



Service Guide

Hitachi Virtual Storage Platform G200, G400, G600, G800

Hitachi Virtual Storage Platform F400, F600, F800

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If a failure occurs multiple times, the storage system might shut off to avoid a serious accident.

Backup

Hitachi cannot guarantee against data loss due to failures. Therefore, back up your data to minimize chances for data loss.

Data backup is also critical when hardware components are added or replaced, because performing such hardware procedures restores parameter settings that can affect how data is managed on the storage systems.

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UEFI Development Kit 2010

This product includes UEFI Development Kit 2010 written by the UEFI Open Source Community. For more information, see the UEFI Development Kit website:

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Preface

This document describes how to service components in the Hitachi Virtual Storage Platform G200, G400, G600, G800 or Hitachi Virtual Storage Platform F400, F600, F800.

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Safety and environmental notices

Equipment warranty

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If a failure occurs multiple times, the storage system might shut off to avoid a serious accident.

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General safety guidelines

Before starting maintenance:

- Maintenance must be performed by trained and qualified engineers only.
- The safety guidelines and procedures in this manual must be read and followed.
- In this manual and on the storage system, hazard warnings are provided to aid you in preventing or reducing the risk of death, personal injury, or product damage. Understand and follow these hazard warnings fully.
- If the warning labels on the storage system become dirty or start peeling off, replace them.
- If an anomaly such as an unusual noise, smell, or smoke occurs on the storage system while it is running, turn off the system or remove the power cables immediately.
- Hazard warnings in this manual or on the storage system cannot cover every possible case, because it is impossible to predict and evaluate all circumstances beforehand. Be alert and use common sense.
- To verify normal operation, operate the storage system according to the information in this manual.

Read the following safety guidelines carefully and follow them when you conduct maintenance of the machine:

- Do not use materials that are outside the specifications for the storage system.
- Use the spare parts, consumables, and materials for maintenance that are specified in this manual; otherwise, personal injury, system damage, and degradation in system quality can occur.
- Keep the maintenance area neat.
- Always put away parts, materials, and tools when not in use.

Handling of heavy parts

- When lifting a heavy object, hold it close to yourself and keep your back erect to prevent back injury.
- When lifting an object designated with a caution in this manual, use a proper lifting tool or ask someone to assist you.

Preventing electric shock

- Before starting work, be sure that, unless otherwise specifically instructed, there is no potential electric hazard in the maintenance area such as insufficient grounding or a wet floor.
- Before starting work, know where the emergency off switches are located and know how to operate them.

- Unless otherwise specifically instructed, remove all power sources to the machine before starting maintenance. Switching off the storage system power supplies is usually not sufficient.
- Do not touch any uninsulated conductor or surface that remains charged shortly after the external power supply to the storage system is disconnected.
- Do not replace parts during a thunderstorm.

Avoiding rotating or moving parts

- Do not supply power to any device with rotating or moving parts that are not properly covered.
- Tuck in your tie, scarf, shirt, or any other loose clothing to prevent it from getting caught by a rotating or moving part.

Preventing machine damage

- Use the tools and instruments, as instructed in this manual, or equivalent commercially available tools and instruments suited for the purpose.
- Use measurement instruments and powered tools that are properly calibrated or periodically inspected.
- Before finishing your work, be sure all parts removed during maintenance have been installed in their original positions in the storage system. Do not leave any tools or foreign material in the storage system.

Working when the storage system is in operation

Observe the following safety measures when working on a storage system that is in operation. When you perform maintenance, do not touch live electric parts to prevent an electric shock.

- Do not touch heat sinks immediately after a board is removed because the heat sinks can be extremely hot.
- While performing maintenance, do not drop tools, screws, or other items into the storage system, because doing so can cause a short circuit.
- While performing maintenance, do not damage or pinch wires.
- When moving a heavy object, ask at least two people to move the object after confirming there are no obstacles nearby.

Precautions when using the storage system

- Use the supplied power cords included with the storage system. Do not use the supplied power cords for other products. Do not use other power cords with the storage system.
- Stop the power feed to the equipment and inform the system administrator immediately if you notice an unusual smell, abnormal heat generation, or smoke emission. Leaving such conditions unattended can cause electric shock or fire.

- Be careful when handling the storage system and its parts. Do not drop the equipment or parts.
- Do not stand on the storage system. Avoid using the storage system for any use other than the one for which it was designed.
- Do not place heavy objects on the storage system, near the vents on the front and rear panels, or on the cables attached to the storage system.
- Do not put a container with items like water or paper clips on the storage system or near the power supply.
- Route cables so as to prevent people from tripping over them.
- Do not operate the storage system in a moist or dusty place.
- Keep these vents open and be sure they are not blocked to keep the storage system ventilated. Cool air enters the storage system from the air vent on the front panel and exits through the vent on the rear panel.
- If a failure occurs in the storage system, follow the instructions in this manual. If the problem is not covered by this manual, contact your system administrator.

Emergency procedures

Use the following procedures to prevent electrical shock or fire when working with the storage system while it is in operation.

For electric shock

- Before performing maintenance, clear away any potential electric hazards in the maintenance area, such as insufficient grounding, loose electrical cables or a wet floor.
- Before performing maintenance, locate the emergency off switches and know how to operate them.
- Unless instructed, remove all power sources to the storage system before working on it. Switching off the storage system power supplies is not sufficient. When power is distributed from a wall or floor outlet, unplug the power supply cord or turn off the switch on the power distribution panel or board.
- If the power supply has a lockout device, lock the device after powering off the storage system and retain the key. Attach a notice on the panel or board prohibiting the use of the switch.
- If the machine power has been already turned off, verify these conditions have been satisfied.

For fire

- Stop all the power to the machine.
- Turn off the emergency power switch or stop the power supply to the storage system.
- If the fire continues to burn after the power is turned off, take necessary actions such as using a fire extinguisher or contacting the fire department.

Audience and qualifications

This guide is intended for data center administrators, facility managers, and others who perform the planning and preparation work for storage system installations. It references skilled tasks and describes important safety considerations, and is not intended as a training aid for untrained personnel.

The information in this guide assumes the reader has the following abilities:

- Is familiar with computing terminology, RAID technology, and optical and Ethernet connectivity.
- Understands networking concepts, network switch technology, and network cabling.
- Knows how to calculate floor loads and power budgeting.
- Understands the procedures for installing rack-mounted components and is trained in safe work procedures.
- Is familiar with high-speed interconnects for modular storage systems.

Product version

This document revision applies to Hitachi Virtual Storage Platform G200, G400, G600, G800 and Hitachi Virtual Storage Platform F400, F600, F800 firmware 83-04-2x or later.

Release notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document. Release notes are available on Hitachi Data Systems Support Connect: <https://knowledge.hds.com/Documents>.

Changes made in this revision

For more information about availability, contact customer support.




- Added new front end module (DW-F800-4HF32R) equipped with 32-Gbps Fibre Channel SFP for connecting VSP Gx00 models and VSP Fx00 models with external devices.
- Added support for the NAS Module
- Modified information related to replacing a channel board to support a 32-Gbps Fibre Channel 4-port front end module.
- Added support for 10-TB hard disk drive (HDD) and Flash Module Drives (FMD) with capacities of 7 TB and 14 TB.


Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	<ul style="list-style-type: none">Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click OK.Indicates emphasized words in list items.
<i>Italic</i>	<ul style="list-style-type: none">Indicates a document title or emphasized words in text.Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: <pre>pairedisplay -g group</pre> (For exceptions to this convention for variables, see the entry for angle brackets.)
Monospace	Indicates text that is displayed on screen or entered by the user. Example: <pre>pairedisplay -g oradb</pre>
< > angle brackets	Indicates variables in the following scenarios: <ul style="list-style-type: none">Variables are not clearly separated from the surrounding text or from other variables. Example: <pre>Status-<report-name><file-version>.csv</pre>Variables in headings.
[] square brackets	Indicates optional values. Example: [a b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a b } indicates that you must choose either a or b.
vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a b] indicates that you can choose a, b, or nothing. { a b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to important or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).

Icon	Label	Description
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical capacity values (for example, logical device capacity, cache memory capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB Open-systems: <ul style="list-style-type: none"> • OPEN-V: 960 KB • Others: 720 KB
1 KB	$1,024 (2^{10})$ bytes
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes

Accessing product documentation

Product user documentation is available on Hitachi Data Systems Support Connect: <https://knowledge.hds.com/Documents>. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

[Hitachi Data Systems Support Connect](https://support.hds.com/en_us/contact-us.html) is the destination for technical support of products and solutions sold by Hitachi Data Systems. To contact technical support, log on to Hitachi Data Systems Support Connect for contact information: https://support.hds.com/en_us/contact-us.html.

[Hitachi Data Systems Community](https://community.hds.com) is a global online community for HDS customers, partners, independent software vendors, employees, and prospects. It is the destination to get answers, discover insights, and make connections. **Join the conversation today!** Go to community.hds.com, register, and complete your profile.

Comments

Please send us your comments on this document to doc.comments@hds.com. Include the document title and number, including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation.

Thank you!

Verifying component failures

This chapter describes how to use the maintenance utility to confirm component failures.

- ☐ [Replaceable parts](#)
- ☐ [Identifying hardware faults](#)

Replaceable parts

The following list shows the components that you can replace on site for the storage systems.



Note: For the dense intermix drive tray, the only user-replacement procedure supported by Hitachi is installing or replacing disk drives.

- Drive (replacing drives on the flash module drive tray is strictly limited to Hitachi and certified partners)
- Battery
- Fan for CBSS or CBSL
- Power supply unit
- Controller
- Cache memory
- Front end module
- Small Form-Factor Pluggable
- Back end module for CBLM or CBLH
- ENC
- SAS cable
- Cache Flash Memory
- LAN blade
- Backup module (BKM) for CBSS or CBSL
- Backup module (BKMF) for CBLM or CBLH

Identifying hardware faults

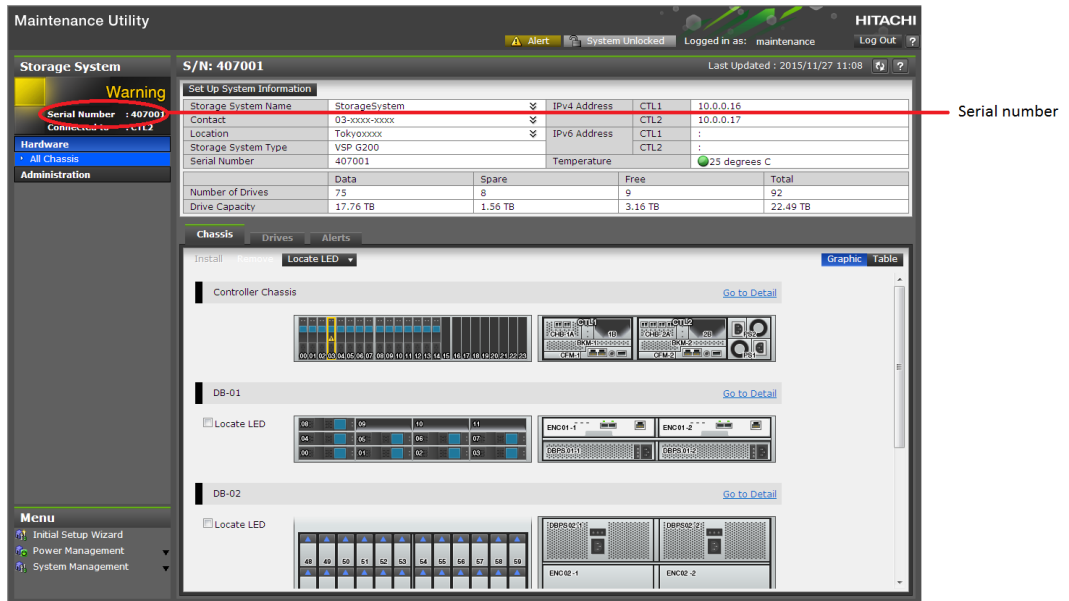
There are several ways the storage system can alert you to failures:

- When notified about an error by email or the Simple Management Network Protocol (SMNP).
- When a failure is indicated by storage system LED (for example, `WARNING` or `ALARM` LED goes on or `READY` LED does not go on).

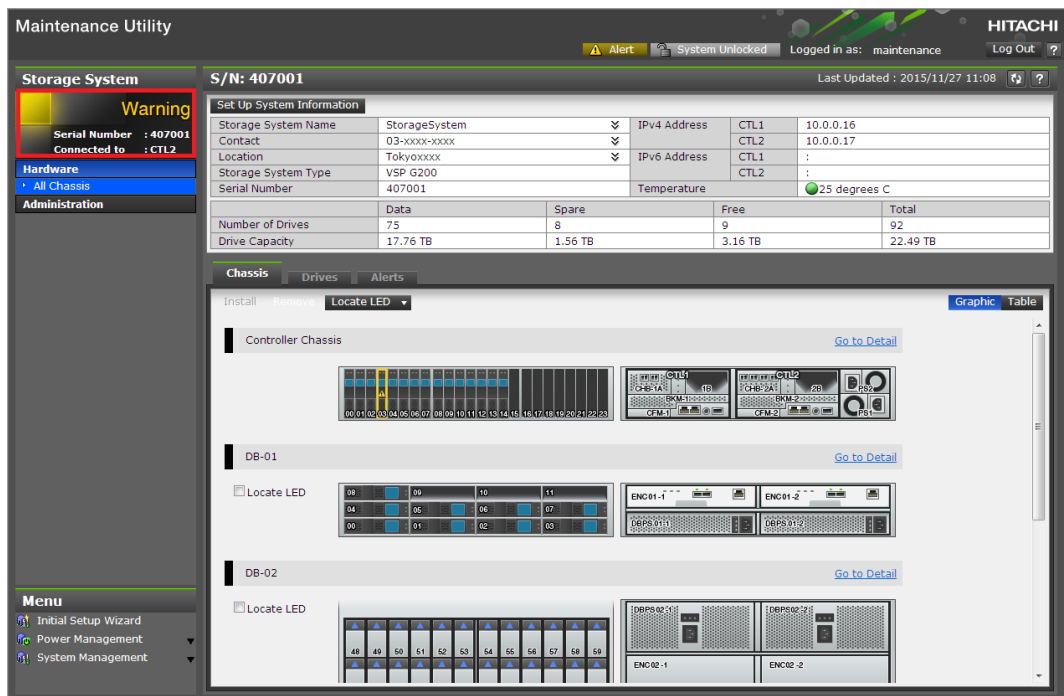
To identify a failed part and recover the storage system:


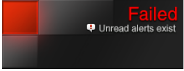


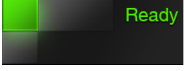
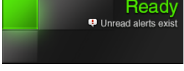
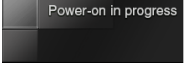
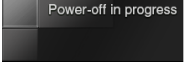
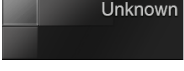
Procedure

1. Check the serial number of the storage system referenced in the email notification or SNMP alert.
2. Start the maintenance utility.
3. In the **Maintenance Utility** window, check the serial number of the storage system where the error was reported. Confirm that this serial number matches the one in step 1.

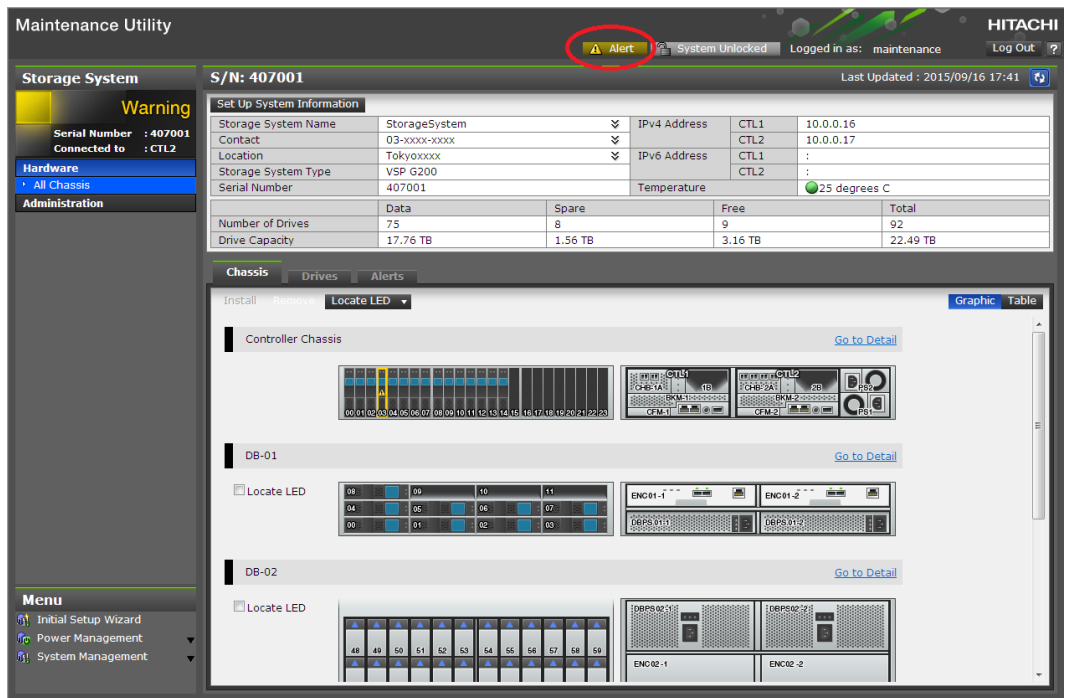


4. In the left pane of the **Maintenance Utility** window (circled in the figure below), check the **Status** of the storage system.

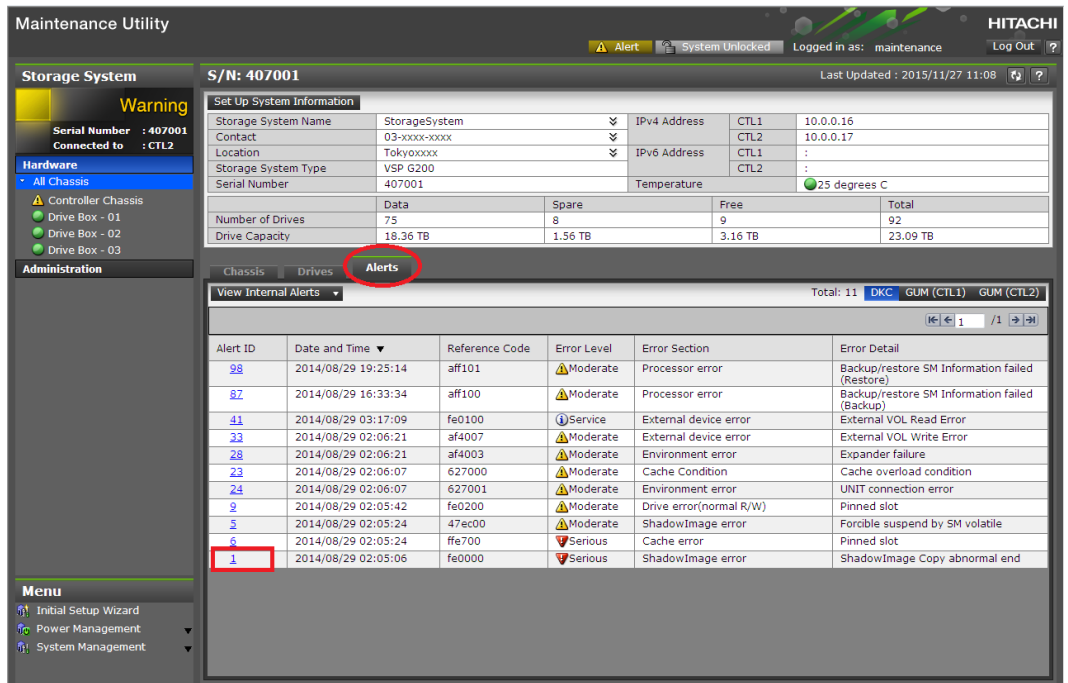


Storage system status	Description	Has the alert been acknowledged?	Navigation area
Failed	The storage system might be down.	No	
		Yes	
Warning	A part has a Blocked or Warning status.	No	
		Yes	
Ready	All parts have a normal status.	No	
		Yes	
Power-on in progress	Power-on is in progress.		
Power-off in progress	Power-off is in progress.		
Unknown	The storage system is in an unknown state prior to power on.		

5. At the top-right of the **Maintenance Utility** window, click **Alert**.




The window switches to the **Alerts** tab.



6. Click the **Alert ID**.
The **Alert Detail** window shows the failed part that must be replaced.

Note: If **SEE MANUAL** does not appear at the top of **Location** in the **Alert Detail** window, go to the next step. If **SEE MANUAL** appears, take action based on the reference code displayed in the **Alert Detail** window. If the user takes action or contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html, steps 7 and beyond are not required.

Alert Detail

 Contact the Hitachi Data Systems customer support.

Alert ID	24
Date and Time	2014/08/29 02:06:07
Reference Code	627001
Error Level	⚠ Moderate
Error Section	Environment error
Error Detail	UNIT connection error
Location	
Concerned Alerts	

Action Codes

Action Code	Possible Failure Parts	Location
58000000	TROUBLESHOOT SECTION	SEE MANUAL
41040003	Drive	HDD00-03
41800100	CTL	CTL2

Total: 2

Close ?

7. Refer to the following table for a description of the reference codes.

Reference code	Recovery action	Reference
aff20x	Tighten the Cache Flash Memory (CFM) screw if necessary.	Replacing cache flash memory on page 251
af400x	Tighten the backup module (BKM/BKMF) screw if necessary.	Replacing a backup module on page 269
af200x	Check power supply (DKCPS) connections.	Replacing a power supply on page 141
af210x	Check the connection of the power cables on the power supply (DKCPS).	Replacing a power supply on page 141
af60xx	Check the connection of the power cables on the power	Replacing a power supply on page 141

	supply (DBPS) for the small/ large form factor drive trays.	
af50xx	Check the connection of the power cables on the power supply (DBPS) for the flash module drive tray.	Replacing a power supply on page 141
ffa0x	Check the connection of the batteries on the backup module (BKMF).	Replacing a backup module on page 269
aff1xx	Troubleshoot the GUM failure.	Troubleshooting the maintenance utility on page 338
af4a0x	Check power supply (CHBBPS) connections.	Checking power cable connections on a host port expansion chassis on page 157
af4b0x	Check the connection of the CHBBPS power cables to the CHBB power supply unit.	Checking power cable connections on a host port expansion chassis on page 157
af4cxx	Check that the screw is secure on the CHBBFAN fan.	Checking the screw on a host port expansion chassis fan on page 137
Reference codes other than those above	Contact the HDS Support Portal at https://support.hds.com/ en_us/contact-us.html .	

8. Click **Action Code** to check the replacement procedure.

Alert Detail

Contact the Hitachi Data Systems customer support.

Alert ID	24
Date and Time	2014/08/29 02:06:07
Reference Code	627001
Error Level	⚠ Moderate
Error Section	Environment error
Error Detail	UNIT connection error
Location	
Concerned Alerts	

Action Codes		
Action Code	Possible Failure Parts	Location
41040003	Drive	HDD00-03
41800100	CTL	CTL2
Total: 2		

Close ?

Parts which need replacement

Action code

9. Read the recovery steps shown in the **Recovery Procedure** window. The following window shows an example of a drive failure.

Recovery Procedure
HITACHI

Drive failure (HDD00-03)

Location	Drive	HDD00-03
	DB	DB-00

Step1 Check the alert part.

Please push the alert part to check that the part is firmly seated. Please DO NOT remove the part and re-insert the same part. Please insert the new replacement part only. If the failure remains, do the following steps.

Step2 Order a replacement part.

To order a replacement part, please access to [support site](#). Then input the following information.

Storage System Type	xxxxx
Serial number	xxxxx
Action Code	xxxxxxxxx

Step3 Replace the alert part.

After receiving a replacement part, please replace the part according to the LED.
The hardware replacement procedure is [here](#).

Step4 Confirm the failure recovery.

After replacement, confirm the failure recovery. Contact the support center if the failure status persists.

Step5 Send back the failed part.

After recovery confirmation, please send back the failed part according to the document.

Close

In this example:

- **Drive** = slot location of the drive in the drive tray.
- **DB** = number of the drive tray.

Hardware description

The system controllers, drive trays and service processor are essential hardware components for a storage system. The following sections provide technical description of the storage system components.

- ☐ [Storage system controllers](#)
- ☐ [Virtual Storage Platform G200 Virtual Storage Platform G400, G600 Virtual Storage Platform G800 Virtual Storage Platform F400, F600 Virtual Storage Platform F800 Controller LEDs and interfaces](#)
- ☐ [Storage system drive trays](#)
- ☐ [Host port expansion chassis](#)
- ☐ [NAS Module Ports and LEDs](#)
- ☐ [Hitachi Virtual Storage Platform Service processor server](#)

Storage system controllers

Every storage system has two controllers. The controllers contain fans and power supplies, and provide the interfaces between a host and the storage system.

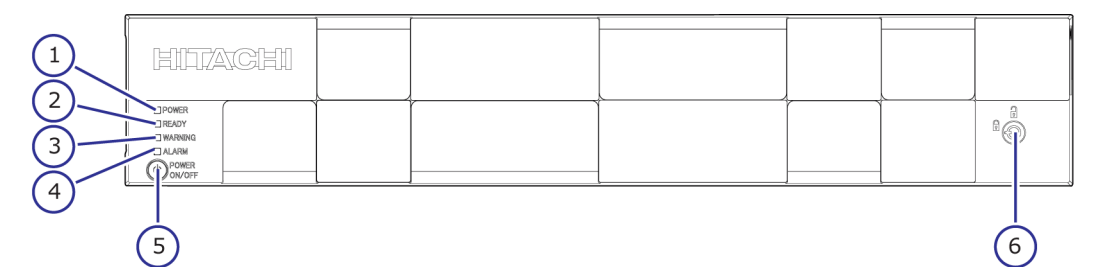
A controller manages the I/O between the host system and data volumes.

CBSS controller

The CBSS controller includes specific functional LEDs located on the front and rear of controller and power supplies to provide its operating status.

CBSS with front panel bezel

The following table describes the definitions of the CBSS controller front panel bezel LEDs.



Number	Item	Description
1	POWER LED	Green: Storage system is powered on. Amber: Storage system is receiving power.
2	READY LED	Green: Normal operation.
3	WARNING LED	Off: Normal operation. Amber: Component requires maintenance. Blink: Failure requires maintenance. Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100.

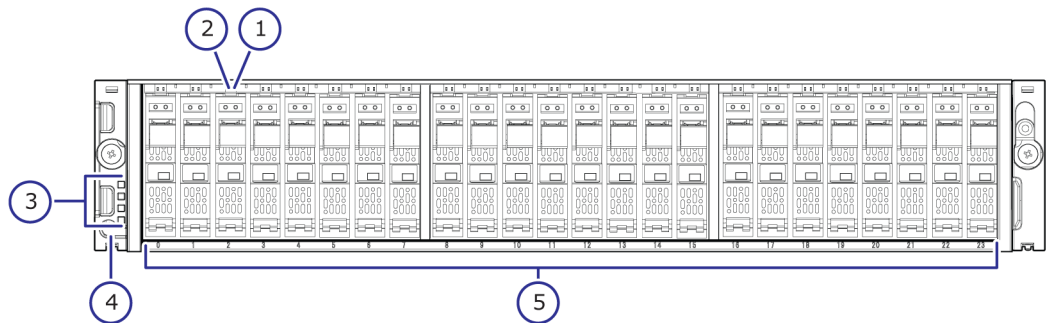
Number	Item	Description
		LED might turn off during user maintenance.
4	ALARM LED	Off: Normal operation. Red: Processor failure (system might be down). Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html .
5	POWER ON/OFF (main switch)	Powers the storage system.
6	Lock	Locks and unlocks the front panel bezel by using the supplied key.



Note: Removing a controller can cause the POWER, READY, WARNING, and ALARM LEDs on the front panel to turn off. These LEDs return to their on state after the storage system recovers from the controller replacement.

CBSS front panel without bezel

The following table describes the definitions of the CBSS controller front panel LEDs.

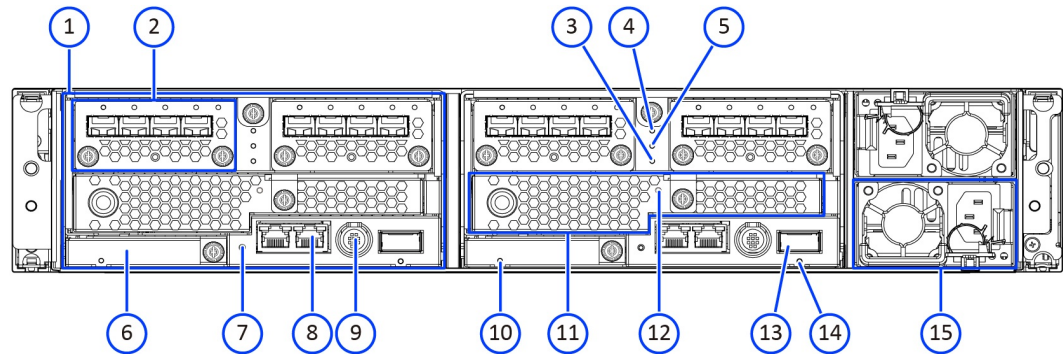


Number	Item	Description
1	ACT LED	Green: Normal operation. Blink green: Drive is being accessed.
2	ALM LED	Red: Drive stopped due to a failure and can be replaced.
3	POWER, READY, WARNING, and ALARM LEDs	Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx,

Number	Item	Description
		462xxx, 3077xx, 4100xx, and 410100.
4	POWER ON/OFF (main switch)	Powers the storage system.
5	Small form factor drives	The twenty-four 2.5-inch small form factor drives are positioned vertically. The slots are organized from 0 to 23.

CBSS rear panel

The following table describes the definitions of the CBSS controller rear panel LEDs.



Number	Item	Description
1	Controllers	Controller 1 (left) and Controller 2 (right).
2	Front end module	N/A
3	CTL ALM LED	Red: Controller can be removed. Blink red: Failure with the power supply unit of the controller. Amber: LAN reset switch was pressed.
4	BACKUP STTS LED	Green: Power restoration in progress following power outage. Fast blink green: Restoring. Slow blink green: Restoring, or sequential shutdown in progress.
5	CTL WARN LED	Amber blink one time: Failure with fan 0.

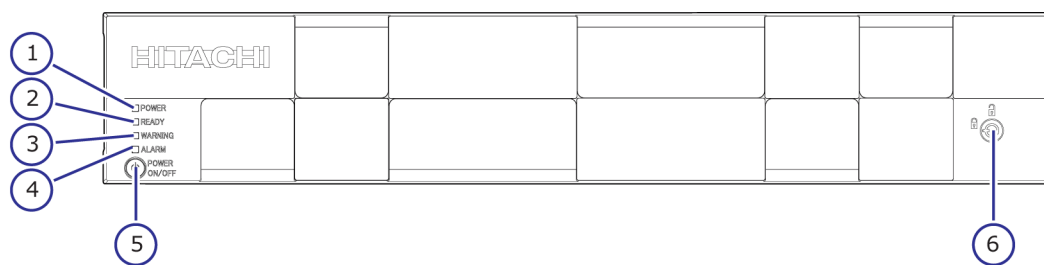
Number	Item	Description
		Amber blink two times: Failure with fan 1.
6	Cache flash memory	N/A
7	LAN-RST switch	Use only when instructed by customer support.
8	LAN port	Maintenance LAN port (left) and user LAN port (right).
9	Uninterruptible power supply (UPS) port	N/A
10	ALARM LED (for cache flash memory)	Red: Cache flash memory can be removed.
11	Backup module	N/A
12	STATUS	Green: Charging of the battery in the backup module is complete. Blink green: Battery in the backup module is charging or discharging. Red: Backup module can be removed. Blink red: Backup module can be removed. Blink red one time: Battery failure Off: battery is not installed, failure occurred, or firmware is being upgraded.
13	SAS port	N/A
14	Port LED	Blue: Port link is established.
15	Power supply unit	N/A

CBSL controller

The CBSL controller includes specific functional LEDs located on the front and rear of controller and power supplies to provide its operating status.

CBSL with front panel bezel

The following table describes the definitions of the CBSL controller front panel bezel LEDs.



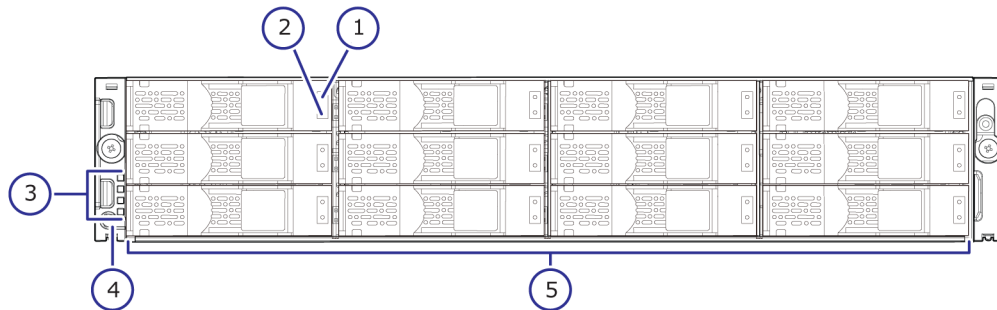
Number	Item	Description
1	POWER LED	Green: Storage system is powered on. Amber: Storage system is receiving power.
2	READY LED	Green: Normal operation.
3	WARNING LED	Off: Normal operation. Amber: Component requires maintenance. Blink: Failure requires maintenance. Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100. LED might turn off during user maintenance.
4	ALARM LED	Off: Normal operation. Red: Processor failure (system might be down). Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html .
5	POWER ON/OFF (main switch)	Powers the storage system.
6	Lock	Locks and unlocks the front panel bezel by using the supplied key.



Note: Removing a controller can cause the POWER, READY, WARNING, and ALARM LEDs on the front panel to turn off. These LEDs return to their on state after the storage system recovers from the controller replacement.

CBSL front panel without bezel

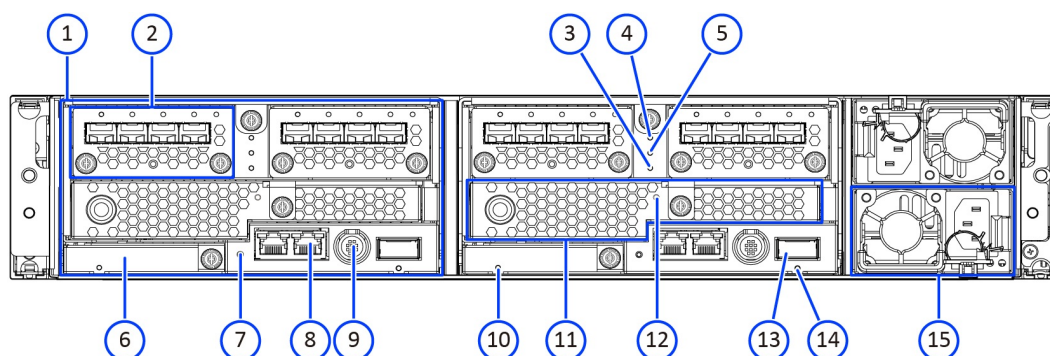
The following table describes the definitions of the CBSL controller front panel LEDs.



Number	Item	Description
1	ACT LED	Green: Normal operation. Blink green: Drive is being accessed.
2	ALM LED	Red: Drive stopped due to a failure and can be replaced.
3	POWER, READY, WARNING, and ALARM LEDs	Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100.
4	POWER ON/OFF (main switch)	Powers the storage system.
5	Large form factor drives	The twelve 3.5-inch large form factor drives are positioned horizontally. The slots are organized in the following order: <div style="display: flex; flex-direction: column; align-items: flex-end;"> <div style="display: flex; justify-content: space-between; width: 100px;"> 891011 </div> <div style="display: flex; justify-content: space-between; width: 100px;"> 4567 </div> <div style="display: flex; justify-content: space-between; width: 100px;"> 0123 </div> </div>

CBSL rear panel

The following table describes the definitions of the CBSL controller rear panel LEDs.



Number	Item	Description
1	Controllers	Controller 1 (left) and Controller 2 (right).
2	Front end module	N/A
3	CTL ALM LED	Red: Controller can be removed. Blink red: Failure with the power supply unit of the controller. Amber: LAN reset switch was pressed.
4	BACKUP STTS LED	Green: Power restoration in progress following power outage. Fast blink green: Restoring. Slow blink green: Restoring, or sequential shutdown in progress.
5	CTL WARN LED	Amber blink one time: Failure with fan 0. Amber blink two times: Failure with fan 1.
6	Cache flash memory	N/A
7	LAN-RST switch	Use only when instructed by customer support.
8	LAN port	Maintenance LAN port (left) and user LAN port (right).
9	Uninterruptible power supply (UPS) port	N/A
10	ALARM LED (for cache flash memory)	Red: Cache flash memory can be removed.
11	Backup module	N/A

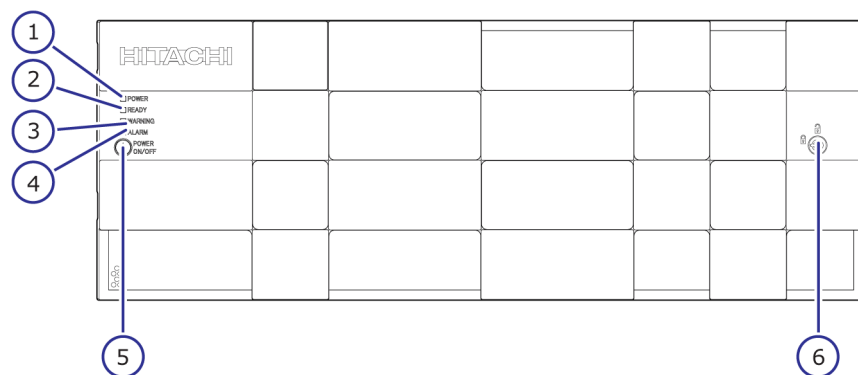
Number	Item	Description
12	STATUS	<p>Green: Charging of the battery in the backup module is complete.</p> <p>Blink green: Battery in the backup module is charging or discharging.</p> <p>Red: Backup module can be removed.</p> <p>Blink red: Backup module can be removed.</p> <p>Blink red one time: Battery failure</p> <p>Off: Battery is not installed, failure occurred, or firmware is being upgraded.</p>
13	SAS port	N/A
14	Port LED	Blue: Port link is established.
15	Power supply unit	N/A

CBLM controller

The CBLM controller includes specific functional LEDs located on the front and rear of controller and power supplies to provide its operating status.

CBLMCBLH with front panel bezel

The following table describes the definitions of the CBLMCBLH controller front panel bezel LEDs.



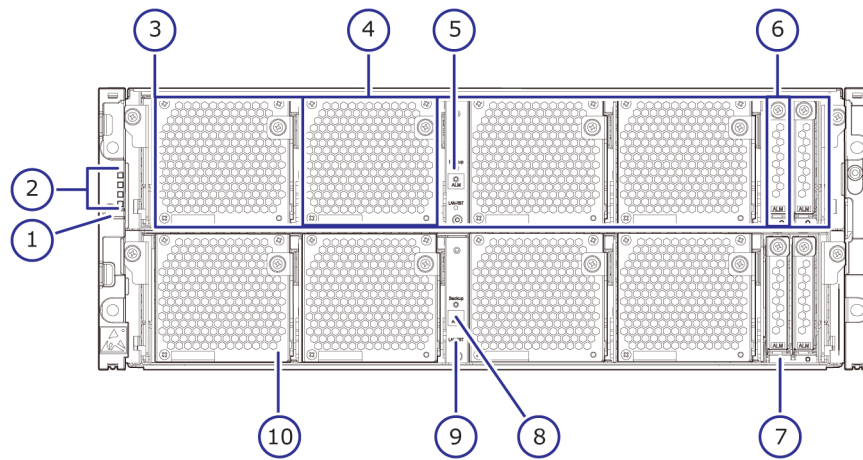
Number	Item	Description
1	POWER LED	Green: Storage system is powered on. Amber: Storage system is receiving power.
2	READY LED	Green: Normal operation.
3	WARNING LED	Off: Normal operation. Amber: Component requires maintenance. Blink: Failure requires maintenance. Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100. LED might turn off during user maintenance.
4	ALARM LED	Off: Normal operation. Red: Processor failure (system might be down). Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html .
5	POWER ON/OFF (main switch)	Powers the storage system.
6	Lock	Locks and unlocks the front panel bezel by using the supplied key.



Note: Removing a controller can cause the POWER, READY, WARNING, and ALARM LEDs on the front panel to turn off. These LEDs return to the on status after the storage system recovers from the controller replacement.

CBLMCBLH front panel without bezel

The following table describes the definitions of the CBLMCBLH controller front panel LEDs.

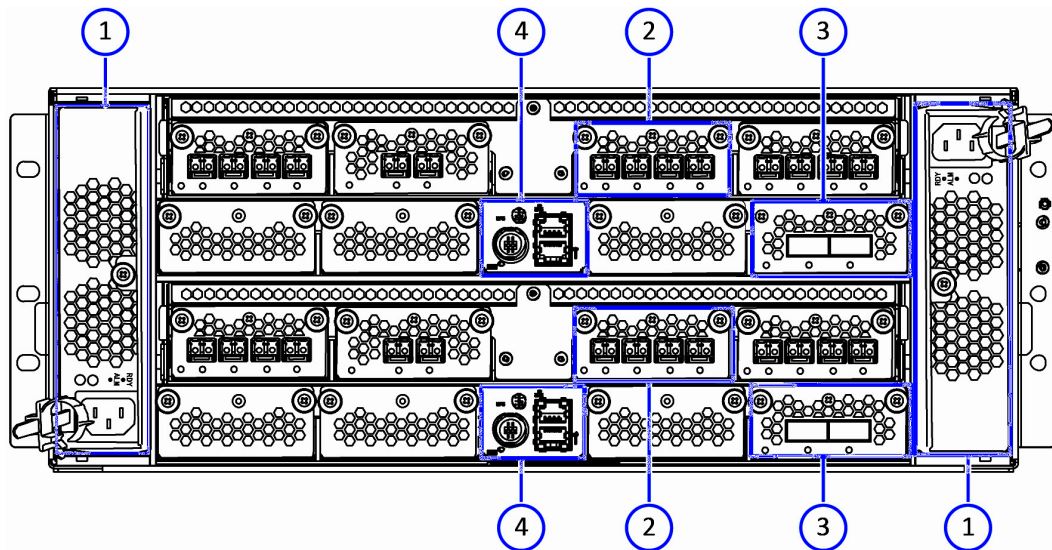


Number	Item	Description
1	POWER ON/OFF (main switch)	Powers the storage system.
2	POWER, READY, WARNING, and ALARM LEDs	Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100.
3	Controllers	Controller 1 (bottom) and Controller 2 (top).
4	Backup module	N/A
5	BACKUP LED	Green: Power restoration in progress following power outage. Fast blink green: Restoring. Slow blink green: Restoring, or sequential shutdown in progress.
6	Cache flash memory	N/A
7	ALM LED (for cache flash memory)	Red: Cache flash memory can be removed.
8	CTL ALM LED	Red: Controller can be removed. Blink red: Failure with the power supply unit of the controller. Amber: LAN reset switch was pressed.
9	LAN-RST switch	Use only when instructed by customer support.

Number	Item	Description
10	STATUS LED (for BKMF)	<p>Green: Charging of the battery in the backup module is complete.</p> <p>Red: Backup module can be removed.</p> <p>Blink red one time: Main battery failure.</p> <p>Blink red two times: Backup battery failure.</p> <p>Blink red three times: Both batteries failed or preventive maintenance replacement of batteries can run.</p> <p>Off: Battery is not mounted, battery-mounting failure occurred, or firmware is being upgraded. Off is normal status for configurations without batteries (for example, BKMF-10 and BKMF-20).</p>

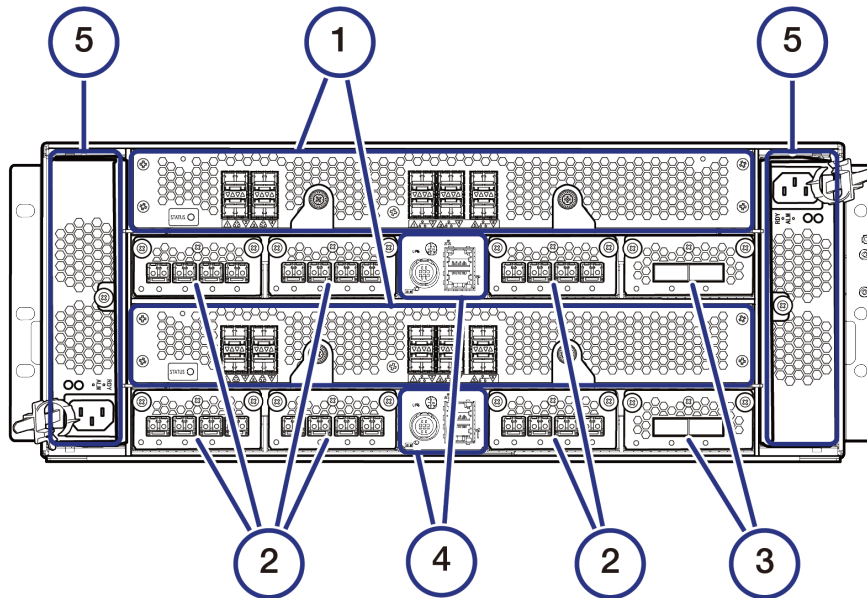
CBLMCBLH rear panel

The following table describes the definitions of the CBLMCBLH controller rear panel LEDs.



Number	Item
1	Power supply unit
2	Front end module
3	Back end module
4	LAN blade

Rear view (includes NAS modules)



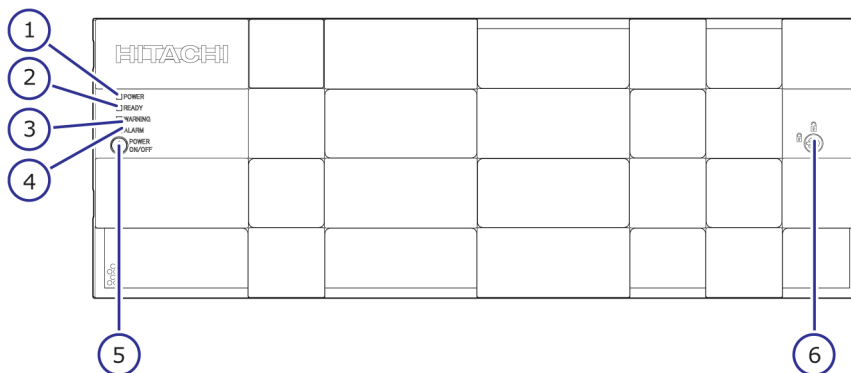
Number	Item
1	NAS module
2	Front end module
3	Back end module
4	LAN blade
5	Power supply unit

CBLH controller

The CBLH controller includes specific functional LEDs located on the front and rear of controller and power supplies to provide its operating status.

CBLH with front panel bezel

The following table describes the definitions of the CBLH controller front panel bezel LEDs.



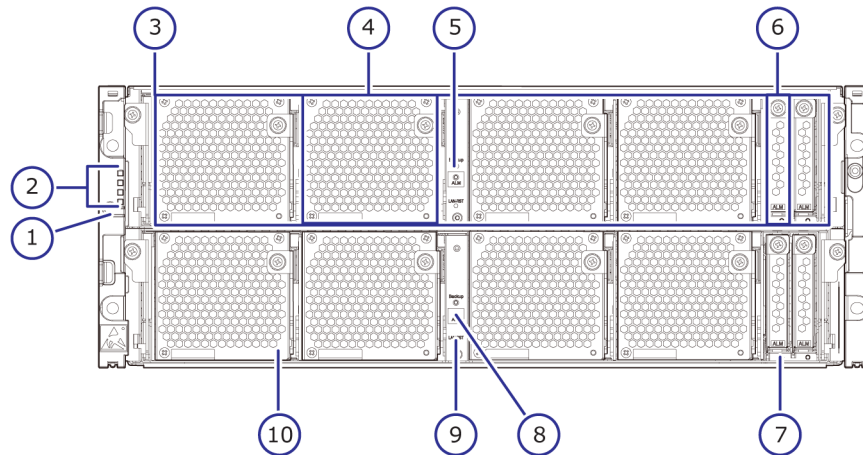
Number	Item	Description
1	Power	Green: Storage system is powered on. Amber: Storage system is receiving power.
2	Ready	Green: Normal operation.
3	Warning	Off: Normal operation. Amber: Component requires maintenance. Blink: Failure requires maintenance. Note: When System Option Mode 1097 is set to ON, the WARNING LED does not blink even if the following failure information issues SIM: Failure information SIM: 452xxx, 462xxx, 3077xy, 4100xx and 410100. LED might go OFF during user maintenance.
4	Alarm	Off: Normal operation. Red: Processor failure (system may be down). Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html .
5	Power ON/OFF	Powers the storage system.
6	Lock	Locks and unlocks the front bezel by using the supplied key.



Note: Removing a controller can cause the POWER, READY, WARNING, and ALARM LEDs on the front panel to go off. These LEDs return to their on state after the storage system recovers from the controller replacement.

CBLH front panel without bezel

The following table describes the definitions of the CBLH controller front panel LEDs.

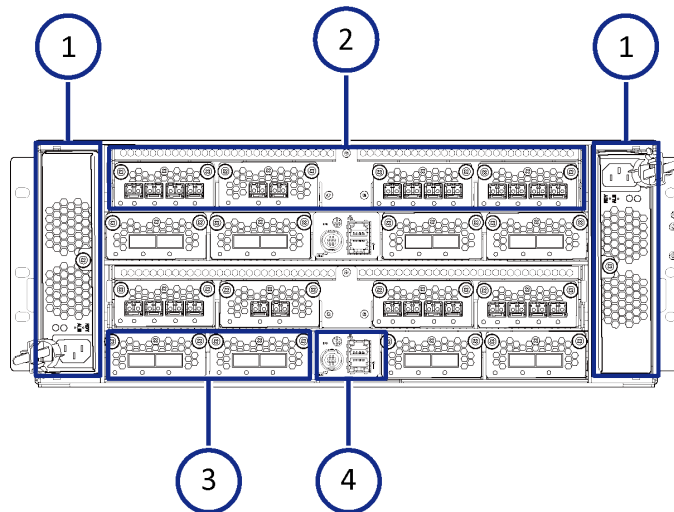


Number	Item	Description
1	POWER ON/OFF (main switch)	Powers the storage system.
2	POWER, READY, WARNING, and ALARM LEDs	See the previous table.
3	Controllers	Controller 1 (bottom) and Controller 2 (top).
4	Backup module	N/A
5	BACKUP LED	Green: Power restoration in progress following power outage. Fast blink green: Restoring. Slow blink green: Restoring, or sequential shutdown in progress.
6	Cache flash memory	N/A
7	ALM LED (for cache flash memory)	Red: Cache flash memory can be removed.
8	CTL ALM LED	Red: Controller can be removed. Blink red: Failure with the power supply unit of the controller.

Number	Item	Description
		Amber: LAN reset switch was pressed.
9	LAN-RST switch	Use only when instructed by customer support.
10	STATUS LED (for BKMF)	<p>Green: Charging of the battery in the backup module is complete.</p> <p>Red: Backup module can be removed.</p> <p>Blink red one time: Main battery failure.</p> <p>Blink red two times: Backup battery failure.</p> <p>Blink red three times: Both batteries failed or preventive maintenance replacement of batteries can run.</p> <p>Off: Battery is not mounted, battery-mounting failure occurred, or firmware is being upgraded. Off is normal status for configurations without batteries (for example, BKMF-10 and BKMF-20).</p>

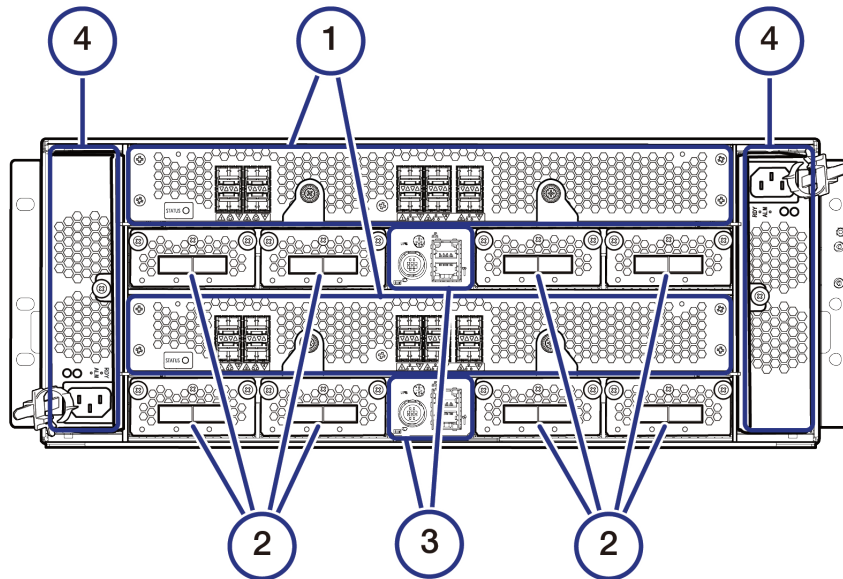
CBLH rear panel

The following table describes the definitions of the CBLH controller rear panel LEDs.



Number	Item
1	Power supply unit
2	Front end module
3	Back end module
4	LAN blade

Rear view (includes NAS modules)



Number	Item
1	NAS module
2	Back end module
3	LAN blade
4	Power supply unit

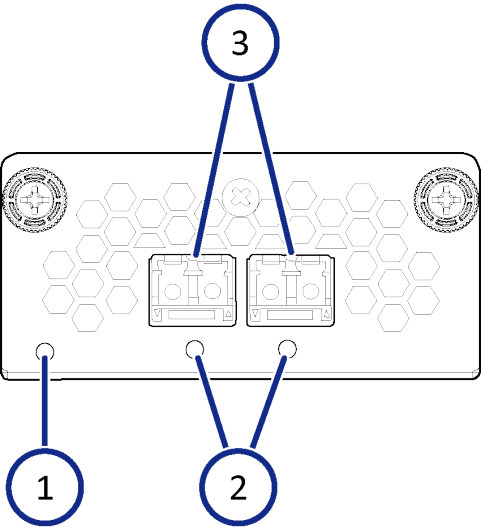
Virtual Storage Platform G200 Virtual Storage Platform G400, G600 Virtual Storage Platform G800 Virtual Storage Platform F400, F600 Virtual Storage Platform F800 Controller LEDs and interfaces

The controllers are equipped with interfaces for connecting, powering, configuring, and managing the storage system. The component LEDs display the operating status of the storage system.

Front end module descriptions

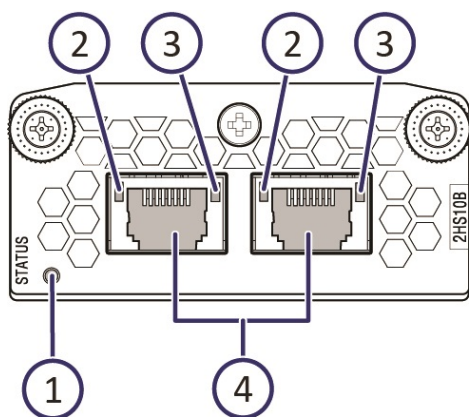
The front end module LEDs display the operating status of the module.

10-Gbps iSCSI board LEDs and connectors (optical)



Number	Item	Description
1	STATUS LED	Green: Front end module is in the power-on state. Red: Front end module can be removed safely.
2	PORT LED	Red: Small form factor pluggable can be removed. Blue: Normal link status. Blink blue: Front end module is in communication status.
3	iSCSI connectors	Connect to Ethernet LAN cables.

10-Gbps iSCSI board LEDs and connectors (copper)



Number	Item	Description
1	STATUS LED	Green: Front end module is in the power-on state. Red: Front end module can be removed safely.
2	PORT (Link/Speed) LED	Yellow: 1-Gbps link. Green: 10-Gbps link. Off: No link connection.
3	PORT LED	Green: Link connection is established. Blinking: Communication is in progress. Off: No link connection or not ready to communicate.
4	iSCSI connectors	Connect to Ethernet LAN cables.

8-Gbps, 16-Gbps, or 32-Gbps Fibre Channel (4-port) board LEDs and connectors

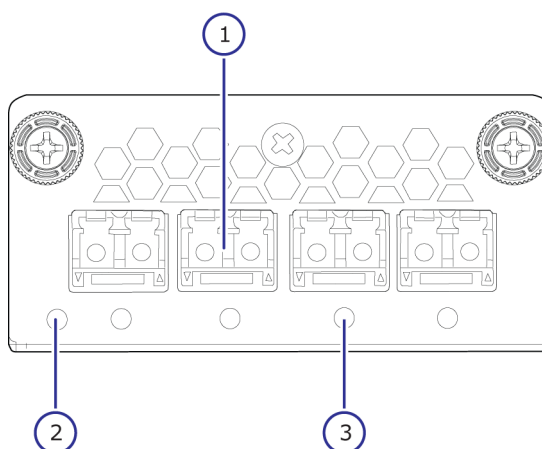


Table 1 8-Gbps Fibre Channel

Number	Item	Description
1	Fibre Channel connectors	Connect to Fibre Channel cables.
2	STATUS LED	Green: Front end module is in power-on state. Red: Front end module can be removed safely.
3	PORT LED	Red: Small form factor pluggable can be removed. Blue: Normal link status at 8-Gbps. Green: Normal link status at 2-Gbps or 4-Gbps.

Table 2 32-Gbps, 16-Gbps Fibre Channel

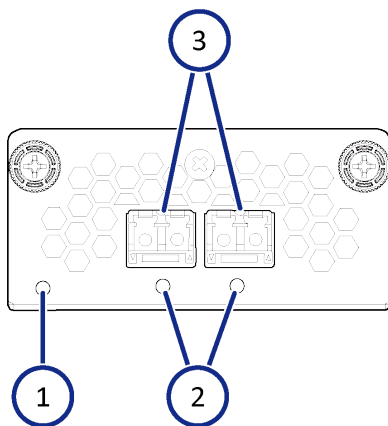
Number	Item	Description
1	Fibre Channel connectors	Connect to Fibre Channel cables.
2	STATUS LED	Green: Front end module is in power-on state. Red: Front end module can be removed safely.
3	PORT LED	Red: Small form factor pluggable can be removed. Blue: Normal link status at 16-Gbps (16-Gbps). Blue: Normal link status at 32-Gbps (32-Gbps).

Number	Item	Description
		Green: Normal link status at 4-Gbps or 8-Gbps (16-Gbps). Green: Normal link status at 8-Gbps or 16-Gbps (32-Gbps).

Port assignments

CHB number	8-Gbps, 16-Gbps, or 32-Gbps Fibre Channel Ports (left to right)			
	Port 1	Port 2	Port 3	Port 4
CHB-1A	1A	3A	5A	7A
CHB-1B	1B	3B	5B	7B
CHB-1C	1C	3C	5C	7C
CHB-1D	1D	3D	5D	7D
CHB-1E	1E	3E	5E	7E
CHB-1F	1F	3F	5F	7F
CHB-1G	1G	3G	5G	7G
CHB-1H	1H	3H	5H	7H
CHB-2A	2A	4A	6A	8A
CHB-2B	2B	4B	6B	8B
CHB-2C	2C	4C	6C	8C
CHB-2D	2D	4D	6D	8D
CHB-2E	2E	4E	6E	8E
CHB-2F	2F	4F	6F	8F
CHB-2G	2G	4G	6G	8G
CHB-2H	2H	4H	6H	8H

16-Gbps Fibre Channel (2-port) board LEDs and connectors

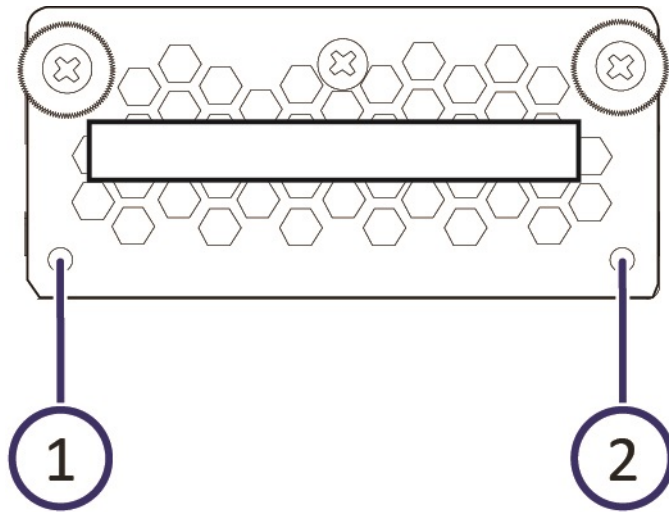


Number	Item	Description
1	STATUS LED	Green: Front end module is in the power-on state. Red: Front end module can be removed safely.
2	PORT LED	Red: Small form factor pluggable can be removed. Blue: Normal link status at 16-Gbps. Green: Normal link status at 4-Gbps or 8-Gbps.
3	Fibre Channel connectors	Connect to Fibre Channel cables.

Port assignments

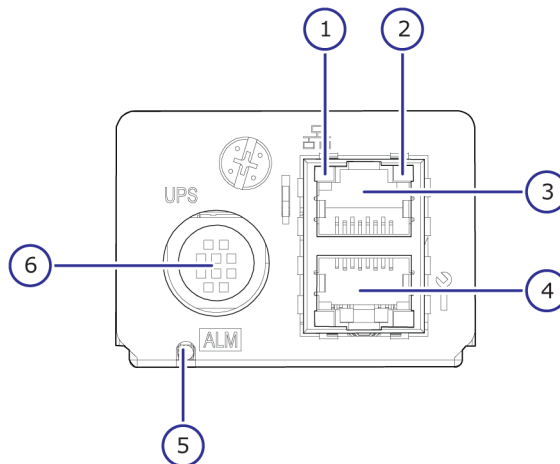
CHB number	16-Gbps Fibre Channel Ports (left to right)	
	Port 1	Port 2
CHB-1A	1A	3A
CHB-1B	1B	3B
CHB-1C	1C	3C
CHB-1D	1D	3D
CHB-1E	1E	3E
CHB-1F	1F	3F
CHB-1G	1G	3G
CHB-1H	1H	3H
CHB-2A	2A	4A
CHB-2B	2B	4B
CHB-2C	2C	4C
CHB-2D	2D	4D
CHB-2E	2E	4E
CHB-2F	2F	4F
CHB-2G	2G	4G
CHB-2H	2H	4H

PCIe module



Number	Item	Description
1	STATUS LED	<p>Green: PCIe module is in the power-ON status.</p> <p>Red: PCIe module failure occurred.</p> <p>Off: PCIe module can be removed safely.</p>
2	Link	<p>Green: PCIe is Gen-3 (8-Gbps) and is linked up normally.</p> <p>Off: PCIe is not linked up (PCIe cable might not be connected). If a PCIe cable is connected, it can be removed safely.</p>

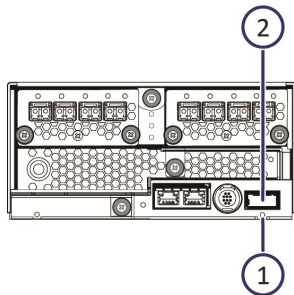
LAN blade LEDs and connectors



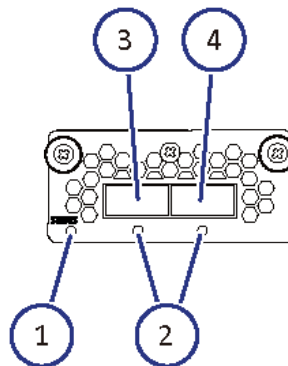
Number	Item	Description
1	ACT LED	Green: Data is being transferred.
2	LINK LED	Green: Link status is normal.
3	LAN 2	LAN port used by the user.
4	LAN 1	Maintenance LAN port used by service personnel.
5	LAN ALARM LED	Red: LAN blade can be removed.
6	Uninterruptible power supply (UPS) port	N/A

Back end module LEDs and connectors

The back end module LEDs display the operating status of the module.



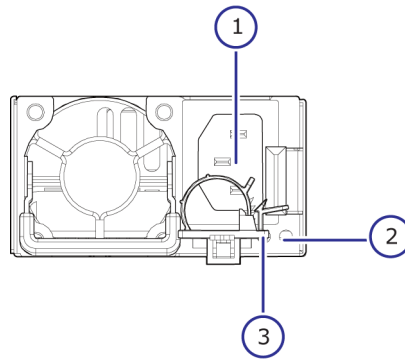
Number	Item	Description
1	PATH 1 connector	Connects to a drive tray.
2	PORT LED	Blue: Normal link status.



Number	Item	Description
1	STATUS LED	Green: Back end module is in the power-on state. Red: Back end module can be removed safely.
2	Port LED	Blue: Link status is normal.
3	PATH 0 connector	Connect to a drive tray.
4	PATH 1 connector	Connects to a drive tray.

CBSS/CBSL AC power supply unit LEDs and connectors

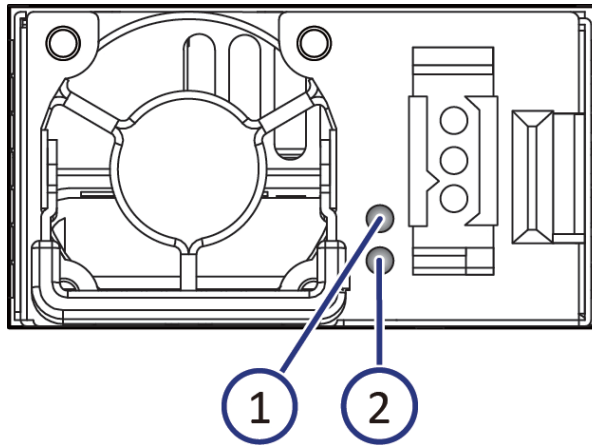
The following table describes the definitions of the CBSS and CBSL AC power supply unit LEDs and connectors.



Number	Item	Description
1	Receptacle	Connects to the power cable provided with the storage system.
2	AC IN LED	Blue: AC input is normal.
3	ALM/RDY LED	Red: Power supply unit can be replaced. Green: Normal operation.

CBSSD/CBSLD DC power supply unit LEDs and connectors

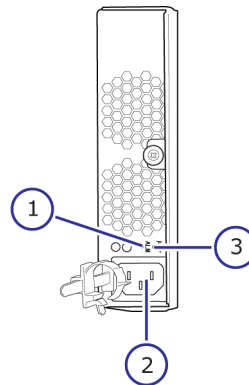
The following table describes the definitions of the CBSSD and CBSLD DC power supply unit LEDs and connectors.



Number	Item	Description
1	ALM/RDY LED	Red: Power supply unit can be replaced. Green: Normal operation.
2	DC IN LED	Blue: DC input is normal.

CBLM power supply unit LEDs and connectorsCBLH power supply unit LEDs and connectors

The following table lists the definitions of the CBLMCBLH power supply unit LEDs and connectors.



Number	Item	Description
1	ALM/RDY LED	Red: Power supply unit can be replaced.

Number	Item	Description
2	Receptacle	Connects to the power cable provided with the storage system.
3	RDY LED	Green: Normal operation.

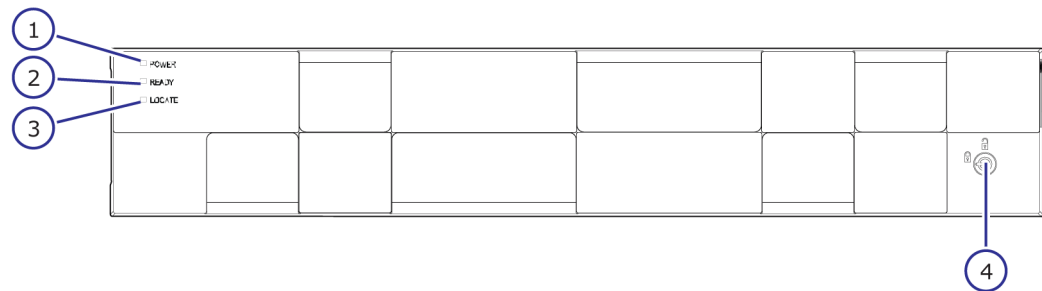
Storage system drive trays

Drive trays contain drives, power supplies, fans, and status LEDs. They also provide interfaces for connecting to controllers and other drive trays.

All-flash storage arrays have various fixed storage capacity configurations of FMD DC2 flash storage devices. To deliver consistent low latency host response times and highest IOP performance across all host connection ports, no HDDs are included or permitted to be configured as part of these configurations.

Small form-factor (SFF) drive tray

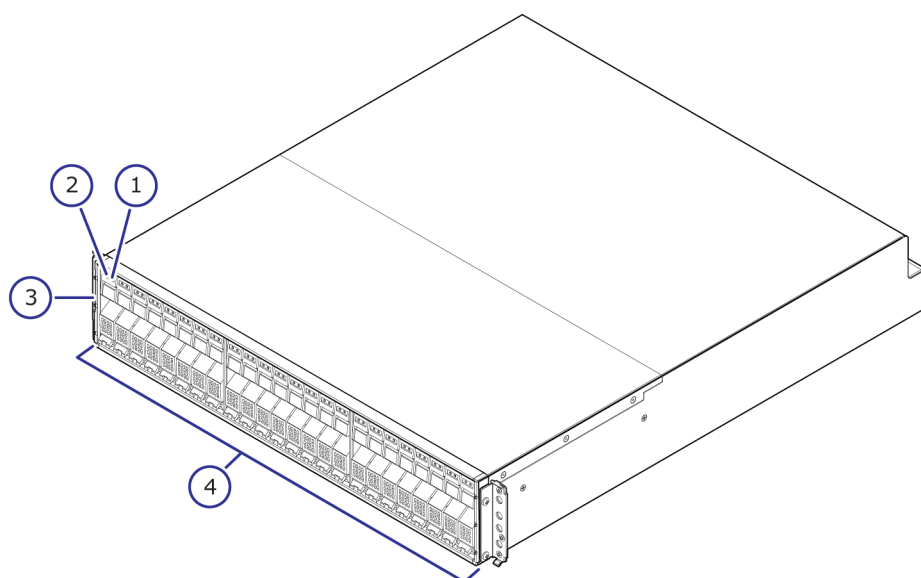
SFF with front panel bezel



Number	Item	Description
1	POWER LED	Green: Drive tray is powered on.
2	READY LED	Green: Drive tray is operational.
3	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.

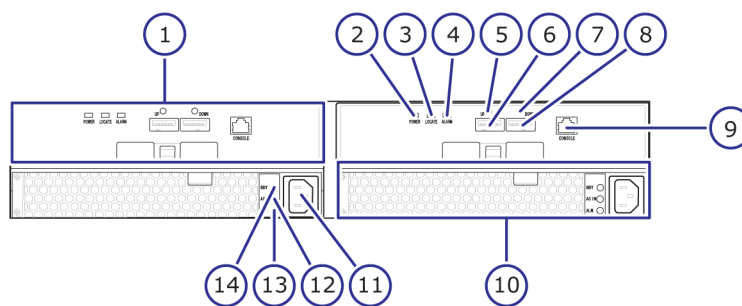
Number	Item	Description
4	Lock	Locks and unlocks the front panel bezel by using the supplied key.

SFF front panel without bezel



Number	Item	Description
1	ACT LED	Green: Normal operation. Blink green: Drive is being accessed.
2	ALM LED	Red: Drive stopped due to a failure and can be replaced.
3	POWER, READY, and LOCATE LEDs	Green: Drive tray is powered on. Green: Drive tray is operational. Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	Small form factor drives	The twenty-four 2.5-inch small form factor drives are positioned vertically. The slots are organized from 0 to 23.

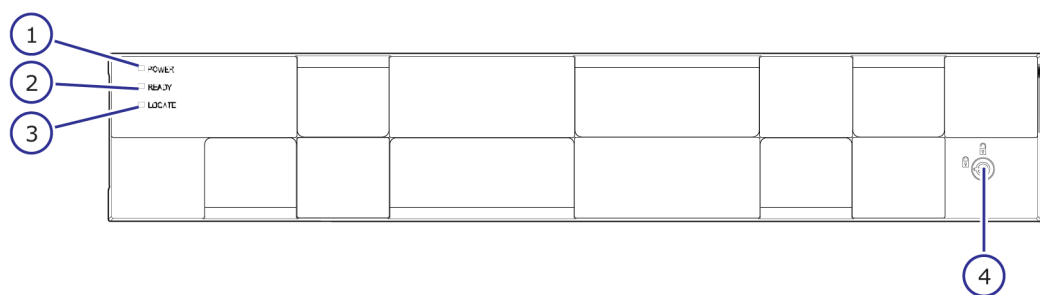
SFF rear panel



Number	Item	Description
1	ENC	N/A
2	POWER LED	Green: ENC is in the power-on state.
3	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	ALARM LED	Red: ENC can be replaced.
5	PATH (IN) LED	Blue: IN side port is linked up.
6	PATH (IN) connector	Connects to a controller or drive tray.
7	PATH (OUT) LED	Blue: OUT side port is linked up.
8	PATH (OUT) connector	Connects to a drive tray.
9	Console	This port is reserved.
10	Power supply unit	N/A
11	Receptacle	Connects to the power cable provided with the storage system.
12	AC IN LED	Green: Normal operation.
13	ALM LED	Red: Power supply unit can be replaced.
14	RDY LED	Green: Normal operation.

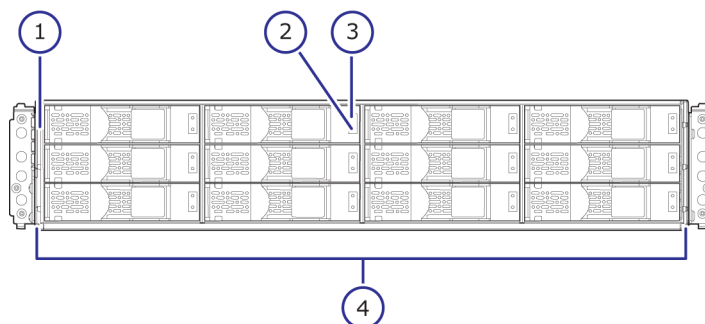
Large form-factor (LFF) drive tray

LFF with front panel bezel



Number	Item	Description
1	POWER LED	Green: Drive tray is powered on.
2	READY LED	Green: Drive tray is operational.
3	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	Lock	Locks and unlocks the front panel bezel by using the supplied key.

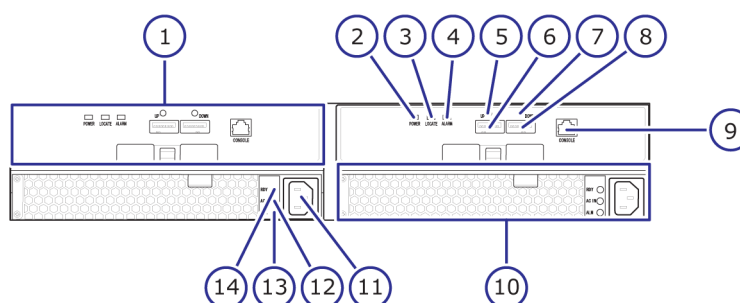
LFF front panel without bezel



Number	Item	Description
1	POWER, READY, and LOCATE LEDs	Green: Drive tray is powered on.
		Green: Drive tray is operational.
		Amber:

Number	Item	Description												
		<ul style="list-style-type: none">Indicates the location of the chassis.Can be turned on or turned off by the maintenance utility.												
2	ACT LED	Green: Normal operation. Blink green: Drive is being accessed.												
3	ALM LED	Red: Drive stopped due to a failure and can be replaced.												
4	Large form factor drives	The twelve 3.5-inch large form factor drives are positioned horizontally. The slots are organized in the following order: <table><tr><td>8</td><td>9</td><td>10</td><td>11</td></tr><tr><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>0</td><td>1</td><td>2</td><td>3</td></tr></table>	8	9	10	11	4	5	6	7	0	1	2	3
8	9	10	11											
4	5	6	7											
0	1	2	3											

LFF rear panel

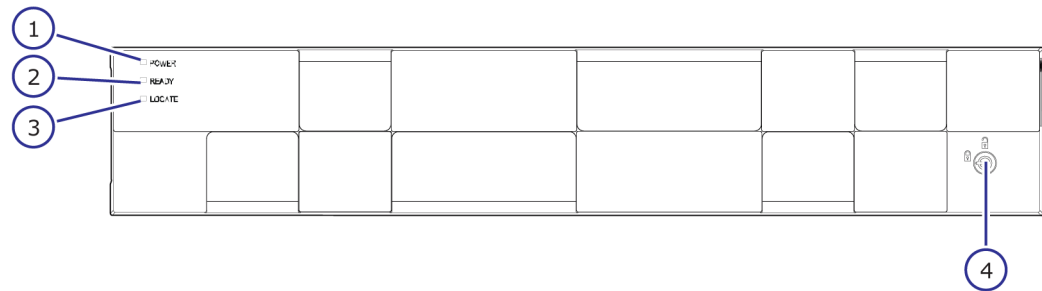


Number	Item	Description
1	ENC	N/A
2	POWER LED	Green: ENC is in the power-on state.
3	LOCATE LED	<p>Amber:</p> <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	ALARM LED	Red: ENC can be replaced.
5	PATH (IN) LED	Blue: IN side port is linked up.

Number	Item	Description
6	PATH (IN) connector	Connects to a controller or drive tray.
7	PATH (OUT) LED	Blue: OUT side port is linked up.
8	PATH (OUT) connector	Connects to a drive tray.
9	Console	This port is reserved.
10	Power supply unit	N/A
11	Receptacle	Connects to the power cable provided with the storage system.
12	AC IN LED	Green: Normal operation.
13	ALM LED	Red: Power supply unit can be replaced.
14	RDY LED	Green: Normal operation.

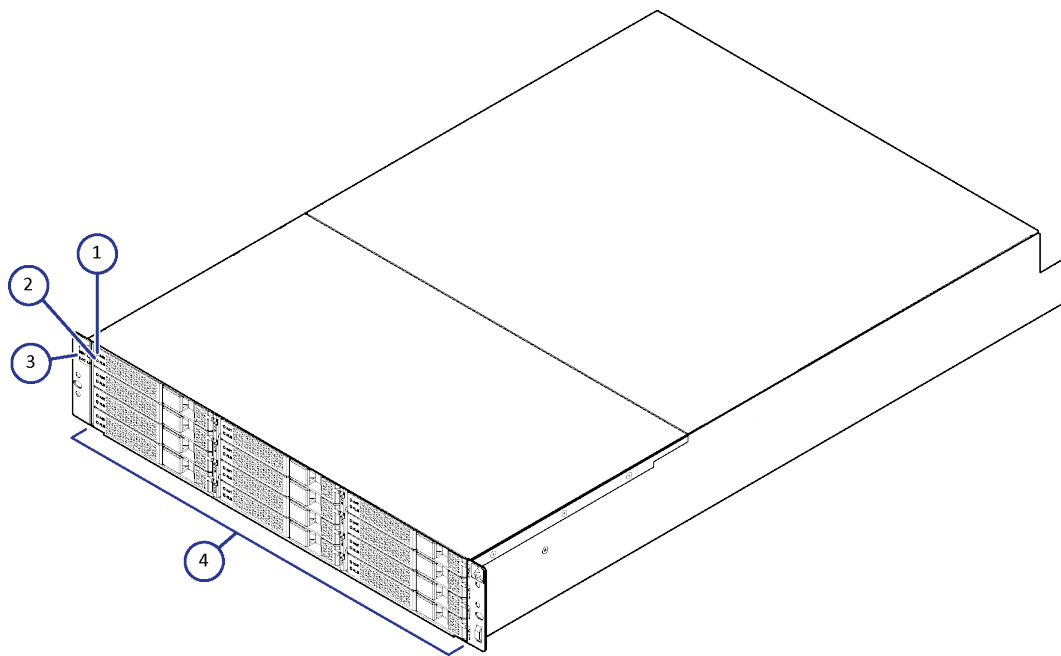
Flash module drive (FMD) tray

FMD with front panel bezel



Number	Item	Description
1	POWER LED	Green: Drive tray is powered on.
2	READY LED	Green: Drive tray is operational.
3	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	Lock	Locks and unlocks the front panel bezel by using the supplied key.

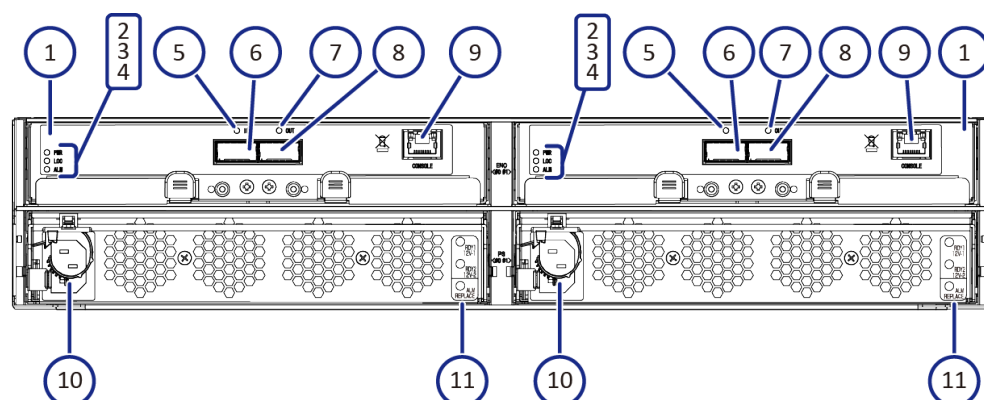
FMD front panel without bezel



Number	Item	Description
1, 2	ACT LED	<p>Green: Normal operation.</p> <p>Blink: Drive is being accessed.</p> <p>Slow blink:</p> <ul style="list-style-type: none"> DKC-F710I-1R6FM/3R2FM: Insufficient battery capacity in the flash module drive. DKC-F810I-1R6FN/3R2FN/6R4FN: Flash module drive built-in capacitor is charged. If the storage system is turned on, the LED stops blinking when the capacitor is finished charging (approximately two minutes). <p>Note: ACT indicator is only printed on some types of FMDs.</p>
	ALM LED	<p>Red: Drive stopped due to a failure and can be replaced.</p> <p>Note: ACT indicator is only printed on some types of FMDs.</p>
3	POWER, READY, and LOCATE LEDs	Green: Drive tray is powered on.

Number	Item	Description
		Green: Drive tray is operational.
		Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	Flash module drives	Twelve flash module drives. Slots are organized the following way: 9, 10, 11 6, 7, 8 3, 4, 5 0, 1, 2

FMD rear panel

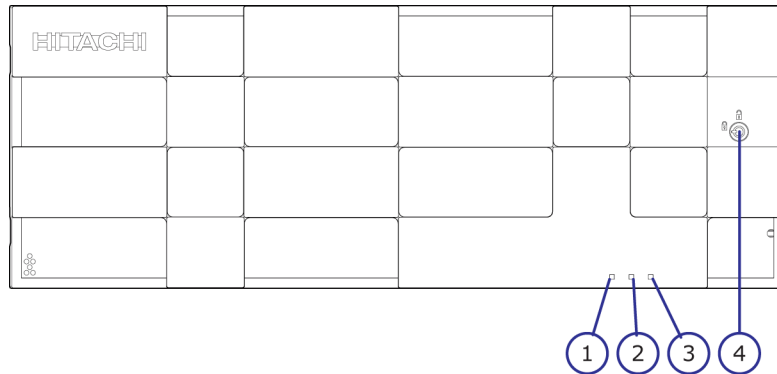


Number	Item	Description
1	ENC	N/A
2	POWER LED	Green: ENC is in the power-on state.
3	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.
4	ALARM LED	Red: ENC can be replaced.
5	PATH (IN) LED	Blue: IN side port is linked up.

Number	Item	Description
6	PATH (IN) connector	Connects to a controller or drive tray.
7	PATH (OUT) LED	Blue: OUT side port is linked up.
8	PATH (OUT) connector	Connect to a drive tray.
9	Console	This port is reserved.
10	Receptacle	Connects to the power cable provided with the storage system.
11	Three LEDS, top to bottom: RDY LED	Green: Power supply unit is operating normally.
	AC IN LED	Green: Power supply unit is operating normally.
	ALM REPLACE LED	Red: Power supply unit can be replaced.

Dense intermix drive tray

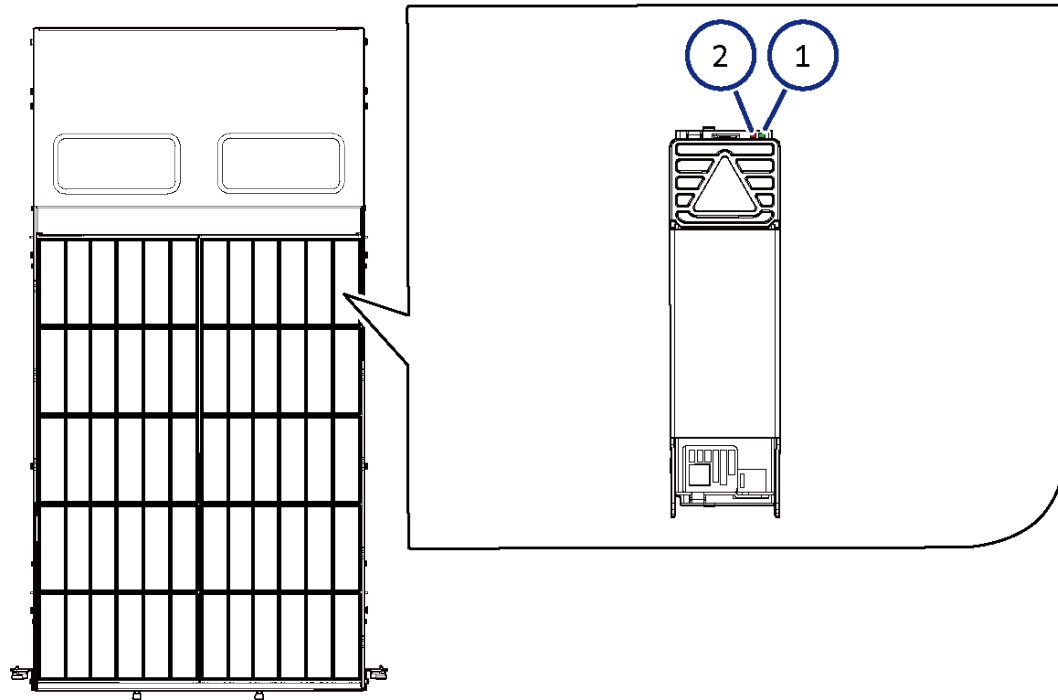
Dense intermix drive tray with front panel bezel



Number	Item	Description
1	POWER LED	Green: Drive tray is powered on.
2	READY LED	Green: Drive tray is operational.
3	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.

Number	Item	Description
4	Lock	Locks and unlocks the front panel bezel by using the supplied key.

Dense intermix drive tray display LEDs



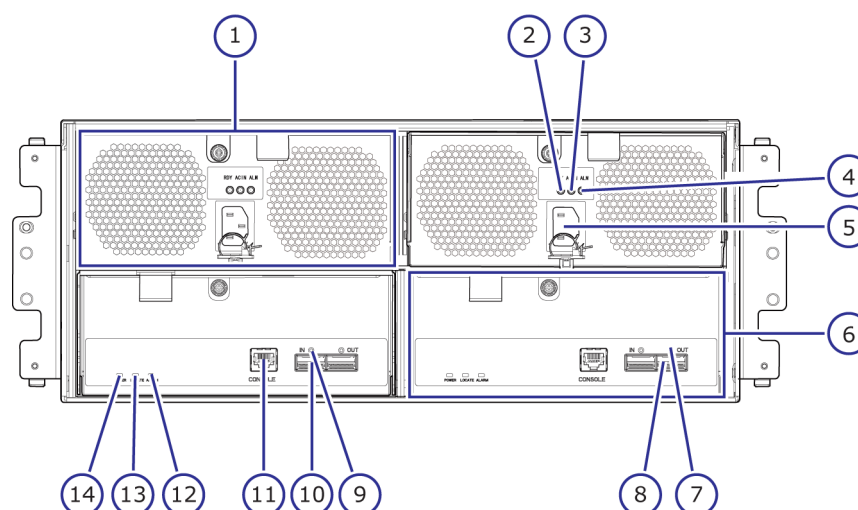
Number	Item	Description
1	ACT	Green: Normal operation. Blink green: Drive is being accessed.
2	ALM LED	Red: Drive stopped due to a failure and can be replaced.



Note: At the rear of the drive tray, the drives are organized from left to right. On the left side of the preceding figure, the rear of the drive tray is at the top.

- Rear of drive tray: 48-59
- 36-47
- 24-35
- 12-23
- Front of drive tray: 00-11

Dense intermix drive tray rear panel

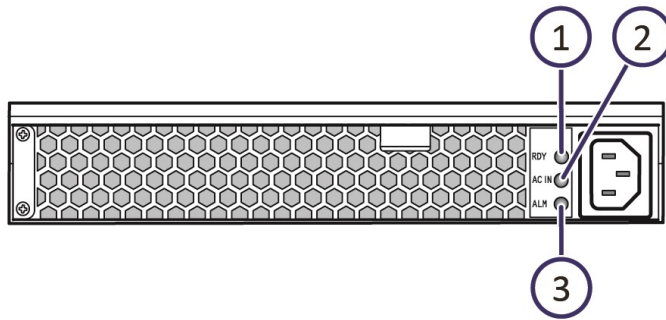


Number	Item	Description
1	Power supply unit	N/A
2	RDY LED	Green: Normal operation.
3	AC IN LED	Green: Normal operation.
4	ALM LED	Red: Power supply unit can be replaced.
5	Receptacle	Connects to the power cable provided with the storage system.
6	ENC	N/A
7	PATH (OUT) LED	Blue: OUT side port is linked up.
8	PATH (OUT) connector	Connect to a drive tray.
9	PATH (IN) LED	Blue: IN side port is linked up.
10	PATH (IN) connector	Connects to a controller or drive tray.
11	Console	This port is reserved.
12	ALARM LED	Red: ENC can be replaced.
13	LOCATE LED	Amber: <ul style="list-style-type: none"> Indicates the location of the chassis. Can be turned on or turned off by the maintenance utility.

Number	Item	Description
14	POWER LED	Green: ENC is in the power-on state.

SFF and LFF AC power supply unit LEDs and connectors

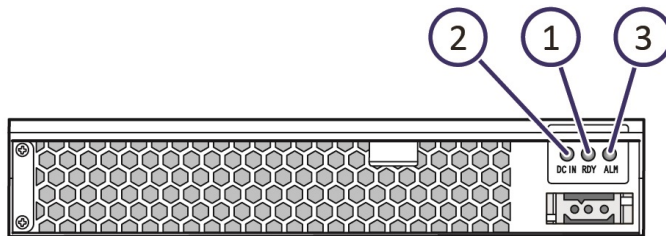
Both SFF and LFF drive trays are equipped with AC power supply units. The AC power supply units include LEDs to display its operating status.



Number	Item	Description
1	RDY LED	Green: Normal operation.
2	AC IN LED	Green: AC input is operating normally.
3	ALM LED	Red: Power supply unit can be replaced.

SFF and LFF DC power supply unit LEDs and connectors

Both SFF and LFF drive trays are equipped with DC power supply units. The DC power supply units include LEDs to display its operating status.

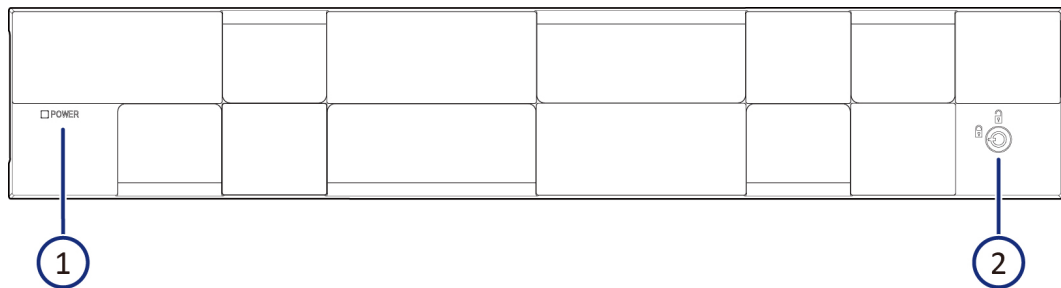


Number	Item	Description
1	RDY LED	Green: Normal operation.

Number	Item	Description
2	DC IN LED	Green: DC input is operating normally.
3	ALM LED	Red: Power supply unit can be replaced.

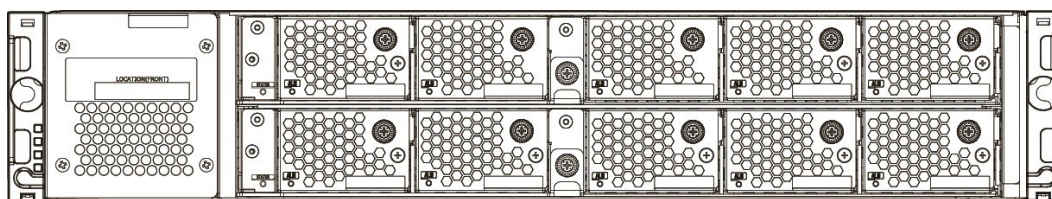
Host port expansion chassis

Host port expansion chassis front panel bezel LEDs

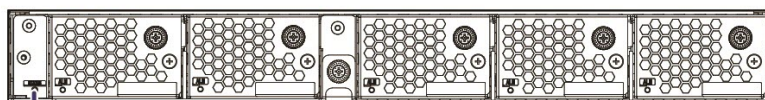


Number	Item	Description
1	POWER LED	Green: Host port expansion is turned on. Amber: PCIe module is turned on. Off: PCIe module is turned off.
2	Safety lock	Lock or unlock the front bezel.

PCIe switchboard



Front view of Expansion Chassis

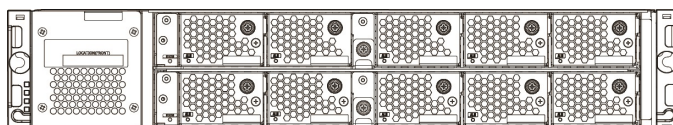


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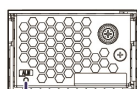
PCIe Switchboard

Number	Item	Description
1	STATUS LED	Green: PCIe switchboard is powered on. Red: PCIe switchboard can be replaced safely. Off: PCIe switchboard is powered off.

Host port expansion chassis fan



Front View of Expansion Chassis

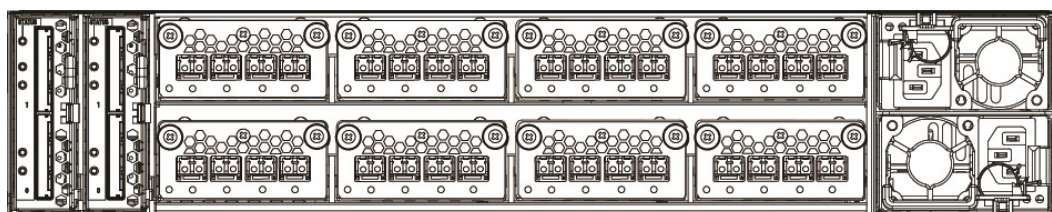


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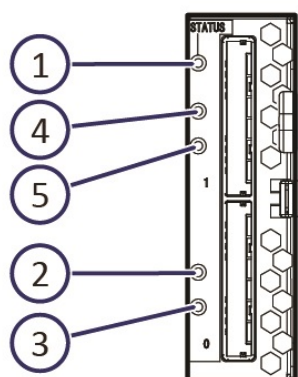
Expansion Chassis Fan

Number	Item	Description
1	ALM LED	Red: Fan failure has occurred. Off: Normal operation.

PCIe cable connector



Rear View of Expansion Chassis

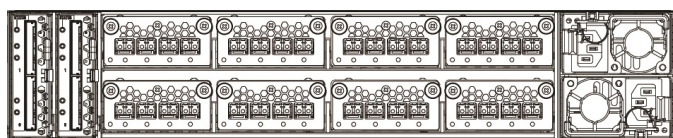


PCIe Cable Connector

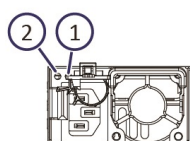
Number	Item	Description
1	STATUS LED	<p>Green: PCIe cable connector is powered on.</p> <p>Red: PCIe cable connector can be replaced safely.</p> <p>Off: PCIe cable connector is powered off.</p>
2	Link Basic LED	<p>Green: Basic PCIe Gen-3.0 (8-Gbps) is linked up normally.</p> <p>Off: Basic PCIe is not linked up (PCIe cable might not be connected). If a cable is connected, it can be removed safely.</p>
3	InAct Basic LED	<p>Amber: Basic PCIe status changed from link up to link down and cables. Cables can be removed safely.</p> <p>Off: Basic PCIe is normal or not set.</p>
4	Link Option LED	<p>Green: Option PCIe Gen-3.0 (8-Gbps) is linked up normally.</p> <p>Off: Option PCIe is not linked up (PCIe cable might not be</p>

Number	Item	Description
		connected). If a cable is connected, it can be removed safely.
5	InAct Option LED	<p>Amber: Option PCIe status changed from link up to link down and cables. Cables can be removed safely.</p> <p>Off: Option PCIe is normal or not set.</p>

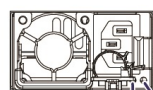
Host port expansion chassis power supply



Rear View of the Expansion Chassis



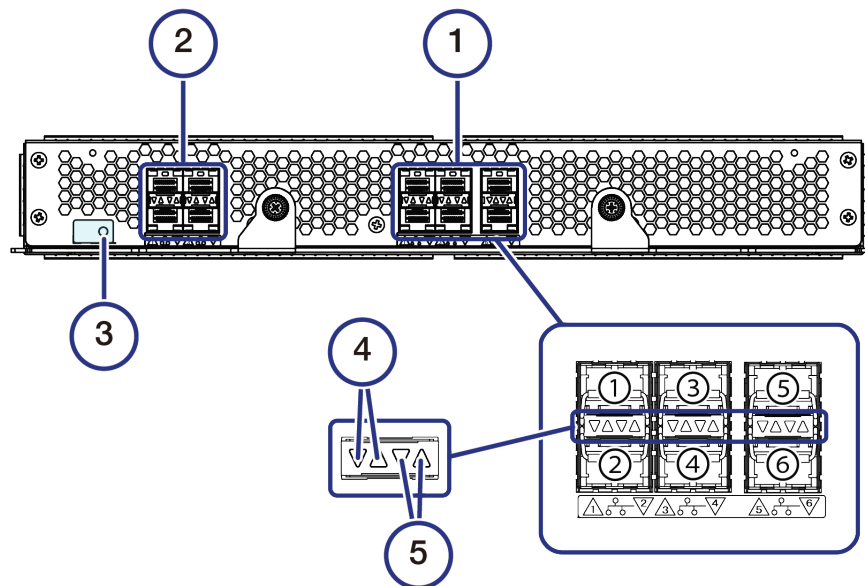
Expansion Chassis Power Supply 2



Expansion Chassis Power Supply 1

Number	Item	Description
1	ALM/RDY LED	<p>Red: Host port expansion chassis power supply can be replaced safely.</p> <p>Green: Normal operation.</p>
2	AC IN LED	Blue: AC input is normal.

NAS Module Ports and LEDs



Legend	Name	Color	Description
1	User LAN port	-	This is used with the file level access. 1. Target group 1 2. Target group 2 3. Target group 3 4. Target group 4 5. Target group 5 6. Target group 6
2	Cluster port	-	Reserved for future use
3	Status LED	Green	NAS modules are functioning normally.
		Red	NAS modules can be removed.
4	Link LED	Blue	Displays link status.
5	Fail LED	Red	A failure has occurred.

Hitachi Virtual Storage Platform Service processor server

The VSP Gx00 models include a separate, dedicated 1U service processor (SVP) to host an element manager (Storage Navigator). The SVP (model number 3919435.P) operates independently from the CPU of the storage system and operating system, and provides out-of-band configuration and management of the storage system. The SVP also monitors and collects

performance data for key components of the storage system to enable diagnostic testing and analysis for customer support.

For more information about the SVP, see the *Service Processor Technical Reference*.

Service processor description

The SVP runs Windows® Embedded Standard 7 operating system, which provides the same desktop environment look and feel as Windows 7 Professional.

The SVP software application can also be installed on a customer-supplied server running Windows 7 Professional x64 Service Pack 1, Windows 10 Professional or Enterprise, or Windows Server 2012 or Windows Server 2012 R2. For more information about supported hardware, operating systems and virtual environments, see the *Service Processor Technical Reference for VSP Gx00 and VSP Fx00 Models*.

- Microsoft Hyper-V Windows Server 2012 R2
- VMware ESXi
- Linux KVM



Note: This product is also designed for IT power distribution systems with phase-to-phase voltage.

The SVP provides four RJ-45 ports:

- Two ports connect to the storage system controllers (one port for each controller).
- One port connects to the IP network of the user.
- One port connects to a user-supplied management console PC.

Three of the four RJ-45 ports (which connect to the controllers and the IP network) are configured as a bridge. The SVP can be addressed using the default IP address 192.168.0.15.

In the unlikely event you cannot connect to the SVP using the default IP address, use the following emergency login: `http://<default SVP IP address>/dev/storage/<model number><system serial number>/emergency.do`. For example:

Storage system model number	Storage system serial number	URL
8320004	456789	<code>http://192.168.0.15/dev/storage/8320004456789/emergency.do</code>
8340004	456789	<code>http://192.168.0.15/dev/storage/8340004456789/emergency.do</code>

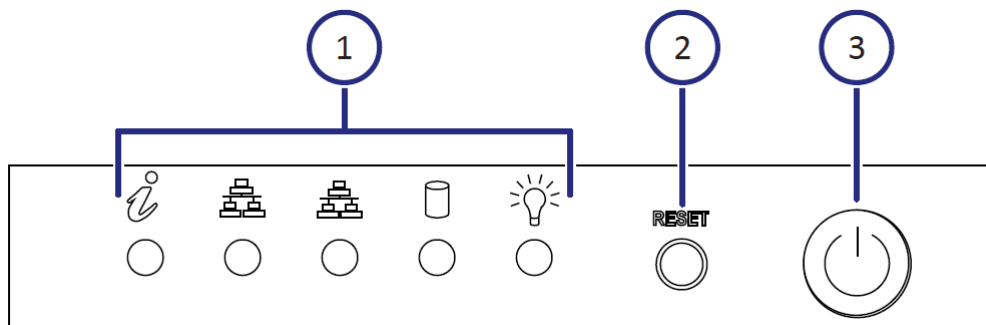
Storage system model number	Storage system serial number	URL
8360004	456789	http://192.168.0.15/dev/storage/8360004456789/emergency.do

Users are responsible for adopting the appropriate security procedures with the SVP, including:

- Applying Windows security patches.
- Turning on automatic Windows updates or using the manual Windows update method.
- Installing antivirus software that has been tested and approved by Hitachi.

SVP front panel

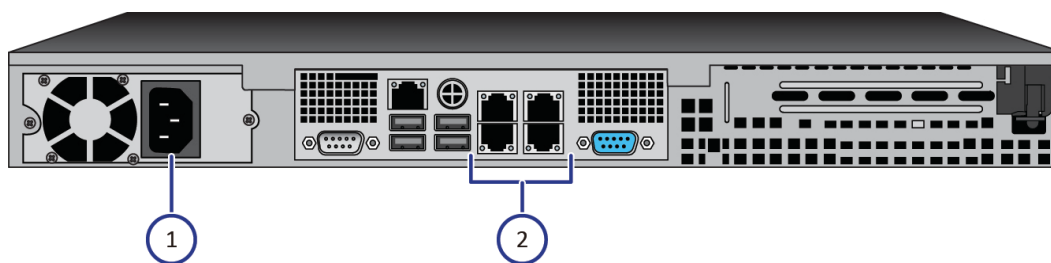
The front panel of the physical SVP is equipped with LEDs, a reset button, and a power button.



Number	Description
1	LEDs. From left to right, the LEDs are: <ul style="list-style-type: none"> • BMC Heartbeat • LAN card 2 • LAN card 1 • Hard drive • System standby power
2	Reset button.
3	Power button. Applies power to or removes power from the SVP.

SVP rear panel

The only ports used on the rear panel of the physical SVP are the power socket and the four LAN ports.



Number	Description
1	Power socket. Attach the power cable supplied with the SVP.
2	<p>Four LAN ports arranged as follows:</p> <p>LAN3 LAN4</p> <p>LAN1 LAN2</p> <p>These ports connect to your IP network, the management console PC, and the user LAN port on each storage system controller.</p>

Note: After the Initial Startup Wizard is run, the SVP can be used in non-bridge mode. In this mode, the cables can be removed from SVP ports LAN3 and LAN4 and attached to switches. For more information, contact customer support.

Replacing storage system components

The following describes the preparation tasks taken before replacing a component and how to check the system status after replacing its components.

- ☐ [Electrostatic discharge precautions](#)
- ☐ [Unpacking replacement components](#)
- ☐ [Follow appropriate power on and power off work procedures](#)
- ☐ [Safety considerations](#)
- ☐ [Guidelines for replacing a component](#)
- ☐ [Guidelines to follow after replacing a component](#)
- ☐ [Using the maintenance utility](#)
- ☐ [Replacement parts](#)
- ☐ [Attaching and removing the front panel bezel](#)
- ☐ [Removing cables](#)
- ☐ [Logging on to NAS Manager](#)
- ☐ [EVS migration before servicing nodes](#)
- ☐ [EVS migration after servicing nodes](#)
- ☐ [Checking recovery after replacing components](#)

Electrostatic discharge precautions

Static electricity can damage the storage system's static-sensitive components.

When performing the service procedures in this document, observe the following electrostatic discharge (ESD) precautions:

- Wear an antistatic wrist strap at all times when handling any field replaceable unit (FRU). Clip the end of the wrist strap to the metal frame of the storage system enclosure. For convenience, a wrist strap is supplied with the storage system. Do not remove the wrist strap until you have completed the removal or replacement.
- Before handling any FRU, discharge any static electricity by touching a grounded surface. Grounded surfaces include static-dissipating mats (already grounded) or grounded workstations.
- Remove all plastic, vinyl, and foam material from the work area.
- Do not remove a FRU from its antistatic protective bag until you are ready to install it.
- Handle any card FRU only by its edges and avoid touching the components or circuitry.
- Do not slide a FRU over any surface.
- Limit body movement (which builds up static electricity) during the removal and replacement of a FRU.
- To avoid electric shock when performing a *hot replacement* of a part, do not wear metallic accessories or a watch and avoid touching *live* parts of the storage system with a screwdriver or similar tools.

Unpacking replacement components

Unpack replacement components in a dry location that is not exposed to moisture, direct sunlight, dust, and temperature extremes. If the part to be added has been exposed to high or low temperature during transport, the part might not operate properly.

Follow appropriate power on and power off work procedures

If a replacement procedure requires power off and power on steps, follow the steps carefully to ensure the security of data.

After powering off the storage system, remove the power cables from the two power supply units on the storage system.

Safety considerations

Observe the following guidelines to ensure safety when replacing parts. Failure to follow these guidelines could result in bodily injury or damage to the chassis or components.

- Use the host to back up user data on the storage system before replacing components.
- When performing any installation, comply with all local health and safety requirements.
- Wear protective footwear when moving storage system hardware.
- Do not wear loose clothing that could get caught in the chassis or mounting hardware. Fasten ties and scarves and roll up sleeves.
- Wear safety glasses when working under conditions that are hazardous to your eyes.
- Keep walkways clear of tools, cables, and parts to prevent them from being stepped on or causing people to trip and fall.
- Do not work on the equipment or disconnect cables during a thunderstorm, when wearing a wool sweater or other heavy wool clothing, or when power is applied.
- Always turn off the storage system and unplug all data and power cables before lifting the storage system.
- Keep floors dry to prevent slips and falls.
- Do not use ungrounded power cables.
- Use only the power cables supplied with this product. Do not use power cables from other products. Otherwise, unexpected failures or accidents can occur.
- If you encounter unusual odors, heat generation, or smoke emission, shut off power to the equipment and inform the appropriate personnel. Leaving such conditions unattended can cause electric shock or fire.
- Keep the area clean and dust-free when replacing components.
- Do not block or cover the openings of the storage system hardware. Never place a unit near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the unit's reliability.
- After a component is replaced, secure the chassis cover to the storage system. Cooling air flow can effectively within the chassis. An open chassis allows air leaks that might interrupt and redirect the flow of cooling air from internal components.
- Do not make mechanical or electrical modifications or repairs to the equipment. Such actions can cause an electric shock or cause the storage system to malfunction. Hitachi is not responsible for regulatory compliance of a modified Hitachi product.
- When removing cables, hold the cable connector and leave enough slack in the cables, so they do not bend to a diameter of less than 76 mm (3") or a

radius less than 38 mm (1.5") when extended and do not become pinched when retracted.

Guidelines for replacing a component

Observe the following guidelines when replacing a component.

- Use only the replacement parts specified in this guide.
- Do not perform maintenance when the storage system is being started. Wait for the **READY** LED on the controller to go on before performing maintenance.
- If you replace a drive, controller, cache memory, front end module, backup module, back end module, ENC, fan, or power supply unit while the storage system is turned on:
 - Wait at least 20 seconds after the failed part was removed before installing the new part.
 - Complete the replacement within 10 minutes. Otherwise, the system might turn off due to an abnormal rise in temperature.

If a power supply unit and another component fail at the same time, replace the power supply unit first, and then replace the other failed component. Otherwise, the system might turn off due to an abnormal rise in temperature.

- If a fan on the controller fails at the same time when another component fails, replace the fan first, and then replace the other failed component. Otherwise, the system might turn off due to an abnormal rise in temperature.
- Insert replacement parts quickly. Otherwise, the recovery might fail.
- If only the power main switch is off, the power is provided by the basic supply. Do not leave components removed from the storage system for long periods of time because this can trigger a power supply alarm.
- If the replacement part has a cover over one or more connectors, replace the cover of the connector part that is going to be used.

Guidelines to follow after replacing a component

Observe the following guidelines after replacing a component in the Hitachi storage system.

- When restarting the storage system, wait for the amber **POWER** LED to go ON, and then turn off the main switch. Wait at least one minute before turning on the main switch.
- After you replace components, close all the external storage system covers.

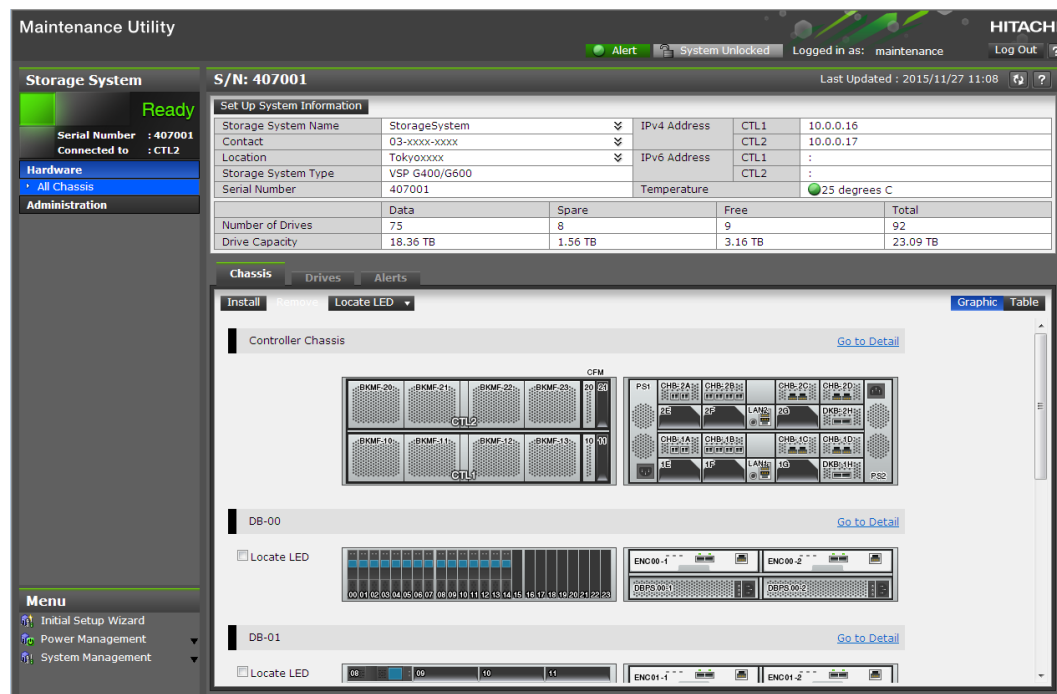
Using the maintenance utility

To configure the storage system using the maintenance utility, start the maintenance utility from Hitachi Device Manager - Storage Navigator.



Note:

- When adding cache memory or replacing controllers (Type Change) on the VSP G200 model, specify the controller boards for adding cache memory or replacement (Type Change), and then start Maintenance Utility.
- Click in the window to see the help menu for the description of the Maintenance Utility.
- To display the help, the settings for enlarging and reducing the display might not be reflected in the help window, depending on the type or version of your browser.

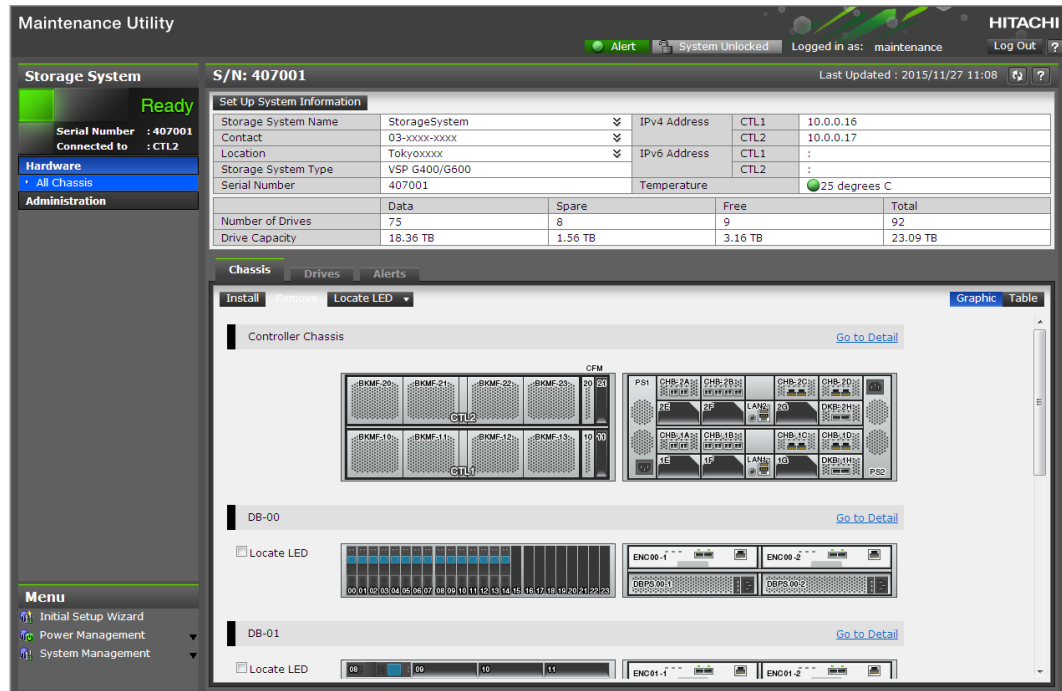


Starting from Hitachi Command Suite

Procedure

1. Start Hitachi Command Suite.
2. In the **Hitachi Command Suite** main window, click the **Resources** tab, and then click **Storage Systems** from the tree view.

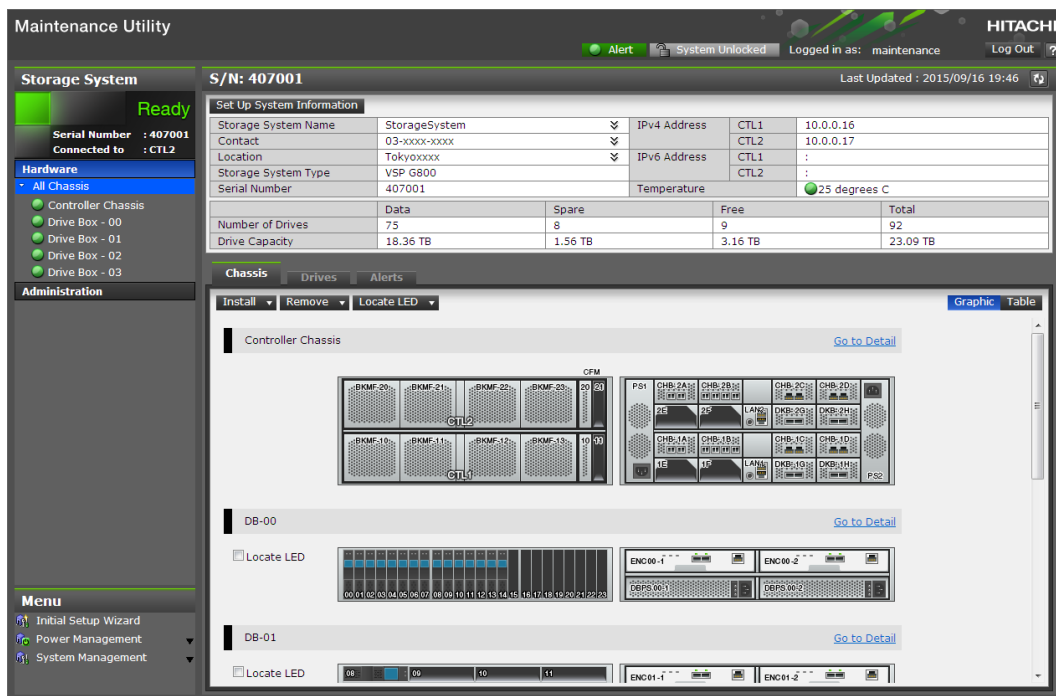
- Expand the tree, and then right-click a storage system and click **Other Functions**.
- In Hitachi Device Manager - Storage Navigator, click the **Maintenance Utility** menu, and then click **Hardware** to start the maintenance utility.



Starting from Hitachi Device Manager - Storage Navigator

Procedure

- Launch a web browser from the console PC connected to the SVP, and then start Device Manager - Storage Navigator.
- Enter the following URL in the address field of your browser, and then press **Enter**: `http://[IP address of SVP]/module/sn2/0/index.do`
- In the **Storage Device List** window, click the picture of the registered storage system.
- Log in to Device Manager - Storage Navigator.
- On the **Maintenance Utility** menu, click **Hardware**.



6. Select the menu for the part that needs to be replaced (see the following table).

Menu	Replace part
Controller board (CTL) replacement for CTL1	<ul style="list-style-type: none"> Controller 1. LAN blade installed on controller 1 (VSP G400, G600 or VSP F400, F600).
Controller board (CTL) replacement for CTL1	<ul style="list-style-type: none"> Controller 1. LAN blade installed on controller 1 (VSP G800 or VSP F800).
Controller board (CTL) replacement for CTL1	Replacing (Type Change) Controller board 1 of VSP G200.
Cache Memory replacement/installation for CTL1	Cache memory installed on controller 1.
FAN replacement for CTL1	Fan installed in controller 1 (VSP G200).
Controller board (CTL) replacement for CTL2	<ul style="list-style-type: none"> Controller 2. LAN blade installed on controller 2 (VSP G400, G600 or VSP F400, F600).
Controller board (CTL) replacement for CTL2	<ul style="list-style-type: none"> Controller 2. LAN blade installed on controller 2 (VSP G800 or VSP F800).
Controller board (CTL) replacement for CTL2	Replacing (Type Change) Controller board 2 of VSP G200.

Cache Memory replacement/installation for CTL2	Cache memory installed on controller 2.
FAN replacement for CTL2	Fan installed in controller 2 (VSP G200).
Other hardware maintenance	Component other than a controller, fan, and LAN blade.

Replacement parts

The storage system is equipped with removable and replaceable components. Each component is assigned with a specific model or part number.

The table provides a list of available replaceable parts for the storage system.

Part name	Part number	Part model	Status of host and storage system	
			I/O from the host	No I/O from the host
200 GB, MLC, 12-Gbps, 2.5-inch flash drive	5559263-A	DKC-F810I-200MEM	Yes	Yes
300 GB, 15 kmin ⁻¹ , 6 Gbps, SAS, SFF (contains BNST)	5552785-A	DKC-F810I-300KCM	Yes	Yes
300 GB, 15 kmin ⁻¹ , 6 Gbps, SAS, SFF	5552785-P	DKC-F810I-300KCMC	Yes	Yes
400 GB, MLC, 12 Gbps, SFF, flash drive	5559016-A	DKC-F810I-400MEM	Yes	Yes
400 GB, MLC, 12 Gbps, LFF, flash drive	5559086-A	DKC-F810I-400M8M	Yes	Yes
600 GB, 10 kmin ⁻¹ , 6 Gbps, SAS, SFF (contains BNST)	5552786-A	DKC-F810I-600JCM	Yes	Yes
600 GB, 10 kmin ⁻¹ , 6 Gbps, SAS, SFF	5552786-P	DKC-F810I-600JCMC	Yes	Yes
600 GB, 15 kmin ⁻¹ , 12 Gbps, SAS, SFF	5559498-A	DKC-F810I-600KGM	Yes	Yes
1.2 TB, 10 kmin ⁻¹ , 6 Gbps, SAS, SFF (contains BNST)	5552789-A	DKC-F810I-1R2JCM	Yes	Yes
1.2 TB, 10 kmin ⁻¹ , 6 Gbps, SAS, SFF	5552789-P	DKC-F810I-1R2JCMC	Yes	Yes
1.2 TB 10 kmin ⁻¹ , 6 Gbps, SAS, LFF	5559119-P	DKC-F810I-1R2J7MC	Yes	Yes
1.6 TB, MLC, 6 Gbps, SFF, flash drive	3286549-A	DKC-F710I-1R6FM	Yes	Yes
1.6 TB, MLC, 6 Gbps, SFF, flash drive	3286550-A	DKC-F710I-3R2FM	Yes	Yes

Part name	Part number	Part model	Status of host and storage system	
			I/O from the host	No I/O from the host
1.8 TB, 10 kmin ⁻¹ , 6 Gbps, SAS, SFF	5560490-A	DKC-F810I-1R8JGM	Yes	Yes
1.8 TB 10 kmin ⁻¹ , 6 Gbps, SAS, LFF	5560694-A	DKC-F810I-1R8J8M	Yes	Yes
1.92 TB, MLC, 12 Gbps, SAS, SFF, flash drive	5562403-A	DKC-F810I-1R9MEM	Yes	Yes
1.92 TB, MLC, 12 Gbps, SAS, SFF, flash drive	5562403-B	DKC-F810I-1R9MGM	Yes	Yes
4 TB, 7200min ⁻¹ , 6 Gbps, SAS 7.2K, LFF (contains BNST)	5552784-A	DKC-F810I-4R0H3M	Yes	Yes
4 TB 7200min ⁻¹ , 6 Gbps, SAS, LFF	5559015-P	DKC-F810I-4R0H4MC	Yes	Yes
4 TB, 7200min ⁻¹ , 6 Gbps, SAS 7.2K, LFF	5552784-P	DKC-F810I-4R0H3MC	Yes	Yes
6 TB, 7200min ⁻¹ , 12 Gbps, SAS 7.2K, LFF	5560075-A	DKC-F810I-6R0H9M	Yes	Yes
6 TB, 7200min ⁻¹ , 12 Gbps, SAS 7.2K, LFF	5560116-A	DKC-F810I-6R0HLM	Yes	Yes
10 TB, 7.2K rpm, LFF, Disk Drive	5562395-A	DKC-F810I-10RH9M	Yes	Yes
10 TB, 7.2K rpm, LFF, Disk Drive for DB60	5562396-A	DKC-F810I-10RHLM	Yes	Yes
1.75 TB, 12 Gbps, LFF, flash module drive DC2	3286696-A	DKC-F810I-1R6FN	Yes	Yes
3.5 TB, 12 Gbps, LFF, flash module drive DC2	3286697-A	DKC-F810I-3R2FN	Yes	Yes
7 TB, 12 Gbps, LFF, flash module drive DC2	3286698-A	DKC-F810I-6R4FN	Yes	Yes
7 TB, MLC, 12 Gbps, SAS, flash module drive	3286734-A	DKC-F810I-7R0FP	Yes	Yes
14 TB, MLC, 12 Gbps, SAS, flash module drive	3286735-A	DKC-F810I-14RFP	Yes	Yes
Battery (VSP G400, G600, G800 or VSP F400, F600, F800)				
CBLM	3289081-A	DW-F800-BAT	Yes	Yes
CBLH	3289081-A	DW-F800-BAT	Yes	Yes
Fan				
CBSS and CBSL	3290738-A	N/A	Yes	Yes

Part name	Part number	Part model	Status of host and storage system	
			I/O from the host	No I/O from the host
Yes				
CBSS and CBSL	3290737-A	N/A	Yes	Yes
CBLM	3289056-A	N/A	Yes	Yes
CBLH	3289056-A	N/A	Yes	Yes
CHBBPS (host port expansion chassis)	3290737-A	N/A	Yes	Yes
DW-F800-DBS and DW-F800-DBL (contains BNST)	3290647-A	N/A	Yes	Yes
DW-F800-DBSC and DW-F800-DBLC These units can be added to VSP G400, G600, G800 or VSP F400, F600, F800 storage systems.	3290647-P	N/A	N/A	N/A
FMD drive tray	3286659-A	N/A	Yes	Yes
Controller				
CBSS and CBSL	3290733-A	DW-F800-CTLS	Yes	Yes
CBSS and CBSL encryption	3290733-B	DW-F800-CTLSE	Yes	Yes
CBLM	3289039-A	DW-F800-CTLM	Yes	Yes
CBLH	3289038-A	DW-F800-CTLH	Yes	Yes
Cache memory				
8 GB	3290718-A	DKC-F810I-CM8G	Yes	Yes
16 GB	5552764-A	DKC-F810I-CM16G	Yes	Yes
32 GB	5552765-A	DKC-F810I-CM32G	Yes	Yes
Front end modules				
10-Gbps SFP iSCSI optical	3289048-A	DW-F800-2HS10S	Yes	Yes
10-Gbps iSCSI copper	3289049-A	DW-F800-2HS10B	Yes	Yes
8-Gbps Fibre Channel	3289046-A	DW-F800-4HF8	Yes	Yes
16-Gbps Fibre Channel (2-port)	3289047-A	DW-F800-2HF16	Yes	Yes
32-Gbps Fibre Channel (4-port)	3292131-A	DW-F800-4HF32R	Yes	Yes
PCIe module	3289195-A	DW-F800-1HP8	Yes	Yes

Part name	Part number	Part model	Status of host and storage system	
			I/O from the host	No I/O from the host
Small Form Factor Pluggable				
Optical module (8-Gbps longwave)	5556750-A	DKC-F810I-1PL8	Yes	Yes
Optical module (8-Gbps shortwave)	5557409-A	DKC-F810I-1PS8	Yes	Yes
Optical module (10-Gbps shortwave)	5559354-A	N/A	Yes	Yes
Optical module (16-Gbps longwave)	5552782-A	DKC-F810I-1PL16	Yes	Yes
Optical module (16-Gbps shortwave)	5552781-A	DKC-F810I-1PS16	Yes	Yes
Optical module (32-Gbps shortwave)	5562178-A	DKC-F810I-1PS32	Yes	Yes
Back end module (DKB)				
CBLM	3289045-A	DW-F800-BS12G	Yes	Yes
CBLM (Encryption) ¹	3289094-A	DW-F800-BS12GE	Yes	Yes
CBLH	3289045-A	DW-F800-BS12G	Yes	Yes
CBLH (Encryption) ¹	3289094-A	DW-F800-BS12GE	Yes	Yes
Note:				
1. Achieved FIPS 140-2 certification.				
ENC				
SFF and LFF drive trays	3290646-A	N/A	Yes	Yes
FMD drive tray	3286658-A	N/A	Yes	Yes
SAS cables				
1 m SAS cable including two omega clips	3290630-A	DW-F800-SCQ1	Yes	Yes
1.5 m SAS cable including two omega clips	3290631-A	DW-F800-SCQ1F	Yes	Yes
3 m SAS cable including two omega clips	3290632-A	DW-F800-SCQ3	Yes	Yes
5 m SAS cable including two omega clips	3290633-A	DW-F800-SCQ5	Yes	Yes
10 m SAS optical cable	3290666-A	DW-F800-SCQ10A	Yes	Yes

Part name	Part number	Part model	Status of host and storage system	
			I/O from the host	No I/O from the host
30 m SAS optical cable	3290667-A	DW-F800-SCQ30A	Yes	Yes
100 m SAS optical cable	3290723-A	DW-F800-SCQ1HA	Yes	Yes
PCIe cable	3290994-A	DW-F800-PC1F	Yes	Yes
Cache flash memory (CFM)				
CFM	3290736-A	DW-F800-BM10	Yes	Yes
CFM	3289043-A	DW-F800-BM20	Yes	Yes
CFM	3289043-B	DW-F800-BM30	Yes	Yes
LAN blade				
LAN board	3289044-A	N/A	Yes	Yes
LAN board	3289044-A	N/A	Yes	Yes
Backup module (BKM)				
CBSS and CBSL	3290735-A	N/A	Yes	Yes
CBLM	3289036-A	N/A	Yes	Yes
CBLH	3289036-A	N/A	Yes	Yes
PCIe cable connector	5560935-A	DW-F800-PC1F	Yes	Yes
PCIe switch board	5560933-A	DW-F800-1HP8	Yes	Yes
Host port expansion chassis fan	5560934-A	DW-F800-CHBB	N/A	N/A
NAS module				
NAS module (HNAS)	3289196-A	DW-F800-NAS	Yes	Yes
Cache Memory for NAS module (RND1)	3289198-A	N/A	Yes	Yes
Small Form-Factor (SFP+) for NAS module (RSFP)	5559354-A	DW-F800-1PS10	Yes	Yes
Service processor	3919435.P	N/A	Yes	Yes

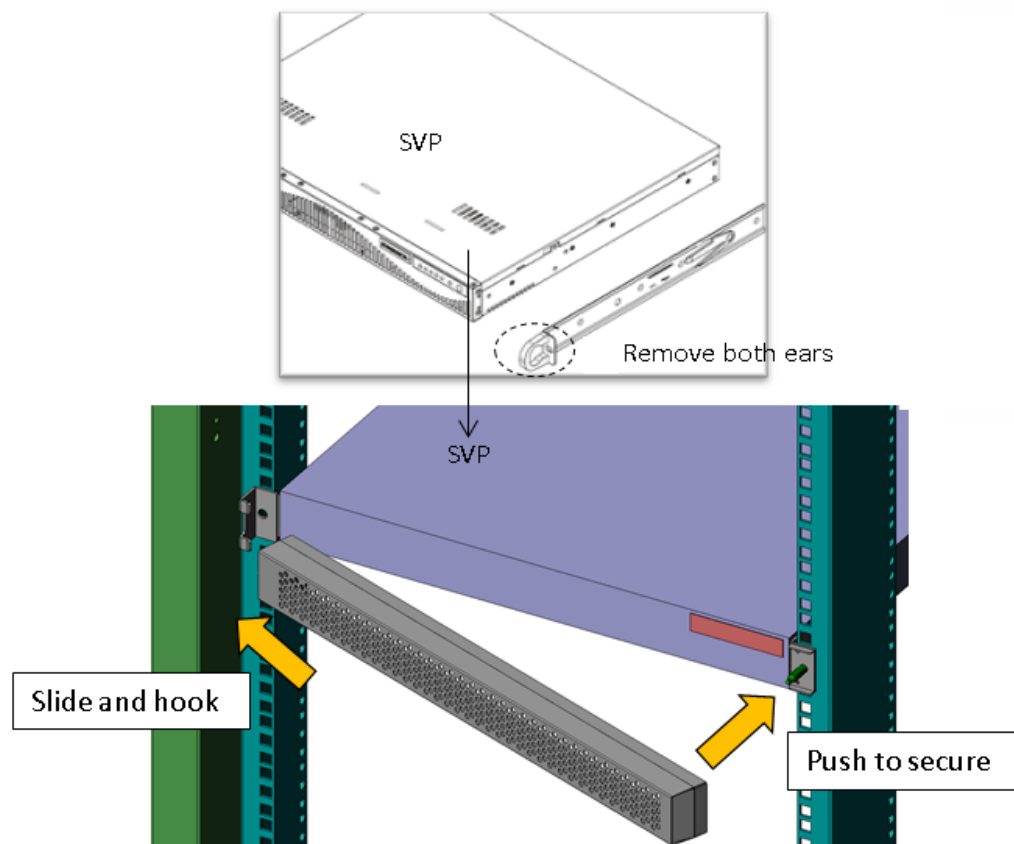
Attaching and removing the front panel bezel

The controller and drive tray contains a front bezel ready to install. In addition, the controller and drive tray accessory kits also provide keys for locking and unlocking the respective front bezels.

Attaching the front bezel to the SVP

Procedure

1. Use the provided key to unlock the front bezel.
2. Hold the key and bottom of the bezel with both hands while facing the front bezel.
3. Insert the tabs on the left-front side of the SVP into the tab holes on the front bezel.
4. Push the right side of the bezel to engage it with the ball catch on the front of the SVP to secure the bezel.
5. Use the provided key to lock the front bezel. To avoid damaging the key, verify the key is fully inserted into the lock before turning it.



Removing the front bezel from the SVP

Procedure

1. Use the provided key to unlock the bezel.
2. Holding the lower right part of the bezel, gently pull the key toward you and disengage the right side of the bezel from the ball catch

3. Holding the lower right part of the bezel, gently pull the key toward you and disengage the right side of the bezel from the ball catch.



Note: To prevent any damages to the bezel, do not open the bezel more than 45 degrees when disengaging the front bezel.

4. Disengage the front bezel from the left tabs and then remove the bezel.

Attaching the front bezel to a CBSS or CBSLAttaching the front bezel to an FMDAttaching a front bezel to an SFF, LFF, or FMD

Procedure

1. Use the provided key to unlock the front bezel.
2. Insert the tabs on the left-front side of the storage system into the tab holes on the front bezel.
3. Use the provided key to lock the front bezel.

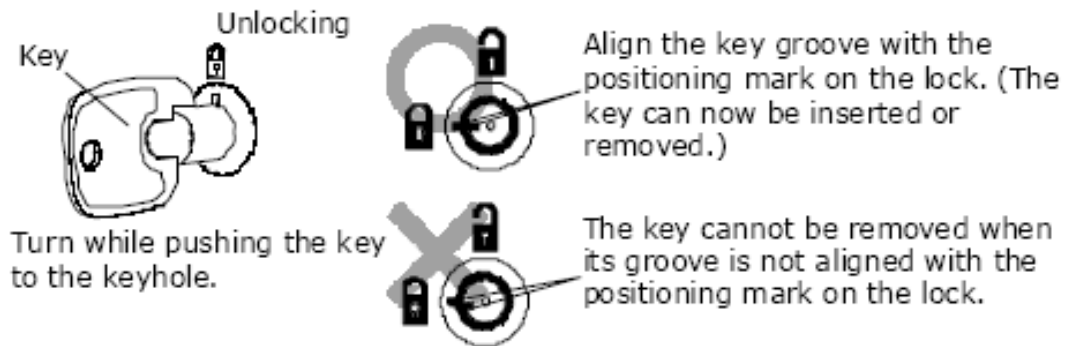


Note: To avoid damaging the key, verify the key is fully inserted into the lock before turning it.

4. Remove the key from the lock.



Note: To avoid damaging the lock, align the groove of the key with the positioning mark on the lock before removing the key.



Removing the front bezel from a DBS or DBL drive tray

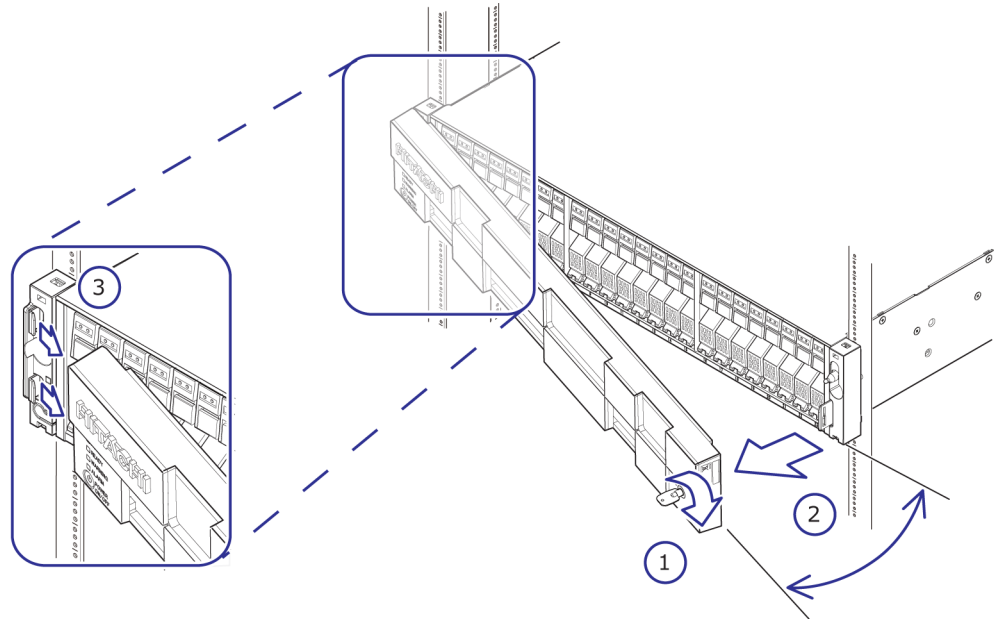
Procedure

1. Use the provided key to unlock the bezel.

2. Holding the lower right part of the bezel, gently pull the key toward you and disengage the right side of the bezel from the ball catch.



Note: To avoid damaging the bezel, do not open the bezel more than 45 degrees when disengaging the front bezel.



3. Disengage the front bezel from the left tabs, and then remove the bezel.

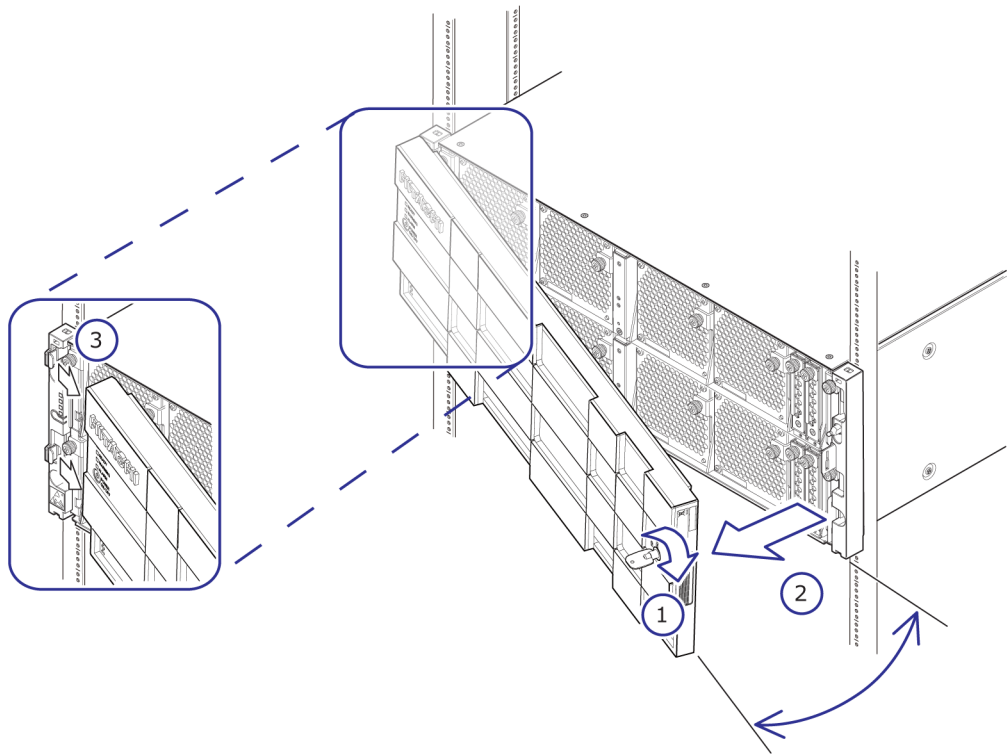
Removing the front bezel from a CBLM CBLH controller

Procedure

1. Use the provided key to unlock the bezel.
2. Holding the lower right part of the bezel, gently pull the key toward you and disengage the right side of the bezel from the ball catch.



Note: To avoid damaging the bezel, do not open the bezel more than 45 degrees when disengaging the front bezel.



3. Disengage the front bezel from the left tabs, and then remove the bezel.

Attaching the front bezel to a CBLM CBLH controller

Procedure

1. Use the provided key to unlock the front bezel.
2. Insert the tabs on the left-front side of the storage system into the tab holes on the front bezel.
3. Push the right side of the bezel until it engages with the ball catch on the front of the storage system to secure the bezel.
4. Use the provided key to lock the front bezel.

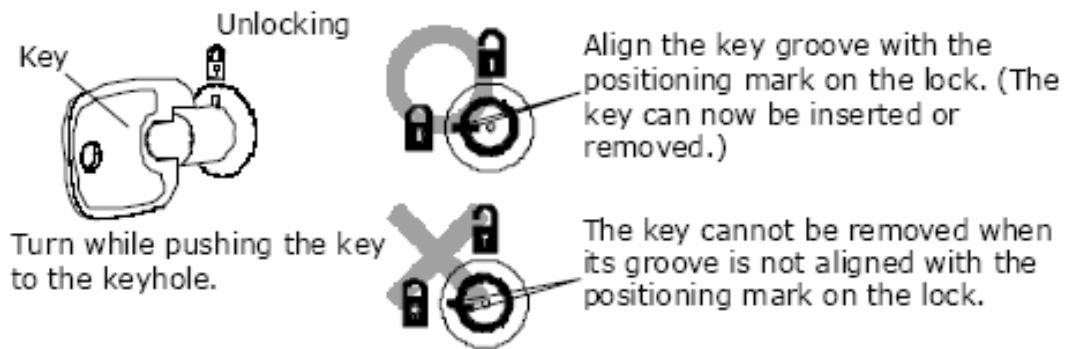


Note: To avoid damaging the key, verify the key is fully inserted into the lock before turning it.

5. Remove the key from the lock.



Note: To avoid damaging the lock, align the groove of the key with the positioning mark on the lock before removing the key.



Attaching the front bezel to a dense intermix drive tray

Procedure

1. Use the provided key to unlock the front bezel.
2. Insert the tabs on the left-front side of the storage system into the tab holes on the front bezel.
3. Push the right side of the bezel until it engages with the ball catch on the front of the storage system to secure the bezel.
4. Use the provided key to lock the front bezel.

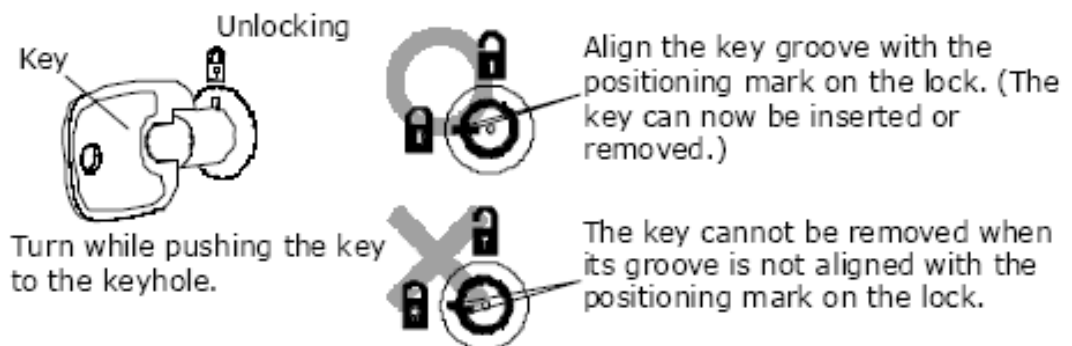


Note: To avoid damaging the key, verify the key is fully inserted into the lock before turning it.

5. Remove the key from the lock.



Note: To avoid damaging the lock, align the groove of the key with the positioning mark on the lock before removing the key.



Removing the front bezel from a dense intermix drive tray

To prevent the rack from tipping when removing a dense intermix drive tray:

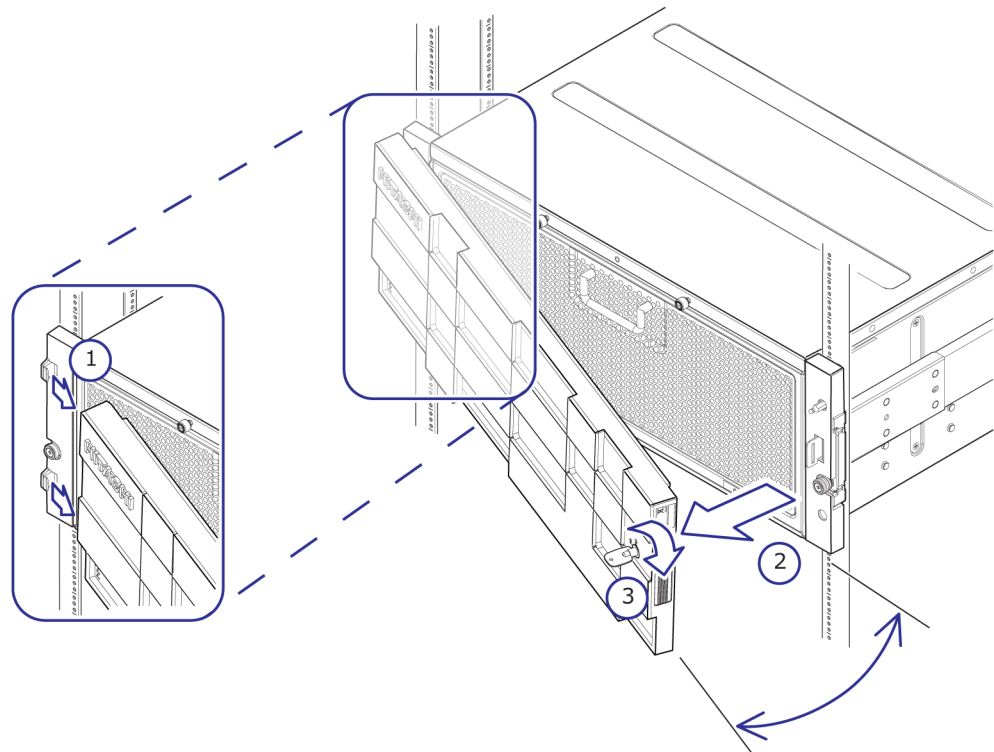
- Do not remove multiple dense intermix drive trays simultaneously.
- After removing the dense intermix drive tray, do not place objects on it or use it as a work space.

Procedure

1. Use the provided key to unlock the bezel.
2. Holding the lower right part of the bezel, gently pull the key toward you and disengage the right side of the bezel from the ball catch.



Note: To avoid damaging the bezel, do not open the bezel more than 45 degrees when disengaging the front bezel.

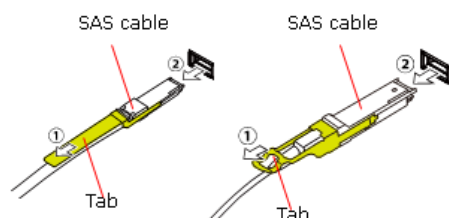


3. Disengage the front bezel from the left tabs, and then remove the bezel.

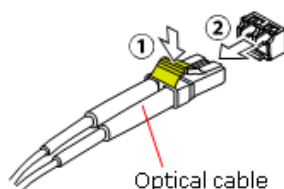
Removing cables

Observe the following instructions when removing cables from the storage system.

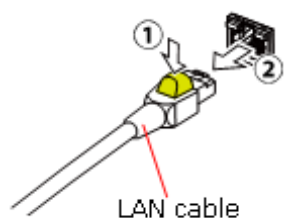
To remove a SAS cable, pull the tab of the SAS cable (1) to release the latch and remove the SAS cable (2).



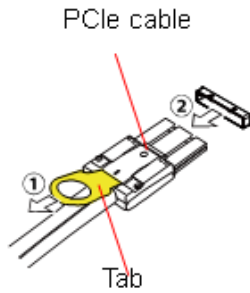
To remove an optical cable, push the top of the connector of the optical cable (1) to release the latch and remove the SAS cable (2).



To remove a LAN cable, push the top of the LAN cable connector (1) to release the latch and remove the LAN cable (2).



To remove a PCIe cable, pull the tab of the PCIe cable (1) to release the latch and remove the PCIe cable (2).



Logging on to NAS Manager

The following procedures describe how to log on to NAS Manager.

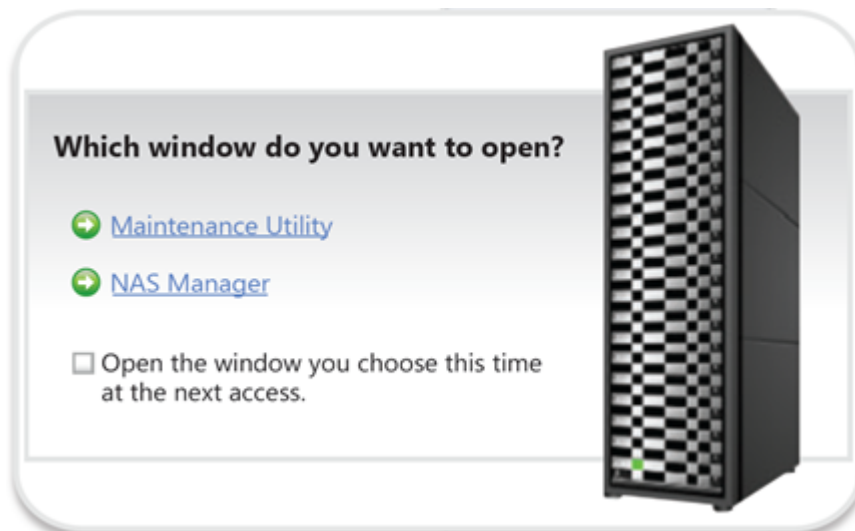
Procedure

1. Open a web browser.
2. Type `https://<unified-management-IP-address>:20443` and press **Enter**.



Note: Enter the IP address of controller 1.

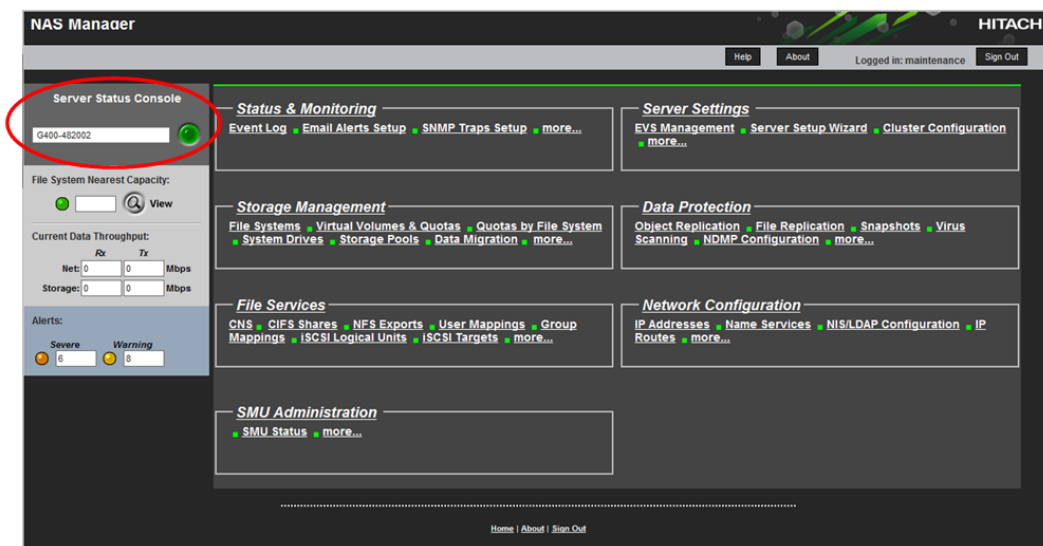
3. Click ➔ **NAS Manager**.



Tip: If you select the **Open the window you choose this time at the next access** check box,, any subsequent login connections

open to the previous window session. This behavior persists until you clear the browser cache.

4. Enter your login credentials:
 - a. In the **User ID** field, type `maintenance`.
 - b. In the **Password** field, enter the password configured during the initial set up of the storage system.
5. Click **Login**.
6. In the **Home** window, click the NAS cluster from the **Server Status Console** drop down list.



7. To log off, click **Sign Out** in the application pane of the **NAS Manager** window, and then close the web browser. If the NAS Manager session does not end, close the web browser.

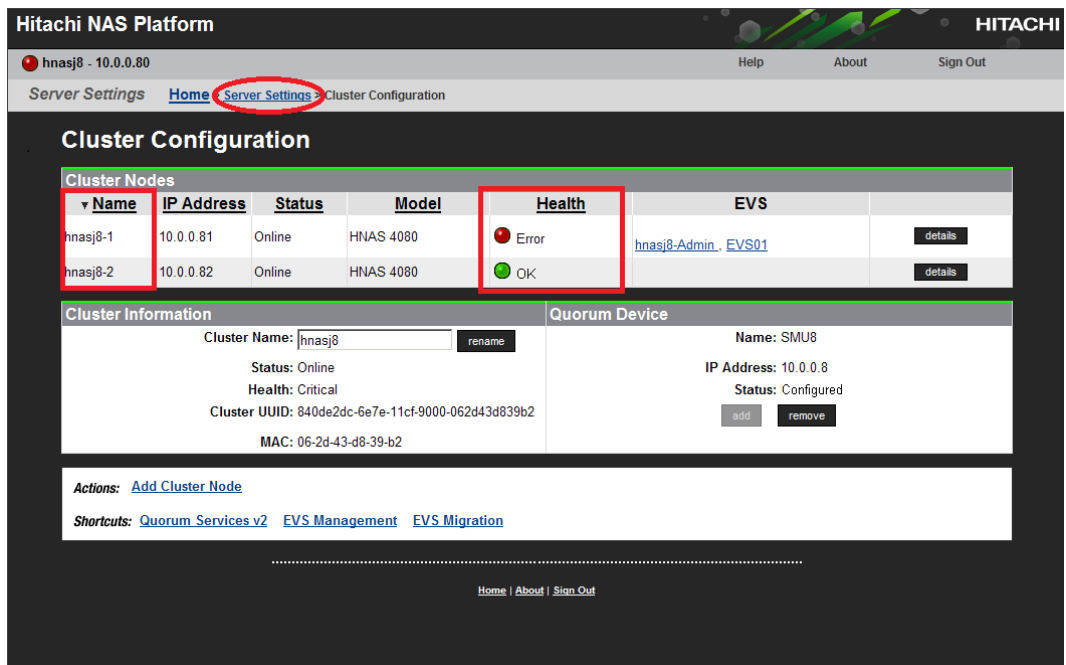
EVS migration before servicing nodes

Procedure

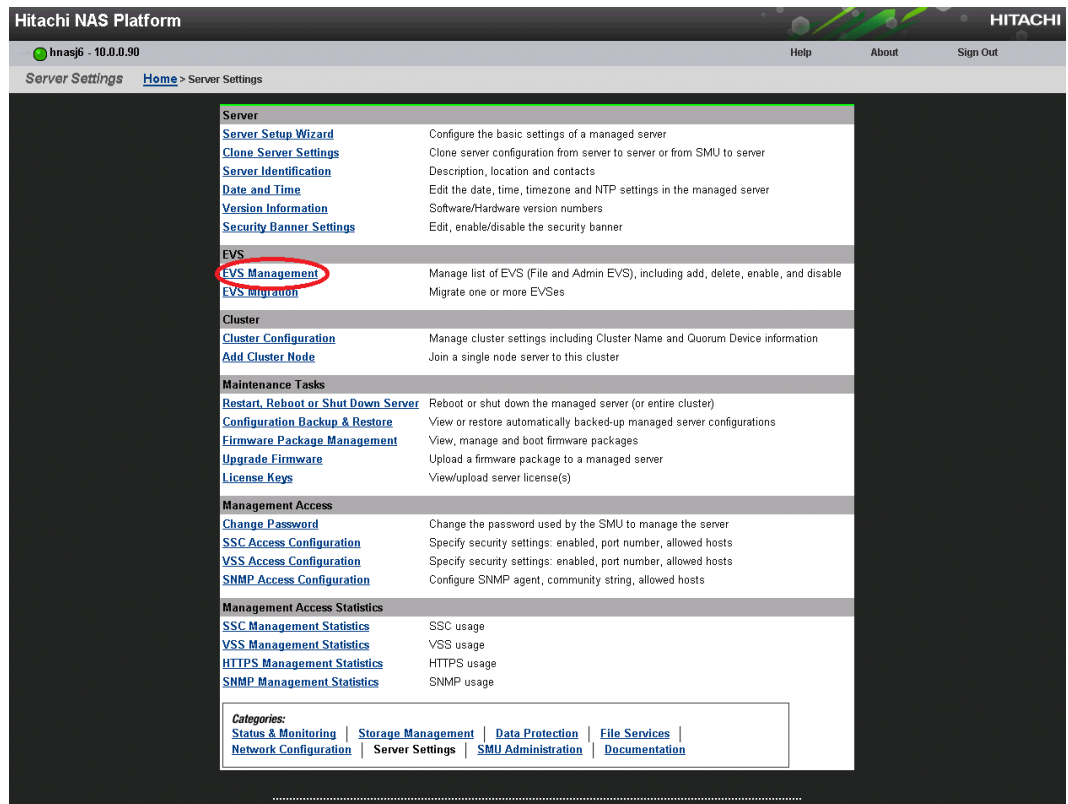
1. Log on to NAS Manager.
2. In the **Home** window, click **Cluster Configuration**.



3. In the **Cluster Configuration** window, use the **Name** column to identify the name of the node to be serviced, and then record the names of the nodes. Nodes that require servicing have a status other than **OK** in the **Health** column.
4. Click **Server Settings**.



5. In the **Server Settings** window, click **EVS Management**.



6. Record the EVS that is operated in the node to be maintained:
 - a. In the **EVS Management** window, find the EVS confirmed in step 3 is displaying in the **Cluster Node** column.
 - b. In the **Label** column, record the EVS name shown . For multiple instances of the EVS, record all EVS names.
7. In the **EVS Management** window, click **EVS Migration**.

NAS Manager

G400-482002

Server Settings Home > Server Settings > EVS Management

EVS Management

Unified Management IP Addresses

CTL1: 10.213.54.240/23 CTL2: 10.213.54.195/23

Filter No Filtering Applied

filter...

Label	Type	Cluster Node	Status	First IP Address	First Port	
<input type="checkbox"/> EVSTEST1	File Services	G400-482002-1	Online	10.213.54.251/23	ag1	details
<input type="checkbox"/> EVSTEST2	File Services	G400-482002-2	Online	10.213.54.255/23	ag1	details
<input type="checkbox"/> EVSTEST3	File Services	G400-482002-1	Online	10.213.54.252/23	ag1	details
<input type="checkbox"/> EVSTEST4	File Services	G400-482002-2	Online	10.213.54.254/23	ag1	details
<input type="checkbox"/> G400-482002-a	admin services	G400-482002-2	Online	details

Check All | Clear All

Actions: enable disable add

Shortcuts: IP Addresser EVS Migration Link Aggregation

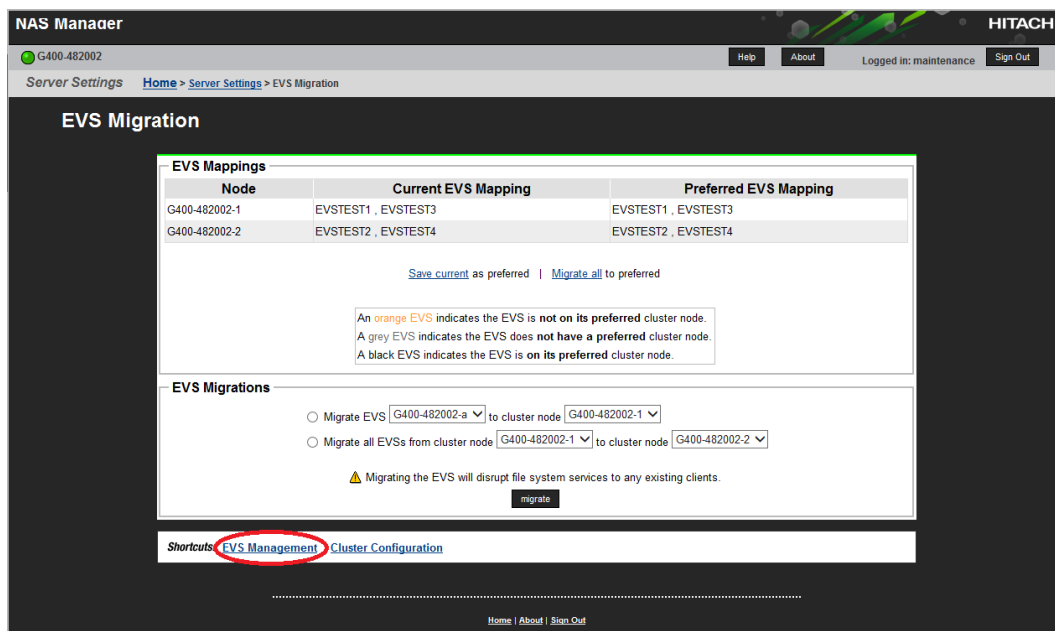
Home / About / Sign Out

8. Migrate all the EVS instances in the node that are to be serviced back to the normal node.

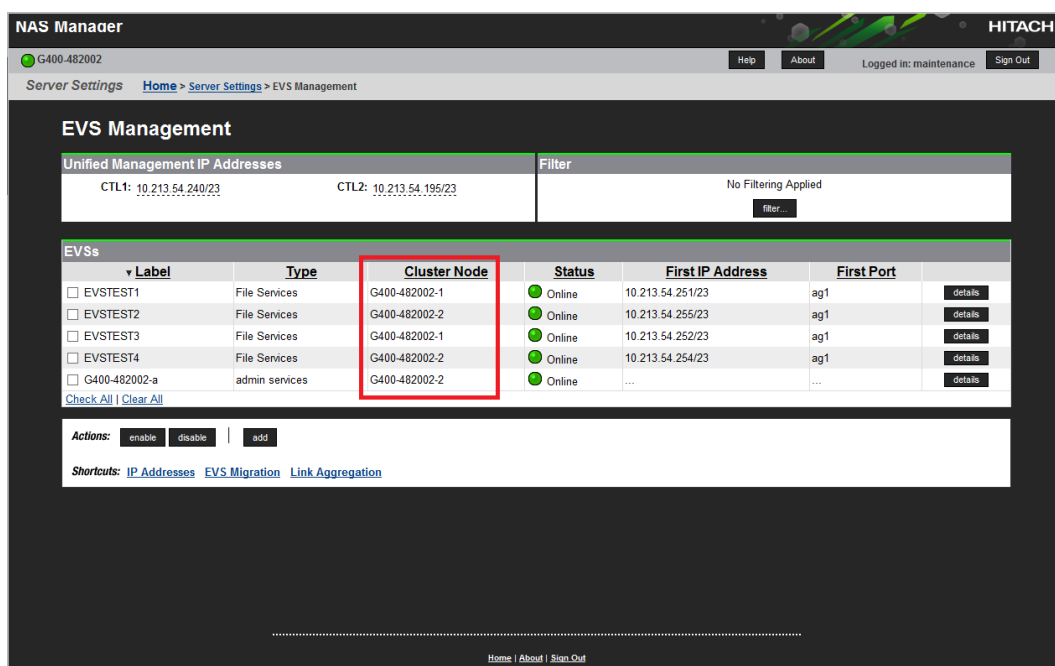


Note: The EVS has no impact on client users of Microsoft Windows NFS. File access for CIFS client users, however, ends and must be restarted.

9. Perform the following steps in the **EVS Migration** window:
 - a. Click the **Migrate all EVS from cluster node** button.
 - b. Using the **from cluster node** list, select the node to be serviced. This is the same node you confirmed in step 6.
 - c. Using the **to cluster node** list, select a normal node.
 - d. Click **migrate** to migrate the EVS.
10. At the confirmation message, confirm that the operations in step 9 are correct, and then click **OK**.
When the migration completes, the message *Successfully migrated all EVS* appears.
11. In the **EVS Migration** window, click **EVS Management** and return to the **EVS Management** window.



12. Confirm the EVS migrated from the node to be serviced to the normal node. Confirm the node names in the destination directory for all instances of the EVS recorded in step 6 appear in the **Cluster Node** column.



13. Log out of NAS Manager.

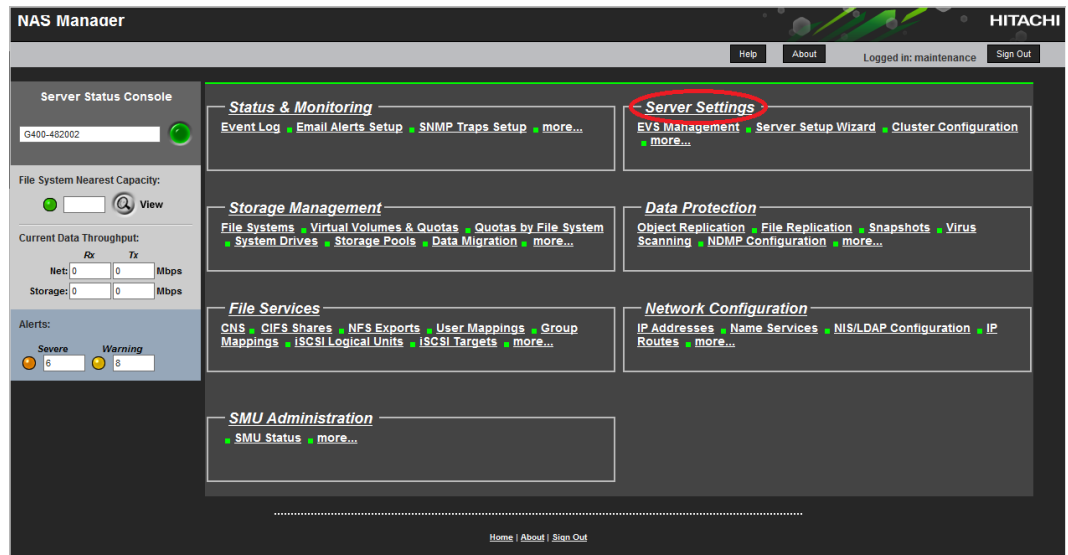
Related tasks

- [Logging on to NAS Manager](#) on page 96

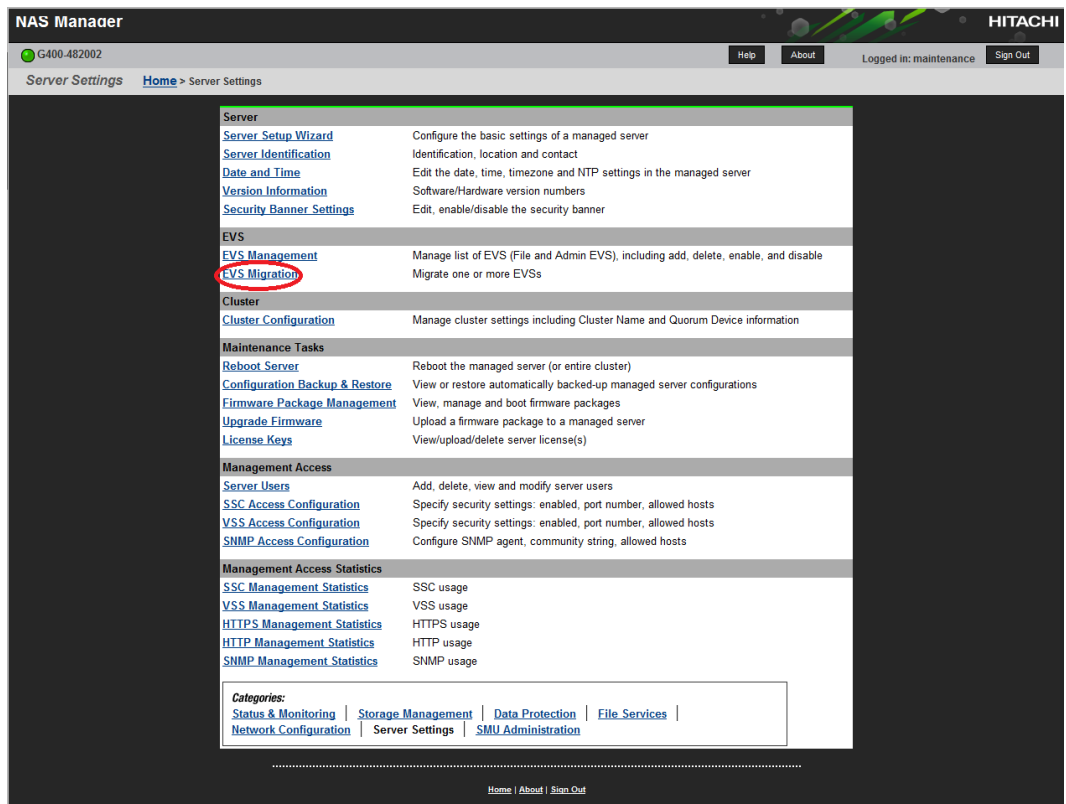
EVS migration after servicing nodes

Procedure

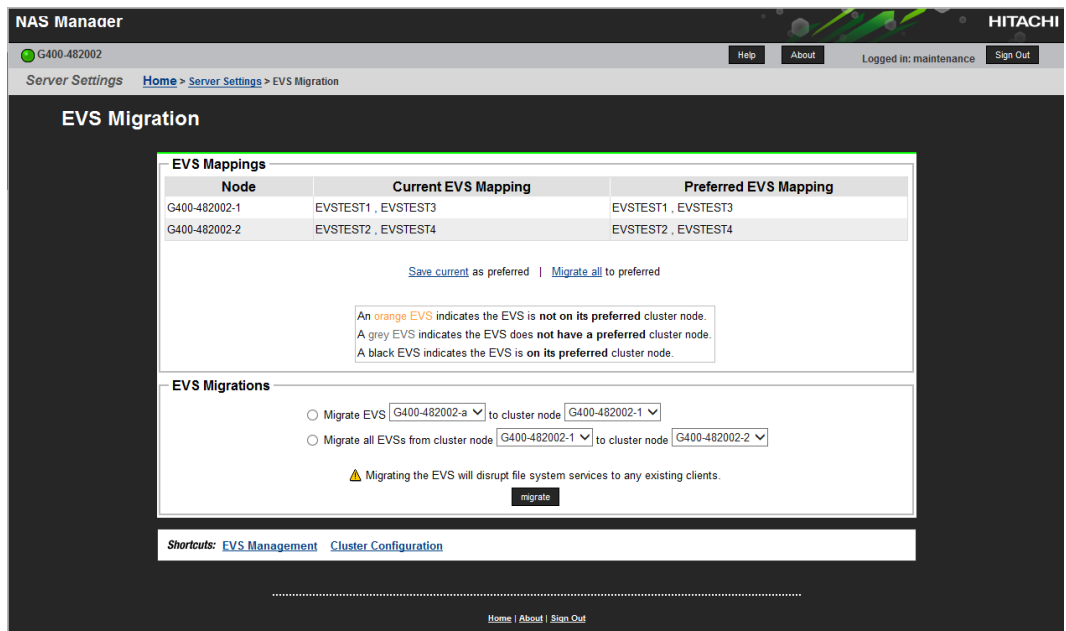
1. Log on to NAS Manager.
2. In the **Home** window, click **Server Settings**.



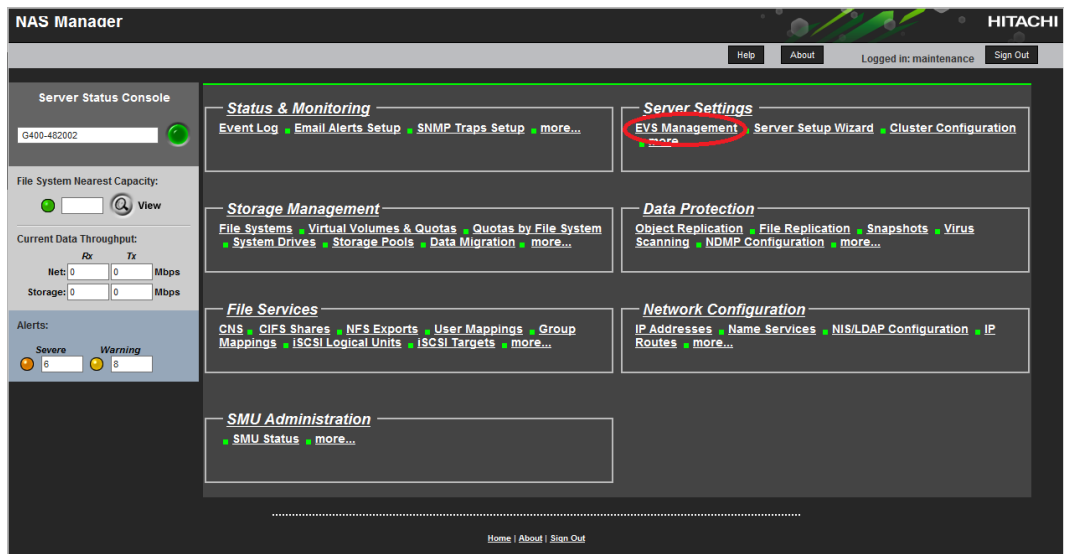
3. In the **Server Settings** window, click **EVS Migration**.



4. Perform the following steps in the **EVS Migration** window:
 - a. Click the **Migrate EVS _ to cluster node _** button.
 - b. From the **EVS** list, select the EVS to be migrated. This destination node is the same as specified in step 6 of the EVS migration before servicing procedure.
 - c. From the **to cluster node** list, select the serviced node.
 - d. Click **migrate** to migrate EVS.
 - e. Repeat these steps for all the EVSes recorded in step 6 of the EVS migration before servicing procedure.



5. When the confirmation message appears, confirm that the operations in step 4 are correct, and then click **OK**.
6. In the **Home** window, click **EVS Management**.



7. In the **EVS Management** window, confirm that the node names in the destination directory for all instances of the EVS recorded in step 6 of the EVS migration before servicing procedure appear in the **Cluster Node** column.

NAS Manager HITACHI

G400-482002 Help About Logged in: maintenance Sign Out

Server Settings [Home](#) > [Server Settings](#) > EVS Management

EVS Management

Unified Management IP Addresses
 CTL1: 10.213.54.240/23 CTL2: 10.213.54.195/23

Filter
 No Filtering Applied
[filter...](#)

EVSs						
Label	Type	Cluster Node	Status	First IP Address	First Port	
<input type="checkbox"/> EVSTEST1	File Services	G400-482002-1	Online	10.213.54.251/23	ag1	details
<input type="checkbox"/> EVSTEST2	File Services	G400-482002-2	Online	10.213.54.255/23	ag1	details
<input type="checkbox"/> EVSTEST3	File Services	G400-482002-1	Online	10.213.54.252/23	ag1	details
<input type="checkbox"/> EVSTEST4	File Services	G400-482002-2	Online	10.213.54.254/23	ag1	details
<input type="checkbox"/> G400-482002-a	admin services	G400-482002-2	Online	details

[Check All](#) | [Clear All](#)

Actions: [enable](#) [disable](#) | [add](#)

Shortcuts: [IP Addresses](#) [EVS Migration](#) [Link Aggregation](#)

[Home](#) | [About](#) | [Sign Out](#)

8. Log out of NAS Manager.

Related tasks

- [Logging on to NAS Manager](#) on page 96
- [EVS migration before servicing nodes](#) on page 97

Checking recovery after replacing components

After you replace one or more components, check to verify that the storage system has recovered.

Procedure

1. In the **Maintenance Utility** window, click **Refresh**.
2. Confirm that the status of the replaced components is **Normal** or **Ready**.

Maintenance Utility

Alert

System Unlocked

Logged in as: maintenance

Log Out

Hitachi

Last Updated: 2015/11/27 11:08

Refresh

Storage System

Ready

Serial Number: 407001

Connected to: CTL2

Hardware

All Chassis

Controller Chassis

Drive Box - 01

Drive Box - 02

Drive Box - 03

Administration

Menu

Initial Setup Wizard

Power Management

System Management

Controller Chassis

Front

Back

Drives

Install

Remove

Block

Stop Copy

Location	Status	Usage	Drive Type/RPM/Capacity	Drive Type-Code	Notification
HDD00-00	Normal	DATA	SAS/15 Krpm/200 GB	DKR20-K200SS	
HDD00-01	Normal	Spare	SSD/MLC/-/200 GB	SLB58-K200SS	
HDD00-02	Normal	Free	SSD/PMCL/-/1.6 TB	NFH1A-P1R6SS	
HDD00-03	Normal	DATA	SSD/PMCL/-/1.6 TB	NFH1E-Q1R6SS	
HDD00-04	Normal	DATA	SAS/15 Krpm/1.2 TB	DKB20-K1R2SS	
HDD00-05	Normal	DATA	SAS/15 Krpm/1.5 TB	DKU20-K1R5SS	
HDD00-06	Normal	DATA	SAS/15 Krpm/200 GB	DKH20-K200SS	
HDD00-07	Normal	DATA	SAS/15 Krpm/200 GB	DKR20-K200SS	
HDD00-08	Normal	DATA	SAS/15 Krpm/200 GB	DKR50-K200SS	
HDD00-09	Normal	DATA	SAS/15 Krpm/200 GB	DKR10-K200SS	
HDD00-10	Normal	DATA	SAS/15 Krpm/200 GB	DKR90-K200SS	
HDD00-11	Normal	DATA	SAS/15 Krpm/200 GB	DKR40-K200SS	
HDD00-12	Normal	Free	SAS/15 Krpm/200 GB	DKR20-K200SS	
HDD00-13	Normal	DATA	SAS/15 Krpm/200 GB	DKR2A-K200SS	
HDD00-14	Normal	DATA	SAS/15 Krpm/200 GB	DKR2J-K200SS	

Replacing a drive

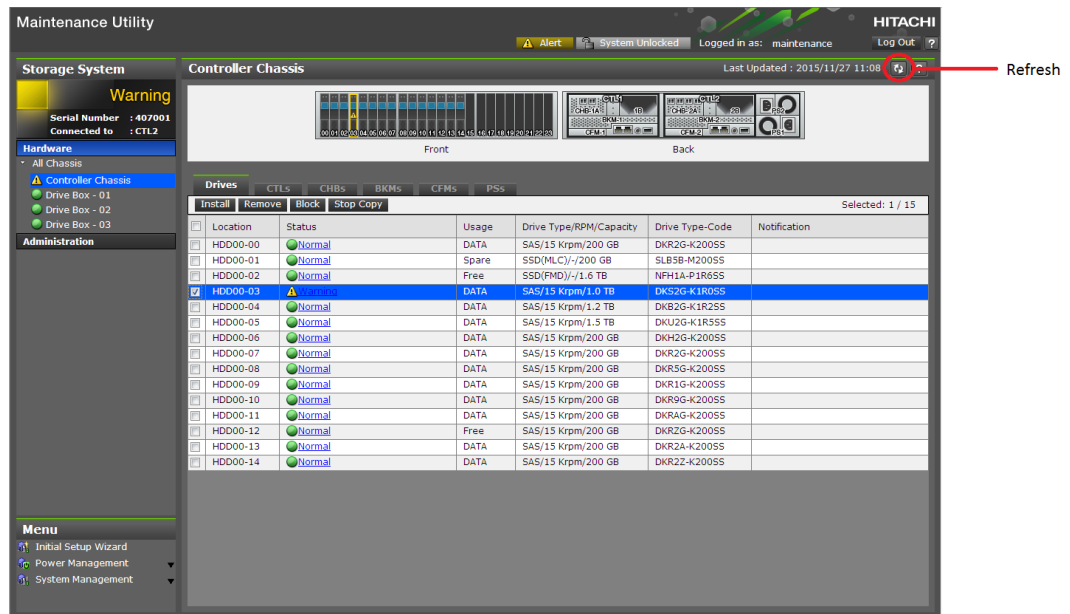
Before replacing a drive, read the precautions and understand the procedure for your drive type.

- ☐ [Checking a drive](#)
- ☐ [Blocking the drive](#)
- ☐ [Replacing a drive for a CBSS or SFF drive tray](#)
- ☐ [Replacing a drive for a CBSL or LFF drive tray](#)
- ☐ [Replacing a drive for a flash module drive tray](#)
- ☐ [Adding a drive to a dense intermix drive tray](#)
- ☐ [Checking the drive status](#)

Checking a drive

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis Hardware > Drive Box**.
3. Click the **Drives** tab.
4. Confirm that the status of the drive to be replaced is Warning, Failed, Blocked, Copy incomplete, or Reserved.
5. Click **Refresh**.



6. Remove the front bezel and check whether the red ALM LED on the failed drive is on or off:
 - If the LED is on, replace the drive.
 - If the LED is off, proceed to [Blocking the drive on page 109](#).



Note: If the ALM LED is ON but the drive status is neither Blocked nor Failed, go to the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

Blocking the drive

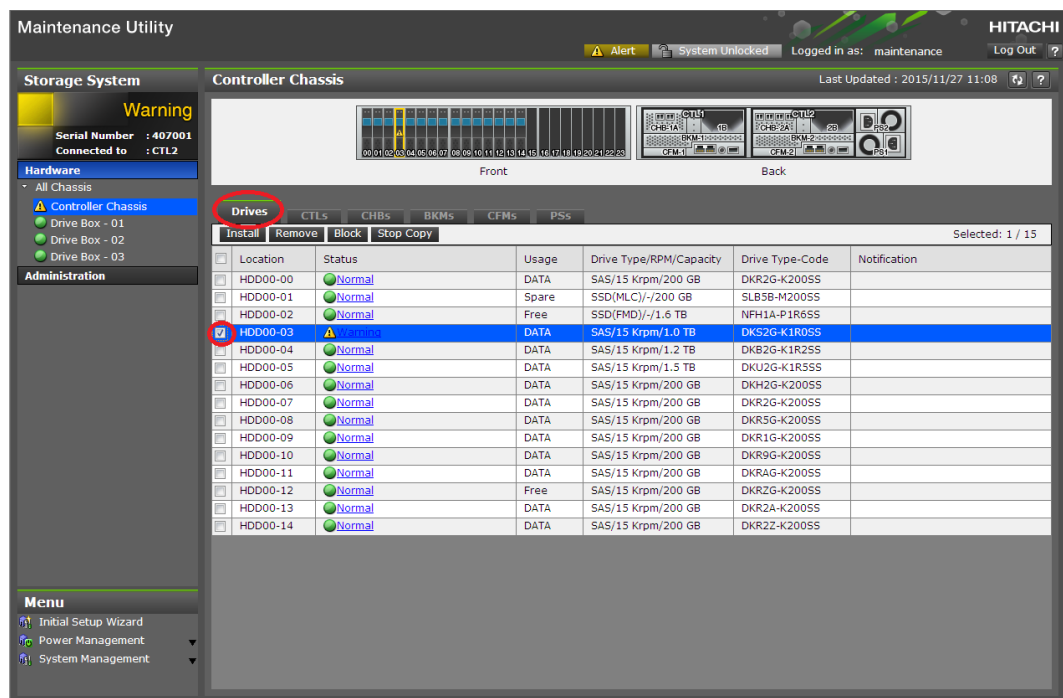
If the red **ALM** LED on a failed drive is off, use the following procedure to identify and block the failed drive before replacing it.

Before you begin

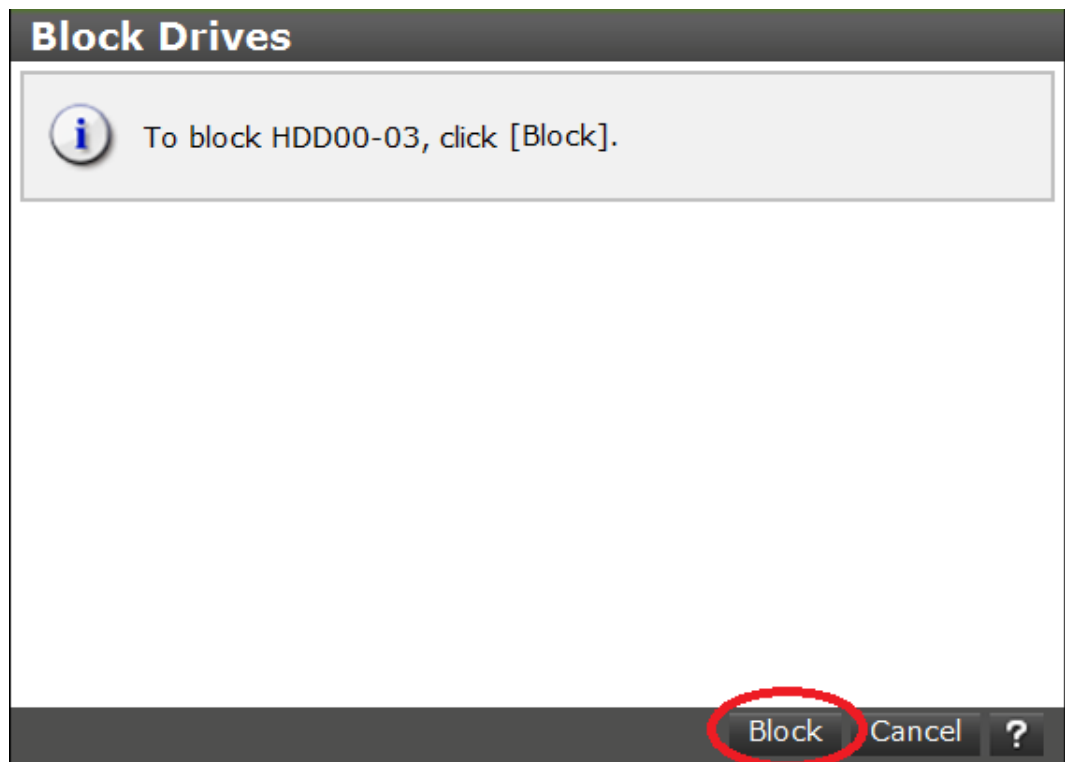
- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.

Procedure

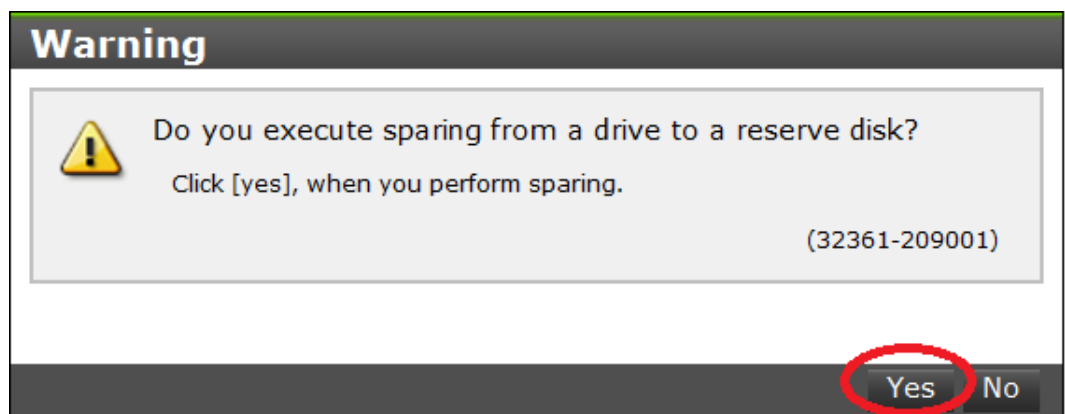
1. In the **Drives** tab of the maintenance utility, check that the blocked drive is identified properly.



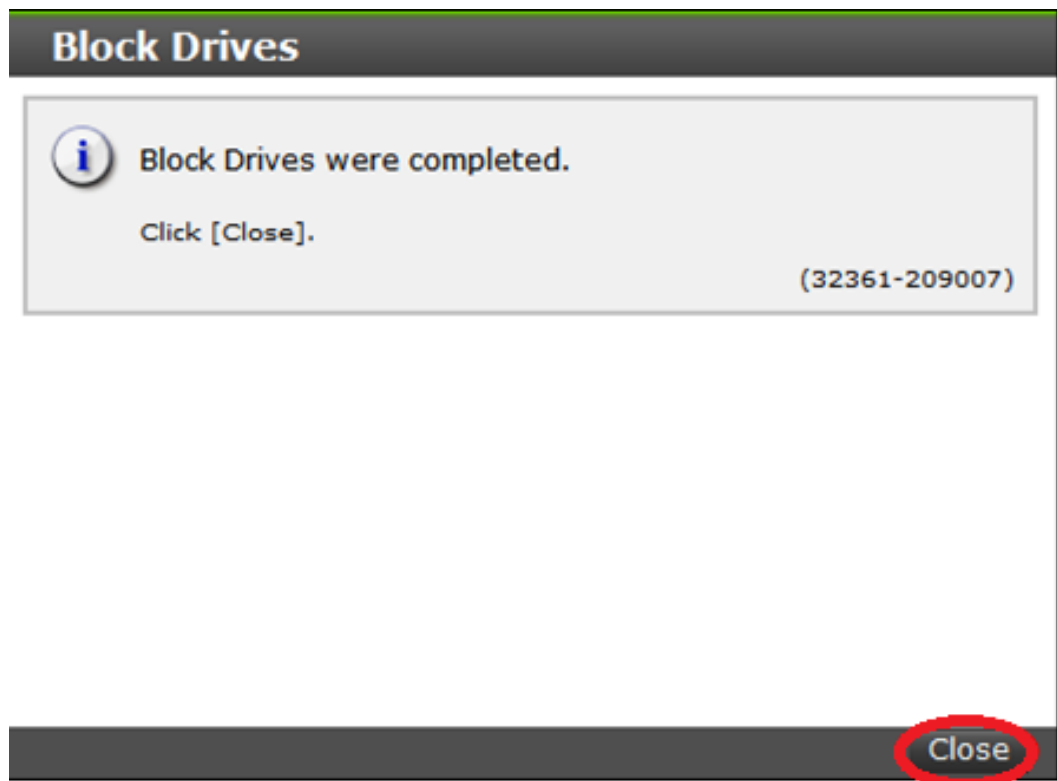
2. Click **Block**.



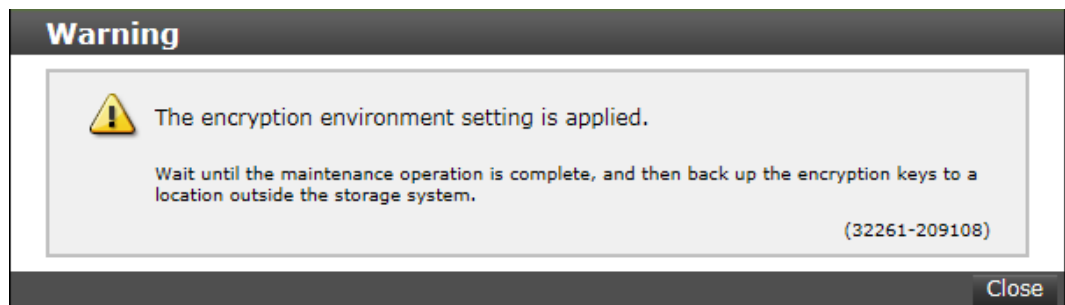
3. If the following warning appears, click **Yes**.



4. Check that the drive status is **Blocked** or **Failed** in the **Controller Chassis Drive Box** window. If the drive status is **Copying**, wait until it changes to **Blocked** or **Failed**.
5. When the following window opens, click **Close**.



6. If you receive a message about the encryption environment setting is applied, click **Close**, and then back up the encryption key after completing the drive-replacement procedure.



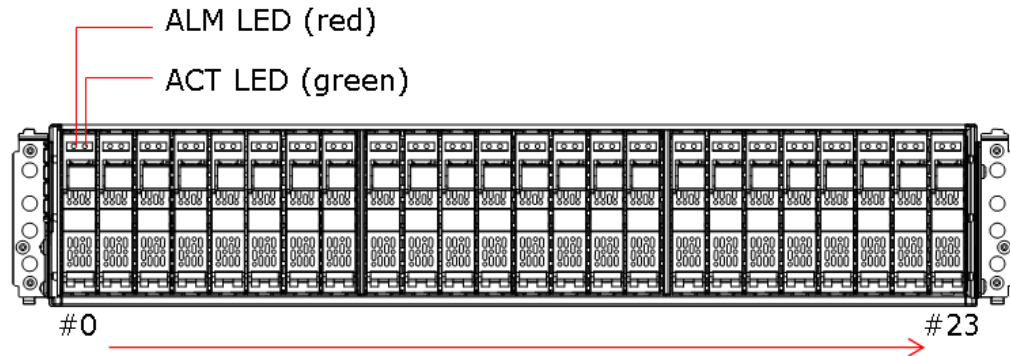
7. In the **Controller Chassis Drive Box** window, check that the drive status is **Blocked**. If the drive status is **Copying**, wait for it to change to **Blocked**.

Replacing a drive for a CBSS or SFF drive tray

The drive numbering in a chassis is #0 to #23, from left to right.

Before you begin

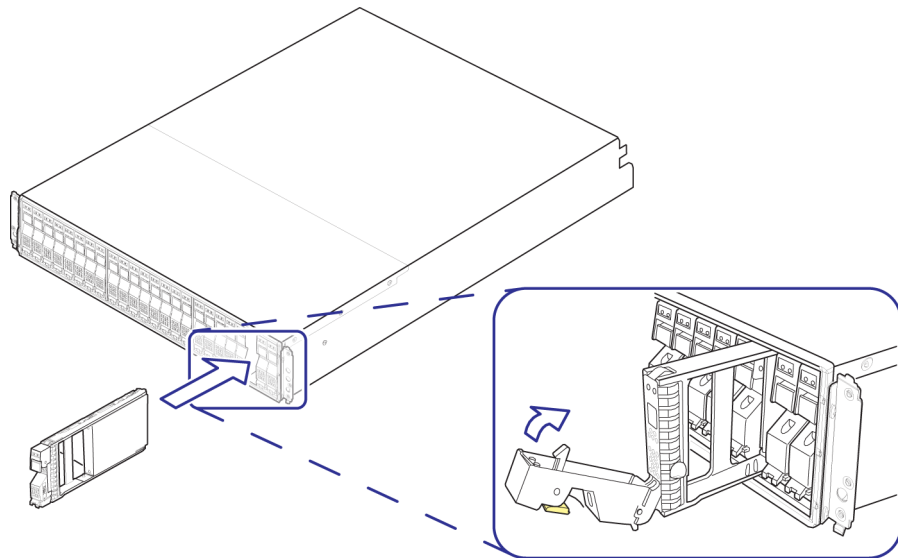
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- The front bezel is removed.




Procedure

1. Pull up the stopper of the drive handle toward you to release the lock.
2. Open the handle toward you, and then gently remove the drive to be replaced.
Handle the drive with care.
3. Wait at least 30 seconds. Then place the new drive into the guide rail and slide it gently in the direction of the arrow.
4. Push the lower part of the drive until it reaches the position where the hook on the handle engages with the square hole on the frame.
5. Raise the stopper, which is tilted toward you, and then press the stopper to disengage the lock.

If the handle is raised so the hook of the handle cannot enter into each hole, the drive cannot be installed properly because it is blocked by the frame of the storage system.



6. Pull the drive handle gently to make sure the drive is installed securely and cannot be pulled out.
7. Confirm that the red **ALM** LED is off at the new drive.

1.  **Note:** If the **ALM** LED is ON but the drive status is neither **Blocked** nor **Failed**, contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

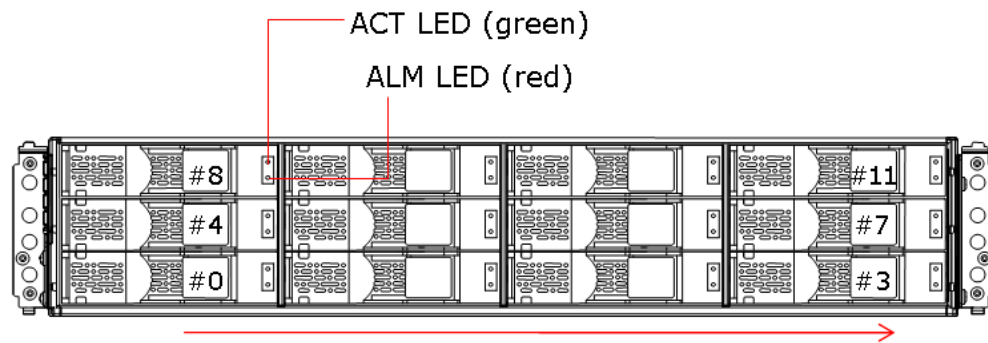
8. In the maintenance utility, click **Hardware > Controller Chassis Hardware > Drive Box**.
9. Click the **Drives** tab.
10. Confirm that the status of the drive to be replaced is **Normal**.
If necessary, click **Refresh** to update the status in the window.
11. Attach the front bezel.

Replacing a drive for a CBSL or LFF drive tray

The drive numbering in the chassis is #0 to #11, from the bottom left to the top right.

Before you begin

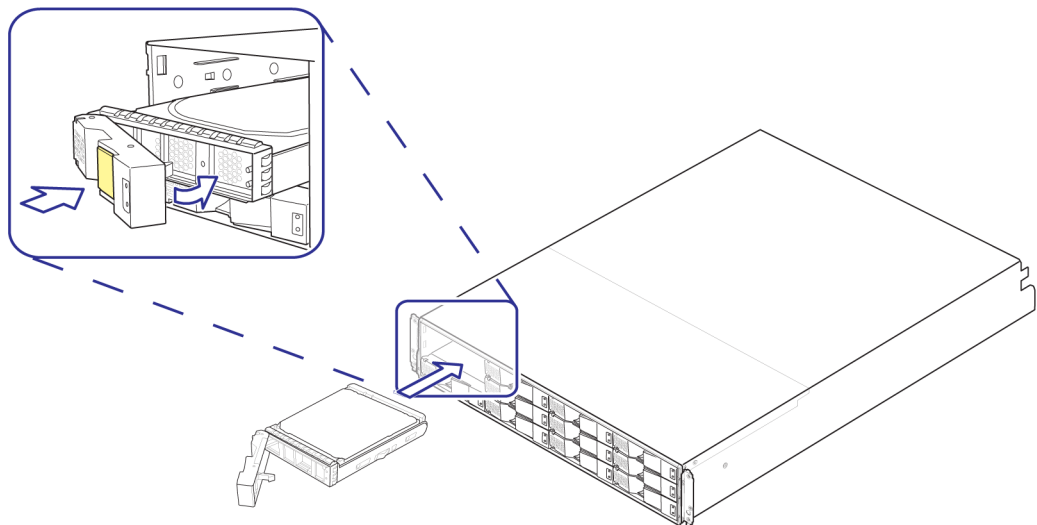
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- The front bezel is removed.



Procedure

1. Pull up the stopper of the drive handle toward you to release the lock.
2. Open the handle toward you, and then gently remove the drive to be replaced.
Handle the drive with care.
3. Wait at least 30 seconds. Then place the new drive into the guide rail and slide it gently in the direction of the arrow.
4. Push the lower part of the drive until it reaches the position where the hook on the handle engages with the square hole on the frame.
5. Pull the stopper lightly, close the handle, and then press the stopper to engage the lock.

If the hook of the handle cannot enter the square hole, the drive cannot be installed properly because it gets blocked by the frame of the storage system.



6. Pull the drive handle gently to make sure the drive is installed securely and cannot be pulled out.



Note: If the ALM LED is ON but the drive status is neither **Blocked** nor **Failed**, contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

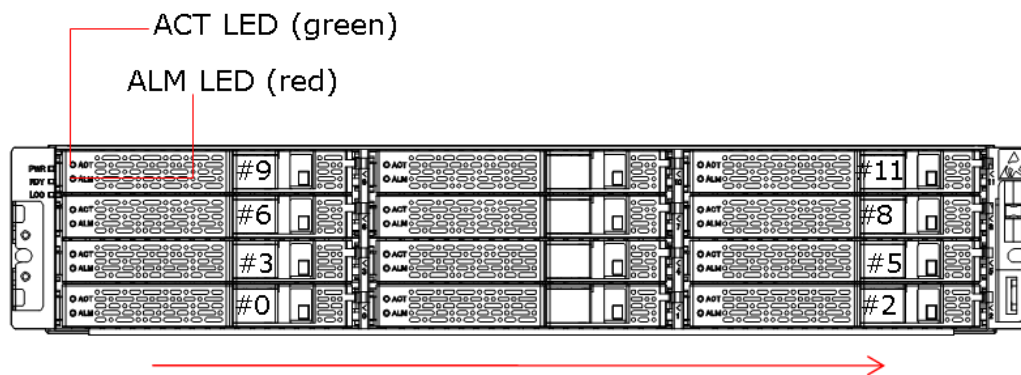
7. In the maintenance utility, click **Hardware > Controller Chassis Hardware > Drive Box**.
8. Click the **Drives** tab.
9. Confirm that the status of the drive to be replaced is **Normal**.
If necessary, click **Refresh** to update the status in the window.
10. Confirm that the red ALM LED is off at the new drive.
11. Attach the front bezel.

Replacing a drive for a flash module drive tray

The drive numbering is #0 to #11, from the bottom left to the top right.

Before you begin

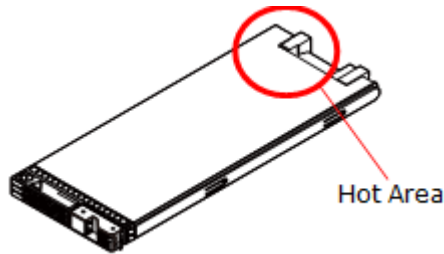
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- The front bezel is removed.



Note: Servicing flash module drives is strictly limited to Hitachi and certified partners. The flash module drive tray accepts DKC-F810I-1R6FN, DKC-F810I-3R2FN, DKC-F810I-6R4FN, DKC-F810I-7R0FP or DKC-F810I-14RFP drives only. HDDs cannot be installed in a flash module drive tray. You cannot install small form factor drive trays, large form factor drive trays, and dense intermix drive trays on an all-flash array.



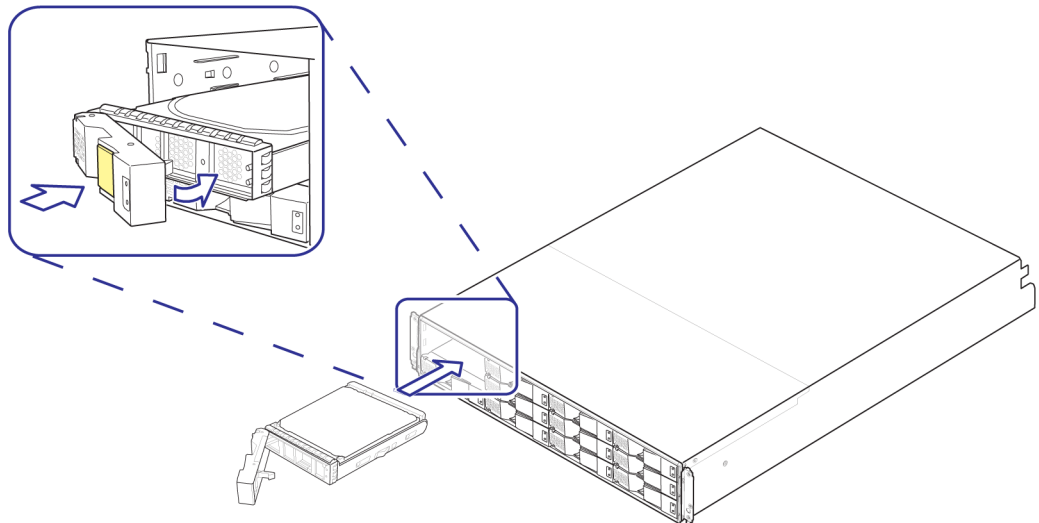
Note: The top-rear area of the flash module drive is extremely hot when the drive is removed from a working system. Avoid touching this hot area when removing the drive.



Procedure

1. Pull up the stopper of the drive handle toward you to release the lock.
2. Open the handle toward you, and then gently remove the drive to be replaced.
Handle the drive with care.
3. Wait at least 30 seconds. Then place the new drive into the guide rail and slide it gently in the direction of the arrow.
4. Push the lower part of the drive until it reaches the position where the hook on the handle engages with the square hole on the frame.
5. Pull the stopper lightly, close the handle, and then press the stopper to engage the lock.

If the hook of the handle cannot enter the square hole, the drive cannot be installed properly because it gets blocked by the frame of the storage system.



6. Pull the drive handle gently to make sure the drive is installed securely and cannot be pulled out.

7. In the maintenance utility, click **Hardware > Controller Chassis Hardware > Drive Box**.
8. Click the **Drives** tab.
9. Confirm that the status of the drive to be replaced is `Normal`.
If necessary, click **Refresh** to update the status in the window.
10. Confirm that the red `ALM` LED is off at the new drive.
11. Attach the front bezel.

Adding a drive to a dense intermix drive tray

The numbering of the drive slots in the dense intermix drive tray begins with 0 to 59 and reads from left to right.

When working on a dense intermix drive tray:

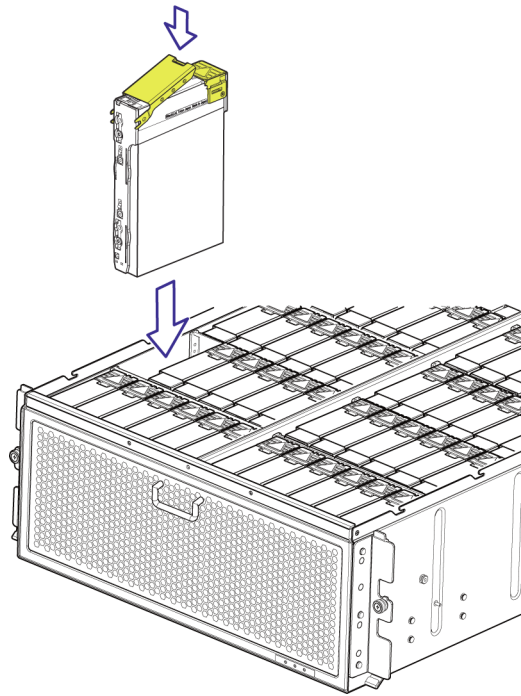
- Be mindful of other workers nearby.
- Exercise care when removing or storing the dense intermix drive tray.
- Do not remove multiple dense intermix drive trays all at once because the rack can fall over.
- Do not put any objects on the removed dense intermix drive tray.
- Do not use the dense intermix drive tray as a work space because the rack can fall over.
- Remove the dense intermix drive tray from the rack and remove the top cover.
- Use only DKC-F810I-1R6FN, DKC-F810I-3R2FN, and DKC-F810I-6R4FN drives when installing flash module drives.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.

Procedure

1. Pull up the stopper of the drive handle toward you to release the lock.
2. Open the handle toward you, and then gently remove the drive to be replaced.
Handle the drive with care.
3. Wait at least 30 seconds. Then place the new drive into the guide rail and slide it gently in the direction of the arrow.
4. Push the drive until it snaps into place.

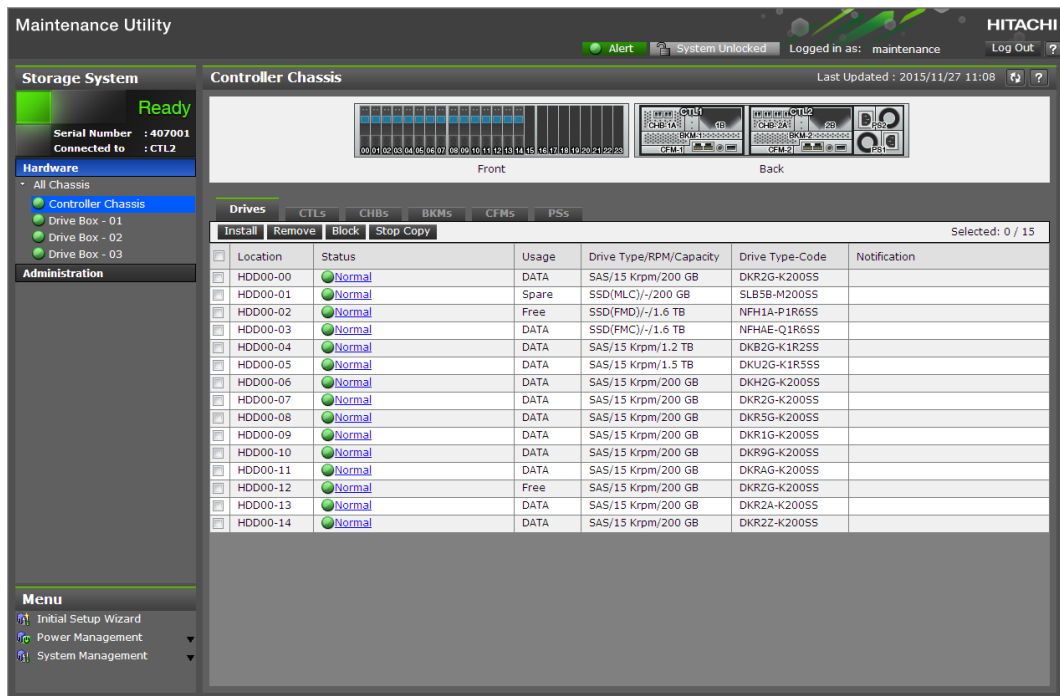


5. Pull the drive handle gently to make sure the drive is installed securely and cannot be pulled out.
6. Attach the top cover of the dense intermix drive tray, and then return the drive tray to the rack.

Checking the drive status

Procedure

1. In the maintenance utility, click **Hardware > Controller Chassis Hardware > Drive Box**.
2. Click the **Drives** tab.
3. Confirm that the status of the replacement drive is `Normal`.



Observe the following guidelines:

- If you replaced a drive without blocking it, click **Refresh** in the **Maintenance Utility** window, and then check the status of the replaced drive.
- When replacing a drive after saving data to a spare drive, the drive status changes to **Normal** after performing the copy-back operation. This operation can take up to 12 hours to perform, depending on the configuration and drive capacity
- If the drive status is **Copy incomplete**, the correction-copy operation cannot be performed because a copy-processing operation is being performed in the parity group to which the target drive belongs. If you are not sure about the restoration method or if the restoration fails, contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

Restoration method: After completing other copy operations, replace the drive using the drive-replacement procedure. For the drive replacement, reuse the drive that was removed instead of using a new drive.

- If the drive status is **Reserved**, the copy-back operation cannot be performed because more than one copy-processing operation is being performed in the parity group to which the copy-back source drive of the target drive belongs. If you are not sure about the restoration method or if the restoration fails, contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

Restoration method: After completing other copy operations, replace the drive using the drive-replacement procedure. For the drive

replacement, reuse the drive that was removed instead of using a new drive.

- If the copy-back operation is set to disabled, this operation will not be performed.

Replacing a battery

The VSP G400, G600, G800 or VSP F400, F600, F800 storage systems have replaceable batteries. Before replacing a battery on these storage systems, read the precautions and understand the procedure for your battery.

- ☐ [Checking the battery](#)
- ☐ [Replacing the battery](#)
- ☐ [Checking battery cable connections](#)

Checking the battery

Before you begin

- Confirm that the storage system power is turned on.
- Confirm that the red **STATUS** LED for the backup module containing the battery to be replaced is blinking.
- The power supply is operating normally.
- You have read [Battery replacement guidelines on page 311](#).
- You have read the precautions supplied by the battery manufacturer and understand the procedure for your battery.

Procedure

1. Start the maintenance utility.
2. In the **Maintenance Utility** window, click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **BKMFs** tab.
4. To display the most recent status of the battery, click **Refresh**.
5. Confirm that the status of the battery to be replaced is **Warning**.

The screenshot shows the Hitachi Maintenance Utility interface. The left sidebar contains a 'Warning' banner for 'Storage System' with serial number 407001 connected to CTL2. Below this are 'Hardware' and 'Administration' sections. The 'Hardware' section is expanded, showing 'Controller Chassis' as the selected item. The main area displays the 'Controller Chassis' window with the 'BKMFs' tab selected. At the top right of this window is a 'Refresh' button, indicated by a red arrow. Below the tabs, there is a table showing the status of various components, including batteries. The table has columns for Location, BKMF Status, Location, Status, Location, and Status. The 'Status' column for BAT-B11 shows a 'Warning' status, indicated by a yellow triangle icon.

Battery(Basic)		Battery(Optional)	
Location	BKMF Status	Location	Status
BKMF-10	Normal	BAT-F10	Normal
BKMF-11	Normal	BAT-B11	Warning
BKMF-12	Normal	BAT-B12	Normal
BKMF-13	Normal	BAT-B13	Normal
BKMF-20	Normal	BAT-F20	Normal
BKMF-21	Normal	BAT-B21	Normal
BKMF-22	Normal	BAT-B22	Normal
BKMF-23	Normal	BAT-B23	Normal

Replacing the battery

The blink pattern of the red `STATUS` LED indicates which battery needs replacement.

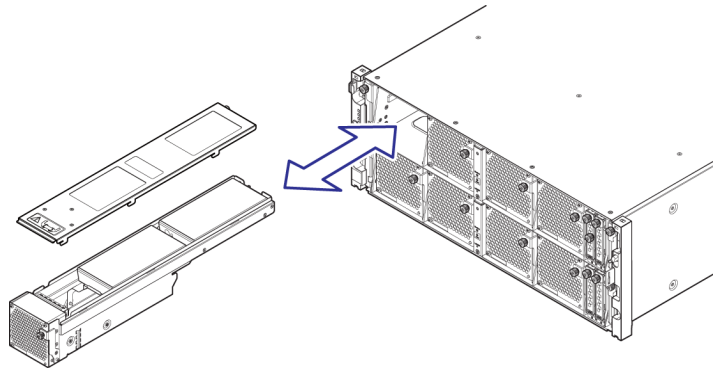
- **One blink::** Replace the standard battery.
- **Two blinks::** Replace the optional battery.
- **Three blinks::** Replace both the standard and optional batteries.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red `STATUS` LED for the backup module containing the battery to be replaced is blinking.
- Use the maintenance utility to check the battery.

Procedure

1. Loosen the blue screw that secures the BKMF whose red `STATUS` LED is blinking.
2. Open the lever to pull out and remove the BKMF with both hands.
3. Find the BKMF whose red `STATUS` LED is blinking, and then loosen the blue screw that secures that BKMF.
4. Slide the top panel of the BKMF and remove it.
5. Hold the latch of the cable connector of the battery to be replaced and remove the connector from the socket.
6. Remove the battery to be replaced.
7. Install a new battery in the BKMF and route cables along the groove of the BKMF.
If replacing one battery, install the replacement battery at the front (fan) side of the system. The battery clicks into place when installed securely in the slot. Route cables with minimum bending.
8. Connect the cable connector to the socket. You will hear a click when the connection is secure.
9. Replace the BKMF top panel by sliding it and then attaching it.
10. Tighten the blue screw on the rear side of the BKMF.
11. With the lever of the BKMF opened, hold the BKMF with both hands and insert it straight into the slot.
12. Close the lever of the BKMF, and tighten the blue screw.

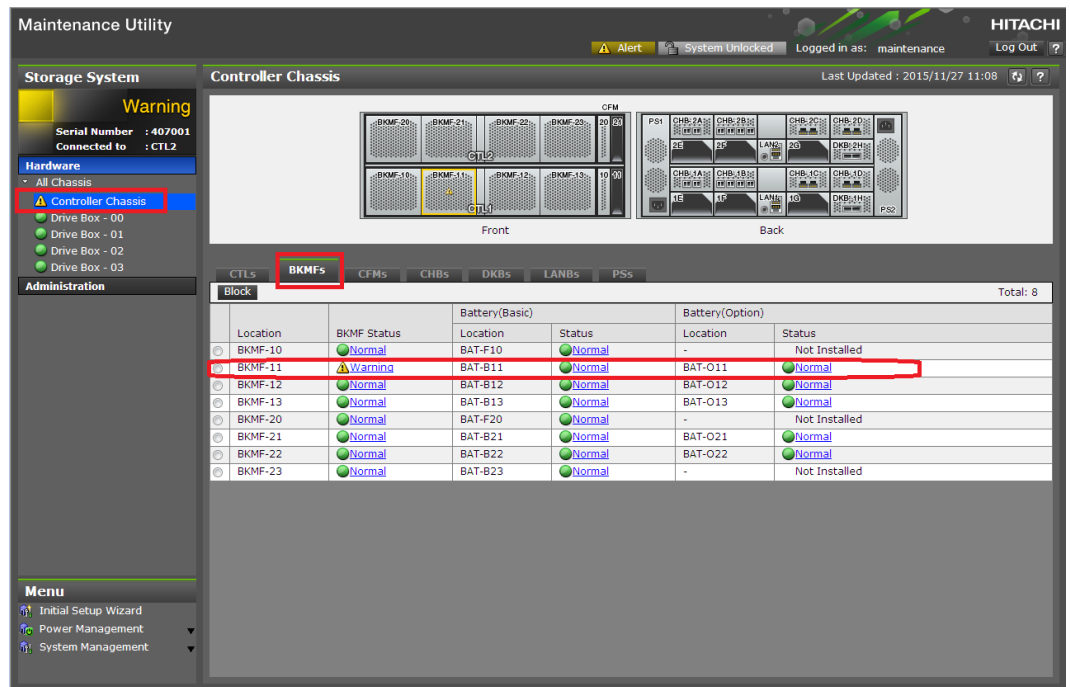


13. Check that the green **STATUS** LED on the BKMF is blinking.
14. In the **Maintenance Utility** window, click **Hardware > Controller Chassis**.
15. Click the **BKMF** tab.
16. Confirm that the status of the replacement battery is **Normal**.
17. Log out and close the **Maintenance Utility** window.

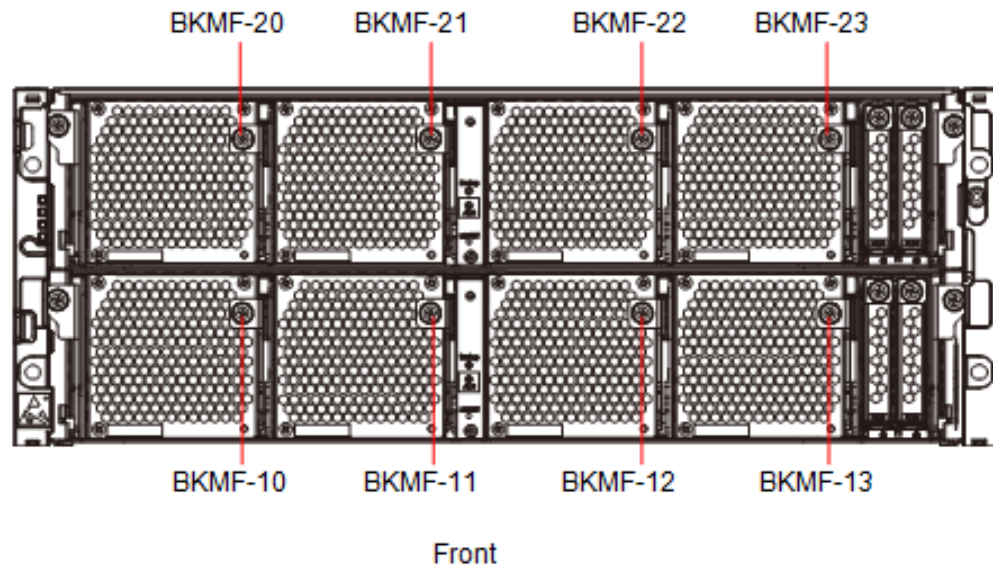
Checking battery cable connections

Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the maintenance utility, click **Controller Chassis** in the left pane, and then click the **BKMF** tab.



CBLM/CBLH BKMF modules

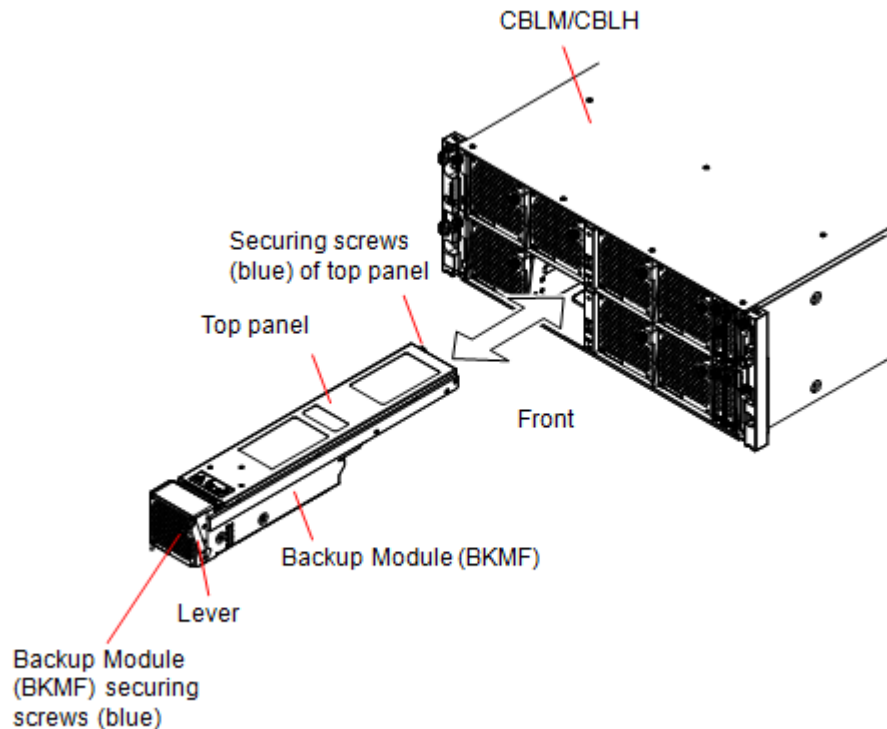


DBF power supply unit locations

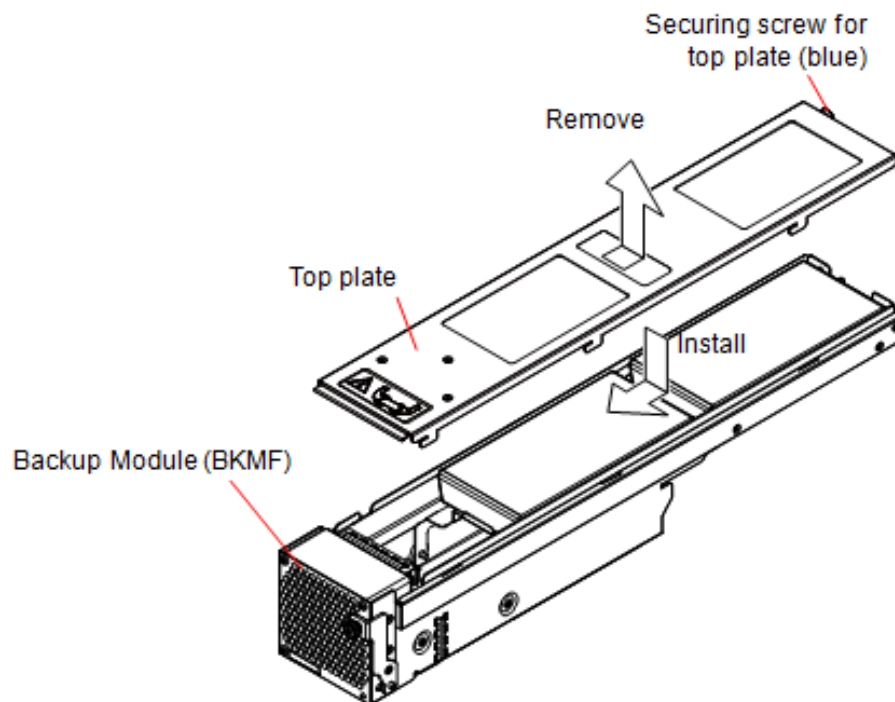


Note: Check the target battery only. Do not touch other batteries.

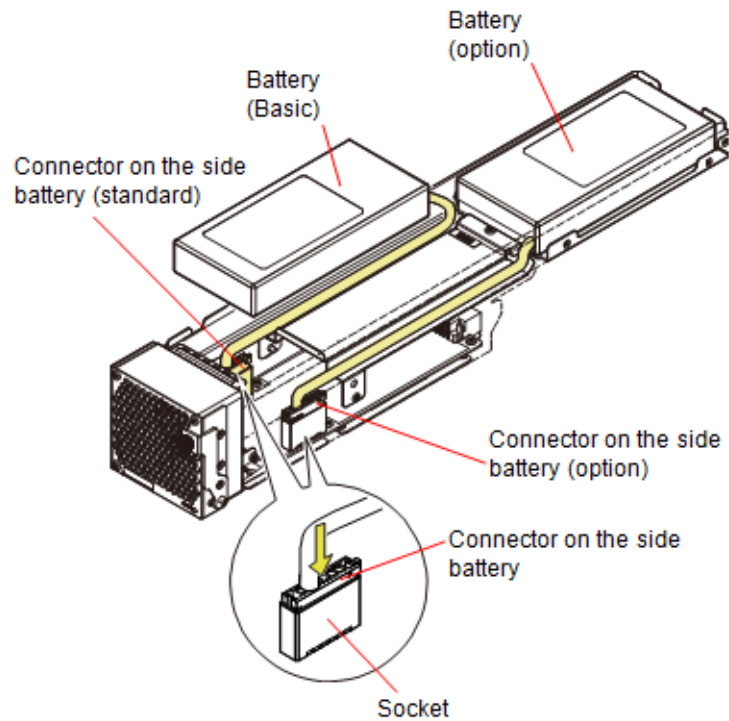
3. Remove the front bezel.
4. Remove the BKMF in which the target battery is installed:
 - a. Check that the red **STATUS** LED on the BKMF is blinking.
 - b. Loosen the blue screw securing the BKMF on which the red **STATUS** LED is blinking.
 - c. Close the lever and pull out the BKMF to remove it.



5. Check the connection of the battery cables:
 - a. Loosen the blue screw on the back of the BKMF.
 - b. Slide the top panel of the BKMF to remove the panel



- c. Check the connection of the target battery cables and connect the connectors to the sockets securely.



- d. Slide the top panel of the BKM to install it.
- e. Tighten the blue screw on the back of the BKM to secure the BKM.
- 6.** Install the BKM:
 - a. Keep the BKM lever open and insert the BKM into the slot.
 - b. Close the BKM lever and tighten the blue screw to secure the BKM.
- 7.** Attach the front bezel.
- 8.** Log out of maintenance utility to close the window.

Replacing a fan

Before replacing a fan, read the precautions and understand the procedure for your fan.

- ☐ [Checking a fan](#)
- ☐ [Blocking the controller](#)
- ☐ [Replacing a fan](#)
- ☐ [Restoring a fan](#)
- ☐ [Replacing a fan on a host port expansion chassis](#)

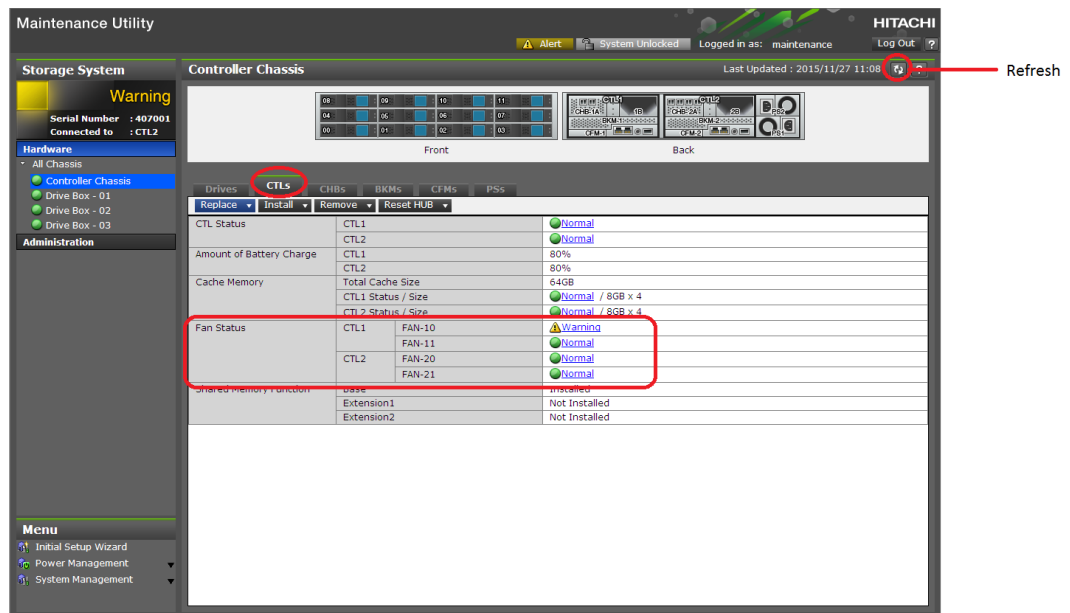
Checking a fan

Before you begin

- Confirm that the storage system power is turned on.

Procedure

1. Start the maintenance utility.
2. In the **Maintenance Utility** window, click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **CTLs** tab.
4. To display the most recent status of the fan, click **Refresh**.
5. Confirm that the status of the fan to be replaced is **Warning**.

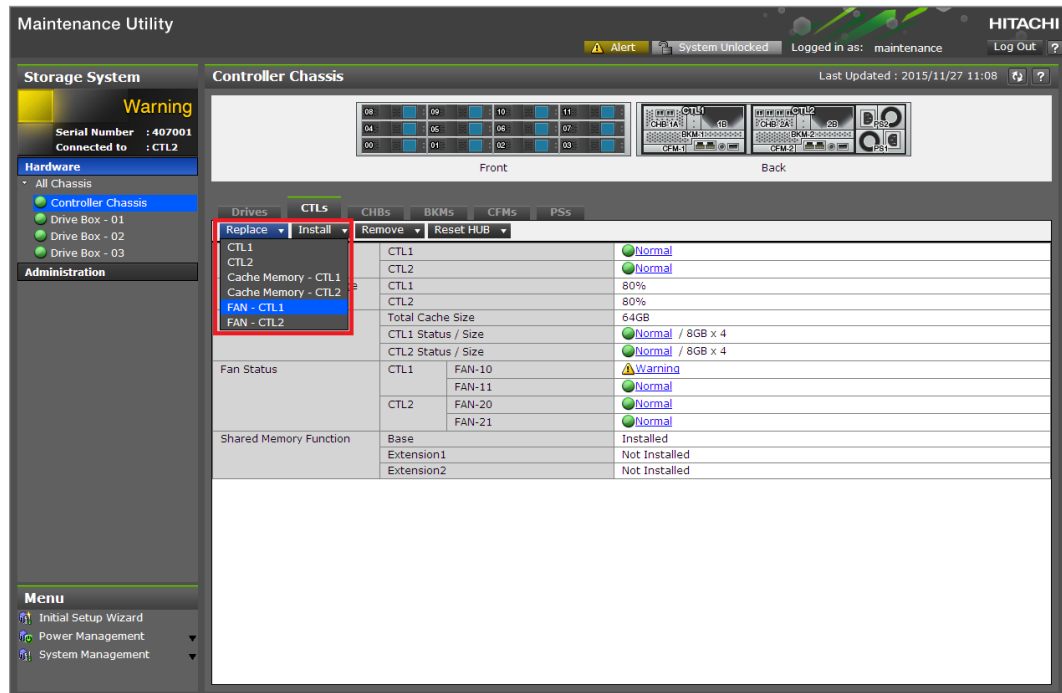


6. Use the amber CTL WARN LED to identify the failed fan that needs to be replaced:
 - If the LED blinks 1 time, replace fan 0.
 - If the LED blinks 2 times, replace fan 1.
- 7.

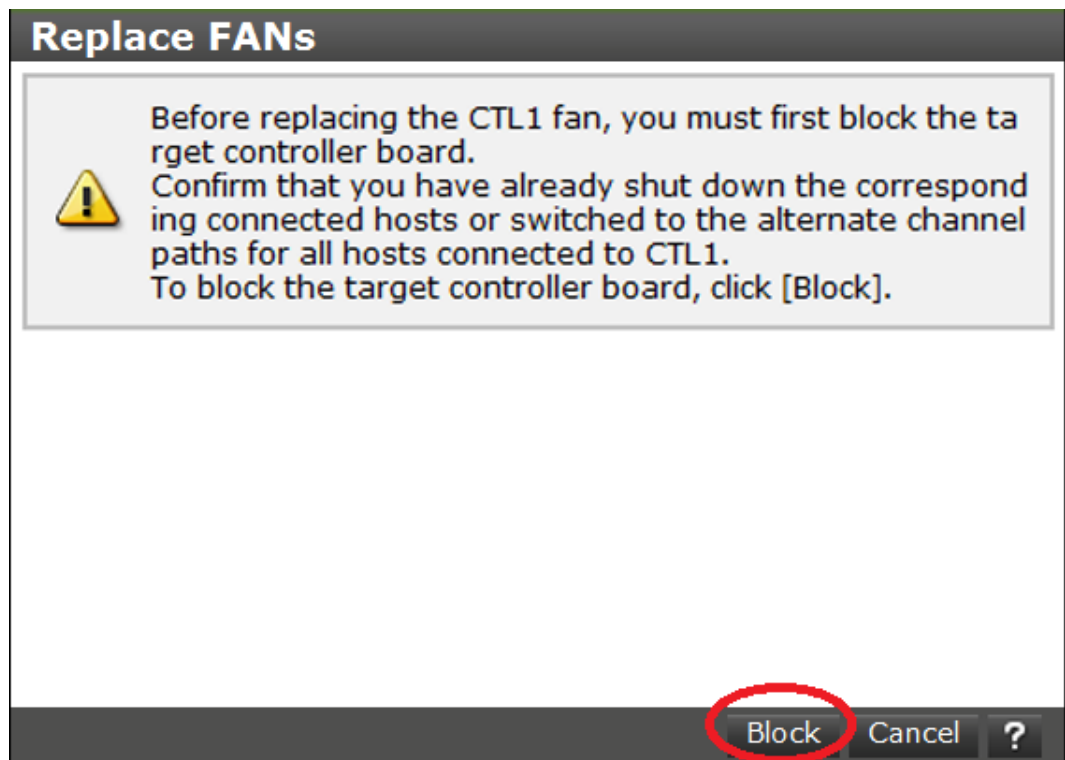
Blocking the controller

Procedure

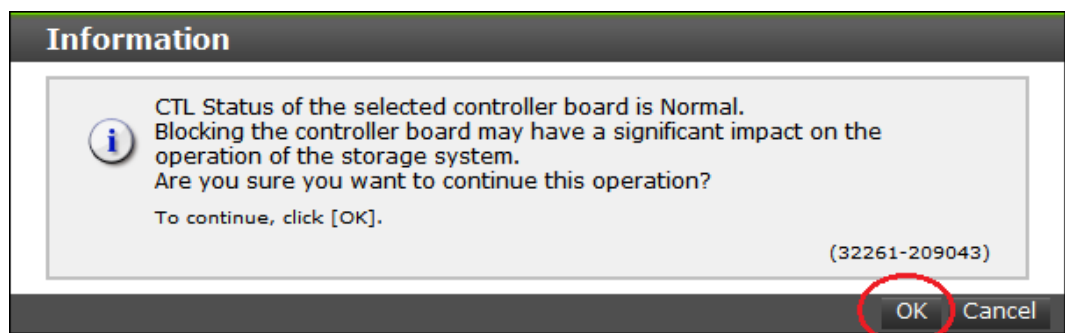
1. Click the **Replace** list, and then select the FAN-CTL to be replaced.



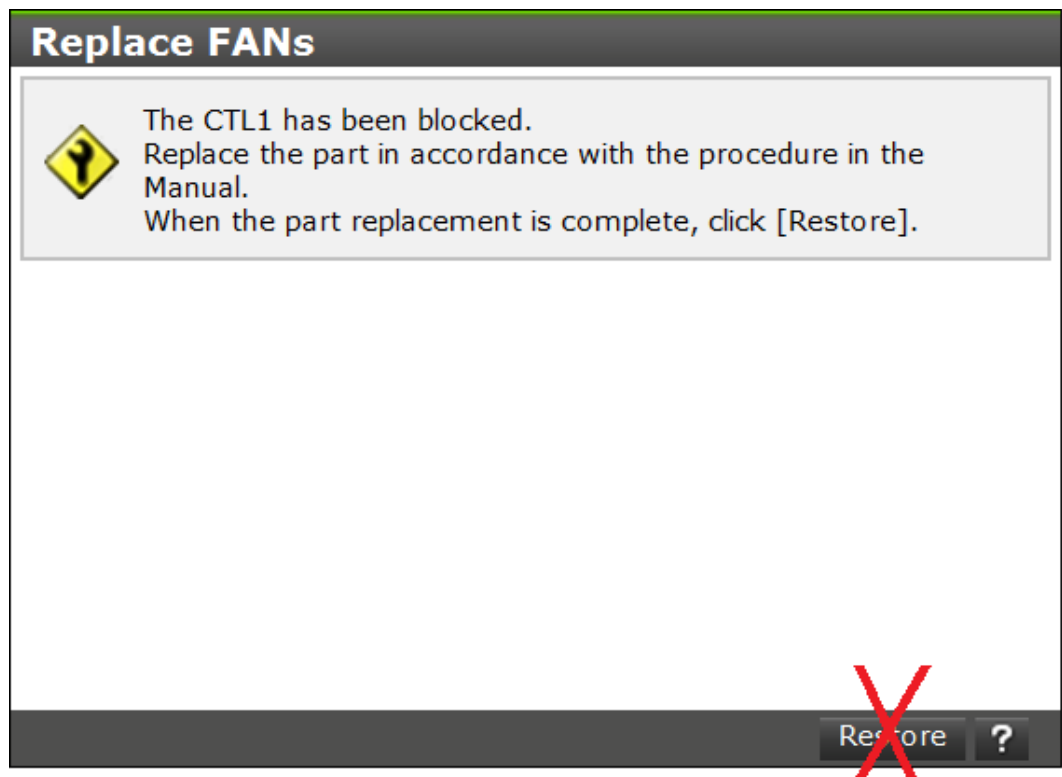
2. Check the controller that contains the fan to be replaced, and then click **Block**.
3. When the **Replace FANs** window opens, verify that the fan shown in the window is the one to be replaced, and then click **Block**.



4. If the following window opens, click **OK**.
- 5.



Check that the controller is blocked and becomes ready for replacing. Leave the **Replace FANs** window open, but do not click the **Restore** button.



Replacing a fan



Caution: Storage system fans rotate at high speed. Exercise extreme caution to avoid getting anything caught in the fan and to prevent injury.



Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.

Before you begin

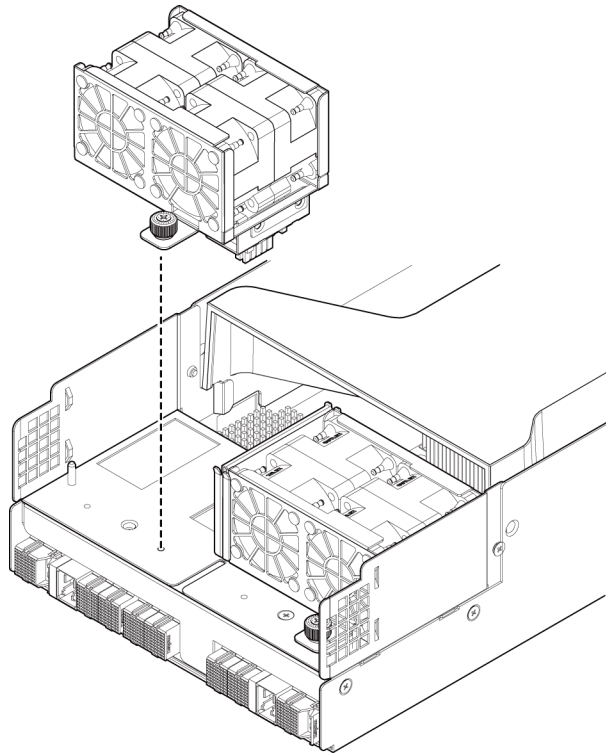
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that a fan is installed in the controller.
- Confirm that the storage system power is turned on.
- Confirm that the amber **CTL WARN** LED is blinking one or two times rapidly (one blink = replace fan 0, two blinks = replace fan 1).
- Use the maintenance utility to block the controller.



Note: Storage system fans rotate at high speed. Exercise extreme caution to avoid getting anything caught in the fan and to prevent injury.

Procedure

1. Remove all cables connected to the controller.
2. Loosen the blue screw that secures the controller, and then open the lever.
3. Hold the controller with both hands, and then pull it gently and remove it.
4. Loosen the blue screw that secures the fan.
5. Lift the fan and remove it from the connector.
6. Install the new fan into the connector of the controller.



7. Tighten the blue screw to secure the fan.
8. Check that the controller connector is in good condition (not deformed or damaged).
9. With the right and left controller levers open completely, insert the controller into the slot of the Controller.
10. Push the controller in all the way, and then close the right and left levers completely.
11. Tighten the blue screw to secure the controller.
12. Connect all the cables that you removed from the controller.

Next steps

- Use the maintenance utility to restore (unblock) the controller.

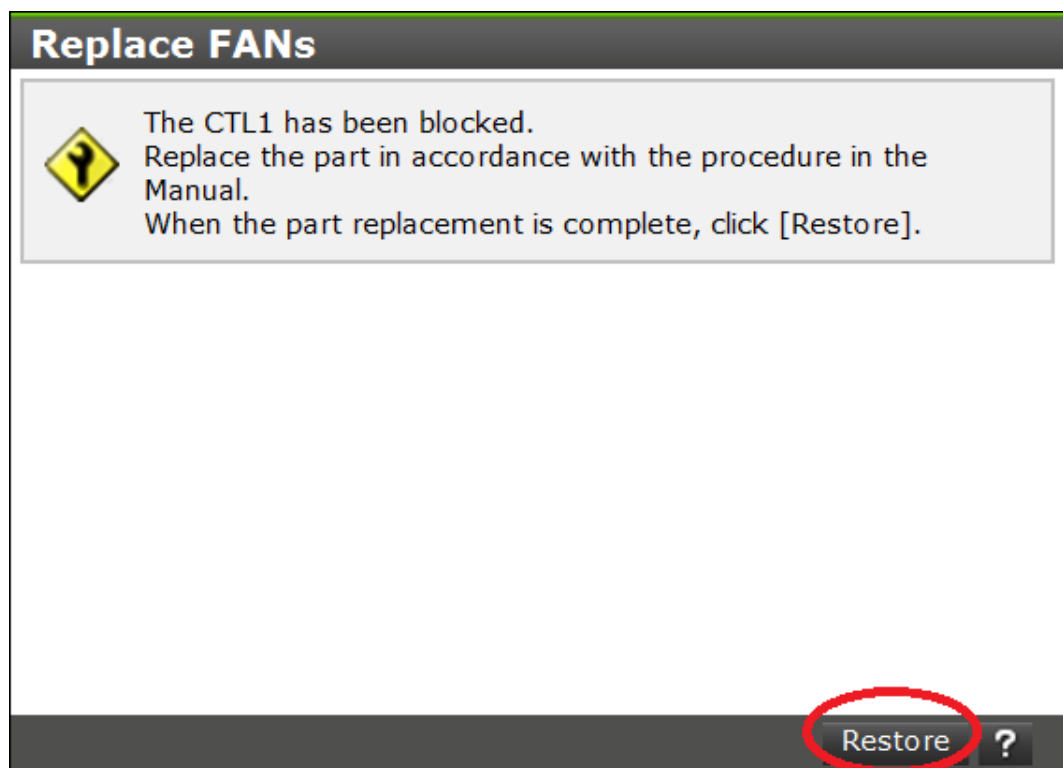
Restoring a fan

Procedure

1. In the **Replace FANs** window, click **Restore**.
A progress bar shows the replacement status.



Note: The restore operation can take up to 20 minutes to complete. If a message states that the recovery failed, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.



2. When the progress bar goes away and the completion message appears, click **Close**.
3. Confirm that the amber CTL WARN LED is off at the fan.
4. In the **BKMFs** tab, click **Refresh** at the top-right of the window and confirm that the fan status is **Normal**.
5. Log out and close the **Maintenance Utility** window.

Replacing a fan on a host port expansion chassis

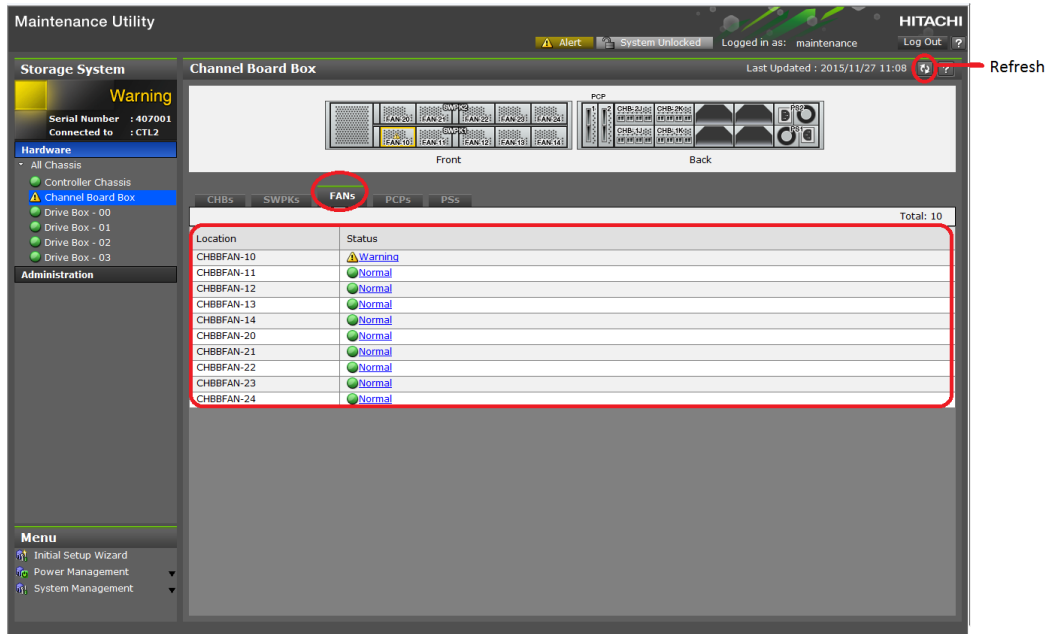
Blocking a fan on a host port expansion chassis

Before you begin

- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.
- The red ALM LED is on at the fan to be replaced.

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Channel Board Box**.
3. Click the **FAN** tab.
4. To display the most recent status of the fan click **Refresh**.
5. Check the status of the fan is **Warning**.

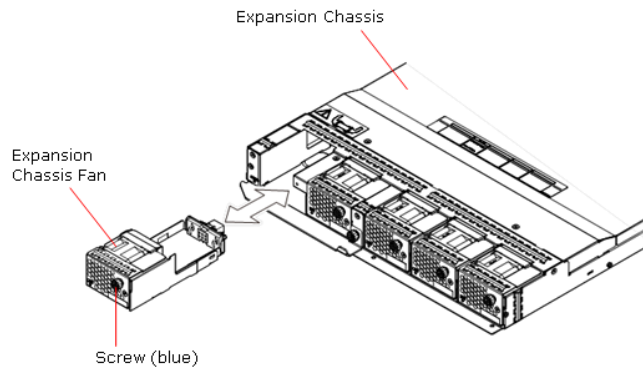


Replacing a fan on a host port expansion chassis

Procedure

1. Remove the front bezel.

2. Loosen the blue screw that secure the fan, and then remove the fan.
3. Insert the new fan into the slot, and tighten the blue screw to secure the fan.



4. Attach the front bezel.

Restoring a fan on a host port expansion chassis

Procedure

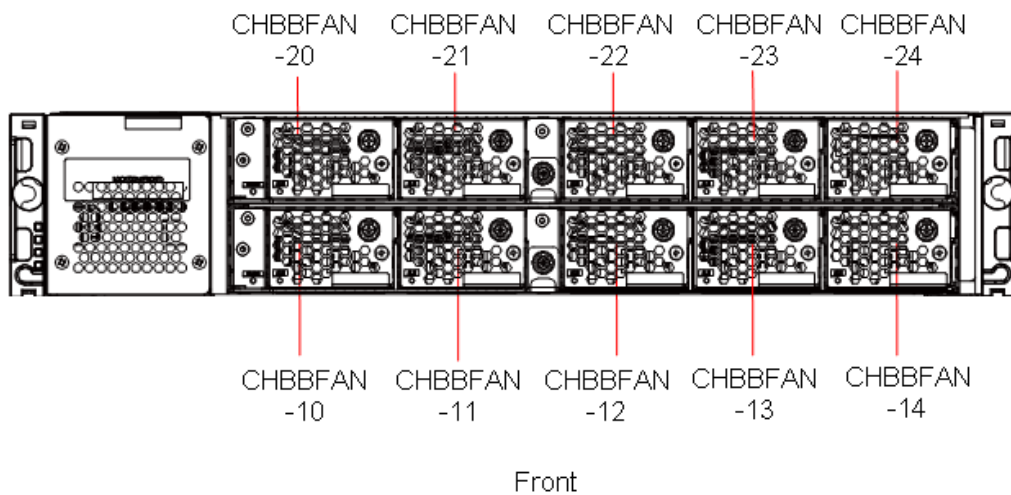
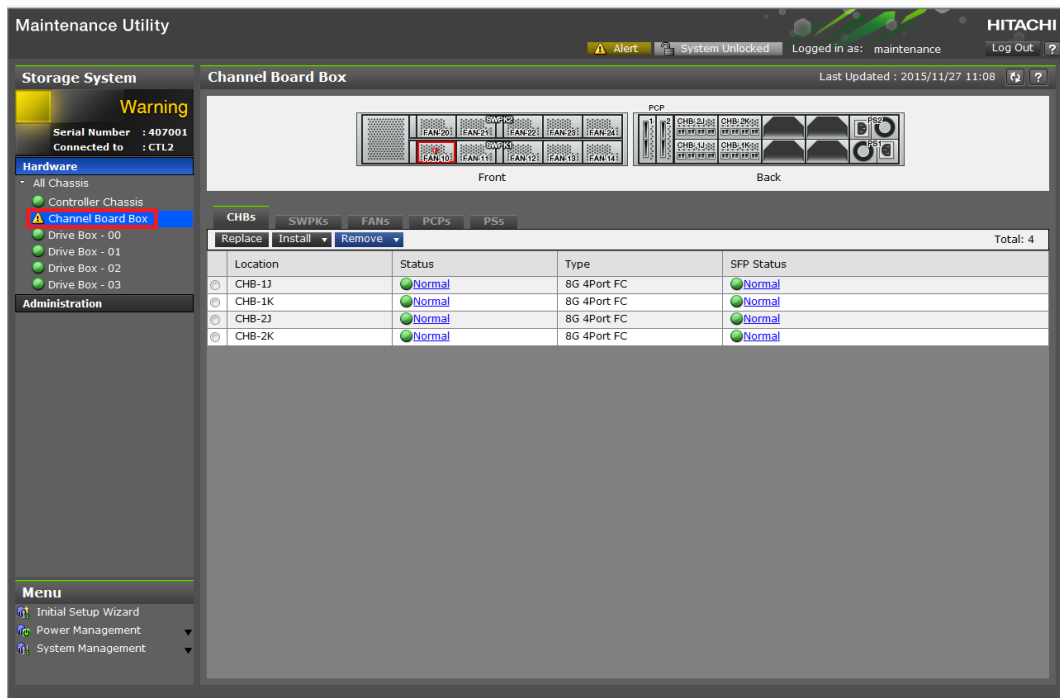
1. In the **FAN** tab, click **Refresh** to display the current fan status.
2. Confirm that the status of the replaced fan is **Normal**.
3. Log out and close the **Maintenance Utility** window.

Checking the screw on a host port expansion chassis fan

Using the following procedure, you can check whether the screw securing the CHBB fan is loose or secure.

Procedure

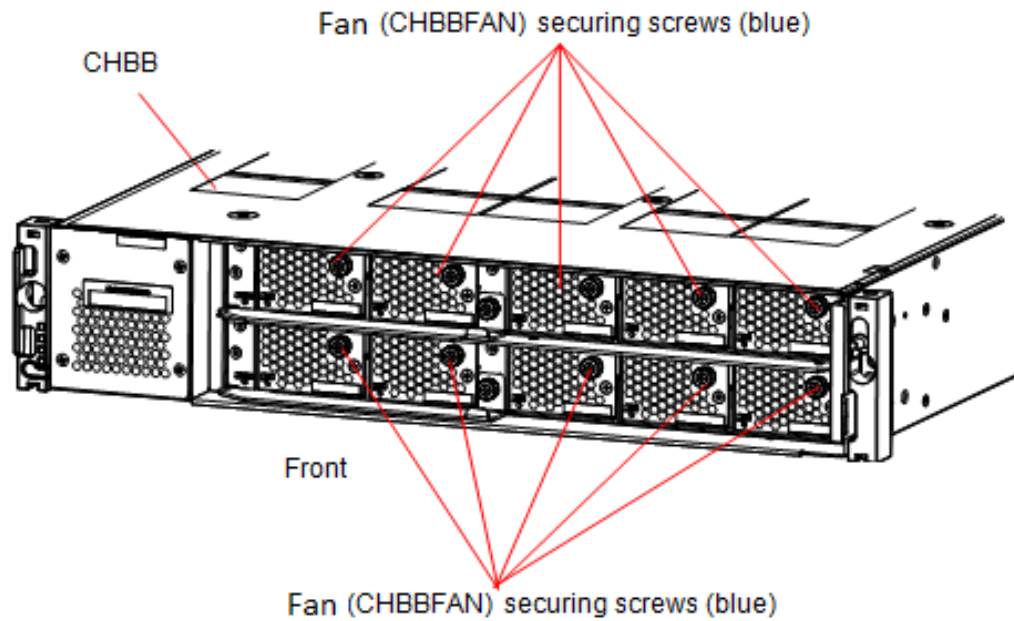
1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, under **Hardware**, click **Channel Board Box** to check the location of the host port expansion chassis fan (CHBB).



3. Remove the front bezel.
4. If the blue screw of the fan you want to check is loose, push the fan all the way in and tighten the screw.



Note: Work only with the fan whose screw connection you want to check. Do not touch other fans.



5. Attach the front bezel.
6. Log out and close the **Maintenance Utility** window.

Replacing a power supply

Before replacing a power supply, read the precautions and understand the procedure for your power supply.

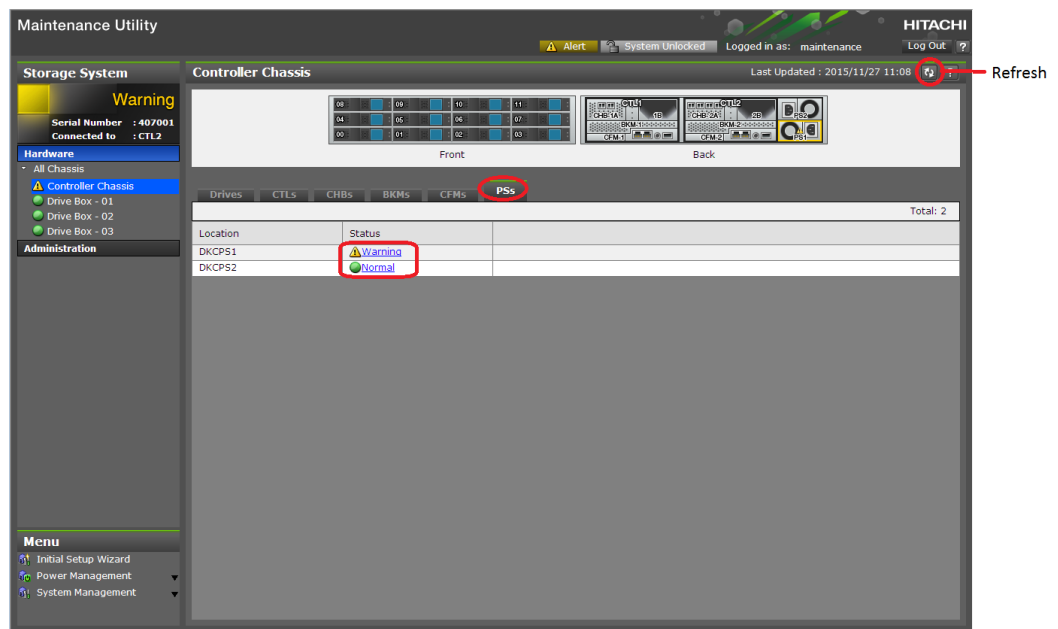
The Hitachi Virtual Storage Platform G200 offers a CBSS, CBSL, DBS, or DBL equipped with AC power supplies, or a CBSSD, CBSLD, DBSD, and DBLD equipped with DC power supplies. Except for their power supplies, these storage systems are functionally equivalent.

- ☐ [Checking the power supply](#)
- ☐ [Replacing a power supply for a CBSS or CBSL](#)
- ☐ [Replacing a power supply for a CBLM or CBLH](#)
- ☐ [Checking DKCPS power supply unit connections](#)
- ☐ [Replacing a power supply for SFF and LFF drive trays](#)
- ☐ [Replacing a power supply for a FMD drive tray](#)
- ☐ [Checking DBPS power supply unit connections](#)
- ☐ [Confirming the power supply unit status](#)
- ☐ [Replacing a power supply for a host port expansion chassis](#)

Checking the power supply

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis, Hardware > Drive Box** or **Hardware > Channel Board Box**.
3. Click the **PSs** tab.
4. To display the most recent status of the power supply, click **Refresh**.
5. Confirm that the status of the power supply to be replaced is **Warning**.



Replacing a power supply for a CBSS or CBSL

Caution: Be sure to replace the faulty power supply. If you replace the operational power supply, the system will go down.

Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.

Note: Power supply unit #1 and power supply unit #2 are installed in opposite directions.

Before you begin

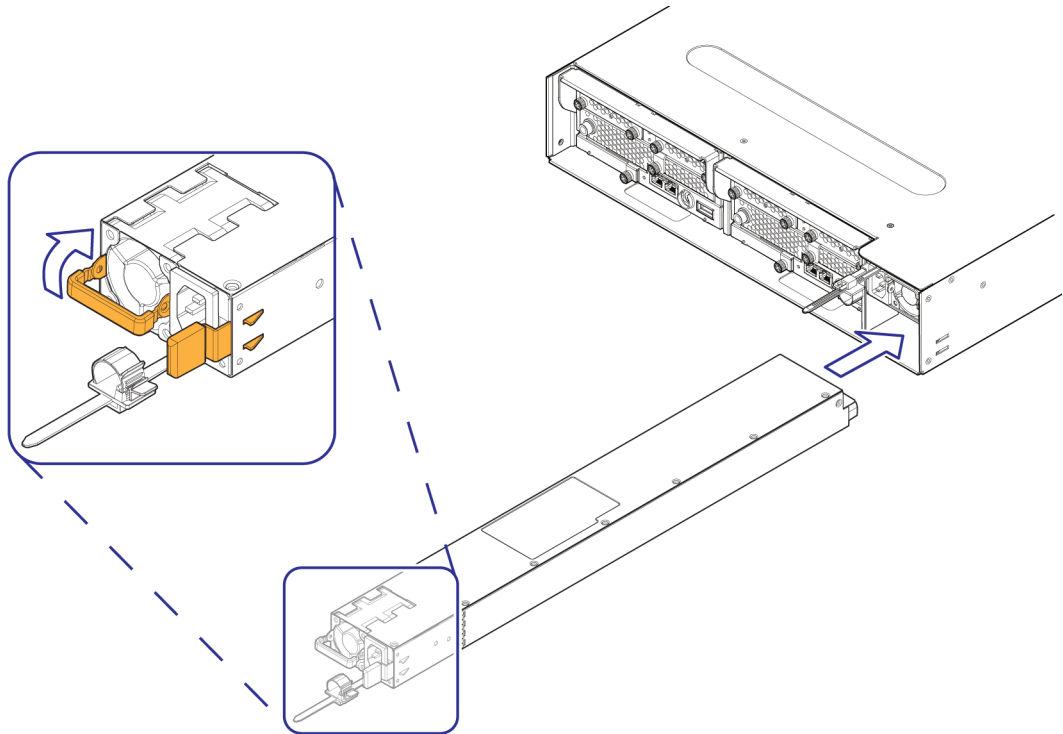
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red ALM/RDY LED for the power supply to be replaced is on.



Note: If the red ALM/RDY LED is on at both power supplies, do not perform this procedure. Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

Procedure

1. Disconnect the power cable from the power supply to be replaced. Remove the cable holder to disconnect the power cable from the power supply.
2. Hold up the latch on the cable holder of the power supply to release the lock, and then slide the cable holder forward.
3. Pull the lever open while pressing the latch on the power supply inward with right thumb. When the lever is completely opened, the power supply moves forward.



4. Pull out and remove it while holding the body of the power supply with both hands.

5. Insert the new power supply into the slot, just before the "shield finger."
6. Wait at least 20 seconds, and then push the power supply gently until the latch clicks. If the latch does not click, reorient the power supply, and then reinsert it into the slot.
7. Connect the power cable to the power supply, and then secure the cable with the cable holder.
8. Confirm that the red **ALM/RDY** LED is off at the power supply and the green **ALM/RDY** LED is on.

If the red **ALM/RDY** LED does not go off after more than 30 minutes following replacement of the power supply, remove the power supply, wait at least 30 seconds, and then reinstall it.

Replacing a power supply for a CBLM or CBLH



Caution: Be sure to replace the faulty power supply. If you replace the operational power supply, the system will go down.



Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.



Note: Power supply unit #1 and power supply unit #2 are installed in opposite directions.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red **ALM** LED for the power supply unit to be replaced is on.

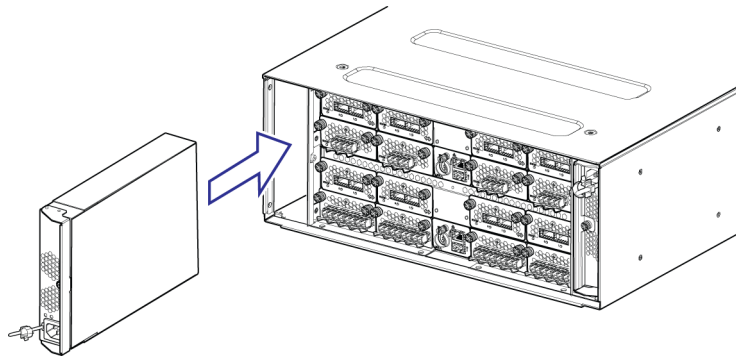


Note: If the red **ALM** LED is on at both power supplies, do not perform this procedure. Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

Procedure

1. Disconnect the power cable from the power supply to be replaced. Remove the cable holder to disconnect the power cable from the power supply.
2. Using a Phillips screwdriver, loosen the blue screw that secures the power supply.
3. Open the lever to remove the power supply.
When the lever is completely opened, the power supply moves forward.

4. Hold the power supply with both hands, and then pull it gently and remove it.



5. Hold up the latch on the cable holder of the new power supply to release the lock, and then slide the cable holder forward.
6. With the lever opened completely, insert the new power supply into the slot. Wait at least 20 seconds, and then insert the power supply all the way into the slot. If the power supply does not install all the way into the slot, reorient the power supply, and then reinsert it into the slot.
7. Close the lever completely.
8. Using a Phillips screwdriver, tighten the blue screw to secure the power supply.
9. Connect the power cable to the power supply, and then secure the cable using the cable holder.
10. Confirm that the red **ALM** LED is off at the power supply and the green **RDY** LED is on.

If the red **ALM** LED does not go off after more than 30 minutes following replacement of the power supply, remove the power supply, wait at least 30 seconds, and then reinstall it.

Checking DKCPS power supply unit connections

Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, click **Controller Chassis** to check the locations of the target power supply unit.
 - CBSS/CBSL:

Maintenance Utility HITACHI

Alert System Unlocked Logged in as: maintenance Log Out

Storage System Warning

Serial Number : 407001
Connected to : CTL2

Hardware

- All Chassis
- Controller Chassis**
- Drive Box - 01
- Drive Box - 02
- Drive Box - 03

Administration

Menu

- Initial Setup Wizard
- Power Management
- System Management

Controller Chassis

Last Updated : 2015/11/27 11:08

Front Back

Drives

CTLs CHBs BKMs CFMs PSS

Install Remove Block Stop Copy Selected: 0 / 15

Location	Slot	Status	Usage	Drive Type/RPM/Capacity	Drive Type-Code	Notification
HDD00-00	00	Normal	DATA	SAS/15 Krpm/200 GB	DKR2G-K200SS	
HDD00-01	01	Normal	Spare	SSD(MLC)/-/200 GB	SLB5B-M200SS	
HDD00-02	02	Normal	Free	SSD(FMD)/-/1.6 TB	NFH1A-P1R6SS	
HDD00-03	03	Normal	DATA	SSD(FMC)/-/1.6 TB	NFAE-Q1R6SS	
HDD00-04	04	Normal	DATA	SAS/15 Krpm/1.2 TB	DKB2G-K1R2SS	
HDD00-05	05	Normal	DATA	SAS/15 Krpm/1.5 TB	DKU2G-K1R5SS	
HDD00-06	06	Normal	DATA	SAS/15 Krpm/200 GB	DKH2G-K200SS	
HDD00-07	07	Normal	DATA	SAS/15 Krpm/200 GB	DKR2G-K200SS	
HDD00-08	08	Normal	DATA	SAS/15 Krpm/200 GB	DKR5G-K200SS	
HDD00-09	09	Normal	DATA	SAS/15 Krpm/200 GB	DKR1G-K200SS	
HDD00-10	10	Normal	DATA	SAS/15 Krpm/200 GB	DKR9G-K200SS	
HDD00-11	11	Normal	DATA	SAS/15 Krpm/200 GB	DKRAG-K200SS	
HDD00-12	12	Normal	Free	SAS/15 Krpm/200 GB	DKR2G-K200SS	
HDD00-13	13	Normal	DATA	SAS/15 Krpm/200 GB	DKR2A-K200SS	
HDD00-14	14	Normal	DATA	SAS/15 Krpm/200 GB	DKR2Z-K200SS	

- CBLM/CBLH:

Maintenance Utility HITACHI

Alert System Unlocked Logged in as: maintenance Log Out

Storage System Warning

Serial Number : 407001
Connected to : CTL2

Hardware

- All Chassis
- Controller Chassis**
- Drive Box - 00
- Drive Box - 01
- Drive Box - 02
- Drive Box - 03

Administration

Menu

- Initial Setup Wizard
- Power Management
- System Management

Controller Chassis

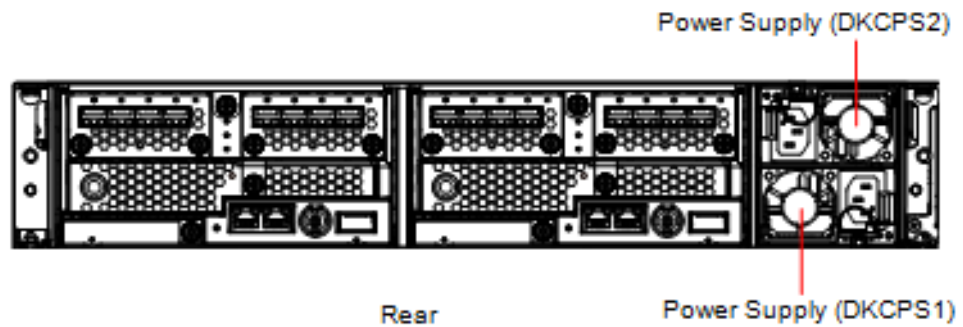
Last Updated : 2015/11/27 11:08

Front Back

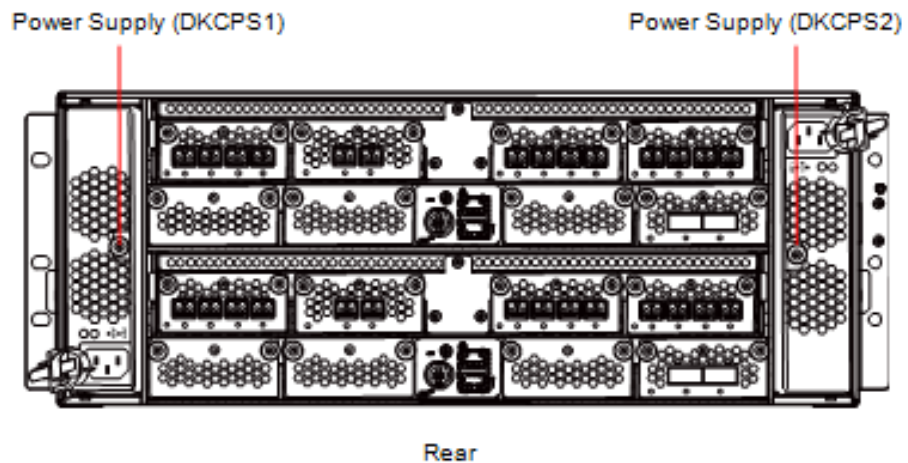
CTLs BKMFs CFMs CHBs DKBs LANBs PSS

Replace Replace (Type Change) Install Remove

CTL Status	CTL1	Normal
	CTL2	Normal
Battery Charge Remaining	CTL1	80%
	CTL2	80%
Cache Memory	Total Cache Size	128GB
	CTL1	CMG0 Status / Size Normal / 8GB x 4
		CMG1 Status / Size Normal / 8GB x 4
	CTL2	CMG0 Status / Size Normal / 8GB x 4
		CMG1 Status / Size Normal / 8GB x 4
Shared Memory Function	Base	Installed
	Extension1	Not Installed
	Extension2	Not Installed
	Extension3	Not Installed
	Extension4	Not Installed



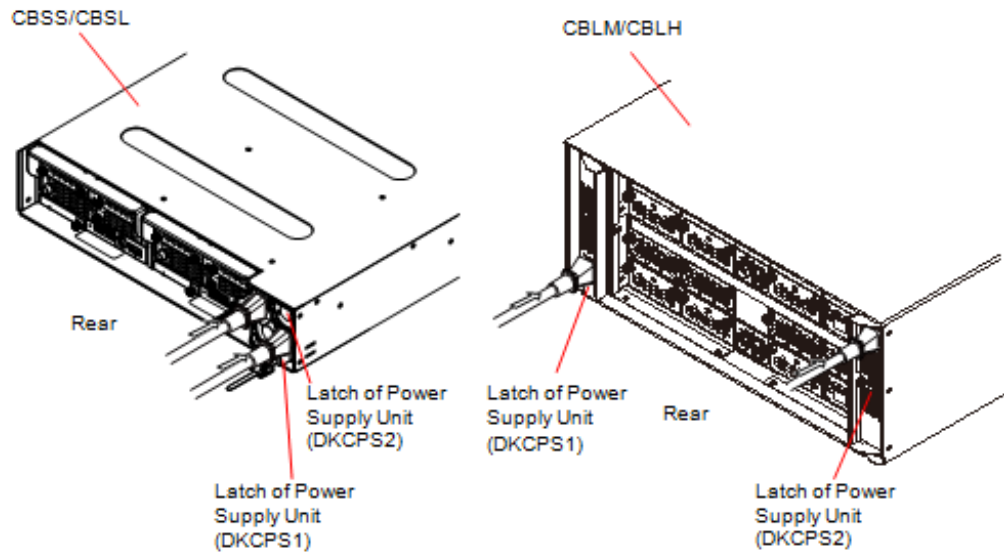
CBLM/CBLH power supply unit locations



Note: Check the target power supply units and power cables only. Do not touch other power supply units and power cables.

3. Check the connection of the target power supply units and power cables:
 - For the CBSS/CBSL, push the power supply units all the way into their slots and check that the latches are locked.

- For the CBLM/CBLH, push the power supply units all the way into their slots and tighten using the blue screws. If the power cables connected to the target power supply units are loose, push the plugs of the power cables into the sockets of the power supply units to connect the cables securely.



4. Log out of the maintenance utility to close the window.

Replacing a power supply for SFF and LFF drive trays



Caution: Be sure to replace the faulty power supply. If you replace the operational power supply, the system will go down.



Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.



Note: Power supply unit #1 and power supply unit #2 are installed in opposite directions.

Before you begin

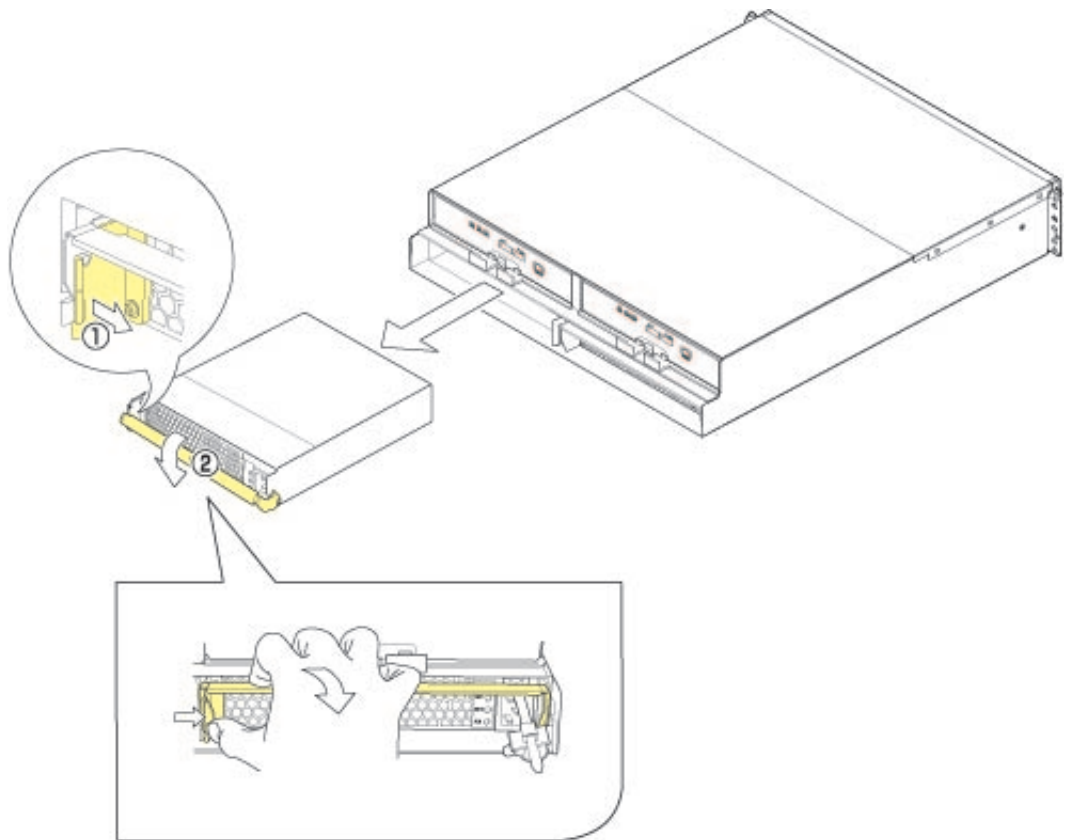
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red **ALM** LED for the power supply unit to be replaced is on.



Note: If the red ALM LED is on at both power supplies, do not perform this procedure, even if the status of the power supplies is Normal. Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

Procedure

1. Disconnect the power cable from the power supply to be replaced. Remove the cable holder to disconnect the power cable from the power supply.
2. Pull the lever open while pressing the latch on the power supply inward with your right thumb. When the lever is completely opened, the power supply moves forward.



3. Hold the power supply with both hands, and then pull it gently and remove it.
4. With the lever opened completely, insert the new power supply into the slot.
Wait at least 20 seconds, and then insert the power supply all the way into the slot.

5. Close the lever completely and secure the power supply. If the lever cannot be moved, reorient the power supply, and then reinsert it into the slot.
6. Connect the power cable to the power supply, and then secure the cable using the cable holder.
7. Confirm that the red **ALM** LED is off at the power supply and the green **RDY** LED is on.



Note: If the **ALM** LED is on and the status of the power supply is Normal, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

If the red **ALM** LED does not go off after more than 30 minutes following replacement of the power supply, remove the power supply, wait at least 30 seconds, and then reinstall it.

Replacing a power supply for a FMD drive tray



Caution: Be sure to replace the faulty power supply. If you replace the operational power supply, the system will go down.



Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.



Note: Power supply unit #1 and power supply unit #2 are installed in opposite directions.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red **ALM** LED for the power supply unit to be replaced is on.

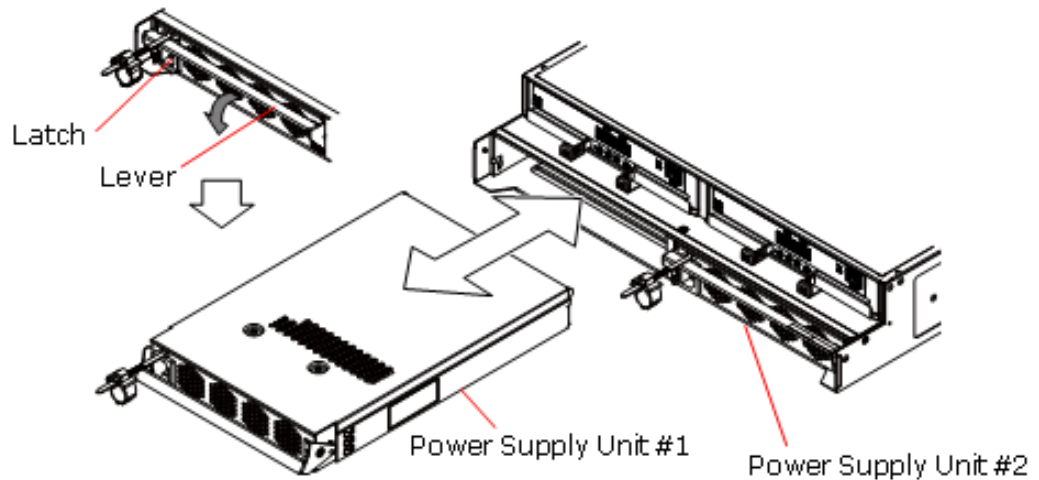


Note: If the red **ALM** LED is on at both power supplies, do not perform this procedure, even if the status of the power supplies is **Normal**. Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

Procedure

1. Disconnect the power cable from the power supply to be replaced. Remove the cable holder to disconnect the power cable from the power supply.

2. Pull the lever open while pressing the latch on the power supply inward with your right thumb. When the lever is completely opened, the power supply moves forward.



3. Hold the power supply with both hands, and then pull it gently and remove it.
4. With the lever opened completely, insert the new power supply into the slot. Wait at least 20 seconds, and then insert the power supply all the way into the slot.
5. Close the lever completely and secure the power supply. If the lever cannot be moved, reorient the power supply, and then reinsert it into the slot.
6. Connect the power cable to the power supply, and then secure the cable using the cable holder.
7. Confirm that the red **ALM** LED is off at the power supply and the green **RDY** LED is on.



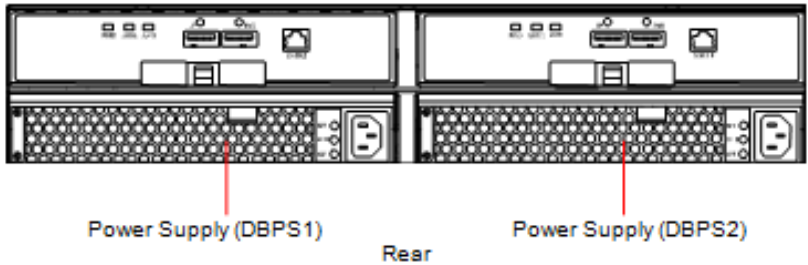
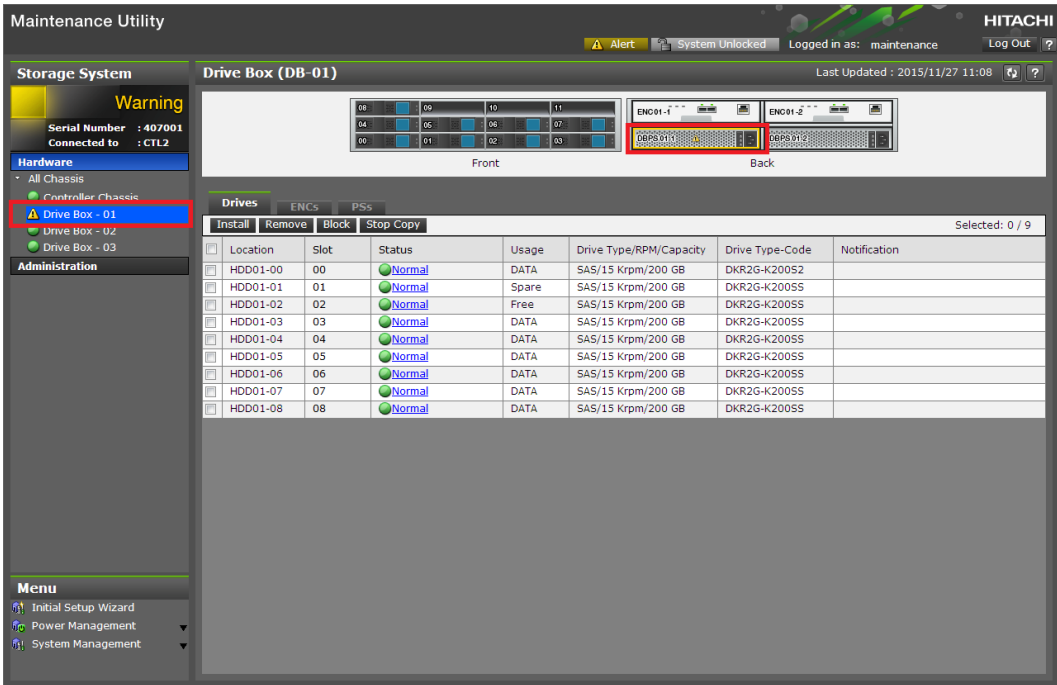
Note: If the **ALM** LED is on and the status of the power supply is Normal, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

If the red **ALM** LED does not go off after more than 30 minutes following replacement of the power supply, remove the power supply, wait at least 30 seconds, and then reinstall it.

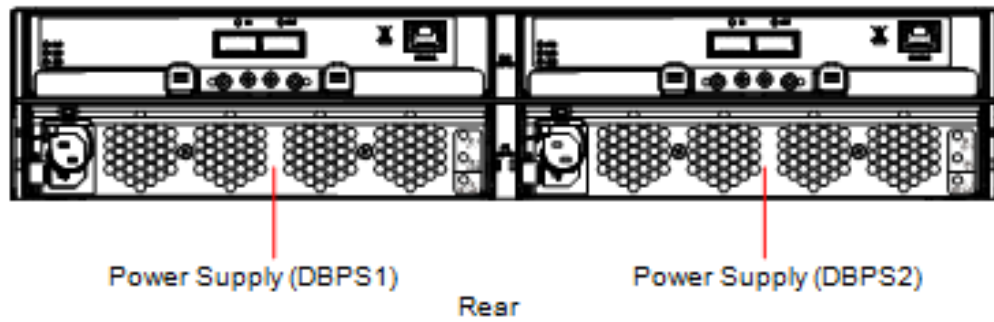
Checking DBPS power supply unit connections

Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the maintenance utility, click **Drive Box** to check the locations of the target power supply units.

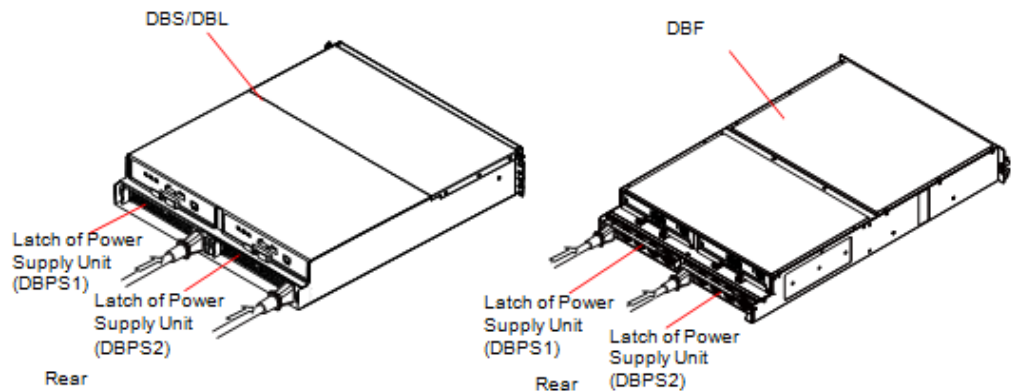


CBLM/CBLH power supply unit locations



Note: Check the target power supply units and power cables only. Do not touch other power supply units and power cables.

3. Check the connection of the target power supply units and power cables:
 - For the CBSS/CBSL, push the power supply units all the way into their slots and check that the latches are locked.
 - For the CBLM/CBLH, push the power supply units all the way into their slots and tighten using the blue screws. If the power cables connected to the target power supply units are loose, push the plugs of the power cables into the sockets of the power supply units to connect the cables securely.



4. Log out of maintenance utility to close the window.

Confirming the power supply unit status

Procedure

1. Click **Hardware > Controller Chassis** or **Hardware > Drive Box**.
2. In the **Controller Chassis** or **Drive Box** window, click the **PSs** tab.

3. In the **PSs** tab in the **Maintenance Utility** window, confirm that the status of the power supply unit changed to **Normal**.
If necessary, click **Refresh** at the top-right of the window to update the status in the window.
4. Log out and close the **Maintenance Utility** window.

Replacing a power supply for a host port expansion chassis



Caution: Be sure to replace the faulty power supply. If you replace the operational power supply, the system will go down.



Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.



Note: Power supply unit #1 and power supply unit #2 are installed in opposite directions.

Before you begin

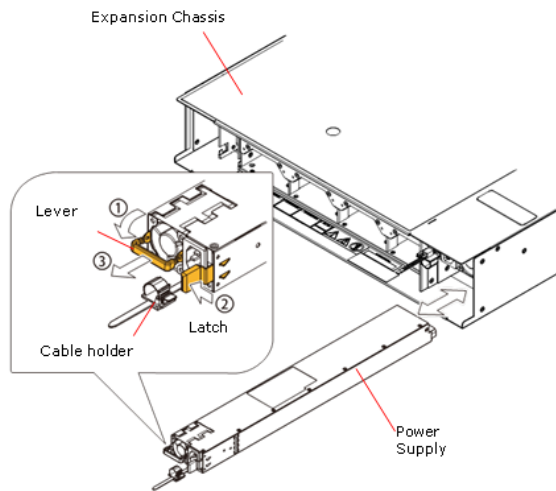
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red **ALM** LED for the power supply unit to be replaced is on.



Note: If the red **ALM/RDY** LED is on at both power supplies, do not perform this procedure. Go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

Procedure

1. Disconnect the power cable from the power supply to be replaced. Remove the cable holder to disconnect the power cable from the power supply.
2. Hold up the latch on the cable holder of the power supply to release the lock, and then slide the cable holder forward.
3. Pull the lever open (1) while pressing the latch on the power supply inward with right thumb (2). When the lever is opened completely, the power supply moves forward.
4. Hold the body of the power supply with both hands (3), and then remove it.



5. Wait at least 30 seconds, and then insert the new power supply, just before the "shield finger."
6. Push the power supply into the unit gently until the power supply latch clicks.
7. Connect the power cable to the power supply, and then secure the cable by the cable holder
8. Confirm that the red ALM/RDY LED is off at the power supply and the green ALM/RDY LED is on.

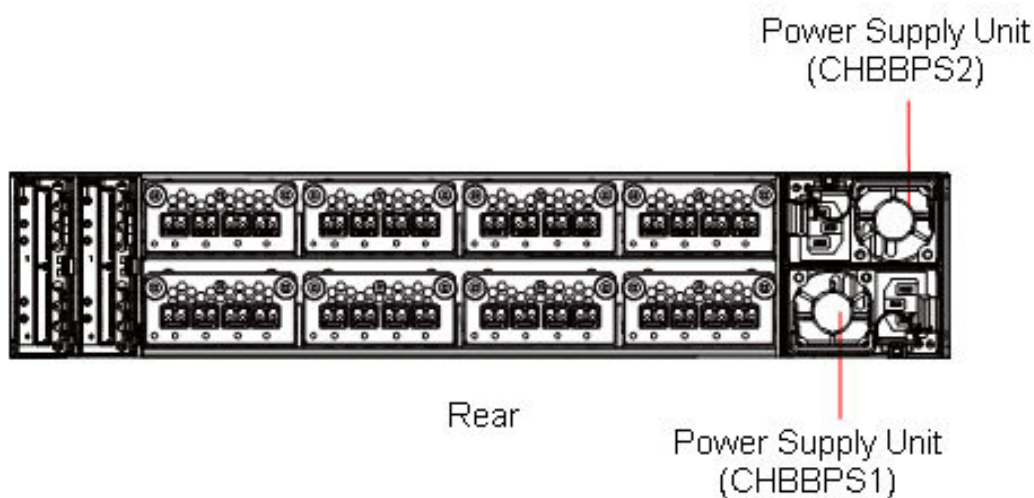
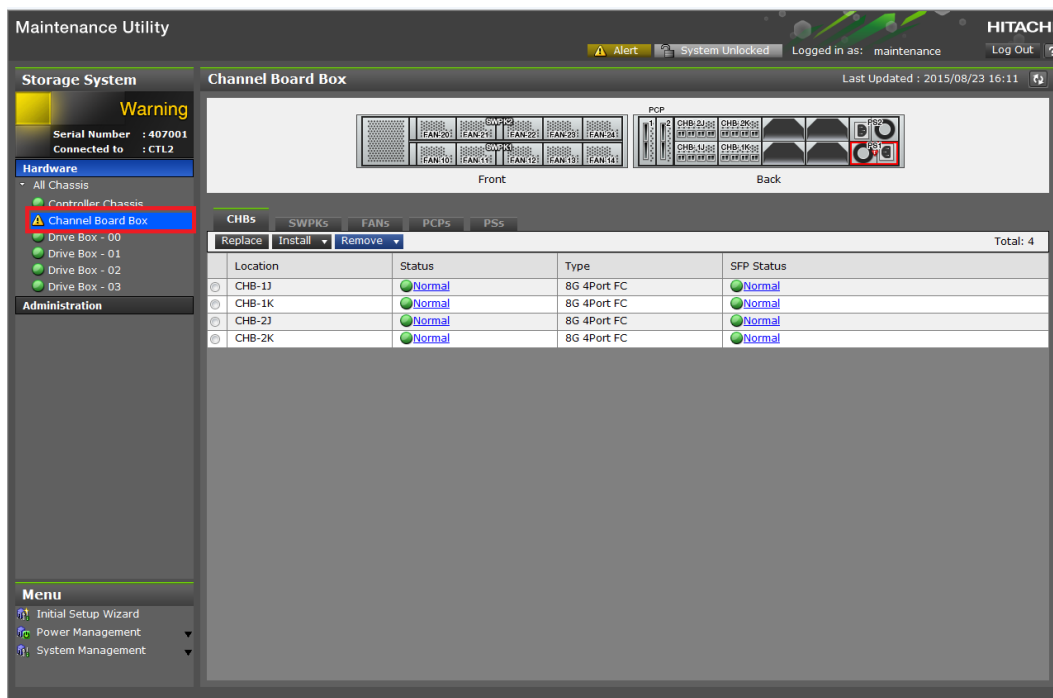
If the red ALM/RDY LED does not go off after more than 30 minutes following replacement of the power supply, remove the power supply, wait at least 30 seconds, and then reinstall it.

Checking the power supply connections on a host port expansion chassis

Using the following procedure, you can check the power supply connection on a host port expansion chassis.

Procedure

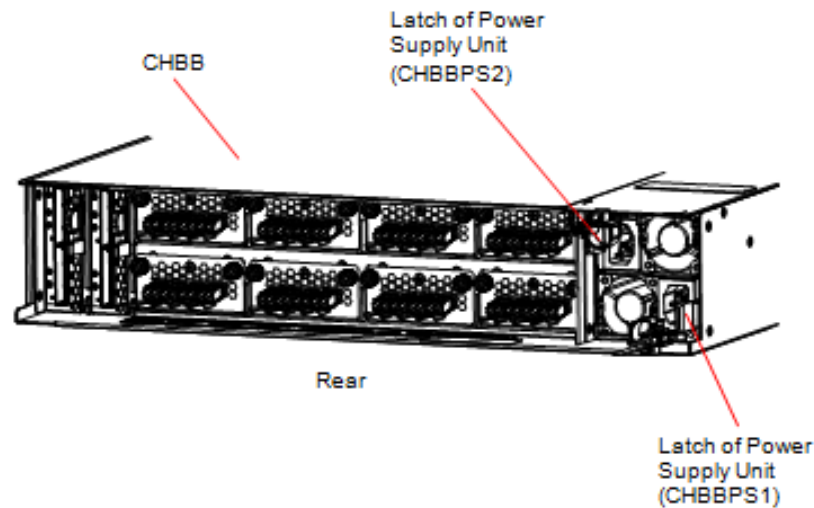
1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, under **Hardware**, click **Channel Board Box** to check the location of the power supply unit on the host port expansion chassis fan (CHBBFAN).



3. Check the connection of the power supply unit and power cable. Push the power supply unit all the way in, and then confirm that the latch is locked and secure. If the power cable not connected to the power supply unit securely, push the plug on the power cable into the socket on the power supply unit and confirm that the connection is secure.



Note: Check the target power supply units and power cables only.
Do not touch other power supply units and power cables.



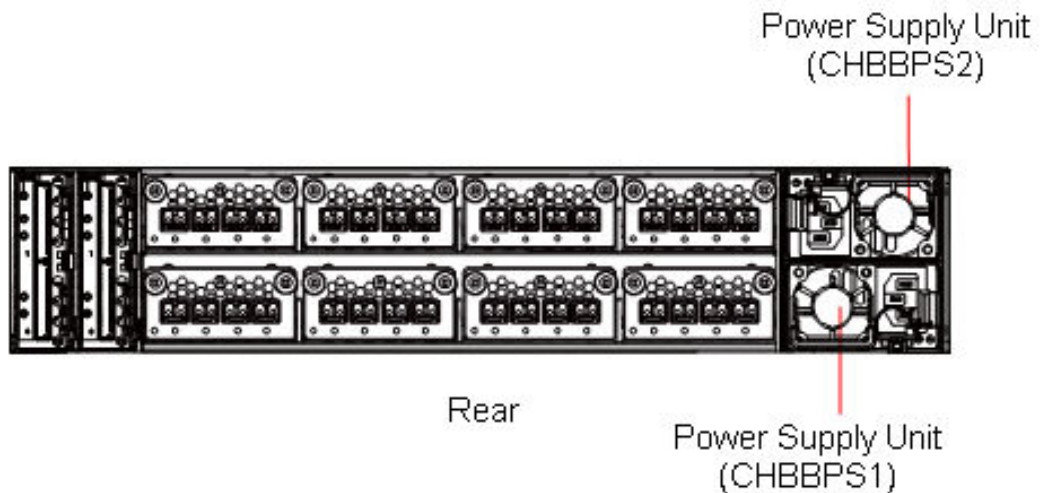
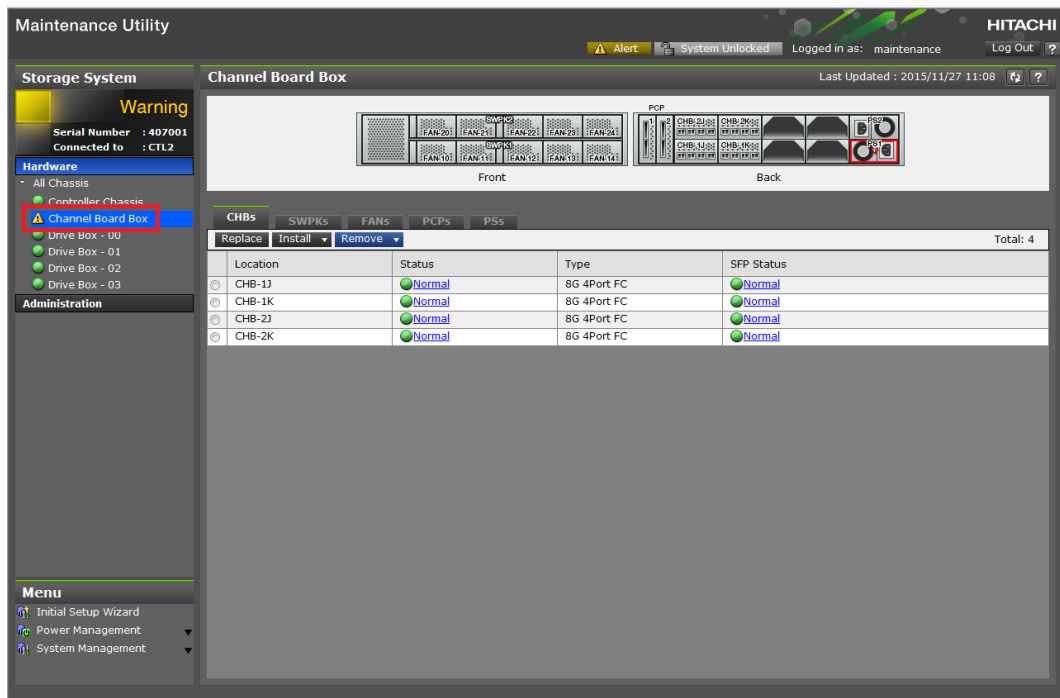
4. Log out and close the **Maintenance Utility** window.

Checking power cable connections on a host port expansion chassis


Using the following procedure, you can check whether the power cable on a host port expansion chassis is loose or secure.

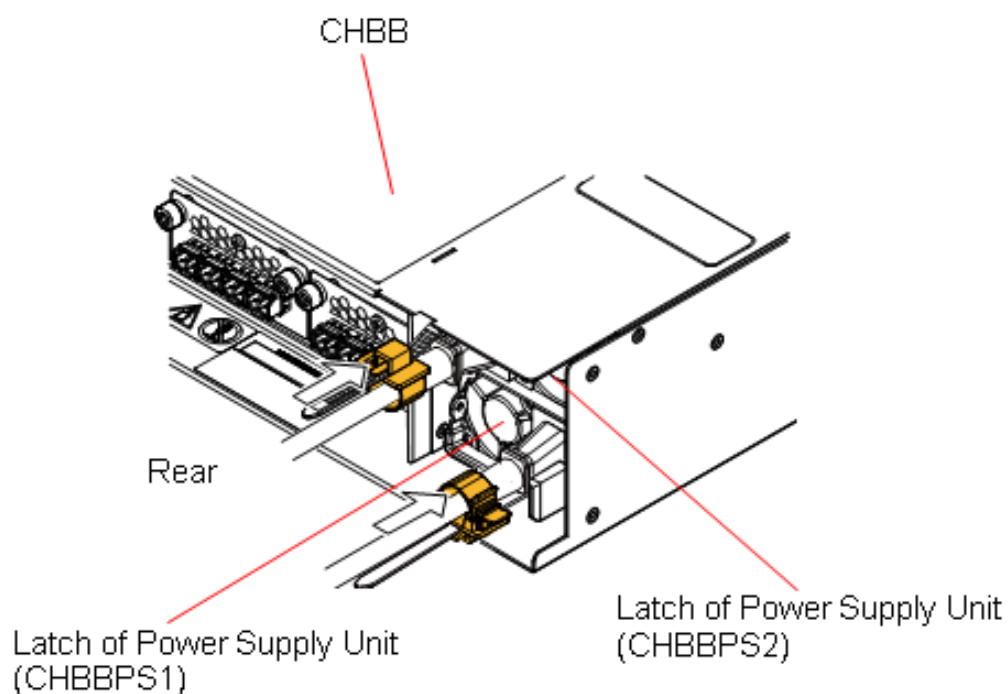
Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, under **Hardware**, click **Channel Board Box** to check the location of the power supply unit on the host port expansion chassis fan (CHBBFAN).



3. Check the connection of the power supply unit and power cable. Push the power supply unit all the way in, and then confirm that the latch is locked and secure. If the power cable not connected to the power supply unit securely, push the plug on the power cable into the socket on the power supply unit and confirm that the connection is secure.

 **Note:** Check the target power supply units and power cables only.
Do not touch other power supply units and power cables.



4. Log out and close the **Maintenance Utility** window.

Replacing a controller

Before replacing a controller, read the precautions and understand the procedure for your controller.



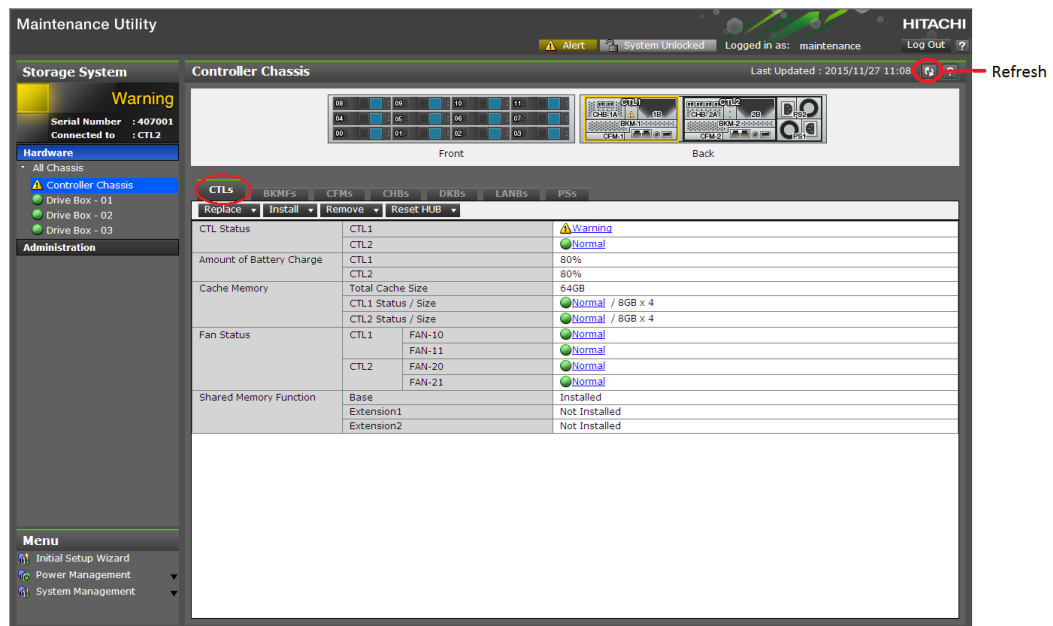
Note: If replacing a controller on a CBSS or CBSL, pay close attention to whether you need to replace the non-encrypting controller or the controller that supports encryption.

- ☐ [Blocking the controller](#)
- ☐ [Replacing a controller for a CBSS or CBSL controller](#)
- ☐ [Replacing a CBLM or CBLH controller](#)
- ☐ [Restoring a controller](#)

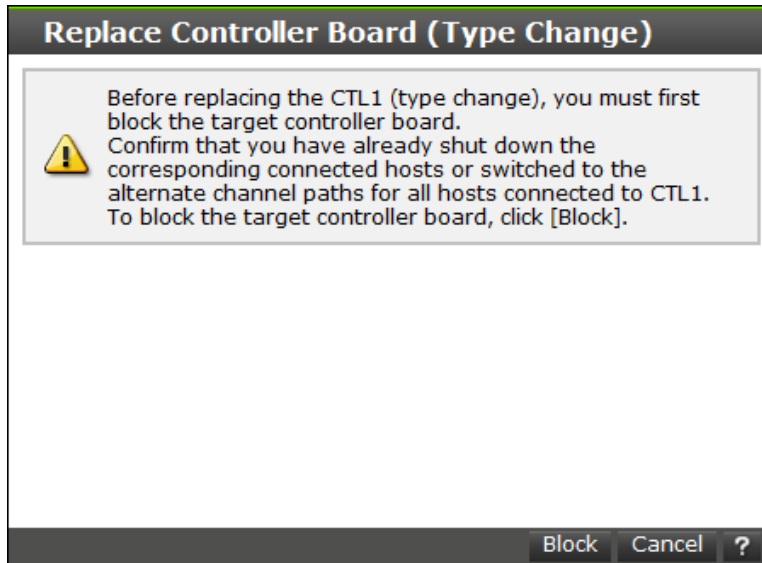
Blocking the controller

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **CTLs** tab.
4. To display the most recent status of the controller, click **Refresh**.

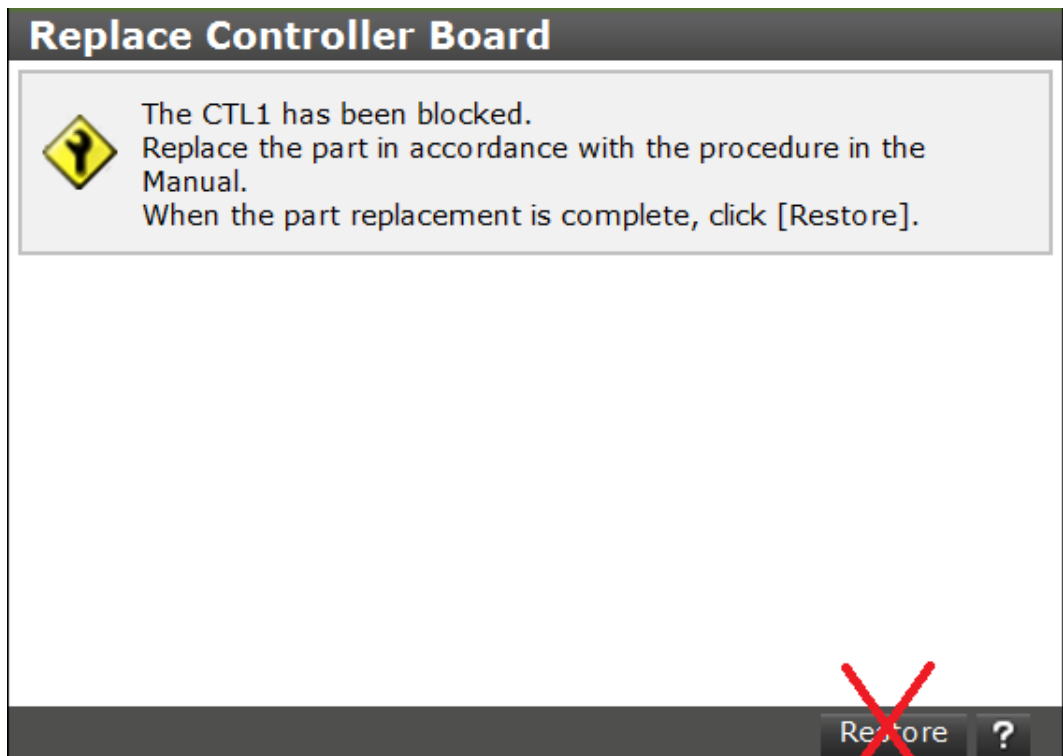


5. Confirm the status of the controller to be replaced is **Warning** or **Failed**.
6. Click **Replace (Type Change)** and select the controller you want to replace.
7. When the **Replace Controller Board (Type Change)** window opens, verify the controller shown in the window is the one to be replaced, and then click **Block**.



8. Check the controller is blocked and becomes ready for replacing. Leave the **Replace Controller Board (Type Change)** window open, but do not click the **Restore** button.

If the Controller Board block fails, click **Close** on the completion message. Then click the **CTLs** tab on the **Controller Chassis** window and check the Controller Board status.





Note: Do not click **Restore** at this time.

Replacing a controller for a CBSS or CBSL controller

When you replace a CBSS or CBSL controller, you will have to install the following components on the new controller:

- Fan
- Cache memory
- Front end module
- Cache flash memory
- Backup module

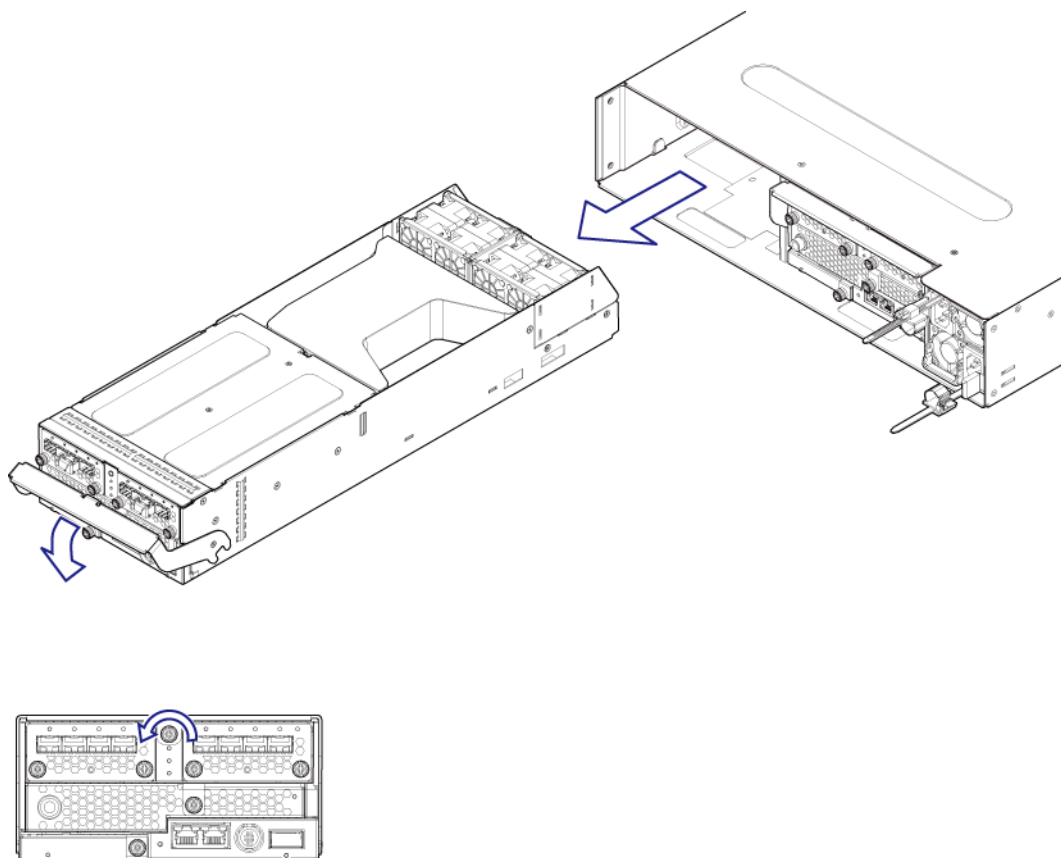
Removing the controller

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the controller.
- Confirm that the storage system power is turned on.
- Confirm that the red `CTL ALARM` LED for the controller to be replaced is on.

Procedure

1. Remove all cables connected to the controller.
2. Loosen the blue screw that secures the controller, and then open the lever.



3. Hold the controller with both hands, and then pull it gently in a straight direction and remove it.
Keep the controller straight to avoid jostling the components above and below it.
4. Install the fan, cache memory, front end module, and CFM on the new controller.

Next steps

- Install the controller.
- Use the maintenance utility to restore (unblock) the controller.

Removing and installing the fan



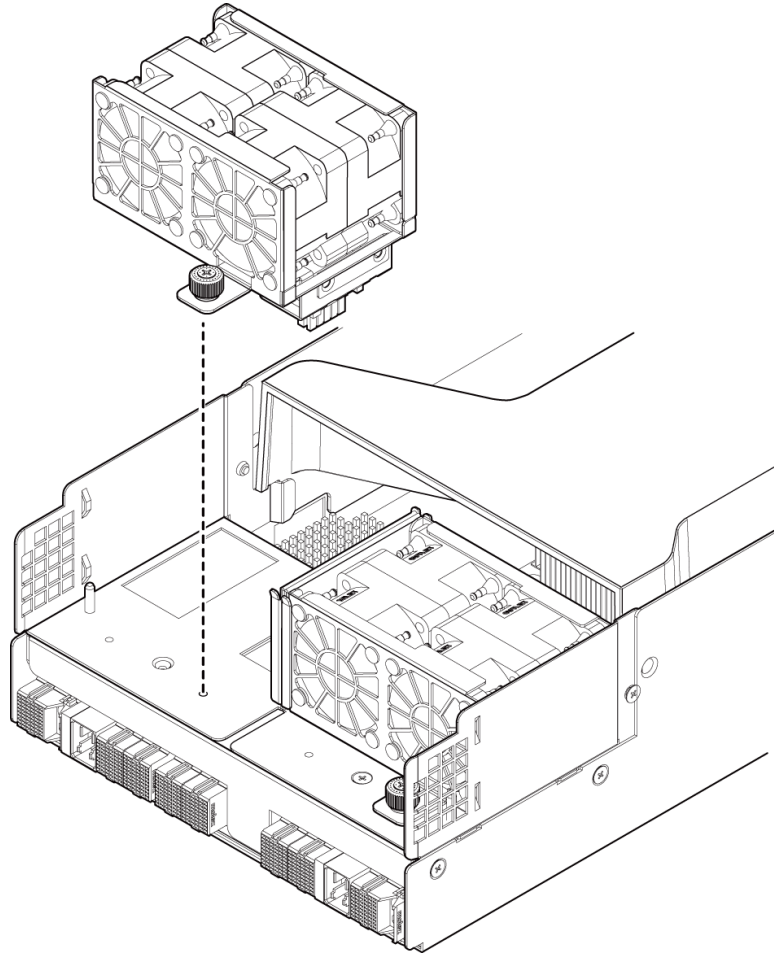
Caution: Storage system fans rotate at high speed. Exercise extreme caution to avoid getting anything caught in the fan and to prevent injury.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- The controller must be removed from the storage system.

Procedure

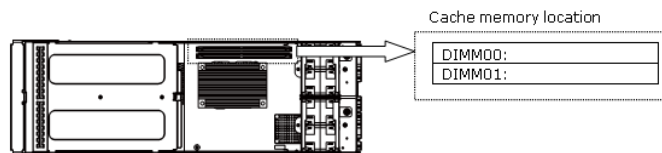
1. Loosen the blue screw that secures the fan.
2. Lift the fan and remove it from the connector.
3. Install the fan into the connector of the new controller.
4. Tighten the blue screw to secure the fan.



Removing and installing cache memory

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.

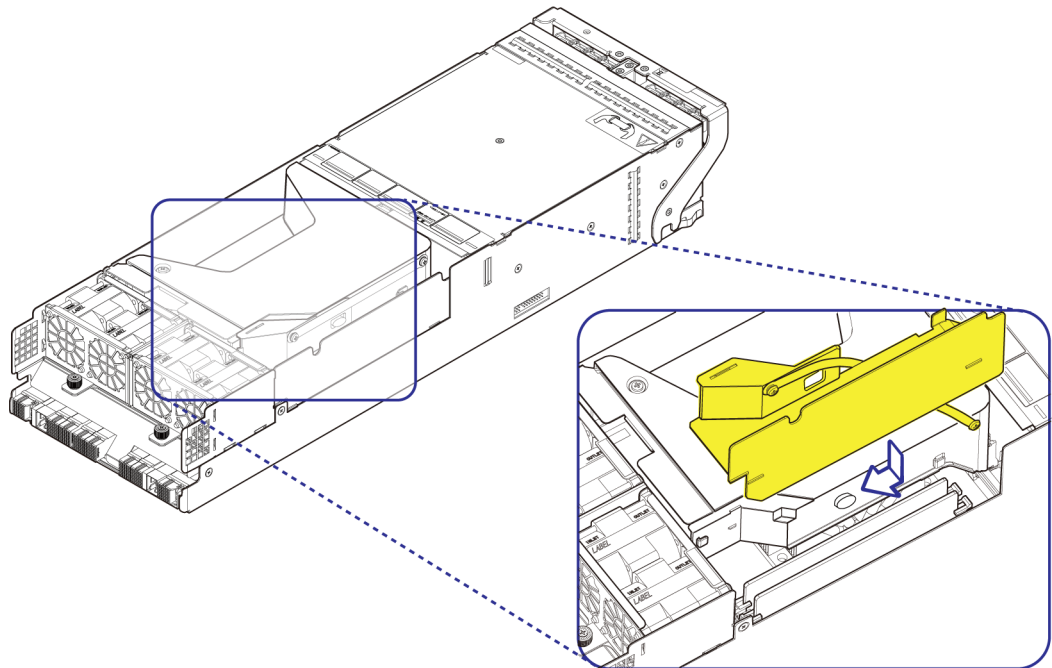


Procedure

1. Press the button, and then slide the dual in-line memory module (DIMM) cover in the direction of the arrow and remove the DIMM cover from the hooks on either side.
2. Lift the DIMM cover gently to remove it.



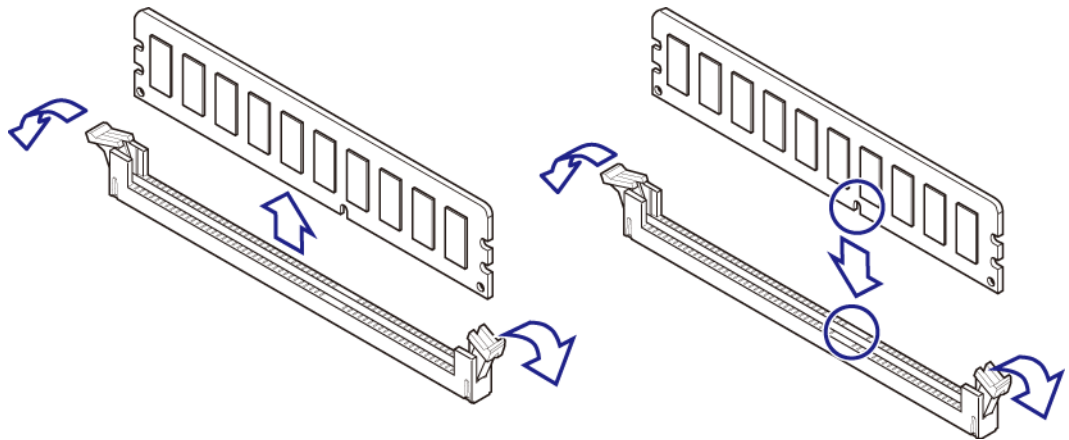
Note: The DIMM cover has a band that can be damaged easily. Exercise care when removing the DIMM cover.



3. Pull the lever outward.
4. Hold both ends of the cache memory, and then gently pull out the cache memory from the socket.



Note: Do not exert pressure on the cache memory. Otherwise, you can damage the printed circuit board.



5. Align the notch on the cache memory board with the projection inside the slot.
6. Holding both ends of the cache memory, insert it into the socket.
7. Confirm that the lever is securing the cache memory.
8. To install the DIMM cover, slide it in the direction of the arrow. Confirm that the DIMM cover is secured by the two hooks on either side.

Next steps

- Install the controller.
- Use the maintenance utility to restore (unblock) the controller.

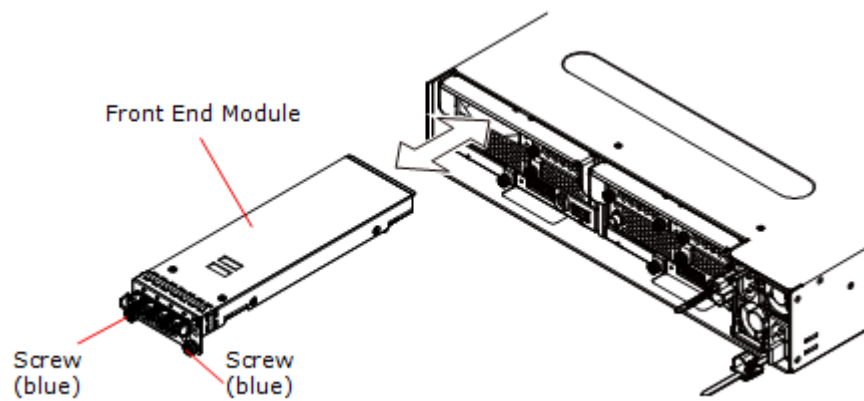
Removing and installing a front end module

Before you begin

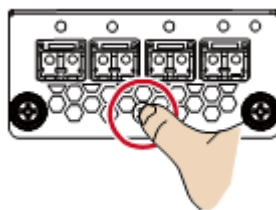
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the controller.
- Remove the controller.

Procedure

1. Loosen the two blue screws that secure the front end module.
2. Using the blue screw, pull out the front end module in a straight direction and remove.



3. Connect the optical cable to the new front end module.
4. Insert the front end module into the slot of the new controller.
5. Push the front of the front end module until the module is inserted all the way into the slot.



6. Tighten the two blue screws to secure the front end module.

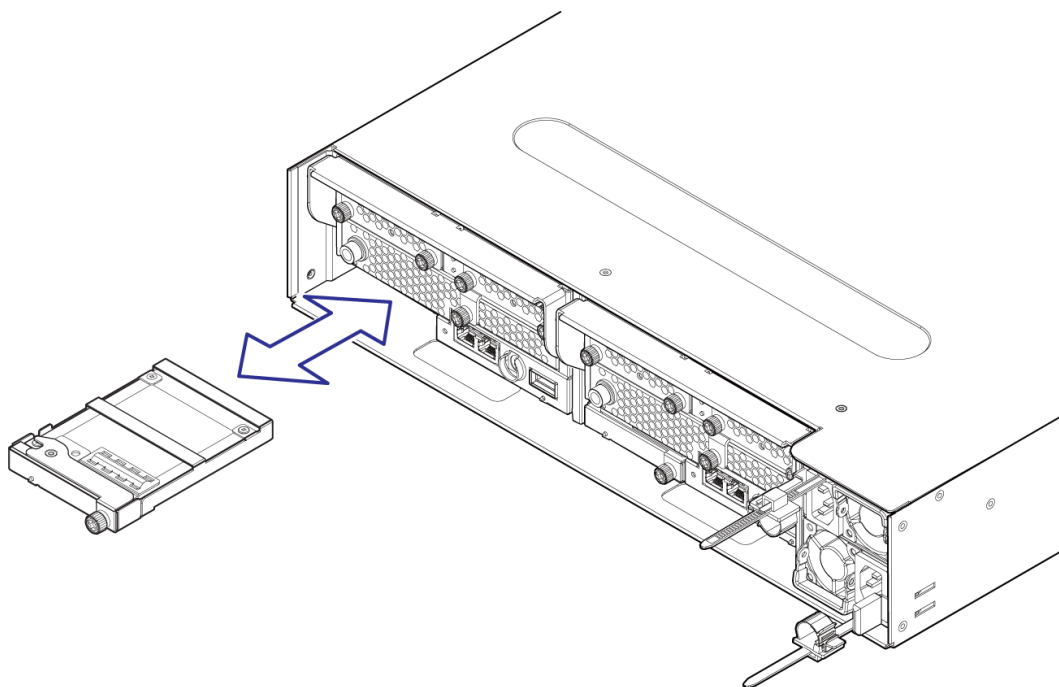
Removing and installing cache flash memory

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the controller.
- The controller must be removed from the storage system.

Procedure

1. Loosen the blue screw that secures the cache flash memory (CFM).
2. Open the lever.
3. Using both hands, hold the body of the CFM and remove it.



4. With the lever opened completely, insert the CFM into the slot.
5. Push the CFM all the way into the slot.
6. Close the lever completely.
7. Tighten the blue screw to secure the CFM.

Next steps

- Once all parts are installed on the controller, install it in the storage system.
- Use the maintenance utility to restore (unblock) the controller.

Removing and installing the backup module

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- The controller must be removed from the storage system.

Procedure

1. Loosen the blue screw that secures the backup module.
2. Open the lever, and then use both hands to remove the backup module.
3. With the backup module lever opened, insert the backup module into the slot of the new controller.
4. Close the backup module lever and tighten the blue screw.

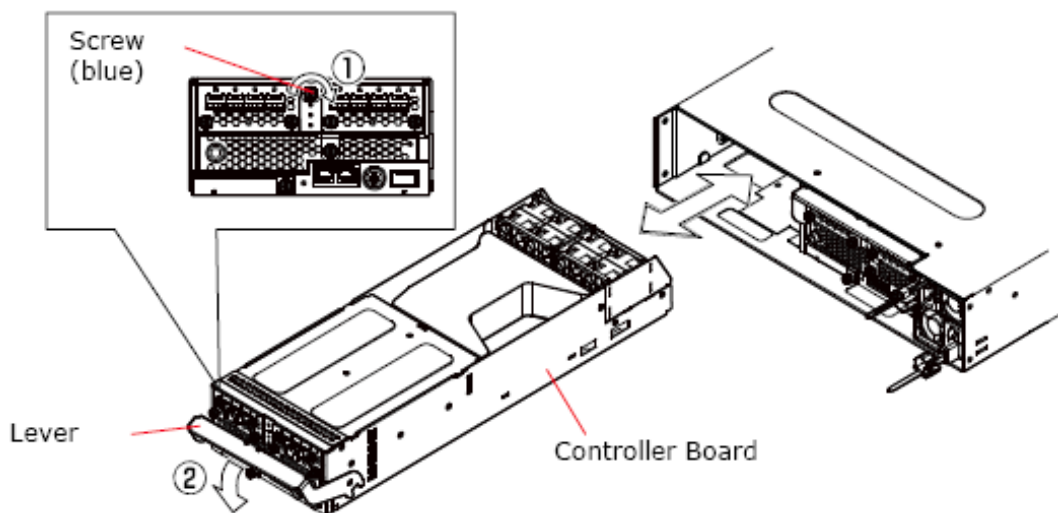
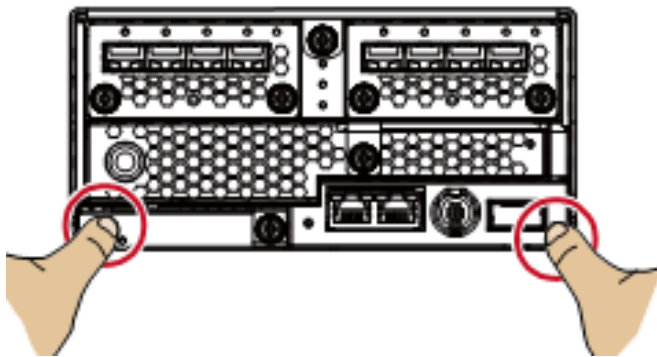
Installing a controller

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Complete the installation of all components from the old controller.

Procedure

1. With the right and left levers of the new controller open completely, insert it into the slot of CBSS or CBSL.
2. Push the bottom-front of the controller all the way into the slot. Stop pushing when the right and left levers close completely.



3. Tighten the blue screw to secure the controller.

4. Confirm that the red CTL ALM LED on the controller is off.
5. Connect all the cables you removed.

Replacing a CBLM or CBLH controller

When you replace a CBLM or CBLH controller, you will have to install the following components on the new controller:

- Cache memory
- Cache flash memory
- Backup module

You must remove the backup module first, and then remove the controller.

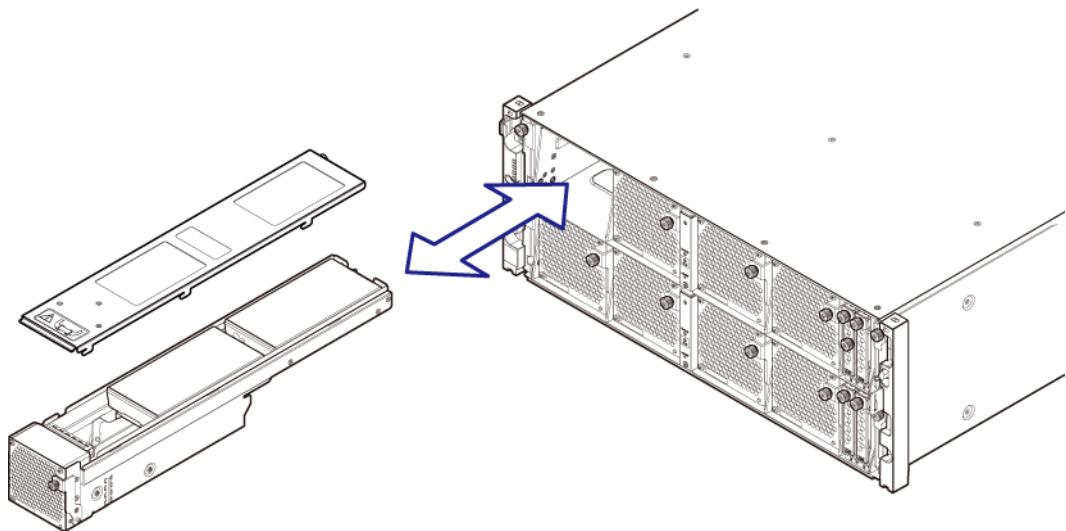
Removing a CBLM or CBLH controller

Before you begin

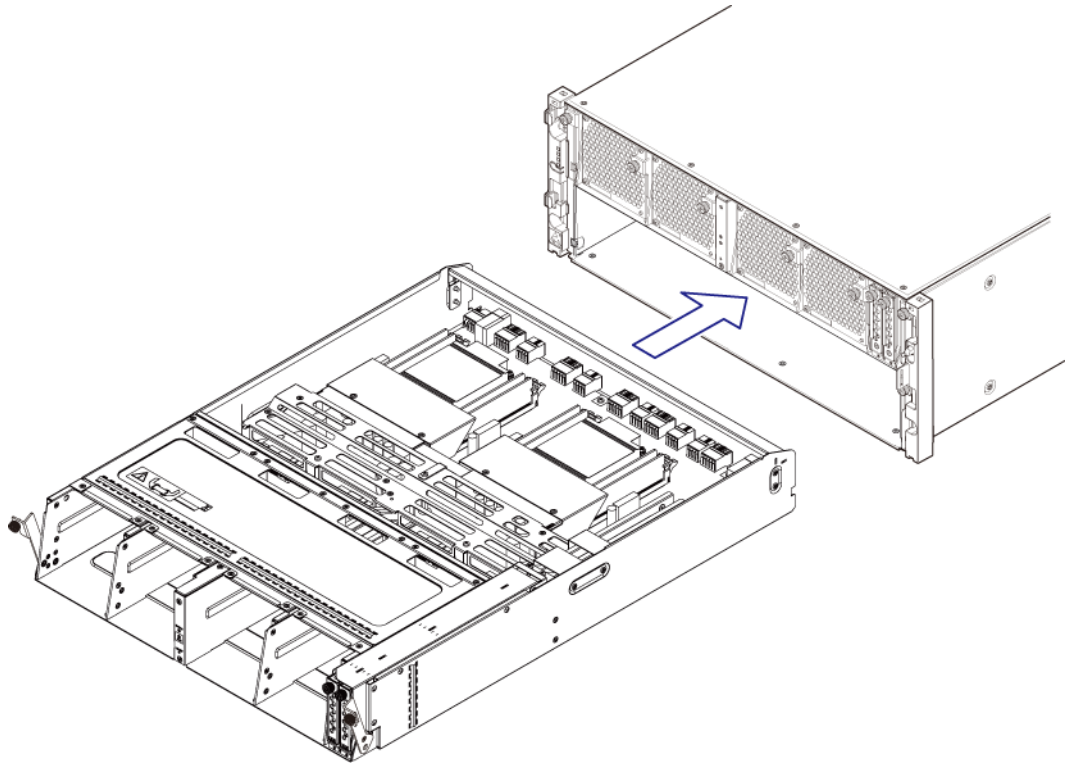
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Use the maintenance utility to block the controller.
- Confirm that the red CTL ALARM LED for the controller to be replaced is on.

Procedure

1. Loosen the right and left blue screws on the lever of the controller in the front of the CBLM or CBLH controller, and then open the lever.
2. Loosen the blue screw securing the backup module (BKMF).
3. Pull out and remove the BKMF.



4. Remove all four BKMf modules installed in the controller.
 5. Loosen the blue right and left screws on the lever of the controller, and then open the lever.
 6. With the lever opened completely, hold the controller with both hands, and then pull it gently and remove it.
- Keep the controller straight to avoid jostling the components above and below it.



Next steps

- Install the backup module (BKMf) in the new controller.
- Install the cache memory on the new controller.
- Install the cache flash memory on the new controller.
- Use the maintenance utility to restore (unblock) the controller.



Note: If the `POWER`, `READY`, `WARNING`, and `ALARM` LEDs on the front of the CBLM/CBLH go off after removing the controller, check the status of the storage system in the **Maintenance Utility** window, and then continue the replacement work. After restoring the controller (described later), confirm that the LED goes on.

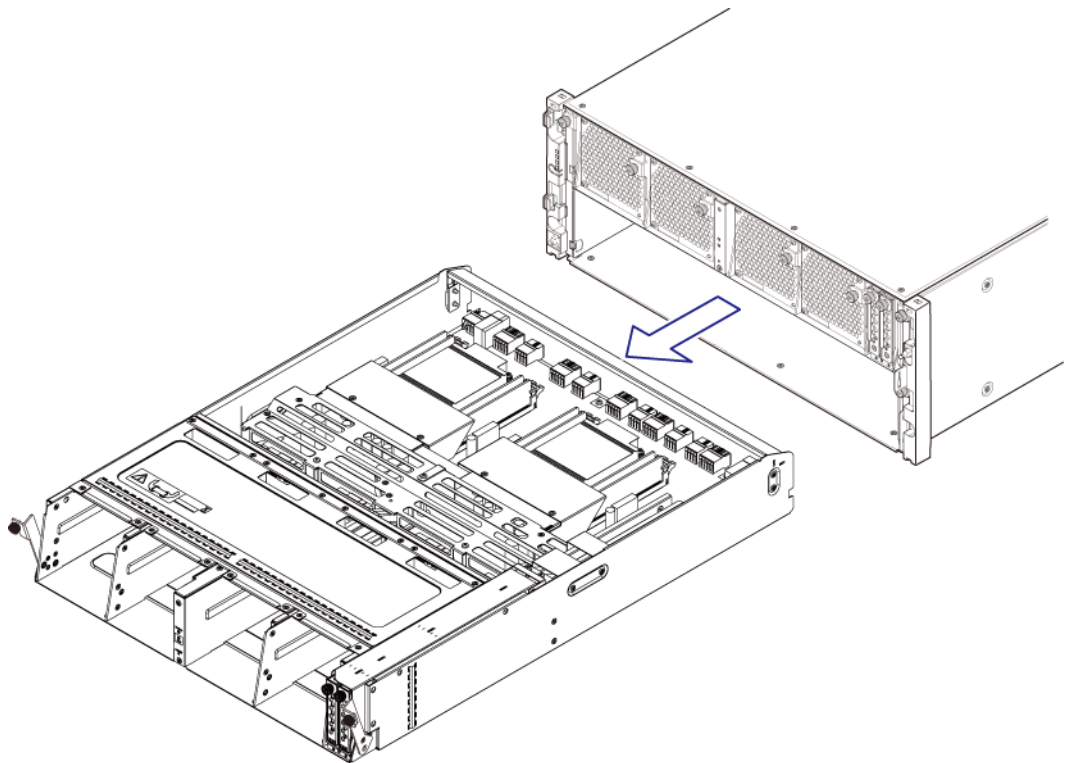
Removing and installing cache memory

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- The controller is removed from the storage system.

Procedure

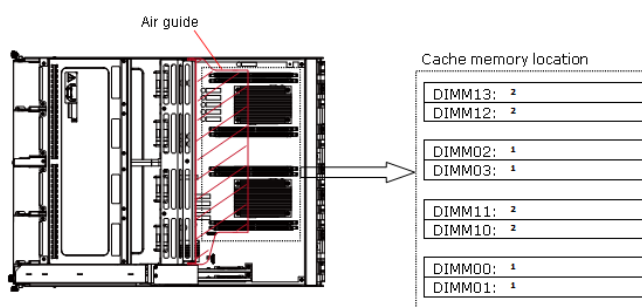
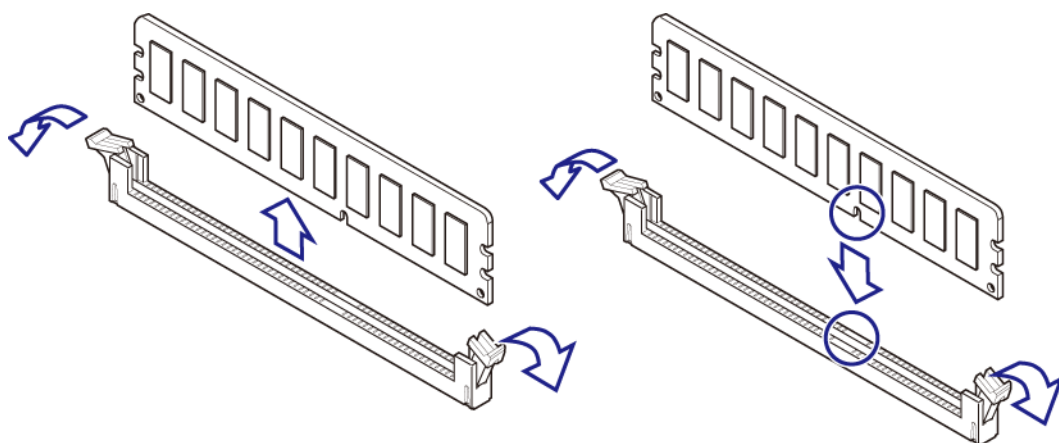
1. Open the air guide.



2. Pull the lever outward.
3. Holding both ends of the cache memory, pull out the cache memory from the socket.



Note: Do not exert pressure on the cache memory. Otherwise, you can damage the printed-circuit board.



Note: DIMMs are installed in sets of four. There are two groups of cache memory DIMM slots: CMG0 and CMG1. Populate the CMG0 slots first, and then populate the CMG1 slots if necessary.

4. Align the notch on the cache memory board with the projection inside the slot.
5. Holding both ends of the cache memory, insert it into the socket of the new controller.
6. Check that the lever is securing the cache memory.
7. Close the air guide.

Next steps

- Once all components are installed on the controller, install the controller in the storage system.
- Use the maintenance utility to restore (unblock) the controller.

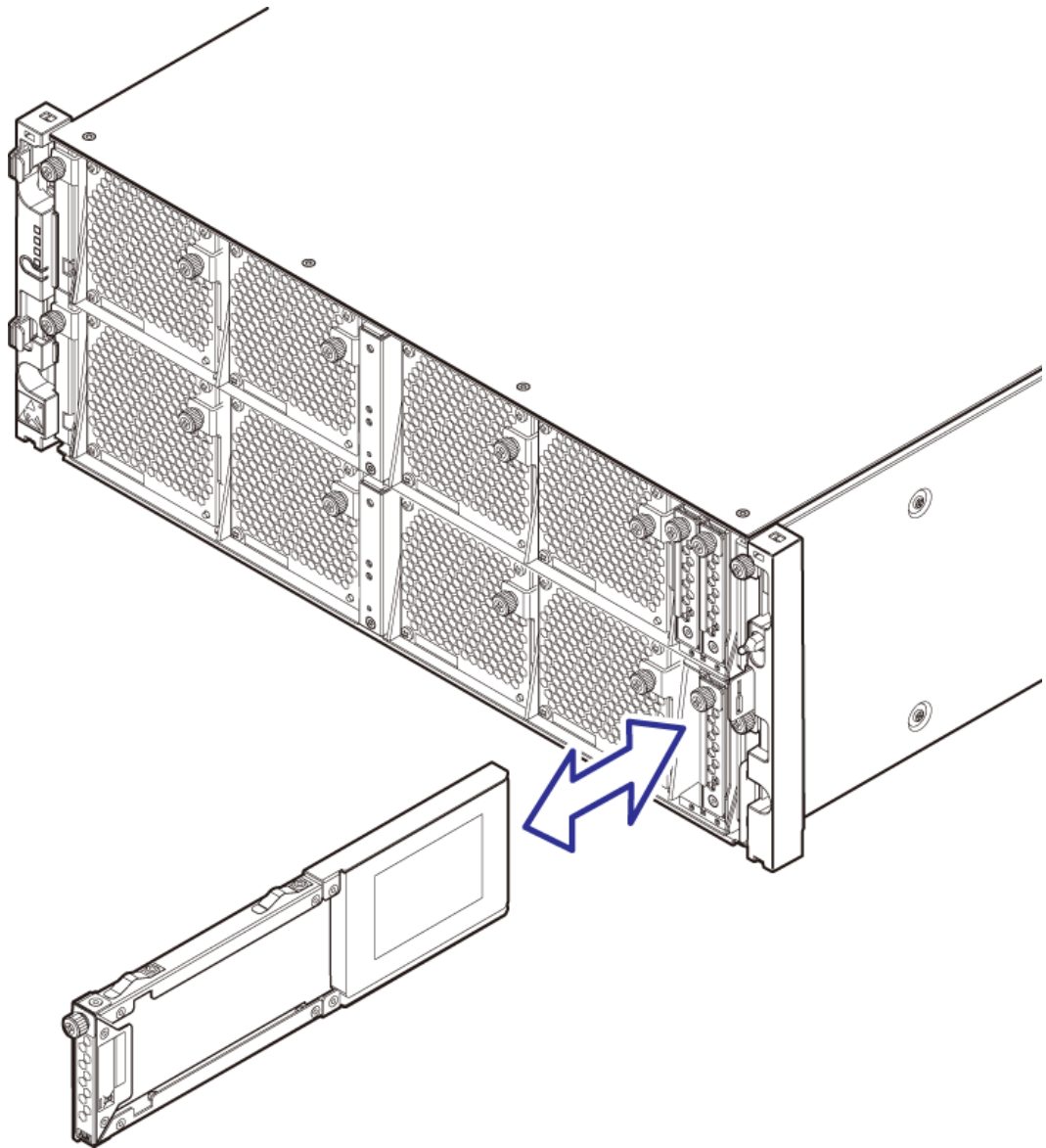
Removing and installing cache flash memory for a CBLM or CBLH controller

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- The controller must be removed from the storage system.

Procedure

1. Loosen the blue screw that secures the cache flash memory (CFM).
2. Open the lever.
3. Using both hands, hold the body of the CFM and remove it.



4. With the lever opened completely, insert the CFM into the slot.
5. Push the CFM all the way into the slot.
6. Tighten the blue screw to secure the CFM.

Next steps

- Once all parts are installed on the controller, install it in the storage system.
- Use the maintenance utility to restore (unblock) the controller.

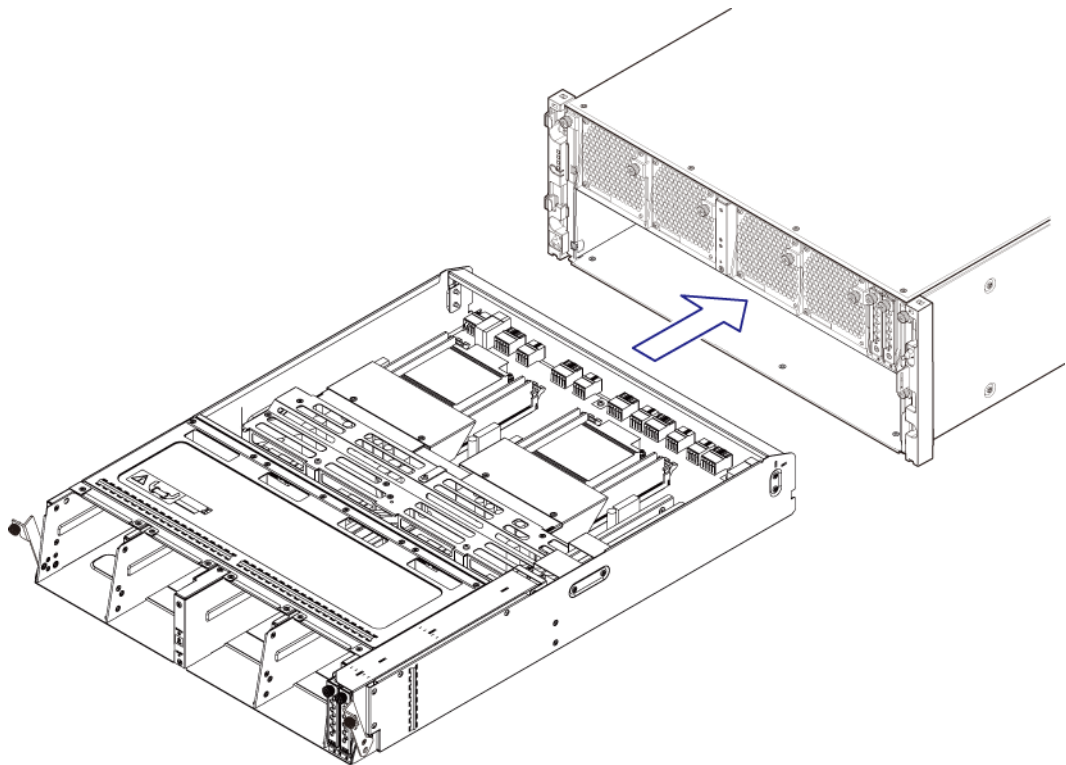
Installing a CBLM CBLH controller

Before you begin

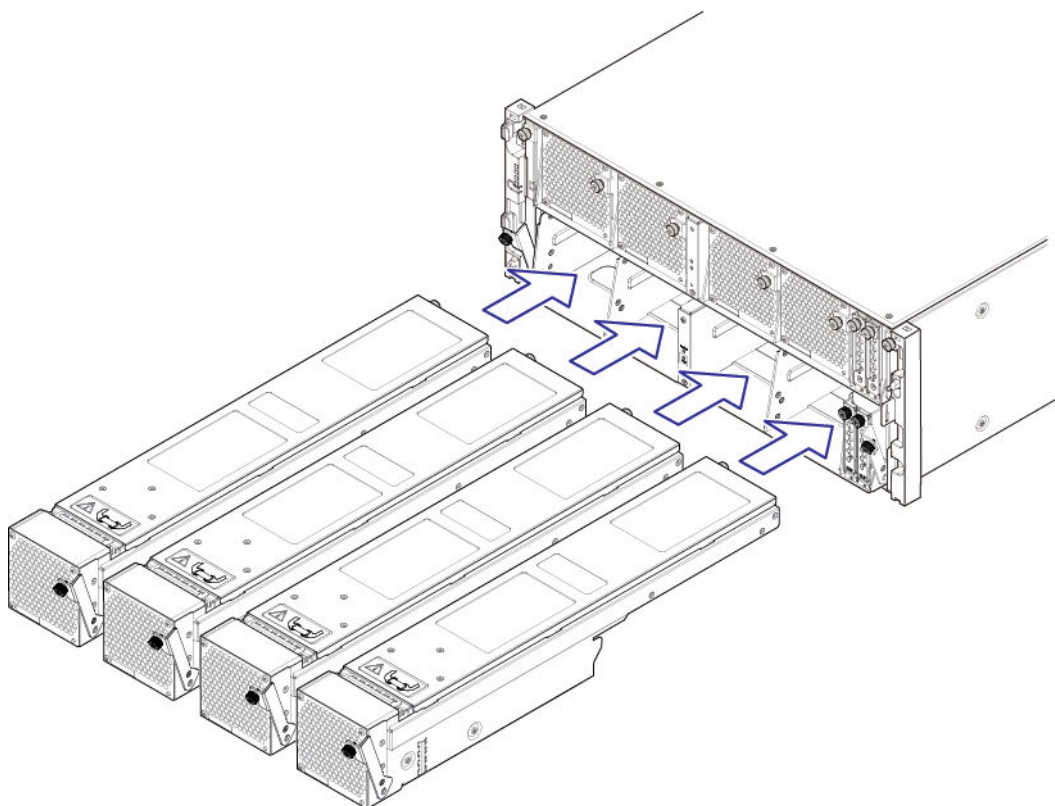
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.

Procedure

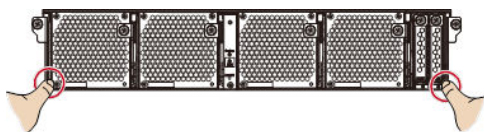
1. With the right and left levers on the new controller opened completely, insert the controller into the slot of the CBLM CBLH chassis. Hold the controller with both hands and move it in a straight direction.



2. With the lever closed on the BKMf you removed, tighten the blue screw to secure the BKMf.
3. Install the four BKMf's on the controller.



4. Push the bottom of the controller all the way into the slot. Stop pushing when the right and left levers close completely.



5. Tighten the blue screw to secure the controller.
6. Confirm that the red CTL ALM LED on the new controller is off.
7. Attach the front bezel.

Next steps

- Use the maintenance utility to restore (unblock) the controller.

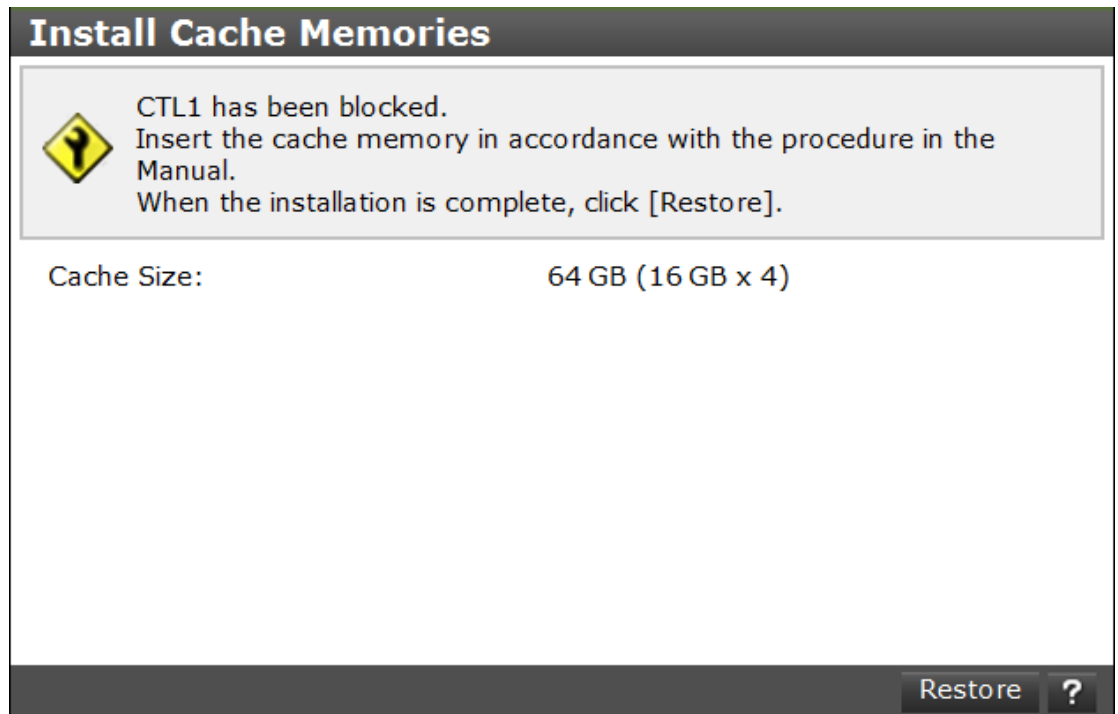
Restoring a controller

Procedure

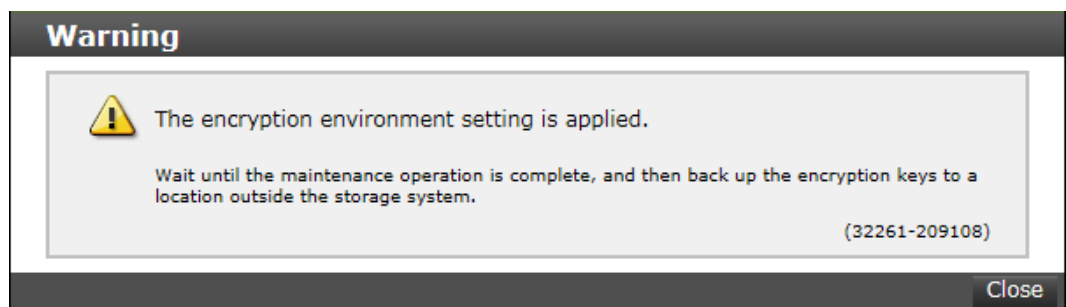
1. At the **Replace Controller Board** window, click **Restore**. A progress bar shows the replacement status.



Note: The restore operation can take up to 20 minutes to complete. If you receive a message about the failed recovery, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.



2. When the progress bar goes away and the completion message appears, click **Close**.
3. If you receive a message about the encryption environment setting is applied, click **Close**.



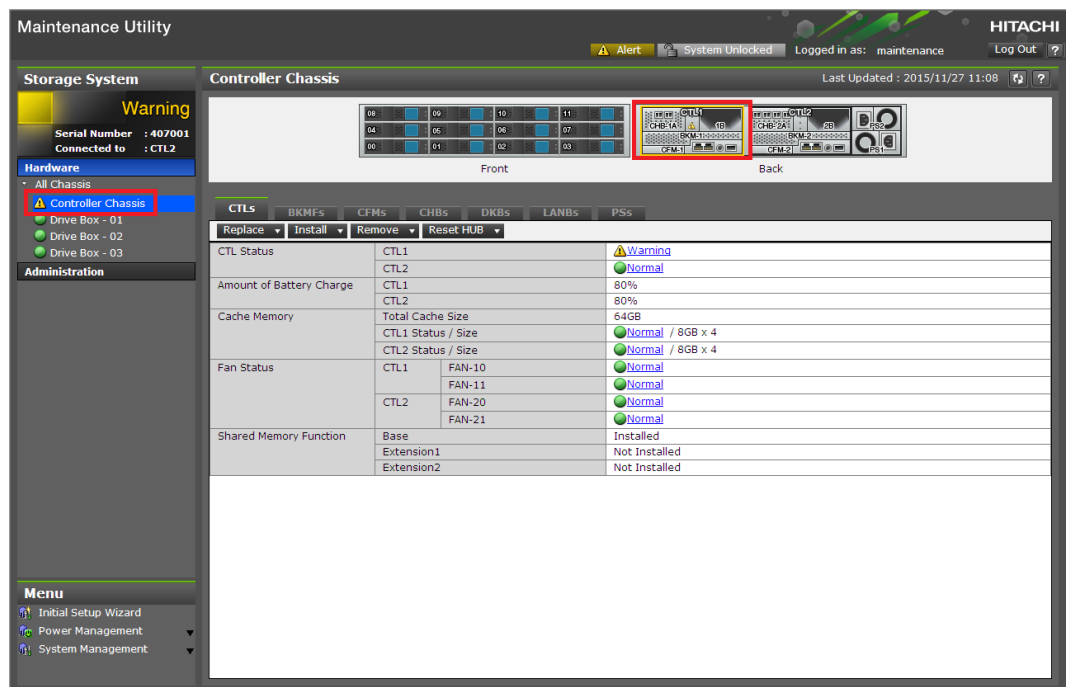
4. Click the **CTLs** tab and confirm that the status of the new controller you replaced is **Normal**. If necessary, click **Refresh** at the top-right of the window to update the status in the window.
5. Log out and close the **Maintenance Utility** window.

Troubleshooting the controller

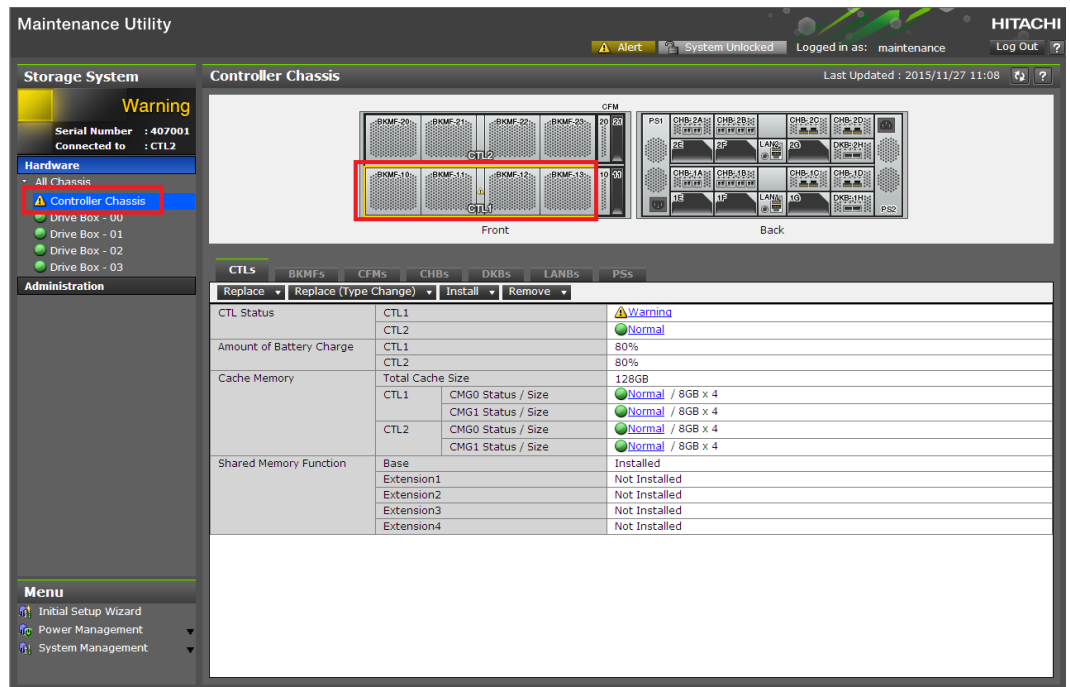
Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, click **Controller Chassis**.

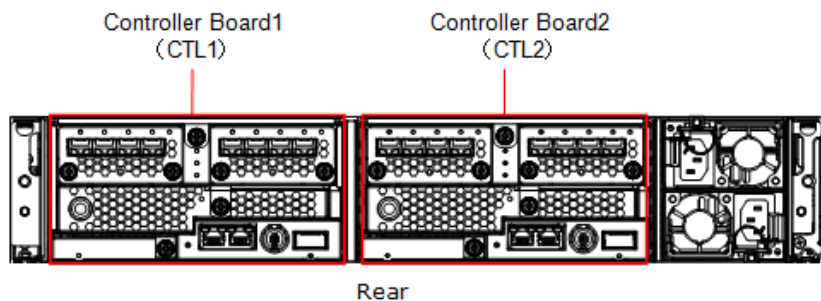
Maintenance Utility window for CBSS or CBSL



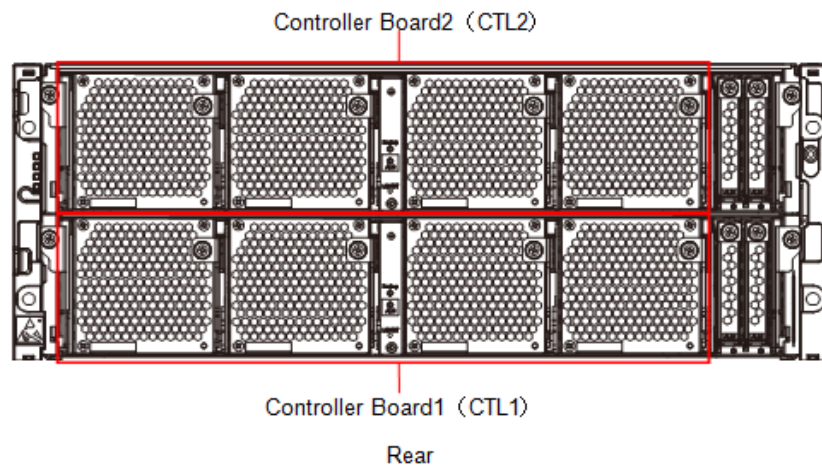
Maintenance Utility window for CBLM or CBLH



CBSS/CBSL controller locations

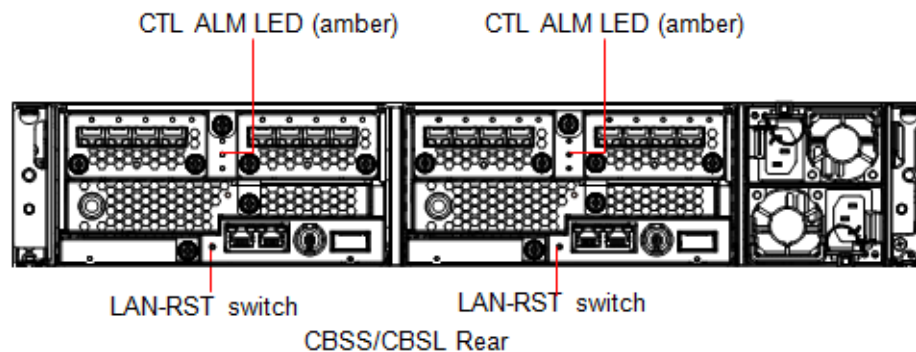


CBLM/CBLH controller locations

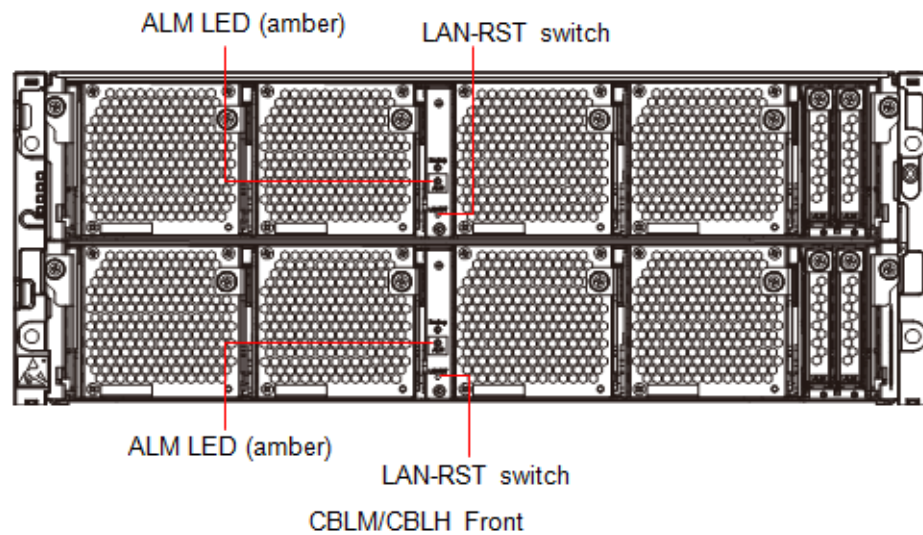


3. Log out of maintenance utility to close the window.
4. Remove the front bezel from the CBLM/CBLH.
5. Press the LAN-RST switch on the target controller (controller 1) using a fine-tipped tool, such as a pen or screwdriver. Confirm that the amber CTL ALM LED on the CBSS/CBSL or the amber ALM LED on the CBLM/CBLH goes ON while the LAN-RST switch is being pressed.

LAN-RST button on CBSS/CBSL controller rear panel



LAN-RST button on CBLM/CBLH controller front panel



6. Wait about 20 minutes.
7. Attach the front bezel to the CBLM/CBLH.

Replacing cache memory

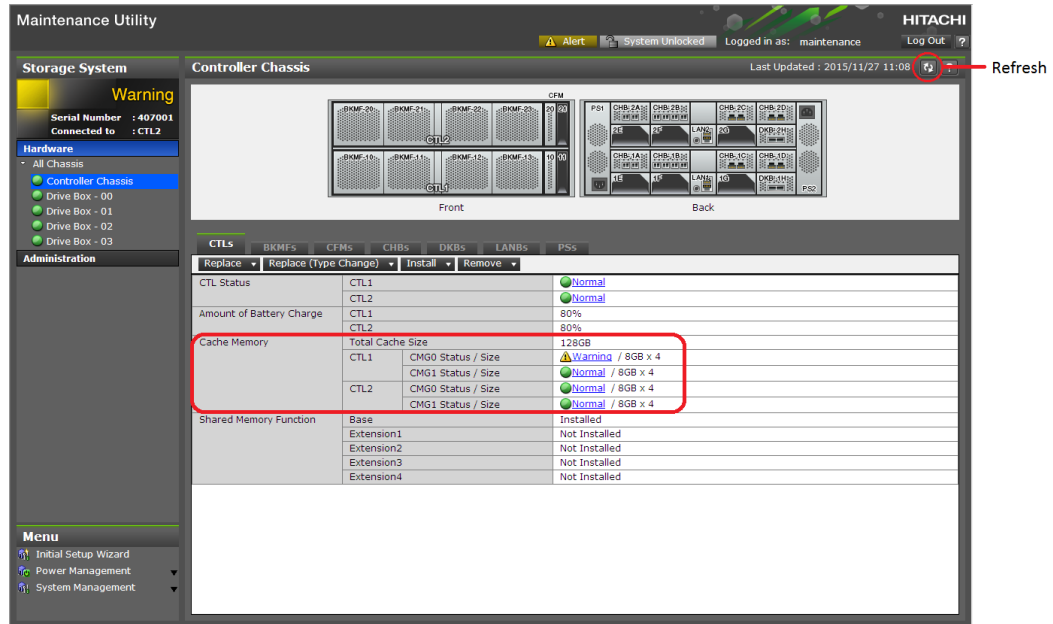
Before replacing cache memory, read the precautions and understand the procedure for your cache memory.

- ☐ [Checking cache memory](#)
- ☐ [Replacing cache memory for a CBLM or CBLH controller](#)
- ☐ [Replacing cache memory for a CBSS or CBSL controller](#)
- ☐ [Replacing cache memory for a CBLM or CBLH controller](#)
- ☐ [Restoring a controller](#)
- ☐ [Replacing cache memory for a NAS module](#)

Checking cache memory

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. Click the **CTLs** tab.
4. To display the most recent status of the cache memory, click **Refresh**.

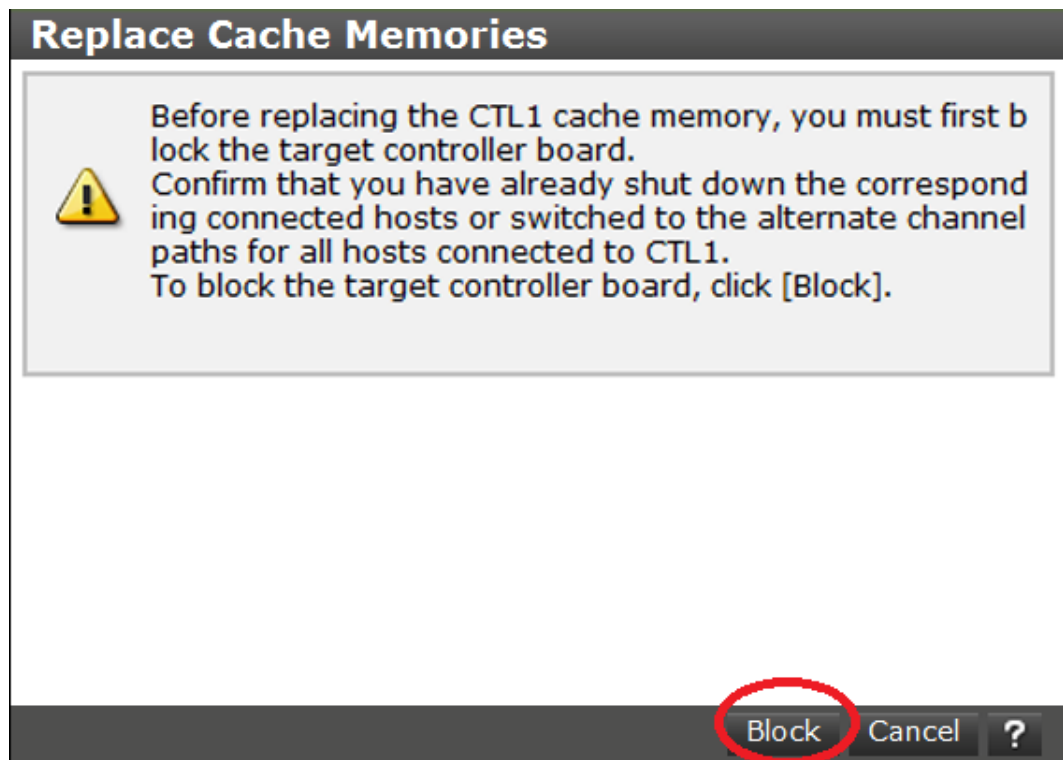


5. Confirm that the status of the cache memory to be replaced is **Warning**.

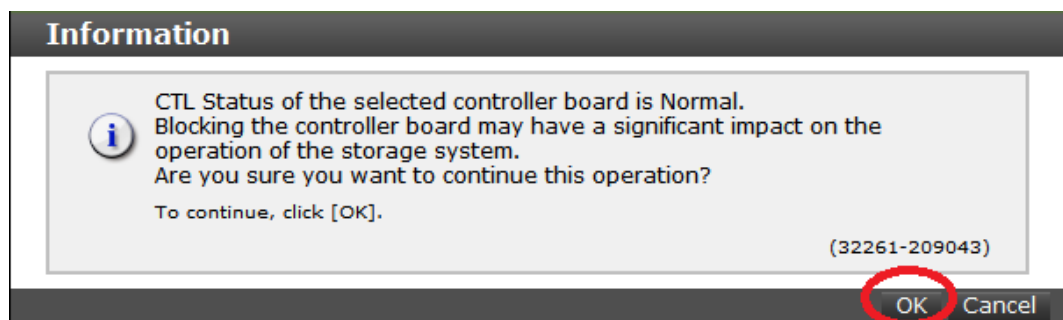
Replacing cache memory for a CBLM or CBLH controller

Procedure

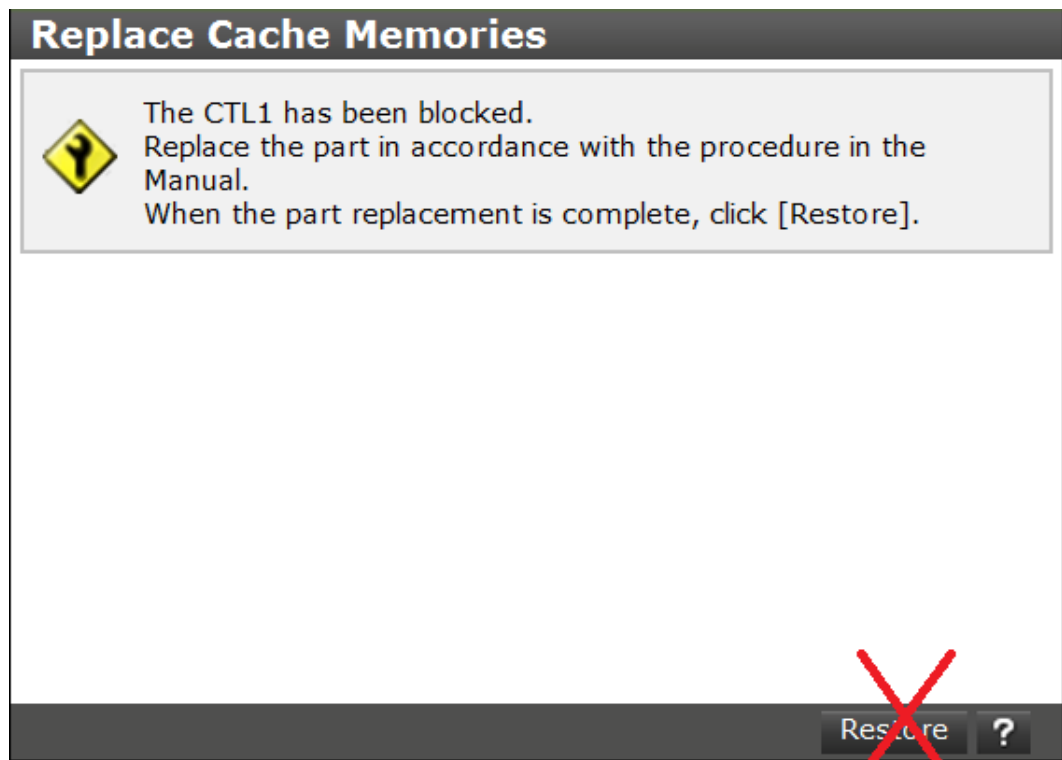
1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **CTLs** tab.
4. Confirm that the component you want to replace has the status **Warning** or **Failed**.
5. Click the **Replace** list, and select the controller that contains the cache memory you want to replace.
6. Click **Block**.



7. Check that the controller has a normal status, and then click **OK**.



8. Check that the controller is blocked and becomes ready for replacing. Leave the **Replace Cache Memories** window open, but do not click the **Restore** button.



Replacing cache memory for a CBSS or CBSL controller

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the controller.
- Confirm that the storage system power is turned on.
- Confirm that the red **CTL ALARM** LED for the controller containing the cache memory to be replaced is on.

Procedure

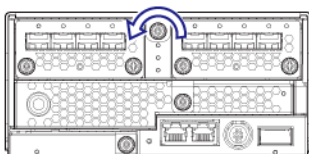
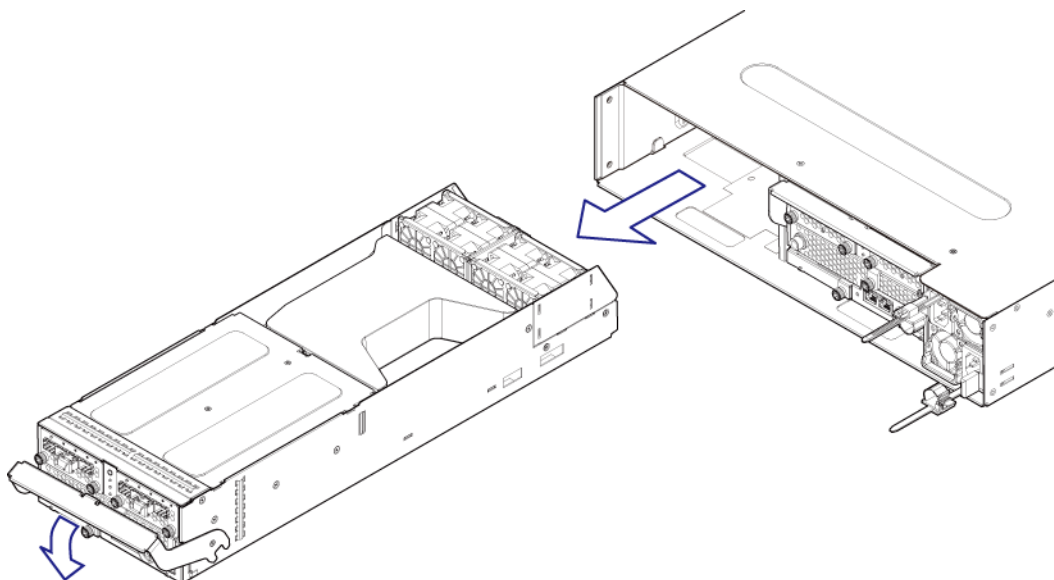
1. Remove all cables connected to the controller.
2. Loosen the blue screw that secures the controller and open the lever.



Note: The **POWER**, **READY**, **WARNING**, and **ALARM** LEDs might go off. If the LED on the front goes off, check whether a component other than the controller has normal status in the **Maintenance Utility** window and continue the replacement. The green **READY** LED on

the front of the CBSS/CBSL goes on after restoring the controller at the end of the replacement procedure.

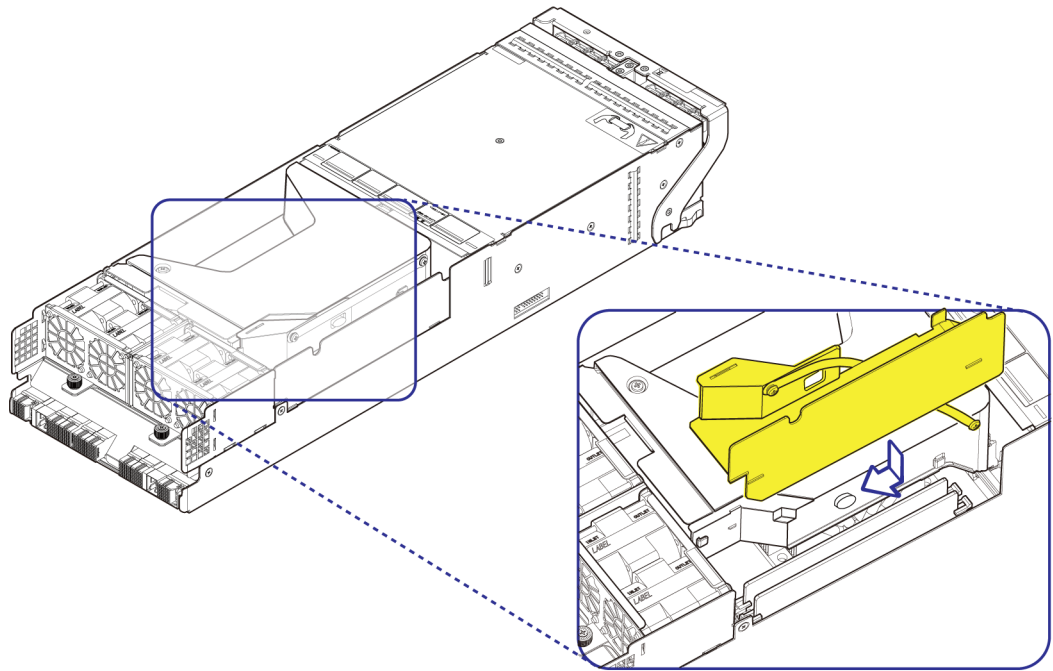
3. Hold the controller with both hands, and then gently remove it. Keep the controller straight to avoid touching the components above and below it.



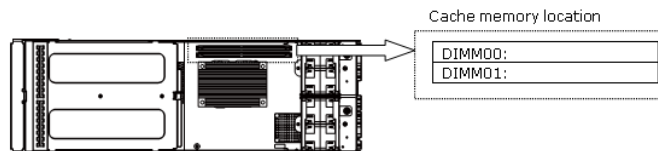
4. Press the button near the dual in-line memory module (DIMM) cover, slide the cover in the direction of the arrow.
5. Lift and remove the DIMM cover from the hooks on either side.



Note: The DIMM cover has a band that can be damaged easily. Exercise care when removing the DIMM cover.



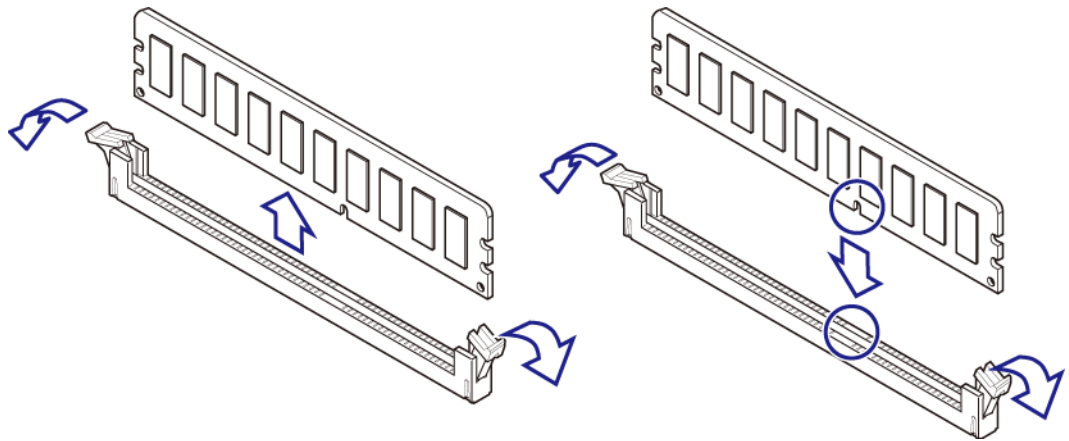
6. Note the cache memory locations.



7. Pull the lever outward.
8. Hold both ends of the cache memory by the fingers, and then gently remove the cache memory from the socket.



Note: Do not exert pressure on the cache memory. Otherwise, you can damage the printed-circuit board.



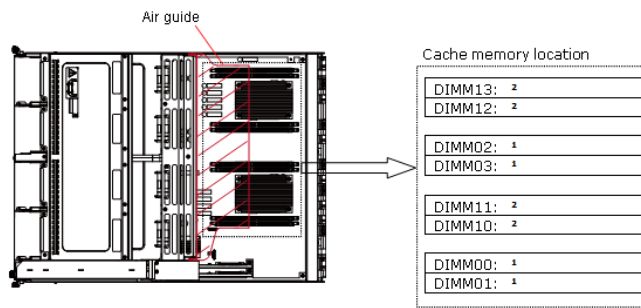
9. Align the notch on the cache memory board with the projection inside the slot.
10. Holding both ends of the cache memory, insert it into the socket of the new controller.
11. Check that the lever is securing the cache memory.
12. To install the DIMM cover, slide it in the direction of the arrow. Confirm that the DIMM cover is secured by the two hooks on either side.
13. Check that the connector of the controller is not damaged, deformed, or dusty.
14. With the right and left levers on the controller opened completely, insert it into the slot of CBSS or CBSL controller.
15. Push the controller in all the way. The right and left levers close completely.
16. Tighten the blue screw to secure the controller.
17. Connect all cables removed from the controller.
18. Confirm that the red **CTL ALM** LED on the controller in which the cache memory was installed goes off.

Next steps

- Use the maintenance utility to restore (unblock) the controller.

Replacing cache memory for a CBLM or CBLH controller

When replacing cache memory on a CBLM or CBLH controller, remove the backup module first, and then remove the controller. A single CBLM or CBLH controller weighs approximately 42 pounds (19 kg).



Note: DIMMs are installed in sets of four. There are two groups of cache memory DIMM slots: **CMG0** and **CMG1**. Populate the **CMG0** slots first, and then populate the **CMG1** slots if necessary.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the controller.
- Confirm that the storage system power is turned on.
- Confirm that the red **CTL ALARM** LED for the controller containing the cache memory to be replaced is on.

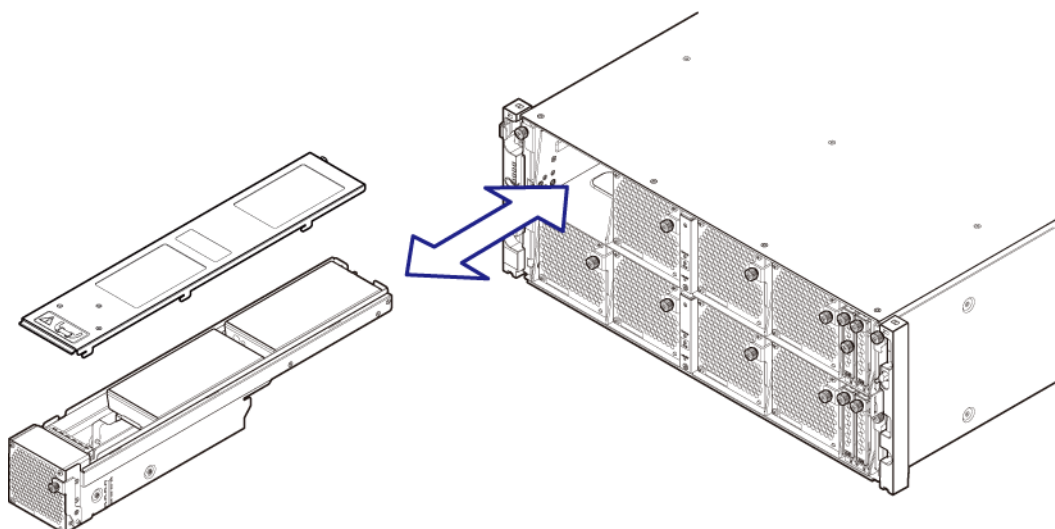
Procedure

1. Remove the front bezel.
2. Loosen the blue left and right screws on the lever of the controller to add the cache memory in the front of the CBLM or CBLH and open the lever.

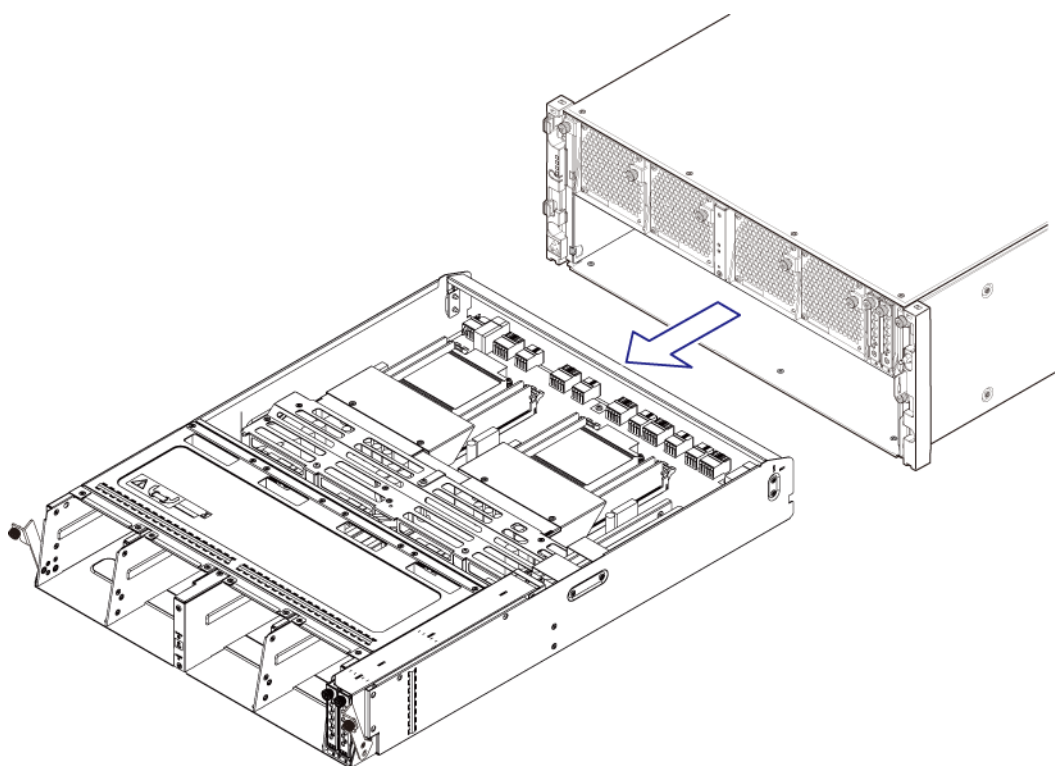


Note: The **POWER**, **READY**, **WARNING**, and **ALARM** LEDs might go off. If the LED on the front goes off, check whether a component other than the controller has normal status in the **Maintenance Utility** window and continue the replacement. The green **READY** LED on the front of the CBLM/CBLH goes on after restoring the controller at the end of the replacement procedure.

3. Loosen the blue screw securing the backup module.
4. With the lever opened, pull out and remove the backup module.



5. Remove all four backup modules installed in the controller.
6. Loosen the blue right and left screws on the lever of the controller, and then open the lever.
7. Hold the controller with both hands and gently remove it. Keep the controller straight to avoid touching the components above and below it.

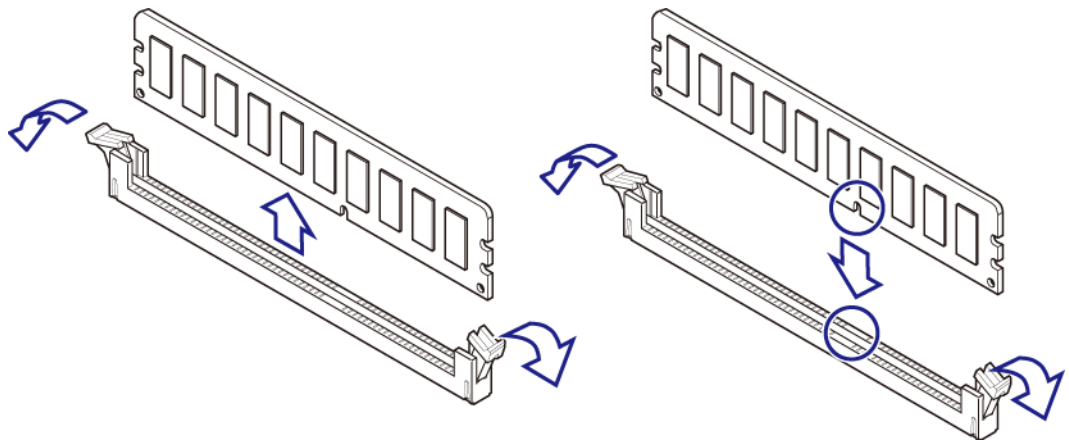


8. Open the air guide.
9. Pull the lever outward.

10. Hold both ends of the cache memory, and then gently pull out the cache memory from the socket.



Note: Do not exert pressure on the cache memory. Otherwise, you can damage the printed circuit board.



11. Align the notch on the cache memory board with the projection inside the slot.
12. Holding both ends of the cache memory, insert it into the socket.
13. Confirm that the lever is securing the cache memory.
14. Close the air guide.
15. Confirm that the connector of the controller is not damaged, deformed, or dusty.
16. With the right and left levers of the controller opened completely, insert it into the slot of the controller.
17. Push the controller all the way into the slot.
The right and left levers close completely.
18. Tighten the blue screw to secure the controller.
19. With the lever on the backup module open, insert the backup module into the slot.
20. With the backup module lever closed, tighten the blue screw to secure it.
21. Install the four backup modules on the controller.
22. Tighten the blue screw to secure the controller.
23. Confirm that the red CTL ALM LED on the controller in which the cache memory was installed goes off.

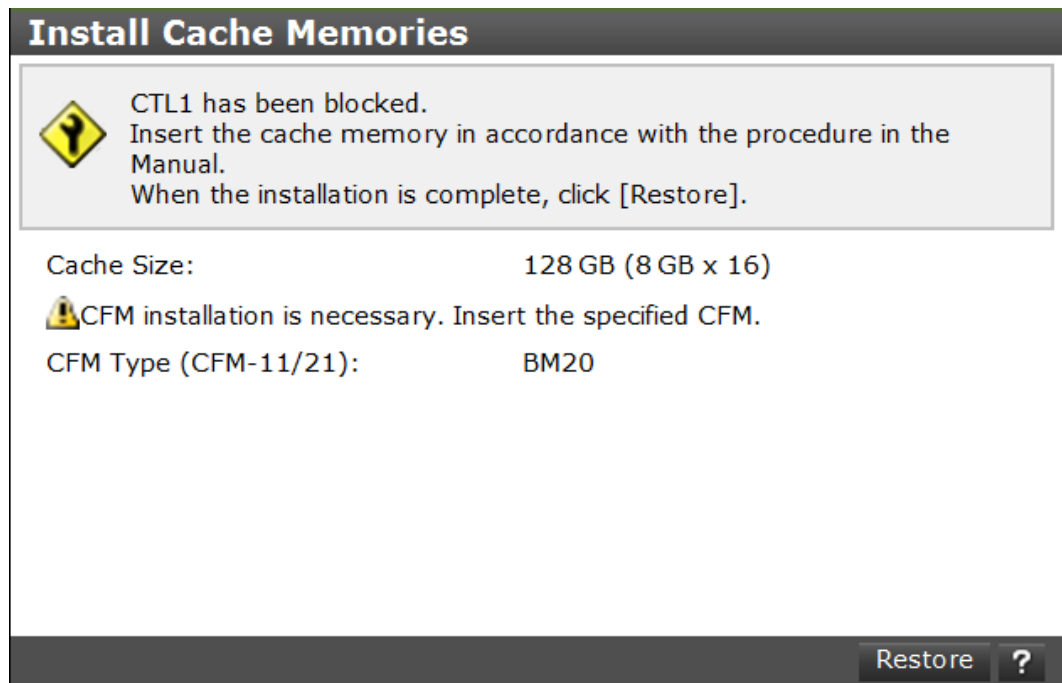
Next steps

- Use the maintenance utility to restore (unblock) the controller.

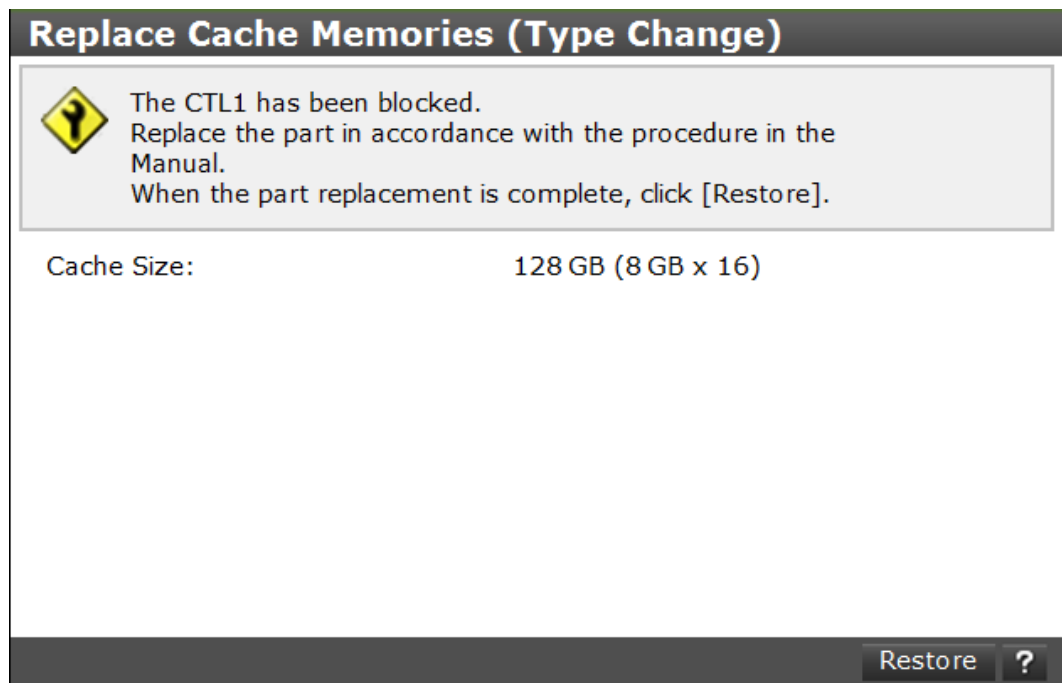
Restoring a controller

Procedure

1. If you increased cache memory, click **Restore** in the **Install Cache Memories** window.



If you replaced cache memory without increasing capacity, click **Restore** in the **Replace Cache Memories** window.



A progress bar shows the replacement status.



Note: The restore operation can take up to 20 minutes to complete. If you receive a message about a failed recovery, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

2. When the progress bar goes away and the completion message appears, click **Close**.
3. Click the **CTLs** tab and confirm that all status conditions are **Normal**. If necessary, click **Refresh** at the top-right of the window to update the status in the window.
4. Log out and close the **Maintenance Utility** window.

Replacing cache memory for a NAS module

Migrate the EVS manually before replacing cache memory for a NAS module

Related tasks

- [EVS migration after servicing nodes](#) on page 102

Blocking a NAS module

Procedure

1. In the **Maintenance Utility** window, click **Hardware > Controller**.
2. Click the **CHBs** tab.
3. To display the most recent status of the cache memory, click **Refresh**.
4. In the **Cache Memory (NAS Module)** column of the cache memory that failed, click **Warning**.

Maintenance Utility

Alert System Unlocked Logged in as: maintenance Log Out

Last Updated: 2015/11/27 11:08 Refresh

Storage System

Warning

Serial Number: 407001 Connected to: CTL2

Hardware

- All Chassis
- Controller Chassis
- Drive Box - 00
- Drive Box - 01
- Drive Box - 02
- Drive Box - 03

Administration

Menu

- Initial Setup Wizard
- Power Management
- System Management

Controller Chassis

CHBs

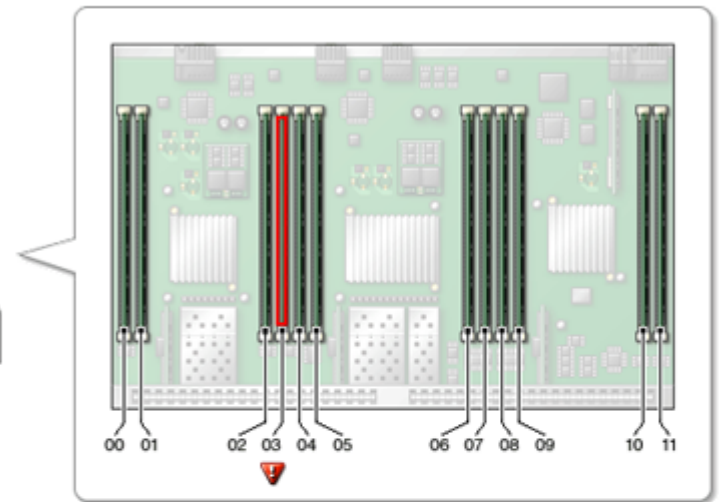
Replace Replace (CHB Type Change) Install Remove

Location	Status	Type	SFP Status	Cache Memory Status (NAS Module)
CHB-1A/1B/1C/1D	Warning	HNAS Unit	Warning	Warning
CHB-2A/2B/2C/2D	Normal	HNAS Unit	Normal	Normal

5. Check the cache memory to be replaced, and then click **Replace**.

NAS Module Cache Memory

Location: CHB-1A/1B/1C/1D



NAS Module Cache Memory				
Location	Component ID	Status	Size	▲
NAS-DIMM00	DI_CACHE_MEM0 (00)	● Normal	8 GB	
NAS-DIMM01	DI_CACHE_MEM1 (01)	● Normal	8 GB	
NAS-DIMM02	DI_CTRL0_MEM (02)	● Normal	8 GB	
NAS-DIMM03	DI_CTRL1_MEM (03)	▼ Failed	8 GB	
NAS-DIMM04	TAN_CTRL0_MEM (04)	● Normal	8 GB	
NAS-DIMM05	TAN_CTRL1_MEM (05)	● Normal	8 GB	▼
				Total : n

Replace

Close

?

6. Click **Block**.

Replace Cache Memories (NAS Module)



Before replacing the CHB-1A/1B/1C/1D cache memory, you must first block the target channel board.

Confirm that you have already shut down the corresponding connected hosts or switched to the alternate channel paths for all hosts connected to CHB-1A/1B/1C/1D.

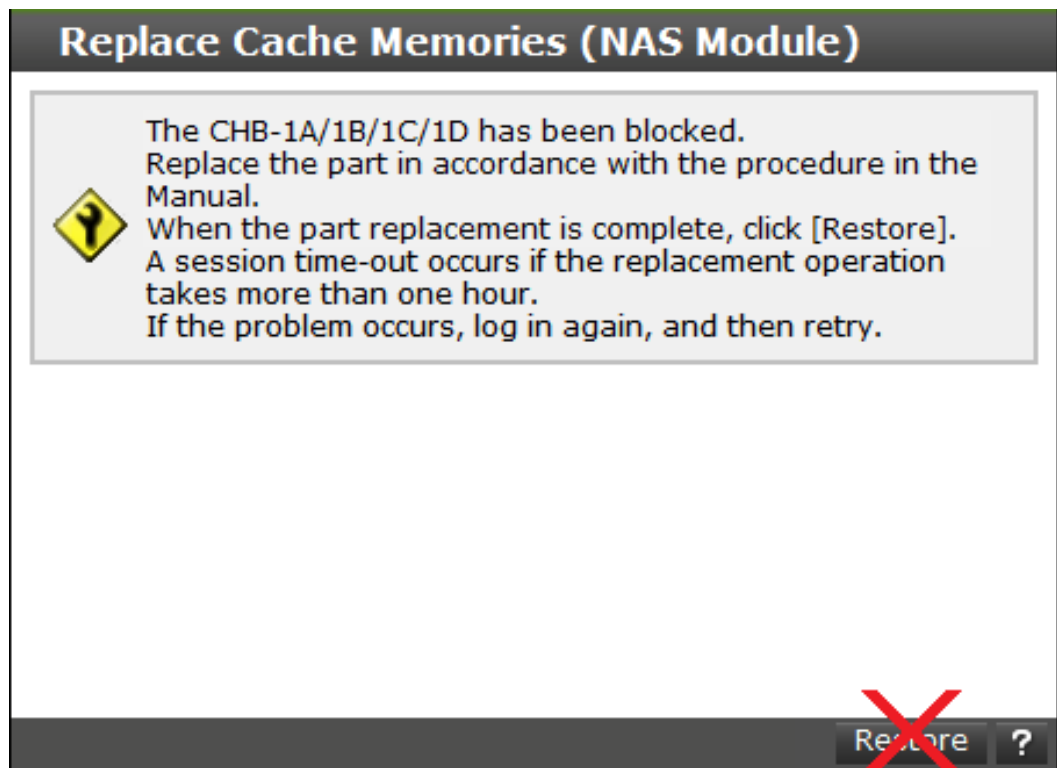
To block the target channel board, click [Block].

Block

Cancel



7. Check that the NAS module is blocked and becomes ready for replacing. Do not click **Restore** at this time.



Related tasks

- [EVS migration after servicing nodes](#) on page 102

Replacing cache memory for a NAS module

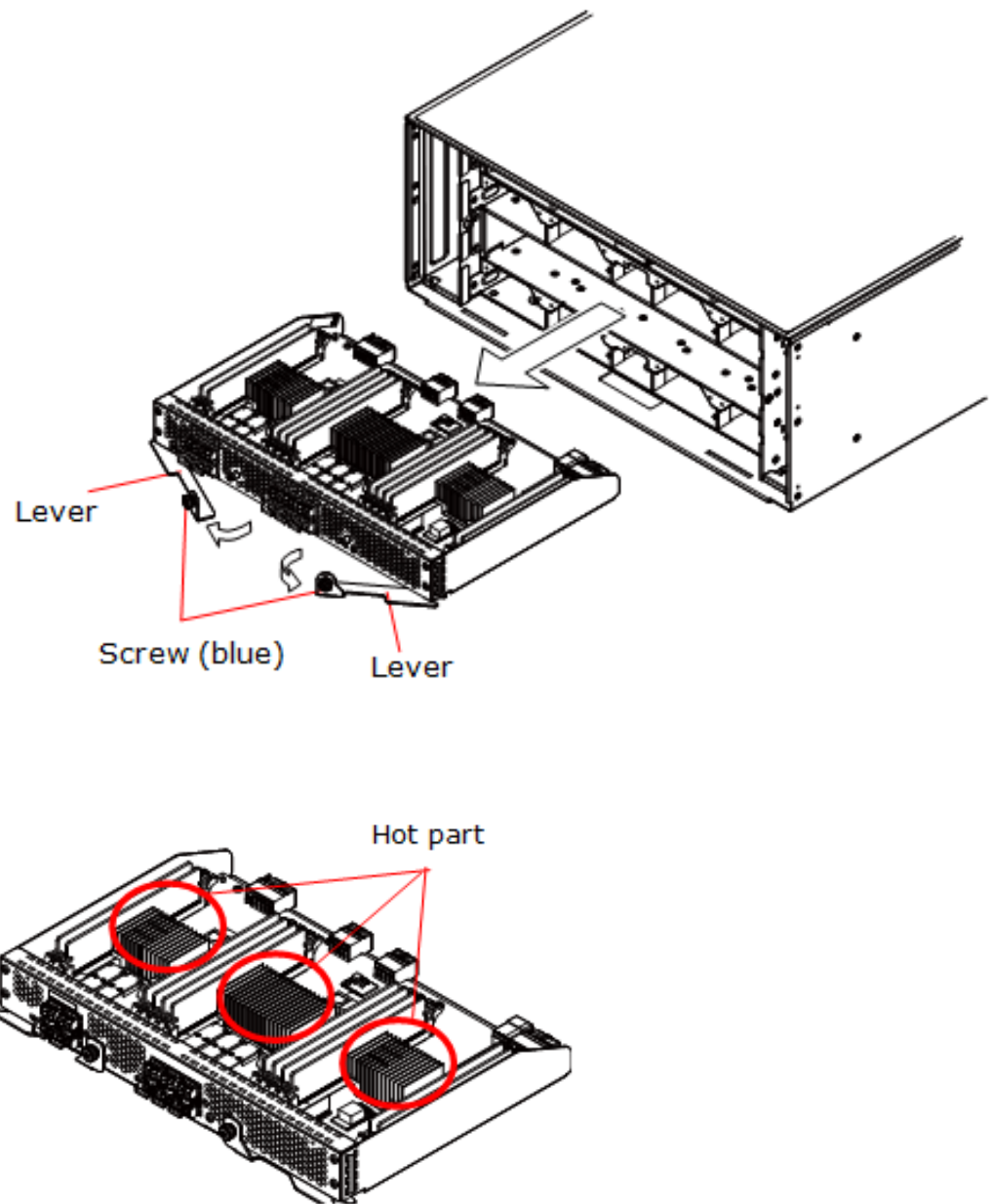
Confirm that the red `STATUS` LED is on at the NAS module containing the cache memory to be replaced.

Procedure

1. Remove the cables connected to the NAS module. Mark the port from where the cable was removed.
2. Loosen the two blue screws that secure the NAS module and open the lever.
3. Hold the NAS module with both hands, keep it straight, and gently pull it toward you. Keep the NAS module level, so that no physical shock is exerted on the parts.

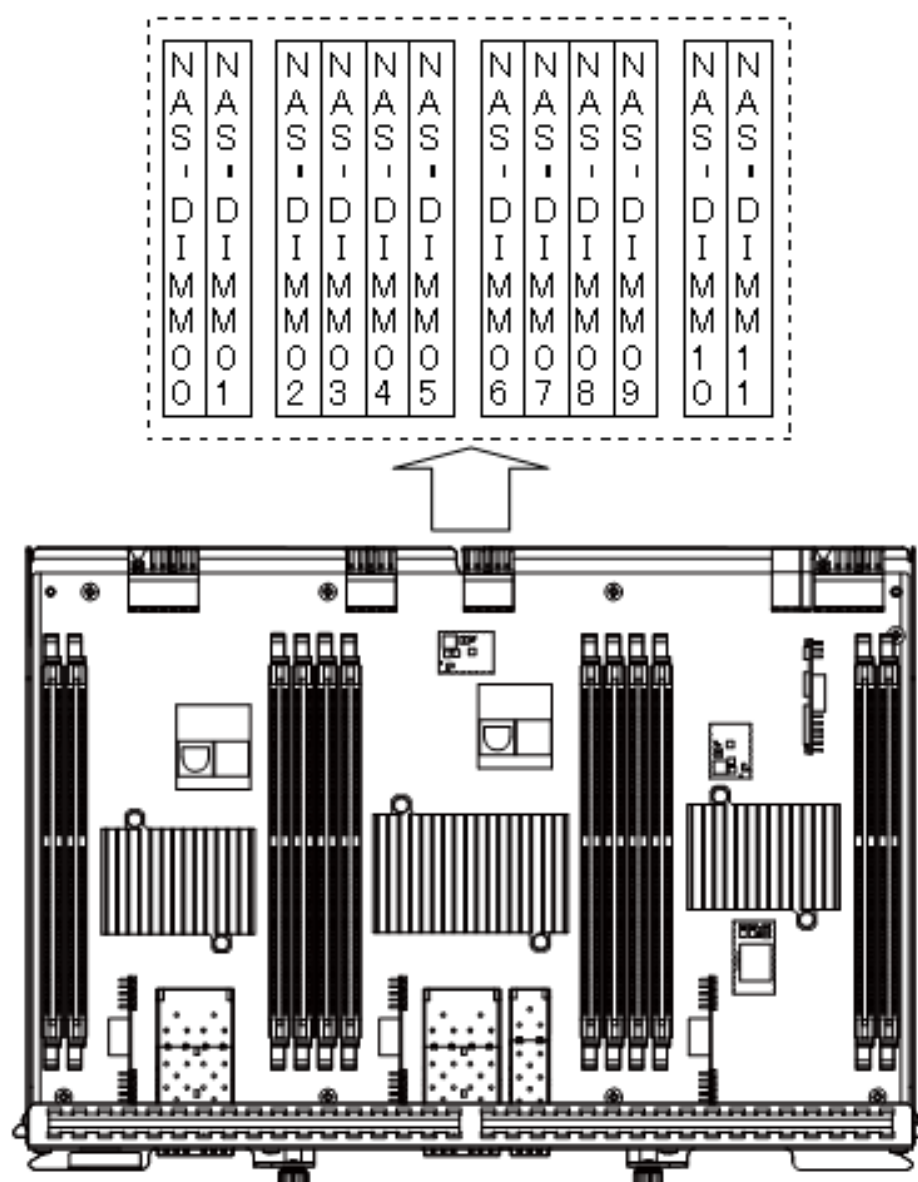


Note: The heat sinks can be hot on a NAS module that is removed from the storage system. Avoid touching these hot parts when removing the NAS module.



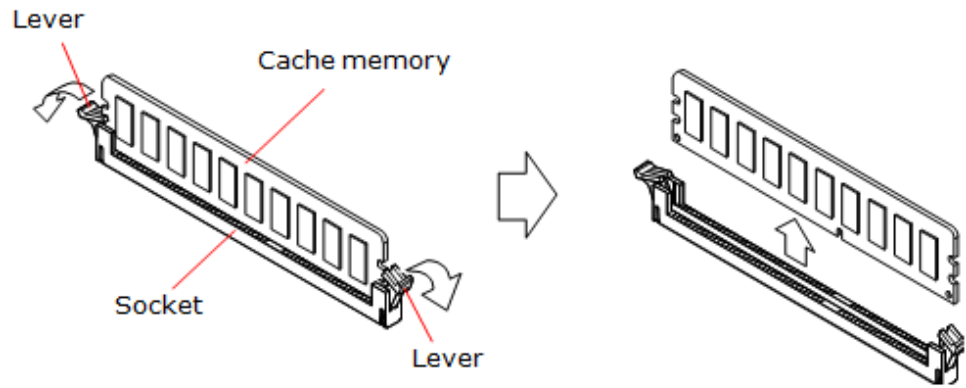
4. Replace the failed cache memory with the new cache memory.

Cache memory Location



Cache memory Location
(NAS Module top view)

5. To remove the cache memory:
 - a. Pull the memory outward.
 - b. Use your fingers to hold both ends of the cache memory, and then pull out the cache memory from the socket.



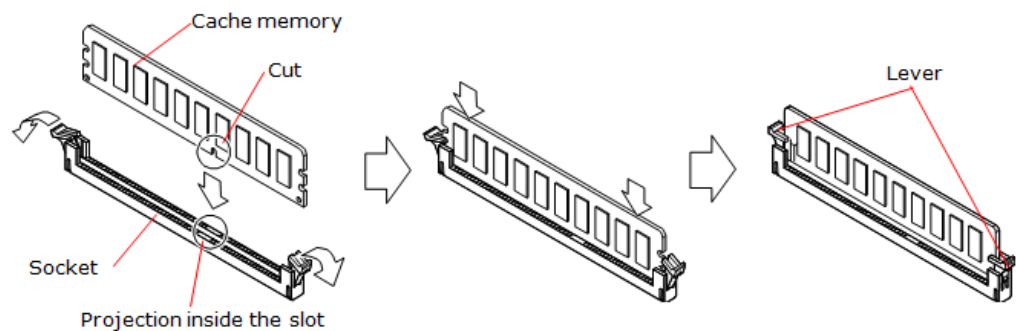
6. Install the new cache memory:

- a. Position the notch (cut) on the cache memory board with the projection inside the slot, and then place the cache memory on the socket
- b. Use your fingers to hold both ends of the cache memory, and then insert the cache memory into the socket.



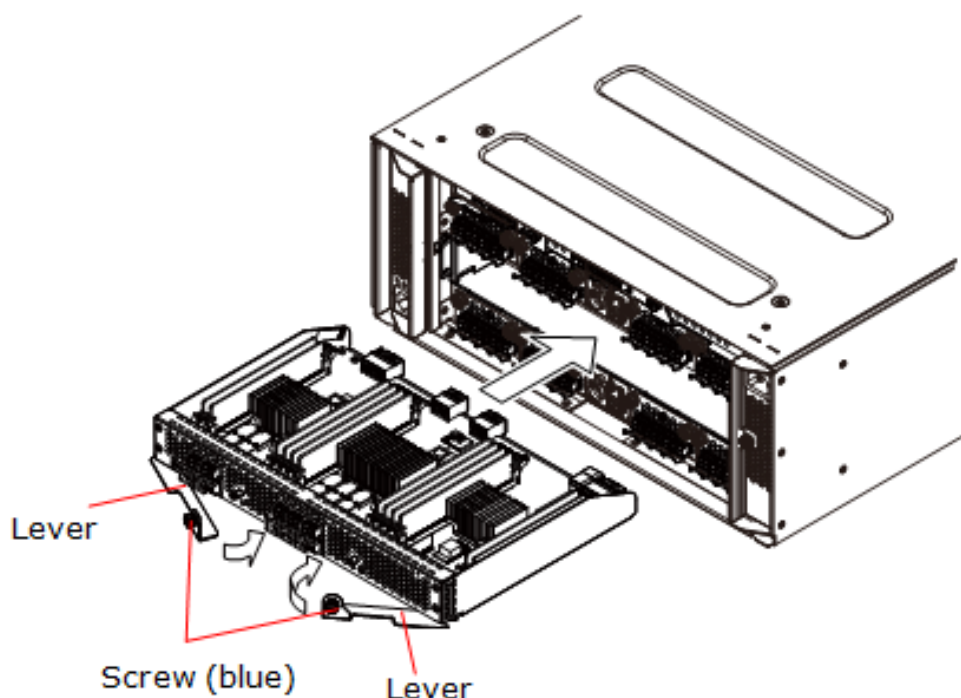
Note: Applying too much pressure can bend the printed-circuit board and damage the cache memory.

- c. Check that the lever is firmly fitted in the cache memory.



7. Install the NAS module:

- a. Insert the new NAS module into the slot while opening the lever.
- b. Push the NAS module all the way into the slot and close the lever.
- c. Tighten the two blue screws to secure the NAS module.



8. On the NAS module, connect the cable to the same port to which the cable was connected before replacing cache memory. Be sure the cable clicks into place.

Related tasks

- [EVS migration after servicing nodes](#) on page 102

Restoring a NAS module

Procedure

1. Click **Restore**.
2. When the completion message appears, click **Close**.
3. Click the **CHBs** tab, and then confirm that the NAS module is **Normal**.
4. After completing the work, log out and close the **Maintenance Utility** window.
5. Migrate the EVS manually from the operating NAS module to the other NAS module.

Related tasks

- [EVS migration after servicing nodes](#) on page 102
- [EVS migration after servicing nodes](#) on page 102

Replacing a front end module

Before replacing a front end module, read the precautions and understand the procedure for your front end module.

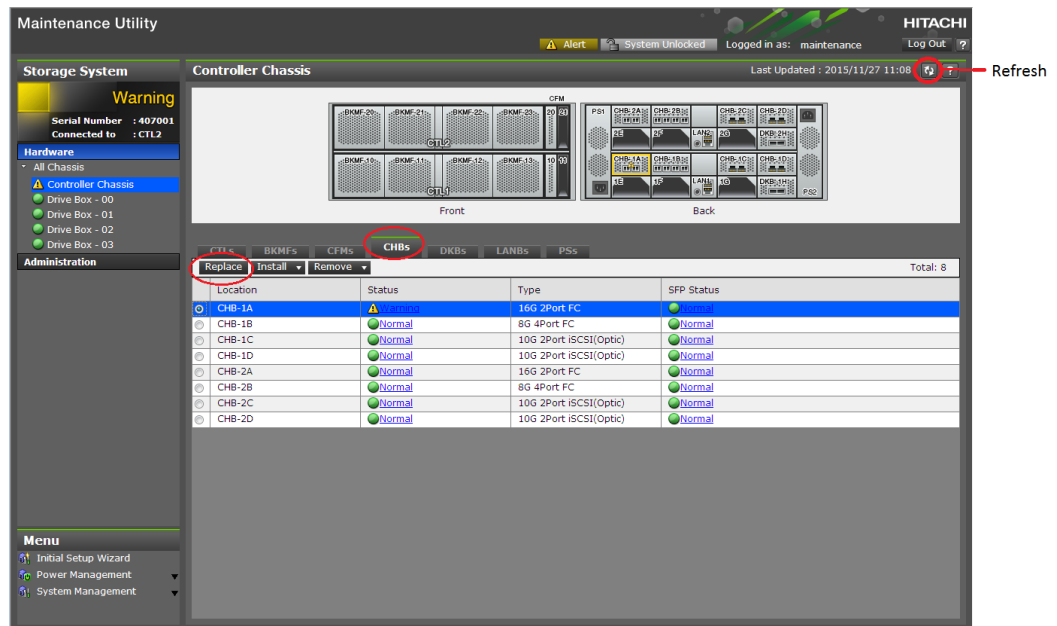
Controller 1 and Controller 2 must have the same number of front end modules installed. For example, if you install a second front end module to Controller 1, you must also install a new front end module to Controller 2. You cannot add a front end module to one controller without adding a front end module to the other controller.

- ☐ [Blocking a front end module](#)
- ☐ [Replacing a front end module on a controller](#)
- ☐ [Replacing a front end module on a host port expansion chassis](#)
- ☐ [Restoring a front end module](#)

Blocking a front end module

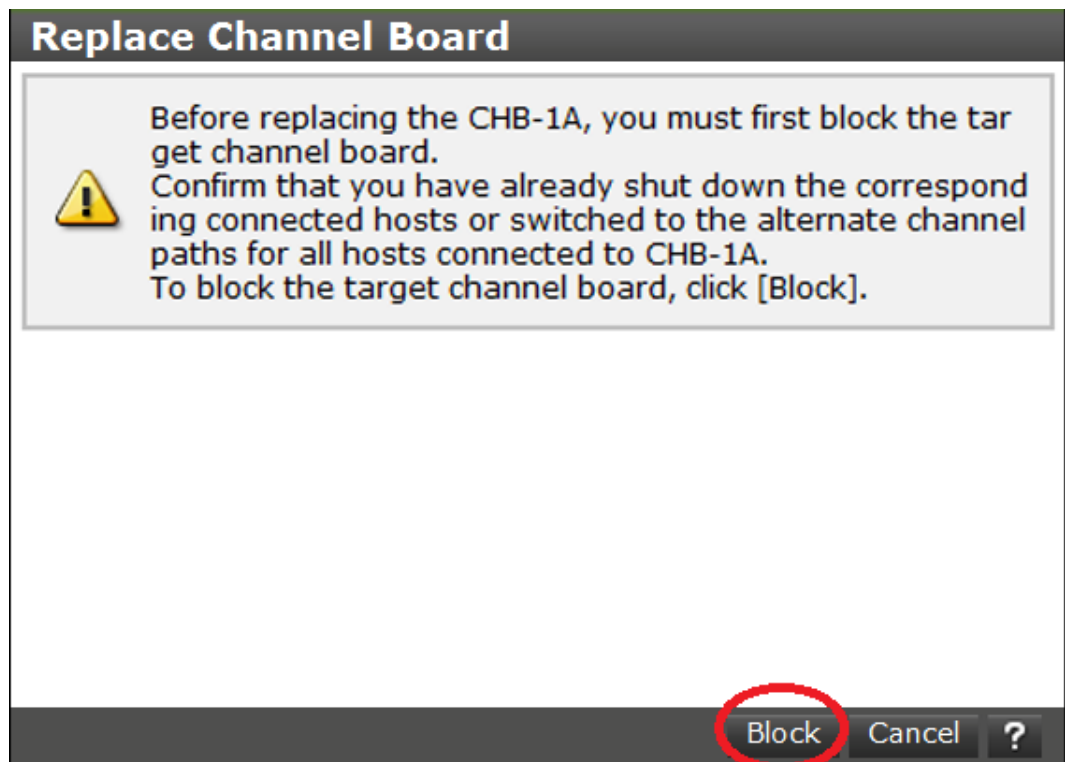
Procedure

1. Start the maintenance utility.
2. In the **Maintenance Utility** window, click **Hardware > Controller Chassis** or **Hardware > Channel Board Box**.
3. Click the **CHBs** tab.
4. To display the most recent status of the front end module, click **Refresh**.
- 5.

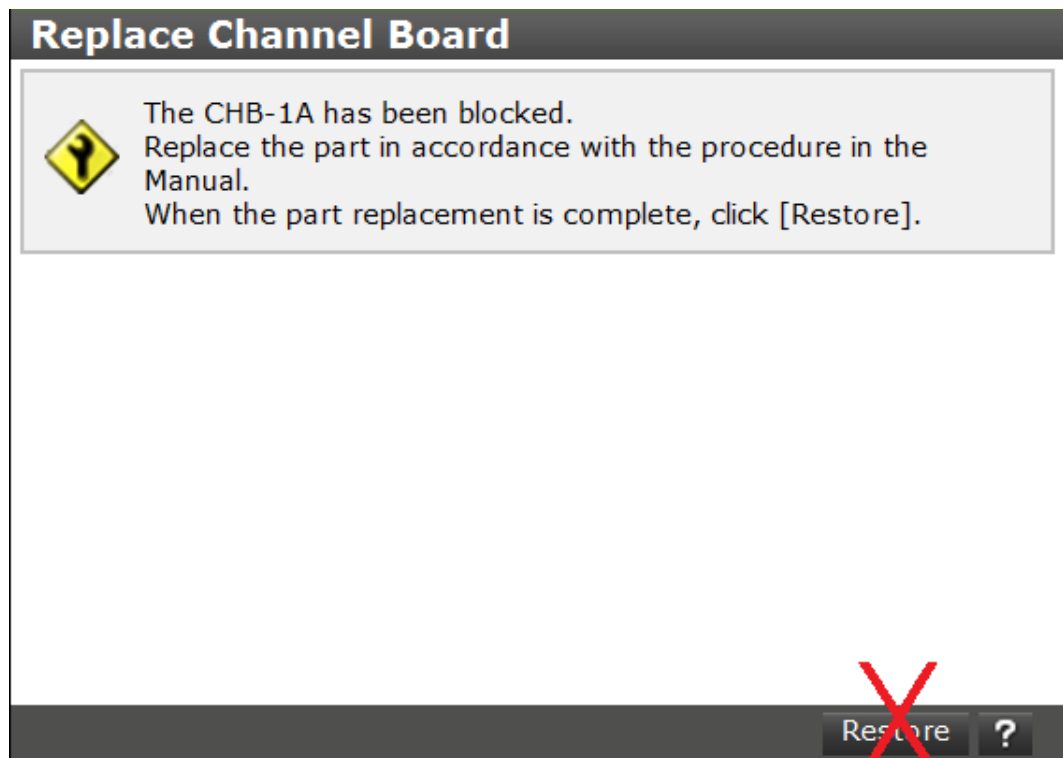


Confirm that the status of the front end module to be replaced is Warning.

6. Click the front end module to be replaced, and then click **Replace**.
7. Click **Block**.



8. Verify that the front end module is blocked and is ready for replacing.
9. Leave the **Replace Channel Board** window open, but do not click **Restore**.



Replacing a front end module on a controller

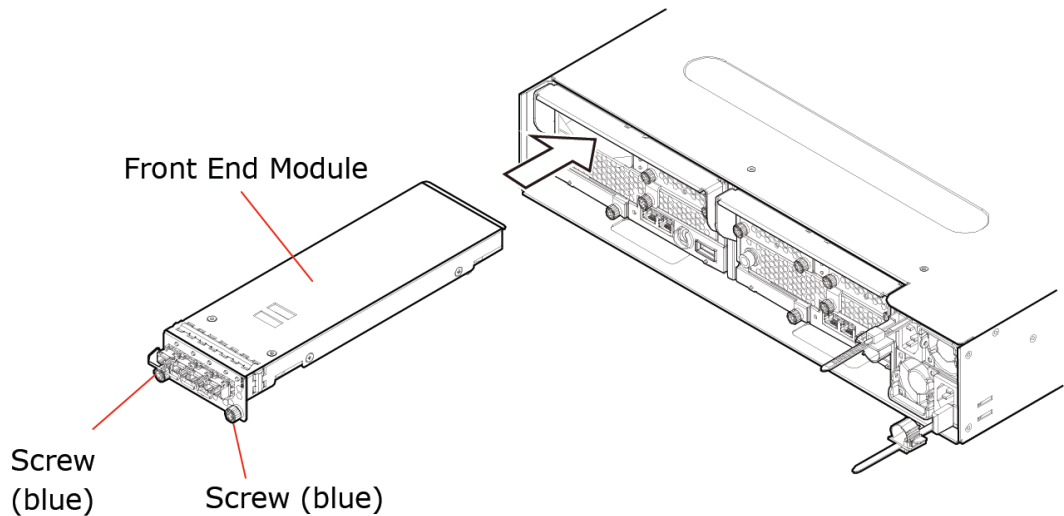
Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the front end module.
- Confirm that the storage system power is turned on.
- The red **STATUS** LED is on at the front end module to be replaced.
- Add the front end module to the same locations of controller 1 and controller 2.

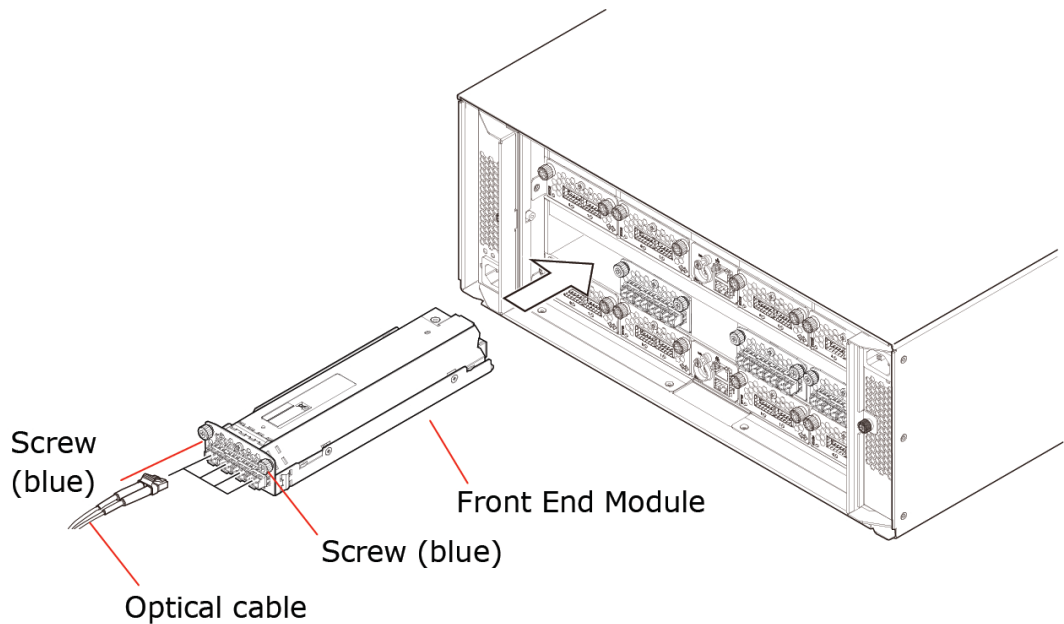
Procedure

1. Disconnect the cable from the front end module.
2. Loosen the two blue screws that secure the front end module.
3. Hold the blue screws, and then gently remove the front end module. Keep the front end module straight to avoid jostling the components above and below it.
4. If applicable, remove the SFPs from the failed component and insert the SFPs into the replacement FED.

- a. Pull the SFP lever down toward you and pull out the SFP. If you cannot remove the SFP, pull it out while pushing open the lever toward you.
 - b. Check the SFP insertion direction and insert the SFP into the port until it clicks.
5. Orient the new front end module as shown below.

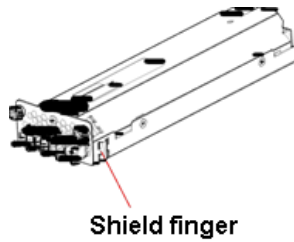


Replacing the front end module on a VSP G200

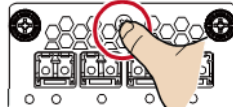


Replacing the front end module on a VSP G400, G600, G800

6. Insert the new front end module into the slot, just before the "shield finger."



7. Gently push the front end module all the way into the slot.



8. Tighten the two blue screws to secure the front end module.
9. Confirm that the red `STATUS` LED on the front end module goes off.
10. Connect the cable to the new front end module.

Next steps

- Use the maintenance utility to restore (unblock) the front end module.

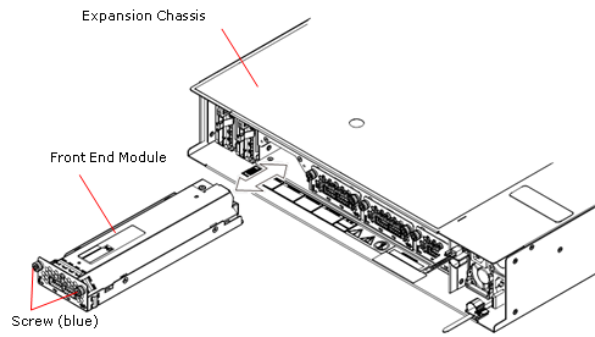
Replacing a front end module on a host port expansion chassis

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the front end module.
- Confirm that the storage system power is turned on.
- The red `STATUS` LED is on at the front end module to be replaced.

Procedure

1. Disconnect the cable from the front end module.
2. Loosen the two blue screws that secure the front end module.
3. Hold the blue screws, and then gently remove the front end module. Keep the front end module straight to avoid jostling the components above and below it.



4. If applicable, remove the SFPs from the failed component and insert the SFPs into the replacement FED.
 - a. Pull the SFP lever down toward you and pull out the SFP. If you cannot remove the SFP, pull it out while pushing open the lever toward you.
 - b. Check the SFP insertion direction and insert the SFP into the port until it clicks.
5. Insert the new front end module into the slot, just before the "shield finger."
6. Gently push the front end module all the way into the slot.



7. Tighten the two blue screws to secure the front end module.
8. Confirm that the red `STATUS` LED on the front end module goes off.
9. Connect the cable to the new front end module.

Next steps

- Use the maintenance utility to restore (unblock) the front end module.

Restoring a front end module

Procedure

1. At the **Replace Channel Board** window, click **Restore**. A progress bar shows the replacement status.



Note: It can take up to 20 minutes for the controller to recover. If a message states that the recovery failed, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

2. When the progress bar goes away and the completion message appears, click **Close**.
3. Click the **CHBs** tab in the **Controller Chassis** or **Channel Board Box** window.
4. Confirm that the status of the new front end module is `Normal`.
If necessary, click **Refresh** at the top-right of the window to update the status in the window.
5. Log out and close the **Maintenance Utility** window.

Replacing a small form-factor pluggable (SFP)

Before replacing a small form-factor pluggable (SFP), read the precautions and understand the procedure for your SFP.



Note: SFP ports also have been referred to as a mini-GigaBit or (GBIC) ports. However, this term has been made obsolete by SFP.

- ☐ [Checking the SFP](#)
- ☐ [Replacing an SFP on a controller](#)
- ☐ [Replacing an SFP on a host port expansion chassis](#)
- ☐ [Replacing a small form-factor pluggable \(SFP+\) for a NAS module](#)

Checking the SFP

Before you begin

Confirm that the red **PORT** LED is on at the front end module whose SFP will be replaced.

Procedure

1. Start the maintenance utility.
2. In the **Maintenance Utility** window, click **Hardware > Controller Chassis** or **Hardware > Channel Board Box**.
3. Click the **CHBs** tab.
4. Confirm that the status of the SFP to be replaced is **Warning**.

The screenshot shows the Hitachi Maintenance Utility interface. The left sidebar has a 'Warning' alert for 'Serial Number : 407001 Connected to : CTL2'. The main area is titled 'Controller Chassis' and shows a diagram of the chassis with 'Front' and 'Back' views. Below the diagram is a table of SFPs. The 'CHBs' tab is selected, and the table shows the following data:

Location	Status	Type	SFP Status
CHB-1A	Normal	16G 2Port FC	Warning
CHB-1B	Normal	8G 4Port FC	Normal
CHB-1C	Normal	10G 2Port iSCSI(Optic)	Normal
CHB-1D	Normal	10G 2Port iSCSI(Optic)	Normal
CHB-2A	Normal	16G 2Port FC	Normal
CHB-2B	Normal	8G 4Port FC	Normal
CHB-2C	Normal	10G 2Port iSCSI(Optic)	Normal
CHB-2D	Normal	10G 2Port iSCSI(Optic)	Normal

The 'Warning' status for CHB-1A is highlighted with a red box. A red arrow points to the 'Refresh' button in the top right corner.

5. In the **SFP Status** column, click the warning to display a pop-up window with SFP port ID, status, and type information.
6. Replace the SFP. Do not click **Close** at this time.

Replacing an SFP on a controller

Install the same type of SFP as the one being replaced. The color of the lever or the entire SFP identifies the SFP type:

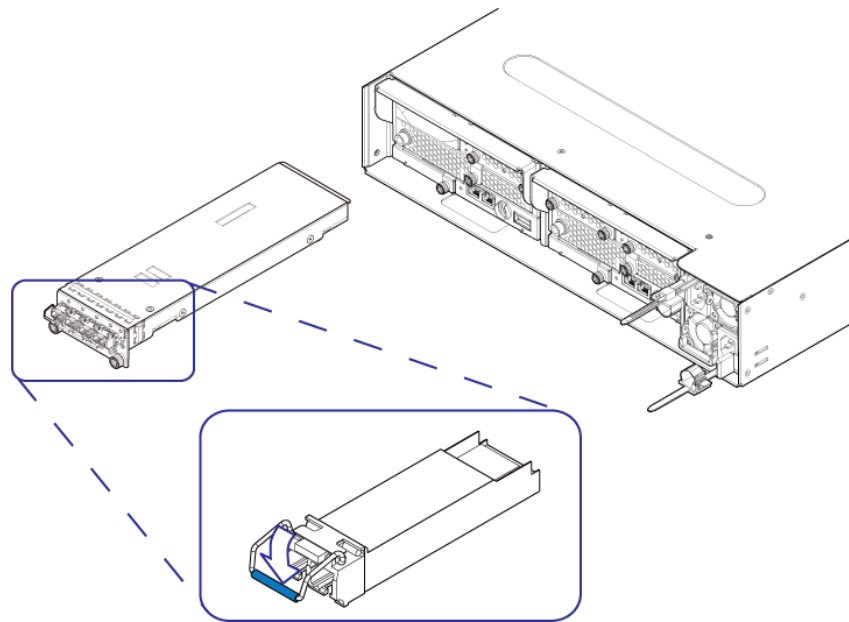
- Shortwave SFPs are black.
- Longwave SFPs are blue.

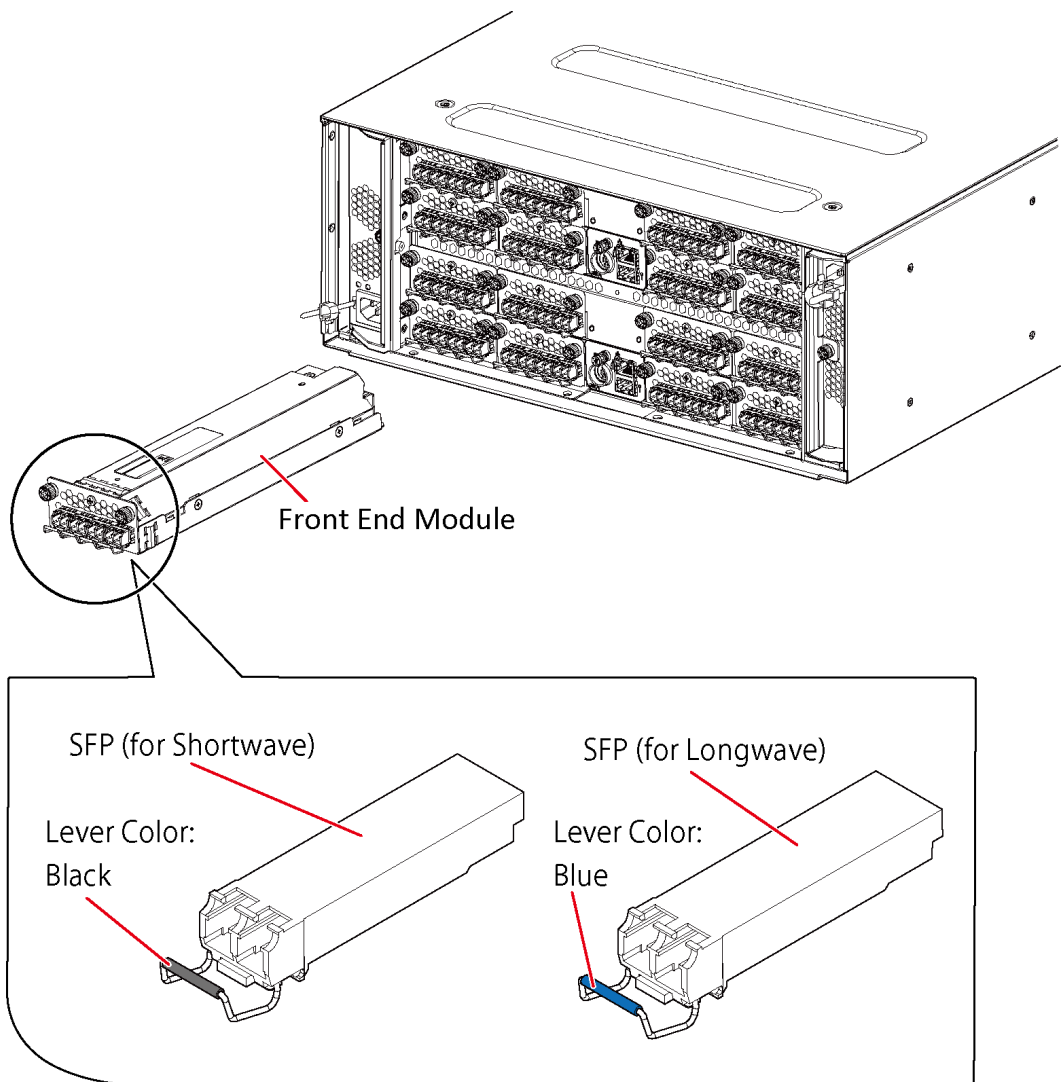
Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- The red `STATUS` LED is on at the front end module whose SFP will be replaced.

Procedure

1. Disconnect the optical fibre cable from the SFP to be replaced.
2. Pull the SFP lever down toward you and pull out the SFP.
If you cannot remove the SFP, pull it out while pushing open the lever toward you.





3. Wait at least 10 seconds, and then check the SFP insertion direction and insert the SFP into the port until it clicks.



Note: Replace the SFP with the same type being removed.

4. Connect the optical fibre cable that matches the new SFP. Check that the cable latch clicks and the cables are surely connected.
5. Confirm that the red **PORT** LED on the front end module is off.
6. In the **Controller Chassis** window, confirm that the status of the replacement SFP is **Normal**.
If necessary, click **Refresh** at the top-right of the window to update the status in the window.
7. Log out and close the **Maintenance Utility** window.

Replacing an SFP on a host port expansion chassis

Install the same type of SFP as the one being replaced. The color of the lever or the entire SFP identifies the SFP type:

- Shortwave SFPs are black.
- Longwave SFPs are blue.

Before you begin

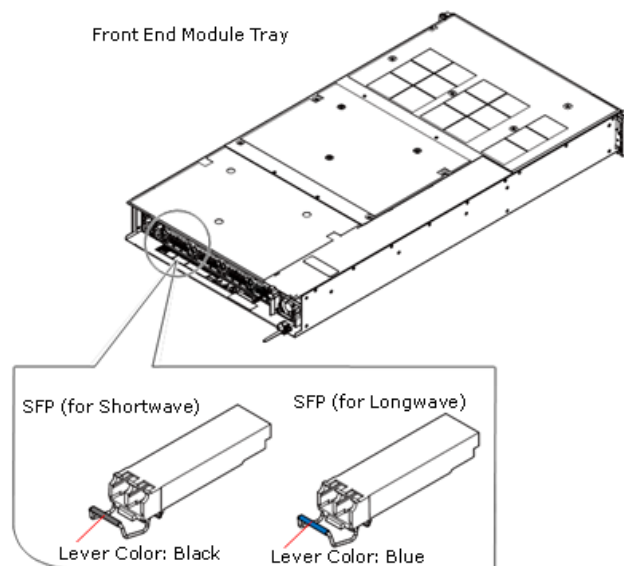
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- The red **PORT** LED is on at the front end module whose SFP will be replaced.

Procedure

1. Disconnect the optical fiber cable from the SFP to be replaced.
2. Pull the SFP lever down toward you and pull out the SFP. If you cannot remove the SFP, pull it out while pushing open the lever toward you.
3. Check the SFP insertion direction and insert the SFP into the port until it clicks.



Note: Replace the SFP with the same type being removed.



4. Connect the optical fibre cable to the new SFP. Check that the cable latch clicks and the cables are surely connected.
5. Confirm that the red **PORT** LED on the front end module is off.
6. In the **Controller Chassis** or **Channel Board Box** window, confirm that the status of the replacement SFP is **Normal**.
If necessary, click **Refresh** at the top-right of the window to update the status in the window.
7. Log out and close the **Maintenance Utility** window.

Replacing a small form-factor pluggable (SFP+) for a NAS module

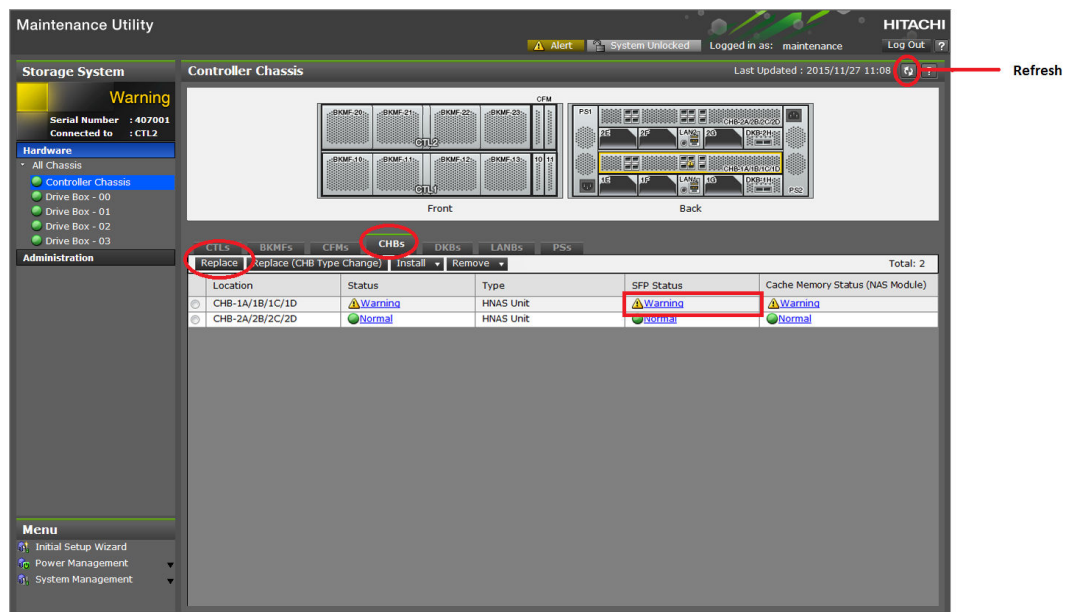
This section describes the procedure for replacing a SFP+ for the NAS module.

Checking the SFP+ for a NAS module

Before you begin

Procedure


1. Start the maintenance utility.
2. In the **Maintenance Utility** window, click **Hardware > Controller Chassis**.
3. Click the **CHBs** tab.
4. To display the most recent status of the SFP+, click **Refresh**.



5. Check the SFP+ to be replaced, and then click **Close**.


Small Form-factor Pluggable

CHB-1A/1B/1C/1D



Port ID	SFP Status	SFP Type
c1	Normal	Short Wave
c2	Normal	Short Wave
c3	Normal	Short Wave
c4	Normal	Short Wave
tg1	Warning	Short Wave
tg2	Normal	Short Wave
tg3	Normal	Short Wave
tg4	Normal	Short Wave
tg5	Normal	Short Wave
tg6	Normal	Short Wave

CHB-2A/2B/2C/2D

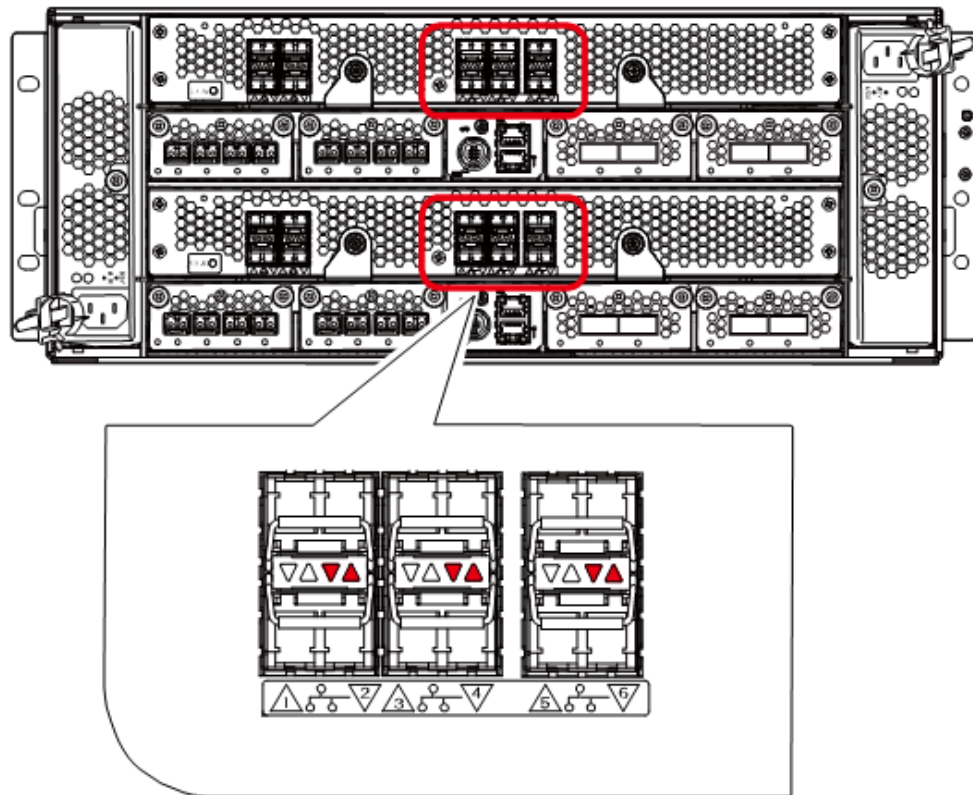


Port ID	SFP Status	SFP Type
c1	Normal	Short Wave
c2	Normal	Short Wave
c3	Normal	Short Wave
c4	Normal	Short Wave
tg1	Normal	Short Wave
tg2	Normal	Short Wave
tg3	Normal	Short Wave
tg4	Normal	Short Wave
tg5	Normal	Short Wave
tg6	Normal	Short Wave

Change SFP Type Close ?

Replacing an SFP+ for a NAS module

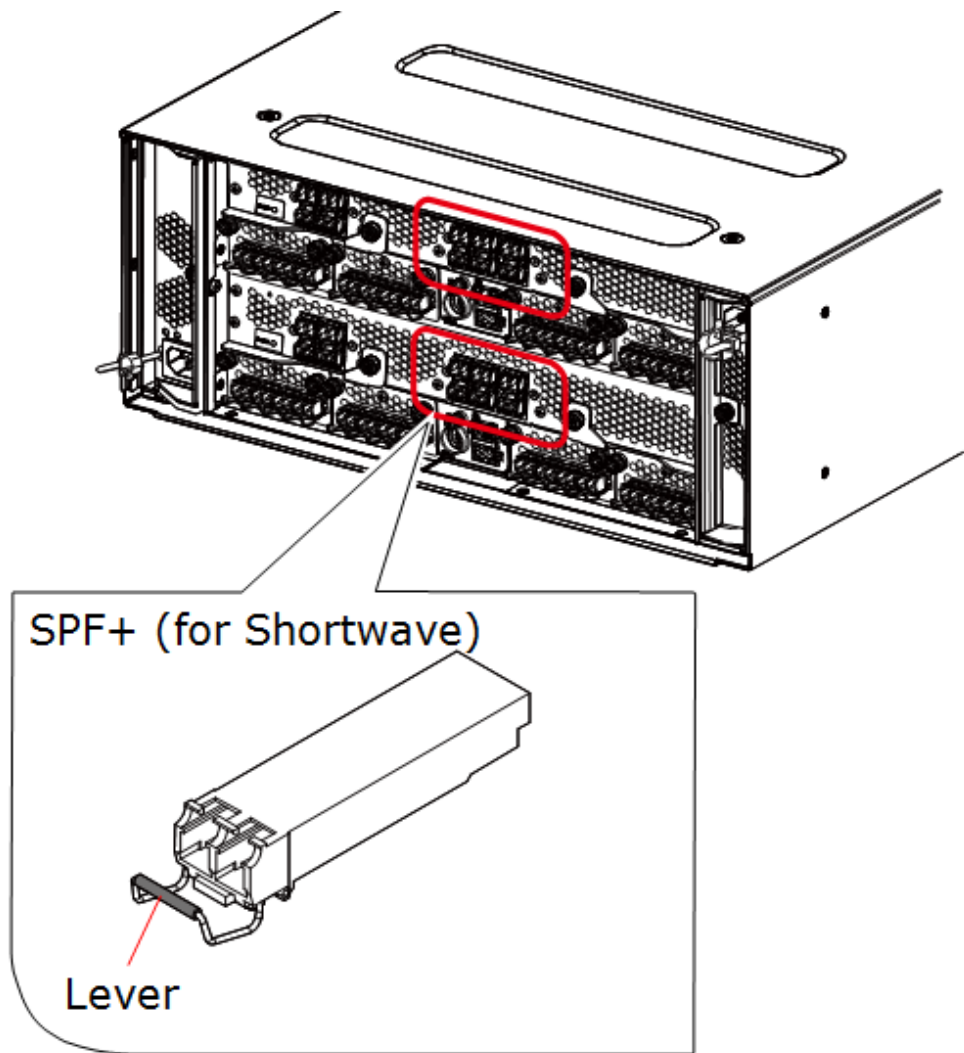
Confirm that the red network port LED is on at the SFP+ to be replaced. Be sure to replace the SFP+ with the same type of SFP+.



Network port

Procedure

1. Remove the cable from the SFP+ to be replaced. Mark the port from where the cable was removed.
2. Remove the SFP+:
 - a. Pull the SFP lever down toward you and pull out the SFP+. If you cannot remove it, pull it out while pushing open the lever toward you.
 - b. Wait at least 10 seconds.
 - c. Check the SFP+ insertion direction, and then inset the SFP+ into the port until the cable clicks into place.



3. On the new SFP+, connect the cable to the same port to which the cable was connected on the old SFP+. Be sure the cable clicks into place.

Restoring the SFP+ for a NAS module

Procedure

1. In the **Maintenance Utility** window, click **Hardware > Controller Chassis**.
2. Click the **CHBs** tab.
3. To display the most recent status of the NAS module, click **Refresh**.
4. Confirm that the status of the replaced SFP+ is **Normal**.
5. Log out of the **Maintenance Utility** window.

Replacing a back end module

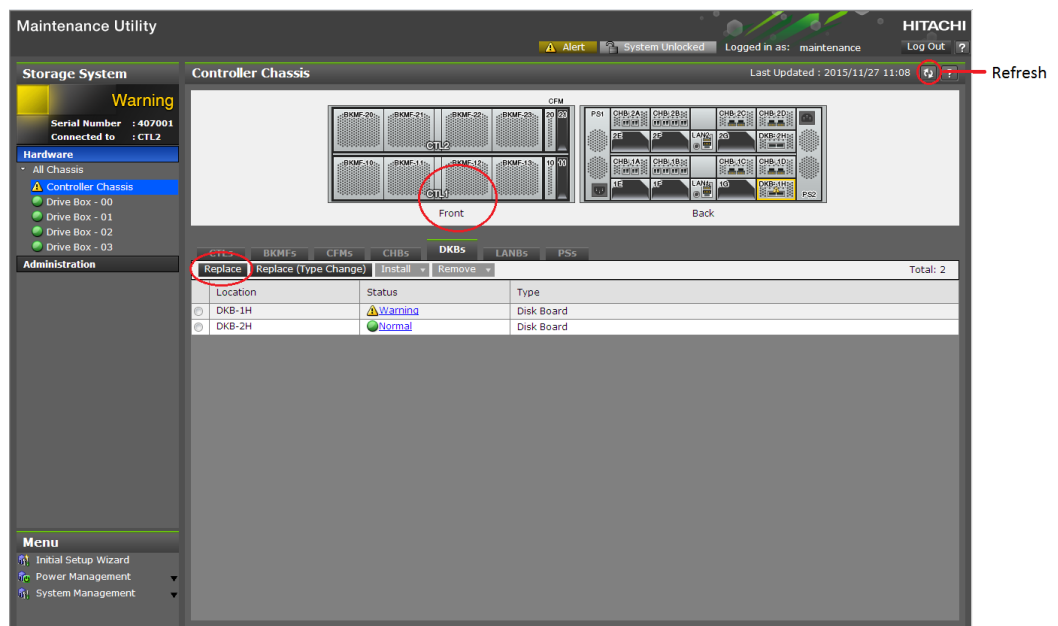
Back end module replacement is supported only on the VSP G800 or VSP F800. Before performing the replacement, read the precautions and understand the procedure for your back end module.

- ☐ [Blocking a back end module](#)
- ☐ [Adding or replacing the back end module](#)
- ☐ [Restoring a DKB](#)

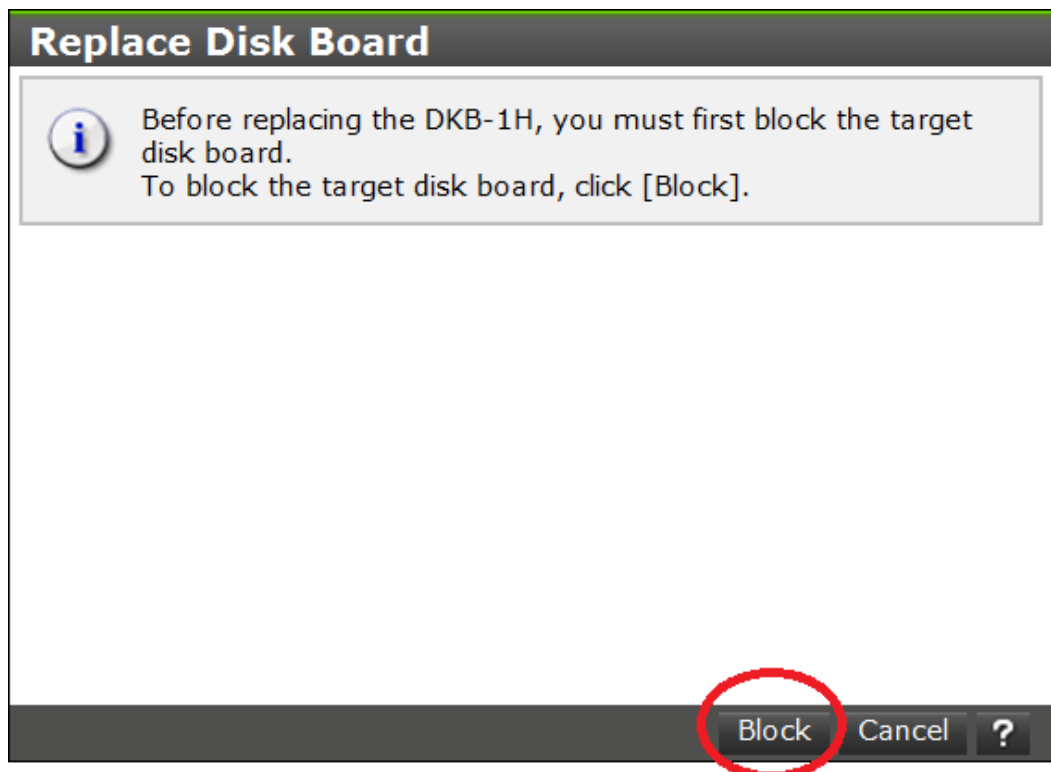
Blocking a back end module

Procedure

1. Start the maintenance utility.
2. In the **Maintenance Utility** window, click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **DKBs** tab.
4. Confirm that the status of the back end module to be replaced is **Warning**.
5. To display the most recent status of the back end module, click **Refresh**.



6. Click the back end module to be replaced, and then click **Replace**.
7. When the **Replace Disk Board** window opens, verify that the back end module shown is the one to be replaced.
8. Click **Block**.



9. Leave the **Replace Disk Board** window open, but do not click the **Restore** button.



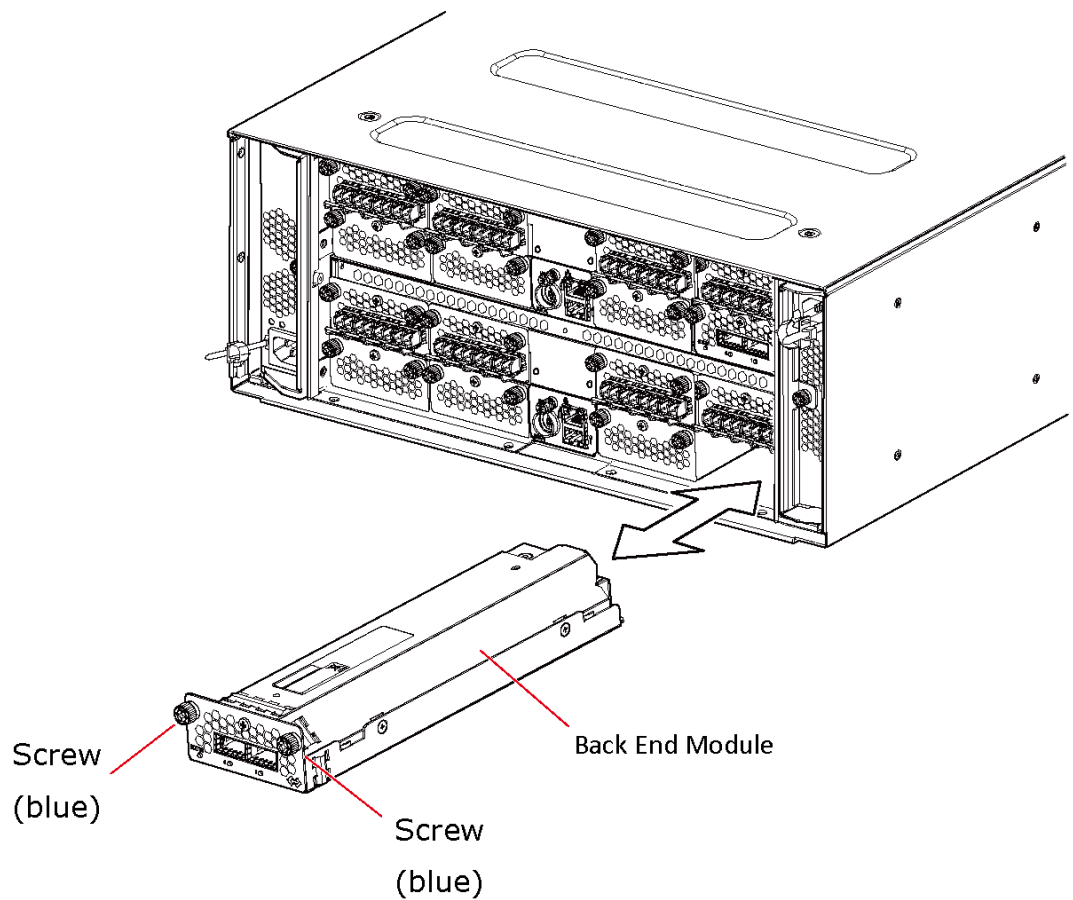
Adding or replacing the back end module

Before you begin

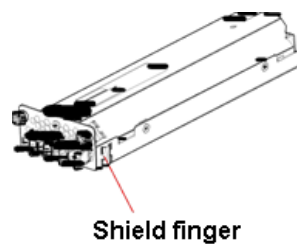
- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Use the maintenance utility to block the back end module.
- Confirm that the storage system power is turned on.
- Confirm that the red `STATUS` LED on the back end module to be replaced is on.

Procedure

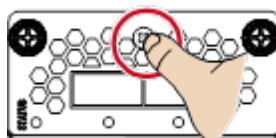
1. Press the white tab on the SAS cable, and then remove the cable from the back end module to be replaced.
2. Loosen the two blue screws that secure the back end module or *dummy* board.
3. Holding the blue screw on the back end module, gently remove the back end module. Keep the back end module straight to avoid jostling the components above and below it.



4. Insert the new back end module into the slot, just before the *shield finger*.



5. Gently push the front of the back end module until the module is inserted all the way into the slot.



6. Connect the SAS cable to the new back end module.
7. Tighten the two blue screws to secure the back end module.
8. Confirm that the red `STATUS` LED on the new back end module is off.

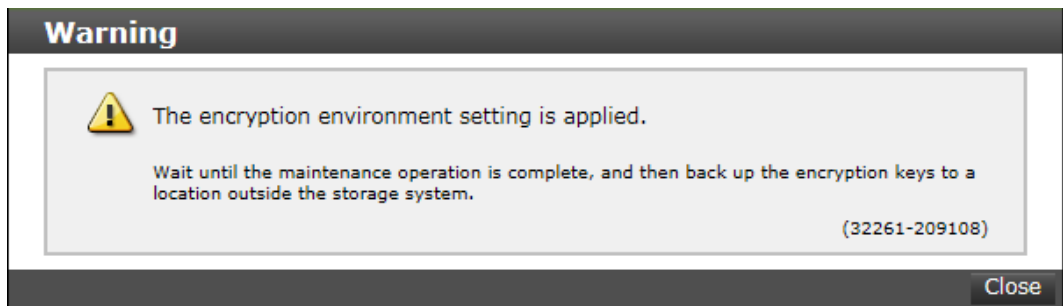
Next steps

- Use the maintenance utility to restore (unblock) the back end module.

Restoring a DKB

Procedure

1. At the **Replace Disk Board** window, click **Restore**.
A progress bar shows the replacement status.
2. When the progress bar goes away and the completion message appears, click **Close**.
3. If a warning message states that the encryption environment setting is applied, click **Close**.



4. Click **DKBs** tab in the **Controller Chassis** window and confirm that the status of the new back end module is `Normal`.
If necessary, click **Refresh** at the top-right of the window to update the status in the window.
5. Log out and close the **Maintenance Utility** window.

Replacing an ENC

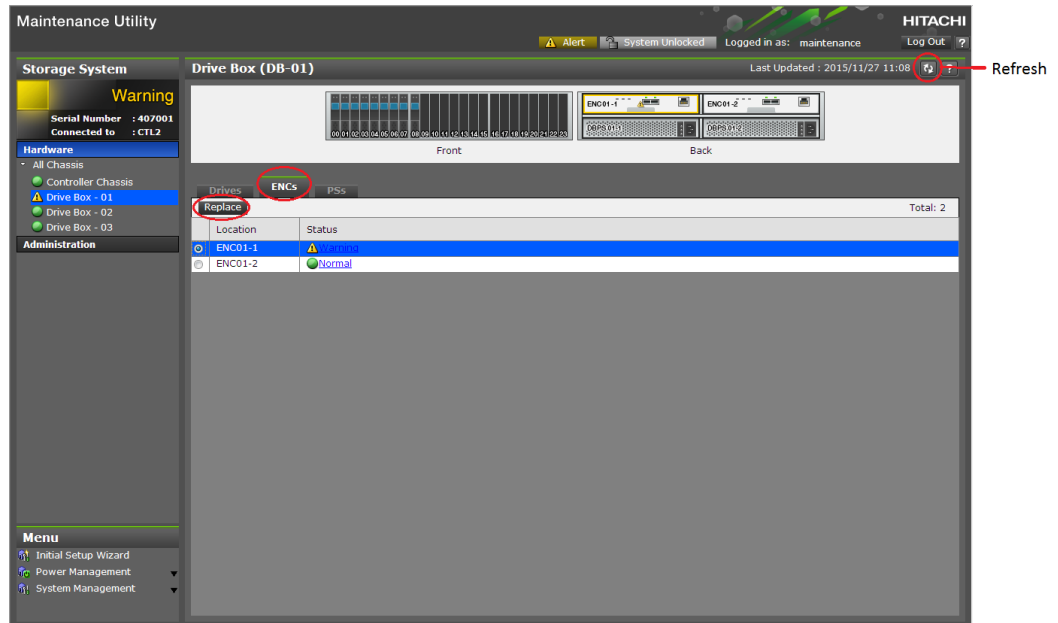
Before replacing an ENC, read the precautions and understand the procedure for your ENC.

- ☐ [Blocking an ENC](#)
- ☐ [Replacing the ENC for SFF and LFF drive trays](#)
- ☐ [Replacing the ENC for a FMD drive tray](#)
- ☐ [Restoring an ENC](#)

Blocking an ENC

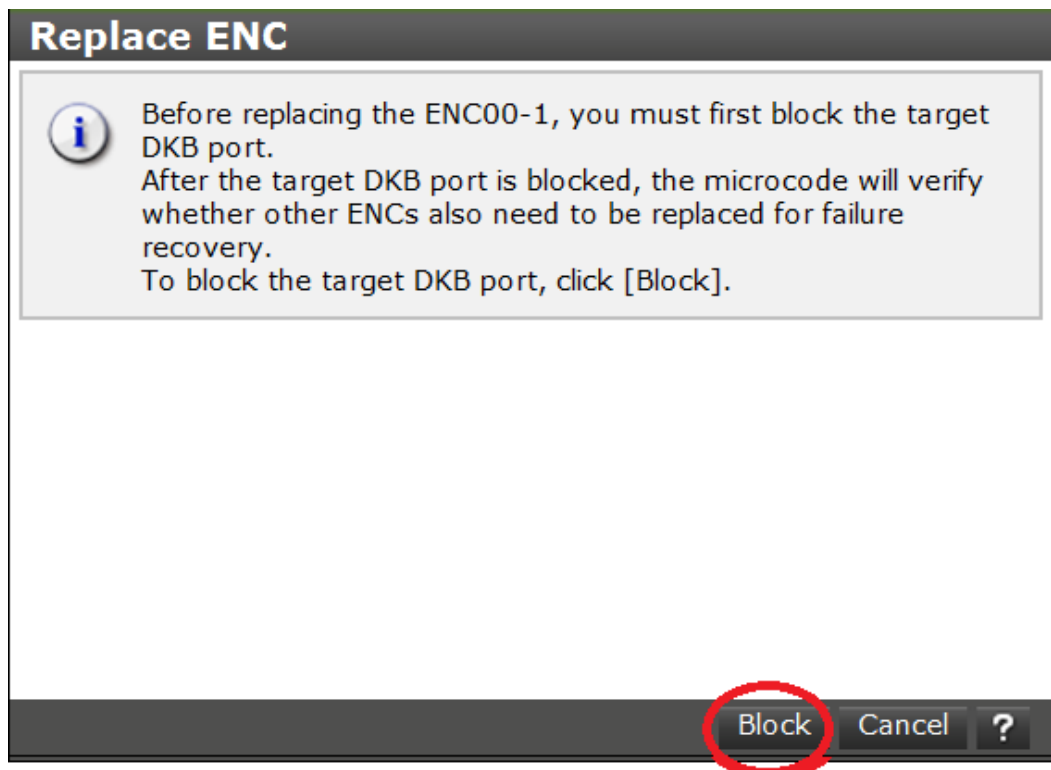
Procedure

1. Start the maintenance utility.
2. Click **Hardware > Drive Box**.
3. In the **Drive Box** window, click the **ENCs** tab.
4. To display the most recent status of the ENC, click **Refresh**.
- 5.

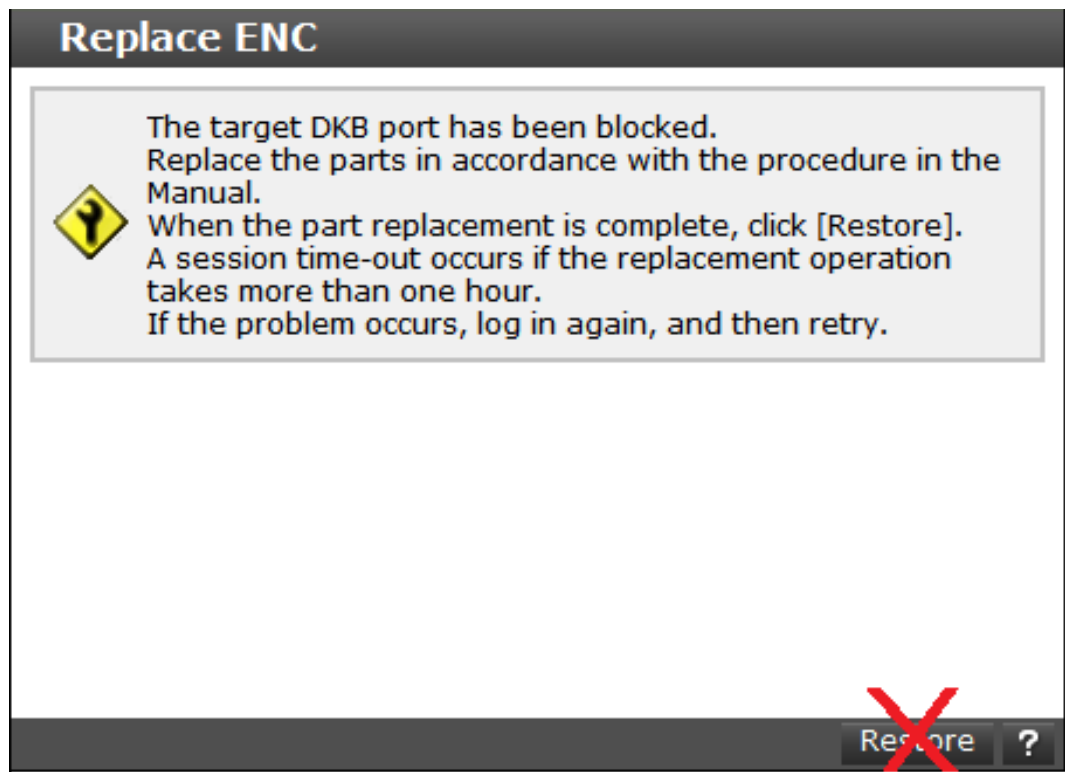


Confirm that the status of the ENC to be replaced is **Warning**.

6. Click the ENC to be replaced, and then click **Replace**.
7. When the **Replace ENC** window opens, confirm that the ENC shown in the window is the one to be replaced.



8. Click **Block**.
9. Verify that the ENC is blocked and is ready for replacing.
10. Leave the **Replace ENC** window open, but do not click the **Restore** button.



Replacing the ENC for SFF and LFF drive trays

Do not touch the ENC connector because it is fragile. Check that the ENC connector is in good shape and is not deformed, damaged, or dusty before installing the ENC.



Note: Be sure to replace the faulty ENC. If you replace the operational ENC, the system will go down.



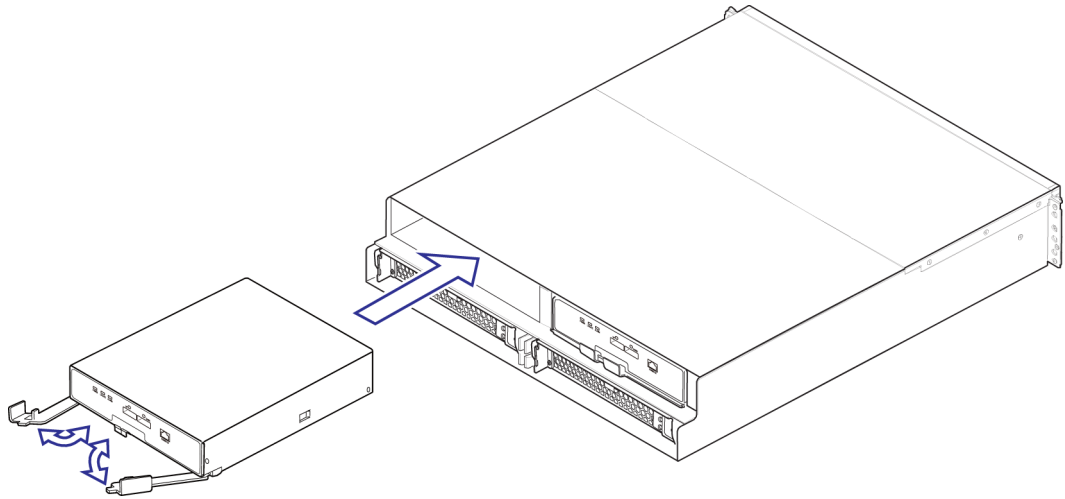
Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Use the maintenance utility to block the ENC.
- Confirm that the red **ALARM** LED for the ENC to be replaced is on.

Procedure

1. Disconnect the SAS cable from the ENC to be replaced.
2. Open toward you the right and left levers that secure the ENC.
When the levers are completely opened, the ENC moves forward.
3. Hold the ENC with both hands, and then pull it gently and remove it.
4. Open completely the right and left levers of the new ENC.
5. Insert the ENC into the slot, and then push the right and left levers toward the ENC until the levers open slightly.



6. Confirm that the red **ALARM** LED on the new ENC is off.
7. Connect the SAS cable to the new ENC.

Replacing the ENC for a FMD drive tray

Do not touch the ENC connector because it is fragile. Check that the ENC connector is in good shape and is not deformed, damaged, or dusty before installing the ENC.



Note: Be sure to replace the faulty ENC. If you replace the operational ENC, the system will go down.



Caution: A short-circuit can cause a fire. Never insert metal or other objects into the cable connector; otherwise, a short-circuit can occur.

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.

- Use the maintenance utility to block the ENC.
- Confirm that the red **ALARM** LED for the ENC to be replaced is on.

Procedure

1. Disconnect the SAS cable from the ENC to be replaced.
2. Open toward you the right and left levers that secure the ENC.
When the levers are completely opened, the ENC moves forward.
3. Hold the ENC with both hands, and then pull it gently and remove it.
4. Open completely the right and left levers of the new ENC.
5. Insert the ENC into the slot, and then push the right and left levers toward the ENC until the levers open slightly.
6. Confirm that the red **ALARM** LED on the new ENC is off.
7. Connect the SAS cable to the new ENC.

Restoring an ENC

Procedure

1. At the **Replace ENC** window, click **Restore**.
A progress bar shows the replacement status.
2. When the progress bar goes away and the completion message appears, click **Close**.
3. Click the **ENCs** tab in the **Drive Box** window and confirm that the status of the new ENC is **Normal**.
If necessary, click **Refresh** at the top-right of the window to update the status of the window.



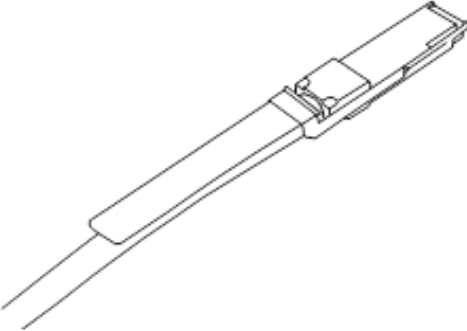
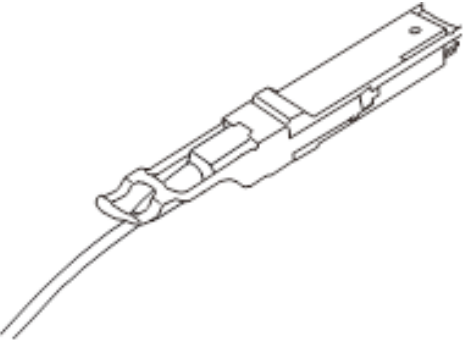
Note: Even if the ENC status is **Normal**, the red **ALARM** LED might not go out. If this occurs, contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

4. Log out and close the **Maintenance Utility** window.

Replacing a SAS cable

Before replacing a SAS cable, read the precautions and understand the procedure for your SAS cable.

SAS cables come in the following shapes:

Model Name	Shape
DW-F800-SCQ1 DW-F800-SCQ1F DW-F800-SCQ3 DW-F800-SCQ5	
DW-F800-SCQ10A DW-F800-SCQ30A DW-F800-SCQ1H	

- Before you replace a cables, block any components connected to ths SAS cables, such as controllers, backend modules, and ENCs.

- For SAS cable DW-F800-SCQ1HA, replace the SAS adapter first. If recovery fails even after replacing the SAS adapter, replace the cable.
- The cable thickness and connector shape depend on the model name of the SAS cable.

☐ [Replacing SAS cables connected to a CBSS or CBSL controller](#)

☐ [Replacing SAS cables connected to a CBLM or CBLH controller](#)

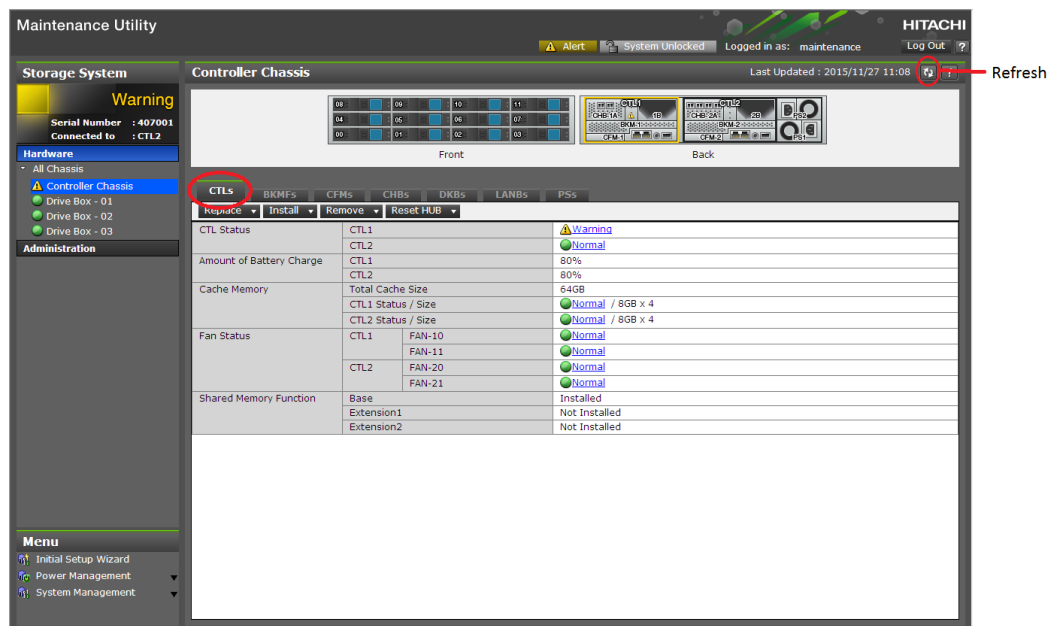
☐ [Replacing SAS cables on a drive tray](#)

Replacing SAS cables connected to a CBSS or CBSL controller

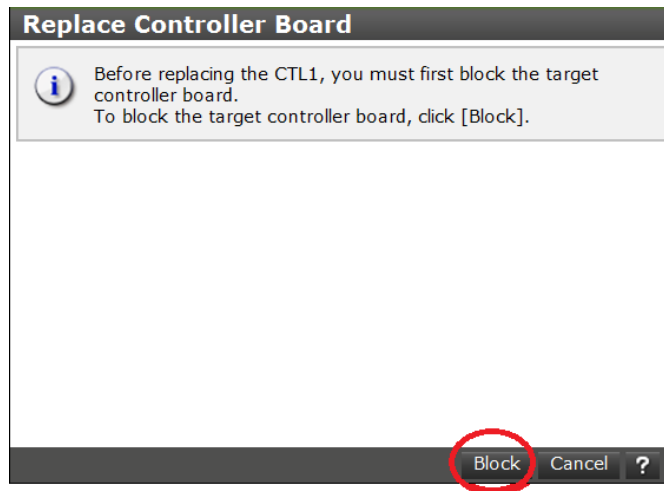
Replacing SAS cables for a CBSS or CBSL controller requires you to block a controller before replacing the cables.

Procedure

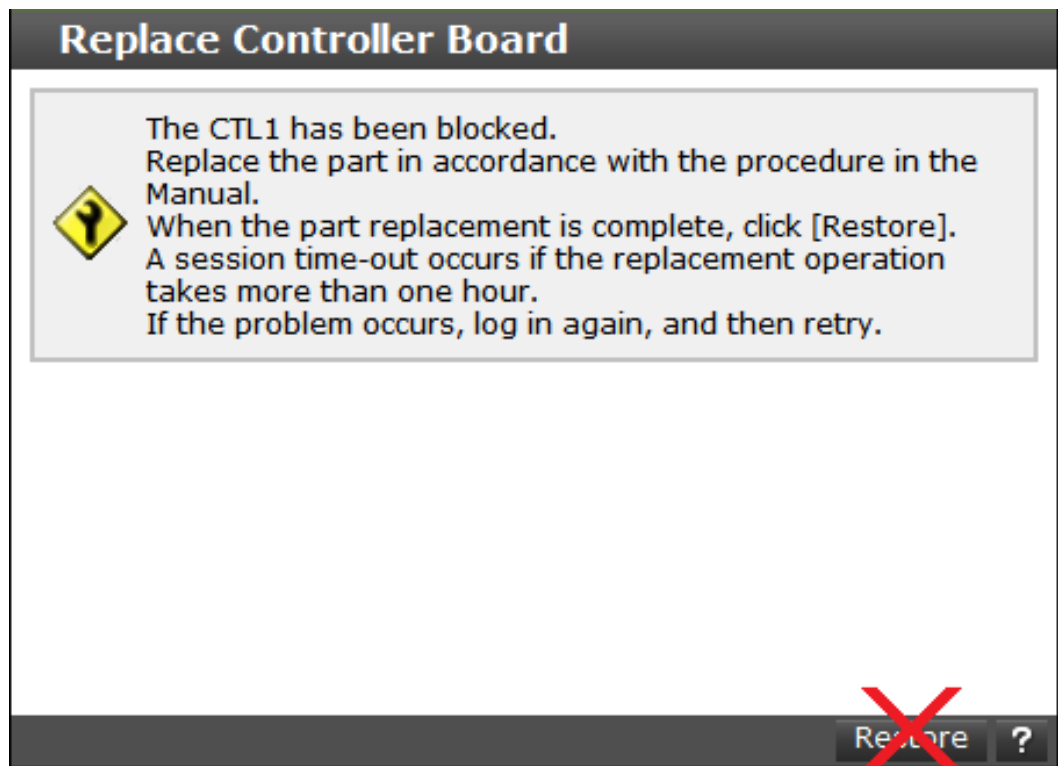
1. Start the maintenance utility.
2. In the **Maintenance Utility** window, **Hardware --> Controller Chassis**.
3. Click the **CTLs** tab.
4. To display the most recent status of the controller, click **Refresh**.



5. Check the status of the controller.
6. After checking that the appropriate controller has been selected, click **Block**.
7. When the **Replace Controller Board** window opens, verify that the appropriate controller is shown in the window, and then click **Block**.



8. Check that the controller is blocked and becomes ready for replacing the SAS cables. Leave the **Replace Controller Board** window open, but do not click the **Restore** button.



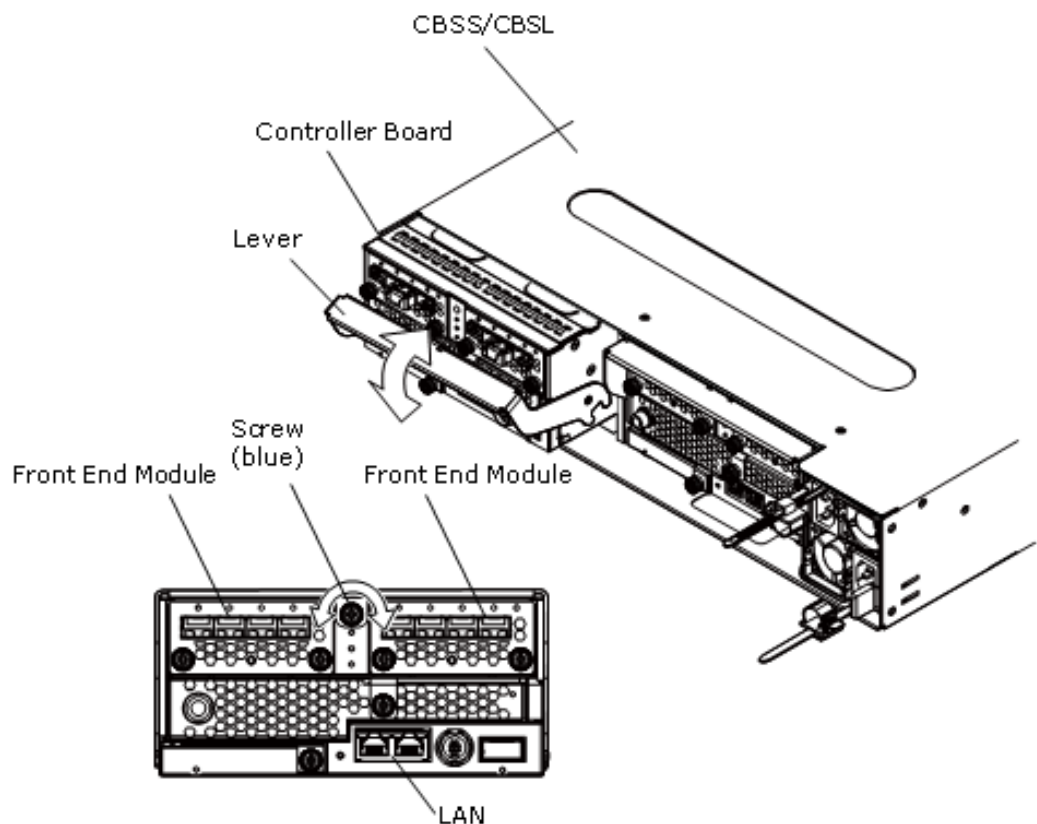
9. Confirm that the red CTL ALM LED on the controller is on.
10. Release the routing of the SAS cable connected to the CBSS or CBSL.
11. Remove the SAS cable from the back end module on the CBSS or CBSL.
12. Remove the SAS cable from the ENC on the CBSS/CBSL drive tray.

13. Remove the front end module of the blocked controller and the cables connected to LAN.
14. Loosen the blue screw that secures the blocked controller and open the lever.



Note: The POWER, READY, WARNING, and ALARM LEDs might go off. If the LED on the front goes off, check whether any component other than the controller is normal in the Maintenance Utility window and continue the procedure. The green READY LED on the front of CBSS/CBSL goes on after you restore the controller at the end of the replacement procedure.

15. Wait at least 20 seconds, and then push the controller all the way in and close the lever.

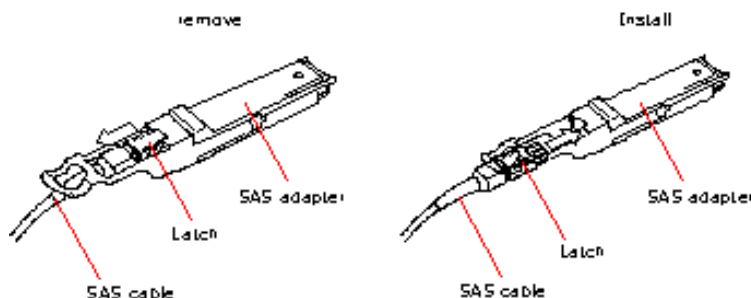


16. Tighten the blue screw and secure the controller.
17. Connect the cables you removed to the front end module and LAN.
18. Connect new SAS cables to the CBSS/CBSL back end module and the ENC of the drive tray connected to the CBSS/CBSL.

- When replacing DW-F800-SCQ1HA cables, pull the cable latches to remove the cables from the SAS adapters. Attach new cables to the SAS adapters and connect to the ENC.
- When replacing the SAS adapter of the SAS cable (DW-F800-SCQ1HA), install the cable to a new SAS adapter, and then connect it to the ENC and route the cable.



Note: The SAS cable does not have to be routed when connecting the DW-F800-SCQ1HA SAS adapter.



19. At the **Replace Controller Board** window, click **Restore**. A progress bar shows the replacement status.



Note: The restore operation can take up to 20 minutes to complete. If a message states that the recovery failed, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

20. When the progress bar goes away and the completion message appears, click **Close**.
21. Click the **CTLs** tab, and then check that the controller whose SAS cable you replaced is *Normal*.
22. Log out and close the **Maintenance Utility** window.

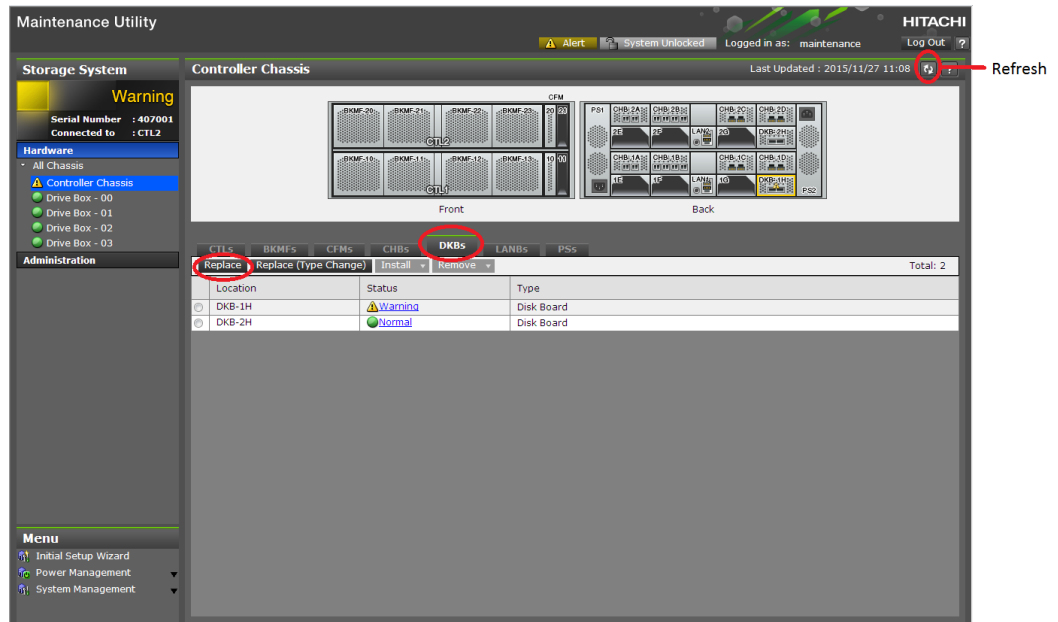
Replacing SAS cables connected to a CBLM or CBLH controller

Replacing SAS cables for a CBLM or CBLH controller requires you to block a back end module before replacing the cables.

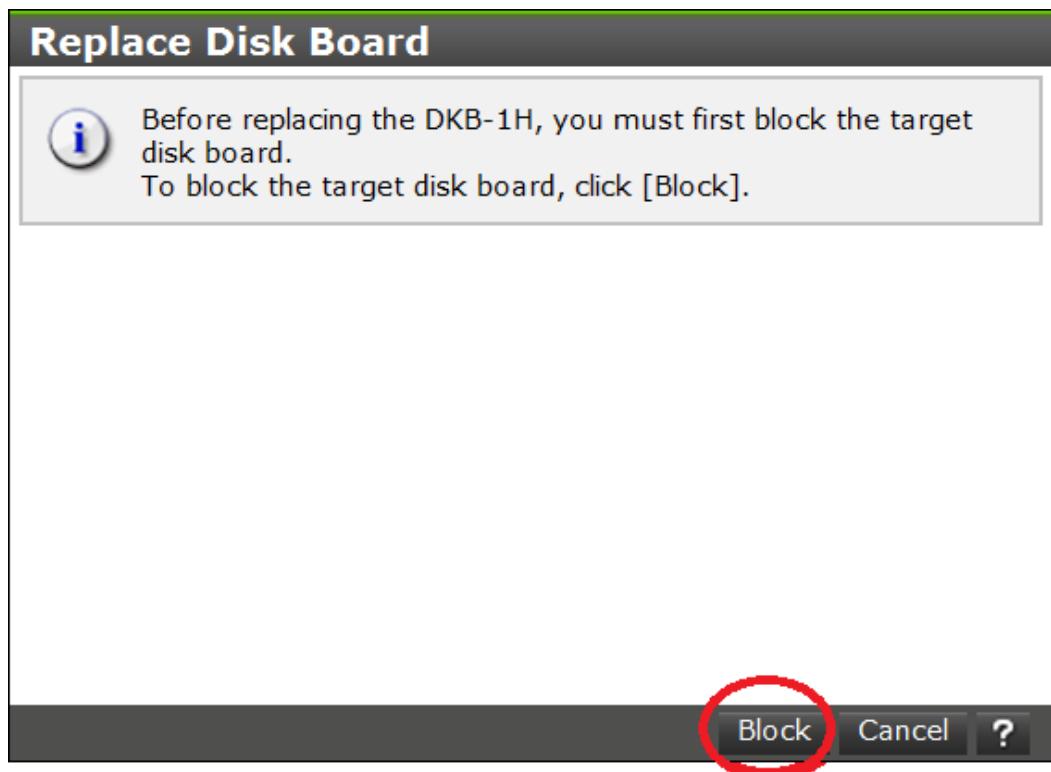
Procedure

1. Start the maintenance utility.

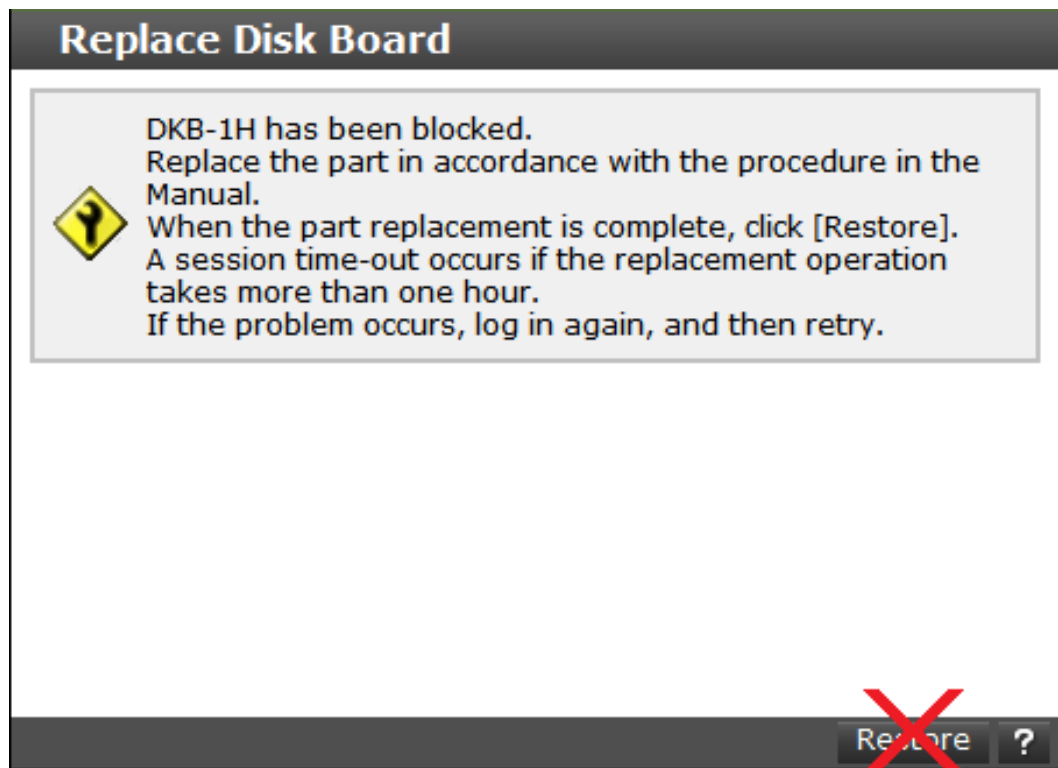
2. In the **Maintenance Utility** window, click **Hardware --> Controller Chassis**.
3. Click the **DKBs** tab.
4. To display the most recent status of the controller, click **Refresh**.



5. Check the status of the back end module.
6. Select the back end module whose SAS cable you want to replace, and then click **Replace**.
7. After checking that the appropriate back end module has been selected, click **Block**.
8. When the **Replace Disk Board** window opens, verify that the back end module shown in the window is the one whose SAS cables are to be replaced, and then click **Block**.



9. Leave the **Replace Disk Board** window open, but do not click the **Restore** button.

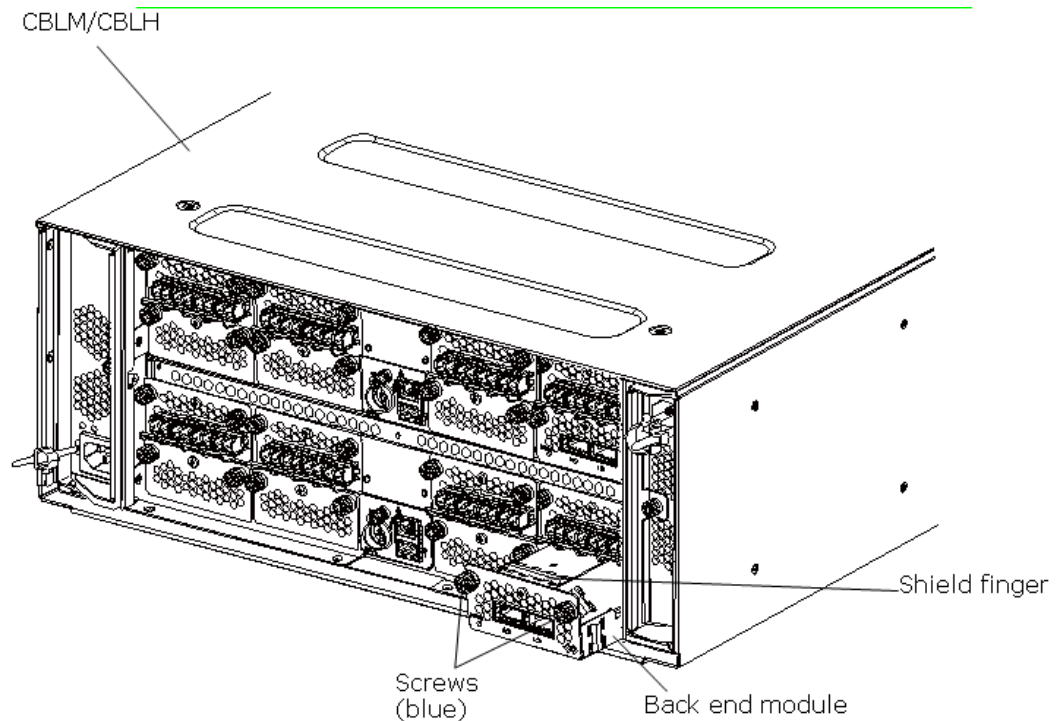


10. Confirm that the red **STATUS** LED on the back end module whose SAS cable you want to replace is on.
11. Unroute the SAS cable connected to the CBLM or CBLH.

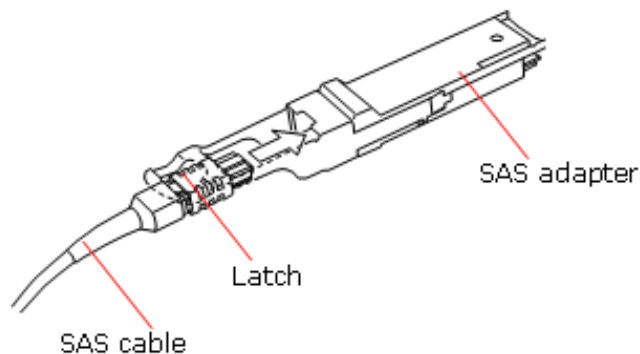


Note: When replacing the SAS adapter for DW-F800-SCQ1HA, you do not have to release the routing of the SAS cable.

12. Remove the SAS cable from the back end module on the CBLM or CBLH.
13. Remove the SAS cable from the ENC on the drive tray connected to the CBLM or CBLH.
14. For SAS cable DW-F800-SCQ1HA:
 - a. Loosen the blue two screws that secure the back end module.
 - b. Hold the blue screw, and then gently pull out the back end module slightly.
 - c. Wait at least 20 seconds, and then re-insert the back end module before the "shield finger."
 - d. Push the back end module slightly.
 - e. Tighten the two blue screws to secure the back end module.



15. Connect new SAS cables to the back end module on the CBLM/CBLH and to the ENC of the CBLM/CBLH drive tray.
16. Confirm that the red **STATUS** LED for the back end module is off.
17. Connect the new SAS cables to the back end module on the CBLM or CBLH and to the ENC of the drive tray connected to the CBLM or CBLH.



18. Connect the cables to the SAS adapters. When replacing the SAS adapter for SAS cable DW-F800-SCQ1HA, install the cable into a new SAS adapter, and then connect it to the ENC.



Note: When connecting the SAS cable DW-F800-SCQ1HA, be sure the cable latch clicks and the cables are connected securely to the SAS adapters.

19. Route the cables appropriately.



Note: The SAS cable does not have to be routed when connecting the DW-F800-SCQ1HA SAS adapter.

20. At the **Replace Disk Board** window, click **Restore**.
A progress bar shows the replacement status.
21. When the progress bar goes away and the completion message appears, click **Close**.
22. Click the **DKBs** tab, and then check that the back end module whose SAS cable you replaced is *Normal*.
23. Log out and close the **Maintenance Utility** window.

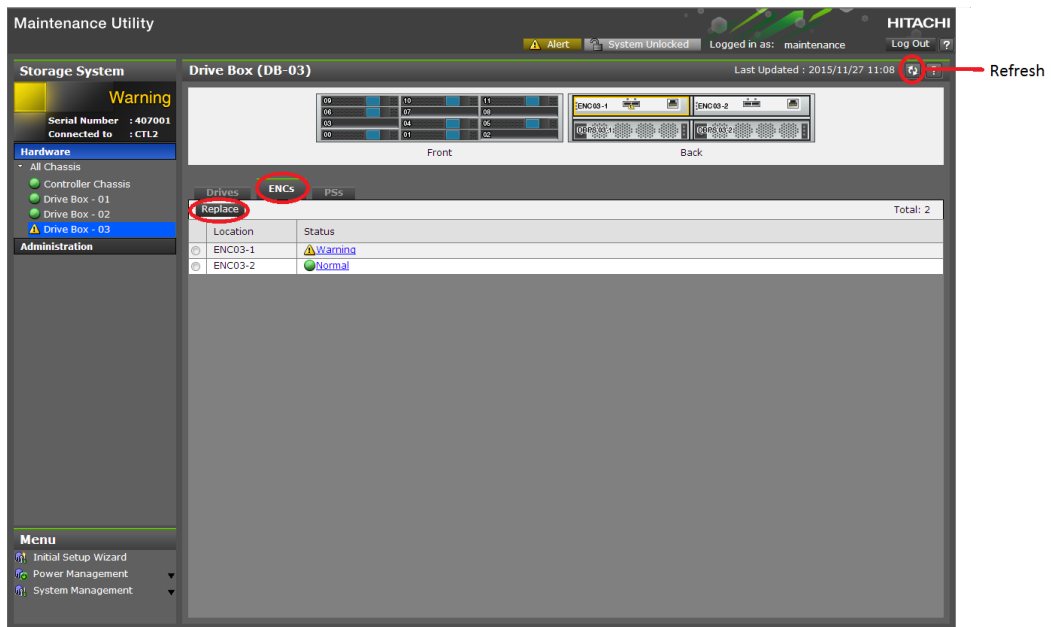
Replacing SAS cables on a drive tray

Replacing SAS cables for a drive tray requires you to block an ENC before replacing the cables.

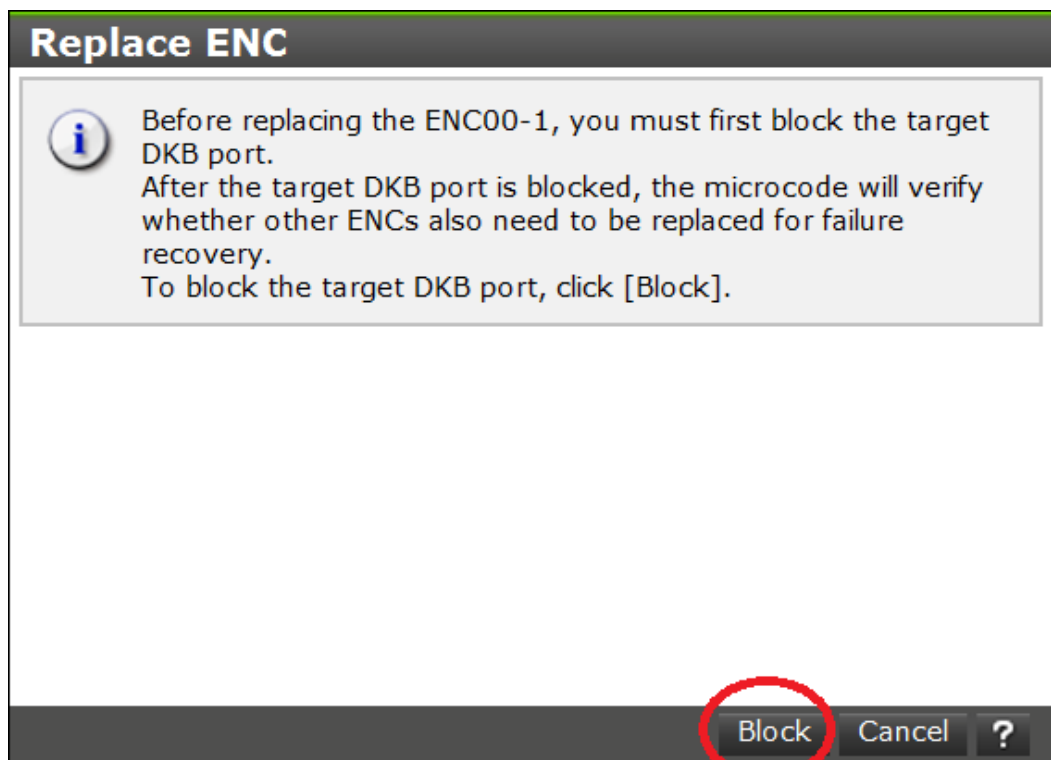
The following procedure describes how to replace SAS cables connected to a drive tray. Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.

Procedure

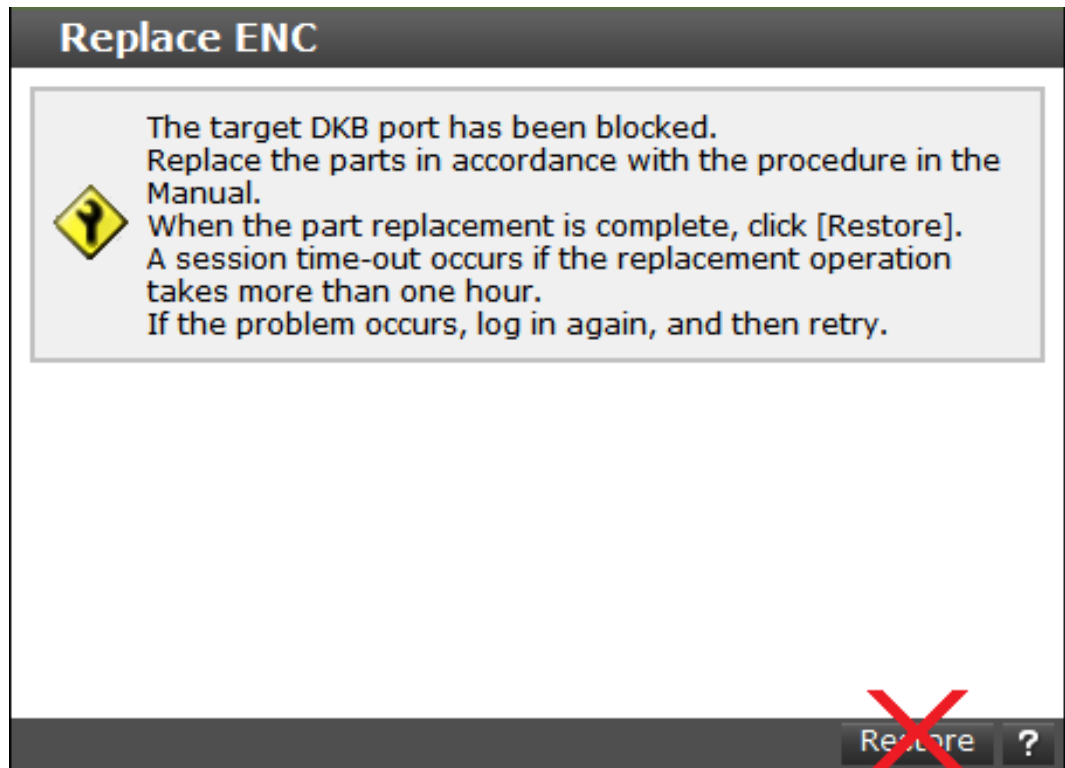
1. Start the maintenance utility.
2. Click **Hardware > Drive Box**.
3. In the **Drive Box** window, click the **ENCs** tab.
4. To display the most recent status of the ENC, click **Refresh**.



5. Click the ENC whose SAS cable you want to replace, and then click **Replace**.
6. When the **Replace ENC** window opens, confirm that the ENC shown in the window is the one to be replaced.



7. Click **Block**.
8. Verify that the appropriate ENC is blocked.
9. Leave the **Replace ENC** window open, but do not click the **Restore** button.

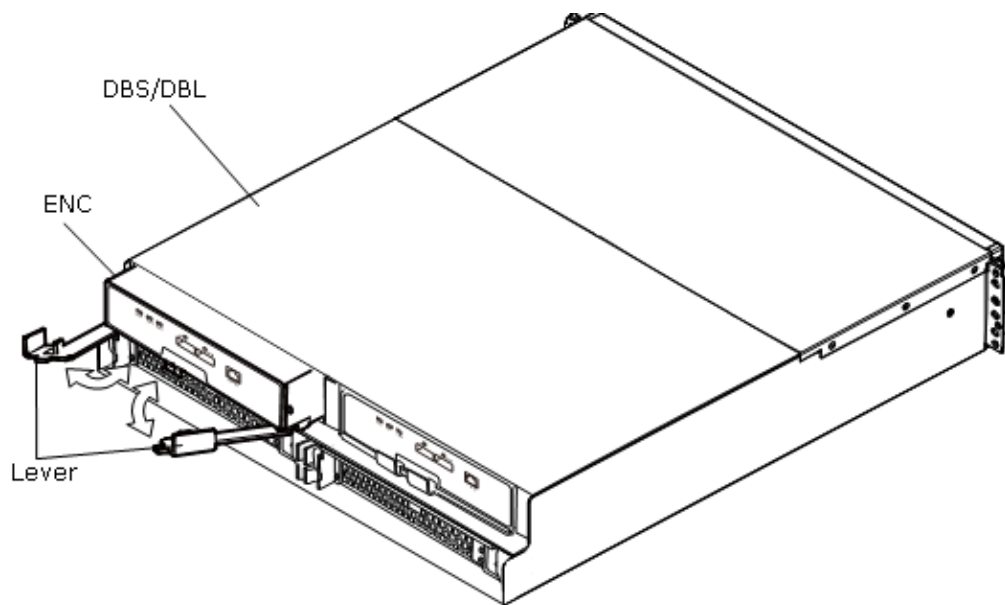


10. Confirm that the red **ALARM** LED on the ENC whose SAS cable you want to replace is on.
11. Unroute the SAS cable connected to the drive tray.



Note: For SAS cable DW-F800-SCQ1HA, you do not have to unroute the cable.

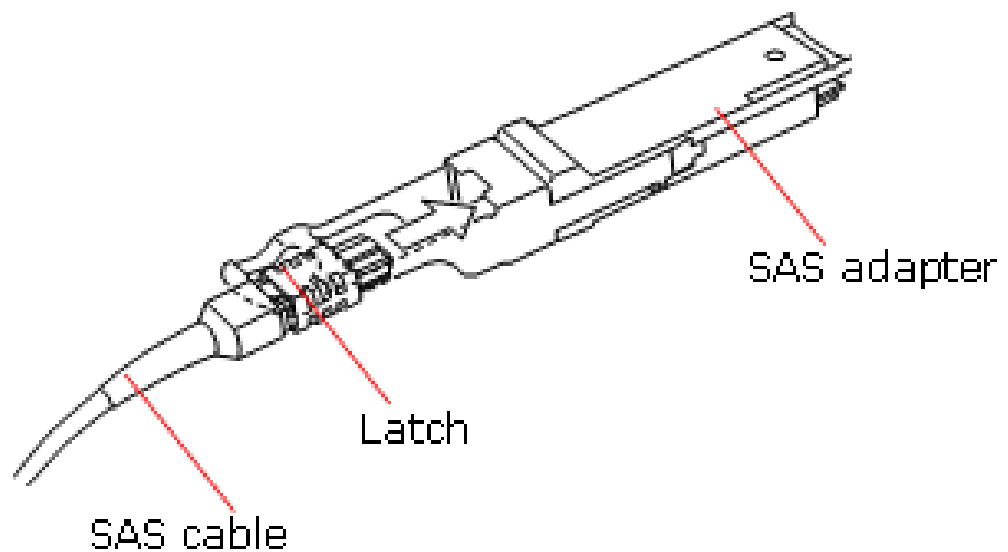
12. Remove the SAS cable from the ENC on the drive tray and from the ENC on a drive tray connected to another drive tray.
13. For SAS cable DW-F800-SCQ1HA:
 - a. Open the lever securing the ENC. When the lever opens completely, the ENC is completely pulled out.
 - b. Wait at least 20 seconds, and then re-insert the ENC until the right and left levers close slightly, and then push the lever toward the ENC.



14. Connect new SAS cables to the ENC on the drive tray(s).



Note: When connecting the SAS cable DW-F800-SCQ1HA, be sure the cable latch clicks and that the cables are connected securely to the SAS adapters.



15. Confirm that the red **ALARM** LED for the ENC is off.
16. Route the cables appropriately.



Note: The SAS cable does not have to be routed when connecting the DW-F800-SCQ1HA SAS adapter.

17. At the **Replace ENC** window, click **Restore**.
A progress bar shows the replacement status.
18. When the progress bar goes away and the completion message appears, click **Close**.
19. Click the **ENCs** tab, and then check that the ENC whose SAS cable you replaced is `Normal`.

1.



Note: If the ENC status is `NORMAL` but the red `ALARM` LED does not go out, contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html.

20. Log out and close the **Maintenance Utility** window.

Replacing cache flash memory

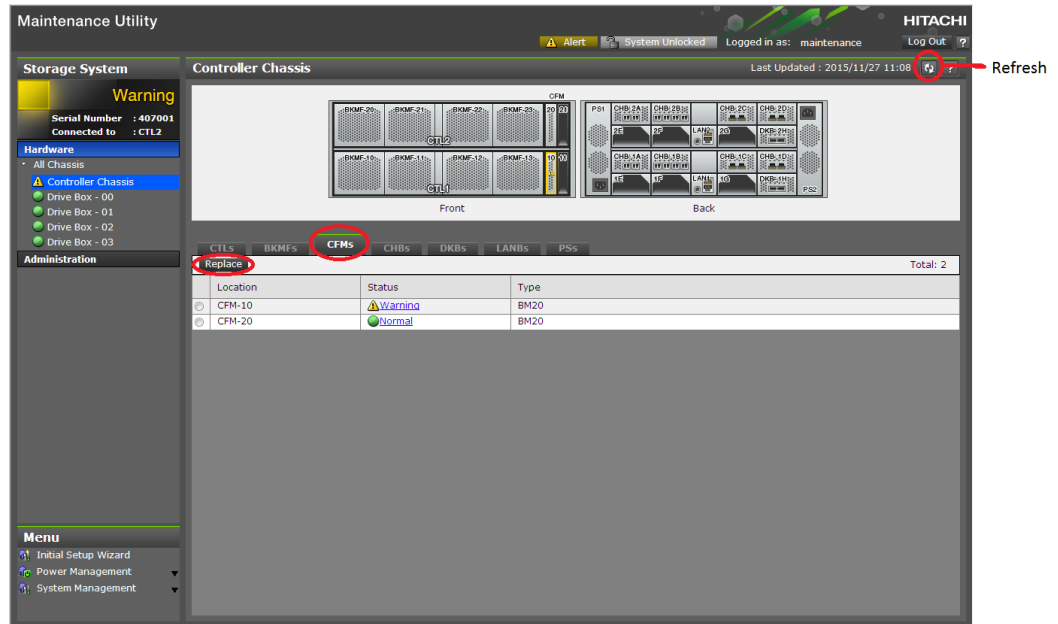
Before replacing cache flash memory (CFM), read the precautions and understand the procedure for your CFM.

- ☐ [Blocking the CFM](#)
- ☐ [Replacing the CFM](#)
- ☐ [Restoring a CFM](#)
- ☐ [Checking cache flash memory screws](#)

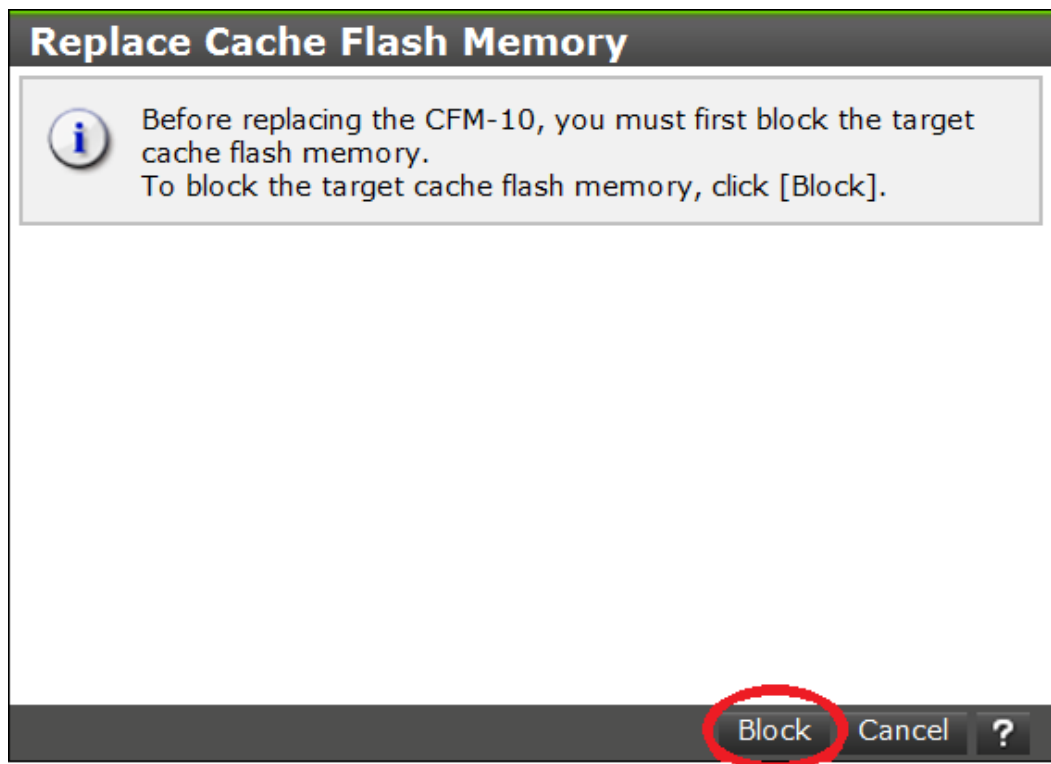
Blocking the CFM

Procedure

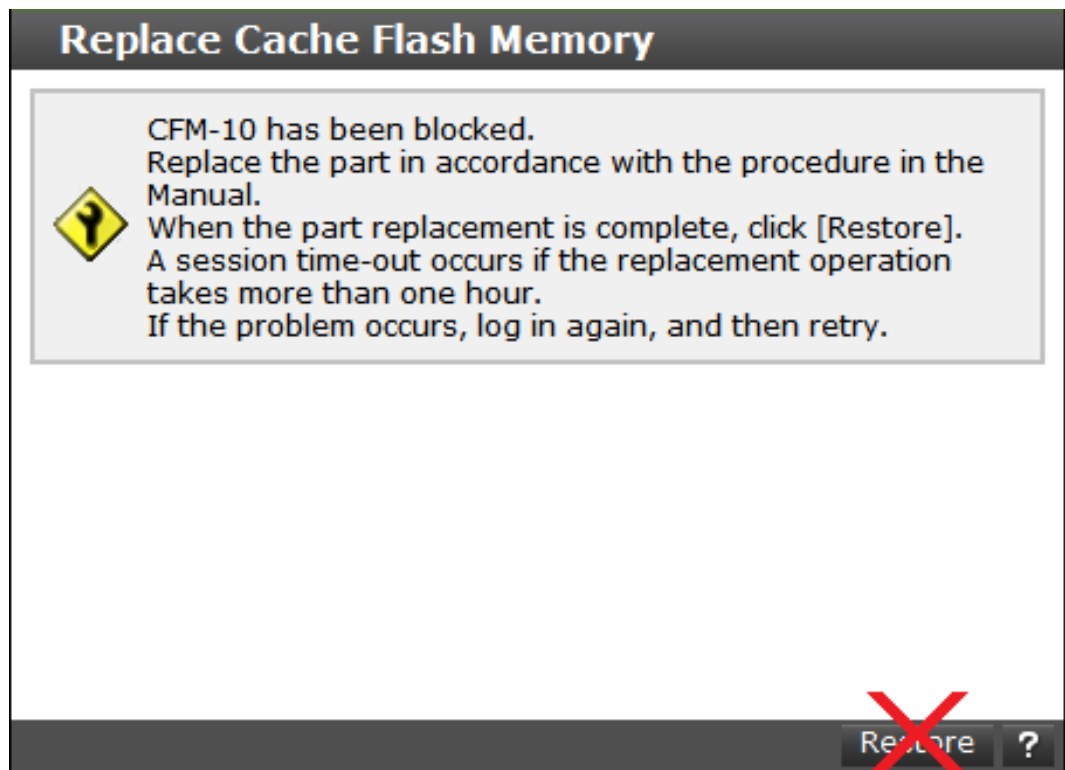
1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **CFMs** tab.
4. To display the most recent status of the CFM, click **Refresh**.



5. Confirm that the status of the CFM to be replaced is **Warning**.
6. Click the CFM to be replaced, and then click **Replace**.
7. When the **Replace Cache Flash Memory** window opens, confirm that the CFM shown in the window is the one to be replaced, and then click **Block**.



8. Click **Block**.
9. Verify that the CFM is blocked and is ready for replacing.
10. Leave the **Replace Cache Flash Memory** window open, but do not click the **Restore** button.



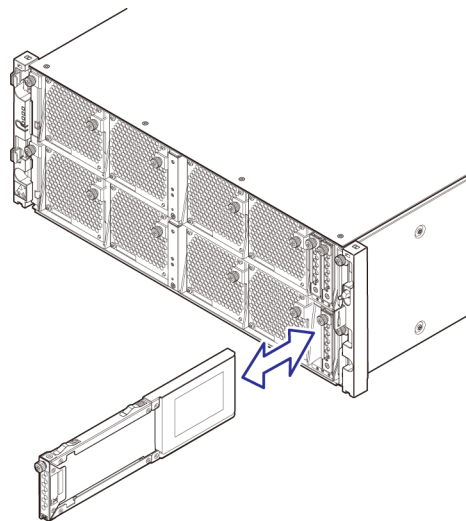
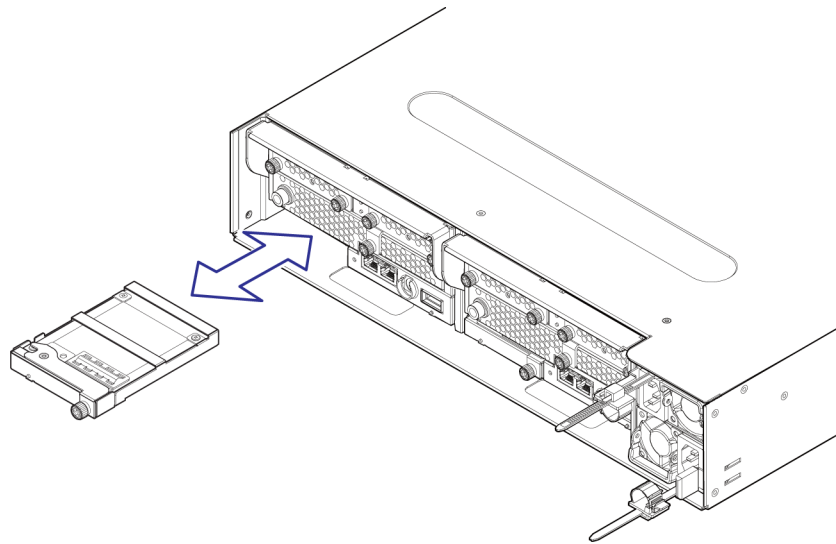
Replacing the CFM

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Use the maintenance utility to block the CFM.
- Confirm that the red **STATUS** LED for the CFM to be replaced is on.
- The red **ALARM** LED (CBSS/CBSL) or **ALM** LED (CBLM/CBLH) on the cache flash memory (CFM) to be replaced is on.

Procedure

1. Loosen the blue screw securing the CFM.
2. Open the lever
3. Hold the CFM with both hands, and then pull it gently and remove it.



4. With the lever opened completely, insert the new CFM all the way into the slot.
5. Close the lever completely, and tighten the blue screw to secure the CFM.
6. Confirm that the red **ALARM** or **ALM** LED on the CFM is off.

Next steps

- Use the maintenance utility to restore (unblock) the CFM.

Restoring a CFM

In the maintenance utility:

Procedure

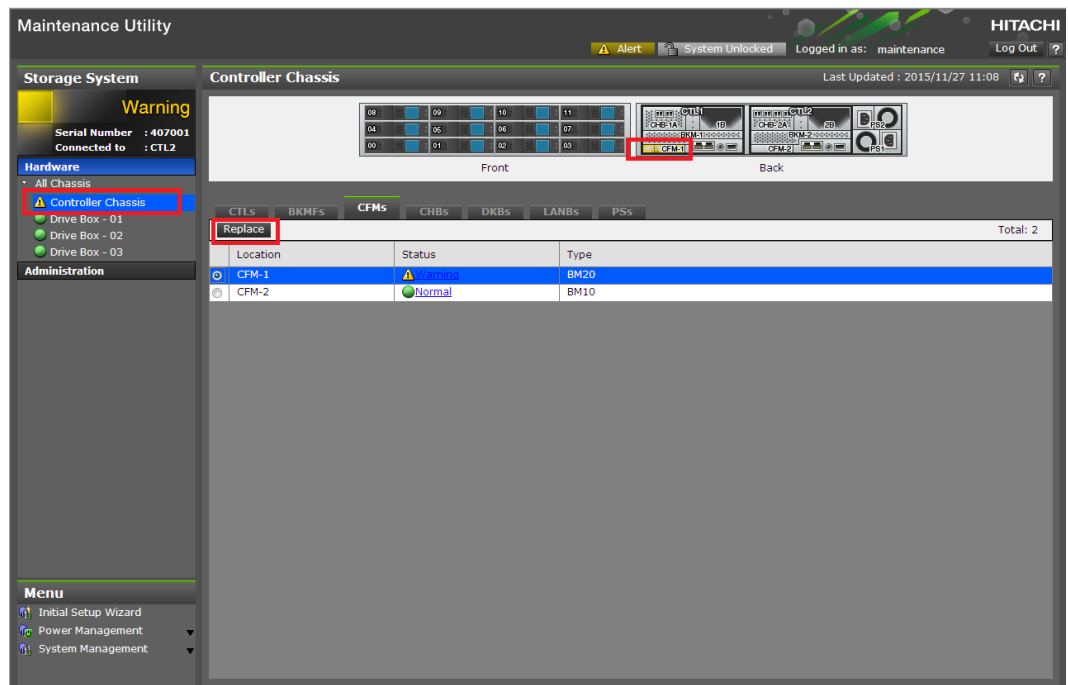
1. In the **Replace Cache Flash Memory** window, click **Restore**.
A progress bar shows the replacement status.
2. When the progress bar goes away and the completion message appears, click **Close**.
3. Click the **CFMs** tab in the **Controller Chassis** window.
4. Verify that the status of the new CFM is **Normal**.
If necessary, click **Refresh** at the top-right of the window to update the status of the window.
5. Log out and close the **Maintenance Utility** window.

Checking cache flash memory screws

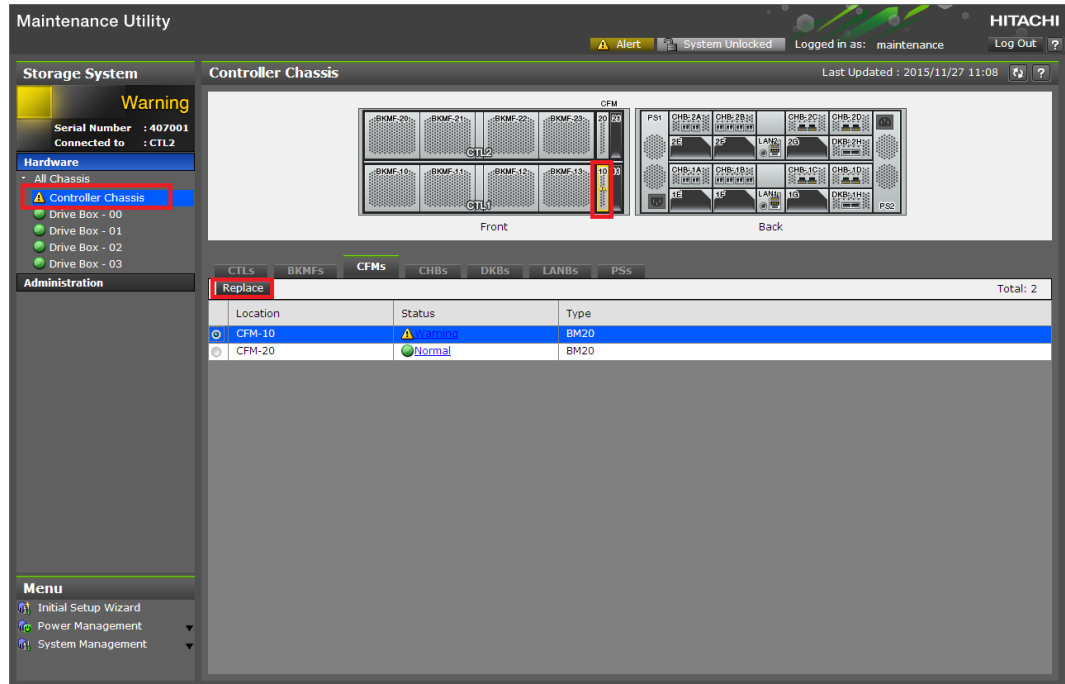
Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, click **Controller Chassis**.
3. Click the **CFM** tab of the maintenance utility to check the location of the target CFM.
4. Click the target CFM, and then click **Replace**.

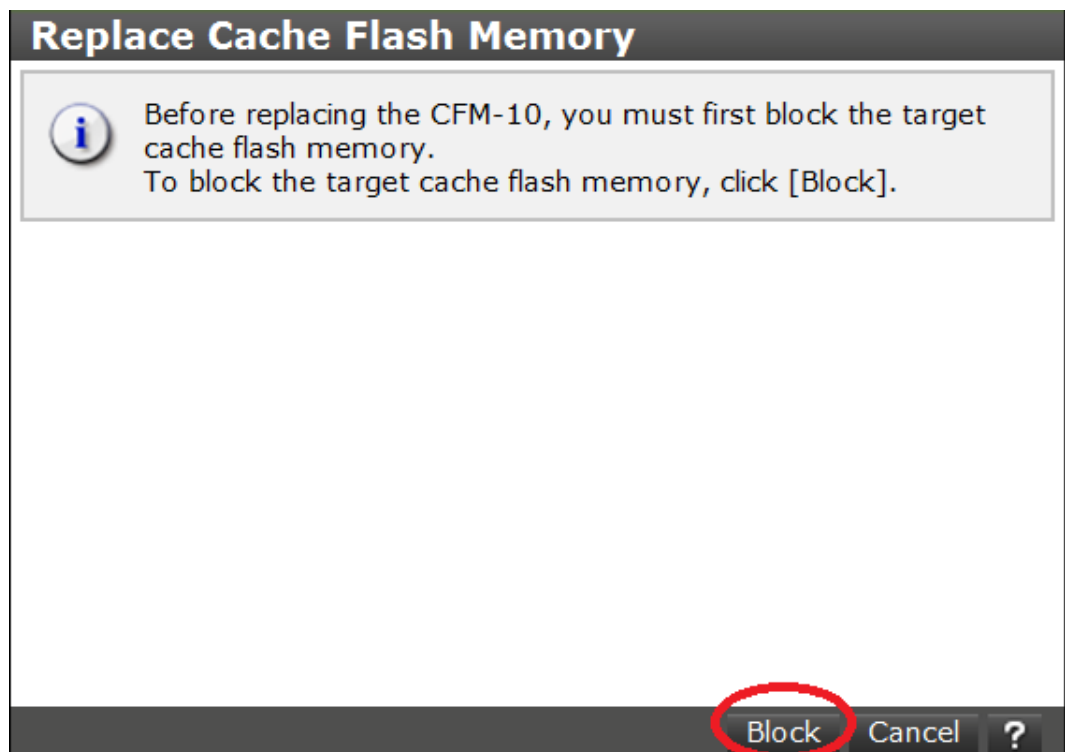
Maintenance Utility window for CBSS or CBSL



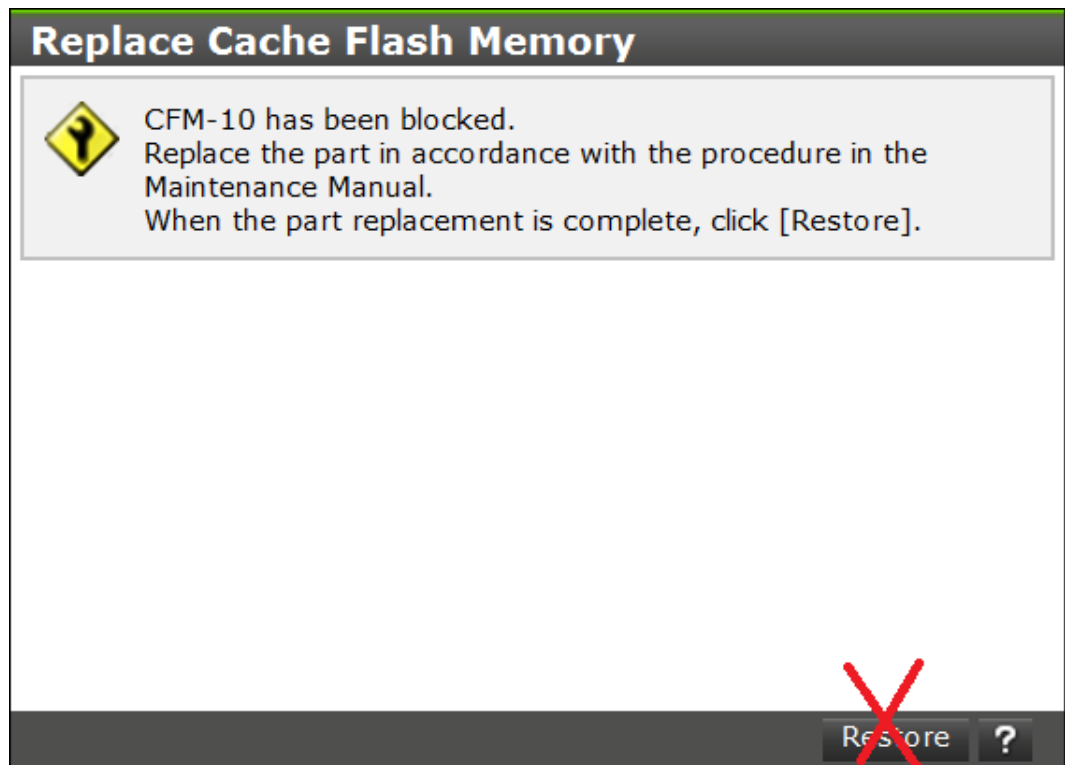
Maintenance Utility window for CBLM or CBLH



5. Check that the target CFM is correct, and then click **Block**

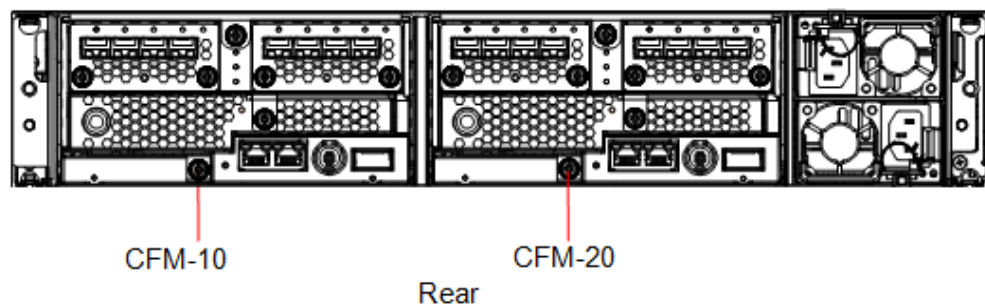


6. Check that the CFM is blocked and ready to be replaced. Do not click **Restore** at this time.

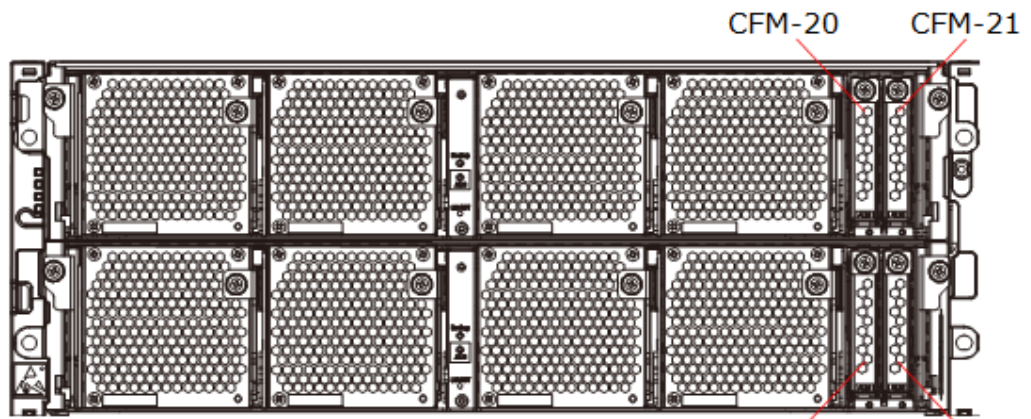


7. Remove the front bezel for the CBLM/CBLH.

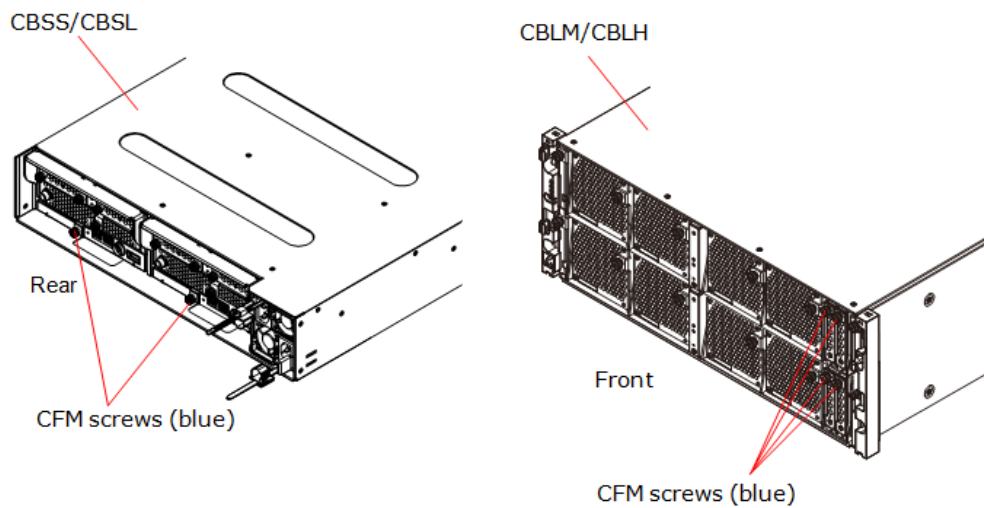
CBSS/CBSL CFM locations



CBLM/CBLH CFM locations



8. If the screws of the target CFM are loose, push the CFM all the way in and tighten the blue screws.



9. Attach the CBLM/CBLH front bezel.
10. In the **Replace Cache Flash Memory** window of the maintenance utility, click **Restore**
11. When the completion message appears, click **Close**.
12. Log out of maintenance utility to close the window.

Replacing a LAN blade

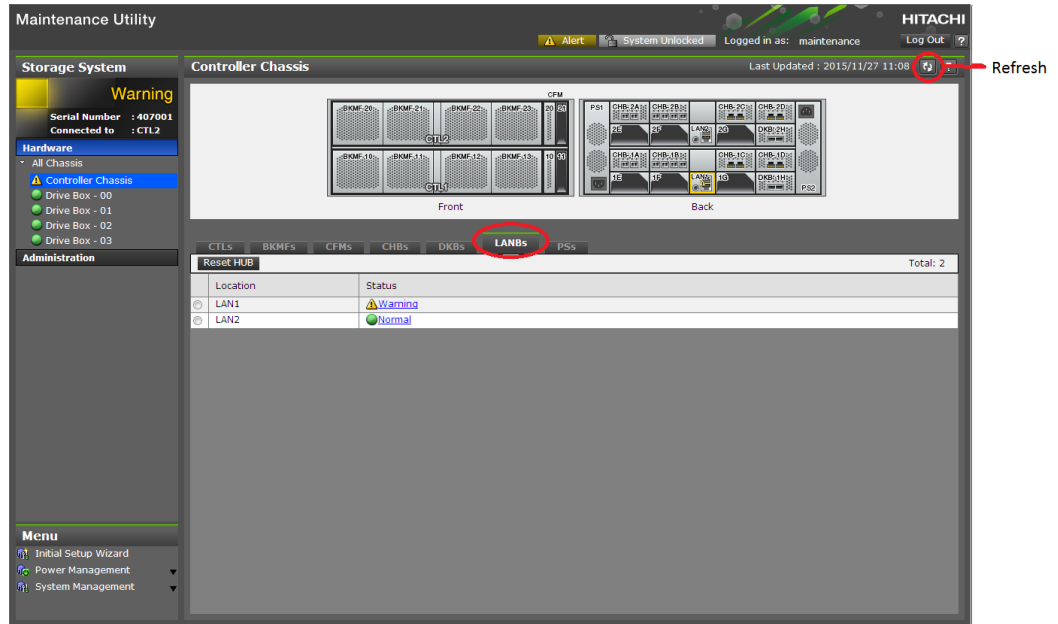
Before replacing a LAN blade, read the precautions and understand the procedure for your LAN blade.

- ☐ [Blocking the controller](#)
- ☐ [Replacing the LAN blade](#)
- ☐ [Restoring the LAN blade](#)

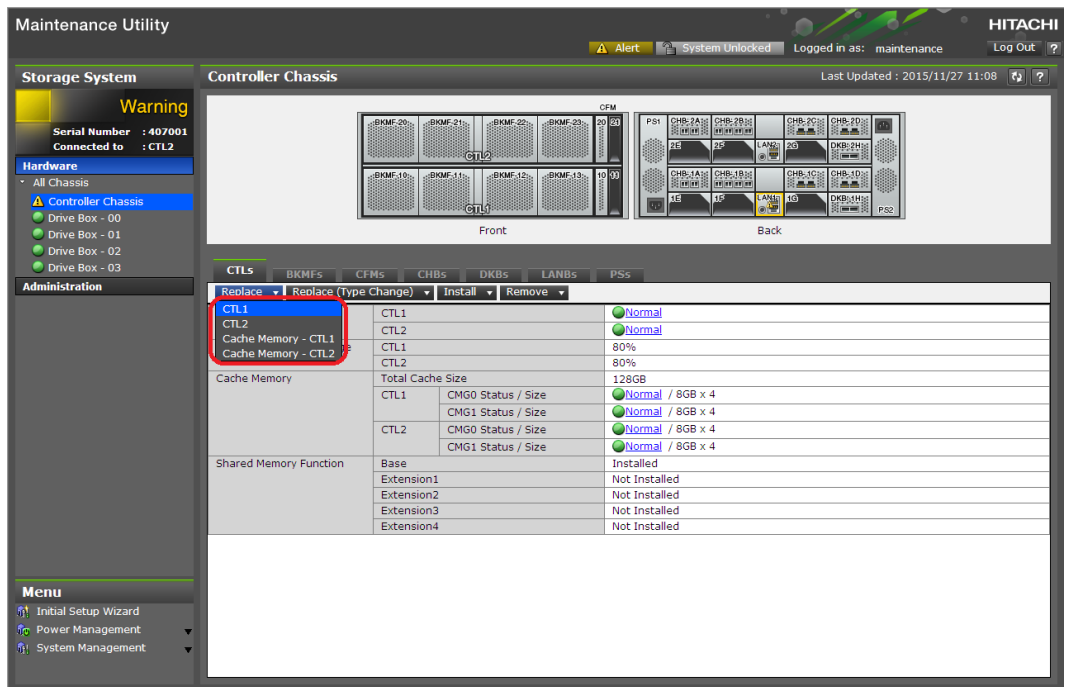
Blocking the controller

Procedure

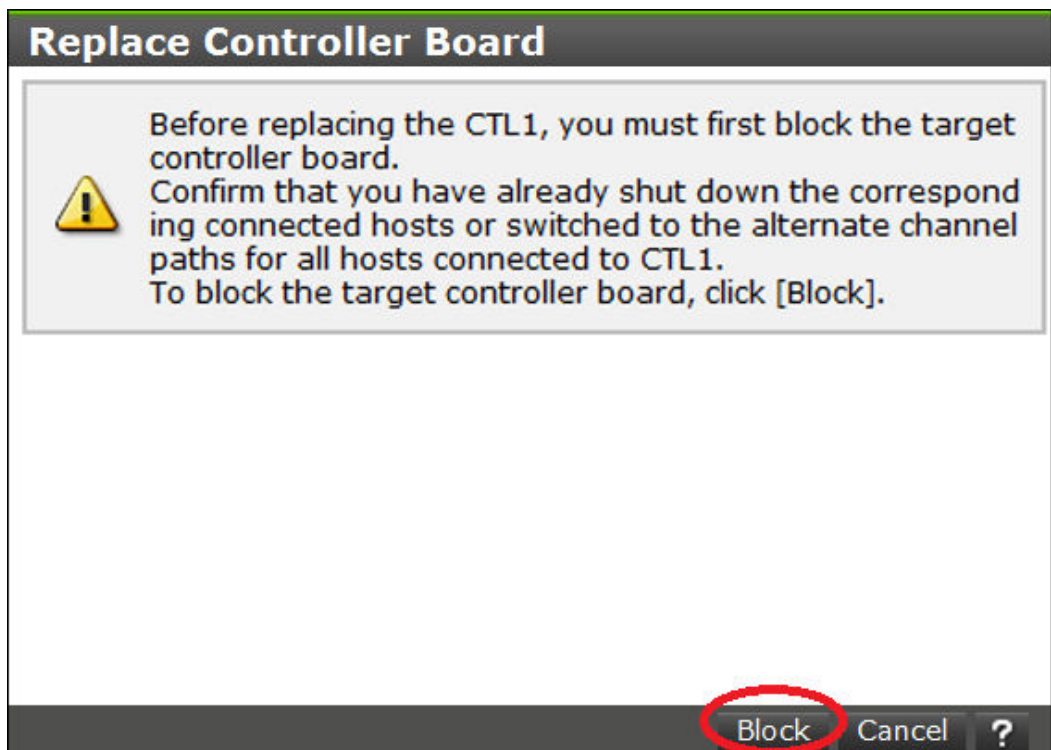
1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. In the **Controller Chassis** window, click the **LANBs** tab.
4. To display the most recent status of the LAN blade, click **Refresh**.



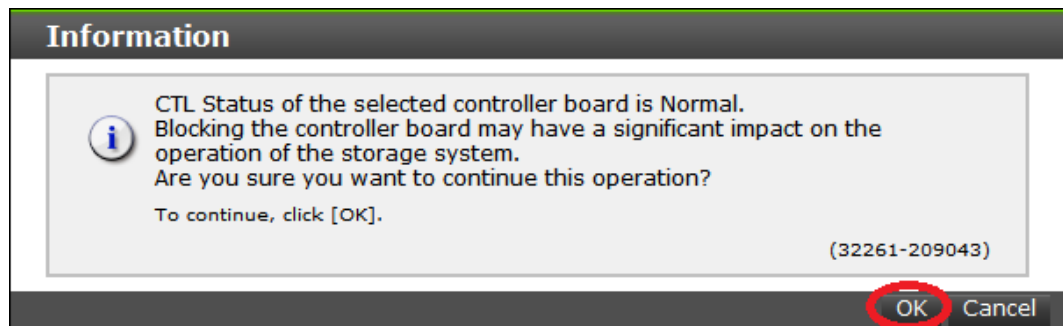
5. Confirm that the status of the LAN blade to be replaced is **Warning**.
6. Click the **CTLs** tab.
7. Click the **Replace** list and select the controller that contains the LAN blade to be replaced.



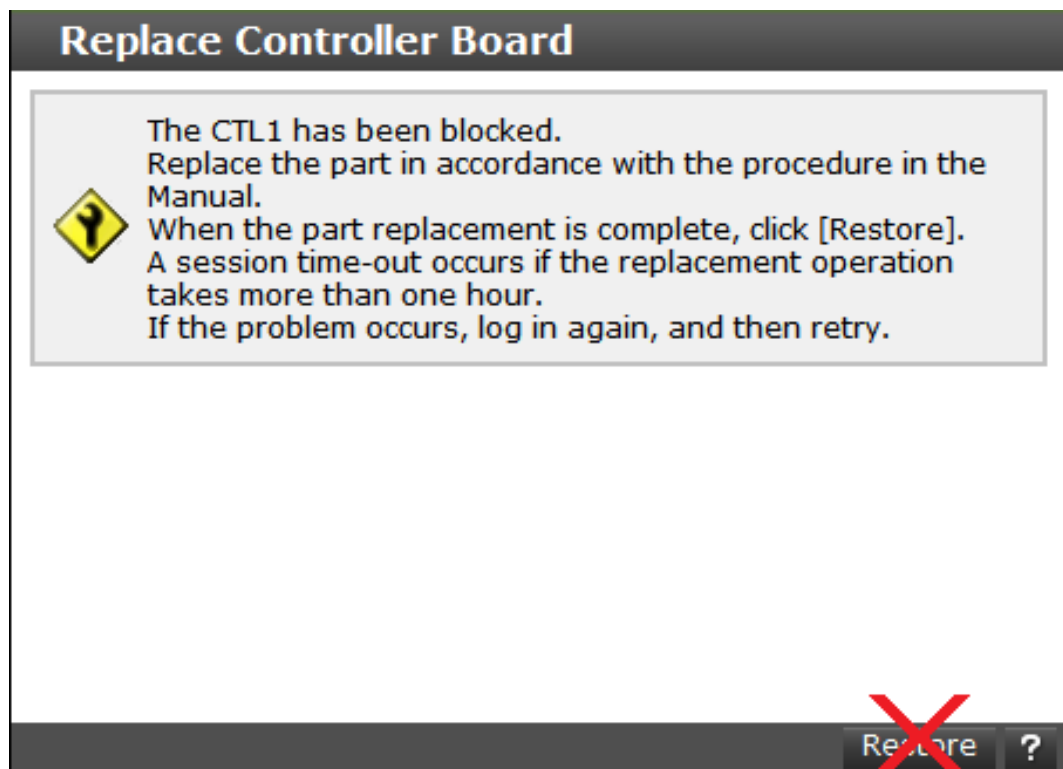
8. When the **Replace Controller Board** window opens, confirm that the controller shown in the window is the one that contains the LAN blade to be replaced.
9. Click **Block**.



10. If the following window opens, click **OK**.



11. Confirm that the controller is blocked.
12. Leave the **Replace Controller Board** window open, but do not click the **Restore** button.



13. Confirm that the red CTL ALM LED on the controller is on.

Replacing the LAN blade

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Use the maintenance utility to block the LAN blade.
- The red CTL ALM LED on the CBLM or CBLH controller is on.

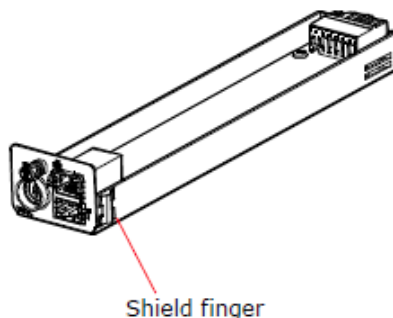
Procedure

1. Remove the LAN cable from the user LAN port.
2. Release the controller:
 - a. Loosen the blue right and left screws on the lever of the controller to be replaced.
 - b. Open the lever.

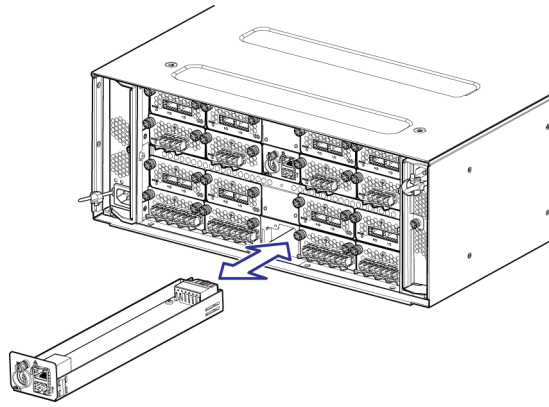


Note: The POWER, READY, WARNING, and ALARM LEDs might go off. If the LED on the front goes off, check whether a component other than the controller has normal status in the **Maintenance Utility** window and continue the replacement. The green READY LED on the front of the CBLM/CBLH goes on after restoring the controller at the end of the replacement procedure.

3. Loosen the blue screw that secures the LAN blade.
4. Using both hands, pull out and remove the LAN blade.
5. Insert the new LAN blade into the slot, just before the "shield finger."



6. Gently push the new LAN blade all the way into the slot.
7. Tighten the blue screw to secure the LAN blade.



8. Secure the controller.
 - a. Push in the controller all the way until the right and left levers close completely.
 - b. Tighten the blue screw and secure the controller.
9. Confirm that the red CTL ALM LED on the controller is off.
10. Connect the LAN cable you removed to the user LAN port.

Next steps

- Use the maintenance utility to restore (unblock) the LAN blade.

Restoring the LAN blade

In the maintenance utility:

Procedure

1. In the **Replace Controller Board** window, click **Restore**.
A progress bar shows the replacement status.



Note: The restore operation can take up to 20 minutes to complete. If a message states that the recovery failed, go to the Customer Contact Us page at https://support.hds.com/en_us/contact-us.html.

2. When the progress bar goes away and the completion message appears, click **Close**.
3. Click the **LANBs** tab in the **Controller Chassis** window and confirm that the status of the new LAN blade is *Normal*.
If necessary, click **Refresh** at the top-right of the window to update the status in the window.
4. Confirm that the red CTL ALM LED is off at the controller that contains new LAN blade.

5. Log out and close the **Maintenance Utility** window.

Replacing a backup module

Before replacing a backup module, read the precautions and understand the procedure for the backup module.

- ☐ [Replacing a BKM](#)
- ☐ [Replacing a BKMF](#)
- ☐ [Checking BKM/BKMF screws](#)

Replacing a BKM

The following sections describe how to replace a BKM backup module.

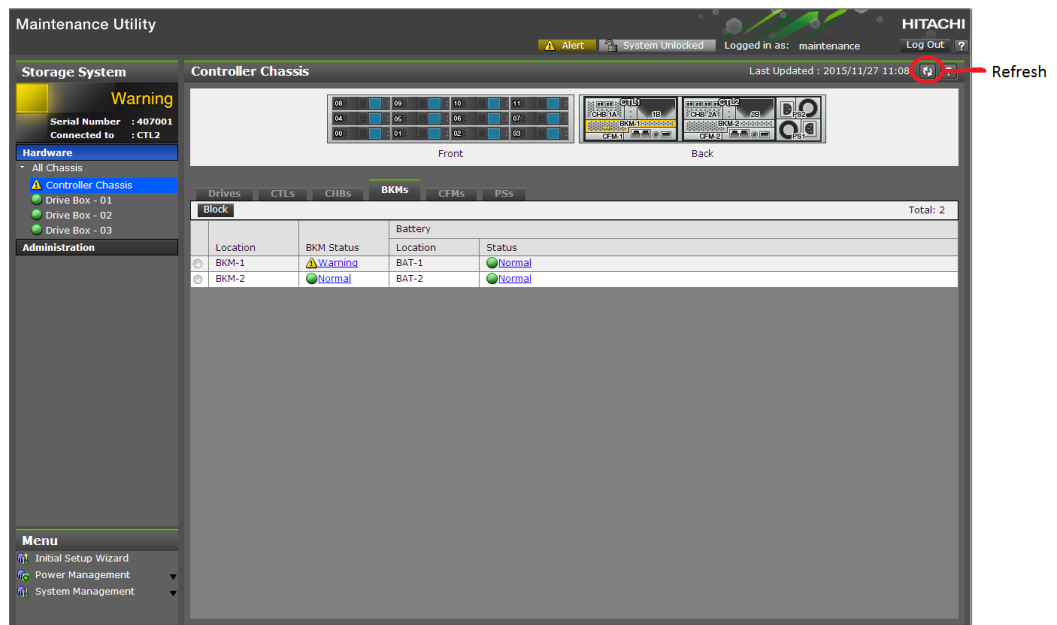
Checking the BKM backup module

Before you begin

- Confirm that a backup module is installed in the backup module enclosure.
- Confirm that the storage system power is turned on.
- Confirm that the red **STATUS** LED on the backup module to be replaced is on.
- Use the Dump tool to collect the storage system configuration information.

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. Click the **BKMs** tab.
4. To display the most recent status of the BKM, click **Refresh**.



5. Confirm that the status of the backup module to be replaced is **Warning**.

Next steps

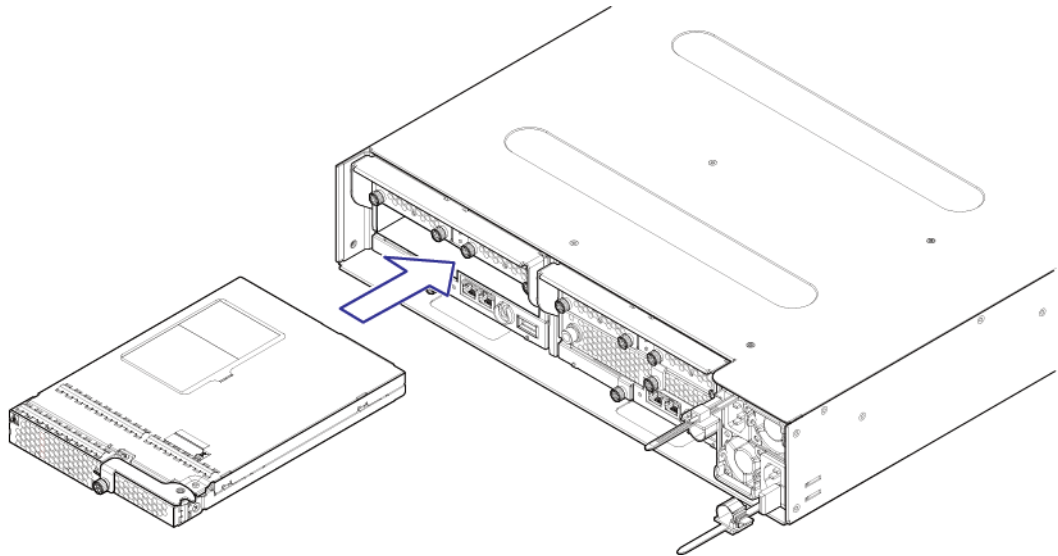
If **Warning** appears for **BKM Status** and **?** appears for the **Battery Lifespan Remaining** values of the batteries, resolve the **Warning** for **BKM Status** so the **?** returns to a numeral value.

Replacing the BKM backup module

Use the following procedure to replace the BKM backup module.

Procedure

1. Loosen the blue screw that secures the BKM.
2. Open the lever forward.
3. Using both hands, hold the body of the BKM, and then pull out and remove the BKM.
4. With the lever of the BKM opened forward, insert the new BKM into the slot.



5. Push the BKM all the way into the slot.
6. Close the lever and tighten the blue screw to secure the BKM.
7. Confirm that the green **STATUS** LED on the BKM is blinking.
8. In the **BKMS** tab of the maintenance utility, check that the status of the BKM you replaced is **Normal**.
9. Log out and close the **Maintenance Utility** window

Replacing a BKMF

The following sections describe how to replace a BKMF backup module.

Blocking a BKMF

Before you begin

- Confirm that a backup module is installed in the backup module enclosure.
- Confirm that the storage system power is turned on.
- Confirm that the red **STATUS** LED on the backup module to be replaced is on.
- Use the Dump tool to collect the storage system configuration information.

Procedure

1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. Click the **BKMFs** tab.
4. To display the most recent status of the BKMF, click **Refresh**.

The screenshot shows the Hitachi Maintenance Utility interface. The top bar includes 'Maintenance Utility', 'Alert', 'System Unlocked', 'Logged in as: maintenance', and 'Log Out'. The left sidebar has 'Storage System' (Warning), 'Hardware' (Controller Chassis, Drive Box - 00, Drive Box - 01, Drive Box - 02, Drive Box - 03), and 'Administration'. The main area is titled 'Controller Chassis' and shows a diagram of the chassis with 'Front' and 'Back' views. Below the diagram, the 'BKMFs' tab is selected, showing a table of BKMF status. A red circle highlights the 'Refresh' button in the top right corner of the main area.

Location	BKMF Status	Battery(Basic)	Status	Battery(Optional)	Status
BKMF-10	Normal	BAT-F10	Normal	-	Not Installed
BKMF-11	Warning	BAT-B11	Normal	BAT-O11	Normal
BKMF-12	Normal	BAT-B12	Normal	BAT-O12	Normal
BKMF-13	Normal	BAT-B13	Normal	BAT-O13	Normal
BKMF-20	Normal	BAT-F20	Normal	-	Not Installed
BKMF-21	Normal	BAT-B21	Normal	BAT-O21	Normal
BKMF-22	Normal	BAT-B22	Normal	BAT-O22	Normal
BKMF-23	Normal	BAT-B23	Normal	-	Not Installed

5. Confirm that the status of the backup module to be replaced is **Warning**.

If **Warning** appears for **BKMF Status** and **?** appears for the **Battery Lifespan Remaining** values of the batteries, resolve the **Warning** for **BKMF Status** so the **?** returns to a numeral value.

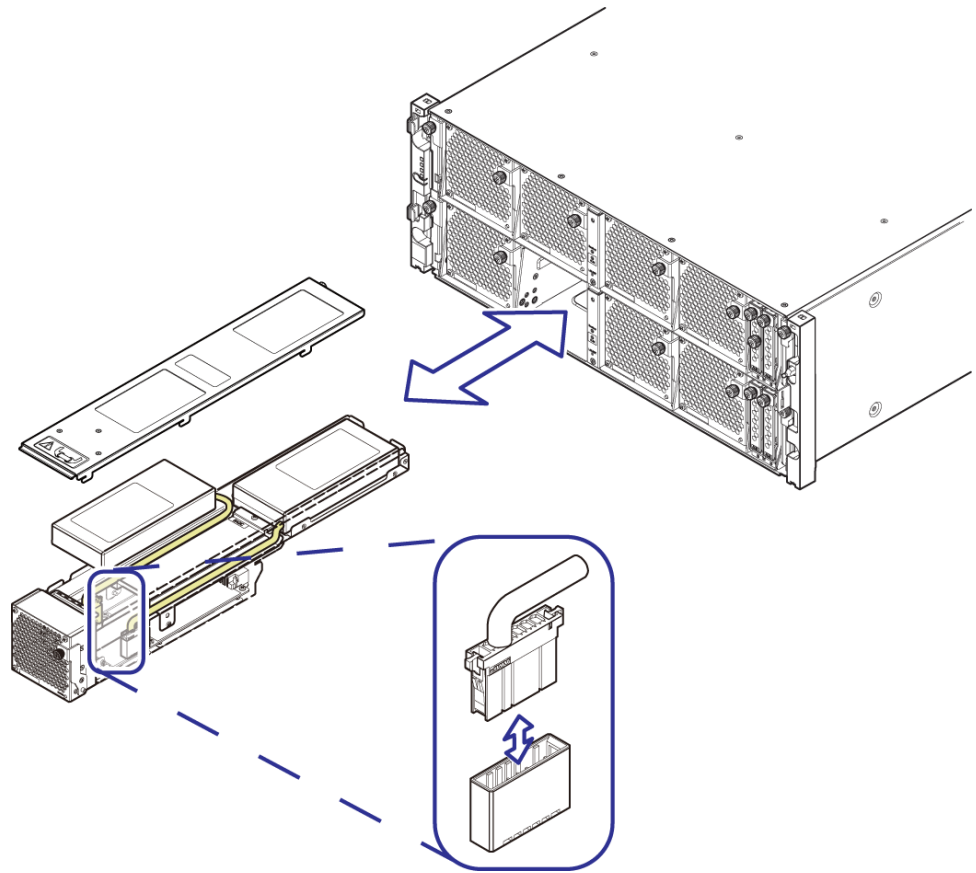
Replacing the BKMF backup module

Before you begin

- Wear a wrist strap connected to the storage system to prevent part failures caused by static electricity. Do not remove the wrist strap until you finish the procedure.
- Confirm that the storage system power is turned on.
- Confirm that the red `STATUS` LED on the backup module to be replaced is on.
- Use the Dump tool to collect the storage system configuration information.
- Use the maintenance utility to verify the backup module status.

Procedure

1. Loosen the blue screw that secures the backup module.
2. Open the lever forward.
3. Open the lever.
4. Hold the backup module with both hands, and then pull it out and remove it.
5. Hold the latch of the cable connector of the battery to be installed in the backup module and remove the connector from the socket.
6. Remove all batteries that are installed.
A maximum of two batteries can be installed.
7. Loosen the blue screw on the rear side of the new backup module.
8. Slide the top panel of the new backup module and remove it.
9. In the new backup module, install all batteries you removed and route the cables along the groove of the backup module.
If you removed one battery, install the battery in the front (fan side) of the storage system. Route the cables to avoid bending the cables.
10. Connect the cable connector to the socket.
11. Slide the top panel of the backup module and attach it.
12. Tighten the blue screw on the rear panel of the backup module.
13. With the lever of the backup module opened forward, insert the new backup module into the slot.



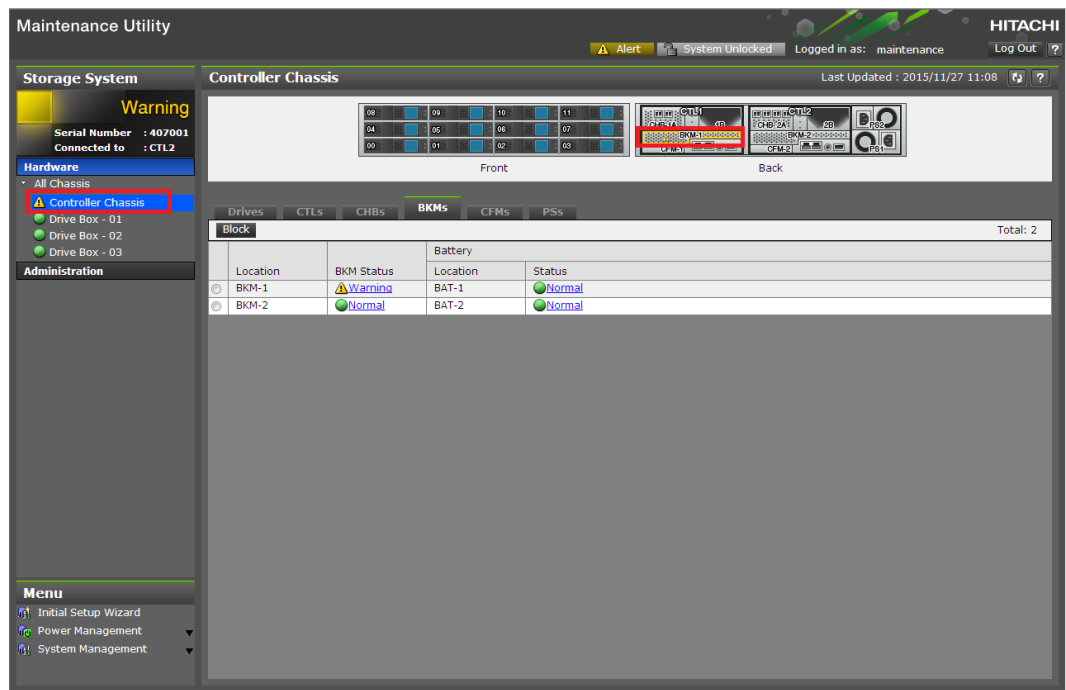
14. Push all the way into the slot.
15. Close the lever and tighten the blue screw to secure the backup module.
16. Confirm that the green **STATUS** LED on the BKMf is blinking.
17. In the **BKMf**s tab of the maintenance utility, check that the status of the backup module you replaced is **Normal**.
If necessary, click **Refresh** at the top-right of the window to update the status.
18. Log out and close the **Maintenance Utility** window.

Checking BKM/BKMF screws

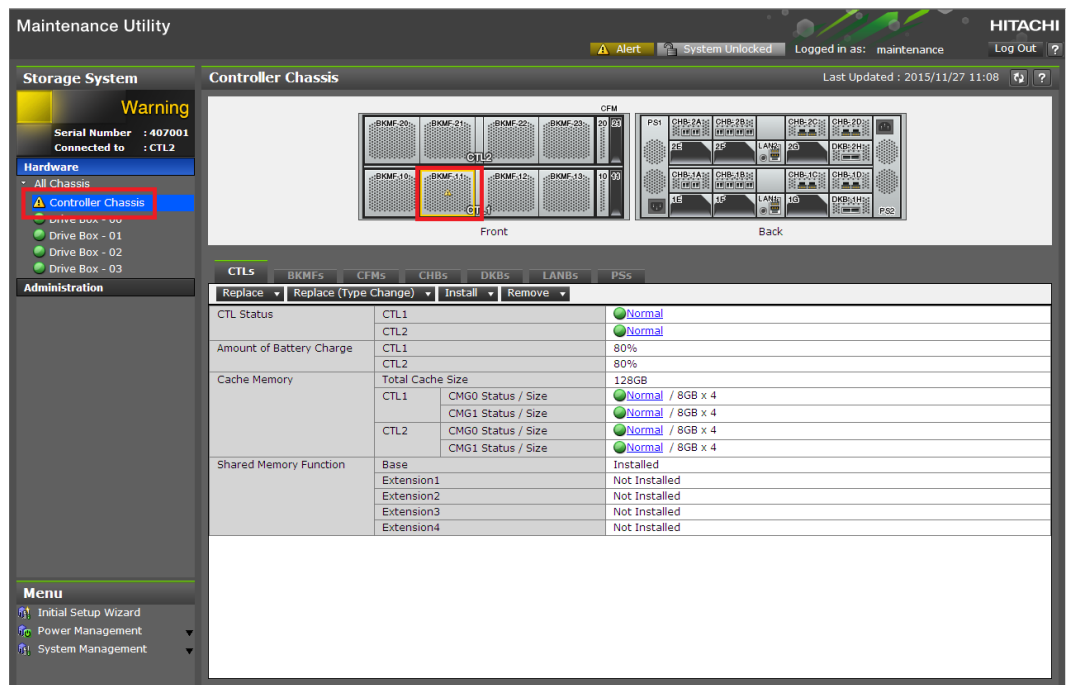
Procedure

1. In the **Alert Detail** window of the maintenance utility, click **Close**.
2. In the left pane, click **Controller Chassis** to check the locations of the target backup modules (BKM/BKMF).

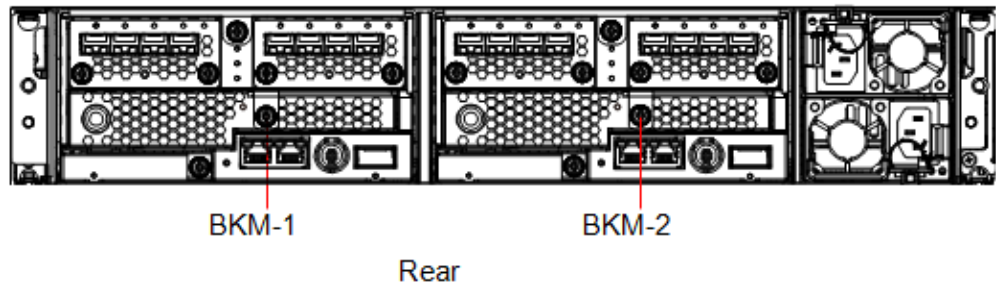
Maintenance Utility window for CBSS or CBSL



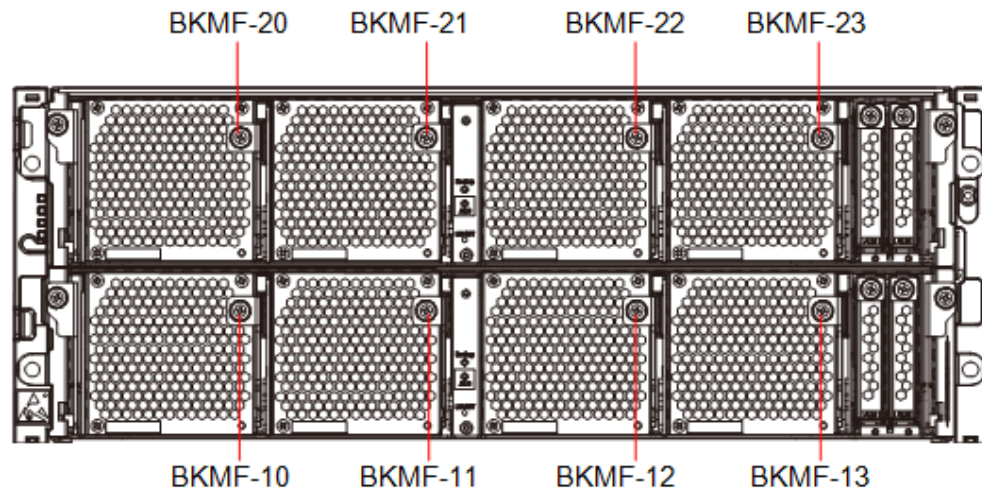
Maintenance Utility window for CBLM or CBLH



BKM Location on CBSS or CBSL

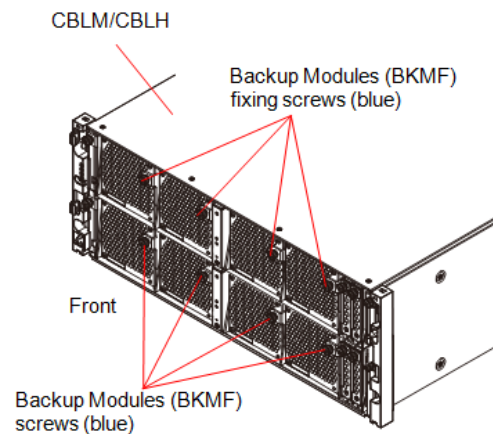
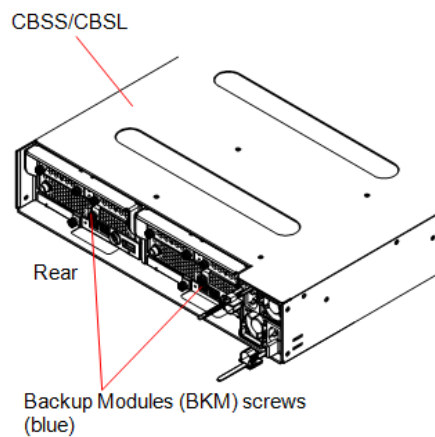


BKMF Location on CBLM or CBLH



Remove the front bezel for CBLM/CBLH.

3. If the screws of the target backup modules are loose, push the backup modules all the way in and tighten the blue screws.



- 4.** Attach the CBLM/CBLH front bezel.
- 5.** Log out of maintenance utility to close the window.

Replacing a PCIe module

The following sections describe how to replace a PCIe module.

- ☐ [Blocking a PCIe module](#)
- ☐ [Replacing a PCIe module](#)
- ☐ [Restoring a PCIe module](#)

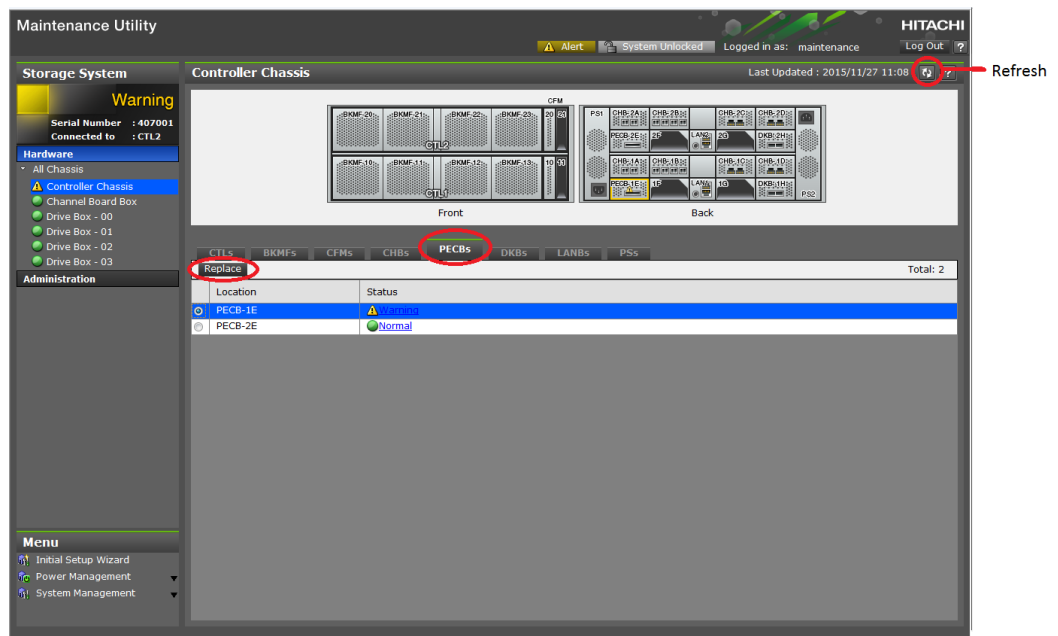
Blocking a PCIe module

Before you begin

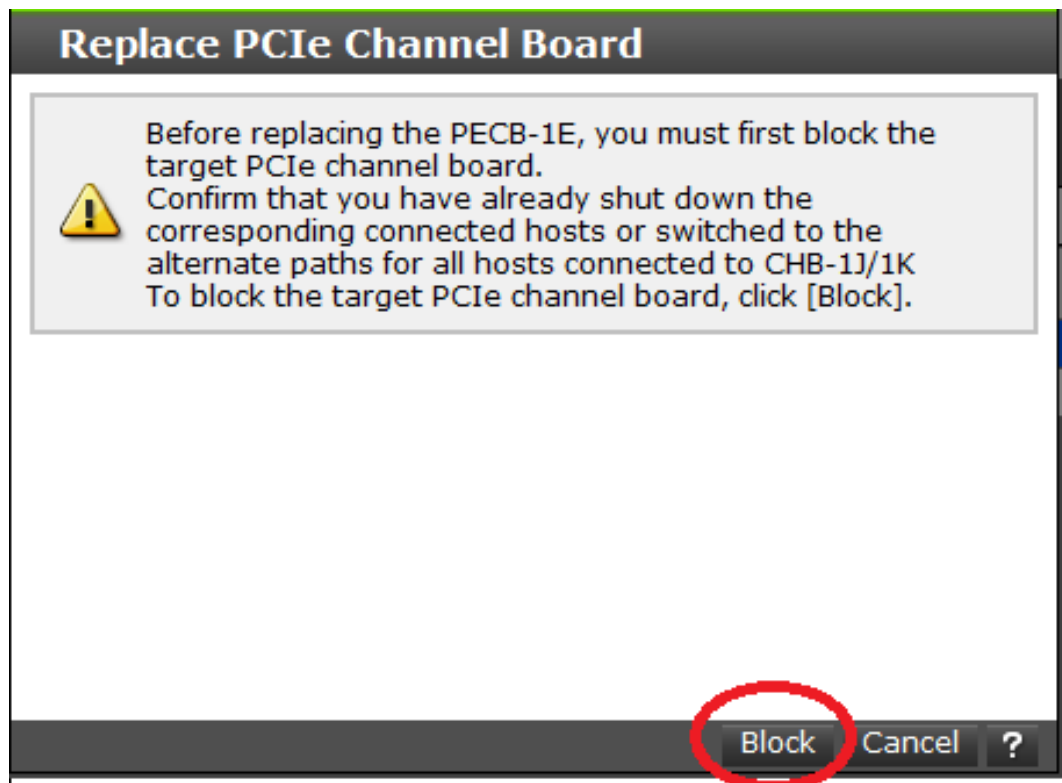
- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.
- The red `STATUS` LED is on at the PCIe module to be replaced.

Procedure

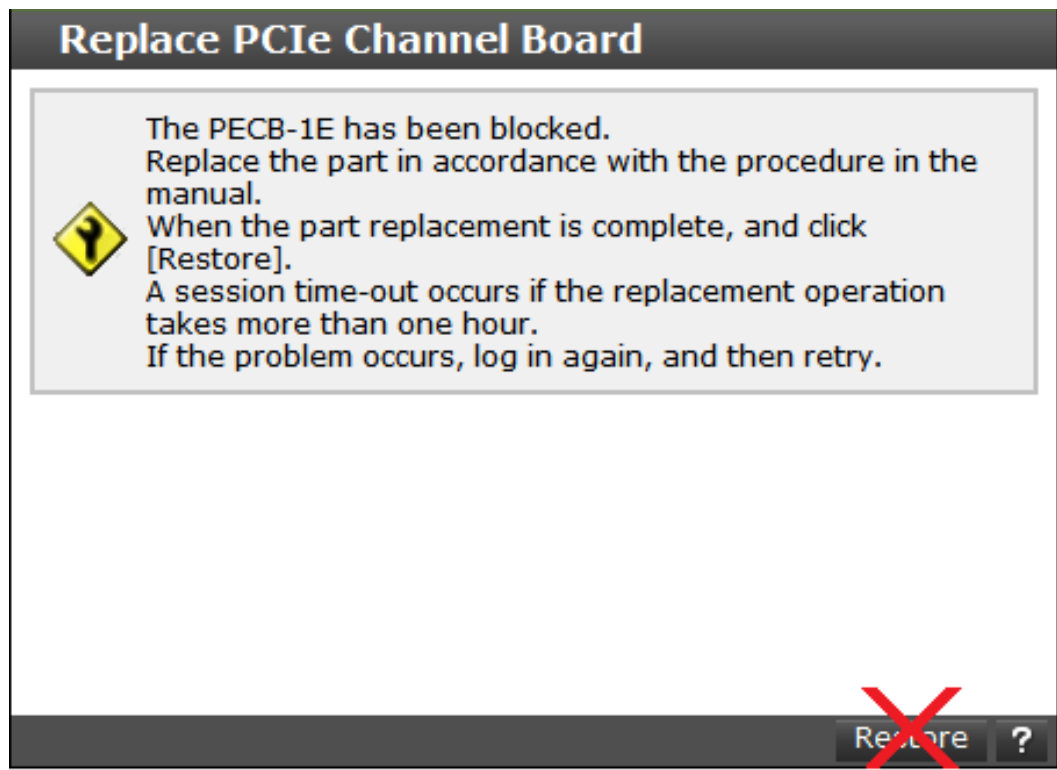
1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. Click the **PECBs** tab.
4. To display the most recent status of the PCIe module click **Refresh**.



5. Confirm that the status of the PCIe module to be replaced is `Warning`.
6. Select the PCIe module to be replaced, and click **Replace**.
7. Click **Block**.



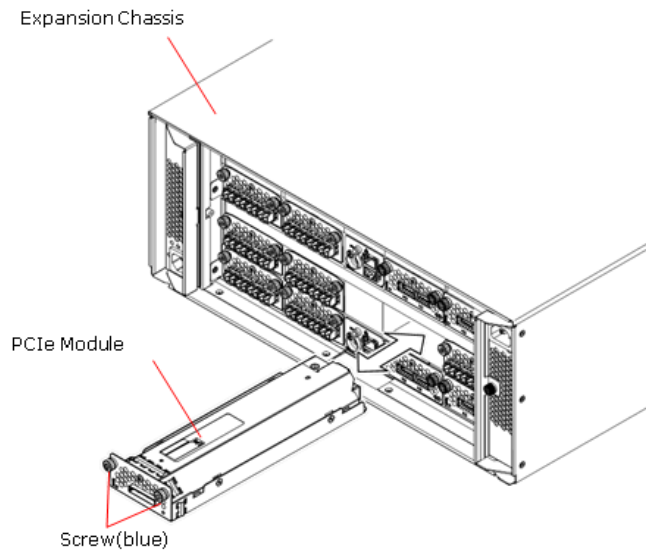
8. Check that the PCIe module is blocked and becomes ready for replacing. Do not click **Restore** at this time.



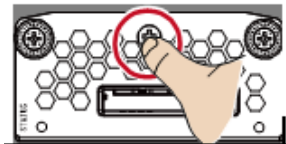
Replacing a PCIe module

Procedure

1. Disconnect the cable from the PCIe module to be replaced.
2. Loosen the two blue screws that secure the PCIe module.
3. Holding the blue screw, pull out and remove the PCIe module. Keep the module straight to prevent to avoid jostling the components above and below.
4. Insert the new PCIe module into the slot just before the "shield finger."



5. Gently push the front of the PCIe module until the module is inserted all the way into the slot.



6. Tighten the two blue screws to secure the PCIe module.
7. Connect the cable to the new PCIe module.
8. Check that the red `STATUS` LED on the PCIe module is off.

Restoring a PCIe module

Procedure

1. At the **Replace PCIe Channel Board** window, click **Restore**.
2. When the completion message appears, click **Close**.
3. Click the **PECBs** tab and confirm that the status of the new PCIe module is `Normal`. If necessary, click **Refresh** at the top-right of the window to update the status of the window.
4. Log out and close the **Maintenance Utility** window.

Replacing a PCIe switch board

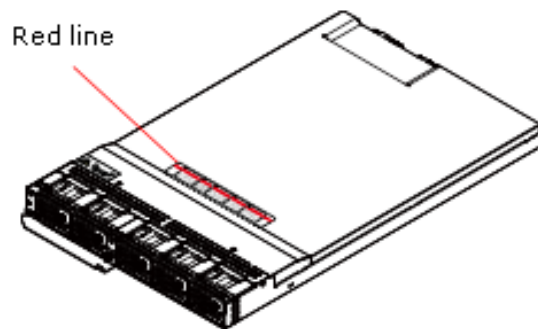
The following sections describe how to replace a PCIe switch board.

- ☐ [Blocking a PCIe switch board](#)
- ☐ [Replacing a PCIe switch board](#)
- ☐ [Restoring a PCIe switch board](#)

Blocking a PCIe switch board

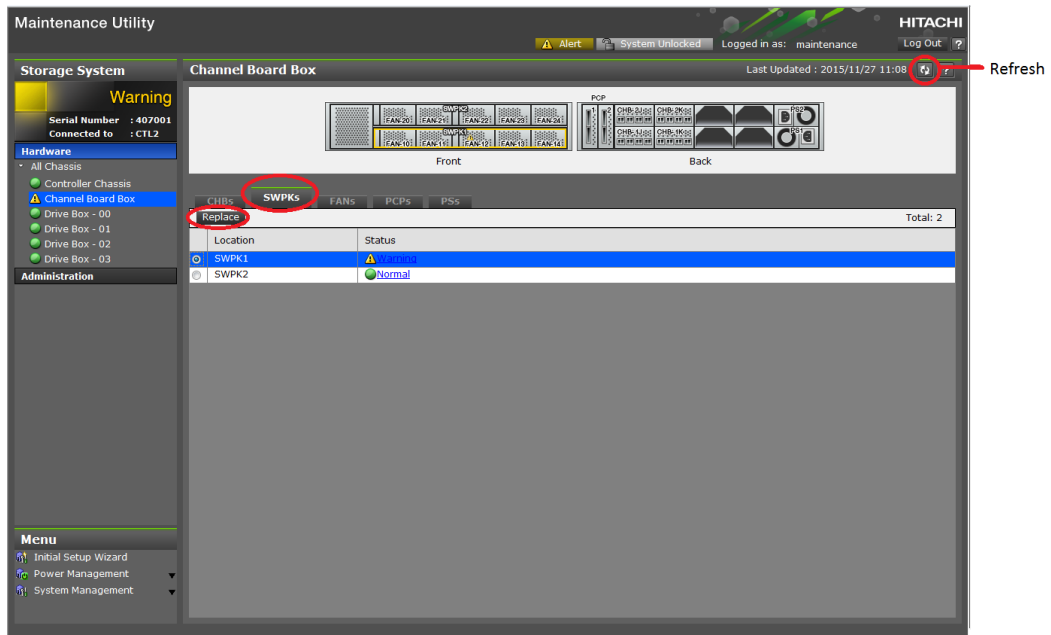
Before you begin

- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.
- The red `STATUS` LED is on at the PCIe switch board to be replaced.
- Dropping the PCIe switch board can cause injury. Be aware of the red line on the top of the controller when sliding out the controller past this mark and always keep a firm hold on the PCIe switch board.

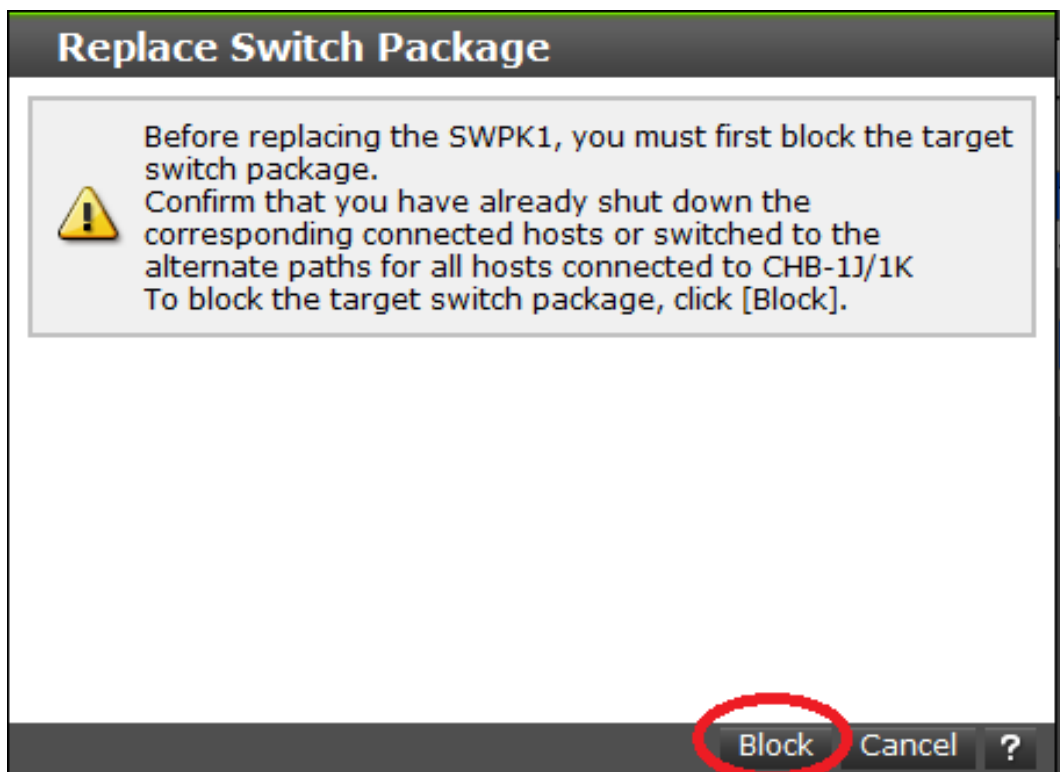


Procedure

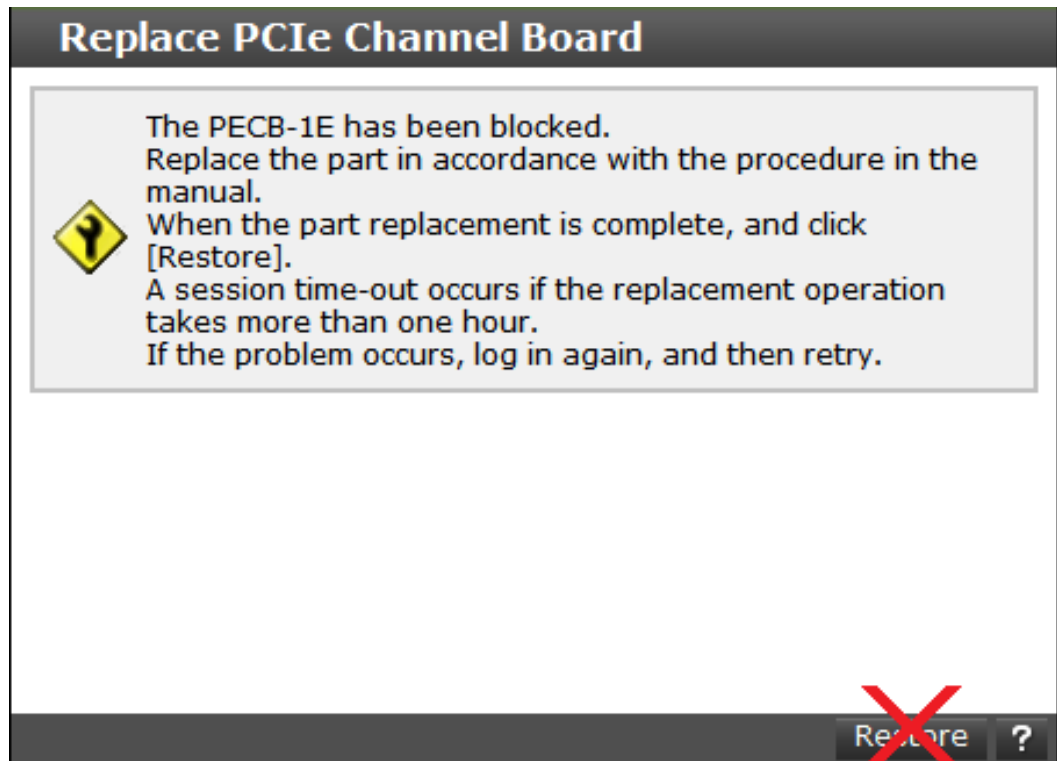
1. Start the maintenance utility.
2. Click **Hardware > Channel Board Box**.
3. Click the **SWPKs** tab.
4. To display the most recent status of the PCIe switch board, click **Refresh**.



5. Confirm that the status of the PCIe switch board to be replaced is Warning.
6. Select the PCIe switch board to be replaced, and click **Replace**.
7. Click **Block**.



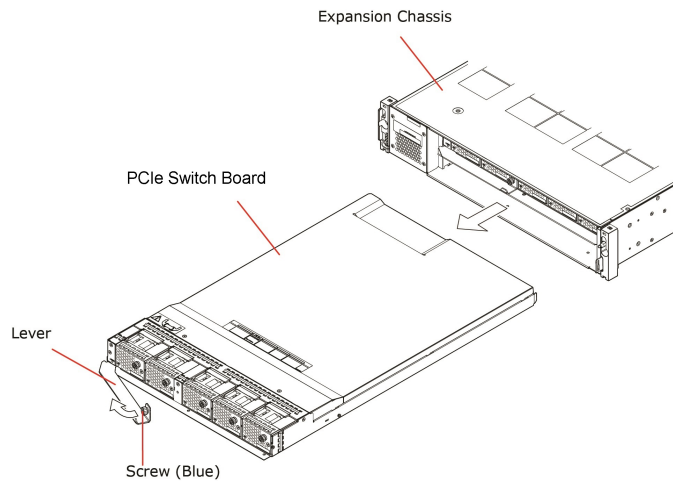
8. Check that the PCIe switch board is blocked and becomes ready for replacing. Do not click **Restore** at this time.



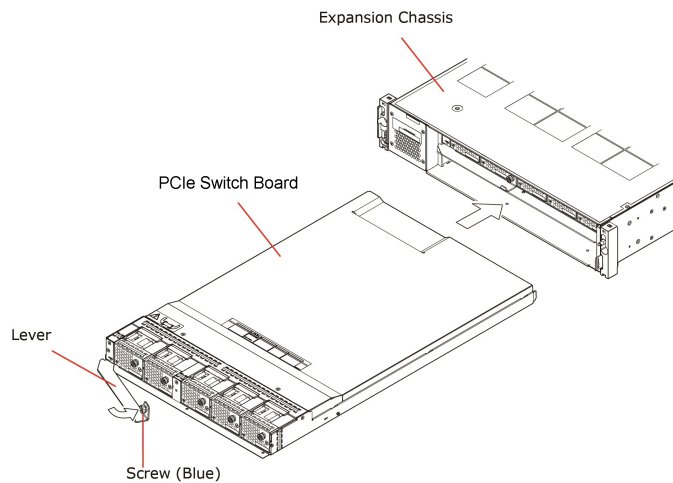
Replacing a PCIe switch board

Procedure

1. Loosen the blue screws on the PCIe switch board and open the lever.
2. If the lever opens completely, the PCIe switch board is pulled out.
3. Hold the body of the PCIe switch board with both hands and remove it.



4. Open the PCIe switch board lever completely.
5. Install the PCIe switch board in the set position until its lever closes slightly, and then push the lever toward the PCIe switch board.
6. Tighten the blue screw and secure the PCIe switch board.



7. Confirm that the red `STATUS` LED is off at the PCIe switch board.
8. Attach the front bezel.

Restoring a PCIe switch board

Procedure

1. At the **Replace PCIe switch board** window, click **Restore**.
2. When the completion message appears, click **Close**.

3. Click the **SWPKs** tab, and then check that the replaced PCIe switch board is **Normal**.
4. Log out and close the **Maintenance Utility** window.

Replacing a PCIe cable connector

The following sections describe how to replace a PCIe cable connector.

- ☐ [Blocking a PCIe cable connector](#)
- ☐ [Replacing a PCIe cable connector](#)
- ☐ [Restoring a PCIe cable connector](#)

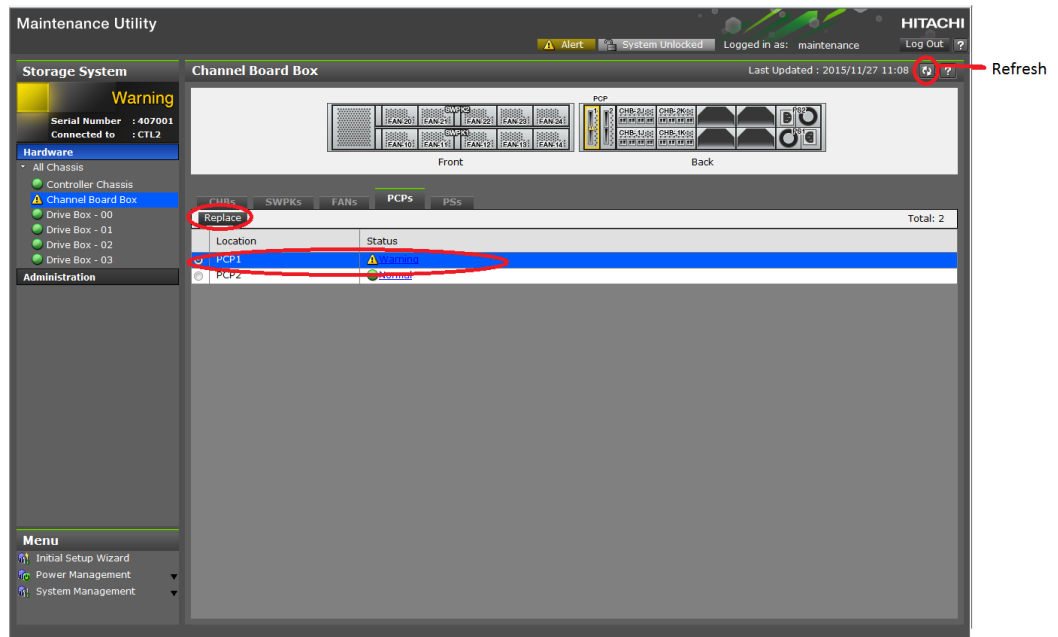
Blocking a PCIe cable connector

Before you begin

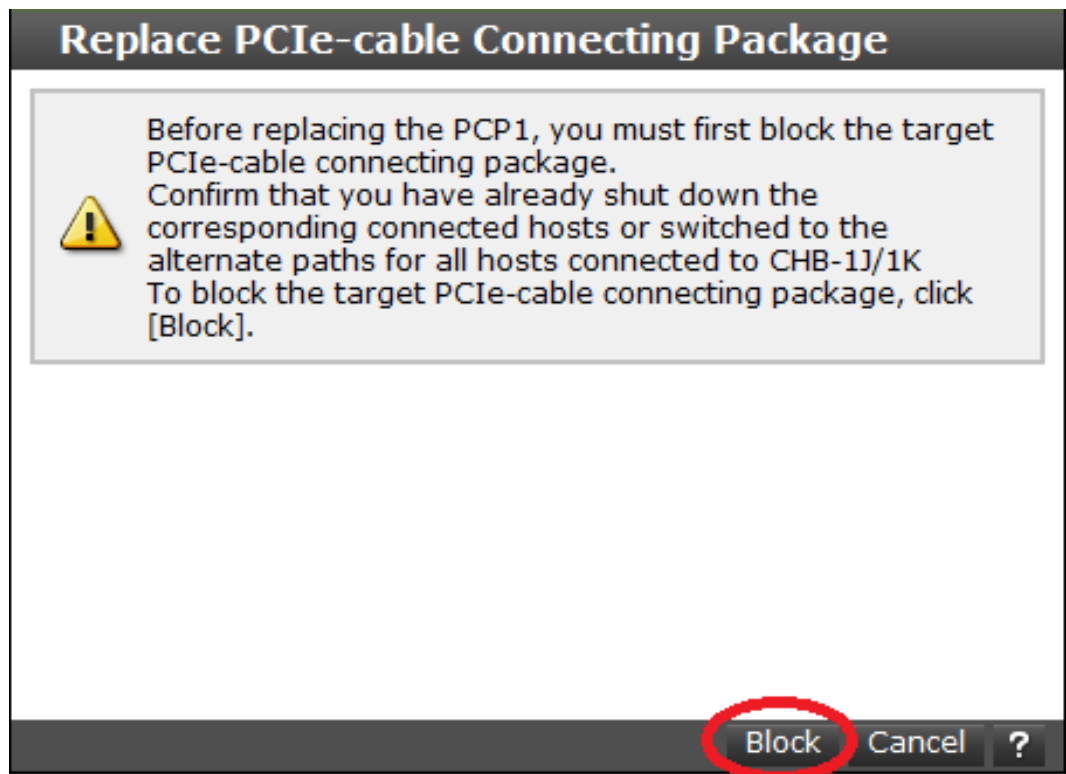
- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.
- The red `STATUS` LED is on at the PCIe cable connector to be replaced.

Procedure

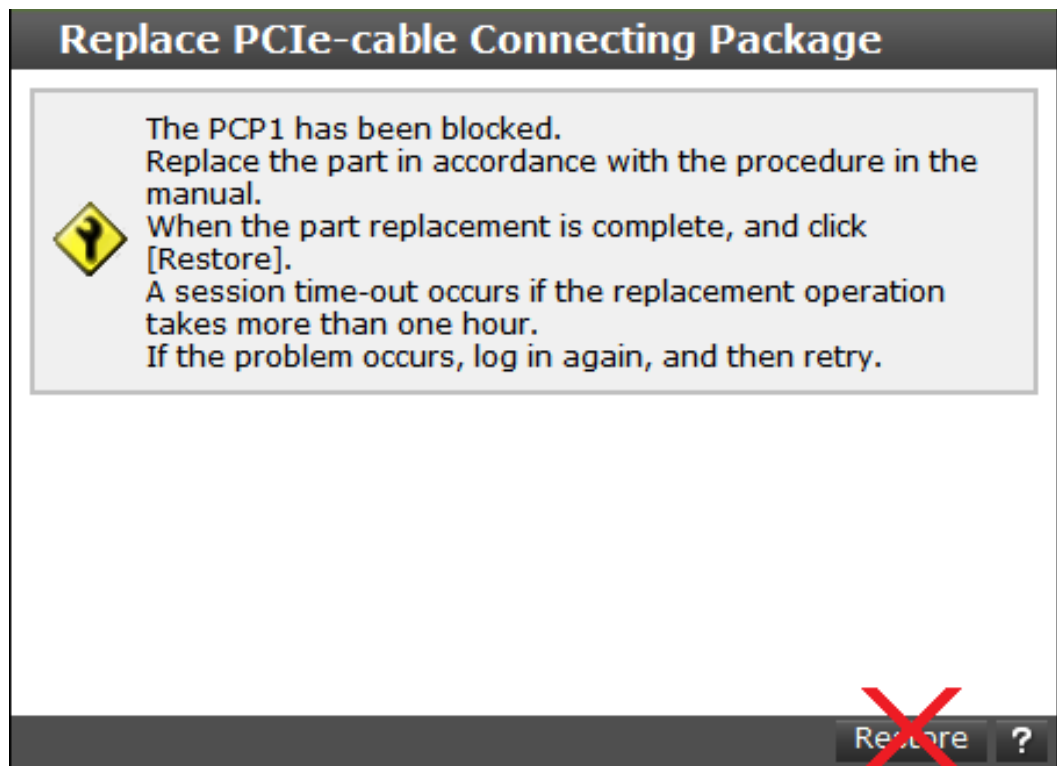
1. Start the maintenance utility.
2. Click **Hardware > Channel Board Box**.
3. Click the **PCPs** tab.
4. To display the most recent status of the PCIe cable connector click **Refresh**.



5. Confirm that the status of the PCIe cable connector to be replaced is `Warning`.
6. Select the PCIe cable connector to be replaced, and click **Replace**.
7. Click **Block**.



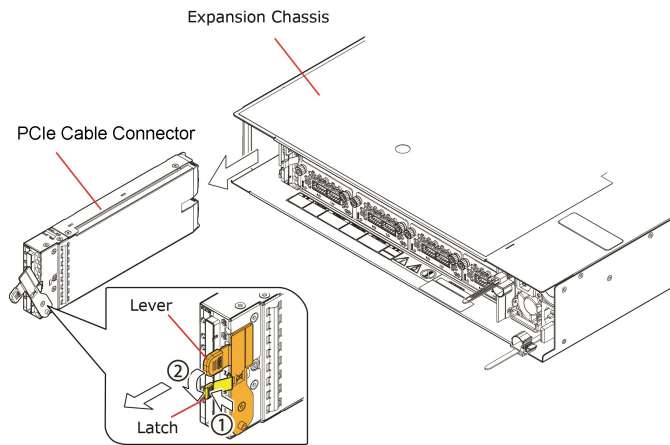
8. Check that the PCIe cable connector is blocked and becomes ready for replacing. Do not click **Restore** at this time.



Replacing a PCIe cable connector

Procedure

1. Disconnect the cable from the PCIe cable connector to be replaced.
2. Press the latch on the PCIe cable connector inward (2), and then open the lever (1).
3. Pull out and remove the PCIe cable connector
4. With the PCIe cable connector lever opened completely, insert the new PCIe cable connector into the slot location of the host port expansion chassis.
5. Push the PCIe cable connector all the way into the slot. Stop when the latch of the PCIe cable connector clicks.



6. Connect the cable to the new PCIe cable connector.
7. Confirm that the red `STATUS` LED is off at the PCIe cable connector.

Restoring a PCIe cable connector

Procedure

1. At the **Replace PCIe-cable Connecting Package** window, click **Restore**. A progress bar shows the replacement status.
2. When the progress bar goes away and the completion message appears, click **Close**.
3. Click the **PCPs** tab in the Channel Board Box window and confirm that the status of the new PCIe cable connector is `Normal`.
4. Log out and close the **Maintenance Utility** window.

Replacing a PCIe cable

The following sections describe how to replace a PCIe cable.

- ☐ [Blocking a PCIe cable](#)
- ☐ [Replacing the PCIe cable](#)
- ☐ [Restoring a PCIe module](#)

Blocking a PCIe cable

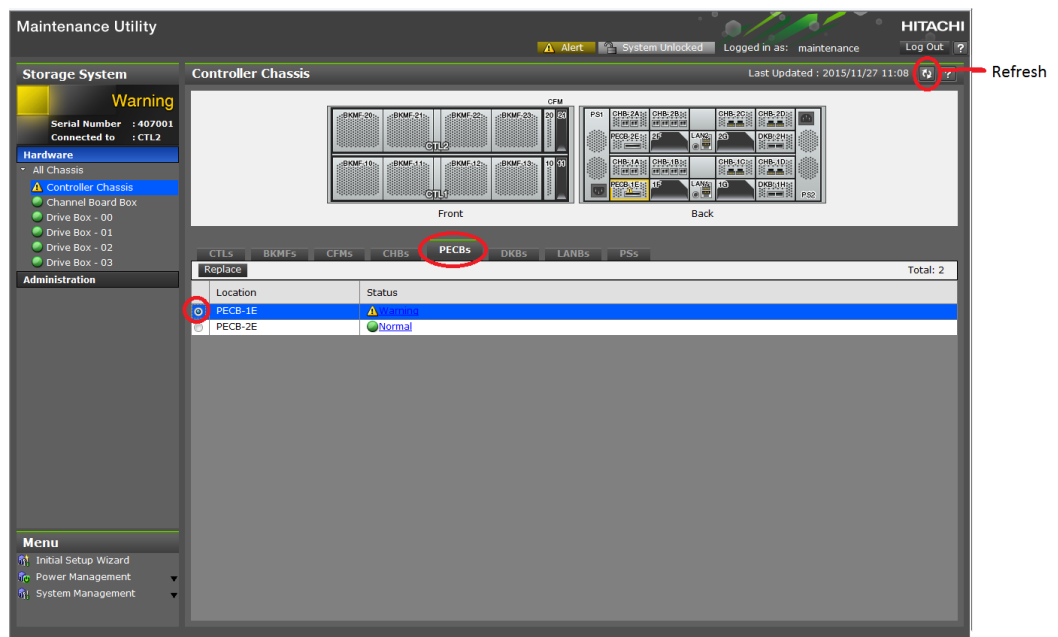
To replace a PCIe cable, block a PCIe module, and then the replace PCIe cables.

Before you begin

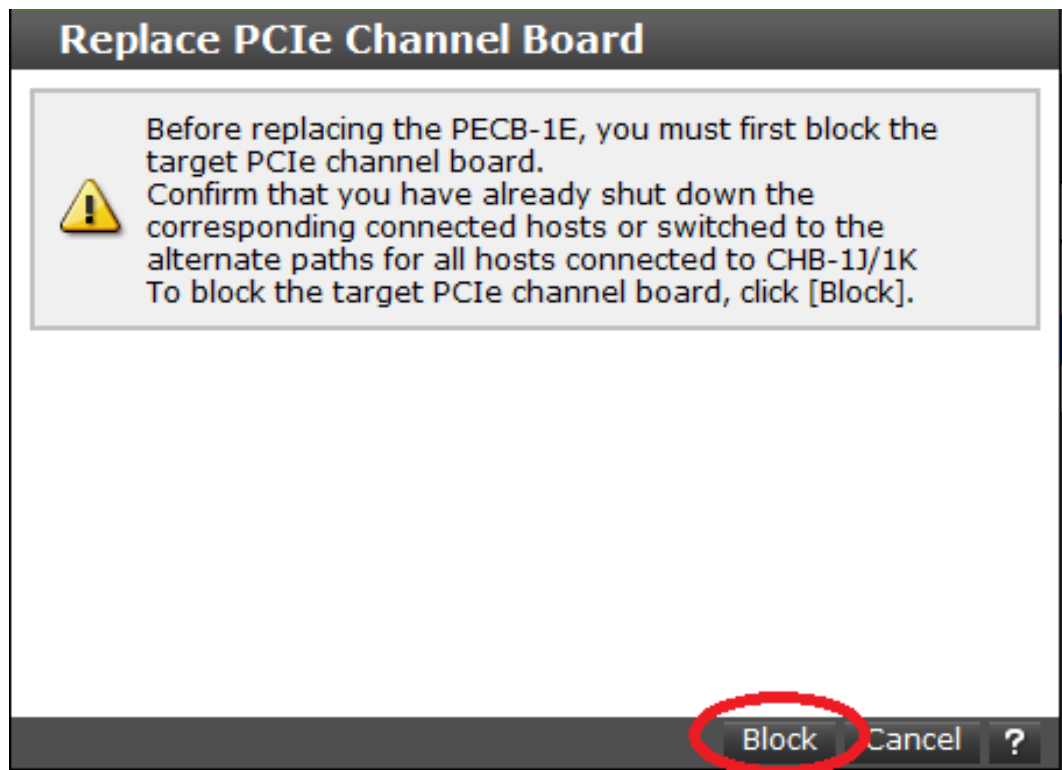
- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.
- The red **STATUS** LED is on at the PCIe module whose PCIe cable you want to replace.

Procedure

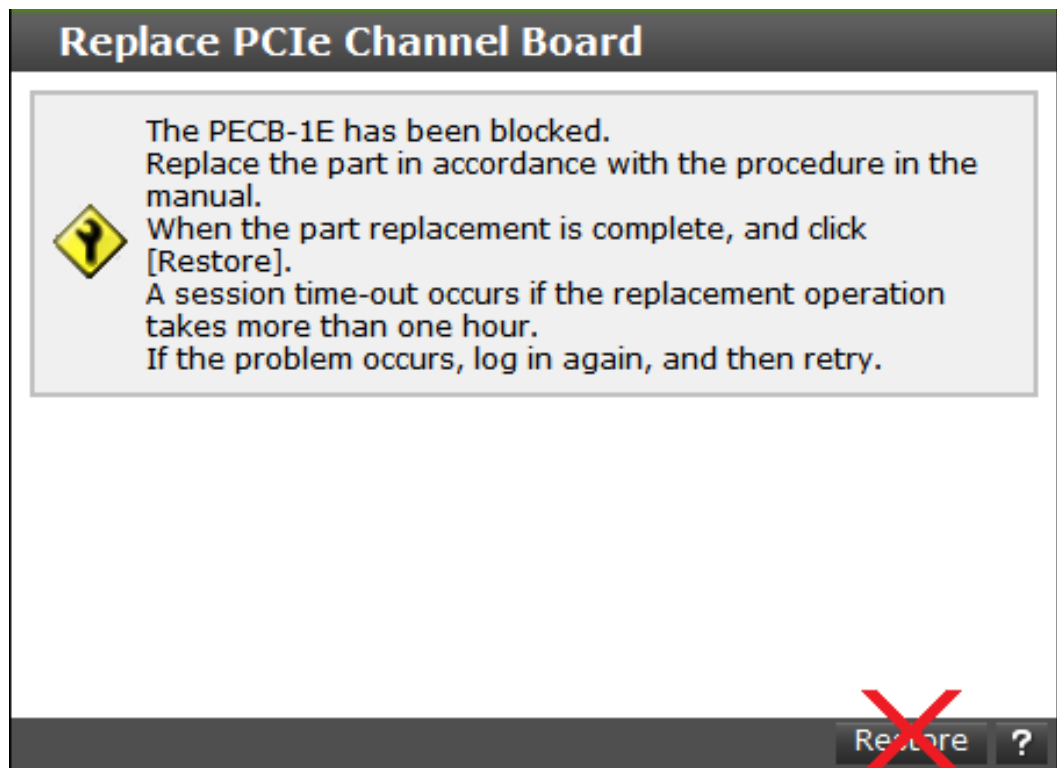
1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. Click the **PECBs** tab.
4. To display the most recent status of the PCIe module click **Refresh**.



5. Check the status. Then select the module whose PCIe cable you want to replace and click **Replace**.
6. Click **Block**.



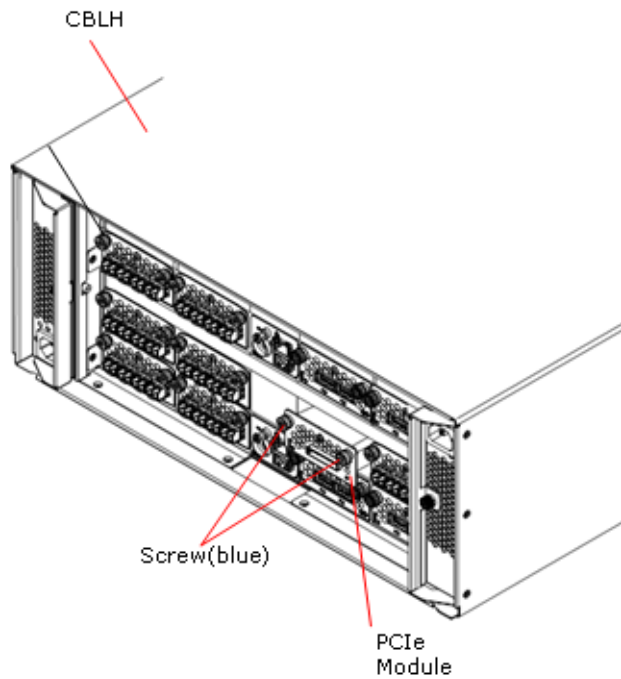
7. Check that the PCIe module is blocked and becomes ready for replacing. Do not click **Restore** at this time.



Replacing the PCIe cable

Procedure

1. Remove the PCIe cable from the PCIe module on the CBLH and from the PCIe cable connector on the host port expansion chassis connected to the CBLH.
2. Loosen the two blue screws that secure the PCIe module.
3. Hold the blue screw, and then pull out the PCIe module slightly.
4. Wait 30 seconds, and then gently insert the PCIe module all the way into the slot.
5. Tighten the two blue screws to secure the PCIe module.



6. Connect new PCIe cables to the PCIe module on the CBLH and to the PCIe cable connector of the host port expansion chassis connected to the CBLH. Check that cable latch clicks and that the cables are connected securely.

Restoring a PCIe module

Procedure

1. At the **Replace PCIe Channel Board** window, click **Restore**.
2. When the completion message appears, click **Close**.
3. Click the **PECBs** tab and confirm that the status of the new PCIe module is **Normal**. If necessary, click **Refresh** at the top-right of the window to update the status of the window.
4. Log out and close the **Maintenance Utility** window.

Replacing a NAS module

Replacing a NAS module procedure involves blocking the NAS module, replacing the component, and restoring the NAS module back to normal working condition.

- ☐ [Blocking a NAS module](#)
- ☐ [Replacing the NAS module](#)
- ☐ [Restoring a NAS module](#)

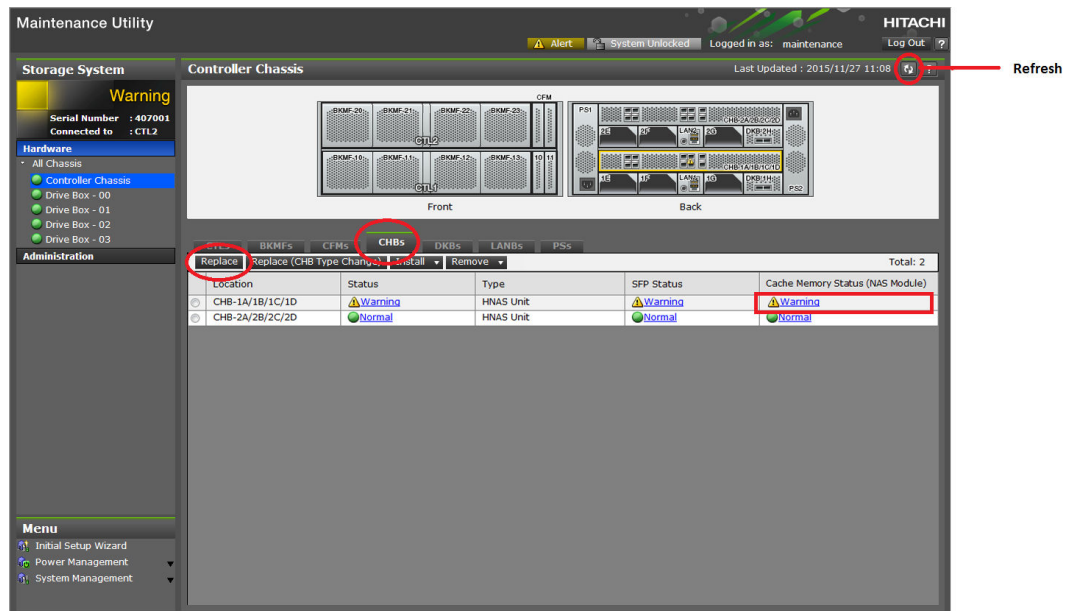
Blocking a NAS module

Before you begin

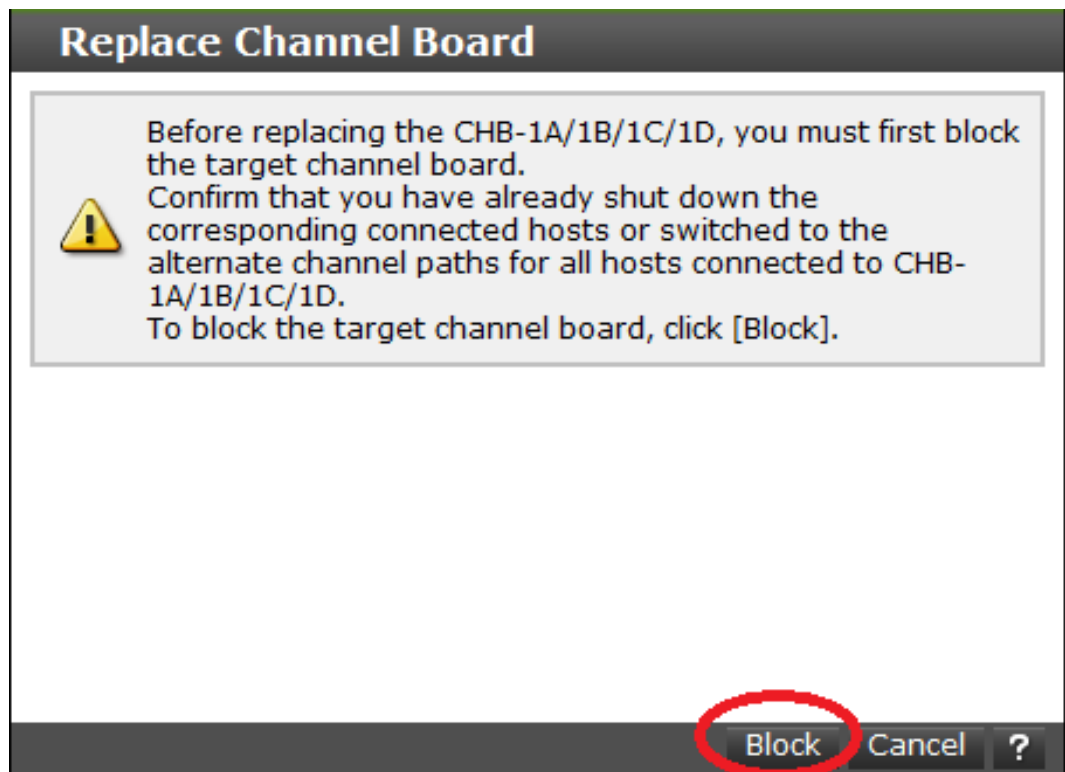
- Confirm that the storage system power is turned on.
- Use the Dump tool to collect the storage system configuration information.
- The red `STATUS` LED is on at the NAS module to be replaced.

Procedure

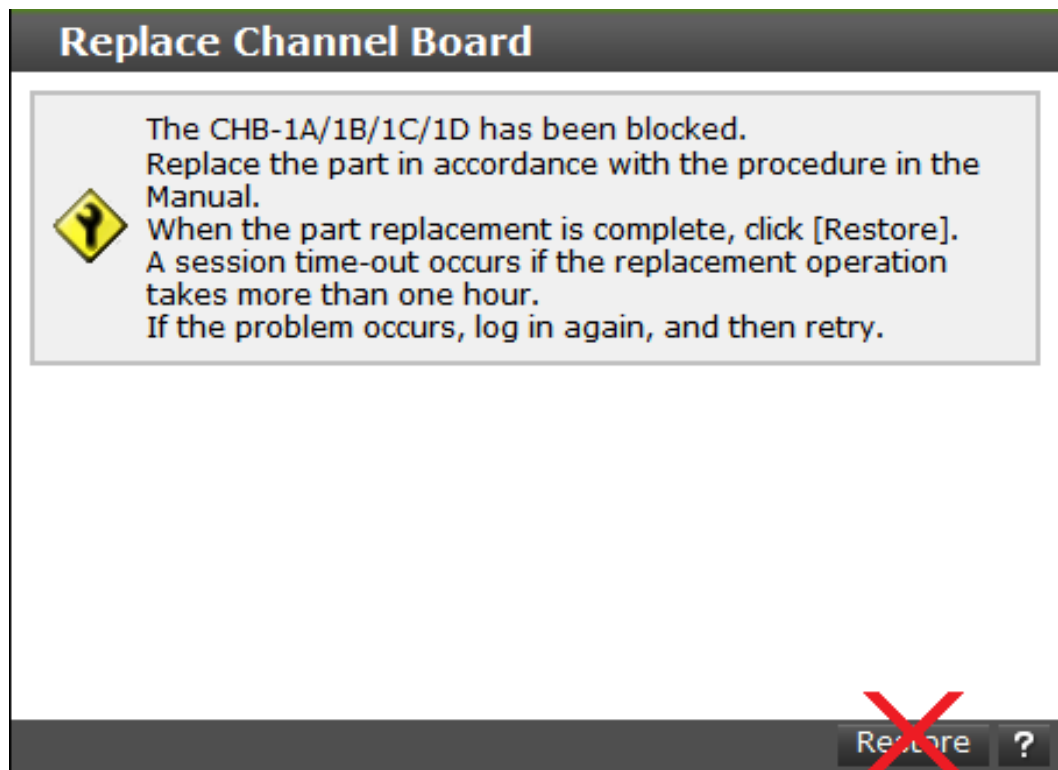
1. Start the maintenance utility.
2. Click **Hardware > Controller Chassis**.
3. Click the **CHBs** tab.
4. To display the most recent status of the PCIe module, click **Refresh**.



5. Check that the status of the failed NAS module is **Warning**.
6. Click the NAS module where the failure occurred, and then click **Replace**.
7. Click **Block**.



8. Check that the NAS module is blocked and becomes ready for replacing. Do not click **Restore** yet.



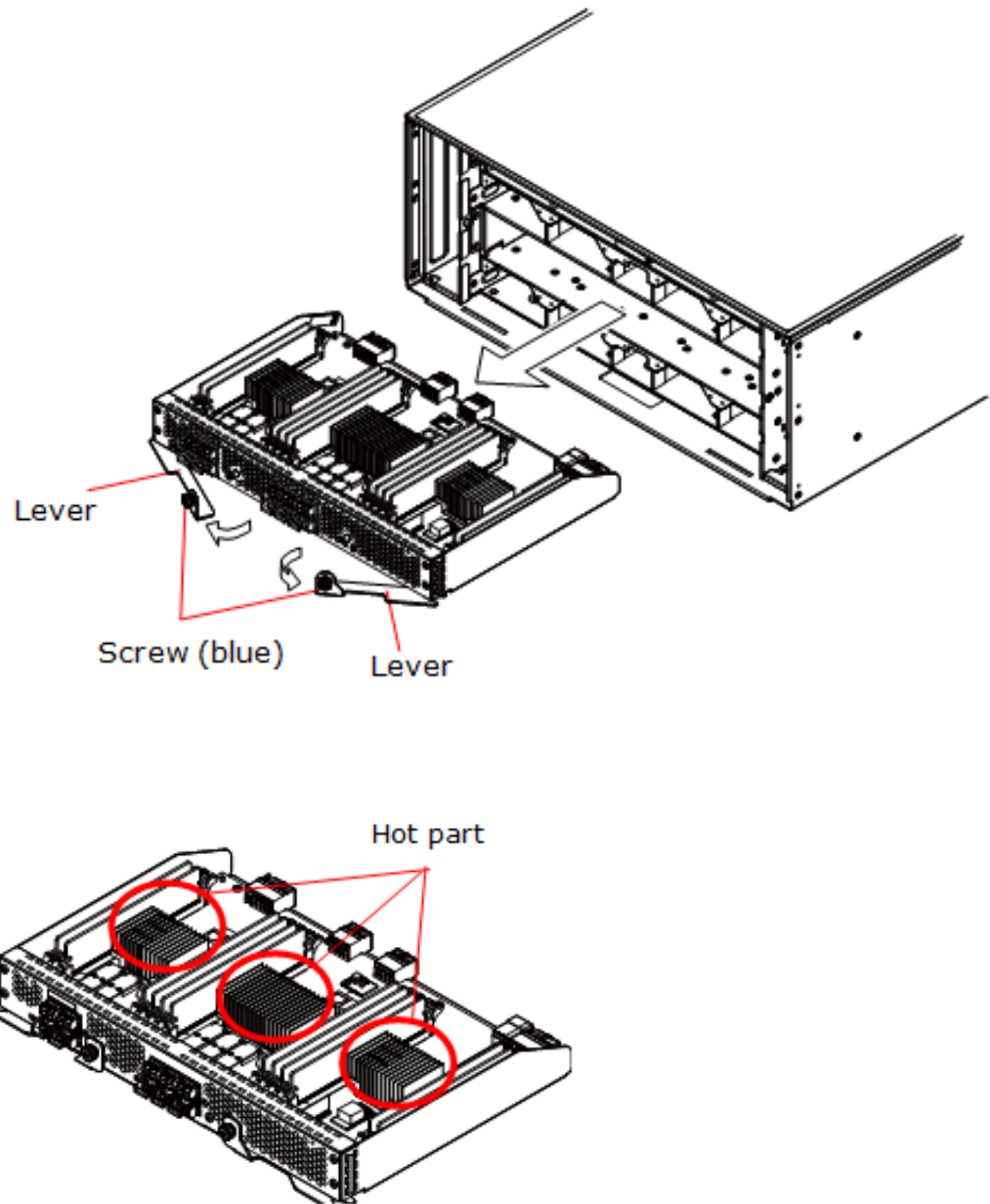
Replacing the NAS module

Procedure

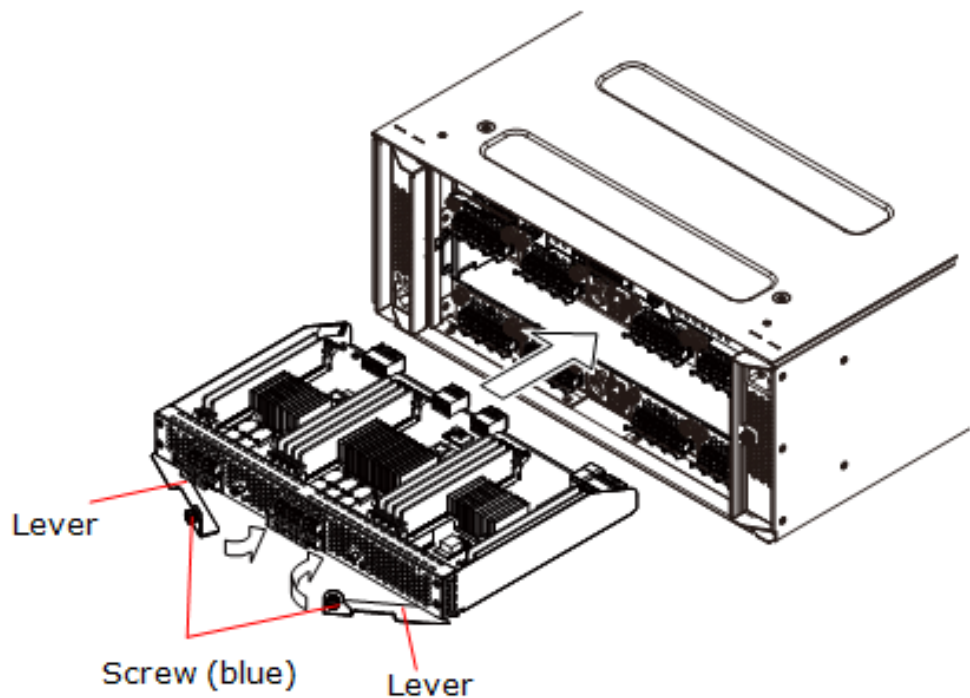
1. Remove the cables connected to the NAS module. Mark the port from where the cable was removed.
2. Loosen the two blue screws that secure the NAS module and open the levers.
3. Hold the NAS module with both hands, keep it straight, and gently pull it forward. Keep the NAS module level to avoid shocking any parts.



Note: The heat sinks can be hot on a NAS module that is removed from the storage system. Avoid touching these hot parts when removing the NAS module.



4. Install the NAS module:
 - a. Remove the Small Form-Factor Pluggable (SFP+) from the NAS module.
 - b. With the lever in an open position, insert the replacement NAS module into the slot. Push the NAS module all the way into the slot and close the lever.
 - c. Tighten the two blue screws to secure the NAS module.



- d. Insert the SFP+ into the NAS module.
5. On the NAS module, connect the cable to the same port before replacing the NAS module. Verify the cable clicks into place.

Restoring a NAS module

Procedure

1. Click **Restore**.
2. When the completion message appears, click **Close**.
3. Click the **CHBs** tab, and then confirm that the NAS module is **Normal**.
4. After completing the work, log out and close the **Maintenance Utility** window.
5. Migrate the EVS manually from the operating NAS module to the other NAS module.

Related tasks

- [EVS migration after servicing nodes](#) on page 102
- [EVS migration after servicing nodes](#) on page 102

General maintenance

This chapter provides general maintenance procedures.

- ☐ [Periodic maintenance](#)
- ☐ [Cleaning the storage system](#)
- ☐ [Inspecting fans](#)
- ☐ [Battery replacement guidelines](#)
- ☐ [Checking for loose or damaged cables or connectors](#)
- ☐ [Restarting the storage system](#)
- ☐ [Storing the storage system](#)

Periodic maintenance

The following table describes the periodic maintenance procedures you can perform to extend the life of your storage system. Inspect and clean the storage system regularly according to the operation environment.

Maintenance	Interval	Approximate time to perform procedure
Clean the storage system	Once a year	5 minutes
Inspect the fan	Once a year	5 minutes
Replace the battery	Every 3 years	10 minutes

Cleaning the storage system

When cleaning the storage system, check whether the system's air vents are clogged by dust. If they are clogged, remove the dust with a vacuum cleaner or wipe the dust using a dry cloth.

Keep the front bezel and rear panel clean. Otherwise, storage system ventilation deteriorates and the inside temperature might rise, causing a failure or fire.

Do not move the storage system during cleaning.

Procedure

1. Clean the outside of the front bezel.
2. Insert the key in the front bezel and turn in the direction shown by the arrow to unlatch the bezel.



Caution: Attach or remove the front bezel carefully to avoid pinching your fingers. Do not touch "live parts;" otherwise, you can receive an electric shock.

3. Remove the front bezel.
4. Clean the internal surfaces of the front bezel.
5. Attach the front bezel.
6. Turn the key in the direction shown by the allow to latch the front bezel.
7. Clean the external surfaces of the rack.

Inspecting fans

Inspect the fans when storage system power is turned on.



Caution: Storage system fans rotate at high speed. Exercise extreme caution to avoid getting anything caught in the fan and to prevent injury.

Procedure

1. Gain access to the inside of the rack.
2. Open the front bezel of the storage system.
3. Confirm that the storage system fans are rotating
4. Close the front bezel, and then close the rack.

Battery replacement guidelines

Each controller contains a sealed battery that provides backup power to cache memory. You must replace the battery every three years.



Note: Do not disassemble the battery; otherwise, you could get burned or receive a shock.

If the storage system does not receive power for more than six months, the battery can become discharged and possibly damaged. To avoid this situation, charge the battery for more than three hours at least once every six months.

Checking for loose or damaged cables or connectors

It is good practice to check cables for damage on a periodic basis. Confirm that all cables and cable connectors are in good condition and connected securely to the appropriate interfaces.

Restarting the storage system

Before restarting the storage system, wait at least one minute with the main switch off (amber **POWER** LED is off).

Storing the storage system

If the storage system does not receive power for more than six months, the battery can become discharged and possibly damaged. To avoid this situation, charge the battery for more than three hours at least once every six months.



Note: Do not store the equipment in an environment with temperatures of 104°F (40°C) or higher because battery life will be shortened.

Troubleshooting the storage system

Proper maintenance of the storage system is important for maintaining high performance. The component LEDs provide the operating status of the storage system and alert the user of any troubleshooting and component replacement activities.

- ☐ [General troubleshooting](#)
- ☐ [Checking hardware replacement alerts](#)
- ☐ [Troubleshooting Hitachi Device Manager - Storage Navigator](#)
- ☐ [Troubleshooting NAS Manager](#)
- ☐ [Troubleshooting the maintenance utility](#)
- ☐ [Background service log](#)
- ☐ [Dump tool](#)
- ☐ [Checking the event log when NAS modules are installed](#)
- ☐ [Checking SIM alerts](#)
- ☐ [Turning the storage system on or off using the maintenance utility](#)
- ☐ [Using LEDs to diagnose problems](#)
- ☐ [Troubleshooting related to SMI-S provider startup setting](#)
- ☐ [Troubleshooting SMI-S](#)

General troubleshooting

Correct values for the storage system IP address

Set appropriate value IP address, subnet mask, and default gateway settings for the storage system for your environment.

IPv4 default value

Controller 1:

Controller 2:

IP Address: 192.168.0.16

Subnet Mask: 255.255.255.0

Default gateway: 0.0.0.0

Controller board 2:

IP Address: 192.168.0.17

Subnet Mask: 255.255.255.0

Default gateway: 0.0.0.0

IPv6 default value

Controller 1:

IP Address: Auto

Controller 2:

IP Address: Auto

DHCPv4 configuration for storage systems

The storage system can be configured to use the DHCPv4 server protocol. When using the DHCPv4 server, configure the storage system to use a static IP address.

If the storage system does not receive an IP address from a DHCP server when it is configured for DHCP, Hitachi Device Manager - Storage Navigator cannot connect to the storage system. Contact your network administrator, and review the DHCPv4 server settings.

Default value

DHCPv4: Off (Static IP Address)

IP address being used by other storage systems or hosts

If the storage system is using the same IP address is used by other devices, Hitachi Device Manager - Storage Navigator cannot connect to the storage system.

Assign an IP address to the storage system that is not used by another device.

IP address configuration for the host

Use Hitachi Device Manager - Storage Navigator to set the IP address, subnet mask, and default gateway that the host can use to communicate with the storage system.

TCP/UDP port filtering being performed on the network switch

The default TCP port number for Hitachi Device Manager - Storage Navigator is 2000.

Set an appropriate value for the network environment of the customer.

```
[default port number]: 2000 (standard)
28355 (secure)
```

Change the port number in network environments using Cisco SIP phones.

Searching storage system across IPv6 routers

The Auto Search Storage system of IPv6 uses link-local scope multicast.

The IPv6 router is unable to transfer this multicast to other local links, so the IPv6 router cannot search storage systems across the IPv6 router. The Auto Search Storage system of IPv6 uses link-local scope multicast. The IPv6 router cannot transfer this multicast to other local links, so the IPv6 router is unable to search storage systems across the IPv6 router. For different local links, register the storage system using a static IP address search.

Checking hardware replacement alerts

The **Maintenance Utility** window displays alerts when hardware components need to be replaced.

Procedure

1. In the **Maintenance Utility** window, click **Hardware > Target Hardware**.
2. Click the **Status** link for the hardware.
3. Open the **Related Alerts** window for the appropriate hardware components, as listed in the following tables.



VSP G200 part	Main window	Tab	Status link
Controller chassis	Controller Chassis window	Drives	Status
		CTLs	CTL Status
			Fan Status
		CHBs	Status
			SFP Status ¹









VSP G200 part	Main window	Tab	Status link
		BKMs	BKM Status
			Battery Status
		CFMs	Status
		PSs	Status
	Small Form-Factor Pluggable window	N/A	SFP Status
Drive tray	Drive Box window	Drives	Status
		ENCs	Status
		PSs	Status
Note: 1. An SFP can be installed in a CBLH only.			





VSP G400, G600VSP F400, F600 part	Main window	Tab	Status link
Controller chassis	Controller Chassis window	Drives	Status
		CTLs	CTL Status
			CMG Status
		BKMFs	BKMF Status
			Battery Status
		CFMs	Status
		CHBs	Status
			SFP Status
			If SFP Status is clicked, the Small Form factor Pluggable window opens. If SFP Status is clicked again, the Related Alerts window opens.
		CHBs	Cache Memory Status (NAS module)
			This appears when the firmware for NAS modules is installed.
			If Cache Memory Status (NAS Module) is clicked, the NAS Module Cache Memory window opens. If NAS Module Cache Memory Status is clicked again, the Related Alerts window opens.
		PECBs	Status
			A PECB can be installed in a CBLH only.







VSP G400, G600VSP F400, F600 part	Main window	Tab	Status link
		DKBs	Status
		LAN boards	Status
		PSs	Status
	Small Form-Factor Pluggable window	N/A	SFP Status
Drive tray	Drive Box window	Drives	Status
		ENCs	Status
		PSs	Status
Host port expansion chassis	Channel Board Box window	CHBs	Status
			SFP Status
		SWPKs	Status
		Fans	Status
		PCPs	Status
		PS	SFP Status
	Small Form-Factor Pluggable window	N/A	SFP Status
NAS module	Main window - NAS Module Status window	Unified Hypervisor	
This is displayed when the firmware for NAS modules is installed.		Hypervisor Network Module	
		NAS Unified Firmware	










The description of Status is listed in the following tables.







Status	Part frame color	Description
 Normal	N/A	Indicates normal status.
 Warning	Amber	<ul style="list-style-type: none"> Possible parts failure. Possible parts failure due to other related parts. Failure caused by other related parts. Replace failed part.
	None	<p>NAS Module Status-limited</p> <p>Any of the following failures occur:</p> <ul style="list-style-type: none"> NAS module hardware fails. NAS-module-related software is experiencing issues. Warning is shown due to possible failure of other components. Change part to return status to Active.

Status	Part frame color	Description
 Failed	Red	A part failed.
		Drive Status-limited <ul style="list-style-type: none"> Possible parts failure. Possible parts failure due to other related parts. Failure caused by other related parts. Replace failed part.
		Hypervisor Network module status-limited Failure occurred in Hypervisor Network module.
 Failed (NAS Unified Firmware)	None	NAS Unified firmware status-limited Failure occurred in NAS Unified firmware.
 Failed (hardware)	None	Unified Hypervisor status-limited Unified Hypervisor is blocked due to hardware factors.
 Failed (software)	None	Unified Hypervisor status-limited Unified Hypervisor is blocked due to software factors.
 Failed (service)	None	NAS Unified firmware status-limited Failure occurred in the file storage function of NAS Unified firmware.
 Failed (unknown)	None	Unified Hypervisor status-limited Unified Hypervisor is blocked.
 Blocked	Red	Only parts requiring blockage instruction by using Maintenance Utility are displayed and in an exchangeable status.
 Not fix	Amber	SFP Status-limited The classification is in an undetermined status.

Status	Part frame color	Description
 Warning (Port n failed)	Amber	Drive Status-limited The drive port is in a failure status. n: Failure drive port number
 Copying n % (TYPE to DRIVE)	Amber	Drive Status-limited Copying is in progress. n: Copy progress rate TYPE: Correction copy, Copy back, Dynamic sparing, Drive copy DRIVE: Copy destination drive location (If the drive is a copy destination drive in Correction copy , DRIVE is displayed as this Drive .) When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.
 Copying n % (TYPE to DRIVE)	Amber	Drive Status-limited Copying is in progress. n: Copy progress rate TYPE: Copy back, Dynamic sparing, Drive copy DRIVE: Copy source drive location When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.
 Pending (TYPE to DRIVE)	Amber	Drive Status-limited Copying is suspended. TYPE: Correction Copy, Copy back, Dynamic sparing, Drive copy DRIVE: Copy destination drive location (If the drive is a copy destination drive in Correction copy , DRIVE is displayed as this Drive .)







Status	Part frame color	Description
		When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.
 Pending (TYPE to DRIVE)	Amber	Drive Status-limited Copying is suspended. TYPE: Copy back, Dynamic sparing, Drive copy DRIVE: Copy source drive location When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.
 Copy incomplete	Amber	Drive Status-limited Copying is incomplete.
 Reserved	Amber	Drive Status-limited The spare disk is unusable.
 Installing	None	NAS Unified Firmware Status-limited NAS Unified firmware is being installed.
	None	NAS Module Status-limited Unified Hypervisor is not starting.
 Active	None	NAS Module Status-limited This indicates normal status. Unified Hypervisor Status-limited Unified Hypervisor started completely. Hypervisor Network Module Status-limited Hypervisor Network Module operates normally. NAS Unified Firmware Status-limited








Status	Part frame color	Description
		NAS Unified firmware is normal.
 Active (Not Redundant)	None	NAS Unified Firmware Status-limited NAS Unified firmware detected a failure in either cluster.
 Active (Warning)	None	NAS Unified Firmware Status-limited NAS Unified firmware detected trouble in either cluster.
 Inactive	None	NAS Module Status-limited No trouble occurs, but start-up is not completed.
 Initial	None	Unified Hypervisor Status-limited Unified Hypervisor is initialized.
 Failure Processing	None	Unified Hypervisor Status-limited Unified Hypervisor is being blocked.
		NAS Unified Firmware Status-limited NAS Unified firmware is being blocked.
 Failure Processing (Stopped)	None	Hypervisor Network Module Status-limited Hypervisor Network Module is stopped.
 Failure Processing (Restarting)	None	Hypervisor Network Module Status-limited Hypervisor Network Module is restarting.
 Processing	None	NAS Unified Firmware Status-limited NAS Unified firmware is starting or stopping. (Case 2)
 Starting	None	Unified Hypervisor Status-limited






Status	Part frame color	Description
		Unified Hypervisor is starting.
		NAS Unified Firmware Status-limited NAS Unified firmware is starting. (Case 1)
 Starting (Service)	None	NAS Unified Firmware Status-limited The file storage function of NAS Unified firmware is starting.
 Starting (NVRAM Restoring)	None	NAS Unified Firmware Status-limited NAS Unified firmware is loading the configuration definition.
 Stopping	None	Unified Hypervisor Status-limited Unified Hypervisor is stopping.
 Stopping (Service)	None	NAS Unified Firmware Status-limited The file storage function of NAS Unified Firmware is stopping.
 Stopped	None	Unified Hypervisor Status-limited Unified Hypervisor is stopped.
		NAS Unified Firmware Status-limited NAS Unified firmware is stopped.
 Stopped (Service)	None	NAS Unified Firmware Status-limited The file storage function of NAS Unified firmware is stopped.








VSP G800VSP F800HM800H Part	Main window	Tab	Status link
Controller chassis	Controller Chassis window	Drives	Status
		CTLs	CTL Status
			CMG Status









VSP G800VSP F800HM800H Part	Main window	Tab	Status link
		BKMFs	BKMF Status
			Battery Status
		CFMs	Status
		CHMs	Status
		CHBs	Status
			SFP Status
		CHBs	Cache Memory Status (NAS module) This appears when the firmware for NAS modules is installed. If Cache Memory Status (NAS Module) is clicked, the NAS Module Cache Memory window opens. If NAS Module Cache Memory Status is clicked again, the Related Alerts window opens.
		PECBs	Status
		DKBs	Status
		LAN boards	Status
		PSs	Status
	Small Form-Factor Pluggable window	—	SFP Status
Drive tray	Drive Box window	Drives	Status
		ENCs	Status
		PSs	Status
Host port expansion chassis	Channel Board Box window	CHBs	Status
			SFP Status
Host port expansion chassis	Channel Board Box window	SWPKs	Status
Host port expansion chassis	Channel Board Box window	Fans	Status
Host port expansion chassis	Channel Board Box window	PCPs	Status
Host port expansion chassis	Channel Board Box window	PS	SFP Status
Host port expansion chassis	Small Form-Factor Pluggable window		
NAS module This is displayed when the firmware for NAS modules is installed.	Main window - NAS Module Status window		Unified Hypervisor
			Hypervisor Network Module
			NAS Unified Firmware

Status	Part frame color	Description
 Normal	N/A	Indicates normal status.
 Warning	Amber	<ul style="list-style-type: none"> • Possible parts failure. • Possible parts failure due to other related parts. • Failure caused by other related parts. Replace failed part.
	None	NAS Module Status-limited Any of the following failures occur: <ul style="list-style-type: none"> • NAS module hardware fails. • NAS module related software is experiencing issues. • Warning is shown due to possible failure of other components. Change part to return status to Active.
 Failed	Red	A part failed.
		Drive Status-limited <ul style="list-style-type: none"> • Possible parts failure. • Possible parts failure due to other related parts. • Failure caused by other related parts. Replace failed part.
		Hypervisor Network module status-limited Failure occurred in Hypervisor Network module.
 Failed (NAS Unified Firmware)	None	NAS Unified firmware status-limited Failure occurred in NAS Unified firmware.
 Failed (hardware)	None	Unified Hypervisor status-limited Unified Hypervisor is blocked due to hardware factors.
 Failed (software)	None	Unified Hypervisor status-limited Unified Hypervisor is blocked due to software factors.

Status	Part frame color	Description
 Failed (service)	None	NAS Unified firmware status-limited Failure occurred in the file storage function of NAS Unified firmware.
 Failed (unknown)	None	Unified Hypervisor status-limited Unified Hypervisor is blocked.
 Blocked	Red	Only parts requiring blockage instruction by using Maintenance Utility are displayed and in an exchangeable status.
 Not fix	Amber	SFP Status-limited The classification is in an undetermined status.
 Warning (Port n failed)	Amber	Drive Status-limited The drive port is in a failure status. n: Failure drive port number
 Copying n % (TYPE to DRIVE)	Amber	Drive Status-limited Copying is in progress. n: Copy progress rate TYPE: Correction copy, Copy back, Dynamic sparing, Drive copy DRIVE: Copy destination drive location (If the drive is a copy destination drive in Correction copy , DRIVE is displayed as this Drive .) When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.
 Copying n % (TYPE to DRIVE)	Amber	Drive Status-limited Copying is in progress. n: Copy progress rate TYPE: Copy back, Dynamic sparing, Drive copy

Status	Part frame color	Description
		<p>DRIVE: Copy source drive location</p> <p>When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.</p>
 Pending (TYPE to DRIVE)	Amber	<p>Drive Status-limited</p> <p>Copying is in a suspended status.</p> <p>TYPE: Correction Copy, Copy back, Dynamic sparing, Drive copy</p> <p>DRIVE: Copy destination drive location (If the drive is a copy destination drive in Correction copy, DRIVE is displayed as this Drive.)</p> <p>When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.</p>
 Pending (TYPE to DRIVE)	Amber	<p>Drive Status-limited</p> <p>Copying is in a suspended status.</p> <p>TYPE: Copy back, Dynamic sparing, Drive copy</p> <p>DRIVE: Copy source drive location</p> <p>When multiple copy statuses exist, a line break is added to every copy status line, and then the information is displayed.</p>
 Copy incomplete	Amber	<p>Drive Status-limited</p> <p>Copying is in an incomplete status.</p>
 Reserved	Amber	<p>Drive Status-limited</p> <p>The spare disk is in an unusable status.</p>
 Installing	None	<p>NAS Unified Firmware Status-limited</p>

Status	Part frame color	Description
		NAS Unified firmware is being installed.
	None	NAS Module Status-limited Unified Hypervisor is not starting.
 Active	None	NAS Module Status-limited This indicates normal status. Unified Hypervisor Status-limited Unified Hypervisor started completely. Hypervisor Network Module Status-limited Hypervisor Network Module operates normally. NAS Unified Firmware Status-limited NAS Unified firmware is normal.
 Active (Not Redundant)	None	NAS Unified Firmware Status-limited NAS Unified firmware detected a failure in either cluster.
 Active (Warning)	None	NAS Unified Firmware Status-limited NAS Unified firmware detected trouble in either cluster.
 Inactive	None	NAS Module Status-limited No trouble occurs, but start-up is not complete.
 Initial	None	Unified Hypervisor Status-limited Unified Hypervisor is initialized.
 Failure Processing	None	Unified Hypervisor Status-limited


Status	Part frame color	Description
		Unified Hypervisor is being blocked.
		NAS Unified Firmware Status-limited NAS Unified firmware is being blocked.
 Failure Processing (Stopped)	None	Hypervisor Network Module Status-limited Hypervisor Network Module is stopped.
 Failure Processing (Restarting)	None	Hypervisor Network Module Status-limited Hypervisor Network Module is restarting.
 Processing	None	NAS Unified Firmware Status-limited NAS Unified firmware is starting or stopping. (Case 2)
 Starting	None	Unified Hypervisor Status-limited Unified Hypervisor is starting.
		NAS Unified Firmware Status-limited NAS Unified firmware is starting. (Case 1)
 Starting (Service)	None	NAS Unified Firmware Status-limited The file storage function of NAS Unified Firmware is starting.
 Starting (NVRAM Restoring)	None	NAS Unified Firmware Status-limited NAS Unified firmware is loading the configuration definition.
 Stopping	None	Unified Hypervisor Status-limited Unified Hypervisor is stopping.
 Stopping (Service)	None	NAS Unified Firmware Status-limited

Status	Part frame color	Description
		The file storage function of NAS Unified Firmware is stopping.
● Stopped	None	Unified Hypervisor Status-limited Unified Hypervisor is stopped. NAS Unified Firmware Status-limited NAS Unified firmware is stopped.
● Stopped (Service)	None	NAS Unified Firmware Status-limited The file storage function of NAS Unified firmware is stopped.


4. When the **Related Alerts** window opens, check for alerts that indicate hardware that needs to be replaced. The following window shows an example.

Related Alerts				
Alerts Related to : CTL2				
Related Alerts				
Alert ID	Date and Time ▼	Reference Code	Error Level	Error Section
269	2014/9/5 21:00:33	180100	!!! Acute	Audit Log
268	2014/9/5 21:00:32	180000	!!! Acute	Audit Log
247	2014/9/5 21:00:31	af0080	!!! Acute	Environmental error
266	2014/9/5 21:00:30	af8060	!!! Acute	Environmental error
265	2014/9/5 21:00:29	af6040	!!! Acute	Environmental error
264	2014/9/5 21:00:28	af5020	!!! Acute	Environmental error
263	2014/9/5 21:00:27	af2000	! Serious	Environmental error
262	2014/9/5 21:00:26	39a000	! Serious	Environmental error
261	2014/9/5 21:00:25	610002	! Serious	Processor error
260	2014/9/5 21:00:24	610001	! Serious	Processor error
				Total: 39
				Close ?

Only the alerts including the action codes of the specified parts and the related parts are displayed. To check the action codes, click the character string in the **Alert ID** column to open an **Alert Detail** window. The following window shows an example.

Alert Detail	
Alert ID	66
Date and Time	2014/09/24 14:02:47
Reference Code	fe0101
Error Level	 Service
Error Section	Cache error
Error Detail	End of Cache Write Through
Location	-
Concerned Alerts	

Action Codes		
Action Code	Possible Failure Parts	Location
58000000	TROUBLESHOOT SECTION	SEE MANUAL
Total: 1		

Close


The **Related Alerts** window shows a maximum of 256 alerts. Alerts detected one hour or more before the most recent alert are not displayed. In this case, see the **Alert** window.

Troubleshooting Hitachi Device Manager - Storage Navigator

Troubleshooting installation

Failure	Recovery action
The installation fails and the message is displayed.	Operate according to the message that has been displayed in the installer and the recovery action. Check the status of the background services of Device Manager - Storage Navigator to take actions (see Background service log on page 344).
The installation success message is displayed. However, the Storage	Check the status of the background services of Device Manager - Storage Navigator and take appropriate action. You cannot collect dump files using the Dump tool.

Failure	Recovery action
Device List will not run or cannot register the storage system.	Collect the target files manually (see Collecting dump files manually on page 380).
The SVP is connected to the network switch, but cannot access Device Manager - Storage Navigator on the SVP through the network switch.	Check that the network cable is connected securely. Check that the network switch is not configured to block the SVP connection.
Device Manager - Storage Navigator cannot be installed because its files and folders (for example, C:\Mapp) were deleted.	Install Device Manager - Storage Navigator using the SVP firmware media that corresponds to this version as the version of Device Manager - Storage Navigator you want to install.
The installation failed due to error "21443-200027" and the error detail code "1072" is displayed.	Install Device Manager - Storage Navigator again. If the error occurs repeatedly, start the SVP again, and then install Device Manager - Storage Navigator again.

Troubleshooting the SVP initial setting command

Failure	Recovery Action
The initial setting command was executed but failed, and a message was displayed.	Operate according to the message that has been displayed in the initial setting command.
The initial setting icompleted normally. However, the Storage Device List will not run or cannot register the storage system.	Check the status of the Device Manager - Storage Navigator background services and take appropriate action (see Background service log on page 344). If using the maintenance port, a communication error might occur in the SVP connected to the management port. Check the network status of the maintenance port. Collect the dump files (see Using the Dump tool on page 379). If the collection fails, collect the target files manually (see Collecting dump files manually on page 380).

Troubleshooting the Storage Device List

For messages that are not described in the following table, go to <SVP Installation Directory>\wk\supervisor\sdlist\help\sdl_message.html.

Message ID	Description	Recovery Action
21041-006002	Clicking the storage system in the Storage Device List window caused the error, and Hitachi Device Manager -	The default browser is not defined. Specify your browser as the default browser (refer to the documentation for your browser) and retry.

Message ID	Description	Recovery Action
	Storage Navigator cannot start.	
21041-006005	Starting the Storage Device List caused the error, and the Storage Device List cannot start.	<p>Failed to connect to the Supervisor service (DKCMan/MAPPAppServer/MAPPWebServer). From the Windows start menu, click Control Panel > System and Security > Administrative Tools > Services, and confirm that the DKCMan, MAPPAppServer, and MAPPWebServer services started. Start the Storage Device List again.</p> <p>If the status of DKCMan, MAPPAppServer, and MAPPWebServer did not start, right-click the service and click Start, or reboot the SVP.</p>
21513-008004	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008004" in the Status field.</p>	<p>Another SVP is connected to the storage system.</p> <p>Stop the services of the storage system running on the PC whose IP address is shown in the troubleshooting code TRCOMM000004 of the background service log.</p>
21513-008005	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008005" in the Status field.</p>	<p>The IP address for each CTL configured in the Add System window and the CTL number set for GUM are not identical.</p> <p>Correct the IP address setting for each controller in the Storage Device List window.</p>
21513-008006	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008006" in the Status field.</p>	<p>The storage system model configured in the Add System window is different than the model that was specified during setup.</p> <p>Delete the storage system from the Storage Device List and re-register the storage system with the correct model.</p>
21513-008007	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008007" in the Status field.</p>	<p>The Configuration model set in the Add System window is different than the model that was specified during setup.</p> <p>Delete the storage system from the Storage Device List and re-register the storage system with the correct Config model.</p>
21513-008008	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008008" in the Status field.</p>	<p>The serial number set in the Add System window and the serial number set in the storage system are not identical.</p> <p>Delete the storage system from the Storage Device List and re-register the storage system with the correct serial number.</p>

Message ID	Description	Recovery Action
21513-008009	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008009" in the Status field.</p>	<p>The user name and the password set in Add System window might be incorrect.</p> <p>Set the user name and the password in the Storage Device List again.</p>
21513-008011	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008011" in the Status field.</p>	<p>The information update failed.</p> <p>This information updates automatically. However, if the message does not disappear after approximately five minutes, select the corresponding storage system from the Storage Device List, stop the system, and then restart it.</p> <p>If the failure does not recover, restart the SVP.</p>
21513-008012	<p>[Warning] was displayed in the storage system icon.</p> <p>Clicking [Warning] displayed "21513-008012" in the Status field.</p>	<p>Another SVP might be connected to the storage system to be used.</p> <p>Check whether services are running for another storage system. If another SVP already started the services of the storage system, stop the services.</p>
21542-005011	Clicking Apply in the Add System window caused a "(21542-005011) error" and the storage icon is not created.	The SVP does not have sufficient free space to create the storage icon. Make 20 GB or more of free space available in the installation directory of the drive.
21542-005019	Clicking Start Service caused the error, and the service cannot start.	Two or more services cannot run simultaneously. Stop the service before starting another service.
21542-005026	Clicking Start Service caused the error, and the service cannot start.	The SVP IP address is invalid. At the top-right of the screen of the Storage Device List window, click SVP IP Address. In the Change SVP IP Address window, set the IP address of the SVP, and then retry Start Service.
	The status of the service changed to Error after rebooting the SVP with the Start-up service set to Auto . The Service Status window shows the error, and the Status field shows BASE .	The SVP IP address is invalid. At the top-right of the screen of the Storage Device List window, click SVP IP Address. In the Change SVP IP Address window, set the IP address of the SVP, and then retry Start Service.
21542-005026	After starting Device Manager - Storage Navigator, a window is displayed indicating you cannot log in to Device Manager - Storage Navigator.	Two or more SVPs can be connected. Only one storage system can connect to an SVP at a time. If other SVPs are connected, disconnect them and then, restart the SVP you are using. If the SVP is not connected, reboot the GUM from the maintenance utility, and then restart the SVP.

Message ID	Description	Recovery Action
21542-008001	[Warning] was displayed in the storage system icon. Clicking [Warning] displayed "21542-008001" in Status.	A processing time-out has occurred in the service associated with the error code. If this error occurs repeatedly, refer to the background service log and perform the relevant coping method. If the background service log does not exist or the condition does not improve, stop the service or reboot the SVP.
21542-008002	[Warning] was displayed in the storage system icon. Clicking [Warning] displayed "21542-008002" in Status.	An error occurred in the service associated with the error code. Refer to the background service log. If the background service log does not exist or the condition does not improve, stop the service or reboot the SVP.

Troubleshooting during Hitachi Device Manager - Storage Navigator operations

Failure	Recovery Action
After registering the storage system, an error occurred while operating Hitachi Device Manager - Storage Navigator or Hitachi Device Manager - Storage Navigator hangs.	<p>Check the status of the Hitachi Device Manager - Storage Navigator background services (see Background service log on page 344). If a failure occurred in the background service, perform the actions on the following row.</p> <p>When using the maintenance port, a communication error might occur in the SVP connected to the management port due to the abnormal maintenance port status. Check the network status of the maintenance port.</p> <p>If the failure persists after taking the actions, collect the dump files (see Collecting dump files from the maintenance utility). If the collection fails, collect the target files manually (see Collecting dump files manually on page 380).</p>
After changing the registered user account without stopping the services of the registered storage system, the 20122-208003 error occurred while using Hitachi Device Manager - Storage Navigator.	Stop the service of the registered storage system in the Storage Device List . Click Edit to register the enabled user account information again, and then start the service.
Other errors	<p>Refer to the appropriate sections in the <i>Hitachi Device Manager-Storage Navigator User Guide</i>:</p> <ul style="list-style-type: none"> • Login errors • No-response errors • Incorrect display errors • UNIX operation errors • Other errors • Troubleshooting - Using Device Manager - Storage Navigator secondary windows

Miscellaneous Hitachi Device Manager - Storage Navigator troubleshooting

Failure	Recovery Action
After registering the storage system successfully, any error occurred during operation.	Check the status of the Device Manager - Storage Navigator background services and take appropriate action (see Background service log on page 344). Collect the dump files (see Using the Dump tool on page 379). If the collection fails, collect the target files manually (see Collecting dump files manually on page 380).
After changing the registered user account without stopping the services of the registered storage system, the "20122-208003" error occurred during the Hitachi Device Manager - Storage Navigator operations.	Stop the service of the registered storage system in the Storage Device List . Click Edit to register the enabled user account information again, and then start the service.

Troubleshooting NAS Manager

If you experience problems using NAS Manager, refer to the troubleshooting procedures in the following sections.

Setting disk capacity assignments

Failure	Recovery
The LDEV created by Device Manager - Storage Navigator or Hitachi Command Suite is not reflected.	Refresh NAS Manager.
The system drive to create a storage pool is not shown in the window.	To create a storage pool, four or more LDEVs are required. Start Device Manager - Storage Navigator or Hitachi Command Suite to create LDEVs. NAS might not be selected when adding the LUN path to LDEVs. For more information about creating LDEVs, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model. Start Device Manager - Storage Navigator and set the LUN path of the LDEVs to be assigned to the storage pool for the NAS platform (user LU). For more information about allocating LDEVs to LUN paths, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
EVS cannot be created.	The common subnet mask must be assigned to EVS in which the same link aggregation is set. Specify the same numerical value as the subnet

	mask of the previously created EVS. For more information about adding EVS, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
IP addresses cannot be assigned to EVS.	Check the IP address to be assigned to each EVS. For more information about adding EVS, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
File systems cannot be created.	<p>No capacity might be available for creating new file systems because all the capacity of the storage pool to create file systems is assigned to the existing file system.</p> <p>Increase the storage pool capacity or create new storage pools. For more information about creating storage pools, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p>

Setting a link to the external server

Failure	Recovery action
The NTP server cannot be detected.	The IP address or the name of the NTP server might be incorrect. Correct the IP address or the name of the NTP server. For more information about setting the system date and time of the NAS modules, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
	The NTP server might not start up. Start the NTP server.
Communication is disconnected between the NAS Module LAN port and the switch LAN port.	The Link Aggregation Control Protocol (LACP) setting of the NAS Module might not be identical with that of the switch. For more information about setting the link aggregation, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
The DNS server cannot be recognized.	The IP address of the DNS server might be incorrect. For more information about changing name services (DNS, WINS), see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
	The DNS server might not start.
The external servers that can be specified by name, such as mail servers, cannot be specified by name.	The DNS server might not be recognized. The DNS server might not be running. For more information about changing name services (DNS, WINS), see the Hitachi Virtual Storage Platform

	Installation and Reference Guide for your storage system model.
The Active Directory server cannot be detected.	<p>The IP address of the Active Director server might be incorrect. For more information about sharing file systems, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The Active Director server might not be running.</p>
The NIS server cannot be recognized.	<p>The IP address of the NIS server might be incorrect. For more information about setting the NIS directory service, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The NIS server might not start.</p>
The LDAP server cannot be recognized.	<p>The IP address of the LDAP server might be incorrect. For more information about setting the LDAP directory service, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The LDAP server might not start.</p>
The SMTP server for failure notification cannot be recognized.	<p>The name or IP address of the SMTP server might be incorrect. For more information about changing NAS failure e-mail notifications, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The SMTP server might not be running.</p>
A test mail is not received even if performing Send Test Event.	<p>The SMTP server might not be recognized or the destination mail address might be incorrect. For more information about changing NAS failure e-mail notifications, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The SMTP server might not be running.</p>
The Syslog server cannot be recognized.	<p>The IP address of the Syslog server might be incorrect. For more information about setting NAS failure notifications using the Syslog, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The Syslog server might not start up.</p>
The SNMP cannot be recognized.	<p>The IP address of the SNMP server might be incorrect. For more information about setting NAS failure notifications using SNMP, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.</p> <p>The SNMP server might not start up.</p>

Troubleshooting file-level access operations

Problem	Cause	Recovery
The Status lamp on the main window turns red or amber. When Event Log is checked, the error related to the network link is shown.	There is a problem with the external servers (NIS, LDAP, NFS Export Active Directory, CIFS).	Recover the external servers to normal operation.
	Link aggregation is not set properly.	Confirm that the same setting is used between the NAS module and the client PC to be connected to the NAS module or the switch. For more information about setting link aggregation, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.
The host or the client PC cannot access the file system	There is a problem with the external servers (NIS, LDAP, NFS Export Active Directory, CIFS).	Recover the external servers to normal operation.
	The settings of the external servers (NIS, LDAP, NFS Export Active Directory, CIFS) are incorrect.	Correct the external server settings. For more information about setting the NIS or LDAP directory service and sharing file systems, see the Hitachi Virtual Storage Platform Installation and Reference Guide for your storage system model.

Troubleshooting the maintenance utility

Maintenance utility port numbers

Use the following table as a reference when changing port numbers for the maintenance utility.

Port Number	Description	Can the port be closed?
80	Maintenance utility (HTTP)	Yes Use the maintenance utility.
161	SNMP (udp)	No
443	Maintenance utility (HTTPS)	No
1900	UPnP	Yes Requires upgrading firmware before adjusting port access.
10500	MAPP connection	No
31001	RAID Manager	No

Port Number	Description	Can the port be closed?
31002	RAID Manager	No

Network cannot connect to the maintenance utility

If the network cannot connect to Maintenance Utility or the 32061-204002 error occurs while operating Maintenance Utility, check that the LAN cable is not removed. If it is removed, connect the cable, and then restart the operation. If the operation cannot recover:

- Log out, close your web browser, and then log in again.
- If it still cannot recover, enter the IP address of controller 1 or controller 2 in your web browser's address bar to log in to Maintenance Utility and check the status of the storage system.

Maintenance Utility window is blank when it opens in Internet Explorer

If the **Maintenance Utility** window shows no content when you open it in Internet Explorer, even after waiting several minutes, use the following procedure to add the **Maintenance Utility** window to the trusted sites, and then open the **Maintenance Utility** window again.

Procedure

1. In Internet Explorer, click **Tools > Internet Options**, and then click the **Security** tab.
2. Click **Trusted Sites > Sites**.
3. Clear the **Require server verification (https:) for all sites in this zone** check box.
4. Enter the IP address of controller 1 to **Add this website to the zone** and click **Add**, and then click **Close**.
5. Add the IP address of controller 2 using the same method.
6. When returning to the **Internet Options** window, click **OK** to close the window.

Maintenance Window is blank when it opens in Google Chrome

If the **Maintenance Utility** window shows no content when you open it in Google Chrome, even after waiting several minutes, use the following procedure to add the **Maintenance Utility** window to the trusted sites, and then open the **Maintenance Utility** window again.

Procedure

1. From the menu on the top of Google Chrome, click **Settings**.
2. Click **Show advanced settings**.

3. Click **Change proxy settings** to open Internet Properties, and then select the **Security** tab.
4. Click **Trusted sites > Sites**.
5. Uncheck **Require server verification (https:) for all sites in this zone**.
6. In **Add this website to the zone**, enter the IP address of controller 1, and then click **Add** and **Close**.
7. Use the same method in the previous step to add the IP address of controller 2.
8. After returning to the Internet Properties window, click **OK** to close the window.

Handling Java security messages

If you start the Update window of the Maintenance Utility, and the message `Application Blocked by Java Security` or `Application Blocked by Security Settings` appears, perform the following procedure.

Procedure

1. From the Windows start menu, click **All Programs > Java**, and then click **Configure Java**.
2. Open the Java Control Panel.
3. In the **Security** tab, click **Edit Site List** in the **Security** tab.
4. Add the following URLs to the **Exception Site List**, and then click **OK**.
 - <http://(IP address of controller 1)>
 - <http://(IP address of controller 2)>
 - <https://(IP address of controller 1)>
 - <https://(IP address of controller 2)>



Note: If `Security – HTTP Location` is displayed when adding the URL, click **Continue**.

5. Close the Java Control Panel, and then restart your web browser.

Contents in the Maintenance Utility window appear to be corrupt

If the contents displayed in the **Maintenance Utility** window appear to be corrupt, exclude the maintenance utility from the compatibility view target. In Internet Explorer, check the Compatibility View on the address bar. In Internet Explorer versions 10 and earlier:

Procedure

1. Click **Tools > Compatibility View setting**.
2. Clear the **Display intranet sites in Compatibility View** check box and the **Display all websites in Compatibility View** check box.

3. Click **Close**.

Maintenance Utility window fails or is blank

In the unlikely event that the login to the **Maintenance Utility** window fails, or the window opens with no content shown (even after waiting several minutes), clear the web browser cache and open the **Maintenance Utility** window again.

Forcing browser refreshes of the Maintenance Utility window

If images in the **Maintenance Utility** window do not appear properly, refresh your web browser.

To refresh your web browser:

Procedure

1. If the maintenance utility is open, log out.
2. Press the `Ctrl` key and `F5` key at the same time to force a refresh.

Maintenance Utility window freezes

The maintenance utility provides a locking feature you can use in case the window freezes (*hangs*).

If the **Maintenance Utility** window *hangs* during normal operation:

Procedure

1. Check the network connection between the SVP and the storage system.
2. Log out of the SVP, and then log in again.
3. When the `System Locked` message appears after logging on again, click **System Locked** to unlock the system.

Releasing the system lock

The maintenance utility cannot be used if it becomes locked. In this case, use the following procedure to unlock the maintenance utility.

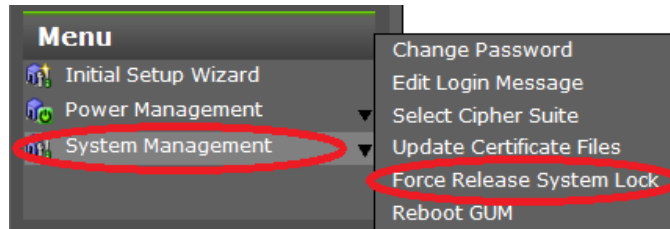
Before you begin

Before releasing the system lock, confirm with the system administrator that releasing the system lock forcibly does not cause any problem.

Procedure

1. Start the maintenance utility:
 - From Hitachi Command Suite. In the Hitachi Command Suite Main window, click **Storage System** from the tree view of the **Resources** tab. Expand the tree, and then click the **Maintenance Utility** menu to open the **Maintenance Utility** window.

- From Device Manager - Storage Navigator: In the Storage Navigator main window, click the **Maintenance Utility** menu bar, and then click **Hardware > Maintain Other Hardware**.
2. In the **Maintenance Utility** window, click **System Management > Force Release System Lock**.



The Force Release System Lock page opens.

3. Click **OK**.
4. At the completion message, click **Close** to remove the message.

Update Firmware window cannot be displayed

If you receive a message in your browser about the **Update Firmware** window cannot be displayed, or if an application error appears, perform the following procedure:

- Terminate the tool, and then register the storage system on the SVP if the error occurs while registering the storage system on the SVP.
- Close the error window, and then update the firmware again if the error occurs during the firmware update on the maintenance utility.

Duplicate maintenance utility windows appear in Internet Explorer

If duplicate **Maintenance Utility** windows appear in Internet Explorer, turn off the Smart Screen Filter function in your web browser.

Procedure

1. In Internet Explorer, click **Safety > Smart Screen Filter**, and then click **Turn off Smart Screen Filter**.
2. Check that **Turn off Smart Screen Filter** is selected, and then click **OK** to close the window.

Duplicate maintenance utility windows appear in Google Chrome

If duplicate **Maintenance Utility** windows appear in Google Chrome, turn off the Smart Screen Filter function in your web browser.

Procedure

1. From the menu on the top of Google Chrome, click **Settings**.
2. Click **Show advanced settings**.

3. Under **Privacy**, uncheck **Enable phishing and malware detection protection**.

Request to download a file during firmware upgrade using Internet Explorer

If a message about saving the JNLP file appears when the firmware update window is displayed in Internet Explorer, perform the following procedure.

Procedure

1. In Internet Explorer, click **Tools > Internet Options**, and then click the **Advanced** tab.
2. Under **Security** in **Settings**, clear **Do not save encrypted pages to disk**.
3. Click **OK** to close the window.



Note: In Google Chrome, click **Keep** at the bottom of the window to store the JNLP file. Do not click **Discard**.

Request to download a file during firmware upgrade using Google Chrome

If a message about saving the jnlp file appears when the firmware update window is displayed in Google Chrome, click Keep at the bottom of the window to store the jnlp file. Do not click Discard.



This type of file can harm your computer. Do you want to keep SJsvlSNStartServlet (...).jnlp anyway?

Keep

Discard

Error when exporting the audit log or backing up user account information

If the message Maintenance Utility cannot be started appears in Internet Explorer, turn off the pop-up blocking.

Procedure

1. On the Start menu, click **Control Panel > Internet Options**.
2. In the **Internet Properties** window, click the **Privacy** tab.
3. Uncheck **Turn on Pop-up Blocker**, and then click **OK**.

Background service log

You can output the logs of the background services that operate the SVP.

See the background service logs when checking that the SVP has started normally.

The background service logs are stored in the following directory:

```
<installDir>\wk\supervisor\system\log
```

Log file type	Log file name
Storage Device List log	system_< serial number >.log
Storage Navigator log	system_<serial number>_< serial number >.log

In the previous line:

- `installDir` = the installation directory of the SVP (for example, `C:\Mapp`).
- `<serial number>` = a sequential number of a given log file that begins with 0.

The background services include the following:

Storage Device List background services

Storage Device List background service	Service name
Storage Device List server	SDLSrv
SVP RMI- API forward server	RMI-API Forward Server
Web Application Server	Web Application Server

Storage Navigator background services

Storage Navigator background service	Service name
Web Application Server	Web Application Server
Storage Navigator server	Storage Navigator
SVP RMI- API server	RMI-API Server
External authentication relay service	External Authenticator
SMI-S Provider service	SMI-S
Communication service	Communication
KMIP Communicator	KMIP Communicator

The output format of logs is: [Occurrence Date and Time] [Failure Level] [Troubleshooting Code] [Service Name] [Log Content]

In the output format above:

- Occurrence date and time = date and time output in the following format: YYYY/MM/DD hh:mm:ss.SS
- Failure level = one of the following failure levels:
 - INFO:** Reference information (start, termination log, and so on).
 - WARN:** Warning (configured values should be checked, service is operating in the default status).
 - ERROR:** Service cannot start due to an error.
- Troubleshooting code = troubleshooting codes are output.
- Service name = service names are output.
- Log contents = message are output.

The following logs are output in their respective background services. Check these logs to ensure that the initialization process for each background service has completed normally and started. These logs will also show whether errors have occurred while the service is running

```
[2015/01/01 13:00:00.000][INFO][TRSTNA000001][Web Application Server]
[Initializing]

2015/01/01 13:00:15.000][INFO][TRSTNA000002][Web Application Server] [Ready]

[2015/01/01 13:00:30.000][INFO][TRSTNA001001][Storage Navigator] [Initializing]

[2015/01/01 13:01:00.000][INFO][TRSTNA001002][Storage Navigator] [Ready]
```

The following section describes troubleshooting codes and appropriate actions to take.

Storage Device List server

The following example is a normal log output:

```
[2015/03/18 15:40:50.372][INFO] [TRSDLS000001] [SDLSrv] [Initializing]

:

:

[2015/03/18 15:41:28.009][INFO] [TRSDLS000002] [SDLSrv] [Ready]
```

The following example is when a log output contains errors:

```
[2015/03/19 17:12:14.551][INFO ] [TRSDLS000006] [SDLSrv] [Stopping]

[2015/03/19 17:12:14.934][ERROR] [TRSDLS000011] [SDLSrv] [Stopping : System is
locked (SN:400001).]
```

```
[2015/03/19 17:12:15.216][ERROR] [TRSDLS000008] [SDLsrv] [ Ready : Failed to stop. ]
```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRSDLS000001	INFO	<p>The initialization processing of the Storage Device List server started.</p> <p>Check that TRSDLS000002 is output and the initialization processing completes normally.</p>
TRSDLS000002	INFO	<p>The initialization processing of the Storage Device List server completed normally.</p>
TRSDLS000003	ERROR	<p>The initialization processing of the Storage Device List server terminated with errors. See the troubleshooting codes that were output before and after this log, and perform the appropriate recovery actions.</p> <p>If no other error log is output, restart the SVP. If the condition does not change after restarting the SVP, set it up again.</p>
TRSDLS000004	ERROR	<p>The port shown in the log cannot be used.</p> <p>If the port exists, change the port number used in the application when allowed. If you cannot change the port number (see Changing SVP port numbers), change the port number for DKCManPrivate. Then perform the following procedure. If the result does not change, restart the SVP. If the condition still does not change after, set up the SVP again.</p> <ol style="list-style-type: none">1. From the Windows Start menu, click Control Panel > System and Security > Management Tool > Services.2. Click DKCMan from the list and click Start Services.
TRSDLS000005	ERROR	<p>The initialization processing of the Storage Device List server timed out.</p>

Troubleshooting code	Failure level	Recovery action
		<p>Restart the SVP. If the condition does not change after restarting the SVP, set it up again.</p> <ol style="list-style-type: none"> 1. From the Windows Start menu, click Control Panel > System and Security > Management Tool > Services. 2. Click DKCMan from the list and click Start Services.
TRSDLS000006	INFO	Stopping the Storage Device List server has begun. Check that TRSDLS000007 is output and the stop processing completes normally.
TRSDLS000007	INFO	Stopping the Storage Device List server completed normally.
TRSDLS000008	ERROR	<p>Stopping the Storage Device List server terminated with errors. The port shown in the log cannot be used. See the troubleshooting codes output before and after this log, and perform the appropriate recovery actions. If no other error log is produced, perform the following procedure to stop the Storage Device List server.</p> <ol style="list-style-type: none"> 1. From the Windows Start menu, click Control Panel > System and Security > Management Tool > Services. 2. Show the DKCMan property. 3. On the General tab, set the Type of Start-up to Manual. 4. Reboot the SVP.
TRSDLS000009	ERROR	The Storage Device List server cannot be stopped at this time. Wait a few minutes, and then try to stop it.
TRSDLS000010	ERROR	<p>The storage system with the serial number displayed in the log cannot stop its service.</p> <p>Perform the following procedure to stop the Storage Device List server:</p> <ol style="list-style-type: none"> 1. From the Windows Start menu, click Control Panel >

Troubleshooting code	Failure level	Recovery action
		<p>System and Security > Management Tool > Services.</p> <p>2. Show the DKCMan property.</p> <p>3. On the General tab, set the Type of Start-up to Manual.</p>
TRSDLS000011	ERROR	<p>The system with the serial number displayed in the log cannot stop its service because another user acquired the lock. Release the lock, and then try to stop the service.</p>
TRSDLS000012	ERROR	<p>The stop processing of the Storage Device List server timed out. If it occurs repeatedly, stop the Storage Device List server in the following procedure.</p> <p>1. From the Windows Start menu, click Control Panel > System and Security > Management Tool > Services.</p> <p>2. Show the DKCMan property.</p> <p>3. On the General tab, set the Type of Start-up to Manual.</p>
TRSDLS000013	WARN	<p>The service status acquisition failed.</p> <p>If this warning does not disappear within three minutes, stop the storage system by Storage Device List, and then restart it.</p> <p>If it does not recover, restart the SVP.</p> <p>If the condition does not change after restarting the SVP, set it up again.</p>
TRNASB000001	ERROR	<p>NAS Unified Firmware Configuration Backup task cannot be registered.</p> <p>Register the NAS unified firmware configuration backup task.</p>
TRNASB000002	ERROR	<p>NAS Unified Firmware Configuration Backup task cannot be deleted.</p> <p>Delete the NAS unified firmware configuration backup task.</p>

Troubleshooting code	Failure level	Recovery action
TRNASB000003	ERROR	<p>NAS Unified Firmware Configuration Backup task cannot be enabled.</p> <p>Enable the NAS unified firmware configuration backup task.</p>
TRNASB000004	ERROR	<p>NAS Unified Firmware Configuration Backup notification cannot be registered.</p> <p>Contact customer support.</p>
TRNASB000005	ERROR	<p>NAS Unified Firmware Configuration Backup notification cannot be deleted.</p> <p>Delete the NAS unified firmware configuration backup notification task.</p>
TRNASB000006	ERROR	<p>NAS Unified Firmware Configuration Backup cannot be performed due to an internal error.</p> <p>If this problem persists, contact customer support.</p>
TRNASB000007	WARN	<p>The saving destination of NAS Unified Firmware Configuration Backup is not valid. Perform the following procedure to check the saving destination.</p> <ol style="list-style-type: none"> 1. Click Control Panel > Administrative Tools > Task Scheduler to start. 2. Click Actions and confirm that the description in the Add arguments (optional) is in the format specified in the NAS unified firmware configuration backup.
TRNASB000008	WARN	<p>The number of generations for NAS Unified Firmware Configuration Backup is not valid. Perform the following procedure to check the number of generations.</p> <ol style="list-style-type: none"> 1. Click Control Panel > Administrative Tools > Task Scheduler to start. 2. Click Actions and confirm that the description in the Add arguments (optional)

Troubleshooting code	Failure level	Recovery action
		is in the format specified in the NAS unified firmware configuration backup.
TRNASB000009	ERROR	<p>NAS Unified Firmware Configuration Backup cannot be performed due to an error in connection to NAS. Perform the following procedure to check the NAS unified firmware status.</p> <ol style="list-style-type: none"> 1. Start Maintenance Utility. 2. Check if the storage system status is Ready. 3. If the status is not ready, perform maintenance.
TRNASB000010	ERROR	<p>NAS Unified Firmware Configuration Backup cannot be collected. Check the following conditions:</p> <ul style="list-style-type: none"> • Whether the HDD capacity in SVP is insufficient. • Whether the saving destination path length is within 218 characters when the destination is changed.
TRNASB000011	ERROR	<p>NAS Unified Firmware Configuration Backup notification task cannot be registered due to an error in connection to the storage system. Perform the following procedure to check the storage system status.</p> <ol style="list-style-type: none"> 1. Start Maintenance Utility. 2. Check if the storage system status is Ready. 3. If the status is not ready, perform maintenance.
TRNASB000012	ERROR	<p>Email address cannot be collected. Perform the following procedure to check the email settings for Maintenance Utility.</p> <ol style="list-style-type: none"> 1. Start Maintenance Utility. 2. Click Administration > Alert Notifications > Email and confirm the email settings are valid.
TRNASB000013	WARN	<p>NAS Unified Firmware Configuration Backup email notification is disabled because SMTP server authentication is</p>

Troubleshooting code	Failure level	Recovery action
		<p>enabled in email settings for Maintenance Utility.</p> <p>To receive error notification of NAS unified firmware configuration backup by email, disable SMTP authentication in email settings for Maintenance Utility.</p> <ol style="list-style-type: none"> 1. Start Maintenance Utility. 2. Click Administration > Alert Notifications > Email and confirm the email settings are valid.



Note: If the user account control in Windows started, click Continue.

SVP RMI-API Forward Server

The following example is a normal log output when the server starts and terminates normally.

```
[2015/03/17 15:49:09.638][INFO ][TRRMIS002001][RMI-API Forward Server]
[Initializing]

[2015/03/17 15:49:16.544][INFO ][TRRMIS002002][RMI-API Forward Server][Ready]

[2015/03/17 18:50:59.982][INFO ][TRRMIS002012][RMI-API Forward Server][Stopping]

[2015/03/17 18:51:00.003][INFO ][TRRMIS002013][RMI-API Forward Server][Stopped]
```

The following example is when a log output contains errors at termination.

```
[2015/03/17 15:49:09.638][INFO ][TRRMIS002001][RMI-API Forward Server]
[Initializing]

[2015/03/17 15:49:10.001][ERROR][TRRMIS002005][RMI-API Forward Server][Failed :
Environment is invalid.]

[2015/03/17 15:49:10.102][INFO ][TRRMIS002004][RMI-API Forward Server][Failed]
```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRRMIS002001	INFO	<p>Output when the RMI-API Forward Server service starts.</p> <p>To confirm that the RMI-API Forward Server service started normally, match it to the log</p>

Troubleshooting code	Failure level	Recovery action
		and check that TRRMIS002002 is output.
TRRMIS002002	INFO	Output when the start of the RMI-API Forward Server service completed normally.
TRRMIS002003	WARN	The RMI-API Forward Server service started, but a warning occurred in the processing. Check the troubleshooting codes output through TRRMIS002001 and log, and take the appropriate action.
TRRMIS002004	ERROR	The RMI-API Forward Server service failed to start. Check the troubleshooting codes output through TRRMIS002001 and log, and take the appropriate actions.
TRRMIS002005	ERROR	Acquiring the environment setting information necessary for starting the RMI-API Forward Server service has failed. Restart the SVP. If the status does not change after restarting the SVP, set it up again.
TRRMIS002006	ERROR	Acquiring the environment setting information necessary for starting the RMI-API Forward Server service failed. Restart the SVP. If the condition does not change after restarting the SVP, set it up again.
TRRMIS002007	WARN	Acquiring the environment setting information necessary for starting the RMI-API Forward Server service failed. Restart the SVP. If the condition does not change after restarting the SVP, set it up again.
TRRMIS002008	WARN	The ports necessary for the RMI-API Forward Server service cannot be used. Check that the port number is not being used by another application and change the port number of the appropriate

Troubleshooting code	Failure level	Recovery action
		application when allowed. If you cannot change the port number (see Changing SVP port numbers), change the port number for RMIIFregist and then restart the SVP.
TRRMIS002009	WARN	<p>The ports necessary for the RMI-API Forward Server service cannot be used.</p> <p>Check that the ports report to the log are not used by another application and change the port number of the appropriate application when permitted. If you cannot change the port number (see Changing SVP port numbers), change the port number for DKCManPrivate and then restart the SVP.</p>
TRRMIS002010	WARN	Use the recovery action for TRRMIS002008.
TRRMIS002011	WARN	Use the recovery action for TRRMIS002009.
TRRMIS002012	INFO	<p>Output when the RMI-API Forward Server service stops.</p> <p>To confirm that the RMI-API Forward Server service stopped normally, match it to the log and check that TRRMIS002013 is output.</p>
TRRMIS002013	INFO	Output when the RMI-API Forward Server service stopped normally.

Web Application Server

The following example is a log output when it is normal.

```
[2015/12/02 16:21:47.113][INFO ][TRMAAS000001][Web Application Server]
[Initializing]

[2015/12/02 16:21:48.410][INFO ][TRMAAS000002][Web Application Server][Ready]
```

The following example is a log output when it is abnormal.

```
[2015/12/03 09:47:22.020][INFO ][TRMAAS000001][Web Application Server]
[Initializing]

[2015/12/03 09:48:25.004][ERROR][TRMAAS000004][Web Application Server][Failed :
Failed to connect to the starting port of the web server. Port=8080.]
```

The following table lists the troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRMAAS000001	INFO	Output when the Web Application Server starts. To check whether the Web Application Server is running normally, check whether this troubleshooting code and TRMAAS000002 are output.
TRMAAS000002	INFO	Output when the Web Application Server started completely.
TRMAAS000003	WARN	The ports necessary for the Web Application Server service cannot be used. Check whether the ports output to the logs are not used in other applications and change the application port numbers if possible. If they cannot be changed, see and change the port numbers of MAPPWebServer.
TRMAAS000004	ERROR	The ports necessary for the Web Application Server service cannot be used. Check whether the ports output to the logs are not used in other applications and change the application port numbers if possible. If they cannot be changed, see and change the port numbers of CommonJettyStart.
TRMAAS000005	ERROR	The ports necessary for the Web Application Server service cannot be used. Check whether the ports output to the logs are not used in other applications and change the application port numbers if possible. If they cannot be changed, see and change the port numbers of CommonJettyStop.
TRMAAS000006	INFO	Output when the Web Application Server stops. To check whether the Web Application Server stopped

Troubleshooting code	Failure level	Recovery action
		normally, check whether this troubleshooting code and TRMAAS000007 are output.
TRMAAS000007	INFO	Output when the Web Application Server stopped normally and completely.

Storage Navigator Server

This is an example of a normal log output when the server starts normally.

```
[2015/03/19 18:08:31.046][INFO ][TRSTNA000001][Web Application Server]
[Initializing]

[2015/03/19 18:08:31.592][INFO ][TRSTNA000002][Web Application Server][Ready]

[2015/03/19 18:09:12.903][INFO ][TRSTNA001001][Storage Navigator][Initializing]

[2015/03/19 18:15:29.387][INFO ][TRSTNA001002][Storage Navigator][Ready]
```

This is an example of a normal log output at termination.

```
[2015/03/19 21:11:49.942][INFO ][TRSTNA000004][Web Application Server][Stopping]

[2015/03/19 21:11:50.478][INFO ][TRSTNA000005][Web Application Server][Stopped]

[2015/03/19 21:11:50.859][INFO ][TRSTNA001004][Storage Navigator][Stopping]

[2015/03/19 21:11:52.209][INFO ][TRSTNA001005][Storage Navigator][Stopped]
```

This is an example of log output when the server does not start normally.

```
[2015/03/20 11:15:33.543][INFO ][TRSTNA000001][Web Application Server]
[Initializing]

[2015/03/20 11:15:34.364][ERROR][TRSTNA000003][Web Application Server]
[Initializing : Failed to start a Storage Navigator.]
```

This is an example when log output contains errors at termination.

```
[2015/03/20 12:24:36.175][INFO ][TRSTNA000004][Web Application Server][Stopping]

[2015/03/20 12:24:38.931][INFO ][TRSTNA000005][Web Application Server][Stopped]

[2015/03/20 12:24:39.142][INFO ][TRSTNA001004][Storage Navigator][Stopping]

[2015/03/20 12:25:40.634][WARN ][TRSTNA001006][Storage Navigator][Stopped : Timeout
has occurred.]
```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRSTNA000001	INFO	Output when the Web Application server starts. To confirm that the Web Application Server started normally, match it to the troubleshooting code and check that TRSTNA000002 is output.
TRSTNA000002	INFO	Output when the start of the Web Application server is completed.
TRSTNA000003	ERROR	The Web Application server failed to start. Select the appropriate storage system from the Storage Device List , stop it, and then restart it. If it does not recover, restart the SVP. If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.
TRSTNA000004	INFO	Output when the Web Application server stops.
TRSTNA000005	INFO	Output when the Web Application server stops completely.
TRSTNA000006	ERROR	An error occurred by stopping the Web Application server. Restart the SVP. If it does not recover after restarting the SVP, set up again.
TRSTNA000007	WARN	The Device Manager - Storage Navigator service stopped unexpectedly, and then it is restarting. If the condition does not change within three minutes, stop the storage system by Storage Device List and restart it. If it does not recover, restart the SVP.

Troubleshooting code	Failure level	Recovery action
		If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.
TRSTNA000008	ERROR	See to change the port number range of DeviceJettyStart to the unused range. Then restart the SVP.
TRSTNA000009	ERROR	See to change the port number range of DeviceJettyStop to the unused range. Then restart the SVP.
TRSTNA000010	ERROR	The Web Application Server stopped forcibly. This message might be output when SVP restarted while the service is running. Select the relevant storage system from the Storage Device List, stop it, and then restart it. If it does not recover, restart the SVP. If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.
TRSTNA000011	ERROR	The Web Application Server stopped forcibly. This message might be output when SVP restarted while the service is running. Select the relevant storage system from the Storage Device List, stop it, and then restart it. If it does not recover, restart the SVP. If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.
TRSTNA001001	INFO	Output when starting the Device Manager - Storage Navigator service. To confirm that the Device Manager - Storage Navigator service has started normally,

Troubleshooting code	Failure level	Recovery action
		match it to the troubleshooting code and check that TRSTNA000008 is output.
TRSTNA001002	INFO	The Storage Navigator service started normally.
TRSTNA001003	WARN	<p>Might be output when the Device Manager - Storage Navigator service is running.</p> <p>If the troubleshooting code is output, the Device Manager - Storage Navigator service is acquiring the information. Wait up to 30 minutes after TRSTNA001001 is output. If TRSTNA001002 is not output after 30 minutes, see the <i>Hitachi Virtual Storage Platform System Administrator Guide</i> for your model for corrective action.</p> <p>If it does not recover, restart the SVP.</p> <p>If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>
TRSTNA001004	INFO	<p>Output when the Device Manager - Storage Navigator server stops.</p> <p>To confirm that the Device Manager - Storage Navigator service stopped normally, match it to the troubleshooting code and check that TRSTNA001005 is output.</p>
TRSTNA001005	INFO	Output when the Device Manager - Storage Navigator server is stopped Device Manager - Storage Navigator completely.
TRSTNA001006	WARN	<p>A time-out has occurred when stopping the Device Manager - Storage Navigator service.</p> <p>If it does not become start completion (TRSTNA001002) at the next start time, restart the SVP.</p>

Troubleshooting code	Failure level	Recovery action
		If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.
TRSTNA001007	ERROR	<p>The Device Manager - Storage Navigator service stopped forcibly. This message might be output when SVP restarted while the service is running.</p> <p>Select the relevant storage system from the Storage Device List, stop it, and then restart it.</p> <p>If it does not recover, restart the SVP.</p> <p>If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>
TRSTNA001008	ERROR	<p>The Device Manager - Storage Navigator service stopped forcibly. This message might be output when SVP restarted while the service is running.</p> <p>Select the relevant storage system from the Storage Device List, stop it, and then restart it.</p> <p>If it does not recover, restart the SVP.</p> <p>If it does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>

SVP RMI-API Server

The following example is a normal log output when the server starts and terminates normally.

```
[2015/03/17 15:49:07.750][INFO ][TRRMIS001001][RMI-API Server] [ Initializing ]
[2015/03/17 15:49:08.000][INFO ][TRRMIS001002][RMI-API Server] [ Ready ]
[2015/03/17 15:49:09.638][INFO ][TRRMIS002501][RMI-API Server] [ Initializing ]
[2015/03/17 15:49:16.544][INFO ][TRRMIS002502][RMI-API Server] [ Ready ]
[2015/03/17 15:52:03.405][INFO ][TRRMIS000001][RMI-API Server] [ Initializing ]
[2015/03/17 15:52:19.364][INFO ][TRRMIS000002][RMI-API Server] [ Ready ]
```

```

:
:
[2015/03/17 18:50:59.982][INFO ][TRRMIS002510][RMI-API Server] [ Stopping ]
[2015/0 3/17 18:51:00.003][INFO ][TRRMIS002511][RMI-API Server] [ Stopped ]
[2015/03/17 18:51:06.645][INFO ][TRRMIS001006][RMI-API Server] [ Stopping ]
[2015/03/17 18:51:06.927][INFO ][TRRMIS000015][RMI-API Server] [ Stopping ]
[2015/03/17 18:51:08.249][INFO ][TRRMIS000016][RMI-API Server] [ Stopped ]
[2015/03/17 18:51:10.695][INFO ][TRRMIS001007][RMI-API Server] [ Stopped ]

```

The start logs of two or more services are reported in the SVP RMI-API server. To confirm the normal start of the SVP RMI-API server, check the logs of TRRMIS000002, TRRMIS001002, and TRRMIS002502. To check for normal completion, check the logs of TRRMIS000016, TRRMIS001007, and TRRMIS002511.

The following example is when a log output contains errors.

```

[2015/03/17 15:49:07.750][INFO ][TRRMIS001001][RMI-API Server][ Initializing ]
[2015/03/17 15:49:08.000][INFO ][TRRMIS001002][RMI-API Server][ Ready ]
[2015/03/17 15:49:09.638][INFO ][TRRMIS002501][RMI-API Server][ Initializing ]
[2015/03/17 15:49:16.544][INFO ][TRRMIS002502][RMI-API Server][ Ready ]
[2015/03/17 15:52:03.405][INFO ][TRRMIS000001][RMI-API Server][ Initializing ]
[2015/03/17 15:52:03.968][ERROR][TRRMIS000007][RMI-API Server][ Failed : Port is
already in use. Port=51100 ]
[2015/03/17 15:52:04.003][INFO ][TRRMIS000015][RMI-API Server][ Stopping ]
[2015/03/17 15:52:04.125][INFO ][TRRMIS000016][RMI-API Server][ Stopped ]

```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRRMIS000001	INFO	<p>Output when the RMI-API Server service starts.</p> <p>The log is output two or more times by retry at the time of error occurrence.</p> <p>To confirm that the RMI-API Server service has started normally, match it to the log and check that TRRMIS000002 is output.</p>

TRRMIS000002	INFO	Output when the start of the RMI-API Server service is completed normally.
TRRMIS000003	WARN	<p>Reading the environment setting files necessary for the RMI-API Server service failed.</p> <p>Restart the SVP.</p> <p>If the condition does not change after restarting the SVP, set it up again.</p>
TRRMIS000004	WARN	<p>Operating with the default value indicated in the log content because the environment setting information necessary for the RMI-API Server service could not be obtained.</p> <p>Restart the SVP.</p> <p>If the condition does not change after restarting the SVP, set it up again.</p>
TRRMIS000005	WARN	<p>Operating with the default value indicated in the log content because the acquisition of the environment setting information necessary for the RMI-API Server service failed.</p> <p>Restart the SVP.</p> <p>If the condition does not change after restarting the SVP, set it up again.</p>
TRRMIS000006	WARN	<p>The port number used of the RMI-API Server service is already used.</p> <p>Check that another application is not using the port number indicated in the log content and close the application. Then stop the appropriate storage system from the Storage Device List and restart it.</p> <p>Check the port number key using the port number indicated by the log content and change it to another port number (see Changing SVP port numbers). If no port management number key corresponding to the port number indicated by the log content exists, the port number cannot be changed.</p>

TRRMIS000007	ERROR	<p>The port number used of the RMI-API Server service is already used.</p> <p>Check that another application is not using the port number indicated by the log content and close the application.</p> <p>Check the port number key using the port number indicated by the log content and change it to another port number (see Changing SVP port numbers). If no port management number key corresponding to the port number indicated by the log content exists, the port number cannot be changed.</p>
TRRMIS000008	WARN	<p>The file operation indicated by the log content failed in the RMI-API Server service.</p> <p>Another application can access the file. Close all other applications, and then stop the appropriate storage system once from the Storage Device List and restart it.</p>
TRRMIS000009	ERROR	<p>An unexpected error occurred in the RMI-API Server service.</p> <p>Gather dump files.</p> <p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see Collecting dump files manually on page 380).</p>
TRRMIS000010	WARN	<p>The connection to the necessary services failed in the RMI-API Server service.</p> <p>Stop the appropriate storage system once and restart it.</p> <p>If the condition does not change after restarting, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set it up again.</p>
TRRMIS000011	ERROR	<p>The connection to the necessary services failed in the RMI-API Server service.</p>

		<p>Stop the appropriate storage system once and restart it.</p> <p>If the condition does not change after restarting, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set it up again.</p>
TRRMIS000012	WARN	The IP address used in the RMI-API Server service is invalid.
TRRMIS000013	ERROR	<p>Check that the IP address of the SVP set by the Storage Device List is correct and restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set it up again.</p>
TRRMIS000014	WARN	<p>Operating with the default value indicated in the log content because the acquisition of the port number used for the RMI-API Server service failed.</p> <p>Check that the port value of the port number key PreRMIServer is set correctly (see Changing SVP port numbers). Stop the appropriate storage system once from the Storage Device List and restart it.</p> <p>If the condition does not change after restarting, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set it up again.</p>
TRRMIS000015	INFO	<p>Output when the RMI-API Server service terminates.</p> <p>The log is output two or more times by retry at the time of error occurrence.</p> <p>To confirm that the RMI-API Server service is completed normally, match it to the log and check the output of TRRMIS000016 is output.</p>
TRRMIS000016	INFO	Output when the RMI-API Server service is stopped normally.
TRRMIS000017	WARN	The connection to the necessary services failed in the RMI-API Server service.
TRRMIS000018	ERROR	

		<p>Restart the SVP.</p> <p>If it does not recover after restarting the SVP, set it up again.</p>
TRRMIS000019	ERROR	<p>The file operation indicated in the log content failed in the RMI-API Server service failed.</p> <p>Another application can access the appropriate file. Close all other applications.</p>
TRRMIS000020	WARN	<p>The client cannot connect to the RMI-API Server because the connection to the necessary service failed in the RMI-API Server service.</p> <p>Check whether <code>DkcId32.dll</code> exists in the following paths.</p> <ul style="list-style-type: none"> • Windows system directory (example: <code>C:\Windows\system32</code>) • Windows directory (example: <code>C:\Windows</code>) • Directory defined in environment variable <code>PATH</code> <p>When <code>DkcId32.dll</code> exists, delete DLL and restart the SVP.</p> <p>If the condition does not recover after restarting the SVP or <code>DkcId32.dll</code> does not exist in the previous path, set up again.</p> <p>¹ This log is output when RMI-API Server detects a connection error, even once.</p> <p>Ignore this log when the connection is successful by retry and Storage Navigator (or the client connected by external RMI) is operating normally.</p>
TRRMIS000021	ERROR	<p>An unexpected error occurred in the RMI-API Server service.</p> <p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see).</p>
TRRMIS000022	ERROR	<p>An unexpected error occurred in the RMI-API Server service.</p>

		<p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see).</p>
TRRMIS000023	ERROR	<p>An unexpected error occurred in the RMI-API Server service.</p> <p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see).</p>
TRRMIS000024	ERROR	<p>An unexpected error occurred in the RMI-API Server service.</p> <p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see).</p>
TRRMIS001001	INFO	<p>Output when starting the RMI-API Server service. To check that the RMI-API Server service has started normally, match it to the log and check that TRRMIS001002 is output.</p>
TRRMIS001002	INFO	<p>Output when the start of the RMI-API Server service is completed normally.</p>
TRRMIS001003	WARN	<p>Operating with the default value indicated in the log content because the acquisition of the port number used in the RMI-API Server service failed.</p> <p>Check that the port value of the port number key RMIClassLoader is set correctly (see Changing SVP port numbers). Stop the appropriate storage system once from the Storage Device List and restart it.</p> <p>If the condition does not change after restarting, restart the SVP.</p> <p>If it does not recover after restarting the SVP, set it up again.</p>
TRRMIS001004	WARN	<p>Operating with the default value indicated in the log content because the acquisition of the environment setting</p>

		<p>information necessary for the RMI-API Server service failed.</p> <p>Check that the IP address of the SVP set by the Storage Device List is correct and restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set it up again.</p>
TRRMIS001005	WARN	<p>A log waiting for other services necessary for starting the RMI-API Server service.</p> <p>The log is output once in ten minutes and six times at a maximum. If Device Manager - Storage Navigator still cannot start after outputting TRRMIS001002 and outputting the log six times, stop the appropriate storage system once from the Storage Device List and restart it.</p> <p>When TRRMIS001003 and TRRMIS001004 are output with the log, check the coping method of the appropriate troubleshooting code together.</p> <p>If the condition does not change after restarting, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set it up again.</p>
TRRMIS001006	INFO	<p>Output when the RMI-API Server service terminates. To confirm that the SVP RMI-API Server service is completed normally, match it to the log and check the output of TRRMIS001007.</p>
TRRMIS001007	INFO	<p>Output when the RMI-API Server service is stopped normally.</p>
TRRMIS001008	WARN	<p>Some functions of the RMI-API Server services are not operating normally.</p> <p>The storage system cannot stop normally.</p> <p>Restart the SVP.</p>
TRRMIS001009	ERROR	<p>An unexpected error occurred in the RMI-API Server service.</p>

		<p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see).</p>
TRRMIS001998	ERROR	The RMI-API Server service terminated abnormally.
TRRMIS001999	ERROR	<p>The service stopped forcibly. This message might be output when SVP restarted while the service is running.</p> <p>Stop the storage system by Storage Device List once, and then restart it.</p>
TRRMIS002501	INFO	<p>Output when the RMI-API Server service starts.</p> <p>To confirm that the RMI-API Server service has started normally, match it to the log and check that TRRMIS002502 is output.</p>
TRRMIS002502	INFO	Output when the start of the RMI-API Server service is completed normally.
TRRMIS002503	WARN	<p>The RMI-API Server service started but a warning has occurred in the processing.</p> <p>Check the troubleshooting codes output from TRRMIS002501 to the log and take actions.</p>
TRRMIS002504	ERROR	<p>The RMI-API Server service failed to start.</p> <p>Check the troubleshooting codes output through TRRMIS002501 and the log and take actions.</p>
TRRMIS002505	ERROR	<p>Acquiring the environment setting information necessary for starting the RMI-API Server service has failed.</p> <p>Stop the relevant storage system from the Storage Device List and restart it.</p> <p>If the condition does not change after restarting the storage system, restart the SVP.</p>
TRRMIS002506	ERROR	
TRRMIS002507	ERROR	

		If it does not recover after restarting the SVP, set up Storage Navigator again.
TRRMIS002508	ERROR	The ports necessary for the RMI-API Server service are unusable. Check that the ports output to the log are not used in another application and change the port number of the appropriate application when permitted. If you cannot change the port number (see), change the port number for DKCManPrivate and then restart the SVP. If the applicable application port number was changed, restart the SVP.
TRRMIS002509	ERROR	
TRRMIS002510	INFO	Output when the RMI-API Server service stops. To confirm that the RMI-API Server service is stopped normally, match it to the log and check that TRRMIS002511 is output.
TRRMIS002511	INFO	Output when the RMI-API Server service is stopped normally.
TRRMIS002512	ERROR	The RMI-API Server service has stopped. If the condition does not change within five minutes, run the following procedures in order. 1. Stop the appropriate storage system from the Storage Device List and restart it. 2. If the condition does not recover using step 1, restart the SVP. 3. If there is still no recovery, set up Storage Navigator again.
TRRMIS002513	ERROR	The RMI-API Server service stopped forcibly. This error might occur when restarting the SVP while the service is running. When the SVP restarted or the storage system stopped, restart the storage system by Storage Device List. In other cases, the RMI-API Server service restarts

		<p>automatically. If the condition does not change within three minutes, perform the following procedure sequentially.</p> <ol style="list-style-type: none"> 1. Stop the storage system using the Storage Device List and restart it. 2. If there is no recovery using step 1, restart the SVP. 3. If there is still no recovery, set up Storage Navigator again.
TRRMIS002514	ERROR	<p>An error occurred in the communication with the RMI-API Server service. The RMI-API Server service restarts automatically. If the condition does not change within one minute, perform the following procedure sequentially.</p> <ol style="list-style-type: none"> 1. Check whether the SVP IP address set by Storage Device List is correct. If not, set it. 2. If there is no recovery using step 1, stop the storage system using the Storage Device List and restart it. 3. If there is no recovery, restart the SVP. 4. If there is still no recovery, set up Storage Navigator again.
TRRMIS002515	ERROR	<p>The RMI-API Server service stopped abnormally.</p> <p>Check the troubleshooting codes output from TRRMIS002501 to this log and take necessary actions.</p>
<p>Note:</p> <p>1. If the router converts the IP address, the address might be different from the IP address of the PC itself. In this case, confirm with the network administrator.</p>		

External authentication relay server

The following example is a normal log output when the server starts normally.

```
[2015/03/19 18:08:31.265][INFO ][TrexAU000001][External Authenticator]
[Initializing]

[2015/03/19 18:08:31.858][INFO ][TrexAU000002][External Authenticator][Ready]
```

The following example is when a log output is normal at termination.

```
[2015/03/19 21:11:48.812][INFO ][TREXAU000004][External Authenticator][Stopping]
[2015/03/19 21:11:48.943][INFO ][TREXAU000005][External Authenticator][Stopped]
```

The following example is when a log output contains errors at startup.

```
[2015/03/20 22:15:36.265][INFO ][TREXAU000001][External Authenticator][Initializing]
[2015/03/20 22:15:36.364][ERROR][TREXAU000003][External Authenticator][Stopped : An
unexpected error has occurred.]
```

The following example is when a log output contains errors at termination.

```
[2015/03/20 22:20:14.317][INFO ][TREXAU000004][External Authenticator][Stopping]
[2015/03/20 22:20:15.113][ERROR][TREXAU000006][External Authenticator][Stopped : An
unexpected error has occurred.]
```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TREXAU000001	INFO	Output when the external authentication relay service starts. To confirm that the external authentication relay service has started normally, match it to the troubleshooting code and check that TREXAU000002 is output.
TREXAU000002	INFO	The external authentication relay service has started normally.
TREXAU000003	ERROR	The external authentication relay service failed to start. Select the appropriate storage system from the Storage Device List , stop it, and then start it. If the condition does not recover, restart the SVP. If the condition does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.
TREXAU000004	INFO	Output when the external authentication relay service stops.

Troubleshooting code	Failure level	Recovery action
		To confirm that the external authentication relay serviced is stopped normally, match it to the troubleshooting code and check that TREXAU000005 is output.
TREXAU000005	INFO	Output when the External authentication relay service stops normally.
TREXAU000006	ERROR	<p>An error occurred by stopping the external authentication relay service.</p> <p>If the external authentication relay service does not start normally (TREXAU000002) at the next start time, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>
TREXAU000007	ERROR	<p>The external authentication relay service is not started.</p> <p>Select the appropriate storage system from the Storage Device List, stop it, and then start it.</p> <p>If the condition does not recover, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>
TREXAU000008	ERROR	<p>The test communication to the Hitachi Command Suite server when setting the external authentication link of the Hitachi Command Suite server failed.</p> <p>The network setting of the Hitachi Command Suite server or the setting of the external authentication can experience a problem.</p> <p>Check the setting of the Hitachi Command Suite server.</p>
TREXAU000009	ERROR	The connection with the Hitachi Command Suite server failed when performing the external

Troubleshooting code	Failure level	Recovery action
		<p>authentication for the Hitachi Command Suite server.</p> <p>The network setting of the Hitachi Command Suite server or the setting of the external authentication can experience a problem.</p> <p>Check the setting of the Hitachi Command Suite server.</p>
TREXAU000010	ERROR	<p>The external authentication relay service stopped forcibly. This message might be output when SVP restarted while the service is running.</p> <p>Select the relevant storage system from the Storage Device List, stop it, and then restart it.</p> <p>If the condition does not recover, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>
TREXAU000011	ERROR	<p>The external authentication relay service stopped forcibly. This message might be output when SVP restarted while the service is running.</p> <p>Select the relevant storage system from the Storage Device List, stop it, and then restart it.</p> <p>If the condition does not recover, restart the SVP.</p> <p>If the condition does not recover after restarting the SVP, set up Device Manager - Storage Navigator again.</p>

SMI-S Provider service

The following example is a normal log output when the SMI-S Provider service starts and terminates normally.

```
[2015/03/31 18:08:31.265][INFO ][TRSMIS000001][SMI-S][Initializing : start SMI-S
service. Port= 5989 ]

[2015/03/31 18:08:31.858][INFO ][TRSMIS000002][SMI-S][Ready]
```



```

:
[2015/03/31 21:11:48.812][INFO ][TRSMIS000007][SMI-S][Stopping]
[2015/03/31 21:11:48.943][INFO ][TRSMIS000006][SMI-S][Stopped]

```

The following example is when a log output contains errors.

```

[2015/03/31 22:15:36.265][INFO ][TRSMIS000001][SMI-S][Initializing : start SMI-S
service. Port= 5989 ]
[2015/03/31 22:15:36.364][ERROR][TRSMIS000003][SMI-S][Failed : Failed to cache.]

```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRSMIS000001	INFO	<p>Output when the SMI-S Provider service starts.</p> <p>To confirm whether the SMI-S Provider service has started normally, check that TRSMIS000002 is output with this log.</p> <p>When TRSMIS000006 is output immediately after starting the SMI-S Provider service, the following factors are considered. Take appropriate actions for respective factors.</p> <ul style="list-style-type: none"> The port number used by other services is set. Change the port number to be used, and then start the service again. There is no file necessary for the SMI-S Provider service to operate. Install the SMI-S Provider program product again, and then restart the service.
TRSMIS000002	INFO	Output when the start of the SMI-S Provider service is completed normally.
TRSMIS000003	ERROR	<p>The cache capacity used by the SMI-S Provider service cannot be secured.</p> <p>Check the cache used by other applications and delete the unnecessary cache. Then, stop the storage system once from the Storage Device List and restart it.</p>

Troubleshooting code	Failure level	Recovery action
TRSMIS000004	ERROR	<p>A time-out occurred in the SMI-S Provider service.</p> <p>When Modify is acquired in the other applications, cancel Modify of the corresponding applications or wait until Modify is canceled. If the error is not resolved or other conditions exist, stop the corresponding storage system in the Storage Device List, and then restart it.</p> <p>Stop the storage system once from the Storage Device List and restart it.</p>
TRSMIS000005	ERROR	<p>An unexpected error occurred while starting the SMI-S Provider service.</p> <p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see Collecting dump files manually on page 380).</p>
TRSMIS000006	INFO	Output when the stop of the SMI-S Provider service is completed normally.
TRSMIS000007	INFO	<p>Output when the SMI-S Provider service stops.</p> <p>To confirm whether the SMI-S Provider service has stopped normally, check that TRSMIS000006 is output with this log.</p>
TRSMIS000008	INFO	<p>Output when the SMI-S Provider service communicates with the RMI server.</p> <p>To confirm whether the SMI-S Provider service started normally, check that TRSMIS000002 and this log are output.</p>
TRSMIS000009	INFO	<p>Output when the SMI-S Provider service communicates with the SVP.</p> <p>To confirm whether the SMI-S Provider service started normally, check that</p>

Troubleshooting code	Failure level	Recovery action
		TRSMIS000002 and this log are output.

Communication service

The following example is a normal the service starts and ends normally.

```
[2015/05/27 16:03:04.875][INFO ][TRCOMM000001][Communication] [Ready : Connection
to GUM2 opened.]

[2015/05/27 16:03:16.972][INFO ][TRCOMM000001][Communication] [Ready : Connection
to GUM1 opened.]

:
```

The following example is when a log output contains errors:

```
2015/05/27 16:03:17.288][ERROR][TRCOMM000004][Communication] [Failed : Connection
to GUM2 failed. Already connected MPC's IP Address is (1)10.xx.yy.zz ]

[2015/05/27 16:03:17.428][ERROR][TRCOMM000009][Communication] [Failed :
Authentication failed by GUM2.]
```

The following table lists troubleshooting codes and recovery actions.

Troubleshooting code	Failure level	Recovery action
TRCOMM000001	INFO	Output when completing the communication path connection with GUM after the communication service starts.
TRCOMM000002	INFO	Output when completing device authentication in the communication path to GUM after the communication service starts.
TRCOMM000003	INFO	Output when completing the consistency check in the communication path to GUM after the communication service starts. This indicates the state that serial numbers, config models, and models are identical.
TRCOMM000004	ERROR	Output when another SVP connected to the storage system is ready for use. Stop the services of the storage system running on the PC whose IP address is shown in the background service log.

Troubleshooting code	Failure level	Recovery action
		If your router converts IP addresses, the address might be different than the IP address of the PC.
TRCOMM000005	WARN	Output when detecting that the IP address for each controller set in the Add System window and the controller number set for GUM are not identical. Correct the IP address setting for each controller in the Storage Device List .
TRCOMM000006	WARN	Output when the storage system model set in the Add System window and specified during setup is not identical. Delete the storage system from the Storage Device List and register it again with the correct storage system model.
TRCOMM000007	WARN	Output when the config model set in the Add System window and specified during setup is not identical. Delete the storage system from the Storage Device List and register it again with the correct Config model.
TRCOMM000008	WARN	Output when the serial number set in the Add System window and specified during setup is not the identical. Delete the storage system from the Storage Device List and register it again with the correct serial number.
TRCOMM000009	ERROR	The user name and the password set in the Add System window might be incorrect. Set the user name and the password in the Storage Device List again.
TRCOMM000010	INFO	Output when disconnecting the communication path to GUM after the communication service starts.
TRCOMM000011	ERROR	Output when the information update failed. It updates again automatically. However, if the TRCOMM000002 log is not output within five minutes of log output, select the storage system from the

Troubleshooting code	Failure level	Recovery action
		<p>Storage Device List. Stop the system, and then restart it.</p> <p>If the failure does not recover, restart the SVP.</p>
TRCOMM000012	ERROR	<p>Another SVP might already connect to the storage system to be used.</p> <p>Check whether any other PCs starting the services of the storage system exists for the storage system to be used. If an SVP already started the services of the storage system, stop the services.</p>
TRCOMM000013	INFO	<p>Output when the Communication service starts.</p> <p>To check whether the communication service is starting normally, confirm that this log and TRCOMM000002 are output.</p>
TRCOMM000014	INFO	<p>Output when the Communication service stops.</p> <p>To confirm that the Communication service is stopped normally, confirm that this log and TRCOMM000015 are output.</p>
TRCOMM000015	INFO	Output when the communication service stops normally.
TRCOMM000016	WARN	<p>Output when the connection with the storage system fails.</p> <p>Check the IP addresses of CTL1 and CTL2 that are set in Storage Device List.</p> <p>If the IP addresses are incorrect, stop the service of this storage system, and then set correct IP addresses. After setting, restart the service.</p> <p>If the IP addresses are correct, check the communication path between the storage system and the SVP or the maintenance utility TRCOMM000017 operation status.</p>

Troubleshooting code	Failure level	Recovery action
TRCOMM000017	ERROR	The communication service terminated abnormally.
TRCOMM000018	ERROR	<p>The communication service is stopped forcibly.</p> <p>This might be output when SVP restarts while the communication service is running.</p> <p>Stop the service of this storage system using Storage Device List and restart it.</p>

KMIP Communicator

The following example is a log output with errors.

```
[2015/11/19 10:49:49.617] [ERROR] [TRKMIP000001] [KMIPCom] [Failed : SSL settings are invalid.]
```

Troubleshooting code	Failure level	Recovery action
TRKMIP000001	ERROR	<p>An unexpected error occurred in the KMIP Communicator service.</p> <p>Collect the dump files (see Using the Dump tool on page 379).</p> <p>If the collection fails, collect the target files manually (see).</p>

Dump tool

About the Dump tool

Use the Dump tool to collect Hitachi Device Manager - Storage Navigator configuration information.

You should collect dump files:

- Before deleting the storage management software.
- To troubleshoot Device Manager - Storage Navigator.
- Before replacing the storage system.

The Dump tool has two files.

- `Dump_Normal.bat` collects dump files containing information about the SVP and minimum information about the storage system. Use this tool when

there is no fatal error, such as a problem with accessing Device Manager - Storage Navigator.

- `Dump_Detail.bat` collects detailed dump files and contains comprehensive information about the storage system in addition to the contents of the normal dump file. Use this tool if you cannot start Device Manager - Storage Navigator or to check for problems with the storage system.

Using the Dump tool

Before you begin

- The client PC must be connected to the SVP using the Remote Desktop Connection.
- Verify Hitachi Device Manager - Storage Navigator is running.
- No other user should be using the Dump tool.
- No maintenance operation is being performed.
- Dump tools for other storage systems are not being used.



Note: If there are issues related to starting Hitachi Device Manager - Storage Navigator, use the dump tool while Hitachi Device Manager - Storage Navigator is not running and collect the information related to SVP.

Procedure

1. In Hitachi Device Manager - Storage Navigator, click **File > Refresh All** to refresh the configuration information shown.
2. On the SVP, exit to a Windows command prompt as Administrator.
3. Change to the directory where the Dump tool is located.
For example, `C:\Mapp\wk\83xxxxxxx\DKC200\mp\pc` where 83xxxxxxx is the DKC serial number.



Note: In the command above, `C:\Mapp` indicates the installation directory of the SVP. If the installation directory is different, replace `C:\Mapp` with the specified installation directory.

4. Specify the output folder for the dump file (for example, `C:\Mapp\wk\83xxxxxxx\DKC200\tmp`) as an output destination, and then run **Dump_Normal.bat** or **Dump_Detail.bat**. For example, to output the performance result of the Detail Dump tool to `C:\Result_832000400001`, enter the following: `Dump_Detail.bat C:\Result_832000400001`



Note: The dump file name is `hdcp.tgz`. To manage the dump file for each storage system, assign the serial number to the output destination folder name. For example, If the serial number: is 832000400001, set the file name to `C:\Result_832000400001`. While executing the tool, `Executing` appears in the command

prompt. When completing the tool execution, `zSv_AutoDump.exe` is completed appears in the command prompt.

5. At the completion message, close the command prompt.
6. Under the output destination folder, check that the following files are created.:
 - `hdcp.tgz` is the dump file. If many dump files are output to the storage system, the SVP free space might be insufficient, and you will have to move the dump files to a location other than the SVP.
`zSv_AutoDump.log` is the dump tool log file. If the dump file was not created, send this log file to your administrator. Otherwise, delete the log file.
7. Exit the command prompt.

Collecting dump files manually

If you cannot use the Dump tool or the Dump tool fails, collect the following dump files manually.

In the following list:

- `installDir` is the SVP installation directory (for example, `C:\Mapp`).
- `%USERPROFILE%` is the installation login user of the SVP (for example, `C:\Users\<user name>`).
- `%WINDIR%` is the Windows folder in the system drive (for example, `C:\Windows`).

`<installDir>\wk\supervisor\dkcman\log*.*`

`<installDir>\wk\supervisor\dkcman\cnf*.*`

`<installDir>\wk\supervisor\rmiserver\log*.*`

`<installDir>\wk\supervisor\rmiserver\cnf*.*`

`<installDir>\wk\supervisor\sdlist\log*.*`

`<installDir>\wk\supervisor\mappiniset\logs\MappIniSet*.*`

`<installDir>\wk\supervisor\mappiniset\mpprt\cnf`

`<installDir>\wk\supervisor\portmanager\logs\PortManager*.*`

`<installDir>\wk\supervisor\restapi\data`

`<installDir>\wk\supervisor\restapi\logs`

`<installDir>\wk\supervisor\restapi\build.json`

`<installDir>\wk\supervisor\restapi\version.json`

`<installDir>\wk\supervisor\system\log*.log`


```

<installDir>\OSS\apache\logs\*.log
<installDir>\OSS\apache\logs\ssl\*.log
<installDir>\OSS\jetty\logs\*.log
%USERPROFILE%\AppData\LocalLow\Sun\Java\Deployment\log
%WINDIR%\system32\config\SysEvent.Evt
%WINDIR%\system32\config\SecEvent.Evt
%WINDIR%\system32\config\AppEvent.Evt
%WINDIR%\minidump\*.dmp
%WINDIR%\System32\Winevt\Logs\Application.evtx
%WINDIR%\System32\Winevt\Logs\Security.evtx
%WINDIR%\System32\Winevt\Logs\System.evtx
%WINDIR%\system32\drivers\etc\HOSTS*
%WINDIR%\system32\drivers\etc\services*
%WINDIR%\minidump\*.dmp
c:\SetupTrace\*. *

```

Checking the event log when NAS modules are installed

The event log shows the operational status of NAS modules. If the lamp of Server Status Console at the top left of the main **NAS Manager** window turns red, check the event log for errors.

Procedure

1. Log in to NAS Manager.
2. Click **Status & Monitoring**.
3. In the **Status & Monitoring** window, click **Event Log**.
4. Check the information in the **Event Log** window

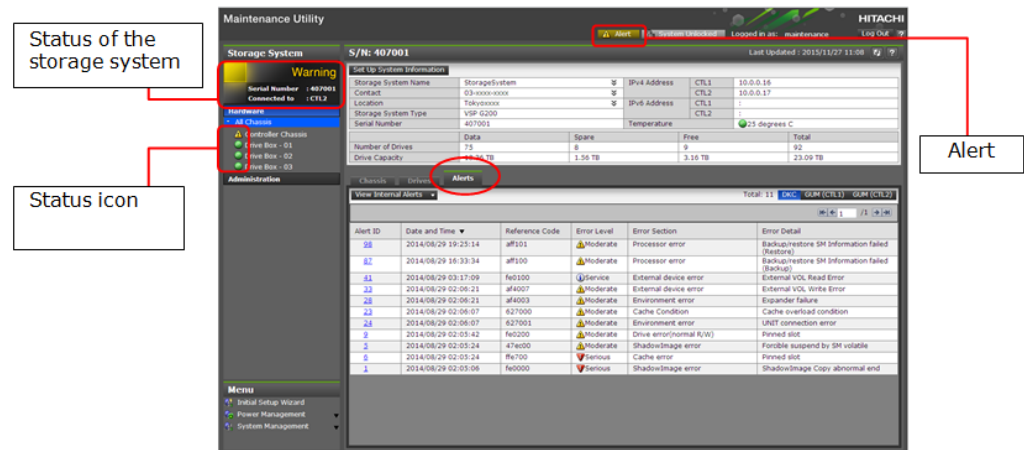
Checking SIM alerts



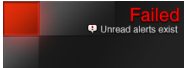



Some alarm, warning, and information notifications shown in the **Maintenance Utility** window include SIM alerts.

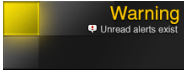



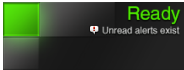

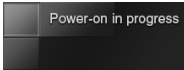
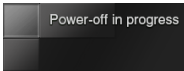
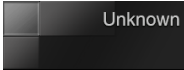
If an alert, warning, or information item appears in the maintenance utility without a SIM associated with it, use the following procedure to obtain more information about the item.

Procedure

1. In the navigation area of the **Maintenance Utility** window, check the status of the storage system.
2. In the header area, click **Alert**.
The **Alerts** tab opens.



Storage system status	Description	Acknowledged alert?	Navigation area	Alert color
Failed	The storage system might be down.	No		 Red
		Yes		 Red
Warning	A part has a Blocked or Warning status.	No		

Storage system status	Description	Acknowledged alert?	Navigation area	Alert color
				Amber
		Yes		 Amber
Ready	All parts have a normal status.	No		 Green
		Yes		 Green
Power-on in progress	Power-on is in progress.			N/A
Power-off in progress	Power-off is in progress.			N/A
Unknown	The storage system is in an unknown state prior to power on.			N/A

3. In the **Alerts** tab, click **DKC, GUM (CTL1)**, and **GUM (CTL2)**, and then check the alerts.

Maintenance Utility HITACHI

Alert System Unlocked Logged in as: maintenance Log Out

Storage System

Warning

Serial Number : 407001
Connected to : CTL2

Hardware

All Chassis

- Controller Chassis
- Drive Box - 01
- Drive Box - 02
- Drive Box - 03

Administration

Menu

- Initial Setup Wizard
- Power Management
- System Management

S/N: 407001 Last Updated : 2015/11/27 11:08

Set Up System Information

Storage System Name	StorageSystem	IPv4 Address	CTL1	10.0.0.16
Contact	03-xxxx-xxxx	CTL2	10.0.0.17	
Location	Tokyoxxxx	IPv6 Address	CTL1	:
Storage System Type	VSP G200	CTL2	:	
Serial Number	407001	Temperature	25 degrees C	

	Data	Spare	Free	Total
Number of Drives	75	8	9	92
Drive Capacity	18.36 TB	1.56 TB	3.16 TB	23.09 TB

Chassis Drives **Alerts**

View Internal Alerts Total: 11 DKC, GUM (CTL1), GUM (CTL2)

Alert ID	Date and Time	Reference Code	Error Level	Error Section	Error Detail
98	2014/08/29 19:25:14	aff101	Moderate	Processor error	Backup/restore SM Information failed (Restore)
87	2014/08/29 16:33:34	aff100	Moderate	Processor error	Backup/restore SM Information failed (Backup)
41	2014/08/29 03:17:09	fe0100	Service	External device error	External VOL Read Error
33	2014/08/29 02:06:21	af4007	Moderate	External device error	External VOL Write Error
28	2014/08/29 02:06:21	af4003	Moderate	Environment error	Expander failure
23	2014/08/29 02:06:07	627000	Moderate	Cache Condition	Cache overload condition
24	2014/08/29 02:06:07	627001	Moderate	Environment error	UNIT connection error
9	2014/08/29 02:05:42	fe0200	Moderate	Drive error(normal R/W)	Pinned slot
5	2014/08/29 02:05:24	47ec00	Moderate	ShadowImage error	Forcible suspend by SM volatile
6	2014/08/29 02:05:24	ffe700	Serious	Cache error	Pinned slot
1	2014/08/29 02:05:06	fe0000	Serious	ShadowImage error	ShadowImage Copy abnormal end

- Under the **Alert ID** column, click an entry.
The **Alert Detail** window opens.

Alert Detail	
Alert ID	98
Date and Time	2014/08/29 19:25:14
Reference Code	aff101
Error Level	⚠ Warning
Error Section	
Error Detail	
Location	
Concerned Alert ID	99

Action Codes		
Action Code	Possible Failure Parts	Location

Total: 0

Close ?

5. To check the internal alert, click **Internal Alerts (DKC)** or **Internal Alerts (GUM)** from the **View Internal Alerts** list. Click an entry under **Alert ID**.
6. When the **Alert Detail** window opens, check the alert information:
 - SSB shows high-priority error information.
 - SSBS shows low-priority error information.

SSB Tab in the Internal Alerts (DKC) Window

Internal Alerts (DKC)

SSB

SSBS

←

←

1

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→

→

Alert ID	Date and Time ▲	F/M	Error Code
123456	2014/01/02 12:59:59	x7	6789
123463	2014/01/02 10:59:59	x4	0156
123452	2014/01/01 23:59:59	x3	2345
123459	2014/01/01 23:59:59	x0	9012
123460	2014/01/01 22:59:59	x1	9023
123461	2014/01/01 21:59:59	x2	9034
123462	2014/01/01 20:59:59	x3	9045
123457	2014/01/01 15:59:59	x8	7890
123453	2014/01/01 12:59:59	x4	2456

Total: 10240

Close

?

SSBS Tab in the Internal Alerts (DKC) Window

Internal Alerts (DKC)

SSB

SSBS

←←1/1138→→

Alert ID	Date and Time ▲	F/M	Error Code
123456	2014/01/02 12:59:59	x7	6789
123463	2014/01/02 10:59:59	x4	0156
123452	2014/01/01 23:59:59	x3	2345
123459	2014/01/01 23:59:59	x0	9012
123460	2014/01/01 22:59:59	x1	9023
123461	2014/01/01 21:59:59	x2	9034
123462	2014/01/01 20:59:59	x3	9045
123457	2014/01/01 15:59:59	x8	7890
123453	2014/01/01 12:59:59	x4	2456

Total: 10240

Close

?

SSB Tab (CTL1) tab in the Internal Alerts (GUM) Window

Internal Alerts (GUM)

SSB (CTL1)

SSB (CTL2)

⏪ ⏩ 1 /1138 ⏪ ⏩

Alert ID	Date and Time ▼	F/M	Error Code
123456	2014/01/02 12:59:59	x7	6789
123463	2014/01/02 10:59:59	x4	0156
123452	2014/01/01 23:59:59	x3	2345
123459	2014/01/01 23:59:59	x0	9012
123460	2014/01/01 22:59:59	x1	9023
123461	2014/01/01 21:59:59	x2	9034
123462	2014/01/01 20:59:59	x3	9045
123457	2014/01/01 15:59:59	x8	7890

Total: 10240

Close ?

SSB Tab (CTL2) tab in the Internal Alerts (GUM) Window

Internal Alerts (GUM)

SSB (CTL1)

SSB (CTL2)

⏪ ⏩ 1 /1138 ⏪ ⏩

Alert ID	Date and Time ▼	F/M	Error Code
123456	2014/01/02 12:59:59	x7	6789
123463	2014/01/02 10:59:59	x4	0156
123452	2014/01/01 23:59:59	x3	2345
123459	2014/01/01 23:59:59	x0	9012
123460	2014/01/01 22:59:59	x1	9023
123461	2014/01/01 21:59:59	x2	9034
123462	2014/01/01 20:59:59	x3	9045
123457	2014/01/01 15:59:59	x8	7890

Total: 10240

Close

?

Turning the storage system on or off using the maintenance utility

In the event the SVP is not operational or cannot connect to the storage system, use the maintenance utility to turn on and turn off the storage system.



Note: If the storage system is turned off by the main switch, you cannot use the maintenance utility to turn on a storage system. Use the main switch to turn it on.

Before you begin

- Verify the breaker is turned on.
- Verify the amber POWER LED on the storage system is on.

Procedure

1. Start the browser on the client PC.
2. In the browser address bar, enter the address of controller 1, and press **Enter**.
The login window opens.
3. Log in.
The **Maintenance Utility** window opens.

4. To turn on the storage system, click **Power Management > Power on Storage System**. At the confirmation message, click **Submit**.
5. To turn off the storage system, click **Power Management > Power off Storage System**. At the confirmation message, click **Submit**.

Using LEDs to diagnose problems

The storage system LEDs provide system status and diagnostic indicators.

If the storage system used in a remote TrueCopy configuration restarts with the TrueCopy status of `enabled`, the following occur:

- The path used by TrueCopy becomes blocked. Notifications from the Hitachi Device Manager - Storage Navigator email alert function, SNMP Agent Support function, and SNMP trap occur when the path is blocked. Follow the instructions in the notification. The blocked path recovers automatically after restarting the storage system.
- If the TrueCopy pair status is `PAIR` or `COPY`, the pair changes to `PSUE`. In this case, suspend the pairs before restarting the storage system.

Power LED does not go on

Procedure

1. Set the main switch to on.
2. Is the Power LED on at the controller?
 - Yes: Go to step 9.
 - No: Power on the host computer.
3. Is the Power LED on at the controller?
 - Yes: Go to step 9.
 - No: Set the main switch to off.
4. Check that the PDU on the rack is delivering power to the storage system.
5. Verify that the AC cable is correctly connected to the plug socket and the equipment.
6. Set the main switch to on.
7. Is the Power LED on at the controller?
 - Yes: Go to step 9.
 - No: Set the main switch to off.
8. Contact your administrator. Go to step 10.
9. Is the Ready LED on?
 - Yes: Continue to use the equipment, even if the green Ready LED blinks fast.
 - No: Use the following corrective action. See [Ready LED does not go on or Ready LED went on and then off on page 390](#).

Power LED turned off

Procedure

1. Is AC power being supplied?
 - Yes: Check the power cables are connected properly and turn off the main switch.
 - No: Supply AC power to the storage system and restart the storage system.
2. Wait more than a minute and then set the main switch to on.
3. Is the Power LED on at the controller?
 - Yes: Go to step 5.
 - No: Set the main switch to off.
4. Contact your administrator. Go to step 6.
5. Is the Ready LED on at the controller?
 - Yes: Use the equipment in its current operational state, even if the green Ready LED blinks fast.
 - No: Use the following corrective action. See [Ready LED does not go on or Ready LED went on and then off on page 390](#).

Ready LED does not go on or Ready LED went on and then off

Procedure

1. Is the controller Power LED on?
 - Yes: Go to step 2.
 - No: Go to step 4 in *POWER LED does not go on*.
2. Is the ALARM LED on at the controller?
 - Yes: See *ALARM LED is on*.
 - No: Go to step 3.
3. Turn off the main switch.
4. Wait more than one minute, and then set the main switch to on.
5. Is the Ready LED on at the controller?
 - Yes: Continue to use the equipment. If the green Ready LED blinks fast, the storage system is operational. Go to step 8.
 - No: Go to step 8.
6. Set the main switch to off.
7. Contact your system administrator.

Alarm LED is on

Procedure

1. Identify which component failed (see [Checking SIM alerts on page 381](#)).

2. Contact your system administrator and do not use the storage system.

Ready LED is on

Procedure

1. Identify which component failed (see [Checking SIM alerts on page 381](#)).
2. Contact your system administrator and continue using the storage system.

Warning LED goes on

Procedure

1. Identify which component failed (see [Checking SIM alerts on page 381](#)).
2. Contact your system administrator and continue to use the storage system.

Troubleshooting related to SMI-S provider startup setting

A message appears if an error occurs when performing the SMI-S provider startup setting.

The following table describes the error message and troubleshooting actions that you can take to resolve the error.

Error message	Probable cause and recommended action
One or both parameters are not specified.	Specify the serial number of the storage system and the startup type as parameters.
The storage system with the specified serial number is not added to the Storage Device List.	Verify the specified serial number.
The specified startup type is not valid.	Specify enable or disable for the startup type.
This function is not supported.	Update the software version of the SVP to 83-03-01-x0/00 or later.
An internal error occurred.	Contact the HDS Support Portal at https://support.hds.com/en_us/contact-us.html ,

Troubleshooting SMI-S

You can send an SMI-S test report to determine whether the communication between the listeners and the SMI-S provider succeeds or fails. If an error occurs when executing the SMI-S test report, an error message is displayed. The following table lists test report errors.

Error message	Possible cause and recovery action
The user ID or the password is not valid.	User ID or password is invalid. Enter the correct user ID or password, and then retry the operation.
An error occurred during the listener information acquisition.	An error occurred during the listener information acquisition. Collect dump files (see Using the Dump tool on page 379).
No listeners are subscribed to the provider.	The listeners are not subscribed to the SMI-S provider. Have the listeners subscribe to the provider, and retry.
The test report cannot be sent to some listeners.	Collect dump files (see Using the Dump tool on page 379).
A time-out error occurred.	Send the test report again. If this problem persists, collect dump files (see Using the Dump tool on page 379).
An internal error occurred.	Collect dump files (see Using the Dump tool on page 379).

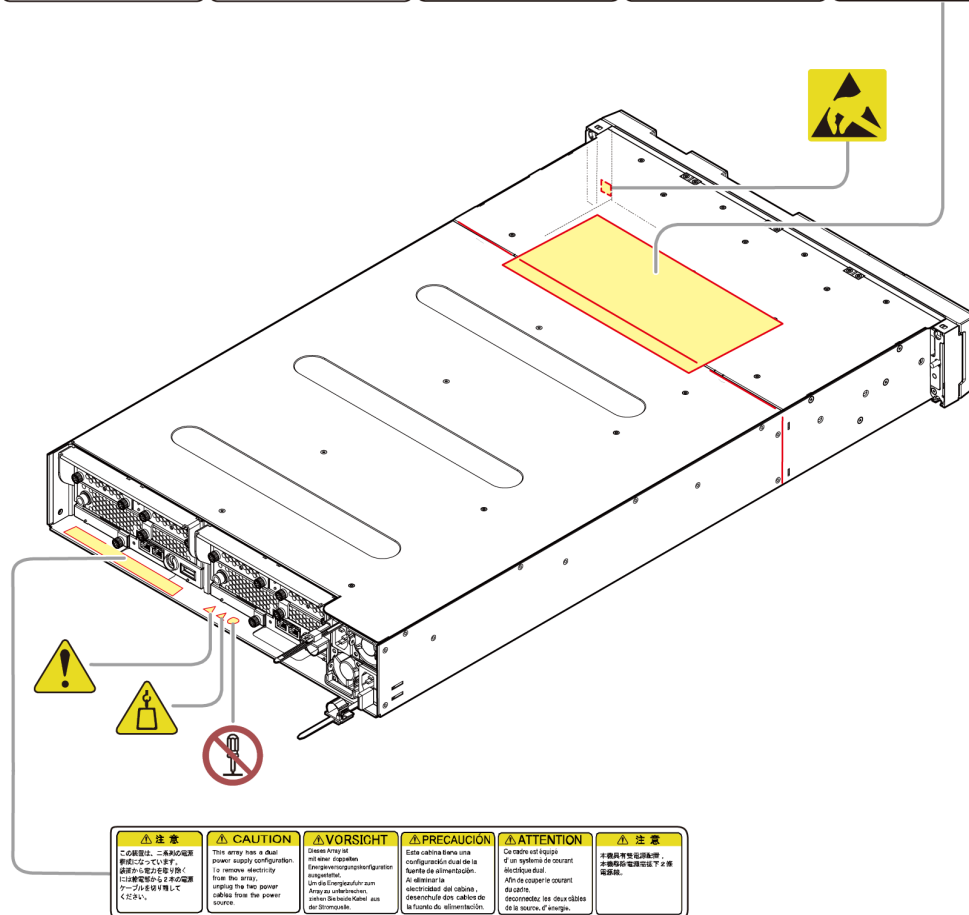
Warning labels on the storage system

- ☐ [CBSS/CBSSD controller](#)
- ☐ [CBSL/CBSLD controller](#)
- ☐ [CBLM controller](#)
- ☐ [CBLH controller](#)
- ☐ [Small form factor drive tray \(AC and DC models\)](#)
- ☐ [Large form factor drive tray \(AC and DC models\)](#)
- ☐ [Flash module drive tray](#)
- ☐ [Dense intermix drive tray](#)
- ☐ [CBSS/CBSL/CBSSD/CBSLD controller](#)
- ☐ [CBLM controller CBLH controller](#)
- ☐ [Drive for a flash module drive tray \(DKC-F710I-1R6FM/DKC-F710I-3R2FM\)](#)
- ☐ [Drive for a flash module drive tray \(DKC-F810I-1R6FN/DKC-F810I-3R2FN/DKC-F810I-6R4FN\)](#)
- ☐ [Dense intermix drive tray power supply](#)
- ☐ [CMA \(used to secure dense intermix drive tray\)](#)
- ☐ [Battery](#)

- ☐ [Host port expansion chassis](#)
- ☐ [PCIe switch board](#)
- ☐ [NAS module](#)

CBSS/CBSSD controller

<p>⚠ CAUTION</p> <p>Take care not to drop</p> <p>Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top – When sliding the array out of the rail terminal past this mark, keep a firm hold on the array.</p>	<p>⚠ 注意</p> <p>落下注意</p> <p>装置が落下しけがをする危険があります。装置上面の赤い線を越えて引き出す場合、装置を両手でしっかりと持ってください。</p>	<p>⚠ VORSICHT</p> <p>Nicht fallen lassen</p> <p>Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben des Arrays angebracht ist.</p>	<p>⚠ PRECAUCIÓN</p> <p>Tenga cuidado para evitar caídas</p> <p>Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior de la cabina.</p>	<p>⚠ ATTENTION</p> <p>Prenez garde de ne pas laisser tomber</p> <p>Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut du cadre.</p>
<p>⚠ CAUTION</p> <p>Heavy</p> <p>Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 44kg.</p>	<p>⚠ 注意</p> <p>重量物注意</p> <p>重量物を上げると、腕や腰を痛めます。リフターを使用したり、2人以上で扱ったりしてください。装置重量は約44kgです。</p>	<p>⚠ VORSICHT</p> <p>Hohes Gewicht</p> <p>Hohes Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 44kg.</p>	<p>⚠ PRECAUCIÓN</p> <p>Peso elevado</p> <p>Levantar una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 44kg.</p>	<p>⚠ ATTENTION</p> <p>Poids</p> <p>Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 44kg.</p>
<p>NOTICE</p> <p>Avoid damage – do not carry the array by its front side. Lift or carry the array by its left right, or rear sides. Avoid damage to the bezel – do not place the array directly on the floor or table while the bezel is attached. Remove the bezel as needed to prevent weight from being applied to the bezel. Avoid damage to the chassis – do not place anything on top of the array.</p>	<p>通知</p> <p>運搬時は、装置前面を持たないでください。変形する恐れがあります。側面および後面を持って、持ち上げたり運んだりしてください。装置にべゼルが付いた状態で、直接床やテーブルに置かないでください。べゼルの破損する恐れがありますので、べゼルを取外すか、べゼルの外力が加かかないように置かないでください。シャーシが変形する恐れがあります。装置の上面にも何も置かないでください。</p>	<p>HINWEIS</p> <p>Vermeiden Sie Beschädigungen – tragen Sie das Array nicht an seiner Vorderseite. Siehe Heben oder Tragen Sie das Array an seinen linken, rechten oder hinteren Seiten. Beschädigen – tippen Sie das Array nicht direkt auf den Boden oder einen Tisch, wenn die Blende angebracht ist. Entfernen Sie die Blende bei Bedarf, damit sie keinen Gewicht ausgesetzt wird. Beschädigen Sie nicht das Gehäuse – stellen Sie keine Gegenstände oben auf das Array.</p>	<p>AVISO</p> <p>Evite daños: no transporte la cabina desde su lado frontal. Levante o transporte la cabina desde el lado izquierdo, derecho o trasero. Evite dañar: no toque el marco: no coloque la cabina directamente sobre el piso o una mesa cuando el marco se encuentra colocado. Extraiga el marco según sea necesario para evitar que el peso que apoyado sobre el bezel.</p>	<p>AVIS</p> <p>Pour éviter les dégâts – ne portez pas le cadre par sa face avant. Soulevez ou transportez le cadre par ses côtés gauche, droit, ou arrière. Pour éviter d'endommager le pourtour – ne posez pas le cadre directement sur le sol ou sur une table lorsque le pourtour est attaché. Retirez le pourtour de sorte à éviter que le poids ne réagisse sur le pourtour. Pour éviter d'endommager le châssis – ne posez rien sur le dessus du cadre.</p>



CBSL/CBSLD controller

CBLM controller

<p>⚠ CAUTION</p> <p>Take care not to drop</p> <p>Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top - when sliding the array out of the rail terminal past this mark, keep a firm hold on the array.</p>	<p>⚠ 注意</p> <p>落下注意</p> <p>装置が落下してけがをする危険があります。装置上面の赤い線を越えて引き出す場合、装置を両手でしっかりと持ってください。</p>	<p>⚠ VORSICHT</p> <p>Nicht fallen lassen</p> <p>Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben des Arrays angebracht ist.</p>	<p>⚠ PRECAUCIÓN</p> <p>Tenga cuidado para evitar caídas</p> <p>Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior de la cabina.</p>	<p>⚠ ATTENTION</p> <p>Prenez garde de ne pas laisser tomber</p> <p>Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut du cadre.</p>
<p>⚠ CAUTION</p> <p>Heavy</p> <p>Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 85kg.</p>	<p>⚠ 注意</p> <p>重量物注意</p> <p>重量物を持ち上げると、腕や腰を痛めます。リフターを使用したり、2人以上で搬下したりしてください。装置重量は約85kgです。</p>	<p>⚠ VORSICHT</p> <p>Hohes Gewicht</p> <p>Beim Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 85kg.</p>	<p>⚠ PRECAUCIÓN</p> <p>Peso elevado</p> <p>Levantar una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 85kg.</p>	<p>⚠ ATTENTION</p> <p>Poids</p> <p>Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 85kg.</p>
<p>NOTICE</p> <p>Avoid damage - do not carry the array by its front side. Lift or carry the array by its left, right, or rear sides. Avoid damage to the bezel - do not place the array directly on the floor or table while the bezel is attached. Remove the bezel as needed to prevent weight from being applied to the bezel. Avoid damage to the chassis - do not place anything on top of the array.</p>	<p>通知</p> <p>運搬時は、装置前面を持たないでください。変形する恐れがあります。前面および後面を持って、持ち上げたり運んだりしてください。装置にベゼルが付いた状態で、平置きしないでください。ベゼルが破壊する恐れがありますので、ベゼルの取付から、ベゼルに外力が掛からないように置いてください。シャーンが変形する恐れがあります。装置の上面に何も置かないでください。</p>	<p>HINWEIS</p> <p>Vermeiden Sie Beschädigungen - tragen Sie das Array nicht an seiner vorderen Seite/oben oder tragen Sie das Array an seiner linken, rechten oder hinteren Seite. Beschädigen - legen Sie das Array nicht direkt auf den Boden oder einen Tisch wenn die Blende angebracht ist. Entfernen Sie die Blende bei Bedarf damit sie keinen Gewicht ausgesetzt wird. Beschädigen Sie nicht das Gehäuse - stellen Sie keine Gegenstände oben auf das Array.</p>	<p>AVISO</p> <p>Evite daños: no transporte la cabina desde su lado frontal. Levante o transporte la cabina desde el lado izquierdo, derecho o trasero. Evite causar daños en el marco: no coloque la cabina directamente sobre el piso o mesa cuando el marco se encuentra colocado. Extraiga el marco según sea necesario para evitar que el peso quede apoyado sobre el marco. Evite causar daños al chasis: no coloque ningún objeto sobre la parte superior de la cabina.</p>	<p>AVIS</p> <p>Pour éviter les dégâts - ne portez pas le cadre par sa face avant. Soulevez ou transportez le cadre par ses côtés gauche, droit, ou arrière. Pour éviter d'endommager le pourtour - ne posez pas le cadre directement au sol ou sur une table lorsque le pourtour est attaché. Retirez le pourtour de sorte à éviter que le poids ne s'exerce sur le pourtour. Pour éviter d'endommager le châssis - ne posez rien sur le dessus du cadre.</p>

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<p>⚠ 注意</p> <p>この装置は、二本足の電源構成になっています。装置の両方を取り除くには装置側から二本の電源ケーブルを切り離してください。</p>	<p>⚠ CAUTION</p> <p>This array has a dual power supply configuration. To remove electricity from the array, unplug the two power cables from the power source.</p>	<p>⚠ VORSICHT</p> <p>Dieses Array hat mit einer doppelten Energieversorgungsanordnung ausgestattet. Um die Energiezufuhr zum Array zu unterbrechen, ziehen Sie beide Kabel aus der Stromquelle.</p>	<p>⚠ PRECAUCIÓN</p> <p>Este cabina tiene una configuración dual de la fuente de alimentación. Al eliminar la electricidad del cabina, desenchufe dos cables de la fuente de alimentación.</p>	<p>⚠ ATTENTION</p> <p>Ce cadre est équipé d'un système de courant électrique dual. Afin de couper le courant du cadre, déconnectez les deux câbles de la source d'énergie.</p>	<p>⚠ 注意</p> <p>本装置は双電源構成です。装置の両方を取り除くには装置側から二本の電源ケーブルを切り離してください。</p> <p>重量 約 85 kg</p>
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CBLH controller

⚠ CAUTION Take care not to drop Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top - when sliding the array out of the rail terminal past this mark, keep a firm hold on the array.	⚠ 注意 落下注意 装置が落下して怪我をする危険があります。装置上面の赤い線を越えて引き出す場合、装置を両手でしっかりと持ってください。	⚠ VORSICHT Nicht fallen lassen Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben des Arrays angebracht ist.	⚠ PRECAUCIÓN Tenga cuidado para evitar caídas Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior de la cabina.	⚠ ATTENTION Prenez garde de ne pas laisser tomber Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut du cadre.
⚠ CAUTION Heavy Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 85kg.	⚠ 注意 重量物注意 重量物を持ち上げると、腕や腰を傷めます。リフターを使用したり、2人以上で搬ったりしてください。装置重量は約85kgです。	⚠ VORSICHT Hohes Gewicht Beim Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 85kg.	⚠ PRECAUCIÓN Peso elevado Levantar una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 85kg.	⚠ ATTENTION Poids Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 85kg.
NOTICE Avoid damage - do not carry the array by its front side. Lift or carry the array by its left, right, or rear sides. Avoid damage to the bezel - do not place the array directly on the floor or table while the bezel is attached. Remove the bezel as needed to prevent weight from being applied to the bezel. Avoid damage to the chassis - do not place anything on top of the array.	通知 運搬時は、装置前面を持たないでください。変形する恐れがあります。側面および後面を持って、持ち上げたり運んだりしてください。装置にベゼルが付いた状態で、平置きしないでください。ベゼルが破損する恐れがありますので、ベゼルの取外しが、ベゼルの外力が掛からないように置いてください。シャーシが変形する恐れがあります。装置の上面に何も置かないでください。	HINWEIS Vermeiden Sie Beschädigungen - tragen Sie das Array nicht an seiner vorderen Seite. Heben oder tragen Sie das Array an seiner linken, rechten oder hinteren Seite. Beschädigen - legen Sie das Array nicht direkt auf den Boden oder einen Tisch wenn die Blende angebracht ist. Entfernen Sie die Blende bei Bedarf damit sie keinen Gewicht ausgesetzt wird. Beachtungen Sie nicht das Gehäuse - stellen Sie keine Gegenstände oben auf das Array.	AVISO Evite daños: no transporte la cabina desde su lado frontal. Levante o transporte la cabina desde el lado izquierdo, derecho o trasero. Evite causar daños en el marco no coloque la cabina directamente sobre el piso o mesa cuando el marco se encuentra colocado. Extraiga el marco según sea necesario para evitar que el peso quede apoyado sobre el marco. Evite causar daños al chasis: no coloque ningún objeto sobre la parte superior de la cabina.	AVIS Pour éviter les dégâts - ne portez pas le cadre par sa face avant. Soulevez ou transportez le cadre par ses côtés gauche, droit, ou arrière. Pour éviter d'endommager le pourtour - ne posez pas le cadre directement au sol ou sur une table lorsque le pourtour est attaché. Retirez le pourtour de sorte à éviter que le poids ne s'exerce sur le pourtour. Pour éviter d'endommager le châssis - ne posez rien sur le dessus du cadre.

⚠ 注意 この装置は、二系統の電源構成となっています。影響から電力を取り除くには電源供給から本装置の電源ケーブルを切り離してください。	⚠ CAUTION This array has a dual power supply configuration. To remove electricity from the array, unplug the two power cables from the power source.	⚠ VORSICHT Dieses Array ist mit einer doppelten Energieversorgungsanordnung ausgestattet. Um die Energiezufuhr zum Array zu unterbrechen, ziehen Sie beide Kabel aus der Stromquelle.	⚠ PRECAUCIÓN Este cabina tiene una configuración dual de la fuente de alimentación. Al eliminar la electricidad del cabina, desconecte los cables de la fuente de alimentación.	⚠ ATTENTION Ce cadre est équipé d'un système de courant électrique dual. Afin de couper le courant du cadre, déconnectez les deux câbles de la source d'énergie.	⚠ 注意 本装置は二系統電源構成、本装置は電源ケーブルを切断してください。 重量 約 85 kg MASS: Approx. 85 kg
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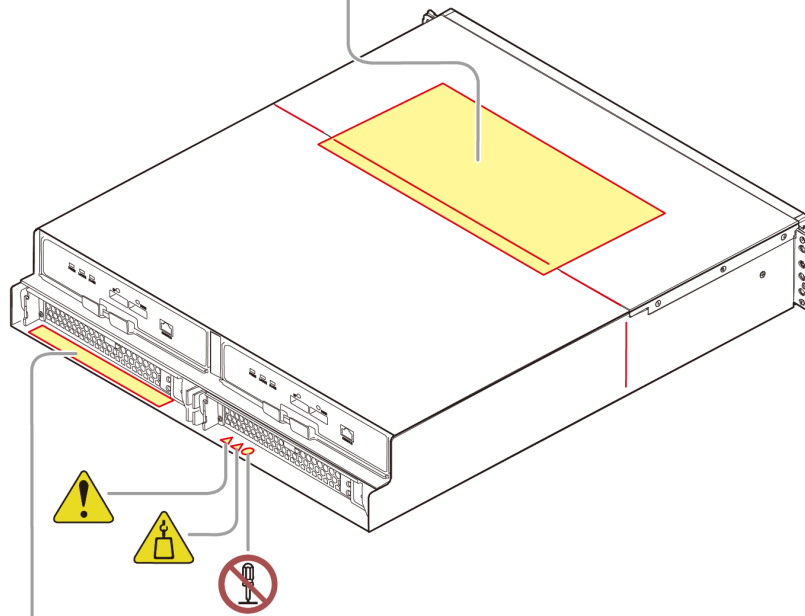
Small form factor drive tray (AC and DC models)

<p>⚠ CAUTION</p> <p>Take care not to drop</p> <p>Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top and sides - When sliding the array out of the rail terminal past this mark, keep a firm hold on the array.</p>	<p>⚠ 注意</p> <p>落下注意</p> <p>装置が落下してけがをする危険があります。装置上面および側面の赤い線を越えて引き出す場合、装置を両手でしっかりと持ってください。</p>	<p>⚠ VORSICHT</p> <p>Nicht fallen lassen</p> <p>Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.</p>	<p>⚠ PRECAUCIÓN</p> <p>Tenga cuidado para evitar caídas</p> <p>Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior y lateral de la cabina.</p>	<p>⚠ ATTENTION</p> <p>Prenez garde de ne pas laisser tomber</p> <p>Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut et sur les côtés du cadre.</p>
<p>⚠ CAUTION</p> <p>Heavy</p> <p>Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 23kg.</p>	<p>⚠ 注意</p> <p>重量物注意</p> <p>重量物を持ち上げると、腕や腰を傷めます。リフターを使用したり、2人以上で搬ったりしてください。装置重量は約 23 kgです。</p>	<p>⚠ VORSICHT</p> <p>Hohes Gewicht</p> <p>Beim Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 23kg.</p>	<p>⚠ PRECAUCIÓN</p> <p>Peso elevado</p> <p>Levantando una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 23kg.</p>	<p>⚠ ATTENTION</p> <p>Poids</p> <p>Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 23kg.</p>
<p>NOTICE</p> <p>Avoid damage - do not carry the array by its front side. Lift or carry the array by its left, right, or rear sides. Avoid damage to the bezel - do not place the array directly on the floor or table while the bezel is attached. Remove the bezel as needed to prevent weight from being applied to the bezel. Avoid damage to the chassis - do not place anything on top of the array.</p>	<p>通知</p> <p>運搬時は、装置前面を持たないでください。装置する恐れがあります。側面および後面を持って、持ち上げたり運んだりしてください。装置にベゼルが付いた状態で、平置きしないでください。ベゼルが破損する恐れがありますので、ベゼルを取外すか、ベゼルに外力が掛からないように置いてください。シャーシが変形する恐れがあります。装置の上面に何も置かないでください。</p>	<p>HINWEIS</p> <p>Vermeiden Sie Beschädigungen - Tragen Sie das Array nicht an seiner vorderen Seite. Heben oder tragen Sie das Array an seiner linken, rechten oder hinteren Seite. Beschädigen - legen Sie das Array nicht direkt auf den Boden oder eine Tisch, wenn die Blende angebracht ist. Entfernen Sie die Blende bei Bedarf, damit sie keinen Gewicht ausgesetzt wird. Beschädigen Sie nicht das Gehäuse - stellen Sie keine Gegenstände oben auf das Array.</p>	<p>AVISO</p> <p>Evite daños: no transporte la cabina desde su lado frontal. Levante o transporte la cabina desde el lado izquierdo, derecho o trasero. Evite causar daños en el marco: no coloque la cabina directamente sobre el piso o mesa cuando el marco se encuentra colocado. Extraiga el marco según sea necesario para evitar que el peso quede apoyado sobre el marco. Evite causar daños al chasis: no coloque ningún objeto sobre la parte superior de la cabina.</p>	<p>AVIS</p> <p>Pour éviter les dégâts - ne portez pas le cadre par sa face avant. Soulevez ou transportez le cadre par ses côtés gauche, droit, ou arrière. Pour éviter d'endommager le pourtour - ne posez pas le cadre directement au sol ou sur une table lorsque le pourtour est attaché. Retirez le pourtour de sorte à éviter que le poids ne s'exerce sur le pourtour. Pour éviter d'endommager le châssis - ne posez rien sur le dessus du cadre.</p>

<p>注意</p> <p>この装置は、二相交流電源のみに対応しています。電源から電圧変動が大きくなる場合、電源を切り離してください。</p>	<p>⚠ CAUTION</p> <p>This array has a dual power supply configuration. To remove electricity from the array, unplug the two power cables from the power source.</p>	<p>⚠ VORSICHT</p> <p>Dieses Array ist mit einer doppelten Stromversorgungsanordnung ausgestattet. Um die Energiezufuhr zum Array zu unterbrechen, ziehen Sie beide Kabel aus der Stromquelle.</p>	<p>⚠ PRECAUCIÓN</p> <p>Esta cabina tiene una configuración dual de la fuente de alimentación. Al eliminar la electricidad del cabina, desconecte los cables de la fuente de alimentación.</p>	<p>⚠ ATTENTION</p> <p>Ce cadre est équipé d'un système de courant alternatif dual. Afin de couper le courant, déconnectez les deux câbles de la source d'énergie.</p>	<p>注意</p> <p>本装置は二相交流電源のみに対応しています。電源から電圧変動が大きくなる場合、電源を切り離してください。</p>
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Large form factor drive tray (AC and DC models)

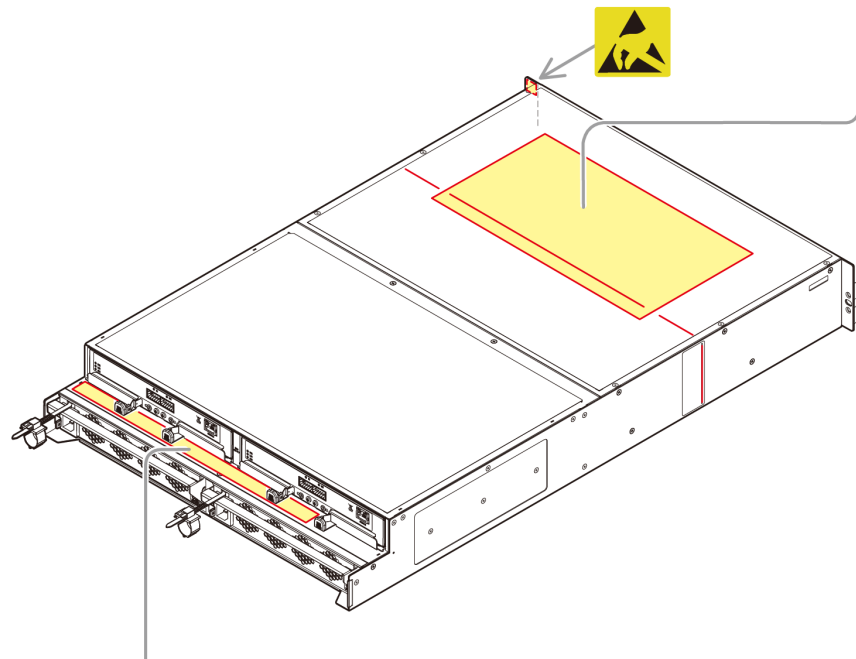
<p>⚠ CAUTION</p> <p>Take care not to drop</p> <p>Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top and sides – When sliding the array out of the rail terminal past this mark, keep a firm hold on the array.</p>	<p>⚠ 注意</p> <p>落下注意</p> <p>装置が落下してけがをする危険があります。装置上面および側面の赤い線を越えて引き出す場合、装置を両手でしっかりと持ってください。</p>	<p>⚠ VORSICHT</p> <p>Nicht fallen lassen</p> <p>Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.</p>	<p>⚠ PRECAUCIÓN</p> <p>Tenga cuidado para evitar caídas</p> <p>Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior y lateral de la cabina.</p>	<p>⚠ ATTENTION</p> <p>Prenez garde de ne pas laisser tomber</p> <p>Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut et sur les côtés du cadre.</p>
<p>⚠ CAUTION</p> <p>Heavy</p> <p>Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 27 kg.</p>	<p>⚠ 注意</p> <p>重量物注意</p> <p>重量物を持ち上げると、腕や腰を傷めます。リフターを使用したり、2人以上で搬ったりしてください。装置重量は約 27 kgです。</p>	<p>⚠ VORSICHT</p> <p>Hohes Gewicht</p> <p>Beim Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 27 kg.</p>	<p>⚠ PRECAUCIÓN</p> <p>Peso elevado</p> <p>Levantar una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 27 kg.</p>	<p>⚠ ATTENTION</p> <p>Poids</p> <p>Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 27 kg.</p>
<p>NOTICE</p> <p>Avoid damage – do not carry the array by its front side. Lift or carry the array by its left, right, or rear sides. Avoid damage to the bezel – do not place the array directly on the floor or table while the bezel is attached. Remove the bezel as needed to prevent weight from being applied to the bezel. Avoid damage to the chassis – do not place anything on top of the array.</p>	<p>通知</p> <p>運搬時は、装置前面を持たないでください。装置する恐れがあります。側面および後面を持って、持ち上げたり運んだりしてください。装置にベゼルが付いた状態で、平置きしないでください。ベゼルが破損する恐れがありますので、ベゼルを取外すか、ベゼルに外力が掛からないように置いてください。シャーシが変形する恐れがあります。装置の上面に何も置かないでください。</p>	<p>HINWEIS</p> <p>Vermeiden Sie Beschädigungen – tragen Sie das Array nicht an seiner vorderen Seite. Heben oder tragen Sie das Array an seiner linken, rechten oder hinteren Seite. Beschädigen – legen Sie das Array nicht direkt auf den Boden oder eine Tisch, wenn die Blende angebracht ist. Entfernen Sie die Blende bei Bedarf, damit sie keinen Gewicht ausgesetzt wird. Beschädigen Sie nicht den Chassis – stellen Sie keine Gegenstände oben auf das Array.</p>	<p>AVISO</p> <p>Evite daños: no transporte la cabina desde su lado frontal. Levante o transporte la cabina desde el lado izquierdo, derecho o trasero. Evite causar daños en el marco: no coloque la cabina directamente sobre el piso o mesa cuando el marco se encuentra colocado. Extraiga el marco según sea necesario para evitar que el peso quede apoyado sobre el marco. Evite causar daños al chasis: no coloque ningún objeto sobre la parte superior de la cabina.</p>	<p>AVIS</p> <p>Pour éviter les dégâts – ne portez pas la cadre par sa face avant. Soulevez ou transportez le cadre par ses côtés gauche, droit, ou arrière. Pour éviter d'endommager le pourtour – ne posez pas le cadre directement au sol ou sur une table lorsque le pourtour est attaché. Retirez le pourtour de sorte à éviter que le poids ne s'exerce sur le pourtour. Pour éviter d'endommager le châssis – ne posez rien sur le dessus du cadre.</p>



<p>⚠ 注意</p> <p>この装置は、二重の保護が施されています。保護から装置を安全に取り出すには、電源ケーブルを電源コンセントから抜いてください。</p>	<p>⚠ CAUTION</p> <p>This array has a dual power supply configuration. To remove safely from the array, unplug the two power cables from the power source.</p>	<p>⚠ VORSICHT</p> <p>Dieses Array hat eine doppelte Stromversorgungsanordnung. Um es sicher aus dem Array zu entfernen, ziehen Sie die beiden Stromkabel aus der Stromquelle.</p>	<p>⚠ PRECAUCIÓN</p> <p>Esta cabina tiene una configuración dual de la fuente de alimentación. Al eliminarla del array, desconecte los cables de la fuente de alimentación.</p>	<p>⚠ ATTENTION</p> <p>Ce cadre est équipé d'un système de source d'alimentation dual. Afin de couper le courant du cadre, déconnectez les deux câbles de la source d'énergie.</p>	<p>電源ケーブルを電源コンセントから抜いてください。</p>
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Flash module drive tray

⚠ CAUTION Take care not to drop Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top and sides.	⚠ 注意 落下注意 装置が落下してけがをする危険があります。装置上面および側面の赤い線を越えずに引き出す場合、装置を両手でしっかりと持ってください。	⚠ VORSICHT Nicht fallen lassen Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.	⚠ PRECAUCIÓN Tenga cuidado para evitar caídas Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior y lateral de la cabina.	⚠ ATTENTION Prenez garde de ne pas laisser tomber Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut et sur les côtés du cadre.
⚠ CAUTION Heavy Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 38kg.	⚠ 注意 重量物注意 重量物を持ち上げると、腕や腰を痛めます。リフターを使用したり、2人以上で搬つたしてください。装置重量は約 38kgです。	⚠ VORSICHT Hohes Gewicht Beim Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 38kg.	⚠ PRECAUCIÓN Peso elevado Levantar una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 38kg.	⚠ ATTENTION Poids Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 38kg.
NOTICE Avoid damage - do not carry the array by its front side. Lift or carry the array by its left, right, or rear sides. Avoid damage to the bezel - do not place the array directly on the floor or table while the bezel is attached. Remove the bezel as needed to prevent weight from being applied to the bezel. Avoid damage to the chassis - do not place anything on top of the array.	通知 運搬時は、装置前面を持たないでください。変形する恐れがあります。側面および後面を持って、持ち上げたり運んだりしてください。装置にベゼルが付いた状態で、平置きしないでください。ベゼルを外すか、ベゼルに外力が掛からないように置いてください。シャーシが変形する恐れがあります。装置の上面に何も置かないでください。	HINWEIS Vermeiden Sie Beschädigungen - tragen Sie das Array nicht an seiner vorderen Seite. Heben oder tragen Sie das Array an seiner linken, rechten oder hinteren Seite. Beschädigen - legen Sie das Array nicht direkt auf den Boden oder einen Tisch, wenn die Blende angebracht ist. Entfernen Sie die Blende bei Bedarf, damit sie keinem Gewicht ausgesetzt wird. Beschädigen Sie nicht das Gehäuse - stellen Sie keine Gegenstände oben auf das Array.	AVISO Evite daños: no transporte la cabina desde su lado frontal. Levante o transporte la cabina desde el lado izquierdo, derecho o trasero. Evite causar daños en el marco: no coloque la cabina directamente sobre el piso o mesa cuando el marco se encuentra colocado. Extraiga el marco según sea necesario para evitar que el peso quede apoyado sobre el marco. Evite causar daños al chasis: no coloque ningún objeto sobre la parte superior de la cabina.	AVIS Pour éviter les dégâts - ne portez pas le cadre par sa face avant. Soulevez ou transportez le cadre par ses côtés gauche, droit, ou arrière. Pour éviter d'endommager le pourtour - ne posez pas le cadre directement au sol ou sur une table lorsque le pourtour est attaché. Retirez le pourtour de sorte à éviter que le poids ne s'exerce sur le pourtour. Pour éviter d'endommager le châssis - ne posez rien sur le dessus du cadre.



注意 この装置は、人の身体を傷める恐れがあります。装置を両手でしっかりと持ち上げてください。	⚠ CAUTION The array may cause a person injury. Lift or carry the array by its left, right, or rear sides.	⚠ VORSICHT Dieses Array ist ein schweres Objekt. Tragen Sie das Array an der linken, rechten oder hinteren Seite.	⚠ PRECAUCIÓN Esta cabina puede causar lesiones a las personas. Mantenga las manos de forma segura en la cabina.	⚠ ATTENTION Ce cadre est équipé d'un système de suspension. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus.	注意 この装置は、人の身体を傷める恐れがあります。装置を両手でしっかりと持ち上げてください。	European Regulatory Address: Hitachi Computer Products (Europe) S.A.S Parc de Limaro, Zone Industrielle, 45160 Ardon, FRANCE	
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Dense intermix drive tray

CAUTION
CRUSH HAZARD
Moving Parts Can cause serious injury

Be careful of falling.
To ensure rack stability, only one storage expansion unit can be extended at a time.

WARNING
転倒注意
ラックが転倒する恐れがあるので、一度に複数台の装置を抜き出さないでください。

CAUTION
落下注意
装置が落下して怪我をする危険があります。リフトを使用したり、2人以上で重たがりしてください。

CAUTION
Heavy
Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 90kg.

WARNING
Auf einen möglichen Fall achten.
Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.

注意
高重量物注意
重重量物を持ち上げると、腕や腰を痛めます。リフトを使用したり、2人以上で重たがりしてください。装置重量は約90kgです。

注意
転倒防止
スライド / レールを取り付けた装置は、棚または作業空間として使用してはなりません。

ADVERTENCIA
Tener cuidado con la caída.
Arrays pueden causar lesiones. Mantenga los arrays sujetos al momento de retirarlos. De lo contrario, se castrarán sin cuidado.

VORSICHT
Nicht fallen lassen
Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.

VORSICHT
Hohes Gewicht
Beim Anheben des schweren Arrays können Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 90kg.

PRECAUCION
Tenga cuidado para evitar caídas
Dejar caer la cabina puede causar lesiones. Mantenga las manos firmemente sobre el array en la cabina. Respete la línea roja marcada en la parte superior y lateral de la cabina.

PRECAUCION
Peso elevado
Levantar una cabina pesada puede causar lesiones en los brazos o la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 90kg.

CAUTION
Take care not to drop
Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top and sides.

注意
落下注意
装置が落下して怪我をする危険があります。リフトを使用したり、2人以上で重たがりしてください。

CAUTION
Be careful of falling.
Slide/rail mounted equipment is not to be used as a shelf or a work space.

CAUTION
CRUSH HAZARD
Moving Parts Can cause serious injury

ATTENTION
Prenez garde de ne pas laisser tomber
Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut et sur les côtés du cadre.

ATTENTION
Poids
Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 90kg.

HDD LOCATION

48	49	50	51	52	53	54	55	56	57	58	59
36	37	38	39	40	41	42	43	44	45	46	47
24	25	26	27	28	29	30	31	32	33	34	35
12	13	14	15	16	17	18	19	20	21	22	23
00	01	02	03	04	05	06	07	08	09	10	11

注意
この装置は、二重の電源線に接続しています。装置から電力を取り除くには、給電ケーブルと電源ケーブルを両方とも抜いてください。

CAUTION
This array has a dual power supply configuration. To remove electricity from the array, unplug the two power cables from the power source.

NOTICE
この装置は二重電源システムです。電源を切断するには、電源ケーブルと電源ケーブルの両方を電源から抜いてください。

VORSICHT
Dieses Array hat eine doppelte Stromversorgungsanordnung. Um die Energiezufuhr zum Array zu unterbrechen, ziehen Sie beide Kabel aus der Stromquelle.

PRECAUCION
Este cabina tiene una configuración dual de la fuente de alimentación. A fin de eliminar la electricidad del cabina, desenchufe dos cables de la fuente de alimentación.

ATTENTION
Ce cadre est équipé d'un système de courant électrique dual. Afin de couper le courant du cadre, déconnectez les deux câbles de la source d'énergie.

注意
本機は二重電源システムです。本機から電力を取り除くには、電源ケーブルと電源ケーブルの両方を電源から抜いてください。

CAUTION
This array has a dual power supply configuration. To remove electricity from the array, unplug the two power cables from the power source.

NOTICE
この装置は二重電源システムです。電源を切断するには、電源ケーブルと電源ケーブルの両方を電源から抜いてください。

WARNING
Be careful of falling.
To ensure rack stability, only one storage expansion unit can be extended at a time.

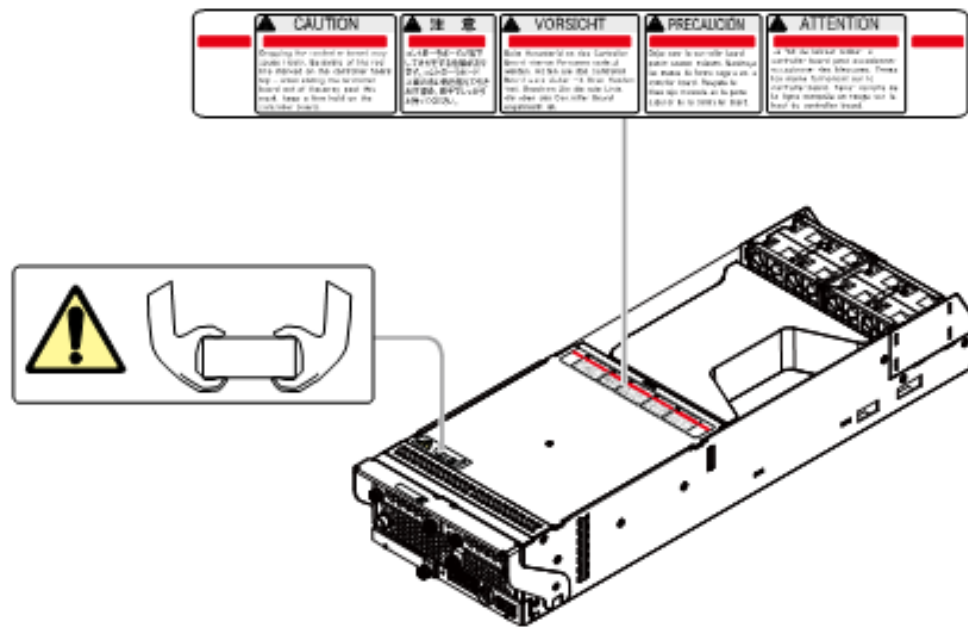
転倒注意
ラックが転倒する恐れがあるので、一度に複数台の装置を抜き出さないでください。

WARNING
Auf einen möglichen Fall achten.
Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.

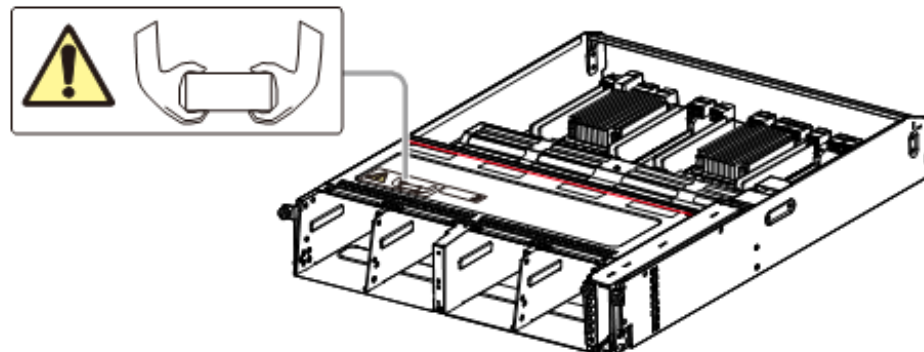
ADVERTENCIA
Tener cuidado con la caída.
Arrays pueden causar lesiones. Mantenga los arrays sujetos al momento de retirarlos. De lo contrario, se castrarán sin cuidado.

ATTENTION
Prenez garde de ne pas laisser tomber.
Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut et sur les côtés du cadre.

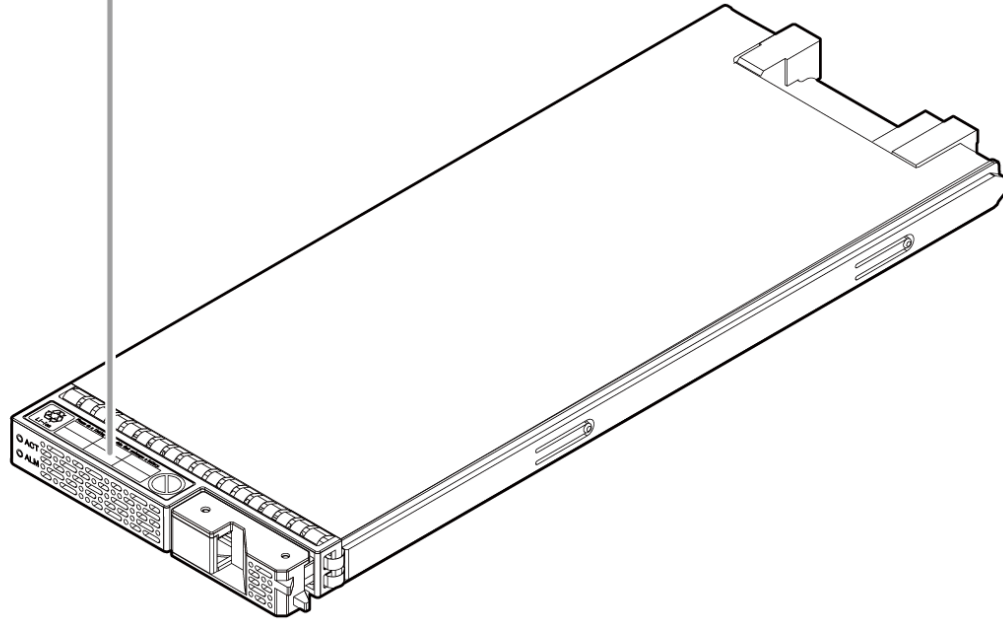
CBSS/CBSL/CBSSD/CBSLD controller

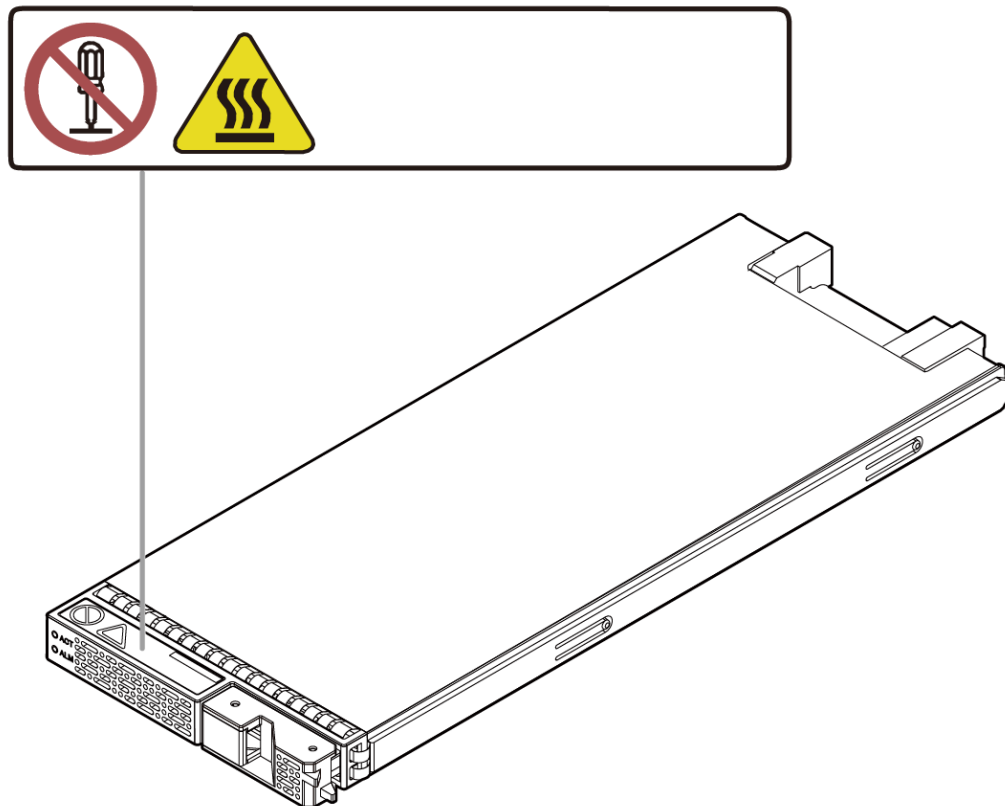


CBLM controller CBLH controller



Drive for a flash module drive tray (DKC-F710I-1R6FM/ DKC-F710I-3R2FM)





Drive for a flash module drive tray (DKC-F810I-1R6FN/DKC-F810I-3R2FN/DKC-F810I-6R4FN)

⚠ CAUTION
CRUSH HAZARD
Moving Parts Can Cause Serious Injury

To ensure rack stability, only one storage expansion unit can be extended at a time.

⚠ WARNING
Be careful of falling.

⚠ 警告
転落注意

ラックが転倒する恐れがあるため、一度に複数台の装置を引き出さないでください。

⚠ WARNING
Ad never negieren Fall action

⚠ ADVERTENCIA
Tener cuidado con la caída

⚠ AVERTISSEMENT
Faites attention au renversement

Ne tirez pas les supports apparents à la fois, sinon l'étagère peut être renversée.

⚠ CAUTION
Take care not to drop

Dropping the array may cause injury. Keep hands securely on array. Be aware of the red line marked on the array top and sides.

⚠ 注意
落下注意

装置が落下して怪我をさせる恐れがあります。装置と床および側面の赤い線を離れて引き出す場合、装置を両手でしっかりと握ってください。

⚠ VORSICHT
Nicht fallen lassen

Beim Herunterfallen des Arrays können Personen verletzt werden. Halten Sie das Array stets sicher mit Ihren Händen fest. Beachten Sie die rote Linie, die oben und an den Seiten des Arrays angebracht ist.

⚠ PRECAUCION
Tenga cuidado para evitar caídas

Dejar caer la cabina puede causar lesiones. Mantenga las manos de forma segura en la cabina. Respete la línea roja marcada en la parte superior y lateral de la cabina.

⚠ ATTENTION
Prenez garde de ne pas laisser tomber

Le fait de laisser tomber le cadre peut occasionner des blessures. Tenez les mains fermement sur le cadre. Tenez compte de la ligne marquée en rouge sur le haut et sur les côtés du cadre.

⚠ CAUTION
Heavy

Lifting the heavy array may cause injury in your arms or low back. Use lifting equipment or handle the array with two or more personnel. This array weighs approximately 90kg.

⚠ 注意
重量物注意

重量物を持ち上げると、腕や腰を傷めます。リフトを使用したり、2人以上で渡ったりしてください。装置重量は約90kgです。

⚠ VORSICHT
Hohes Gewicht

Beim Anheben des schweren Arrays könnten Ihre Arme oder Ihr unterer Rücken verletzt werden. Verwenden Sie eine Hebevorrichtung oder transportieren Sie das Array mit mindestens zwei Personen. Dieses Array wiegt etwa 90kg.

⚠ PRECAUCION
Peso elevado

Levantar una cabina pesada puede causar lesiones en los brazos o a la región lumbar. Utilice un dispositivo de elevación o levante la cabina con la ayuda de dos o más personas. Esta cabina posee un peso aproximado de 90kg.

⚠ ATTENTION
Poids

Le fait de soulever le cadre qui est lourd peut entraîner des lésions aux bras ou au bas du dos. Utilisez un équipement de levage ou manipulez le cadre à deux personnes ou plus. Ce cadre pèse environ 90kg.

⚠ CAUTION
Be careful of falling.

Slide/rail mounted equipment is not to be used as a shelf or a work space.

⚠ 注意
転倒防止

スライド / レールを取り付けた装置は、棚または作業空間として使用してはならない。

⚠ VORSICHT
Auf einen möglichen Fall achten.

Ausrüstung, auf der ein Gleiten und Schiene bestiegen werden, muss nicht als ein Regal oder ein Arbeitsgebiet verwendet werden.

⚠ PRECAUCION
Tener cuidado con la caída.

El equipo sobre el cual la dispositiva y el carril son montados no debe ser usado como un anaqueo o un trabajo del área.

⚠ ATTENTION
Faites attention au renversement.

L' équipement sur lequel un part glissé sur un rail est monté ne doit pas être utilisé comme une étagère ou un secteur de travail.

HDD LOCATION

48	49	50	51	52	53	54	55	56	57	58	59
36	37	38	39	40	41	42	43	44	45	46	47
24	25	26	27	28	29	30	31	32	33	34	35
12	13	14	15	16	17	18	19	20	21	22	23
00	01	02	03	04	05	06	07	08	09	10	11

⚠ 注意

この装置は、二重の電源構成になっています。装置から電力を取り除くには、装置側からある電源ケーブルを切り離してください。

⚠ CAUTION

This array has a dual power supply configuration. To remove electricity from the array, disconnect the two power cables from the power source.

⚠ VORSICHT

Dieses Array ist mit einer doppelten Energieversorgungsanordnung ausgestattet. Um die Stromzufuhr zum Array zu unterbrechen, ziehen Sie beide Kabel aus der Stromquelle.

⚠ PRECAUCION

Este cabina tiene una configuración dual de la fuente de alimentación. Al retirar la electricidad de la cabina, desconecte los cables de la fuente de alimentación.

⚠ ATTENTION

Ce cadre est équipé d'un système de courant électrique dual. Afin de couper le courant du cadre, déconnectez les deux câbles de la source d'énergie.

⚠ 注意

本装置は雙電源構成です。本装置から電源を落とすには、電源ケーブルを2本切断してください。

DH3268072-1

NOTICE

この装置は、二重の電源構成になっています。装置から電力を取り除くには、装置側からある電源ケーブルを切り離してください。

NOTICE

此装置は雙電源構成です。本装置から電源を落とすには、電源ケーブルを2本切断してください。

⚠ WARNING
Be careful of falling.

⚠ 警告
転落注意

ラックが転倒する恐れがあるため、一度に複数台の装置を引き出さないでください。

⚠ WARNING
Ad never negieren Fall action

⚠ ADVERTENCIA
Tener cuidado con la caída

⚠ AVERTISSEMENT
Faites attention au renversement

Ne tirez pas les supports apparents à la fois, sinon l'étagère peut être renversée.

⚠ WARNING
Be careful of falling.

⚠ 警告
転落注意

ラックが転倒する恐れがあるため、一度に複数台の装置を引き出さないでください。

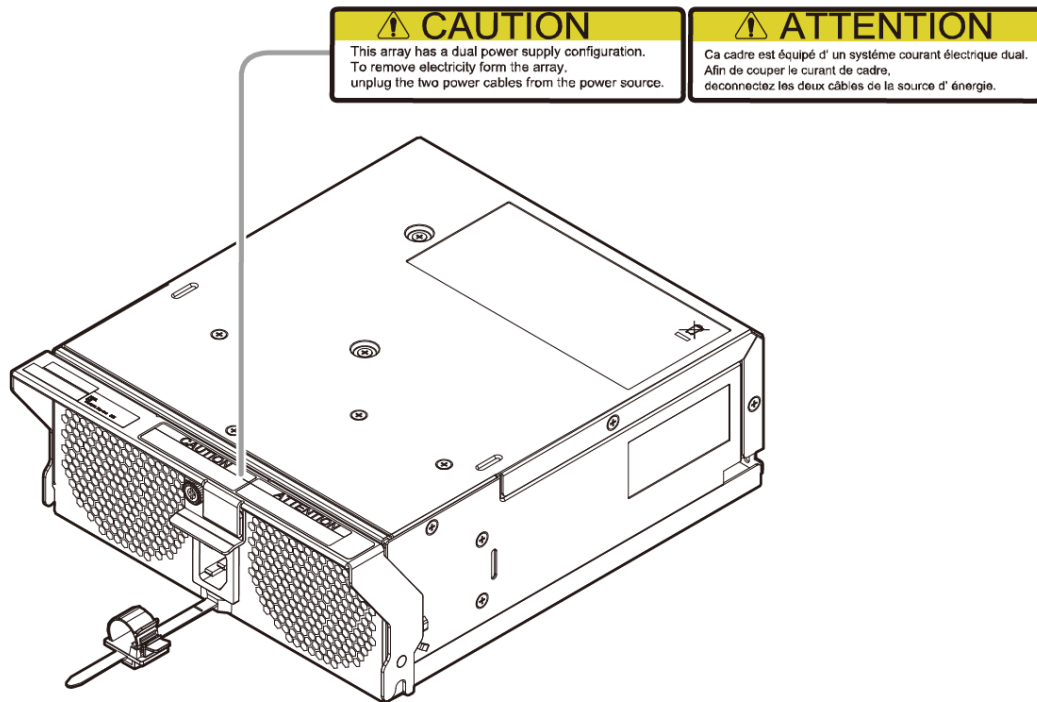
⚠ WARNING
Ad never negieren Fall action

⚠ ADVERTENCIA
Tener cuidado con la caída

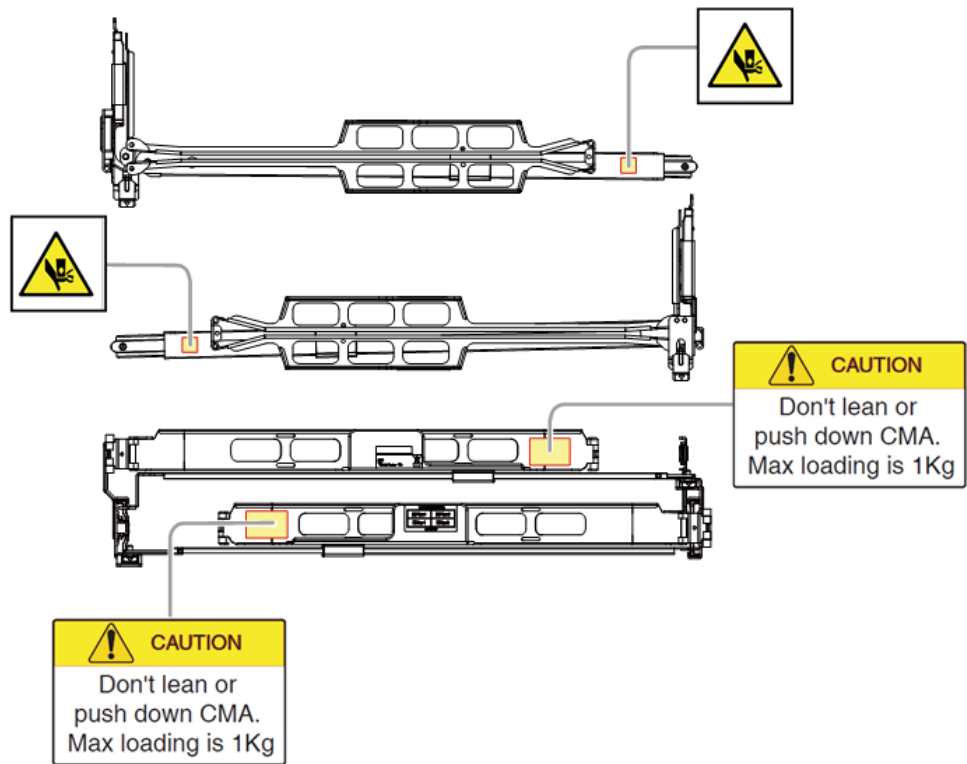
⚠ AVERTISSEMENT
Faites attention au renversement

Ne tirez pas les supports apparents à la fois, sinon l'étagère peut être renversée.

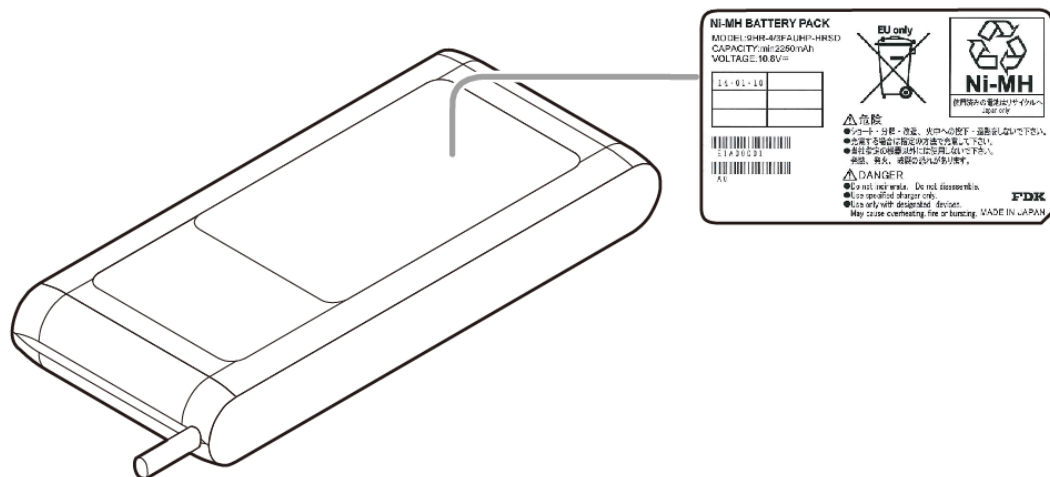
Dense intermix drive tray power supply



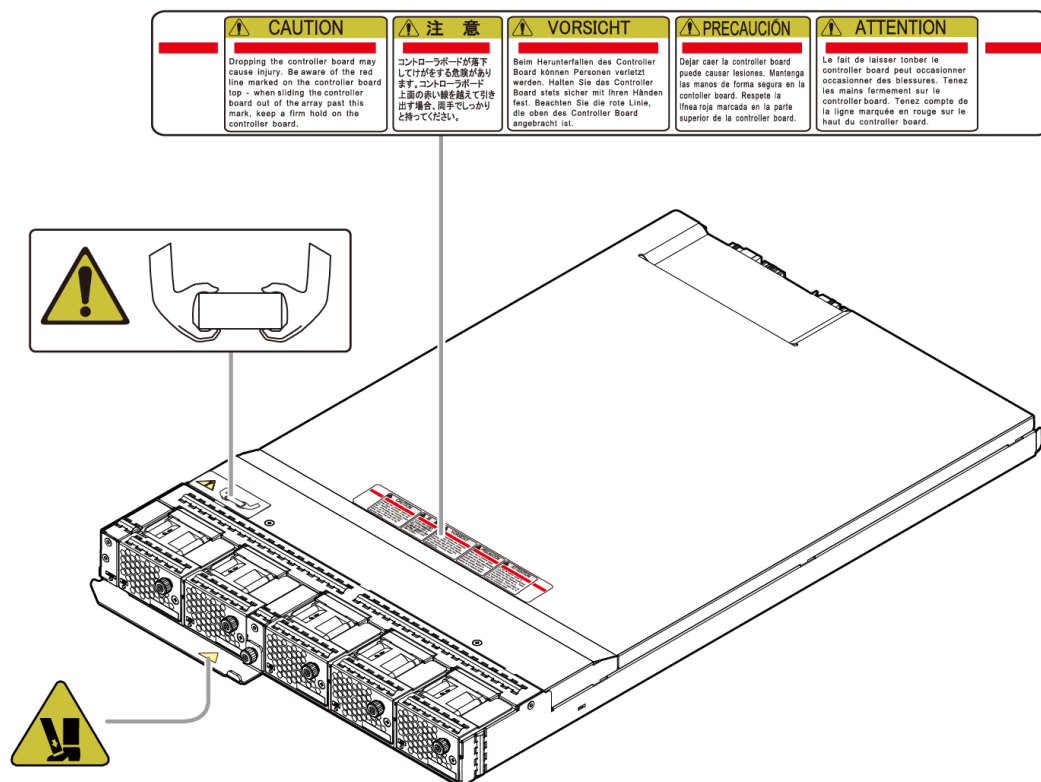
CMA (used to secure dense intermix drive tray)



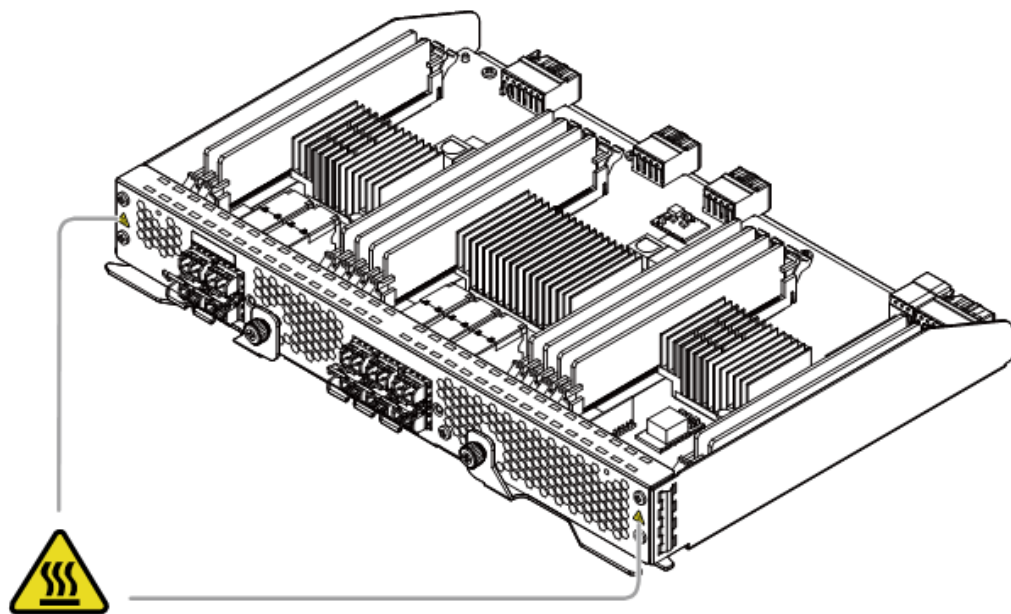
Battery



Host port expansion chassis



NAS module



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Hitachi Data Systems

Corporate Headquarters

2845 Lafayette Street
Santa Clara, California 95050-2639
U.S.A.
www.hds.com

Regional Contact Information

Americas

+1 408 970 1000
info@hds.com

Europe, Middle East, and Africa

+44 (0) 1753 618000
info.emea@hds.com

Asia Pacific

+852 3189 7900
hds.marketing.apac@hds.com

Contact Us

www.hds.com/en-us/contact.html



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