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Hitachi Compute Rack 210H
CRU Replacement Guide

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Hitachi Data Systems

MK-90CRH004-02

Contents

Preface

This document describes replacement procedure of the CRU of the *Compute Rack 210H* (CR 210H).

This preface includes the following information:

Notice: The use of Compute Rack and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

Intended Audience

This document is intended for the personnel who are involved in planning, managing, and performing the tasks to prepare your site for Compute Rack installation and to install the same.

This document assumes the following:

- The reader has a background in hardware installation of computer systems.
- The reader is familiar with the location where the Compute Rack will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

Product Version

This document revision applies to Compute Rack 210H version 0021R21500.

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.

Document Organization

The table below provides an overview of the contents and organization of this document. Click the chapter title in the left column to go to that chapter. The first page of each chapter provides links to the sections in that chapter.

Chapter	Description
Chapter 1, Introduction	Describes user replacement overview for the Hitachi Compute Rack System.
Chapter 2, Replaceable parts	Describes the user replaceable parts of the CR 210H.
Chapter 3, Preparation	Describes a preparation of replacing components of the system unit.
Chapter 4, Replacing parts	Describes how to remove and install a component of the system unit.
Chapter 5, Setup after maintenance	Describes setup required after maintenance conducted due to a component failure of the system unit.

Referenced Documents

Compute Rack 210H (CR 210H) documents:

- Hitachi Compute Rack 210H Getting Started Guide, MK-90CRH000
- Hitachi Compute Rack 210H User's Guide, MK-90CRH002
- Hitachi Compute Rack 210H/220H Windows Installation Guide, MK-90CRH007
- Hitachi Compute Rack 210H/220H BIOS Guide, MK-90CRH008
- Hitachi Compute Rack 210H/220H Remote Management User's Guide, MK-90CRH006
- Hitachi Compute Blade Series / Hitachi Compute Rack Series OS Installation Guide for Windows Server, MK-99COM076

Document Conventions

The term “Compute Rack” refers to all Compute Rack models, unless otherwise noted.

This document uses the following typographic conventions:

Convention	Description
Regular text bold	In text: keyboard key, parameter name, property name, hardware labels, hardware button, hardware switch. In a procedure: user interface item
Italic	Variable, emphasis, reference to document title, called-out term
`Screen text`	Command name and option, drive name, file name, folder name, directory name, code, file content, system and application output, user input
< > (angled brackets)	Variable (used when italic is not enough to identify variable).
[ ] (square bracket)	Optional values
{ } braces	Required or expected value
| vertical bar	Choice between two or more options or arguments
_(underline)	Default value, for example, [a | b]

Convention 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 storage capacity values (for example, logical device capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
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

Getting Help

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, log on to the Hitachi Data Systems Portal for contact information: https://portal.hds.com.

Comments

Please send us your comments on this document: 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!

Safety guidelines

This section contains warnings and important safety guidelines for using a Hitachi Compute Rack System. Read and understand the information in this section before removing, replacing and installing system components.

This section includes the following key topics:

- Safety information
- Common precautions concerning safety
- General safety precautions
- Precautions against damage to equipment
- Safety and warning labels

Safety information

This document uses the following symbols to emphasize certain information.

Symbol	Label	Description
	WARNING	This indicates the presence of a potential risk that might cause death or severe injury.
	CAUTION	This indicates the presence of a potential risk that might cause relatively mild or moderate injury.
NOTICE	NOTICE	This indicates the presence of a potential risk that might cause severe damage to the equipment and/or damage to surrounding properties.
	Note	This indicates notes not directly related to injury or severe damage to equipment.
	Tip	This indicates advice on how to make the best use of the equipment.
	Fire Hazard	This warns fire hazard. Take appropriate precautions to prevent the risk of catching a fire.
	Electric Shock Hazard	This warns electric shock hazard. Failure to take appropriate precautions could result in serious injury or death.
	Hot Surface	Hot Surface indicates the risk of a serious burn by high temperature.
	Laser Hazard	This warns laser hazard. Failure to take appropriate precautions could result in invisible laser radiation.
	General Prohibition Sign	This indicates the general prohibition.
	Disassembly Prohibition Sign	This indicates not to allow customer to disassemble component.
	General Mandatory Sign	This indicates a general action to take. Action by following the instructions in this guide.
	Unplug Power cord	This indicates unplugging the power cable from the outlet to avoid electric shock and fire.

Common precautions concerning safety

Please carefully read through these safety instructions to follow:

- When operating the equipment, follow the instructions and procedures provided in the manual.
- Be sure to follow notes, cautionary statements and advice indicated on the equipment or in the manual.
- Referring to manuals attached to other products which you install in or connect to the equipment, follow the instructions described in those manuals.

Failure to follow those instructions can cause injury, fire or damage to property including the equipment.

General safety precautions

Handling of power cables

Always use the power cables shipped with the equipment, and follow the instructions below: Failure to follow the correct handling practices lead to damaging the power cables to expose the copper wires and to overheat due to short-circuiting or partial disconnection, which may cause electric shock or fire.

- Do not place any object on the power cables.
- Do not use the power cables near heat-generating appliances.
- Do not heat the power cables.
- Do not bundle the power cables.
- Do not subject the power cables to ultraviolet or strong visible light continuously.
- Keep the power cables from contact with alkali, acid, fat and oil, or humidity.
- Do not use the power cables in a high-temperature environment.
- Do not use the power cables above their specified rating.
- Do not use the power cables for other devices.
- Do not touch the power plug with moistened hands.
- Do not place any objects around the electrical outlets in order to allow users to quickly unplug the power cables.

Poor contact and tracking

Comply with the following instructions when handling the power plug. Otherwise, tracking or poor contact may cause overheating and a fire.

- Make sure that the power plug is fully and securely inserted into the electrical outlet.
- Before inserting the power plug, confirm that there is no dust or a water droplet on the plug. If any dust or water droplet is found, wipe it off with a dry cloth and then insert it.

Requirements for power outlets

- Use a grounding 2-pole plug-in power outlet. Outlets of any other types would cause an electric shock or fire.
- In order to prevent an electric shock, connect the outlet's grounding electrode to a grounding terminal installed by a qualified electrician. Without connection to the grounding terminal, an electric shock can occur in the event of a failure in power supply.

Plugging and unplugging

When inserting the power plug into the electrical outlet or removing it, be sure to hold the plug section. Do not pull the cable; it can partially break the wire, overheat the broken part and lead to a fire.

Power supply

Since the power supply has a high-voltage area in it, do not open the cover. If you do, it can result in an electric shock or equipment failure.

Installing power supply slot cover

When removing a power supply, do not insert your hand or tool inside the power slot. After removing a power supply, install a power slot cover. Inside the power slot, some conductors are exposed. If you touch them with your hand or tool, it may cause electric shock or equipment failure.

Abnormal heat, smoke, abnormal noise, or abnormal smell

Should you find anything abnormal occurring, turn off the power and unplug all the power cables of the equipment (maximum of 2) from the electrical outlets.

Do not repair, remodel or disassemble

Do not attempt to repair, remodel or disassemble the equipment on your own, except for performing expansion work in accordance with the instructions in this manual. Work performed by unqualified persons can lead to an electric shock, fire, or burns. Especially it is hazardous if you touch areas inside the high-voltage power unit.

Removal of the cover or bracket

Do not remove the cover or bracket. It can result in an electric shock, burns or equipment failure.

High temperature at a power supply

When a power supply is in operation, the cover and handle get hot. Be careful when replacing a failed module. You can get burned.

Adding and replacing parts

The cover and internal parts are hot immediately after the power is turned off. You must wait for about 10 minutes before adding or removing internal parts unless otherwise specified in this manual. If not, the hot equipment causes you to get burned.

Installing internal component and connecting peripherals

- When you remove a cover for removing and installing components or connect peripherals, disconnect all the AC cables from electrical outlets and disconnect all signal cables from the system unit unless otherwise specified.
  Otherwise, you get injury or electric shock. Also malfunction of the system unit might result.
- Use peripherals, internal components, signal cables, and AC cables that the manual describes as supported.
  Otherwise, compatibility issues might occur and malfunction of the peripherals, internal component, and the system unit. Also burn, smoke, or fire might occur.



Laser beam

- On this product, a Class 1 laser product is installed. Do not look directly at the laser beam. Do not look at the laser beam using an optical instrument.
- Under the laser module cover, a laser beam is being emitted. Do not remove the cover of an unused board.

Requirements for the product

Install the product on a fixed rack. Do not lean against the product or stand on it. Do not install the product in a place with weak floors and walls.
Do not subject the product to excessive vibration. That can drop and fall the product, leading to failure.


Installing the equipment in a rack

To install or remove the system equipment in or from the rack cabinet, always get help from at least one other person or use tools. If the system equipment has to be installed on 31U and above of the rack cabinet or it is already installed there, call for maintenance personnel instead of attempting to install or remove it. Defective installation may cause the system equipment to fall, resulting in injury or equipment failure.


Using a rack cabinet

When using a rack cabinet, do not place anything on the system unit mounted on the cabinet and do not use the top of the system unit mounted on the cabinet as a work bench. A heavy object placed on top of the system unit on the cabinet may fall, resulting in injury.

Locking the rail into place

Be sure to pull out the equipment until it locks into place. If not, the equipment may move unexpectedly, which causes you to get injured such as your finger caught in the gap.

Contact with metal edges

When moving the equipment or adding parts, take care not to hurt yourself on the metal or plastic edges. You can wear cotton gloves to protect your hands.

Improper battery type

CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

Handling of batteries

Since maintenance personnel should change batteries, do not change them yourself. Follow the instructions described below. Inappropriate handling can result in injury because the battery can overheat, burst, and catch fire.

- Do not put the battery on charge.
- Do not short out the battery.
- Do not disassemble the battery.

Storing batteries

When storing batteries, apply adhesive tape on the terminals for insulation. If the batteries are stored without insulation, the terminals can contact each other to cause a short-circuit and overheat or burst, leading to injury or fire.

Precautions against damage to equipment

Insertion of foreign objects into the equipment

Do not allow clips, pins or any other metal items or flammable items to enter the equipment through a vent or by any other means. Continuing to operate the equipment with foreign objects could cause failure.

Impact from falling

Do not fall the equipment or hit it against another object. It can cause internal deformation and deterioration. Operating the equipment under such defective conditions can cause failure.

Vent

A vent is used for preventing rise in temperature inside the equipment. Do not block the vent by placing or leaning an object. If you do, the temperature rises, which can cause failure. Check and clean ventilation holes periodically to keep the dust from gathering on them.

Contact with connection terminals

Do not touch connection terminals, such as a connector with your hand or any metal item. Do not insert any objects such as wire into them. Do not place the equipment in a place with metal pieces. If you do, a short circuit can be developed, causing equipment failure.

Moving between two locations with a temperature differential

When you move the equipment from one location to another, a significant temperature gap between the two locations may cause condensation on the surface or inside the equipment. Operating the equipment with condensation inside can cause a failure in equipment. Leave the equipment at the new location for several hours until the equipment temperature conforms to that of the new environment before you start using it. When you move the equipment from an environment with temperature 5 degrees Celsius to that with 25 degrees Celsius, for example, leave it for about two hours.

Adding and connecting to peripheral devices

Use only peripheral devices which are explicitly listed as supported in the manual, and always follow the instructions in the manual. Using devices other than those mentioned above would cause a failure in peripheral devices and equipment due to the difference in connection specifications.

Radio interference

When you install the equipment next to another electronic device, the radio waves may interfere with each other. In particular, a television set or a radio in the vicinity may make a noise.

Magnetism generator

Do not place a device that generates strong magnetism, such as a magnet or a speaker, near the equipment. Doing so can cause a system unit failure.

Handling HDD/SSD

An HDD/SSD is a precision instrument. Handle it carefully when you use it. Inappropriate handling could result in HDD/SSD failure.

Failed HDD/SSD

- If you attempt to replace failed HDD/SSD using an incorrect procedure or failed alternative disk, data on the disk array can be corrupted. Back up the data before replacing the drive.
- If you attempt to replace normal HDD/SSD, data on the disk array can be corrupted. Only replace the failed HDD/SSD.
- Replace the failed HDD/SSD with turning on the system unit. Otherwise, data on the disk array can be corrupted.

Static electricity

Discharge static electricity by touching metal door knob or wear cotton gloves whenever you handle a component. Otherwise, the device might fail.

Residual electric charge

When you change the configuration of the system unit (DIMM, fan, PCI card, or peripherals), disconnect all the power plugs and wait 30 seconds and more before the procedure. Otherwise, residual electric charge might cause malfunction.

Aluminum electrolytic capacitors

An aluminum electrolytic capacitor has a limited service life. Do not use it past its service life. Otherwise, leakage or depletion of the electrolyte may cause smoke or electric shock. To avoid such hazardous situations, replace limited-life parts once they are past their designated service life.

Distribution board

Install a distribution board close to an entrance/exit to protect the devices in your computer system and to serve as an emergency power breaker.

Signal cables

- Route cables not to trip over them. Tripping over cables could cause injury or failure of devices connected to the equipment, and also could cause loss of valuable data.
- Do not place heavy items on the cables. Avoid routing cables close to a thermal appliance. If you do, it could cause damage to cable sheaths, resulting in failure of the connected devices.

Before turning off the power

- Follow the prescribed procedure for power operation. Power input or output not according to the prescribed procedure may cause problems on the system equipment.
- Before turning off the power, confirm that all devices connected to the equipment stop. Turning off the power during operation of the equipment may cause equipment failure or data loss.
- When you are using an OS which requires the shut down procedure, be sure to finish the shut down procedure before turning off the power. Otherwise, data may be lost.

Rack Mount Safety Consideration

- Elevated Ambient Temperature

  If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the unit.

- Reduced Air Flow

  Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

- Mechanical Loading

  Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

- Circuit Overloading

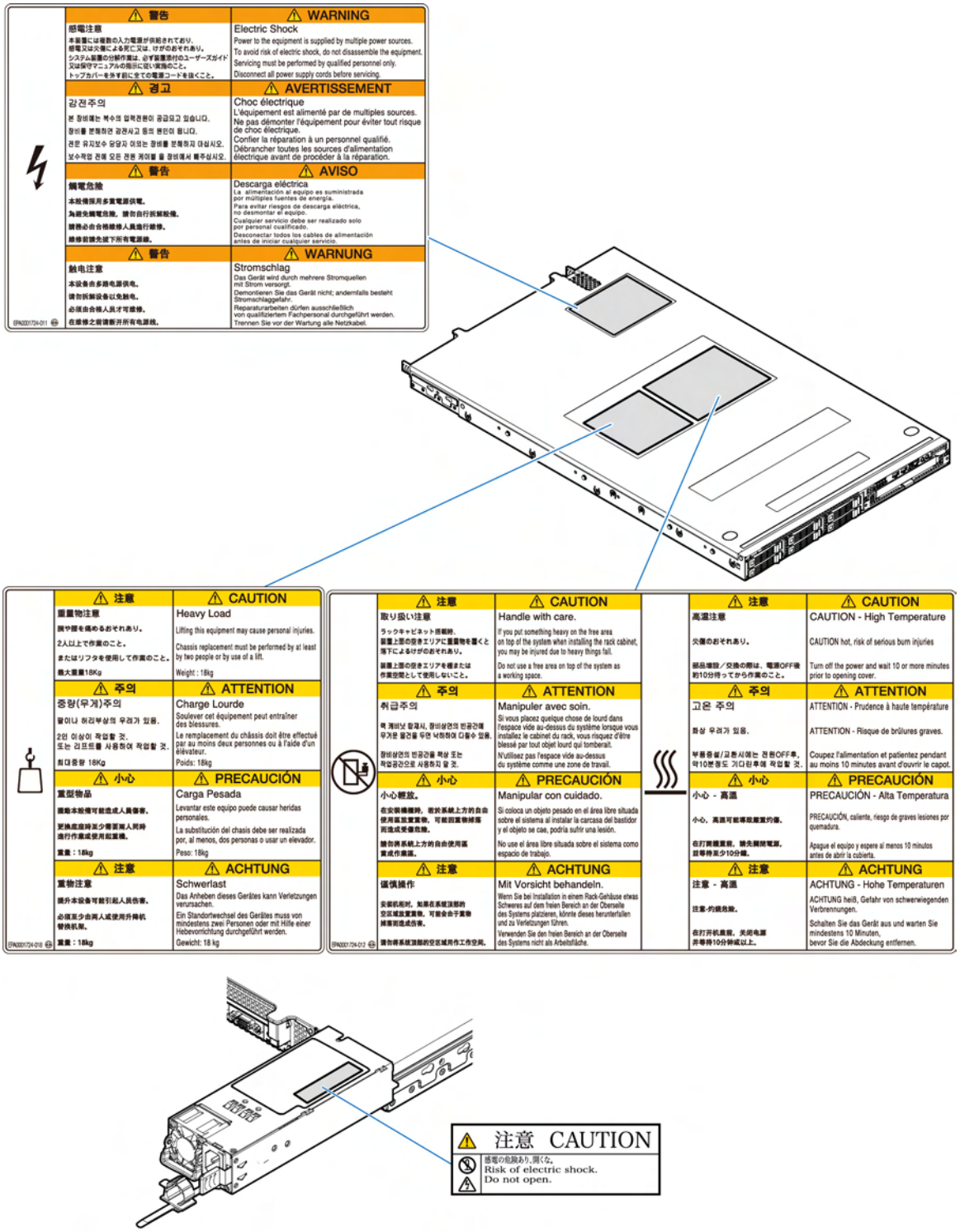
  Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

- Reliable Earthing

  Reliable earthing of rack-mounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

Safety and warning labels

The location and content of the warning and safety labels on the CR 210H are shown here.



1

Introduction

This chapter describes user replacement overview for the Hitachi Compute Rack System.

- ☐ User Replacement Guideline
- ☐ User maintenance tasks
- ☐ When a failure occurs
- ☐ LED overview

User Replacement Guideline

The Hitachi Compute Rack system is designed with many customer replaceable units (CRUs) to allow for greater flexibility in performing defective parts replacement. However, customer should consult with Hitachi Data Systems Support about the failed parts before replacement. After consultation, Hitachi Data Systems Support will ship the spare part directly to you for replacement.

The system unit contains several LEDs that light when certain problems occur, making it easy for users to quickly find the source of these problems.
The LEDs are described in this chapter.

User maintenance tasks

The maintenance tasks described in this manual follow the Hitachi Data Systems Customer Support program.

- The Hitachi Data Systems self-service program allows users to perform allowable installation and configuration tasks and maintenance tasks on the Hitachi Compute Rack System.

When a failure occurs

The following is an overview of the maintenance tasks you can perform when a failure occurs on your system.

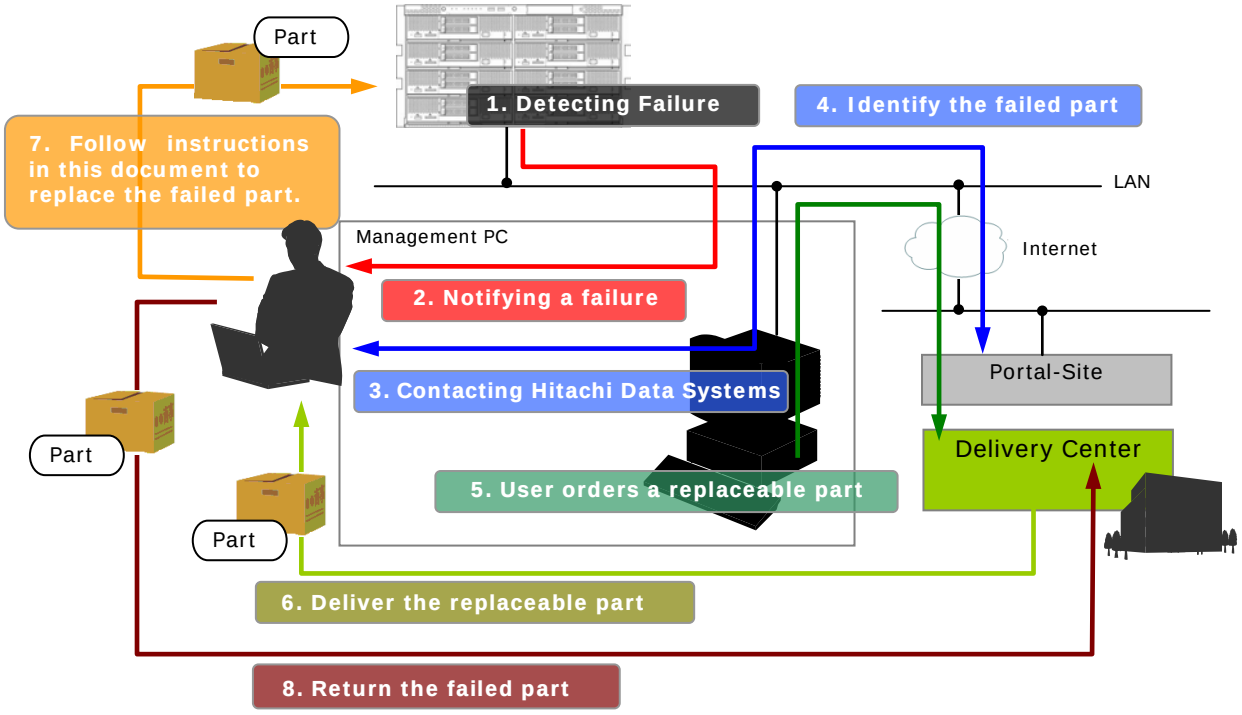


Figure 1-1: User Maintenance process

Table 1-1: User Maintenance process

Step	Process	Description
1	**Detecting Failure**	Failure detection in the subsystem.
2	**Notifying a failure**	Failure notification (SNMP, LED).
3	**Contacting Hitachi Data Systems**	Contacting Hitachi Data Systems Technical Support and identify the failed parts.
4	**Identify the failed part**	
5	**User orders a replaceable part**	Ordering the parts.
6	**Deliver the replaceable part**	Replacing the parts after the spare parts arrive and checking the recovery from the failure.
7	**Follow instructions in this document to replace the failed part.**	
8	**Return the failed part**	Return the replaced parts.

LED overview

This section describes the indicator LEDs of the system.

Front side

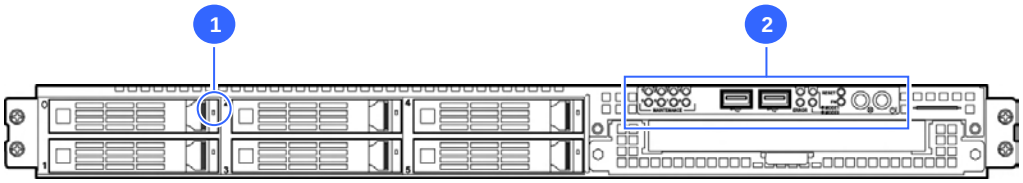


Figure 1-2: CR 210H front side overview

Table 1-2: CR 210H front side indicators

Location	Name	State	Description
1	HDD status LED	Green-On	Accessing HDD/SSD.
		Amber-On	Error occurred.
		Amber-Blink*	On-going data rebuild.
2	Operation panel	-	The operation panel has switches to control the system unit and LEDs for the status of the system unit. See Operation panel on page 1-5
* The LED lights green while the HDD/SSD is being accessed for rebuilding.			

Operation panel

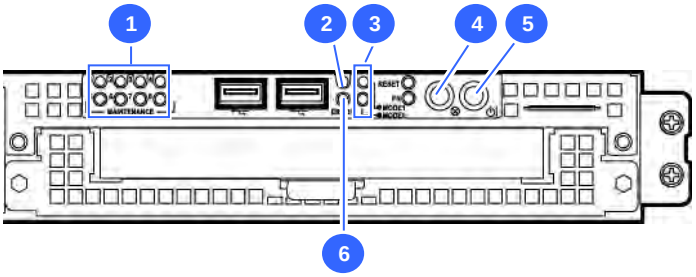


Figure 1-3: CR 210H operation panel overview

Table 1-3: Operation panel switches and indicators

Location	Name	State	Description
1	MAINTENANCE LEDs	Green-On	Indicate the operation status of the system unit.
2	ACCESS LED	Green-On	Accessing HDD/SSD.
		Amber-On	Error occurred.
		Amber-Blink*	On-going data rebuild.
3	MODE0 LED	Green-On	The lower LED is MODE0 and the upper one is MODE1. According to the lighting state of these two LEDs and the SERVICE LED, the information displayed on MAINTENANCE LEDs will differ.
	MODE1 LED	Green-On	
4	SERVICE switch with SERVICE LED	Blue-On	The SERVICE LED turns on when a SERVICE switch either on the front side or the rear side is pressed.
5	POWER switch with POWER LED	Green-On	Press the POWER switch to turn on/off the system unit. The POWER LED is turned on when the system unit is turned on by pressing the POWER switch. If you press the POWER switch continuously for 4 seconds or more, you can forcibly turn off the system unit.
6	ERROR LED	Amber-On	HDD errors, fan errors, power supply errors, or other hardware errors occur.

* The LED lights green while the HDD/SSD is being accessed for rebuilding.

MAINTENANCE LEDs

MAINTENANCE LEDs can display the event code, the POST code or the power consumption, and you can select what to display on it by using the SERVICE switch.
A combination of ON/OFF selections of MODE0 LED, MODE1 LED, and SERVICE LED determines what is currently displayed.
A combination of ON/OFF selections of MODE0 LED, MODE1 LED, and the SERVICE LED determines what the MAINTENANCE LEDs indicate as follows:

Table 1-4: What the MAINTENANCE LEDs indicate

SERVICE LED	MODE0 LED	MODE1 LED	What the MAINTENANCE LEDs indicate
Off	**Off**	**Off**	Event code
On	**Off**	**On**	POST code
Off	**On**	**On**	Power consumption

- Event code

  The operation status of the system unit is displayed. Under normal operation, all LEDs are OFF. If an error occurs, the LED corresponding to the component where the error occurred is turned on.

Table 1-5: Event code indicate

MAINTENANCE LED	Where the error occurred
1	CPUs
2	Memory
3	Motherboard
4	PCI
5	Power / Voltage
6	Fans
7	Temperature
8	Other hardware
All off	Normal operation

- POST code

  POST code of the system BIOS is displayed.
  All codes have two digits, and each digit is a four-bit data in binary.
  Upper digit is displayed with the four LEDs from 1 to 4, and lower one displayed on the LEDs 5 to 8.
  If Power On Self Test (POST) is successful, LEDs 1, 3, 5, 6, and 7 are turned on, and the POST code is "AE" in this case.

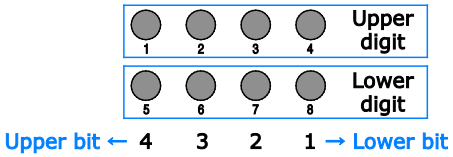


Figure 1-4: POSTs code indicate

> **Tip** The MAINTENANCE LEDs keep the data of the POST code and the event code unless the AC power source is turned off. When the power of the system unit is turned on, the display gets cleared.

- Power consumption

  The rough estimate of the current power consumption of the system unit (W) is displayed.
  The numbers of turned-on MAINTENANCE LEDs indicate the power consumption as follows:

Table 1-6: Power consumption indicate

MAINTENANCE LED	Power consumption
All Off	Less than 200 W
Only 1 is On	200 W or more and less than 250 W
1 and 2 are On	250 W or more and less than 300 W
1 through 3 are On	300 W or more and less than 350 W
1 through 4 are On	350 W or more and less than 400 W
1 through 5 are On	400 W or more and less than 450 W
1 through 6 are On	450 W or more and less than 500 W
1 through 7 are On	500 W or more and less than 550 W
1 through 8 are On	550 W or more

Tip The indicated power consumption value is not accurate. Use this value as a just reference.

SERVICE switch

The SERVICE switch is used to switch what to display on the MAINTENANCE LEDs. Also the SERVICE switch is used to turn on the SERVICE LED. SERVICE LED is used as one of the information to show what kind of code is now on MAINTENANCE LEDs.
The ON/OFF status of this switch does not affect the operation of the system. Every time you press the SERVICE switch, the MAINTENANCE LEDs will change the code to display as follows.

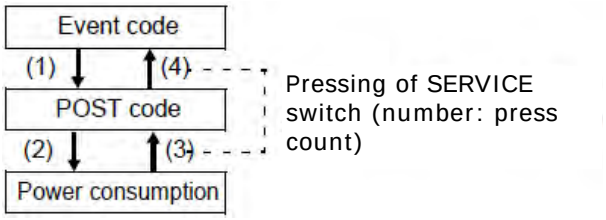


Figure 1-5: MAINTENANCE LEDs indicate pressing of SERVICE switch

Note When you intend to press a SERVICE switch, be careful not to press the POWER switch. The system will be shut down if the POWER switch is pressed.

Tip When an AC cable is connected and the system unit gets supplied with AC power, both SERVICE LEDs on the front side and on the rear side of the system unit blink for about 60 seconds. During this period, the MAINTENANCE LEDs are turned off.
The system unit doesn't start unless the SERVICE LEDs finish blinking. So you will have to wait the system to start until the LEDs finish blinking if you press the POWER switch while the SERVICE LEDs are still blinking.

Rear side

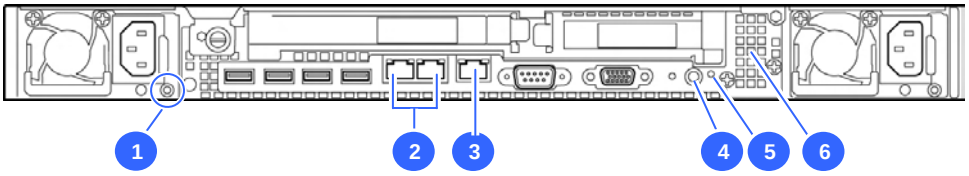


Figure 1-6: CR 210H rear side overview

Table 1-7: CR 210H rear side indicators

Location	Name	State	Description
1	Power supply LED	Green-Blink	AC power is supplied / Stand-by state (AC cable is connected, POWER LED switch is OFF)
		Green-On	Power is ON / Normal operation (POWER switch is ON)
		Amber-Blink	Warning status (over-temperature)
		Amber-On	Errors occurred (Failure, AC cable has been disconnected, or other reason)
2	Network interface connectors 1, 2	-	Connectors to connect LAN cables. Network interface connector numbers are 1 and 2 from right to left.
3	Management interface connector	-	Connect the management interface connector to a system console terminal using a LAN cable when you use the remote management function. For the details of the remote management function, see *Remote Management User's Guide*.
4	SERVICE switch with SERVICE LED	Blue-On	The SERVICE LED turns on when a SERVICE switch either on the front side or the rear side is pressed.
5	Power LED	Green-On	Power is ON / Normal operation (POWER switch is ON)*
6	Extension network interface connectors	-	If you install an optional LAN mezzanine, you can add two network interface connectors.

* When the AC power supplied to the system unit, this LED may blink in amber.

Network interface connectors 1, 2

The status LEDs on the connector are explained as follows.

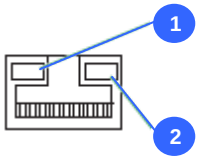


Figure 1-7: Network interface connector's status LED

Table 1-8: Network interface connectors status LED indicate

Location	Name	State	Description
1	Activity LED	Green-On	A link with a HUB has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a HUB has not been established.
2	Link LED	Amber-On*	A 1000BASE-T link with a hub has been established.
		Green-On*	A 100BASE-TX link with a hub has been established.
		Amber-Blink	A 1000BASE-T link with a hub is being established.
		Green-Blink	A 100BASE-TX or 10BASE-T link with a hub is being established.
		Off	A 10BASE-T link with a hub has been established or link with a hub has not been established. The Activity LED shows either case.
* AC power is still supplied even if the power of the system unit is turned off, but this LED will be turned off because only link by 10BASE-T can be established.			

- Onboard LAN controllers (network interfaces) displayed by the device manager are as follows:
  - Onboard LAN1: PCI bus 6, device 0, function 0
  - Onboard LAN2: PCI bus 6, device 0, function 1
- The number of the network adapter which is the network interface connector recognized by the device manager may not match to the network interface connector number.

Management interface connector

The status LEDs on the connector are explained as follows.

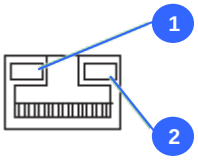


Figure 1-8: Management interface connector status LED

Table 1-9: Management interface connector status LED indicate

Location	Name	State	Description
1	Activity LED	Green-On	A link with a HUB has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a HUB has not been established.
2	Link LED	Green-On	A 100BASE-TX link with a hub has been established.
		Green-Blink	A 100BASE-TX or 10BASE-T link with a hub is being established.
		Off	A 10BASE-T link with a hub has been established or link with a hub has not been established.

Note

Do not directly connect between the management interface connector and a network interface connector 1 or 2 using a LAN cable. If you do, the system unit does not work properly.

Tip

- The link speed and duplex of the management interface are specified to auto-negotiation. Therefore, also specify auto-negotiation to the LAN ports both of a console, terminal and a switching hub which connected to the management interface.
- We recommend you use the management interface at 100BASE-TX. If the links speed of the management interface is 10 Mbps (10BASE-T link established, the Link LED is OFF), malfunction may occur in communication. In this case you need to reconfigure the network connected to the management interface.
- If you find the communication is unstable, turn off the system unit, shut down the AC power by, for example, disconnecting the AC cable, wait 30 seconds or more, and then reconnect AC power and turn on the system unit.

Extension network interface connectors

Different network interfaces are added depending on which LAN mezzanine is installed.

- LAN mezzanine (CN7M0T-Y/CN7M0T-R): 1000BASE-T/100BASE-TX/10BASE-T

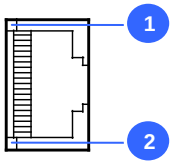


Figure 1-9: LAN mezzanine (CN7M0T-Y/CN7M0T-R) status LED

Table 1-10: LAN mezzanine (CN7M0T-Y/CN7M0T-R) status LED indicate

Location	Name	State	Description
1	Link LED	Amber-On*	A 1000BASE-T link with a hub has been established.
		Green-On*	A 100BASE-TX link with a hub has been established.
		Off	A 10BASE-T link with a hub has been established or link with a hub has not been established. The Activity LED shows either case.
2	Activity LED	Green-On	A link with a HUB has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a HUB has not been established.
* AC power is still supplied even if the power of the system unit is turned off, but this LED will be turned off because only link by 10BASE-T can be established.			

- LAN mezzanine (CN7M1T-Y/ CN7M1T-R): 10GBASE-T/1000BASE-T

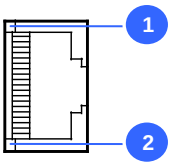


Figure 1-10: LAN mezzanine (CN7M1T-Y/ CN7M1T-R) status LED

Table 1-11: LAN mezzanine (CN7M1T-Y/ CN7M1T-R) status LED indicate

Location	Name	State	Description
1	Link LED	Amber-On	A 10GBASE-T link with a hub has been established.
		Green-On	A 1000BASE-TX link with a hub has been established.
		Off	A link with a hub has not been established.
2	Activity LED	Green-On	A link with a hub has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a hub has not been established.

- LAN mezzanine (CN7M1S-Y/ CN7M1S-R): 10GBASE-T SFP+

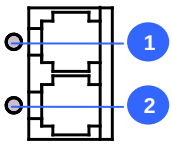


Figure 1-11: LAN mezzanine (CN7M1S-Y/ CN7M1S-R) status LED

Table 1-12: LAN mezzanine (CN7M1S-Y/ CN7M1S-R) status LED indicate

Location	Name	State	Description
1	Link LED	Green-On	A 10GBASE-T link with a hub has been established.
		Amber-On*	A 1000BASE-T link with a hub has been established.
		Off	A link with a hub has not been established or device driver has not been loaded.
2	Activity LED	Green-On	A link with a hub has been established.
		Green-Blink	Data is being transmitted or received.
		Off	A link with a hub has not been established or device driver has not been loaded.

Tip

- Onboard LAN controllers of the optional LAN mezzanine displayed by the device managers are as follows.
  - LAN controller 1: PCI bus 4, device 0, function 0
  - LAN controller 2: PCI bus 4, device 0, function 1
- The number of the network adapter which is the network interface connector recognized by the device manager may not match to the network interface connector number.
- LAN mezzanine (CN7M1T-Y/CN7M1T-R) interfaces support link speed is 10 Gbps and 1 Gbps (10GBASE-T and 1000BASE-T). If the links speed of the LAN mezzanine (CN7M1T-Y/CN7M1T-R) is 100 Mbps or 10 Mbps (100BASE-TX or 10BASE-T link established, the Link LED is lights solid amber), you need to reconfigure the network connected to the LAN mezzanine interface. In this case, the Link LED is lights solid amber as well as if the link speed is established with 1000 Mbps (1000BASE-T). Be careful because you cannot discriminate a linking speed (10 Mbps, 100 Mbps or 1000 Mbps) by lighting status the Link LED.
- LAN mezzanine (CN7M1S-Y/CN7M1S-R) interfaces support link speed is only 10 Gbps (10GBASE-SR). If the links speed of the LAN mezzanine interface is 1000 Mbps (1000BASE-SX link established, the Link LED is lights solid amber), you need to reconfigure the network connected to the LAN mezzanine interface.

2

Replaceable parts

This chapter describes the user replaceable parts of the CR 210H.

- ☐ Overview
- ☐ Location

Overview

The following parts in the CR 210H are CRUs replaceable by user.

Table 2-1: CRU overview

No	Parts	Product name	Code	Specification
1	**HDD / SSD**	**HDD SAS 300GB, 10000rpm, 2.5 inch**	GQ-UH7300UVHM-R	HDD SAS 300GB, 10000rpm, 2.5 inch
		HDD SAS 450GB, 10000rpm, 2.5 inch	GQ-UH7450UVHM-R	HDD SAS 450GB, 10000rpm, 2.5 inch
		HDD SAS 600GB, 10000rpm, 2.5 inch	GQ-UH7600UVHM-R	HDD SAS 600GB, 10000rpm, 2.5 inch
		HDD SAS 900GB, 10000rpm, 2.5 inch	GQ-UH7900UVHM-R	HDD SAS 900GB, 10000rpm, 2.5 inch
		HDD SAS 1.2TB, 10000rpm, 2.5 inch	GQ-UH71200UCM-R	HDD SAS 1.2TB, 10000rpm, 2.5 inch
		HDD SAS 146GB, 15000rpm, 2.5 inch	GQ-UH7146VVHM-R	HDD SAS 146GB, 15000rpm, 2.5 inch
		HDD SAS 300GB, 15000rpm, 2.5 inch	GQ-UH7300VVHM-R	HDD SAS 300GB, 15000rpm, 2.5 inch
		HDD SATA2 500GB, 7200rpm, 2.5 inch	GQ-UH75007A-R	HDD SATA2 500GB, 7200rpm, 2.5 inch
		HDD SATA2 1TB, 7200rpm, 2.5 inch	GQ-UH710007A-R	HDD SATA2 1TB, 7200rpm, 2.5 inch
		SSD SATA 100GB, EMLC, 2.5 inch	GQ-UH7100NDM-R	SSD SATA 100GB, EMLC, 2.5 inch
		SSD SATA 200GB, EMLC, 2.5 inch	GQ-UH7200XCM-R	SSD SATA 200GB, EMLC, 2.5 inch (Intel S3700)
		SSD SAS 400GB, EMLC, 2.5 inch	GQ-UH7400NCM-R	SSD SAS 400GB, EMLC, 2.5 inch
2	**Power supply**	**Power Supply 800W**	GQ-BP2361-R	Power Supply 800W, Redundant
3	**FAN**	**FAN, System for CR 210H**	GQ-X210HM0001-R	Fan, System for CR 210H
4	**DIMM**[1]	**Memory 2GBx1, LV RDIMM**	GQ-MJ702GL3-R	Memory, 2GBx1, 1333MHz DDR3 LV RDIMM
		Memory 4GBx1, LV RDIMM	GQ-MJ704GL3-R	Memory, 4GBx1, 1333MHz DDR3 LV RDIMM
		Memory 8GBx1, LV RDIMM	GQ-MJ708GL3-R	Memory, 8GBx1, 1333MHz DDR3 LV RDIMM
		Memory 16GBx1, LV RDIMM	GQ-MJ716GL3-R	Memory, 16GBx1, 1333MHz DDR3 LV RDIMM
		Memory 2GBx1, 1600 RDIMM	GQ-MJ7002H4-R	Memory, 2GBx1, 1600MHz DDR3 RDIMM
		Memory 4GBx1, 1600 RDIMM	GQ-MJ7004H4-R	Memory, 4GBx1, 1600MHz DDR3 RDIMM
		Memory 8GBx1, 1600 RDIMM	GQ-MJ7008H4-R	Memory, 8GBx1, 1600MHz DDR3 RDIMM
		Memory 16GBx1, 1600 RDIMM	GQ-MJ7016H4-R	Memory, 16GBx1, 1600MHz DDR3 RDIMM

No	Parts	Product name	Code	Specification
5	PCI card	**HBA, Hitachi 8Gb Dual Port, Full Height**	GQ-CC7841-R	HBA, Hitachi 8Gbps, Dual Port (Full Height)
		HBA, Hitachi 8Gb Dual Port, Low Profile	GQ-CC7842-R	HBA, Hitachi 8Gbps, Dual Port (Low Profile)
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7721-R[2]	LAN card, PCIe, 1000BASE-T, Dual Port Broadcom BCM5718
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7723-R[2]	LAN card, PCIe, 1000BASE-T, Dual Port Broadcom BCM5718
		LAN Card, 1Gb Quad Port Broadcom	GQ-CN7741-R	LAN card, PCIe, 1000BASE-T, Quad Port Broadcom BCM5719
		LAN Card, 1Gb Quad Port Broadcom	GQ-CN7743-R	LAN card, PCIe, 1000BASE-T, Quad Port Broadcom BCM5719
		LAN Card, 10Gb Dual Port Broadcom	GQ-CN7821-R	LAN card, PCIe, 10GBASE-SR, Dual Port Broadcom BCM57810
		LAN Card, 10Gb Dual Port Broadcom	GQ-CN7823-R	LAN card, PCIe, 10GBASE-T, Dual Port Broadcom BCM57810
		LAN Card, 10Gb Dual Port Broadcom	GQ-CN7841-R	LAN card, PCIe, 10GBASE-SFP+ w/o Transceiver, Dual Port Broadcom BCM57810

Notes:

1 1600 RDIMM (1600 MHz) and LV RDIMM (1333 MHz DDR3) cannot be mounted together in the system unit.

2 CN7721-Y/CN7721-R and CN7723-Y/CN7723-R cannot be mounted together in the system unit.

CRUs are of two types:

- **Hot-swappable component**

  Hot-swappable component is replaceable without shutting down the system unit.
  In the CR 210H, the following CRUs are hot-swappable:
  - HDD/SSD. See Replacing an HDD/SSD on page 4-2.
  - Power supply. See Replacing a power supply on page 4-5.

- When replacing a failed HDD/SSD in hot-swap condition, you need the following conditions.
  - Configured a disk array with redundancy (RAID1,5,6, or 10)
  - Disk array is operating in degraded mode.
    Or disk array is performing or finishing rebuilding data to a reserve disk with hot spare function.
- When replacing a failed power supply in hot-swap condition, confirm that another power supply is installed and active status.

- **Non hot-swappable component**

  Non hot-swappable component requires shutting down the system unit and disconnecting the AC cables while replacement.
  In the CR 210H, the following CRUs are non hot-swappable:

  – Fan. See Replacing a fan on page 4-9.

  – DIMM. See Replacing a DIMM on page 4-13.

  – PCI card. See Replacing a PCI card on page 4-17.

Location

This section describes the replaceable parts location of the system unit.

Replaceable parts – front and rear

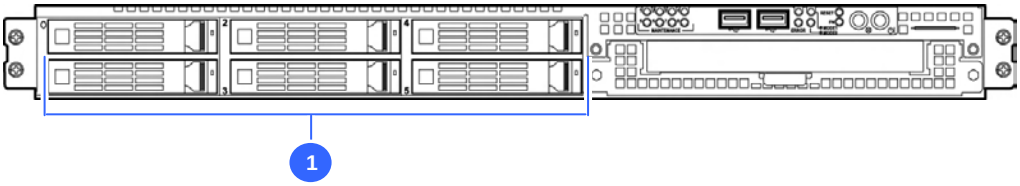


Figure 2-1: CR 210H Replaceable parts – front

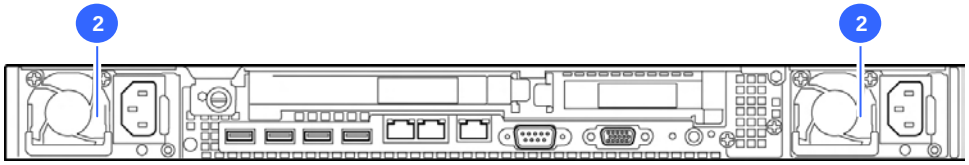


Figure 2-2: CR 210H Replaceable parts – rear

Table 2-2: CR 210H Replaceable parts – front and rear

Location	Parts	Product name	Code
1	HDD/SSD*	HDD SAS 300GB, 10000rpm, 2.5 inch	GQ-UH7300UVHM-R
		HDD SAS 450GB, 10000rpm, 2.5 inch	GQ-UH7450UVHM-R
		HDD SAS 600GB, 10000rpm, 2.5 inch	GQ-UH7600UVHM-R
		HDD SAS 900GB, 10000rpm, 2.5 inch	GQ-UH7900UVHM-R
		HDD SAS 1.2TB, 10000rpm, 2.5 inch	GQ-UH71200UCM-R
		HDD SAS 146GB, 15000rpm, 2.5 inch	GQ-UH7146VVHM-R
		HDD SAS 300GB, 15000rpm, 2.5 inch	GQ-UH7300VVHM-R
		HDD SATA2 500GB, 7200rpm, 2.5 inch	GQ-UH75007A-R
		HDD SATA2 1TB, 7200rpm, 2.5 inch	GQ-UH710007A-R
		SSD SATA 100GB, EMLC, 2.5 inch	GQ-UH7100NDM-R
		SSD SATA 200GB, EMLC, 2.5 inch	GQ-UH7200XCM-R
		SSD SAS 400GB, EMLC, 2.5 inch	GQ-UH7400NCM-R
2	Power supply*	Power Supply 800W	GQ-BP2361-R
* Hot-swappable component.			

Replaceable parts – inside

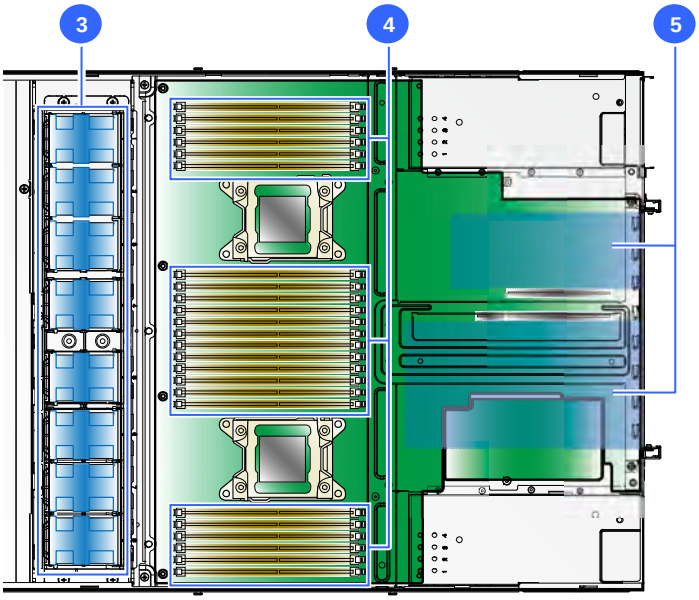


Figure 2-3: CR 210H Replaceable parts – inside

Table 2-3: CR 210H Replaceable parts – inside

Location	Parts	Product name	Code
3	Fan[1]	FAN, System for CR 210H	GQ-X210HM0001-R
4	DIMM[1 2]	Memory 2GBx1, LV RDIMM	GQ-MJ702GL3-R
		Memory 4GBx1, LV RDIMM	GQ-MJ704GL3-R
		Memory 8GBx1, LV RDIMM	GQ-MJ708GL3-R
		Memory 16GBx1, LV RDIMM	GQ-MJ716GL3-R
		Memory 2GBx1, 1600 RDIMM	GQ-MJ7002H4-R
		Memory 4GBx1, 1600 RDIMM	GQ-MJ7004H4-R
		Memory 8GBx1, 1600 RDIMM	GQ-MJ7008H4-R
		Memory 16GBx1, 1600 RDIMM	GQ-MJ7016H4-R

Location	Parts	Product name	Code
5	PCI card[1]	**HBA, Hitachi 8Gb Dual Port, Full Height**	GQ-CC7841-R
		HBA, Hitachi 8Gb Dual Port, Low Profile	GQ-CC7842-R
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7721-R[3]
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7723-R[3]
		LAN Card, 1Gb Quad Port Broadcom	GQ-CN7741-R
		LAN Card, 1Gb Quad Port Broadcom	GQ-CN7743-R
		LAN Card, 10Gb Dual Port Broadcom	GQ-CN7821-R
		LAN Card, 10Gb Dual Port Broadcom	GQ-CN7823-R
		LAN Card, 10Gb Dual Port Broadcom	GQ-CN7841-R

Note:

1 Non hot-swappable component.

2 1600 RDIMM (1600 MHz) and LV RDIMM (1333 MHz DDR3) cannot be mounted together in the system unit.

3 CN7721-Y/CN7721-R and CN7723-Y/CN7723-R cannot be mounted together in the system unit.

3

Preparation

This chapter describes preparation for replacing system components.

- ☐ Basic Replacement Procedure
- ☐ Unpack a spare component
- ☐ Powering off system unit
- ☐ Sliding out the system unit for maintenance
- ☐ Removing/Installing the cover

Basic Replacement Procedure

This section describes the replacement procedure for hot-swappable components and non hot-swappable components.

Hot-swappable component: HDD / SSD / Power supply

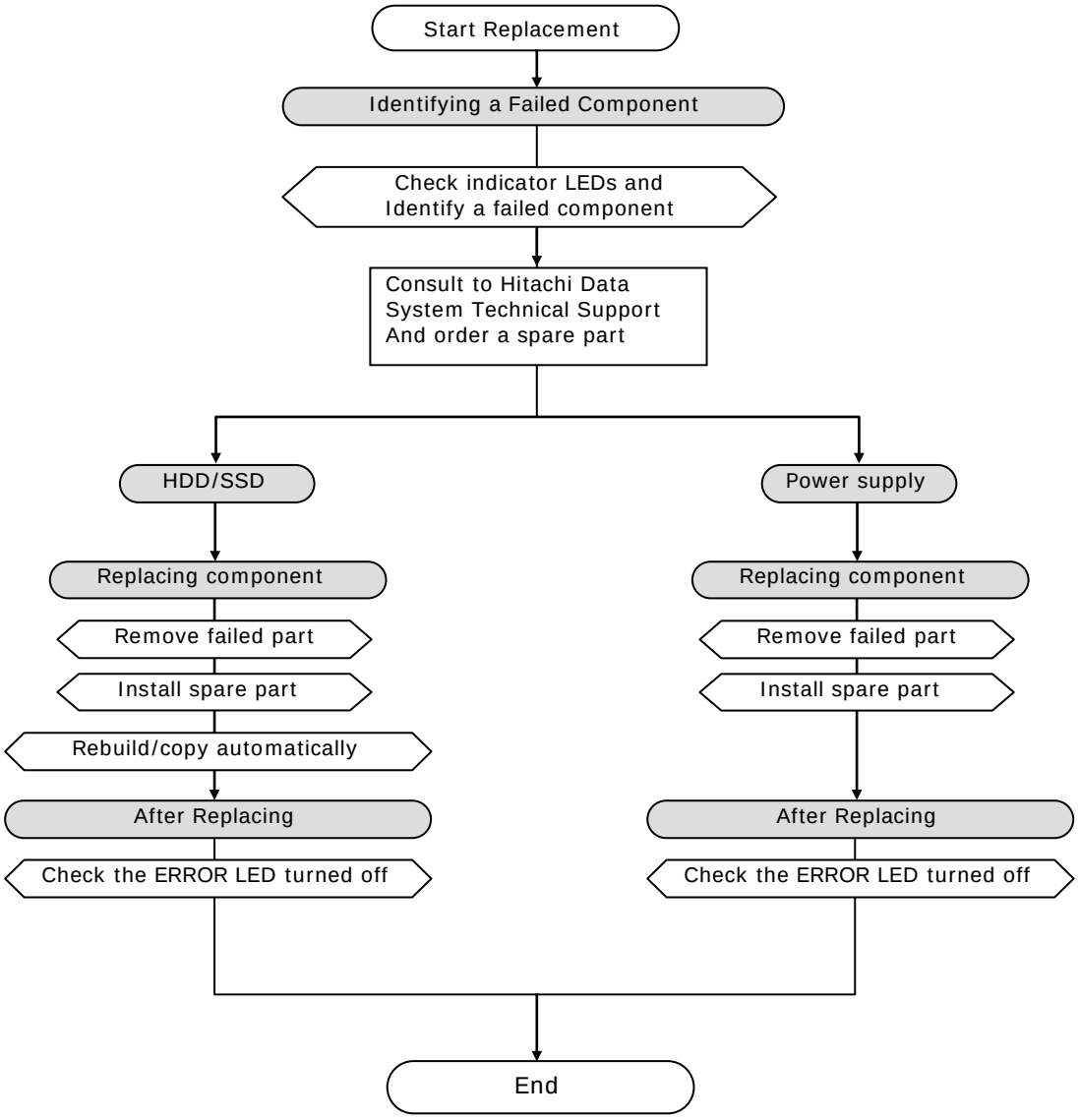


Figure 3-1: Basic procedure – hot-swappable component

Non hot-swappable component: Fan / DIMM / PCI card

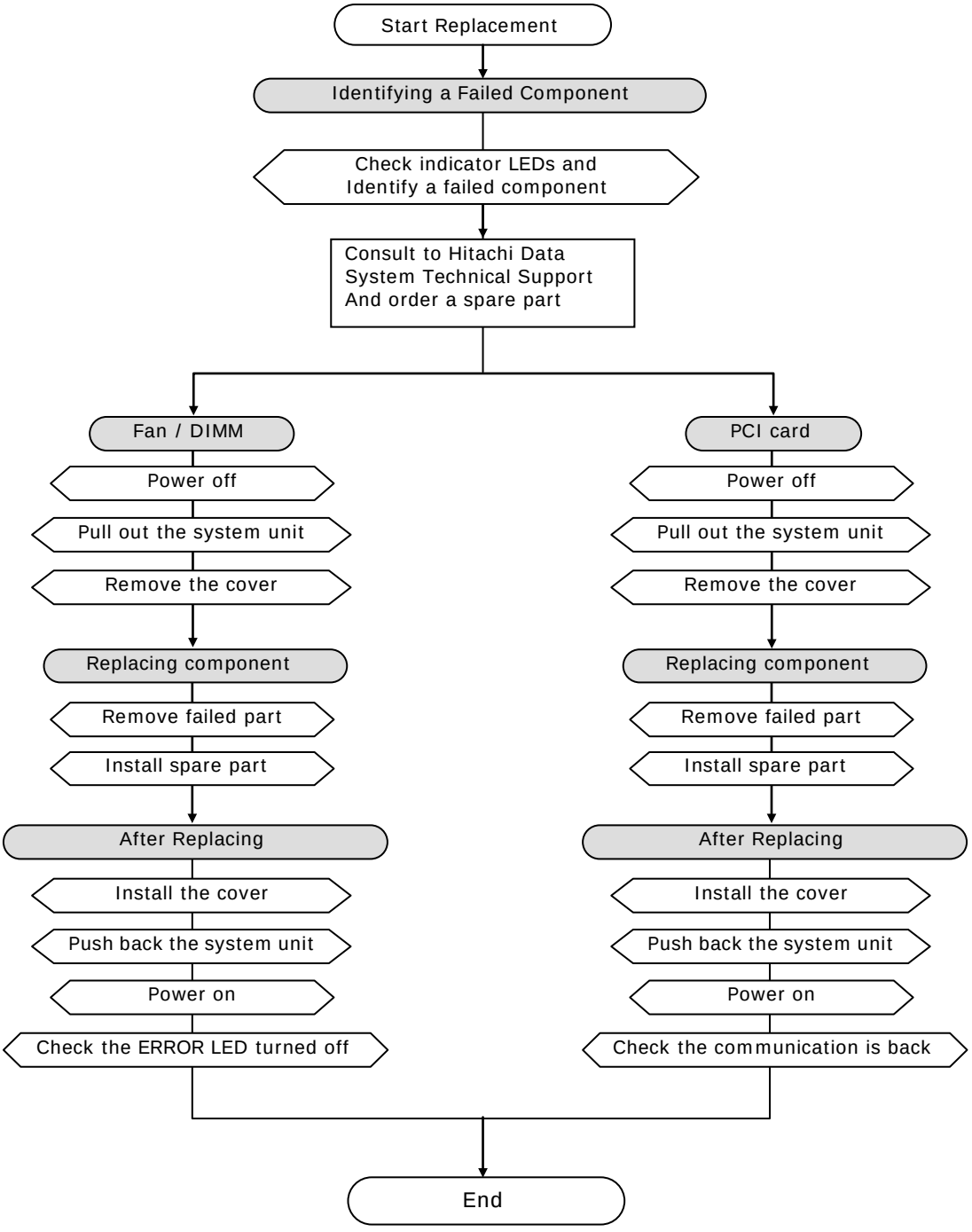


Figure 3-2: Basic procedure – non hot-swappable component

Unpack a spare component

1. Remove the spare component from the static-protective container.
2. Verify that the spare component is the correct code for replacement.
3. Return the spare component to the container or place it on an antistatic mat until you are ready to install it.

Powering off system unit

This section describes the procedures to powering off the system unit.
You need to perform the following procedure to replace a non hot-swappable component.

1. Confirm that the devices and the peripherals connected to the system are not being accessed.
2. Confirm that the ACCESS LED is OFF.
3. Press the POWER switch on the front side of the system unit.
   The power for the system unit is turned off.

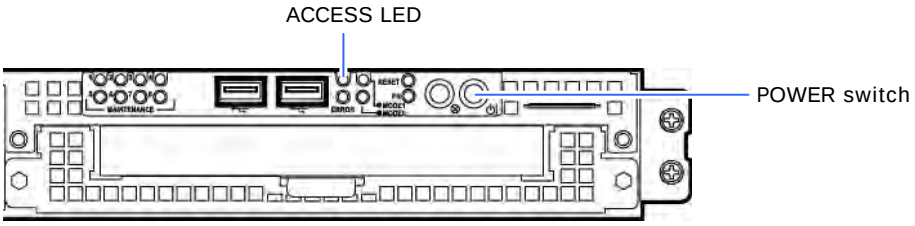


Figure 3-3: Turn off the POWER switch

Note

Depending on a peripheral, you may need to turn off the peripheral before you turn off the system unit. For details, see the manual of each peripheral device.

Tip

- If the power is automatically turned off when the operating system (OS) is shut down, you do not need to press the POWER switch.
- The power may not be turned off due to cache protection even if you press the POWER switch. In this case, wait until the power will be turned off.
- The fans inside the power supplies of the system unit continue running unless the AC power source is turned off.

4. Turn off the peripherals.

Sliding out the system unit for maintenance

This section describes the procedures for sliding out the system unit from the rack cabinet.
You need to perform the following procedure to replace a **non hot-swappable** component.

Sliding out the system unit from a rack cabinet

When do maintenance of the system unit, slide out the system unit from the rack cabinet.

1. Disconnect all the cables from the system unit.

   See *Hitachi Compute Rack 210H Getting Started Guide*.

2. Remove an optional front bezel (AU7704-Y/AU7704-R) if any.

   See *Hitachi Compute Rack 210H Getting Started Guide*.

3. Slide out the system unit while pressing the buttons on the inner rails until the inner rails stop.

   Then the inner rails are locked by lock latches (White).

- Lift the front of the system unit slightly when sliding out the system unit. Otherwise, the system unit can interfere with another unit installed below, which may cause those units to be deformed.
- Do not push down the system unit while sliding out the system unit. If you do, the system unit may be deformed.

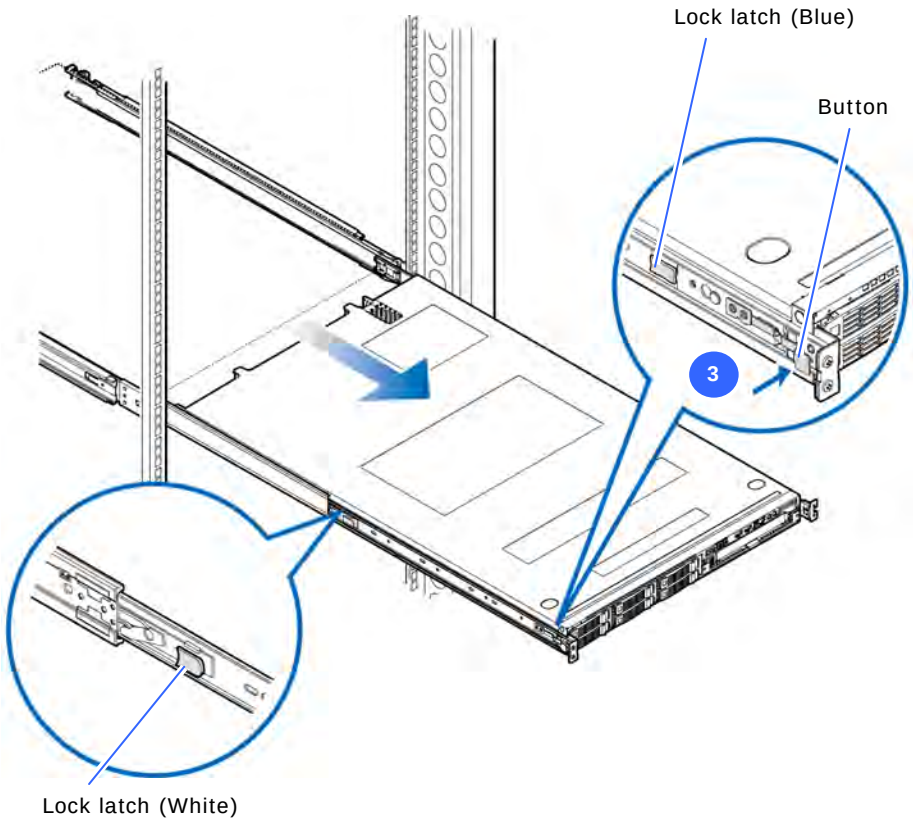


Figure 3-4: Sliding out the system unit from the rack cabinet

The gap between the pillar of rack cabinet and the inner rail on system unit may be too narrow to press the button on inner rail with finger.

If you cannot press the button through the gap, use the extraction tool (GQ-X210HM0109-Y).

How to use the extraction tool

Insert the tools in the gap between the pillar of rack cabinet and the inner rail on both ends, and push the tools inward to press the button on inner rail.

Pull the system unit out of the rack cabinet pressing the buttons.

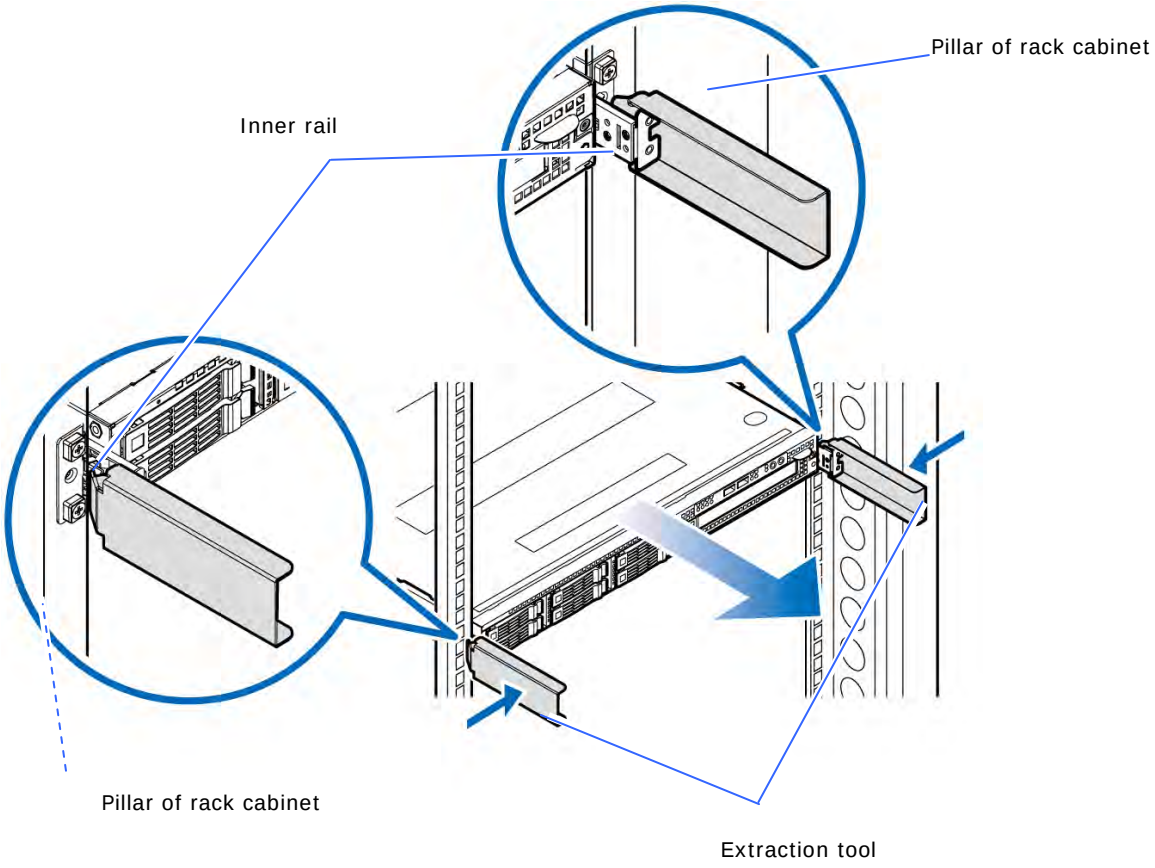


Figure 3-5: How to use the extraction tool

Sliding the system unit into a rack cabinet

1. Pull the lock latches (Blue) and slide the system unit into the rack cabinet slightly.

   Then the inner rails are locked by the buttons.

- Slide in the system unit gently. Lift the front of the system unit slightly when sliding the system unit into the rack cabinet. Otherwise, the system unit can interfere with another unit installed below, which may cause those units to be deformed.
- Do not push down the system unit while sliding out the system unit. If you do, the system unit may be deformed.
- When you slide the system unit into the rack cabinet, be careful against being caught the cable clamp of the power supply. The cable clamps may be damaged.

2. Perform reverse procedure of the removal to install a front bezel and connect external cables.

   See Sliding out the system unit from a rack cabinet.

Removing / Installing the cover

This section describes the procedure for removing and installing the top cover of the system unit.
Do not open the top cover unless **non hot-swappable** components need replacement.

Removing the top cover

1. Slide out the system unit from the rack cabinet.

   See Sliding out the system unit from a rack cabinet on page 3-5.
2. Loosen the captive screw at the rear of the system unit.
3. Press the two release marks and slide the top cover toward the rear of the system unit.
4. Lift up and remove the top cover from the system unit.

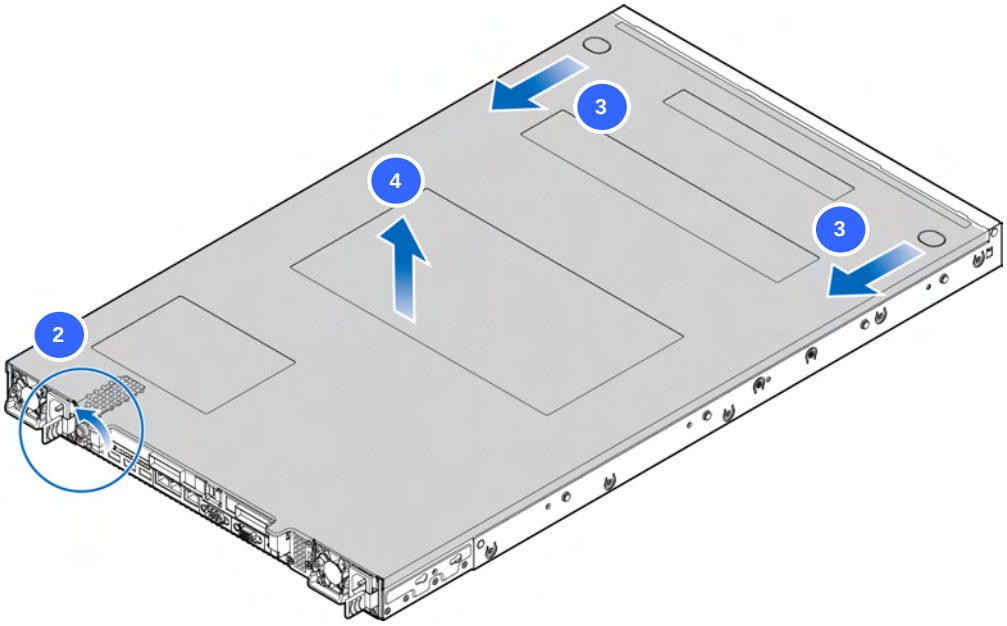


Figure 3-6: Remove the top cover

Installing the top cover

NOTICE Make sure all of the internal cables and components are correctly kept inside the system unit before installing the cover. Otherwise, the cables may be damaged or disconnected.

1. Align the hooks inside the top cover side tabs with the guide slots on both sides of the chassis.
2. Close and slide the top cover toward the front of the system unit.

   Make sure the front edge of the top cover is fully inserted in the chassis correctly.
3. Tighten the captive screw at the rear of the system unit.

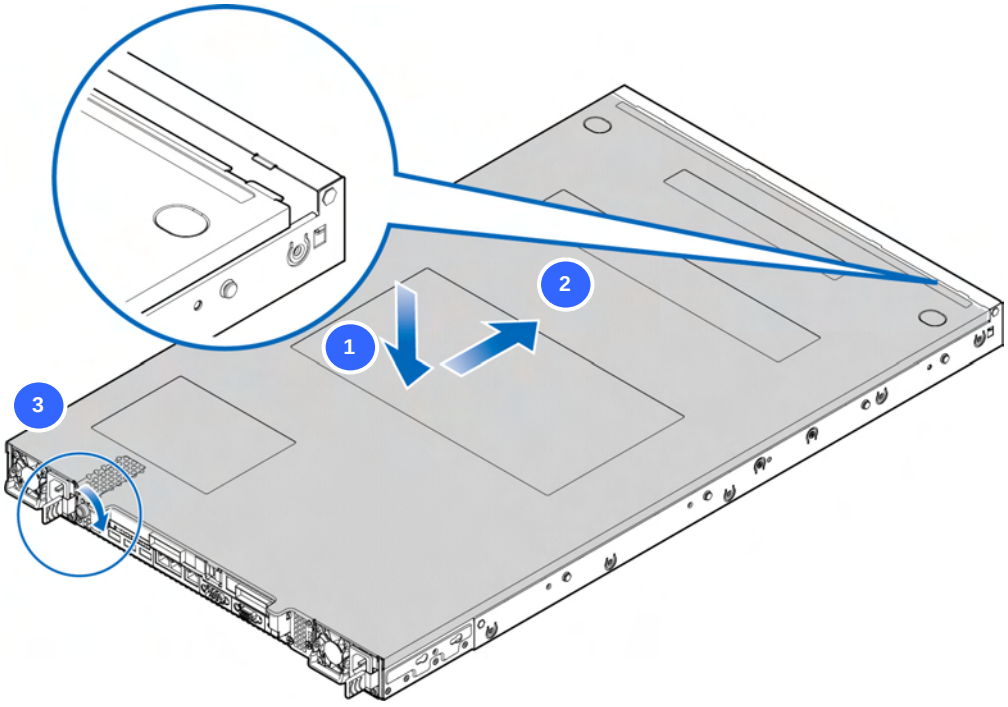


Figure 3-7: Install the top cover

4. Reinstall the system unit to the rack cabinet.

   See Sliding the system unit into a rack cabinet on page 3-8.

4

Replacing parts

This chapter describes the procedure for removing and installing components of the system unit.

- ☐ Replacing an HDD/SSD
- ☐ Replacing a power supply
- ☐ Replacing a fan
- ☐ Replacing a DIMM
- ☐ Replacing a PCI card

Replacing an HDD/SSD

This section describes the procedure for replacing an HDD/SSD.

Location of installing HDD/SSD

Install an HDD/SSD to extension storage bays. The locations of the extension storage bays are as follows.

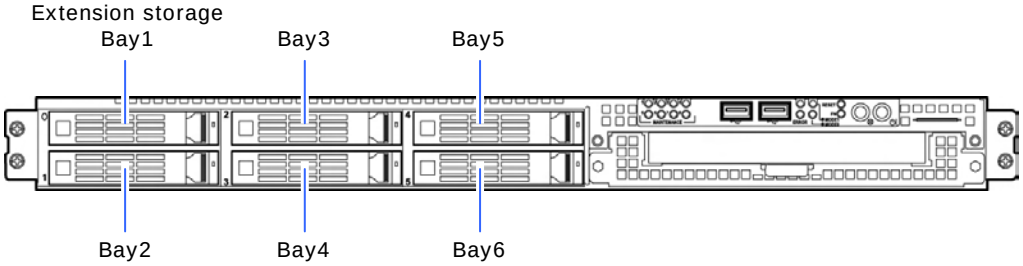


Figure 4-1: Location of extension storage bay

The correspondence between the extension storage bay numbers and the stamp on the front of the system unit is as follows.

Table 4-1: Extension storage bay and Bay configuration label

Extension storage bay		Stamp	
1	**4**	0	3
2	**5**	1	4
3	**6**	2	5

Tip

When replacing a failed HDD/SSD in hot-swap condition, you need the following conditions.

- Configured a disk array with redundancy (RAID1,5,6, or 10)
- Disk array is operating in degraded mode.
  Or disk array is performing or finishing rebuilding data to a reserve disk with hot spare function.

Removing an HDD/SSD

1. Confirm the failed HDD/SSD.

   The HDD status LED on the HDD tray lights solid amber.
2. Push the tab of HDD tray to unlock the HDD/SSD.
3. Pull the lever open, and then pull out the failed HDD/SSD slightly.

4. Wait about 30 seconds until the disk motor stops. Then, pull out the HDD/SSD straight forward.

NOTICE Do not make an impact on the HDD/SSD. Wait at least 30 seconds before removing the HDD. Removing the failed HDD during its motor rotating may damage other HDDs and cause unexpected failures.

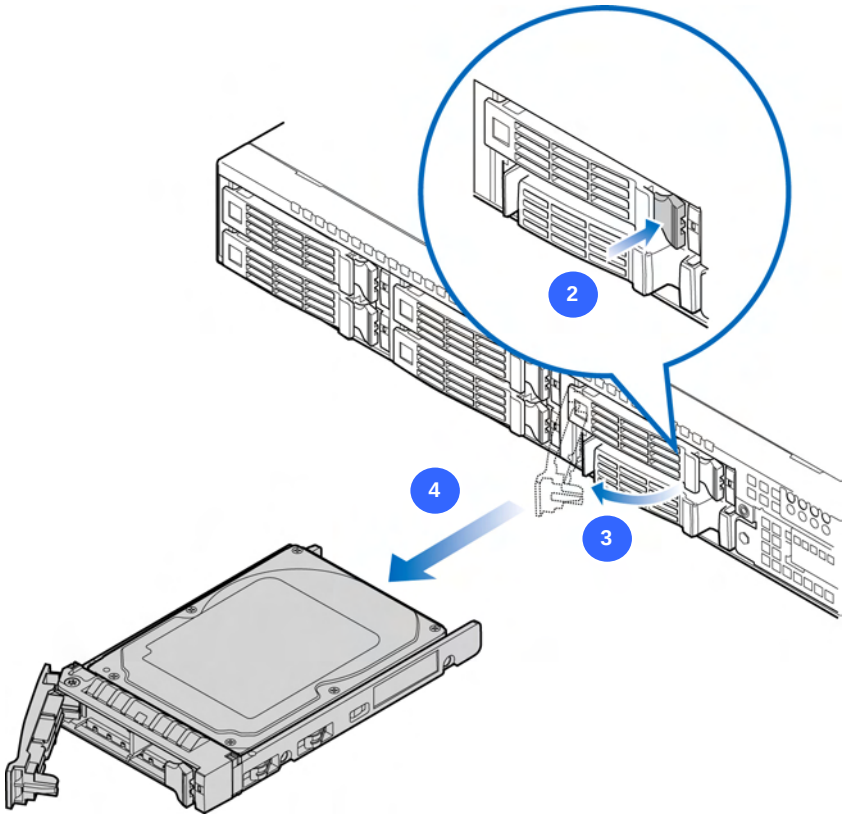


Figure 4-2: Remove a failed HDD/SSD

Installing an HDD/SSD

Note Install the same specification HDD/SSD with failed HDD/SSD. Otherwise, the HDD/SSD may not be rebuilt correctly or may incur abnormal operation.

1. Open the HDD tray lever of the replacing HDD/SSD.
2. Insert the HDD/SSD into the extension storage bay along the guide slowly.

3. Hold the lever and push the HDD/SSD into the extension storage bay slowly. When the HDD/SSD stops at the bottom, slowly close the lever to lock the HDD tray.

NOTICE Install the replacing HDD/SSD in the same extension storage bay where the failed HDD/SSD has been removed. Otherwise, data may be lost.

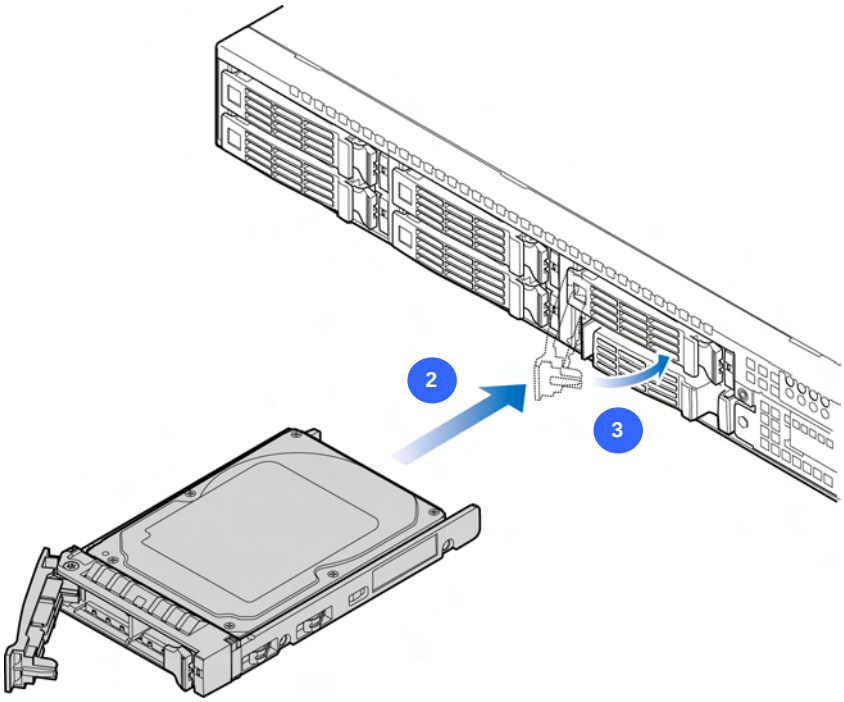


Figure 4-3: Installing an HDD/SSD

4. After a while, confirm that the HDD status LED on the HDD tray of the replacing HDD/SSD turns off or lights solid green.

Tip During rebuilding data in progress, the HDD status LED blinks amber.

Do not turn off the power of the system unit during rebuilding data.

Replacing a power supply

This section describes the procedure for replacing a power supply.

Location of installing power supply

Install a power supply to power supply slots. The locations of the power supply slots are as follows.

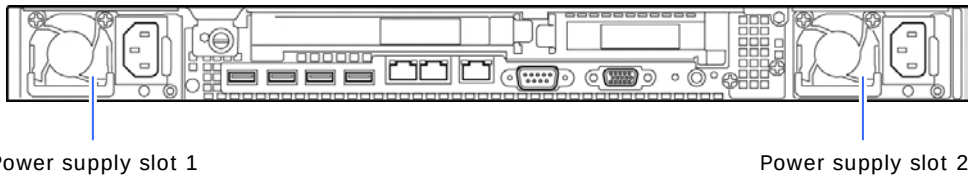


Figure 4-4: Location of power supply slot

Tip

When replacing a power supply in hot-swap condition, confirm that another power supply is installed and active status.

Removing a power supply

1. Confirm the failed power supply.

   The Power supply LED lights solid amber.
2. Open the cable clamp to release the AC cable.
3. Disconnect the AC cable from the failed power supply.

NOTICE Do not disconnect the AC cable connected to the power supply which is operating normally.
If you do, the power to the system unit will be turned off and the data may be lost.

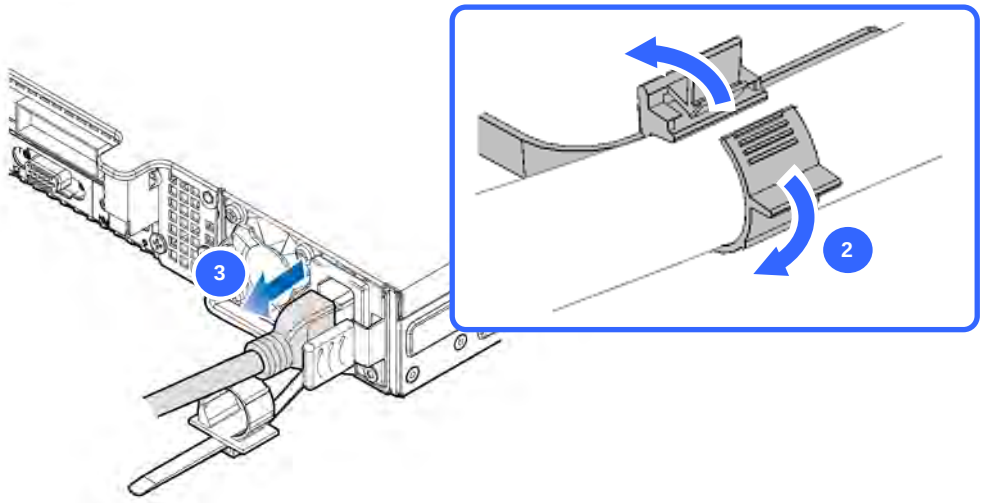


Figure 4-5: Disconnect an AC cable

4. Grasp the handle and push the lock tab, and then pull out the failed power supply straightly.
5. Hold the body of the failed power supply, and then pull out it straight forward.

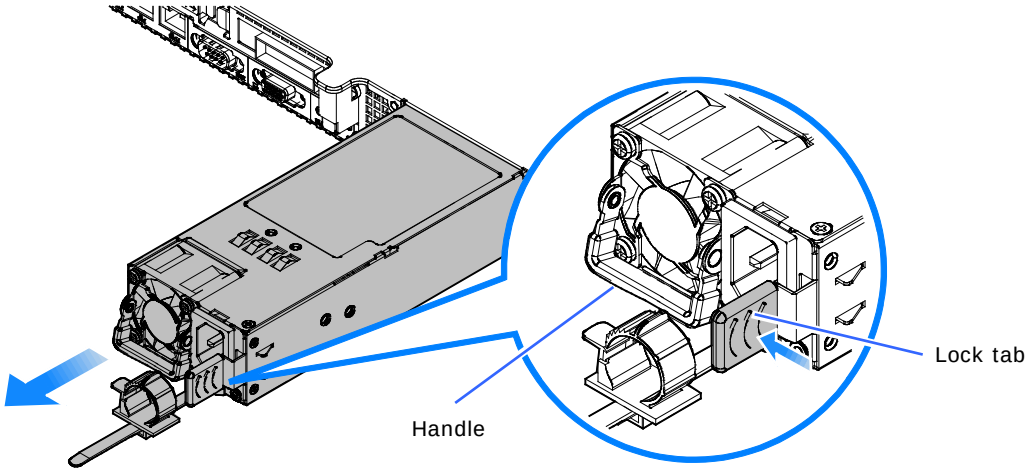


Figure 4-6: Remove a failed power supply

Installing a power supply

1. Fold the handle of the replacing power supply.
2. Insert the replacing power supply into the power supply slot and push it until the position where the power supply is locked.

Make sure that there is no gap between the power supply and the system unit chassis. Any gap means that the power supply is not inserted in place. If you find any gap, remove the power supply and install it correctly.

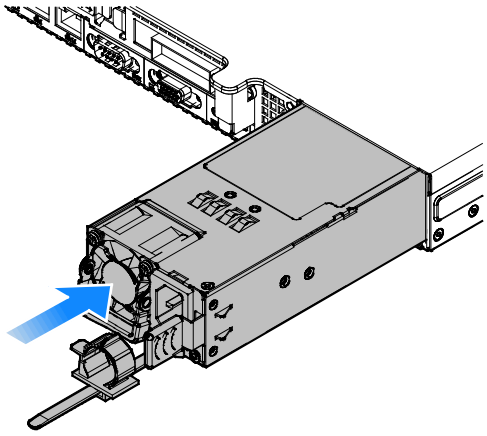


Figure 4-7: Install a power supply

3. Connect the AC cable to the installed power supply and insert the plug into an electrical outlet.

4. Fix the AC cable using a cable clamp attached to the power supply in order to avoid unintended disconnection. After the AC cable is fixed, push the cable clamp all the way toward the power plug.

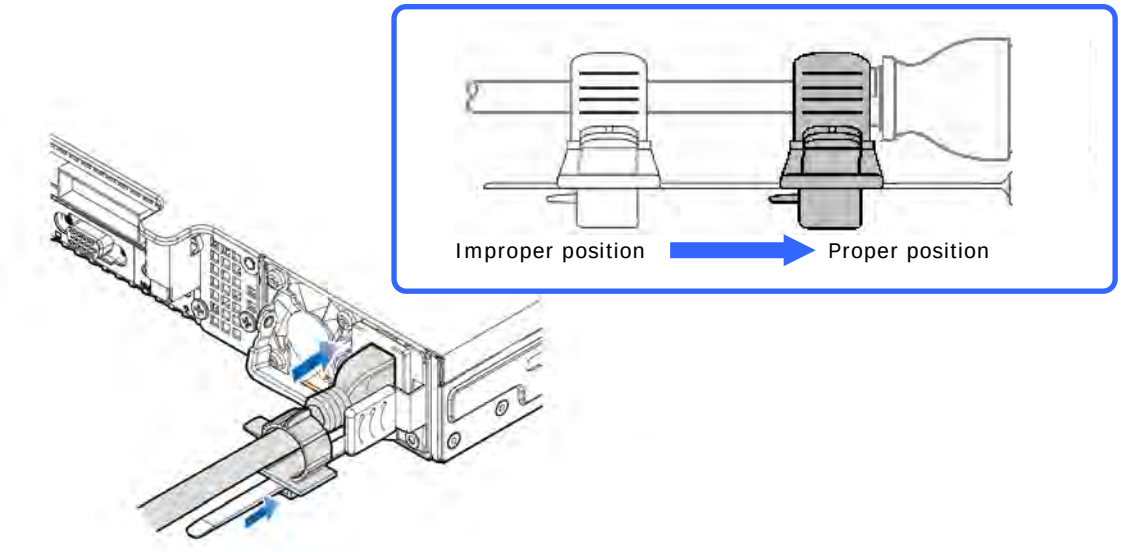


Figure 4-8: Fixing AC cable using the cable clamp

5. Make sure that the power supply LED of installed power supply lights solid green.

Replacing a fan

This section describes the procedure for replacing a fan.

Location of installing fan

Install a fan module to fan slot. A fan module contains two fans. The locations of the fan slots are as follows.

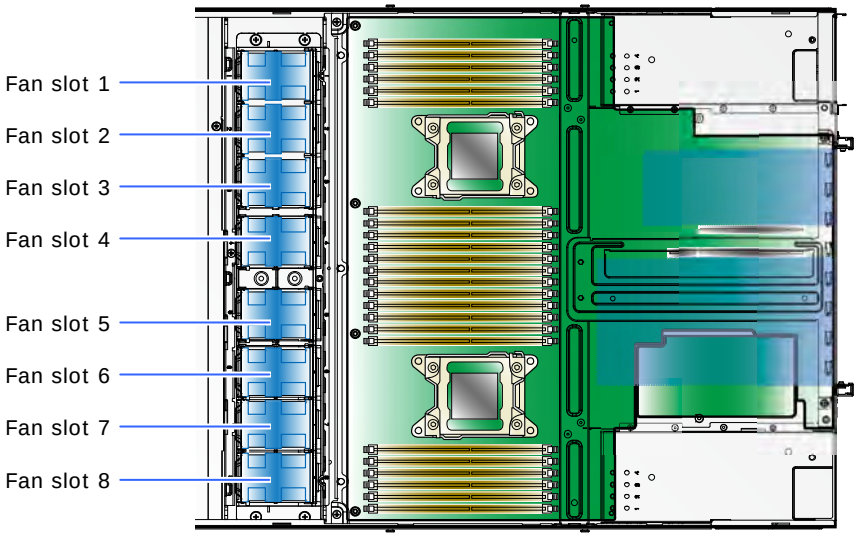


Figure 4-9: Location of fan slot

A fan module has a DC cable which connects to a DC connector on the HDD backplane.
The DC connector which connects DC cable is dependent on the fan slot which installs fan module.
The DC connector each fan slot corresponds as follows.

Table 4-2: DC connector corresponding to fan slot

Fan slot	Notation of DC connector on the HDD backplane
1	JFAN1
2	JFAN2
3	JFAN3
4	JFAN4
5	JFAN5
6	JFAN6
7	JFAN7
8	JFAN8

Removing a fan

1. Turn off the power of the system unit and peripherals.

   See Powering off system unit on page 3-4.

2. Slide out the system unit from the rack cabinet.

   See Sliding out the system unit from a rack cabinet on page 3-5.

3. Remove the cover of the system unit.

   See Removing the top cover on page 3-9.

4. Remove the screw that secures the cache backup module bracket to the chassis.

5. Slide the cache backup module bracket toward the fan slot1, and then lift it out.

   Put the cache backup module bracket on the front side of chassis.

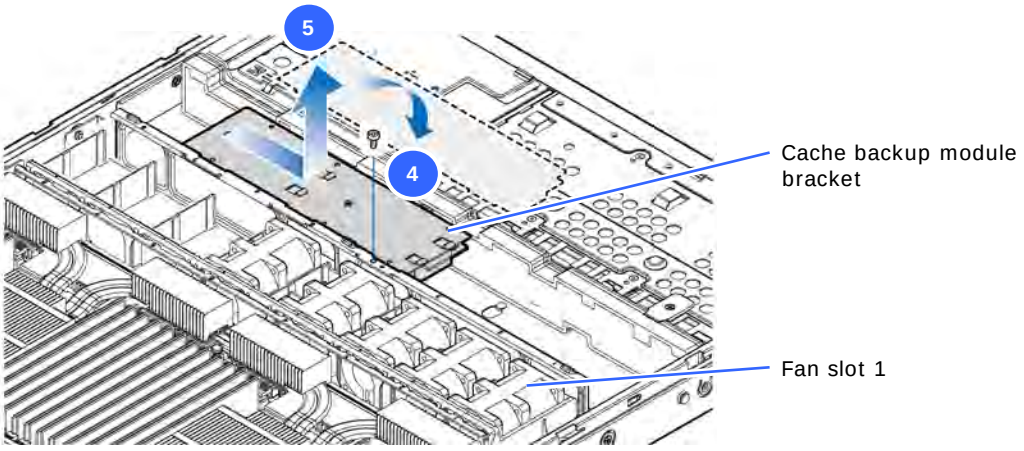


Figure 4-10: Remove the cache backup module bracket

Tip

If the cache backup module is installed on the cache backup module bracket, do not disconnect the cable.

---

6. Check which fan slot you need to remove the fan module from.

7. Disconnect the DC cable of fan module connected to DC connector on the HDD backplane.

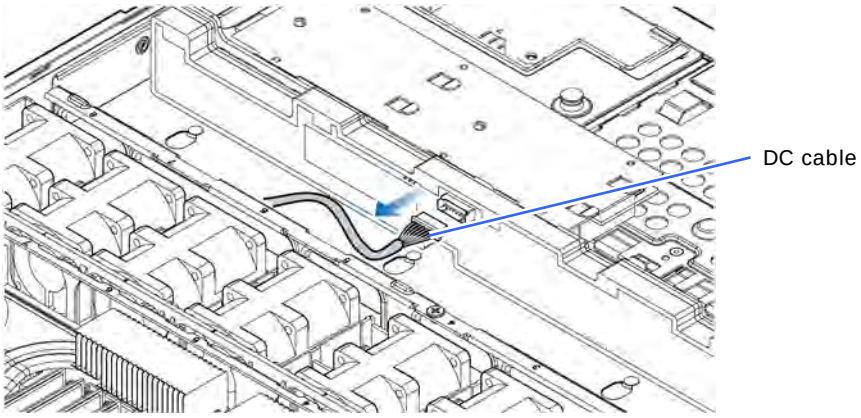


Figure 4-11: Remove a DC cable

8. Lift out the fan module.

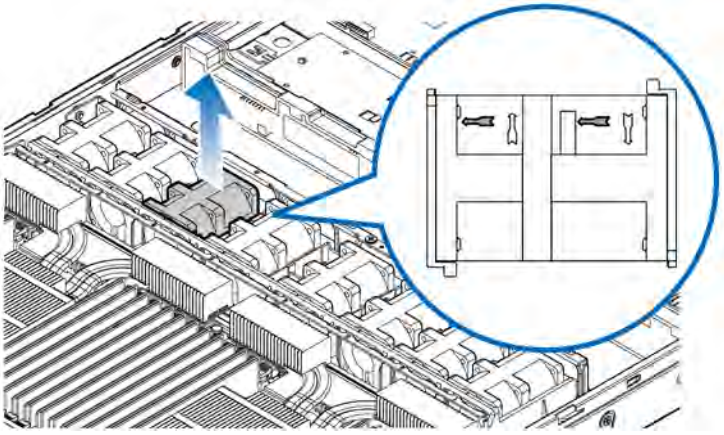


Figure 4-12: Remove a fan module

Installing a fan

1. Reverse the removal procedure to install a replacing fan module.

- Install the replacing fan module matching with the arrow mark of fan module and rear of the system unit. Otherwise, the cooling function does not work properly and might damage the system unit.
- Make sure that fan does not touch with fan cables.

2. Install the cover of the system unit.

   See Installing the top cover on page 3-10.

3. Reinstall the system unit to the rack cabinet.

   See Sliding the system unit into a rack cabinet on page 3-8.

Replacing a DIMM

This section describes the procedure for replacing a DIMM.

Location of installing DIMM

Install a DIMM to memory slots on the motherboard. The locations of the memory slots are as follows.

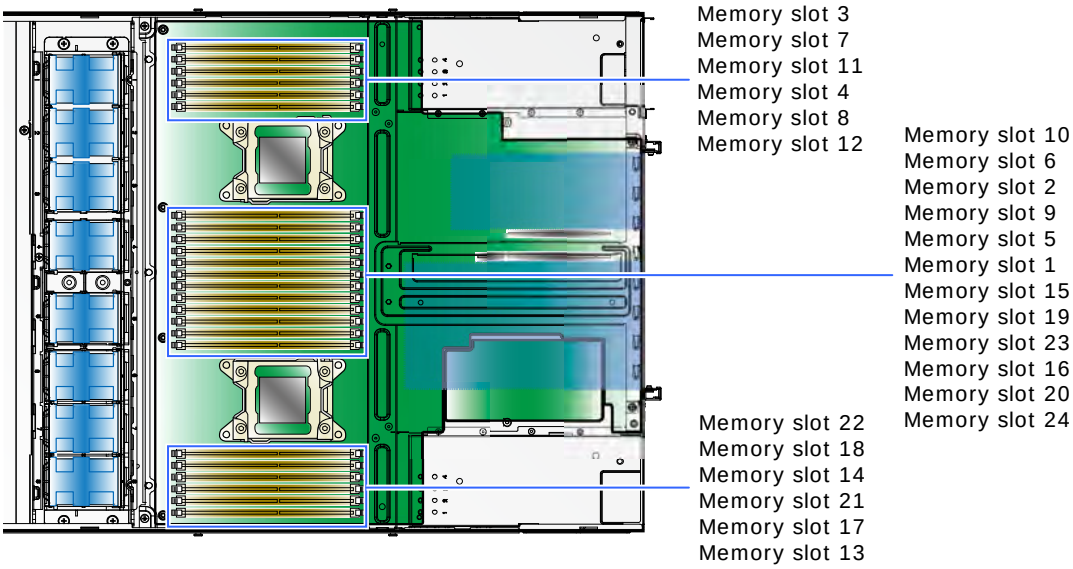


Figure 4-13: Location of memory slot

Each memory slot is indicated on the motherboard as follows.

Table 4-3: Memory slot indicated on the motherboard

Memory slot		indicator on the motherboard	
1	**13**	CPU1_DIMM1	CPU2_DIMM1
2	**14**	CPU1_DIMM2	CPU2_DIMM2
3	**15**	CPU1_DIMM3	CPU2_DIMM3
4	**16**	CPU1_DIMM4	CPU2_DIMM4
5	**17**	CPU1_DIMM5	CPU2_DIMM5
6	**18**	CPU1_DIMM6	CPU2_DIMM6
7	**19**	CPU1_DIMM7	CPU2_DIMM7
8	**20**	CPU1_DIMM8	CPU2_DIMM8
9	**21**	CPU1_DIMM9	CPU2_DIMM9
10	**22**	CPU1_DIMM10	CPU2_DIMM10
11	**23**	CPU1_DIMM11	CPU2_DIMM11
12	**24**	CPU1_DIMM12	CPU2_DIMM12

Removing a DIMM

1. Turn off the power of the system unit and peripherals.

   See Powering off system unit on page 3-4.
2. Slide out the system unit from the rack cabinet.

   See Sliding out the system unit from a rack cabinet on page 3-5.
3. Remove the top cover of the system unit.

   See Removing the top cover on page 3-9.
4. Check which memory slot you need to remove the DIMM from.
5. Open the lock tabs, and then remove the DIMM from the memory slot.

NOTICE

- Be careful not to tamper with the nearby parts when you remove the DIMM, since the working space is narrow.
- Make sure you do not bend the electrolytic capacitors when opening the lock tabs of a memory slot. Otherwise, the motherboard may be damaged.

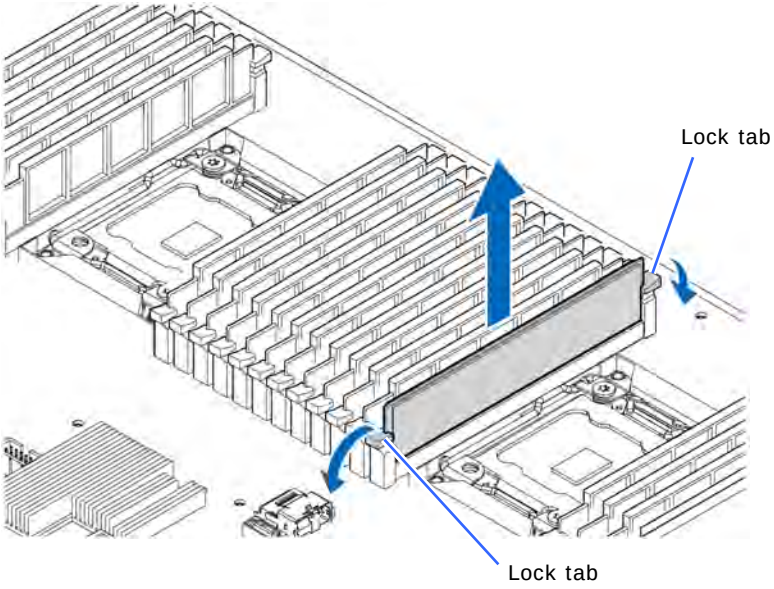


Figure 4-14: Remove a DIMM

Installing a DIMM

1. Ensure that the lock tabs of the memory slot are in the open position.

NOTICE Make sure you do not bend the electrolytic capacitor when opening the lock tabs of a memory slot. Otherwise, the motherboard may be damaged.

Note Install the replacing DIMM in the same memory slot where the failed DIMM has been removed. Otherwise, the system unit might not operate normally.

2. Orient the replacing DIMM to the direction where the DIMM keys align correctly with the memory slot.
3. Push the replacing DIMM into the memory slot until the lock tabs lock the DIMM in place.

   If the lock tabs are not closed properly, the DIMM is not locked in the memory slot. Push down the DIMM again.

NOTICE Insert the DIMM vertically to the slot. Otherwise, it may cause damages to pins of the connector such as bent pins.

Tip The shape of DIMM differs depending on the Product code.

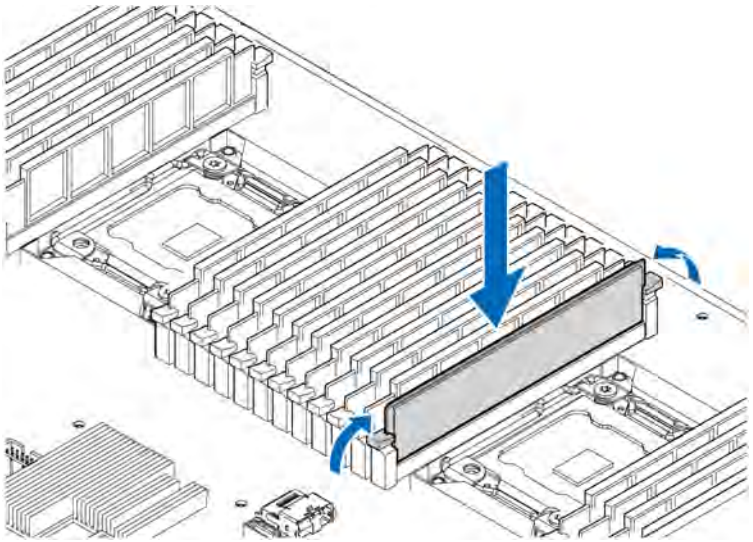


Figure 4-15: Install a DIMM

4. Install the top cover of the system unit.

   See Installing the top cover on page 3-10.

5. Reinstall the system unit to the rack cabinet.

   See Sliding the system unit into a rack cabinet on page 3-8.

Replacing a PCI card

This section describes the procedure for replacing a PCI card.

Location of installing PCI card

Install a PCI card to PCI slots on the PCI riser installed on the motherboard. The locations of the PCI slots are as follows.

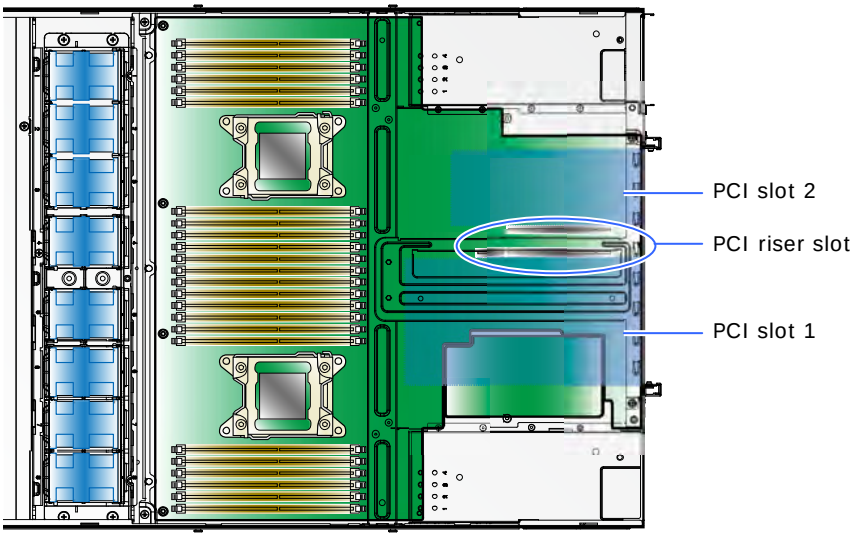


Figure 4-16: Location of PCI slot

The specification of each PCI slot is as follows.

Table 4-4: PCI slot specification

PCI slot	PCI type	I/O voltage	Slot form	Bus number	Device number	Bus scan order[1]	Support PCI card type
1	PCI Express 3.0	3.3 V	16 lanes (x16)	2	0	1	PCI Express x1, x2, x4, x8, x16 / standard / half size
2[2]			8 lanes (x8)	3	0	2	PCI Express x1, x2, x4, x8 / lowprofile / MD2

Notes:

1 A PCI card which has a base class value "01h" is given priority to performing shadow.

2 This slot is recognized as "PCI Slot 3" by device manager of Windows OS

Removing a PCI card

1. Turn off the power of the system unit and peripherals.

   See Powering off system unit on page 3-4.
2. Slide out the system unit from the rack cabinet.

   See Sliding out the system unit from a rack cabinet on page 3-5.
3. Remove the top cover of the system unit.

   See Removing the top cover on page 3-9.
4. Remove the two screws that secure the PCI riser bracket to the chassis.
5. Pull out the PCI riser bracket from the PCI riser slot.

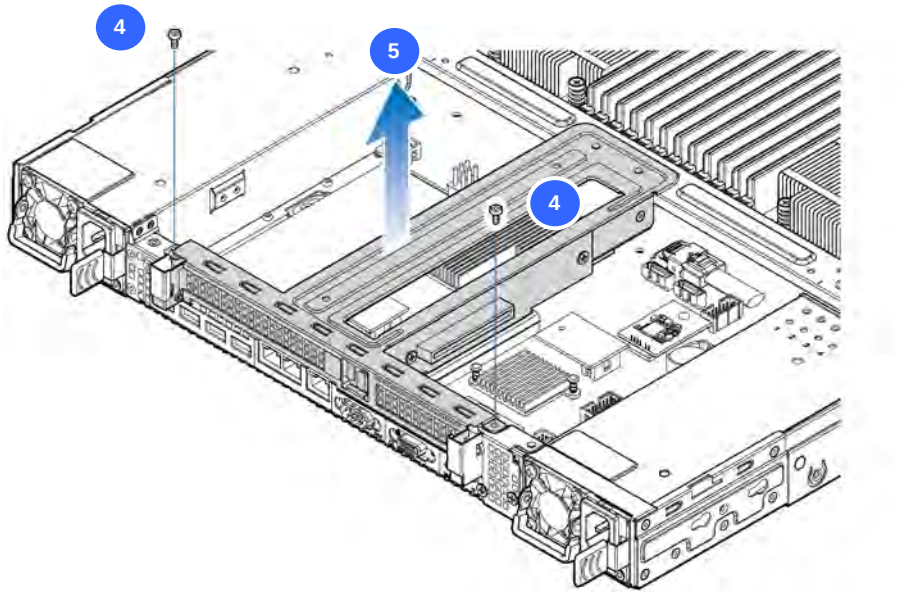


Figure 4-17: Remove the PCI support bracket

6. If the RAID card with cache backup is installed, remove the screw, and then pull out the RAID card from the PCI riser.

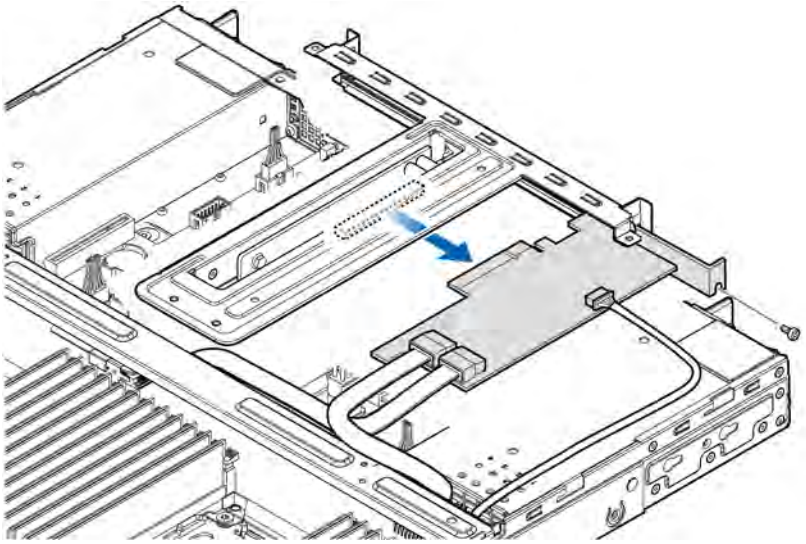


Figure 4-18: Remove the RAID card

7. Check which PCI slot you need to remove the PCI card from.
8. Remove the screw, and then pull out the PCI card from the PCI riser.

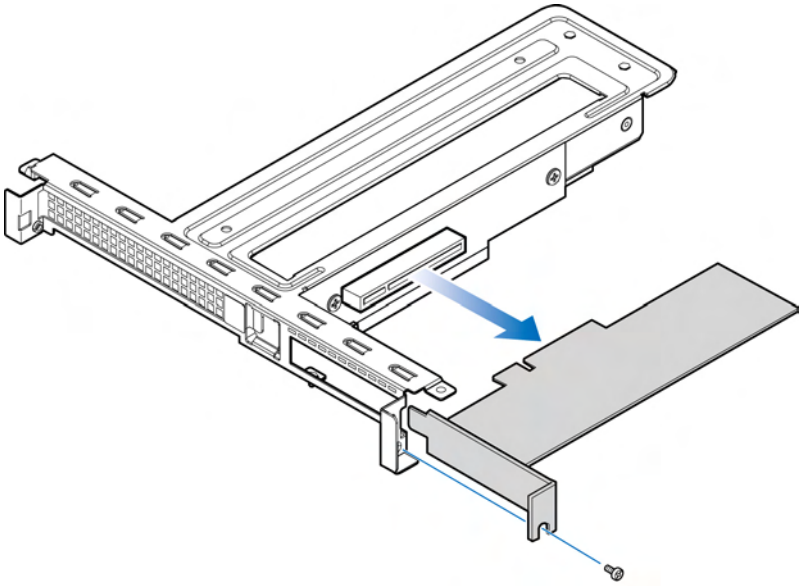


Figure 4-19: Remove a PCI card

Installing a PCI card

1. Reverse the removal procedure to install a replacing PCI card.

- Make sure the PCI card is inserted straightly into the PCI slot connector. When the PCI card is not in place, the PCI card may not operate properly.
- The external connectors on the PCI card have to be parallel to the bracket of the PCI slot. Adjust the position of the external connectors properly when you secure the PCI card with screw. When the gap between the external connector and bracket is not appropriate, cables cannot be connected.

- If a connector module is installed on the PCI card, remove the connector before installing the PCI card into the PCI slot.
  For information about the procedure for installing/removing the connector module, see the document of the PCI card.
- Make sure that the two SAS cables and the cache backup cable are not disconnected to the RAID card with cache backup module if any.

2. Install the top cover of the system unit.

   See Installing the top cover on page 3-10.

3. Reinstall the system unit to the rack cabinet.

   See Sliding the system unit into a rack cabinet on page 3-8.

5

Setup after maintenance

This chapter describes setup required after maintenance conducted due to a component failure of the system unit.

- ☐ Notice of maintenance by maintenance person
- ☐ Changing a network adapter's MAC address
- ☐ Restoring the Web console or Remote Console setting
- ☐ BIOS resetting
- ☐ Windows BitLocker recovery password

Notice of maintenance by maintenance person

Hitachi Data Systems basically provides the latest version of components, BIOS and firmware, when replacement is required for some components due to the system unit failure.

As required, unreplaced components or parts, BIOS or firmware might be updated to the latest version.

Changing a network adapter's MAC address

The MAC address individually owned by a network adapter will change when a LAN card, motherboard or LAN mezzanine is replaced.

In the following cases, the work for recognizing a new MAC address is required:

- If the peripheral equipment of a destination provides fixed MAC address management:

  To update the MAC address of the peripherals, restart the peripherals after replacing the motherboard or LAN component and turn on the system unit.

- If a user program or an application program manages a MAC address:

  If a user program or an application specifies management of MAC address values, update data to a new MAC address after replacing the motherboard or LAN component.

- If you use LAN extended functions:

  The LAN extended functions share one MAC address with two network adapters which are primary card and secondary card.
  Delete the setting of LAN extended functions before replacing the motherboard or LAN component. After replacing a component, set again the LAN extended functions.

  For details on how to use the LAN utility, see *Windows Server 2008 R2 LAN Extended Functions User's Guide*.

Restoring the Web console or Remote Console settings

The server management settings as the Web console and the Remote Console application will be lost when a motherboard is replaced.
For this reason, if either the Web console or the Remote Console application is used, restore the server management settings from the Web console.

The server management settings should be backed up and kept in advance in preparation for a failure.

For the backup and restoration of server management settings, see *Hitachi Compute Rack 210H/220H Remote Management User's Guide*.

Depending on the fault status, the BMC network settings of the management network interface might be returned to the factory defaults. In this case, reconfigure the BMC network.

BIOS resetting

System BIOS or RAID BIOS settings might be returned to the factory defaults when a motherboard or a RAID card is replaced.

In this case, reset the BIOS settings using the BIOS setup utility, such as "Setup menu" or "MegaRAID WebBIOS".
If you change the BIOS settings from the factory defaults, note down all the changed setting values after replacement in case of failure.

For system BIOS and RAID BIOS settings, see *Hitachi Compute Rack 210H/220H BIOS Guide*.

Similarly, BIOS settings of a PCI card might be returned to the factory defaults when replace a PCI card.

For the BIOS settings of an optional PCI card, see Optional PCI card instruction manual.

Windows BitLocker recovery password

If the Windows BitLocker Drive Encryption is in use, cancel drive encryption in advance when replacing a motherboard or a RAID card.

After replacing component, make a reconfiguration of drive encryption.

In case of a failure that causes the OS not to boot, it is impossible to cancel the encryption. In this case, make recovery by entering a "recovery password" after replacing the component.

- Windows BitLocker Drive Encryption is available when an optional TPM board (EQ7000-Y/EQ7000-R) is installed in the system unit.
- Strictly manage the recovery password. If the recovery password is lost, the OS will be unbootable or data will be inaccessible.

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MK-90CRH004-02