

# Hitachi Compute Rack 220S CRU Replacement Guide

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# Preface

This document describes replacement procedure of the CRU of the *Compute Rack 220S* (CR 220S).

This preface includes the following information:

- ☐ [Intended Audience](#)
- ☐ [Release Notes](#)
- ☐ [Referenced Documents](#)
- ☐ [Document Conventions](#)
- ☐ [Convention for storage capacity values](#)
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**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.

## 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.

## Referenced Documents

Compute Rack 220S (CR 220S) documents:

- Hitachi Compute Rack 220S Getting Started Guide, MK-90CRS001
- Hitachi Compute Rack 220S User's Guide, MK-90CRS002
- Hitachi Compute Rack 220S Windows Installation Guide, MK-90CRS005
- Hitachi Compute Rack 220S BIOS Guide, MK-90CRS000
- Hitachi Compute Rack 220S Remote Management User's Guide, MK-90CRS004
- 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
<b>Regular text bold</b>	In text: keyboard key, parameter name, property name, hardware labels, hardware button, hardware switch. In a procedure: user interface item
<i>Italic</i>	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, [ <u>a</u> ] 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](mailto: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.
<b>NOTICE</b>	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

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### 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.

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### 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.

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### 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.

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### **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.

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### **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.

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### **Removal of the cover or bracket**

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

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### **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.

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### **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.

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### **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.

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### **Improper battery type**

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

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### **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.

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## Precautions against damage to equipment

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.
-



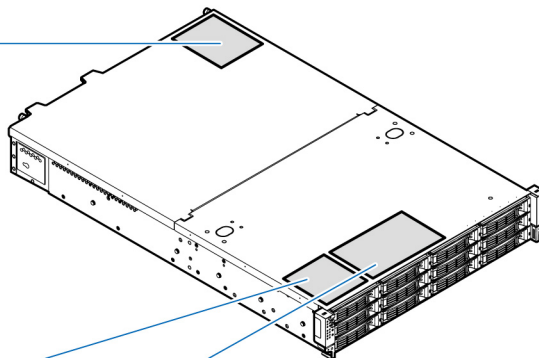
## **Rack Mount Safety Consideration**


- **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)."
-

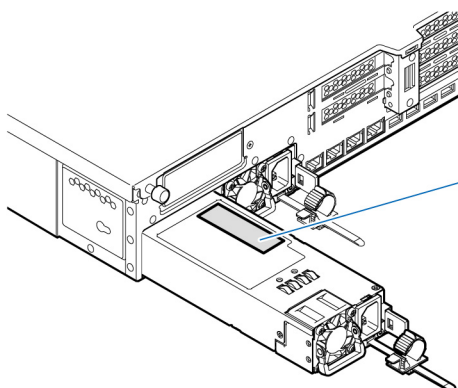
# Safety and warning labels

The location and content of the warning and safety labels on the CR 220S are shown here.

	<b>⚠ 警告</b> <b>感電注意</b> 本装置には複数の入力電源が供給されており、感電には十分注意する必要があります。感電の恐れがあります。システム設置の分解作業は、必ず電源供給のユーザズガイド又は保守マニュアルの指示に従い、慎重に行ってください。トップカバーをはずす前に全ての電源コードを抜くこと。	<b>⚠ WARNING</b> <b>Electric Shock</b> Power to the equipment is supplied by multiple power sources. To avoid risk of electric shock, do not disassemble the equipment. Servicing must be performed by qualified personnel only. Disconnect all power supply cords before servicing.
	<b>⚠ 경고</b> <b>감전 주의</b> 본 장비에는 복수의 입력전원이 공급되고 있습니다. 감전 위험을 방지하고 중의 위험을 방지합니다. 시스템 유지보수 작업 시에는 장비에 대한 안전을 항상 주의하십시오. 보수작업 전에 모든 전원 케이블을 장비에서 분리하십시오.	<b>⚠ AVERTISSEMENT</b> <b>Choc électrique</b> L'équipement est alimenté par de multiples sources. Ne pas démonter l'équipement pour éviter tout risque de choc électrique. Confier la réparation à un personnel qualifié. Débrancher toutes les sources d'alimentation électrique avant de procéder à la réparation.
	<b>⚠ 警告</b> <b>觸電危険</b> 本装置は複数の電源から電力を供給されています。感電の危険があります。感電の危険を避けるため、分解作業を行う前に電源供給のユーザズガイド又は保守マニュアルの指示に従って、すべての電源ケーブルを装置から取り外してください。	<b>⚠ AVISO</b> <b>Descarga eléctrica</b> La alimentación al equipo es suministrada por múltiples fuentes de energía. Para evitar riesgos de descarga eléctrica, no desmontar el equipo. Cualquier servicio debe ser realizado solo por personal cualificado. Desconectar todos los cables de alimentación antes de iniciar cualquier servicio.
	<b>⚠ 警告</b> <b>触电注意</b> 本装置は複数の電源から電力を供給されています。感電の危険があります。感電の危険を避けるため、分解作業を行う前に電源供給のユーザズガイド又は保守マニュアルの指示に従って、すべての電源ケーブルを装置から取り外してください。	<b>⚠ WARNING</b> <b>Stromschlag</b> Das Gerät wird durch mehrere Stromquellen mit Strom versorgt. Demontieren Sie das Gerät nicht; andernfalls besteht Stromschlaggefahr. Reparaturarbeiten dürfen ausschließlich von qualifiziertem Fachpersonal durchgeführt werden. Trennen Sie vor der Wartung alle Netzkabel.



	<b>⚠ 注意</b> <b>重負荷注意</b> 機内を過剰に重くおそれ、2人以上で作業してください。また、リフトを使用して作業してください。最大重量33kg	<b>⚠ CAUTION</b> <b>Heavy Load</b> Lifting this equipment may cause personal injuries. Chassis replacement must be performed by at least two people or by use of a lift. Weight: 33kg
	<b>⚠ 주의</b> <b>중량(무게)주의</b> 들어올리거나 하중부담을 두는 사람이 있어야 합니다. 2인 이상이 작업할 것. 또는 리프트를 사용하여 작업할 것. 최대중량 33kg	<b>⚠ ATTENTION</b> <b>Charge Lourde</b> Soulever cet équipement peut entraîner des blessures. Le remplacement du châssis doit être effectué par au moins deux personnes ou à l'aide d'un élévateur. Poids: 33kg
	<b>⚠ 小心</b> <b>重荷物品</b> 機内を過剰に重くおそれ、2人以上で作業してください。また、リフトを使用して作業してください。最大重量33kg	<b>⚠ PRECAUCIÓN</b> <b>Carga Pesada</b> Levantar este equipo puede causar heridas personales. La sustitución del chasis debe ser realizada por, al menos, dos personas o usar un elevador. Peso: 33kg
	<b>⚠ 注意</b> <b>重物注意</b> 機内を過剰に重くおそれ、2人以上で作業してください。また、リフトを使用して作業してください。最大重量33kg	<b>⚠ ACHTUNG</b> <b>Schwerlast</b> Das Anheben dieses Gerätes kann Verletzungen verursachen. Ein Standortwechsel des Gerätes muss von mindestens zwei Personen oder mit Hilfe einer Hebevorrichtung durchgeführt werden. Gewicht: 33 kg
	<b>⚠ 注意</b> <b>取り扱い注意</b> ラックキヤビネットを開封する際は、ラック上部の空きエリアに重荷物を置くと落下による怪我の恐れがあります。作業空間として使用しないでください。	<b>⚠ CAUTION</b> <b>Handle with care.</b> If you put something heavy on the free area on top of the system when installing the rack cabinet, you may be injured due to heavy things fall. Do not use a free area on top of the system as a working space.
	<b>⚠ 주의</b> <b>취급 주의</b> 랙 캐비닛을 열거나, 랙바상면의 빈공간에 무거운 물건을 두면 낙하하여 다칠 수 있습니다. 작업상면의 빈공간을 작업 공간 또는 작업공간으로 사용하지 않습니다.	<b>⚠ ATTENTION</b> <b>Manipuler avec soin.</b> Si vous placez quelque chose de lourd dans l'espace vide au-dessus du système lorsque vous installez le cabinet du rack, vous risquez d'être blessé par tout objet lourd qui tomberait. N'utilisez pas l'espace vide au-dessus du système comme une zone de travail.
	<b>⚠ 小心</b> <b>小心取扱</b> 在架機搬送時、若於系統上部的自由使用區放置重荷物，可能因重荷物掉落而造成受傷。請勿將系統上部的自由使用區當成作業區。	<b>⚠ PRECAUCIÓN</b> <b>Manipular con cuidado.</b> Si coloca un objeto pesado en el área libre situada sobre el sistema al instalar la carcasa del bastidor y el objeto se cae, podría sufrir una lesión. No use el área libre situada sobre el sistema como espacio de trabajo.
	<b>⚠ 注意</b> <b>謹慎操作</b> 安裝架機時，如果在系統頂部的空區域放置重荷物，可能會由于重荷物掉落而造成受傷。請勿將系統頂部的空區域用作工作空間。	<b>⚠ ACHTUNG</b> <b>Mit Vorsicht behandeln.</b> Wenn Sie bei Installation in einem Rack-Gehäuse etwas Schweres auf dem freien Bereich an der Oberseite des Systems platzieren, könnte dieses herunterfallen und zu Verletzungen führen. Verwenden Sie den freien Bereich an der Oberseite des Systems nicht als Arbeitsfläche.
	<b>⚠ 注意</b> <b>高温注意</b> 火傷の恐れがあります。部品交換/交換の際は、電源OFF後、約10分待ってから作業してください。	<b>⚠ CAUTION</b> <b>CAUTION - High Temperature</b> CAUTION hot, risk of serious burn injuries. Turn off the power and wait 10 or more minutes prior to opening cover.
	<b>⚠ 주의</b> <b>고온 주의</b> 화상 우려가 있음. 부품 교체/교환 시에는 전원 OFF 후, 약 10분 정도 기다린 후 작업할 것.	<b>⚠ ATTENTION</b> <b>ATTENTION - Prudence à haute température</b> ATTENTION - Risque de brûlures graves. Coupez l'alimentation et patientez pendant au moins 10 minutes avant d'ouvrir le capot.
	<b>⚠ 小心</b> <b>小心 - 高温</b> 高温に注意。火傷の恐れがあります。部品交換/交換の際は、電源OFF後、約10分待ってから作業してください。	<b>⚠ PRECAUCIÓN</b> <b>PRECAUCIÓN - Alta Temperatura</b> PRECAUCIÓN: caliente, riesgo de graves lesiones por quemaduras. Apague el equipo y espere al menos 10 minutos antes de abrir la cubierta.
	<b>⚠ 注意</b> <b>注意 - 高温</b> 高温に注意。火傷の恐れがあります。部品交換/交換の際は、電源OFF後、約10分待ってから作業してください。	<b>⚠ ACHTUNG</b> <b>ACHTUNG - Hohe Temperaturen</b> ACHTUNG heiß, Gefahr von schwerwiegenden Verbrennungen. Schalten Sie das Gerät aus und warten Sie mindestens 10 Minuten, bevor Sie die Abdeckung entfernen.



<b>⚠ 注意 CAUTION</b> 感電の危険あり、開くな。 Risk of electric shock. Do not open.
--



# 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.

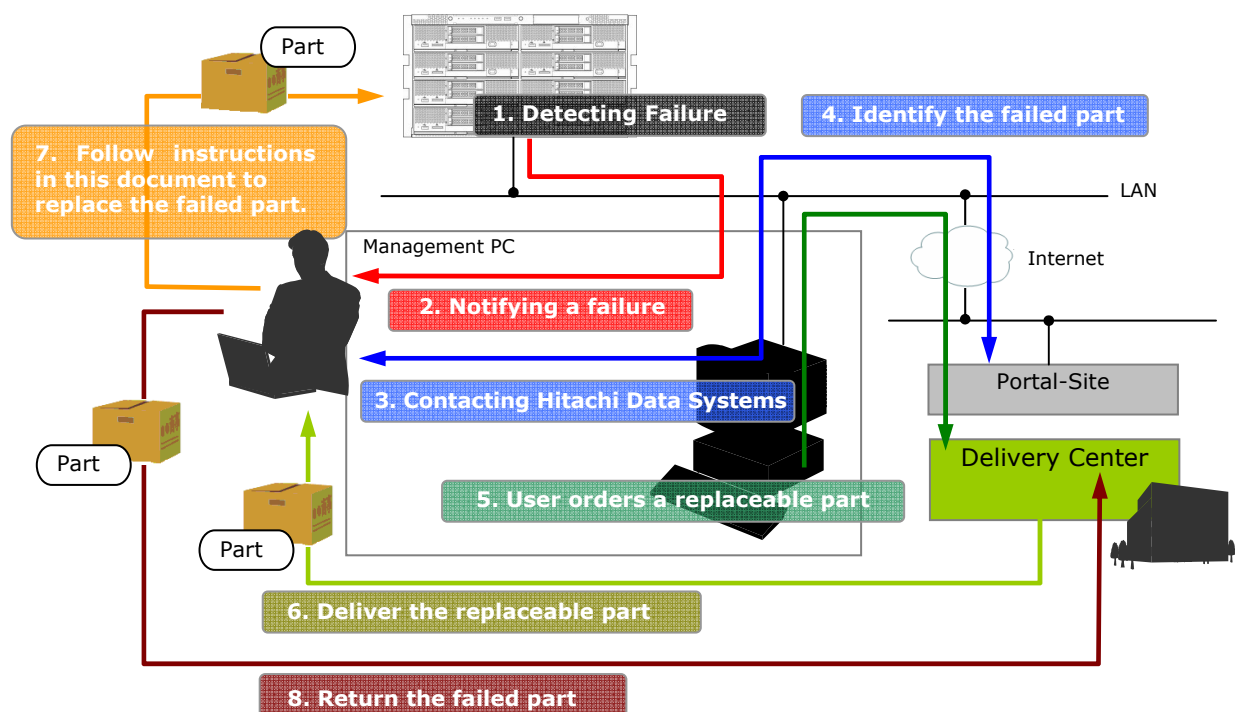
## User maintenance tasks

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

# LED overview

This section describes the indicator LEDs of the system unit.

## Front side

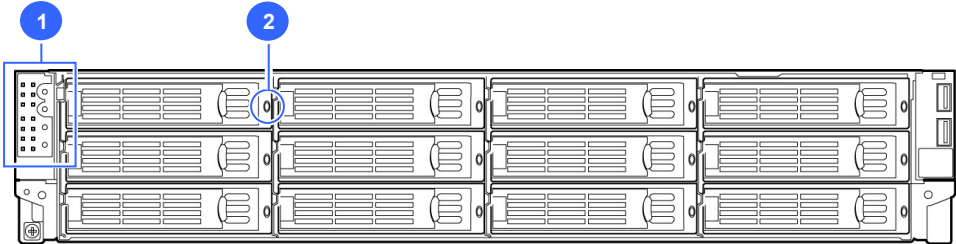
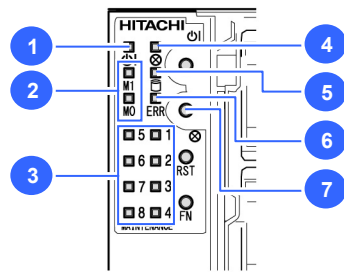


Figure 1-2: CR 220S front side Overview

Table 1-2: CR 220S front side indicators

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

## Operation panel



**Figure 1-3: CR 220S Operation panel overview**

**Table 1-3: Operation panel switches and indicators**

Location	Name	State	Description
1	POWER LED	Green-On	The POWER LED is turned on when the system unit is turned on by pressing the POWER switch.
2	MODE1 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.
	MODE0 LED	Green-On	
3	MAINTENANCE LEDs	Green-On	Indicating the operation status of the system unit.
4	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	ACCESS LED	Green-On	Accessing HDD/SSD.
6	ERROR LED	Amber-On	HDD errors, fan errors, power supply errors, or other hardware errors occur.
7	SERVICE switch	-	Press the SERVICE switch to turn on/off the SERVICE LED.

## 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

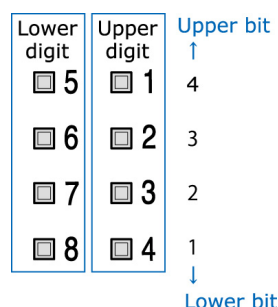
- POST code

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.



**Figure1-4:POSTcode indicate**



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



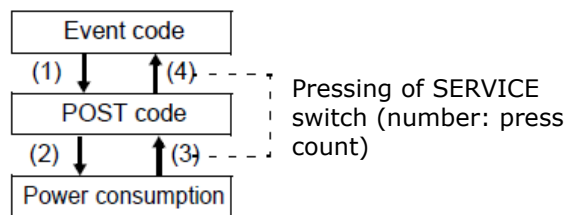
The indicated power consumption value is not accurate. Use this value as a just reference.

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## 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**



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.



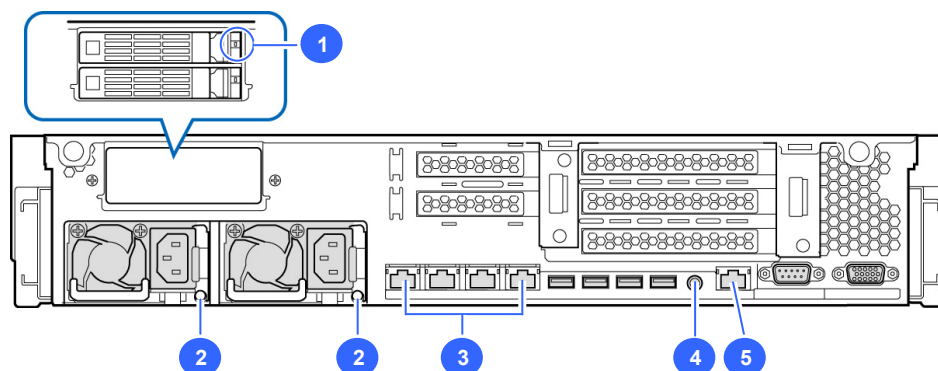
When an AC cable is connected and the system unit gets supplied with AC power, both SERVICE LEDs on the front side and on the rear side of the system unit blink for about 60 seconds. During this period, the MAINTENANCE LEDs are turned off.

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.

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## Rear side



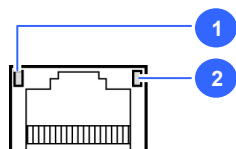
**Figure 1-6: CR 220S rear side overview**

**Table 1-7: CR 220S rear side indicators**

Location	Name	State	Description
1	HDD status LED (optional)	Green-On	Accessing HDD.
		Amber-On	Error occurred.
		Amber-Blink*	On-going data rebuild.
2	Power supply LED	Green-Blink	AC power is supplied / Stand-by state (AC cable is connected, POWER 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)
3	Network interface connectors 1-4	-	Connectors to connect LAN cables. Network interface connector numbers are 1 to 4 from right to left.
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	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 <i>Remote Management User's Guide</i> .
* The LED lights green while the HDD is being accessed for rebuilding.			

## Network interface connectors 1, 2, 3, 4

The status LEDs on the connector are explained as follows.



**Figure 1-7: Network interface connector status LED**

**Table 1-8: Network 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	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.

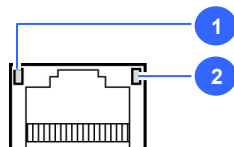
\* AC power is still supplied even if the power of the system unit is turned off, but this LED will be turned off because only link by 10BASE-T can be established.



- 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
  - Onboard LAN3: PCI bus 6, device 0, function 2
  - Onboard LAN4: PCI bus 6, device 0, function 3
- 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.



Do not directly connect between the management interface connector and a network interface connector 1 to 4 using a LAN cable. If you do, the system unit does not work properly.



- 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.



## Replaceable parts

This chapter describes the user replaceable parts of the CR 220S.

- ☐ [Overview](#)
- ☐ [Location](#)

## Overview

The following parts in the CR 220S are CRUs replaceable by user.

**Table 2-1: CRU overview**

No	Parts	Product name	Code	Specification
1	HDD/ SSD	HDD SATA2 500GB, 7200rpm, 3.5 inch	GQ-UH75006F-R	HDD SATA2 500 GB, 7200rpm, 3.5 inch
		HDD SATA2 1TB, 7200rpm, 3.5 inch	GQ-UH710006F-R	HDD SATA2 1 TB, 7200rpm, 3.5 inch
		HDD SATA2 2TB, 7200rpm, 3.5 inch	GQ-UH720006F-R	HDD SATA2 2 TB, 7200rpm, 3.5 inch
		HDD SATA2 3TB, 7200rpm, 3.5 inch	GQ-UH730006F-R	HDD SATA2 3 TB, 7200rpm, 3.5 inch
		HDD Nearline SAS 3TB, 7200rpm, 3.5 inch	GQ-UH7300NSM-R	HDD Nearline SAS 3TB, 7200rpm, 3.5 inch
		HDD Nearline SAS 4TB, 7200rpm, 3.5 inch	GQ-UH7400NSM-R	HDD Nearline SAS 4TB, 7200rpm, 3.5 inch
		HDD SAS 300GB, 10000rpm, 2.5 inch	GQ-UH7300UVHM-R	HDD SAS 300 GB, 10000rpm, 2.5 inch
		HDD SAS 450GB, 10000rpm, 2.5 inch	GQ-UH7450UVHM-R	HDD SAS 450 GB, 10000rpm, 2.5 inch
		HDD SAS 600GB, 10000rpm, 2.5 inch	GQ-UH7600UVHM-R	HDD SAS 600 GB, 10000rpm, 2.5 inch
		HDD SAS 900GB, 10000rpm, 2.5 inch	GQ-UH7900UVHM-R	HDD SAS 900 GB, 10000rpm, 2.5 inch
		SSD SATA 200GB, EMLC, 2.5 inch	GQ-UH7200XCM-R	SSD SATA 200GB, EMLC, 2.5 inch (Intel S3700)
2	Power supply	Power Supply 800W	GQ-BP2361-R	Power Supply 800 W, Redundant
3	FAN	FAN, System for CR 220S	GQ-X220HM0002-R	Fan, System for CR 220H, CR 220S
4	DIMM <sup>1</sup>	Memory 2GBx1, LV RDIMM	GQ-MJ702GL3-R	Memory, 2 GBx1, 1333 MHz DDR3 LV RDIMM
		Memory 4GBx1, LV RDIMM	GQ-MJ704GL3-R	Memory, 4 GBx1, 1333 MHz DDR3 LV RDIMM
		Memory 8GBx1, LV RDIMM	GQ-MJ708GL3-R	Memory, 8 GBx1, 1333 MHz DDR3 LV RDIMM
		Memory 16GBx1, LV RDIMM	GQ-MJ716GL3-R	Memory, 16 GBx1, 1333 MHz 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 8 Gbps, Dual Port (Full Height)
		HBA, Hitachi 8Gb Dual Port, Low Profile	GQ-CC7842-R	HBA, Hitachi 8 Gbps, Dual Port (Low Profile)
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7721-R <sup>2</sup>	LAN card, PCIe, 1000BASE-T, Dual Port Broadcom BCM5718
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7723-R <sup>2</sup>	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
<b>Notes:</b>				
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 220S, 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 4-6.



- 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 220S, the following CRUs are non hot-swappable:

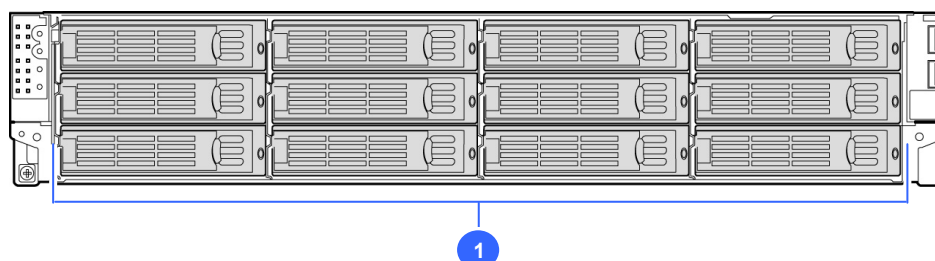
- Fan. See [Replacing a fan](#) on page 4-10.
- DIMM. See [Replacing a DIMM](#) on page 4-13.
- PCI card. See [Replacing a PCI card](#) on page 4-19.



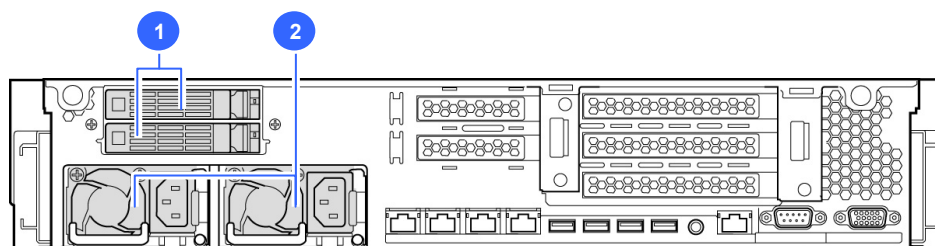
## Location

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

### Replaceable parts – front and rear



**Figure 2-1: CR 220S Replaceable parts – front**



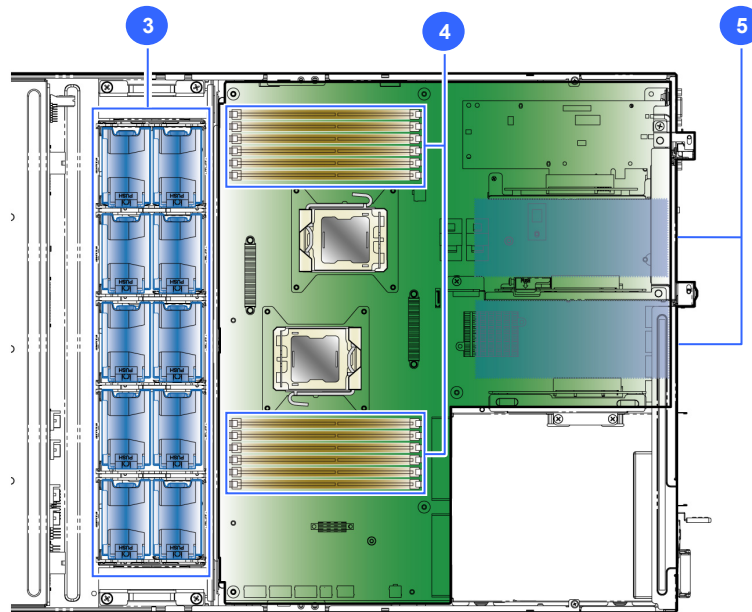
**Figure 2-2: CR 220S Replaceable parts – rear**

**Table 2-2: CR 220S Replaceable parts – front and rear**

Location	Parts	Product name	Code
1	HDD <sup>1</sup>	HDD SATA2 500GB, 7200rpm, 3.5 inch	GQ-UH75006F-R
		HDD SATA2 1TB, 7200rpm, 3.5 inch	GQ-UH710006F-R
		HDD SATA2 2TB, 7200rpm, 3.5 inch	GQ-UH720006F-R
		HDD SATA2 3TB, 7200rpm, 3.5 inch	GQ-UH730006F-R
		HDD Nearline SAS 3TB, 7200rpm, 3.5 inch	GQ-UH7300NSM-R
		HDD Nearline SAS 4TB, 7200rpm, 3.5 inch	GQ-UH7400NSM-R
	HDD <sup>1 2</sup>	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

Location	Parts	Product name	Code
1	SSD <sup>1 2</sup>	SSD SATA 200GB, EMLC, 2.5 inch	GQ-UH7200XCM-R
2	Power supply <sup>1</sup>	Power Supply 800W	GQ-BP2361-R
<b>Notes:</b> 1 Hot-swappable component. 2 When an optional Rear HDD kit (ES7623-Y/ES7623-R) is installed.			

## Replaceable parts – inside



**Figure 2-3: CR 220S Replaceable parts – inside**

**Table 2-3: CR 220S Replaceable parts – inside**

Location	Parts	Product name	Code
<b>3</b>	<b>Fan<sup>1</sup></b>	<b>FAN, System for CR 220H, CR 220S</b>	GQ-X220HM0002-R
<b>4</b>	<b>DIMM<sup>1 2</sup></b>	<b>Memory 2GBx1, LV RDIMM</b>	GQ-MJ702GL3-R
		<b>Memory 4GBx1, LV RDIMM</b>	GQ-MJ704GL3-R
		<b>Memory 8GBx1, LV RDIMM</b>	GQ-MJ708GL3-R
		<b>Memory 16GBx1, LV RDIMM</b>	GQ-MJ716GL3-R
		<b>Memory 2GBx1, 1600 RDIMM</b>	GQ-MJ7002H4-R
		<b>Memory 4GBx1, 1600 RDIMM</b>	GQ-MJ7004H4-R
		<b>Memory 8GBx1, 1600 RDIMM</b>	GQ-MJ7008H4-R
		<b>Memory 16GBx1, 1600 RDIMM</b>	GQ-MJ7016H4-R

Location	Parts	Product name	Code
5	PCI card <sup>1</sup>	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 <sup>3</sup>
		LAN Card, 1Gb Dual Port Broadcom	GQ-CN7723-R <sup>3</sup>
		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
<b>Note:</b>			
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.			

## Preparation

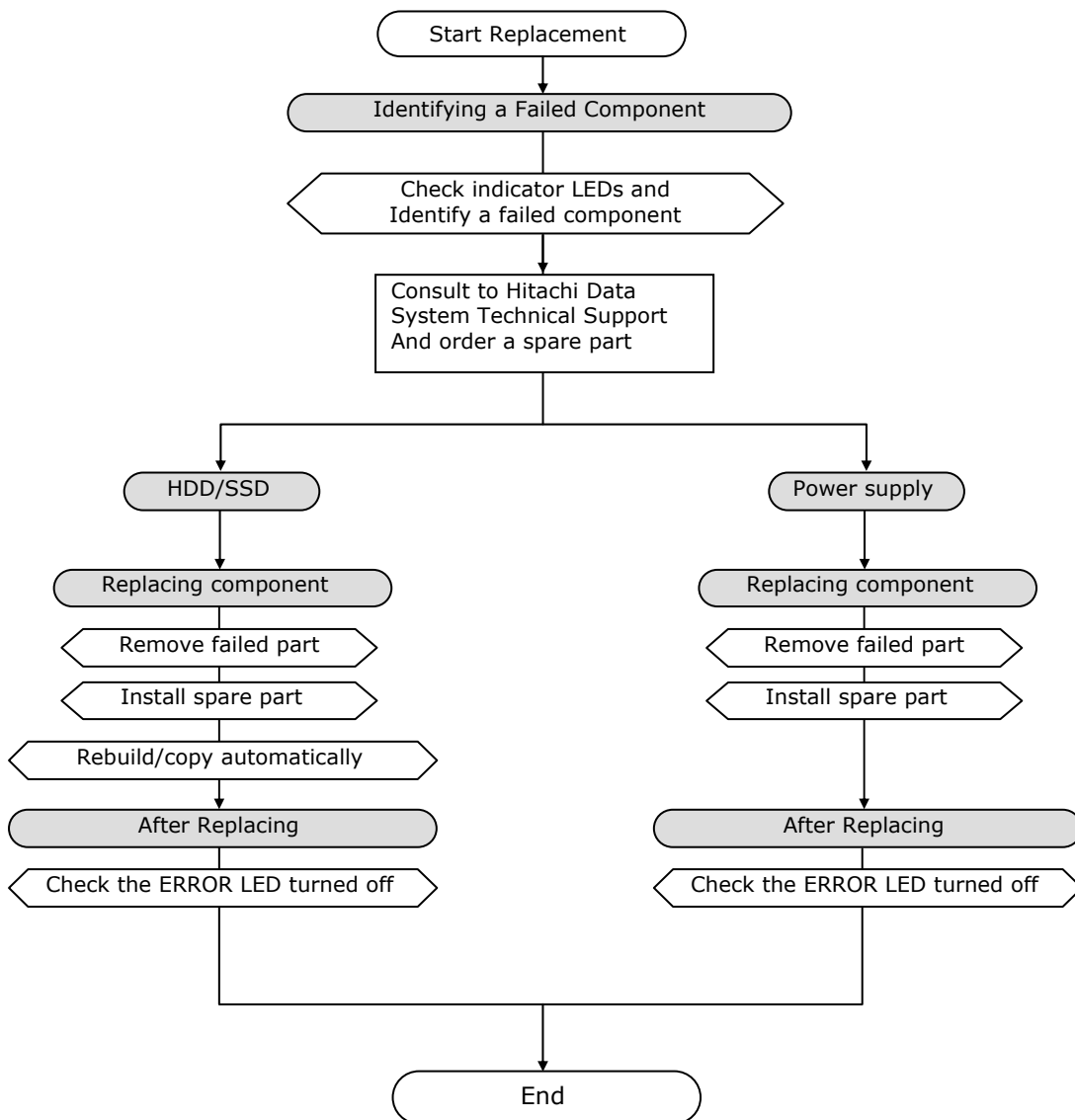
This chapter describes a preparation of replacing components of the system unit.

- ☐ [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

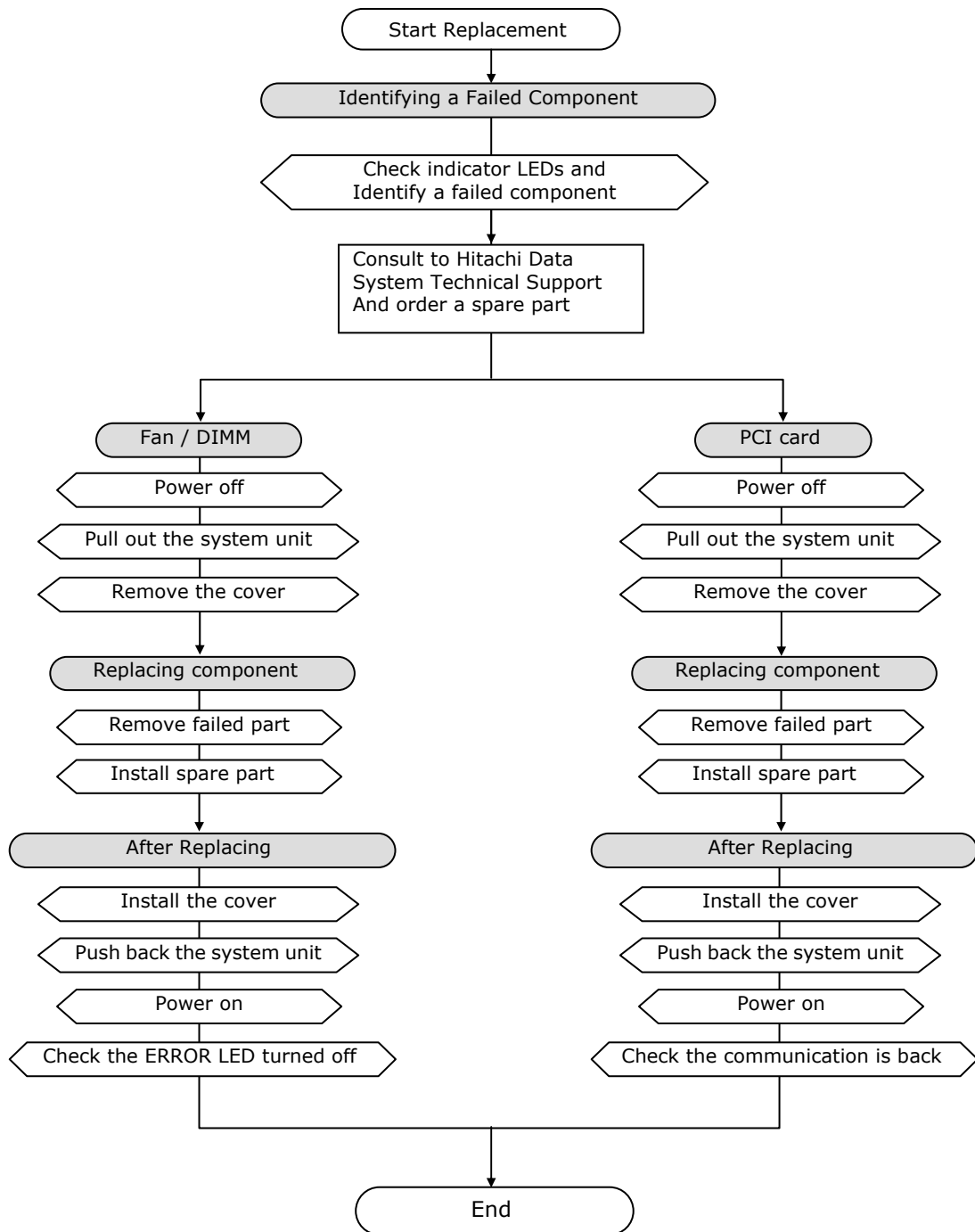
This section describes the replacement procedure of hot-swappable component and non hot-swappable component.

### 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**

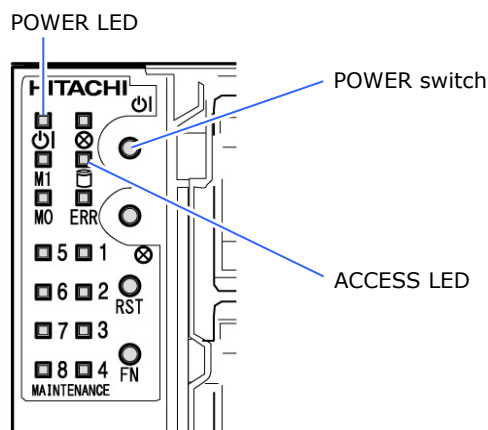
## Unpack a spare component

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**



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.



- 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 220S Getting Started Guide*.

2. Remove an optional front bezel (AU7706-Y/AU7706-R) if any.

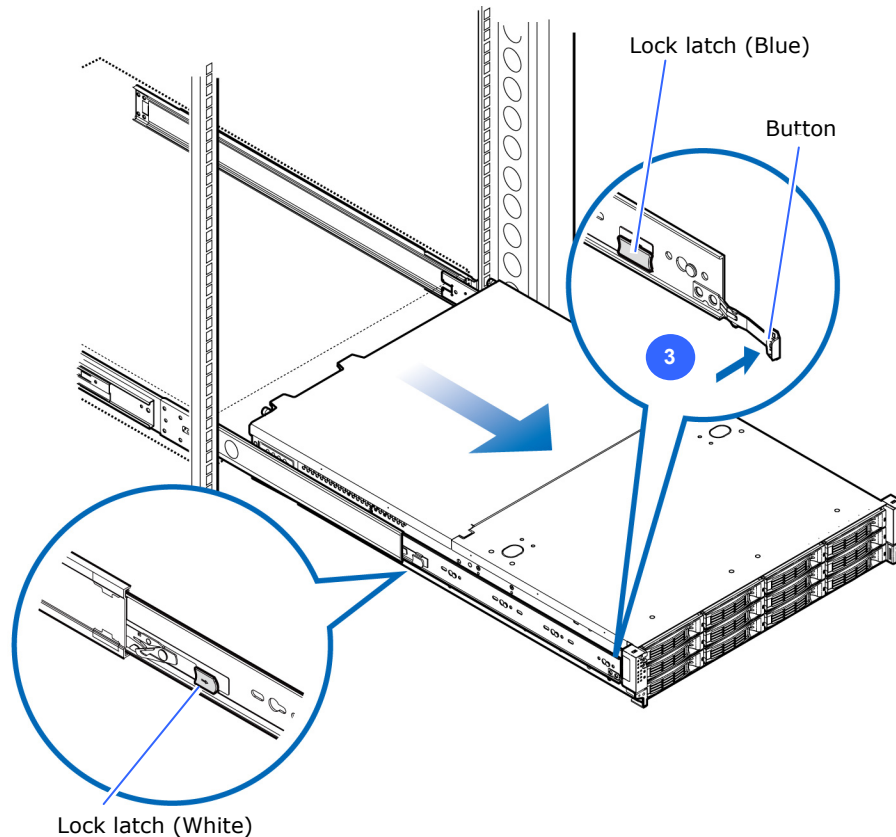
See *Hitachi Compute Rack 220S Getting Started Guide*.

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**

## 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](#).

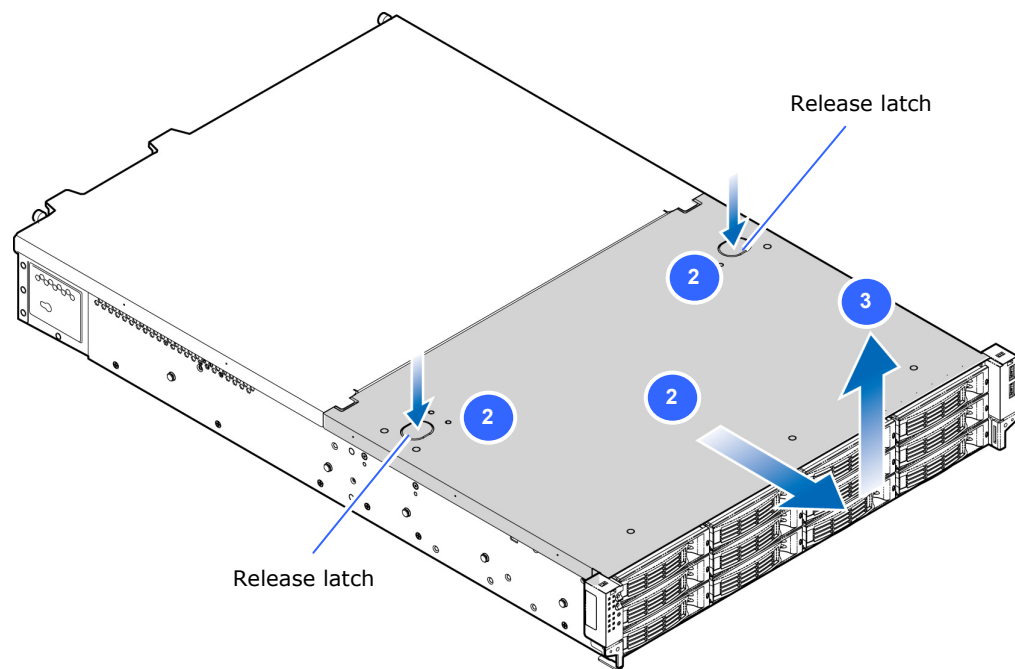
## Removing/Installing the cover

This section describes the procedure for removing and installing the cover of the system unit.

Do not open the cover unless **non hot-swappable** components need replacement.

### Removing the front 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. Press the two release latches and slide the front top cover toward the front of the system unit.
3. Lift up and remove the top cover from the system unit.



**Figure 3-5: Remove the front top cover**

## Removing the rear top cover

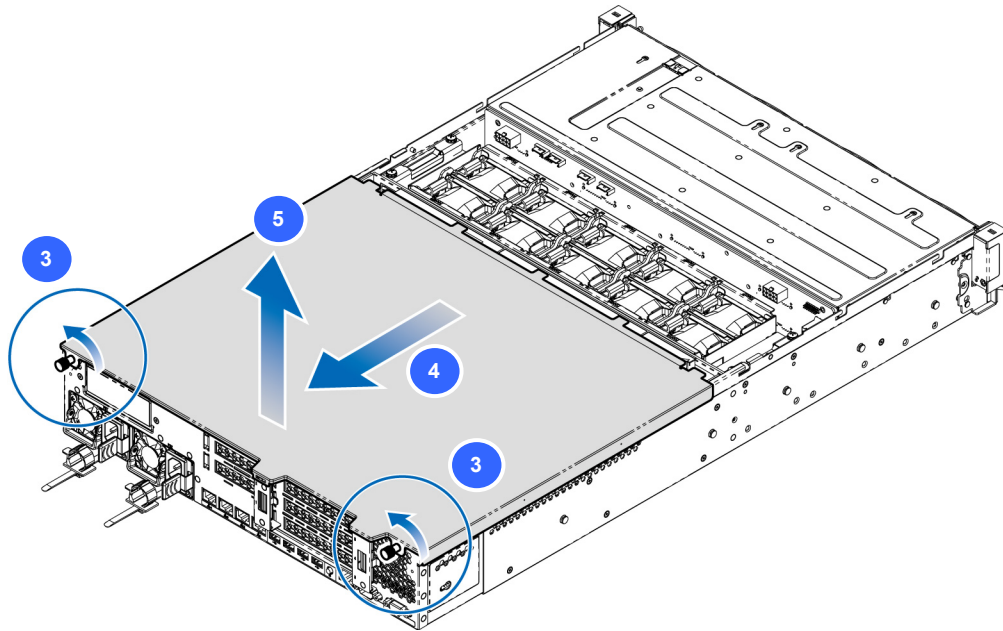
1. Slide out the system unit from the rack cabinet.  
See [Sliding out the system unit from a rack cabinet](#) on page 3-5.
2. Remove the front top cover.  
See [Removing the front top cover](#) on page 3-7.



Remove the front top cover before removing the rear top cover. Otherwise the front edge of the rear top cover is caught on the front top cover and may be deformed.

---

3. Loosen the two captive screws at the rear of the system unit.
4. Press and slide the rear top cover toward the rear of the system unit.
5. Lift up and remove the rear top cover from the system unit.



**Figure 3-6: Remove the rear top cover**

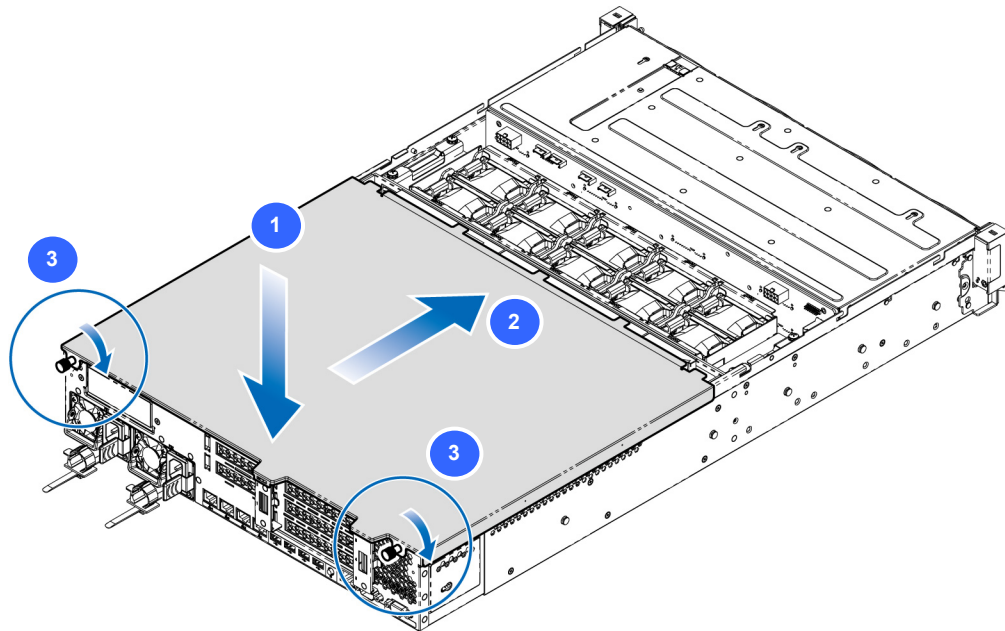
## Installing the rear top cover

---

**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 rear top cover side tabs with the guide slots on both sides of the chassis.
2. Close and slide the rear top cover toward the center of the system unit.
3. Tighten the two captive screws at the rear of the system unit.



**Figure 3-7: Install the rear top cover**

4. Reinstall the system unit to the rack cabinet.  
See [Sliding the system unit into a rack cabinet](#) on page 3-6.

## Installing the front 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.

---

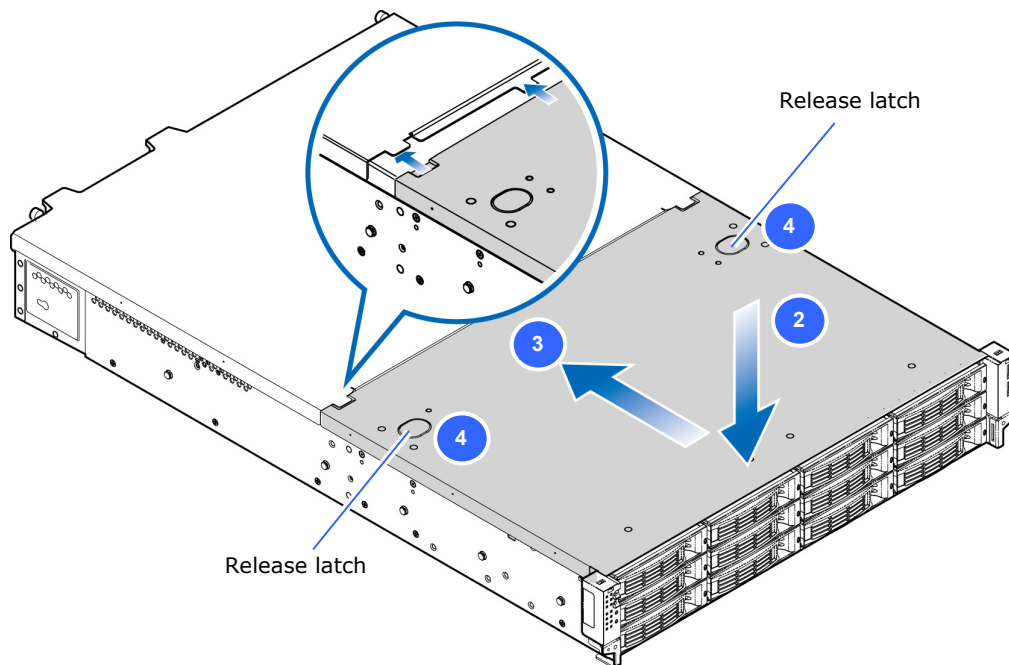
1. Installing the rear top cover.

See [Installing the rear top cover](#) on page 3-9.



Installing the rear top cover before installing the front top cover. Otherwise the front edge of the rear top cover is caught on the front top cover and may be deformed.

2. Align the hooks inside the front top cover side tabs with the guide slots on both sides of the chassis.
3. Close and slide the front top cover toward the center of the system unit.  
Make sure the rear edge of the front top cover is fully inserted in the rear top cover correctly.
4. Make sure that the front top cover is locked by the two release latches.



**Figure 3-8: Install the front top cover**

5. Reinstall the system unit to the rack cabinet.

See [Sliding the system unit into a rack cabinet](#) on page 3-6.

## 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](#)

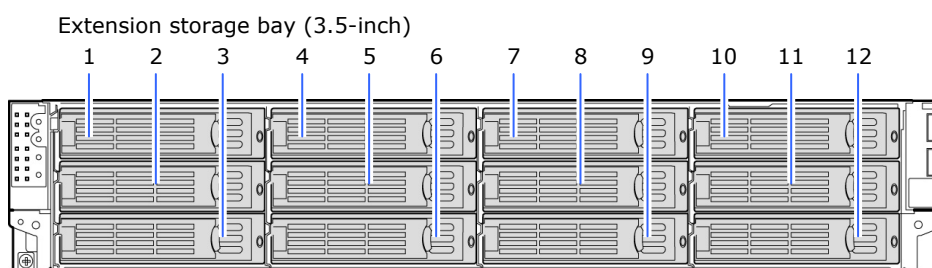
## Replacing an HDD/SSD

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

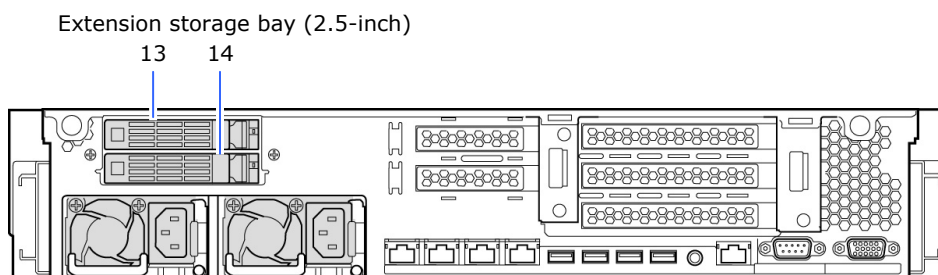
### Location of installing HDD/SSD

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

- Front side



- Rear side



**Figure 4-1: Location of extension storage bay**

The correspondence between the extension storage bay numbers and the bay configuration label on the side tab of the extension storage bays is as follows.

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

Extension storage bay		Bay configuration label	
1	8	0	7
2	9	1	8
3	10	2	9
4	11	3	10
5	12	4	11
6	13	5	12
7	14	6	13





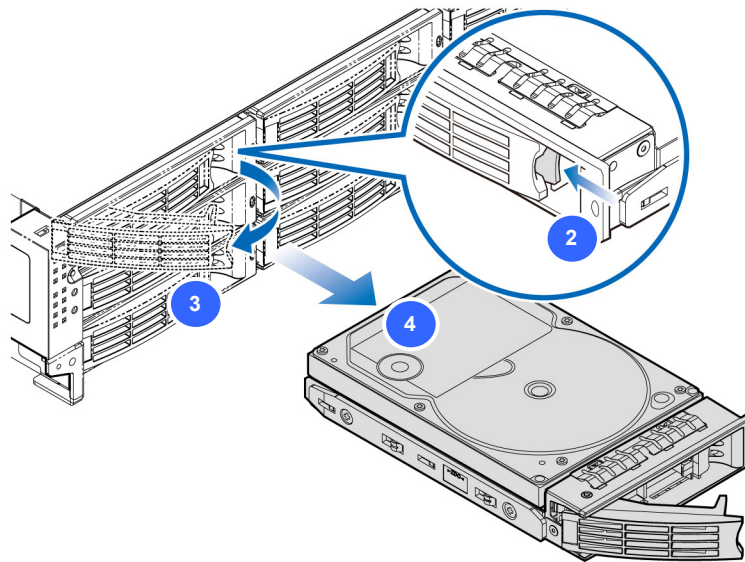
When replacing a failed HDD in hot-swap condition, you need the following conditions.

- 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.

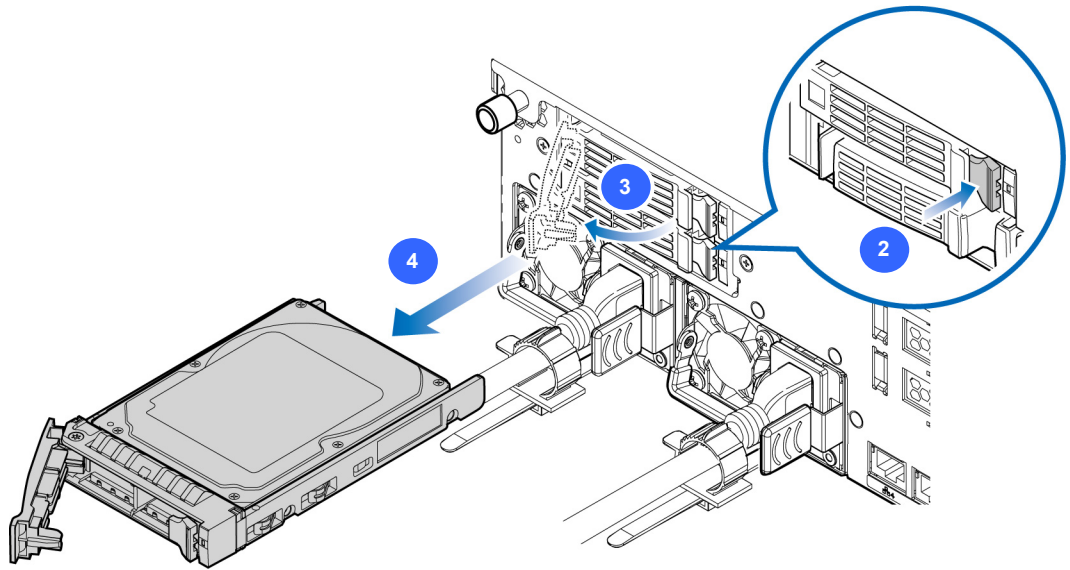
## Removing an HDD/SSD

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 (Front side)**



**Figure 4-3: Remove a failed HDD/SSD (Rear side)**

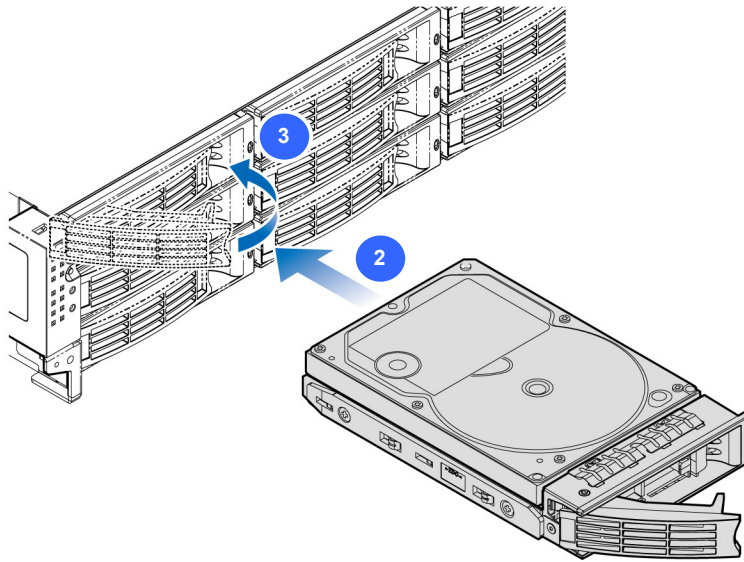
## Installing a HDD/SSD



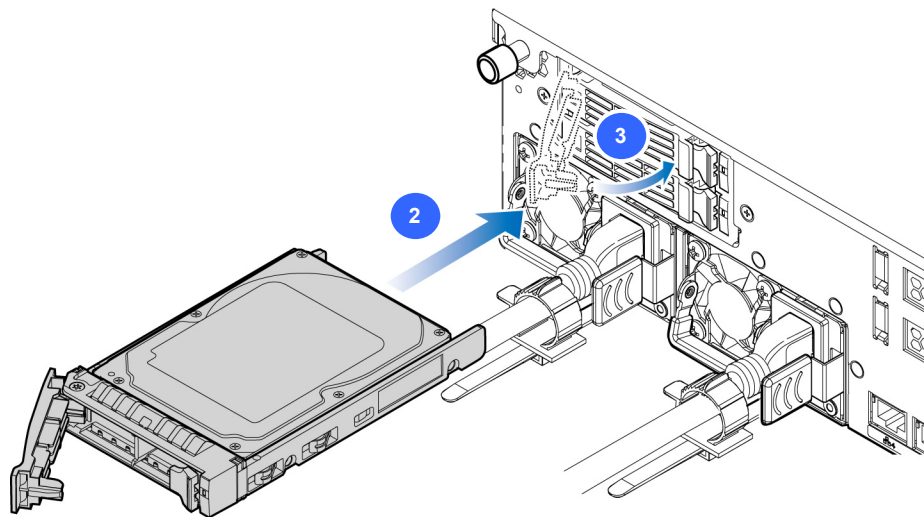
Install the same specification HDD/SSD with failed HDD/SSD. Otherwise, the HDD/SSD may not be rebuilt correctly or may incur abnormal operation.

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 4-4: Installing an HDD (Front side)**



**Figure 4-5: Installing an HDD/SSD (Rear side)**

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.



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

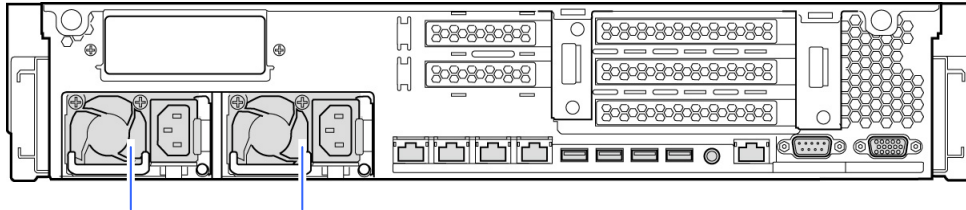
Do not turn off the power of the system unit during rebuilding data.

## 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.



Power supply slot 1 Power supply slot 2

**Figure 4-6: Location of power supply slot**

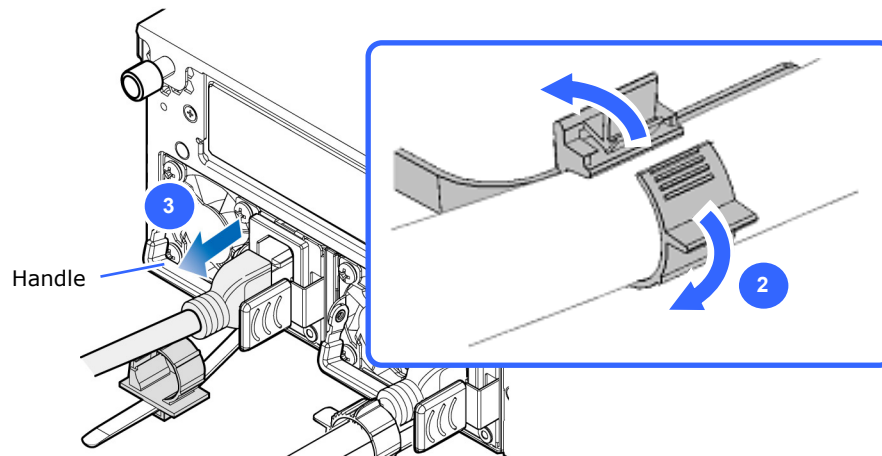


When replacing a power supply in hot-swap condition, confirm that another power supply is installed and active status.

### Removing a power supply

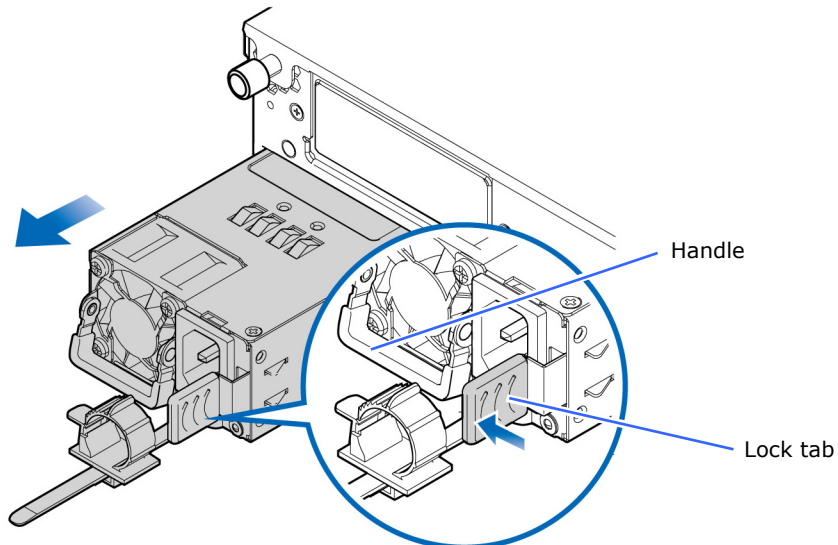
1. Confirm the failed power supply.  
The Power supply LED lights solid amber.
2. Open the cable clamp to release the AC cable.
3. Disconnect the AC cable from the failed power supply.

**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 4-7: Disconnect an AC cable**

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



**Figure 4-8: Remove a failed power supply**

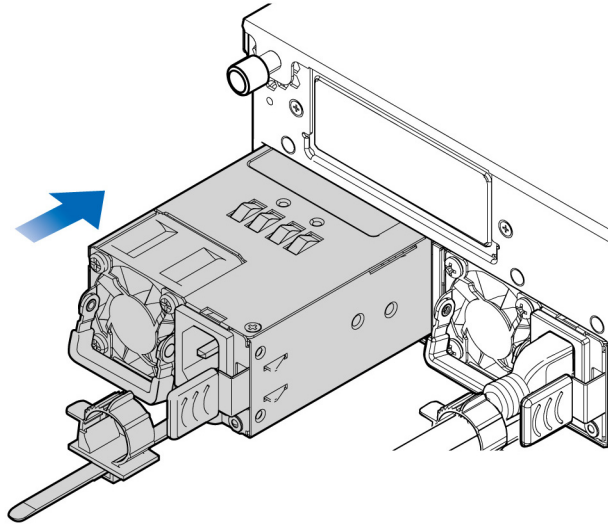
## Installing a power supply

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



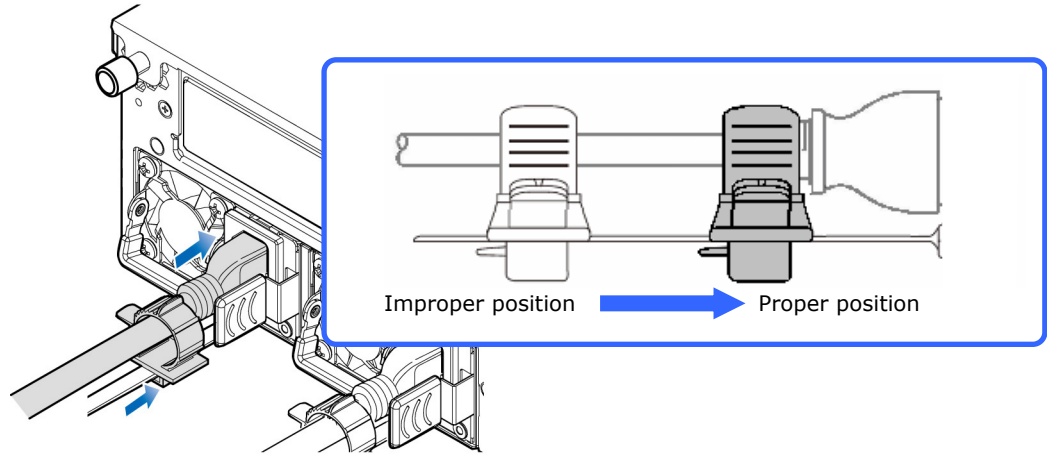
Make sure that there is no gap between the power supply and the system unit chassis. Any gap means that the power supply is not inserted in place. If you find any gap, remove the power supply and install it correctly.

---



**Figure 4-9: 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 4-10: Fixing AC cable using the cable clamp**

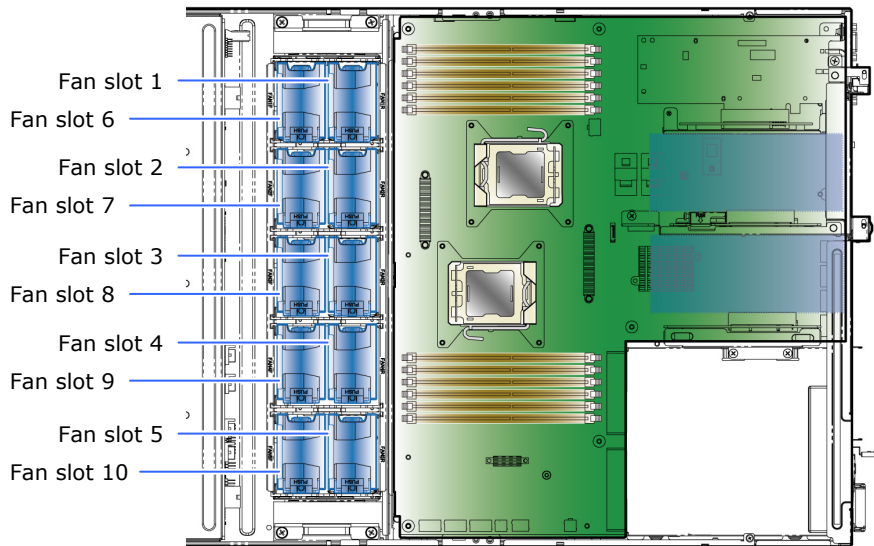
5. Make sure that the power supply LED of installed power supply lights solid green.

## Replacing a fan

This section describes the procedure for replacing a fan.

### Location of installing fan

Install a fan to fan slot. The locations of the fan slots are as follows.

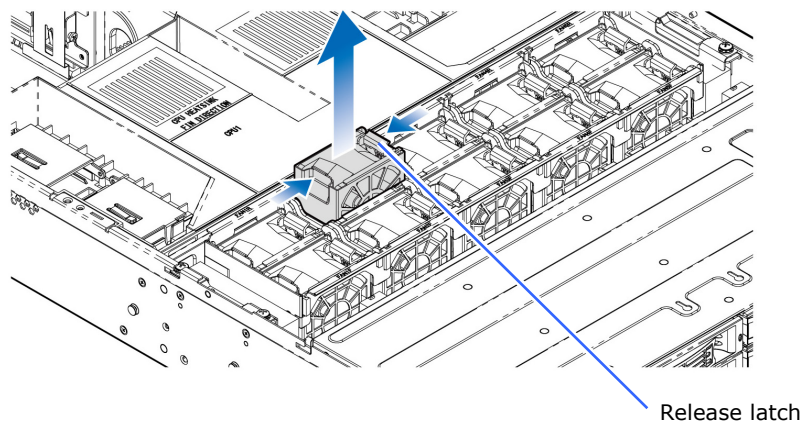


**Figure 4-11: Location of fan slot**



## 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 front top cover of the system unit.  
See [Removing the front top cover](#) on page 3-7.
4. Check which fan slot you need to remove the fan module from.
5. Grasp the fan, press the release latch of fan, and then lift it out of straight upward.



**Figure 4-12: Remove a fan**

## Installing a fan

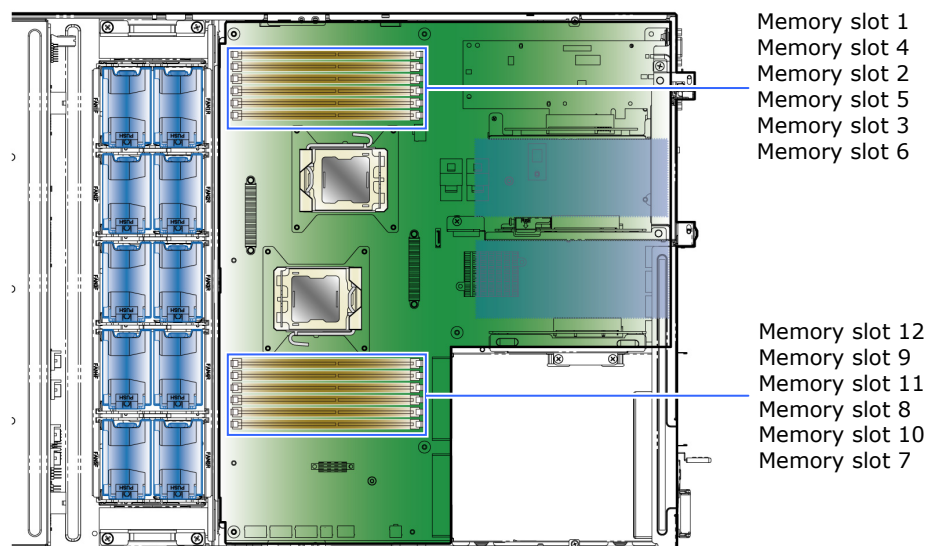
1. Orient the fan to the direction where the fan connector aligns with the connector on the system unit.
2. Insert the fan into the fan slot, and then push the fan until the release latch of fan is locked.
3. Install the front top cover of the system unit.  
See [Installing the front top cover](#) on page 3-10.
4. Reinstall the system unit to the rack cabinet.  
See [Sliding the system unit into a rack cabinet](#) on page 3-6.

# 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**

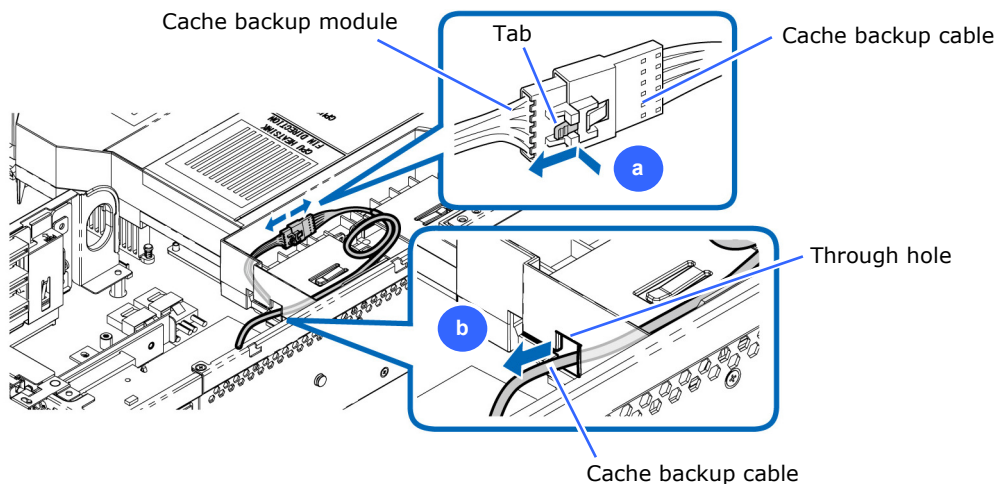
Each memory slot is indicated on the motherboard as follows.

**Table 4-2: Memory slot indicated on the motherboard**

Memory slot		indicator on the motherboard	
1	7	CPU1_DIMM1	CPU2_DIMM1
2	8	CPU1_DIMM2	CPU2_DIMM2
3	9	CPU1_DIMM3	CPU2_DIMM3
4	10	CPU1_DIMM4	CPU2_DIMM4
5	11	CPU1_DIMM5	CPU2_DIMM5
6	12	CPU1_DIMM6	CPU2_DIMM6

## 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 front top cover of the system unit.  
See [Removing the front top cover](#) on page 3-7.
4. Remove the rear top cover of the system unit.  
See [Removing the rear top cover](#) on page 3-8.
5. If the RAID card with cache backup module is installed, follow the steps below.
  - a. Push the tab of the cache backup module connector, and then remove the cache backup module from the cache backup cable.
  - b. Pull out the cache backup cable from the through hole of the air baffle.



**Figure 4-14: Remove the cache backup cable**

6. If the Rear HDD kit (ES7623-Y/ES7623-R) is installed, follow the steps below.
  - a. Pull out the cushion.
  - b. Remove the SAS cable and the LED flat cable from the HDD backplane.
  - c. Pull out the SAS cable and the LED flat cable from the through hole of the air baffle.

---

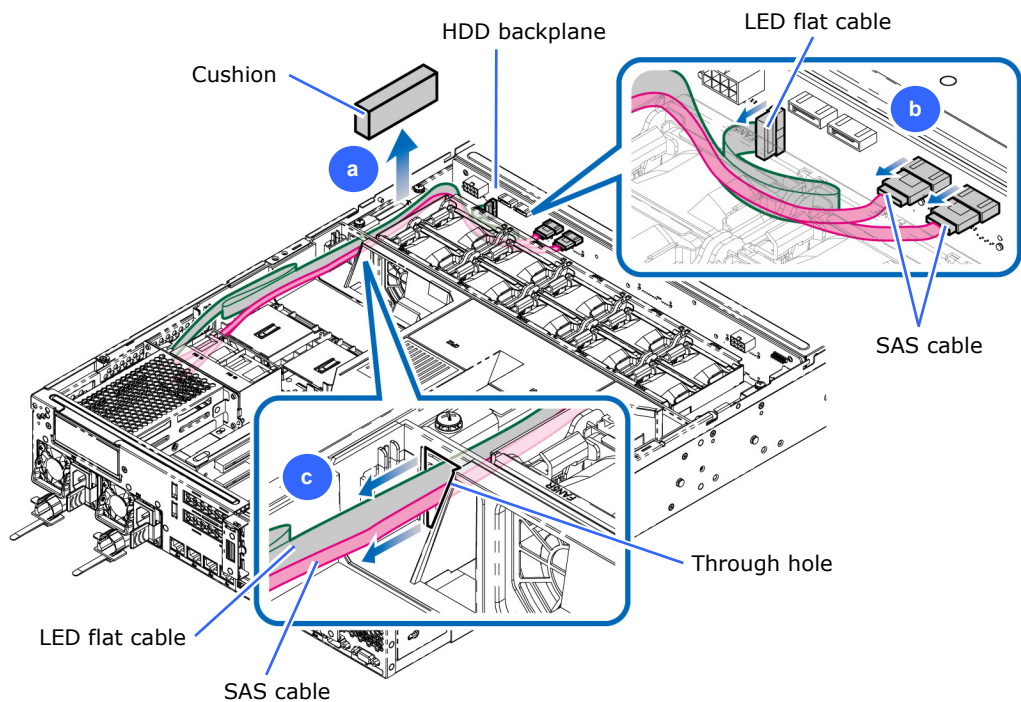
**NOTICE** Be careful not to tamper with the nearby parts when you remove the cables, since the working space is narrow.

---



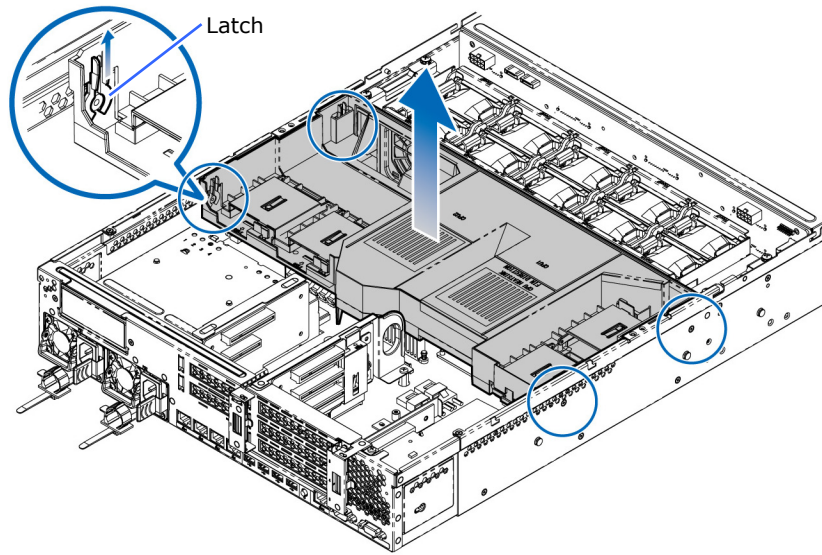
Do not throw away the cushion, because it is necessary to attach again it to the chassis.

---



**Figure 4-15: Remove the SAS cable and LED flat cable**

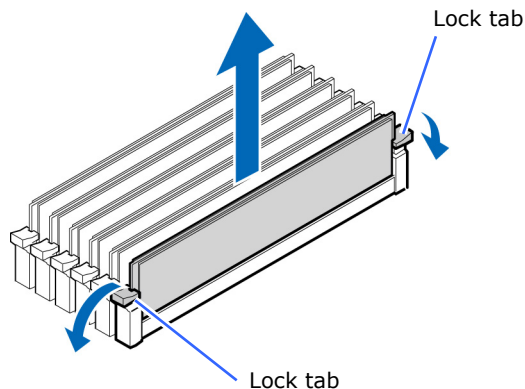
7. Pull up the four latches of the air baffle slightly.
8. Lift up and remove the air baffle.



**Figure 4-16: Remove the air baffle**

9. Check which memory slot you need to remove the DIMM from.
10. 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 4-17: 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.

---



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.

---

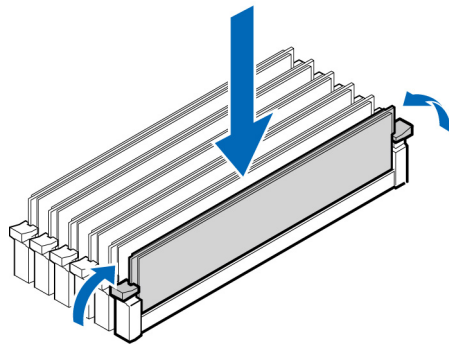
**NOTICE** Insert the DIMM vertically to the slot. Otherwise, it may cause damages to pins of the connector such as bent pins.

---



The shape of DIMM differs depending on the Product code.

---



**Figure 4-18: Install a DIMM**

4. Perform the reverse procedure of removal to install the air baffle.

---

**NOTICE**

- Make sure that cables do not get hung up on the side of the air baffle when the air baffle is installed. Otherwise, the cables may be damaged or disconnected.
  - Route the cables where that the cables do not touch heatsinks or fans. Otherwise, the cables may be damaged by heat of heatsinks or rotation of fans while in operation.
- 

5. Perform the reverse procedure of removal to connect the SAS cable and the LED flat cable from the Rear HDD kit (ES7623-Y/ES7623-R) to the HDD backplane if any.
- 



Make sure that the cushion is attached to the chassis.

---

6. Perform the reverse procedure of removal to connect the cache backup cable to RAID card with cache backup module if any.
- 



Make sure that the cache backup cable is routed and connected correctly to the cache backup module.

---

7. Install the rear top cover of the system unit.

See [Installing the rear top cover](#) on page 3-9.

8. Install the front top cover of the system unit.

See [Installing the front top cover](#) on page 3-10.

9. Reinstall the system unit to the rack cabinet.

See [Sliding the system unit into a rack cabinet](#) on page 3-6.

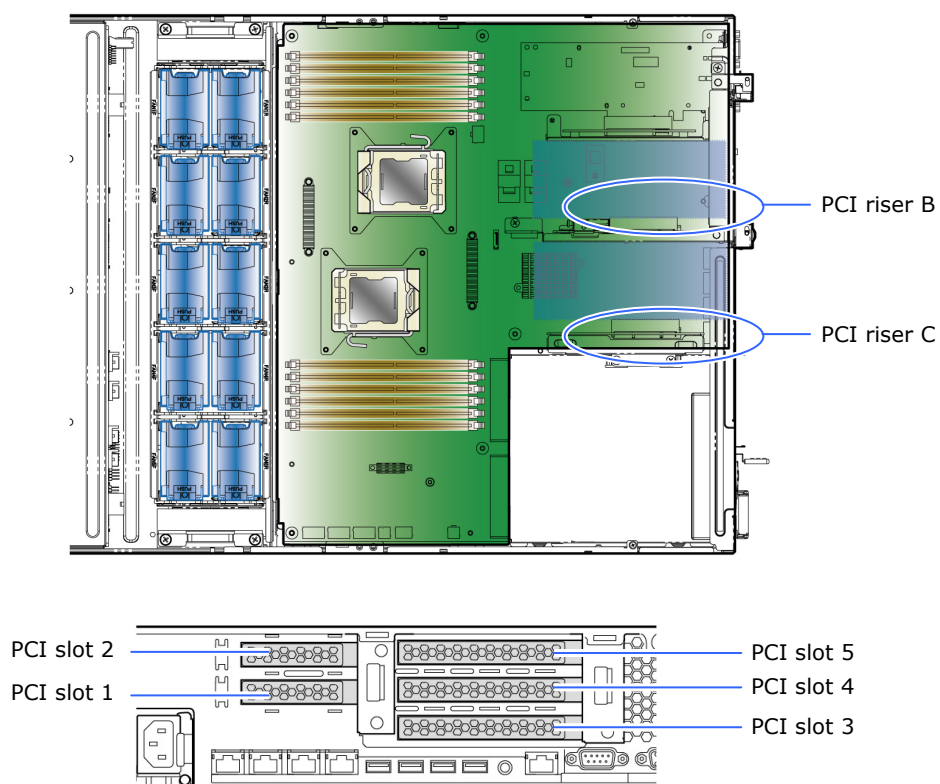


## Replacing a PCI card

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 4-19: Location of PCI slot**

The specification of each PCI slot is as follows.

**Table 4-3: PCI slot specification**

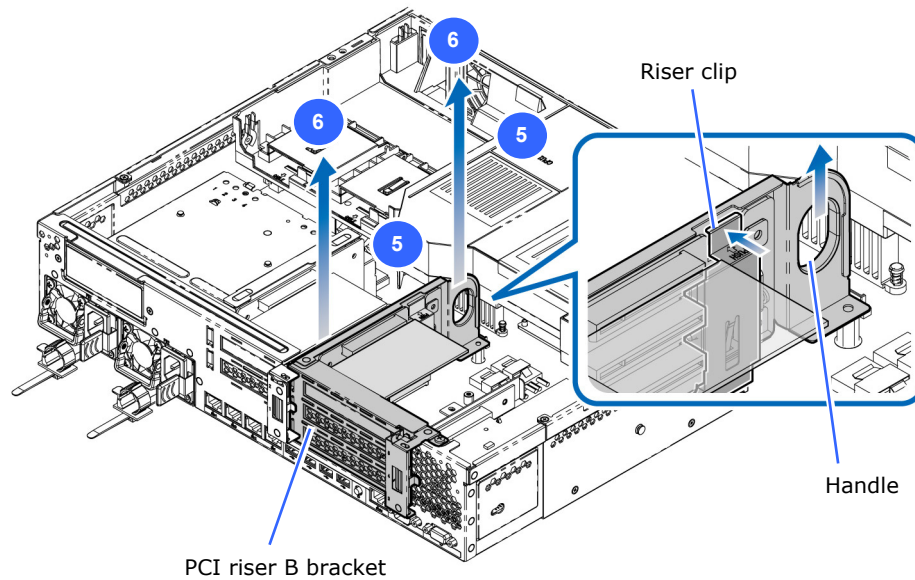
PCI slot	PCI type	I/O voltage	Slot form	Bus number	Device number	Bus scan order <sup>1</sup>	Support PCI card type		
1	PCI Express 2.0	3.3 V	4 lanes (x4) <sup>2</sup>	8	0	4	PCI Express x1, x2, x4 / lowprofile / MD2		
2			8 lanes (x8) <sup>3</sup>	9	0	5	PCI Express x1, x2, x4, x8 / lowprofile / MD2		
3	PCI Express 3.0			2	0	1	PCI Express x1, x2, x4, x8 / standard / half size <sup>4</sup>		
4				3	0	2			
5	8 lanes (x8)		4	0	3				

**Notes:**  
1 A PCI card which has a base class value "01h" is given priority to performing shadow.  
2 The shape of connector is x4 (4 lanes), but works as x1 (1 lane).  
3 The shape of connector is x8 (8 lanes), but works as x4 (4 lane).  
4 A PCI card with a length 197 mm or less can be installed even if the length is over half size (167.75 mm).

## Removing a PCI card

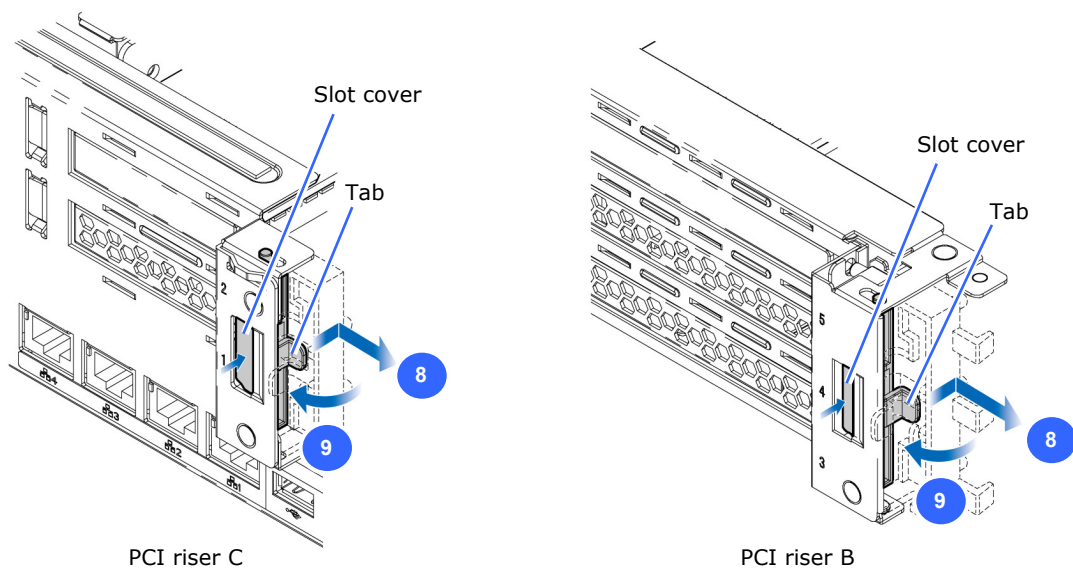
1. Turn off the power of the system unit and peripherals.  
See [Powering off system unit](#) on page 3-4.
2. Slide out the system unit from the rack cabinet.  
See [Sliding out the system unit from a rack cabinet](#) on page 3-5.
3. Remove the front top cover of the system unit.  
See [Removing the front top cover](#) on page 3-7.
4. Remove the rear top cover of the system unit.  
See [Removing the rear top cover](#) on page 3-8.

5. Grasp the handle of the PCI riser B bracket, and then pull the handle slightly while pinch the riser clip.
6. Pull out the PCI riser B bracket straight upward from the PCI riser slot B.



**Figure 4-20: Remove the PCI riser B bracket**

7. Check which PCI slot you need to remove the PCI card from.
8. Pinch the tab of the slot cover, and then slide the slot cover while pulling the tab toward the PCI connectors.
9. Open the slot cover.

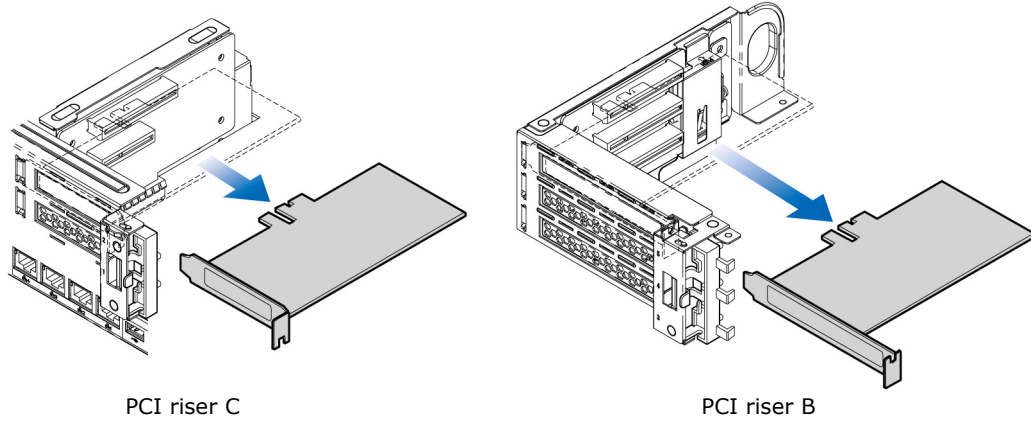


**Figure 4-21: Open the slot cover**



A dummy cover is installed in the slot which a PCI card is not installed in. Be careful not to fall a dummy cover because it is easy to remove.

10. Pull out the PCI card from the PCI riser.



**Figure 4-22: Remove a PCI card**

## Installing a PCI card

1. Perform reverse procedure of the removal 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 the slot cover.  
When the gap between the external connector and bracket is not appropriate, cables cannot be connected.
- Make sure the PCI riser B is inserted straightly into the PCI riser slot connector B. When the PCI riser is not in place, the PCI card may not operate properly.



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.

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2. Install the rear top cover of the system unit.  
See [Installing the rear top cover](#) on page 3-9.
3. Install the front top cover of the system unit.  
See [Installing the front top cover](#) on page 3-10.
4. Reinstall the system unit to the rack cabinet.  
See [Sliding the system unit into a rack cabinet](#) on page 3-6.



## 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 or motherboard 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 220S 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.

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## 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 220S 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.

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## 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 (EQ7001-Y/EQ7001-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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## **Hitachi Data Systems**

### **Corporate Headquarters**

2845 Lafayette Street  
Santa Clara, California 95050-2639  
U.S.A.  
[www.hds.com](http://www.hds.com)

### **Regional Contact Information**

#### **Americas**

+1 408 970 1000  
[info@hds.com](mailto:info@hds.com)

#### **Europe, Middle East, and Africa**

+44 (0) 1753 618000  
[info.emea@hds.com](mailto:info.emea@hds.com)

#### **Asia Pacific**

+852 3189 7900  
[hds.marketing.apac@hds.com](mailto:hds.marketing.apac@hds.com)

