

NEC Express Server
Express5800 Series

Express5800/R110g-1E EXP283A/EXP284A User's Guide

Model Number: N8100-2180F/2181F/2182F/2183F

Chapter 1 General Description

Chapter 2 Preparations

Chapter 3 Setup

Chapter 4 Appendix

Documents for This Product

Documents for this product are provided as booklets (📖) or as electronic manuals (📄) in the EXPRESSBUILDER disc (📀).



Precautions for Use

Describes points of caution to ensure the safe use of this server.
Read these cautions before using this server.



Getting Started

Describes how to use this server, from unpacking to operations.
See this guide at first and confirm an outline of this product.



EXPRESSBUILDER



User's Guide

| | |
|--------------------------------|---|
| Chapter 1: General Description | Overviews, names, and functions of the server's parts |
| Chapter 2: Preparations | Installation of additional options, connection of peripheral devices, and proper location for this server |
| Chapter 3: Setup | System BIOS configurations and summary of EXPRESSBUILDER |
| Chapter 4: Appendix | Specifications and other information |



Installation Guide (Windows)

| | |
|--|--|
| Chapter 1: Installing Windows | Installation of Windows and drivers, and important information for installation |
| Chapter 2: Installing the Bundled Software | Installation of bundled software, such as NEC ESM PRO and Universal RAID Utility |



Maintenance Guide


| | |
|----------------------------|---|
| Chapter 1: Maintenance | Server maintenance and troubleshooting |
| Chapter 2: Useful Features | The details of system BIOS settings, RAID Configuration Utility, and EXPRESSBUILDER |
| Chapter 3: Appendix | Error messages and Windows Event Logs |








Other documents

Provides the details of NEC ESM PRO, Universal RAID Utility, and the other features.

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Notations Used in This Document

Notations used in the text

In addition to safety-related symbols urging caution, three other types of notations are used in this document. These notations have the following meanings.

| | |
|------------------|---|
| Important | Indicates critical items that must be followed when handling the server or operating software. If the procedures described are not followed, <u>server failure, data loss, and other serious malfunctions could occur.</u> |
| Note | Indicates items that must be confirmed when handling the server or operating software. |
| Tips | Indicates information that is helpful to keep in mind when using this server. |

Optical disk drive

This server is equipped with one of the following drives, depending on the purchase order. These drives are referred to as *optical disk drives* in this document.

- DVD-ROM drive
- DVD Super MULTI drive

Hard disk drive

Unless otherwise stated, *hard disk drive* described in this document refers to the following.

- Hard disk drive (HDD)
- Solid state drive (SSD)

Removable media

Unless otherwise stated, *removable media* described in this document refers to the following.

- USB flash drive
- Flash FDD

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

See Chapter 1 (1.2 Supported Windows OS) in *Installation Guide (Windows)* for detailed information.

| Notations in this document | Official names of Windows |
|----------------------------|-----------------------------------|
| Windows Server 2012 R2 | Windows Server 2012 R2 Standard |
| | Windows Server 2012 R2 Datacenter |
| Windows Server 2012 | Windows Server 2012 Standard |
| | Windows Server 2012 Datacenter |
| Windows Server 2008 R2 | Windows Server 2008 R2 Standard |
| | Windows Server 2008 R2 Enterprise |
| Windows Server 2008 * | Windows Server 2008 Standard |
| | Windows Server 2008 Enterprise |

* Windows Server 2008 is 32-bit(x86) only in this manual.

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Regulatory Notices

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Class A Emission Compliance Statement/ Avis de conformité à la réglementation d'Industrie Canada:

CAN ICES-3(A)/NMB-3(A)

CE / Australia and New Zealand Statement


This is a Class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures (EN55022).

BSMI Statement

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Disposing of your used product

| | |
|---|---|
|  | <p>In the European Union EU-wide legislation as implemented in each Member State requires that used electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes Information and Communication Technology (ICT) equipment or electrical accessories, such as cables or DVDs. When disposing of used products, you should comply with applicable legislation or agreements you may have. The mark on the electrical and electronic products only applies to the current European Union Member States.</p> <p>Outside the European Union If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority and ask for the correct method of disposal.</p> |
|---|---|

Turkish RoHS information relevant for Turkish market

EEE Yönetmeliğine Uygundur

CCC声明

声明

此为 A 级产品, 在生活环境中, 该产品可能会造成无线电干扰。在这种情况下, 可能需要用户对其干扰采取切实可行的措施。

| 部件名称 | 有毒有害物质或元素 | | | | | |
|-------------|-----------|-----------|-----------|-----------------|---------------|-----------------|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 印刷线路板 | × | ○ | ○ | ○ | ○ | ○ |
| HDD、DVD等 | × | ○ | ○ | ○ | ○ | ○ |
| 机箱、支架 | ○ | ○ | ○ | ○ | ○ | ○ |
| 电源 | × | ○ | ○ | ○ | ○ | ○ |
| 键盘 | × | ○ | ○ | ○ | ○ | ○ |
| 其他 (电缆、鼠标等) | × | ○ | ○ | ○ | ○ | ○ |

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。
 ×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。

Vietnam RoHS information relevant for Vietnam market

Complying with "CIRCULAR, No.30/2011/TT-BCT (Hanoi, August 10 2011), Temporary regulations on content limit for certain hazardous substances in electrical products"



廢電池請回收

警告:

如果更換錯誤池會產生爆炸請以相同或同型電池更換使用

Declaration of Conformity

with the requirements of Technical Regulation on the Restriction Of the use of certain Hazardous Substances in Electrical and Electronic Equipment
(adopted by Order №1057 of Cabinet of Ministers of Ukraine)

The Product is in conformity with the requirements of Technical Regulation on the Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment (TR on RoHS).

The content of hazardous substance with the exemption of the applications listed in the Annex №2 of TR on RoHS:

1. Lead (Pb) – not over 0,1wt % or 1000wt ppm;
2. Cadmium (Cd) – not over 0,01wt % or 100wt ppm;
3. Mercury (Hg) – not over 0,1wt % or 1000wt ppm;
4. Hexavalent chromium (Cr6+) – not over 0,1wt % or 1000wt ppm;
5. Polybrominated biphenyls (PBBs) – not over 0,1wt % or 1000wt ppm;
6. Polybrominated diphenyl ethers (PBDEs) – not over 0,1wt % or 1000wt ppm.

Декларація про Відповідність
Вимогам Технічного Регламенту Обмеження Використання деяких Небезпечних Речовин в
електричному та електронному обладнанні
(затвердженого Постановою №1057 Кабінету Міністрів України)

Виріб відповідає вимогам Технічного Регламенту Обмеження Використання деяких Небезпечних Речовин в електричному та електронному обладнанні (ТР ОВНР).

Вміст небезпечних речовин у випадках, не обумовлених в Додатку №2 ТР ОВНР, :

1. свинець (Pb) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
2. кадмій (Cd) – не перевищує 0,01 % ваги речовини або в концентрації до 100 частин на мільйон;
3. ртуть (Hg) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
4. шестивалентний хром (Cr6+) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
5. полібромбіфеноли (PBB) – не перевищує 0,1% ваги речовини або в концентрації до 1000 частин на мільйон;
6. полібромдефенілові ефіри (PBDE) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон.

Декларация о Соответствии
Требованиям Технического Регламента об Ограничении Использования некоторых Вредных
Веществ в электрическом и электронном оборудовании
(утверждённого Постановлением №1057 Кабинета Министров Украины)

Изделие соответствует требованиям Технического Регламента об Ограничении Использования некоторых Вредных Веществ в электрическом и электронном оборудовании (ТР ОИВВ).

Содержание вредных веществ в случаях, не предусмотренных Дополнением №2 ТР ОИВВ:

1. свинец (Pb) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
2. кадмий (Cd) – не превышает 0,01 % веса вещества или в концентрации до 100 миллионных частей;
3. ртуть (Hg) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
4. шестивалентный хром (Cr6+) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
5. полибромбифенолы (PBB) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
6. полибромдифеноловые эфиры (PBDE) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей.

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| |
|--|
| Keep this document for future reference. |
|--|

Latest editions

This document was created based on the information available at the time of its creation. The screen images, messages and procedures are subject to change without notice. Substitute as appropriate when content has been modified.

The most recent version of the guide, as well as other related documents, is also available for download from the following website.

<http://www.nec.com/>



Precautions for Use (Be Sure to Read)

The following provides information required to use your server safely and properly. For details of names in this section, see *Names and Functions of Parts* in this document.

Safety precautions

Follow the instructions in this document for the safe use of the NEC Express server.

This guide describes hazardous parts of the server, possible hazards, and how to avoid them. Server components with possible danger are indicated with a warning label placed on or around them.

WARNING or **CAUTION** is used to indicate a danger in this guide or on warning labels. Each term is defined as follows:









Indicates there is a risk of death or serious personal injury

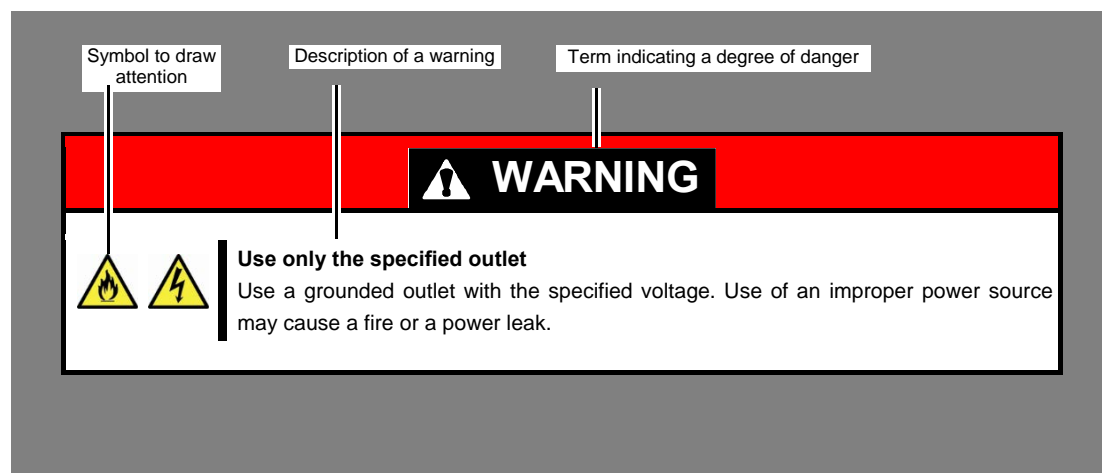


Indicates there is a risk of burns, other personal injury, or property damage

Precautions and notices against hazards are presented with one of the following three symbols. Each symbol is defined as follows:

| | | | |
|---|--------------------------|---|---|
|  | Attention | This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type. | (Example)  (Electric shock risk) |
|  | Prohibited Action | This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. | (Example)  (Do not disassemble) |
|  | Mandatory Action | This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. | (Example)  (Disconnect a plug) |

(A label example used in this guide)



Symbols used in this document and on warning labels

Attentions

| | | | |
|--|--|--|--|
| | Indicates the presence of electric shock hazards. | | Indicates the presence of mechanical parts that can result in bodily injury. |
| | Indicates the presence of a hot surface or component. Touching this surface could result in bodily injury. | | Indicates the presence of mechanical parts that can result in pinching or other bodily injury. |
| | Indicates there is a risk of explosion. | | Indicates the presence of laser beam that cause blindness. |
| | Indicates there is a risk of fire or fumes. | | Indicates a general notice or warning that cannot be specifically identified. |
| | Indicates there is a risk of electric shock for the multiple receiving. | | |

Prohibited Actions

| | | | |
|--|--|--|--|
| | Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused. | | Do not touch the server with wet hand. Otherwise, an electric shock may be caused. |
| | Do not touch the component specified by this symbol. Otherwise, an electric shock or burn may be caused. | | Do not use the server in the place where water or liquid may pour. Otherwise, an electric shock or fire may be caused. |
| | Do not place the server near the fire. Otherwise, a fire may be caused. | | Indicates a general prohibited action that cannot be specifically identified. |










Mandatory Actions





| | | | |
|--|---|--|---|
| | Unplug the power cord of the server. Otherwise, an electric shock or fire may be caused. | | Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction. |
| | Make sure equipment is properly grounded. Otherwise, an electric shock or fire may be caused. | | |

Safety notes

This section provides notes on using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see *Safety precautions*.

General

|  WARNING | |
|---|--|
|  | <p>Do not use the server for services where human life may be at stake or high reliability is required.</p> <p>This server is not intended for use in medical, nuclear, aerospace, mass transit or other applications where human life may be at stake or high reliability is required, nor is it intended for use in controlling such applications. We disclaim liability for any personal injury and property damages caused by such use of this server.</p> |
|   | <p>Do not use the server if any smoke, odor, or noise is present.</p> <p>If smoke, odor, or noise is present, immediately turn off the server and disconnect the power plug from the outlet, then contact the store where you purchased the product or your sales representative. Using the server in such conditions may cause a fire.</p> |
|   | <p>Do not insert needles or metal objects.</p> <p>Do not insert needles or metal objects into ventilation holes in the server or openings in the optical disk drive. Doing so may cause an electric shock.</p> |
|  | <p>Use a rack that conforms to the designated standard</p> <p>This server can be mounted onto a 19-inch rack that conforms to EIA standards. Do not mount the server onto any rack that does not conform to EIA standards. Doing so may cause a server malfunction, personal injury, or damage to peripheral devices. For more information about racks that can be used with the server, consult with your sales representative.</p> |
|   | <p>Use the server only under the specified environment</p> <p>Do not install the server rack in any environment that is not suitable for installation.</p> <p>Installation in an unsuitable environment is harmful for the server and other systems installed in the rack and may cause fire or personal injury due to the rack falling. For a detailed explanation on installation environments or seismic reinforcement, see the instruction manual supplied with the rack or consult with your sales representative.</p> |

|  CAUTION | |
|---|---|
|    | <p>Keep water or foreign matter away from the server.</p> <p>Do not let any liquid such as water or foreign materials including pins or paper clips enter the server. Failure to follow this warning may cause an electric shock, a fire, or failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server, and contact the store where you purchased the product or your sales representative.</p> |

Rack installation

CAUTION



Do not attempt to carry or install the server alone

More than two people are required to carry or install the rack. Otherwise, the rack may fall, resulting in personal injury or damage to peripheral devices. In particular, tall racks such as a 42U rack become unstable unless steadied with a stabilizer. Make sure that two or more people hold the rack to carry or install the rack.



Do not install with the load weight distributed unevenly

To avoid unevenly distributing the load of the rack and server, install a stabilizer or connect multiple racks to distribute the weight. Otherwise, the rack may fall, resulting in personal injury.



Do not install components alone, and check the door hinge pins of the rack

Two or more people are required to install the rack components such as the door or rails. When installing the door, make sure that both upper and lower hinge pins are held in place. Incomplete attachment may cause components to fall off as well as personal injury.



Do not extend any device from the rack that is not stabilized

When extending a device from the rack, make sure that the rack is stable (by using a stabilizer or seismic reinforcement). Otherwise, the rack may fall, resulting in personal injury.



Do not extend more than one device out of the rack

Extending multiple devices from the rack may cause the rack to fall, resulting in personal injury. Extend only one device at one time.



Do not exceed the rated capacity of the power supply when connecting devices

To prevent burn injuries, fire, and damage to the server, make sure the load on the branch circuit that supplies power to the rack will not exceed the rated load. For inquiries regarding the installation or wiring of the power supply system, consult with the company that performed the installation or wiring, or the power company that services your area.

Power supply and power cord use

WARNING



Do not hold the power plug with a wet hand.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.



Do not connect the ground wire to a gas pipe.

Never connect the ground wire to a gas pipe. Failure to follow this warning may cause a gas explosion.

CAUTION



Power supply cord

This server may be shipped with multiple power supply which requires more than one connector to AC mains.

The AC power cord(s) is consider as the mains disconnected device for the server, always disconnect the power supply cord(s) before opening up or servicing the server.



Power supply

The power supplies in your system may produce high voltages and energy hazards, which can cause bodily harm. Unless you are instructed otherwise, only trained service technicians are authorized to remove the covers and access of the components inside the system.



Plug into a proper power source.

Use a grounded outlet with the specified voltage. Use of an outlet with a voltage other than that specified causes fire and electrical leakage. Do not install the server in any environment that requires an extension cord. Connecting to a cord that does not conform to the power supply specs of the server causes overheating, resulting in fire.

If you want to use an AC cord set with a ground wire of class 0I, be sure to connect the ground wire before inserting the power plug into the outlet. Before disconnecting the ground wire, be sure to disconnect the power plug from the output.



Do not connect many cords into a single outlet by using extension cords.

The electric current exceeding the rated flow overheats the outlet, which may cause a fire.



Insert the power plug into the outlet as far as it goes.

Heat generation resulting from a halfway inserted power plug (imperfect contact) may cause a fire. Heat will also be generated if condensation is formed on dusty blades of the halfway inserted plug, increasing the possibility of fire.

 **CAUTION**
Do not use any unauthorized interface cable.

Use only the interface cables provided with the server. Electric current that exceeds the amount allowed could cause fire. Also, observe the following precautions to prevent electrical shock or fire caused by a damaged power cord.



- Do not stretch the cord harness
- Do not bend the power cord.
- Do not twist the power cord
- Do not step on the power cord.
- Uncoil the power cord before use
- Do not secure the power cord with staples or equivalents
- Do not pinch the power cord
- Keep chemicals away from the power cord
- Do not place any object on the power cord
- Do not alter, modify, or repair the power cord
- Do not use a damaged power cord (replace the damaged power cord with a power cord of the same standard. For information on replacing the power cord, contact the store where you purchased the product or a sales representative)

**Do not use the attached power cord for any other devices or usage.**

The power cord that comes with your server is designed aiming to connect with this server and to use with the server, and its safety has been tested. Do not use the attached power cord for any other purpose. Doing so may cause a fire or an electric shock.

**Do not pull out a cord by gripping the cord part.**

Pull a cord straight out by gripping the connector part. Pulling a cord by gripping the cord part or applying extra pressure to the connector part may damage the cord part, which may cause a fire or electric shock.

Installation, relocation, storage, and connection

CAUTION



Do not attempt to lift the server by holding the front bezel.

Securely hold the server by the base to move or lift. Do not attempt to lift it by holding the front bezel. Doing so may cause the front bezel to come off, which may cause not only breakage of the server but also cause the server to fall on to persons resulting in personal injury.



Do not install the server in any place other than specified.

Do not install the server in the following places or any place other than specified in this User's Guide. Failure to follow this instruction may cause a fire.

- A dusty place
- A humid place such as near a boiler
- A place exposed to direct sunlight
- An unstable place



Do not use the server in an environment where corrosive gas is present

Do not install the server in a place subject to corrosive gases including sodium chloride, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, or ozone. Do not install the server in an environment that contains dust, chemicals that accelerate corrosion such as NaCl or sulfur, or conductive materials. Failure to follow this warning may cause the wiring on the printed wiring board to short-circuit, leading to fire. If you have any questions, contact the store where you purchased the product or a sales representative.



Do not install the server while the cover is removed

Do not install the server to a rack while the cover or other relevant items removed. Not only will the cooling effect within the server decrease, causing the server to malfunction, but also may allow dust to enter the server, resulting in fire or electrical shock.



Do not get your fingers caught in the rails

When mounting/removing the server onto/from the rack, be careful to avoid getting your fingers caught in the rails or cutting your fingers on the rails.



Do not apply any weight on the server when it is extended from the rack

Do not apply force on the server when it is extended from the rack. Doing so cause the frames to bend, which makes it impossible to be mounted on the rack. It also may cause the server to fall, resulting in personal injury.



Do not attempt to connect or disconnect the interface cable while the power cord is plugged into an outlet

Be sure to unplug the power cord from a power outlet before connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching a cable or connector may cause an electric shock or a fire resulted from a short circuit.

⚠ CAUTION**Use only the specified interface cable.**

Use only interface cables provided by NEC and locate a proper device and connector before connecting a cable. Using an authorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire.

Also, observe the following notes on using and connecting an interface cable.

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.
- Do not use any damaged cable.

Cleaning and working with internal devices

⚠ WARNING**Do not disassemble, repair, or alter the server.**

Never attempt to disassemble, repair, or alter the server on any occasion except as described in this document. Failure to follow this warning may cause not only malfunction of the server but also an electric shock or fire.

**Do not look into the optical disk drive**

A laser beam used in the optical disk is harmful to the eyes. Do not look into or insert a mirror into the drive while the drive is powered on. If a laser beam (which is invisible) enters your eyes, you may lose your eyesight.

**Do not attempt to remove lithium, NiMH, or Li-ion batteries by yourself.**

The server contains the lithium, NiMH, or Li-ion battery (some optional devices have a lithium, NiMH, or Li-ion battery installed). Do not remove the battery by yourself. Placing a battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead battery, contact the store you purchased the product or your sales representative. Do not attempt to disassemble the server to replace or recharge the battery by yourself.

Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the NEC. Do not dispose of batteries in a fire or with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site

**Disconnect the power plug before cleaning the server.**

Be to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even of the server is off-powered.

Occasionally disconnect the power plug from the outlet and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION**High temperature**

Components including internal hard disk drives in the server are extremely hot just after the server is turned off. Allow the surface to cool before installing/removing.

**Secure cables or cards in place**

Be sure to secure the power cord, interface cables, and cards in place. Incomplete installation causes a loose connection, resulting in smoke or fire

**Electric shock**

The hard disk drives and power supply unit (only when two redundant power supplies are installed) support hot swapping. If replacing a component when the electrical current is being supplied, use extreme caution not to get electric shock by touching terminal parts of the internal components.

During operation**⚠ CAUTION****Do not pull out or remove the server from the rack.**

Do not pull the server out of the rack or remove it from the rack. In addition to causing equipment to not function properly, separating the server from the rack may result in personal injury.

**Avoid contact with the server during thunderstorms.**

Do not touch any part of the server including the cables when a thunderstorm is approaching. Also, do not connect or disconnect any devices. There may be a risk of electric shock from lightning strike.

**Keep animals away from the server.**

Keep animals such as pets away from the server. Pet hair or other waste enters the server, which may cause a fire or electric shock.

**Do not leave the optical disk drive tray open.**

Dust may get in the server when the tray is open, which may result in a malfunction. In addition, bumping the open tray could cause personal injury.

**Do not remove the server from the rack while it is operating.**

Do not pull out or remove the server from the rack while the server is running. In addition to causing equipment to not function properly, separating the server from the rack may result in personal injury.

**Do not place any object on top of servers.**

Separating the server from the rack may result in personal injury and damage to nearby personal belongings.

**Do not get yourself caught in the fan**

Keep your hands and hair away from the cooling fan at the rear of the server during operation. Failure to observe this warning may cause your hands or hair to catch in the fan, resulting in personal injury.

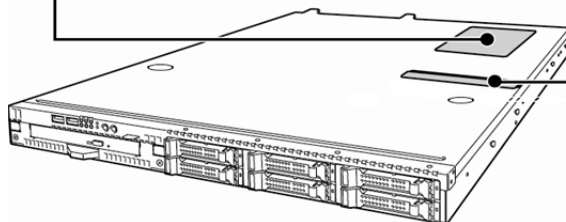
Warning labels

Warning labels are attached on or near the components with potential hazards to draw attention from users to potential hazards involved in handling the server. This label is either attached or printed on the component. Do not remove or black out this label and keep it clean. If no label is attached or printed on the server, or if there is a label coming off or stained, contact your sales representative.

External view



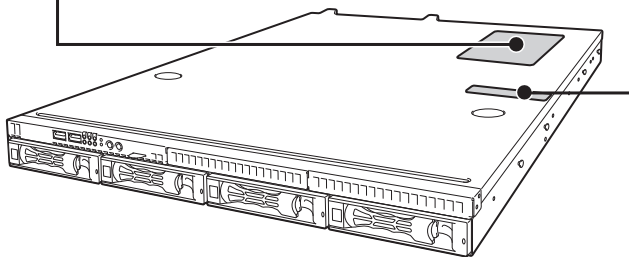
2.5-inch drive model



| ⚠ 注意 CAUTION ATTENTION | |
|--|---|
| <p>高温になるコンポーネントがあります。十分に冷えてから触れるようにして下さい。 As some components may become very hot during system operation, give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down. Comme certains composants peuvent se réchauffer beaucoup pendant le fonctionnement du système, laissez-les se refroidir suffisamment et faites bien attention lorsque vous manipulez les composants internes juste après avoir désactivé le système. 有的部件可能会达到高温。请注意待其冷却之后再接触。 有的组件可能会达到高温。请注意须等冷却之后再接触。</p> | ⚠ |
| <p>電源を切ってもバッテリーで稼働している部分があります。 保守をする前に全てのコンポーネントの取り扱い説明書をお読みください。 Some internal components may still be operational on battery power. Refer to instruction manuals for this system as well as options prior to maintenance. Quelques composants internes peuvent encore continuer à fonctionner avec l'alimentation de la batterie. Référez-vous aux manuels d'instruction pour ces systèmes aussi bien que les dispositifs en options avant d'effectuer les travaux d'entretien. 即使切断电源, 有的部件也会依靠电池运转。 在进行维护之前, 请认真阅读各组件的使用说明书。 即使切断电源, 有的组件也会依靠电池运转。 在进行维护之前, 请先阅读各组件的使用说明书。</p> | ⚠ |
| <p>オプションの取付け、取り外し時は電源プラグをコンセントから抜き、外部装置と接続しているケーブルを外して下さい。 Disconnect all AC power cords from both system and external peripherals prior to installing/removing options. Déconnectez tous les câbles CA du système et des périphériques externes avant d'installer/d'enlever les dispositifs en option. 进行可选项的安装和拆卸时, 请先从插座拔下电源插头并分离与外部设备间的线缆。 进行選購設備安裝和拆卸時, 請先將電源插頭從插座中拔出, 並取下與外部設備連接的線纜。</p> | ⚠ |
| <p>ネジは本体内部へ落とさない様、十分ご注意ください。 Do not drop any screws inside the system. Ne laissez tomber aucune vis à l'intérieur du système. 请一定注意不要让螺丝掉入设备内部。 請注意絕對不要將螺絲掉入設備內部。</p> | ⚠ |
| <p>ボード及びオプション機器の接続の際は、必ずユーザーズガイドを参照し、正しく接続して下さい。 誤った接続は、故障や火災の原因となります。 Refer to the "User's Guide" when option board or peripherals are installed. Incorrect installations may result in damage to the system and lead to accidents. Référez-vous au «Guide de l'utilisateur» lorsque des cartes en option ou des périphériques sont installés. Une installation incorrecte risque d'endommager le système et de causer des accidents. 连接板卡及可选项设备时, 请务必参照“用户指南”进行正确连接。连接错误, 有可能造成故障或火灾。 安装控制卡及選購設備時, 請務必參照“用戶指南”進行正確連接。連接錯誤時, 可能會造成故障或火災。</p> | ⚠ |
| <p>指をはさんだり、ぶついたりしないように注意して下さい。 To avoid the risk of personal injury, be careful when accessing the inside of the system. Pour éviter tout risque de blessure, faites attention en accédant à l'intérieur du système. 请小心不要夹住或碰伤手指。 請注意不要夾傷手指, 或因碰撞而受傷。</p> | ⚠ |
| <p>装置の持ち上げ、移動の際は、装置の底面をしっかりと持ち持ち上げて下さい。 Firmly hold the bottom of the system when required to lift and carry the system. Saisissez fermement le fond du système au cas où vous devez soulever et transporter le système. 抬起、移动设备时, 请牢固抓住设备底部将其抬起。 抬起、搬運伺服器時, 請牢牢抓住設備底部將其抬起。</p> | ⚠ |

3.5-inch drive model

⚠ 注意 : スライドレールに取付けられた装置を棚又は作業台として使用しないで下さい。
CAUTION: Slide rail mounted equipment is not to be used as a shelf or a work space.
ATTENTION: L'équipement monté sur rail/glissière ne doit pas être utilisée comme étagère ou aire de travail.
注意: 请不要把安装在滑轨上面的设备作为架子或者是工作台使用。



Handling precautions

Confirm the following precautions.

- Do not use any cell phone or PHS and switch off them near the server. Electric waves from such devices can cause server to malfunction.
- Install the server in an appropriate place. For details about the installation location, see *Chapter 2 (2. Installation and Connection)*.
- Make sure that the server is off and unplug the power cord before connecting/removing cables to/from peripheral devices, if they are not plug-and-play devices.
- Connect the provided power cord to a 100/200 VAC outlet.
- Make sure that the access LED on the server is off before turning off the power or ejecting an optical disk.
- Wait for at least 30 seconds before turning on the server after turning off the server. If any Uninterruptible Power Supply (UPS) unit is connected, set it to wait for at least 30 seconds before turning on the server after power off. If the optional RAID Controller N8103-168 is installed, wait for at least 90 seconds before turning on the server after turning off the power.
- Turn off the server and unplug the power cord before moving it.
- Regularly clean the server to prevent various types of failure. See *Chapter 1 (2. Daily Maintenance)* in "*Maintenance Guide*" for details about cleaning.
- Check the system clock approximately once per month. Use of a time server (NTP server) is recommended.
- We recommend you store the server at room temperature. Keep the following storage conditions.
Temperature: -10°C to 55°C, Humidity: 20% to 80%, No condensation of moisture
- Do not use the server, or removable/backup media such as tape cartridges when moving them from a cold place to a warm place. The condensation will occur and cause malfunctions and failures when these are used in such state. Use the server after waiting sufficiently.
Reference: Time effective at avoiding condensation in winter (10°C or more differences between the room temperature and atmospheric temperature)
 - Disk devices: Approximately 2 to 3 hours
 - Tape media: Approximately 1 day
- If you use the third party optional device to the server, and it causes failure, a charge for repairing must be paid even within warranty period.

Anti-static measure

This product contains static-sensitive electronic components. Follow the measures below to avoid a failure caused by static electricity when installing or uninstalling any optional device.

• Wearing Anti-static Wrist Strap or Anti-static Gloves

Wear a wrist strap on your wrist and connect the wire to the chassis. If there is no wrist strap, touch an unpainted metal surface of the chassis connected to the ground to discharge static electricity from your body before touching the component. Touch the metal part occasionally to discharge the static electricity while working on the component.

• Checking the Workplace

- Work on an anti-static floor or concrete floor.
- If you work on a place where static electricity is likely to be generated (e.g. carpet), be sure to provide anti-static protection.

• Using the Work Table

Place the server on a mat with Electrostatic Discharge (ESD) protection.

• Clothing

- Do not wear wool or synthetic clothes.
- Wear anti-static shoes.
- Remove any kind of metal accessories such as a ring, bracelet or wrist watch.

• Handling of Components

- Keep the component in an anti-static bag until you install it to the server.
- Hold the component by the edges to avoid touching any terminals or mounting parts.
- Place the component in an anti-static bag when storing or moving them.

• Handling of Cables

When connecting a cable (e.g., LAN cable), static electricity may also be charged due to friction against the floor.

Connecting the charged cable with an I/O device may cause damage to the devices in the system. It is recommended to use a product such as electrostatic discharge kit to eliminate the static charge before connecting the cable.

• Installing and Uninstalling the Optional Device

- To avoid electric hazard and malfunction, be sure to turn off the power switch of the server and unplug the power cord from the outlet before installing or uninstalling any optional device. If the device is hot-swappable, you do not need to turn off the power switch and unplug the power cord.
- The device contains static-sensitive electronic components. When installing or uninstalling the optional device, wear an anti-static wrist strap on your wrist to avoid a failure caused by the static electricity. To use the strap, connect the wire to the chassis.

Tips for your health and safety

Using a computer extensively may affect different parts of your body. Here are tips you should follow while working on a computer to minimize strain on your body.

Keep proper posture

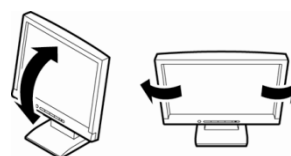
The basic body position for using a computer is sitting straight with your hands on the keyboard parallel with the floor, and your eyes directed slightly downward toward the monitor. With the proper posture described above, no unnecessary strain is applied on any part of your body, in other words when your muscles are most relaxed.

Working on the computer with bad posture such as hunching over or being too close to the monitor could cause fatigue or deteriorated eyesight.



Adjust the angle of your display

Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. Working without adjusting the display to a comfortable angle makes it difficult for you to maintain a proper posture and you will get tired easily. Adjust the viewing angle before use.



Adjust the brightness and contrast of the display

Display screens have functions to control brightness and contrast. The most suitable brightness/contrast depends on age, individuals, and environment, so adjust it to suit your preferences. A too bright or too dark display is bad for your eyes.



Adjust the angle of keyboard

Some keyboards are ergonomically designed, which allow the angle to be adjusted. Adjusting the angle of the keyboard is effective to reduce tension on your shoulders, arms, and fingers.



Clean your equipment

Keeping your equipment clean is important not only for the appearance but also for functional and safety reasons. A dusty monitor makes it difficult to see the display contents, so clean it regularly.

Take rest breaks

When you feel tired, take a break. Light exercise is also recommended.



NEC Express5800 Series Express5800/R110g-1E

1

General Description

This chapter introduces the features of this server and explains the name of each part.

1. Introduction

2. Accessories

Explains the server's accessories.

3. Standard Features

Explains the server's feature.

4. Names and Functions of Parts

Explains the name of each part contained in this server.

1. Introduction

Thank you for purchasing this NEC Express5800 Series product.

This high performance server is powered by the latest microprocessor "Intel® Xeon® processor / Pentium® processor".

NEC's latest technology and architectures realize high-power and high-speed operation that cannot be matched by existing servers.

The server is designed with consideration of not only reliability but also expandability, which enables you to use it as a network server.

To use the server correctly and to bring out the server's performance, read this document carefully.

2. Accessories

The carton box contains various accessories which are required for setup or maintenance. **Make sure you have them all** for future use.

- Tool for Removing Slide Rails (outer rails)
- EXPRESSBUILDER*1
- Getting Started
- Cable Ties (for securing AC power cord)
- SDR Update CD-ROM
- Power Cord
- Front Bezel

*1 Instruction manuals are stored in the PDF format on the EXPRESSBUILDER disc. Install Adobe Reader into your computer to read them.

Make sure you have all accessories and inspect them. If an accessory is missing or damaged, contact your sales representative.

3. Standard Features

The server has the following standard features:

High performance

- Intel® Xeon® processor / Pentium® processor
 - High-speed memory access (DDR3L 1600 supported)*
 - High-speed disk access (SATA2 6 Gbps, SAS 6 Gbps supported)
 - High-speed 1000BASE-T (2 ports) interface (1Gbps/100Mbps/10Mbps supported)
- * : Intel® Pentium® processor G3240 is running at 1333MHz.

High reliability

- Memory monitoring feature (error correction/error detection)
- Memory degeneracy feature (logical isolation of a failed device)
- Bus parity error detection
- Temperature detection
- Error detection
- Internal fan monitoring feature
- Internal voltage monitoring feature
- RAID system (disk array)
- Auto rebuild feature (hot swapping supported)
- BIOS password feature
- The security lock that comes with Front Bezel
- Redundant Fan (optional)
- Redundant Power Unit

Management Utilities

- NEC ESMPRO
- ExpressUpdate
- Remote controlling feature (EXPRESSSCOPE Engine 3)
- RAID system management utility (Universal RAID Utility)
- Hard disk drive monitoring

Power saving and noiseless design

- Power monitoring feature
- Power control feature
- 80 PLUS® Platinum certified high efficiency power supply unit (for non-redundant power supply)
- 80 PLUS® Gold certified high efficiency power supply unit (for redundant power supply)
- Fan control appropriate to environment, work load, and configuration
- Enhanced Intel SpeedStep® Technology supported

Expandability

- PCI Express 3.0 (x16 lanes): 1 slot (low profile)
- PCI Express 2.0 (x4 lanes): 1 slot (low profile)
- Large capacity memory of up to 32 GB
- Hard disk drive bay
 - 2.5-inch drive model: Standard 6 slots, 8 slots max. (cannot be used if using optical disk drive)
 - 3.5-inch drive model: 4 slots
- Optical disk drive bay provided as standard
- USB3.0 interface (requires the supporting OS)
- Three LAN ports (one for management LAN)

Ready to use

- Hard disk drives can be installed with one-touch setup, which requires no cables (hot swap supported)

Various built-in Features

- El Torito Bootable CD-ROM (no emulation mode) format supported
- Software power-off
- Remote power-on feature
- AC-Link feature
- Remote console feature
- Power switch mask
- Baseboard Management Controller (BMC) conforming to IPMI v2.0

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D) utility

Easy setup

- EXPRESSBUILDER (OS setup utility)
- BIOS setup utility (SETUP)

Maintenance features

- Off-line tools
- Memory dump feature using the DUMP switch
- Feature to back up and restore BIOS/BMC settings using the EXPRESSSCOPE profile key

3.1 Management Features

The hardware components of the server provide operation control/reliability features as shown below. Additionally, *NEC ESMPRO Agent*, which is provided in EXPRESSBUILDER, enables you to collectively manage the state of your systems. You can also monitor the status of the server from a PC to manage the network where *NEC ESMPRO Manager* provided in EXPRESSBUILDER is installed.

The features available on this server are as shown in the table below.

| Function | | Availability | Description |
|--------------------|--------------|--------------|--|
| Hardware | | | Shows physical hardware information. |
| | Memory bank | ○ | Shows physical memory information. |
| | Device info | ○ | Shows information specific to the server. |
| | CPU | ○ | Shows physical CPU information. |
| System | | ○ | Shows logical CPU information and monitors the load factor. Shows logical memory information and monitors the status. |
| I/O device | | ○ | Shows information on I/O devices (floppy disk drive, serial ports, parallel ports, keyboard, mouse, and video). |
| System environment | | | Monitors temperatures, fans, voltage, power supply, doors, and others. |
| | Temperature | ○ | Monitors the temperature inside of the chassis. |
| | Fan | ○ | Monitors the fans. |
| | Voltage | ○ | Monitors the voltage inside of the chassis. |
| | Power supply | ○ | Monitors the power supply unit. |
| | Door | × | Monitors chassis intrusion (open/close of the covers and doors on the chassis). |
| Software | | ○ | Shows service, driver, and OS information. |
| Network | | ○ | Shows network (LAN) information and monitors packets. |
| BIOS | | ○ | Shows BIOS information. |
| Local polling | | ○ | Monitors the values of MIB items obtained by NEC ESMPRO Agent. |
| Storage | | ○ | Monitors controllers and storage devices including hard disk drives. |
| File system | | ○ | Shows the file system configuration and monitors the free space. |
| RAID System | | × | Universal RAID Utility will monitor the RAID System. |
| Others* | | ○ | Monitors OS stall using the Watch Dog Timer. |
| | | ○ | Performs alert processing after an OS STOP error occurs. |

○: Supported. △: Partially supported. ×: Unsupported.

*: Not displayed on the NEC ESMPRO Manager screen.

Tips

NEC ESMPRO Manager and NEC ESMPRO Agent are supplied with the server as standard. For how to install and use each software component, refer to the explanation of the component.

3.2 Firmware and Software Version Management

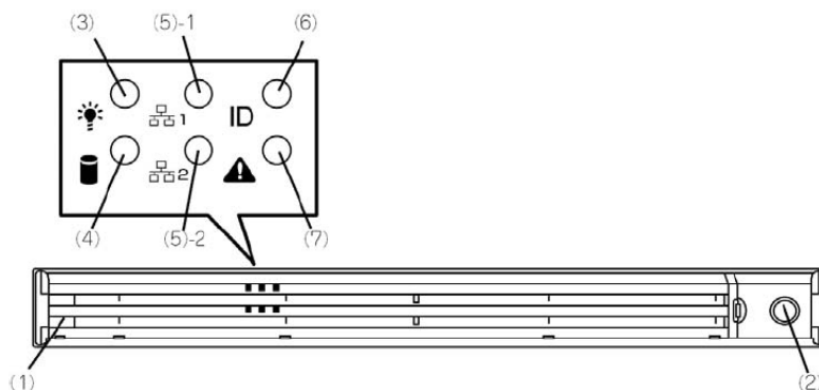
You can manage the version of firmware or software on the server and update them with an update package by using NEC ESMPRO Manager and ExpressUpdate Agent.

This feature automatically updates multiple packages without stopping the system by using NEC ESMPRO Manager.

4. Names and Functions of Parts

The names and the functions of the server's parts are as follows.

4.1 Front View (With Front Bezel)



(1) Front Bezel (optional)

The cover to protect the front and top of the server.

(2) Key Slot

Bezel Lock Key can be inserted into Key Slot to lock Front Bezel.

(3) POWER LED (green/amber)

After the power cord is connected, this LED lights amber during initialization of system.
This LED lights green when the power is ON.

(4) Disk Access LED (green/amber)

This LED lights or flashes green when the internal hard disk drive or optical disk drive is being accessed.
The LED lights amber if a hard disk drive error occurs.

(5) LINK/ACT LED (green)

This LED turns on when the server is connected to the network.
Sequential numbers 1 and 2 indicate LAN connectors 1 and 2, respectively.

(6) Unit ID (UID) LED (blue)

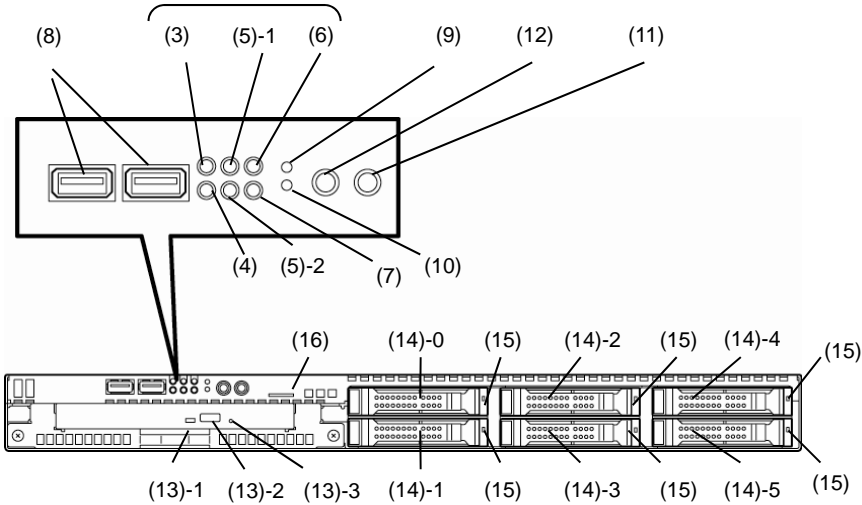
This LED turns on when the UID switch is pressed.
Commands from the software also cause it to turn on or flash.

(7) STATUS LED (green/amber)

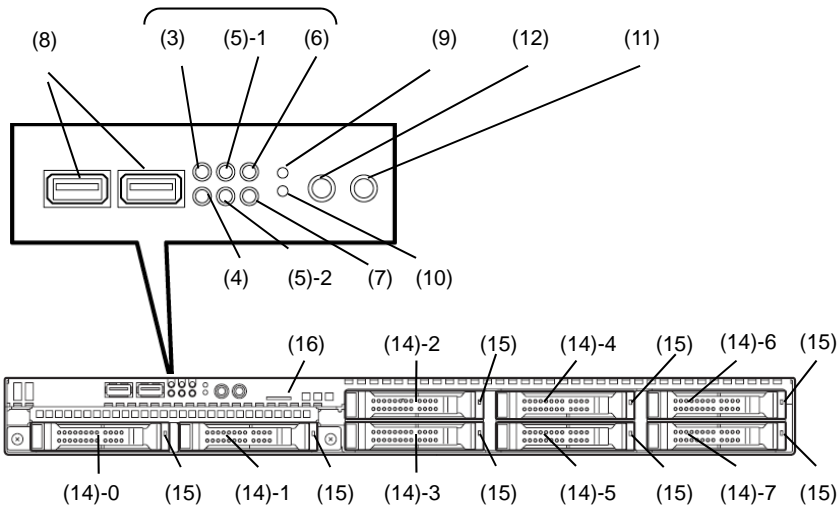
This LED indicates the server status. It lights green when the server is operating normally. If an abnormality is detected, it turns on or flashes amber.

4.2 Front View (Without Front Bezel)

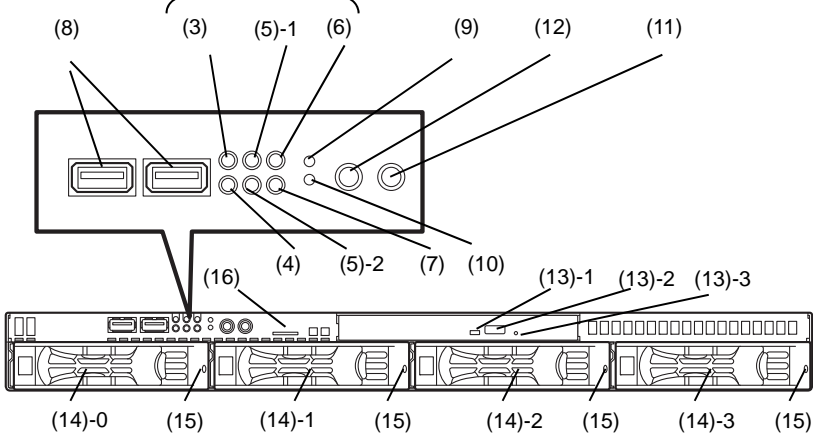
2.5-inch drive model: x6 HDD model



2.5-inch drive model: x8 HDD model



3.5-inch drive model



(8) USB Connectors (front)

These connectors are used to connect devices that support the USB interface.

Blue connector: for USB3.0

Black connector: for USB2.0

(9) BMC RESET Switch

The switch to reset BMC of this server. Use the switch only when there is something wrong with EXPRESSSCOPE Engine 3 (BMC).

To use this switch, press it at least five seconds.

(10) DUMP Switch (NMI)

When the switch is pressed, memory dump is performed.

(11) POWER Switch

The switch to turn the server on and off. Press once to turn on the server. The LED lights green when it is on. Press it again to turn off the server. Hold down the switch for 4 seconds or more to forcibly turn off the server.

(12) Unit ID (UID) Switch

The switch to turn on and off the UID LEDs provided at the front and rear of the server. Pressing the switch once turns on the UID LED and pressing once more turns off the LED. Commands from the software also cause it to turn on or flash.

(13) Optical Disk Drive Bay

Either of the following drives can be installed.

– DVD-ROM drive

– DVD SuperMULTI drive

(13) - 1 Access LED for optical disk

(13) - 2 Eject button

(13) - 3 Eject hole

(14) 2.5-inch/3.5-inch Hard Disk Drive Bay

The bay where hard disk drives are installed. The sequential numbers indicate the corresponding slot numbers. All bays include dummy trays.

(15) DISK LED (green/amber)

The LED provided for each hard disk drive

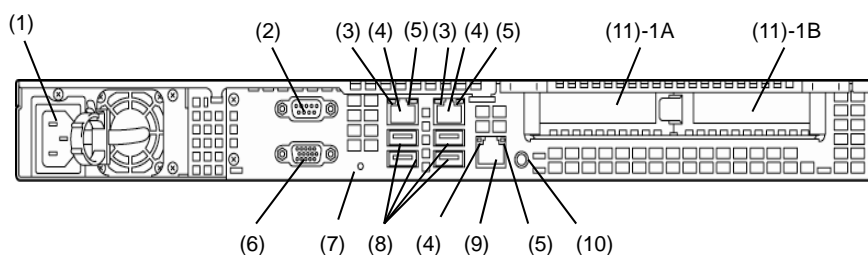
This LED light turns green when a hard disk drive is being accessed. The light turns amber if a hard disk drive is broken and it flashes green and amber alternately when a hard disk drive is being rebuilt in the RAID system

(16) Pull-out Tab

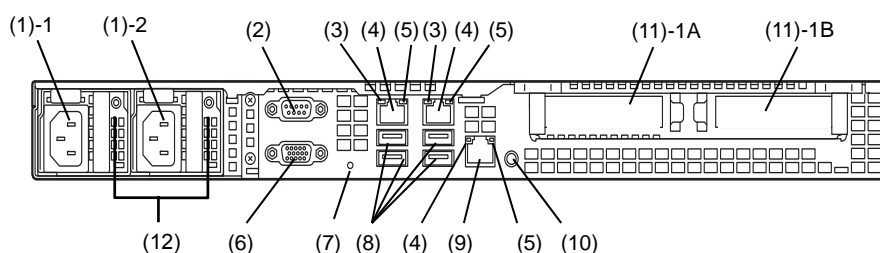
A label indicating the part number and serial number of the server is located on Pull-out Tab.

4.3 Rear View

<Non-Redundant Power Supply Unit Model>



<Redundant Power Supply Unit Model>



(1) AC Inlet

This socket is used to connect the power cord.
The sequential numbers indicate the corresponding slot numbers.

(2) Serial Port A (COM A) Connector

This connector is used to connect devices that support a serial interface. Note that it is not possible to directly connect to a dedicated line.

(3) LINK/ACT LED (green)

The LED indicates the access status of LAN.

(4) LAN Connectors

LAN connectors support 1000BASE-T/100BASE-TX/10BASE-T.
If Shared BMC LAN feature is enabled in ROM Utility, LAN connector 1 can also be used as the management LAN connector. Sharing port is not recommended from the point of performance and security.

(5) SPEED LED (green/amber)

The LED indicates the transfer speed of LAN ports.

(6) Display Connector

The connector to connect a display.

(7) DC Power LED (green)

This LED lights amber during BMC initialization. The LED lights green when the power is ON.

(8) USB Connectors

These connectors are used to connect devices that support the USB interface.

(9) Management LAN Connector

A LAN connector which supports 100BASE-TX. This port is used for connection with EXPRESSSCOPE Engine 3, and cannot be used as a data transmission port. This port cannot be used when Shared BMC LAN feature is used.

(10) UID (Unit ID) Switch/LED (blue)

The switch to turn on and off the UID LEDs provided at the front and rear of the server. Pressing the switch once turns on the UID LED and pressing once more turns off the LED.

(11) PCI Slot

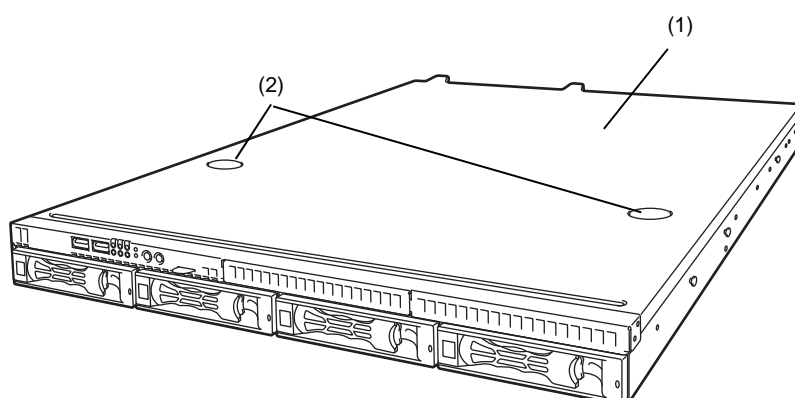
The slot is used to install the low profile type PCI board.
The sequential numbers indicate the corresponding slot numbers.

(12) AC Power LED

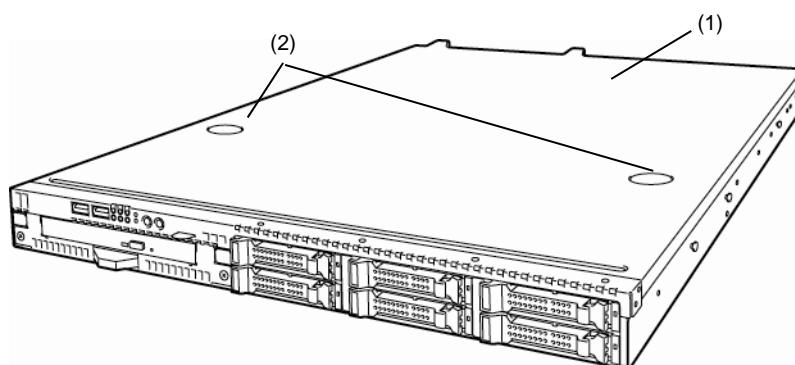
A LED for showing AC power status.

4.4 External View

3.5-inch drive model



2.5-inch drive model

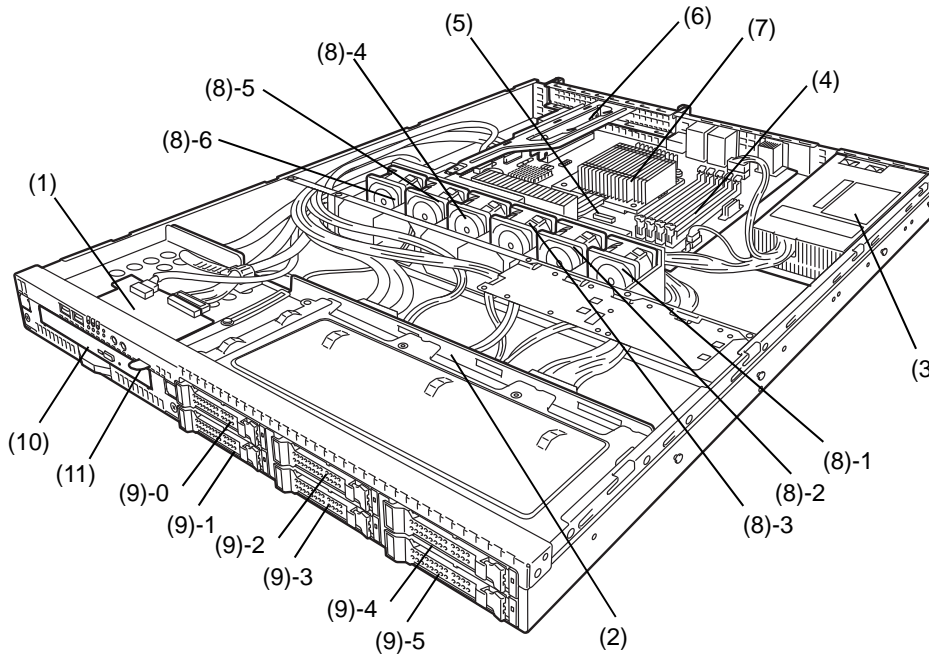


- (1) Top Cover
- (2) Release Button

4.5 Internal View

The images below do not show the duct.

2.5-inch drive model (non-redundant fan / non-redundant power supply / x6 HDD model)



(1) Front Panel Board

(2) Backplane

(3) Power Supply Unit

(4) DIMM (optional)

(5) Motherboard

(6) PCI Riser Card

(7) Processor (attached under the heat sink)

(8) Cooling Fan

-1 BPB_FAN1

-2 BPB_FAN3

-3 BPB_FAN5

-4 BPB_FAN7

-5 BPB_FAN9

-6 BPB_FAN11

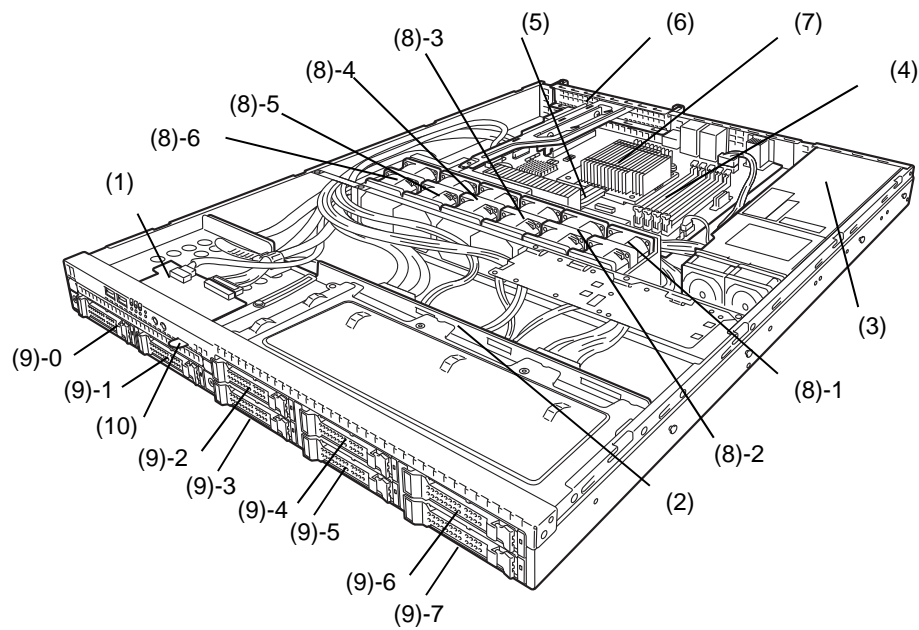
(9) 2.5-inch Hard Disk Drive Bay

The sequential numbers indicate the corresponding slot numbers.

(10) Optical Disk Drive (optional)

(11) Pull-out Tab

2.5-inch drive model (redundant fan / redundant power supply / x8 HDD model)



- (1) Front Panel Board

(2) Backplane

(3) Power Supply Unit

(4) DIMM (optional)

(5) Motherboard

(6) PCI Riser Card

(7) Processor (attached under the heat sink)
- (8) Cooling Fan

-1 BPB_FAN1

BPB_FAN2

-2 BPB_FAN3

BPB_FAN4

-3 BPB_FAN5

BPB_FAN6

-4 BPB_FAN7

BPB_FAN8

-5 BPB_FAN9

BPB_FAN10

-6 BPB_FAN11

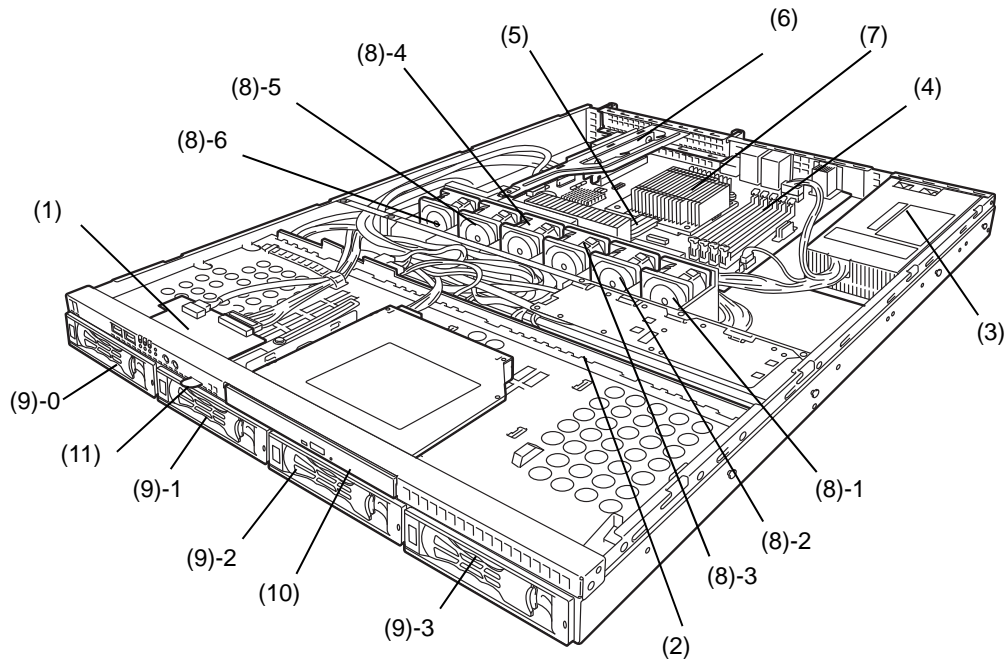
BPB_FAN12

(9) 2.5-inch Hard Disk Drive Bay

The sequential numbers indicate the corresponding slot numbers.

(10) Pull-out Tab

3.5-inch drive model (non-redundant fan / non-redundant power supply model)



- (1) Front Panel Board

(2) Backplane

(3) Power Supply Unit

(4) DIMM (optional)

(5) Motherboard

(6) PCI Riser Card

(7) Processor (attached under the heat sink)
- (8) Cooling Fan

-1 BPB_FAN1

-2 BPB_FAN3

-3 BPB_FAN5

-4 BPB_FAN7

-5 BPB_FAN9

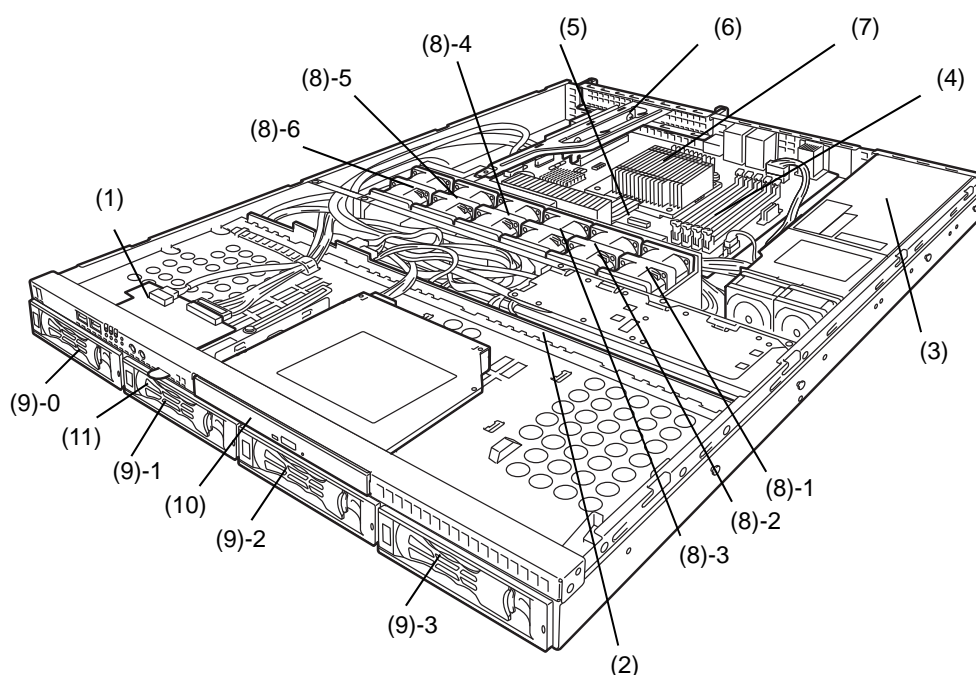
-6 BPB_FAN11

(9) 3.5-inch Hard Disk Drive Bay

The sequential numbers indicate the corresponding slot numbers.

(10) Optical Disk Drive (optional)

(11) Pull-out Tab

3.5-inch drive model (redundant fan / redundant power supply model)**(1) Front Panel Board****(2) Backplane****(3) Power Supply Unit****(4) DIMM (optional)****(5) Motherboard****(6) PCI Riser Card****(7) Processor (attached under the heat sink)****(8) Cooling Fan**

-1 BPB_FAN1

BPB_FAN2

-2 BPB_FAN3

BPB_FAN4

-3 BPB_FAN5

BPB_FAN6

-4 BPB_FAN7

BPB_FAN8

-5 BPB_FAN9

BPB_FAN10

-6 BPB_FAN11

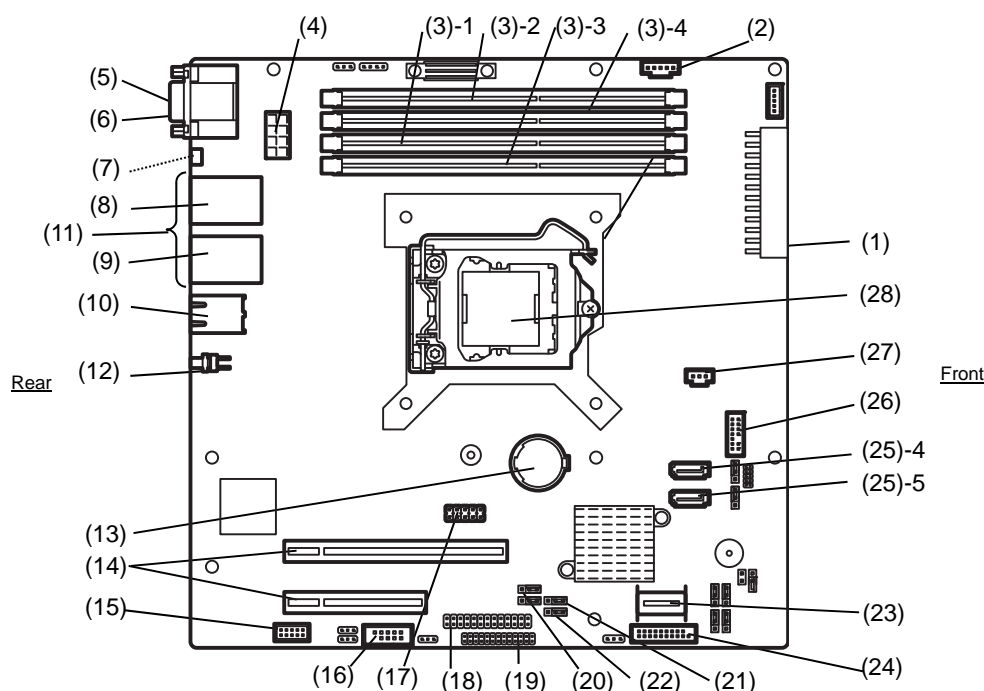
BPB_FAN12

(9) 3.5-inch Hard Disk Drive Bay

The sequential numbers indicate the corresponding slot numbers.

(10) Optical Disk Drive (optional)**(11) Pull-out Tab**

4.6 Motherboard



- | | |
|--|---|
| <p>(1) Power Connector</p> <p>(2) PM-BUS Connector</p> <p>(3) DIMM Slots (the number after hyphen indicates slot number)</p> <p>(4) Power Connector (CPU)</p> <p>(5) Serial Port (COM A) Connector</p> <p>(6) VGA Connector</p> <p>(7) Power LED (rear)</p> <p>(8) LAN1 Connector</p> <p>(9) LAN2 Connector</p> <p>(10) LAN Connector for Management</p> <p>(11) USB Connector (rear)</p> <p>(12) UID Switch (rear)</p> <p>(13) Lithium Battery</p> <p>(14) PCI Riser Card Connector (dedicated to low profile cards) For the supported PCI card specifications, see <i>Chapter 2 (1.12 PCI card)</i>.</p> <p>(15) SPI Flash Mezzanine Connector EXPRESSSCOPE profile key (SPI memory) has been installed, where BIOS and BMC configuration data is stored. Move it when replacing MB to keep using the data.</p> | <p>(16) Serial Port (COM B) Connector</p> <p>(17) Internal Flash Memory Connector</p> <p>(18) Front Panel Connector</p> <p>(19) HDD BP Connector</p> <p>(20) Clear CMOS Jumper</p> <p>(21) RAID Configuration Jumper</p> <p>(22) Clear Password Jumper</p> <p>(23) SAS/Serial ATA Connector</p> <p>(24) USB Connector (front)</p> <p>(25) Serial ATA Connector (the number after hyphen indicates connector number)</p> <p>(26) TPM Kit Connector</p> <p>(27) SGPIO Connector</p> <p>(28) Processor (CPU) Socket</p> |
|--|---|

* Only the connectors used for server upgrades and maintenance (such as replacing parts) are listed here. Use other connectors or parts without any change.

4.7 Status Indicators

This section explains the indication and meanings of the server LEDs.

4.7.1 POWER LED (💡)

POWER LED indicates the power ON/OFF status of the server.

The following table lists POWER LED patterns.

| POWER LED pattern | Description |
|-------------------|--|
| On (green) | The server is normally powered on. |
| On (amber) | The power cord is plugged in and BMC is being initialized. The server can be powered on after the amber LED is unlit. |
| Off | The server is off-powered. |

4.7.2 STATUS LED (⚠)

STATUS LED lights green while hardware is operating normally. STATUS LED is off or lights/flashes amber if there is a hardware failure.

The following table lists STATUS LED patterns, their description and solution.

Tips

Refer to the system event log (SEL) by using NEC ESMPro or the offline maintenance utility to view the cause of failure.

| STATUS LED pattern | Description | Solution |
|--------------------|--|--|
| On (green) | Normal state | — |
| Flashing (green) | Memory is in a degraded state | Find the device in degraded state by using the BIOS setup utility <i>SETUP</i> , and replace it as soon as possible. |
| | Uncorrectable memory errors have often occurred. | |
| | Operating while CPU error is detected. | |
| Off | The power is off. | Turn on the server. |
| | POST is in progress. | STATUS LED turns green after the POST process. |
| | Watchdog timer expired. | Turn the power off and then turn it on. If the POST screen displays any error message, take notes of the message, and contact your sales representative. |
| | An uncorrectable error in memory was detected. | |
| | A PCI bus error was detected. | |
| | Memory dump is being requested. DUMP Switch was pressed. Note It remains green when the dump is caused by software. | Wait until the memory dump is complete. |

| STATUS LED pattern | Description | Solution |
|--------------------|---|---|
| On (amber) | A temperature alarm was detected. | Check the internal fan for dusts. Also check if the fan unit is properly connected. If the LED indication does not change when the fans are normal, contact your sales representative. |
| | A voltage alarm was detected. | Contact your sales representative. |
| | A CPU temperature alarm was detected. | |
| | A CPU error was detected. | Turn the power off and then turn it on. If the POST screen displays any error message, take notes of the message, and contact your sales representative. |
| | SMI timeout was detected | Contact your sales representative. |
| | Sensor error was detected. | |
| Flashing (amber) | Failure of the power supply unit was detected | Contact your sales representative. |
| | A fan alarm was detected. | Check if the internal cooling fan cable is properly connected. |
| | A temperature warning was detected. | Check the internal cooling fan for dusts. Also check if the fan unit is properly connected. |
| | A voltage warning was detected | Contact your sales representative. |
| | An error was detected on either of the hard disk drives when the RAID system is configured. | |

4.7.3 LINK/ACT LED (1, 2)

LINK/ACT LED at the front of the server lights green when it is connecting to LAN and flashes when transmitting or receiving data on LAN. The number next to the icon indicates a LAN port number.

4.7.4 Disk Access LED ()

DISK Access LED indicates the status of HDDs.

The following table lists DISK Access LED patterns.

| DISK Access LED pattern | Description |
|---------------------------|--|
| On (green)/Flashing green | Hard disk drive or optical disk drive is being accessed. |
| On (amber) | Hard disk drive is failing. |
| Off | Hard disk drive is halted. |

4.7.5 Optical Disk Access LED

The LED for optical disk drive at the front of the server flashes when a CD or DVD is being accessed.

4.7.6 UID LED (ID)

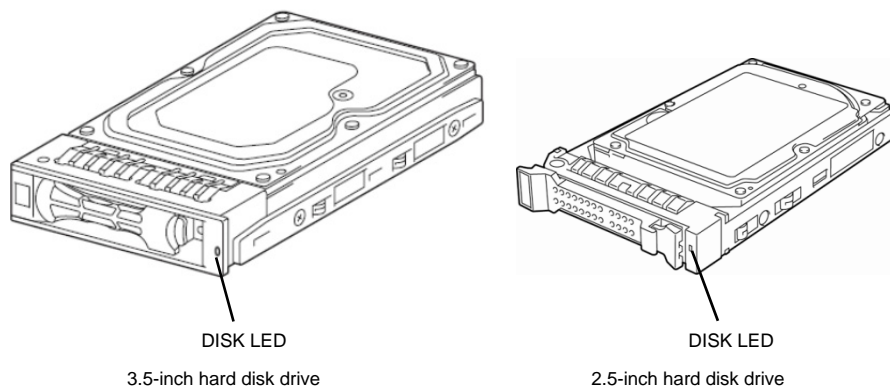
The UID LED is provided one each at the front and rear of the server. This LED is used to identify the target server among multiple servers installed in a rack.

The following table lists UID LED patterns.

| UID LED pattern | Description |
|-----------------|--|
| On (blue) | UID Switch is on. UID LED turns off when UID Switch is pressed again. |
| Flashing blue | The server is received the command from the management software. |
| Off | UID Switch is off. |

4.7.7 LED on a hard disk drive

DISK LED on a hard disk drive indicates several states.



The following table lists DISK LED patterns.

| DISK LED pattern | Description |
|--------------------------------------|---|
| On (green)/Flashing green | Hard disk drive is being accessed. |
| On (amber) | Hard disk drive is failing in RAID system. |
| Flashing green and amber alternately | Rebuild is in progress. Rebuild starts automatically when the broken HDD is replaced. (Auto Rebuild Feature) |
| Off | Hard disk drive is halted. |

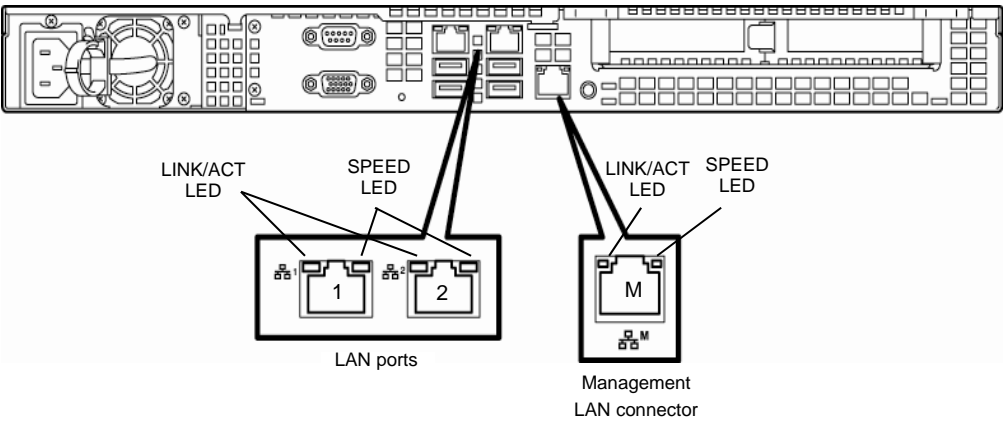
Important

Observe the following precautions whenever you use the auto rebuild feature.

- Do not turn off or reboot the server while a hard disk drive is being rebuilt.
- Wait at least 90 seconds before installing a hard disk drive after removing one.
- Do not replace a hard disk drive while another hard disk drive is being rebuilt.

4.7.8 LEDs for LAN connectors

The three LAN connectors provided at the rear of the server have two LEDs each.



• LINK/ACT LED

This LED indicates the state of the LAN port.

The following table lists LINK/ACT LED patterns.

| LINK/ACT LED pattern | Description |
|----------------------|---|
| On (green) | The server is connected with network correctly. |
| Flashing (green) | The server is accessing network. |
| Off | The server is disconnected from network. |

• SPEED LED

This LED indicates which network interface is used.

- Two onboard LANs (1, 2) support 1000BASE-T, 100BASE-TX, and 10BASE-T.
- Management LAN (M) supports 100BASE-TX, and 10BASE-T.

The following table lists LINK/ACT LED patterns.

| SPEED LED pattern | Description |
|-------------------|--|
| On (amber) | The port is operating with 1000BASE-T interface. |
| On (green) | The port is operating with 100BASE-TX interface. |
| Off | The port is operating with 10BASE-T interface. |

Preparations

This chapter describes preparations for using this server.

1. Installing Internal Optional Devices

You can skip this section if you did not purchase any optional devices.

2. Installation and Connection

Place the server in a proper location and connect some cables following this section.

I. Installing Internal Optional Devices



This section describes the instructions for installing supported optional devices and precautions. If you did not purchase any optional device requiring installation, you can skip this section.



Important

- If use the third party optional device to the server, and it causes failure, a charge for repairing must be paid even within the warranty period.

I.1 Safety Precautions

Be sure to observe the following precautions to install and remove optional devices properly and safely.

|  WARNING | |
|--|---|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> • Do not disassemble, repair, or modify the server. • Do not remove the lithium battery, NiMH battery, or Li-ion battery. • Disconnect the power plug when installing and removing devices. |

|  CAUTION | |
|--|---|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> • Do not drop • Do not leave the server being pulled out. • Make sure to complete installation. • Do not install with the cover removed. • Do not get your fingers caught. • High temperature • Electrical shock |

1.2 Anti-static Measures

This product contains static-sensitive electronic components. Follow the measures below to avoid a failure caused by static electricity when installing or uninstalling any optional device.

• Wearing Anti-static Wrist Strap Or Anti-static Gloves

Wear a wrist strap on your wrist and connect the wire to the chassis. If there is no wrist strap, touch an unpainted metal surface of the chassis connected to the ground to discharge static electricity from your body before touching the component. Touch the metal part occasionally to discharge the static electricity while working on the component.

• Checking the Workplace

- Work on an anti-static floor or concrete floor.
- If you work on a place where static electricity is likely to be generated (e.g. carpet), be sure to provide anti-static protection.

• Using the Work Table

Place the server on a mat with Electrostatic Discharge (ESD) protection.

• Clothing

- Do not wear wool or synthetic clothes.
- Wear anti-static shoes.
- Remove any kind of metal accessories such as a ring, bracelet or wrist watch.

• Handling of Components

- Keep the component in an anti-static bag until you install it to the server.
- Hold the component by the edges to avoid touching any terminals or mounting parts.
- Place the component in an anti-static bag when storing or moving them.

• Handling of Cables

When connecting a cable (e.g., LAN cable), static electricity may also be charged due to friction against the floor.

Connecting the charged cable with an I/O device may cause damage to the devices in the system. It is recommended to use a product such as electrostatic discharge kit to eliminate the static charge before connecting the cable.


• Installing and Uninstalling the Optional Device

- To avoid electric hazard and malfunction, be sure to turn off the power switch of the server and unplug the power cord from the outlet before installing or uninstalling any optional device. If the device is hot-swappable, you do not need to turn off the power switch and unplug the power cord.
- The device contains static-sensitive electronic components. When installing or uninstalling the optional device, wear an anti-static wrist strap on your wrist to avoid a failure caused by the static electricity. To use the strap, connect the wire to the chassis.

1.3 Overview of Installation and Removal

Install/remove components by using the following procedure.

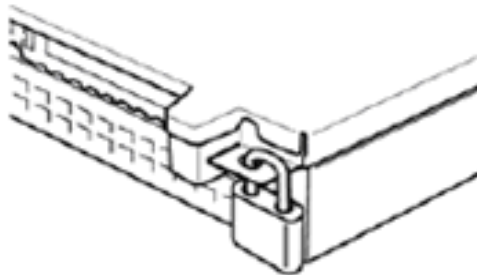
The internal components except for hard disk drives must be installed or removed after dismounting the server from the rack. See *Chapter 2 (2. Installation and Connection)* for details.

| ⚠ CAUTION | |
|---|--|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> • Do not drop the server • Do not leave the server pulled out of the rack • Replace the cover after installing components • Beware of high temperatures • Do not get your fingers caught when installing components |

Important

BRACKET KEY : This equipment intended for installation in restricted access location.

- Access can only be gained by **SERVICE PERSON** or by **USERS** who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a **TOOL** or lock and key, or other means of security, and is controlled by the authority responsible for the location.



1. If the server is mounted on a rack, use UID Switch to identify the target server.
See *Chapter 2 (1.4 Confirming Servers (UID Switch))*.
2. Remove the front bezel.
See *Chapter 2 (1.5 Removing the Front Bezel)*.
3. Turn off the server.
See *Chapter 3 (6. Turning off the Server)*.
4. Disconnect the power cord from the outlet and the server.

Important

After disconnecting the power cord from the server, wait for at least 5 seconds before continuing to work because the components on the motherboard might still be operating for 3 to 4 seconds even after the power cord was disconnected.

5. When installing or removing the Internal Flash Memory, DIMMs, RAID controllers, PCI cards, or optical disk drives, dismount the server from the rack and place it on a flat and hard desk.

See *Chapter 2 (2.1.2 Installing the server to the rack or removing it from the rack – (2) Removal procedure)*.

If installing only additional hard disk drives, go to step 11.

Important Do not leave the server open on the rack.

6. Remove the top cover.
See *Chapter 2 (1.6 Removing the Top Cover)*.
7. Depending on the components to be installed or removed, follow the procedure in order.
See *Chapter 2 (1.7 Internal Flash Memory to 1.13 Optical Disk Drive)*.
8. Connect cables.
See *Chapter 2 (1.10.1 Connecting cables)*.
9. Attach the top cover.
See *Chapter 2 (1.19 Attaching the Top Cover)*.
10. Mount the server onto the rack.
See *Chapter 2 (2.1.2 (1) Installation)*.
11. Install hard disk drives.
See *Chapter 2 (1.15 3.5-inch Hard Disk Drive or 1.16 2.5-inch Hard Disk Drive)*.
12. Attach the front bezel.
See *Chapter 2 (1.20 Attaching the Front Bezel)*.

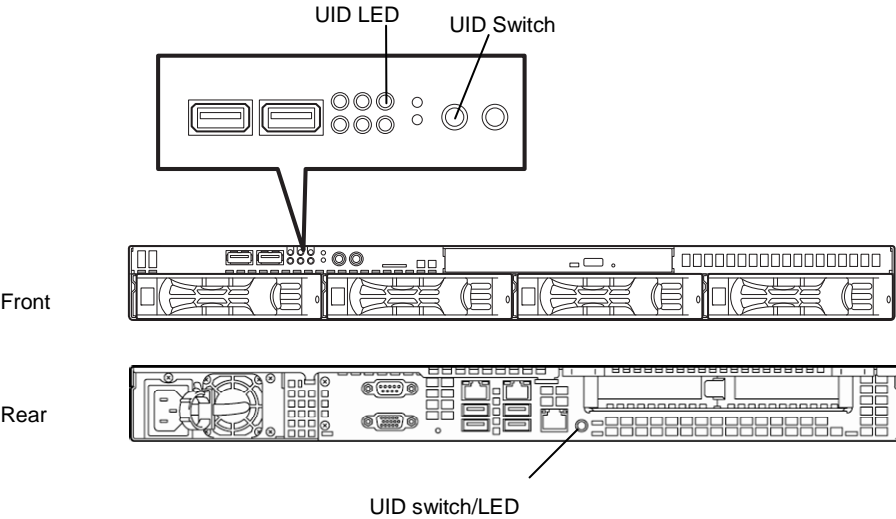
Continue the setup with reference to *Chapter 2 (2.2 Connection)*.

1.4 Confirming Servers (UID Switch)

Using UID Switch helps you to identify the target server.

When the server is working, **be sure to identify the target server by using UID Switch first.**

When UID Switch is pressed, UID LED lights blue. When it is pressed again, the LED is unlit.



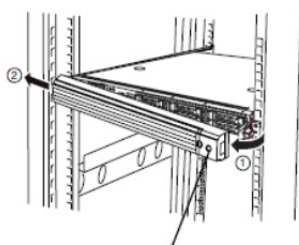
1.5 Removing the Front Bezel

Remove the front bezel when turning the server on or off, or handling an optical disk drive.

1. Unlock the front bezel by using the attached bezel lock key.



2. Hold the right end of the front bezel carefully to pull it toward you.
3. Slide the front bezel to the left a little to release the tab from the frame and then remove the front bezel from the server.

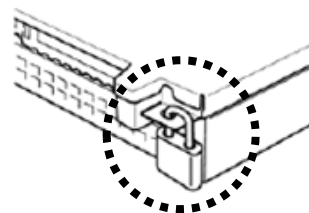


Bezel lock key slot

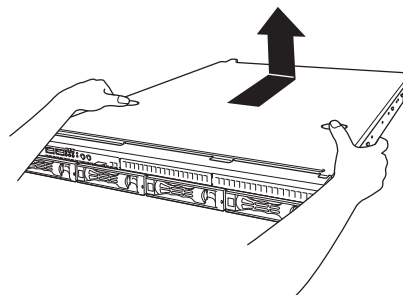
1.6 Removing the Top Cover

Remove the top cover when installing or removing the Internal optional drives connections.

1. Unlock the chassis, if necessary.
2. Slide back the top cover while pressing its release button.

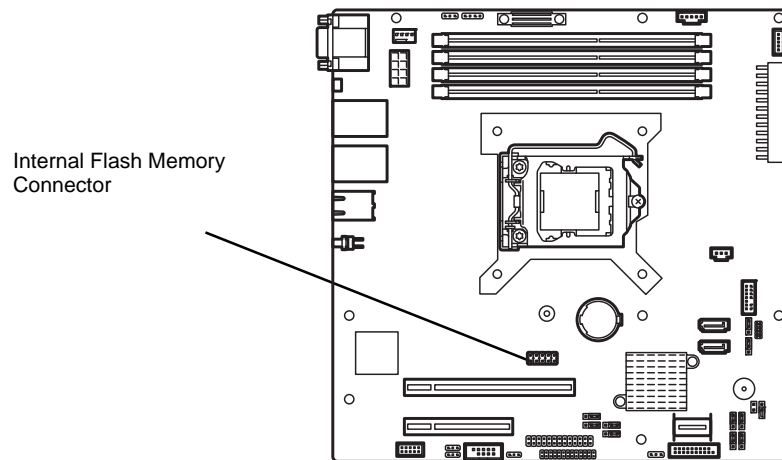


3. Lift the top cover off the server.



1.7 Internal Flash Memory

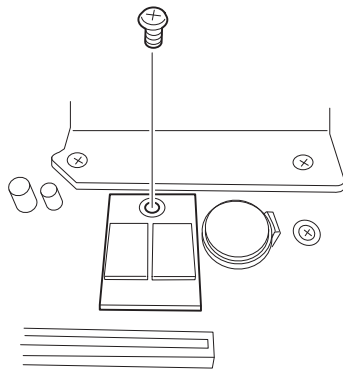
This section describes the procedure for installing the Internal Flash Memory.



1.7.1 Installation

Install the Internal Flash Memory in the following procedure.

1. See steps 1 to 4 in *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Attach the Internal Flash Memory and fix it with the screw provided with the Internal Flash Memory Kit.



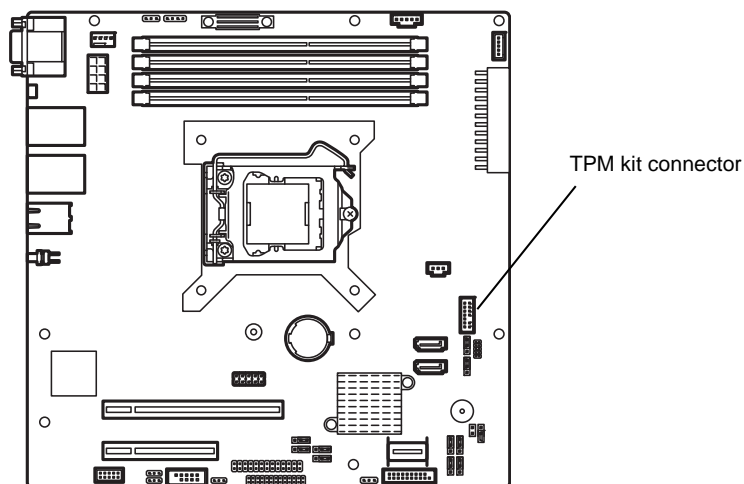
3. Attach the cover provided with the Kit to the Internal Flash Memory.

1.7.2 Removal

To remove the Internal Flash Memory, reverse the installation procedure.

1.8 TPM Kit

This section describes the procedure for installing optional TPM Kit.



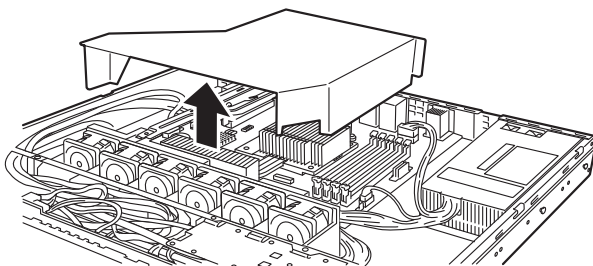
1.8.1 Installation

Install the TPM Kit in accordance with the following procedure.

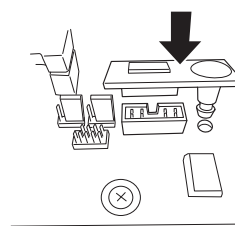
Note

The TPM kit once installed cannot be removed.

1. See steps 1 to 6 in *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Lift the air duct and remove it.



3. Install the TPM Kit and secure it by pushing the nylon rivet provided with the TPM Kit.



1.9 DIMM

Install a Dual Inline Memory Module (DIMM) to a DIMM socket on the motherboard in the server. The motherboard provides four sockets to install DIMMs.

- Important**
- Use only the DIMMs provided by NEC.
 - Read through *Chapter 2 (1.2 Anti-static Measures)* beforehand.

Tips Up to 32 GB (8 GB × 4) of memory can be installed.

The server supports 2-way interleaved memory system.

In 2-way interleaved memory system, the data transfer rate of the memory is twice that of a non-interleaved memory system.

1.9.1 Maximum supported memory size

The maximum available memory size on the server depends on the architecture (x86 architecture) and OS specs.

A list of maximum memory sizes

| OS | The maximum memory size supported on each OS | The maximum memory size supported on the server |
|--|--|--|
| Windows Server 2008 Standard x86 Edition | 4 GB | 4 GB (using HW-DEP feature) * Default factory settings |
| | | About 3.5 GB (not using HW-DEP feature) Note: When Execute Disable Bit (XD Bit) is set to Disabled in BIOS SETUP. |
| Windows Server 2008 R2 Standard | 32 GB | 32 GB |
| Windows Server 2008 Enterprise | 64 GB | |
| Windows Server 2008 R2 Enterprise | 2 TB | |
| Windows Server 2012 Standard Windows Server 2012 Datacenter | 4 TB | |
| Red Hat Enterprise Linux 5 (x86) Red Hat Enterprise Linux 6 (x86) | 16 GB | 16 GB |
| Red Hat Enterprise Linux 5 (EM64T) | 1 TB | 32 GB |
| Red Hat Enterprise Linux 6 (x86_64) | 3 TB | |
| VMware ESXi 5.1 | 2 TB | 32 GB Up to 1 TB of the main memory is available to each virtual machine. |

1.9.2 DIMM installation order

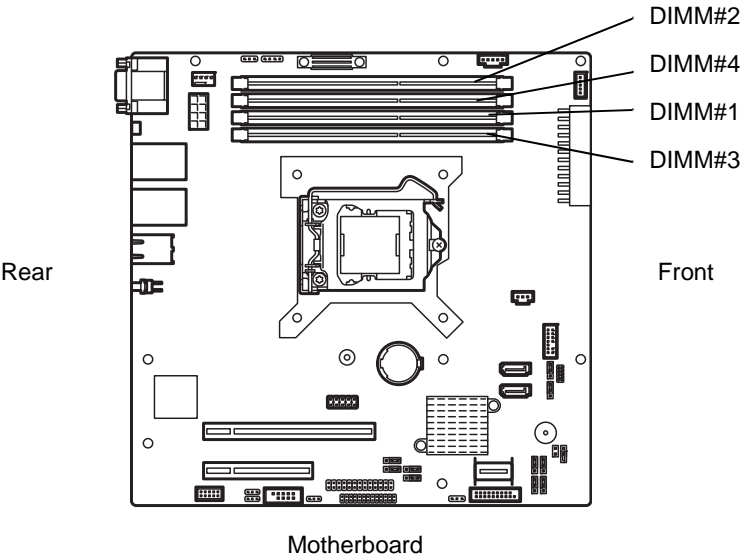
Install DIMMs one by one in order of increasing memory size into slots in the order of DIMM#1, DIMM#2, DIMM#3, and DIMM#4.

If you want to run the server in 2Way Interleave mode, observe the following installation rules:

- Install them in pairs
- The two DIMMs installed together must be of the same specifications and memory size.
- Install the pairs as DIMM#1 and DIMM#2, or DIMM#3 and DIMM#4. The installation order between the pairs does not matter.

Installation examples

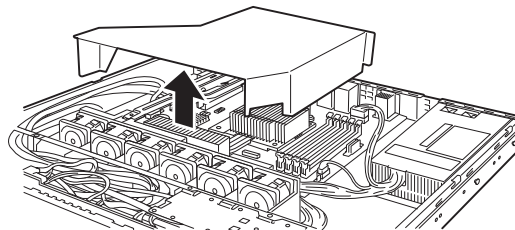
| Example | 2Way Interleave | DIMM#1 | DIMM#2 | DIMM#3 | DIMM#4 |
|---------|-----------------|-----------|-----------|---------------|---------------|
| 1 | Available | 2 GB DIMM | 2 GB DIMM | Not installed | Not installed |
| 2 | Available | 2 GB DIMM | 2 GB DIMM | 2 GB DIMM | 2 GB DIMM |
| 3 | Not available | 2 GB DIMM | 2 GB DIMM | 2 GB DIMM | Not installed |
| 4 | Not available | 2 GB DIMM | 2 GB DIMM | Not installed | 2 GB DIMM |



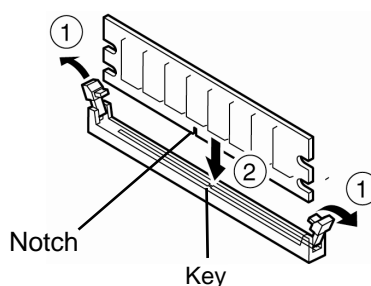
1.9.3 Installation

Install a DIMM by using the following procedure.

1. See steps 1 to 4 in *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Lift the duct off the server.



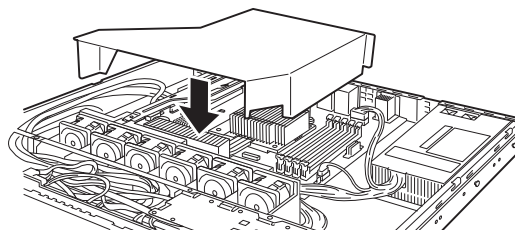
3. Open both levers of the target DIMM slot outward and push the DIMM straight into the socket.
When the DIMM is inserted correctly, the lever automatically closes.



Important

- Align the notch on the DIMM with the key on the slot.
- Do not apply too much pressure when you push a DIMM into the socket.

4. Attach the duct.



5. Assemble the server.
6. Turn on the server and confirm that no error messages are displayed in POST screen.
If any error messages are displayed, see *Chapter 3 (1. POST Error Message)* in "*Maintenance Guide*".
7. Run the BIOS Setup Utility. On the **Advanced** menu, choose **Memory Configuration, Memory Information**. Make sure the capacity of added DIMM is displayed properly.
See *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".
8. On the **Advanced** menu, choose **Memory Configuration, Memory Retest** and then specify **Yes**.
Choose **Save Changes and Exit** to restart.
9. Set the paging file size to the recommended value (Total memory size x 1.5) or more.
When using a Windows OS, see *Chapter 1 (6.1 Specifying Memory Dump Settings (Debug Information))* in "*Installation Guide (Windows)*".
For other OS, see the manual provided with the operating system or contact your sales representative.

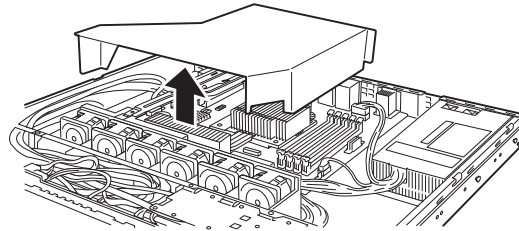
1.9.4 Removal

Remove a DIMM in the following procedure.

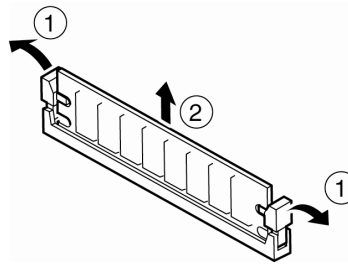
Note

- When removing a defective DIMM, check error messages displayed at POST or NEC ESMPRO and check the DIMM socket where the defective DIMM is installed.
- At least one DIMM needs to be installed for the server to operate.

1. See steps 1 to 4 in *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Lift the duct off the server.



3. Open both levers of DIMM slot to unlock DIMM.
4. Remove DIMM by pulling it up straight.



5. Assemble the server.
6. Turn on the server and confirm that no error messages are displayed on POST. If any error message is displayed, see *Chapter 3 (1. POST Error Message)* in "Maintenance Guide".
7. Run the BIOS Setup Utility. On the **Advanced** menu, choose **Memory Configuration, Memory Retest** and then specify **Yes**. Choose **Save Changes and Exit** to restart.
8. Set the paging file size to the recommended value (Total memory size x 1.5) or more.
When using a Windows OS, see *Chapter 1 (6.1 Specifying Memory Dump Settings (Debug Information))* in "Installation Guide (Windows)".
For other OS, see the manual provided with the operating system or contact your sales representative.

1.10 Jumper Settings and Cable Connections Based on Internal Hard Disk Drive Configuration

This section describes the jumper settings and cable connections when using hard disk drives installed in HDD cages in a non-RAID System or RAID System.

- Important

If you use hard disk drives in the RAID system or change the RAID level, initialize the hard disk drives. If the hard disk drive contains valuable data, be sure to backup the hard disk drive before installing the RAID controller and configuring the RAID system.
- Note

In the RAID system, use hard disk drives that have the same specifications (capacity, rotational speed, and standard) for each disk array.
- Tips

Logical drives can be created even with only one physical device.

Set the jumper on the motherboard according to your system, as shown below.

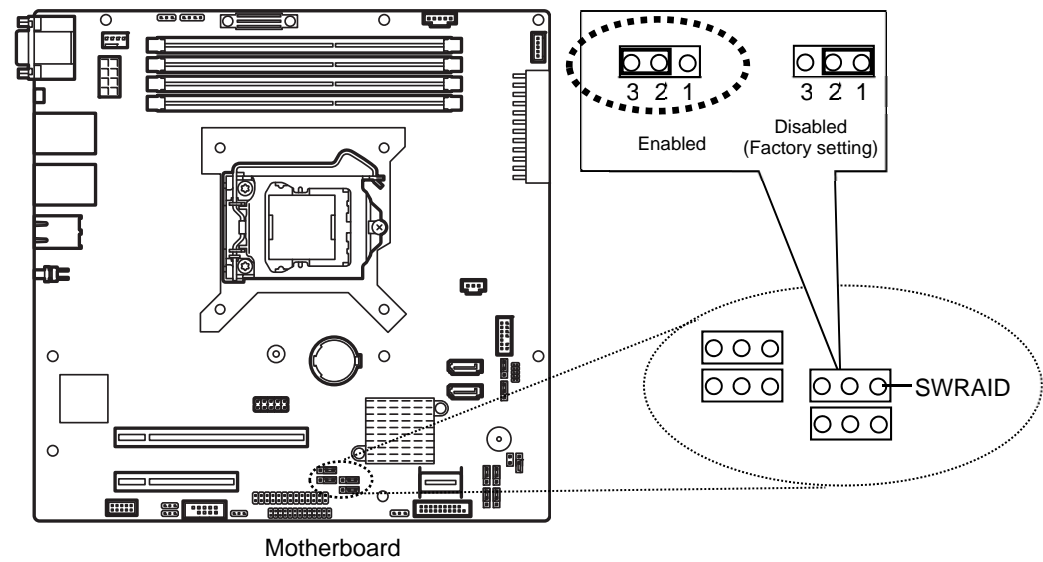
- Important

Avoid static electricity to work with the procedure below. For details, see *Chapter 2 (1.2 Anti-static Measures)*.

(a) Using on-board SATA controllers (LSI Embedded MegaRAID™)

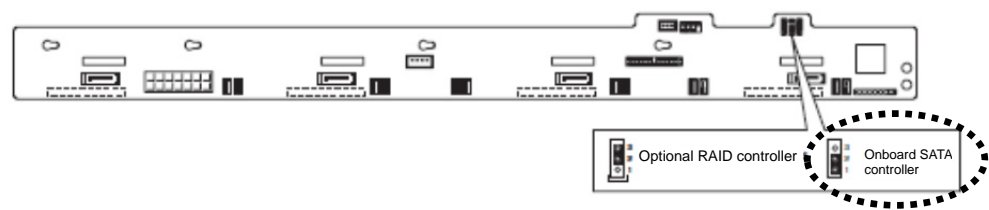
Jumpers on motherboard (SWRAID)

Change the jumper setting to 2-3 (Enabled).

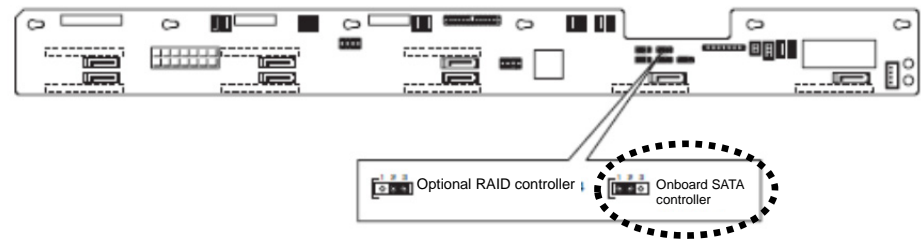


Change the jumper setting of the backplane for the hard disk drive.

Backplane for 3.5-inch hard disk drive (J3)



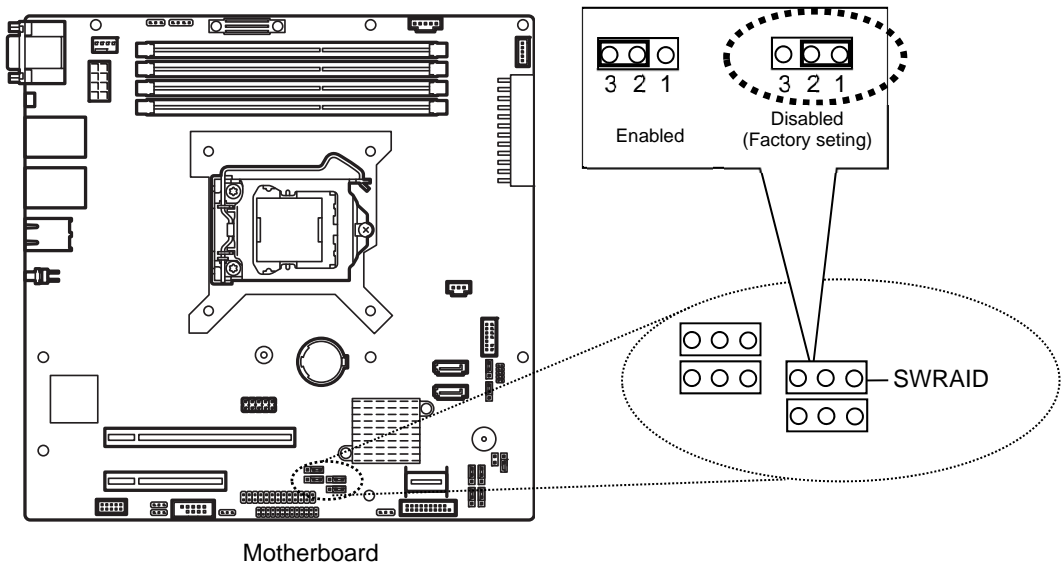
Backplane for 2.5-inch hard disk drive (J3)



(b) Using an optional RAID controller

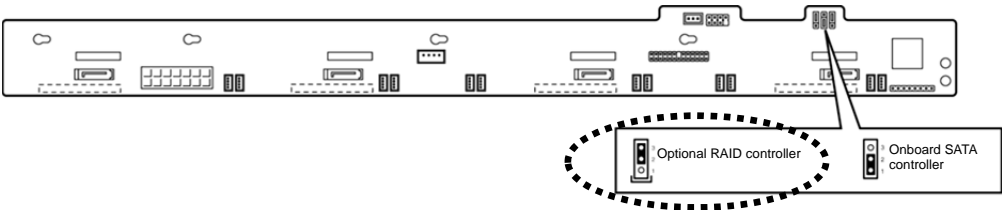
Jumper on motherboard (SWRAID)

Change the jumper setting to 1-2 (Disabled).

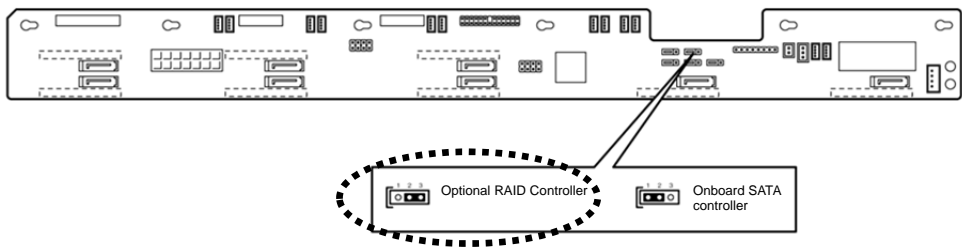


Change the jumper setting of the backplane for the hard disk drive.

Backplane for 3.5-inch hard disk drive (J3)



Backplane for 2.5-inch hard disk drive (J3)



Note When installing an optional RAID Controller, start the BIOS Setup utility, select **PCI Configuration** from the **Advanced** menu, and then make sure that the parameter of **PCI Slot xx ROM** (xx is PCI slot number) is set to **Enabled**.

Important Do not change the mode to hibernate when building a RAID System.

(c) Installation

For the instruction of installing the optional RAID controller , see *Chapter 2 (1.12 PCI Card)*.

Important

When connecting a RAID controller, set the boot priority to 8th or higher in the Boot menu of the BIOS Setup utility. If the setting is 9th or lower, the configuration menu for RAID controllers cannot be launched.

(d) Removal

To remove the optional RAID controller, reverse the installation procedure.

If you intend to use with the card removed, be sure to attach the blank cover attached to the riser card.

1.10.1 Connecting cables

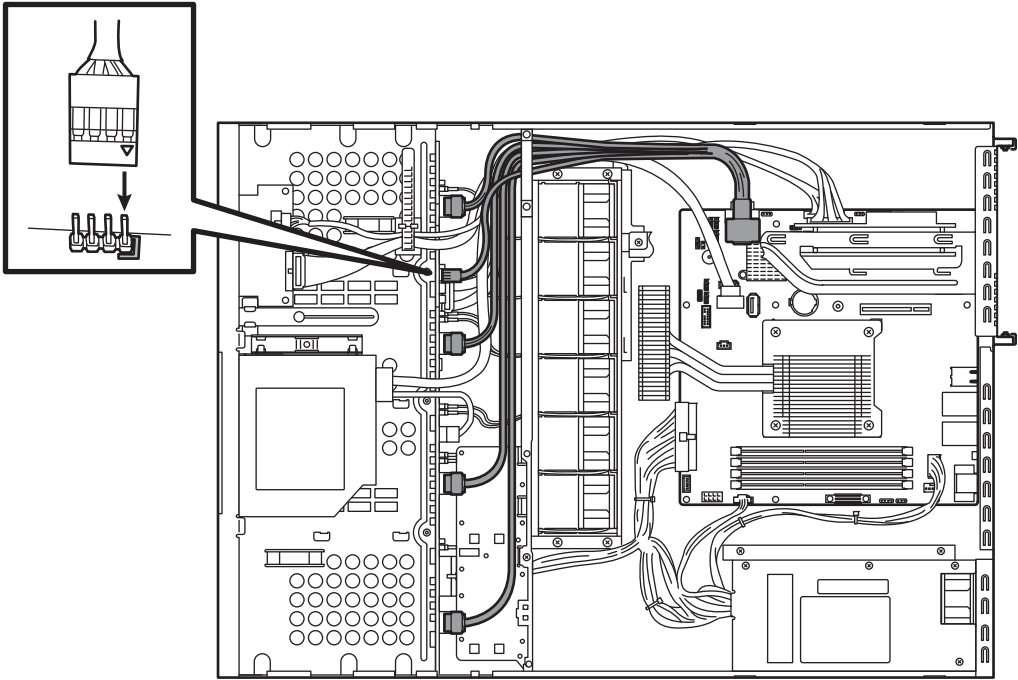
To use an on-board RAID controller or optional RAID controller, connect the interface cable. See the figures below for how to connect cables.

Important Both SAS hard disk drives and SATA hard disk drives cannot be installed.

Tips When using SAS hard disk drives, install a RAID controller to the server.

Using the on-board RAID controller for a 3.5-inch drive model

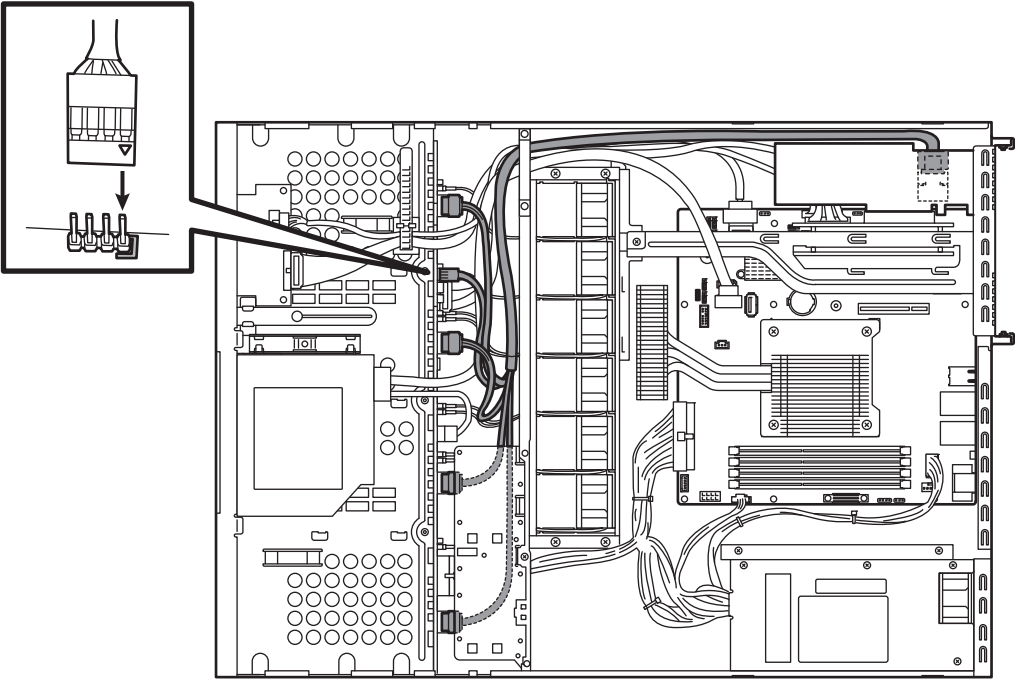
- Prepare the optional SAS/SATA cable K410-288(00).
- Connect the P0 to P3 connectors of the K410-288(00) to the SATA0 to SATA3 connectors on the backplane, respectively.
- While matching the pin 1 (indicated by the triangleΔ) of the S1 and the pin 1 (indicated by the bold line) of the SGPIO1, connect the S1 connector of the K410-288(00) to the SGPIO1 connector on the backplane.
- Connect the miniSAS connector of the K410-288(00) to the MINISAS_1 connector on the motherboard.



| Motherboard | Hard disk drive | Backplane |
|-------------|-----------------|-----------|
| MINISAS_1 | SLOT 0 | SATA 0 |
| | SLOT 1 | SATA 1 |
| | SLOT 2 | SATA 2 |
| | SLOT 3 | SATA 3 |

Using optional RAID controller for a 3.5-inch drive model

- Prepare the optional SAS/SATA cable K410-240(00).
- Connect the P0 to P3 connectors of the K410-240(00) to the SATA0 to SATA3 connectors on the backplane, respectively.
- While matching the pin 1 (indicated by the triangleΔ) of the S1 and the pin 1 (indicated by the bold line) of the SGPIO1, connect the S1 connector of the K410-240(00) to the SGPIO1 connector on the backplane.
- Connect the miniSAS connector of the K410-240(00) to the connectors for ports 0 to 3 on the optional RAID controller.

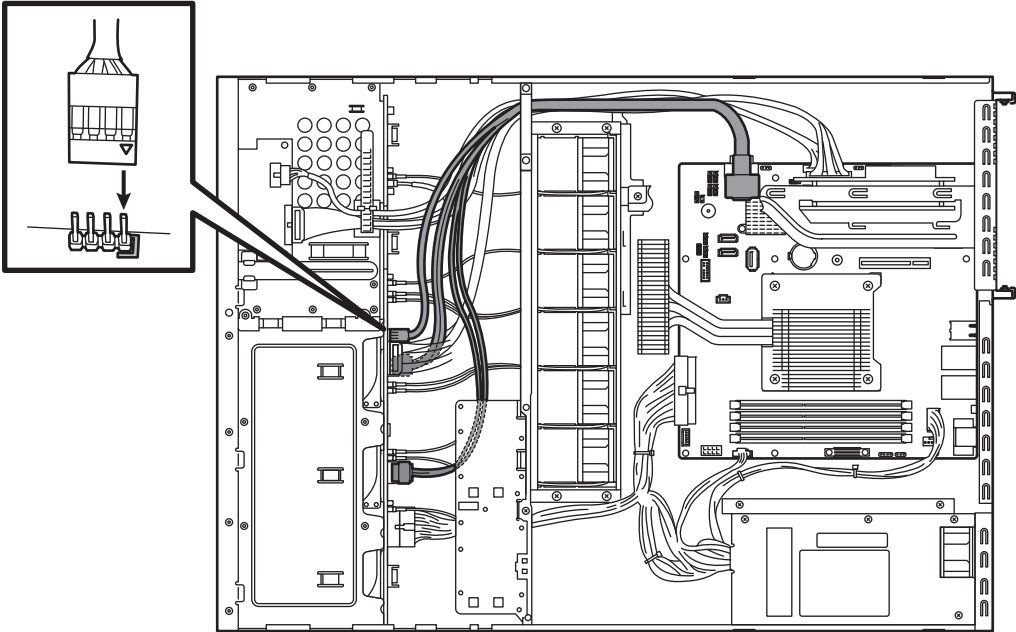


| Optional RAID Controller | Hard disk drive | Backplane |
|--------------------------|-----------------|-----------|
| Ports 0 to 3 | SLOT 0 | SATA 0 |
| | SLOT 1 | SATA 1 |
| | SLOT 2 | SATA 2 |
| | SLOT 3 | SATA 3 |

In the 2.5-inch drive model, where to connect on the backplane differs depending on the number of hard disk drives installed (6 or 8). See the description below for the backplane number and the slot number on the hard disk drive.

Using the on-board SATA controller in a 2.5-inch drive model with six hard disk drives installed (1 to 4 drives)

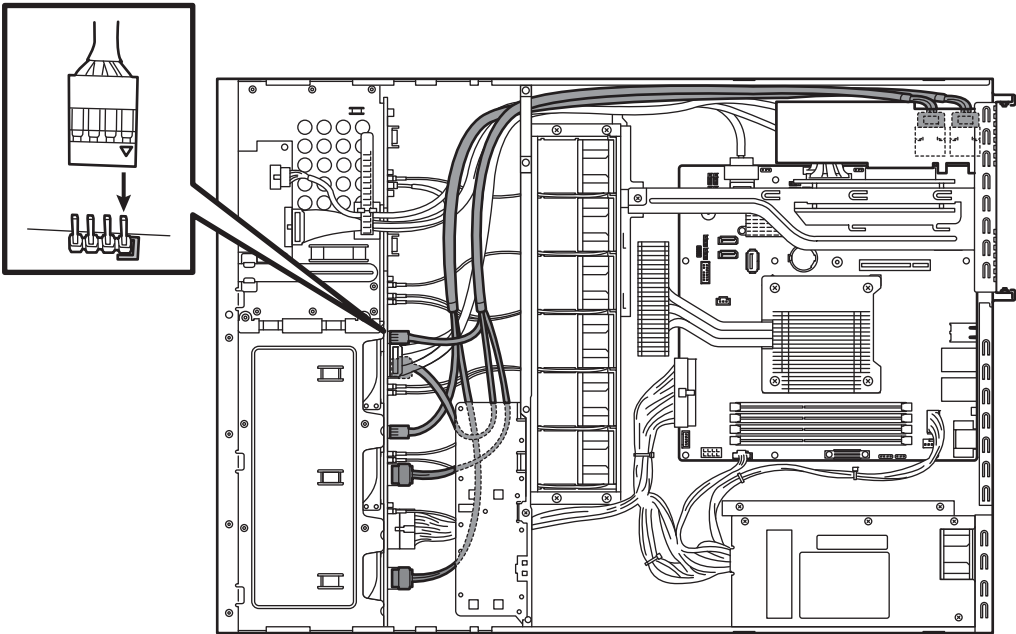
- Prepare the optional SAS/SATA cable K410-289(00).
- Connect the P0 to P3 connectors of the K410-289(00) to the SATA2 to SATA5 connectors on the backplane, respectively.
- While matching the pin 1 (indicated by the triangleΔ) of the S1 and the pin 1 (indicated by the bold line) of the SGPIO1, connect the S1 connector of the K410-289(00) to the SGPIO1 connector on the backplane.
- Connect the miniSAS connector of the K410-289(00) to the MINISAS_1 connector on the motherboard.



| Motherboard | Hard disk drive | Backplane |
|-------------|-----------------|-----------|
| MINISAS_1 | SLOT 0 | SATA 2 |
| | SLOT 1 | SATA 3 |
| | SLOT 2 | SATA 4 |
| | SLOT 3 | SATA 5 |

Using optional RAID controller for a 2.5-inch drive model with six hard disk drives installed (1 to 6 drives)

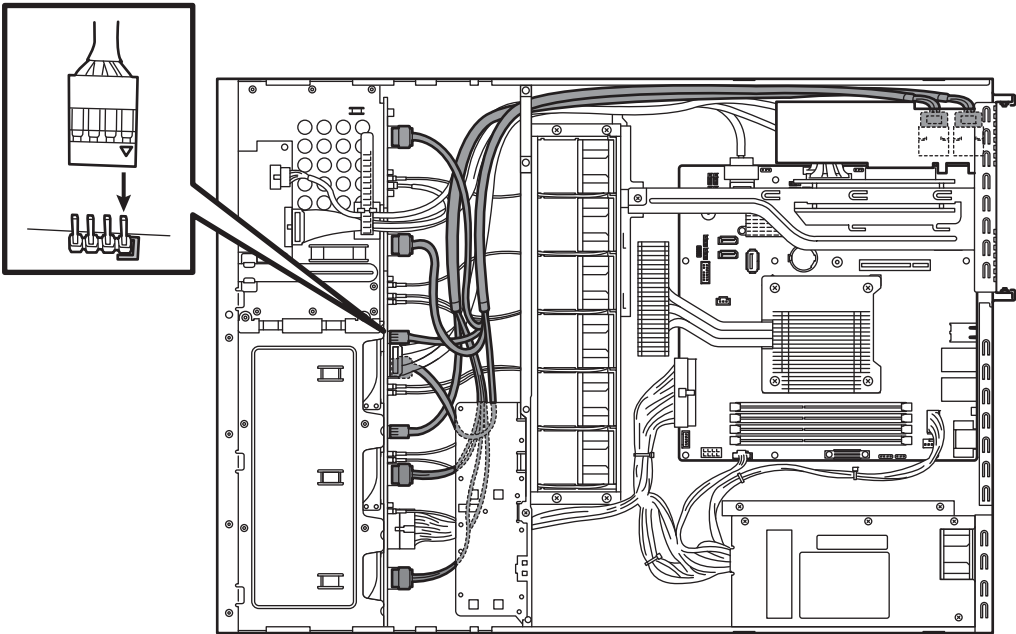
- Prepare the optional SAS/SATA cables K410-240(00) and K410-204(00).
- Connect the P0 to P3 connectors of the K410-240(00) to the SATA2 to SATA5 connectors on the backplane, respectively.
- Connect the P4 and P5 connectors of the K410-204(00) to the SATA6 and SATA7 connectors on the backplane, respectively.
- While matching the pin 1 (indicated by the triangle△) of the S1 and the pin 1 (indicated by the bold line) of the SGPIO1, connect the S1 connector of the K410-240(00) to the SGPIO1 connector on the backplane.
- While matching the pin 1 (indicated by the triangle△) of the S2 and the pin 1 (indicated by the bold line) of the SGPIO2, connect the S2 connector of the K410-204(00) to the SGPIO2 connector on the backplane.
- Connect the miniSAS connector of the K410-240(00) to the connectors for ports 0 to 3 on the optional RAID controller.
- Connect the miniSAS connector of the K410-204(00) to the connectors for ports 4 to 7 on the optional RAID controller.



| Optional RAID controller | Hard disk drive | Backplane |
|--------------------------|-----------------|-----------|
| Ports 0 to 3 | SLOT 0 | SATA 2 |
| | SLOT 1 | SATA 3 |
| | SLOT 2 | SATA 4 |
| | SLOT 3 | SATA 5 |
| Ports 4 to 7 | SLOT 4 | SATA 6 |
| | SLOT 5 | SATA 7 |
| | — | — |
| | — | — |

Using optional RAID controller for a 2.5-inch drive model with eight hard disk drives installed (1 to 8 drives)

- Prepare the optional SAS/SATA cables K410-240(00) and K410-204(00).
- Connect the P0 to P3 connectors of the K410-240(00) to the SATA0 to SATA3 connectors on the backplane, respectively.
- Connect the P4 to P7 connectors of the K410-204(00) to the SATA4 to SATA7 connectors on the backplane, respectively.
- While matching the pin 1 (indicated by the triangle△) of the S1 and the pin 1 (indicated by the bold line) of the SGPIO1, connect the S1 connector of the K410-240(00) to the SGPIO1 connector on the backplane.
- While matching the pin 1 (indicated by the triangle△) of the S2 and the pin 1 (indicated by the bold line) of the SGPIO2, connect the S2 connector of the K410-204(00) to the SGPIO2 connector on the backplane.
- Connect the miniSAS connector of the K410-240(00) to the connectors for ports 0 to 3 on the optional RAID controller.
- Connect the miniSAS connector of the K410-204(00) to the connectors for ports 4 to 7 on the optional RAID controller.



| Optional RAID controller | Hard disk drive | Backplane |
|--------------------------|-----------------|-----------|
| Ports 0 to 3 | SLOT 0 | SATA 0 |
| | SLOT 1 | SATA 1 |
| | SLOT 2 | SATA 2 |
| | SLOT 3 | SATA 3 |
| Ports 4 to 7 | SLOT 4 | SATA 4 |
| | SLOT 5 | SATA 5 |
| | SLOT 6 | SATA 6 |
| | SLOT 7 | SATA 7 |

1.10.2 Notes on setting up a RAID System

Note the following points when setting up a RAID system.

- The number of hard disk drives required varies in each RAID level.
- If on-board RAID controllers or the optional RAID controllers (N8103-171/172) are used, the RAID system cannot be built in RAID5/RAID6.

| RAID level | The minimum number of hard disk drives required to set up a RAID system | |
|------------|---|-----------------------|
| | On-board RAID Controller or N8103-171/172 | N8103-168/173/174/161 |
| RAID 0 | 1 | 1 |
| RAID 1 | 2 | 2 |
| RAID 5 | | 3 |
| RAID 6 | | 3 |
| RAID 10 | 4 | 4 |
| RAID 50 | | 6 |
| RAID 60 | | 6 |

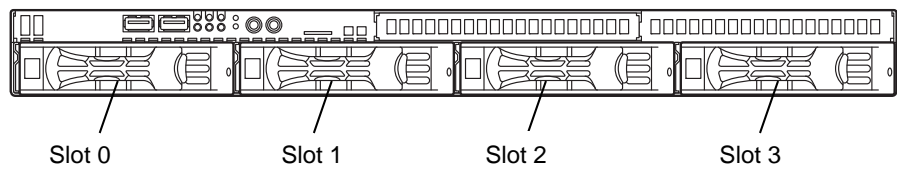
- Use SAS/SATA hard disk drives or SSDs that have the same capacity and rotational speed.
- When installing an OS in your RAID system, you can easily complete the setup process, including RAID configuration and OS installation, by using EXPRESSBUILDER. If you want to install the OS manually, use the RAID system configuration utility (WebBIOS or SuperBuild utility). The utility can be run during POST which starts immediately after the server is turned on. For details, see *Chapter 2 (4. RAID System Configuration)* in "Maintenance Guide" or the manual supplied with the optional RAID controller.

Important

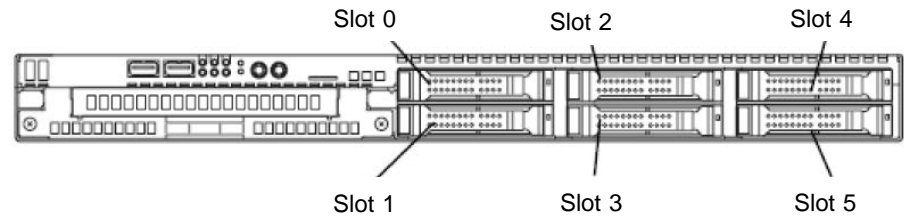
- Do not change the RAID system mode to hibernate.
- Build a disk array in the RAID system using hard disk drives that have the same specifications (capacity, rotational speed, and interface).

HDD slot numbering

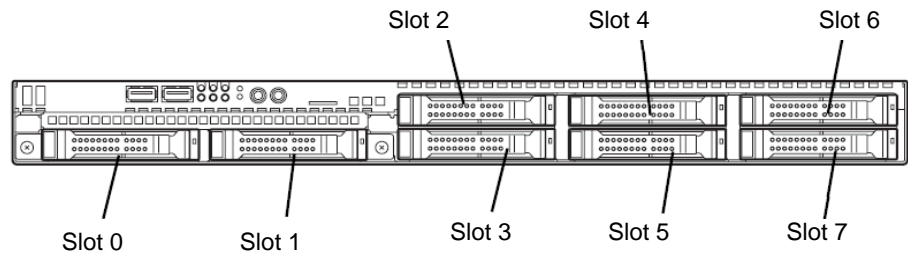
3.5-inch drive model



2.5-inch drive model (1 to 6 drives)



2.5-inch drive model (1 to 8 drives)



1.1.1 Extra Battery for RAID Controller

The optional extra battery is used in order to avoid data loss caused by accidents during a write-back operation. The model of the extra battery to be used depends on a RAID controller.

- For N8103-172/173/174, use N8103-154 extra battery
- For N8103-161/168, use flash backup unit that comes with RAID controller.

1.1.1.1 Handling precautions

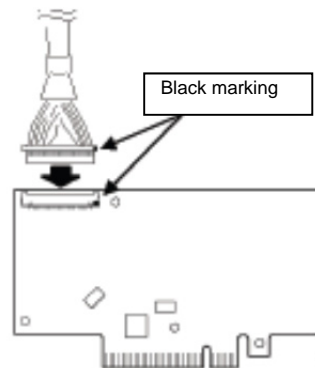
Observe the following precautions to use the extra battery.

- Use the extra battery that supports the RAID controller used.
- The extra battery is a very delicate electronic device. Before installation, touch the metal frame part of the server to discharge the static electricity from your body.
- Do not drop or bump the backup battery.
- For recycling and disposing the backup battery, refer to the manual that comes with it.

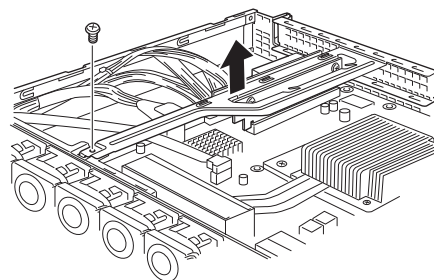
1.1.1.2 Installing N8103-154 extra battery (for N8103-172/173/174)

This section describes the procedure of installing an extra battery for RAID controller.

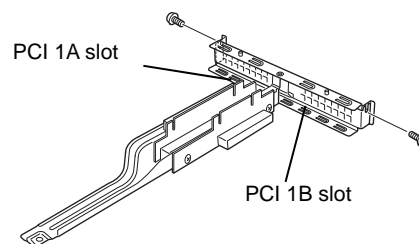
1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Remove the RAID controller.
While matching the marking, connect the battery control cable that comes with extra battery to RAID controller.



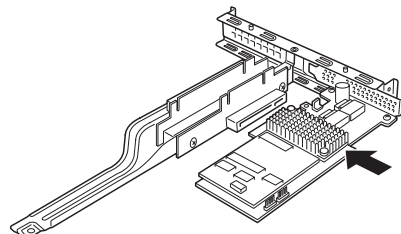
4. Remove one screw securing the riser card. Hold the both sides of the card and lift it straight off the server.



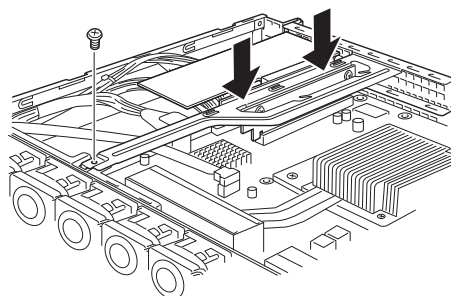
5. Remove one screw from the riser card and remove the PCI 1B blank cover.



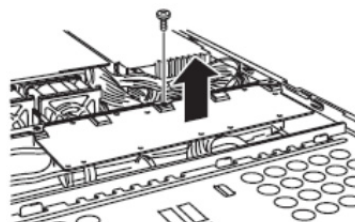
6. Attach the RAID controller to the riser card.



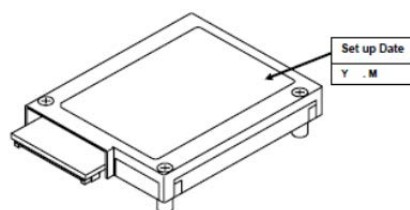
7. Insert the riser card into the slot of the motherboard and fix the riser card with the screw which you removed in step 5. Position the terminal part of the riser card in the slot of the motherboard and then securely insert it.



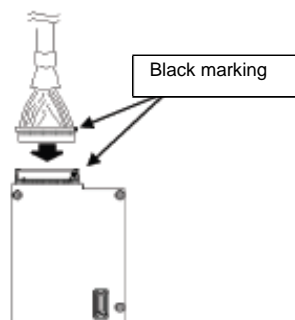
8. Unscrew the battery bracket securing the battery.



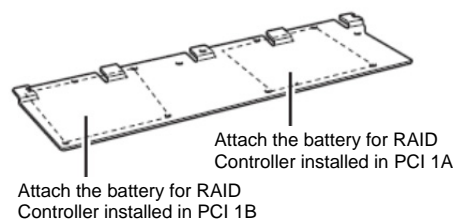
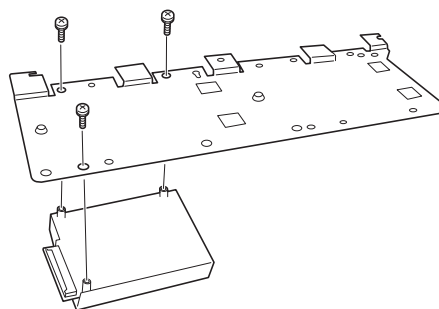
9. Write down the installation date (year and month) on the SET UP DATE LABEL and attach it to the position shown in the right figure.



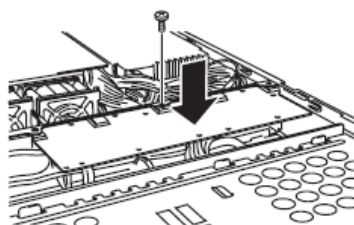
10. While matching the marking, connect the battery control cable to the battery pack, as shown in the right figure.



11. Attach the extra battery to the battery bracket by using three screws. The installation position of the extra battery is PCI 1B side.



12. Attach the bracket using one screw you removed in step 8.

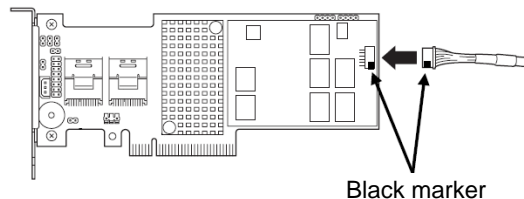


13. Reassemble the server.

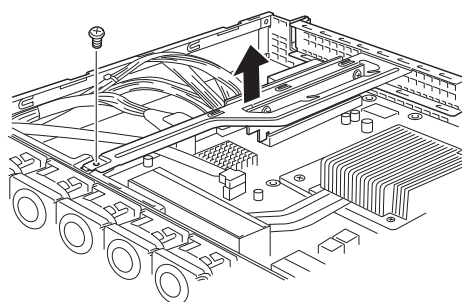
1.11.3 Installing flash backup unit that comes with N8103-161/-168

This section describes the procedure of installing a flash backup unit that comes with N8103-161/-168 RAID controller.

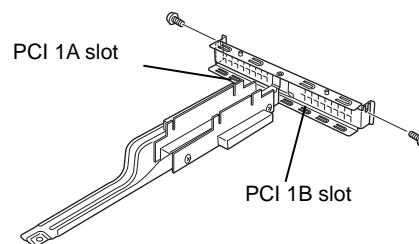
1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Connect FBU control cable (600 mm) that comes with the N8103-161/-168 RAID controller.



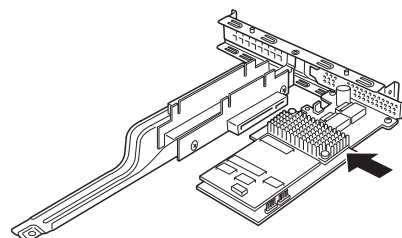
4. Remove one screw securing the riser card. Hold the both sides of the card and lift it straight off the server.



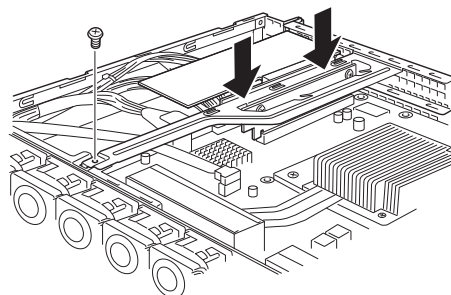
5. Remove one screw from the riser card and remove the PCI 1B blank cover.



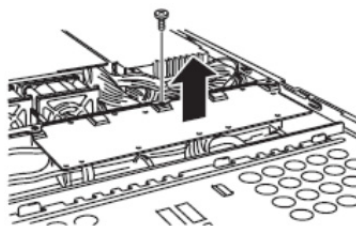
6. Attach the RAID controller to the riser card.



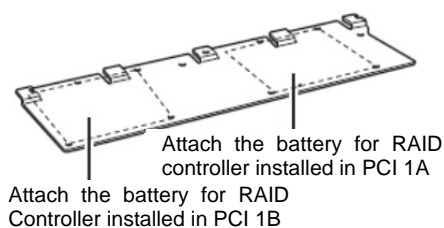
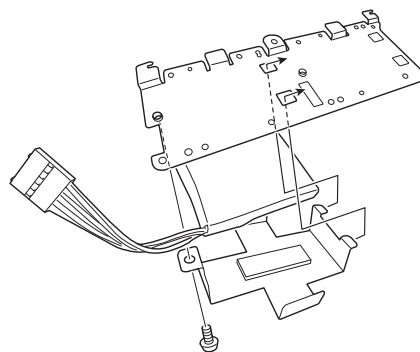
7. Insert the riser card into the slot of the motherboard and fix the riser card with the screw which you removed in step 4. Position the terminal part of the riser card in the slot of the motherboard and then securely insert it.



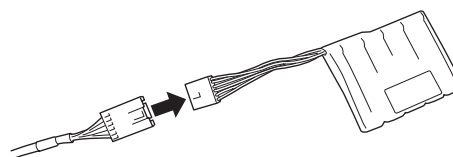
8. Unscrew the battery bracket securing the battery.



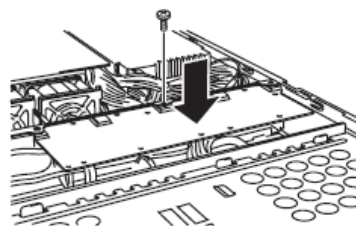
9. Attach the flash backup unit to the battery bracket by using one screw.
The installation position of the flash backup unit is the PCI 1B side.



10. Connect FBU control cable (600) to flash backup unit.



11. Attach the bracket using one screw you removed in step 8.



12. Reassemble the server.

1.12 PCI Card

The server provides a riser card where you can install a PCI card on the motherboard. The riser card can have two low-profile PCI cards installed.

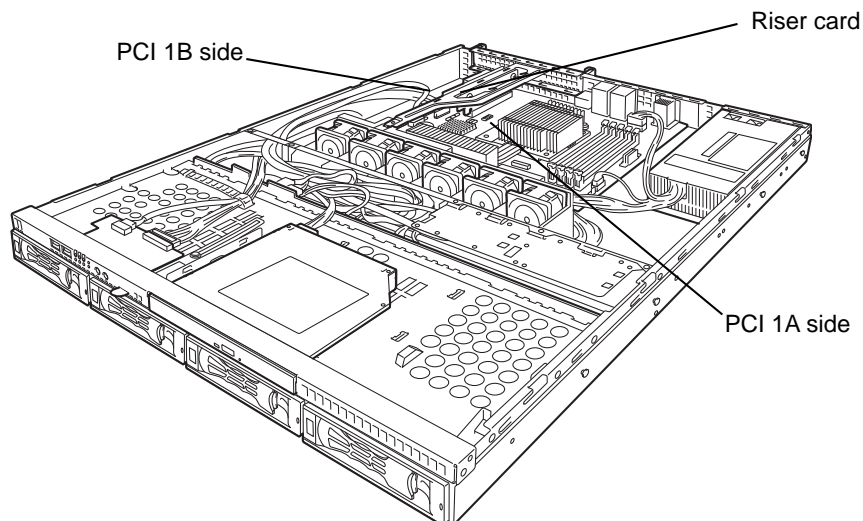
Connect PCI cards for network expansion or file device function into PCI card slots provided on the riser card.

Important Avoid static electricity to work with the procedure below. For details, see [Chapter 2 \(1.2 Anti-static Measures\)](#).

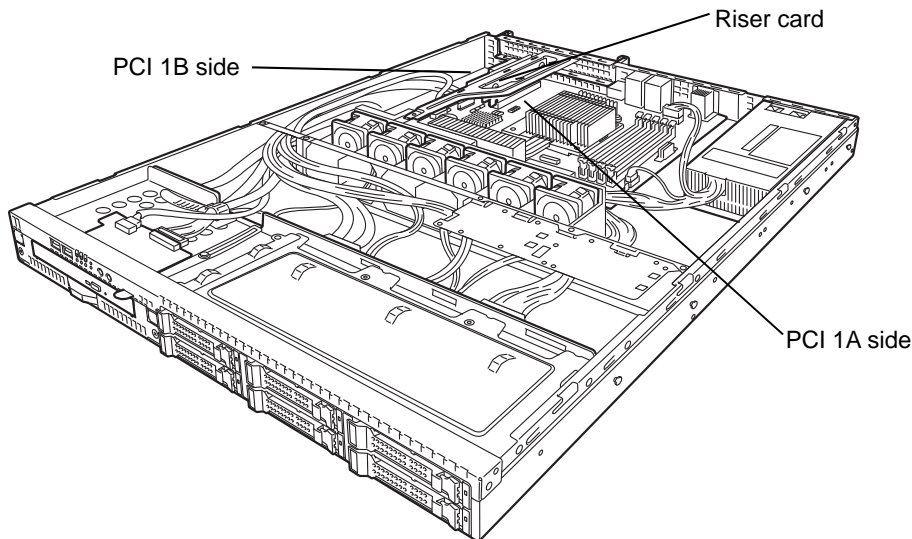
Note Only Low-profile type of PCI cards can be installed in the riser card of the server. Check the card spec before installation.

Tips If SAS controllers, RAID controllers, LAN adapter (network boot), or Fibre Channel controllers are used without connecting to hard disk drives with OS installed, set the **Option ROM** for the card to **Disabled**. For the setting, see [Chapter 2 \(1. System BIOS\)](#) in "Maintenance Guide".

3.5-inch hard disk drive model



2.5-inch hard disk drive model



1.12.1 Notes

Read the following notes when installing or removing a PCI card.

- Do not touch the terminals of the riser cards and the leads of electronic components with your bare hand. Fingerprints and dust left on them cause the server to malfunction due to a connection failure or damage to the leads.
- The server provides no connector to connect a LED connector which is supplied in RAID Controller used to indicate disk access.
- The search order for PCI bus slot on boot is as follows.
Slot 1A → Slot 1B
- The PCI devices of the same type (including onboard PCI device) may be recognized in different order from that described above, depending on OS or RAID System BIOS utility. Check the slot location of PCI device by PCI bus number, device number and function number shown in the table below.

| PCI device | PCI bus number | Device number | Function number |
|--------------|----------------|---------------|-----------------|
| Onboard NIC1 | 39h | 0 | 0 |
| Onboard NIC2 | 39h | 0 | 1 |
| Slot 1A | 1h | 0 | × |
| Slot 1B | 2h | 0 | × |

- Set **Disabled** for the optional ROM of a LAN device not to be booted by using the BIOS Setup utility.
- If an additional bootable PCI card (such as a RAID Controller, SAS controller, or LAN card) is installed, the boot priority may change. After the installation, set the boot priority in the **Boot** menu of the BIOS Setup utility.
- If a bootable device such as a PCI card or USB device is added, the boot order may change. In the BIOS Setup utility, select **Hard Drive BBS Priorities** from the **Boot** menu, and then specify a higher priority for the boot device.
Boot → Hard Drive BBS Priorities → Check the display
If the boot device is an HDD under an optional RAID Controller, the display is (Bus xx Dev 00) PCI RAID Adapter. Note that the value for xx changes depending on the PCI slot where a RAID Controller is installed.

1.12.2 Supported cards and available slots

The following tables list supported cards and slots available for them. For details, see the manual supplied with the card.

Tips

- Different cards mounted on the same bus operate at the lower frequency.
- When the operation performance of a PCI card is higher than the PCI slot on the server, the PCI card operates with the performance of the PCI slot on the server.
- Standard network
Teaming among standard network controllers (both on-board cards) is supported.
- For the N8117-01A, use a cable with the following product name and designation:
Product name: RS-232C (B)
Designation: 804-062746-820

(1/2)

| Model name | Product name | | PCI 1A | PCI 1B | Remark |
|------------|---|------------------------------------|--------------|--|--------|
| | | PCI slot performance ^{*1} | X16 lane | x4 lane | |
| | | Transfer bandwidth (per lane) | 8 Gb/s | 5 Gb/s | |
| | | Slot size | Low profile | | |
| | | PCI card type | x16 socket | x8 socket | |
| | | Available card size | Up to 173 mm | | |
| N8103-142 | SAS controller (Card performance: PCI EXPRESS 2.0 (x8)) | ○ | ○ | Dedicated to connecting external devices | |
| N8103-171 | RAID Controller (RAID 0/1) (Card performance: PCI EXPRESS 2.0 (x8)) | — | ○ | Dedicated to connecting internal disks Cannot be installed with N8103-160 | |
| N8103-172 | RAID Controller (512MB,RAID 0/1) (Card performance: PCI EXPRESS 3.0 (x8)) | — | ○ | Dedicated to connecting internal disks An extra battery (N8103-154) can be connected | |
| N8103-173 | RAID Controller (512MB,RAID 0/1/5/6) (Card performance: PCI EXPRESS 3.0 (x8)) | — | ○ | | |
| N8103-174 | RAID Controller (1 GB, RAID 0/1/5/6) (Card performance: PCI EXPRESS 3.0 (x8)) | — | ○ | | |
| N8103-168 | RAID Controller (1 GB, RAID 0/1/5/6) (Card performance: PCI EXPRESS 3.0 (x8)) | — | ○ | For connecting internal disks The RAID cache can be backed up by using the flash backup unit that comes with N8103-168. | |
| N8103-161 | RAID Controller (1GB, RAID 0/1/5/6) (Card performance: PCI EXPRESS 3.0 (x8)) | ○ | ○ | For connecting HDDs The RAID cache can be backed up by using the flash backup unit that comes with N8103-161. Cannot be installed with N8103-171 | |
| N8190-153 | Fibre Channel controller (8 Gbps/Optical) (Card performance: PCI EXPRESS 2.0 (x8)) | ○ | ○ | For connecting an external Fibre Channel Cannot be installed with N8190-157/158 | |
| N8190-154 | Fibre Channel controller (2 ch) (8 Gbps/Optical) (Card performance: PCI EXPRESS 2.0 (x8)) | ○ | ○ | For connecting an external Fibre Channel Cannot be installed with N8190-157/158. | |
| N8190-157 | Fibre Channel controller (16 Gbps/Optical) (Card performance: PCI EXPRESS 3.0 (x8)) | ○ | ○ | For connecting an external Fibre Channel Cannot be installed with N8190-153/154. The case of Pentium G3220 is until one piece. | |
| N8190-158 | Fibre Channel controller (2 ch) (16 Gbps/Optical) (Card performance: PCI EXPRESS 3.0 (x8)) | ○ | — | For connecting an external Fibre Channel Cannot be installed with N8190-153/154. The case of Pentium G3240 model can not install. | |
| N8104-145 | 1000BASE-T connection board (2ch) (Card performance: PCI EXPRESS 2.0 (x4)) | ○ | ○ | For additional LAN(Intel) Teaming (AFT/SFT/ALB) and bonding with only N8104-145 is supported. Cannot be installed with N8104-138/132. | |

(2/2)

| Model name | Product name | | PCI 1A | PCI 1B | Remark |
|------------|--|------------------------------------|--------------|--|--------|
| | | PCI slot performance ^{*1} | X16 lane | x4 lane | |
| | | Transfer bandwidth (per lane) | 8 Gb/s | 5 Gb/s | |
| | | Slot size | Low profile | | |
| | | PCI card type | x16 socket | x8 socket | |
| | | Available card size | Up to 173 mm | | |
| N8104-138 | 1000BASE-T connection board (1ch) (Card performance: PCI EXPRESS 2.0 (x1)) | ○ | ○ | For additional LAN | |
| N8104-132 | 1000BASE-T connection board (2ch) (Card performance: PCI EXPRESS 2.0 (x1)) | ○ | ○ | | |
| N8104-133 | 1000BASE-T connection board (4ch) (Card performance: PCI EXPRESS 2.0 (x4)) | ○ | ○ | | |
| N8104-128 | 10GBASE-T connection board (SFP+/2 ch) (Card performance: PCI EXPRESS 2.0 (x8)) | ○ | ○ | For additional LAN Prepare SFP module [N8104-129] if needed. Teaming (AFT/SFT/ALB) and bonding on the same board is supported. Only 1 team per system. For RHEL6 (x86), only one board can be installed | |
| N8104-146 | Infiniband connection board (1ch) (Card performance: PCI EXPRESS 3.0 (x8)) | ○ | - | For Infiniband FDR(56Gbps) | |
| N8104-147 | Infiniband connection board (2ch) (Card performance: PCI EXPRESS 3.0 (x8)) | ○ | - | For Infiniband FDR(56Gbps) | |
| N8118-01 | PCI SSD adapter (Card performance:PCI EXPRESS 2.0(x4)) | ○ | - | For storing data Cannot be used as an OS boot sector. | |
| N8117-01A | Additional RS-232C connector kit | ○ | ○ | For additional serial (RS-232C) port Up to 1 | |

● Installed as standard ○ Can be installed - Cannot be installed

*1 Lane: Indicates the transfer performance (transfer bandwidth).

<e.g.> For PCI Express

1 lane = 2.5 Gbps (unidirectional), 4 lanes = 10 Gbps (unidirectional)

For PCI Express 2.0

1 lane = 5 Gbps (unidirectional), 4 lanes = 20 Gbps (unidirectional)

For PCI Express 3.0

1 lane = 8 Gbps (unidirectional), 4 lanes = 32 Gbps (unidirectional)

Socket: Indicates the connector size. A card up to the number of sockets can be connected.

<e.g.> x4socket = x1card, x4card can be installed. x8 card cannot be installed.

* Maximum card depth that can be inserted.

LowProfile: Up to 173 mm

* For details of functions of each card, refer to the technical guide.

* The card performance described in the parentheses after the Product name indicates the maximum operation performance of the card.

* When the operation performance of a PCI card is higher than the PCI slot on the server, the PCI card operates with the performance of the PCI slot on the server.

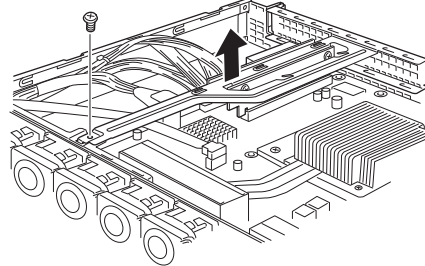
1.12.3 Installation

Install a riser card to a PCI card in the following procedure.

Important When installing a PCI card, make sure the connector of the card fits the connector of the riser card.

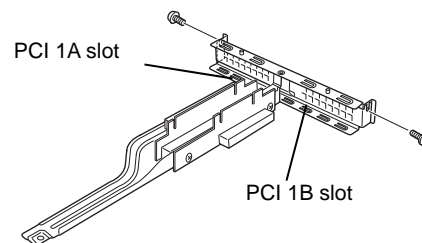
Note Check the card type (low profile or full-height type) which respective riser card supports and the type of PCI card to be installed.

1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Remove one screw securing the riser card. Hold the both ends of the riser card and lift it off.



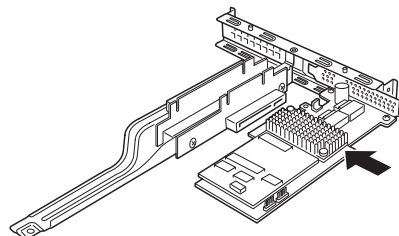
Note Be careful not to contact with other parts.

4. Confirm the installation position with the reference to the table on the previous pages.
5. Remove one screw from the riser card and remove the blank cover.



Note Keep the blank cover for future use.

6. Install a PCI card to the riser card.
When installing the card, position the terminal part of the PCI card to the riser card slot and insert it.



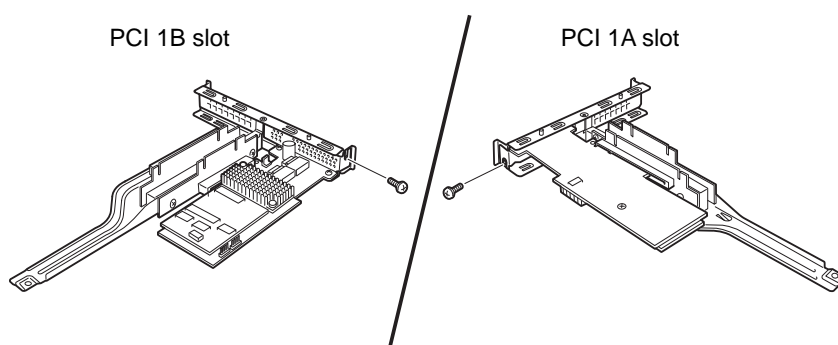
Important Do not touch the terminal part of riser cards or PCI cards and the signal pins of electric parts installed on the card. Installing cards with dirt or oil can cause malfunction.

Tips If you have trouble installing the card, remove the card once and try again. If you apply excessive pressure on the card, a PCI card or riser card might break.

Note

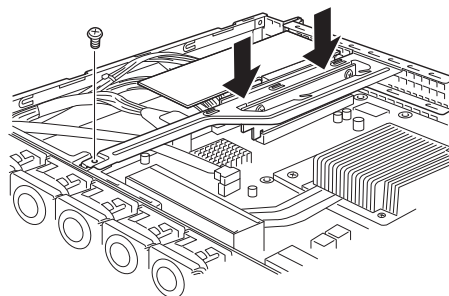
- Make sure that the head of a PCI card bracket is seated into the fixed slot.
- Depending on type of PCI cards, the terminal part of the PCI card may be too large to fit in the connector.

7. Fix the PCI card with the screw you removed in step 5.



Tips If the cable which is to be connected to the connector on the motherboard of the server is provided on the board, connect it to the board before installing the riser card to the server.

8. Connect the riser card to the motherboard slot and fix the card with the screw you removed in step 3. When connecting the card, position the terminal part of the card to the slot on the motherboard and insert it.



9. Reassemble the server.
10. Turn on the server and make sure that no error messages are displayed on POST screen. For details on POST error messages, see *Chapter 3 (1. POST Error Message)* in "Maintenance Guide".
11. To set up the PCI card, run the configuration utility on the installed the card, if necessary. For details, refer to the manual that comes with the card.
- If a RAID controller, SAS controller or LAN card which connects to any bootable device is added, the boot priority is changed to the default settings. Configure the boot priority in the **Boot** menu of the BIOS Setup Utility. For details, see *Chapter 2 (1.2.5 Boot)* in "Maintenance Guide".

Using the optional RAID controller

For details, refer to the manual that comes with optional RAID controller.

Important Avoid static electricity to work with the procedure below. For details, see *Chapter 2 (1.2 Anti-static Measures)*.

Note

- When installing an optional RAID controller, run the BIOS Setup Utility, select **PCI Configuration** from the **Advanced** menu, and then make sure that the parameter of **PCI Slot xx ROM** (xx is PCI slot number) is set to **Enabled**.
- When connecting a RAID controller, set the boot priority to 8th or higher in the Boot menu of the BIOS Setup Utility. If the setting is 9th or lower, the configuration menu for RAID controllers cannot be launched.

Important Do not change the mode to hibernate when building a RAID system.

1.12.4 Removal

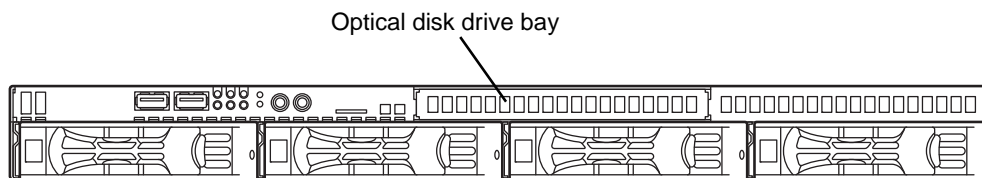
To remove a riser card, reverse the installation procedure. Hold the riser card to which the PCI card is attached firmly and remove it.

If using the server while the PCI card is removed, attach the blank cover that comes with the riser card.

1.13 Optical Disk Drive

This section describes the procedure for installing the optional optical disk drive.

Important Do not install any unsupported optical disk drive.

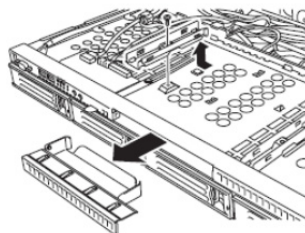


1.13.1 Installation

Install an optical disk drive in the following procedure.

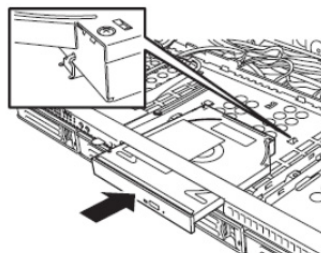
(a) 3.5-inch drive model

1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Unscrew one screw securing the bracket of the optical disk drive and remove the optical disk drive cover.

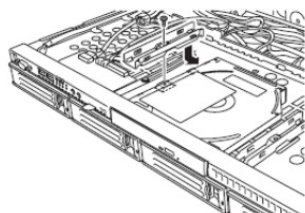


Important Keep the screw and dummy tray in the optical disk drive for future use.

4. Install the optical disk drive.



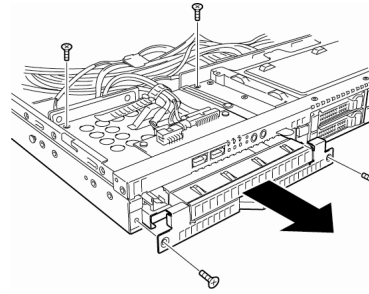
5. Screw the bracket you removed in step 2 to secure the optical disk drive in place.



6. Reassemble the server.

(b) 2.5-inch drive model

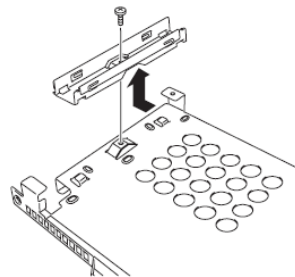
1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Remove the two screws on the front and the two screws securing the optical disk drive tray, and pull the tray out.



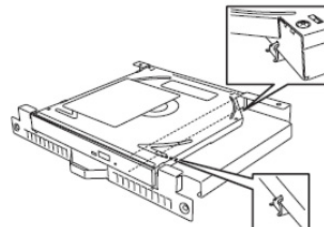
4. Remove the optical disk drive cover.

Important | Keep the screws and dummy tray in the optical disk drive for future use.

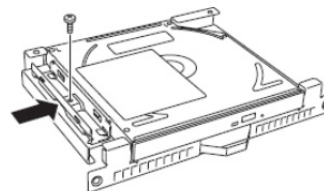
5. Unscrew and remove the bracket securing the optical disk drive tray which you pulled out in step 3.



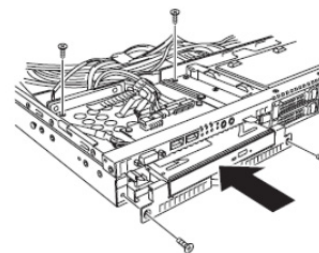
6. Install the optical disk drive.



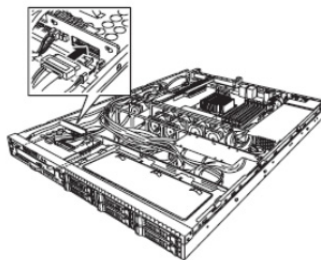
7. Screw the bracket securing the optical disk drive.



8. Insert the optical disk drive tray and secure four screws removed in step 3 to fix the optical disk drive tray to chassis.



9. Connect the optical disk drive cable.



10. Reassemble the server.

***1.13.2* Removal**

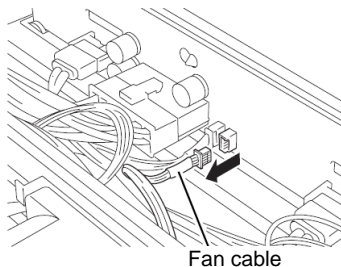
To remove an optical disk drive, reverse the installation procedure above.

1.14 Redundant Fan

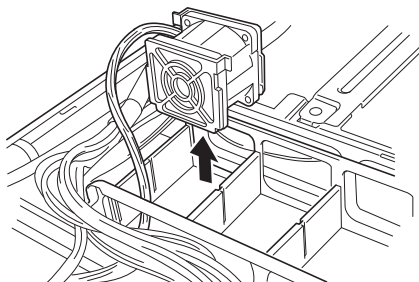
Replace the standard cooling fan with an optional redundant fan to make redundant fan configuration.

1.14.1 Replacing the standard fan unit with redundant fan unit

1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Disconnect the fan cable from the backplane.

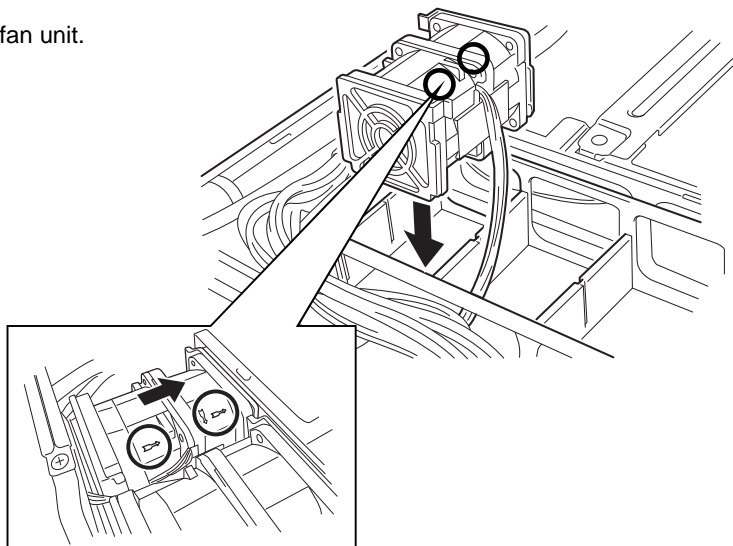


4. Lift the fan unit straight to remove it.



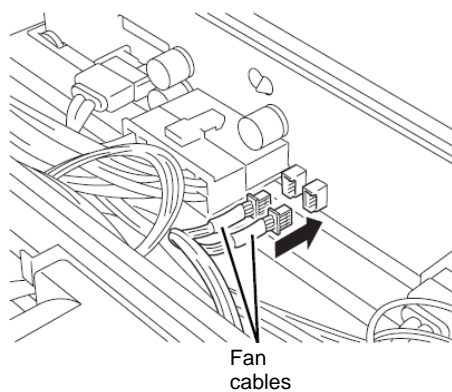
Important Keep the removed fan unit for future use.

5. Install the redundant fan unit.

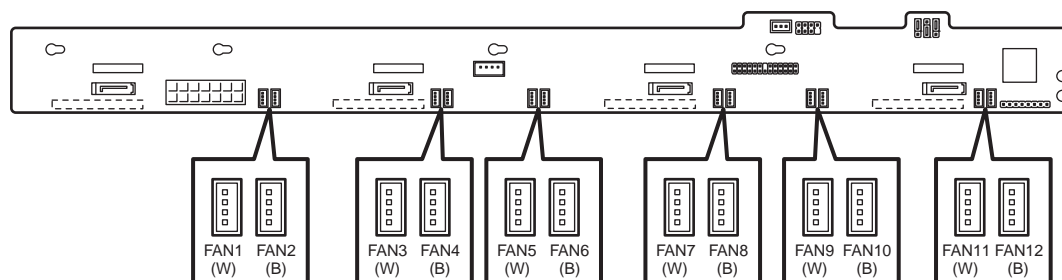


Important Make sure that the fan unit faces rearward of the chassis as shown by the arrows that indicate the air flow.

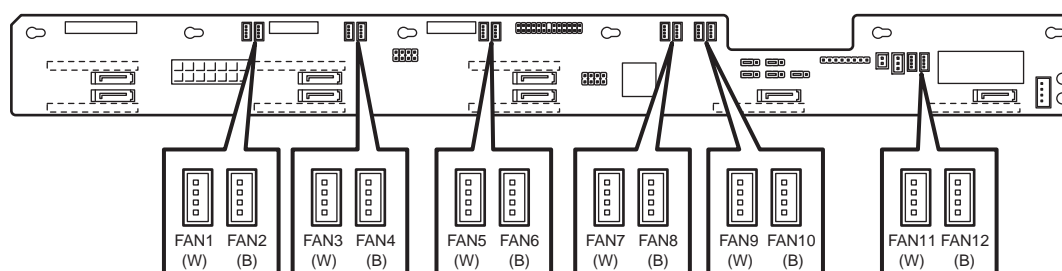
6. Connect the fan cables to the backplane. Make sure that the fan cables are not caught in the top cover, fan, or chassis.



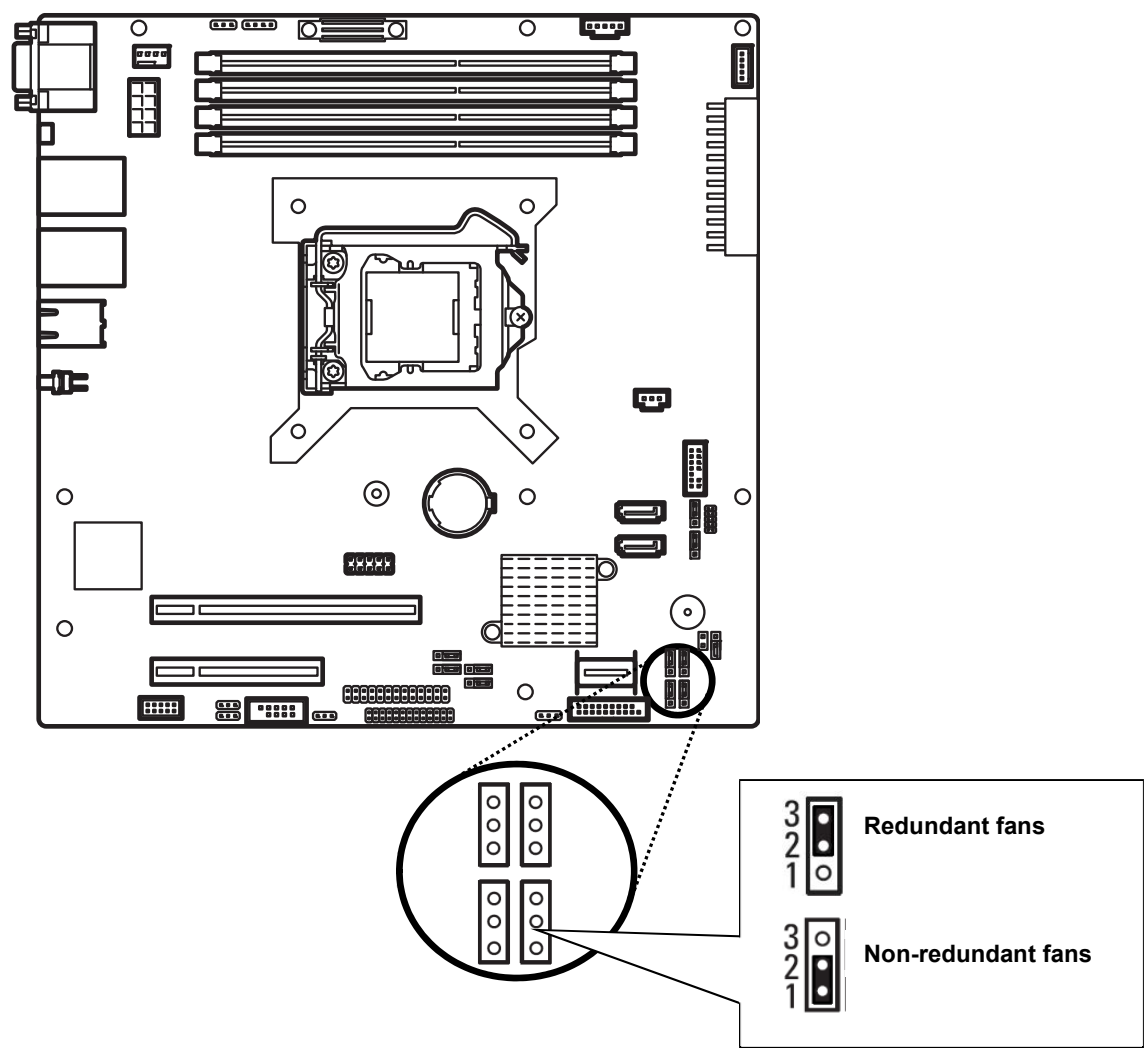
Backplane for 3.5-inch hard disk drive



Backplane for 2.5-inch hard disk drive



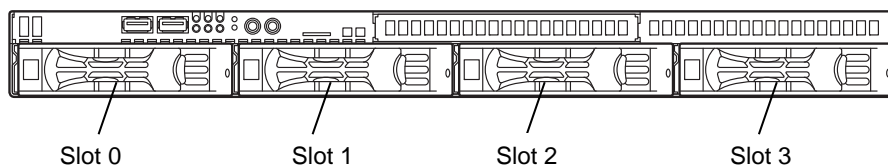
7. Change the jumper settings on the motherboards, as shown in the figure below.



Important Do not change the other jumper pins.

1.15 3.5-inch Hard Disk Drive

The hard disk drive bays can install up to four hard disk drives.



Important

- Use hard disk drives provided by NEC.
- Hard disk drives with different types of interfaces or different rotational speeds cannot be installed together.
- If using hard disk drives in a RAID system, confirm the jumper settings and cabling.

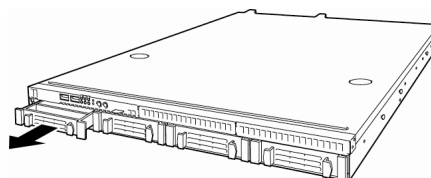
1.15.1 Installation

Install a hard disk drive by using the following procedure.

Important

In the RAID system, install the hard disk drives that have the same specifications (capacity, rotational speed and interface).

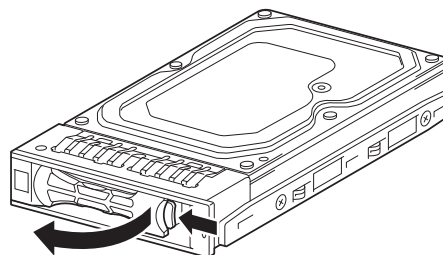
1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Locate the slot where you install the hard disk drive.
The server provides four slots. Install hard disk drives in ascending order of slot number.
3. Remove the dummy trays.



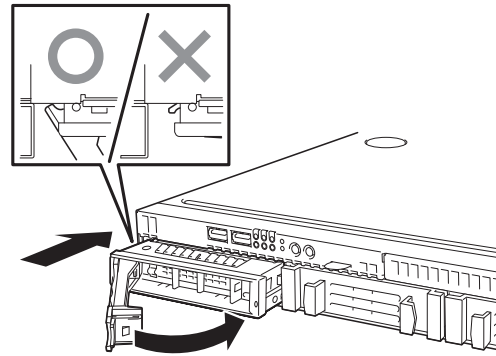
Important

- Keep the dummy trays for future use.
- Keep the dummy trays installed where hard disk drives are not installed.

4. Unlock the handle of the tray.



5. Hold the tray and its handle, and then insert it into the slot.

**Note**

- Push it all the way until the handle's lock touches the frame.
- Hold the tray firmly with both hands.

6. Slowly close the handle.
The tray is locked making a clicking sound.

Important

Be careful that your finger is not caught between the handle and the tray.

Note

When you push the drive into the slot, confirm the handle got hooked on the frame.

7. Turn on the server, run the BIOS Setup Utility, and then specify the boot order from the **Boot** menu. For details about the **Boot** menu, see *Chapter 2 (1.2.5 Boot)* in "*Maintenance Guide*".
8. See *Chapter 2 (1.20 Attaching the Front Bezel)* to put the front bezel back.

1.15.2 Removal

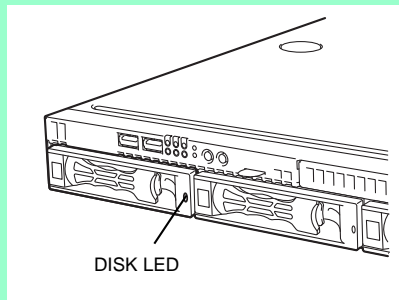
Remove a hard disk drive in the following procedure.

Important

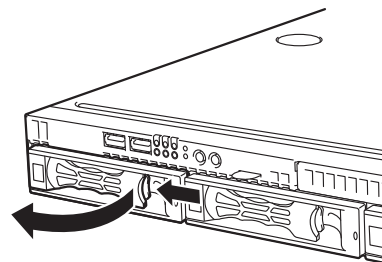
If you dispose of the removed hard disk drive, follow instructions described in *Chapter 1 (1. Transfer, Movement, and Disposal)* in "Maintenance Guide".

Note

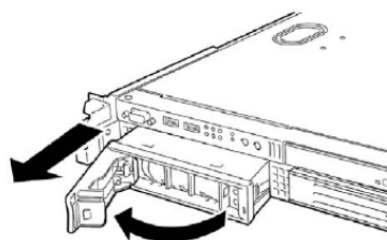
If you remove a failed hard disk drive, check the DISK LED lit in amber.



1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Push the lever to unlock and open the handle.



3. Hold the handle and tray firmly and pull the hard disk drive out. **Do not pull the handle only.**
4. Fill the open slot with the dummy tray, if necessary.



5. Turn on the server, run the BIOS Setup Utility, and then specify the boot order from the **Boot** menu. For details about the **Boot** menu, see *Chapter 2 (1.2.5 Boot)* in "Maintenance Guide".
6. See *Chapter 2 (1.20 Attaching the Front Bezel)* to put the front bezel back.

***1.15.3* Replacing a hard disk drive in the RAID system**

In the RAID system, you can use the auto rebuild feature to restore the data back to the state before the failure.

The auto rebuild feature is enabled in logical drives set to RAID 1, RAID 5, RAID 6, RAID 10, and RAID 50.

The disk is automatically rebuilt when hot swapping a failed hard disk drive.

During the auto rebuild, the DISK LED on the hard disk drive flashes green and amber alternately to indicate that auto rebuild is being performed.

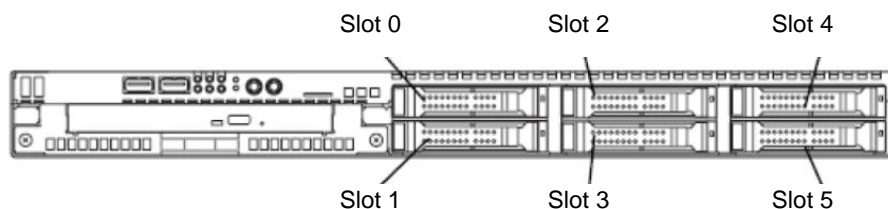
Observe the following precautions whenever executing auto rebuild.

- Do not turn off the server until auto rebuild completes.
- Leave an interval of at least 90 seconds between a hard disk drive removal and a hard disk drive installation.
- Do not replace another disk during the auto rebuilding.

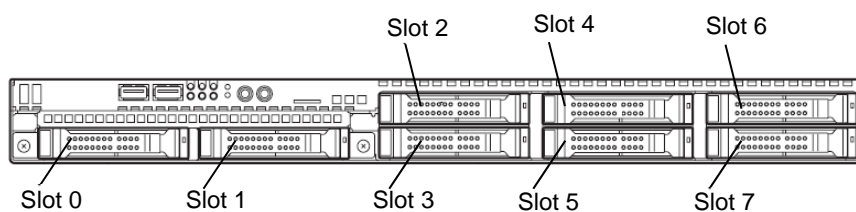
1.16 2.5-inch Hard Disk Drive

The hard disk drive bays can install up to six hard disk drives as standard.

<Standard>



<With extra 2.5-inch HDD cage>



Important

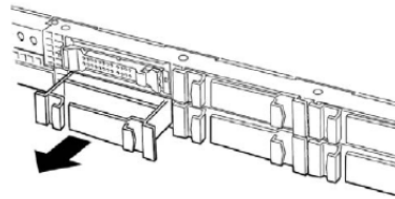
- Use hard disk drives provided by NEC.
- Hard disk drives with different types of interfaces or different rotational speeds cannot be installed together.
- If using hard disk drives in a RAID system, confirm the jumper settings and cabling.

1.16.1 Installation

Install a hard disk drive by using the following procedure. Follow the same installation procedure for other bays.

Important In the RAID system, install the hard disk drives that have the same specifications (capacity, rotational speed and interface). HDD and SSD can not use together in the same RAID system.

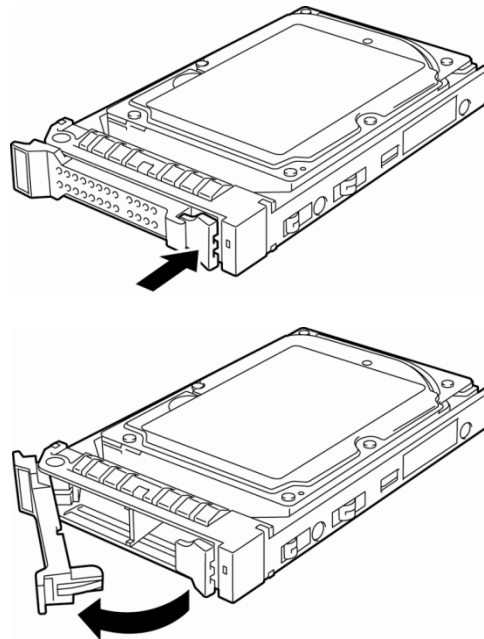
1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Locate the slot where you install the hard disk drive.
The server provides six slots as standard. Install hard disk drives in ascending port number order.
3. Remove the dummy trays.



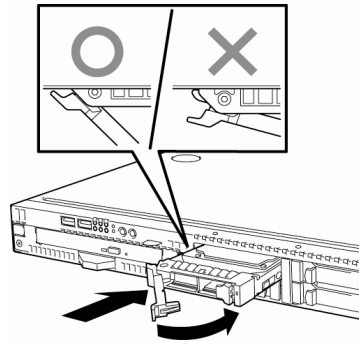
Important

- Keep the dummy trays for future use.
- Keep the dummy trays installed where hard disk drives are not installed.

4. Unlock the handle of the tray.



5. Hold the tray and its handle, and then insert it into the slot.

**Note**

- Push it all the way until the handle's lock touches the frame.
- Hold the tray firmly with both hands.

6. Slowly close the handle.
The tray is locked making a clicking sound.

Important

Be careful that your finger is not caught between the handle and the tray.

Note

When you push the drive into the slot, confirm the handle got hooked on the frame.

7. Turn on the server, run the BIOS Setup Utility, and then specify the boot order from the **Boot** menu. For details about the **Boot** menu, see *Chapter 2 (1.2.5 Boot)* in "Maintenance Guide".
8. See *Chapter 2 (1.20 Attaching the Front Bezel)* to put the front bezel back.

1.16.2 Removal

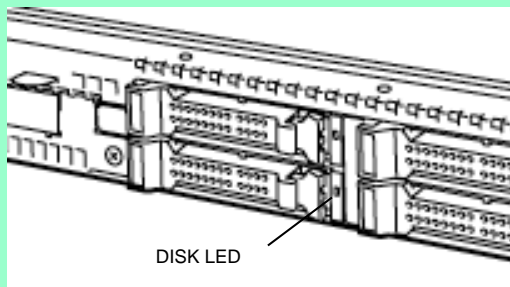
Remove a hard disk drive in the following procedure.

Important

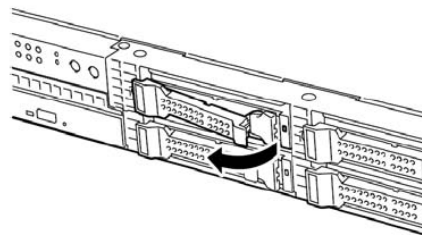
If you dispose of the removed hard disk drive, follow instructions described in *Chapter 1 (1. Transfer, Movement, and Disposal)* in "Maintenance Guide".

Note

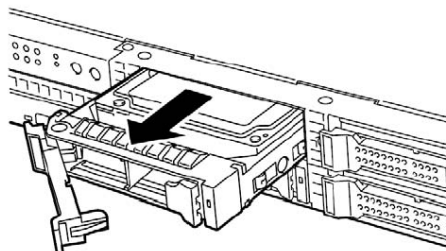
If you remove a failed hard disk drive, check the DISK LED lit in amber.



1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. Push the lever to unlock and open the handle.



3. Hold the handle and tray firmly and pull the hard disk drive out. **Do not pull the handle only.**
4. Fill the open slot with the dummy tray, if necessary.



5. Turn on the server, run the BIOS Setup Utility, and then specify the boot order from the **Boot** menu. For details about the **Boot** menu, see *Chapter 2 (1.2.5 Boot)* in "Maintenance Guide".
6. See *Chapter 2 (1.20 Attaching the Front Bezel)* to put the front bezel back.

***1.16.3* Replacing a hard disk drive in the RAID system**

In the RAID system, you can use the auto rebuild feature to restore the data back to the state before the failure.

The auto rebuild feature is enabled in logical drives set to RAID 1, RAID 5, RAID 6, RAID 10, RAID 50 and RAID 60.

The disk is automatically rebuilt when hot swapping a failed hard disk drive.

During the auto rebuild, the DISK LED on the hard disk drive flashes green and amber alternately to indicate that auto rebuild is being performed.

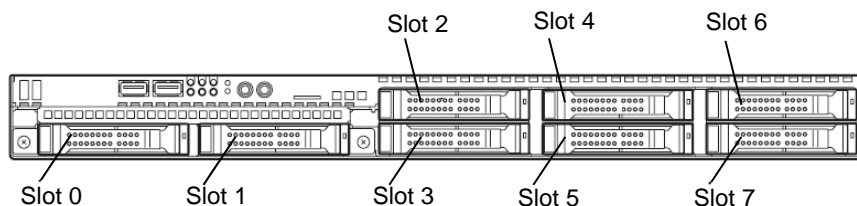
Observe the following precautions whenever executing the auto rebuild

- Do not turn off the server until the auto rebuild completes.
- Leave an interval of at least 90 seconds between a hard disk drive removal and a hard disk drive installation.
- Do not replace another disk during the auto rebuilding.

1.17 Extra 2.5-inch HDD Cage

You can use eight hard disk drives when the extra 2.5-inch HDD cage N8154-52 is installed.

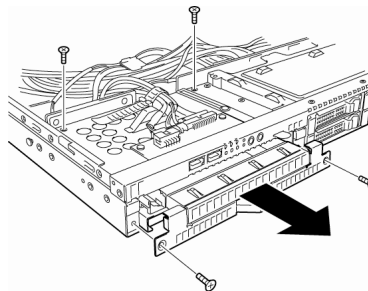
- To use the extra cage, prepare the optional SAS/SATA cables K410-240(00) and K410-204(00).



1.17.1 Installation

Install the extra 2.5-inch HDD cage by using the following procedure.

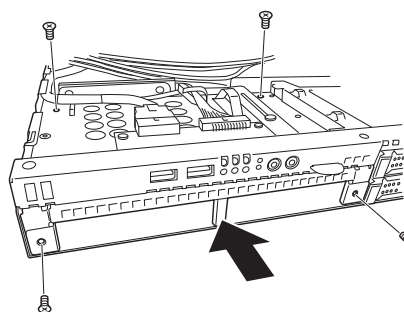
1. See *Chapter 2 (1.3 Overview of Installation and Removal)* for preparations.
2. See *Chapter 2 (1.6 Removing the Top Cover)* to remove the top cover.
3. Remove the two screws from the front panel and two screws from the optical disk drive, and then pull out the optical disk drive tray.



4. Remove the cover from the optical disk drive.

Important Keep the removed cover for future use.

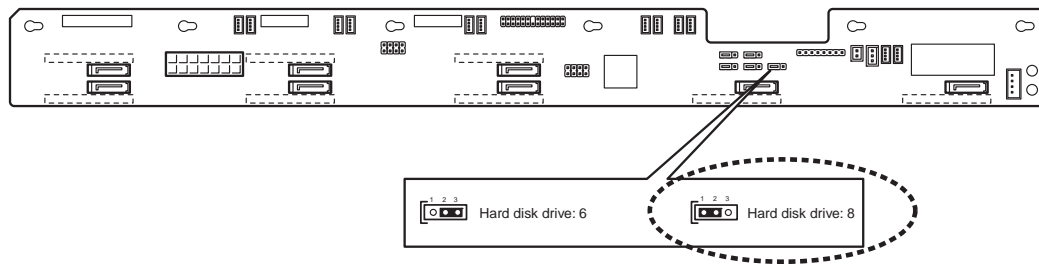
5. Insert the extra 2.5-inch HDD cage into the slot, and secure it to the server chassis with the four screws removed in step 3.



6. Change the jumper setting (J6) on the backplane to 1-2.

Standard : 2-3 (default)

With extra HDD cage : 1-2

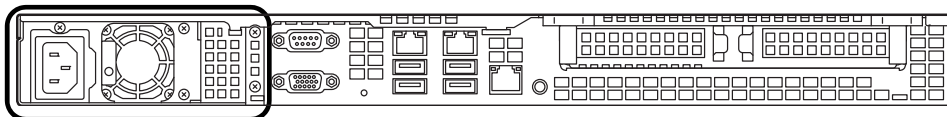


7. Change the cable connection between the optional RAID controller and the backplane for the hard disk drive. For details, see *Chapter 2 (1.10.1 Connecting cables)*.
8. Reassemble the server.

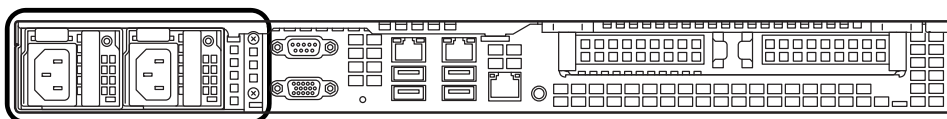
1.18 Redundant Power Supply Unit (2x 500W)

Replace the standard power supply unit with an optional redundant power supply unit to make redundant power supply configuration.

< Non-redundant power supply unit installed >

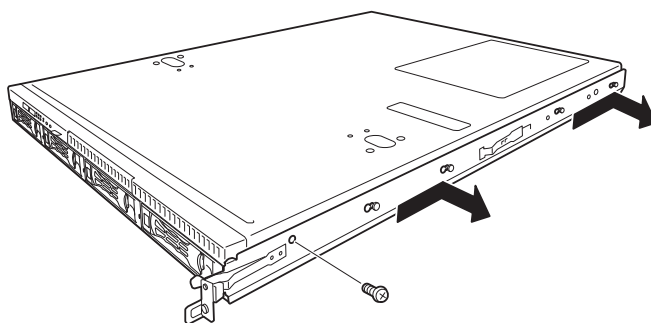


< Redundant power supply unit installed >



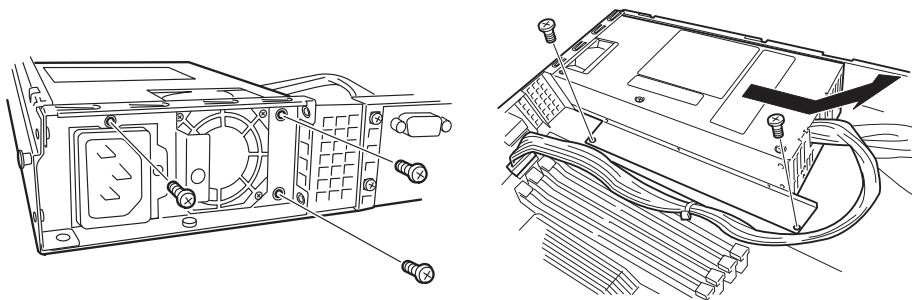
1.18.1 Replacing the standard power supply unit with redundant power supply unit

1. See Chapter 2 (1.3 Overview of Installation and Removal) for preparations.
2. Remove the right inner rail.

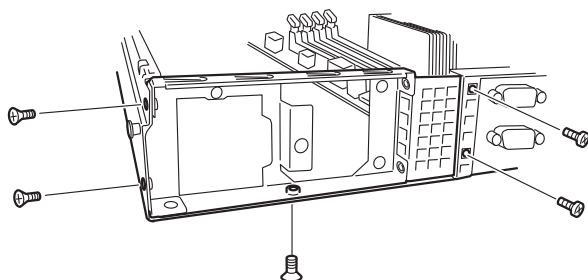


Remove one screw, move the inner rail toward rear of the server, and remove the inner rail.

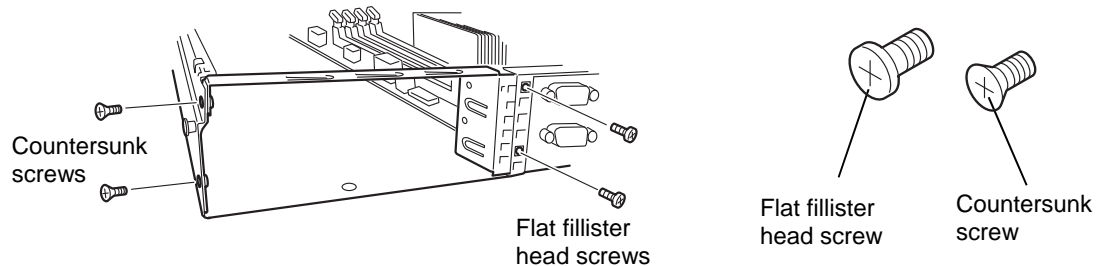
3. Remove the top cover according to Chapter 2 (1.6 Removing the Top Cover).
4. Disconnect four power cables from the motherboard and backplane for hard disk drive.
5. Remove the five screws from the power supply unit, and take the power supply unit out from the chassis.



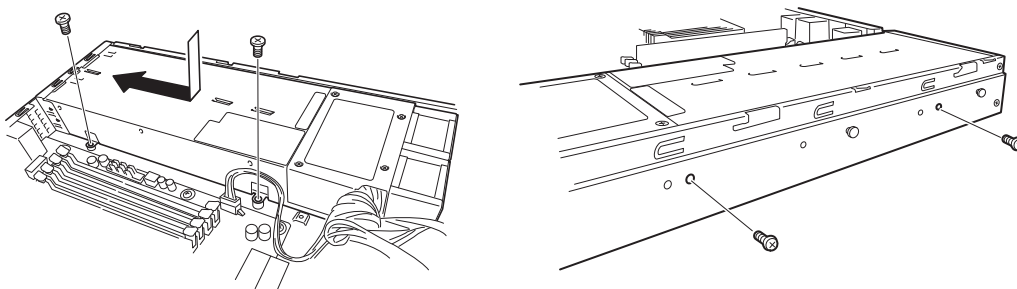
6. Remove the five screws to remove the bracket for the power supply unit.



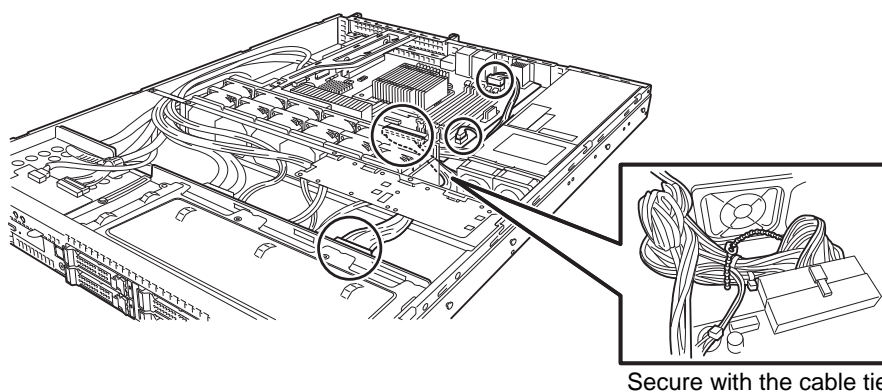
7. Mount the bracket for the redundant power supply unit with four screws (two flat fillister head screws and two countersunk screws). The bracket is provided with the redundant power supply unit.



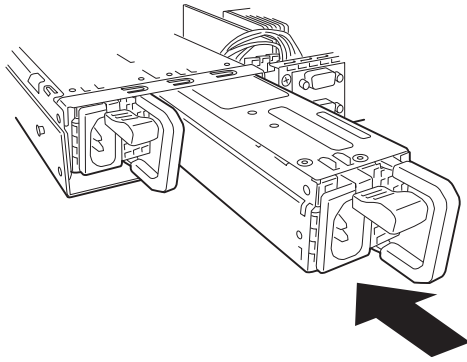
8. Mount the power cage to the chassis with four screws.



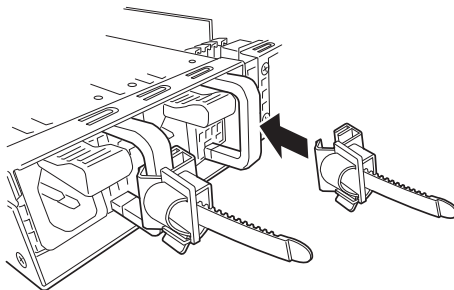
9. Connect the four cables to the motherboard and backplane for hard disk drives.



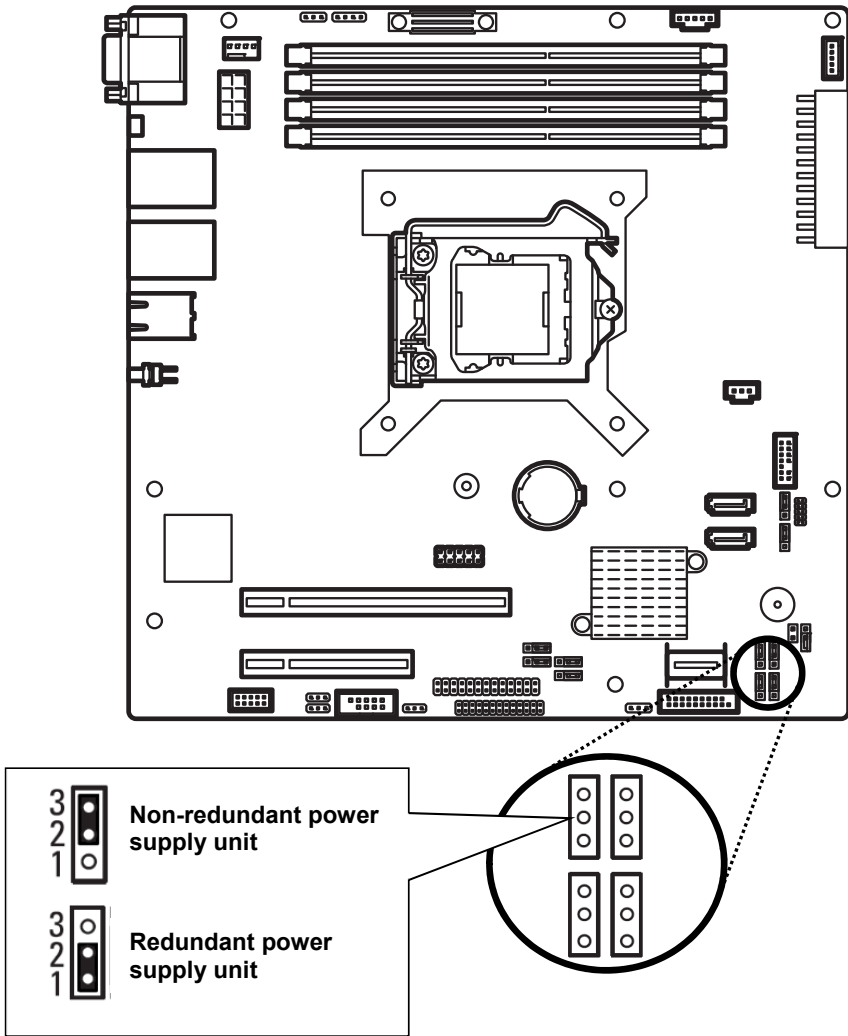
10. Insert the two redundant power supply units into the power cage.



11. Attach the cable tie that comes with the redundant power supply unit to the handle of the redundant power supply unit



12. Change the jumper settings on the motherboard, as shown in the figure below.

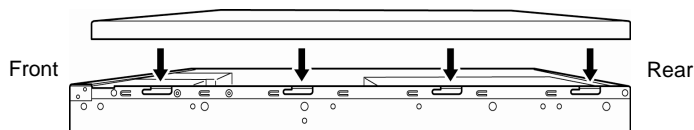


Important Do not change the other jumper pins.

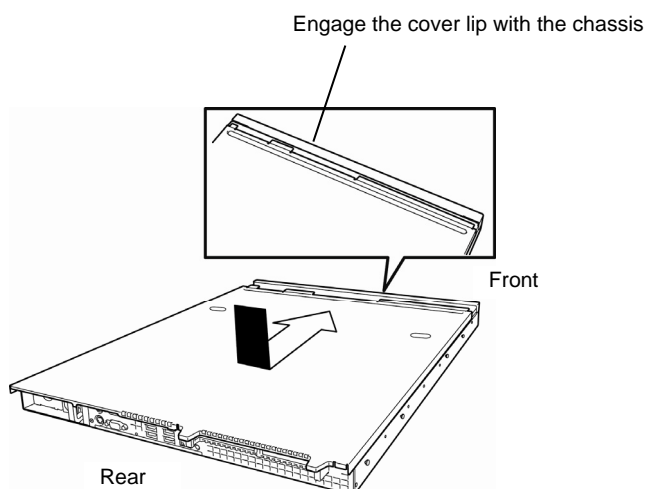
13. Update SDR by using SDR Update CD that comes with the redundant power supply.

1.19 Attaching the Top Cover

When attaching the top cover, make sure that the tab is securely inserted into the server frame, and then slide it forward. The top cover is locked when it makes a clicking sound.



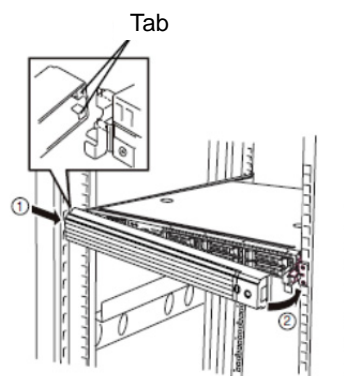
Check that the release button is raised. If the button stays depressed, slide the cover backward again.



1.20 Attaching the Front Bezel

Hook the tab on the left of the bezel to the server frame, and fit the bezel into the server.

Lock the bezel with the bezel lock key.



Important

Be careful not to accidentally press POWER Switch when attaching the front bezel.

2. Installation and Connection



This section describes how to position the server and connect cables.



2.1 Installation

This server must be mounted to a rack which conforms to EIA standards for use.

2.1.1 Installing rack

Refer to the manual that comes with your rack for how to install the rack.

|  WARNING | |
|--|---|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> • Use only in the specified environment. • Do not connect the ground wire to a gas pipe. |


|  CAUTION | |
|--|---|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> • Do not carry or install the server only by a single person. • Do not install the server so that the load may be concentrated on a specific point. • Do not install any components only by a single person. Confirm that hinge pins of the door are completely secured in place. • Do not pull out the server from the rack when the rack is unstable. • Do not leave more than one device being pulled out from the rack. • Do not provide the wiring for the server to exceed the rating of the power supply. • Do not use in the environment where corrosive gas is generated. |


Do not install the rack or server under the following environment.

- Narrow space
- Place that cannot bear the total weights of the rack
- Place where stabilizers cannot be installed
- Place of uneven or slanting floor
- Place of drastic temperature change (near a heater, air conditioner, or refrigerator)
- Place where intense vibration may be generated
- Place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, and so on) exist
- Place where the air (or dust) includes components accelerating corrosion (sulfur, sodium chloride, and so on) or conductive metals
- Place where chemicals may be accidentally sprayed over
- Place where a carpet not subject to anti-static process is laid
- Place where some objects may be fallen on the rack
- Place near a device generating intense magnetic field (such as TVs, radios, broadcast/communication antennas, power transmission wires, and electromagnetic cranes) is placed
- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption
- Place near equipment that generates power noise, such as contact spark at power-on/power-off of commercial power supply through a relay

2.1.2 Installing the server to the rack or removing it from the rack


Mount the server to the rack.


**WARNING**



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, refer to *Safety precautions in Precautions for Use*.

- Do not use any racks out of standards.
- Use only under the specified environment.

**CAUTION**



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to *Safety precautions in Precautions for Use*.

- Do not drop.
- Do not leave the server being pulled out.
- Do not install with the cover removed.
- Do not get your fingers caught.

About temperature increases and airflow in the rack

Review airflow in the rack and room so that the internal temperature will not exceed the operational temperature during operation.

Air enters the server from the front and exits from the rear.

(1) Installation

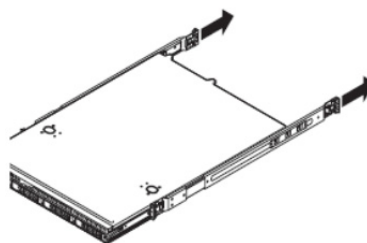
Mount the server to a rack in the following procedure.

- **Preparation for mounting**

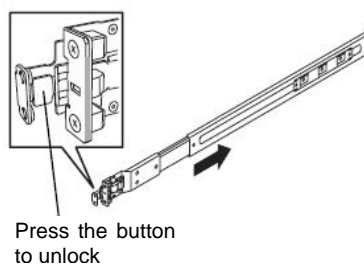
Remove the tape that attached slide rails before mounting it to the rack.

- **Removing outer rails**

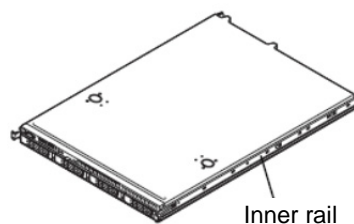
1. Remove the slide rails from left and right sides of the server.



2. While pressing the unlock button at the front of the server, hold the rail and slowly slide it backward.



3. After removing the outer rail, only the inner rail is screwed to the server.



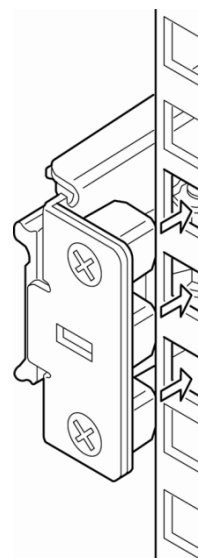
- **Installing outer rail**

Attach the outer rail you previously removed to the rack.

Fit the square-shaped protrusions of the rail to the square holes of the rack. Make sure that it makes a clicking sound indicating that it is locked.




Right figure shows the front right side of the rack. Install to the rear right side and front and rear left sides following the same procedure.

Make sure that the rail assembly is installed at the same height as the other slide rail already installed.



Important Confirm that the rails are securely locked.

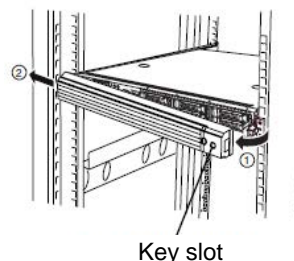
- **Installing the server**

|  CAUTION | |
|---|--|
|   | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to <i>Safety precautions</i> in <i>Precautions for Use</i>.</p> <ul style="list-style-type: none"> • Do not drop. • Do not leave the server being pulled out. • Do not install with the cover removed. • Do not get your fingers caught. |

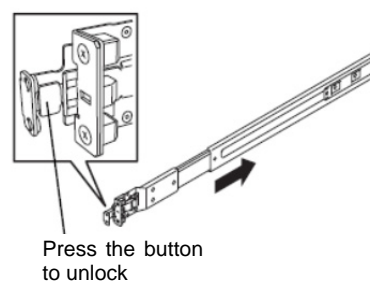
(2) Removal procedure

Remove the server from the rack in the following procedure. It is recommended more than one person work on this together.

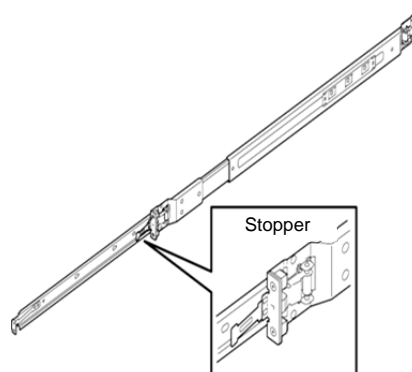
1. Turn off the server, and then disconnect the power cord and all cables from the server.
2. Unlock the front bezel and remove it.



3. Slowly pull the server out while pressing the unlock buttons located on either side of the front of the server.



4. The server will come to a stop halfway. Press and hold the stoppers on the rails and pull the server out of the rack.



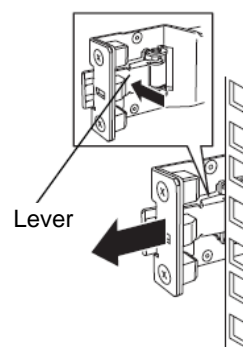
Important Be careful not to get your fingers caught in the rails and levers.

5. Hold the server firmly and remove it from the rack.

Important

- While more than one person is supporting the bottom part of the server, slowly pull out the server.
- Do not apply pressure on the server from top when it is being pulled out.

6. Pull the rail in the direction of the arrows while pressing the lever.



(3) Removing outer rails

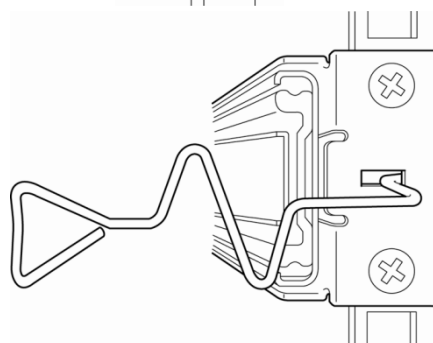
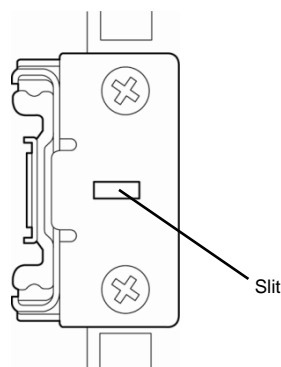
If multiple rails are installed and the unlock lever cannot be pushed, remove the rail from the rack by using the following procedure.

1. See *Chapter 2 (2.1.2 - (2) Removal procedure)* to remove the server from the rack.

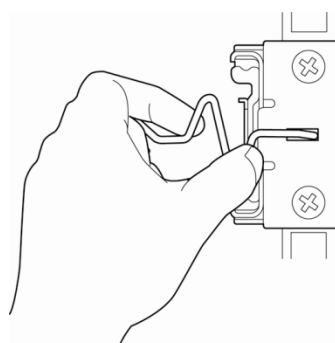
2. Prepare the designated tool to remove slide rail (outer rail) that comes with the server.



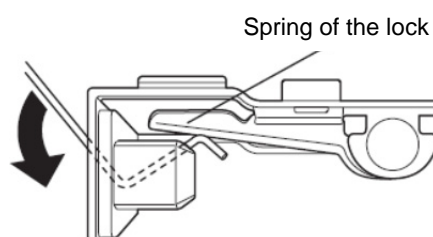
3. Insert the tool into the slit at the front of a rail as shown in the right figure.



4. Unlock the rail by moving the tool in the direction as shown in the right figure.

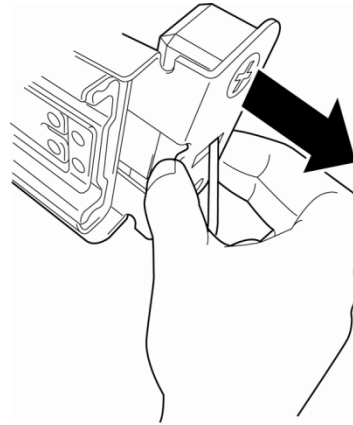


Front view

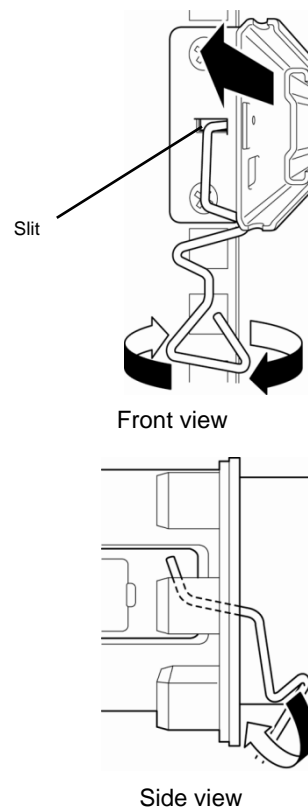


Top view

5. Remove the rail from the rack while it is being unlocked.







6. Insert the tool into the slit at the rear of the rail in the direction described. Rotate the tool to unlock it as shown in the right figure.
7. Remove the rail while it is being unlocked.

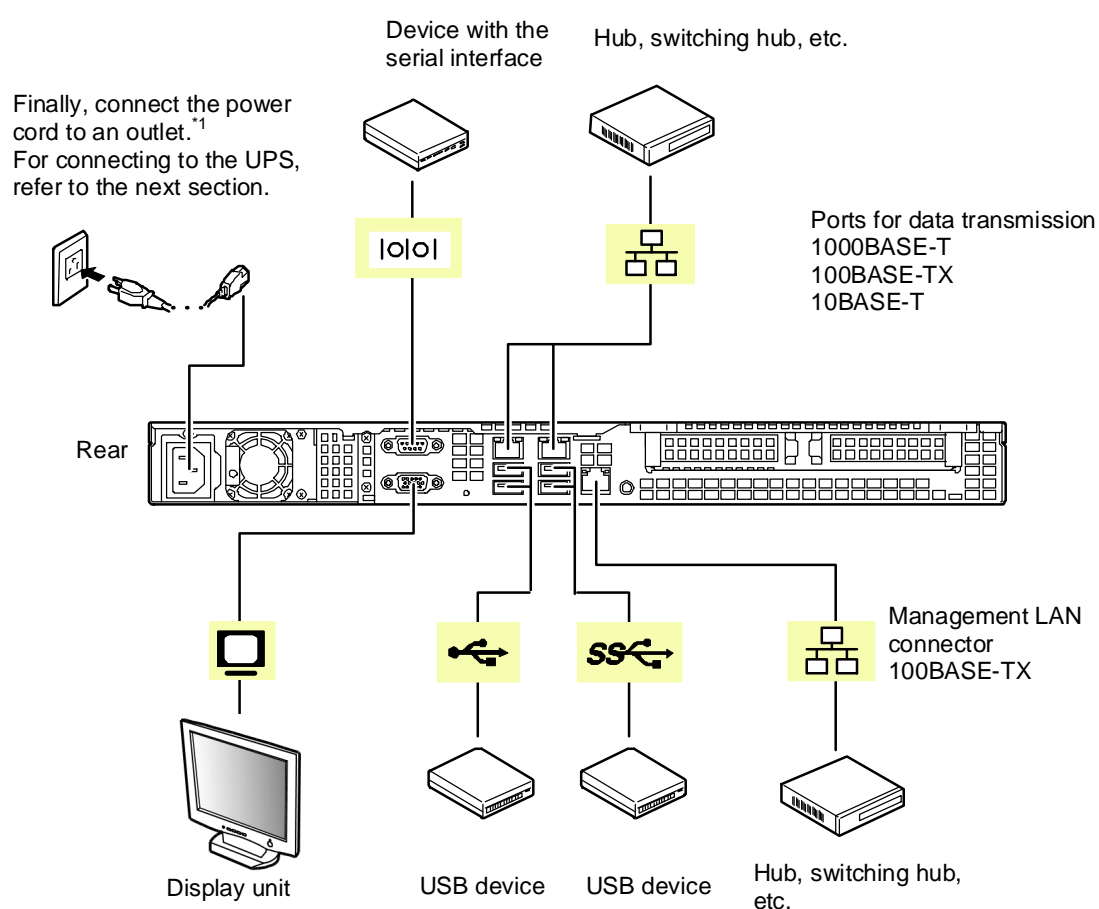
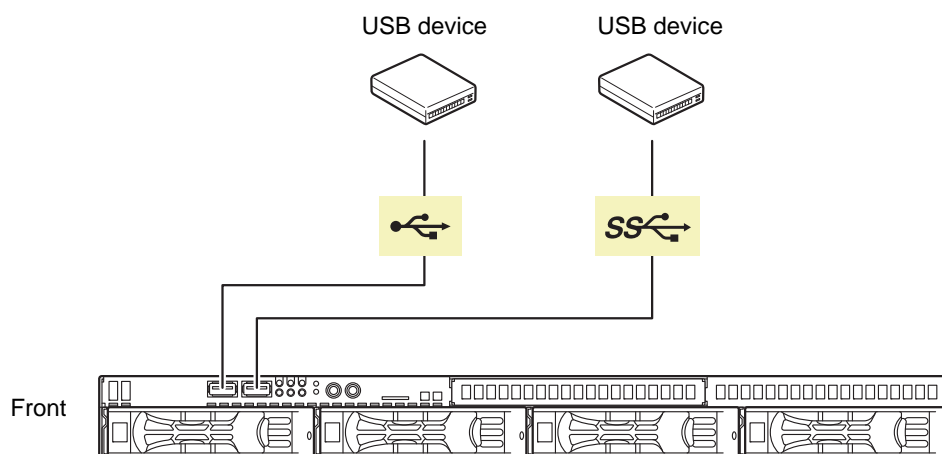


2.2 Connection

Connect peripheral devices to the server. Connectors that enable a variety of peripheral devices to be connected are provided at the front and rear of the server. Figures on the following pages show the peripheral devices that can be connected as standard. Connect the peripheral devices before connecting the power cord to the server.

|  WARNING | |
|--|---|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> Do not hold the power plug with wet hands Do not connect the ground wire to a gas pipe |

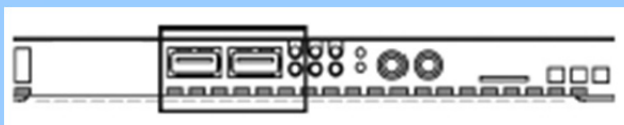
|  CAUTION | |
|--|---|
|  | <p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to <i>Safety precautions in Precautions for Use</i>.</p> <ul style="list-style-type: none"> Use only the specified outlet to insert. Do not connect the power cord to an outlet that has an illegal number of connections. Insert the power plug into the outlet as far as it goes. Use only the specified power cord Do not connect or disconnect the interface cable with the power plugged in the outlet. Use only the specified interface cable |



*1 Connect the power cord to a circuit breaker of up to 15 A.
To prevent power cord from disconnecting, secure the power cord with the provided cable tie.

- Important** **Use of external USB devices**
- If you connect an external USB DVD-ROM drive to a USB connector at the front of the server, do not connect any other device to the adjacent USB port.
- * The ports in a box in the images below are “adjacent USB ports”.

USB connectors at the front of the server



- Important**
- Turn off the server and peripheral devices to be connected before connecting.
 - Do not connect the third party device.
 - Fix the power cord or interface cable with cable ties.
 - When removing the server from the rack, disconnect the power cord and interface cables.
 - Make sure that no pressure is applied on the plug of power cord.

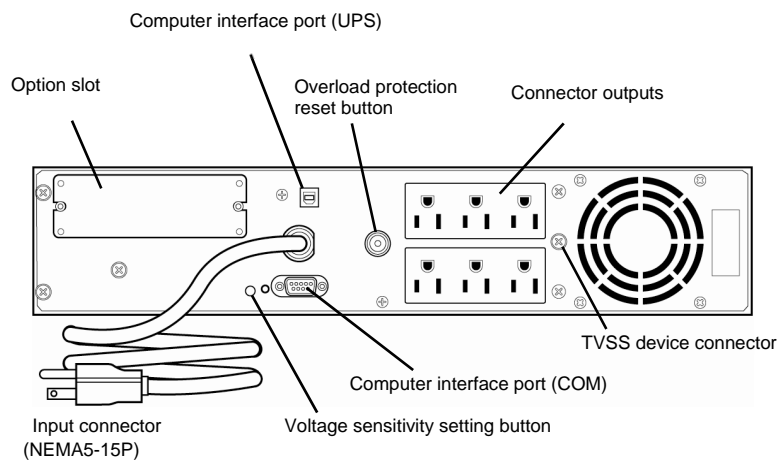
Note If you connect a card to a line, use the card which you have applied for with the certification authority.

Tips A leased line cannot be directly connected to the serial port connector.

2.2.1 Connecting to a uninterruptible power supply (UPS)

To connect to the uninterruptible power supply (UPS), use the connector output on the rear of the UPS. For details, refer to the manual supplied with the UPS.

Example



To change the settings for linking the power supply of UPS, select **Server** and then **AC-LINK** in the BIOS setup utility, and change the displayed parameters. Select **Power On** to perform automatic operations by using the UPS. For details, see *Chapter 2 (1.2.4 Server)* in "Maintenance Guide".

NEC Express5800 Series Express5800/R110g-1E

3

Setup

This chapter describes how to set up the server.

1. Turning on the Server

Power-On Self-Test (POST) is explained in this section.

2. System BIOS Setup

You can customize the BIOS settings by following the instructions in this section.

3. EXPRESSSCOPE Engine 3

EXPRESSSCOPE Engine 3 provides useful features through the Baseboard Management Controller (BMC).

4. EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows and maintain the server.

5. Installing Software Components

You can install Windows and bundled software by following the instructions in "*Installation Guide (Windows)*".

6. Turning off the Server

Turn off power when not using the server.

1. Turning on the Server

Turn on the server by using the following procedure.

Tips

After connecting the power cord or turning off the server, wait for at least 30 seconds before pressing the POWER switch when the server is OFF.
If the optional RAID Controller N8103-168 is installed, wait for at least 90 seconds before turning on the server after turning off the power.

1. Turn on the peripheral devices such as display unit.

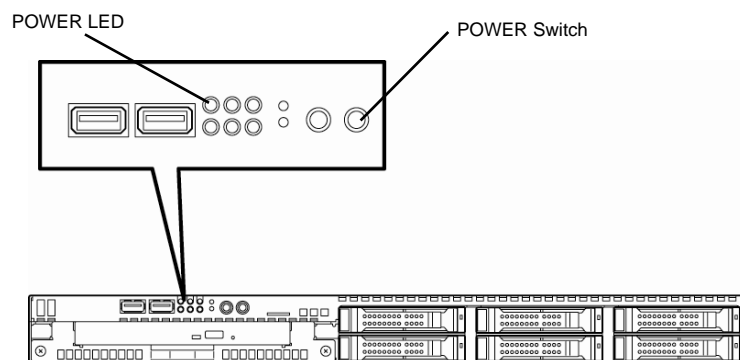
Note

If the power cord is connected to power control system such as an Uninterruptible Power Supply (UPS), make sure that the power control system is turned on.

2. Remove the front bezel.
3. If POWER LED lights amber, wait until POWER LED is unlit.
4. Press POWER Switch at the front of the server.
POWER LED is turned on green and after a while, NEC logo appears on the display.

Important

Do not turn off the server until NEC logo and some characters are displayed.



While NEC logo is being displayed, the self-diagnostic program (POST) runs and diagnoses the hardware. For details, see *Chapter 3 (1.1.1 POST sequence)*.

1.1 POST

Power-On Self-Test (POST) is a self-diagnostic program stored in the server as standard. POST automatically runs immediately after the server is turned on and checks the motherboard, memory, processor (CPU), keyboard, and mouse. POST also displays the start-up messages of different utilities during the operation.

Usually, you do not need to check the message of POST. Check messages displayed at POST in the following cases.

- When introducing a server
- If you suspect a failure
- When you hear beep many times during the time between the power on and OS startup
- When any error message is displayed

1.1.1 POST sequence

Explains how POST runs in order.

Important

- Do not press any keys or perform mouse operations while POST is in progress.
- Powering on the server, after you installed or removed an optional PCI board or moved it to another slot, may display the message that indicates incorrect board configuration and suspend POST. In such a case, press <F1> key to continue POST. Board configuration can be made using the utility described later.

1. POST runs automatically when the server is turned on.

NEC logo appears on the screen as factory settings.



2. When **Password On Boot** is set to **Enabled** on the **Security** menu in the BIOS setup utility (SETUP), the logo is displayed, and then the password entry is displayed. If you enter the wrong password three times in a row, POST stops and you cannot proceed to the subsequent operation. In this case, turn off and on the server.

Important

Do not set a password until you install the OS.

3. If <Esc> key is pressed, the logo disappears and the details of POST are displayed.

Tips

To show the details of POST without pressing <ESC> key, set **Quiet Boot** to **Disabled** in the **Boot** menu of the BIOS settings.

4. POST displays several types of message. These messages let you know that the installed CPU or connected keyboard and mouse are detected.

5. After a while, the following message is displayed on the screen.

Press <F2> SETUP, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network

You can call the functions below upon completion of POST by pressing the designated function key.

- <F2> key: Run the SETUP. For information on the SETUP, see *Chapter 3 (2. System BIOS Setup)*.
 <F3> key: Run EXPRESSBUILDER from Internal Flash Memory (optional). For information on EXPRESSBUILDER, see *Chapter 3 (4. EXPRESSBUILDER)*.
 <F4> key: Run the offline tool. For information on the offline tool, see *Chapter 1 (9. Offline Tools) in "Maintenance Guide"*.
 <F12> key: Boot from network.

Note

- If the optional Internal Flash Memory is not installed in the server, <F3> key message is not displayed.
- Note that the server does not boot from Internal Flash Memory when a bootable CD/DVD-ROM is set on the drive.

6. If a controller which has its dedicated BIOS such as a SAS controller board is installed, a message that prompts you to start the dedicated utility to set each board is displayed.

Example: optional SAS controller

Press Ctrl-C to start LSI Corp Configuration Utility...

The utility starts by pressing <Ctrl> + <C> keys.

Example: optional RAID controller

Press <Ctrl> <H> for Web BIOS

The utility starts by pressing <Ctrl> + <H> keys.

Example: on-board RAID controller

Press <Ctrl> <M> to Run LSI Software RAID Configuration Utility

The utility starts by pressing <Ctrl> + <M> keys.

For details on the utility, refer to the manual supplied with each optional board.

Depending on the hardware configuration, the message "Press Any Key" might appear to prompt a key entry. This is a behavior of the BIOS of the optional board. Continue to operate after checking the manual of the optional board.

7. If you set a password at **SETUP** in the BIOS Setup utility, the password entry appears upon successful completion of POST.
 Up to three password entries will be accepted. Three incorrect password entries disable the server to boot. In such a case, turn off the power and wait about ten seconds before turning on to boot the server.

Important

Do not set a password before OS is installed.

8. The OS starts when POST is completed.

1.1.2 POST error messages

If POST detects an error, the error message is displayed on the screen or beeps are sounded. Write down the error message for future use. For details, see *"Maintenance Guide"*.

2. System BIOS Setup

This section describes how to configure Basic Input Output System (BIOS).

2.1 Overview

The BIOS Setup Utility (SETUP) is a utility to configure basic hardware settings. This utility is pre-installed in the server as standard and can run without bootable discs.

Usually, you do not need to change the parameters of the SETUP. **Use only when the case applies to any of cases described in Chapter 3 (2.4 Cases that Require Setting Changes).**

2.2 Starting SETUP Utility

Turn on the server and wait until the following message appears. See *Chapter 3 (1.1.1 POST sequence)* for details.

Press <F2> SETUP, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network

When you press <F2> key during displaying the message or NEC logo, SETUP runs and displays the **Main** menu upon completion of POST.

About password entry

The entry of the password appears after you set a password in SETUP.

Enter password [

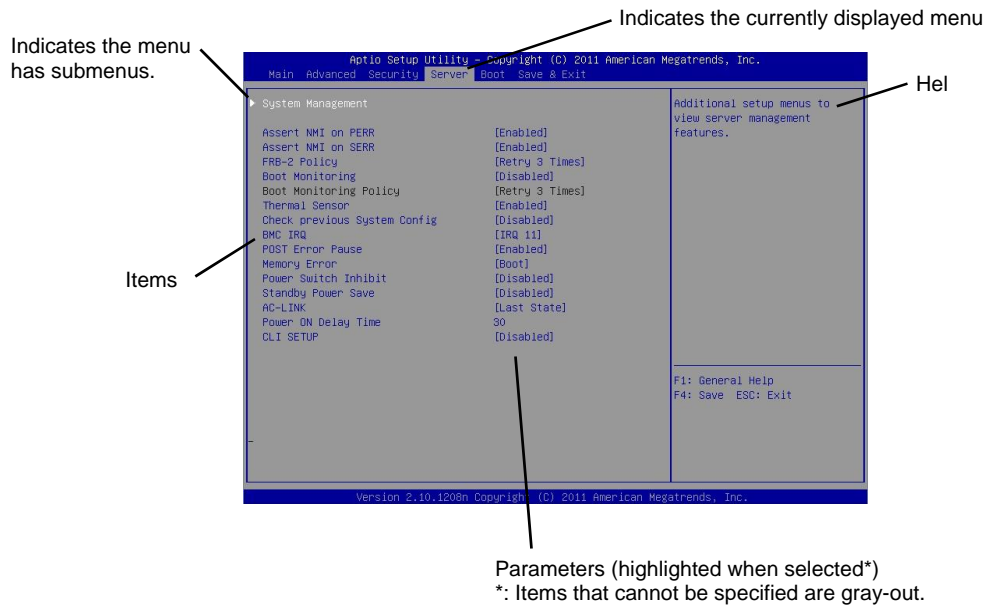
If you enter a wrong password three times, SETUP stops. Turn off the server and try again.

To exit SETUP after saving the parameters, choose **Save & Exit** and then **Save Changes and Exit**.

To exit SETUP without saving the parameters, choose **Save & Exit** and then **Discard Changes and Exit**.

2.3 Usage of SETUP

This section explains how to use SETUP.



- ☐ Cursor keys (<↑>, <↓>)
Select an item displayed on the screen. If characters of an item are highlighted, that means the item is currently selected.
- ☐ Cursor keys (<←>, <→>)
Select menus including **Main**, **Advanced**, **Security**, **Server**, **Boot**, and **Save & Exit**.
- ☐ <→> key/<+> key
Change the parameter of the selected item. You cannot use this key when a menu which has ► on the left is selected.
- ☐ <Enter> key
Press this key to confirm the selected parameter.
- ☐ <Esc> key
Press this key to return the previous screen. If you choose **Yes** in the following message, SETUP closes without saving the changed parameters.

| | |
|----------------------|----|
| Quit without saving? | |
| [Yes] | No |

- ☐ <F1> key
Press this key to display help information. Press <Esc> key to go back to the original screen.

☐ <F2> key

Press this key to restore the parameters. If you choose **Yes** in the following message, the previous parameter(s) are restored.

| |
|-----------------------|
| Load Previous Values? |
| [Yes] No |

☐ <F3> key

Press this key to load default settings. If you choose **Yes** in the following message, the default settings of SETUP are restored. **The default settings are different from the factory settings.** See *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*" for details.

| |
|----------------------|
| Load Setup Defaults? |
| [Yes] No |

☐ <F4> key

Press this key to save parameters. If you choose **Yes** in the following message, the parameters you configured are saved and SETUP closes.

| |
|------------------------------|
| Save configuration and exit? |
| [Yes] No |

2.4 Cases that Require Setting Changes

Specify parameters according to the following table when your system matches "Description". The list of SETUP parameters and factory settings are described in **Chapter 2 (1. System BIOS) in "Maintenance Guide"**.

| Category | Description | To be changed | Remark |
|----------------|---|---|---|
| Basic | Change date and time | Main → System Date Main → System Time | Configurable on OS |
| | On/Off NumLock on power ON | Boot → Bootup Numlock State | |
| | On/Off the function to display NEC logo during POST | Boot → Quite Boot → Disabled | By pressing <Esc> key, prevent the display of the logo. |
| Memory | Configure the memory after the DIMM is added or exchanged. | Advanced → Memory Configuration → Memory Retest → Yes | After rebooting, the Memory Retest setting changes to No automatically. |
| Optional board | Install RAID Controller board | Advanced → PCI Configuration → PCI Device Controller and Option ROM Settings → PCI Slot n Option ROM → Enabled | n is PCI slot number of the RAID Controller |
| | When an optional board is installed, set to [Disabled] for Option ROM for all PCI devices except for the boot device. | Advanced → PCI Configuration → PCI Device Controller and Option ROM Settings → PCI Slot n Option ROM → Enabled | "n": Slot number in the PCI device (except for the boot device) |
| | | Advanced → PCI Configuration → PCI Device Controller and Option ROM Settings → LAN1 Option ROM Scan → Disabled | Option ROM on LAN1 must be disabled. |
| Boot | Change the boot order of devices | Boot → Boot Option Priorities → Change the boot priority | |
| | Use remote power on feature (from modem) | Advanced → Advanced Chipset Configuration → Wake On Ring → Enabled | |
| | Use remote power on feature (from RTC alarm) | Advanced → Advanced Chipset Configuration → Wake On RTC Alarm → Enabled | |
| | Control from HW console terminal | Advanced → Serial Port Configuration → Change respective setting. | |
| Security | Set a password to restrict operation of SETUP. | Security → Administrator Password → Security → User password | After a password is set, the entry of password is displayed when SETUP is launched. |
| | Set a password to restrict booting. | Security → Password on Boot → Enabled | You can select this parameter after you set a password. |

| Category | Description | To be changed | Remark |
|------------------|---|--|--------|
| UPS Powerlink | When the server is supplied with power from UPS, always turn on the power. | Server → Power Control Configuration → AC-LINK → Power On | |
| | If the server is turned off by using POWER switch, leave it OFF even when UPS supplies power. | Server → Power Control Configuration → AC-LINK → Last State | |
| | Keep the power OFF even when UPS supplies power. | Server → Power Control Configuration → AC-LINK → Stay off | |

3. EXPRESSSCOPE ENGINE 3

3.1 Overview

EXPRESSSCOPE Engine 3 provides useful features by using Baseboard Management Controller (BMC).

EXPRESSSCOPE Engine 3 monitors the power unit, cooling fans, temperature, and voltage of the server. If the management LAN connector is connected to the network, you can remotely perform the following features by using a web browser or SSH client.

- Managing the server
- Remotely controlling the keyboard, video, and mouse (KVM)*
- Remotely accessing a CD/DVD/floppy disk/ISO image/USB flash drive*

* To use this feature, the optional license for remote management (N8115-04) is required.

To enable this feature, a USB mass storage device, such as Remote FD, Remote CD/DVD, Remote USB flash drive or Virtual Flash is virtually connected.

About N8115-04 Remove KVM and Media License

More than one removable drives other than the actual drives are displayed on the operating system of the server. These added removable drives are the virtual removable drives reserved for the remote media feature of EXPRESSSCOPE Engine 3 (*1).

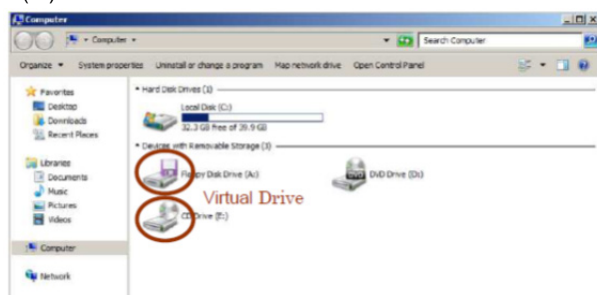


Fig. 1 Example of Windows Server 2008 R2 Computer Folder (*2)

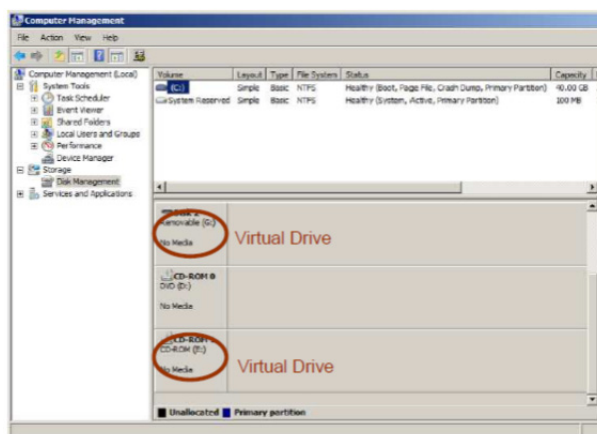


Fig. 2 Example of Windows Server 2008 R2 Server Manager (*2)

*1 This feature enables you to use FD/CD/DVD drives, ISO images or USB flash drives on "PC for Management" as virtual drives that are connected to the server.

*2 The number of drives and the drive character are different depending on hardware configurations.

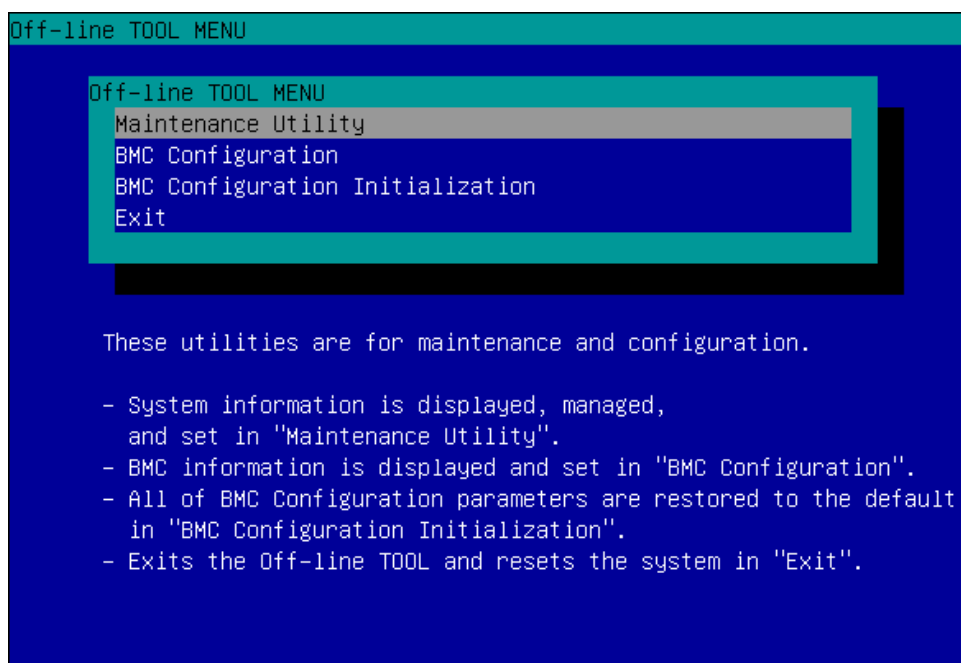
3.2 EXPRESSSCOPE ENGINE 3 Network Configuration

To use EXPRESSSCOPE Engine 3 through the network, follow the steps below.

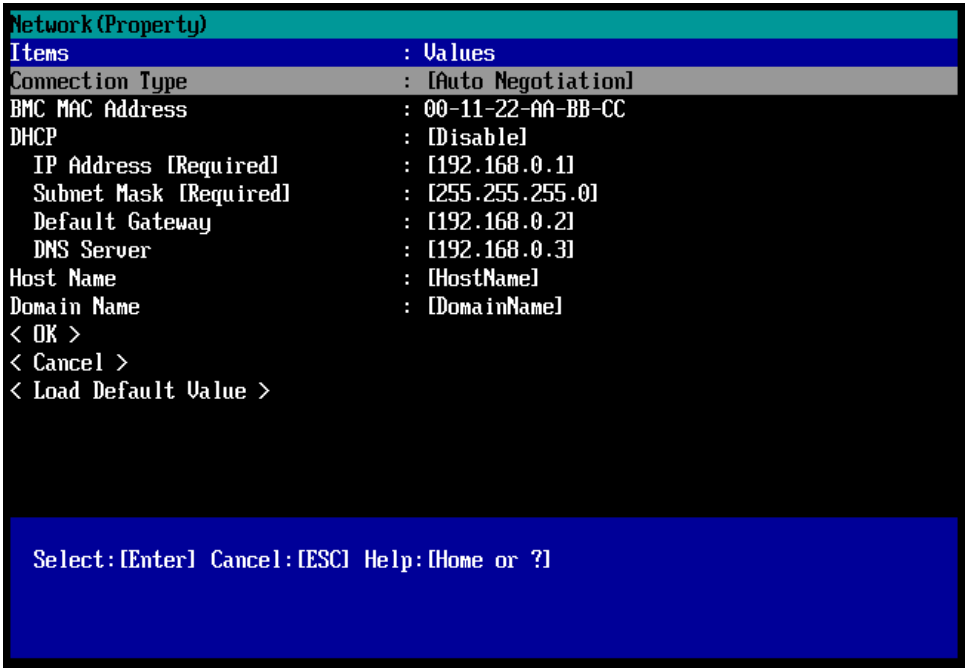
1. Turn on the server and wait until the following message appears on the lower left of the screen. See *Chapter 3 (1.1.1 POST sequence)* for details.

Press <F2> SETUP, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network

2. When you press <F4> key during displaying the message or NEC logo, ROM utility starts upon completion of POST.
3. The keyboard selection menu appears. Choose your keyboard type.
4. On the Off-line TOOL MENU, choose **BMC Configuration**, **BMC Configuration**, **Network**, and then **Property**.



- 5. In the **DHCP** of the Property screen, specify **Enable** or configure **IP Address/Subnet Mask**.



Tips If **Shared BMC LAN** is enabled, Web feature, remote media/KVM feature, or command line interface feature may be interrupted. In this case, wait for a while, and connect with network again.

- 6. Connect the LAN cable to the management LAN connector in order to connect to the network. Access EXPRESSSCOPE Engine 3 by using a web browser from "PC for Management" with the settings specified by step 5.

4. EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows or maintain the server.

4.1 Features of EXPRESSBUILDER

EXPRESSBUILDER provides the following features.

| Feature | Description |
|-----------------------------------|---|
| Setup (Windows reinstallation) | Installs Windows on your server. Easily completes the process from RAID configuration to installation of applications. To use this feature, choose OS installation in Boot Selection Menu. |
| Bundled software* | Stores various bundled software, such as NEC ESMPRO Agent. |
| Maintenance | Diagnoses your server system. To use this feature, choose Tool menu in Boot Selection Menu. |
| Instruction manuals* | Stores various documents, such as "User's Guide", "Installation Guide" and "Maintenance Guide". |

* Documents and some software components are not stored in N8115-14 Internal Flash Memory (optional).

4.2 Usage of EXPRESSBUILDER

If you want to install Windows, start EXPRESSBUILDER by using the following ways.

EXPRESSBUILDER disc:

Insert the disc into the server and either turn on the server or restart the server by pressing <Ctrl> + <Alt> + <Delete> keys. EXPRESSBUILDER starts from the disc.

If you want to install any bundled software or see documents, insert the disc into a computer on which Windows is running. The Autorun menu appears automatically.

N8115-14 Internal Flash Memory (optional):

Confirm that the EXPRESSBUILDER disc or other bootable disc is not inserted. Press <F3> key when the following message appears on POST screen.

Press <F2> SETUP, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network

5. Installing Software Components

Continue to install the operating system and other bundled software.

See the instructions below.

- *Installation Guide (Windows)*

6. Turning off the Server

Turn off the server by using the following procedure. When the power cord of the server is connected to a UPS, refer to the documentation supplied with the UPS or the documentation for the application controlling the UPS.

1. Shut down the OS.
2. If the server does not automatically power off, press POWER Switch at the front of the server.
Confirm that POWER LED is OFF.
3. Turn off peripheral devices.

Tips

Hibernate function of Windows Server cannot be used. Do not set Hibernate at Windows shutdown.

NEC Express5800 Series Express5800/R110g-1E

4

Appendix

1. **Specifications**
2. **Interrupt Lines**

1. Specifications

1.1 2.5-inch Drive Model

| | | | | | | | |
|--|--|--|---|------------------------------------|-----------------------------------|------------------------------------|-----------------------------------|
| Product name | | | Express5800/R110g-1E, EXP283A | | | | |
| Model | | | N8100-2182F | | | | |
| CPU | Type | Intel® Pentium® processor G3240 | Intel® Xeon® processor E3-1220 v3 | Intel® Xeon® processor E3-1240L v3 | Intel® Xeon® processor E3-1231 v3 | Intel® Xeon® processor E3-1275L v3 | Intel® Xeon® processor E3-1271 v3 |
| | Clock | 3.10 GHz | 3.10 GHz | 2.40 GHz | 3.4 GHz | 2.7 GHz | 3.6 GHz |
| | Standard/Maximum | 1/1 | | | | | |
| | 1st cache | 32 KB instruction/32 KB data | | | | | |
| | 2nd cache | 256 KB | | | | | |
| | Number of cores/ Number of threads (T) (1 CPU) | 2C/2T | 4C/4T | 4C/8T | | | |
| Chipset | | Intel® C224 chipset | | | | | |
| Memory | Standard/Maximum | | Not pre-installed (installation required)/32 GB (4 x 8 GB) | | | | |
| | Memory module | | DDR3L-1600 SDRAM DIMM, unbuffered | | | | |
| | Maximum clock | | 1333 MHz | 1600 MHz | | | |
| | Error check, correction | | ECC | | | | |
| Auxiliary storage | Drive bay | Standard | — | | | | |
| | | Maximum*3 | 2.5-inch HDD: SATA 8 TB (8 x 1 TB), SAS 9.6 TB (8 x 1.2TB) 2.5-inch SSD: SAS 3.2 TB (8 x 400 GB) | | | | |
| | | Hot swap | Supported | | | | |
| | Interface level/ RAID System | | SATA 6 Gb/s: RAID 0/1/10 (standard), RAID 5/6/50 (optional) SAS 6 Gb/s: RAID 0/1/5/6/10/50 (optional) | | | | |
| | Optical disk drive | | Internal/external drive (optional) *1 | | | | |
| | Expansion slots | Additional bay | | — | | | |
| Supported slot | | 1x PCI EXPRESS 3.0 (x16 lanes, x16 sockets) + 1x PCI EXPRESS 2.0 (x4 lanes, x8 sockets) (Low profile, 173 mm) | | | | | |
| Graphics | Chip/VideoRAM | | Management controller chip/32 MB | | | | |
| | Graphic display/ resolution | | 16,770,000 colors: 640 x 480, 800 x 600, 1,024 x 768, 1,280 x1,024 | | | | |
| Interface | | | 1x analog RGB (MiniD-Sub15 pins, 1 x rear) 1x serial port (RS-232C compliant/D-Sub 9 pins, serial port A, 1 x rear, optional port can be used (up to two ports in total)) 4 x USB 2.0 (1 x front, 2 x rear, 1 x internal) 3 x USB 3.0 (1 x front, 2 x rear) | | | | |
| Redundant power supply | | | — | | | | |
| Redundant fan | | | Supported (optional) | | | | |
| External dimensions (width × depth × height) | | | 444.0 x 615.2 x 43.6 mm (protrusions not included) 485.0 x 740.9 x 44.3 mm (front bezel/ protrusions/ inner rails included) | | | | |
| Weight (Standard/Max.) | | | 10 kg/17.5 kg (including rails) | | | | |

| | |
|--|--|
| Product name | Express5800/R110g-1E, EXP283A |
| Model | N8100-2182F |
| Power supply | 1 x 400 W 80 PLUS® Platinum compliant (bipolar grounded outlet) (hot-plug unavailable) 100/200 VAC ± 10%, 50/60 Hz ± 3 Hz (power cable must be selected) |
| Power rating | 462 W |
| Environmental requirements Temperature/Humidity | Operating: 10 to 40°C/20 to 80%, Storage: -10 to 55°C/20 to 80% (no condensation either when operating or when stored) |
| Main accessories | EXPRESSBUILDER (NEC ESMPRO Manager) (Windows), NEC ESMPRO Agent, User's Guide (electronic document) included, Getting Started, one-touch rack rail (mounted on the server as standard) Power cord |
| Installed OS | — |
| Supported OSs | Microsoft® Windows Server® 2008 Standard (RTM, SP2 or later), Microsoft® Windows Server® 2008 Enterprise (RTM, SP2 or later), Microsoft® Windows Server® 2008 R2 Standard, Microsoft® Windows Server® 2008 R2 Enterprise Microsoft® Windows Server® 2012 Standard, Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter |

*1 If you do not intend to install an internal DVD-ROM or an internal DVD SuperMULTI in all systems, prepare at least one external DVD-ROM per system for maintenance and OS reinstallation purposes.

| | | | | | | | |
|--|--|--|---|------------------------------------|-----------------------------------|------------------------------------|-----------------------------------|
| Product name | | | Express5800/R110g-1E, EXP284A | | | | |
| Model | | | N8100-2183F | | | | |
| CPU | Type | Intel® Pentium® processor G3240 | Intel® Xeon® processor E3-1220 v3 | Intel® Xeon® processor E3-1240L v3 | Intel® Xeon® processor E3-1231 v3 | Intel® Xeon® processor E3-1275L v3 | Intel® Xeon® processor E3-1271 v3 |
| | Clock | 3.10 GHz | 3.10 GHz | 2.40 GHz | 3.4 GHz | 2.7 GHz | 3.6 GHz |
| | Standard/Maximum | 1/1 | | | | | |
| | 1st cache | 32 KB instruction/32 KB data | | | | | |
| | 2nd cache | 256 KB | | | | | |
| | Number of cores/ Number of threads (T) (1 CPU) | 2C/2T | 4C/4T | 4C/8T | | | |
| Chipset | | Intel® C224 chipset | | | | | |
| Memory | Standard/Maximum | | Not pre-installed (installation required)/32 GB (4 x 8 GB) | | | | |
| | Memory module | | DDR3L-1600 SDRAM DIMM, unbuffered | | | | |
| | Maximum clock | 1333 MHz | 1600 MHz | | | | |
| | Error check, correction | | ECC | | | | |
| Auxiliary storage | Drive bay | Standard | — | | | | |
| | | Maximum ^{*3} | 2.5-inch HDD: SATA 8 TB (8 x 1 TB), SAS 9.6 TB (8 x 1.2TB) 2.5-inch SSD: SAS 3.2 TB (8 x 400 GB) | | | | |
| | | Hot swap | Supported | | | | |
| | Interface level/ RAID System | | SATA 6 Gb/s: RAID 0/1/10 (standard), RAID 5/6/50 (optional) SAS 6 Gb/s: RAID 0/1/5/6/10/50 (optional) | | | | |
| | Optical disk drive | | Internal/external drive (optional) *1 | | | | |
| | Expansion slots | Additional bay | | — | | | |
| Supported slot | | 1x PCI EXPRESS 3.0 (x16 lanes, x16 sockets) + 1x PCI EXPRESS 2.0 (x4 lanes, x8 sockets) (Low profile, 173 mm) | | | | | |
| Graphics | Chip/VideoRAM | | Management controller chip/32 MB | | | | |
| | Graphic display/ resolution | | 16,770,000 colors: 640 x 480, 800 x 600, 1,024 x 768, 1,280 x 1,024 | | | | |
| Interface | | | 1x analog RGB (MiniD-Sub15 pins, 1 x rear) 1x serial port (RS-232C compliant/D-Sub 9 pins, serial port A, 1 x rear, optional port can be used (up to two ports in total)) 4 x USB 2.0 (1 x front, 2 x rear, 1 x internal) 3 x USB 3.0 (1 x front, 2 x rear) | | | | |
| Redundant power supply | | | Supported | | | | |
| Redundant fan | | | Supported (optional) | | | | |
| External dimensions (width × depth × height) | | | 444.0 x 615.2 x 43.6 mm (protrusions not included) 485.0 x 740.9 x 44.3 mm (front bezel/protrusions/inner rails included) | | | | |
| Weight (Standard/Max.) | | | 10 kg/17.5 kg (including rails) | | | | |

| | |
|--|--|
| Product name | Express5800/R110g-1E, EXP284A |
| Model | N8100-2183F |
| Power supply | 2 x 500 W 80 PLUS® Gold compliant (bipolar grounded outlet) (hot-plug available) 100/200 VAC \pm 10%, 50/60 Hz \pm 3 Hz (power cable must be selected) |
| Power rating | 513 W |
| Environmental requirements Temperature/Humidity | Operating: 10 to 40°C/20 to 80%, Storage: -10 to 55°C/20 to 80% (no condensation either when operating or when stored) |
| Main accessories | EXPRESSBUILDER (NEC ESMPro Manager) (Windows), NEC ESMPro Agent, User's Guide (electronic document) included, Getting Started, one-touch rack rail (mounted on the server as standard) Power cord |
| Installed OS | — |
| Supported OSs | Microsoft® Windows Server® 2008 Standard (RTM, SP2 or later) Microsoft® Windows Server® 2008 Enterprise (RTM, SP2 or later) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Microsoft® Windows Server® 2012 Standard Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter |

*1 If you do not intend to install an internal DVD-ROM or an internal DVD SuperMULTI in all systems, prepare at least one external DVD-ROM per system for maintenance and OS reinstallation purposes.

1.2 3.5-inch Drive Model

| | | | | | | | | |
|--|---|---|---|--------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|
| Product name | | | Express5800/R110g-1E, EXP283A | | | | | |
| Model | | | N8100-2180F | | | | | |
| CPU | Type | | Intel® Pentium® processor G3240 | Intel® Xeon® processor E3-1220 v3 | Intel® Xeon® processor E3-1240L v3 | Intel® Xeon® processor E3-1231 v3 | Intel® Xeon® processor E3-1275L v3 | Intel® Xeon® processor E3-1271 v3 |
| | Clock | | 3.10 GHz | 3.10 GHz | 2.40 GHz | 3.4 GHz | 2.7 GHz | 3.6 GHz |
| | Standard/Maximum | | 1/1 | | | | | |
| | 1st cache | | 32 KB instruction/32 KB data | | | | | |
| | 2nd cache | | 256 KB | | | | | |
| | Number of cores/ Number of threads (T) (1 CPU) | | 2C/2T | 4C/4T | 4C/8T | | | |
| Chipset | | | Intel® C224 chipset | | | | | |
| Memory | Standard/Maximum | | Not pre-installed (installation required)/32 GB (4 x 8 GB) | | | | | |
| | Memory module | | DDR3L-1600 SDRAM DIMM, unbuffered | | | | | |
| | Maximum clock | | 1333 MHz | 1600 MHz | | | | |
| | Error check, correction | | ECC | | | | | |
| Auxiliary storage | Drive bay | Standard | — | | | | | |
| | | Maximum*3 | 3.5-inch HDD: SATA 16TB (4 x 4 TB) | | | | | |
| | | Hot swap | Supported | | | | | |
| | Interface level/RAID System | | SATA 6 Gb/s: RAID 0/1/10 (standard*1), RAID 5/6 (optional) | | | | | |
| | Optical disk drive | | Internal/external drive (optional) *2 | | | | | |
| | Additional slots | Additional bay | | — | | | | |
| Supported slots | | 1x PCI EXPRESS 3.0 (x16 lanes, x16 sockets) + 1x PCI EXPRESS 2.0 (x4 lanes, x8 sockets) (Low profile, 173 mm) | | | | | | |
| Graphics | Chip/VideoRAM | | Management controller chip/32 MB | | | | | |
| | Graphic display/resolution | | 16,770,000 colors: 640 x 480, 800 x 600, 1,024 x 768, 1,280 x 1,024 | | | | | |
| Interface | | | 1x analog RGB (MiniD-Sub15 pins, 1 x rear) 1x serial port (RS-232C compliant/D-Sub9 pin, serial port A, 1 x rear, optional port can be used (up to two ports in total)) 4 x USB 2.0 (1 x front, 2 x rear, 1 x internal) 3 x USB 3.0 (1 x front, 2 x rear) | | | | | |
| Redundant power supply | | | — | | | | | |
| Redundant fan | | | Supported (optional) | | | | | |
| External dimensions (width × depth × height) | | | 444.0 x 615.2 x 43.6 mm (protrusions not included) 485.0 x 740.9 x 44.3 mm (front bezel/inner rails/protrusions included) | | | | | |
| Weight (Standard/Max.) | | | 10 kg/17.5 kg (including rails) | | | | | |
| Power supply | | | 1 x 400 W 80 PLUS® Platinum compliant (bipolar grounded outlet) (hot-plug unavailable) 100/200 VAC ± 10%, 50/60 Hz ± 3 Hz (power cable must be selected) | | | | | |
| Power rating | | | 462 W | | | | | |

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|--|----------------------|--|--|--|
| Product name | | Express5800/R110g-1E, EXP283A | | |
| Model | | N8100-2180F | | |
| Environmental requirements Temperature/Humidity | | Operating: 10 to 40°C/20 to 80%, Storage: -10 to 55°C/20 to 80% (no condensation either when operating or when stored) | | |
| Main accessories | | EXPRESSBUILDER (NEC ESMPro Manager) (Windows), NEC ESMPro Agent, User's Guide (electronic document) included), Getting Started, one-touch rack rail (mounted on the server as standard) Power cord | | |
| Installed OS | | — | | |
| Supported OSs | OSs supported by NEC | Microsoft® Windows Server® 2008 Standard (RTM, SP2 or later) Microsoft® Windows Server® 2008 Enterprise (RTM, SP2 or later) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Microsoft® Windows Server® 2012 Standard Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter | | |

*1 When using an onboard RAID configuration, RAID10 is not supported if an additional 2 TB HDD is installed.

*2 If you do not intend to install an internal DVD-ROM or an internal DVDSuperMULTI in all systems, prepare at least one external DVD-ROM per system for maintenance and OS reinstallation purposes.

| | | | | | | | | |
|--|---|---|---|-----------------------------------|------------------------------------|-----------------------------------|------------------------------------|-----------------------------------|
| Product name | | | Express5800/R110g-1E, EXP284A | | | | | |
| Model | | | N8100-2181F | | | | | |
| CPU | Type | | Intel® Pentium® processor G3240 | Intel® Xeon® processor E3-1220 v3 | Intel® Xeon® processor E3-1240L v3 | Intel® Xeon® processor E3-1231 v3 | Intel® Xeon® processor E3-1275L v3 | Intel® Xeon® processor E3-1271 v3 |
| | Clock | | 3.10 GHz | 3.10 GHz | 2.40 GHz | 3.4 GHz | 2.7 GHz | 3.6 GHz |
| | Standard/Maximum | | 1/1 | | | | | |
| | 1st cache | | 32 KB instruction/32 KB data | | | | | |
| | 2nd cache | | 256 KB | | | | | |
| | Number of cores/ Number of threads (T) (1 CPU) | | 2C/2T | 4C/4T | 4C/8T | | | |
| Chipset | | | Intel® C224 chipset | | | | | |
| Memory | Standard/Maximum | | Not pre-installed (installation required)/32 GB (4 x 8 GB) | | | | | |
| | Memory module | | DDR3L-1600 SDRAM DIMM, unbuffered | | | | | |
| | Maximum clock | | 1333 MHz | 1600 MHz | | | | |
| | Error check, correction | | ECC | | | | | |
| Auxiliary storage | Drive bay | Standard | — | | | | | |
| | | Maximum* ³ | 3.5-inch HDD: SATA 16TB (4 x 4 TB) | | | | | |
| | | Hot swap | Supported | | | | | |
| | Interface level/RAID System | | SATA 6 Gb/s: RAID 0/1/10 (standard*1), RAID 5/6 (optional) | | | | | |
| | Optical disk drive | | Internal/external drive (optional) *2 | | | | | |
| | Additional slots | Additional bay | | — | | | | |
| Supported slots | | 1x PCI EXPRESS 3.0 (x16 lanes, x16 sockets) + 1x PCI EXPRESS 2.0 (x4 lanes, x8 sockets) (Low profile, 173 mm) | | | | | | |
| Graphics | Chip/VideoRAM | | Management controller chip/32 MB | | | | | |
| | Graphic display/resolution | | 16,770,000 colors: 640 x 480, 800 x 600, 1,024 x 768, 1,280 x 1,024 | | | | | |
| Interface | | | 1x analog RGB (MiniD-Sub15 pins, 1 x rear) 1x serial port (RS-232C compliant/D-Sub9 pin, serial port A, 1 x rear, optional port can be used (up to two ports in total)) 4 x USB 2.0 (1 x front, 2 x rear, 1 x internal) 3 x USB 3.0 (1 x front, 2 x rear) | | | | | |
| Redundant power supply | | | Supported | | | | | |
| Redundant fan | | | Supported (optional) | | | | | |
| External dimensions (width × depth × height) | | | 444.0 x 615.2 x 43.6 mm (protrusions not included) 485.0 x 740.9 x 44.3 mm (front bezel/inner rails/protrusions included) | | | | | |
| Weight (Standard/Max.) | | | 10 kg/17.5 kg (including rails) | | | | | |
| Power supply | | | 2 x 500 W 80 PLUS® Gold compliant (bipolar grounded outlet) (hot-plug available) 100/200 VAC ± 10%, 50/60 Hz ± 3 Hz (power cable must be selected) | | | | | |
| Power rating | | | 513 W | | | | | |

| | | | | |
|--|----------------------|--|--|--|
| Product name | | Express5800/R110g-1E, EXP284A | | |
| Model | | N8100-2181F | | |
| Environmental requirements Temperature/Humidity | | Operating: 10 to 40°C/20 to 80%, Storage: -10 to 55°C/20 to 80% (no condensation either when operating or when stored) | | |
| Main accessories | | EXPRESSBUILDER (NEC ESMPro Manager) (Windows), NEC ESMPro Agent, User's Guide (electronic document) included, Getting Started, one-touch rack rail (mounted on the server as standard) Power cord | | |
| Installed OS | | - | | |
| Supported OSs | OSs supported by NEC | Microsoft® Windows Server® 2008 Standard (RTM, SP2 or later) Microsoft® Windows Server® 2008 Enterprise (RTM, SP2 or later) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Microsoft® Windows Server® 2012 Standard Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter | | |

*1 When using an onboard RAID configuration, RAID10 is not supported if an additional 2 TB HDD is installed.

*2 If you do not intend to install an internal DVD-ROM or an internal DVDSuperMULTI in all systems, prepare at least one external DVD-ROM per system for maintenance and OS reinstallation purposes.

2. Interrupt Lines

Interrupt lines are assigned as factory settings as shown below. Use this table as a reference when you add optional devices.

- **Interrupt lines**

As factory settings, interrupt lines are assigned as follows.

| IRQ | Peripheral Device (Controller) | IRQ | Peripheral Device (Controller) |
|-----|--------------------------------|-----|---------------------------------|
| 0 | System timer | 8 | Real-time clock |
| 1 | – | 9 | Microsoft ACPI-Compliant System |
| 2 | Cascade connection | 10 | PCI |
| 3 | COM 2 serial port | 11 | PCI |
| 4 | COM 1 serial port | 12 | – |
| 5 | PCI | 13 | Arithmetic operation processor |
| 6 | – | 14 | – |
| 7 | – | 15 | – |