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NEC Express5800/120Eh  
User's Guide**

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Keep this manual at hand for quick reference at anytime necessary.



## SAFETY INDICATIONS

Follow the instructions in this manual for your safety to use the NEC Express server.




Your server contains components with possible danger, hazards that may cause by ignoring warnings, and preventive actions against such hazards.

Server components with possible danger are indicated with a warning label placed on or around them as well as described in this manual.


In this manual or warning labels, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:


 <b>WARNING</b>	Indicates the presence of a hazard that may result in death or serious personal injury if the instruction is ignored.
 <b>CAUTION</b>	Indicates the presence of a hazard that may cause minor personal injury, including burns, or property damage if the instruction is ignored.

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type. (Attention)
	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. (Prohibited Action)
	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. (Mandatory Action)

(Example)





High temperature.  
Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.

Symbol to draw attention







Term indicating a degree of danger

Symbol indicating a prohibited action (may not always be indicated)



Description of a danger

# SYMBOLS USED IN THIS MANUAL AND WARNING LABELS



## Attentions

	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause fingers to be caught.
	Indicates that improper use may cause fumes or fire.
	Indicates a general notice or warning that cannot be specifically identified.
	Indicates that improper use may cause loss of eyesight due to laser beam.

## Prohibited Actions

	Indicates a general prohibited action that cannot be specifically identified.
	Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused.

## Mandatory Action

	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.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

### **Momentary voltage drop prevention:**

This product may be affected by a momentary voltage drop caused by lightning. To prevent a momentary voltage drop, an AC uninterruptible power supply (UPS) unit should be used.

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## **PREFACE**

Congratulations on the purchase of your NEC Express server.

Purchase of this server is your assurance of receiving state-of-the-art, high quality hardware to meet your needs, both now and in the future.

Read this User's Guide thoroughly to fully understand handling of the NEC Express server and appreciate its functions to the maximum extent.

## ABOUT THIS USER'S GUIDE

This manual is a guide for proper setup and use of your server.

This manual also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of your server.

Keep this manual for future use.

The following describes how to proceed with this manual.

### How to Use This Manual

To aid you in finding information quickly, this manual contains the following information:

#### **Chapter 1 Notes on Using Your Server**

includes information that needs attention to use the server. Make sure to read this chapter before setting up and using the server. It also includes requirements and advisory information for transfer and disposal of the server.

#### **Chapter 2 General Description**

includes information necessary to use the server, such as names and functions of its components, handling of the floppy disk and DVD-ROM drives.

#### **Chapter 3 Setting Up Your Server**

tells you how to select a site, unpack the system, make cable connections, and power on your system.

#### **Chapter 4 Configuring Your Server**

tells you how to configure the system and provides instructions for running the BIOS SETUP Utility and the RAID configuration utility, which is used to configure RAID drives in your system. This chapter also provides information on mother board jumper settings.

#### **Chapter 5 Installing the Operating System with Express Setup**

describes how to install the operating system.

#### **Chapter 6 Installing and Using Utilities**

describes how to install the utilities for the server. It also includes a description on using the attached "NEC EXPRESSBUILDER" CD-ROM.

#### **Chapter 7 Maintenance**

provides you with all the information necessary to maintain successful operation of the server. This chapter also includes a description on relocating and storing the server.

#### **Chapter 8 Troubleshooting**

contains helpful information for solving problems that might occur with your system.

#### **Chapter 9 Upgrading Your Server**

provides you with instructions for upgrading your system with an additional processor, optional memory, optional add-in cards, hard disk drives, peripheral devices, and power supply.

#### **Chapter 10 Internal Cabling Diagram**

includes cabling information for the SAS/SATA2 controller, 5.25-inch device, and the power supply.

#### **Appendix A Specification**

provides specifications for your server.



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**Appendix B Other Precautions**

provides supplementary notes on using the server.

**Appendix C IRQ and I/O Port Address**

provides a list of factory-set IRQs and I/O port addresses assigned.

**Appendix D Installing Windows Server 2003 x64 Editions**

describes how to install Microsoft Windows Server 2003 x64 Editions without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003 x64 Editions. See Chapter 5 for details.

**Appendix E Installing Windows Server 2003**

describes how to install Microsoft Windows Server 2003 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003. See Chapter 5 for details.

**Appendix F Product Configuration Record Table**

provides a table to be filled with your server configuration.

## Text Conventions

The following conventions are used throughout this manual. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

- IMPORTANT:** Items that are mandatory or require attention when using the server
- NOTE:** Helpful and convenient piece of information

## IN THE PACKAGE

The carton contains various accessories, as well as the server itself. See the packing list to make sure that you have everything and that individual components are not damaged. If you find any component missing or damaged, contact your service representative.

- Store the provided accessories in a designated place for your convenience. You will need them to install an optional device or troubleshoot your server, as well as to set it up.
- Make a backup copy of each provided floppy disk, if any. Store the original disk as the master disk in a designated place, and use its copy.
- Improper use of any provided CD-ROM may alter your system environment. If you find anything unclear, immediately ask your service representative for help.

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# Chapter 1

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## Notes on Using Your Server

This chapter includes information necessary for proper and safe operation of your server.

## WARNING LABELS

The warning label is attached to components with possible danger or their vicinity in your server to inform the user that a hazardous situation may arise when operating the server. (Do not intentionally remove or damage any of the labels.)


If you find any labels totally/partially removed or illegible due to damage, contact your service representative.



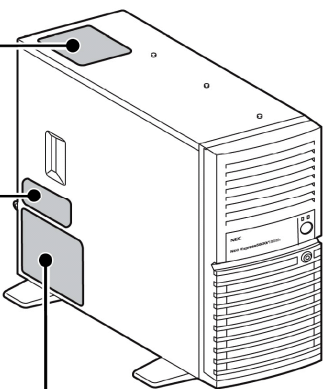
**注意重物  
注意重物**

**WARNING:  
HEAVY ITEM**

为了防止腰肌受损以及物体失手落下，移动设备时请一定由2个人以上进行。  
為了防止腰部受傷以及設備掉落，移動伺服器時請由2人以上進行。






**To avoid the risk of personal injury or damage to the unit, move the unit with at least two or more people.**



**注意 CAUTION**

- 有的部件可能会达到高温。请注意待其冷却之后再接触。
- 有的部件即使切断电源仍然使用电池在运转。进行设备维护前，请事先阅读各部件相关的说明书。
- 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. · Some internal components may still be operational on battery power. Refer to instruction manuals for this system as well as options prior to maintenance.








**注意 CAUTION**

进行可选配件的安装和拆卸时，请先把电源插头从插座中拔出，并取下与外部设备连接着的线缆。  
進行選購設備的安裝和拆卸時，請先把電源插頭從插座中拔出，並取下與外部設備連接的線纜。

**Disconnect all AC power cords from both system and external peripherals prior to installing/removing options.**




拔下电源插头  
拔掉電源插頭




有触电危险  
注意觸電

请一定要注意不要把螺丝掉落在主机内部。  
請注意絕對不要將螺絲掉入設備內部。

**Do not drop any screws inside the system.**




对板卡以及可选设备进行连接时，请务必参照“用户指南”，正确进行连接。  
如果错误连接，可能会导致故障或火灾的发生。  
安裝控制卡及選購設備時，請務必參閱“用戶指南”，進行正確連接。  
選錯插頭時，可能會造成故障或火災。




**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.**

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。



**To avoid the risk of personal injury, be careful when accessing the inside of the system.**

抬起或移动设备时，请注意托稳设备底部。  
抬起或搬運伺服器時，請牢牢托住設備底部進行搬運。












**Firmly hold the bottom of the system when required to lift and carry the system.**

## SAFETY NOTES

This section provides notes on using your server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see "SAFETY INDICATIONS" provided earlier.

### General

 <b>WARNING</b>	
	<p>Do not use the server for services where critical high availability may directly affect human lives.</p> <p>Your server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.</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 your service representative. Using the server in such conditions may cause a fire.</p>
	<p>Keep needles or metal objects away from the server.</p> <p>Do not insert needles or metal objects into ventilation holes in the server or openings in the floppy disk or DVD-ROM drive. Doing so may cause an electric shock.</p>

 <b>CAUTION</b>	
	<p>Do not access inside your server for a service or replacement of the internal components.</p> <p>The service representative can only install or remove the internal components and optional devices. To avoid personal injury or electrical shock, contact your service representative when your need to install/remove the internal components.</p>
 	<p>Keep water or foreign matter away from the server.</p> <p>Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a 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. Contact your service representative.</p>

## 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.

### CAUTION



Plug in to a proper power source.

Use a proper wall outlet. Use of an improper power source may cause a fire or a power leak.

Do not install the server where you need an extension cord. Use of a cord that does not meet the power specifications of your server may heat up the cord and cause a fire.



Do not connect the power cord to an outlet that has an illegal number of connections.

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



Do not pull the cable when disconnecting it.

When disconnecting the cable from the device, hold the cable connector and pull it straight out. Pulling the cable out by the cable portion or giving mechanical stress to the connector could damage the cables and connectors to result in an electrical shock hazard or 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.



Use the authorized power cord only.

Use only the power cord that comes with your server. Use of an unauthorized power cord may cause a fire when the electric current exceeds the rated flow. Also, observe the following to prevent an electric shock or fire caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use any damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your service representative for replacement.)

## Installation, Relocation, Storage, and Connection

### ⚠ WARNING



Disconnect the power cord(s) before installing or removing the server.

Make sure to power off the server and disconnect the power cord(s) from a power outlet before installing/removing the server. All voltage is removed only when the power cords are unplugged.

### ⚠ CAUTION



Never attempt to lift the server only by yourself.

Your server weighs max 20 kg (depending on its hardware configuration). Carrying the server only by yourself may strain your back. Hold the server firmly by its bottom with at least two or more people. Do not hold the front mask to lift the server. The front mask may be disengaged from the server, causing 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 manual. 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 connect any interface cable with the power cord of the server plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or 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 an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.



Do not use any unauthorized 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.

## 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 other than described in this manual. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.



Do not look into the DVD-ROM drive.



A laser beam used in the DVD-ROM drive is harmful to the eyes. Do not look into or insert a mirror into the drive while the drive is powered. If a laser beam is caught in your eyes, you may lose your eyesight (the laser beam is invisible).



Do not remove the lithium battery.

Your server contains the lithium battery. Do not remove the battery. Placing the lithium close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.



Disconnect the power plug before accessing inside the server, or connecting the peripherals.

Make sure 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 if the server is off-powered.

Disconnect the power plug from the outlet occasionally 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



Avoid installation in extreme temperature conditions.

Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.



Make sure to complete board installation.

Always install a board firmly. An incompletely installed board may cause a contact failure, resulting in smoking or fire.



Protect the unused connectors with the protective cap.

The unused power supply cable connectors are covered with the protective cap to prevent short circuits and electrical hazards, when removing the power supply cable connector from the installed devices, attach the protective cap to the connector. Failure to follow this warning may cause a fire or an electric shock.

## During Operation

### CAUTION



Stay away from the fan.

Keep your hand or hair away from the cooling fan on the rear of the server. Failure to follow this warning may get your hand or hair caught in the fan, resulting in injury.



Avoid contact with the server during thunderstorms.

Disconnect the power plug from the outlet when a thunderstorm is approaching. If it starts thundering before you disconnect the power plug, do not touch any part of the server including the cables. Failure to follow this warning may cause a fire or an electric shock.



Keep animals away from the server.

Failure to follow this warning may cause a fire or an electric shock.



Do not leave the CD tray open.

If dust gets on the lens of DVD-ROM drive, the drive may have problems reading your disks. Also, the CD tray may be broken by contacting any objects.



Take off the headset before connection.

To protect your ears, take off the headset before connecting it to the headset jack. Make sure that the volume is not extremely turned up before connection.



Do not place any object on top of the server.

The server may fall and cause property damage to the surroundings.



Do not use a cellular phone or pager around the server.

Turn off the cellular phone or pager. Radio interference may cause malfunctions of the server.

## FOR PROPER OPERATION

Observe the following notes for successful operation of the server. Use of the server ignoring the notes will cause malfunctions or failures of the server.

- Install the server in a place that meets requirements for successful operation. For details, see Chapter 3, "Setting Up Your Server."
- If the power cord supplied with your system is not compatible with the AC wall outlet in your region, contact your service representative to obtain a suitable power cord.
- Make sure to power off the server before connecting or disconnecting cables between the server and peripheral devices.
- Verify that the access lamp on the server is unlit before turning off the server or ejecting the floppy disk.
- When plugging the power cord to the system, you may experience 10 seconds delay from the time you press the POWER/SLEEP switch on the front panel. This is normal system operation.
- When you have just turned off the server, wait at least 10 seconds before turning it back on. If the server is connected to the UPS, set at least 10 seconds delay in the power-on schedule.
- For the disk which does not conform to the CD standard, the playback of such a disk with the CD drive is not guaranteed.
- Turn off the power and unplug the power cord from the outlet before relocating the server.
- Clean the server on a regular basis. (See Chapter 7 for cleaning.) Regular cleaning proactively prevents various failures of the server.
- Lightning may cause a momentary voltage drop. To prevent this problem, it is recommended to use of an uninterruptible power supply unit.
- Make sure to use optional devices supported by the server. Some non-supported devices may be physically installed/connected but cause failures of the server as well as malfunctions of the server.
- NEC recommends you use NEC's genuine products. Some third-party products claim that they support the server. However, repair of the server due to a failure or damage resulted from use of such third-party products will be charged.



## TRANSFER TO THIRD PARTY

The following must be observed when you transfer (or sell) the server or software provided with the server to a third party:

Make sure to provide this manual along with the server to a third party.

---

**IMPORTANT:** About data on the hard disk drive

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk drive to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

---

### Provided software

To transfer or sell any software application that comes with the server to a third party, the following requirements must be satisfied:

- All provided software applications must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software applications that are not approved for transfer must be uninstalled before transferring the server.



## DISPOSAL AND CONSUMABLES

- Dispose of the server, all the internal devices and DVD/CD-ROMs according to all national laws and regulations.

### IMPORTANT:

- For disposal (or replacement) of the battery on the mother board of the server, consult with your service representative.
  - It is the user's responsibility to completely erase or modify all the data stored in storage device such as hard disk drive so that the data cannot be restored.
- 
- Your server contains some components that are only good for a limited period of time and require replacement, such as fans, internal batteries, the internal DVD-ROM drive, the floppy disk drive, and the mouse. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your service representative for replacement or the product lives.

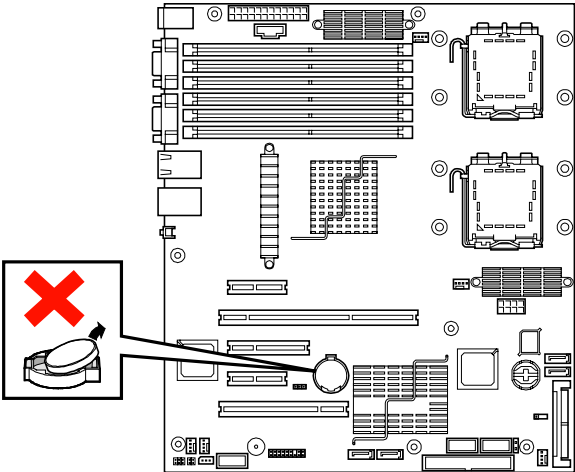
**⚠ WARNING**



Do not remove the lithium battery.

Your server contains the lithium battery. Do not remove the battery. Placing the lithium or nickel cadmium battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.



**Mother board**

## USER SUPPORT

Before Asking for Repair, do the following when the server appears to fail:

1. Check if the power cord and the cables to other devices are properly connected.
2. See Chapter 8 to find if your problem fits the description. If it does, take the recommended measure for it.
3. Check if the software required for operation of the server is properly installed.

If the server still appears to fail after you have taken the above actions, consult with your service representative immediately. Take notes on lamp indications of the server and alarm indications on the display unit before consultation, which may provide a significant help to your service representative.

## Advice for Health

The longer you keep using the computer equipment, the more you become tired, which may cause disorders of your body. When you use a computer, observe the following to keep yourself from getting tired:

### Good Working Posture

You have good posture if the following are satisfied when you use a computer:

- You sit on a chair with your back straight.
- Your hands are parallel with the floor when you put them on the keyboard.
- You look at the screen slightly lower than your eye height.

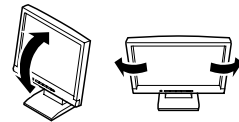
You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

You have "bad posture" when you sit with your back hunched up or you operate a display unit with your face close to the screen. Bad working posture may cause eye strain or poor eyesight.



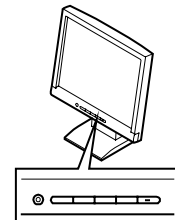
### Adjustment of Display Unit Angles

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. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.



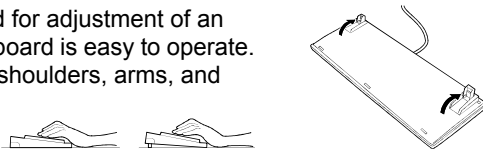
### Adjustment of Screen Brightness and Contrast

The display unit has brightness and contrast adjustment functions. The most suitable brightness and contrast depend on the individual and the working environment (well-lighted room or insufficient light). Adjust brightness and contrast so that the screen will be easy to see. An extremely bright or dark screen will give a bad effect to your eyes.



### Adjustment of Keyboard Angle

The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



### Cleaning of Equipment

Clean equipment regularly. It is difficult to see the display contents on a dusty screen. Keeping equipment clean is also important for your sight.

### Fatigue and Rest

If you feel tired, you should stop working and do light exercises.



# Chapter 2

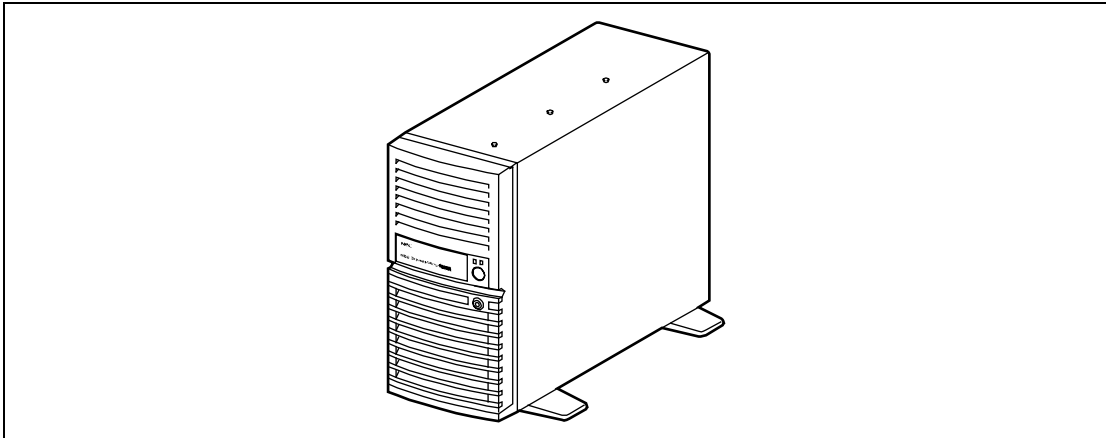
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## General Description

This chapter provides information that you should be familiar with before using the server. It includes names and functions of the components and features of the server.

## OVERVIEW

Your server is a modular, multiprocessing server based on the Intel® Xeon® processor family. It is a solid performer and offers the latest technology. The combination of compute performance, memory capacity, and integrated I/O provides a high performance environment for many server market applications. These range from large corporations supporting remote offices to small companies looking to obtain basic connectivity capability such a file and print services, e-mail, web access, web site server, etc. Your server is housed and available as a tower-based system.



**Front View**

As application requirements increase, you can expand your server with an additional memory, add-in boards and peripheral devices; tape devices, and hard disk drives. The server features the following major components.

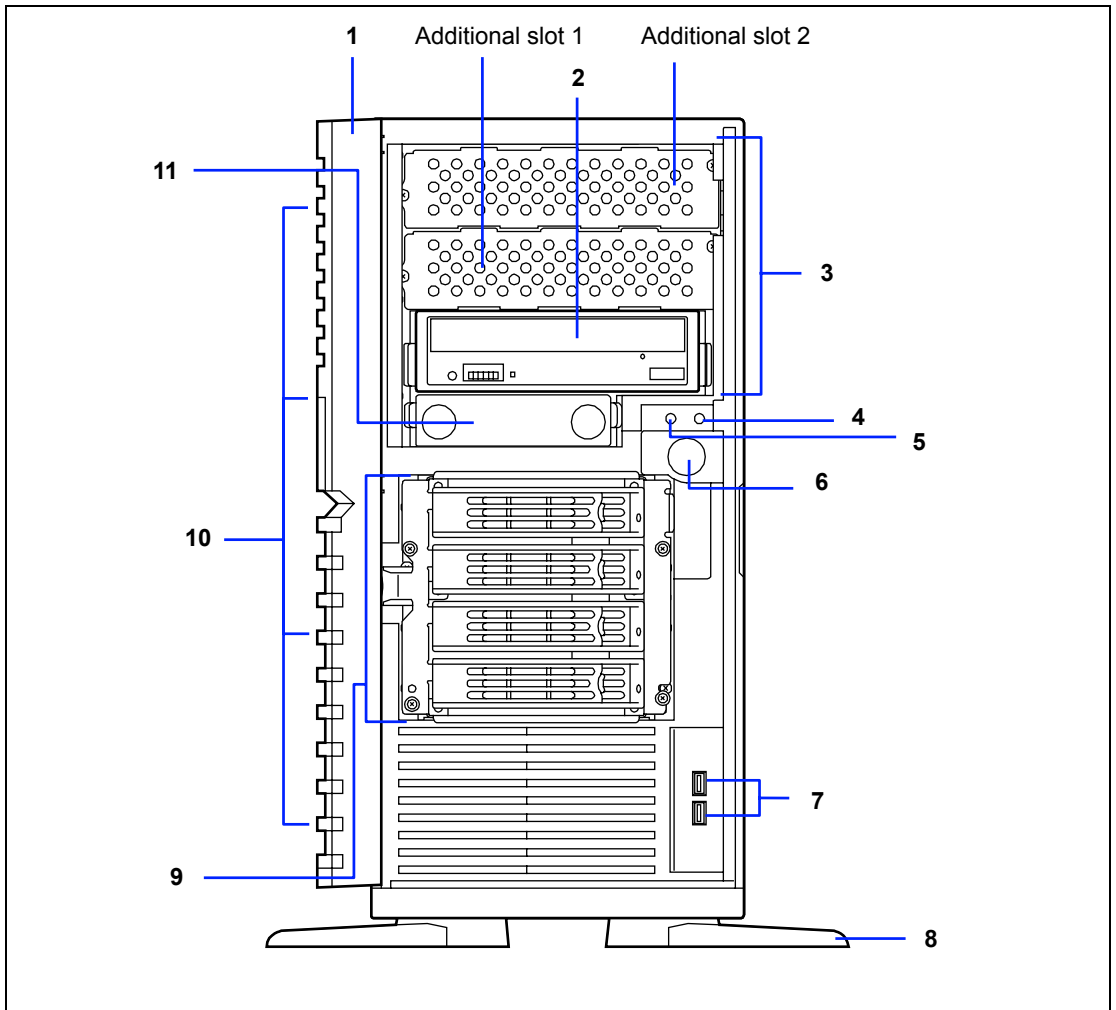
- A high-performance Intel Xeon processor
- Up to 24GB of memory (using 4GB DIMMs)  
Minimum configuration is 1GB of memory
- Dual channel memory configuration
- Five integrated I/O expansion PCI slots for add-in boards (three PCI Express slots, one 64-bit/100 MHz slot and one 32-bit/33 MHz slot)
- Onboard enhanced IDE interface controller
- Onboard SAS RAID controller
- Onboard 1000/100/10 network controller
- Four hard disk drive expansion bays
- Embedded PC-compatible support (serial, parallel, mouse, keyboard, USB, LAN, and video)

## SYSTEM CHASSIS

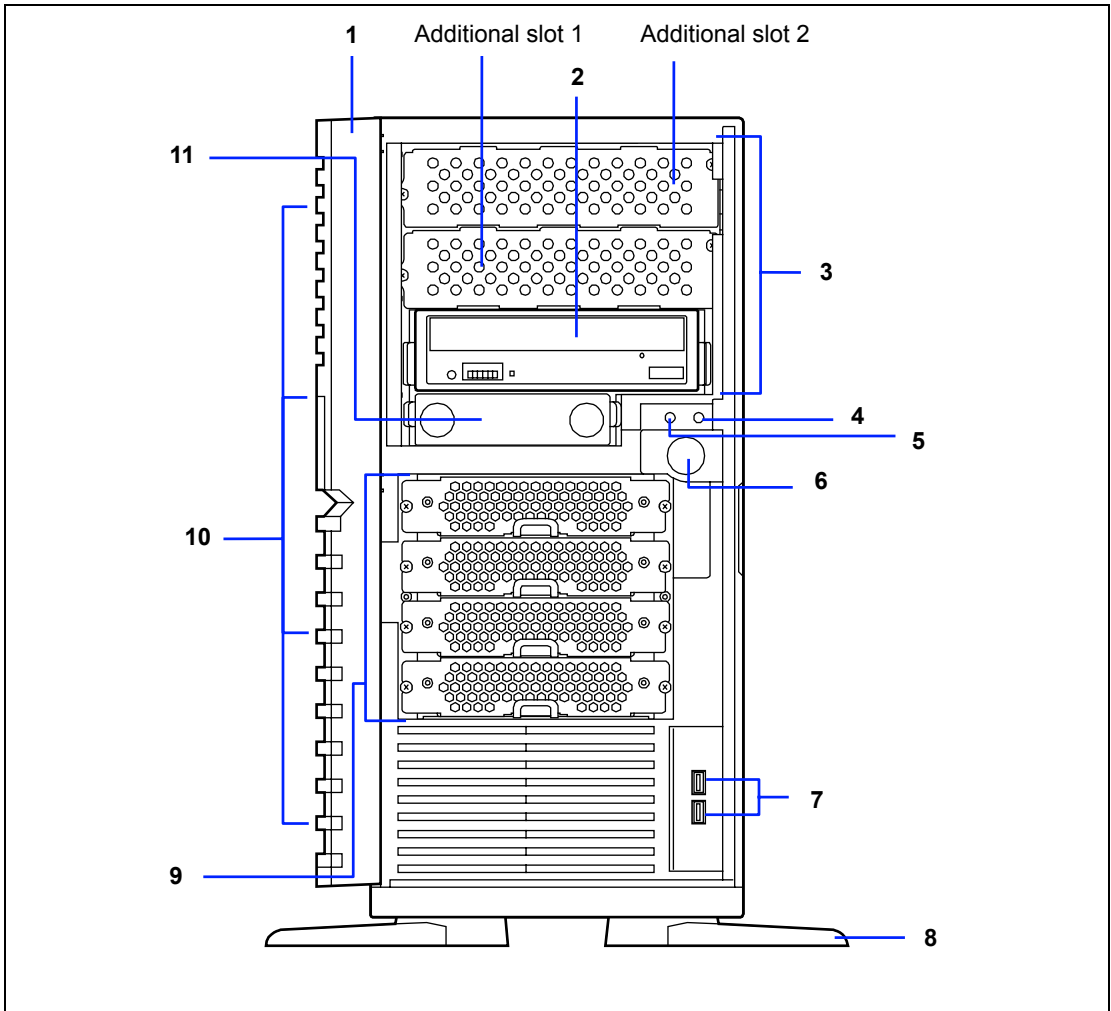
Names and functions of the components are shown below.

### Front View

### SAS Model



### SATA Model





**1 Front mask**

The front mask protects the front face of the chassis.

**2 DVD-ROM drive**

The DVD-ROM drive reads data from the inserted CD-ROM or DVD-ROM.

The drive is equipped with the following:

- Open/Close button to eject the tray
- Access lamp that indicates the disk access status (lights orange while being accessed)
- Emergency hole to forcibly eject the tray

**3 5.25-inch device bay**

Backup file device of 5.25-inch width such as DAT drive or MO drive may be installed in the 5.25-inch device bay.

A DVD-ROM drive is factory-installed in the bottom bay.

To install a DVD-RAM drive or internal AIT (IDE), install it in the bottom bay. In this case, move the DVD-ROM drive to the additional slot 1 and connect it as a master drive.

**4 Disk access lamp (green)**

The disk access lamp is lit while the system accesses to an internal hard disk drive. If the internal hard disk drive is connected to the optional board, this lamp can be lit only when the LED cable provided with the server is connected.

**5 POWER/SLEEP lamp (green)**

Lights green when the server is powered on. Blinks green when the system is placed in the sleep mode.

**6 POWER/SLEEP switch**

The POWER/SLEEP switch is used to turn the power of the server ON/OFF. If you press this switch once, the power is turned on with the lamp going on green. If you press the switch again, the power is turned off.

Some OS setting can provide the function of switching to the power saving (sleep) mode. If you press the POWER/SLEEP switch once after the setting, the system enters into the power saving mode. If you press the switch again, the system returns to the normal state. (Depending on installed optional boards, the function cannot be provided.)

**7 USB connectors**

The USB connectors are connected with devices accepting the USB interface.

**8 Stabilizer**

Use the stabilizers to prevent the server from falling down. Close the stabilizers when laying the server down.

**9 Hard disk drive bay**

The bay can contain hard disk drives.

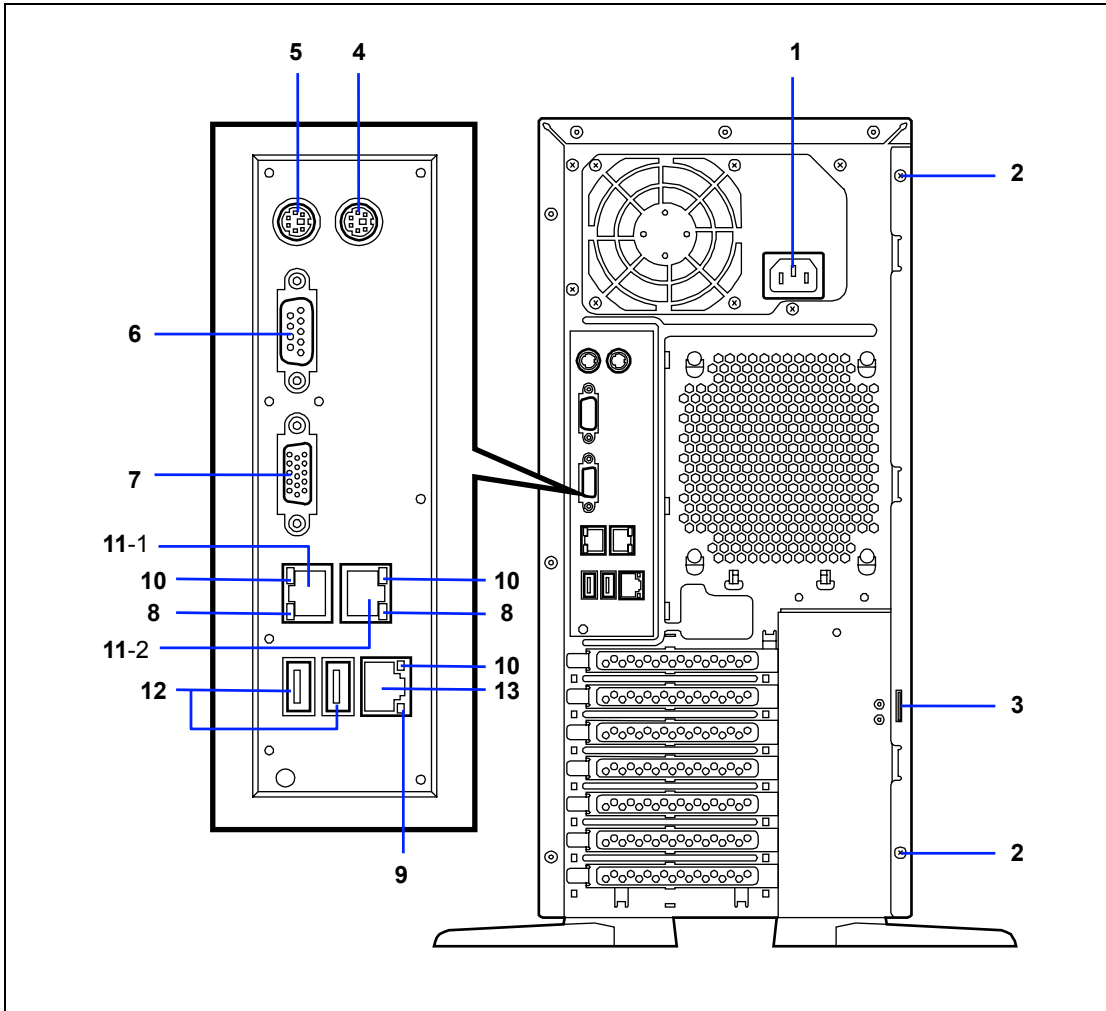
**10 Release tabs (4 at an end of front mask)**

The release tabs are provided to unlock the front mask. Press the tabs to remove the front mask.

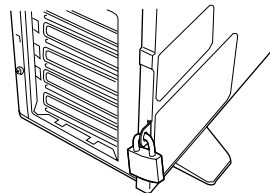
**11 3.5-inch floppy disk drive bay**

The bay can contain an internal USB floppy disk drive (option).

## Rear View



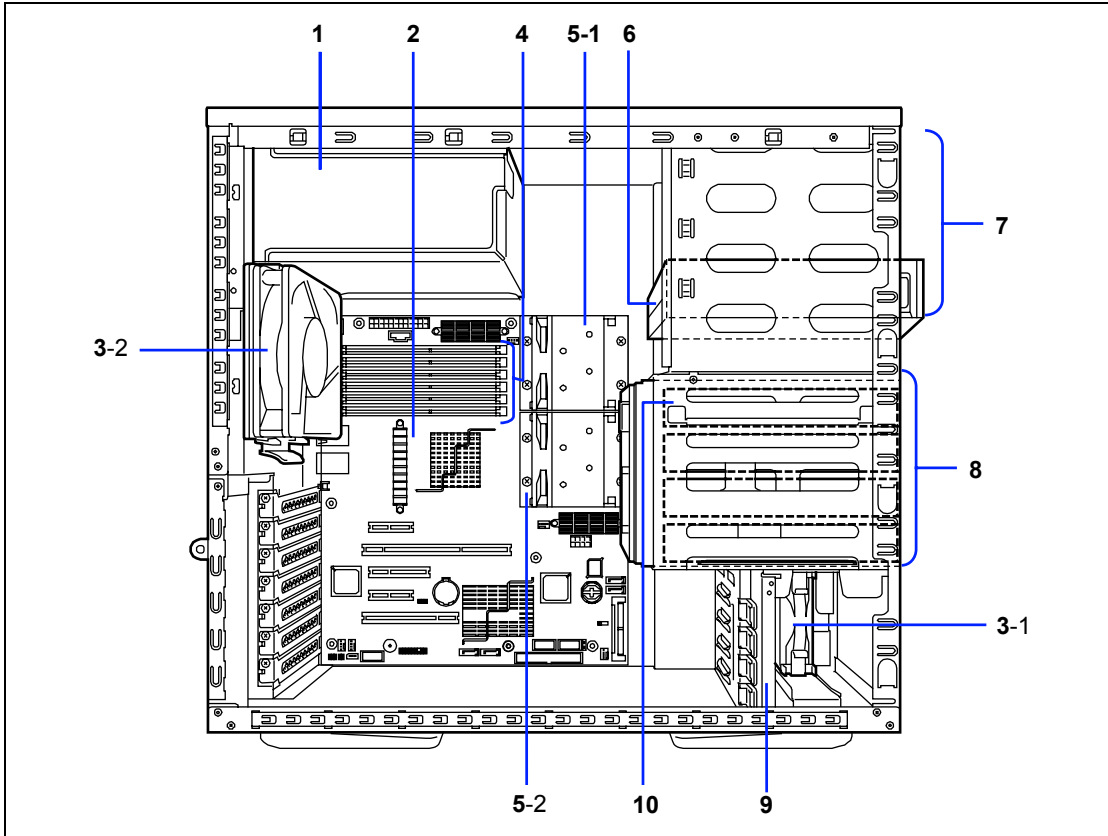
- 1 AC inlet**  
The AC inlet is connected with the power cord.
- 2 Fixing screws (2)**  
Secures the left side cover.
- 3 Cover lock plate**  
Installing a theft prevention device protects the internal components of the workstation from being stolen.



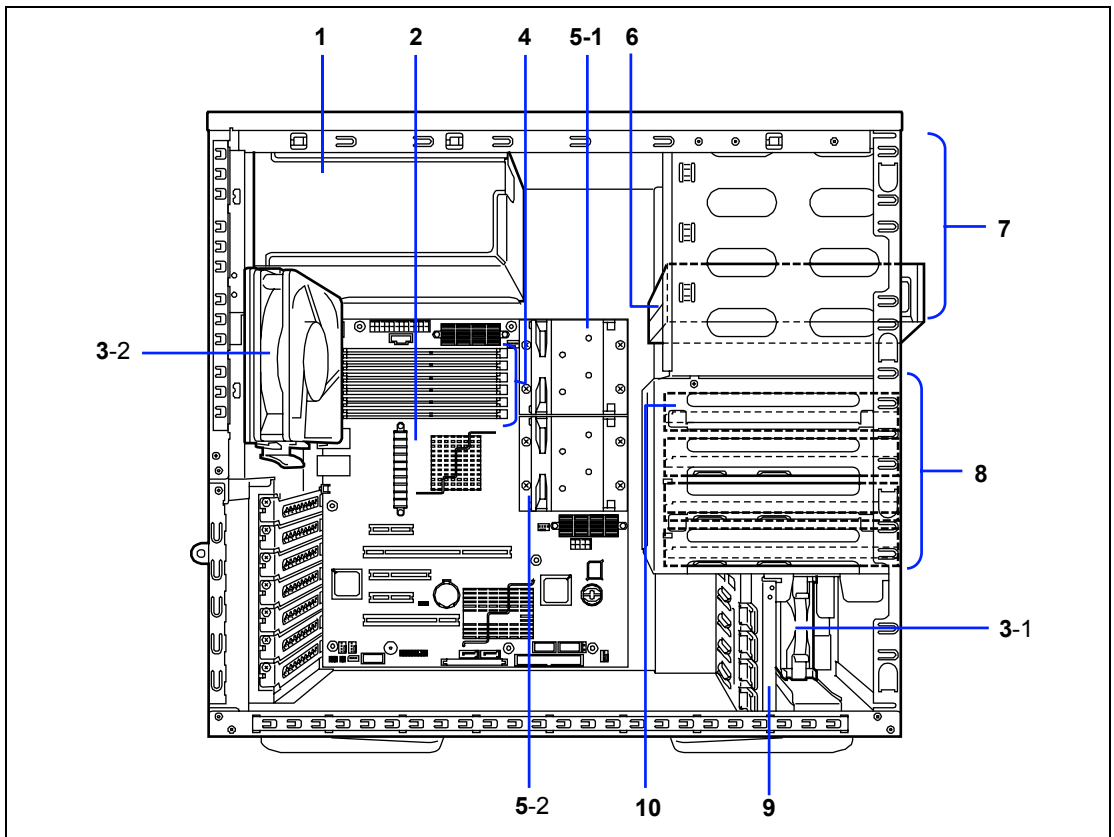
- 4 Mouse connector**  
The mouse connector is connected with the mouse coming with the server.
- 5 Keyboard connector**  
The keyboard connector is connected with keyboard coming with the server.
- 6 Serial port connector**  
The serial port connector is used to connect the server to a device with the serial interface. The server cannot be directly connected to a leased line through the connector.
- 7 Monitor connector**  
The monitor connector is connected with the display unit.
- 8 1000/100/10 lamp**  
1000/100/10 lamp indicates the transfer rate of LAN port.
- 9 100/10 lamp**  
100/10 lamp indicates the transfer rate of management LAN port.
- 10 LINK/ACT lamp**  
The LINK/ACT lamp shows the LAN access status.
- 11 LAN connector**  
The LAN connector is connected with a network system on LAN (1000BASE-T/100BASE-TX/10BASE-T). The value following the bold-faced number indicates the port number.
- 12 USB connectors**  
The USB connectors are connected with devices accepting the USB interface.
- 13 Management LAN port**

## Internal View

### SAS Model

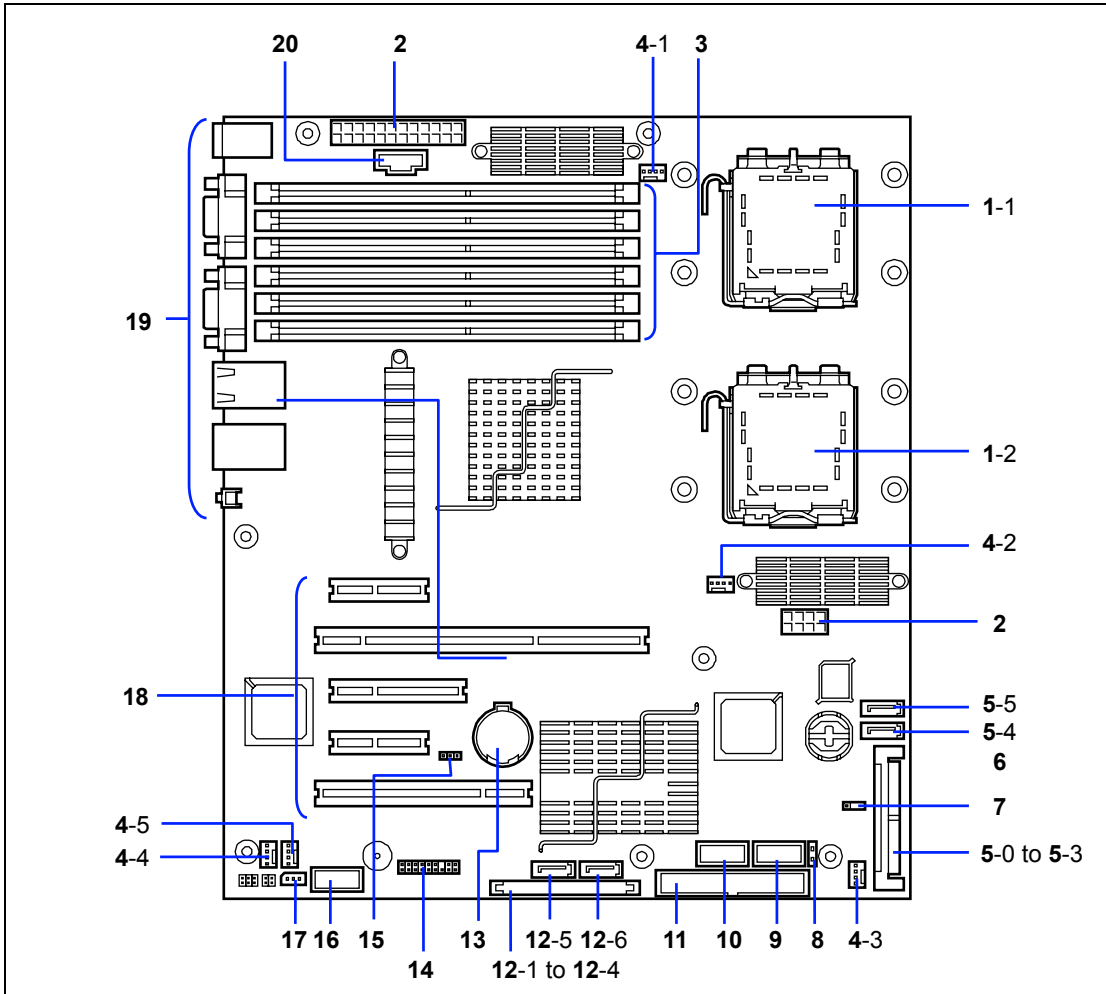


## SATA Model



- 1 Power supply unit**
- 2 Mother board**
- 3 Cooling fan**
  - 3-1 Front
  - 3-2 Rear
- 4 DIMMs**
- 5 CPU heat sink**
  - 5-1 CPU 1
  - 5-2 CPU 2 (additional)
- 6 DVD-ROM drive**
- 7 5.25-inch device bay**  
A standard DVD-ROM drive is factory-installed in the bottom slot.
- 8 Hard disk drive bay**  
For SAS model, the HDD cage is factory installed.
- 9 PCI guide rail**
- 10 3.5-inch hard disk drive (optional)**

# MOTHER BOARD

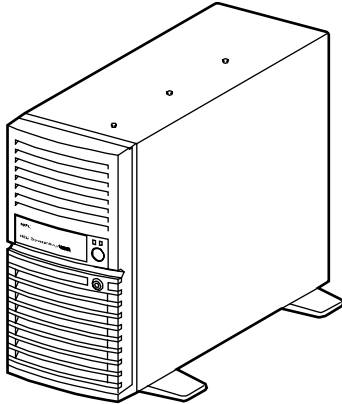


- 1** Processor socket
  - 1-1 CPU1 socket
  - 1-2 CPU2 socket
- 2** Power connectors
- 3** DIMM sockets  
(DIMM #A-1, #A-2, #A-3, #B-1, #B-2, and #B-3 from bottom to top)
- 4** Cooling fan connector
  - 4-1: CPU1 heat sink fan
  - 4-2: CPU2 heat sink fan
  - 4-3: Front fan
  - 4-4: Rear fan
  - 4-5: VR fan
- 5** SAS connector  
(Not provided for SATA model. The last digit shows a channel number.)
- 6** Connector for RAID5 activation key
- 7** SAS SW RAID select jumper switch (Not provided for SATA model.)  
See Chapters 4 and 9 for switch setting.
- 8** Disk LED connector
- 9** USB port connector
- 10** USB device connector
- 11** IDE connector
- 12** Serial ATA connector  
(12-1 to 12-4 are not provided for SAS model. The last digit shows a channel number.)
- 13** Lithium battery
- 14** Switch/LED cable connector
- 15** CMOS configuration jumper switch
- 16** Serial port B connector (for option device)
- 17** IPMB connector
- 18** PCI board slots (#1 to #5 from top)
  - 18-1: PCIe ×4
  - 18-2: 64-bit/100MHz PCI-X
  - 18-3: PCIe ×8
  - 18-4: PCIe ×1 (connector: ×4)
  - 18-5: 32-bit/33MHz PCI
- 19** Connector for external device
- 20** Reserved

## STANDARD FEATURES

### High performance

- Dual-Core Intel® Xeon® Processor
- High-speed 1000BASE-T/100BASE-TX/10BASE-T interface (1Gbps/100Mbps/10Mbps supported)
- High-speed disk access (SATA2)
- Dual channel memory configuration



### High-reliability

- BIOS password feature
- Temperature detection
- Cooling fan monitoring feature
- Internal voltage monitoring feature
- Memory monitoring feature (single-bit error correction/double-bit error detection)
- CPU/memory degradation feature
- Disk array (SATA2/SAS)
- Bus parity error detection
- Error notification

### Management Utilities

- NEC ESM PRO
- Off-line Maintenance Utility
- NEC DianaScope
- NEC EXPRESSSCOPE Engine

### Power Saving Feature

- Sleep feature (available for Windows Server 2003)

### Expandability

- Large memory of up to 24GB (six 4GB DIMMs)
- USB interface (USB 2.0)
- Five integrated I/O expansion PCI slots
  - PCI Express (x8): 1 slot
  - PCI Express (x4): 1 slot
  - PCI Express (x1): 1 slot
  - PCI-X (64-bit/100 MHz): 1 slot
  - PCI bus (32-bit/33 MHz): 1 slot
- Serial ATA x6 channels (x2 channels for SAS model)
- Ultra ATA 100 x1 channel
- Up to two multi-processors
- Can be used as rack-mount type. (N81243-64F rack conversion kit is required.)

### Many Available Features

- El Torito Bootable CD-ROM (no emulation mode) format support
- Remote power-on feature
- AC-LINK feature
- Disk array (SATA)
- IPMI v2.0 compliant Baseboard Management Controller (BMC)

### Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis

### Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- BIOS setup utility
- Configuration Diskette Creator



---

## Power Supply

The system contains one auto-sensing 600-watt power supply at an operating frequency of 50/60 Hz.

The power supply is designed to comply with existing emission standards and provide sufficient power for a fully loaded system configuration.

---

## Peripheral Bays

The system supports a variety of standard PC AT-compatible peripheral devices. The chassis includes these peripheral bays:

- Three 5.25-inch file bays for installing 5.25-inch peripheral devices such as an optional tape drives. (A DVD-ROM drive is factory-installed.)
- The 3.5-inch device bays for installing up to four SATA or SAS hard disk drives.

---

## Remote Power-On Feature (Wake On LAN)

The remote power-on function turns on the server through a network. It sends a special packet from the management computer to a remote server to turn it on if the server is off-powered.

To enable this feature, you must select "Enabled" for each submenu in the Power Management Setup of the Advanced menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

The remote power-on feature is not available in the following cases. Press the POWER/SLEEP switch once to start the OS, and turn off the server in an appropriate procedure.

- Abnormal previous system shut-down
- No power supply to the server (due to turned-off breaker, disconnected power cord, power blackout, etc.)

---

## AC LINK Feature

When the power cord of the server is connected to an uninterruptible power supply (UPS) unit, the server supports the power linkage feature that enables control over the power supply from the UPS to the server. The AC LINK feature can be enabled or disabled with Power Management Setup in the Server menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

---

## Security

The BIOS setup utility provides a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, access to the system is allowed only after the user enters the correct password(s). For example:

- Set and enable an administrative password.
- Set and enable a user password
- Check the user account when entering the BIOS setup utility or booting the system.

---

## NEC EXPRESSBUILDER

The CD-ROM that comes with the server contains a setup utility called "NEC EXPRESSBUILDER."

The major functions of the NEC EXPRESSBUILDER are:

- To install the Operating System.  
"Express Setup" helps you to install the Windows Operating System. (See Chapter 5)
  - To diagnose the system.  
NEC EXPRESSBUILDER includes the System Diagnostics to check your server. (See Chapter 6)
  - To create support disks.  
Use this function to create the support disks used to boot the utilities from the floppy disk, or the OEM floppy disk used for a manual installation of Windows. (See Chapter 6)
  - To update the BIOS.  
Use this function to update the system BIOS or firmware of the server. (See Chapter 6)
  - To update the Windows System\*  
"Update Express5800 system" in Master Control Menu (Windows-based NEC EXPRESSBUILDER feature) updates the several drivers of Microsoft Windows. (See Chapter 6)
  - To install the utilities.  
NEC EXPRESSBUILDER includes some management software for Windows (NEC ESMPRO, NEC DianaScope and so on) and maintenance utilities for DOS (System diagnostics, Off-line Maintenance Utility and so on).  
You can install the applications for Windows from Master Control Menu and install the utilities for DOS from Tools menu. (See Chapter 6)
  - To read the online documents\*  
You can refer to the online documents from Master Control Menu. (See Chapter 6)
- \* These functions are available under the Windows system.

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**NOTE:** Some features among those listed above can be used from the remote computer via cross cable (COM), or LAN. See Chapter 6 for details.

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## NEC ESMPRO

The NEC ESMPRO is server management software that runs on the OS. The NEC ESMPRO includes the NEC ESMPRO Manager for the server monitoring terminal and the NEC ESMPRO Agent for the NEC Express server.

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**NOTE:** For details of major functions of the NEC ESMPRO, system configuration and setups with the NEC ESMPRO, see Chapter 6. Available functions of the NEC ESMPRO depend on the OS you install. Ask your service representative for details.

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## Off-line Maintenance Utility

The Off-line Maintenance Utility is used for maintenance and fault analysis of the server. This utility is usually used by the service representative. See Chapter 8 for details.

---

## System Diagnostic Utility

The system diagnostic utility contained in the NEC EXPRESSBUILDER is useful to detect hardware failures. See Chapter 7 for details.

---

## Remote Management

The server may be monitored and managed via LAN/WAN by installing the optional Remote Management (N8115-03) and NEC DianaScope utility. To use the NEC DianaScope, a separately priced server license is required.

The Remote Management performs the following:

- Monitoring of temperature, voltage, and fans
- Generation of SEL (system event log) at occurrence of hardware failure
- Monitoring of OS stall by using watchdog timer
- Notification after occurrence of OS stop error
- Remote management via LAN/WAN by using NEC DianaScope (e.g., resetting the server, power on/off, viewing System Event Log (SEL))

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### NOTES:

- Notes on using Remote Management (N8115-03)
    - Booting the server from the NEC EXPRESSBUILDER CD by using the Remote Media function is not available.
    - For the latest information about Remote Console/Remote Media function, visit our web site.
  - The following functions are not supported in the command line interface of EXPRESSSCOPE Engine.
    - Power state acquisition
    - STATUS LED state acquisition
-

## USING YOUR SERVER

This section describes basic operations of your server including how to use devices such as the floppy disk drive and the DVD-ROM drive. See Appendix B for notes on using the floppy disk, CD-ROM, and accessories including the keyboard and the mouse.

---

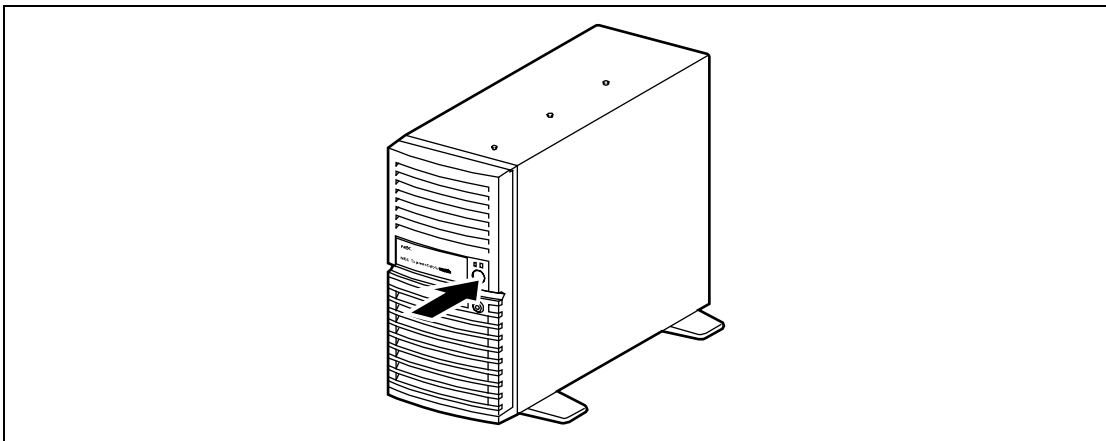
### POWER Switch

Use the POWER/SLEEP switch to turn on/off the server.

#### Power On

Press the POWER switch on the front of the computer chassis.

The POWER/SLEEP lamp lights in green.



---

#### IMPORTANT:

- If the power cord is connected to a power control device such as a UPS (Uninterruptible Power Supply), make sure that the power control device is powered.
  - Do not turn off the server until characters appear on the screen.
-

## POST

POST (Power On Self-Test) is the self-diagnostic program stored in the system memory.

When you power on the server, the system automatically runs POST to check the mother board, ECC memory module, CPU module, keyboard, and mouse. POST also displays messages of the BIOS Setup utility, such as the start-up message, while in progress.

The NEC logo is displayed in a large, bold, black font, centered within a rectangular border.

With the factory setup of the server, the NEC logo appears on the display unit while POST is in progress. (To display the POST check results, press **Esc**.)

You don't always need to check the POST check results. Check messages that POST displays when:

- you use the NEC Express server for the first time.
- the server appears to fail.
- the server beeps for many times between power-on and OS start-up.
- an error message appears on the display unit.

## POST Execution Flow

The following describes the progress of POST in the chronological order.

---

### IMPORTANT:

- Do not power off the server while POST is in progress.
  - Do not make key entries or perform mouse operations while POST is in progress.
  - Some system configurations may display the message "Press Any Key" to prompt a key entry. This message is driven by BIOS of an installed optional board. Make sure to read the manual that comes with the optional board before any key entry.
  - 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** to continue POST. Board configuration can be made using the utility described later.
- 

1. After a few seconds from power-on, POST starts checking the memory. The count message of the basic and expansion memory appears at top left on the display unit screen. The memory check may takes a few minutes to complete depending on the memory size of the server. Also, it may take approximately one minute for the screen display to appear after rebooting the server.
2. Some messages appear upon completion of the memory check. These messages appear to indicate that the system has detected the CPU, keyboard, and mouse.
3. After a few seconds, POST displays the following message prompting you to launch the BIOS SETUP utility, stored in the system memory of the server. This message appears at bottom left on the screen.

Press <F2> to enter SETUP or Press <F12> to boot from Network

Launch the BIOS setup utility when you need to change the settings to meet the requirements for the server. As long as the above message is not displayed with an error message, you don't have to launch the utility. (Ignore the message. POST will automatically proceed.)

To launch the BIOS setup utility, press **F2** while the above message is displayed. See Chapter 4 for setup and parameters.

The server automatically restarts POST all over again when you exit the SETUP utility.

4. If your server uses onboard SAS RAID feature, the following message is displayed on the screen to prompt you to run the utility.

Press Ctrl-M to run LSI Logic Software RAID Setup Utility

Press **Ctrl + M** to run the utility. For detail explanation, see Chapter 4 for detail.

5. If the POST detects the optional add-in card, it display the message prompting you to launch the add-in card BIOS configuration utility. (Ignore the message. POST will automatically proceed a few seconds later.)

Refer to the manual that comes with the optional add-in card for detail.

6. If you set a password using the BIOS SETUP utility, the password entry screen 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 installing an OS.

---

7. The OS starts when POST completes.

## POST Error Messages

When POST detects an error, it displays an error message on the display unit screen or emits beep code. See Chapter 8 for POST error codes.

---

**IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

---

---

## Power Off

Follow the procedure below to power off the server. If the power cord of the server is connected to a UPS, refer to the manual that comes with the UPS or the manual for the application that controls the UPS.

---

**IMPORTANT:** Always allow POST to complete before turning off the server.

---

1. Shut down the OS.
2. Press the POWER/SLEEP switch on the front of the server.  
The POWER/SLEEP lamp goes out.
3. Power off peripheral devices.

---

**NOTE:** The standby function of Windows Server is not available. Do not select "Standby" in the Windows shutdown menu.

---

---

## SLEEP Switch

The POWER/SLEEP switch allows you to save almost all power of the server (power-saving mode or sleep mode).

Press the POWER/SLEEP switch on the front of the server to place the server in the power-saving mode. (The POWER/SLEEP lamp blinks.) In the power-saving mode, the server retains the memory data and the status of the previous operations.

To resume the original state, press the POWER/SLEEP switch again. (It may take a little time to resume the original state.)

---

**NOTE:** The operational level in the power-saving mode depends on the OS in use. (Available for Windows Server 2003.)




---



---

## DVD-ROM Drive

The server is provided with the DVD-ROM drive on its front to read data from a disc.

 <b>CAUTION</b>	
 	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Do not leave the tray ejected from the DVD-ROM drive.</li><li>■ Take off the headphone before you plug in the headphone jack.</li></ul>

### Setting and Removing the Disc

1. Make sure that the power of the server is on (with the POWER/SLEEP lamp being lit in green) before setting the disc on the DVD-ROM drive.
2. Press the Open/Close button on the front of the DVD-ROM drive.  
The tray comes out.
3. Put the disc on the tray carefully and securely with the character printed surface facing upward.
4. Press the Open/Close button or gently push on the tray front.  
The tray is automatically retracted into the DVD-ROM drive.

---

**IMPORTANT:** If a noisy sound in driving the DVD-ROM drive occurs after setting a disc, set it again correctly.

---

To take out the disc from the DVD-ROM drive, press the Open/Close button in the similar way in setting the disc to make the tray go out. If the access LED is lit in orange, the disc is being accessed. Confirm that the access LED is not lit before pressing the Open/Close button.

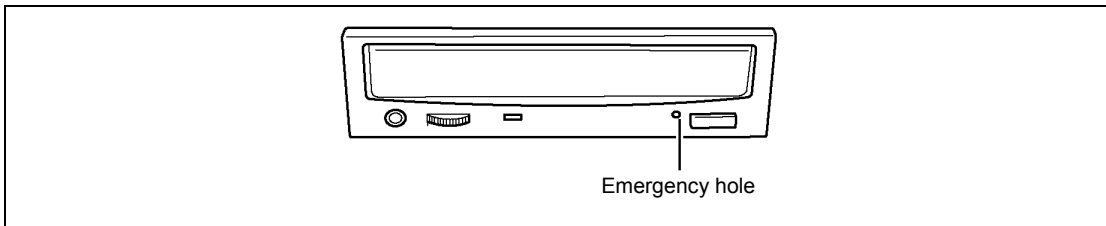
Your OS may have a command to eject the tray.

When you have taken out the disc, retract the tray back in place.

### When you fail to eject:

When you fail to eject the tray with the Open/Close button and take out the disc from the server, follow the procedure below.

1. Press the POWER switch to power off the server. (The POWER/SLEEP lamp goes off.)
2. Insert a metal pin of approximately 1.2 mm in diameter and 100 mm in length (a straightened large paper clip will make a substitute) into the emergency hole on the front of the DVD-ROM drive and gently push it in until the tray is ejected.



---

#### **IMPORTANT:**

- Do not use a toothpick or plastic stick that is easy to break.
  - If the above procedure does not let you take out the DVD/CD-ROM, contact your service representative.
- 

3. Hold the tray and pull it out.
4. Take out the disc.
5. Push the tray back into position.

## Use of the Disc

Keep the following notes in mind to use the disc for the server:

- For the disk which does not conform to the CD standard, the playback of such a disk with the CD drive is not guaranteed.
- Do not drop the disc.
- Do not place anything on the disc or bend the disc.
- Do not attach any label onto the disc.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the disc with its printed side upward and gently put it on the tray.
- Do not scratch the disc or write anything directly on it with a pencil or ball-point pen.
- Keep the disc away from cigarette smoke.
- Do not leave the disc in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the disc, wipe the disc from its center to edge with a dry soft cloth slowly and gently.
- Use the CD cleaner to clean the disc. Do not use record spray/cleaner, benzene, or thinner.
- Keep the disc in a disc case when not in use.
- If the disc emits large noise in the DVD-ROM drive, remove the disc and insert it back again.

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# Chapter 3

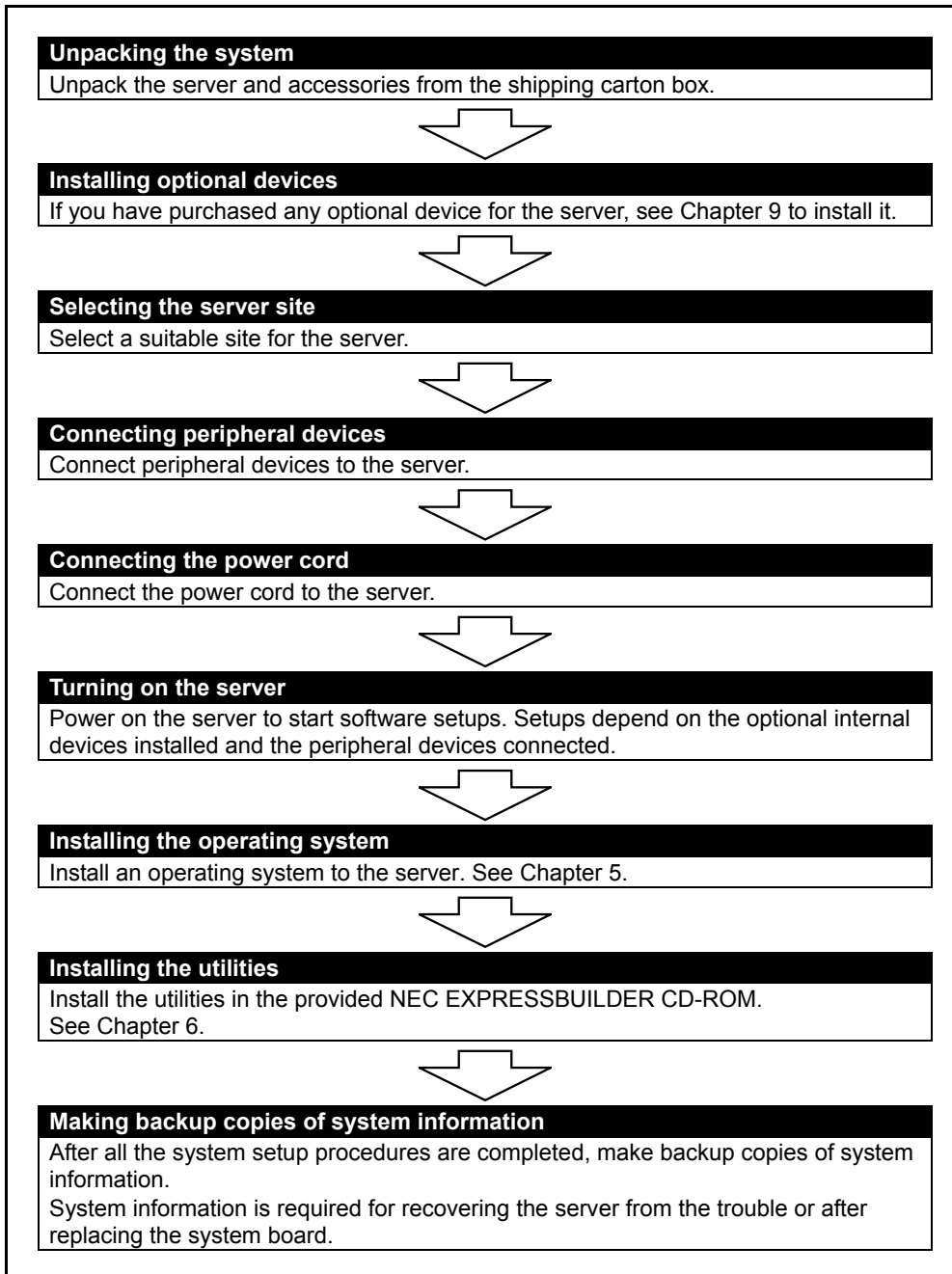
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## Setting Up Your Server

This chapter describes how to set up your server appropriate for your system, on a step-by-step basis.

## SETUP FLOW

Follow the flowchart below to set up the server.



## UNPACKING THE SYSTEM

When you receive your system, inspect the shipping containers prior to unpacking. If the shipping boxes are damaged, note the damage, and if possible, photograph it for reference. After removing the contents of the containers, keep the cartons and the packing materials. If the contents appear damaged when you unpack the boxes, file a damage claim with the carrier immediately.

## INSTALLING OPTIONAL DEVICES

To install any optional device, see Chapter 9, "Upgrading Your Server," for the installation procedure. Proceed to the next section if you have no optional devices to install.


---

**IMPORTANT:** There are third-party products (memory modules, hard disk drives, etc.) available for the server in the markets. However, NEC recommends that you should use NEC products for stable operation. NEC assumes no liability for data errors and failures due to malfunction of the server resulted from installation of those third-party products.

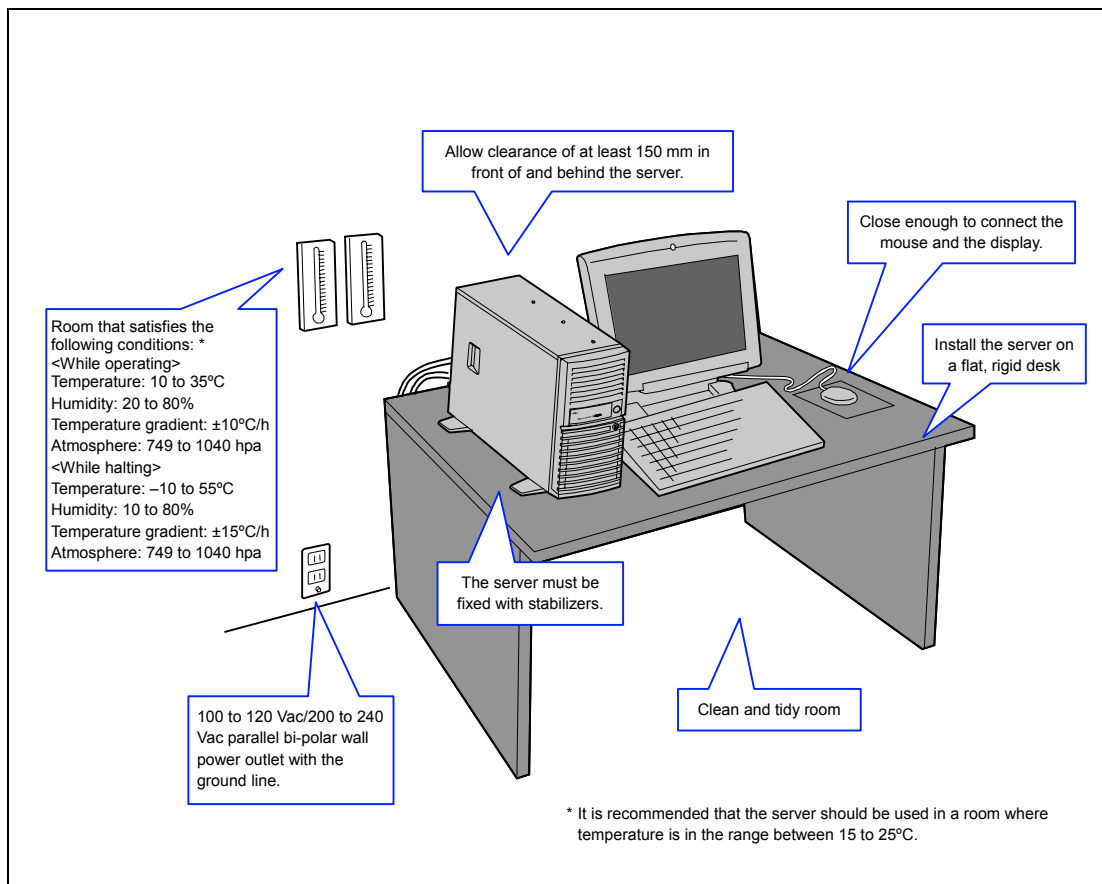
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## SELECTING SERVER SITE

Read the following precautions before selecting a suitable site for your server. The following describes installation of the server and connections to the server.

<b>⚠ CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Never attempt to lift the server only by yourself.</li><li>■ Do not install the server in any place other than specified.</li></ul>

The following figure illustrates a site suitable for installing the server.





When you have selected a server site, hold the server by its bottom with at least three persons and carry it to the site, then place it slowly and gently.

---

**IMPORTANT:** Do not hold the server by its front mask to lift the server. The front mask may be disengaged and damage the server.


---

Do not install the server in the following locations as it may cause malfunctions of the server.

- Places with drastic changes in temperature (e.g., near a heater, air conditioner, or refrigerator)
- Places with strong vibration
- Places with corrosive gas in presence, near chemicals, or with possibilities of chemicals sprayed over
- On a non-antistatic carpet
- Places with possibilities of falling objects
- Places where a power outlet that shares the ground line with another (especially the one to which a device with large power consumption is connected) must be used for the server
- Places near a device generating intense magnetic field (such as a TV, radio, broadcast/communication antenna, power transmission wire, and electromagnetic crane) is placed
- Places near equipment that generates power noise (e.g., contact spark at power-on/power off of commercial power supply through a relay). If you must install the server close to such equipment, request your service representative for separate power cabling or noise filter installation.

## CONNECTING PERIPHERAL DEVICES

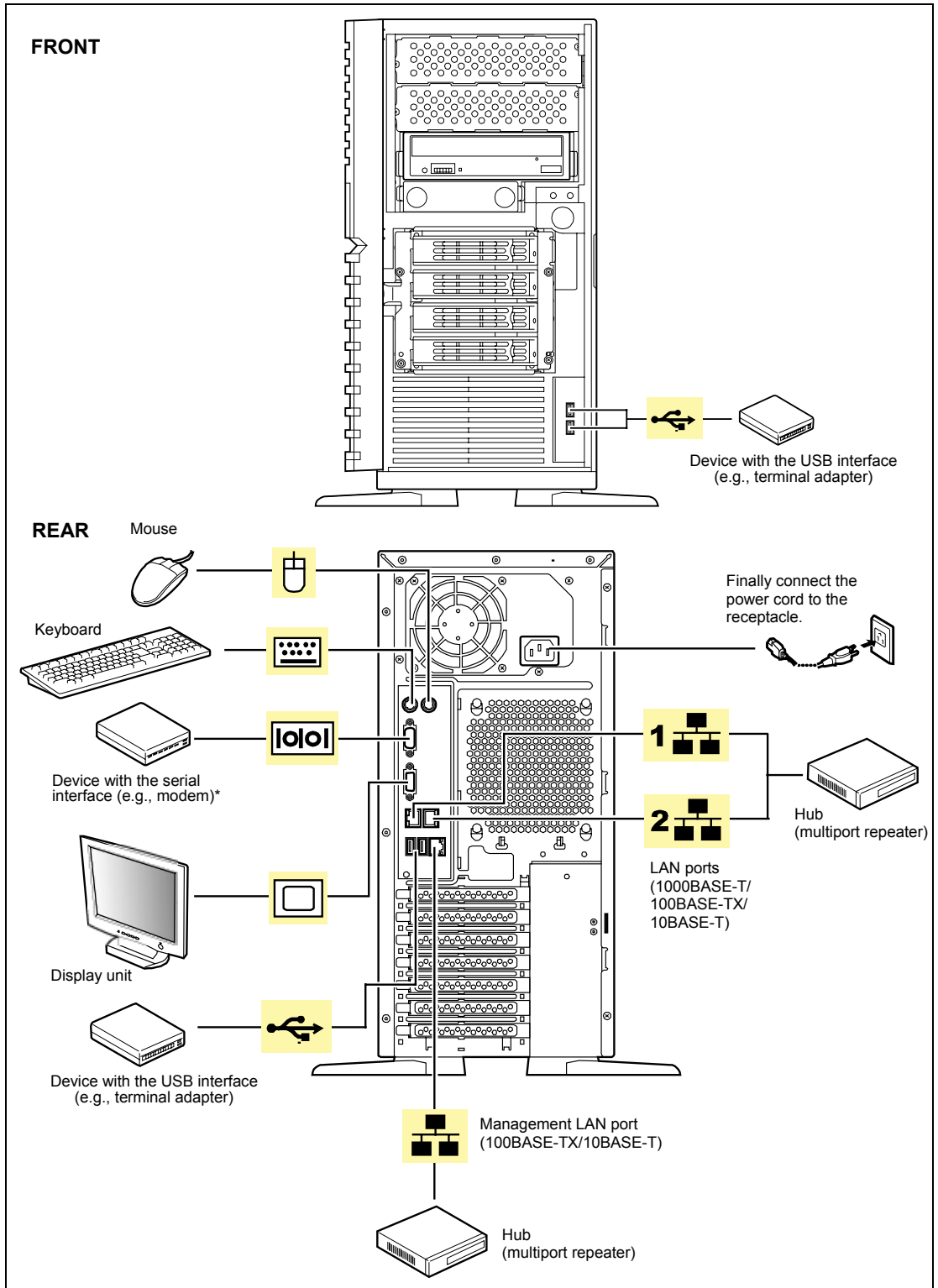
Connect peripheral devices to the server. The server is provided with connectors for wide variety of peripheral devices. The figure on the next page illustrates available peripheral devices for the server in the standard configuration and locations of the connectors for the devices.

<b>⚠ CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Do not use any damaged cable connector.</li><li>■ Do not use any unauthorized interface cable.</li><li>■ Do not use the server with any loose interface connection.</li><li>■ Do not step on the interface cable or place any heavy object on it.</li></ul>

---

### IMPORTANT:

- Power off the server and a peripheral device before connection. Connecting a powered peripheral device to the powered server will cause malfunctions and failures.
  - To connect a third-party peripheral device or interface cable to the server, consult with your service representative for availability of such a device or cable. Some third-party devices may not be used for the server.
  - To connect the provided keyboard and mouse, plug their connectors to the server with the "Δ" mark on the connectors facing right.
  - Do not connect the serial ports with the telephone line directly.
  - Do not connect any devices to the connectors not instructed in this subsection. Doing so could damage the device, your server, or both.
-



## CONNECTING POWER CORD

Connect the provided power cord to the server.

### ⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not hold the power plug with a wet hand.

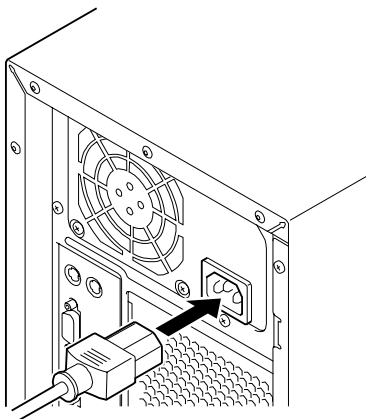
### ⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not plug the power cord in to an improper power source.
- 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 the authorized power cord only.

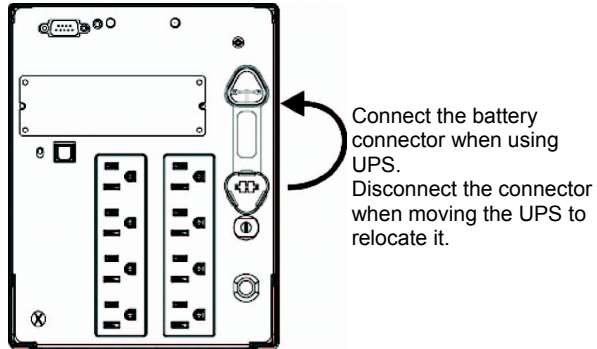
1. Plug the provided power cord into the power receptacle on the rear of the server.
2. Plug the other end of the power cord into the wall outlet.



---

**NOTES:**

- To connect the power cord from the server to an interruptive power supply (UPS), use service outlets on the rear of the UPS. Refer to the manual that comes with the UPS for details.



- When the power cord from the server is connected to a UPS, change the BIOS SETUP utility of the server to link with power supply from the UPS. Change a parameter for "AC-LINK" of the Server menu of the BIOS SETUP utility. See Chapter 4 for details.
-

## TURNING ON THE SERVER

Turn on the server and follow the on-screen instructions for setup.

---

**IMPORTANT:** Before turning on the server:

- Some optional boards require setups with the BIOS setup utility before installation. If the server has a PCI board with the PCI-to-PCI bridge installed, the BIOS setup utility is enabled to launch. Check on the board specifications to find out whether it requires pre-installation setups before actually installing the board.
- Some installed optional devices or connected peripheral devices require setups before proceeding to the next step.

To use the server with no optional devices installed besides the graphic board, install a desired OS to the server.

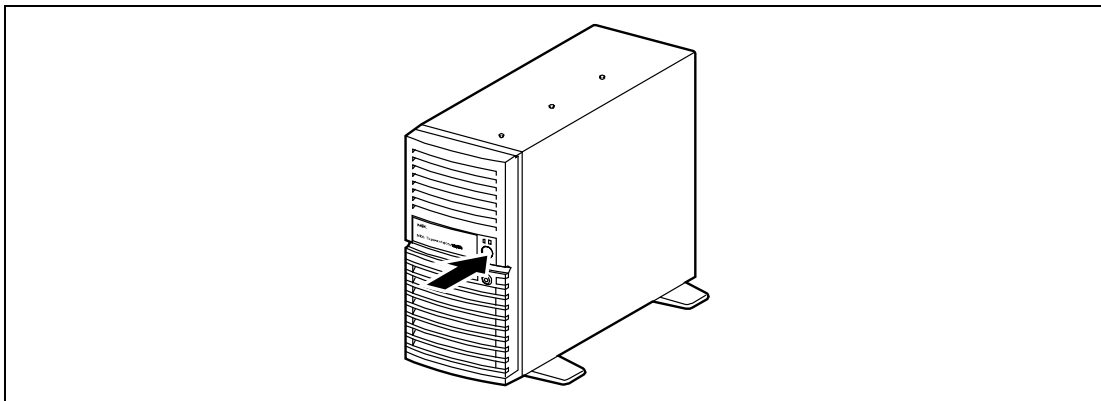
---

1. Make sure all external devices, such as a video display, keyboard, and mouse have been connected, and the power cords are connected.
2. Power on the video display and any other external devices.
3. Make sure that the floppy disk drive contains no floppy disk and the DVD-ROM drive contains no bootable DVD/CD-ROM.
4. Press the POWER/SLEEP switch.

---

### NOTES:

- If the power cord is connected to the power control unit such as the UPS, turn on the power control unit.
  - Connect the power cord and wait a few seconds before pressing the POWER switch. The POWER/SLEEP switch does not work in a few seconds after connecting the power cord due to firmware start-up.
- 



The POWER/SLEEP lamp on the front of the server comes on.

In a few seconds, the NEC logo appears on the screen and the Power On Self-Test (POST) begins.

The POST runs automatically when you power on the server or reset it with a keyboard operation (**Ctrl + Alt + Delete**). The POST runs diagnostics, initializes the server, sets interrupt vectors, detects installed peripheral devices, and boots the operating system (if installed). See Chapter 2 for detailed description on POST.

If the server halts before completing the POST, the POST emits a beep code indicating a fatal system error requiring immediate attention. (See Chapter 8, "Troubleshooting," for troubleshooting information.)

During memory test, the POST displays the amount of memory it was able to access and test. Depending on the amount of installed memory, it may take several minutes to complete the memory test.

---

**NOTE:** The factory-set is defined to hide the POST screen with the NEC logo screen. You can always change the NEC logo screen to the POST screen by pressing **Tab**. To change the start-up screen, use the BIOS setup utility. (See Chapter 4 for details.)

---

During the POST, you will see the banner message to prompt you to launch the BIOS setup utility stored in ROM on the mother board or on an installed option board.

Start the BIOS setup utility appropriate to your system environment to change the CMOS Setup. For detail explanation on the BIOS setup utility for the server, see Chapter 4. For the BIOS utility for the option board, refer to the manual that comes with the option board.

---

**IMPORTANT:** Always allow POST to complete before turning off your system.

---

## **INSTALLING OPERATING SYSTEM**

See Chapter 5 for installing Microsoft Windows Server 2003.

To install the other operating system, contact your service representative.

## **INSTALLING UTILITIES**

Install the utilities that come with the server. See Chapter 6 for details.

## **MAKING BACKUP COPIES OF SYSTEM INFORMATION**

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

- 1.** Insert the "NEC EXPRESSBUILDER" CD-ROM into the DVD-ROM drive and reboot the system.
- 2.** Select [Tools].
- 3.** Select [Off-line Maintenance Utility].
- 4.** Select [System Information Management].
- 5.** Insert a floppy disk into the floppy disk drive.
- 6.** Select [Save].



# Chapter 4

---

## Configuring Your Server

Configuration and setup utilities are used to change your system configuration. You can configure your system, as well as option boards you may add to your system, using the BIOS Setup utility. Several unique system parameters are configured using the BIOS Setup utility, which is stored in the system FLASH memory.

If your system has been factory configured, the BIOS Setup utility or RAID Configuration Utility do not need to be run unless you want to change the password or security features, add certain types of option boards or devices, or upgrade your mother board.

This chapter also provides information on several system configuration parameters that are set by jumpers on the system board. However, these parameters do not usually require change.

Use NEC EXPRESSBUILDER CD-ROM to create the device driver diskettes.

## SYSTEM BIOS (BIOS SETUP UTILITY)

The BIOS Setup utility is provided to make basic hardware configuration for the server. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the BIOS Setup utility and shipped in the best conditions. Thus, you don't need to use the BIOS Setup utility in most cases. However, you might wish to use the BIOS Setup utility in the cases described below.

---

### IMPORTANT:

- The BIOS Setup utility is intended for system administrator use only.
  - The BIOS Setup utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the BIOS Setup utility. With the User password, system parameters available for viewing and changing are limited.
  - Do not set any password before installing the OS.
  - The server contains the latest version of the BIOS Setup utility. Dialog boxes appear on your BIOS Setup utility, thus, may differ from descriptions in this manual. If you find anything unclear, see the online help or ask your service representative.
-

---

## Starting SETUP Utility

A few seconds after powering on, the following message appears at bottom left on the screen. If NEC logo appears instead, press **Esc**.

Press <F2> to enter SETUP or Press <F12> to boot from Network

Press **F2** to start the BIOS Setup utility and display its Main menu.

If you have previously set a password with the BIOS Setup utility, the password entry screen appears. Enter the password.

Enter password:[                    ]

Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

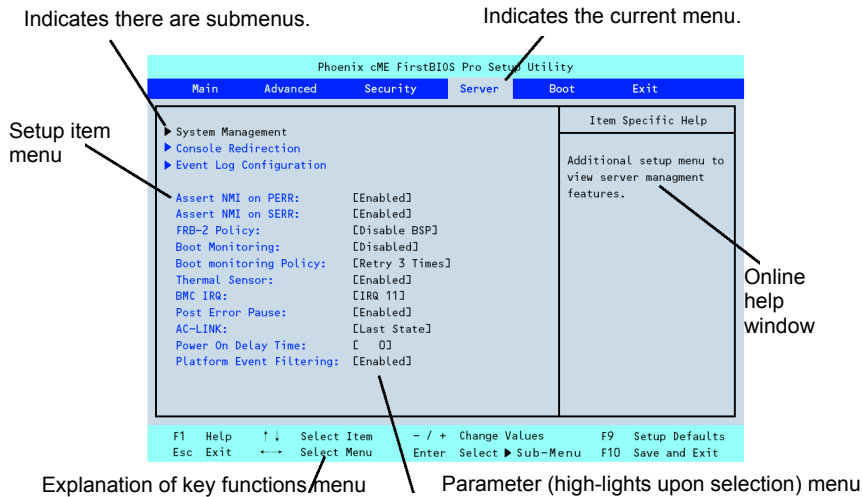
---

**NOTE:** The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters. With the User password, system parameters available for viewing and changing are limited.

---

## Description on On-Screen Items and Key Usage

Use the following keyboard keys to work with the BIOS Setup utility. These keys are also listed at the bottom of the menu screen.



- Cursor (↑, ↓):** Move cursor up and down. The cursor moves only to the settings that you can change.
- Cursor (←, →):** Move between menus.
- and +:** Select the previous value (–) or the next value (+) for the field.
- Enter** Execute command or select ► submenu.
- Esc** Exit the current menu and return to the previous menu.
- F1:** Get Help about an item. Press **Esc** to return to the previous menu.
- F9:** Load default configuration values for this menu.
- F10:** Save configuration values and exit.

---

## Configuration Examples

The following describes examples of configuration required to use software-link features or for system operations.

### Time and Date Settings

You can also change the time and date settings via the operating system commands.

Select [Main] - [System Time].

Select [Main] - [System Date].

### Link with Management Software

To control power supply of the server with NEC ESM PRO Manager via the network

Select [Advanced] - [Advanced Chipset Control] - [Wake On LAN/PME] - [Enabled].

Select [Server] - [AC LINK] - [Stay Off].

### Hard Disk Drive

To check the hard disk drive status

Select [Main] - [Primary IDE Master] and check the status indications.

To configure the SW RAID (on-board) with SATA hard disk drives

Select [Advanced] - [Peripheral Configuration] - [SATA Controller Mode Option] - [Enhanced]. Then select [Advanced] - [Peripheral Configuration] - [SATA RAID] - [Enabled], and configure the RAID drive.

---

**IMPORTANT:** Be sure to set to [Enabled] after executing [Load Setup Defaults] or CMOS clear. Leaving this parameter as the factory-set value (Disabled) may destroy the data in hard disk drive.

---

## UPS

To link power supply with the UPS

- To power on the server when power is supply from the UPS  
Select [Server] - [AC LINK] - [Power On].
- To keep the server off-powered even when power is supplied from the UPS  
Select [Server] - [AC LINK] - [Stay Off].
- To keep the server off-powered even when power is supplied from the UPS if the POWER switch was used to power off  
Select [Server] - [AC LINK] - [Last State].

## Boot

To change the boot order of devices connected to the server

Select [Boot] and specify the boot order.

To control from the remote console

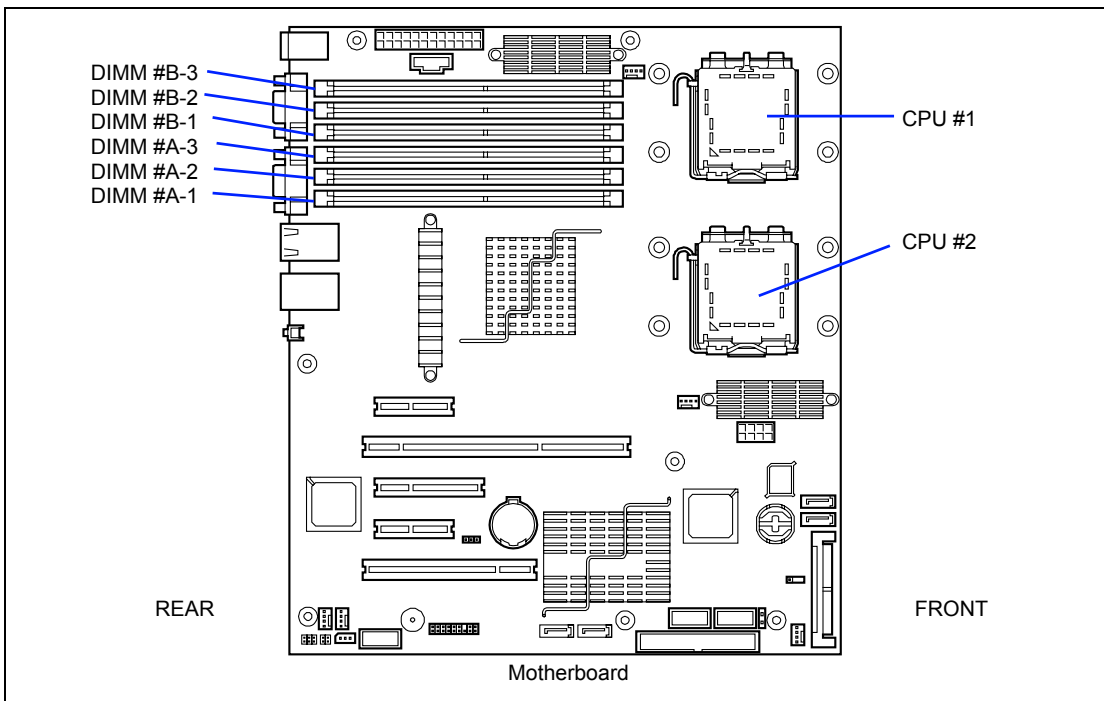
Select [Server] - [Console Redirection] and set each item.

## Memory

To check the installed memory (DIMM board) status

Select [Advanced] - [Memory Configuration] and check the status indications.

The on-screen DIMM group numbers and socket locations on the motherboard are associated as shown in the following figure.



To clear the memory (DIMM board) error information

Select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes] and reboot.

To run power-on memory test

Select [Advanced] - [Memory Configuration] - [Extended RAM Step] - [1MB] and reboot.

## CPU

To check the installed CPU status

Select [Main] - [Processor Settings] and check the status indications.

The on-screen processor numbers and socket locations on the motherboard are associated as shown in the figure on the previous page.

To clear the CPU error information

Select [Main] - [Processor Settings] - [Processor Retest] – [Yes] and reboot.

## Keyboard

To set Numlock

Select [Advanced] - [Numlock] – [On]/[Off].

## Event Log

To clear event logs

Select [Server] - [Event Log Configuration] - [Clear all Event Logs], press **Enter**, and select [Yes].

## Security

To set passwords on the BIOS

Select [Security] - [Set Supervisor Password] and enter a password.

Select [Security] - [Set User Password] and enter a password.

Set Supervisor password first, then User password.

## External Devices

To set up external devices

Select [Advanced] - [Peripheral Configuration] and set up each device.

## Internal Devices

To install the disk array controller board or SCSI controller board

Select [Advanced] - [PCI Configuration] - [PCI Slot n Option ROM] - [Enabled].  
n: slot number

To clear the hardware configuration data (after installing/removing internal devices)

Select [Advanced] - [Reset Configuration Data] - [Yes].

## Saving the Configuration Data

**IMPORTANT:** If the SATA hard disk drives are used in disk array configured with the on-board HostRAID, be sure to select [Advanced] - [Peripheral Configuration] - [SATA Controller Mode Option] - [Enhanced]. Then, select [Advanced] - [Peripheral Configuration] - [SATA RAID Enable] - [Enabled]. Leaving this parameter as the factory-set value (Disabled) may destroy the data in hard disk drive.

To save the current configuration data

Select [Exit] - [Exit Saving Changes] or [Save Changes].

To discard changes to the current configuration data

Select [Exit] - [Exit Discarding Changes] or [Discard Changes].

To load the user-defined default

Select [Exit] - [Load Setup Defaults].

To load the custom defaults

Select [Exit] - [Load Custom Defaults].

To save the custom defaults

Select [Exit] - [Save Custom Defaults].



## Menu and Parameter Descriptions

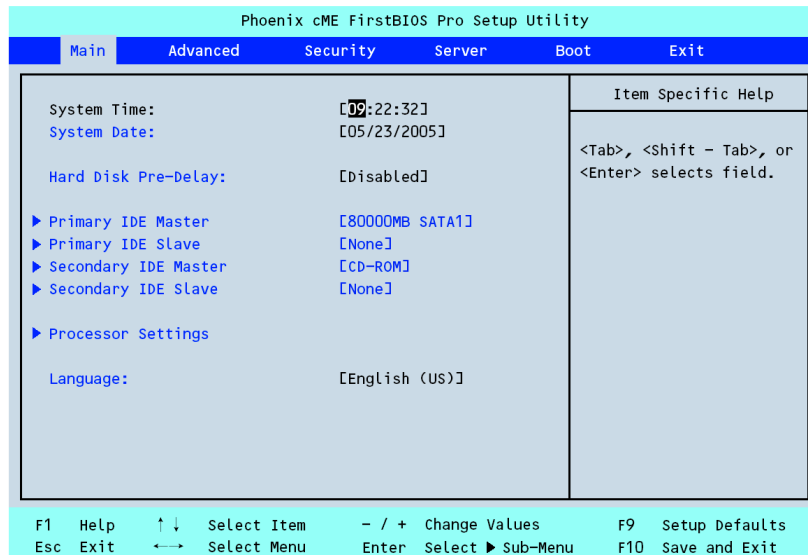
The SETUP utility has the following six major menus:

- Main
- Advanced
- Security
- Server
- Boot
- Exit

To set minute functions, select a submenu from the above menus. The following describes available functions and parameters, as well as the factory-set, for each menu.

### Main

If BIOS SETUP is started, the Main menu appears first. If you select a menu item preceded by symbol ► and press **Enter**, the appropriate submenu appears.



The items which can be set on the Main menu screen and their functions are described below.

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Set the system time.	
System Date	MM/DD/YYYY	Set the system date.	
Hard Disk Pre-Delay	[Disabled] 3 seconds 6 seconds 9 seconds 12 seconds 15 seconds 21 seconds 30 seconds	Allows slower spin-up drives to come ready.	
Primary IDE Master Primary IDE Slave Secondary IDE Master Secondary IDE Slave	–	Shows the information on the device connected to each channel on the submenu. If only one hard disk drive is connected to serial ATA channel, the information is displayed on area for Primary IDE.  The settings of some items may be changed. However, leave the items as they are at the shipment.	
Processor Settings	–	Shows the processor settings submenu. See the next page.	
Language	[English (US)] Français Deutsch Español Italiano	Select which language BIOS displays.	

[ ]: Factory-set

**IMPORTANT:** Check and adjust the system clock before the operation if any of the following conditions is applicable.

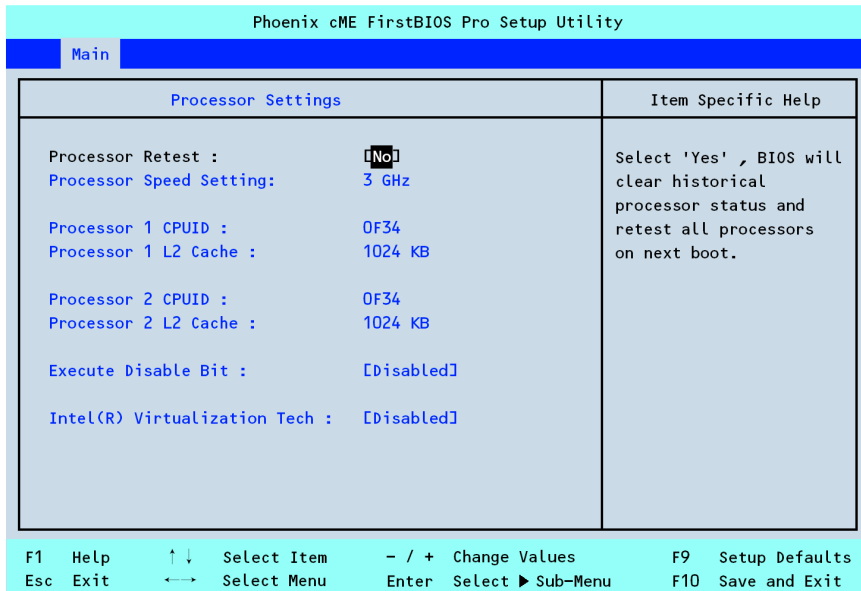
- After carriage of device
- After storage of device
- After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)

Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).

If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your service representative for maintenance.

## Processor Settings

If you select "Processor Settings" on the Main menu, the screen shown below appears.



See the table below for the items.

Option	Parameter	Description	Your Setting
Processor Retest	[No] Yes	If you select [Yes], BIOS will clear historical processor status and retest all the processors on the next boot. This parameter is automatically reset to "No" at the next boot.	
Processor Speed Setting	nnn GHz	Displays clock speed for the processor. (View only)	
Processor 1 CPUID	Numeral (0Fxx) Disabled Not Installed	Displays CPU ID for processor 1. "Disabled" indicates that the processor is defected. "Not Installed" indicates that no CPU is installed. (View only)	
Processor 1 L2 Cache	–	Displays L2 cache size for processor 1.	
Processor 2 CPUID	Numeral (0Fxx) Disabled Not Installed	Displays CPU ID for processor 2. "Disabled" indicates that the processor is defected. "Not Installed" indicates that no CPU is installed. (View only)	
Processor 2 L2 Cache	–	Displays L2 cache size for processor 2.	

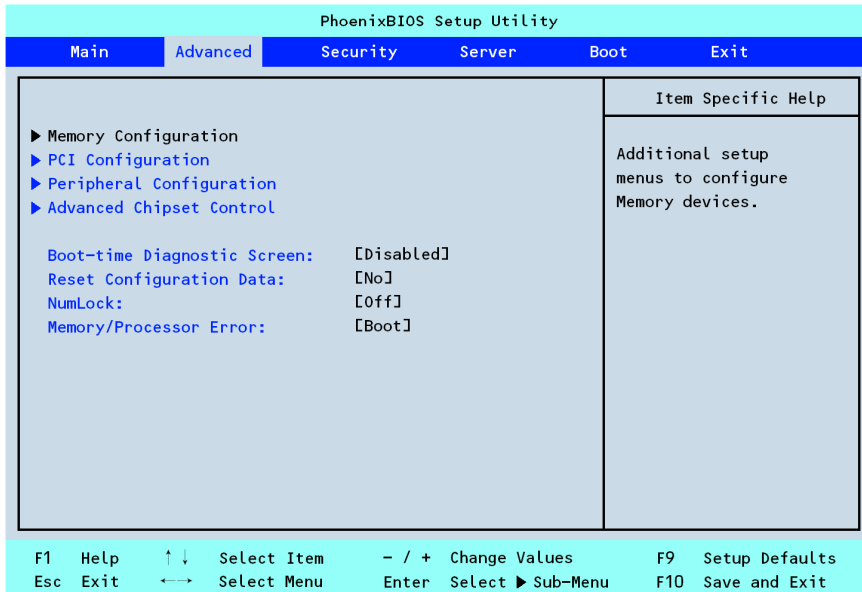
Option	Parameter	Description	Your Setting
Execute Disable Bit	[Disabled] Enabled	Displayed only when the CPU supports Execute Disable Bit. Specify whether to enable or disable this feature.	
Intel(R) Virtualization Tech	[Disabled] Enabled	Specify whether to enable or disable the virtualization technology of Intel processor.	

[ ]: Factory-set

## Advanced

The Advanced menu appears if you move the cursor to the position of "Advanced."

If you select a menu item preceded by symbol ► and press **Enter**, the appropriate submenu appears.



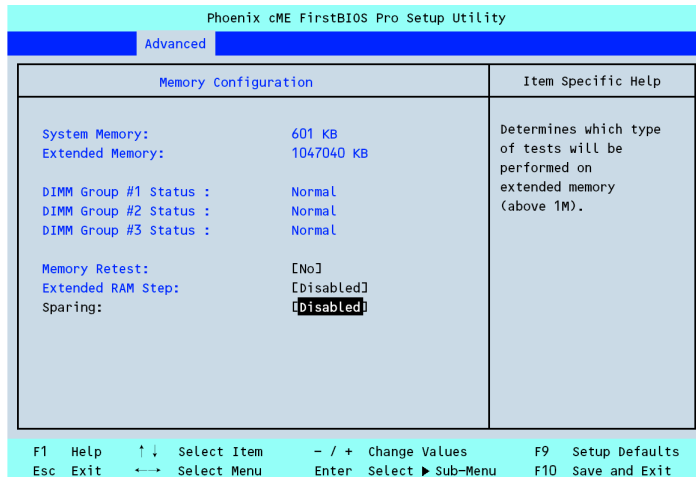
See the table below for the items.

Option	Parameter	Description	Your Setting
Memory Configuration	–	Displays submenu.	
PCI Configuration	–	Displays submenu.	
Peripheral Configuration	–	Displays submenu.	
Advanced Chipset Control	–	Displays submenu.	
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether the power-on self-test (POST) running screen is displayed or not on booting. If disabled, the BIOS will display the NEC logo during POST. Press <b>Esc</b> to switch to the POST running screen.	
Reset Configuration Data	[No] Yes	Select "Yes" if you want to clear the system configuration data stored in POST. This parameter is automatically reset to "No" at the next boot.	
NumLock	On [Off]	Specify whether to enable or disable the Numlock feature at system start-up.	
Memory/Processor Error	[Boot] Halt	Specify whether to stop POST execution if a memory or processor error was detected during POST.	

[ ]: Factory-set

### Memory Configuration

The following screen appears if you select "Memory Configuration" on the Advanced menu.



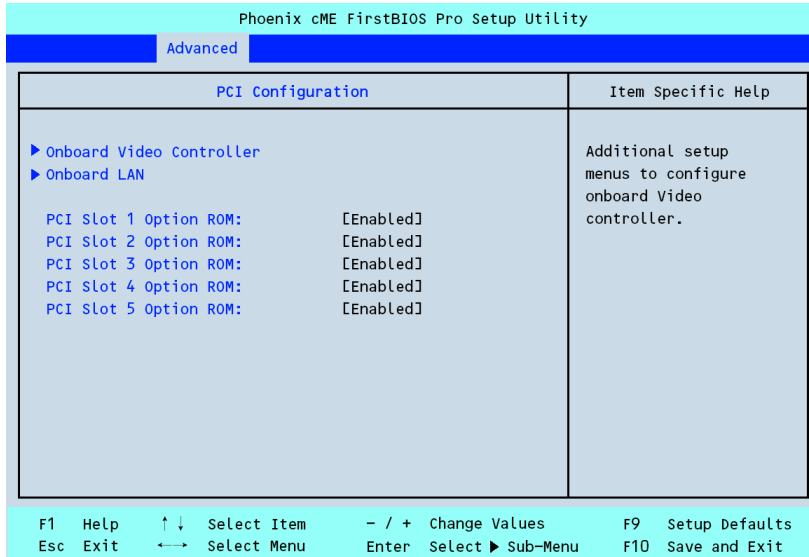
See the table below for the items.

Option	Parameter	Description	Your Setting
System Memory	–	Indicates the total capacity of the base memory. (View only)	
Extended Memory	–	Indicates the total capacity of the memory available for OS. (View only)	
DIMM Group #1 Status DIMM Group #2 Status DIMM Group #3 Status	Normal Disabled Not installed	Indicates the current memory status. (View only) "Normal" indicates that the memory devices operate normally. "Disabled" indicates that one or more memory devices are defected. "Not Installed" indicates that no memory devices are installed. On-screen group numbers and DIMM sockets on mother board are associated as follows. Group #1: DIMM #A-1, #B-1 Group #2: DIMM #A-2, #B-2 Group #3: DIMM #A-3, #B-3 Each group is composed of two DIMMs of interleave type.	
Memory Retest	[No] Yes	If you select [Yes], BIOS will clear historical memory status and retest all the DIMMs on the next boot. This parameter is automatically reset to "No" at the next boot.	
Extended RAM Step	1MB 1KB Every location [Disabled]	Specify whether to execute a memory test for extended memory or not. If the test is executed, specify the block size.	
Sparing	[Disabled] Enabled	Specify whether to enable or disable online spare memory feature.	

[ ]: Factory-set

## PCI Configuration

The following screen appears if you select "PCI Configuration" on the Advanced menu. If you select a menu item preceded by symbol ► and press **Enter**, the appropriate submenu appears.



See the table below for the items.

Option	Parameter	Description	Your Setting
PCI Slot 1 - 5 Option ROM	[Enabled] Disabled	Displays the submenu to specify whether to enable or disable the BIOS on the device (board) connected to PCI slot. Set this item to "Enabled" when: <ul style="list-style-type: none"> <li>installing graphics accelerator board</li> <li>the disk array controller or SCSI controller is connected with the hard disk drive which contains an OS</li> </ul> Set this item to "Disabled" when: <ul style="list-style-type: none"> <li>the LAN controller which contains ROM BIOS is used but the board does not provide network booting.</li> </ul> Disabling Option ROM Scan saves memory consumption and time for startup.	

[ ]: Factory-set

– Onboard Video Controller

Option	Parameter	Description	Your Setting
VGA Controller	[Enabled] Disabled	Specify whether the onboard video controller is enabled or disabled.	
Onboard VGA Option ROM Scan	[Auto] Force	Specify whether to execute option ROM scan of onboard video controller automatically or forcibly.	

[ ]: Factory-set

– Onboard LAN

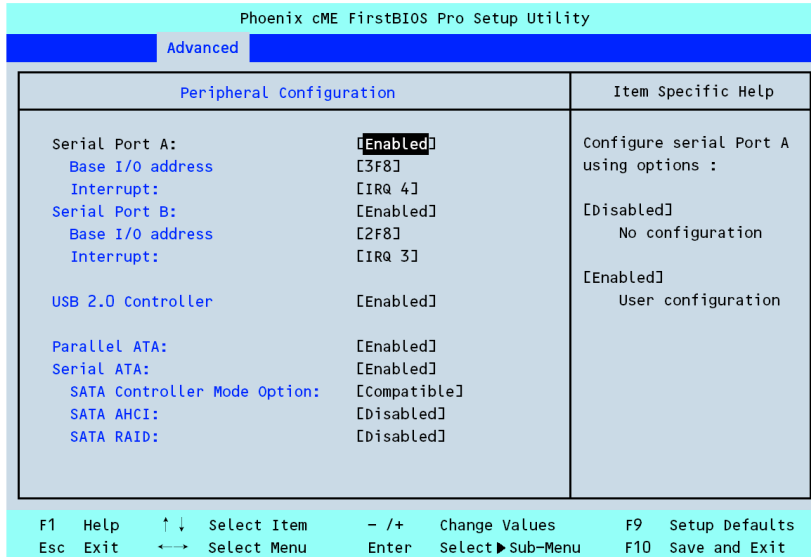
Option	Parameter	Description	Your Setting
LAN Controller	Disabled [Enabled]	Specify whether the onboard LAN controller is enabled or disabled.	
LAN1 Option ROM Scan	Disabled [Enabled]	Specify whether the BIOS scan of onboard LAN controller 1 is enabled or disabled.	
LAN2 Option ROM Scan	Disabled [Enabled]	Specify whether the BIOS scan of onboard LAN controller 2 is enabled or disabled.	

[ ]: Factory-set



### Peripheral Configuration

The screen shown below appears if you select "Peripheral Configuration" on the Advanced menu. If you select a menu item preceded by symbol ► and press **Enter**, the appropriate submenu appears.



See the table below for the items.

**IMPORTANT:** Note that the interrupt and/or base I/O address does not conflict with others. If the value set for the interrupt or base I/O address is used in another resource, the yellow asterisk (\*) appears. Reassign any item with the yellow asterisk properly.

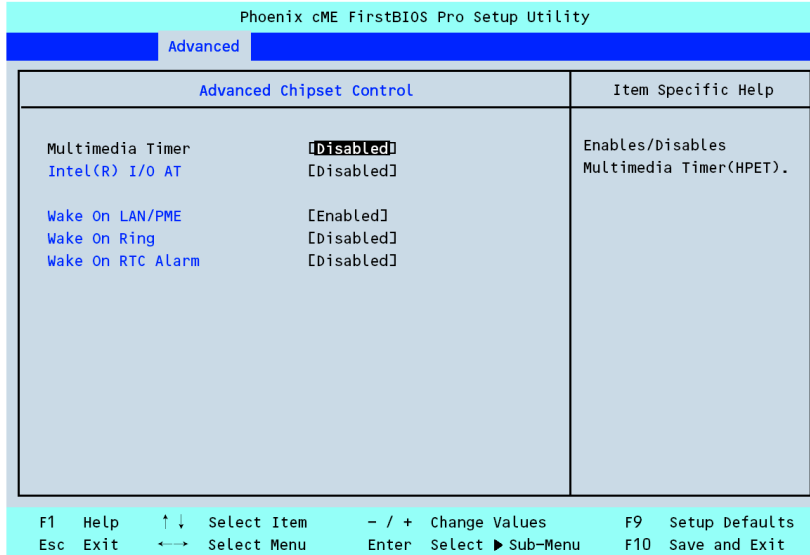
Option	Parameter	Description	Your Setting
Serial Port A	Disabled [Enabled]	Selects whether serial port A is enabled or disabled.	
Base I/O address	[3F8] 2F8 3E8 2E8	Selects the base I/O address for serial port A.	
Interrupt	IRQ 3 [IRQ 4]	Selects the interrupt for a serial port A.	
Serial Port B	Disabled [Enabled]	Selects whether serial port B is enabled or disabled (display only).	
Base I/O address	3F8 [2F8] 3E8 2E8	Selects the base I/O address for serial port B.	
Interrupt	[IRQ 3] IRQ 4	Selects the interrupt for a serial port B.	
USB 2.0 Controller	Disabled [Enabled]	Selects whether the USB 2.0 device is enabled or disabled.	

Option	Parameter	Description	Your Setting
Parallel ATA	Disabled [Enabled]	Selects whether the parallel ATA is enabled or disabled.	
Serial ATA	Disabled [Enabled]	Selects whether the serial ATA is enabled or disabled.	
SATA Controller Mode Option	[Compatible] Enhanced	This menu is available only when "Serial ATA" is enabled. Selects the SATA Controller Mode Option on mother board. "Compatible": Automatically detects SATA hard disk drive and controls it as the normal hard disk drive. "Enhanced": Automatically detects SATA hard disk drive and controls it in native IDE mode.	
SATA AHCI	[Disabled] Enabled	This option is available only when "Enhanced" is set for "SATA Controller Mode Option". Selects whether the SATA AHCI is enabled or disabled.	
SATA RAID	[Disabled] Enabled	This option is available only when "Enhanced" is set for "SATA Controller Mode Option". Selects whether the RAID disk drives that uses the onboard SATA is enabled or disabled. Note: If you attempt to start the system from SATA hard disk drive with different setting, the data may be destroyed.	

[ ]: Factory-set

### Advanced Chipset Control

The following screen appears if you select "Advanced Chipset Control" on the Advanced menu. Selecting an item on the screen allows the proper submenu to appear.



See the table below for the items.

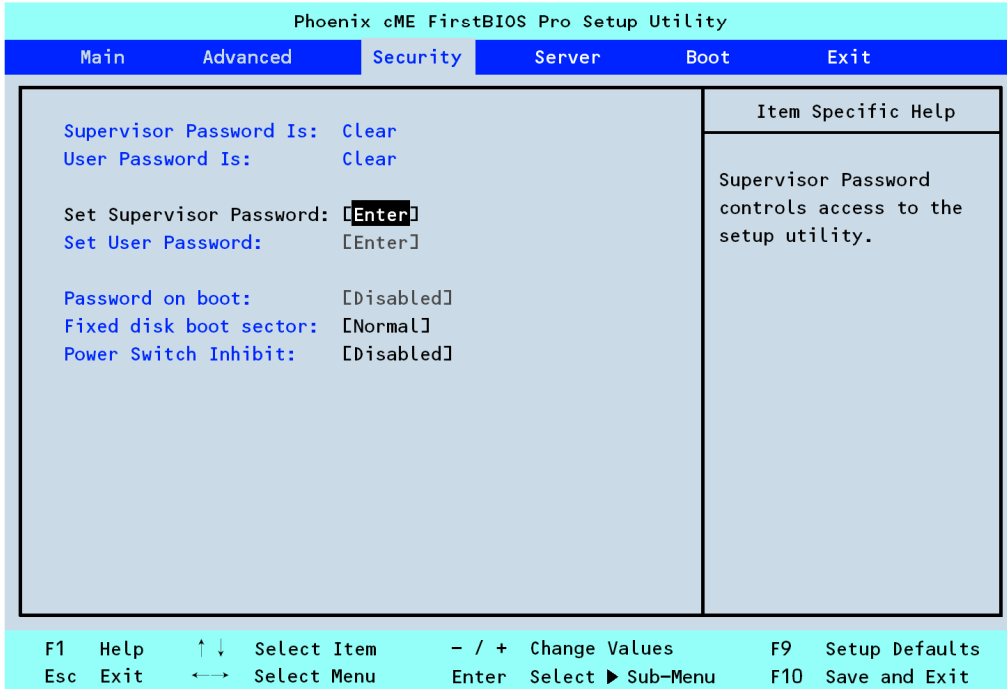
Option	Parameter	Description	Your Setting
Multimedia Timer	[Disabled] Enabled	Specify whether the timer corresponding to multimedia is enabled or disabled.	
Intel(R) I/O AT	[Disabled] Enabled	Specify whether the Intel(R) I/O Acceleration Technology feature is enabled or disabled.	
Wake On LAN/PME	Disabled [Enabled]	Specify whether the remote power-on function through a network is enabled or disabled.	
Wake On Ring	[Disabled] Enabled	Specify whether the remote power-on function through a serial port is enabled or disabled.	
Wake On RTC Alarm	[Disabled] Enabled	Specify whether the scheduling power-on function by using RTC alarm feature is enabled or disabled.	

[ ]: Factory-set

**IMPORTANT:** If supplying AC power to the server is stopped, the remote power-on function (Wake On LAN/PME and Wake On Ring) is disabled at the next boot. Press the POWER switch to restart the system. The Wake On LAN/PME and Wake On Ring functions are enabled when the DC power is supplied to the server at the next time.

## Security

The Security menu appears if you move the cursor to the position of "Security."



Press **Enter** on "Set Supervisor Password" or "Set User Password" to display the dialog to set/change password.

---

### IMPORTANT:

- User password can be set only when Supervisor password is already set.
  - Set the passwords only after OS is installed.
  - If you forget the passwords, contact your service representative.
-

See the table below for the items.

Option	Parameter	Description	Your Setting
Supervisor Password Is	Clear Set	Indicates the password setting status.	
User Password Is	Clear Set	Indicates the password setting status.	
Set Supervisor Password	Up to eight alphanumerics	Press <b>Enter</b> to display the supervisor password entry screen. This password enables all the SETUP menus to be accessed. This setting can be done only on login with the password input of "Supervisor" at start of SETUP.	
Set User Password	Up to eight alphanumerics	Press <b>Enter</b> to display the user password input screen. For this password, accessing to the SETUP menu is restricted.	
Password on boot*	[Disabled] Enabled	Specify whether the passwords are entered or not on booting. At first the supervisor password must be set. If the supervisor password is set and this option is disabled, BIOS determines that a user is booting.	
Fixed disk boot sector	[Normal] Write Protect	Specify whether to permit writing into boot sector of the hard disk drive or not.	
Power Switch Inhibit	[Disabled] Enabled	Specify whether to enable or disable the power switch feature.	

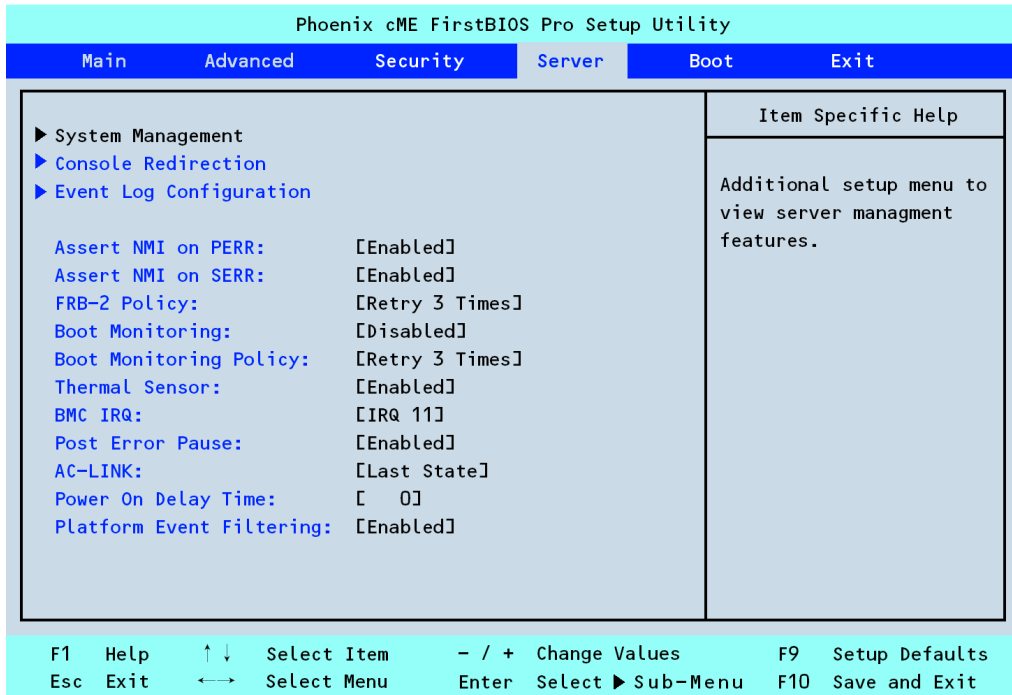
[ ]: Factory-set

\* You can set this item on [Set Supervisor Password] menu.

## Server

The Server menu appears if you move the cursor to "Server."

If you select a menu item preceded by symbol ► and press **Enter**, the appropriate submenu appears.



See the table below for the items.

Option	Parameter	Description	Your Setting
System Management	–	Displays submenu.	
Console Redirection	–	Displays submenu.	
Event Log Configuration	–	Displays submenu.	
Assert NMI on SERR	Disabled [Enabled]	Indicates whether PCI SERR is supported or not.	
Assert NMI on PERR	Disabled [Enabled]	Indicates whether PCI PERR is supported or not.	
FRB-2 Policy	Disable FRB2 Timer Disable BSP Do Not Disable BSP [Retry 3 Times]	Set the FRB level 2 timer.	

Option	Parameter	Description	Your Setting
Boot Monitoring	[Disabled] Every 5 minutes between 5 minutes and 60 minutes	Specify whether to enable or disable the boot monitoring function on booting, or select the time limit for timeout. To use this function, install NEC ESMPRO Agent. Set this item to "Disabled" if the system is booted from OS without installation of NEC ESMPRO Agent.	
Boot Monitoring Policy	[Retry 3 Times] Retry Service Boot Always Reset	Specify the processing at the occurrence of timeout during boot monitoring. If [Retry 3 times] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. If [Retry Service Boot] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. Then the boot is tried from the service partition for three times. The failure in the third boot causes the system to stop booting. If [Always Reset] is selected, the system is reset after the occurrence of timeout and OS boot is retried repeatedly. * If no service partition exists in the system, OS boot is retried repeatedly from the system partition.	
Thermal Sensor	Disabled [Enabled]	Specify whether to enable or disable the thermal sensor monitoring function. If a thermal error is detected with this item being set to "Enabled", the system stops at the end of POST.	
BMC IRQ	Disabled [IRQ 11]	Set the IRQ for BMC.	
Post Error Pause	Disabled [Enabled]	Indicates whether POST is aborted once at the end of POST if an error occurs during the execution of POST.	
AC-LINK	Stay Off [Last State] Power On	Specify the state of power when the AC power to the server is turned off once and then on. (See the table below.)	

Option	Parameter	Description	Your Setting
Power on Delay Time	[0] - 255	Specify the DC power on delay time within the range between 0 and 255 seconds. The time specified is valid when "Power On" or "Last State" is specified for AC LINK.	
Platform Event Filtering	Disabled [Enabled]	This item becomes meaningless when the notification feature of EXPRESSSCOPE Engine is enabled.	

[ ]: Factory-set

The table below shows the operation when the AC power to the server is turn off once and then on again, depending on the setting of "AC LINK."

System status before AC power off	Setting of AC LINK		
	Stay Off	Last State	Power On
Operating	Off	On	On
Aborting (DC power being off also)	Off	Off	On
Forced shutdown	Off	Off	On

\* Press the power switch continuously for four seconds or longer. This forcibly turns off the power.

---

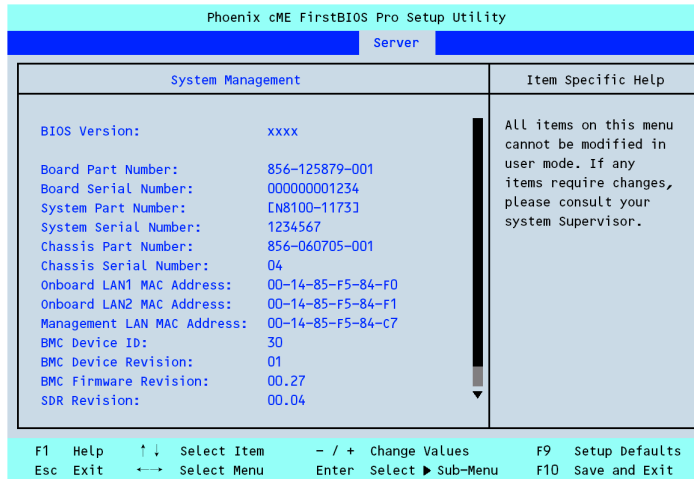
**IMPORTANT:**

- To power on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC Link] - [Power On].
  - If the server is connected to the UPS, set at least 10 seconds delay in the power-on schedule.
-



## System Management

The following screen appears if you select "System Management" on the Server menu and press **Enter**.



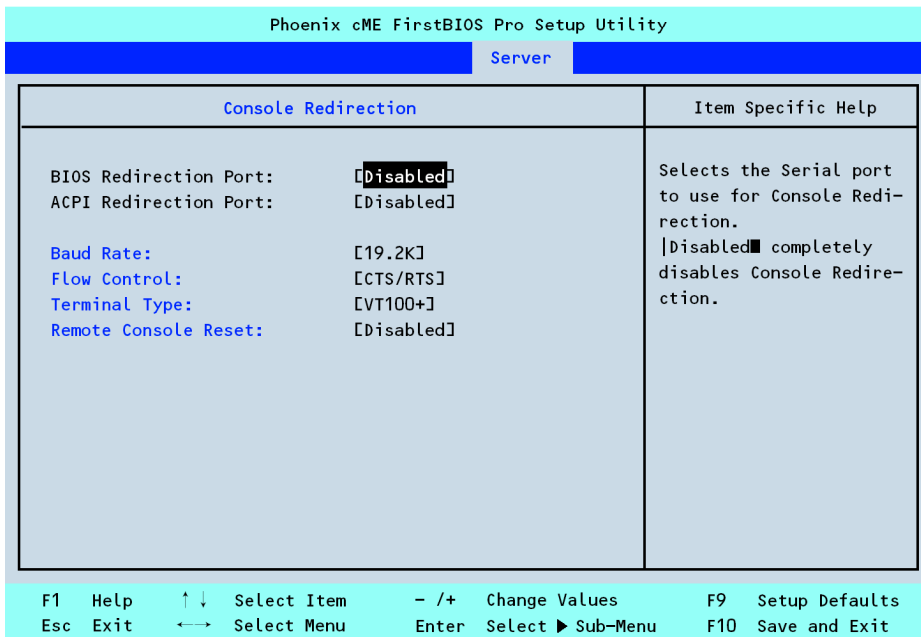
See the table below for the items.

Option	Parameter	Description	Your Setting
BIOS Version	—	Displays the current BIOS version. (View only)	
Board Part Number	—	Displays the mother board part number. (View only)	
Board Serial Number	—	Displays the mother board serial number. (View only)	
System Part Number	—	Displays the system code number. (View only)	
System Serial Number	—	Displays the System serial number. (View only)	
Chassis Part Number	—	Displays the chassis part number. (View only)	
Chassis Serial Number	—	Displays the chassis serial number. (View only)	
Onboard LAN1 MAC Address	—	Displays the MAC address of onboard network controller 1. (View only)	
Onboard LAN2 MAC Address	—	Displays the MAC address of onboard network controller 2. (View only)	
Management LAN MAC Address	—	Displays the MAC address of management network controller 2. (View only)	
BMC Device ID	—	Displays the device ID of BMC (Baseboard Management Controller). (View only)	
BMC Device Revision	—	Displays the revision of BMC (Baseboard Management Controller) device. (View only)	
BMC Firmware Revision	—	Displays the revision of BMC (Baseboard Management Controller) firmware. (View only)	
SDR Revision	—	Displays the revision of SDR (Sensor Data Record). (View only)	
PIA Revision	-	Displays the revision of PIA (Platform Information Area). (View only)	

[ ]: Factory-set

### Console Redirection

The following screen appears if you select "Console Redirection" on the Server menu and press **Enter**.



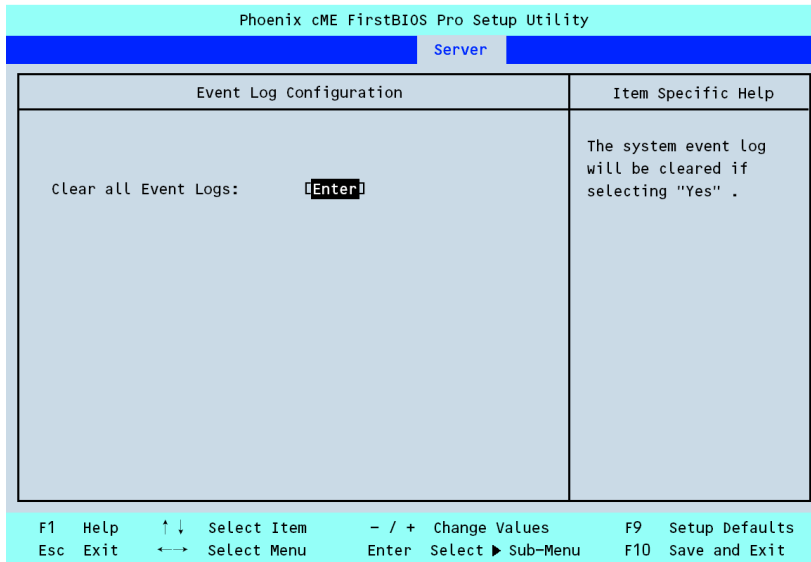
See the table below for the items.

Option	Parameter	Description	Your Setting
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Specify the serial port to which a remote console is connected.	
ACPI Redirection Port	[Disabled] Serial Port A Serial Port B	Specify the serial port to which an ACPI console is connected.	
Baud Rate	9600 [19.2k] 38.4k 57.6k 115.2k	Specify the baud rate used for the interface with successive remote consoles.	
Flow Control	None XON/XOFF [CTS/RTS] CTS/RTS+CD	Specify the flow control method.	
Terminal Type	PC ANSI [VT100+] VT-UTF8	Specify the type of remote console.	
Remote Console Reset	[Disabled] Enabled	Specify whether to enable or disable the reset command issued from remote console.	

[ ]: Factory-set

## Event Log Configuration

The following screen appears if you select "Event Log Configuration" on the Server menu and press **Enter**.



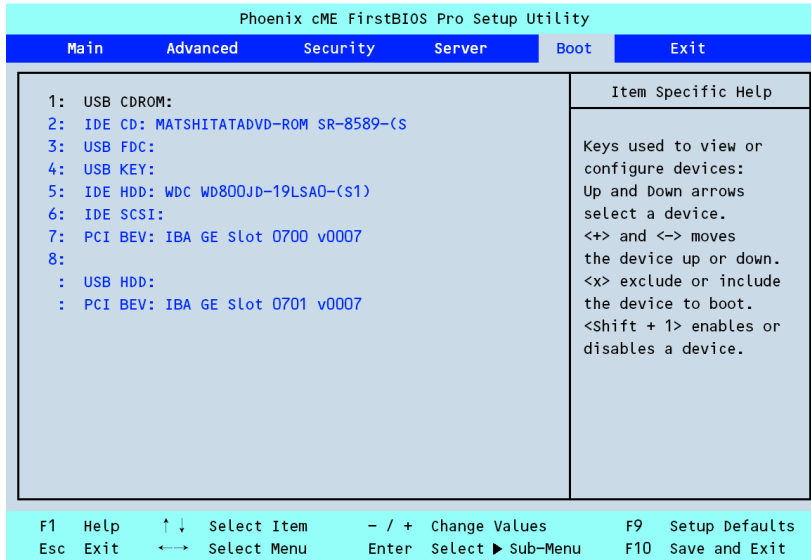
See the table below for the items.

Option	Parameter	Description	Your Setting
Clear all Event Logs	Enter	Press <b>Enter</b> and select "Yes" on the confirmation screen to clear the system event log.	

[ ]: Factory-set

## Boot

If you move the cursor to the position of "Boot," the Boot menu appears, which is used to set the boot priority.



The server searches for devices in the order set in this menu on booting. Finding the boot software, the server starts the software.

The priority of the boot devices can be changed by using the ↑, ↓, +, and - keys. Move the cursor to the desired device with the ↑ or ↓ key and change the priority with the + or - key.

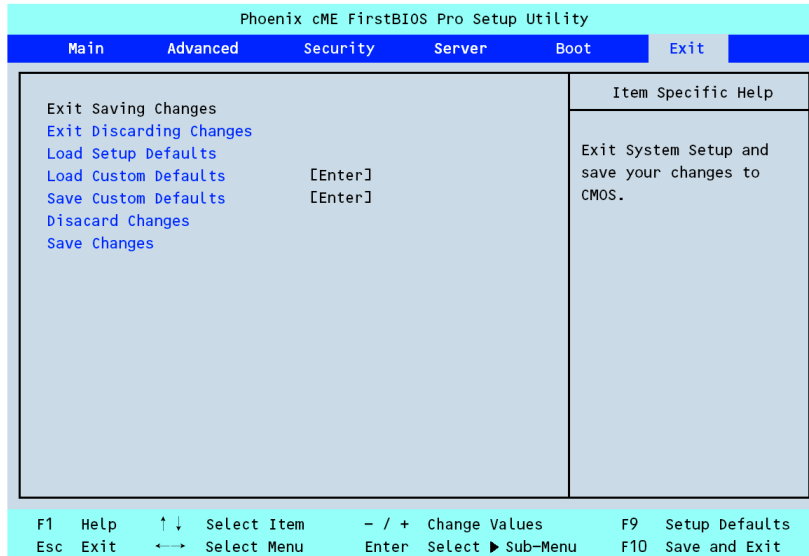
---

**IMPORTANT:** To boot NEC EXPRESSBUILDER, set the priority of the devices as shown in the figure above.

---

## Exit

The Exit menu appears if you move the cursor to "Exit."



The options on the menu are described below.

### Exit Saving Changes

Select this item to terminate SETUP after saving the newly selected information in CMOS (nonvolatile memory). Selecting "Exit Saving Changes" causes the confirmation screen to appear. If you select "Yes," SETUP is terminated with the newly selected information saved in CMOS (nonvolatile memory). Then the server automatically reboots the system.

### Exit Discarding Changes

Select this item to terminate SETUP without saving the newly selected information in CMOS (nonvolatile memory). When the confirmation message "Save before exiting?" appears, select "No" to terminate SETUP without storage of the modified information. Then the server proceeds to Boot menu. Selecting "Yes" allows SETUP to be terminated with storage of the modified information. Then the server automatically reboots the system.

### Load Setup Defaults

Select this item to return all the values of SETUP to the default values. Selecting "Load Setup Defaults" causes the confirmation screen to appear. Select "Yes" to return the values to the default values. Select "No" to return to the Exit menu screen.

---

**IMPORTANT:** This option sets [SATA RAID Enabled] in the [Advanced] - [Peripheral Configuration] menu to [Disabled]. If the SATA hard disk drives are installed in your server and the onboard SATA RAID feature is used, change the parameter of the [SATA RAID Enabled] from [Disabled] to [Enabled] before exiting BIOS Setup. Leaving this parameter as the factory-set value (Disabled) may destroy the data in hard disk drive.

---

---

**NOTE:** To display the [SATA RAID Enabled] menu, select [Advanced] - [Peripheral Configuration] - [SATA Controller Mode Option] - [Enhanced].

---

### Load Custom Defaults

Select this item and press **Enter** to load the custom defaults stored. This menu does not appear if the Custom Defaults are not saved.

### Save Custom Defaults

Select this item and press **Enter** to save the parameters currently being edited as custom defaults. When the parameters are saved, the Load Custom Defaults menu appears.

### Discard Changes

Select this item to return the values modified currently to the previous values before saving the values to CMOS.

### Save Changes

Select this item to save the newly selected information to CMOS (non-volatile memory) without the termination of SETUP.

## SETUP UTILITY

This section describes the RAID configuration tool, LSI Logic Software RAID Setup Utility. This utility resides on the LSI Logic Software RAID, therefore, its operation is independent from the operating system.

---

**NOTE:** The LSI Logic Software RAID Setup Utility cannot be operated through the remote console feature of NEC DianaScope.

---

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### Running Setup Utility

#### Running LSI Logic Software RAID Setup Utility

1. When the following screen appears after you have powered on the server, press **Esc**.

The POST screen appears.



2. Check the description as shown below on the POST screen, then press **Ctrl + M** or **Enter**.

LSI Logic Software RAID Setup Utility starts.

---

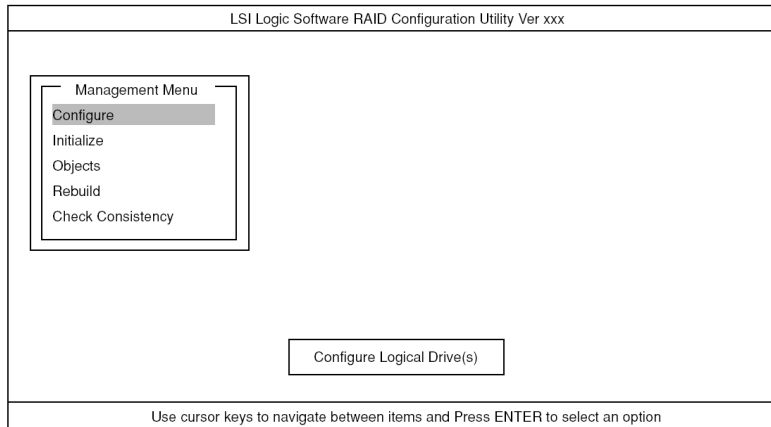
```
LSI Logic SoftwareRAID BIOS Version xxxxxx
LSI Logic MPT RAID Found at PCI Bus No:xx Dev No:xx
Scanning for port 00 Responding xxxxxxxx xxxxMB
Standard FW xxx DRAM=128MB(SDRAM)
xx Logical drive(s) Configured
Press <Ctrl><M> to Run LSI Logic Software RAID Setup Utility
```

---

**NOTE:** Press **Ctrl + M** to start the LSI Logic Software RAID Setup Utility.

---

### **LSI Logic Software RAID Configuration Utility TOP Menu (Management Menu)**



### **Exiting from LSI Logic Software RAID Setup Utility**

Press **Esc** in the TOP menu of LSI Logic Software RAID Setup Utility.

When a confirmation message appears, select [Yes].

Please Press <Ctrl> <Alt> <Del> to REBOOT the system.

When the above message appears, press **Ctrl + Alt + Delete**.

The server is rebooted.



## Menu Tree

### Setting list

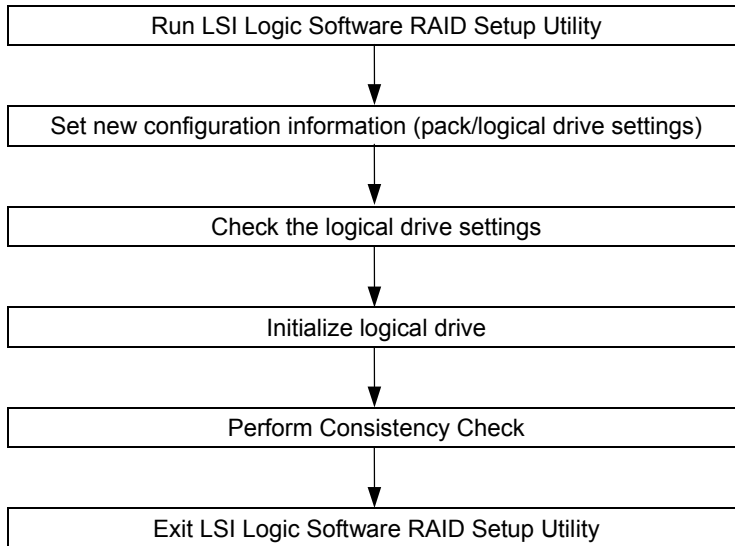
+ : Selection/execution parameter \* : Setting parameter. • : Information display  
> : Can be set (modified) after creation of logical drive

Menu	Description
+Configure	Performs Configuration settings
+Easy Configuration	Set configuration (Using fixed value)
+New Configuration	Set new configuration
+View/Add Configuration	Additional setting / viewing configuration
+Clear Configuration	Clear configuration
+Select Boot Drive	Chose Bootable Logical Drive
+Initialize	Initialize logical drive
+Objects	Various settings
+Adapter	Set disk array controller
+Sel. Adapter	Clear configuration
*Rebuild Rate	30
*Chk Const Rate	30
*FGI Rate	30
*BGI Rate	30
*Disk WC	Display default value (setting not required)
*Read Ahead	On
*Bios State	Enable
*Stop on Error	No
*Fast Init	Enable
*Auto Rebuild	On
*Auto Resume	Enable
*Disk Coercion	1GB
*Factory Default	Default setting
+Logical Drive	Logical drive operation
+Logical Drives	Select logical drive (when multiple logical drives exist)
+Initialize	Initialize logical drive
+Check Consistency	Check logical drive redundancy
+View/Update Parameters	Display logical drive information
• RAID	Display RAID level
• SIZE	Display logical drive capacity
• Stripe SIZE	Display stripe size
• #Stripes	Display the number of hard disk drives in logical drive
• State	Display logical drive status
• Spans	Display setting of span
• Disk WC	Display setting of write cache
• Read Ahead	Display setting of read ahead
+Physical Drive	Physical drive operation
+Physical Drive Selection Menu	Select physical drive
+Make HotSpare	Set as hot-spare disk for auto rebuilding
+Force Online	Make a disk online
+Force Offline	Make a disk offline
+Drive Properties	Display hard disk drive information
• Device Type	Hard disk drive type
• Capacity	Hard disk drive capacity
• Product ID	Hard disk drive model
• Revision No.	Hard disk drive revision
+Rebuild	Perform rebuilding
+Check Consistency	Perform logical drive redundancy check

---

## Operating Procedures for Setup Utility

### Creating/Adding Configuration



1. Run LSI Logic Software RAID Setup Utility.
2. Select "Configure" → "New Configuration" from the TOP menu (Management Menu).  
Select "View/add Configuration" to add configuration.

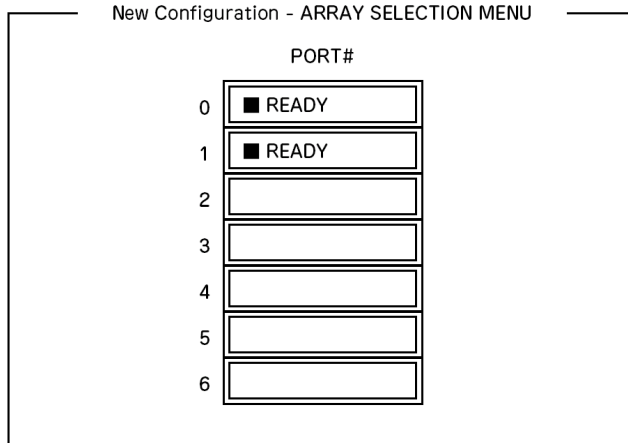
---

#### **IMPORTANT:**

- Creating a configuration using "New Configuration" menu clears the existing configuration information. To add configuration information to the existing configuration, select "View/add Configuration."
  - You cannot create Spanning of RAID1 or set the logical drive capacity on "Easy Configuration" menu.  
Use "New Configuration" or "View/Add Configuration" instead.
-

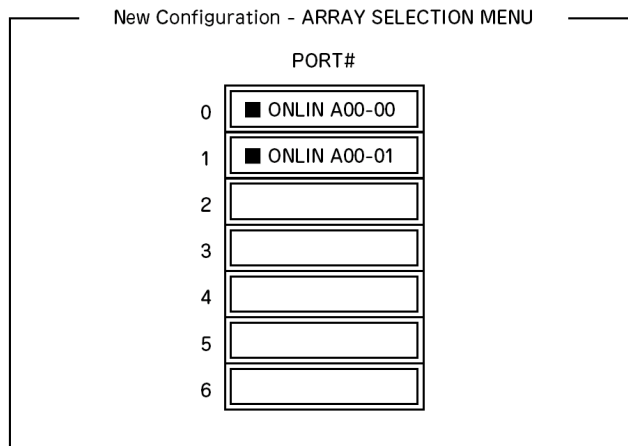
3. When a confirmation message (Proceed?) is displayed, select "Yes."

The SCAN DEVICE starts (scanning information is displayed at the bottom of the screen). Upon completion of SCAN DEVICE, the "New Configuration - ARRAY SELECTION MENU" screen appears.



4. Move the cursor onto the hard disk drive to be packed by using cursor key and then press **Space** to select the hard disk drive.

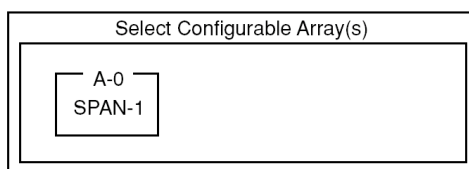
The display for the selected hard disk drive changes from READY to ONLINE.



5. Press **F10** to set "Select Configurable Array(s)".

6. Press **Space**.

SPAN-1 is set.



7. Press **F10** to create logical drive.

The "Logical Drives Configure" screen appears. (The figure below shows an example of RAID1 configured with two hard disk drives.)

Logical Drives Configured					
LD	RAID	Size	#Stripes	Stripe Sz	Status
0	1	xxxMB	2	64KB	ONLINE

Logical Drive0	
RAID =	1
Size =	xxxxMB
DWC =	On
RA =	On
Accept	
Span =	NO

8. Select "RAID," "Size," "DWC," "RA", or "Span" by using cursor keys. Then press Enter to fix the selection and set each value.

- (1) "RAID": Sets RAID level.

Parameter	Remarks
0	RAID0
1	RAID1
10	Spanning of RAID1

The selectable RAID level varies depending on the number of hard disk drives that configure a pack.

- (2) "Size": Sets logical drive size.

Up to 40 logical drives can be created per disk array controller.

- (3) "DWC": Sets parameter for Disk Write Cache.

Parameter	Remarks
Off	Write through
On	Write back

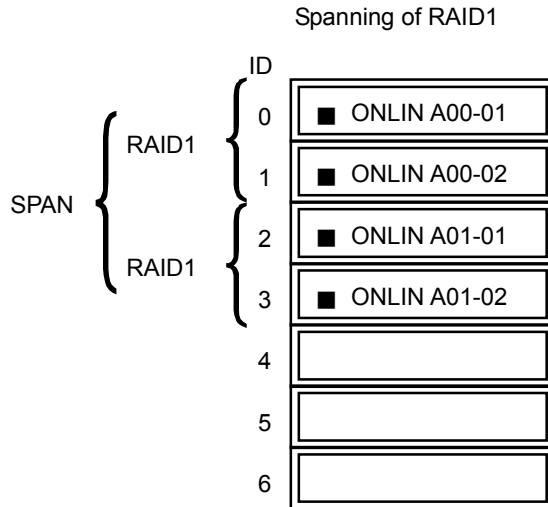
- (4) "RA": Sets parameter for Read Ahead.

Parameter	Remarks
Off	Does not perform read ahead.
On	Performs read ahead.

(5) "Span: Sets Span.

Parameter	Remarks
SPAN=NO	Does not set span.
SPAN=YES	Sets span.

When performing SPAN, create two or more sets of the same pack at pack creation, as shown in the figure below.



9. When all settings are completed, select "Accept" and then press **Enter** to create logical drive.  
The created logical drive is displayed in the "Logical Drive Configured" screen.
10. After creating logical drive, press **Esc** to close the screen.  
Go back to the "Save Configuration?" screen and then select "Yes" to save the configuration.
11. When the confirmation message shows that the configuration has been saved, press **Esc** to return to the TOP menu screen.
12. On the TOP menu screen, select "Objects" → "Logical Drive" → "View/Update Parameters" to check logical drive information.
13. Select "Initialize" in the TOP menu screen.
14. When the "Logical Drives" screen appears, move the cursor to the logical drive to be initialized, and press **Space**.  
The logical drive is selected.
15. After selecting logical drive, press **F10** to start initialization.  
A confirmation screen for execution appears. Select "Yes" to start initialization.  
When the progress bar in the "Initialize Logical Drive Progress" screen indicates 100%, initialization is completed.

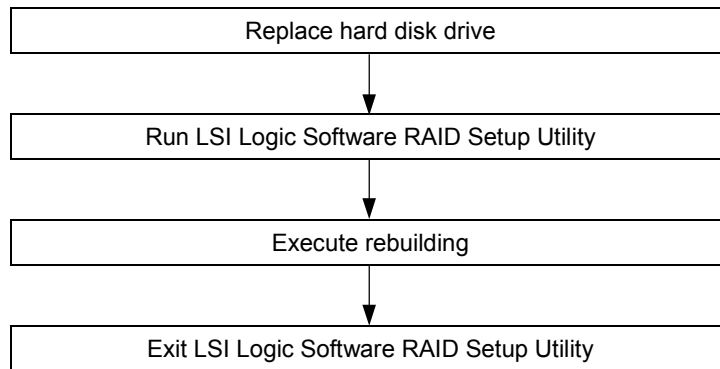
16. Execute Check Consistency on the logical drive that has been initialized.  
See "Check Consistency" for details.
17. Press **Esc** to return to the TOP menu and exit from LSI Logic Software RAID Setup Utility.

---

**IMPORTANT:**

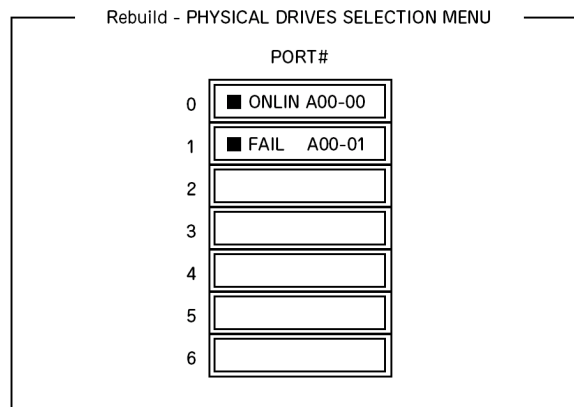
- Be sure to execute Check Consistency after creating configuration.
  - Check Consistency has two modes: "check and recover" and "check only".
-

## Manual Rebuild



1. Replace a hard disk drive and turn on the server.
2. Run LSI Logic Software RAID Setup Utility.
3. Select "Rebuild" from the TOP menu.

The "Rebuild – PHYSICAL DRIVES SELECTION MENU" screen appears.



4. Move the cursor onto the hard disk drive displaying "FAIL," and then press **Space** to select it.

Multiple hard disk drives can be selected (simultaneous rebuilding.)

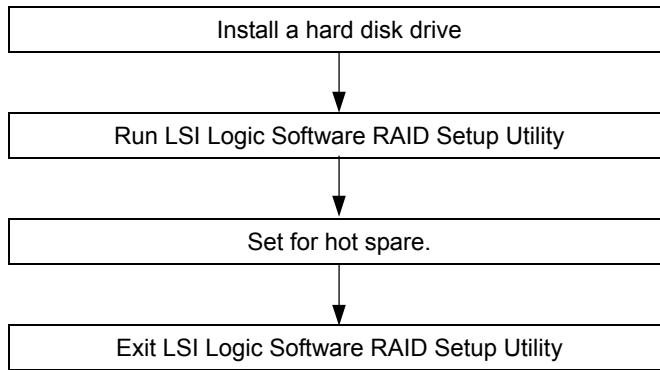
5. The "FAIL" indication for the hard disk drive selected starts blinking.
6. When hard disk drive has been selected, press **F10** to start rebuilding.
7. When confirmation screen for execution appears. Select "Yes".

The rebuild process starts.

When the progress bar in the "Rebuild Physical Drives in Progress" screen indicates 100%, rebuilding is completed.

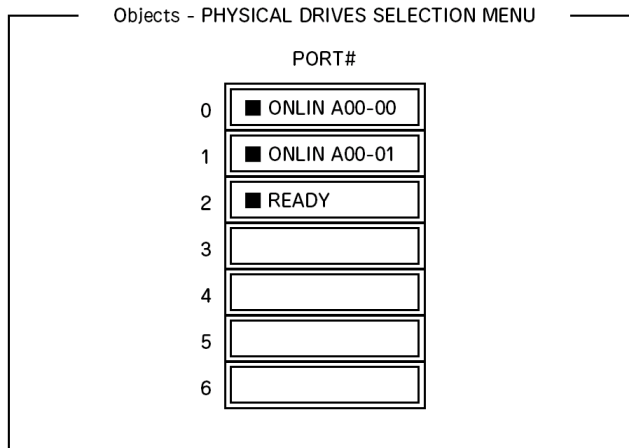
8. Press **Esc** to return to the TOP menu and exit LSI Logic Software RAID Setup Utility.

## Setting Hot Spare



1. Install a hard disk drive to be used as hot spare, and then turn on the server.
2. Run LSI Logic Software RAID Setup Utility.
3. Select "Objects" → "Physical Drive" from the TOP menu.

The "Objects - PHYSICAL DRIVES SELECTION MENU" screen appears.

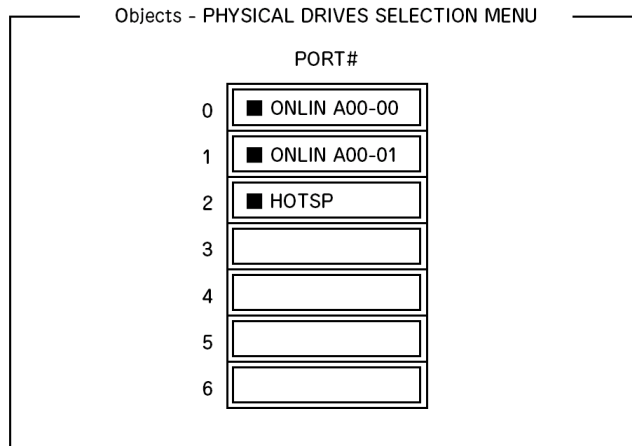


4. Move the cursor onto the hard disk drive to be used as hot spare and press **Enter**.
5. The "Port #X" screen appears. Select "Make HotSpare."
6. A confirmation screen appears. Select "Yes."

The hard disk drive indication is changed to "HOTSP."



7. Press **Esc** to return to the TOP menu and exit LSI Logic Software RAID Setup Utility.

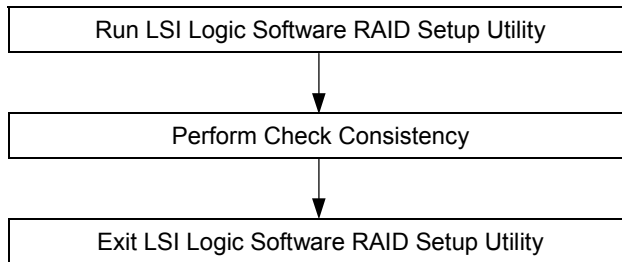


---

**IMPORTANT:**

- Select "Objects" → "Physical Drive" → "Port #X" → "Force Offline" to cancel the hot spare setting.
  - When two or more hard disk drives (of the same capacity) are assigned as hot spare, rebuilding is performed in order starting from the one with the smaller CH number/ID number.
-

## Check Consistency



1. Run LSI Logic Software RAID Setup Utility.
2. Select "Check Consistency" from the TOP menu.  
The "Logical Drives" screen appears.
3. Move the cursor onto the logical drive to be checked, and press **Space** to select it.
4. When logical drive has been selected, press **F10** to start consistency check.
5. A confirmation screen for execution appears. Select "Yes".  
The consistency check starts.  
When the progress bar in the "Check Consistency Progress" screen indicates 100%, the consistency check is completed.
6. Press **Esc** to return to the TOP menu and exit LSI Logic Software RAID Setup Utility.

---

### IMPORTANT:

- Be sure to execute Check Consistency after creating configuration.
  - Check Consistency has two modes: "check and recover" and "check only".
-

## Others

### 1. Clear Configuration

Clears configuration information. Select "Configure" → "Clear Configuration" from the TOP menu. Executing "Clear Configuration" clears all configuration information on the disk array controller and hard disk drives. The configuration information on all channels of the disk array controller is also cleared.

---

#### NOTES:

- When configuration information on the disk array controller and that on the hard disk drive do not match (excluding at replacement of faulty disk array controller), configuration may fail if you select the configuration information on the disk array controller. In this case, execute "Clear Configuration" to create configuration again.
  - LSI Logic Software RAID Setup Utility cannot delete each logical drive. Use MegaRAID Storage Manager instead.
- 

### 2. Force Online

Puts a hard disk drive being in the FAIL status online.

Select "Objects" → "Physical Drive" → (select hard disk drive) → "Force Online" from the TOP menu.

### 3. Rebuild Rate

Sets the Rebuild Rate.

Select "Objects" → "Adapter" → "Sel. Adapter" → "Rebuild Rate" from the TOP menu.

Available value is between 0% and 100%. Default value (recommended) is 30%.

### 4. Hard disk drive information

Checks hard disk drive information.

Select "Objects" → "Physical Drive" → (select hard disk drive) → "Drive Properties" from the TOP menu.

## **ADD-IN CARD'S BIOS**

Refer to the documentation coming with the optional add-in card for details.

When the server has multiple optional PCI boards installed, the server first displays the start-up message of the BIOS SETUP Utility of the mother board. It then displays the utility start-up message for optional PCI boards one by one. The start-up message appears for the optional PCI board in the PCI #1 slot first, then PCI #2, PCI #3, PCI #4, and finally PCI #5. The message displayed may vary depending on the optional PCI board. Refer to the manual that comes with the optional PCI board for details.

## CONFIGURING MOTHER BOARD JUMPERS

You can use the following procedure to clear the CMOS data in the server.

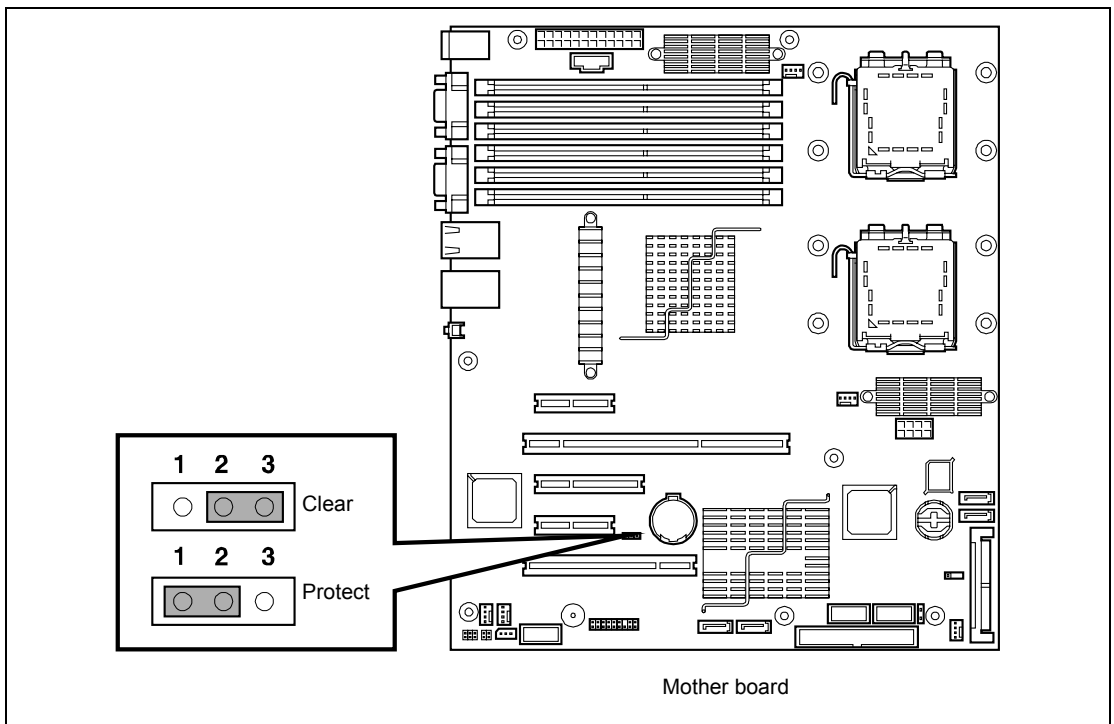
---

### IMPORTANT:



- Clearing the CMOS data resumes the factory-set configuration data.
  - Do not change any other switch settings. Any change may cause the server to fail or malfunction.
  - Clearing CMOS sets [SATA RAID Enabled] in the [Advanced] - [Peripheral Configuration] menu to [Disabled]. If the SATA hard disk drives are installed in your server and the onboard SATA RAID feature is used, change the parameter of the [SATA RAID Enabled] from [Disabled] to [Enabled] before exiting BIOS Setup. Leaving this parameter as the factory-set value (Disabled) may destroy the data in hard disk drive.
- 



**NOTE:** To display the [SATA RAID Enabled] menu, select [Advanced] - [Peripheral Configuration] - [SATA Controller Mode Option] - [Enhanced].

---



The following describe the clearing procedure.

 <b>WARNING</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Do not disassemble, repair, or alter the server.</li><li>■ Do not remove the lithium battery.</li><li>■ Disconnect the power plug before working with the server.</li></ul>

 <b>CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Make sure to complete board installation.</li><li>■ Do not pinch your finger with mechanical components.</li><li>■ Avoid installation in extreme temperature conditions.</li></ul>

---

**IMPORTANT:** Components inside the server are easily affected by static electricity. Handle a component after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components. See "Static Precautions" in this chapter for details of the static electricity.

---

1. See the section "Preparing for Installation and Removal" in Chapter 9 to prepare
2. Remove the left side cover (see Chapter 9).
3. Change jumper switching setting from "Protect" to "Clear".

---

**IMPORTANT:**

- Use the clip over jumper pins 1 and 2 on the mother board.
  - Do not lose the clip.
- 

4. After three seconds later, reinstall the jumper.
5. Reinstall the server and then turn on the power.

6. Press **F2** during POST to run the BIOS Setup utility, and configure the mother board again.

---

**IMPORTANT:** If the SATA hard disk drives are installed in your server and the onboard SATA RAID feature is used, change the parameter of the [SATA RAID Enabled] in the [Advanced] - [Peripheral Configuration] menu from [Disabled] to [Enabled] before exiting BIOS Setup. Leaving this parameter as the factory-set value (Disabled) may destroy the data in hard disk drive.

---

---

**NOTE:** To display the [SATA RAID Enabled] menu, select [Advanced] - [Peripheral Configuration] - [SATA Controller Mode Option] - [Enhanced].

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# Chapter 5

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## Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to the server.

- Microsoft® Windows® Server 2003 Standard Edition / Microsoft® Windows® Server 2003 Enterprise Edition
- Microsoft® Windows® Server 2003 R2 Standard Edition / Microsoft® Windows® Server 2003 R2 Enterprise Edition

To use the server with the other operating systems described in this section, contact your service representative.

---

**IMPORTANT:** Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See Chapter 4 for detail.

---

## About Express Setup

"Express Setup" helps you to install the Windows Operating System.

The setup automatically configures the RAID system and installs the Operating System and some management software.

---

**IMPORTANT:** Executing the Express Setup erases all data on the hard disk drive.

---

You can also use "Configuration disk" at "Express Setup" in order to save or backup parameters for installation.

The Configuration disk is able to have some parameters files that include the configuration information for the server setup.

If you want to set up the server as before, execute the Express Setup with the parameters file you have saved that time.

---

### NOTES:

- The parameters file is not mandatory to set up the system.
  - If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
  - If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
  - You can create a parameters file in advance using "Configuration Diskette Creator" included in NEC EXPRESSBUILDER.
-

## Microsoft Windows Server 2003

This subsection provides information on installing Microsoft® Windows® Server 2003 in the server. Read instruction in this section before proceeding the installation.

---

### NOTES:

- Express Setup does not support the installation of Windows Server x64 Editions. If you want to install it, see Appendix D.
  - If you want to install the Windows Server 2003 without using Express Setup, see Appendix E.
- 

---

## Installation Notice

This section explains what you should know before the installation of Windows.

### About Windows family

Express Setup supports the installation of the following Windows 2003 editions:

- Microsoft® Windows® Server 2003 Standard Edition / Microsoft® Windows® Server 2003 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")
- Microsoft® Windows® Server 2003 R2 Standard Edition / Microsoft® Windows® Server 2003 R2 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")

If you want to install the other OS, contact your sales representative.

### Installing Optional Mass Storage Driver

To install optional mass storage driver, see "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6 to create setup inf file.

### BIOS Settings

Before installing Windows Server 2003, confirm if the BIOS settings are correct. See Chapter 4 to confirm the settings.

### NEC ESMPRO Agent

NEC ESMPRO Agent requires to install the necras.sys driver on your Windows system. If you install the Windows without using the Express Setup, run the "Update Express5800 system" in Master Control Menu.

## Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER CD-ROM attached to your system supports the following optional Raid Controller and SCSI Controller:

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6.

---

### <SAS Hard Disk Model>

- Controllers supporting installation of OS with Express Setup
  - N8103-91 Disk Array Controller (Internal SAS HDD)\*
  - N8103-99 Disk Array Controller (0ch)\*
  - LSI Logic Embedded MegaRAID™ (embedded on the mother board)
- Other controllers
  - N8103-80F Disk Array Controller (SCSI 1ch)\*
  - N8103-75 SCSI Controller\*
  - N8103-95 SCSI Controller\*

### <SATA Hard Disk Model>

- Controllers supporting installation of OS with Express Setup
    - N8103-101 Disk Array Controller (SATA2)\*
    - LSI Logic Embedded MegaRAID™ (embedded on the mother board)
  - Other controllers
    - N8103-80F Disk Array Controller (SCSI 1ch)\*
    - N8103-75 SCSI Controller\*
    - N8103-95 SCSI Controller\*
- \* Option.

## Windows Server 2003

Express Setup can install the Windows Server 2003.

Confirm below notes before installing the Windows.

---

### **IMPORTANT:**

- Before starting the installation, complete all the process of hardware settings (BIOS and optional board settings).
  - After completing Express Setup, see "Setup for Solving Problems".
- 

## Installing on the Mirrored Volume

If you want to install Windows Server 2003 on the volume that is mirrored using "Disk Management", invalid the mirroring before operating the installation to set back to the basic disk, and valid the mirroring again after the installation has completed.

Creating, invalid, delete mirror volume can be operated from "Disk Management" in "Computer Management".

## Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

## About removable media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

## Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create as the Windows system drive.

## Creating Partition Size

The size for the partition that the system is to be installed can be calculated from the following formula.

$$\begin{aligned} & \text{Size necessary to install the system} + \text{Paging File Size} + \text{Dump File Size} \\ & \qquad \qquad \qquad + \text{Application Size} \\ \text{Size necessary to install the system} &= 3500\text{MB (Windows Server 2003R2)} \\ & \qquad \qquad \qquad 3500\text{MB (Windows Server 2003 with Service} \\ & \qquad \qquad \qquad \text{Pack1)} \\ & \qquad \qquad \qquad 4400\text{MB (Windows Server 2003 + Service Pack1} \\ & \qquad \qquad \qquad \text{CD-ROM)} \\ \text{Paging File Size (Recommended)} &= \text{Mounted Memory Size} * 1.5 \\ \text{Dump file Size} &= \text{Mounted Memory Size} + 12\text{MB} \\ \text{Application Size} &= \text{Required Size} \end{aligned}$$

---

### IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
  - The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
- 

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

$$\begin{aligned} & 3500\text{MB} + (512\text{MB} * 1.5) + (512\text{MB} + 12\text{MB}) + \text{Application Size} \\ & = 4792\text{MB} + \text{Application Size} \end{aligned}$$

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

(If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

## Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix E to re-install the system.

## Disk Configuration (Concerning the area displayed as "EISA")

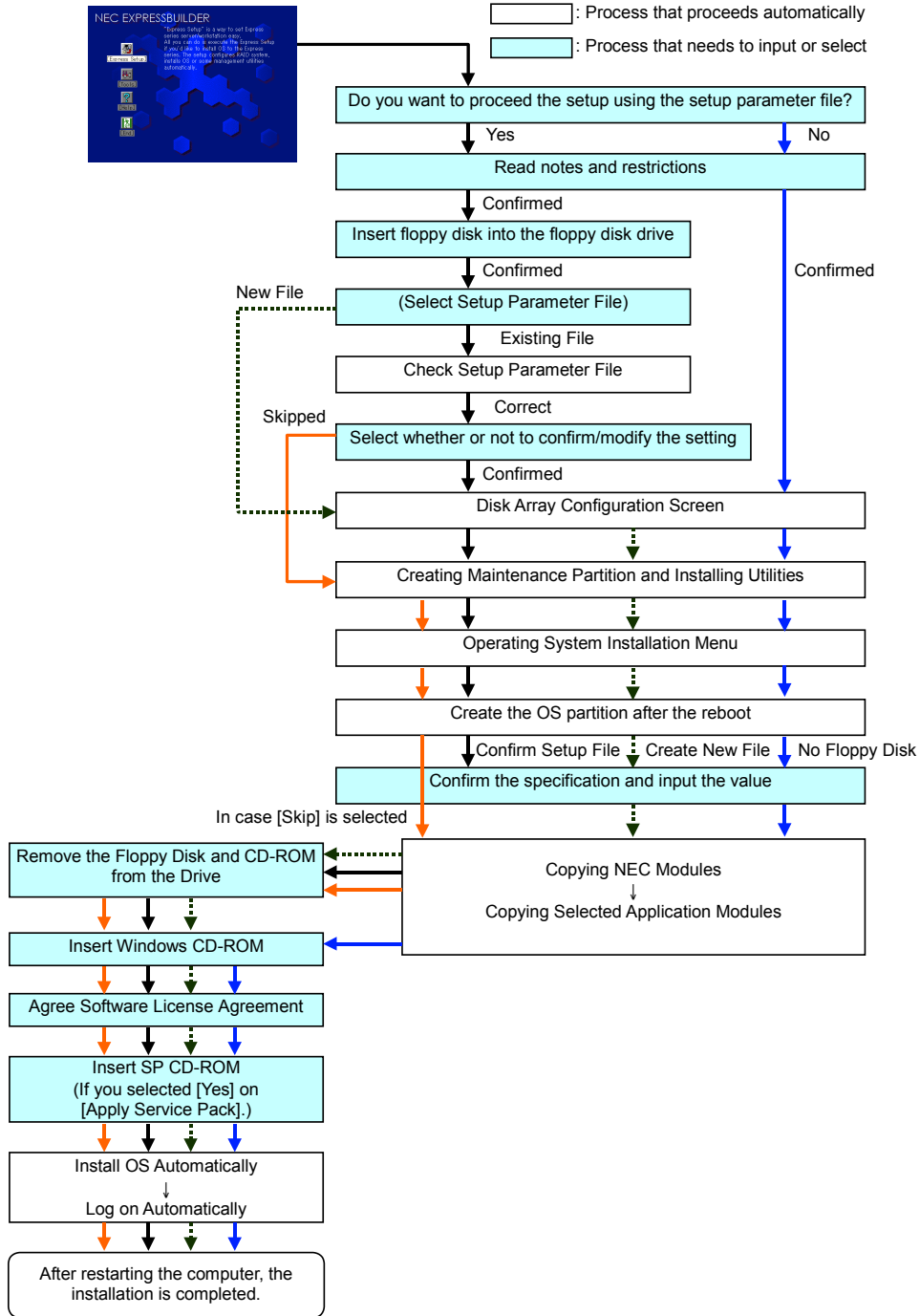
In disk area, an area displayed as "EISA" may exist. This area is maintenance partition for saving configuration information and utilities. Do not delete the area.

## Application of Service Pack

When using Windows Server 2003 with this equipment, surely apply Service Pack 1. When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

## The Flow of Setup

This section shows the flow of the Express setup.





## Installing the Windows Server 2003

Express Setup proceeds the setup by specifying the necessary information on the wizard. You can also save the setup information created on the wizard in a floppy disk as a setup file.

---

### NOTES:

- Prepare a floppy disk to use as Configuration Disk if you want to save the parameters or use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards. When using the floppy disk, the Express setup can continue the setup without specifying the parameters.
  - On remote KVM console, you cannot use the mouse in Procedures 1 through 15. Use the keyboard.
    - : Used to move to the next screen.
    - ←: Used to return to the previous screen.
    - ↑ ↓: Used to select a menu.
    - F1**: Displays help.
    - ENTER**: Used to select [OK] or to decide each item.
    - ESC**: Used to select [Cancel].
- 

1. Turn the power of peripheral device on, and then turn on the server.

---

### NOTES:

- Do not mount an MO device on your server during the Windows installation.
  - Do not connect the other hard disk drives except the drive that you want to create as the Windows system drive.
  - If you create multiple logical drives in your system, refer to "Reinstalling the operation system when multiple logical drives exist" (Appendix E).
- 

2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER.  
The system boots from the CD-ROM and NEC EXPRESSBUILDER starts.
4. Click [Express Setup].
5. The message, "Do you want to use the parameters file in order to set up the Express server or workstation?", appears.  
If you want to use the parameters file, click [Yes].  
If not, click [No].

6. "NOTE" appears. Click [Confirm] after reading that.

---

**NOTE:** If any operating systems have been installed on the hard disk drive already, the message that prompts you to select continuing or stopping appears.

---

7. If you select "Yes" at step 5, place a floppy disk into the floppy disk drive mounted on the server.

If not, go on the next step.

---

**NOTE:** If you set the floppy disk at this step, do not remove the floppy disk from the server until the message as removing the floppy disk appears.

---

### **[Using the existing Configuration Disk]**

The parameters files in the floppy disk is listed in dialogue-box.

- 1) Select a parameters file to use in the Express Setup.

After the parameters file is specified, the message "Do you want to review or modify the Setup File parameters?" appears.

- 2) If you want to modify or confirm the parameters file, click [Review]. If not, click [Skip].

Click [Review] → Go on the next step.

Click [Skip] → Go on the step 9.

### **[Using a blank disk]**

- 1) Click the box under [Setup File Name: (A)] or press **A**.

The dialog box appears.

- 2) Input the file name and click [Use].

8. Confirm or modify the parameters of disk array configuration.

---

**NOTE:** If you do not use disk array controller, go on the next step.

---

If a Disk array controller is installed or the On-board RAID is enabled, the [Configure RAID] dialog-box appears. Confirm the parameters, modify if necessary, and then click [OK].

When the dialogue-box is closed, the Express setup automatically performs the RAID configuration, creating Maintenance partition and installing several utilities.

9. Select the installing Operating system.

Select "Windows" from the menu.

10. Next, [Basic Information] wizard appears. Confirm the parameters, modify if necessary, and then click [Next].

After that, click [Next], [Back], or [Help] on the screen to continue. Modify the parameters each time if necessary.

**IMPORTANT:**

- Reserve the partition to install the OS more than the minimally required size.
- If you select "Use Existing Partition" at "System Partition", the information included in the first partition (excluding maintenance partition) will all be formatted and deleted. The information included in the other partition will be retained. In the figure below, describes the partition which information will be deleted when maintenance partition exists.

First Partition <Maintenance Partition> Retained	Second Partition Deleted	Third Partition Retained	Fourth Partition Retained
--	--------------------------------	--------------------------------	---------------------------------

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use Existing Partition" at "System Partition".
- If you specify other than 4095MB for the "Installing Partition", it is necessary to convert to NTFS.
- If "Use Existing Partition" at "System Partition" is selected but the partition other than the one to install Windows Server 2003 does not exist (excluding maintenance partition), Express Setup will reserve the maximum area of the hard disk drive to install Windows Server 2003.
- You can not go to the next screen if the specification is incorrect.
- To specify the setup parameters, the number of characters must not exceed the limit as shown in the table below. (Double-byte character shall be counted as two characters.)

Item	Value specified	Max. number of characters
Create Users	User Name	19
	Group Name	20
	Full Name	63
	Explanation	47
Create Groups	Group Name	20
	Explanation (Group Name)	47

---

**NOTE:** If you press **F9** in [Role of Computer], the installation will be done using the default values of Express Setup for the subsequent settings automatically. (Only when the [OK] is displayed in the lower right of the screen).

---

- 11.** Copy the modules for the optional mass storage driver.

If you want to install the optional mass storage driver, insert the floppy disk attached to mass storage driver into the floppy disk drive and follow the message to operate the installation.

---

**NOTE:** You can use this function only when the floppy disk drive is attached to the system.

---

- 12.** Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive according to the message.

If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

Insert Windows Server 2003 CD-ROM into the DVD-ROM drive.

[Agree Software License Agreement] screen appears.

- 13.** Read the agreement carefully and click [I agree.] or press **F8** if you do agree. If you do not agree, click [I disagree] or press **F3**.

---

**IMPORTANT:**

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
  - If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.
- 

- 14.** If you selected [Yes] on [Apply Service Pack] at Basic Information, follow the procedure below.

- 1) Follow the message to take Windows Server 2003 CD-ROM out of the DVD-ROM drive.
- 2) Follow the message to insert Windows Server 2003 Service Pack 1 or later into the DVD-ROM drive.

Windows Server 2003 and the specified application will be installed automatically and logon to the system. Install and configure the device drivers.

- 15.** If you install Microsoft Windows Server 2003 R2, insert Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 into the DVD-ROM drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 from the DVD-ROM drive, and restart the system.

Now the Setup using Express Setup has completed.

---

## Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

### PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. The [Windows Explorer] dialog starts.
  - \* The procedure in the case of the standard start menu  
Click Start menu and click [Windows Explorer].
  - \* The procedure in the case of the classic start menu  
Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "DXSETUP.EXE" in the following directory.  
DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PROSET\2KXPWS03  
The [Intel® PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Complete" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

## Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhance the through put by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

---

### IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- 

If you want to utilize AFT/ALB feature, follow the procedure below to setup.

1. The [Intel (R) PROSet] dialog box appears.
  - \* The procedure in the case of the standard start menu  
Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, point to [Settings] and click [Control Panel].
    2. Click [administrative tools].
    3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.
2. Select [Teaming] tab and then check on [Team with other adapters] and click [New Team...].

The [New Team Wizard] dialog box appears. Click [Next].

  - \* Specify a name for the team if it necessary.
3. Select the adapters to include in team.
4. Select "Adapter Fault Tolerance" or "Adaptive Load Balancing" and click [Next].
5. Click [Finish].
6. The setup will go back to [Intel (R) PROSet for Wired Connections] dialog box, so click[OK].
7. Restart the system.

## Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not be able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

[When PROSet is not installed]

- 1.** The [Local Area Connection Properties] dialog box appears.
  - \* The procedure in the case of the standard start menu
    1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, Click [Settings] and Click [Network Connections].  
The [Network Connections] dialog box appears.
    2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.
- 2.** Click [Configure].  
The property dialog box for network adapter appears.
- 3.** Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
- 4.** Click [OK] on the property dialog box for network adapter.



[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.
  - \* The procedure in the case of the standard start menu

Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, point to [Settings] and click [Control Panel].
    2. Click [administrative tools].
    3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.
2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.
3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

---

**NOTE:** We recommend you to add [Network Monitor] at [AddingServices]. [Network Monitor] can monitor the frame (or the packet)that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

---

## Optional Network Board Driver

If you want to utilize optional Network Board (N8104-112/119/111/86/120/121), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER CD-ROM.

In case of utilizing (N8104-86/111)

"DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO100\WS03XP2K"

In case of utilizing (N8104-112/119/120/121)

"DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO1000\WS03XP2K"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

## Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and Double-click [(Network Adapter Name)].  
[(Network Adapter Name) Properties] appears.  

---

**NOTE:** [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

---
3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location(Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-86/111)], specify  
[DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO100\WS03XP2K].  
Then click [Next].  
When using [(N8104-112/119/120/121)], specify  
[DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO1000\WS03XP2K].  
Then click [Next].
7. Click [Finish].

## Graphics Accelerator Driver

The graphics accelerator driver will be automatically installed by Express Setup or system update.

## Installing SCSI Controller Driver (N8103-75/95)

If you utilize SCSI controller driver (N8103-75/95), update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

The SCSI controller driver will be installed automatically.

## Installing Disk Array Controller Driver (N8103-80F)

To additionally install the N8103-80F in a system containing Windows Server 2003, connect the controller and take the following steps to install the driver:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools]→ [Computer Management].
2. Double-click [LSI Logic Megaraid SCSI 320-1] which Device Manager lists.
3. Click the [Driver] tab and click [Update Driver...].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select the "Search for the best driver in these locations." and check the "Search removable media [floppy, CD-ROM...]" check box.
6. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, and click [Next].
7. Copying of the driver is completed, and the [Completing the Hardware Update Wizard] dialog box below appears. Click [Finish].

## Notes of N8103-75

After installing OS, the driver may not be installed depending on the method of installing OS occasionally.

In that case, please install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click the SCSI Controller driver which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
  - [Adaptec SCSI Card 29320ALP -Ultra320 SCSI ]

The installation of the driver is completed.

Restart the system according to the message appeared on the screen.

## Available switch options for Windows Server 2003 Boot.ini file.

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

"Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

"A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

<Example of Boot.ini file>

```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
/PAE
C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
```

This is the end of editing Boot.ini file.

---

**NOTE:** If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

---

---

## Setting for Solving Problems

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

### Memory Dump (Debug Information)

This section describes the procedures for collecting memory dump (debug information) in the server.

---

#### **IMPORTANT:** Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
  - If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.
- 

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].  
The [System Properties] dialog box appears.
2. Select [Advanced] tab.
3. Click [Settings] on the [Startup and Recovery] group box.

---

**IMPORTANT:**

## Windows Server 2003 x64 Editions

- To specify "Complete Memory Dump" to write the debug information is recommended.  
If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 1MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

## Windows Server 2003

- To specify "Complete Memory Dump" to write the debug information is recommended.  
If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
  - Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB" (In case the memory capacity is more than 2GB, a free area of "2048+12MB" or more).
  - In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.
-

4. Specify "Complete memory dump" and modify [Dump file:] in the [Write debugging information] group box.  
e.g. Write the debug information in D drive write the file name "MEMORY.DMP".  
D:\MEMORY.DMP
5. Click [Settings] on the [Performance] group box.  
The [Performance Options] window appears.
6. Click [Advanced] tab on the [Performance Options] window.
7. Click [Change] on the [Virtual memory] group box.
8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than [Recommended], and click [Set].

---

**IMPORTANT:**

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - For more information on "Recommended" value, see "Creating Partition Size" described earlier.
  - In case the memory is expanded, re-specify the paging file to suit the new memory size.
- 

9. Click [OK].

The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.



## Windows Dr. Watson

Windows Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].  
The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.  
The diagnostic information will be stored with the file name "DRWTSN32.LOG".

---

**NOTE:** You can not specify network path. Specify the path on local computer.

---

4. Specify the location of crash dump file in the [Crash Dump] box.

---

**NOTE:** "Crash Dump File" is a binary file that can be read with Windows Debugger.

---

5. Check the following check box on the [Option] box.

- Dump Symbol Table
- Dump All Thread Contexts
- Add To Existing Log File
- Create Crash Dump File

For more information on each function above, refer to Online Help.

6. Click [OK].

## Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble. To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].  
The [Control Panel] dialog box appears.
2. Double-click [Add or Remove Programs].  
The [Add or Remove Programs] dialog box appears.
3. Click [Add/Remove Windows Component].  
The [Windows Components Wizard] dialog box appears.
4. Click [Management and Monitoring Tools] and then click [Details].  
The [Management and Monitoring Tools] dialog appears.
5. Click to select the [Network Monitor Tools] check box, and then click [OK].
6. The [Windows Components Wizard] dialog box appears again, so click [Next].
7. If the setup asks to install the disk, insert the OS CD-ROM into DVD-ROM drive and click [OK].
8. Click [Finish] in the [Windows Component Wizard] dialog box.
9. Close the [Add or Remove Programs] dialog box.
10. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [Network Monitor]. For information on how to operate Network Monitor, refer to Online Help.

---

## Installing Maintenance Utilities

Various maintenance utilities are contained in your NEC EXPRESSBUILDER CD-ROM. See Chapter 6 for installing the utilities to your server or management workstations.

---

## Updating the System – Installing Service Pack –

Update the system in the situation below:

- Modified system configuration.
- Recovered the system using recovery process.

Log on to the system with the account that has administrative authority (e.g. Supervisor) and insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.

[Setup] in [Master Control Menu] screen appears, so left-click the item.

Click [Update Express5800 System] from the menu and the setup will start. After that, follow the message to continue the setup process.

---

## Making Backup Copies of System Information

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the "NEC EXPRESSBUILDER" CD-ROM into the DVD-ROM drive and reboot the system.
2. Select [Tools].
3. Select [Off-line Maintenance Utility].
4. Select [System Information Management].
5. Insert a floppy disk into the floppy disk drive.
6. Select [Save].

---

## **Installing with the OEM-FD for Mass Storage Device**

This section explains how to setup with the OEM-FD. You usually do not have to do as follows. If your system has any Mass storage devices, you have to set as follows depending on your system. The detailed information is provided by the manual of the Mass storage device.

### **Installation of Mass storage device not to be supported by ExpressSetup**

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is disk array controller, configure the RAID system before running the NEC EXPRESSBUILDER.
3. Boot the system from the NEC EXPRESSBUILDER CD-ROM.
4. (a) When the dialog of Disk array configuration appears, check "Use Existing Array".  
(b) Check "Apply OEM-FD for Mass storage device".
5. Copy the driver for the mass storage device in the ExpressSetup.

Insert the floppy disk attached the mass storage device into the floppy disk drive.

Continue the ExpressSetup, referring to messages displayed on the display.

# Chapter 6

---

## Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

## NEC EXPRESSBUILDER

NEC EXPRESSBUILDER is an automated software integration tool to help simplify the process of installing and configuring your server. Shipped with all NEC servers, the NEC EXPRESSBUILDER CD-ROM provides a flexible, guided installation process for system administrators to install Microsoft Windows Server 2003 or other operating systems (contact your service representative for the server certified operating systems).

---

**NOTE:** Before using NEC EXPRESSBUILDER for initial setup, complete the hardware configuration.

---

NEC EXPRESSBUILDER includes two distinct programs. One can be booted under DOS for initial setup, and one is for use under Windows operating system.

- DOS-based with local console

Used to set up the server at the first time. This program is also used to diagnose the server and to install/uninstall the management utilities on the maintenance partition of the system drive.



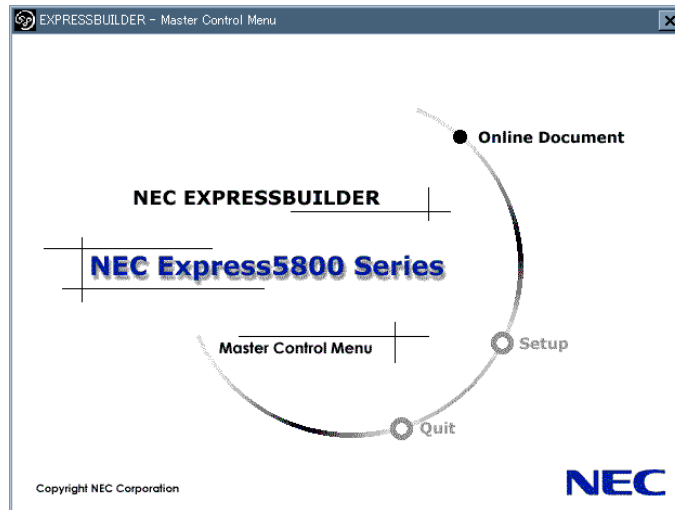
---

**NOTE:** A mouse can't be used when NEC EXPRESSBUILDER is operated with the remote KVM console. Use a keyboard.

---

- Windows-based

This program is called as "Master Control Menu" that can run under the Microsoft Windows system (Windows 95 or later and Windows NT 4.0 or later). You can install the several applications and read the documentation from the menu.



---

## NEC EXPRESSBUILDER for DOS-Based with Local Console

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with local console.

### Starting NEC EXPRESSBUILDER

The following procedure instructs you to start NEC EXPRESSBUILDER.

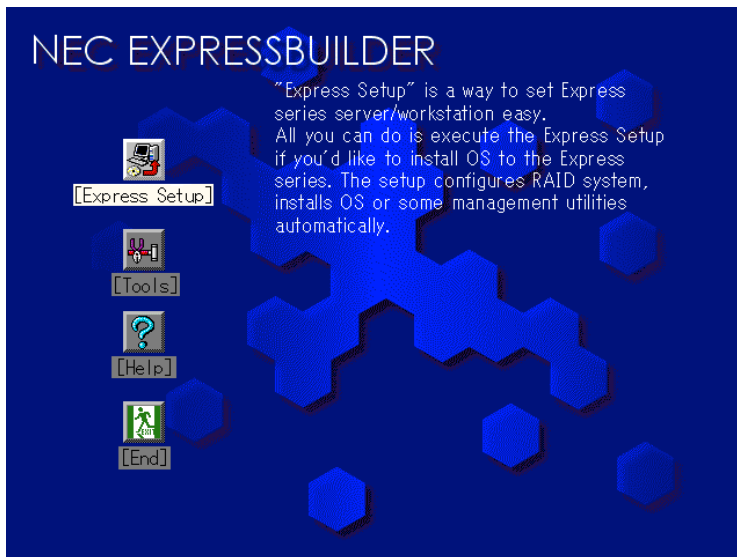
---

**IMPORTANT:** Do not remove the NEC EXPRESSBUILDER CD-ROM while NEC EXPRESSBUILDER is running.

---

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER CD-ROM supplied with your server into the DVD-ROM drive of your server.
3. Ensure that the floppy disk drive is empty.
4. Press the RESET switch or press **Ctrl, Alt, and Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

NEC EXPRESSBUILDER boots up displaying the top menu.





## Express Setup

"Express Setup" is intended for initial setup of the server. Its automatic installation mode guides the user easily through the process by detailing specific hardware features and providing screen prompts for software selection and configuration. The program loads the utilities and drivers, applies RAID settings, partitions the disk, and installs the desired operating system.

If you install Windows Server 2003, after a few tasks are completed, all that remains to be done is to remove the NEC EXPRESSBUILDER CD-ROM and install the Windows CD-ROM, input a product ID number, and acknowledge the license agreement.

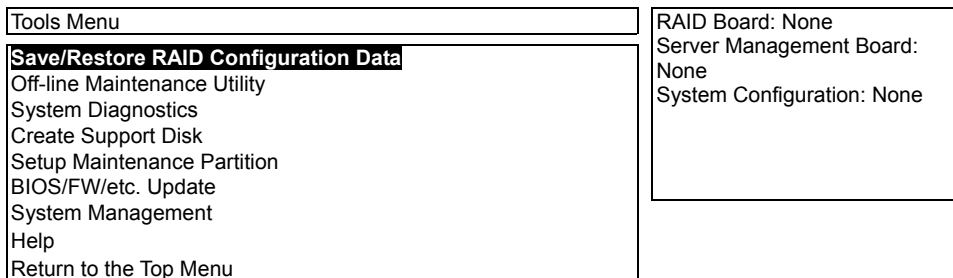
---

### IMPORTANT:

- The Express Setup is intended for the initial setup of the server system and, therefore, the Express Setup clears the contents of the hard disk drive.
  - Once Express setup is started, do not remove "Configuration Diskette" from the floppy disk drive without any directions.
  - Express Setup does not support the installation of Windows Server 2003 x64 Editions.
- 

## Tools

"Tools" is also intended for initial setup of the server. It provides more installation options than Express Setup and permits the user to quickly create utility support disks, run the Off-line Maintenance Utility and system diagnostic utility, set up a maintenance partition, and update the various BIOS programs.



- Save/Restore RAID Configuration Data

The item allows the configuration information on the disk array system to be saved or restored from the floppy disk.

- Save Disk Array Configuration Data

The configuration information on the disk mirroring controller is saved into the floppy disk. If you set or change RAID, always use this function to save the configuration information into the floppy disk.

---

**IMPORTANT:** Some Disk Array Controllers do not support this function. In that case, this menu will not be shown.

---

– Restore Disk Array Configuration Data

The configuration information saved in a floppy disk is restored to NVRAM and hard disk drive on the disk mirroring controller.

If the configuration information is broken or changed by mistake, restore the configuration information.

When the defected disk array controller is replaced, the configuration information on the hard disk drive must be saved into the disk array controller.

However, if the configuration information on the new disk mirroring controller is saved into a hard disk drive, use this function to restore the configuration information.

---

**IMPORTANT:**

- Some Disk Array Controllers do not support this function. In that case, this menu will not be shown.
  - This is a function for maintenance. Please do not use it except maintenance.
- 

■ Off-line Maintenance Utility

Off-line Maintenance Utility is an OS-independent maintenance program that performs preventive maintenance and error analysis for your server. See Chapter 8 or online help for details.

■ System Diagnostics

Executes various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

After the System Diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

■ Create Support Disk

NEC EXPRESSBUILDER CD-ROM contains a number of device drivers and utilities that you can put on floppy disks and load onto your system.

Using this menu creates a support disk by copying from the NEC EXPRESSBUILDER CD-ROM. If your system has the Windows operating system, you may find it more convenient to use NEC EXPRESSBUILDER for Windows-based to make support disks.

Write the displayed title on the floppy disk label, which is useful for management in the future. Customers are to provide a floppy disk to create a support disk.

- Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER  
Creates a support disk for installing Windows Server 2003 x64 Editions.
- Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER  
Creates a support disk for installing Windows Server 2003. (No need to create this disk when installing the operating system with the Express Setup.)
- ROM-DOS Startup FD  
Creates a support disk for starting the ROM-DOS system.

- Off-line Maintenance Utility Bootable FD

Creates a support disk for activating the Off-line Maintenance Utility.

- Setup Maintenance Partition

Maintenance partition is a specific partition for the server and created on your system disk. About 55MB of the maintenance partition includes the various maintenance utilities and executable commands.

In this menu, you can create the maintenance partition, install the various utilities, and update the utilities. The maintenance utilities installed in the maintenance partition are system diagnostics and Off-line Maintenance Utility.

---

**IMPORTANT:**

- Do not reset or turn off the server while the running this menu. If the processing is discontinued, the system becomes unable to start.
  - The existence of the maintenance partition may be identified from the operating system. In order to retain the Configuration Data, do not delete the partition.
- 

**NOTES:**

- The maintenance partition, once created, will not be recreated again.
  - When the maintenance partition does not exist, some menu items do not appear.
- 

- Create Maintenance Partition

NEC EXPRESSBUILDER creates about 55MB of the maintenance partition on the system disk (or disk array system) as work area. The various utilities are installed when the maintenance partition is created successfully or when the maintenance partition is already created.

- Install Maintenance Partition Utilities

Various utilities are installed in the maintenance partition from the CD-ROM.

- Update Maintenance Partition Utilities

Various utilities are copied in the Maintenance Partition from the update disk. This menu is only used when the update disk is supplied from your service representative or attached with your system.

- FDISK

Execute FDISK command of ROM-DOS system. You can create/delete partitions, etc.

- System Management

The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- BIOS/FW/etc. Update

This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

After rebooting the system, an update program is started automatically from the floppy disk, and the various BIOS and firmware programs are updated.

---

**IMPORTANT:** Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

---

- Help

Displays explanations about various functions of NEC EXPRESSBUILDER.

- Return to the Top Menu

Choosing this menu returns to the Top Menu.

---

## **NEC EXPRESSBUILDER for DOS-based with Remote Console**

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with remote console.

NEC EXPRESSBUILDER contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM B (serial) port.

---

### **IMPORTANT:**

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
  - To use the remote console feature, a floppy disk containing a configuration information file named "CSL\_LESS.CFG" must be inserted in the floppy disk drive. If "CSL\_LESS.CFG" is not found in floppy disk, no menu is displayed on the management PC.
  - If you fail to configure the disk array controller N8103-80F or 81F from the remote console, try again using the server console.
  - The system may fail to operate with the transfer rate of 115.2 Kbps for serial console redirection. Specify any other transfer rate than 115.2 Kbps.
-

---

## Starting

The following two methods are available to start the server.

- Running NEC EXPRESSBUILDER from the management PC via LAN
- Running NEC EXPRESSBUILDER from the management PC via direct connection (COM B)

For the procedure for starting NEC EXPRESSBUILDER for DOS-based with Remote Console, see "NEC DianaScope".

---

### IMPORTANT:

- Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the DVD-ROM drive is not the first device to launch the system.
  - To use the remote console feature, a floppy disk containing a configuration information file must be inserted in the floppy disk drive. You can create a configuration information file by using System Management feature in the Tools menu or by NEC DianaScope Configuration menu. The configuration information file must be named as "CSL\_LESS.CFG" and stored in the root directory of the floppy disk.
- 

**NOTE:** The following items of BIOS setup information will be set as shown below.

- LAN Controller: [Enabled]
  - Serial Port A: [Enabled]  
Base I/O Address: [3F8]  
Interrupt: [IRQ 4]
  - Serial Port B: [Enabled]  
Base I/O Address: [2F8]  
Interrupt: [IRQ 3]
  - BIOS Redirection Port: [Serial B]
  - Baud Rate: [19.2K]
  - Flow Control: [CTS/RTS]
  - Console Type: [PC ANSI]
-

## Top Menu

Shown below are the top menu items.



- Setup  
Automatically sets up the server.
- Tools  
Launch the features of NEC EXPRESSBUILDER individually.
- Help  
Help message on NEC EXPRESSBUILDER.
- Quit  
Quit NEC EXPRESSBUILDER.

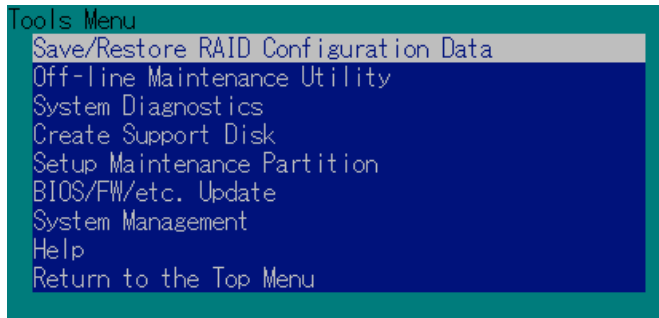
## Setup

The NEC EXPRESSBUILDER checks the hardware configuration of the server. The disk array and maintenance partition are automatically configured.



## Tools

When you select the [Tools] on the Top Menu, the following screen appears.



The menu items available only in remote console operation among those described in section "NEC EXPRESSBUILDER for DOS-based with Local Console" are displayed. See the previous subsection for detailed explanation of menu items.

---

**IMPORTANT:** The following is varied from the [Tools] menu in the local console mode.

- Test items and operation method of System Diagnostics. See Chapter 7 for details.
-



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## NEC EXPRESSBUILDER for Windows-Based (Master Control Menu)

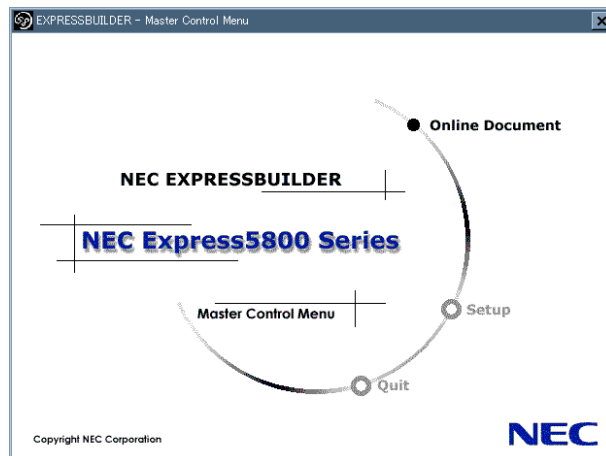
The Master Control Menu is used to,

- Read the User's Guide or the other documents,
- Update the NEC Express5800 system, and
- Install the management software.

---

### NOTES:

- Master Control Menu requires Microsoft Windows 95 (or later) or Windows NT 4.0 (or later).
  - Some documents are provided in the PDF format. Use the Adobe Acrobat Reader to read these documents.
- 



Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive. Master Control Menu appears on the screen automatically. If the Autorun function is invalid in your system, run the \MC\1ST.EXE file in the CD-ROM directly. Some items are grayed-out when the logon user does not have the authority of the administrator or the item is not proper for the system.

To use Master Control Menu,

- Click on [Online Document], [Setup] or [Quit], or
- Click the right mouse button on Master Control Menu window.

## CONFIGURATION DISKETTE CREATOR

"Configuration Diskette Creator" is a tool to create [Configuration Diskette] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Configuration Diskette created by the Express Setup and Configuration Diskette Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Configuration Diskette] to setup the servers from NEC EXPRESSBUILDER.

---

**IMPORTANT:** You can not create [Configuration Diskette] for Microsoft Windows Server 2003 x64 Editions.

---

---

**NOTE:** You can install Windows Server 2003 without [Configuration Diskette]. Also, you can modify/newly create [Configuration Diskette] during the setup with NEC EXPRESSBUILDER.

---

### Creating Configuration Diskette

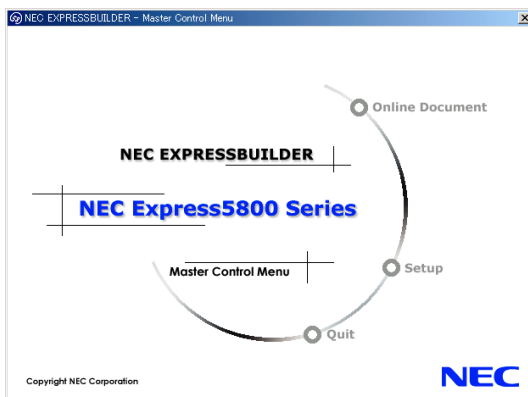
This section describes about specifying setup information that is necessary for OS installation and creating [Configuration Diskette]. Follow the procedure below.

---

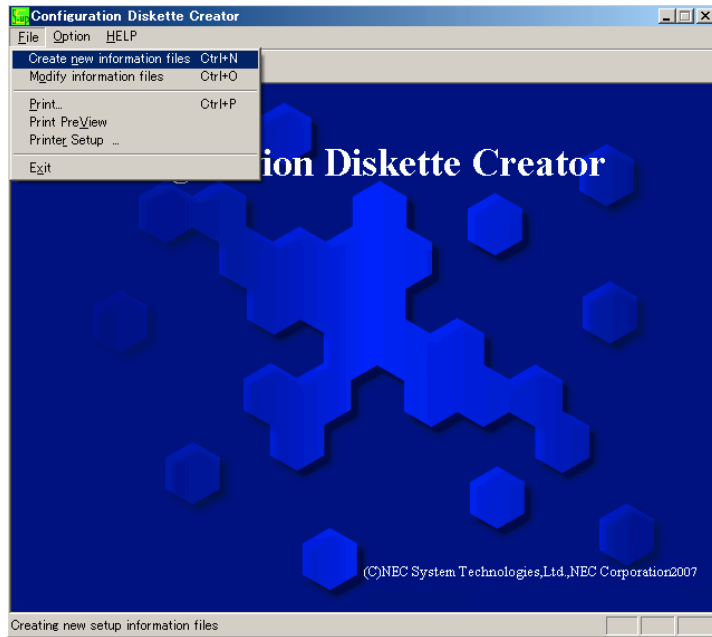
**NOTE:** In the procedure below, the folder name that is specified when installing Trekking command is assumed as [Configuration Diskette Creator].

---

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.  
Master Control Menu will appear.
3. Right-click on the screen or left-click [Setup]. The menu will appear.

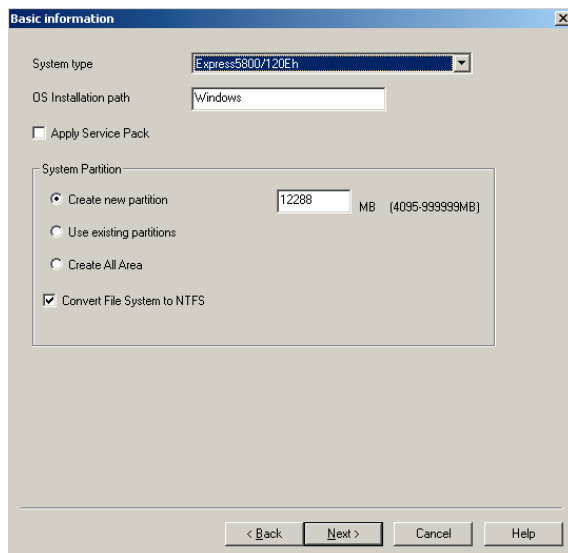


4. Click [Configuration Diskette Creator].  
Configuration Diskette Creator window is displayed.
5. Click [Create New Information files] from the [File] menu.  
The [Disk Environment] dialog box will be displayed.



6. Specify each item and click [OK].

The dialog boxes to specify setup information will be displayed in order, such as [Basic Information] dialog box.

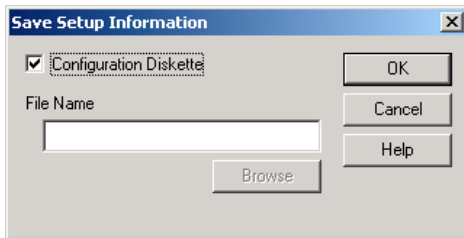


7. Follow the message to specify each item on the dialog box and click [Next].

**NOTE:** If you click on [Cancel], all the input value will be deleted.

When completing the specification of setup information, the [Save Setup Information] dialog box will appear.

8. Confirm that the [Configuration Diskette] check box is checked, and input file name for the Setup File in [File Name].



9. Insert the floppy disk formatted by 1.44MB into the floppy disk drive and click [OK].

Now [Configuration Diskette] has been created. [Configuration Diskette] is used when you install Windows Server 2003. Put a label and keep it where it will not be lost.

**NOTE:** For the information on the contents of each specifying item, refer to the Help.

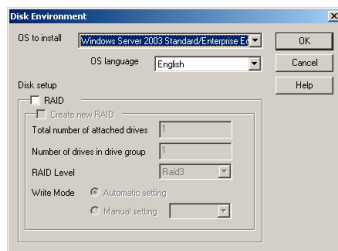
If you want to modify the information file that already exists, click [Modify information files] on Configuration Diskette Creator window. Refer to the Help to modify the inf file.

## Installing Optional Mass Storage Driver

To install optional Mass Storage Driver that is supported by the Express Setup, follow the procedure below to create [Configuration Diskette].

1. Display Configuration Diskette Creator window.
2. From the [File] menu, click [Create new information files].  
[Disk Environment] dialog box will be displayed.
3. Specify each item and click on [OK].

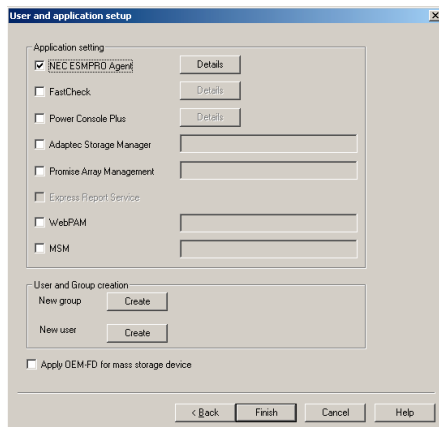
The dialog boxes to specify setup information will be displayed in order, such as [Disk Environment] dialog box.



4. Follow the message to specify each item on the dialog box and click on [Next].

**NOTE:** If you click on [Cancel], all the input value will be deleted.

5. When [User and application setup] is displayed, check [Apply OEM-FD for mass storage device].



6. When the [Save Setup Information] dialog box is displayed, confirm that the [Configuration Diskette] check box is checked, and input file name for the Setup File in [File Name].
7. Insert the floppy disk formatted by 1.44MB into the floppy disk drive and click on [OK].

## NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, create graphs to record trends, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

---

### Functions and Features

The NEC ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of NEC ESMPRO Manager include:

- Hardware and software server configuration
  - Hardware resources mounted in servers, such as the CPU, memory, disks, disk arrays, and LAN boards.
  - Software resources, such as operating system information and drivers running on each server.
- Server failures
  - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
  - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
  - NEC ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

**For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPRESSBUILDER CD-ROM.**

## Web-based Promise Array Manager

Web-based Promise Array Manager is a RAID management utility for monitoring SATA2 RAID controller.

Refer to online documentation (pdf format) contained in NEC EXPRESSBUILDER CD-ROM for detailed explanation.

## MegaRAID Storage Manager (Server)

MegaRAID Storage Manager (hereinafter abbreviated to MSM) is an application to manage or monitor the N8103-99 disk array controller (0ch), N8103-90 disk array controller (for external SAS hard disk drives) or N8103-91 disk array controller (for internal SAS hard disk drives). You can use MSM for management of arrays and error notification by event monitoring while the system is running.

Before attempting to operate MSM, read the "MegaRAID Storage Manager User's Guide" contained in NEC EXPRESSBUILDER CD-ROM. The manual explains the MSM installation procedure and notes on operating MSM.

---

### Setup with Express Setup

You can install MSM with Express Setup contained in NEC EXPRESSBUILDER CD-ROM. When you start the Express Setup, a dialog to specify an application appears. Select [MSM] on the dialog.

---

### Manual Setup

See the online document "MegaRAID Storage Manager User's Guide" contained in NEC EXPRESSBUILDER CD-ROM for details.

## MegaRAID Storage Manager (Management PC)

Install this utility to use the MegaRAID Storage Manager (hereinafter abbreviated to MSM) via network.

Before attempting to operate MSM, read the "MegaRAID Storage Manager User's Guide" contained in NEC EXPRESSBUILDER CD-ROM. The manual explains the MSM installation procedure and notes on operating MSM.

## Power Console Plus

Power Console Plus is a utility to control the RAID system of the disk array controller (MegaRAID controller) produced by LSI Logic. Use of Power Console Plus enables operations (e.g., monitoring and maintenance) of RAID systems that are constructed on local NEC Express servers and NEC Express servers connected through networks (TCP/IP). The operations can be done online on graphical screens without the system being stopped.

---

### Major Functions

Power Console Plus has the following features:

- Supporting the Wizard function to facilitate configuration
- Enabling the change of RAID levels
- Being compatible with SAF-TE
- Supporting the performance monitor
- Supporting enclosure functions such as temperature monitoring, power monitoring, and fan monitoring
- Enabling the settings of Write, Read, and Cache policies for each logical drive
- Supporting the save and restore functions for configuration
- Enabling the display of the SCSI transfer rate

---

### Components

Power Console Plus consists of the following five components:

- **SNMP Agent**  
This function is not yet supported. Do not install SNMP Agent.
- **MegaRAID Service Monitor**  
Enables NEC ESMPRO to monitor the MegaRAID controller by registering event logs. Install MegaRAID Service Monitor in the NEC Express server in which the MegaRAID controller is mounted.
- **MegaRAID Client**  
Controls the RAID system on graphical screens. Install MegaRAID Client in the NEC Express server in which the MegaRAID controller mounted or in the management PC that is connected through the NEC Express server and network.
- **MegaRAID Server**  
Enables control of the MegaRAID controller via the network. Install MegaRAID Server in the NEC Express server in which the MegaRAID controller mounted.



- **MegaRAID Registration Server**

Enables control of the MegaRAID controller via the network. Install in one of NEC Express servers and management PCs that are connected through network. The above components must be installed correctly for establishing the environment to use Power Console Plus.

Power Console Plus components to be installed are different between the target servers and management PC.

- **Server:**

NEC Express server in which the MegaRAID controller is mounted

Install the following three components in this server:

- MegaRAID Service Monitor
- MegaRAID Server
- MegaRAID Client

- **Management PC:**

Management PC that monitors and controls servers via the network (TCP/IP)

When managing array on Terminal Server working on Windows NT Server Version 4.0 Terminal Server Edition, prepare PC, and install Management PC component. Management PC does not guarantee operation on Client, which used Terminal Server, Terminal Server Emulator, WBT.

Start Power Console Plus of management PC, after the Power On machine that installed "Server" and "Management Server".

Install the following component in this PC:

- MegaRAID Client

- **Management server:**

Machine that manages all servers that are monitored and controlled by management PCs

Install the following component in one of the servers or management PCs:

- MegaRAID Registration Server

---

## Server Setup

This section explains Power Console Plus setup in the NEC Express server in which the MegaRAID controller is mounted.

## Operating Environment

This section explains the operating environment required for Power Console Plus to operate on a server.

- Hardware
  - Machine:  
NEC Express5800 series connected with the AMI disk array controller (A)
  - Memory:  
Size large enough for OS operation + 8MB or more
  - Free space of the hard disk drive:  
5MB or more
  - Display unit:  
Screen size 1024 × 768 or larger
  - Required peripheral equipment:  
Network Interface card  
CD-ROM unit  
Pointing device such as a mouse
- Software
  - Microsoft Windows NT version 4.0  
(Windows NT Version 4.0 Service Pack 6a or later + Internet Explorer 5.5 or later)
  - Microsoft Windows 2000

## Management PC Setup

This section explains Power Console Plus setup in a computer that manages servers via the network (TCP/IP).

### Operating Environment

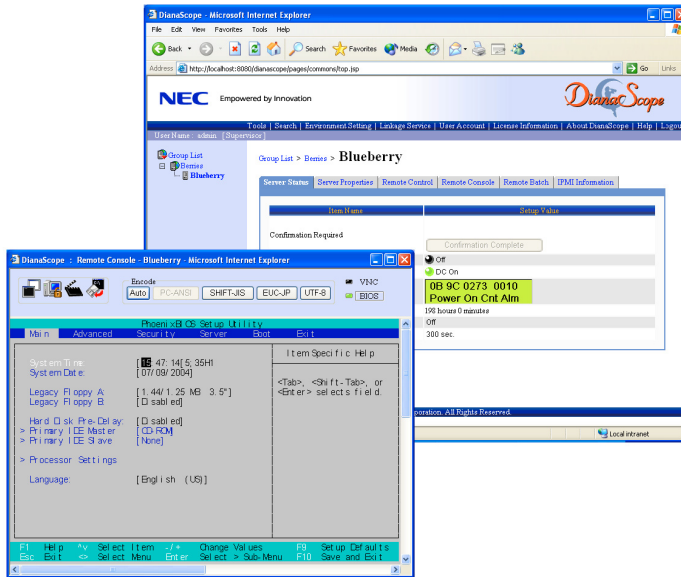
This section explains the operating environment required for Power Console Plus to operate on a management PC.

- Hardware
  - Machine:  
NEC Express5800 series  
PC/AT-compatible machine (which contains Intel Pentium or a CPU at least equivalent to it)
  - Memory:  
Size large enough for OS operation + 8MB or more
  - Free space of the hard disk drive:  
5 MB or more
  - Display unit:  
Screen size 1024 × 768 or larger
  - Required peripheral equipment:  
Network Interface card  
CD-ROM unit  
Pointing device such as a mouse
- Software
  - Microsoft Windows NT Version 4.0  
(Windows NT Version 4.0 Service Pack 5 or later + Internet Explorer 4.01 Service Pack 2 or later)
  - Microsoft Windows 2000
  - Microsoft Windows 95/98/Me

## NEC DianaScope

The NEC DianaScope is software for the remote management of this server.

See the online documents for details on the functions and installation of NEC DianaScope.



**NOTE:** You need the server license to activate DianaScope for this product. The server license below is attached to this product.

- DianaScope Additional Server License (1)

# Chapter 7

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## Maintenance

This chapter describes the daily maintenance of the server and precautions when relocating or storing the server.

### MAKING BACKUP COPIES



NEC recommends you make backup copies of your valuable data stored in hard disk drives of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your service representative.



When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the disk array configuration data if your system is in the array configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, use the configuration utility that is resident in the FLASH memory on the optional disk array controller board. Refer to the manual supplied with the board.

## CLEANING

Clean the server on a regular basis to keep the server in a good shape.

 <b>WARNING</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Do not disassemble, repair, or alter the server.</li><li>■ Do not look into the DVD-ROM drive.</li><li>■ Do not remove the lithium battery.</li><li>■ Disconnect the power plug before working with the server.</li></ul>

 <b>CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Avoid installation in extreme temperature conditions.</li><li>■ Make sure to complete board installation.</li><li>■ Protect the unused connectors with the protective cap.</li></ul>

---

## Cleaning the Server

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

---

### **IMPORTANT:**

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner and benzene to clean the server.
  - The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.
- 

1. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly, wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

## Cleaning the Interior

### CAUTION



The qualified service representative can only install or remove the components described in this subsection. To avoid personal injury or electrical shock, contact your service representative when you need to install/remove the internal components.

One of the most important items in a good maintenance program is regular and thorough cleaning of the interior of the server, especially around the mother board.

Dust buildup inside the server can lead to several problems. As dust acts as a thermal insulator, a buildup can prevent proper system cooling. Excessive heat will shorten the life of server components. Also, dust may contain conductive or corrosive materials that can cause short circuits or corrosion of electrical contacts.

How often you should clean the interior of the server depends on the environment in which it is located. For most office environments, you probably should clean the server every 12 months. For more severe environments, clean the interior every 6 months.

Cleaning the interior of the server entails powering off the server and removing the left side cover. You will need a small vacuum cleaner (with plastic tipped nozzle and electrostatic protection), computer grade canned air, and a small brush for cleaning the interior.

Follow the procedure below to clean the interior of the server.

### WARNING



Unplug all power cords.

Unplug all power cords before performing any maintenance. Voltage is present inside the server and display unit even after the power is turned off. All voltage is removed only when the power cord is unplugged.

---

**IMPORTANT:** Do not use the brush made of chemical fabric, or the cleaning material that will generate an electrostatics.

---

1. Turn off the server and unplug all power cables.
2. Remove the left side cover. (See Chapter 9.)
3. Remove the dust accumulate on the air inlet of the front and the rear fan.
4. Use a small brush to loosen any dust and debris on the mother board.
5. Use computer grade canned air to blow dust off components on the mother board.
6. Use a small vacuum cleaner with plastic tip to vacuum out dust and debris from the interior of the server.
7. Reinstall the left side cover. (See Chapter 9.)
8. Reconnect all power cables and turn on the server.

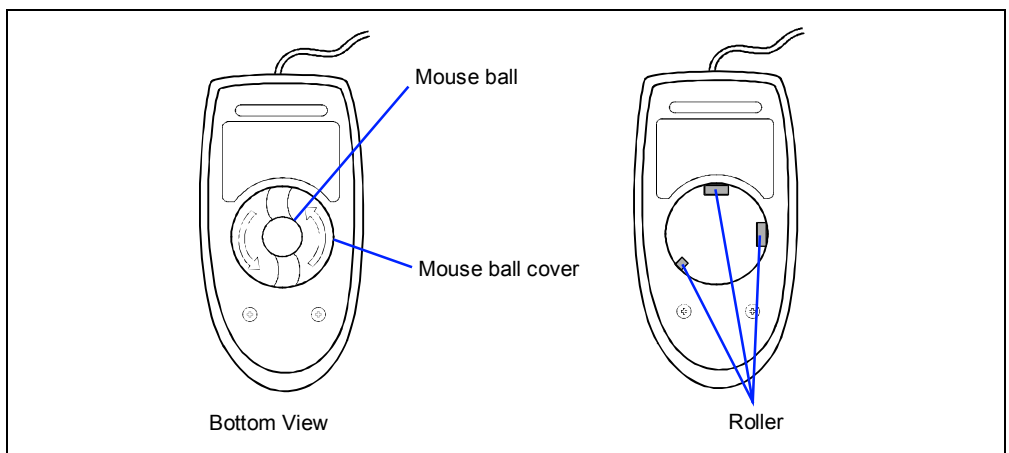


## Cleaning the Keyboard/Mouse

Make sure that the server and peripheral devices are all off-powered (the POWER/SLEEP lamp goes off), and then wipe the keyboard surface with a dry cloth.

The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Prepare cold or lukewarm water, neutral detergent, alcohol, two dry soft clothes, and cotton swabs.
2. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
3. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it.
4. Take out the ball from the mouse. Cover the bottom of the mouse with your hand, and turn your hand holding the mouse (the mouse is on your palm with the button upward). The mouse ball is released onto your palm.



5. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
6. Rub off stains on the mouse ball. Softly wipe the mouse ball with the cloth prepared in Step 5.
7. Wipe the mouse ball with a dry soft cloth.
8. Wipe three small rollers inside the mouse with a cotton swab soaked with alcohol. Wipe stains slowly and carefully by rotating rollers with the tip of the cotton swab.
9. Blow out any dust from the mouse. Protect your eyes from the dust.
10. Put the mouse ball back into the mouse.
11. Place the mouse ball cover, and rotate it clockwise until it is locked.

---

## Cleaning Disc

A dusty disc or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and disc regularly:

1. Make sure that the server is powered (the POWER/SLEEP LED is lit).
2. Press the CD tray Open/Close button on the front of the DVD-ROM drive. The tray opens.
3. Hold the disc lightly and take it out from the tray.

---

**NOTE:** Do not touch the signal side of the disc with your hand.

---

4. Wipe the tray with a dry soft cloth.

---

**IMPORTANT:** Do not wipe the lens of the DVD-ROM drive. Doing so may damage the lens and may cause a malfunction of the drive.

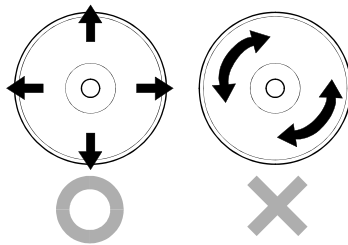
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5. Push on the tray front to close the tray.
6. Wipe the signal side of the disc with a dry soft cloth.

---

**IMPORTANT:** Wipe disc from the center to the outside. Use only disc cleaner if necessary. Cleaning a disc with record spray/cleaner, benzene, or thinner causes damage to the disc contents. At worst, inserting the disc into the server may cause failure.

---



## SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tools] - [System Diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

---

### Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

---

**IMPORTANT:** When executing the system diagnostics, make sure to disconnect the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

---

---

**NOTE:** On checking the hard disk drive, no data is written into the disk.

---

## Startup and Exit of System Diagnostics

There are two ways to diagnose the server: to use the local console (keyboard) of the server itself, and to use the management PC via serial port (remote console).

**IMPORTANT:** Two methods of LAN and the serial port are mentioned in "NEC EXPRESSBUILDER" of Chapter 6 "Installing and Using Utilities" in the way of communicating in remote console. Use the serial port to execute System Diagnostics with remote console. The LAN connection is not for System Diagnostics.

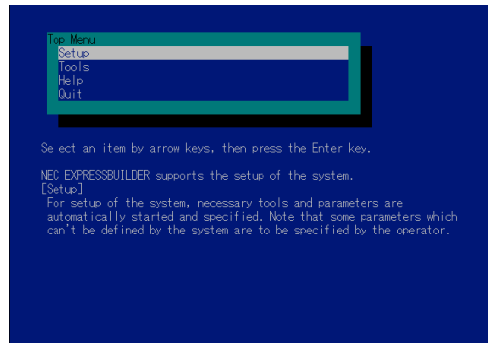
Procedures to start the diagnostics program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to start the system.

The step which the step which local console of the server is used for, and remote console are used for is different. Refer to "NEC EXPRESSBUILDER" of Chapter 6 "Installing and Using Utilities", to start the system properly. The following menu is displayed on the screen, when starting the system from the NEC EXPRESSBUILDER.



Local console

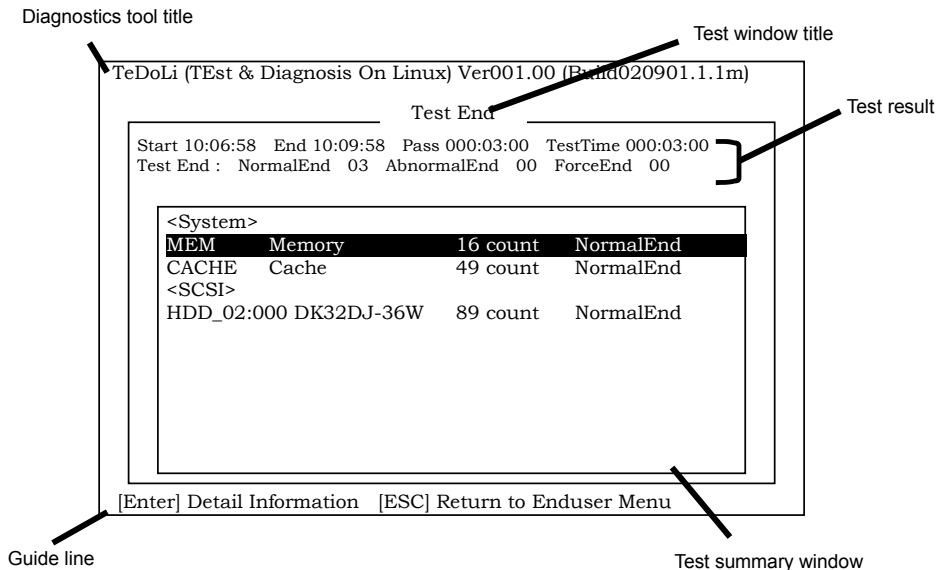


Remote console

5. Select [Tools].

## 6. Select [System Diagnostics].

The system diagnostics starts and will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:



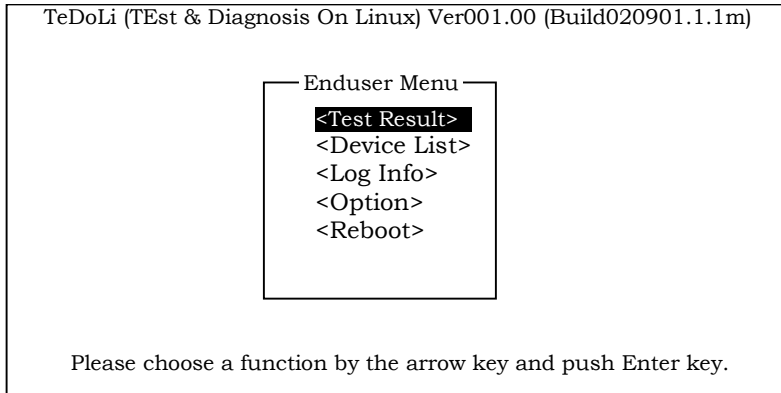
- Diagnostics tool title  
Shows the name and version of the diagnostic tool.
- Test window title  
Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.
- Test result  
Shows the start, end, and elapsed time and completion status of the diagnostics.
- Guide line  
Shows the details of the keys to operate window.
- Test summary window  
Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the test Summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your service representative.

7. Follow the guide line shown at the bottom of the screen, and press the **Esc** key.

The [Enduser Menu] below is displayed.




- <Test Result> Shows the diagnostics completion screen of the above diagnostics.
- <Device List> Shows a list of connected devices.
- <Log Info> Shows the log information of the diagnostics. It can be saved on a floppy disk.  
To save it on a floppy disk, insert a formatted floppy disk to the floppy disk drive, and select <Save(F)>.
- <Option> Optional features can be used from this menu.
- <Reboot> Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.  
The server restarts and the system is started from the NEC EXPRESSBUILDER.
9. Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the DVD-ROM drive.
10. Power off the server and unplug the power cord from the receptacle.
11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.
12. Plug in the power cord.

This completes the system diagnostics.

## RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

<b>⚠ CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Never attempt to lift the server only by yourself.</li><li>■ Do not install the server in any place other than specified.</li><li>■ Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.</li></ul>

---

### IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact your service representative.
  - Make sure to make a backup copy of your valuable data in the hard disk drive, if any.
  - Make sure not to apply a shock to hard disk drives to relocated the server if the contains any.
- 

1. Take a media out of the server, if any.
2. Power off the server (the POWER/SLEEP lamp goes off).
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Hold the server by its bottom to carry the server.

---

**IMPORTANT:** Do not hold the front mask to lift the server. The front mask may be disengaged from the server, causing personal injury.

---

6. Protect the server with the shock-absorbing materials, and pack it securely.

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# Chapter 8

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## Troubleshooting

If your server does not operate as expected, read this chapter before assuming a failure.

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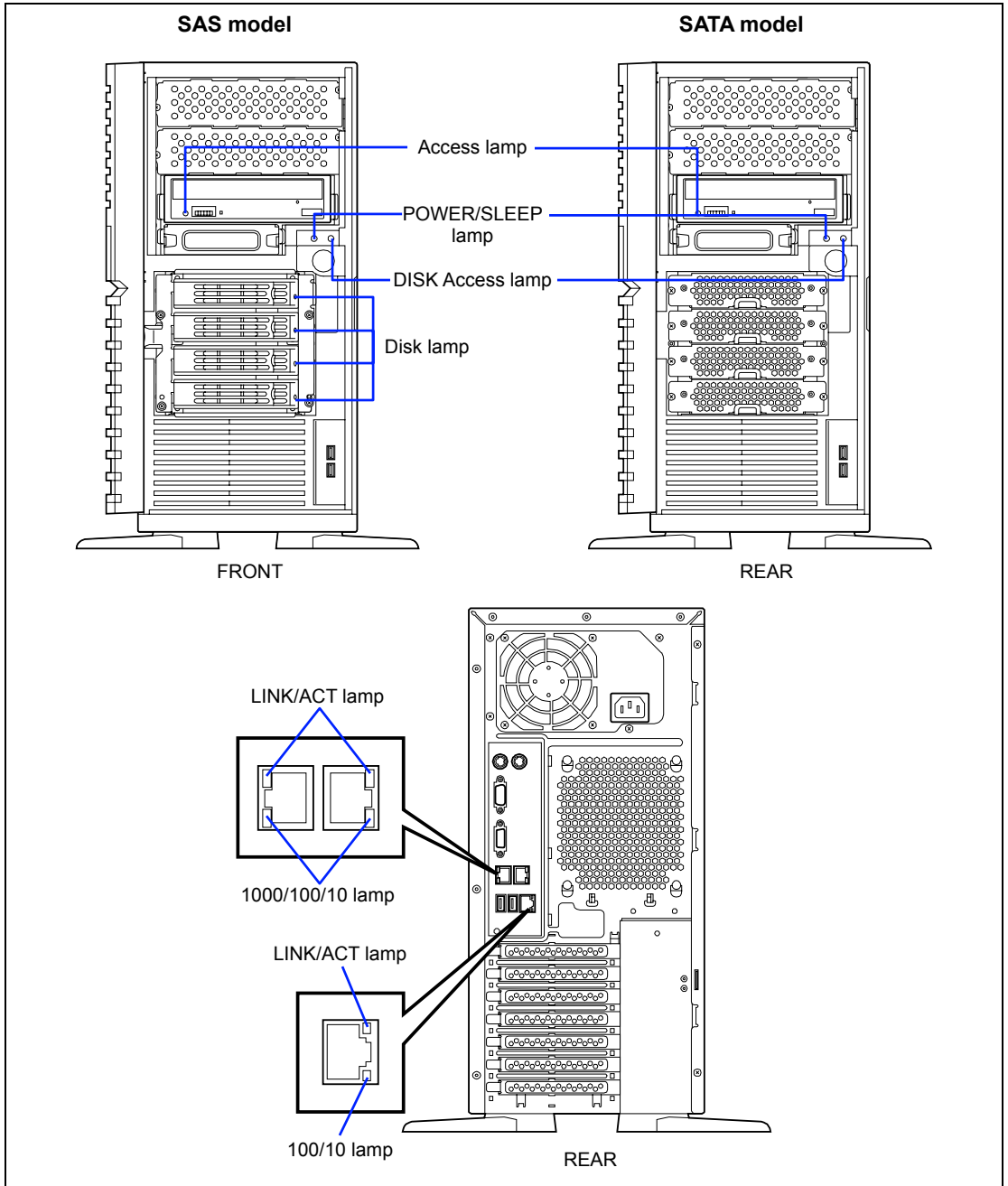
**NOTE:** For provision against an unexpected failure, it is recommended to install the Off-line Maintenance Utility, NEC ESMPRO, to the server and client computers.

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# LAMPS

The following describes lamps on the server and their indications. See Chapter 2 for each location.



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## POWER/SLEEP Lamp

The green POWER/SLEEP lamp lights to indicate normal operation while the server is powered. When the server is off-powered, the POWER/SLEEP lamp stays unlit.

The POWER/SLEEP lamp indicates that the server is running in the power-saving mode (sleep mode). If the OS supports the power-saving mode, pressing the POWER/SLEEP switch blinks the POWER/SLEEP lamp in green and places the server in the power-saving mode. Press the POWER/SLEEP switch to turn out the POWER/SLEEP lamp and place the server back in the normal mode.

The power-saving mode is only available when the OS supports the power-saving feature. Some OS's allow you to set the server to automatically turn in the power-saving mode when no access is made to the server for a certain period of time or to select the power-saving mode with a command.

---

## Access Lamps

The access lamps for the floppy disk drive and the DVD-ROM drive light when access is made to a media in the drive.

---

## DISK Access Lamp

The DISK access lamp indicates the state of hard disk drive.

This lamp lights in green every time any of such hard disk drive is accessed.

---

**IMPORTANT:** To indicate the access states of the built-in hard disk drives when optional board (e.g., disk mirroring controller or disk array controller) is installed, connect the LED cable provided with the server to the LED connector on the mother board and the optional board.

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## LINK/ACT Lamp

The link/ACT lamp indicates the state of each network port normally equipped with the server. If the power is supplied to the server and the hub and they are correctly connected with each other, the lamp is lit green (LINK state). If information is transmitted through a network port, the lamp blinks green (ACT state).

If the lamp is not lit in the LINK state, check the network cable and the cable connection. If the lamp is not lit still after the checking, the network (LAN) controller may be defected. Contact your service representative.

---

## 1000/100/10 Lamp

The 1000/100/10 lamp indicates whether each of the network ports normally equipped with the server is operated through the 1000BASE-T, 100BASE-TX or 10BASE-T network interface. If the lamp is lit orange, the network port is operated through 1000BASE-T. If the lamp is lit green, the network port is operated through 100BASE-TX. If the lamp is off, the network port is operated through 10BASE-T.

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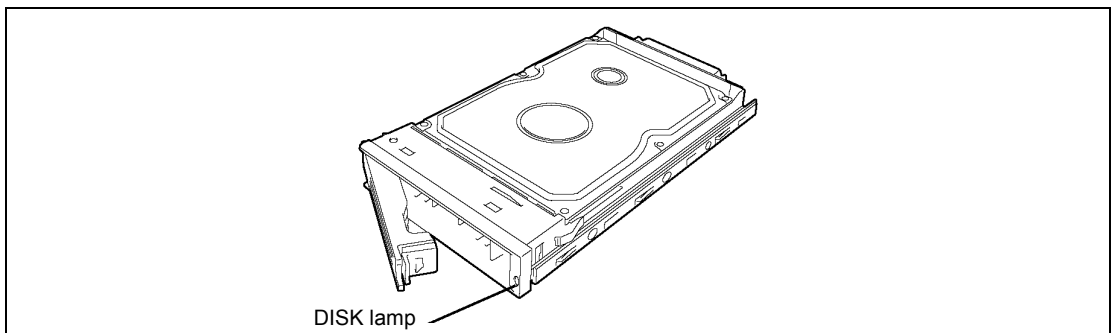
## 100/10 Lamp

The 100/10 indicates whether the management LAN port is operated through the 100BASE-TX or 10BASE-T network interface. If the lamp is lit green, the network port is operated through 100BASE-TX. If the lamp is off, the network port is operated through 10BASE-T.

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## Hard Disk Drive Lamp

The optional hot-swap SCSI hard disk drive bay can contain four 1-inch height hard disk drives. Each hard disk drive has a DISK lamp on its front panel.



The DISK lamp indicates the drive status as follows.

- Lighting green  
The hard disk drive is installed and powered on.
- Blinking green  
Indicates that the hard disk drive is accessed.
- Lighting amber  
Indicates that the installed hard disk drive is defected.

---

**NOTE:** While hard disk drives are in the disk array configuration (RAID1 or RAID5), a single failed hard disk drive does not affect the operation of the server. However, it is recommended to replace the failed hard disk drive and auto-rebuild (reconfigure) the hard disk drives as soon as possible. (You can hot-swap such a failed hard disk drive.)

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- Slowly blinking amber

Indicates that the hard disk drive is being rebuilt (this status is not a failure). If the defected hard disk drive is replaced with a new one in the disk array configuration, the data is automatically rebuilt (auto rebuild function).

The lamp goes on green when the rebuild is terminated normally. The lamp goes on amber if the rebuild fails.

---

**IMPORTANT:** To abort rebuilding, power off the server. In such a case, restart the server, hot-swap the failed hard disk drive, and restart rebuilding. Observe the following notes to use the auto-rebuild feature.

- Do not power off the server. (If the server is powered off before rebuilding hard disk drives, the auto-rebuild feature will not start.)
  - When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive back again.
  - Do not replace another hard disk drive while rebuilding is in progress.
-

## ERROR MESSAGES

If an error occurs in the server, an error message appears on the display unit connected to the server.

---

### Error Messages after Power-on

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors. However, even when there is no hardware failure, use of the keyboard or mouse at the following timing causes the POST to assume a keyboard controller error and stop processing.

- Immediately after the server is powered
- Immediately after the system is rebooted in response to a keyboard instruction (simultaneous key entry of **Ctrl + Alt + Delete**)
- Immediately after the system is rebooted in response to an OS instruction
- During hardware initialization following restart of the POST

When the POST detects a hardware failure due to the above reason, restart the server once again. If the same error message reappears, you may assume there is no hardware error. To ensure normal operation of the server, however, make sure to follow the following restrictions.

- Do not make any keyboard entry or use the mouse before the memory count appears on the screen following the server power-on.
- Do not make any keyboard entry or use the mouse before the start-up message of the Configuration Utility appears on the screen following the server reboot.

---

**IMPORTANT:** Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.

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## POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. The following table lists error codes, error messages, and actions to take.

**IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Error code	Error message	Recommended Action
0200	Failure Fixed Disk.	Contact your service representative.
0210	Stuck Key.	Disconnect the keyboard and connect it again.
0211	Keyboard error	Disconnect the keyboard and connect it again. If the error cannot be corrected, contact your service representative.
0213	Keyboard locked - Unlock key switch.	Release the lock of the key switch. If the error cannot be corrected in spite of the release of the lock, contact your service representative.
0220	Monitor type does not match CMOS - Run SETUP.	Start the SETUP. If the error cannot be corrected in spite of the start of SETUP, contact your service representative.
0230	System RAM Failed at offset.	Contact your service representative.
0231	Shadow Ram Failed at offset.	
0232	Extended RAM Failed at address line.	
0250	System battery is dead - Replace and run SETUP.	Contact your service representative to replace the battery. (After restarting the computer, start the SETUP to provide the setting again.)
0251	System CMOS checksum bad - Default configuration used.	The default values have just been set. Start the SETUP to provide the setting again. If the error cannot be corrected, contact your service representative.
0252	Password checksum bad - Passwords cleared.	The password has just been cleared. Start the SETUP to provide the setting again.
0260	System timer error.	Start the SETUP to set the date and time again. If the same error occurs successively in spite of the resetting, contact your service representative.
0270	Real time clock error.	
0271	Check date and time setting.	
02D0	System cache error - Cache disabled.	The cache cannot be used. Contact your service representative.



Error code	Error message	Recommended Action
02D1	System Memory exceeds the CPU's caching limit.	Contact your service representative.
02F4	EISA CMOS not write able.	
02F5	DMA Test Failed.	
02F6	Software NMI Failed.	
02F7	Fail-safe Timer NMI Failed.	
0B22	CPUs are installed out of order.	Request the maintenance to replace the CPU.
0B28	Unsupported CPU detected on CPU Slot 1.	Make sure that the server supports the CPU. If you are not sure, contact your service representative to request the maintenance.
0B29	Unsupported CPU detected on CPU Slot 2.	
0B30	Fan 1 Alarm occurred.	Contact your service representative to replace the fan.
0B31	Fan 2 Alarm occurred.	
0B32	Fan 3 Alarm occurred.	
0B5F	Forced to use Processor with error	Because an error is detected in every CPU, the system is forcibly started. Contact your service representative.
0B60	DIMM group #1 has been disabled	Contact your service representative.
0B61	DIMM group #2 has been disabled	
0B62	DIMM group #3 has been disabled	
0B63	DIMM group #4 has been disabled	
0B64	DIMM group #5 has been disabled	
0B65	DIMM group #6 has been disabled	
0B70	The error occurred during temperature sensor reading.	Contact your service representative.
0B71	System Temperature out of the range.	Contact your service representative to replace the fan.
0B74	The error occurred during voltage sensor reading.	Contact your service representative.
0B75	System voltage out of the range.	
0B80	BMC Memory Test Failed.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B81	BMC Firmware Code Area CRC check failed.	
0B82	BMC core Hardware failure.	
0B83	BMC 1BF or 0BF check failed.	Start SETUP and select [Server] - [Event Log Configuration] - [Clear All Error Logs] and press <b>Enter</b> to clear event logs.
0B8A	BMC SEL area full.	
0B8B	BMC progress check timeout.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B8C	BMC command access failed.	
0B8D	Could not redirect the console - BMC Busy -	
0B8E	Could not redirect the console - BMC Error -	
0B8F	Could not redirect the console - BMC Parameter Error -	
0B90	BMC Platform Information Area corrupted.	
0B91	BMC update firmware corrupted.	

<b>Error code</b>	<b>Error message</b>	<b>Recommended Action</b>
0B92	Internal Use Area of BMC FRU corrupted.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B93	BMC SDR Repository empty.	Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B94	IPMB signal lines do not respond.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B95	BMC FRU device failure.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B96	BMC SDR Repository failure.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B97	BMC SEL device failure.	
0B98	BMC RAM test error.	
0B99	BMC Fatal hardware error.	
0B9A	Management controller not responding.	
0B9B	Private I2C bus not responding.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B9C	BMC internal exception.	
0B9D	BMC A/D timeout error.	
0B9E	SDR repository corrupt.	
0B9F	SEL corrupt.	
0BB0	SMBIOS – SROM data read error.	
0BB1	SMBIOS – SROM data checksum bad.	Contact your service representative to replace the DIMM in the relevant group.
8100	Memory Error detected in DIMM group #1.	
8101	Memory Error detected in DIMM group #2.	
8102	Memory Error detected in DIMM group #3.	
8103	Memory Error detected in DIMM group #4.	
8104	Memory Error detected in DIMM group #5.	
8105	Memory Error detected in DIMM group #6.	Contact your service representative.
8160	Mismatch Processor Speed detected on Processor 1.	
8161	Mismatch Processor Speed detected on Processor 2.	
None	Expansion ROM not initialized – PCI Mass Storage Controller in slot xx (xx: slot number)	Disable initialization of the optional device expansion ROM by using the BIOS SETUP utility (see Chapter 4).
	H/W Configuration of BMC is corrupted. !! Update BMC F/W Configuration by configuration tool !! !! Refer to BMC configuration manual !!	Use the NEC EXPRESSBUILDER to configure the optional remote management card (see Chapter 6).

## Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-3-1-1 indicates 1 beep, pause, 3 beeps, pause, 1 beep, pause, and 1 beep notifying that the DRAM refresh test error occurred.

Beep code	Description	Recommended action
3-3 (repetitive)	ROM checksum error	Contact your service representative to replace the mother board.
1-2-2-3		
1-3-1-1	DRAM refresh test error	Check if the DIMMs are properly connected. If the error persists, contact your service representative to replace DIMM or mother board.
1-3-1-3	Keyboard controller error	Disconnect the keyboard and connect it again. If the error persists, contact your service representative to replace the mother board.
1-3-3-1	No memory or capacity check error	Check if the DIMMs are properly connected. If the error persists, contact your service representative to replace DIMM or mother board.
1-3-4-1	DRAM address error	
1-3-4-3	DRAM test Low Byte error	
1-4-1-1	DRAM test High Byte error	
1-5-1-1	CPU startup error	Contact your service representative to replace the mother board.
1-5-2-1	No CPU installed	Contact your service representative to replace the CPU or mother board.
2-1-2-3	BIOS ROM copyright test error	Contact your service representative to replace the mother board.
2-2-3-1	Unexpected interrupt test error	
1-2	Option ROM initialization error	Check if BIOS SETUP is correctly configured. If an expansion of Option ROM for additionally installed PCI board is not displayed, check if the PCI board is properly installed. If the error persists, contact your service representative to replace the mother board or PCI board.

**NOTE:** Beep code 1-5-4-2 informs you that AC power supply is interrupted due to power failure or momentary voltage drop and the system is restarted. This is not an error.

## SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

---

### Problems with NEC Express Server

#### No screen display appears and beep occurs.

- Is the DIMM board installed securely?
  - Check whether the DIMM board is inserted into the mating connector securely.
  - Make sure the jumper switches have been returned to their original positions after CMOS clearing. See "Configuring Mother Board Jumpers" in Chapter 4 for the positions of the jumper switches.

#### Fail to power on the server:

- Is the server is properly supplied with power?
  - Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.
  - Check the power cord for broken shield or bent plugs.
  - Make sure the power breaker for the connected power outlet is on.
  - If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. See the manual that comes with the UPS for details.

Power supply to the server may be linked with the connected UPS using the BIOS Setup utility of the server.

<Menu to check: [Advanced] - [AC-LINK]>
- Did you press the POWER/SLEEP switch?
  - Press the POWER/SLEEP switch on the front of the server to turn on the power (the POWER/SLEEP lamp lights).

**POST fails to complete:**

- Is the DIMM board installed?
  - Check the installation location of DIMMs (see Chapter 9).
- Is the memory size large?
  - The memory check may take a few seconds if the memory size is large. Wait for a while.
- Did you perform any keyboard or mouse operation immediately after you started the server?
  - If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.
- Does the server have contains appropriate memory boards or PCI devices?
  - Operation of the server with unauthorized devices is not guaranteed.

**Fail to access to internal or external devices (or such devices fail to operate):**

- Are cables properly connected?
  - Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.
- Is the power-on order correct?
  - When the server has any external devices connected, power on the external devices first, then the server.
- Did you install drivers for connected optional devices?
  - Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.
- Is BIOS configuration correct?
  - Some devices connected to the serial or parallel port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

**The keyboard or mouse fails to operate:**

- Is the cable properly connected?
  - Make sure that the cable is connected to the correct connector on the rear of the server.
  - The keyboard or mouse does not operate if it is connected when the server is powered (not applicable to USB devices). Power of the server first and connect it properly.
- Are the server drivers installed?
  - Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

**Fail to access to the DVD/CD-ROM:**

- Is the DVD/CD-ROM properly set in the DVD-ROM drive tray?
  - The tray is provided with a holder to secure the DVD/CD-ROM. Make sure that the DVD/CD-ROM is placed properly in the holder.
- Is the DVD/CD-ROM applicable to the server?
  - The DVD/CD-ROM for Macintosh is not available for use.
  - For the disk which does not conform to the CD standard, the playback of such a disk with the DVD drive is not guaranteed.

**The POWER/SLEEP lamp goes on when the power cord is connected:**

- When the server receives an AC power after the power cord is connected, the POWER/SLEEP lamp goes on. This is a normal operation of the server, not a fault. The lamp will go off when DC power is turned on, and then off.

**Inserted the correct DVD/CD-ROM but the message like the following is displayed:**

The DVD/CD-ROM is not inserted or the wrong DVD/CD-ROM is inserted.  
Please insert the correct DVD/CD-ROM.  
OK

- Is the data side of the DVD/CD-ROM dirty or injured?
  - Take the DVD/CD-ROM out of the DVD-ROM drive, confirm that it is not dirty or injured, reset and click [OK].

**Fail to access the hard disk drive:**

(Refer to the documentation supplied with the disk array controller.)

- Is the hard disk drive applicable to the server?
  - Operation of any device that is not authorized by NEC is not guaranteed.
- Is the hard disk drive properly installed?
  - See Chapter 9.

**Fail to access the (internal or external) SCSI devices:**

- Is the SCSI device applicable to the server?
  - Operation of any SCSI device that is not authorized by NEC is not guaranteed.
- Is the cable connection changed?
  - See Chapter 10 for cable connection.
- Are SCSI devices properly configured?
  - When the server has external SCSI devices connected, hard disk drive settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.
- Is cable length exceeded?
  - Refer to the manual that comes with the SCSI device for details.
- Are the optional SCSI controllers properly configured?
  - Use the BIOS Setup utility for proper configuration of SCSI devices connected to the SCSI connector on the mother board. When the server has an optional SCSI controller installed and SCSI devices connected to it, use the BIOS Setup utility that comes with the optional SCSI controller for proper configuration. See the manual that comes with the optional SCSI controller for details.

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## Problems with Windows Server 2003 x64 Editions

**There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.**

Source: DCOM  
Category: Error  
Event ID: 10016  
Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user {NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.  
This security permission can be modified using the component Services administrative tool.

→ It is not a problem in operating the system.

**There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.**

Event Source: Service Control Manager  
Event Type: Error  
Event ID: 7011  
Description: Timeout (30000 milliseconds) waiting for a transaction response from the IMAP4Svc service.

→ When this event is not registered by rebooting the system, it is not a problem in operating the system.



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## Problems with Windows Server 2003 R2

There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2.

Source: IPMIDRV

Type: Error

Event ID: 1001

Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver. If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

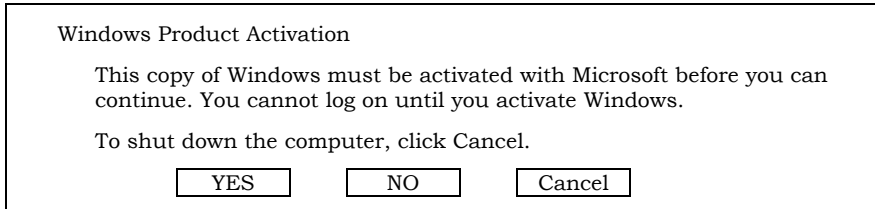
[NEC Express5800 Web Site]

[http://www.nec.co.jp/express/download/W2K3\\_R2](http://www.nec.co.jp/express/download/W2K3_R2)

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## Problems with Windows Server 2003

The system displays the message below and fails to log on.

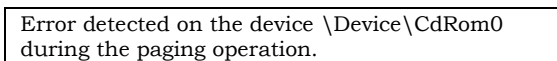


→ In Windows Server 2003, the above message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.

**Cannot install the operating system correctly.**

- Did you confirm the notes on installing the operating system?  
→ See Chapter 6.

**During installation, the following warning is registered in the System Log of the Event Viewer:**



→ There is no problem on this issue.

**Fail to start the OS:**

- Is the NEC EXPRESSBUILDER CD-ROM in the DVD-ROM drive?  
→ Take out the NEC EXPRESSBUILDER CD-ROM and restart the server.
- Is the OS broken?  
→ Use recovery process to recover the system.

**The OS presents unstable operation:**

- Did you update the system?  
→ Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER CD-ROM to update the system. (See Chapter 6.)

**The system does not restart automatically when a stop error occurs, though the system is adjusted to automatically restarting:**

→ When the system does not restart automatically, restart it manually.

**The system restarts automatically when a stop error occurs, though the system is NOT adjusted to automatically restarting:**

- There is no problem about this issue.  
Check the System Event Log to confirm that STOP error occurred.

**Cannot turn the power OFF at the blue screen:**

- If you want to turn off the power at the blue screen, execute forced shutdown (forced shutdown: continue to press POWER/SLEEP switch for 4 seconds). The power will not be turned off if you press the switch for less than 3 seconds.

**The PXE boot (network boot) fails or the server is not found on the network:**

- Is the cable connected properly?
  - Connect the proper cable to the network port on the rear of the Express server. In addition, make sure that the used cable conforms to the network interface standard.
- Is BIOS configuration correct?
  - The internal LAN controller may be disabled with the BIOS Setup utility of the server. Check the setting with the BIOS setup utility.
- Have the protocol and service already configured?
  - Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.
- Is the transfer speed correct?
  - Open the network property dialog box in control panel to specify the link speed and duplex value the same as the value specified for HUB.

**The Telnet Service is not installed.**

- Adjust the computer name to 14 characters or less, and then install the Telnet Service according to <How to install the Telnet Service>.

## &lt;How to install the Telnet Service&gt;

1. Click [Run] on Start menu.
2. Type "tlntsvr /service" in the [Open] box, and click [OK].
3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.

- \* When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

### Wake-On-LAN Function

The Remote Power ON/OFF function (Wake-On-LAN) is disabled immediately after the AC power is turned on.

Start Windows 2003 once, perform the steps below, and then shut down the system. After restart, the Remote Power On/Off function is enabled unless the AC power is turned off.

1. Select [Start] - [Administrative Tools] - [Computer Management].
2. Select [Device Manager] - [Network Adapter], and double-click [Intel(R) PRO/1000 EB Network Connection with I/O Acceleration #n]. Set as follows in the [Detail] tab.

PME: [ON]

Wake On: [Magic Packet]

## Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER CD-ROM, check the following:

- Did you set the NEC EXPRESSBUILDER during POST and restart the server?
  - If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.
- Is BIOS configuration correct?
  - The boot device order may be specified with the BIOS SETUP utility of the server. Use the BIOS Setup utility to change the boot device order to boot the system from the DVD-ROM drive first.
    - <Menu to check: [Boot]>
- Is an error message appeared?
  - When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears. After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
Hard disk access error	The hard disk drive is not connected or it is failed. Check whether the hard disk drive is correctly connected.
NvRAM access error	An access to the nonvolatile memory (NvRAM) is not acceptable.
The system-specific information does not exist on the baseboard. Please restore the backup data or write the data by using [System Information Management] of the Off-line Maintenance Utility. Only the authorized personnel are allowed to do this operation.	The system-specific information can't be acquired in the mother board exchange and so on.

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## Problems with Express Setup

### Express Setup can not be used

- Express Setup does not support the installation of Microsoft Windows Server 2003 x64 Editions.  
If you want to perform re-setup, see Appendix D and perform "Manual Setup".

### Following message appeared when you tried to install Express Setup to the hard disk drive that has smaller capacity than the specified partition size:

The specified partition size has exceeded the capacity of the hard disk.  
The setup created the partition at the maximum size that can be reserved on the hard disk.  
Setup will continue the process.  
OK

- It is not an abnormal condition. Press **Enter** to continue the installation.

### The message can not be displayed correctly when copying the files from CD-ROM or checking CD-ROM:

- Press **R**. When the message appears again even if you press **R**, restart the Express Setup from the beginning. In case the same result occurred after the restart of installation, contact Maintenance Service Company and ask them to check the DVD-ROM drive.

### Express Setup terminated and asks to input setup information.

- There are some errors on the specified setup information.  
Follow the instruction to input the correct value. It is not necessary to cancel the installation.

### [OK] appears on the [Role of Computer] screen.

- If you click [OK] here, the setup will select the default value of Express Setup for the later specification to continue the process.

<The Default Value for Windows Server 2003>

The specification of network protocol

Protocol :	TCP/IP[DHCP Specified]
Service :	Select sharing Microsoft network files and printer.
Client :	Microsoft network client.
Component :	SNMP
Application :	NEC ESMPRO Agent MegaRAID Storage Manager (When disk array system) Power Console Plus (When disk array system)

**[OK] does not appear on [Role of Computer] screen.**

- The [OK] does not appear if the Setup File that has already been created is loaded.
- [OK] appears only when you first entered the [Role of Computer] screen. Once you go to the next screen from [Role of Computer], the [OK] will not appear even if you enter [Back] to go back to the [Role of Computer] screen.

**Select [Use Existing Partition] at [System Partition], but the OS is installed in the whole area of the disk.**

- Is there any other partition than the partition to re-use (excluding maintenance area)? If the partition other than the one to re-use does not exist, the setup will reserve the whole area of the disk to install operating system.

**Specified to join the Domain, but the system is installed as Workgroup.**

- When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

**Entered the incorrect Product ID/CD key.**

- Even if you entered the incorrect Product ID/CD key, Express Setup will start. However, the setup will stop and asks you to re-enter the correct value. Also in this case, input request will occur when rebooting after GUI setup completed during Express Setup. If these 2 inputs are done correctly, there is no problem on Windows setup.

**Unable to specify the details of Network adapter.**

- In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows.

**Connected more than two Network adapter and specified different protocol for each adapter, but all the protocols are specified on either adapter.**

- It's a design. Each adapter is specified so that all the installed protocols can be used. The value that can not be specified during Express Setup will all be specified by default value.

**When more than two Network adapter are specified, the detailed specification of TCP/IP protocol are all set to use DHCP.**

- When more than two Network adapter are specified, the detailed specification of the protocol may all be set by default value. Re-specify the details from Control Panel.

**Not more than two Network adapter is connected, but the detailed specification of the protocol are all set by default.(e.g. Specified IP Address on TCP/IP, but DHCP is specified)**

- Are you specifying more than two protocols?  
In this case, the situation will be the same as connecting more than two Network adapter, so the detailed specification of the protocol are all set by default.  
Re-specify the details from Control Panel after starting the OS.



---

## Problems with Disk Array Configuration

Check the following if the server configuring a disk array does not operate properly or a utility does not operate correctly. If a relevant item is found, follow the processing method.

### Fail to install the OS:

- Is the disk array controller configured?
  - Provide proper configuration for the disk array controller by using the LSI Logic Software RAID Setup Utility.

### Fail to start the OS:

- Is the BIOS of the disk array controller changed?
  - Set the BIOS correctly by using the LSI Logic Software RAID Setup Utility.
- Does POST recognize the disk array controller?
  - After making sure that the disk array controller is connected correctly, then power on the server.  
  
If the disk array controller is not recognized correctly despite correct connection, the disk array controller may be failed. Contact your service representative.

### Rebuild fails:

- Is the capacity of the hard disk drive to be rebuilt sufficient?
  - The hard disk drive to be rebuilt should have the same capacity of the failed hard disk drive.
- Is RAID0 configured?
  - RAID0 has no data redundancy, therefore, Rebuild is disabled in the RAID0 configuration. Replace the failed hard disk drive, create the configuration data again and initialize the hard disk drives. Then recover the data by using backup data.

### Auto rebuild fails:

- Was a sufficient time taken for hot swap of hard disk drives?
  - To allow the auto rebuild to operate correctly, it should take 90 seconds or longer for the interval between the removal of the failed hard disk drive and the installation of a new hard disk drive.
- Is configuration correct?
  - Check the setting of auto rebuild by using the LSI Logic Software RAID Setup Utility. <Menus to check: Top menu - [Objects] - [Adapter] - [Auto Rebuild]>

### A hard disk drive fails:

Contact your service representative.

---

## Problems with Master Control Menu

### The master control menu fails to appear:

- Is your system Windows NT 4.0 or later, or Windows 95 or later?
  - The CD-ROM Autorun feature is supported by Windows NT 4.0 and Windows 95. The older versions do not automatically start from the CD-ROM.
- Is **Shift** pressed?
  - Setting the CD-ROM with **Shift** pressed down cancels the Autorun feature.
- Is the system in the proper state?
  - The menu may not appear depending on the system registry setting or the timing to set the CD-ROM. In such a case, start the Explorer and run \MC\1ST.EXE in the CD-ROM.

---

## Collecting Event Log

This section describes on how to collect the log of various events that occurred on the server.

---

**IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

---

1. Click [Management Tool] → [Event Viewer] from the Control Panel.
2. Select the type of the log to collect.

On [Application Log], the events related to the running application is archived. On [Security Log], the events related to the security is archived. On [System Log], the events occurred at the item which configures Windows system is archived.
3. Click [Save as...] in the [Run] menu.
4. Input the file name of archived log in the [File Name] box.
5. Select the type of the log file you want to save in the [File Type] list box and click [OK].

For more information, refer to Windows Online Help.

---

## Collect Configuration Information

This section describes on how to collect the information on hardware configuration and inside specification.

In order to collect information, "Diagnostic Program" is used.

---

**IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

---

1. Point to [Settings] in Start menu, and click [Control Panel].  
The [Control Panel] dialog box appears.
2. Double-click [Management Tool], and double-click [Computer Management].  
The [Computer Management] dialog box appears.
3. Click [System Tool] → [System Information].
4. Click [Save as System Information File] in the [Operation] menu.
5. Input the file name to save in the [File Name] box.
6. Click [Save].

---

## Collecting Dr. Watson Diagnostic Information

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

---

## Memory Dump

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like. For more information, refer to "Specifying Memory Dump (Debug Information (refer to Chapter 5 for detail))".

---

**IMPORTANT:**

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
  - Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.
-

## OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

---

### IMPORTANT:

- The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER CD-ROM and the Off-line Maintenance Utility Bootable FD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
  - Starting the Off-line Maintenance Utility disables any access from a client to the server.
- 

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### Starting the Off-line Maintenance Utility

The Off-line Maintenance Utility may be started in the following ways.

- From the CD-ROM  
Set the NEC EXPRESSBUILDER CD-ROM in the DVD-ROM drive and reboot the system.  
After the menu is displayed on the screen, select "Tools" - "Off-line Maintenance Utility".  
The Off-line Maintenance Utility program starts from the CD-ROM.
- From the floppy disk (by using an external floppy disk drive)  
Set the Off-line Maintenance Utility Bootable FD in the floppy disk drive and reboot the system.  
The Off-line Maintenance Utility program starts from the boot disk.  
The Off-line Maintenance Utility Bootable FD is created by selecting "Tools" - "Create Support FD" on the NEC EXPRESSBUILDER.
- Manual start (by pressing **F4**)  
When the Off-line Maintenance Utility is installed, press **F4** while the start-up screen of the server is on screen. The Off-line Maintenance Utility starts from the hard disk drive.

---

## Features of Off-line Maintenance Utility

The Off-line Maintenance Utility provides the following features. (Available features vary depending on the way you started the Off-line Maintenance Utility.)

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**IMPORTANT:** See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.

---

- **IPMI Information Viewer**  
Provides the functions to view the system event log (SEL), sensor data record (SDR), and field replaceable unit (FRU) and to make a backup copy of them.  
  
Using this feature, you can find system errors and events to determine a maintenance part.
- **BIOS Setup Viewer**  
Provides the functions to export the current configuration data defined with the SETUP utility to a text file.
- **System Information Viewer**  
Provides the functions to view information on the processor and the BIOS and export it to a text file.
- **System Information Management**  
Provides the function to make a back-up copy of your data.  
  
Without the backup data, the system-specific information and/or configuration may not be restored.  
  
Only the authorized personnel is allowed to restore the backup data.
- **Start of Utilities**  
With the NEC EXPRESSBUILDER, you can start the following utilities installed in the maintenance partition.
  - System Management
  - System Diagnostics
  - Maintenance Partition Update

## RESETTING THE SERVER

If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.

---

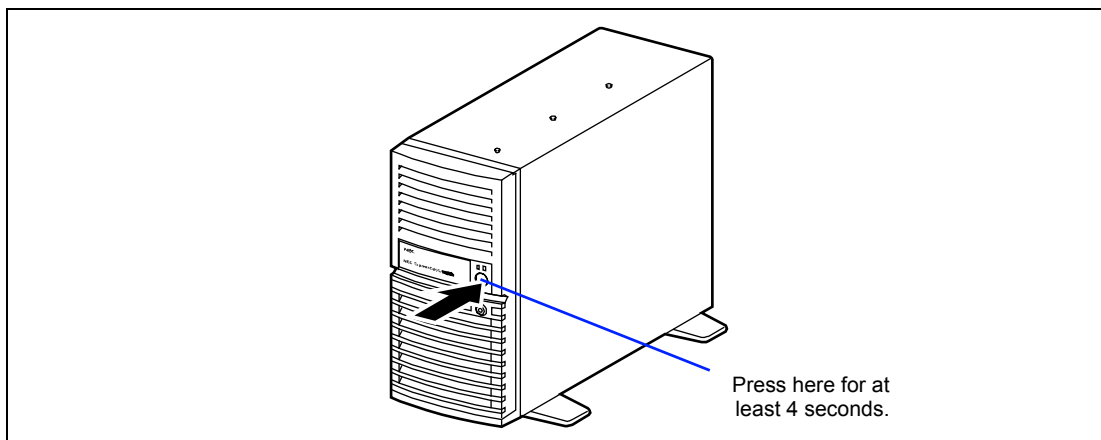
**IMPORTANT:** Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

---

## FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER/SLEEP switch does not turn off the server, or resetting does not work.

Press and hold the POWER/SLEEP switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 10 seconds after turning off the power (forced shutdown).



---

### IMPORTANT:

- If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.
  - If the processor is heated excessively, the circuit for protecting expensive components is started. If so, the POWER/SLEEP switch cannot be used to control the power because the system is entered into the reset status. Pull out the power cord and turn off the power. After a while, check the operation environment (including the ambient temperature). Then connect the power cord and turn on the power. It may be necessary to leave the power-off status in the period until the processor is cooled sufficiently (about five minutes in normal).
-

# Chapter 9

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## Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for install or removing such optional devices, and notes on using them.



---



### **IMPORTANT:**

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for installing or removing any optional devices.
  - Use the options and cables approved by NEC. You will be charged by any repair of a malfunction, fault, or defect occurring in a server in which one or more component not approved by NEC are used.
  - Always update the system if the hardware configuration is changed (See Chapter 5 for details).
-

## SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

 <b>WARNING</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Do not disassemble, repair, or alter the server.</li><li>■ Do not remove the lithium battery.</li><li>■ Disconnect the power plug before working with the server.</li></ul>

 <b>CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.</p> <ul style="list-style-type: none"><li>■ Avoid installation in extreme temperature conditions.</li><li>■ Make sure to complete board installation.</li><li>■ Protect the unused connectors with the protective cap.</li><li>■ Never attempt to lift the server only by yourself.</li></ul>



## STATIC PRECAUTIONS

An electrostatic discharge (ESD) can damage disk drives, option boards, and other components. Electronic device can be easily damaged by static electricity. To prevent damage, observe the following information.

- Wear a wrist strap (an arm belt or anti-static glove).

Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.

- Work with the server on the anti-static or concrete floor.

- When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.

- Use a work table.

Place the server on an anti-static mat to work with it.

- Clothe

- Do not wear a wool or synthetic cloth to work with the server.

- Wear anti-static shoes to work with the server.

- Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.

- Handling of components

- Keep any component in an anti-static bag until you actually install it to the server.

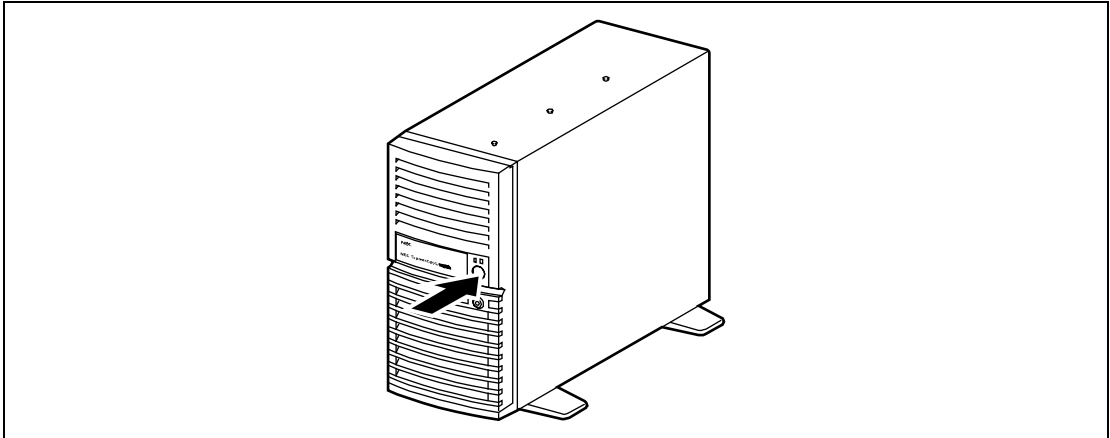
- Hold a component by its edge to avoid touching any terminals or components.

- To store or carry any component, place it in an anti-static bag.

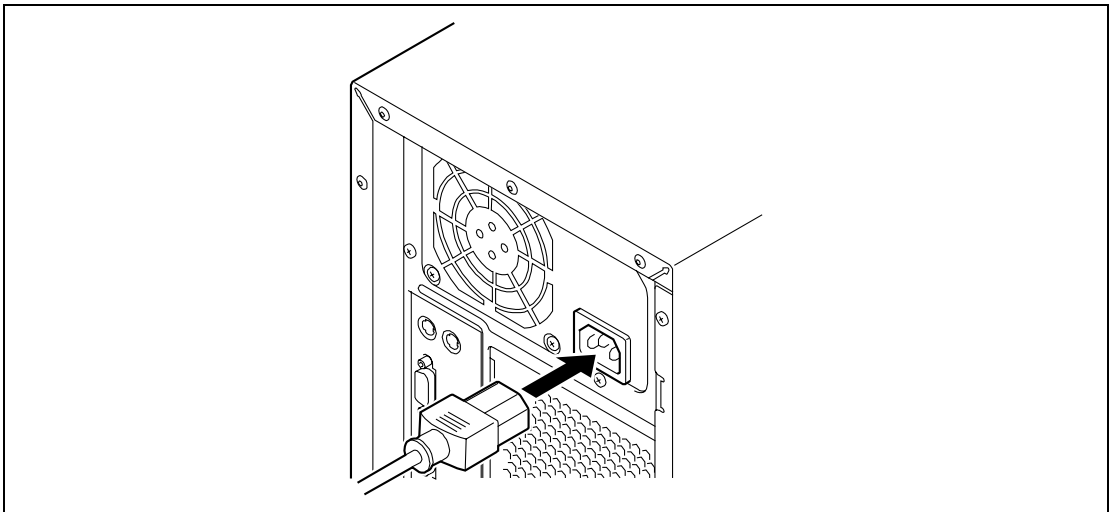
## PREPARING FOR INSTALLATION AND REMOVAL

Prepare the installation or removal of a component depending on the following procedure:

1. Shut down the OS or press the POWER/SLEEP switch to turn off the power of the server. (The POWER/SLEEP lamp goes off.)



2. Pull out the power cord from the AC inlet on the server.



3. Remove all the cables connected to the server on the rear panel.

## INSTALLATION OR REMOVAL PROCEDURE

Install or remove a component from the server in the following procedure.

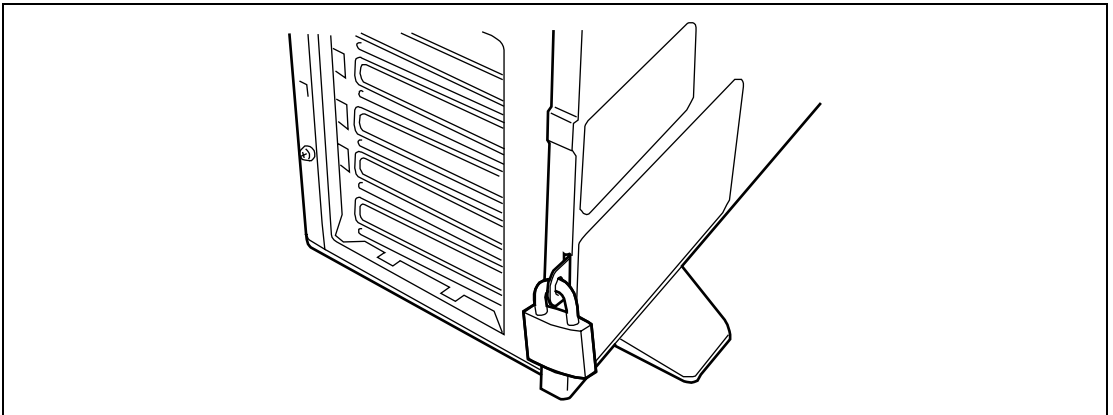
### Left Side Cover

The left side cover should be removed to access to built-in devices in the server.

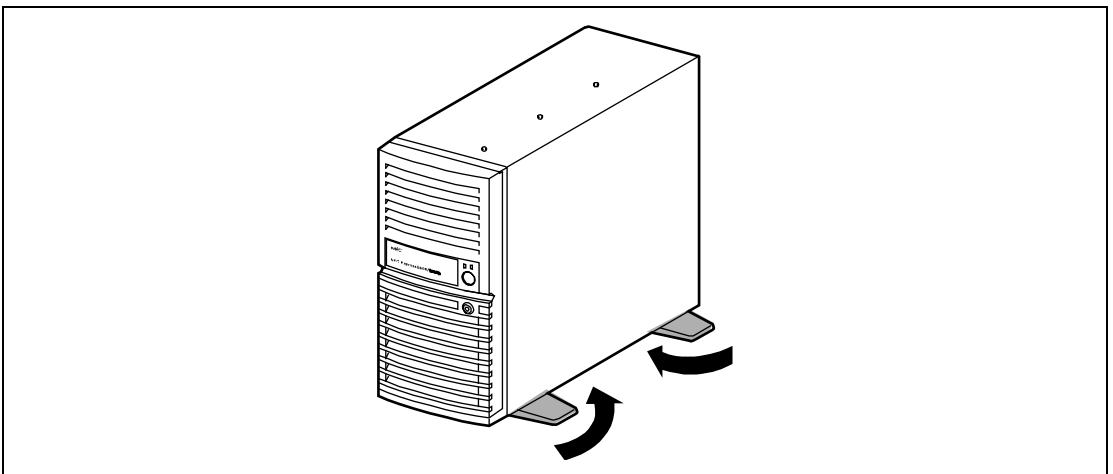
#### Removal

Remove the left side cover in the following procedure.

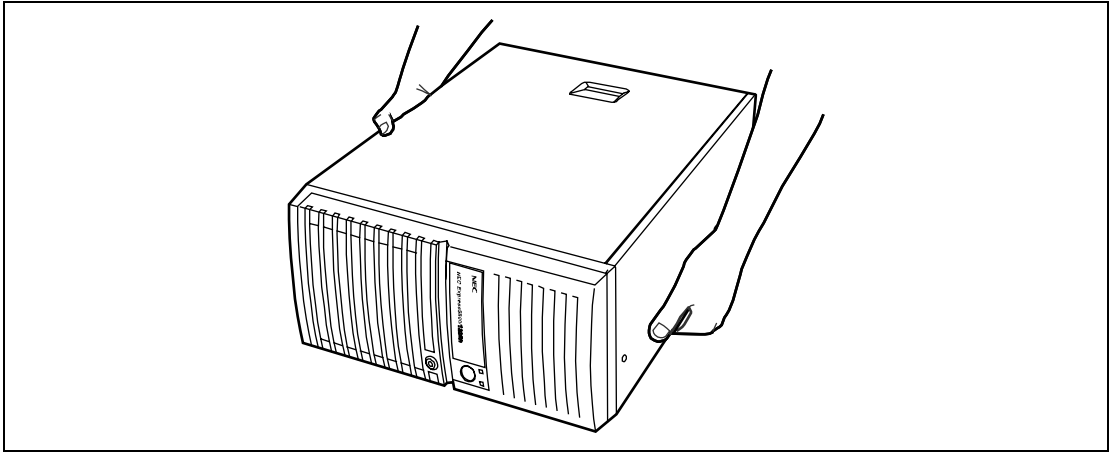
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the left side cover if required.



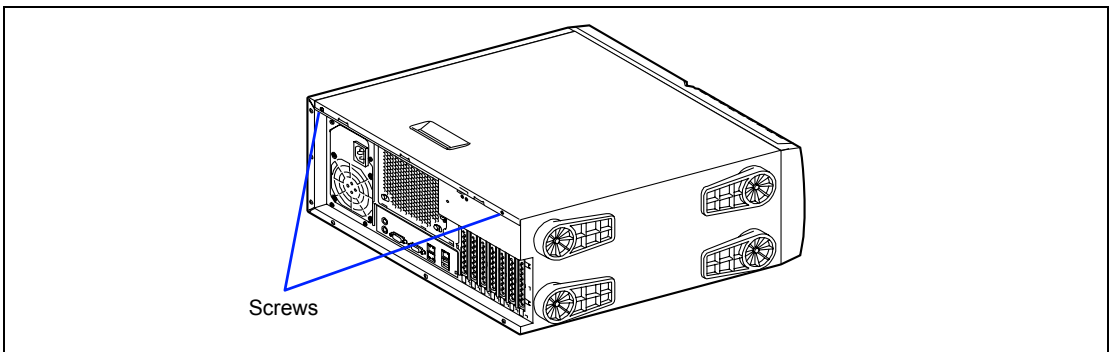
3. Fold the four stabilizers at the bottom of the server toward inside.



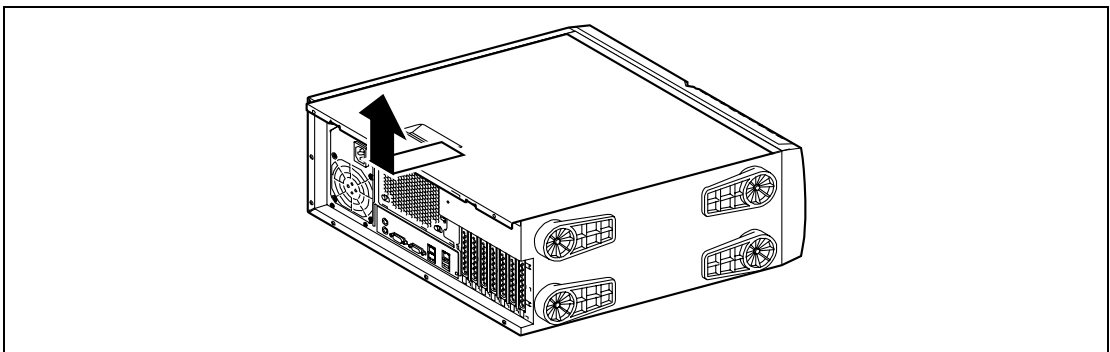
4. Lay the server slowly and gently so that its right cover faces the floor.



5. Remove the two screws from the rear of the server.

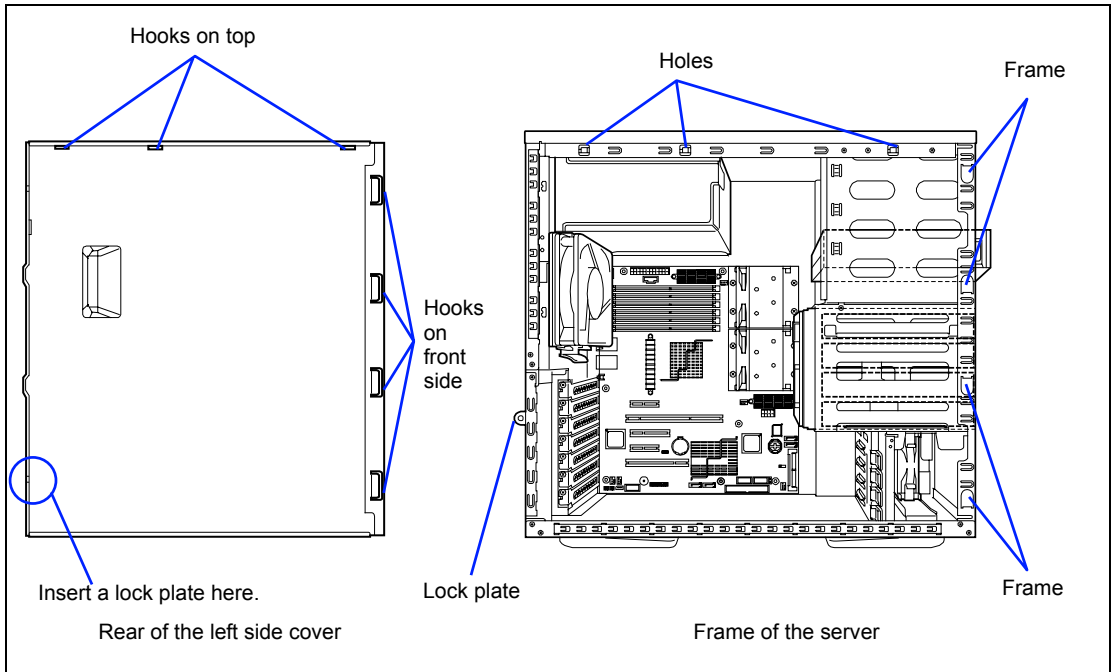


6. Hold the left side cover securely to remove it.

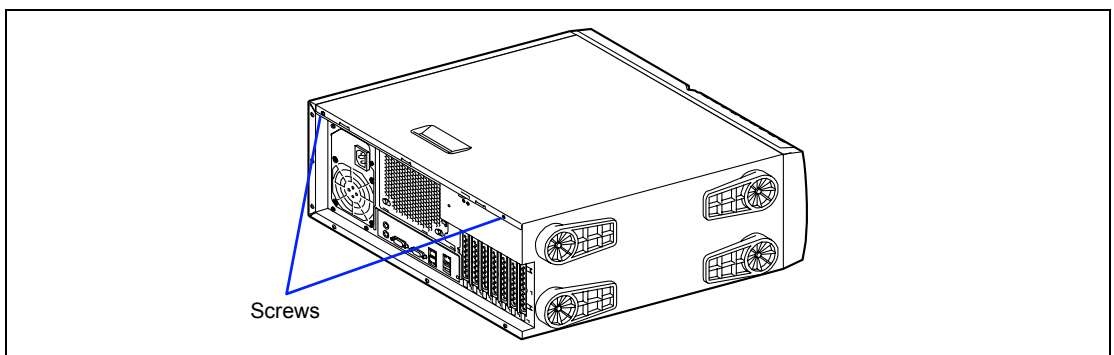


### Installation

The side cover can be installed in the reverse procedure of the removal. Make sure that the hooks on the side cover are inserted into the frame holes of the server certainly. When you install the cover by sliding the cover toward the front of the server, also make sure that the hooks on the front side are engaged with the frame of the server. Otherwise, you will fail to install the cover securely.



Finally, install the left side cover and secure it with two screws removed in step 5 of removal procedure.



---

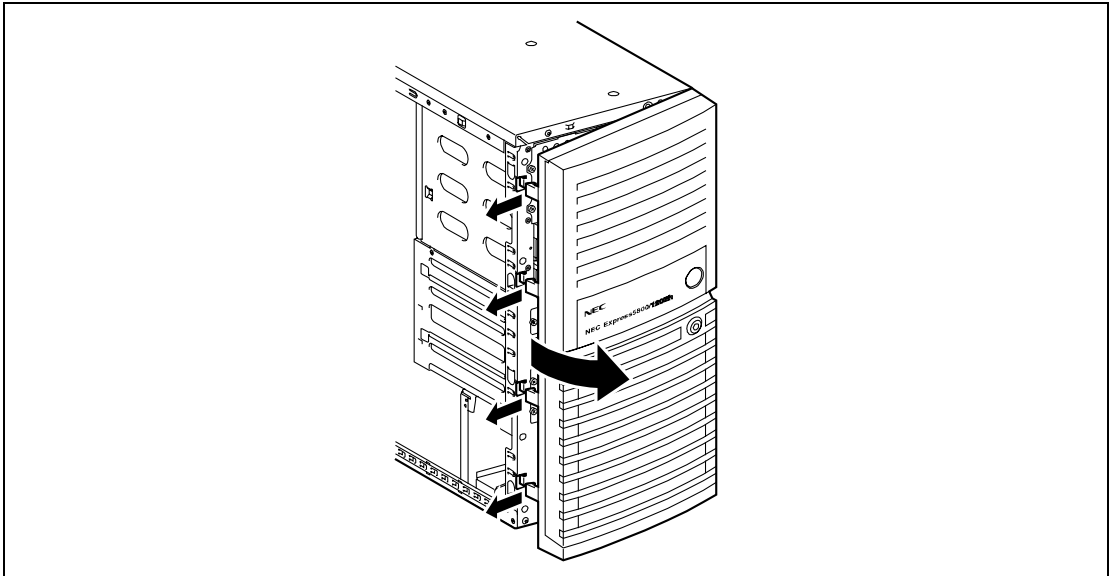
## Front Mask

The front mask must be removed to install or remove the hard disk drive and 5.25-inch device.

### Removal

Follow the procedure below to remove the front mask.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the left side cover as described earlier in this chapter.
3. Pull the release tabs (4) at the left end of the front mask toward you so that the tabs are removed from the frame of the server.

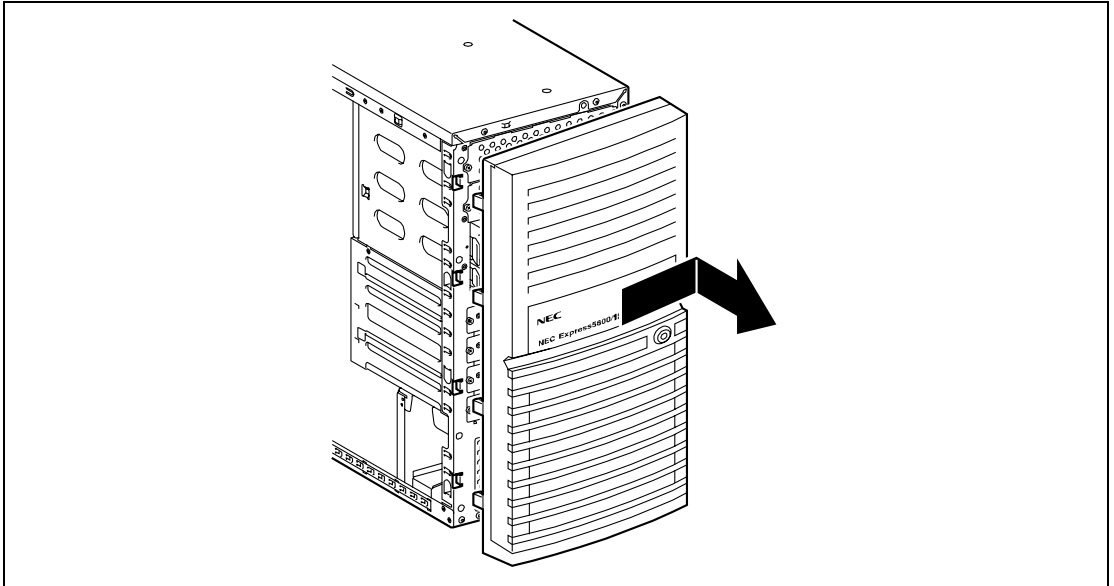


---

**IMPORTANT:** If the tabs are pulled out toward you excessively, the hooks fixing the right end of the front mask will be damaged. Only pull out the tabs a little.

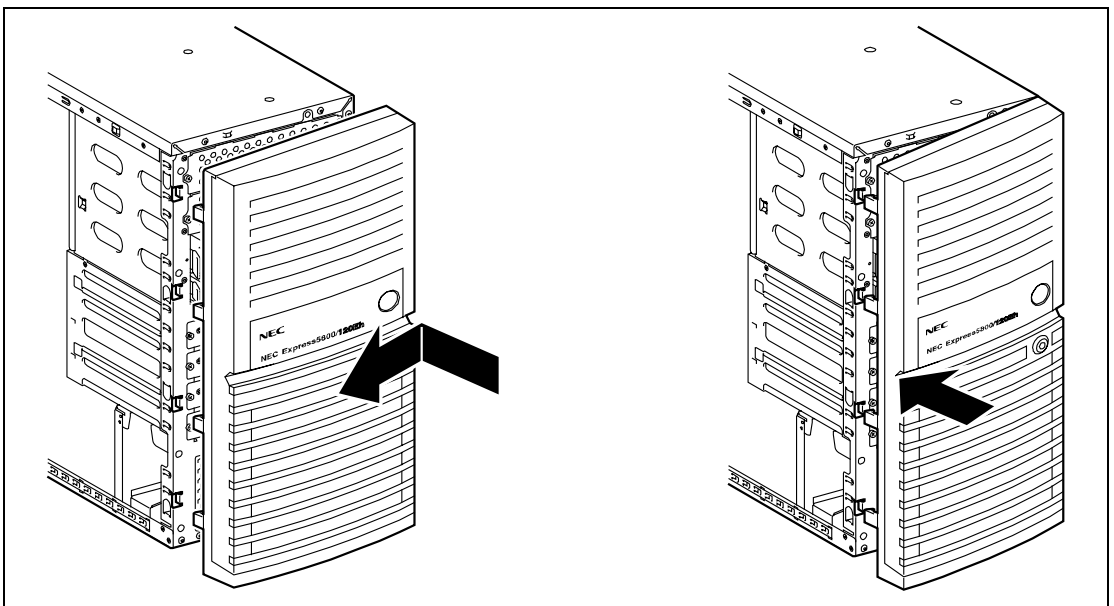
---

4. Remove the front mask to the right to release the tabs on the front mask from the chassis.



## Installation

The front mask can be installed in the reverse order of the removal. Insert the four tabs at the right end of the front mask into the holes on the front of the server, push the left end of the front mask to the server, and lock the mask with the release tabs.



---

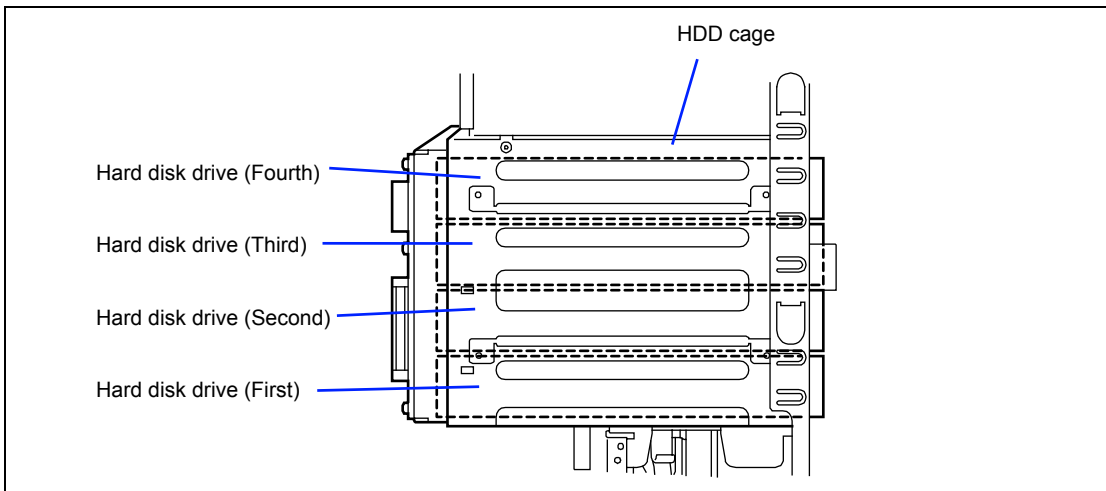
### 3.5-inch Hard Disk Drive (SAS Model)

The hard disk drive bay may contain up to four hard disk drives.

---

**IMPORTANT:**

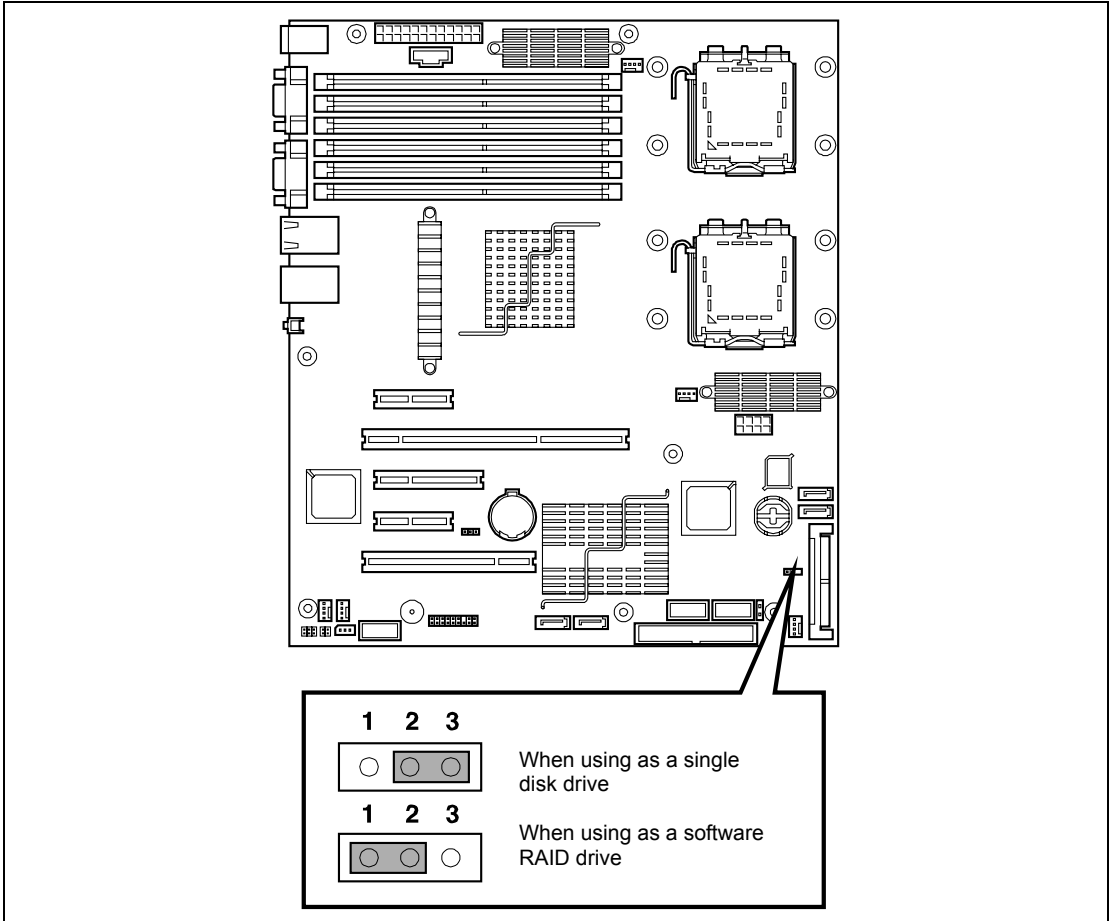
- Do not use any hard disk drive that is not authorized by NEC. Installing a third-party's hard drive may cause a failure in the server as well as the hard disk drive. Repair of any failure or damage in the server caused by such a hard disk drive will be charged.
  - The SAS hard disk drives installed can be used either as a single disk or a Software RAID drive configured by jumper switch setting on mother board.
- 





## Setting SAS Software

Set the SAS SWRAID jumper switch as shown in the figure below.



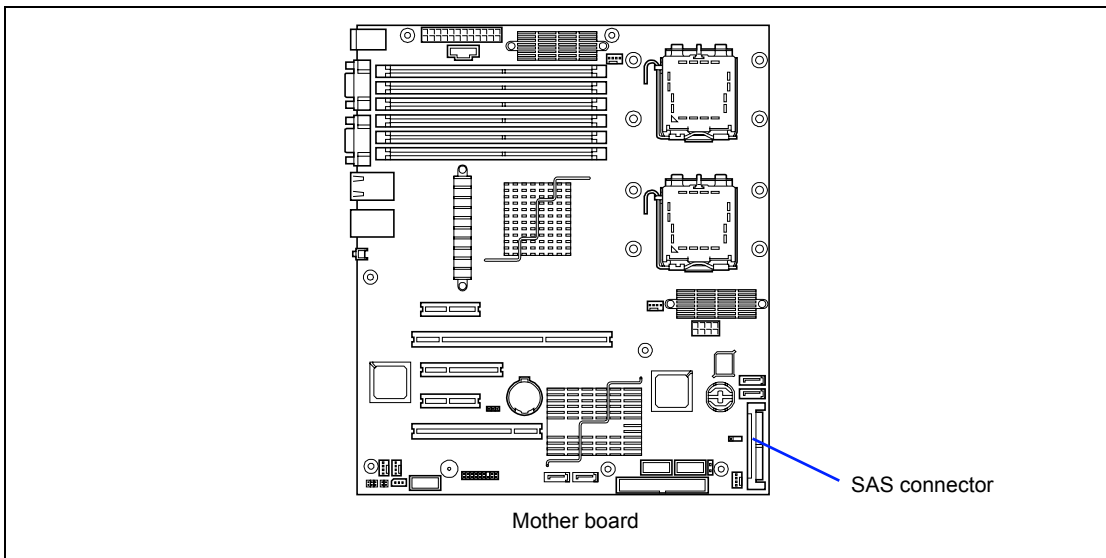
Use SETUP utility to configure the Software RAID (see Chapter 4).

## Installation

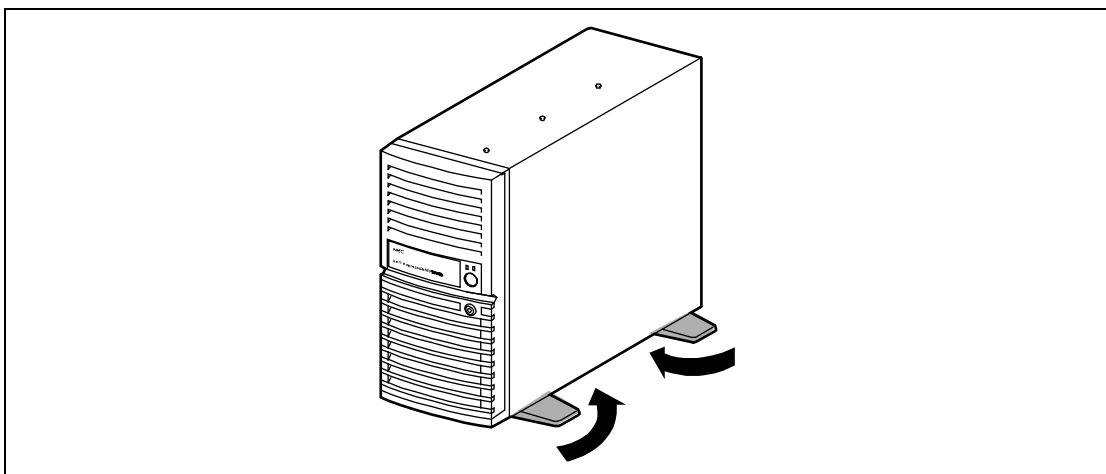
Follow the procedure as described below to install 3.5-inch hard disk drives.

1. Configure the operation mode of hard disk drives according to the manual supplied with the hard disk drive.

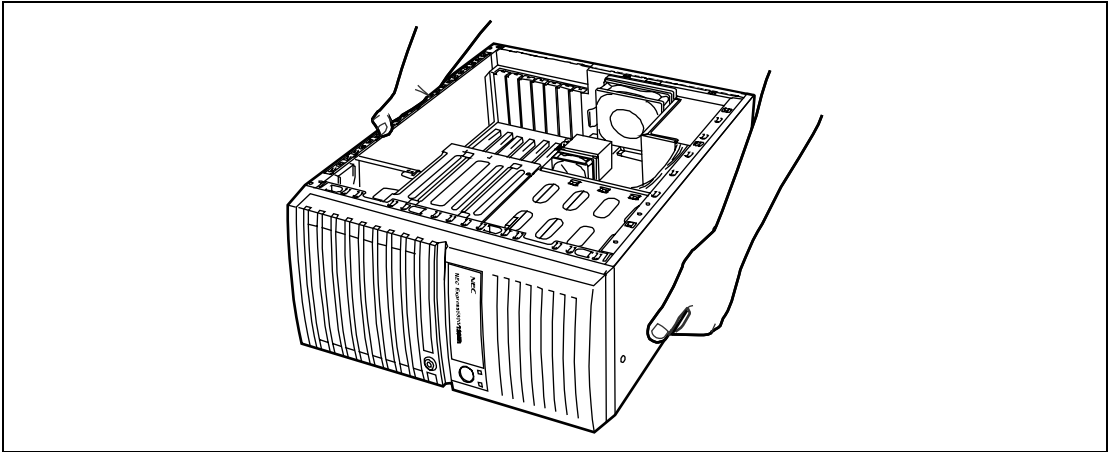
Hard Disk Drive	Bay to Install
First hard disk drive	Bottom
Second hard disk drive	Lower middle
Third hard disk drive	Upper middle
Fourth hard disk drive	Top



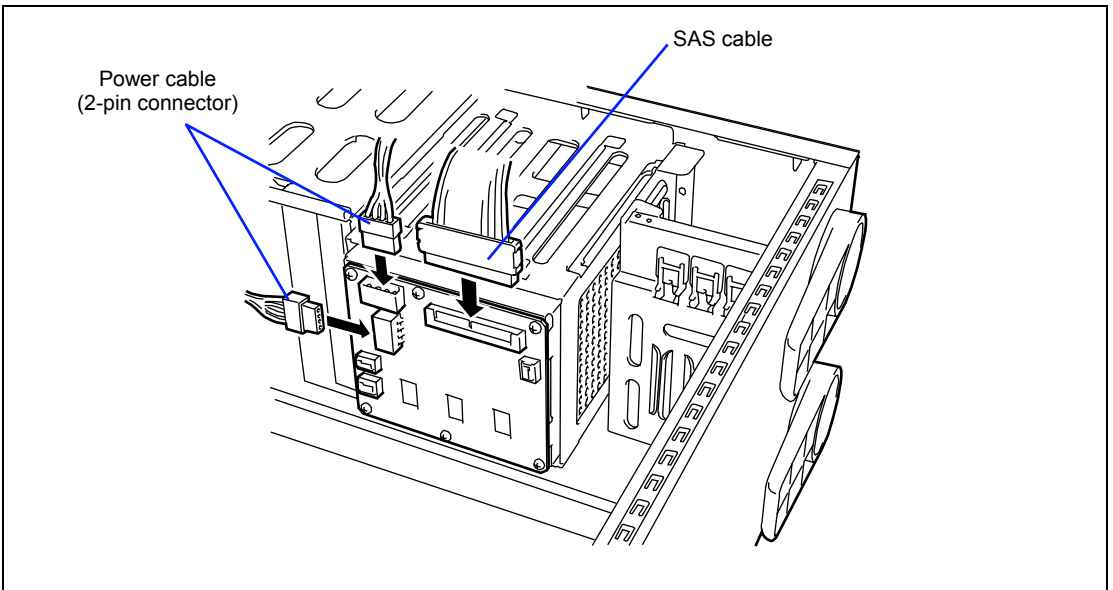
2. See the section "Preparing for Installation and Removal" described earlier to prepare.
3. Fold the four stabilizers at the bottom of the server toward inside.



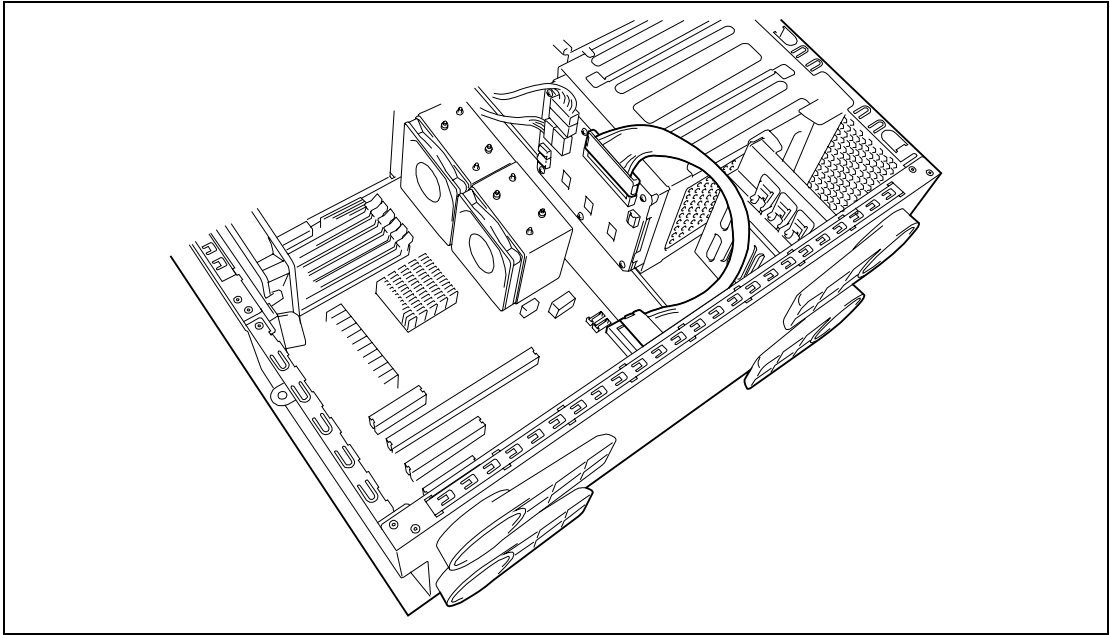
4. Lay the server so that its right cover faces the floor.  
Lay the server slowly and gently.



5. Connect the SAS cable and power cable as shown in the figure below.



6. Connect the SAS cable to the SAS connector.



7. Install the left side cover.
8. Raise the server and open the front mask.

**9.** Install the hot-plug SAS hard disk drives in the HDD cage.

Fully open the lever of the hard disk drive and insert the drive into the HDD cage until it hits the depth of HDD cage.

After the hard disk drive is fully inserted into the cage, close the lever to fix the drive. (A click occurs when it is locked.)

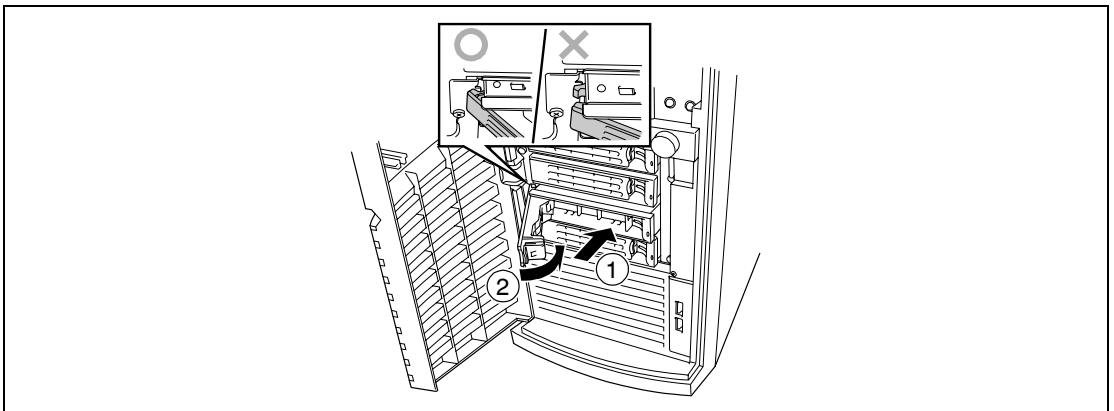
---

**IMPORTANT:** Use the hard disk drive that is authorized by NEC.  
Consult with your service representative for available hard disk drive.

---

**NOTE:** Make sure of the orientation of the hard disk drive tray before inserting the drive. See the figure below. Also make sure that the hooks of the hard disk drive are engaged with the frame of the HDD cage.

---



---

**NOTE:** The slots of the HDD cage contain trays without hard disk drive. To install the hard disk drive, first remove the tray according to the removal procedure described later. Install a hard disk drive tray to the vacant slot of the cage to keep the cooling effect of the server.

---

To remove the hard disk drive carrier, push the green tab on the lever and open the lever toward you until it stops. Then, the hard disk drive tray is unlocked. Securely hold the tray and the lever and insert the tray straight into the HDD cage.

---

**IMPORTANT:** Removing more than one hard disk drive while the server is powered on destroys the logical disk. Remove or replace the hard disk drive one by one.

---

**10.** Close the front mask.

## Removal

Follow the procedure as described below to remove 3.5-inch hard disk drives.

---

### **IMPORTANT:** About data on the hard disk drive

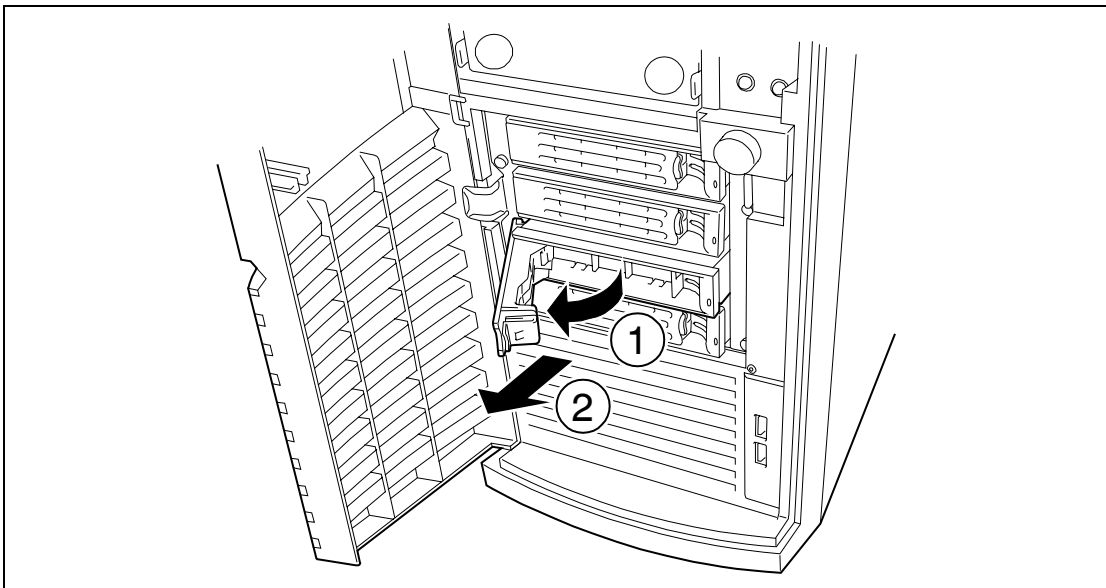
Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk drive to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

---

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Open the front mask.
3. Follow Step 10 of the installation procedure to remove the hard disk drive.



4. Close the front mask.

---

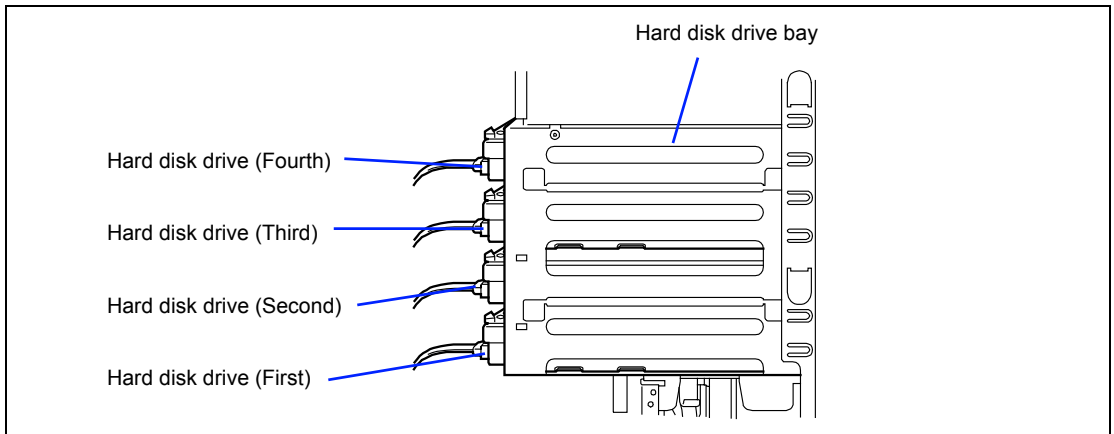
## 3.5-inch Hard Disk Drive (SATA Model)

The hard disk drive bay may contain up to four hard disk drives.

---

**IMPORTANT:** Do not use any hard disk drive that is not authorized by NEC. Installing a third-party's hard drive may cause a failure in the server as well as the hard disk drive. Repair of any failure or damage in the server caused by such a hard disk drive will be charged.

---



## Setting SATA Software RAID

Run the system BIOS SETUP utility, select [Peripheral Configuration] - [SATA Controller Mode Option], and change parameter to [Enhanced] from factory-set [Compatible]. When the [SATA RAID] menu appears, select [Enabled] to use the SATA Software RAID feature.

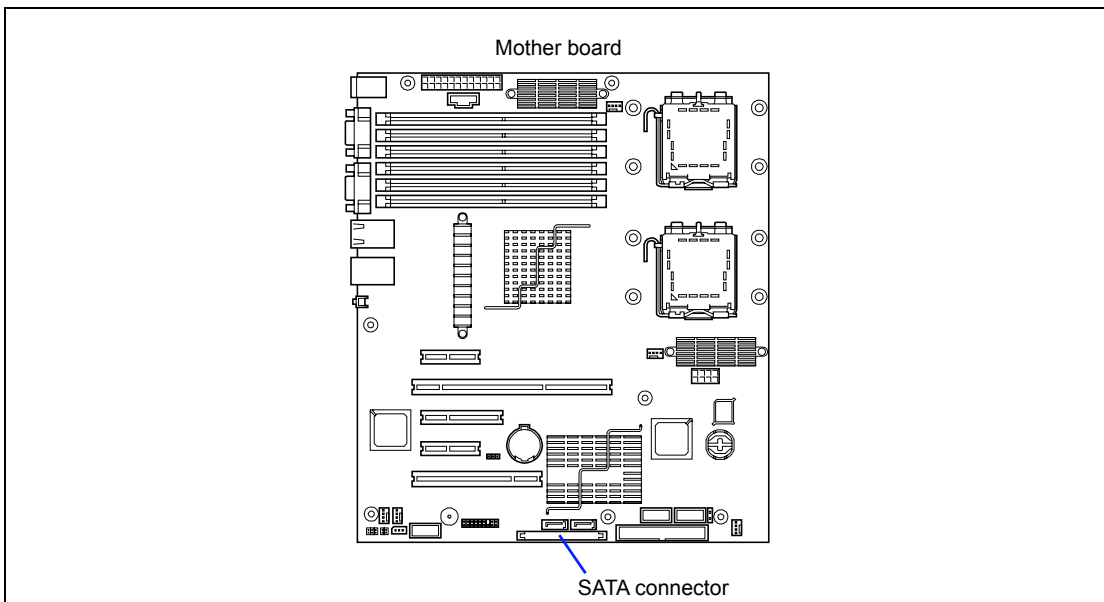
After restarting the system, POST displays the message prompting you to launch the Software RAID Utility. Run the utility according to the on-screen message. For RAID setting, see Chapter 4 for details.

## Installation

Follow the procedure as described below to install 3.5-inch hard disk drives.

1. Configure the operation mode of hard disk drives according to the manual supplied with the hard disk drive.

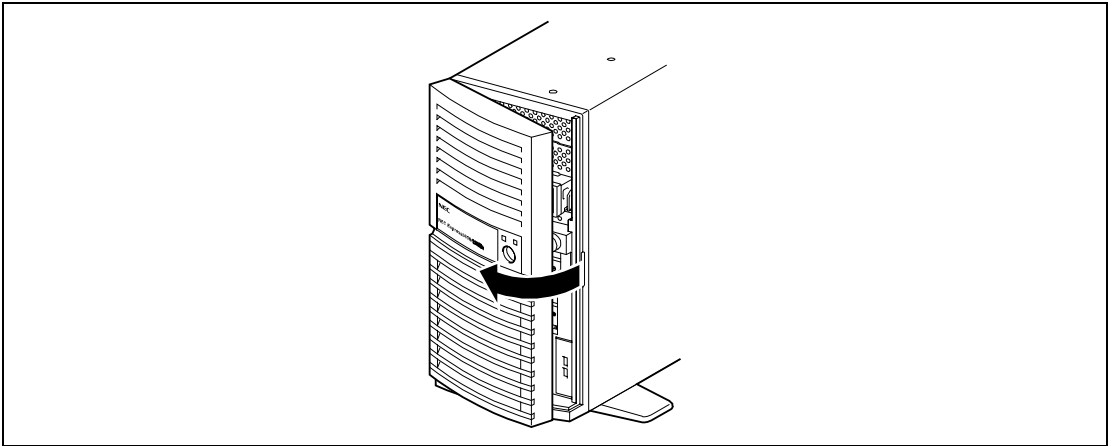
Hard Disk Drive	Bay to Install
First hard disk drive	Bottom
Second hard disk drive	Lower middle
Third hard disk drive	Upper middle
Fourth hard disk drive	Top



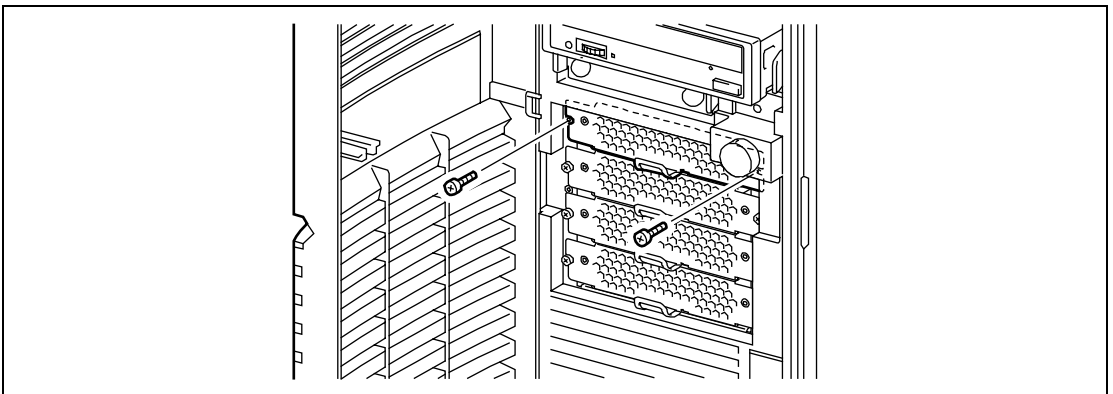
2. See the section "Preparing for Installation and Removal" described earlier to prepare.



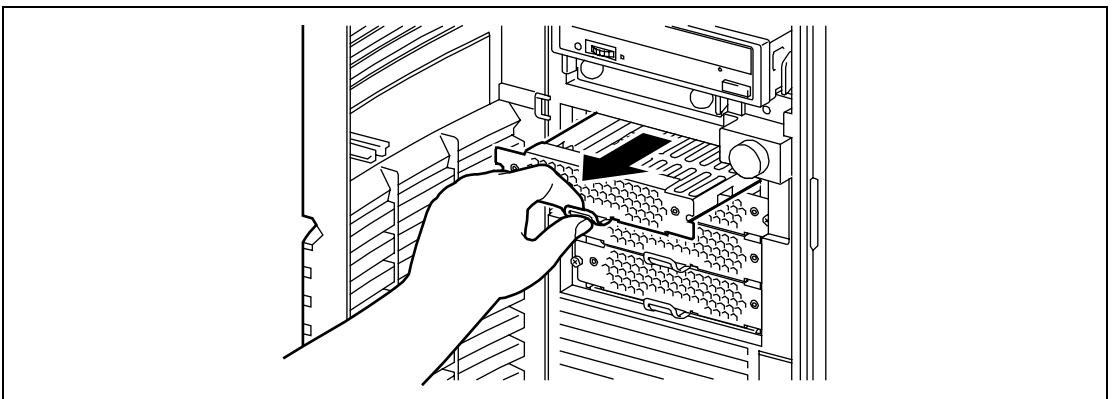
3. Remove the left side cover according to the section "Front Mask" described earlier in this chapter and open the front mask.



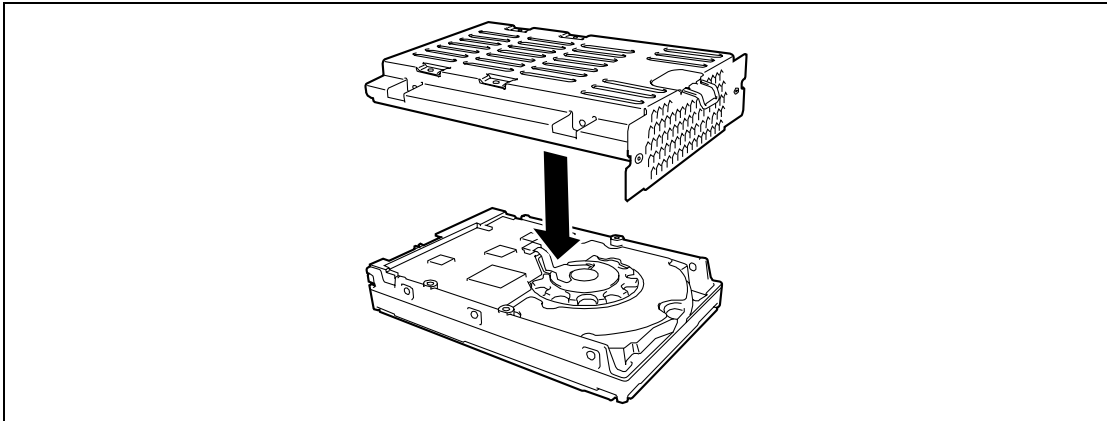
4. Disconnect the interface cable and power cord from the hard disk drive if connected.
5. Remove two screws on the front panel securing the hard disk drive carrier.



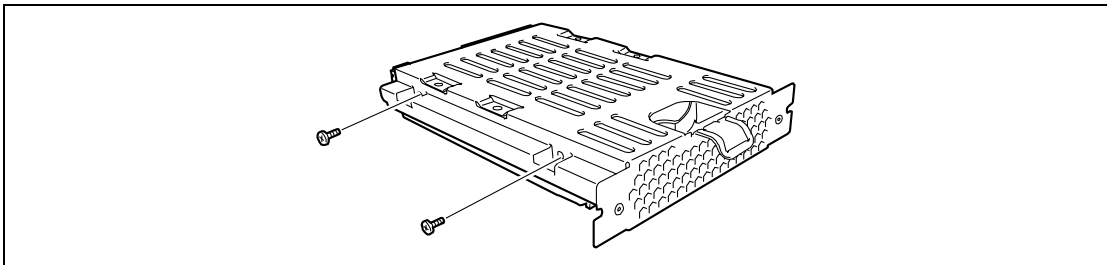
6. Hold the lever and pull out the hard disk drive carrier.



7. Place the removed hard disk drive on a flat and rigid place, and put the hard disk drive carrier over it.



8. Align the screw holes of the hard disk drive with those of the hard disk drive bay and secure the hard disk drive with four screws (two each for right and left sides).

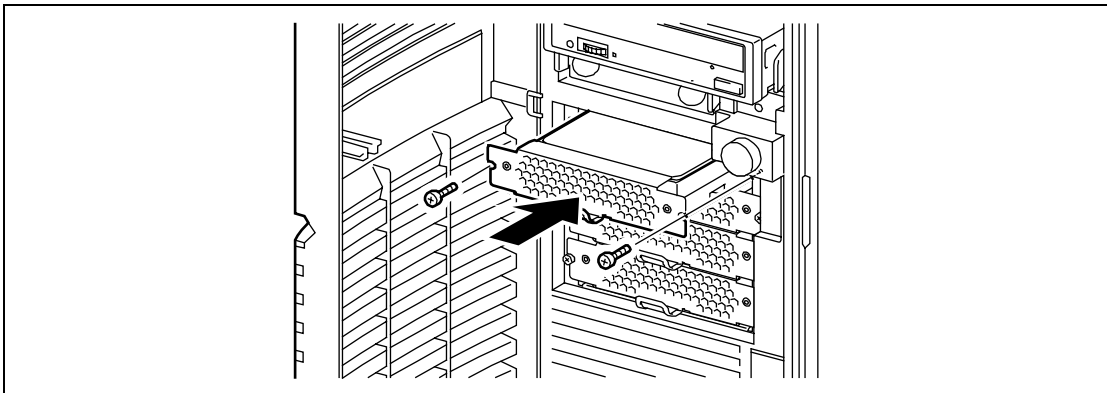


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**IMPORTANT:** Use the screws provided with the hard disk drive. Using screws longer than the required length may cause the hard disk drive to be damaged.

---

9. Hold the lever of the hard disk drive carrier and insert it into the slot, then secure it with two screws.

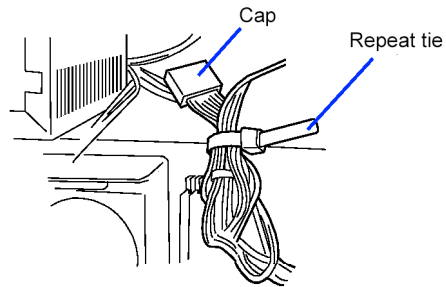


**10.** Provide the cable connections.

See Chapter 10 for cable connections.

---

**NOTE:** If caps are put on the SCSI interface and/or power cables, remove them. (Keep the removed caps for future use.) Put the mating caps on the unused power connectors and bundle the cables with a repeat tie.

**11.** Assemble the server.**12.** Run BIOS SETUP utility and check to see that the hard disk drive is correctly recognized. See Chapter 4 for details.

## Removal

Follow the procedure as described below to remove 3.5-inch hard disk drives.

---

**IMPORTANT:** About data on the hard disk drive

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk drive to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

---

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the left side cover according to the section "Front Mask" described earlier in this chapter and open the front mask.
3. Follow Steps 5 and 6 of the installation procedure to remove the hard disk drive carrier.
4. Follow Step 8 of the installation procedure to remove the hard disk drive.
5. Reassemble the server.

## Notes on Installing Additional Hard Disk Drives (SATA2) [N8150-204A/-205A/-206A/-207A/-208A/-209A]

If you are using the additional hard disk drive (SATA2) [N8150-204A/-205A/-206A/-207A/-208A/-209A] in the server, the slot ID numbers indicated in the chassis do not correspond to the disk numbers displayed in Windows 2003 Disk Management. Be sure to confirm the disk numbers on the POST screen to ensure proper disk management and replacement.

---

**NOTE:** To display the POST screen, press **Esc** while the NEC logo is being displayed on the screen after you power on the system. If the POST screen changes too fast, press **Pause** to hold the screen.

---

Slot ID number in the chassis (Disk number on the POST screen)	Disk number in Windows 2003 Disk Management			
	Disk x1	Disk x2	Disk x3	Disk x4
1 (Fixed Disk 0)	Disk 0	Disk 0	Disk 0	Disk 0
2 (Fixed Disk 1)	–	Disk 1	Disk 2	Disk 2
3 (Fixed Disk 2)	–	–	Disk 1	Disk 1
4 (Fixed Disk 3)	–	–	–	Disk 3

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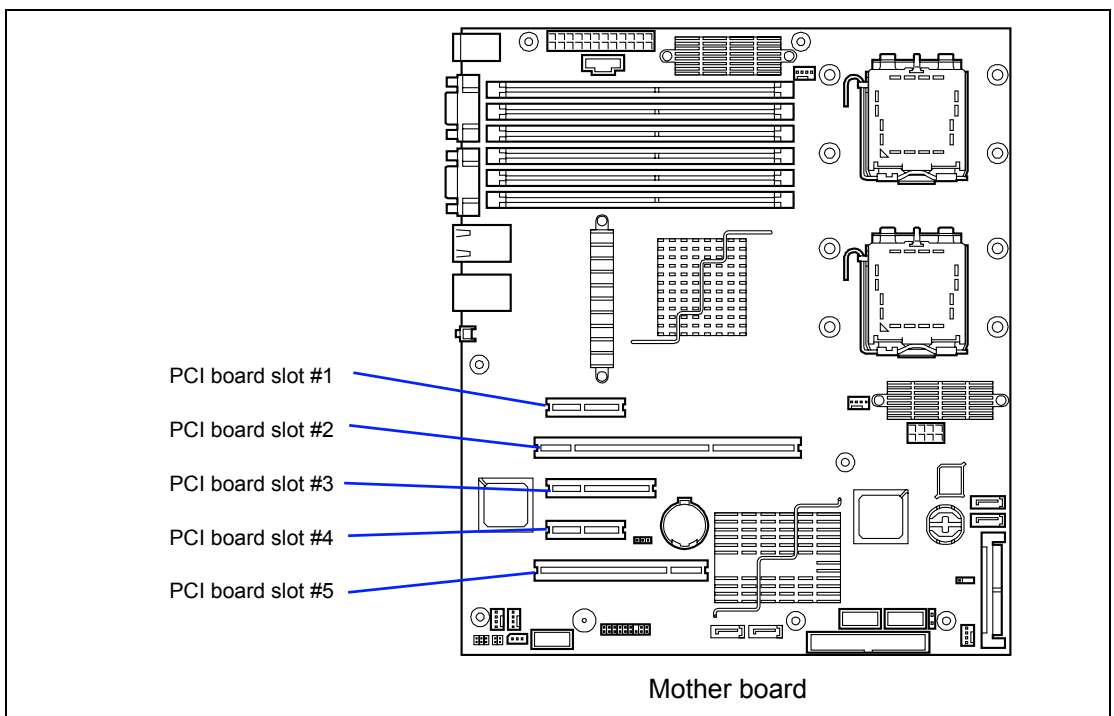
## PCI Board

The server is equipped with five slots for installing PCI boards.

---

### IMPORTANT:

- Any PCI board is easily affected by static electricity. Handle a PCI board after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components on the PCI board. In addition, do not put the PCI board on a desk directly. See "Static Precautions" in this chapter for details of the static electricity.
  - The long-sized board (full-length board) can be installed only to the PCI slot #2. Care must be taken to avoid damage to the components on the mother board when installing the long-sized board.
- 



Slots to install the PCI board

SAS Model

N code	Product name	Slot (Bus A)	Slot (Bus B)	Slot (Bus C)	Slot (Bus D)	Slot (Bus E)	Note
		PCIe #1	PCI-X #2	PCIe #3	PCIe #4	PCI #5	
	PCI slot capability <sup>1</sup>	x4 lane	64 bit/100MHz	x8 lane	x1 lane	32 bit/32MHz	
	Slot size	Full-height					
	PCI board type <sup>1</sup>	x4 socket	3.3V	x8 socket	x4 socket	5V	
Available board size	Short		Long/short				
N8103-95	SCSI controller (64-bit/66MHz PCI)	-	√	-	-	√	2 max. Cannot connect with internal hard disk drive.
N8103-75	SCSI controller (64-bit/133MHz PCI-X)	-	√	-	-	√	2 max. Cannot connect with internal hard disk drive.
N8103-126	SCSI controller (64-bit/133MHz PCI-X)	-	√	-	-	√	2 max. Cannot connect with internal hard disk drive. For connection with SATA disk array
N8103-104	Disk array controller for onboard SAS (PCI EXPRESS (x4))	-	-	√	-	-	1 max. among N8103-91/101/103/104/105
N8103-105	Disk array controller for onboard SAS (PCI EXPRESS (x4))	-	-	√	-	-	
N8103-91	Disk array controller for onboard SAS (PCI EXPRESS (x4))	-	-	√	-	-	1 max. 3 max. with N8103-80.
N8103-90	Disk array controller for external SAS (PCI EXPRESS (x4))	-	-	√	-	-	1 max. Cannot connect with internal hard disk drive. 3 max. with N8103-80/90/99.
N8103-99	Disk array controller (0 ch) (64-bit/133MHz PCI-X)	-	√	-	-	-	1 max.
N8103-80	Disk array controller (1 ch) (64-bit/66MHz PCI)	-	√	-	-	√	1 max. Cannot connect with internal hard disk drive. 3 max. with N8103-90/81/99.
N8104-111	100BASE-TX adapter (32-bit/33MHz PCI)	-	√	-	-	√	2 max.
N8104-86	100BASE-TX adapter (32-bit/33MHz PCI)	-	√	-	-	√	2 max.
N8104-119	1000BASE-T adapter (64-bit/133MHz PCI-X)	-	√	-	-	√	1 max. per PCI bus (2 max. per PCI bus with AFT) N8104-120: 2 max. per system Cannot co-exist with N8104-112.
N8104-120	1000BASE-T adapter (2 ch) (64-bit/133MHz PCI-X)	-	√	-	-	√	
N8104-114	1000BASE-T adapter (PCI EXPRESS (x1))	√	-	√	√	-	2 max. Teaming with another N8104-114 is allowed.
N8104-121	1000BASE-T adapter (2ch) (PCI EXPRESS (x4))	√	-	√	√	-	2 max.
N8104-112	1000BASE-SX adapter (2ch) (64-bit/133MHz PCI-X)	-	√	-	-	√	1 max. per PCI bus (2 max. per PCI bus with AFT) Cannot co-exist with N8104-103/113.
N8104-123A	10GBASE-SR adapter (PCI EXPRESS (x8))	-	-	√	-	-	1 max.
N8105-45	Graphics accelerator (32-bit/33MHz PCI)	-	√	-	-	√	1 max.
N8117-01A	Additional RS232C connector kit	-	-	-	√	√	1 max.

√: Available, -: Unavailable

SATA Model

N code	Product name	Slot (Bus A)	Slot (Bus B)	Slot (Bus C)	Slot (Bus D)	Slot (Bus E)	Note
		PCIe #1	PCI-X #2	PCIe #3	PCIe #4	PCI #5	
	PCI slot capability <sup>1</sup>	x4 lane	64 bit/100MHz	x8 lane	x1 lane	32 bit/32MHz	
	Slot size	Full-height					
	PCI board type <sup>1</sup>	x4 socket	3.3V	x8 socket	x4 socket	5V	
Available board size	Short		Long/short				
N8103-95	SCSI controller (64-bit/66MHz PCI)	-	√	-	-	√	2 max. Cannot connect with internal hard disk drive.
N8103-75	SCSI controller (64-bit/133MHz PCI-X)	-	√	-	-	√	2 max. Cannot connect with internal hard disk drive.
N8103-126	SCSI controller (64-bit/133MHz PCI-X)	-	√	-	-	√	2 max. Cannot connect with internal hard disk drive. For connection with SATA disk array
N8103-101	Disk array controller (SATA2) (PCI EXPRESS (x4))	√	-	√	√	-	1 max.
N8103-103	Disk array controller (SATA2) (PCI EXPRESS (x4))	√	-	√	√	-	1 max.
N8103-102	Additional battery for N8103-101	√	√	√	√	√	1 max.
N8103-80	Disk array controller (1 ch) (64-bit/66MHz PCI)	-	√	-	-	√	1 max. Cannot connect with internal hard disk drive. 2 max. with N8103-81/86
N8104-111	100BASE-TX adapter (32-bit/33MHz PCI)	-	√	-	-	√	2 max.
N8104-86	100BASE-TX adapter (32-bit/33MHz PCI)	-	√	-	-	√	2 max.
N8104-119	1000BASE-T adapter (64-bit/133MHz PCI-X)	-	√	-	-	√	1 max. per PCI bus (2 max. per PCI bus with AFT) N8104-120: 2 max. per system
N8104-120	1000BASE-T adapter (2 ch) (64-bit/133MHz PCI-X)	-	√	-	-	√	Cannot co-exist with N8104-112.
N8104-114	1000BASE-T adapter (PCI EXPRESS (x1))	√	-	√	√	-	2 max. Teaming with another N8104-114 is allowed.
N8104-121	1000BASE-T adapter (2ch) (PCI EXPRESS (x4))	√	-	√	√	-	2 max.
N8104-112	1000BASE-SX adapter (2ch) (64-bit/133MHz PCI-X)	-	√	-	-	√	1 max. per PCI bus (2 max. per PCI bus with AFT) Cannot co-exist with N8104-103/113.
N8104-123A	10GBASE-SR adapter (PCI EXPRESS (x8))	-	-	√	-	-	1 max.
N8105-45	Graphics accelerator (32-bit/33MHz PCI)	-	√	-	-	√	1 max.
N8117-01A	Additional RS232C connector kit	-	-	-	√	√	1 max.

√: Available, -: Unavailable

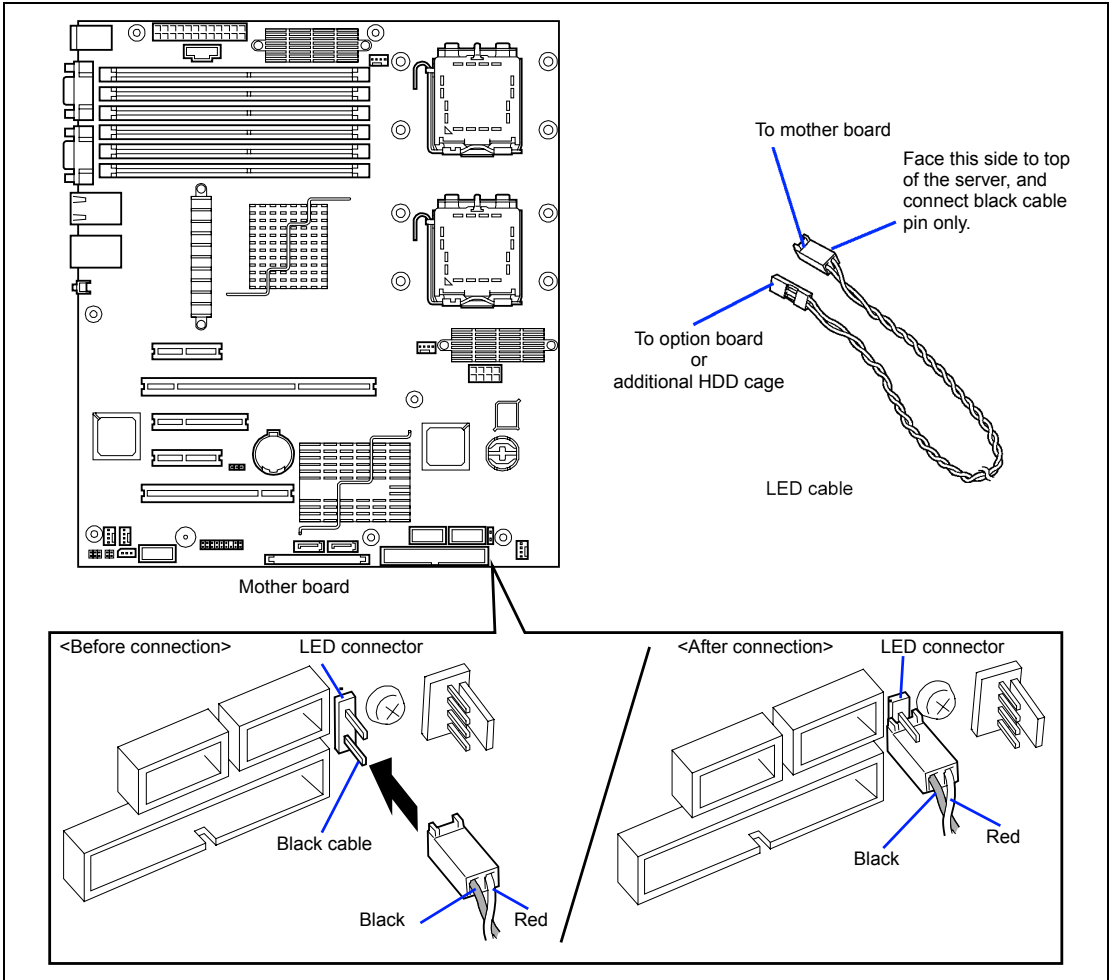
## Installation Considerations for RAID Controller

Described below must be considered when installing any of the RAID controller listed below. For details, refer to the manual that comes with the RAID controller.

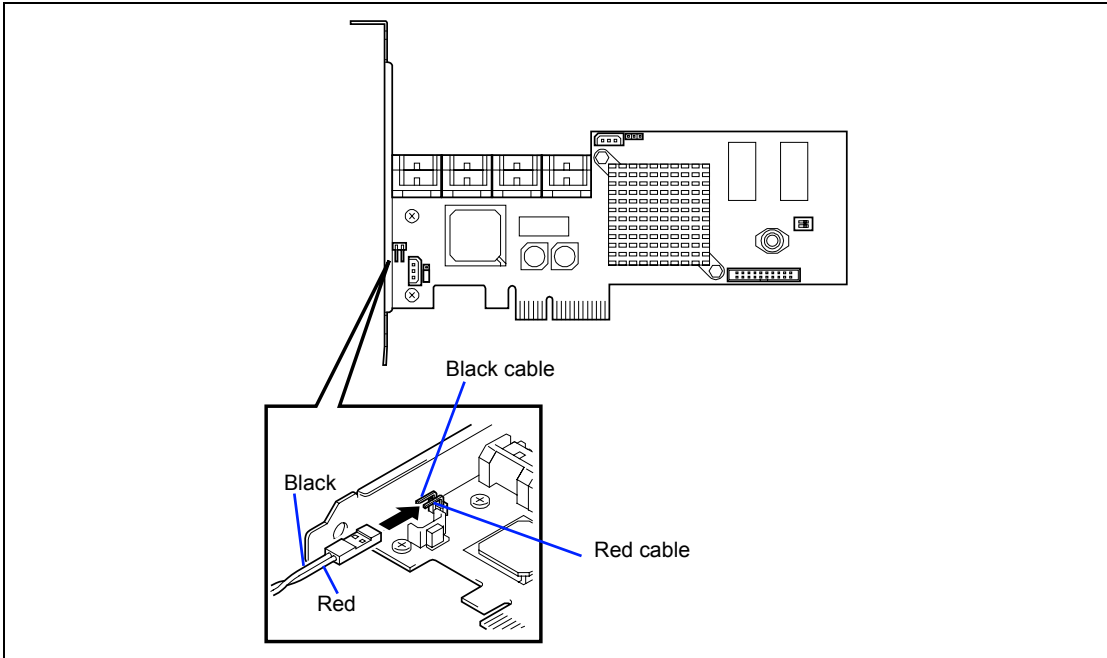
- N8103-101 SATA2 Disk array controller
- N8103-105 SAS Disk array controller
- N8103-91 Disk array controller
- N8103-99 Disk array controller (0ch)
- Prepare the hard disk drives and cables appropriate to RAID controller to be installed.
- Configure the Logical Settings of hard disk drive.
- Prepare the number of hard disk drives required for desired RAID (Redundant Array of Inexpensive [Independent] Disks) level.
- Making hard disk drives in the disk array configuration or changing the RAID level initializes hard disk drives. If the hard disk drive to be configured in the array has your valuable data stored, make sure to make a backup copy of the data in another hard disk drive before installing the disk array controller board and configuring the array.
- Use hard disk drives of the same capacity and revolution for each pack to configure them in the array.
- The disk array configuration improves disk reliability but provides a smaller disk capacity than the total capacity of hard disk drives in the disk array configuration.
- When the disk array controller board is replaced, restore the disk array configuration information in the disk array controller board. Use the configuration utility for the restoration. Chapter 6 for details.
- To indicate the access status of each hard disk drive connected to the RAID controller with the DISK ACCESS lamp on the front panel of the server, use the LED cable that comes with your server.
  - With N8103-101/105 disk array controller, connect the LED cable to the LED connector on mother board and that on the RAID controller.
  - With N8103-91 disk array controller, connect the LED cable to the LED connector on the mother board and that on the N8154-11 additional HDD cage.

Refer to the manual that comes with your RAID controller for more information.

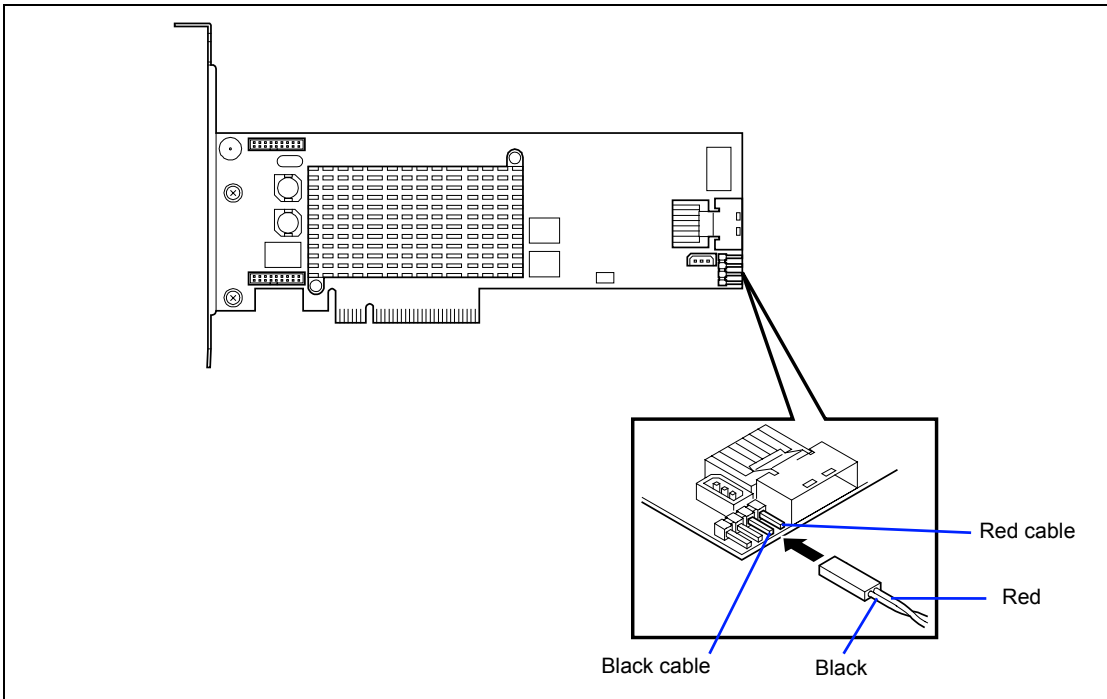




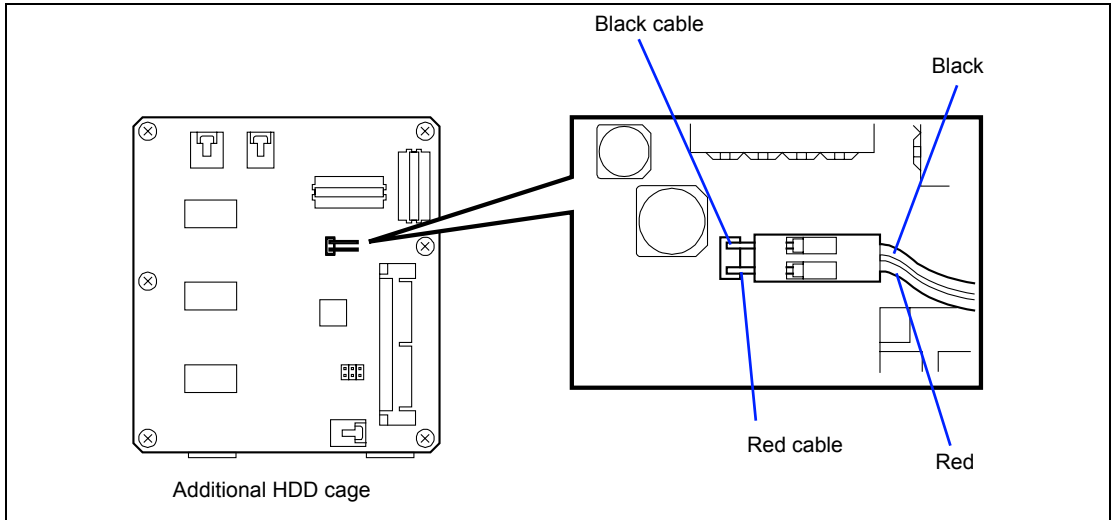
**N8103-101**



**N8103-105**



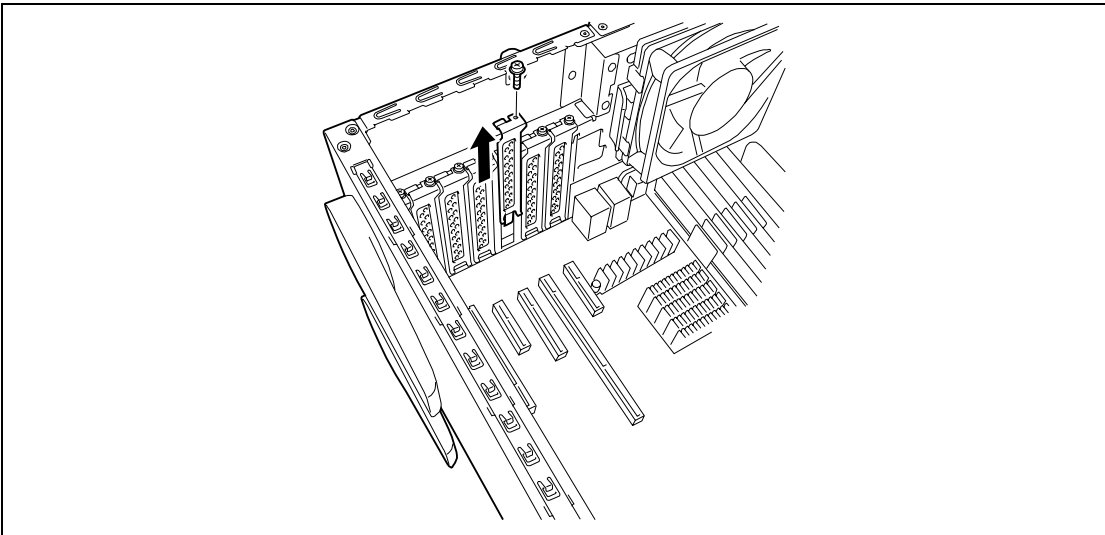
### N8154-11 Additional HDD Cage



## Installation

Install the board to be connected to the PCI board slot depending on the following procedure. Refer to the manual provided with the board.

1. Before the installation, set the switches and jumpers on the installed board appropriately referring to the manual provided with the board, if necessary.
2. See the section "Preparing for Installation and Removal" described earlier to prepare.
3. Remove the left side cover.
4. Remove the additional slot cover at the same location (height) as the installation slot.



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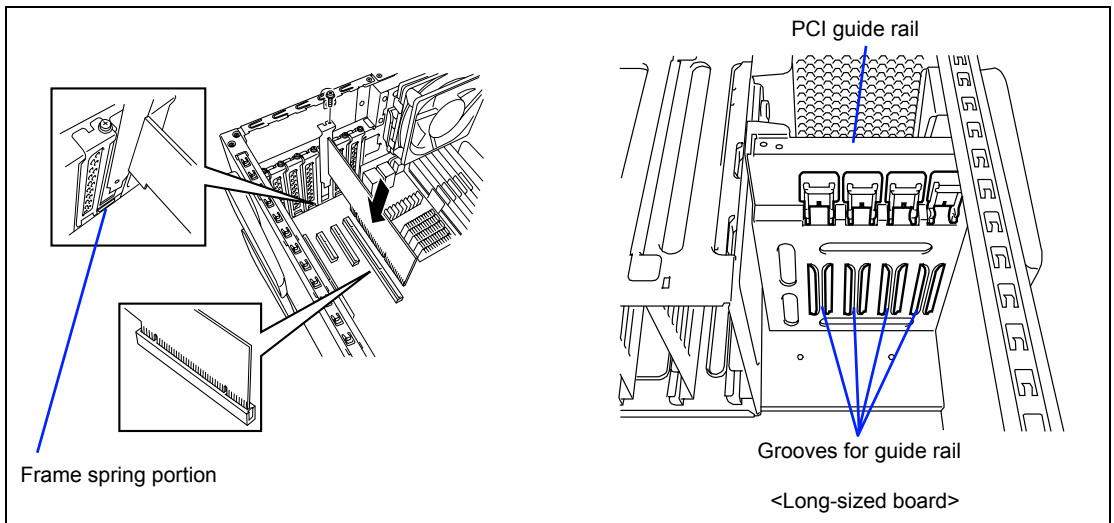
**IMPORTANT:** Store the removed slot cover for future use.

---

5. Make the component side of the board face the bottom of the server, put the rear panel of the board on the frame spring securely, and push the board fully so that the board connection port is certainly connected to the slot.

For a long-sized board, align the board with the groove of the guide rail on the front of the server and then connect the board to the slot.

**IMPORTANT:** If the board cannot be installed well, remove the board once and then install it again. Note that adding an excess force to the board may cause it to be damaged.



6. Assemble the server.
7. Turn on the power of the server. Make sure that no error message appears in the POST.

If an error message appears, write down the message and contact your service representative for the maintenance.

8. Start the BIOS Setup Utility to set the "Reset Configuration Data" in the "Advanced" menu to "Yes."

This is required to update the hardware configuration information. See Chapter 4 for details.

## Setting after installation

Depending on the type of the installed board, some settings of the server must be modified by using the proper utility (such as the BIOS Setup Utility or the setup utility installed in the board) after the installation.

Provide the settings correctly according to the information described in the manual provided with the board.

The server scans the PCI bus numbers in the ascending order after the power-on. If the BIOS utility is stored in the optional ROM mounted on the board, the PCI bus start messages (banners) appear in the ascending order of the PCI bus numbers.

## Removal

Remove the board from the PCI board slot in the following procedure.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the left side cover.
3. Remove the board.
4. Assemble the server.
5. Turn on the power of the server. Make sure that no error message appears in the POST.

If an error message appears, write down the message and contact your service representative for the maintenance.

6. Start the BIOS Setup Utility to set the "Reset Configuration Data" in the "Advanced" menu to "Yes."

This is required to update the hardware configuration information. See Chapter 4 for details.

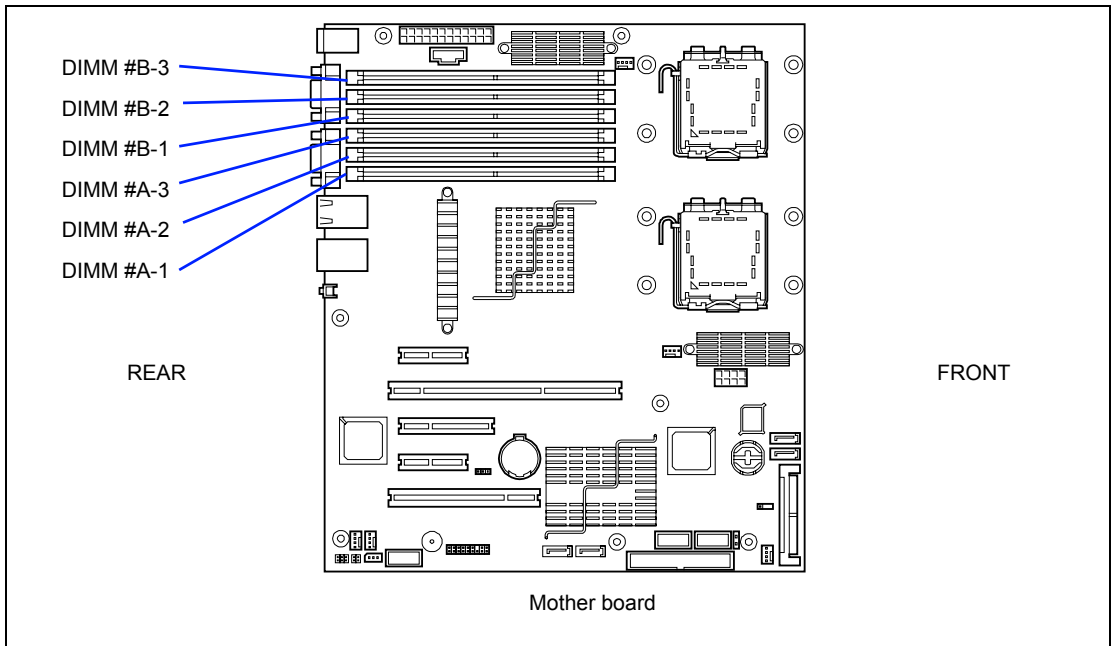
## DIMM

The DIMM (Dual Inline Memory Module) is installed in a DIMM socket on the mother board installed in the server.

Up to 24GB (4GB × 6) of memory can be added.

### IMPORTANT:

- The DIMM is easily affected by static electricity. Handle the DIMM after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components on the DIMM. In addition, do not put the DIMM on a desk directly. See "Static Precautions" for details of the static electricity.
- Do not use any DIMM not approved by NEC. If an unapproved third party's DIMM is installed in the server, not only the DIMM but also the server itself may be defected. You will be charged by any repair of a malfunction or defect caused by such a device within the warranty period.



The mother board in your server supports the dual channel memory configuration. The dual channel memory configuration increases data transfer rate.

## Installation Order and Notes

The following table shows the installation order.

Condition	DIMM numbers
Minimum installation	DIMM #A-1 and DIMM #B-1
When added one pair	DIMM #A-2 and DIMM #B-2
When added two pairs	DIMM #A-3 and DIMM #B-3

## DIMM Installation Pattern for Using Online Spare Memory Feature

To enable online spare memory feature, DIMMs in memory controller must be the same capacities and type. Depending on specification of memory controller, the spare memory is set in unit of rank memory.

The logical memory capacity of single rank memory differs from that of dual rank memory when online spare memory is specified.

- Single rank memory configuration  
 $(\text{Physical memory capacity} * \text{Number of DIMMs}) - \text{Physical memory capacity} = \text{Logical memory capacity}$
- Dual rank memory configuration  
 $(\text{Physical memory capacity} * \text{Number of DIMMs}) - (\text{Physical memory capacity} / 2) = \text{Logical memory capacity}$

The server supports the following DIMMs

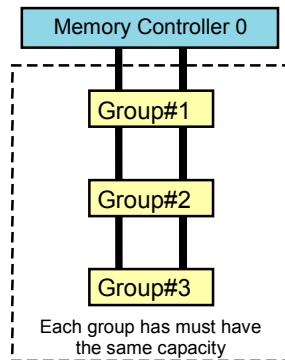
- N8102-250 Additional 1-GB memory: Single rank
- N8102-251 Additional 2-GB memory: Dual rank
- N8102-252 Additional 4-GB memory: Dual rank

The use the online spare memory feature, install DIMMs according to the table shown below. (To enable the online spare memory, BIOS setting is required (see Chapter 4).)

## Installation Pattern in Memory Controller 0

	Group #1 DIMM #A1, #B1	Group #2 DIMM #A1, #B1	Group #3 DIMM #A1, #B1	Total capacity of physical memory	Total capacity of logical memory
Pattern 1	Standard 1GB	Additional 1GB		2GB	1GB
Pattern 2	Standard 1GB	Additional 1GB	Additional 1GB	3GB	2GB
Pattern 3	Additional 2GB	Additional 2GB		4GB	3GB
Pattern 4	Additional 2GB	Additional 2GB	Additional 2GB	6GB	5GB
Pattern 5	Additional 4GB	Additional 4GB		8GB	6GB
Pattern 6	Additional 4GB	Additional 4GB	Additional 4GB	12GB	10GB





The memory group farthest from the memory controller is specified as spare memory.

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**NOTES:**

- If both Group #1 and Group #2 contain DIMMs, the Group #2 is specified as spare memory.
  - If all groups contain DIMMs, the Group #3 is specified as spare memory.
- 

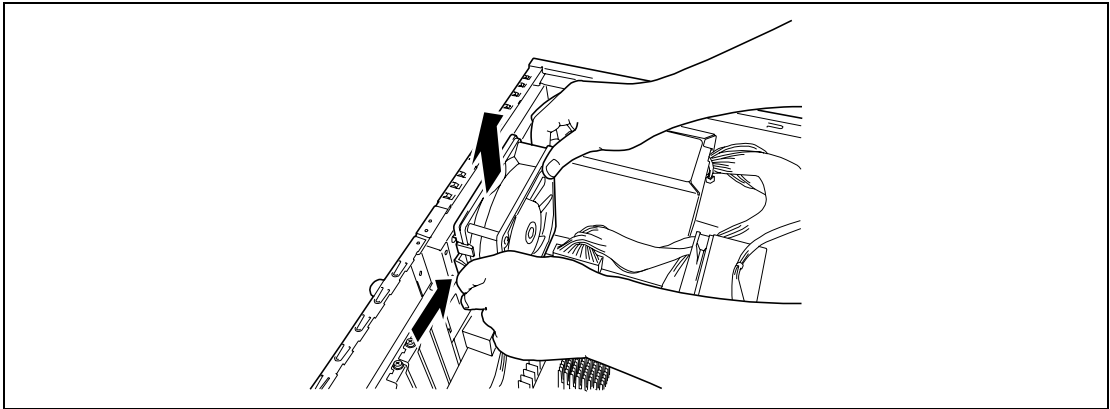
You may install DIMMs in the memory controller 1 in the similar way as the memory controller 0.

The capacity of physical/logical memory is calculated for each controller.

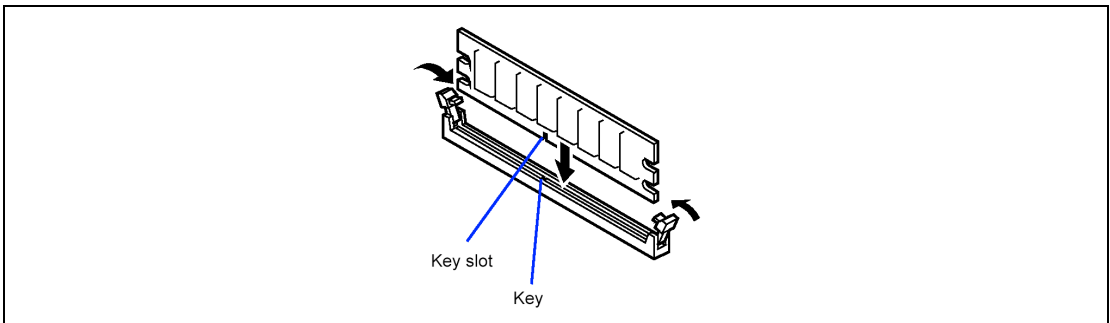
## Installation

Install a DIMM in the following procedure.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the left side cover as described earlier in this chapter.
3. Firmly hold the server with your both hands so that its left side faces upward, and bring it down slowly and gently.
4. Remove the cooling fan.



5. Open the levers at both ends of the socket.
6. Push the DIMM to the socket straight.



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**NOTE:** Make sure of the orientation of DIMM. The terminal side of the DIMM has key and key slot to prevent incorrect insertion.

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**IMPORTANT:** Use extreme care when installing a DIMM. Applying too much pressure can damage the socket.

---

If the DIMM is inserted into the DIMM socket, the lever is automatically closed.

7. Close the levers securely.

- 8.** Assemble the server.
- 9.** Turn on the power of the server. Make sure that no error message appears in the POST.  
If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
- 10.** Run the BIOS SETUP and select [Advanced] → [Memory Configuration] to verify that the installed DIMM shows the status "Normal". (See Chapter 4 for details.)
- 11.** Select "Yes" for [Reset Configuration Data] on the [Advanced] menu.  
This is required to update the hardware configuration information. See Chapter 4 for details.
- 12.** If Windows Server 2003 is in use, set the paging file size to the recommended value or a greater value. See Chapter 5 for details.

## Removal

Remove the DIMM depending on the following procedure.

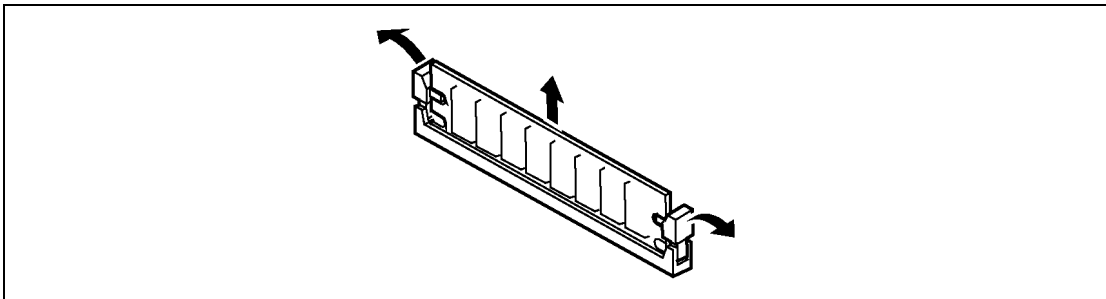
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### NOTES:

- To remove the defected DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket (group) in which the defected DIMM is installed.
  - The server needs at least two DIMMs installed to operate.
- 

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Open the levers at the both ends of the socket for the DIMM to be removed.

The lock is released to allow the DIMM to be removed.



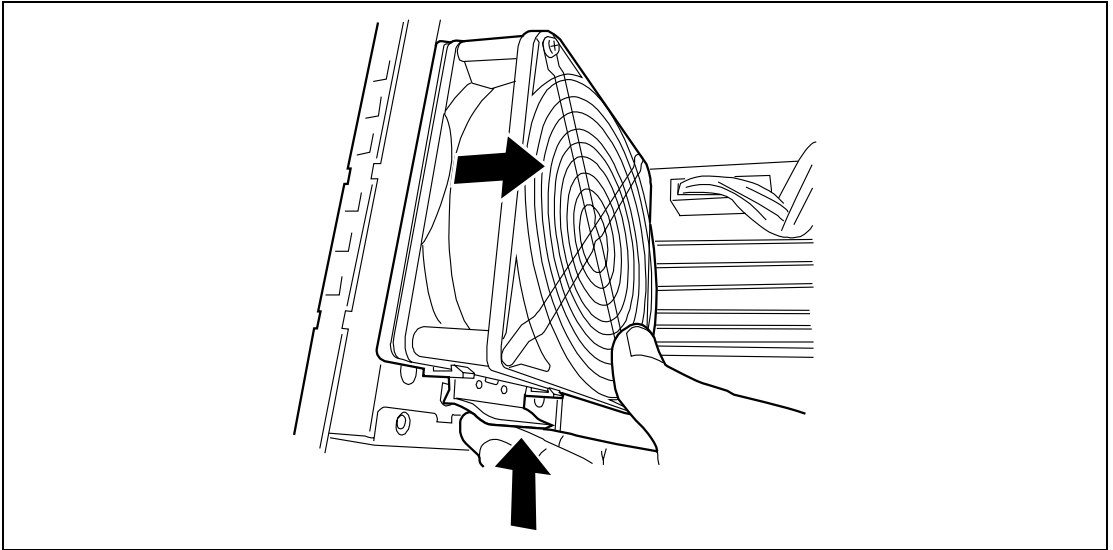
3. Remove the DIMM.
4. Assemble the server.
5. Turn on the power of the server. Make sure that no error message appears in the POST. If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
6. Run the BIOS SETUP and select [Advanced] → [Memory Configuration] → [Memory Retest] → [Enabled] to clear the error information of the removed DIMM. (See Chapter 4 for details.)
7. Select "Yes" for [Reset Configuration Data] on the [Advanced] menu. This is required to update the hardware configuration information. See Chapter 4 for details.
8. If Windows Server 2003 is in use, set the paging file size to the recommended value or a greater value. See Chapter 5 for details.

## Installation of Duct

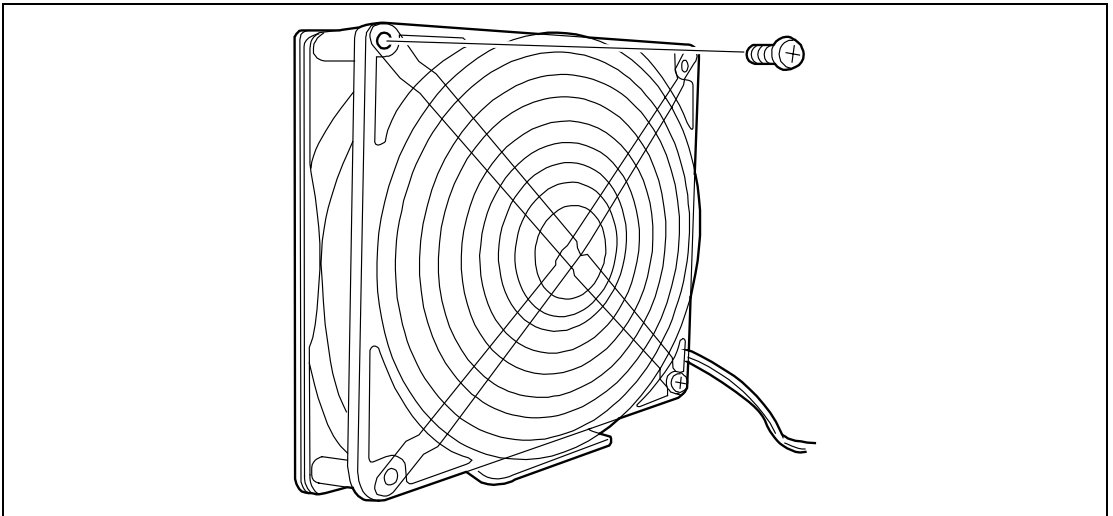
When installing additional 4-GB or 8-GB DIMM, an optional duct must be installed.

Take the following steps to install a duct.

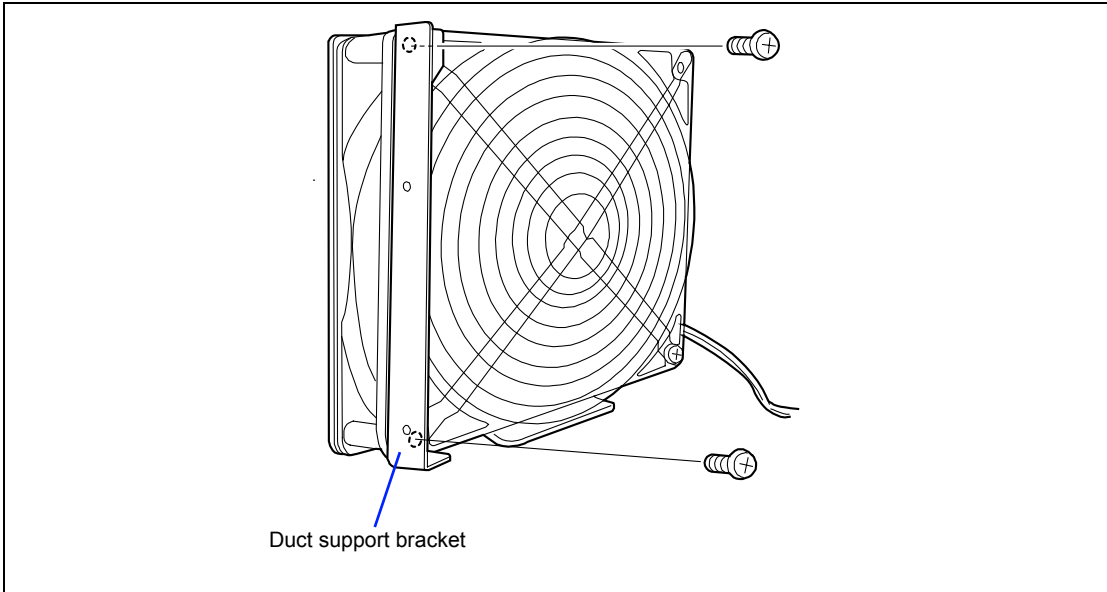
1. Remove the fan.



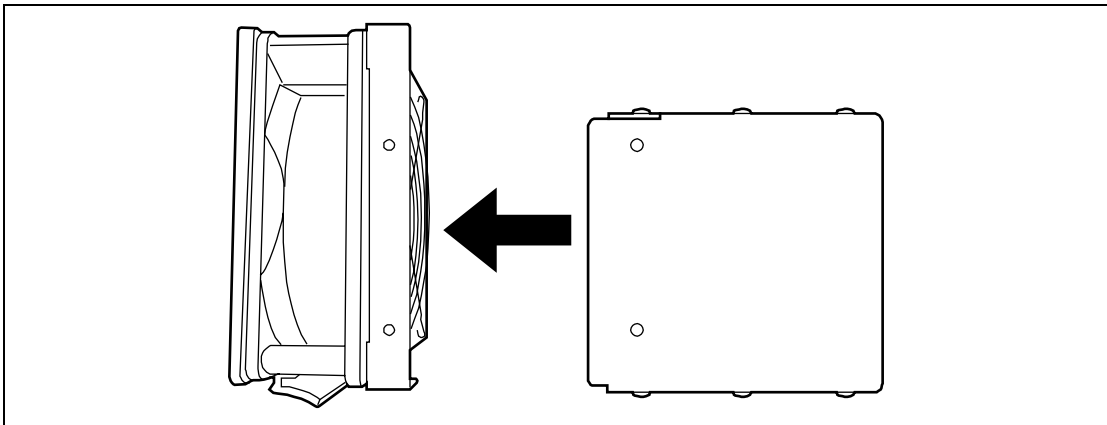
2. Remove the set screw from the fan guard.



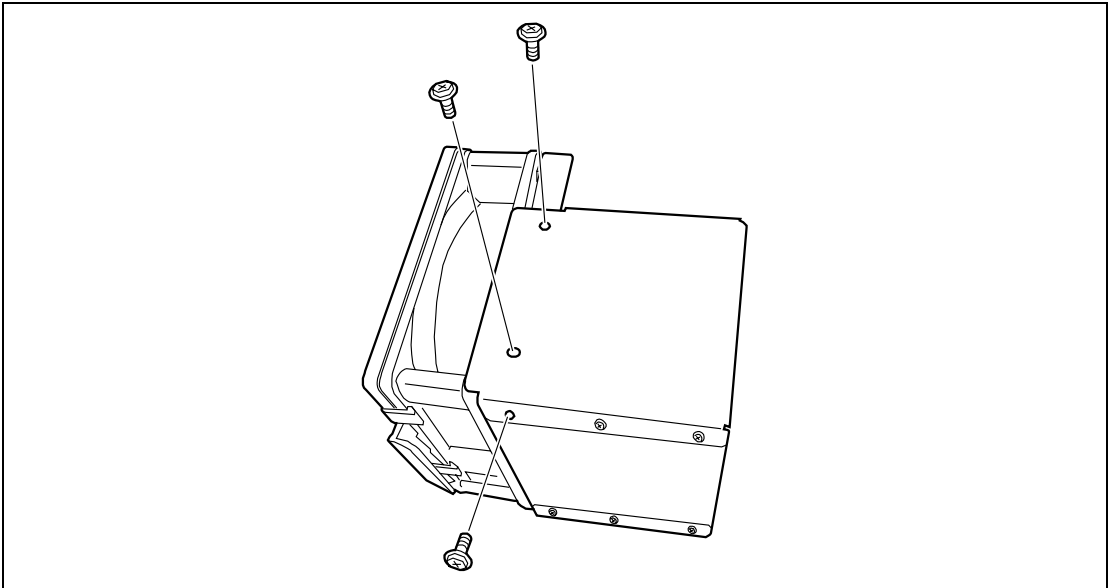
3. Fix the duct support bracket to the fan guard with two screws (a screw removed in Step 2 and a screw for fixing the fan guard coming with the additional DIMM).



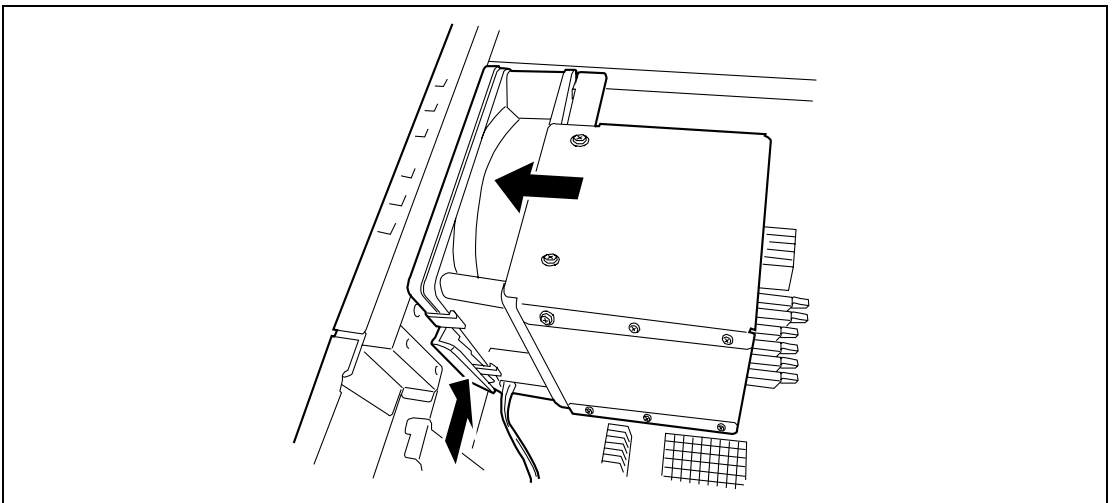
4. Fix the duct to the duct support bracket with metric screws coming with the DIMM.



Use three screws as shown in the figure below.



5. Reinstall the fan in the same location as before.

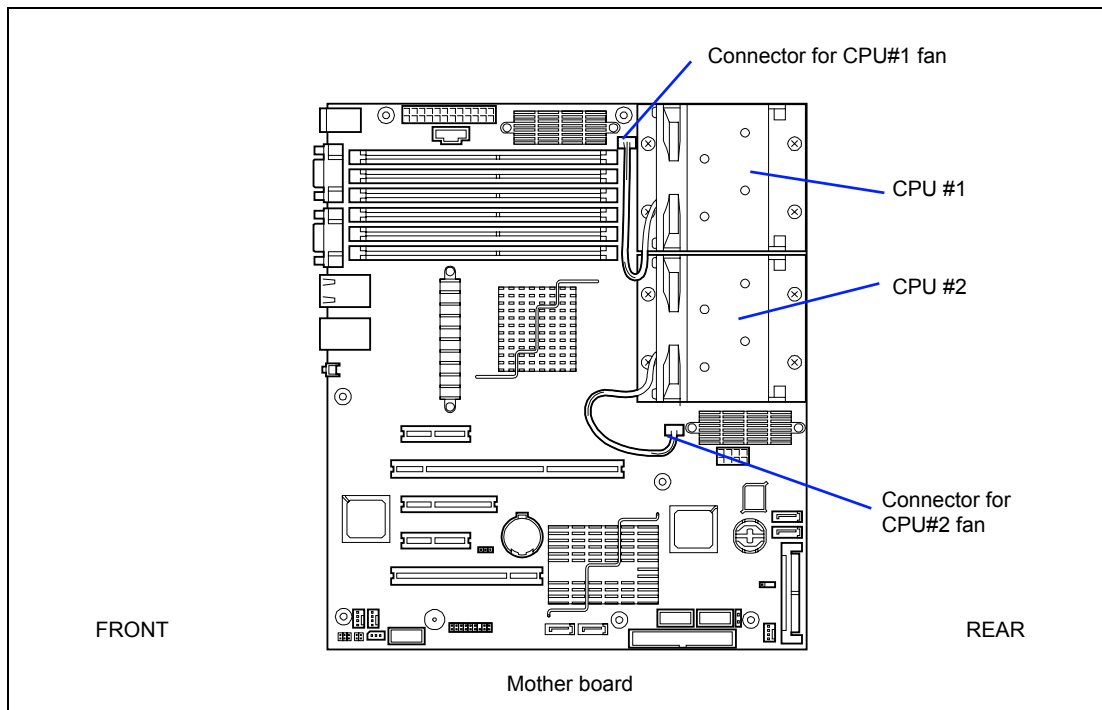


## Processor (CPU)

The server may have another CPU installed in addition to the factory-installed CPU (Intel® Xeon® Processor).

### IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU pins by a bare hand or place the CPU directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Do not operate the system until confirming that the additionally installed CPU is in normal state.
- Make sure to use the CPU authorized by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the mother board. Repair of the server due to failures or damage resulted from installing such a board will be charged.

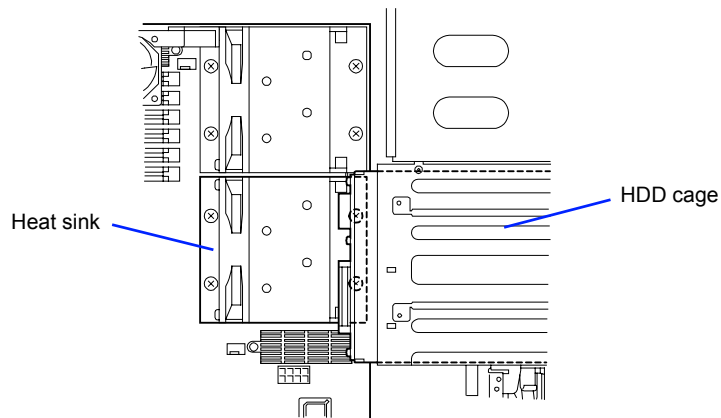




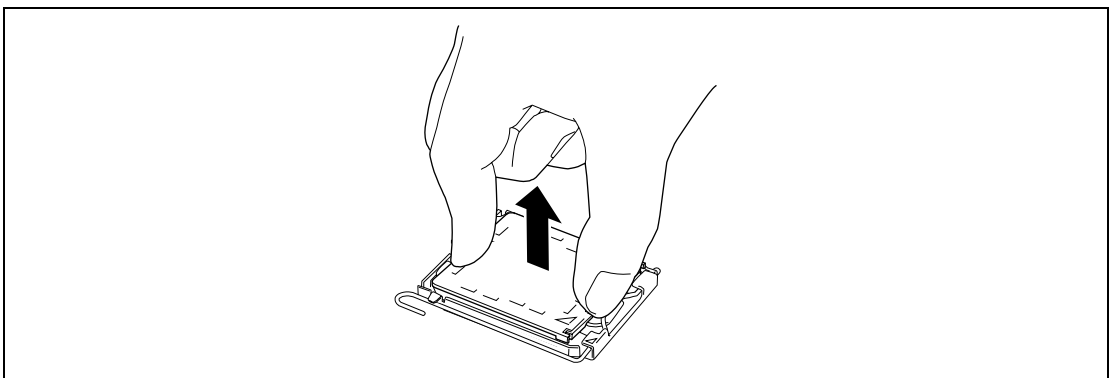
## Installation

Take the following steps to install the CPU.

**NOTE:** With the server of SAS model, screws securing the heat sink are hidden by the HDD cage. Remove the HDD cage before starting installation of CPU.

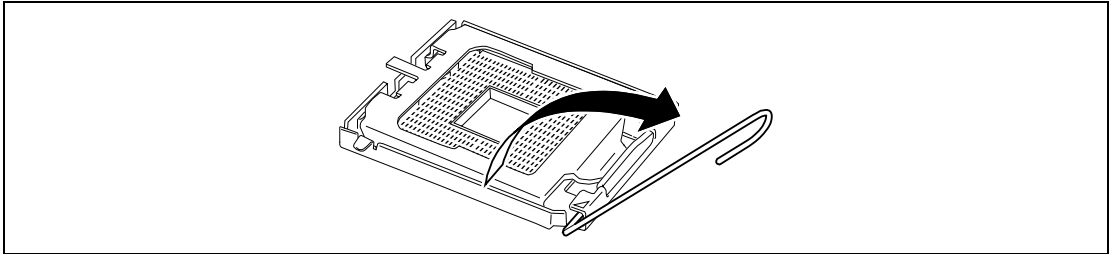


1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the left side cover.
3. Firmly hold the server with your both hands so that its left side faces upward, and bring it down slowly and gently.
4. Remove the cover.

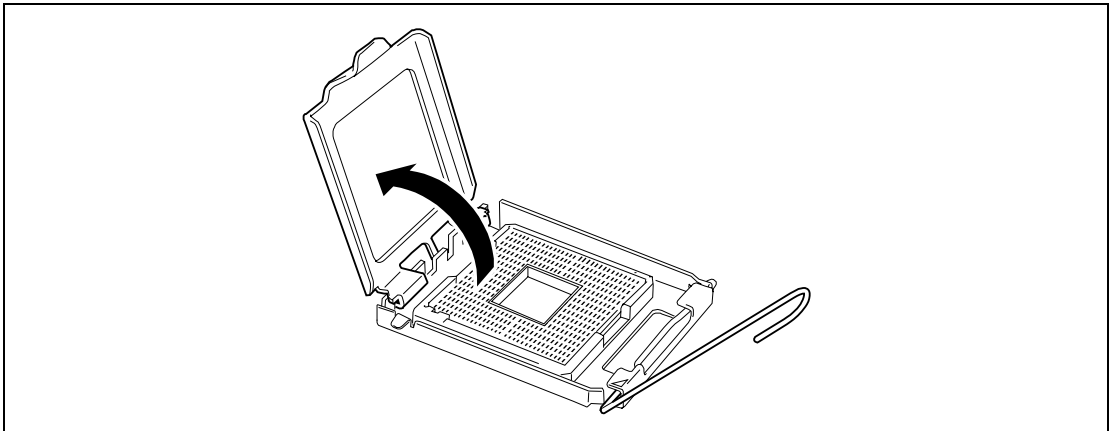


**IMPORTANT:** Keep the removed cover for future use.

5. Raise the lever on the socket.

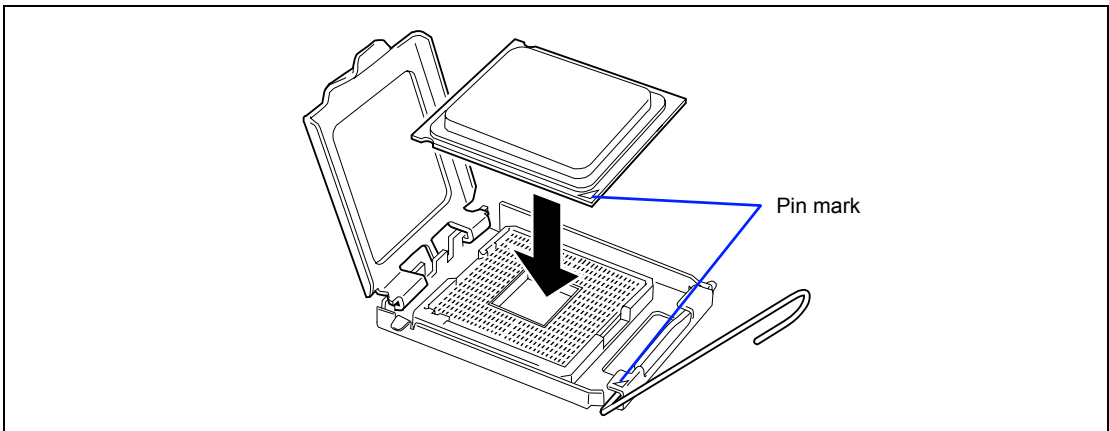


6. Raise the holder.

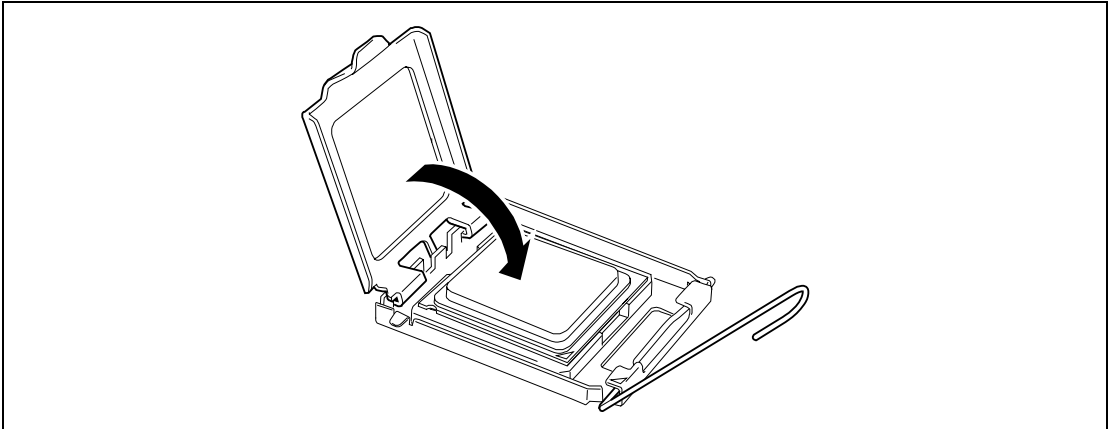


7. Put the CPU on the socket slowly and carefully.

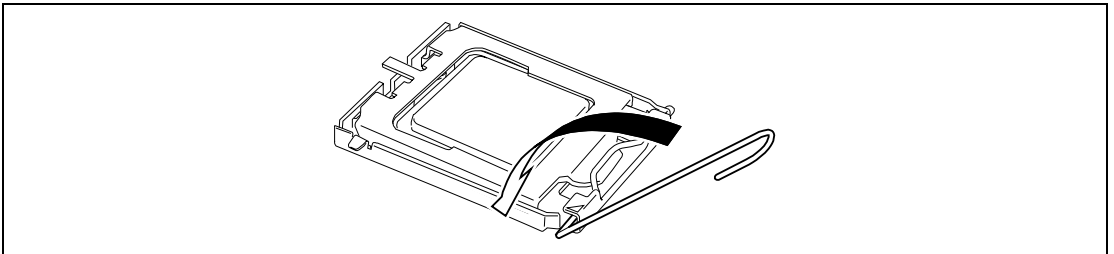
**IMPORTANT:** Make sure of the orientation of CPU. A pin mark is placed on CPU and CPU socket to prevent an incorrect insertion. Check the pin marks on CPU and socket before inserting CPU into socket.



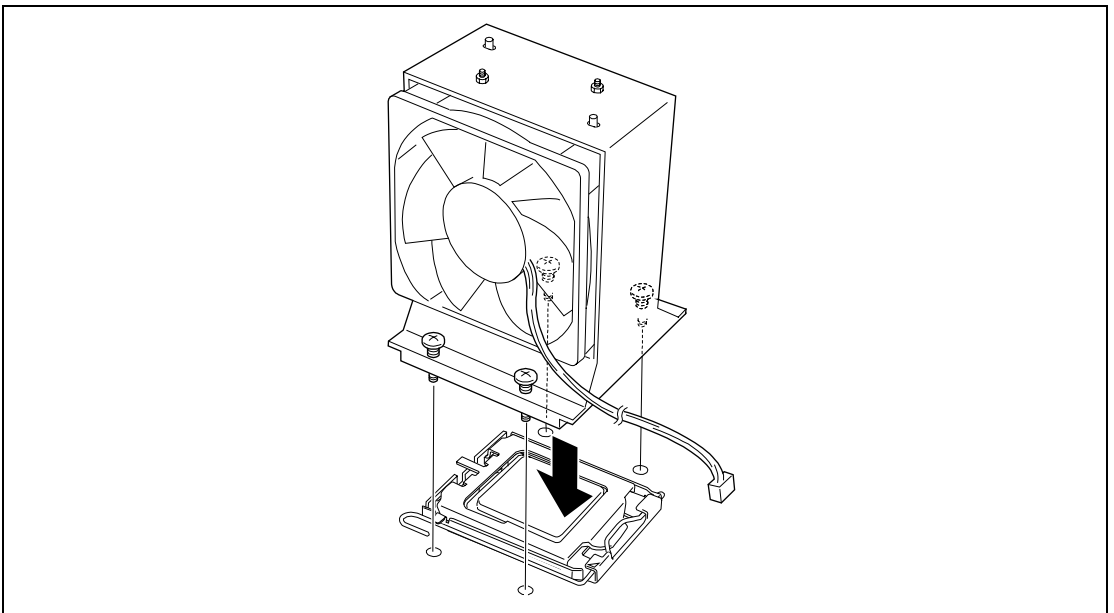
8. Push the CPU lightly to the socket, and push down the holder.



9. Push down the lever to secure the CPU.

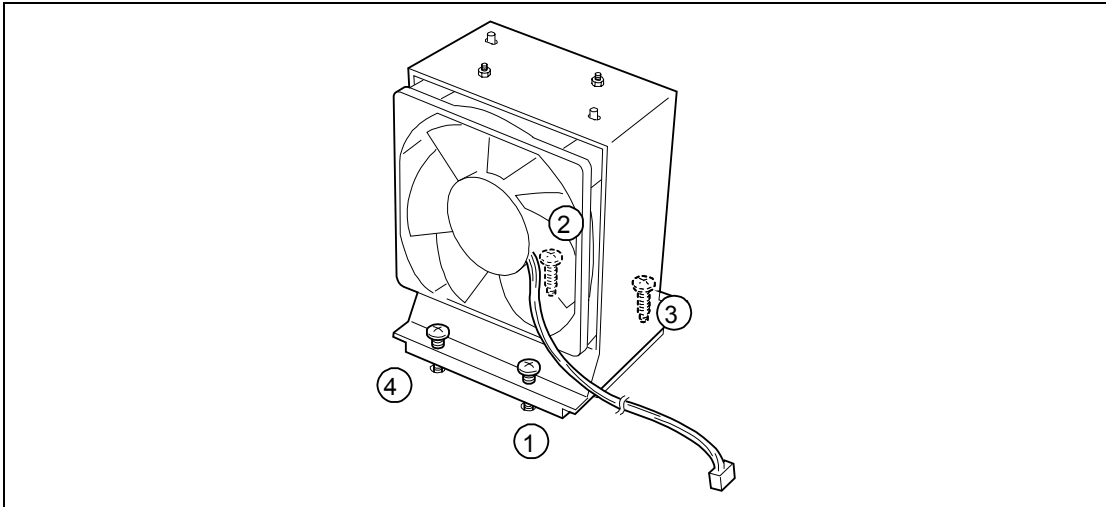


10. Put the heat sink on CPU.



- 11.** Fix the heat sink with four screws.

Temporarily secure the four screws in the order as shown in the figure below. Then, secure them tightly.



- 12.** Make sure that the heat sink is level with the mother board.

---

**NOTES:**

- If the heat sink is not level, remove it, and then install it again. If the CPU is not positioned correctly, it causes the heat sink not to be level.
  - Do not move the secured heat sink.
- 

- 13.** Set [Reset Configuration Data] on the Advanced menu to "Yes".

This setting is required to change the hardware configuration data. See Chapter 4 for details.

- 14.** If the CPUs are additionally installed to configure a multi-processor system, provide the following settings on Windows.

Select [Device Manager] - [Computer] and check the driver. If the driver is "ACPI single processor PC", change it to "ACPI multi-processor PC". Restart the server according to the on-screen message, and update the system. See Chapter 5 for details.

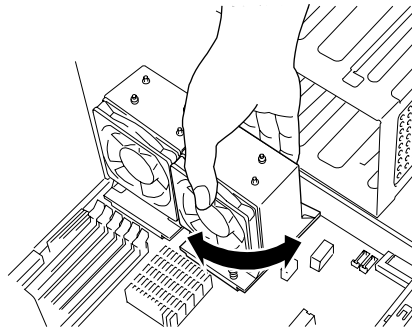
## Removal

To remove the CPU, prepare for removal referring to steps 1 and 3 in the installation procedure and do the reverse procedure of steps 11 to 4. To remove the heat sink, first remove the screw, and slightly move the heat sink at a level, then remove the heat sink.

---

### IMPORTANT:

- Do not remove any CPU unless it is failed.
- After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the CPU. To remove the heat sink from the CPU, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the CPU. Removing the heat sink with it adhering to the CPU may cause the CPU and/or socket to be damaged.



Do the following procedure if a CPU is removed (or replaced).

1. Start SETUP to select menus [Main] – [Processor Settings] – [Processor Retest] in the order to clear the error information on the removed CPU (see Chapter 4).

When a CPU is replaced, select menus [Main] – [Processor Settings] to confirm that the ID and L2 Cache Size of the additional CPU are defined normally (see Chapter 4).

2. Set [Reset Configuration Data] on the Advanced menu to [Yes].

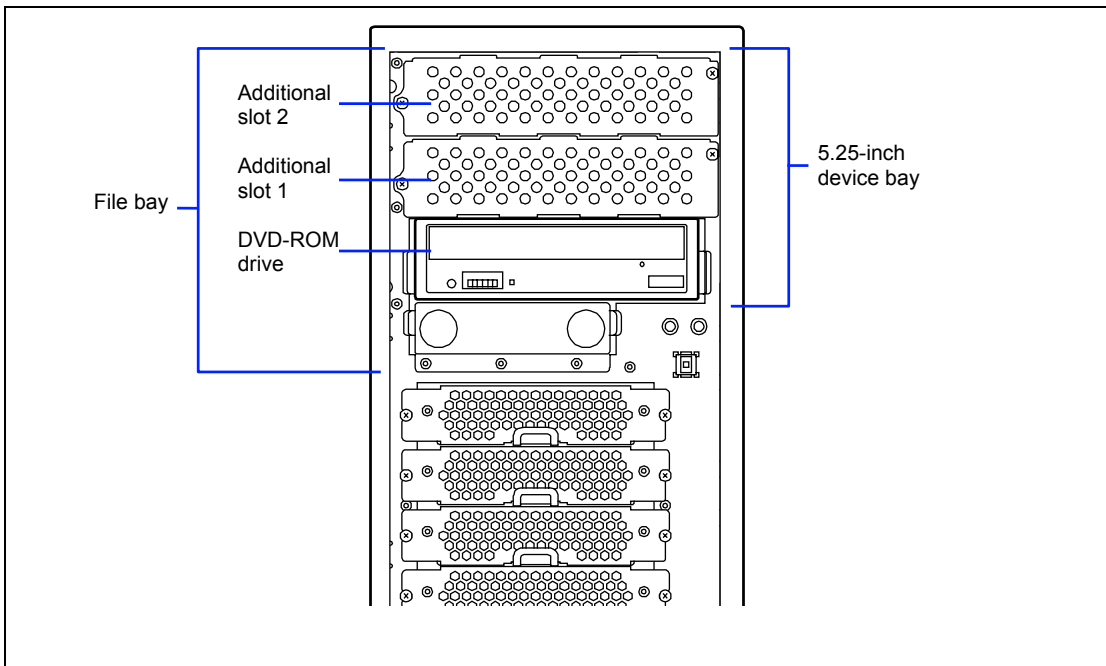
This is required to update the hardware configuration information. See Chapter 4 for details.

## File Device

The server has two slots on which backup devices including DVD-RAM, MO, and magnetic tape drives are installed (the factory-installed DVD-ROM drive occupies another slot).

### NOTES:

- If a SCSI device is installed, the optional SCSI controller board and internal SCSI cable are required. See Chapter 10 for details.
- To install an optional IDE device, move the DVD-ROM drive to additional slot 1. Then, install the IDE device instead.
  - Factory-installed DVD-ROM drive: master (factory default)
  - Optional IDE device: slave



## Installation

Install a file device in the following procedure. Explanations are for factory-installed file bay. Explanation specific for hard disk drive installing kit is also described.

### SCSI Device

1. Provide the proper setting for the device.

See the table below for the settings of the devices which can be installed in the device bay.

Device	Setting
SCSI device	Termination resistance: OFF*

- \* If the terminator is not connected to the optional internal SCSI cable, set the termination resistance to ON.

---

**IMPORTANT:** SCSI ID for the device you are installing must be unique.

---

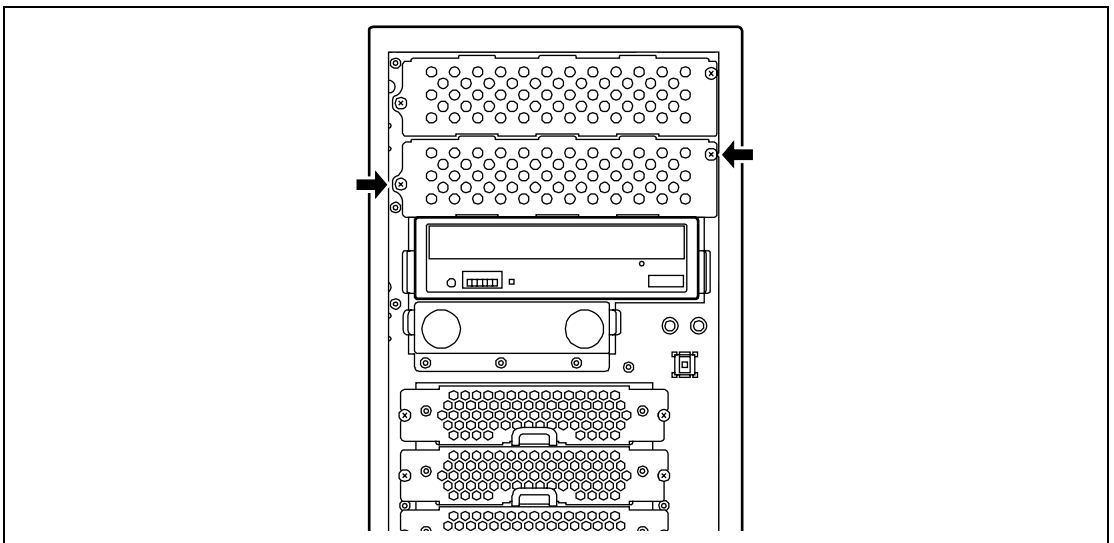
2. See the section "Preparing for Installation and Removal" described earlier to prepare.
3. Remove the left side cover and front mask as described earlier in this chapter.

---

**NOTE:** If you are going to install the hard disk drive device bay conversion kit, remove the dummy cover from the additional slot 2.

---

4. Remove the two screws securing the dummy cover of the additional slot 1.

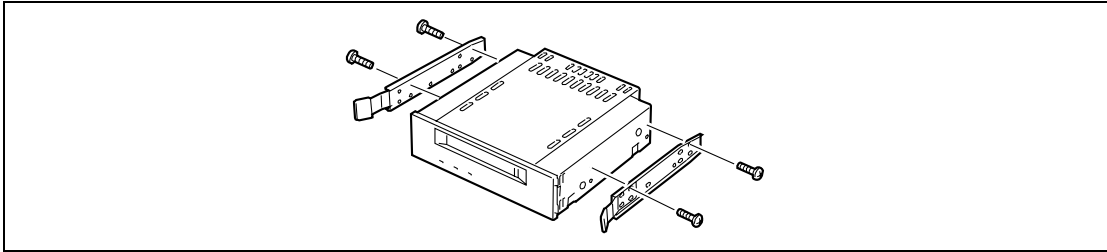



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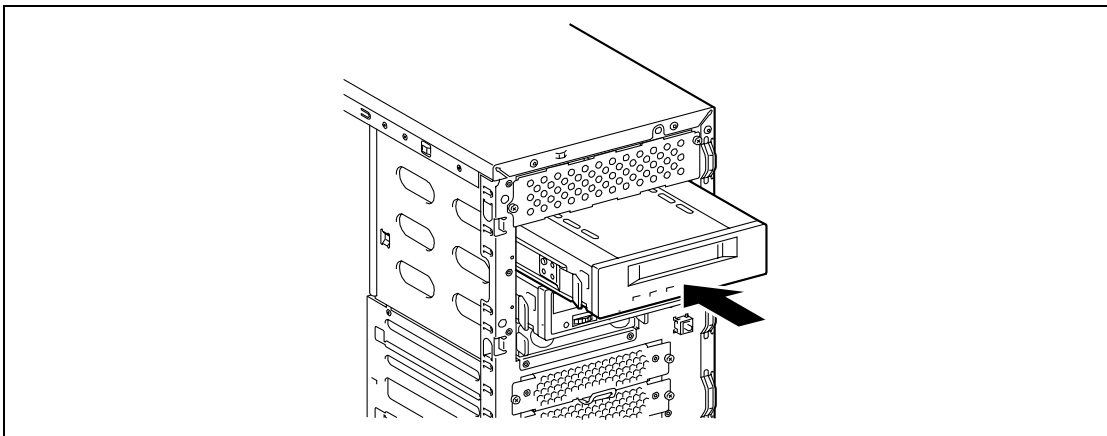
**IMPORTANT:** Keep the removed dummy cover for future use.

---

5. Secure the device to be installed to the rail with two screws provided with the device.



6. Slowly insert the device into additional slot 1 with the release tabs on both sides of the file bay pushed.  
Push the file bay until a click occurs to lock it.



7. Connect the interface and power cables to the 5.25-inch device installed from one side of the server.  
See Chapter 10 for details.
8. Assemble the server.
9. Set the parameters including the transfer rate using the BIOS utility of the SCSI controller.  
Refer to the manual provided with the SCSI controller for details.
10. Install the device driver for the installed device.  
Refer to the manual provided with the device for details.



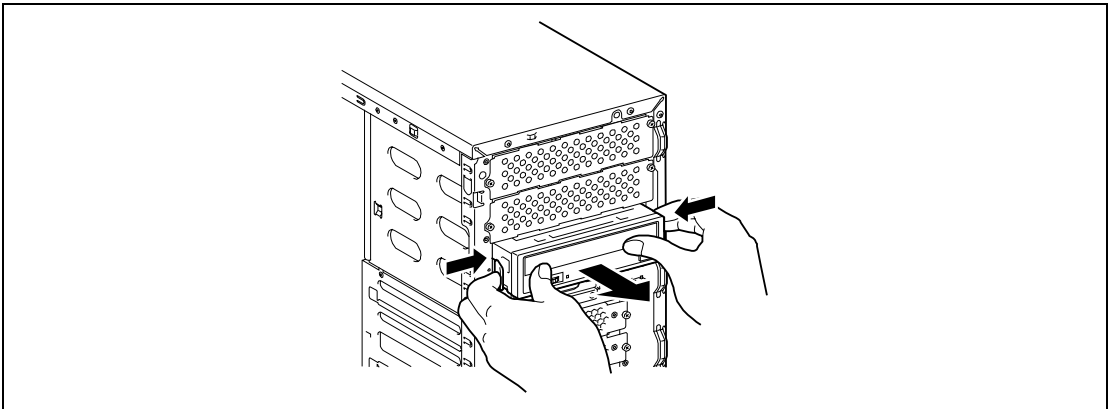
## IDE Device

1. Provide the proper setting for the device.

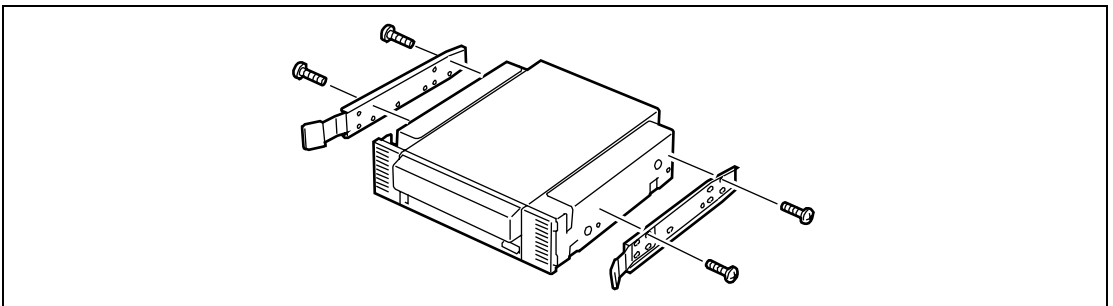
See the table below for the settings of the devices which can be installed in the device bay.

Device	Setting
IDE device	Termination resistance: OFF

2. See the section "Preparing for Installation and Removal" described earlier to prepare.
3. Remove the left side cover and front mask as described earlier in this chapter.
4. Remove all the cables from the factory-installed DVD-ROM drive and the devices installed in the device bay.
5. Remove the factory-installed DVD-ROM drive with the release tabs on the both sides of the drive pushed.

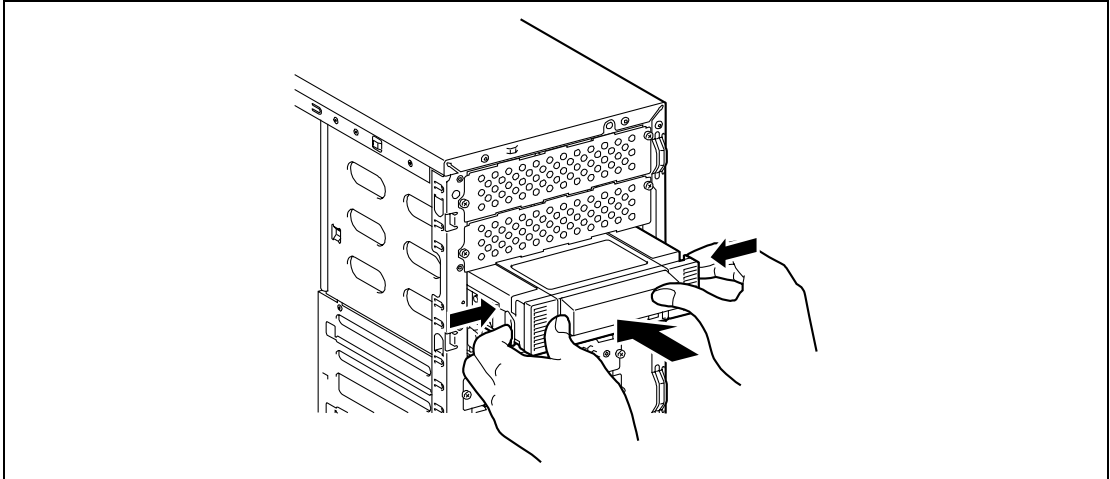


6. Secure the device to be installed to the rail with two screws provided with the device.

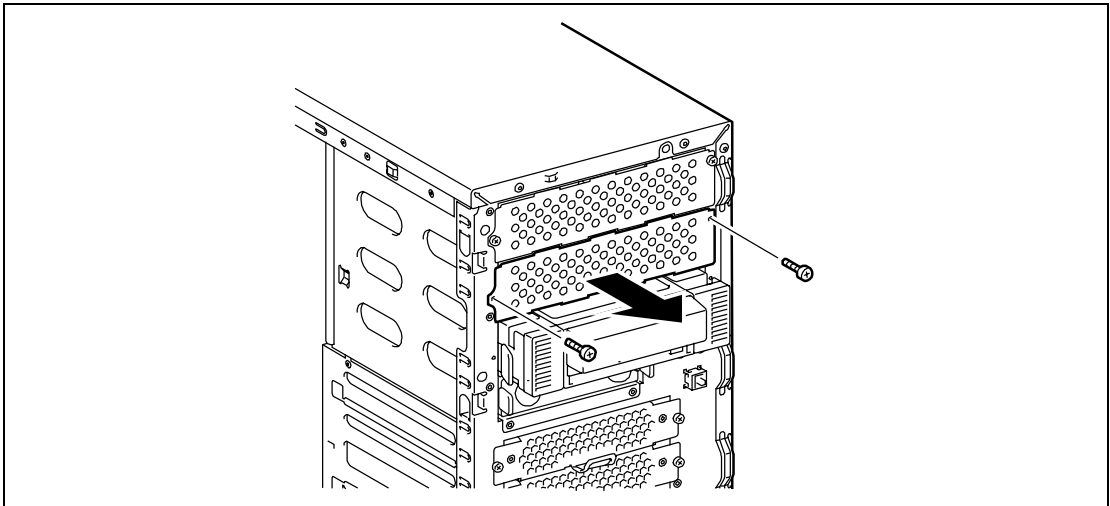


7. Slowly insert the device into the slot from where the DVD-ROM drive has been removed with the release table on both sides of the device.

Push the device until a click occurs to lock it.



8. Remove the two screws from dummy cover of the additional slot 1 to remove the dummy cover.



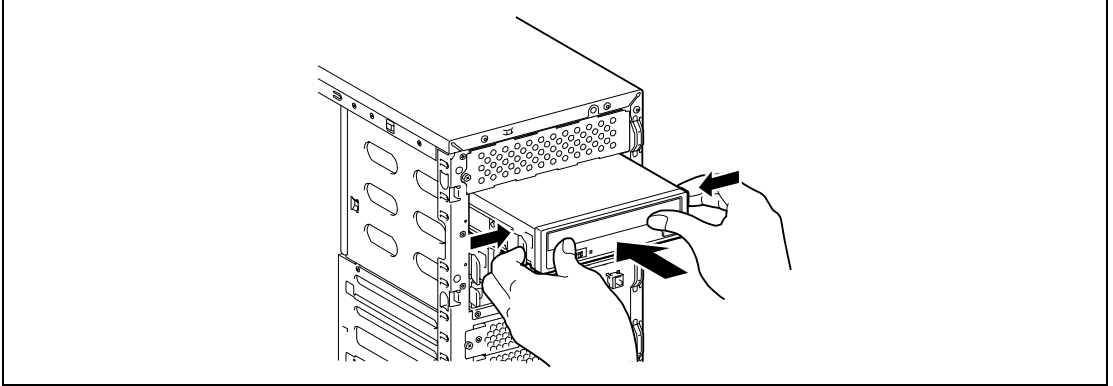
---

**IMPORTANT:** Keep the removed dummy cover for future use.

---

9. Slowly insert the DVD-ROM drive into additional slot 1 with the release tabs on both sides of the drive.

Push the drive until a click occurs to lock it.



10. Connect the interface and power cables to the 5.25-inch device installed from one side of the server.  
See Chapter 10 for details.
11. Assemble the server.
12. Set the parameters including the transfer rate using the BIOS utility of the IDE controller.  
Refer to the manual provided with the IDE controller for details.
13. Install the device driver for the installed device.  
Refer to the manual provided with the device for details.

## Removal

The file device can be removed in the reverse order of the installation. If the device is removed but not installed again, install the dummy cover.

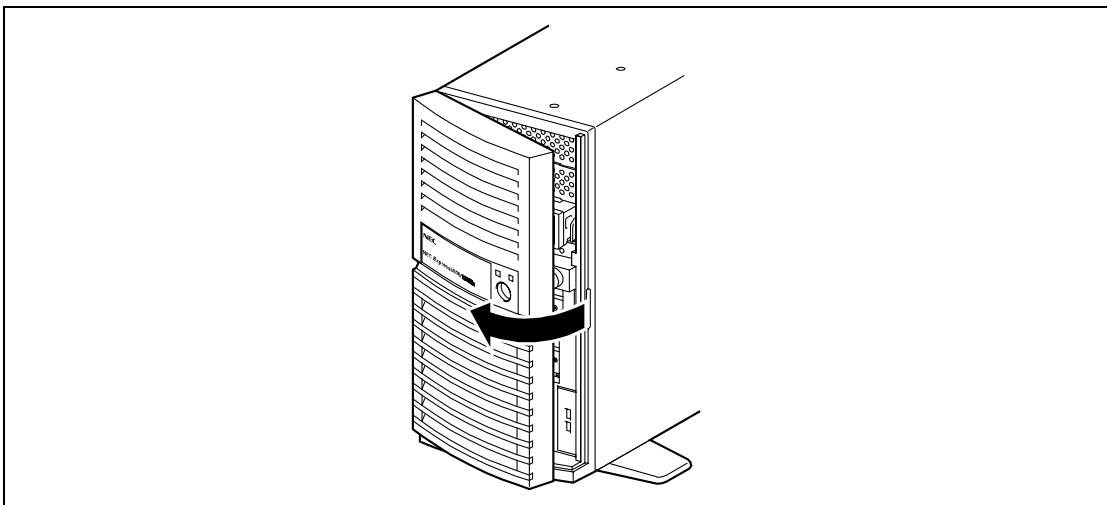
## Additional HDD Cage

The N8154-09 additional HDD cage (called HDD cage) is dedicated to the server. It can contain four SATA hard disk drives to configure a disk array. The hard disk drives can be removed or replaced with the server being powered on (hot-swap feature).

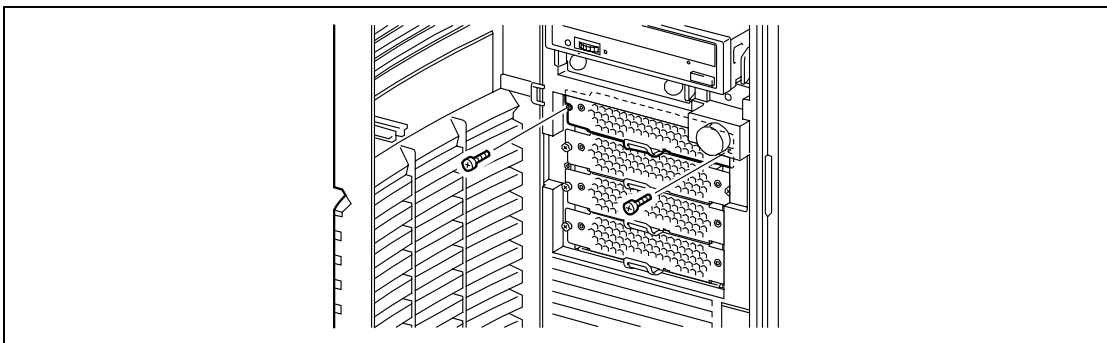
### Installation

Install the HDD cage in the following procedure.

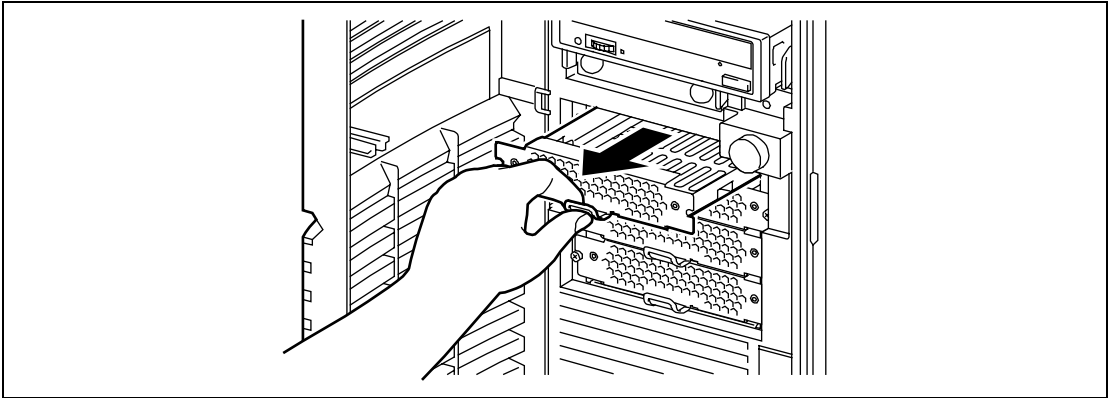
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the left side cover according to the section "Front Mask" described earlier in this chapter and open the front mask.



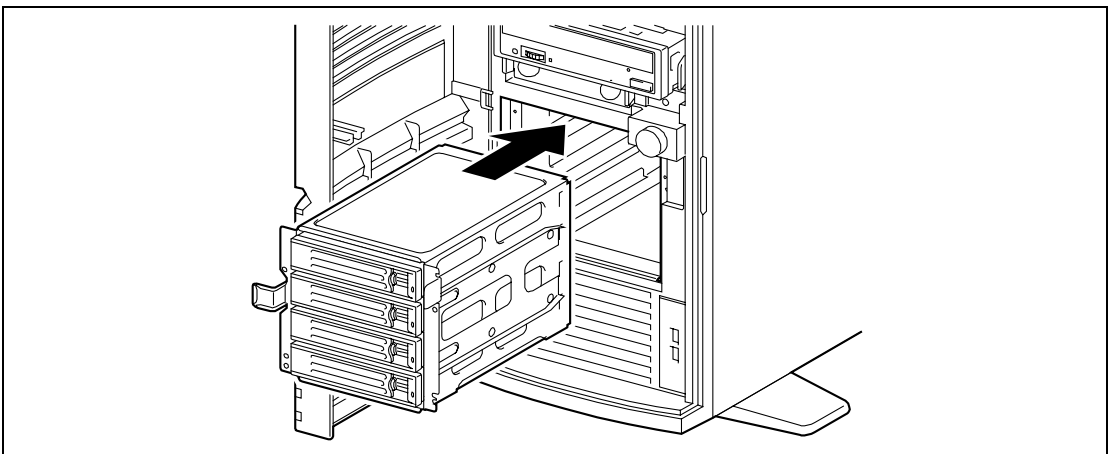
3. Disconnect the interface cable and power cord from the hard disk drive if connected.
4. Remove two screws on the front panel securing the hard disk drive carrier.



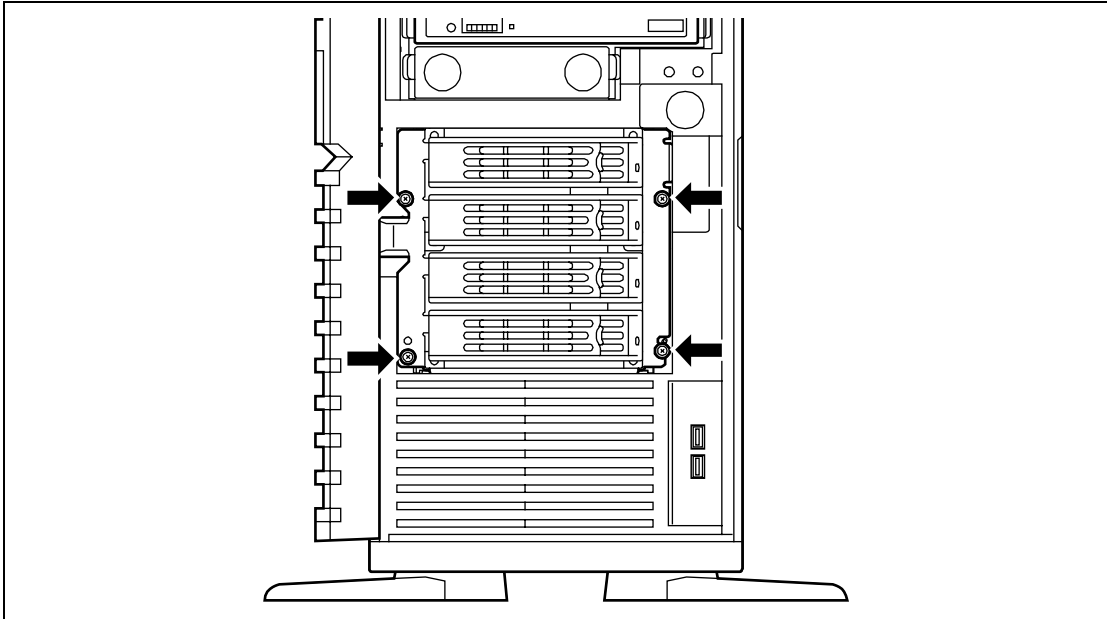
5. Hold the lever and pull out the hard disk drive carrier.



6. Pull out the remaining three hard disk drive carrier in the same manner.
7. Hold the HDD cage and insert it slowly into the server as shown in the figure below.



8. Secure the HDD cage to the server with four screws removed in steps 4 to 6.



---

**IMPORTANT:** Carefully keep the removed drive carriers or screws for future use.

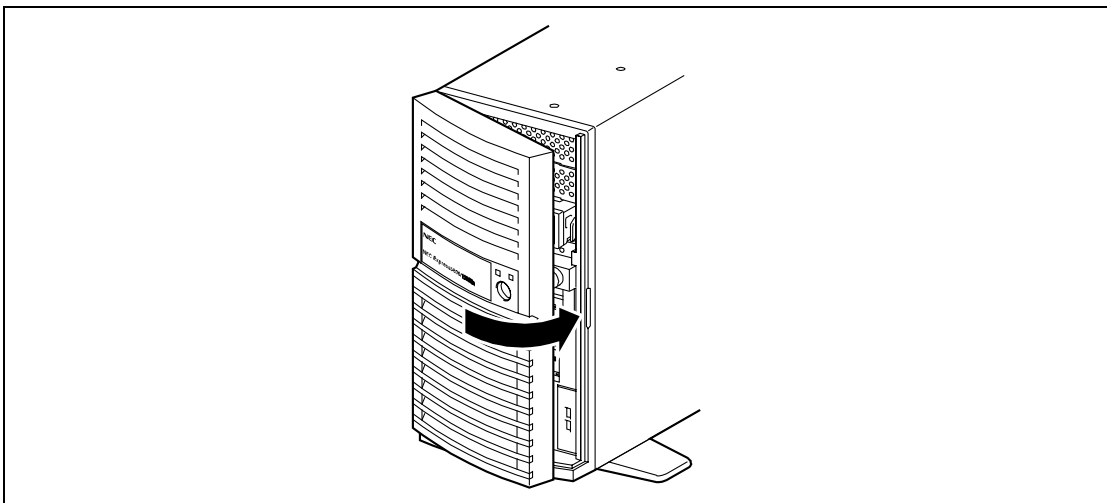
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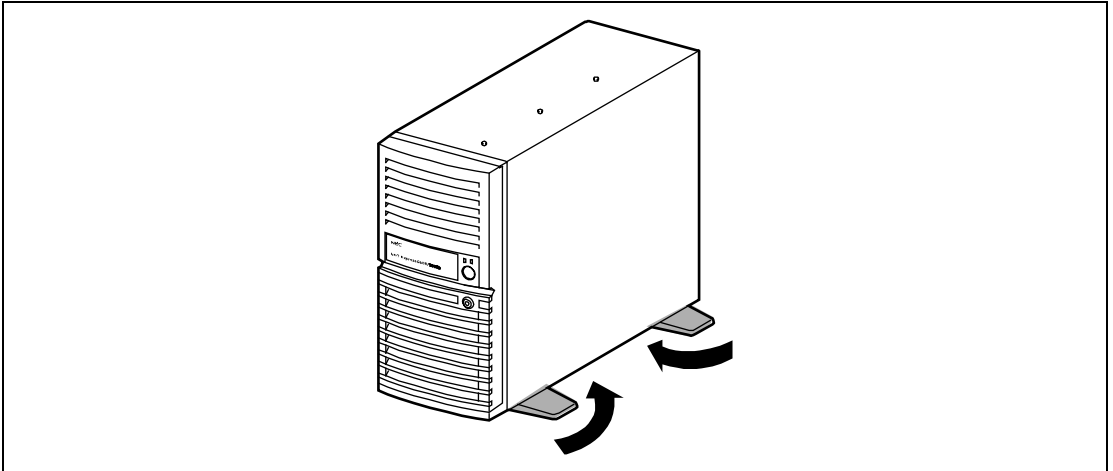
**NOTE:** The location of screw holes depends on the cage. Install the HDD cage properly according to the figure.

---

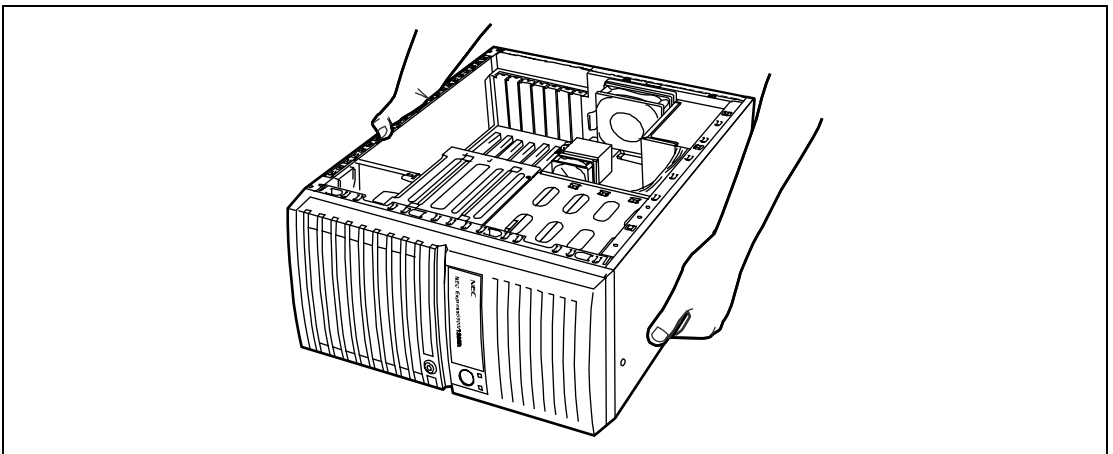
9. Close the front mask.



10. Fold the four stabilizers at the bottom of the server toward inside.



11. Lay the server so that its right cover faces the floor.  
Lay the server slowly and gently.



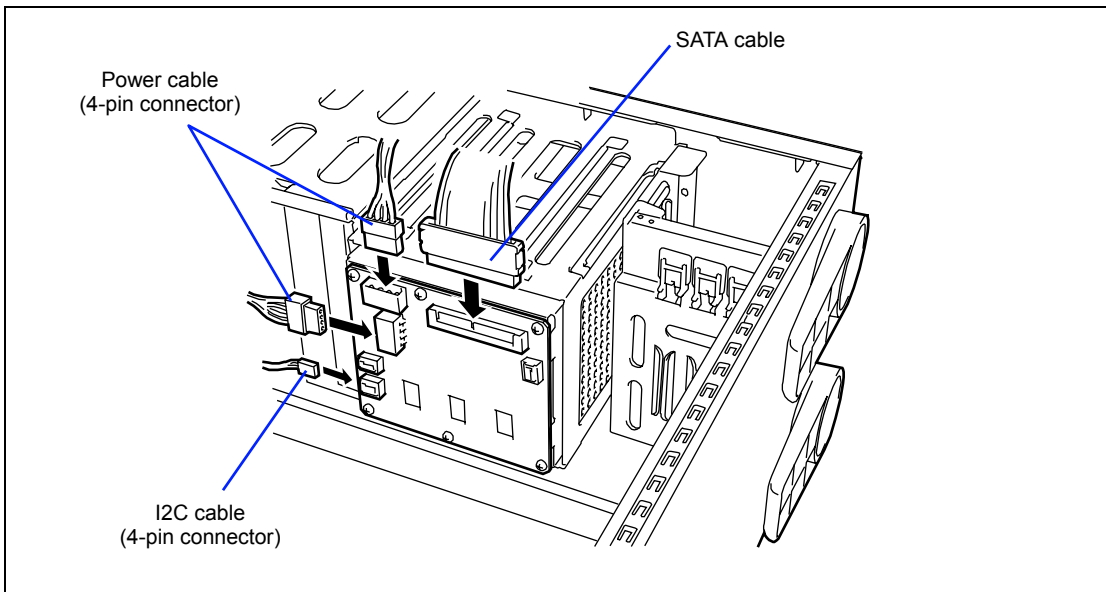
12. Make sure that the disk array controller is installed in the server. If not, install it.

---

**NOTE:** See Chapter 5 for installing the disk array controller.

---

- 13.** Connect the SATA cable provided with the HDD cage, I2C cable, and power cable as shown in the figure below.



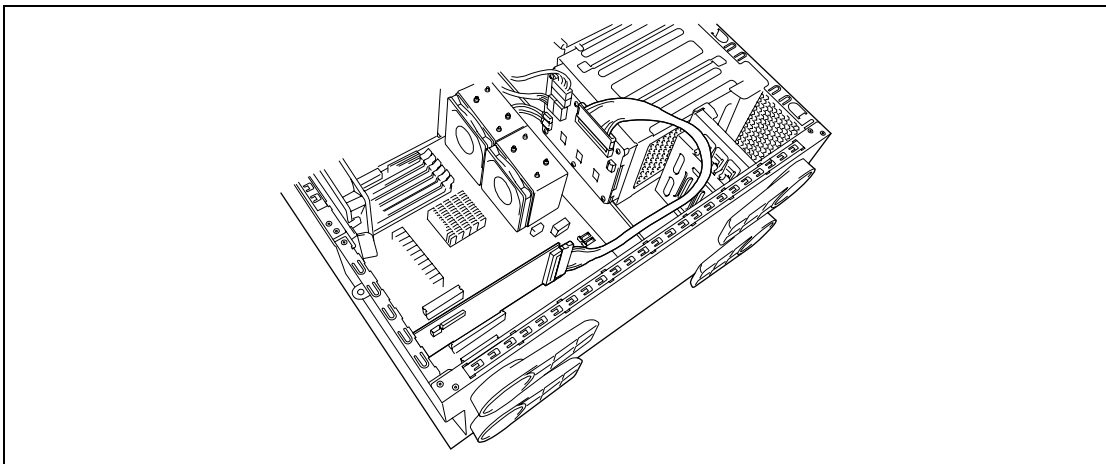
- 14.** Connect the SATA cable to the RAID board (SATA).

A label indicating a channel number of destination port is attached to SATA cable. Connect the SATA cable to the port (connector) having the same number as that of SATA cable.

---

**NOTE:** The figure below shows an example when connecting to N8103-101 RAID board. The location of connector and assignment of channel numbers depend on the board. Refer to the manual that comes with your board.

---





15. Install the left side cover.
16. Raise the server and open the front mask.
17. Install the hot-plug SATA hard disk drives in the HDD cage.

Fully open the lever of the hard disk drive and insert the drive into the HDD cage until it hits the depth of HDD cage.

After the hard disk drive is fully inserted into the cage, close the lever to fix the drive. (A click occurs when it is locked.)

---

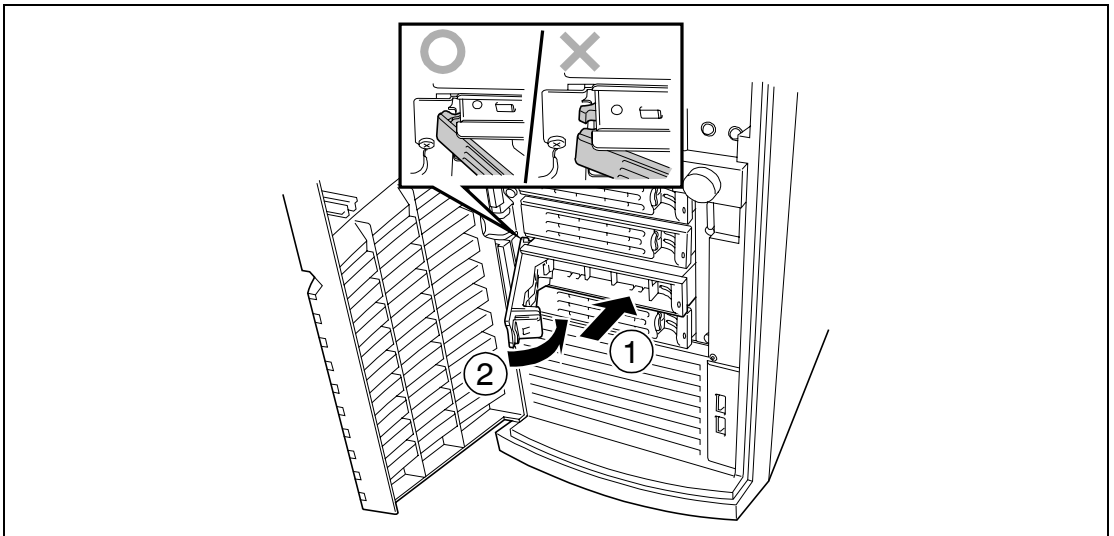
**IMPORTANT:** Use the hard disk drive that is authorized by NEC.  
Consult with your service representative for available hard disk drive.

---

---

**NOTE:** Make sure of the orientation of the hard disk drive tray before inserting the drive. See the figure below. Also make sure that the hooks of the hard disk drive are engaged with the frame of the HDD cage.

---



---

**NOTE:** The upper three slots of the HDD cage contain trays without hard disk drive. To install the hard disk drive, first remove the tray according to the removal procedure described later. Install a hard disk drive tray to the vacant slot of the cage to keep the cooling effect of the server.

---

To remove the hard disk drive carrier, push the green tab on the lever and open the lever toward you until it stops. Then, the hard disk drive tray is unlocked. Securely hold the tray and the lever and insert the tray straight into the HDD cage.

---

**IMPORTANT:** Removing more than one hard disk drive while the server is powered on destroys the logical disk. Remove or replace the hard disk drive one by one.

---

18. Close the front mask.

## Removal

The HDD cage can be removed in the reverse order of the installation.

# Chapter 10

---

## Internal Cabling Diagrams

Internal cable connections of the server are shown below.

---

**NOTE:** See Chapter 2 for detail connector locations on the mother board.

---

## INTERFACE CABLES

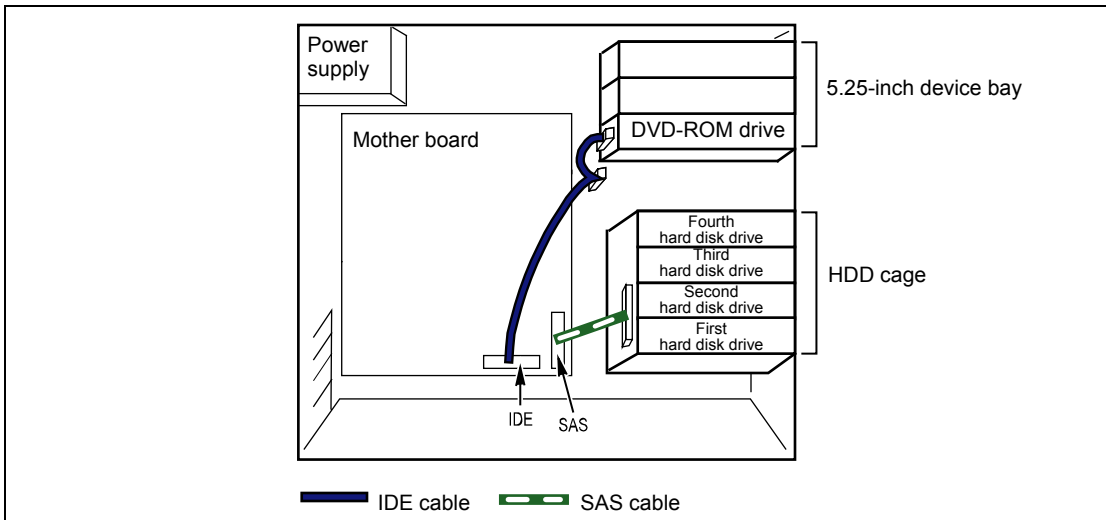
This section describes the connections of the interface cables.

### Addition of Hard Disk Drive

The connection required when a hard disk drive is added is described below.

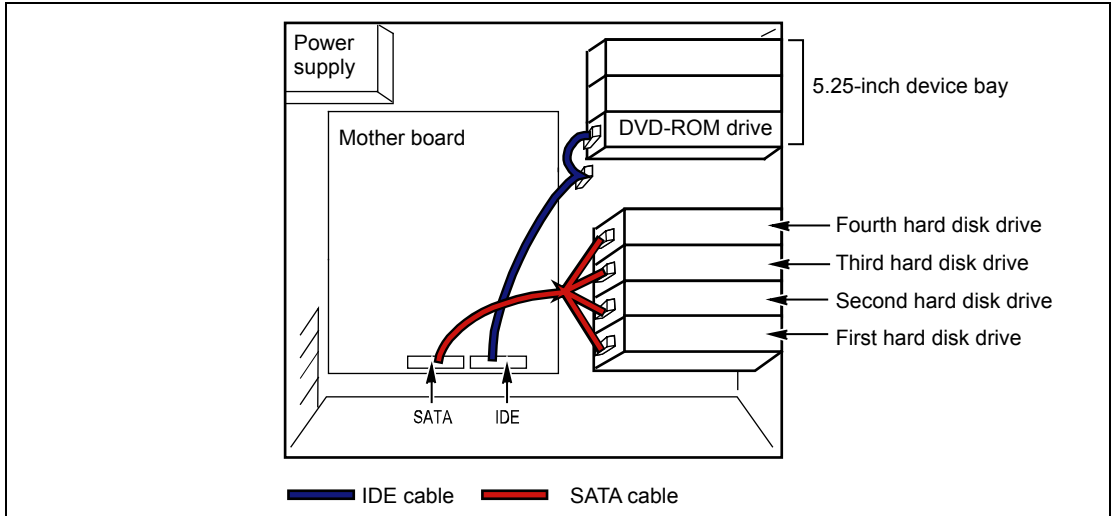
### Installation of SAS Disks

If the SAS hard disk drives are added, connect the cables as shown in the figure below. Fill the drive bay with the hard disk drives from the bottom to top bay.



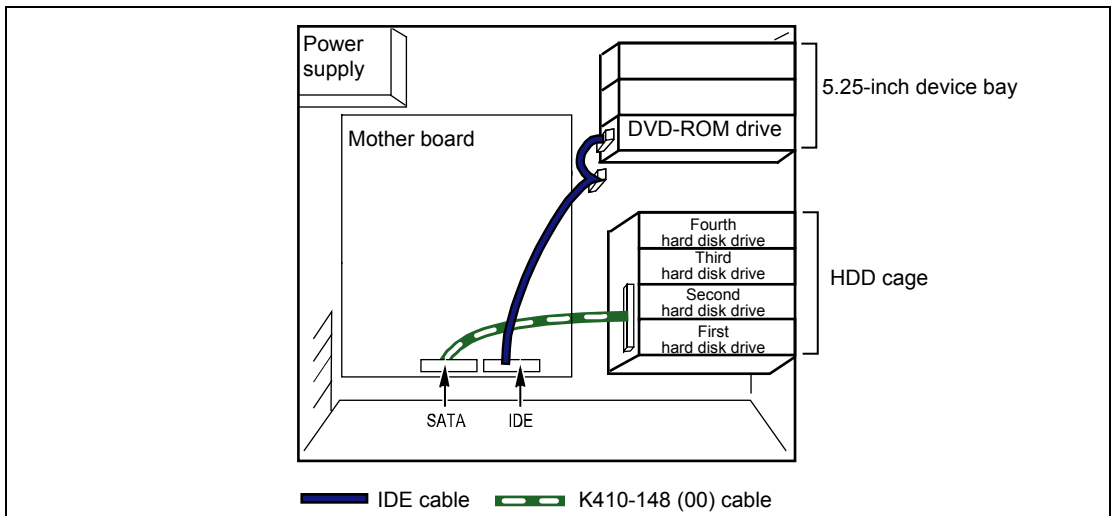
## Installation of SATA Disks

If the serial ATA (SATA) hard disk drives are added, connect the cables as shown in the figure below. Fill the drive bay with the hard disk drives from the bottom to top bay.



## Installation of N8154-09 Additional HDD Cage in SATA Model Server

If the N8154-09 Additional HDD Cage is added, connect the cables as shown in the figure below. Fill the drive bay with the hard disk drives from the bottom to top bay.



---

## Connection of Disk Array Controller N8103-91 (SAS)

If SAS hard disk drives are installed, the disk array controller (SAS) can be connected to the server. The internal hard disk drives can be subject to the disk array configuration. The supported RAID configuration includes RAID0 (striping), RAID1 (mirroring), and RAID5 (striping + parity). Hard disk drives having a different interface cannot be installed together. In addition, the disk array controller cannot be connected to disk expansion unit.

- RAID0 (striping)

Stores data on two hard disk drives by dividing it (striping). Both hard disk drives can be accessed at the same time. This improves disk access performance compared with using a single hard disk.

---

**IMPORTANT:**

- RAID0 does not have data redundancy. When a hard disk drive failure occurs, data cannot be restored.
  - Logical capacity of the array becomes a multiple of the connected hard disk drive.
- 

- RAID1 (mirroring)

Stores the data being saved to one hard disk drive to another hard disk drive. This method is called "mirroring." When storing data onto one hard disk drive, the same data is simultaneously stored onto another hard disk drive. When a hard disk drive becomes faulty, the one with the same data can be used. This provides operation without the system going down.

---

**IMPORTANT:**

- RAID1 reads or writes data to/from the two hard disk drives at the same time. The disk access performance is lower than the single disk.
  - Logical capacity of the array is equal to one hard disk drive connected.
-

- RAID5 (striping + parity)

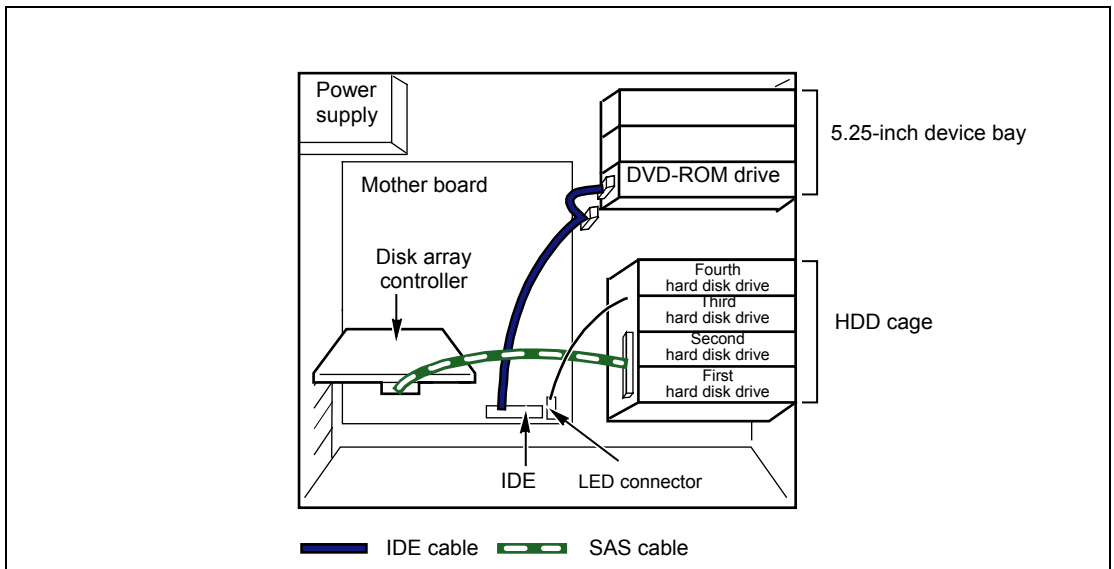
Stores data onto four hard disk drives by dividing it (striping) in the same way as RAID0. With RAID5, parity (redundant data) is also divided and stored on four hard disk drives. Even if one of the configured hard disk drives becomes faulty, data can be used without any problem.

---

**IMPORTANT:**

- Because data is read from or written to four hard disk drives concurrently, the disk access performance is lower than that of the configuration using only a single disk.
  - Because the parity data is saved, the logical capacity is a little lower than the total capacity of the four hard disk drives.
- 

To build a disk array, at least two hard disk drives for RAID0 or RAID5, and at least three hard disk drives for RAID5 are required.



Connect the LED cable provided with the server to the LED connector on the mother board and the disk array controller for indicating the hard disk drive access status.

You can check the disk status (disk error or rebuilding of disk array) through the disk array management utility, MegaRAID Storage Manager, coming with the disk array controller.

---

## Connection of Disk Array Controller N8103-101 (SATA2)

If serial ATA (SATA) hard disk drives are installed, the disk array controller (SATA2) can be connected to the server. The disk array controller (SATA2) is an optional PCI RAID board provided to improve the data reliability. It supports RAID0, RAID1, and RAID5.

- RAID0 (striping)

Stores data on two hard disk drives by dividing it (striping). Both hard disk drives can be accessed at the same time. This improves disk access performance compared with using a single hard disk.

---

**IMPORTANT:**

- RAID0 does not have data redundancy. When a hard disk drive failure occurs, data cannot be restored.
- Logical capacity of the array becomes a multiple of the connected hard disk drive.

- RAID1 (mirroring)

Stores the data being saved to one hard disk drive to another hard disk drive. This method is called "mirroring." When storing data onto one hard disk drive, the same data is simultaneously stored onto another hard disk drive. When a hard disk drive becomes faulty, the one with the same data can be used. This provides operation without the system going down.

---

**IMPORTANT:**

- RAID1 reads or writes data to/from the two hard disk drives at the same time. The disk access performance is lower than the single disk.
- Logical capacity of the array is equal to one hard disk drive connected.

- RAID5 (striping + parity)

Stores data onto three or more hard disk drives by dividing it (striping) in the same way as RAID0. With RAID5, parity (redundant data) is also divided and stored on four hard disk drives.

Even if one of the configured hard disk drives becomes faulty, data can be used without any problem.

---

**IMPORTANT:**

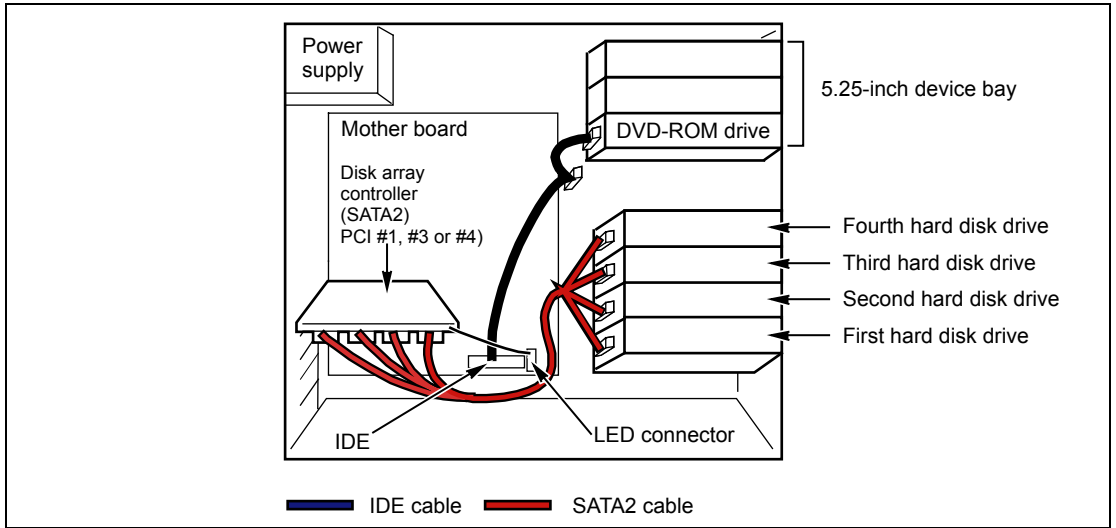
- Because data is read from or written to three or more hard disk drives concurrently, the disk access performance is lower than that of the configuration using only a single disk.
  - Because the parity data is saved, the logical capacity is a little lower than the total capacity of the installed hard disk drives.
-



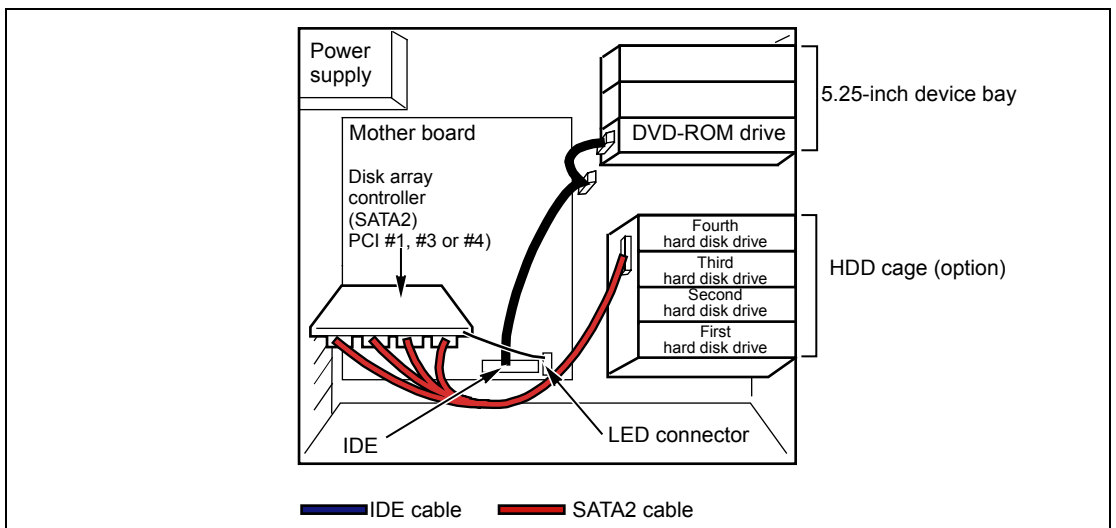
To build a disk array, at least two hard disk drives are required. Use the SATA2 cables provided with the disk array controller (SATA2) for the connection. Remove the cables connected to the hard disk drives and save them for future use.

**IMPORTANT:** Use hard disk drives with the same capacity and performance.

Standard Configuration



When Using Additional HDD Cage



To indicate the access status of the internal hard disk drives, connect the LED cable provided with the server to the LED connector on the mother board and the disk array controller (SATA).

You can check the disk status (disk error or rebuilding of disk array) through the disk array management utility, Web-based Promise Array Manager, coming with the disk array controller (SATA).

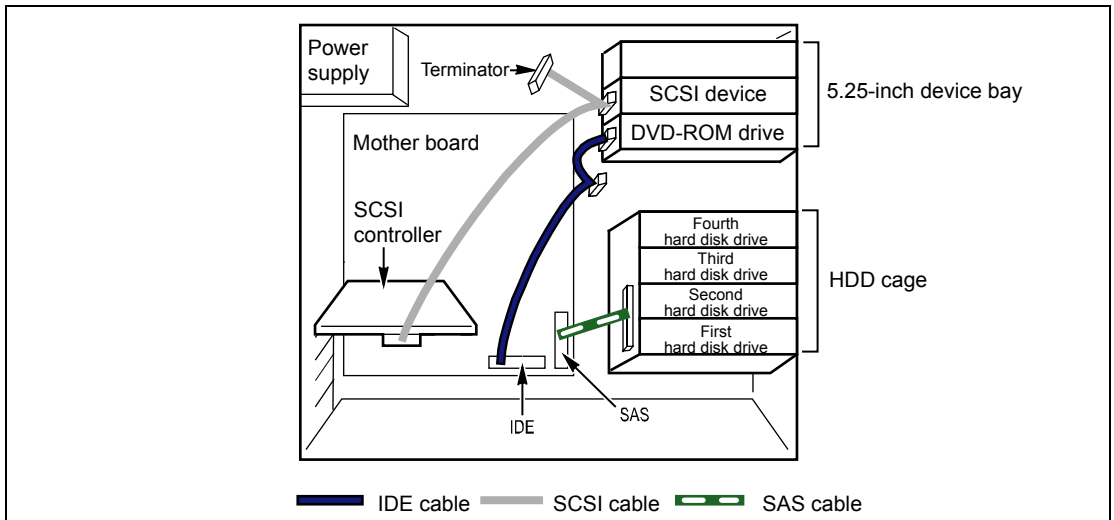
## Connection of 5.25-inch Device

The 5.25-inch device bay can be equipped with a SCSI device or an IDE device.

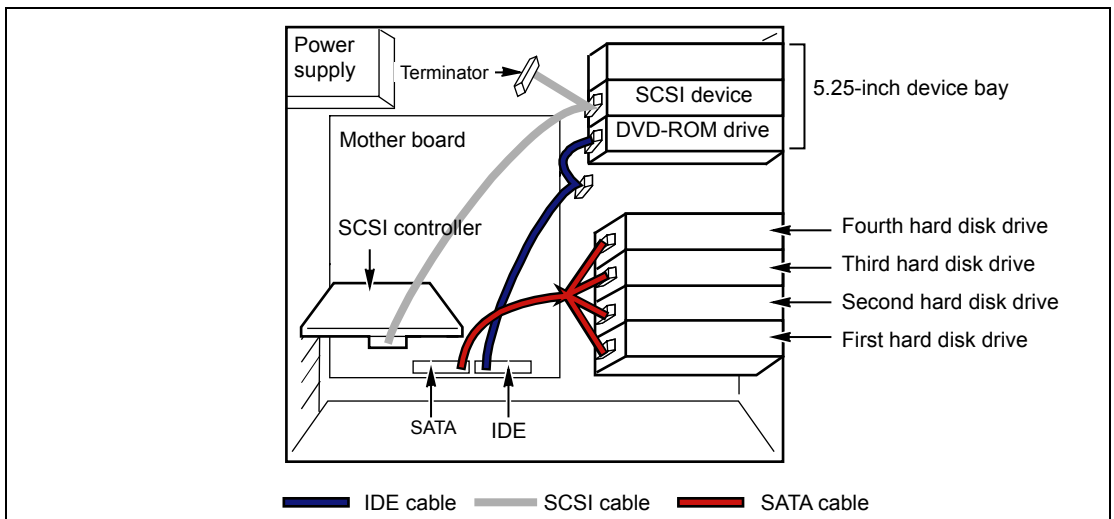
### Installation of SCSI Device

The SCSI controller and the SCSI cable used for the connection is sold separately. If the SCSI cable sold separately (K410-68A(00)) has the connector for terminating the SCSI connection, set the termination setting of the 5.25-inch device to off.

#### [SAS model]



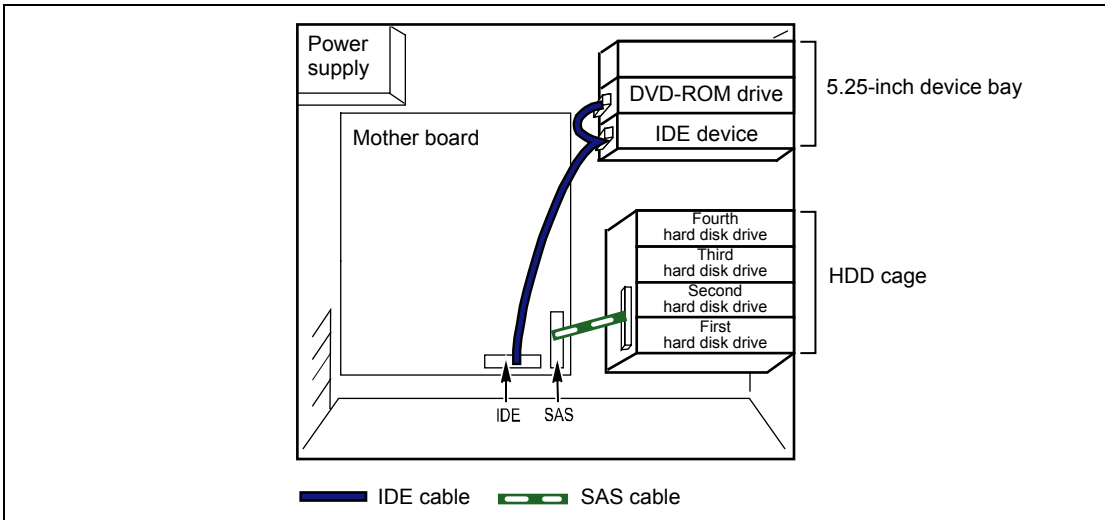
#### [SATA model]



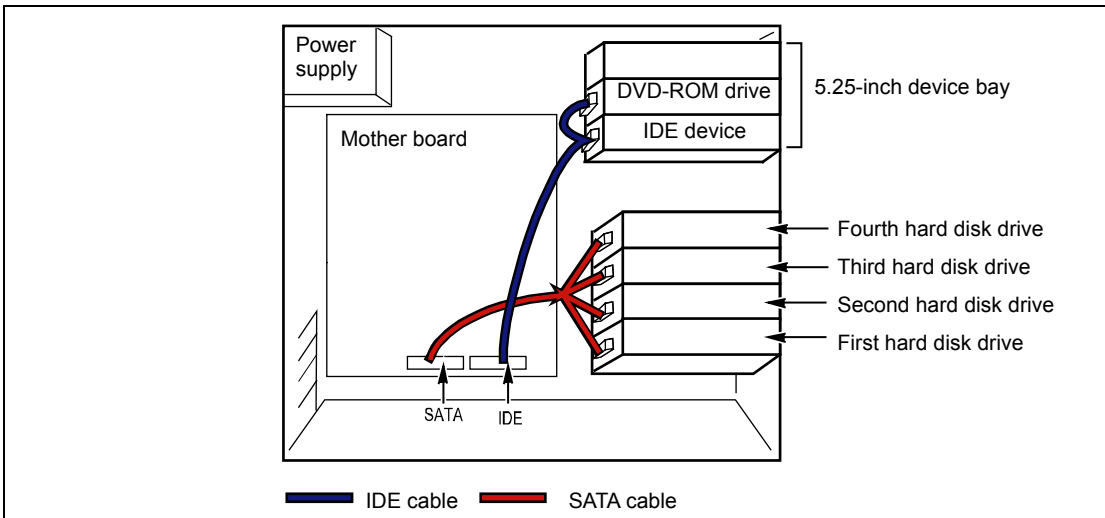
### Installation of IDE Device

Use the separately-priced IDE controller and the IDE cable for the connection.

#### [SAS model]



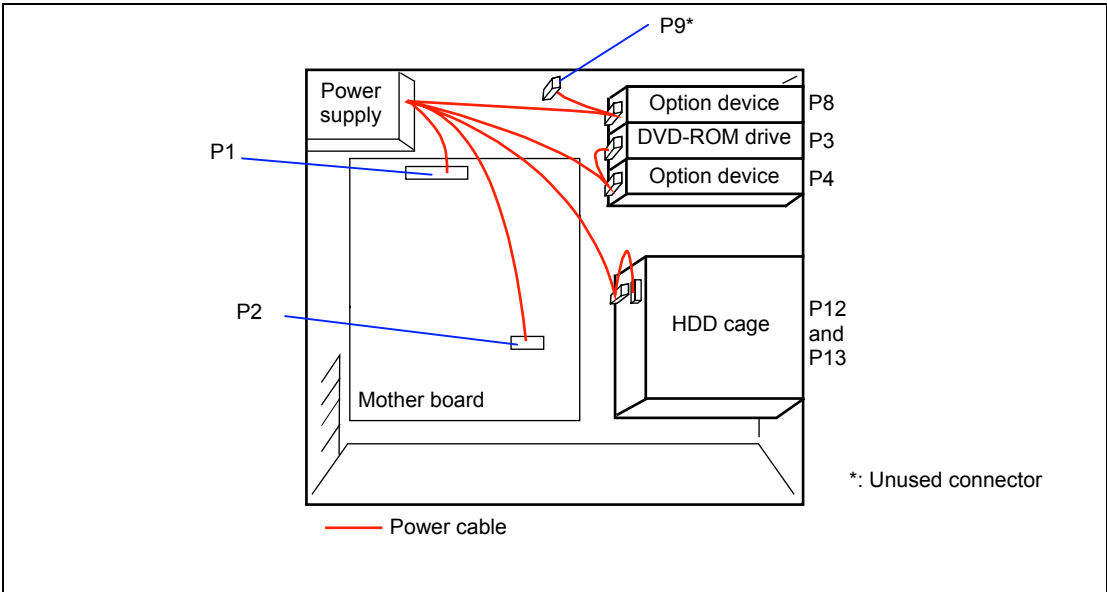
#### [SATA model]



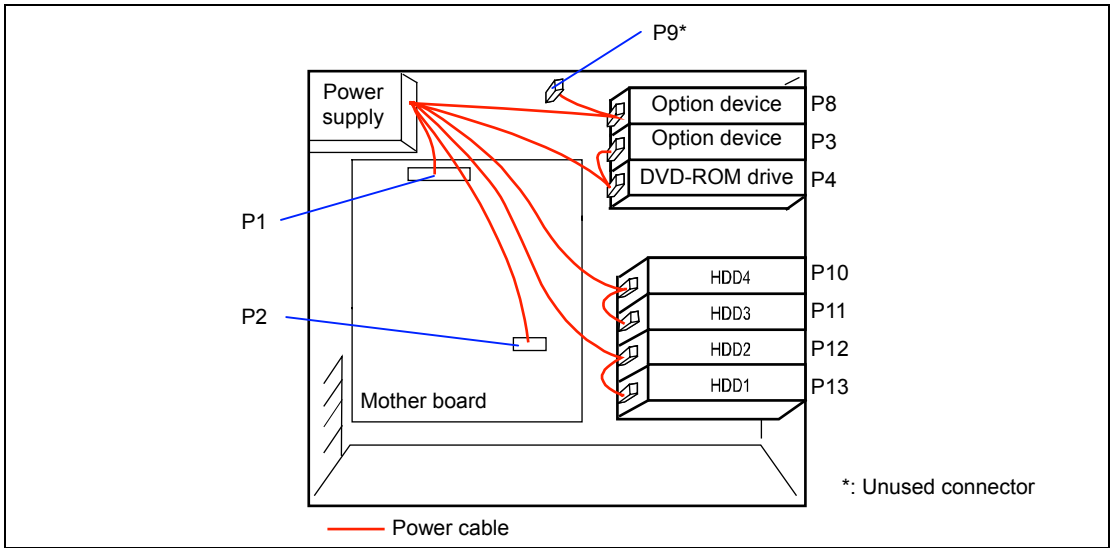
# POWER CABLES

An example of the power cable connection is shown in the figure below. The server only uses the power cables shown here.

[SAS model]



[SATA model]



# Appendix A

## Specifications

### SATA2 Model (N8100-1235F/1236F/1321F/1322F)

Item		NEC Express5800/120Eh			
		N8100-1235F	N8100-1236F	N8100-1321F	N8100-1322F
CPU	Type	Dual-core Intel® Xeon® Processor			
	Clock / Cache	1.6G/1066/4M	3G/1333/4M	2G/1066/4M	2.33G/1333/4M
	Number of processors	1			
	Maximum	2			
Chipset		Intel Blackford-VS + ESB2E + ServerEngines Pilot			
Memory	Standard	1GB (512 MB × 2)			
	Maximum	24 GB (4 GB × 6)			
	Expansion unit	2 DIMMs (512MB×2/1GB×2/2GB×2/4GB×2)			
	Expansion times	2 times			
	Memory module	DDR2-533/667 SDRAM DIMM (Fully Buffered Type), Dual channel memory configuration supported)			
Error check		ECC, ChipKill, Sparing			
Graphics (VRAM)		Matrox G200 + 2MB			
Auxiliary input device	Floppy disk drive (standard)	None			
	Hard disk drive (standard)	None			
	Hard disk drive (maximum)	SATA2 (250GB x 4)			
	Hard disk drive (hot-plug)	Optional Hot Plug SATA2 HDD x 4 with N8154-09F			
DVD-ROM (standard)		DVD-ROM x 1 (load on tray, x6 speed or faster)			
5.25-inch file bay		3 slots (A DVD-ROM drive is factory-installed.)			
3.5-inch disk bay		1-inch height x4 (SATA2 fixed) (Can be changed to SATA2 HotPlug)			
Additional PCI slot		5 slots (PCI Express (x8) x1, PCI Express (x4) x1, PCI Express (x1) x1, 64-bit/100MHz PCI-X x1, 32-bit/33MHz PCI x1)			
Disk array	Standard	On-board SATA SW RAID (0,1)			
	Option	Disk array controller			
Internal interface	IDE (single unit)	Ultra ATA100 x1ch			
	SATA (single unit)	SATA2 x6ch			
	SATA (disk Array)	Supports N8103-101 (max. 1 )			
	SCSI (single unit)	Option (for tape unit with N8103-75/95)			
	SCSI (external Disk Array)	Option (Supports N8103-80/81 (up to 2, SAS DAC (SW/HW) may be installed together)			
	SAS (single unit)	-			
	SAS (internal disk array)	-			
SAS (external disk array)	Supports N8103-90 (up to 3 including N8103-91/99)				

## A-2 Specifications

---

Item		NEC Express5800/120Eh			
		N8100-1235F	N8100-1236F	N8100-1321F	N8100-1322F
External interface	Front	USB2.0 x2			
	Rear	VGA x1, KB (PS/2) x1, Mouse (PS/2) x1, Serial x1, USB2.0 x2, 10/100/1000BASE-T x2, 10/100BASE-TX x1 (100BASE-TX is used for management)			
Cabinet design		Mini tower			
External dimensions		198 (width) × 440 (height) × 518 (depth) mm			
Weight		16 kg (Max. 23 kg)			
Power supply		100 to 120 Vac/200 to 240 Vac parallel bi-polar receptacle with the ground line			
Power consumption		550 VA, 545 W			
Switch		Power/Sleep (front), Dump (rear)			
Security key		Provided			
LED		Power/Sleep, HDD (front), LAN x3 (rear)			
Environmental requirements	Temperature	10 to 35°C (operating), -10 to 55°C (non-operating, storage)			
	Humidity	20 to 80% RH (no condensation)			



**SATA2 Model (N8100-1287F/1288F/1352F)**

Item		NEC Express5800/120Eh		
		N8100-1287F	N8100-1288F	N8100-1352F
CPU	Type	Dual-core Intel® Xeon® Processor		
	Clock / Cache	1.6G/1066/4M	2G/1333/4M	3.0G/1333/4M
	Number of processors	1		
	Maximum	2		
Chipset		Intel Blackford-VS + ESB2E + ServerEngines Pilot		
Memory	Standard	1GB (512 MB × 2)		
	Maximum	24 GB (4 GB × 6)		
	Expansion unit	2 DIMMs (512MB×2/1GB×2/2GB×2/4GB×2)		
	Expansion times	2 times		
	Memory module	DDR2-533/667 SDRAM DIMM (Fully Buffered Type), Dual channel memory configuration supported)		
	Error check	ECC, ChipKill, Sparing		
Graphics (VRAM)		Matrox G200 + 2MB		
Auxiliary input device	Floppy disk drive (standard)	None		
	Hard disk drive (standard)	None		
	Hard disk drive (maximum)	SATA2 (500GB x 4)		
	Hard disk drive (hot-plug)	Optional Hot Plug SATA2 HDD x 4 with N8154-09F		
	DVD-ROM (standard)	DVD-ROM x 1 (load on tray, x6 speed or faster)		
5.25-inch file bay		3 slots (A DVD-ROM drive is factory-installed.)		
3.5-inch disk bay		1-inch height x4 (SATA2 fixed) (Can be changed to SATA HotPlug)		
Additional PCI slot		5 slots (PCI Express (x8) x1, PCI Express (x4) x1, PCI Express (x1) x1, 64-bit/100MHz PCI-X x1, 32-bit/33MHz PCI x1)		
Disk array	Standard	On-board SATA SW RAID (0,1)		
	Option	Disk array controller		
Internal interface	IDE (single unit)	Ultra ATA100 x1ch		
	SATA (single unit)	SATA2 x6ch		
	SATA (disk Array)	Supports N8103-101 (max. 1 )		
	SCSI (single unit)	Option (for tape unit with N8103-75/95)		
	SCSI (external Disk Array)	Option (Supports N8103-80/81 (up to 2, SAS DAC (SW/HW) may be installed together)		
	SAS (single unit)	-		
	SAS (internal disk array)	-		
	SAS (external disk array)	Supports N8103-90 (up to 3 including N8103-91/99)		

## A-4 Specifications

---

Item		NEC Express5800/120Eh		
		N8100-1287F	N8100-1288F	N8100-1352F
External interface	Front	USB2.0 x2		
	Rear	VGA x1, KB (PS/2) x1, Mouse (PS/2) x1, Serial x1, USB2.0 x2, 10/100/1000BASE-T x2, 10/100BASE-TX x1 (100BASE-TX is used for management)		
Cabinet design		Mini tower		
External dimensions		198 (width) × 440 (height) × 518 (depth) mm		
Weight		16 kg (Max. 23 kg)		
Power supply		100 to 120 Vac/200 to 240 Vac parallel bi-polar receptacle with the ground line		
Power consumption		550 VA, 545 W		
Switch		Power/Sleep (front), Dump (rear)		
Security key		Provided		
LED		Power/Sleep, HDD (front), LAN x3 (rear)		
Environmental requirements	Temperature	10 to 35°C (operating), -10 to 55°C (non-operating, storage)		
	Humidity	20 to 80% RH (no condensation)		

**SAS Model (N8100-1237F/1238F/1323F/1324F)**

Item		NEC Express5800/120Eh			
		N8100-1237F	N8100-1238F	N8100-1323F	N8100-1324F
CPU	Type	Dual-core Intel® Xeon® Processor			
	Clock / Cache	1.6G/1066/4M	3G/1333/4M	2G / 1066 / 4M	2.33G/1066/4M
	Number of processors	1			
	Maximum	2			
Chipset		Intel Blackford-VS + ESB2E + ServerEngines Pilot			
Memory	Standard	1GB (512 MB × 2)			
	Maximum	24 GB (4 GB × 6)			
	Expansion unit	2 DIMMs (512MB×2/1GB×2/2GB×2/4GB×2)			
	Expansion times	2 times			
	Memory module	DDR2-533/667 SDRAM DIMM (Fully Buffered Type), Dual channel memory configuration supported)			
	Error check	ECC, ChipKill, Sparing			
Graphics (VRAM)		Matrox G200 + 2MB			
Auxiliary input device	Floppy disk drive (standard)	None			
	Hard disk drive (standard)	None			
	Hard disk drive (maximum)	SAS (146GB x 4)			
	Hard disk drive (hot-plug)	Hot Plug SAS HDD x 4			
	DVD-ROM (standard)	DVD-ROM x 1 (load on tray, x6 speed or faster)			
5.25-inch file bay		3 slots (A DVD-ROM drive is factory-installed.)			
3.5-inch disk bay		1-inch height x4 (SAS HotPlug)			
Additional PCI slot		5 slots (PCI Express (x8) x1, PCI Express (x4) x1, PCI Express (x1) x1, 64-bit/100MHz PCI-X x1, 32-bit/33MHz PCI x1)			
Disk array	Standard	On-board SAS SW RAID (0,1)			
	Option	Disk array controller			
Internal interface	IDE (single unit)	Ultra ATA100 x1ch			
	SATA (single unit)	-			
	SATA (disk Array)	-			
	SCSI (single unit)	Option (for tape unit with N8103-75/95)			
	SCSI (external Disk Array)	Option (Supports N8103-80/81 (up to 2, SAS DAC (SW/HW) may be installed together)			
	SAS (single unit)	4i connector x1 + 2ch			
	SAS (internal Disk Array)	Supports N8103-91/99 (either one)			
	SAS (external Disk Array)	Supports N8103-90 (up to 3 including N8103-91/99)			
External interface	Front	USB2.0 x2			
	Rear	VGA x1, KB (PS/2) x1, Mouse (PS/2) x1, Serial x1, USB2.0 x2, 10/100/1000BASE-T x2, 10/100BASE-TX x1 (100BASE-TX is used for management)			
Cabinet design		Mini tower			
External dimensions		198 (width) × 440 (height) × 518 (depth) mm			
Weight		16 kg (Max. 23 kg)			
Power supply		100 to 120 Vac/200 to 240 Vac parallel bi-polar receptacle with the ground line			
Power consumption		550 VA, 545 W			
Switch		Power/Sleep (front), Dump (rear)			
Security key		Provided			
LED		Power/Sleep, HDD (front), LAN x3 (rear)			
Environmental requirements	Temperature	10 to 35°C (operating), -10 to 55°C (non-operating, storage)			
	Humidity	20 to 80% RH (no condensation)			

**SAS Model (N8100-1290F/1291F/1293F)**

Item		NEC Express5800/120Eh		
		N8100-1290F	N8100-1291F	N8100-1293F
CPU	Type	Dual-core Intel® Xeon® Processor		
	Clock / Cache	1.6G/1066/4M	2G/1066/4M	3G/1066/4M
	Number of processors	1		
	Maximum	2		
Chipset		Intel Blackford-VS + ESB2E + ServerEngines Pilot		
Memory	Standard	1GB (512 MB × 2)		
	Maximum	24 GB (4 GB × 6)		
	Expansion unit	2 DIMMs (512MB×2/1GB×2/2GB×2/4GB×2)		
	Expansion times	2 times		
	Memory module	DDR2-533/667 SDRAM DIMM (Fully Buffered Type), Dual channel memory configuration supported)		
	Error check	ECC, ChipKill, Sparing		
Graphics (VRAM)		Matrox G200 + 2MB		
Auxiliary input device	Floppy disk drive (standard)	None		
	Hard disk drive (standard)	None		
	Hard disk drive (maximum)	SAS (300GB x 4)		
	Hard disk drive (hot-plug)	Hot Plug SAS HDD x 4		
	DVD-ROM (standard)	DVD-ROM x 1 (load on tray, x6 speed or faster)		
5.25-inch file bay		3 slots (A DVD-ROM drive is factory-installed.)		
3.5-inch disk bay		1-inch height x4 (SAS HotPlug)		
Additional PCI slot		5 slots (PCI Express (x8) x1, PCI Express (x4) x1, PCI Express (x1) x1, 64-bit/100MHz PCI-X x1, 32-bit/33MHz PCI x1)		
Disk array	Standard	On-board SAS SW RAID (0,1)		
	Option	Disk array controller		
Internal interface	IDE (single unit)	Ultra ATA100 x1ch		
	SATA (single unit)	-		
	SATA (disk Array)	-		
	SCSI (single unit)	Option (for tape unit with N8103-75/95)		
	SCSI (external Disk Array)	Option (Supports N8103-80/81 (up to 2, SAS DAC (SW/HW) may be installed together)		
	SAS (single unit)	4i connector x1 + 2ch		
	SAS (internal Disk Array)	Supports N8103-91/99 (either one)		
	SAS (external Disk Array)	Supports N8103-90 (up to 3 including N8103-91/99)		
External interface	Front	USB2.0 x2		
	Rear	VGA x1, KB (PS/2) x1, Mouse (PS/2) x1, Serial x1, USB2.0 x2, 10/100/1000BASE-T x2, 10/100BASE-TX x1 (100BASE-TX is used for management)		
Cabinet design		Mini tower		
External dimensions		198 (width) × 440 (height) × 518 (depth) mm		
Weight		16 kg (Max. 23 kg)		
Power supply		100 to 120 Vac/200 to 240 Vac parallel bi-polar receptacle with the ground line		
Power consumption		550 VA, 545 W		
Switch		Power/Sleep (front), Dump (rear)		
Security key		Provided		
LED		Power/Sleep, HDD (front), LAN x3 (rear)		
Environmental requirements	Temperature	10 to 35°C (operating), -10 to 55°C (non-operating, storage)		
	Humidity	20 to 80% RH (no condensation)		

# Appendix B

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## Other Precautions

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### Transfer Rate of the On-board LAN Controller

The onboard network interface controller supports 10Base-T and 100Base-TX networks and is capable of full or half duplex.

The controller can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the link speed and duplex mode to the same value as the value specified for HUB.

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### Server Management Software

The NEC EXPRESSBUILDER CD-ROM that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

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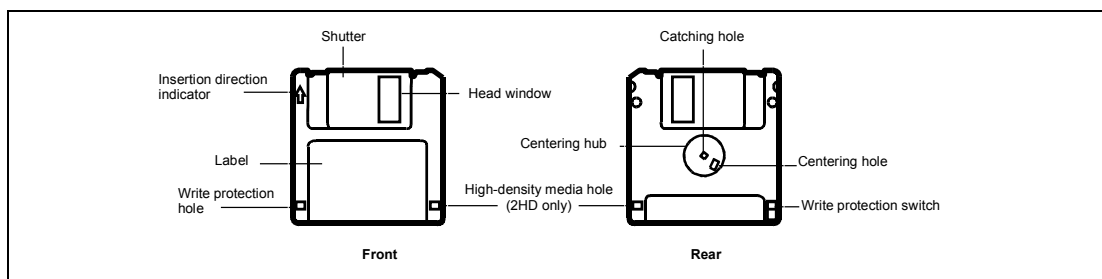
### Floppy Disk

The following describes use of the floppy disk.

#### Floppy disk type

The server uses 3.5-inch floppy disks. You can use the following two types of 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)  
Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)  
Stores data of 720KB.



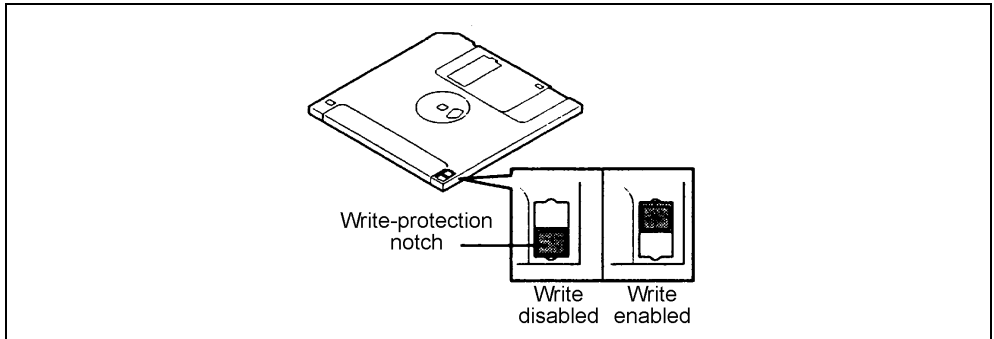
### Notes on use

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Do not leave the floppy disk with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the floppy disk near any form of liquid or a chemical or in a place where a chemical may be accidentally sprayed over them.
- Do not place any magnetic objects (e.g., magnet) near the floppy disk.
- Do not clip the floppy disk or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.

- Write-protection

A floppy disk has a write-protect switch that prevents the stored data from accidental erasure.



You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data.

To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.

- Disk format

To write data into a floppy disk, the floppy disk must be "formatted." "Formatting" is to initialize the floppy disk and make it available for the system environment (operating system).

---

**IMPORTANT:**

- Formatting a used floppy disk clears all the data contained in it, if any.
- Formatting a floppy disk from the DOS command line is not available with the server. Use a formatted floppy disk to work with it on the DOS command line.

The format method depends on your operating system. Refer to the manual that comes with your operating system for details.

- Data backup

"Data backup" is to copy data stored in a media into another media (e.g., floppy disk, digital audio tape, or magnet-optical disk).

---

**IMPORTANT:** Make sure to make a back-up copy of every floppy disk, if provided.

---

The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or sever failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis.

---

## DVD/CD-ROM

Keep the following notes in mind to use the DVD/CD-ROM for the server:

- Press the center of the storage case to remove the DVD/CD-ROM from the case.
- Do not drop the DVD/CD-ROM.
- Do not place anything on the DVD/CD-ROM or bend the DVD/CD-ROM.
- Do not attach any label onto the DVD/CD-ROM.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the DVD/CD-ROM with its printed side upward and gently put it on the tray.
- Do not scratch the DVD/CD-ROM or write anything directly on it with a pencil or ball-point pen.
- Do not leave the DVD/CD-ROM with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the DVD/CD-ROM in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the DVD/CD-ROM, wipe the DVD/CD-ROM from its center to edge with a dry soft cloth slowly and gently.
- Use the dedicated cleaner to clean the DVD/CD-ROM. Do not use record spray/cleaner, benzene, or thinner.
- Keep the DVD/CD-ROM in the dedicated case when not in use.

---

## Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- Saving your valuable data

When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- Three-generation data management

NEC recommends that you should employ three-generation data management for data storage.

Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the fourth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.



This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

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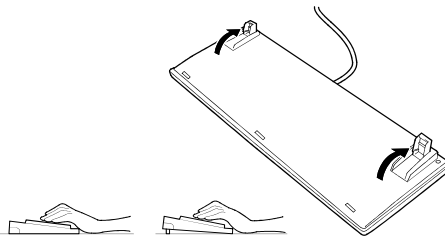
## Keyboard

The keyboard is a device to instruct your computer by entering alphanumeric characters or symbols.

---

### IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



---

**NOTE:** The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

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## Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

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### NOTE:

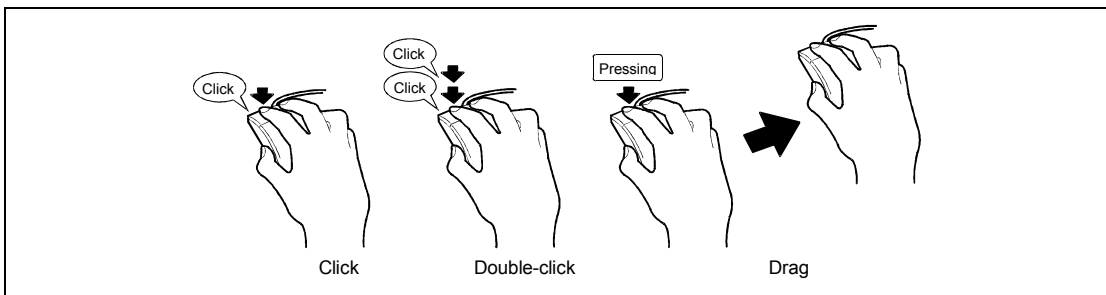
- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)



Mouse operation includes "Click," "Double-click," and "Drag."

- Click: Press the button only once and release it.  
Double-click: Press the button twice consecutively and release it.  
Drag: Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



# Appendix C

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## IRQ and I/O Port Address

The factory-set interrupt requests and I/O port addresses are listed below. Find an appropriate one to install an optional device.

### Interrupt Request

The factory-set IRQs are assigned as follows:

IRQ	Peripheral Device (Controller)
0	System timer
3	COM2
4	COM1
5	PCI
8	Real-time clock
9	APCI
10	PCI
11	BMC
13	Numeric processor
14	Primary IDE channel
16	PCI
24	PCI

## I/O Port Address

The factory-set I/O port addresses for the server are assigned as follows:

Address <sup>*1</sup>	Chip in Use <sup>*2</sup>
00 - 1F	DMA controller
20 - 2D	Interrupt controller
2E - 2F	Super I/O configuration
30 - 31	Interrupt controller
34 - 35	Interrupt controller
38 - 39	Interrupt controller
3C - 3D	Interrupt controller
40 - 43	Timer controller
4E - 4F	Super I/O configuration
50 - 53	Timer/counter
61	NMI
62	LPC reserve
63	NMI
70 - 77	NMI/real-time clock
80 - 91	DMA controller
92	Port 92
93 - 9F	DMA controller
A0 - A1	Interrupt controller
A4 - A5	Interrupt controller
A8 - A9	Interrupt controller
AC - AD	Interrupt controller
B0 - B1	Interrupt controller
B2 - B3	Advanced power management
B4 - B5	Interrupt controller
B8 - B9	Interrupt controller
BC - BD	Interrupt controller
C0 - DF	DMA controller
F0	Coprocessor error
F1 - FF	Logic device configuration
170 - 177	IDE secondary bus controller
1F0 - 1F7	IDE primary bus controller
2F8 - 2FF	Serial port 2
376	IDE secondary bus controller
3F0 -3F5	Floppy disk drive 1
3F6	IDE primary bus controller
4D0 -4D1	Interrupt controller
CA2 - CA3	BMC SMS interface
CA4 - CA5	BMC SMS interface
CF8 - CFB	PCI configuration address/reset control (CF9)
CFC - CFF	PCI configuration data

\*1 Hexadecimal notation

\*2 I/O port address for PCI devices can be arbitrarily assigned according to the type and number of PCI devices.

# Appendix D

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## Installing Windows Server 2003 x64 Editions

This section explains how to install the Windows Server 2003 x64 Editions.

### BEFORE INSTALLING Windows Server 2003 x64 Editions

Read the following notes or information before installing the Windows Server 2003 x64 Editions.

---

#### Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER CD-ROM attached to your server supports the following optional boards;

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6.

---

#### <SAS Hard Disk Model>

- Controllers supporting installation of OS with Express Setup
  - N8103-91 Disk Array Controller (Internal SAS HDD)\*
  - N8103-99 Disk Array Controller(0ch)\*
  - LSI Logic Embedded MegaRAID™ (embedded on the mother board)
- Other controllers
  - N8103-80F Disk Array Controller (SCSI 1ch)\*
  - N8103-75 SCSI Controller\*
  - N8103-95 SCSI Controller\*

#### <SATA Hard Disk Model>

- Controllers supporting installation of OS with Express Setup
    - N8103-101 Disk Array Controller (SATA2)\*
    - LSI Logic Embedded MegaRAID™ (embedded on the mother board)
  - Other controllers
    - N8103-80F Disk Array Controller (SCSI 1ch)\*
    - N8103-75 SCSI Controller\*
    - N8103-95 SCSI Controller\*
- \* Option.

---

## **Installing Service Pack**

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

---

## **Updating System**

If you modified the Windows system, execute "Update Express5800 system" in Master Control Menu.

---

## **Re-installing to the Hard Disk which has been upgraded to Dynamic Disk**

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

---

## **Manual Installation when N8103-80F Keeps Connection**

If you keep those controllers connecting during installation process, pop-up messages may appear. This does not affect on system behavior. Click [YES] and continue the installation. Follow the message hereafter.

---

## **Mounting MO Device**

Do not mount an MO device on your server during the Windows installation.

---

## **About Removable Media**

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.



## INSTALLING WINDOWS SERVER 2003 X64 EDITIONS

### Preparations for Installation

- NEC EXPRESSBUILDER CD-ROM
- Microsoft Windows Server 2003 R2 Standard x64 Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise x64 Edition (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER

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### Creating "Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER.

---

**NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Edition, you do not need to create it again.

---

You can create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER, use this procedure.

If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.
4. Press the RESET switch or press **Ctrl + Alt + Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.

5. Select [Create Support Disk] from [Tools].
6. Select [Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER] from [Create Support Disk] menu.



7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.  
Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER will be created.

Write-protect and attach a label, then keep it safely.

- Create from [Master Control Menu]

[Master Control Menu] runs on the following operating systems.

- Windows Server 2003 x64 Editions
- Windows Server 2003
- Windows Vista
- Windows XP x64 Edition
- Windows XP
- Windows 2000
- Windows Me/98/95
- Windows NT 4.0

You can create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER from [Master Control Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Run the operating system.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.  
[Master Control Menu] will appear.
4. Click on [Setup] with left mouse button and click [Make OEM-DISK] and then [for Windows Server 2003 x64 Edition].

---

**NOTE:** You can do the same operation with the menu appeared by the Right-click.

---

5. Insert the floppy disk into the floppy disk drive according to the message.  
Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER will be created.

Write-protect and attach a label, then keep it safely.

---

## Windows Server 2003 x64 Editions Clean Installation

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

1. Turn on the system power.
2. Insert the Windows Server 2003 x64 Edition CD-ROM into the DVD-ROM drive.
3. Press **Ctrl + Alt + Delete** to reset the system.

After a bootable operating system has been installed on the hard disk, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

If no bootable operating system exists on the hard disk, this step is unnecessary.

The Windows Server 2003 x64 Editions setup screen will appear.

If the screen is not displayed, **Enter** was not pressed properly.

Begin after turning on the system power again.

4. If the RAID controller or SCSI controller is installed in the system, press **F6** in a few seconds when the window is in either of the following states.
  - "Setup is inspecting your computer's hardware configuration ..." is displayed.
  - A screen with a solid blue background is displayed.

---

**IMPORTANT:** There is no visible indication on screen when **F6** has been pressed.

---

5. When the following message is displayed, press **S**.

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices.

The following message is displayed.

Please insert the disk labeled  
manufacturer-supplied hardware support disk  
into Drive A:  
\*Press ENTER when ready.

6. Insert the Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

A list of mass storage devices is displayed.

Select the [LSI Logic Fusion-MPT SAS Driver (Server 2003 x64)] and press **Enter**.

7. Select the proper SCSI Adapter and press **Enter**.
  - [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]  
(When N8103-91 board is installed.)
  - [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]  
(When N8103-99 board is installed.)
  - [Promise SuperTrak EX Series Controller-x64 platform]  
(When N8103-101 board is installed.)
  - [LSI MegaRAID Software RAID (Windows XP/2003 64-bit)]  
(When LSI Logic Embedded MegaRAID™ is used.)Continue performing tasks according to the subsequent messages that appear.
8. When the following message is shown, press **Enter** to start "Welcome to Setup".
9. When the installation of Windows Server 2003 x64 Edition has finished, the system reboots automatically.
10. The [Windows Setup] screen will be displayed after logged on to the system.



---

**IMPORTANT:**

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.
  - You can install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2. In this case, note that the [Windows Setup] screen is not displayed.
- 

11. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the DVD-ROM drive.

Confirm the parameters and click [OK].

12. When the installation has completed, remove Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM from the DVD-ROM drive, and restart the system.

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this manual.

---

## Reinstallation to Multiple Logical Drives

This subsection describes the procedure for reinstalling the operation system if the multiple logical drives exist.

### Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

### Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

The following list shows the existing partitions and unpartitioned space on this computer.

Use the UP and DOWN ARROW keys to select an item in the list.

\* Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.

3. Continue the clean installation again following the procedure described earlier in this chapter.

The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

## Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

---

## Updating the System

To ensure normal system operation you should update your system using the following procedures.

1. Logon to the system using the administrator account or other account which is a member of the Administrators group.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.  
Master Control Menu is automatically appeared on the screen.
3. Click on [Setup] with left mouse button and click on [Update NEC Express5800 system] section.
4. Continue your work for system update as the following message.
5. Click on [OK] to restart the system.
6. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive immediately after clicking on [OK].

---

**IMPORTANT:** If you change the configuration of the system (by adding or removing hardware or Operating system software components) or repair the system, you must run the system update again.

---

## DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

### **PROSet**

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. The [Windows Explorer] dialog starts.
  - \* The procedure in the case of the standard start menu  
Click Start menu and click [Windows Explorer].
  - \* The procedure in the case of the classic start menu  
Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "DXSETUP.EXE" in the following directory.  
DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PROSET\WS3XPX64  
The [Intel® PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Complete" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

---

## Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhance the through put by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

---

### IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- 

If you want to utilize AFT/ALB feature, follow the procedure below to setup.

1. The [Intel (R) PROSet] dialog box appears.
  - \* The procedure in the case of the standard start menu  
Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, point to [Settings] and click [Control Panel].
    2. Click [administrative tools].
    3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.
2. Select [Teaming] tab and then check on [Team with other adapters] and click [New Team...].

The [New Team Wizard] dialog box appears and click [Next].

  - \* Specify a name for the team if it necessary.
3. Select the adapters to include in team.
4. Select "Adapter Fault Tolerance" or "Adaptive Load Balancing" and click [Next].
5. Click [Finish].
6. The setup will go back to [Intel (R) PROSet for Wired Connections] dialog box, so click [OK].
7. Restart the system.



## Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not be able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

[When PROSet is not installed]

- 1.** The [Local Area Connection Properties] dialog box appears.
  - \* The procedure in the case of the standard start menu
    - 1) Click Start menu, click [Control Panel], click [Network Connections], and click [Local Area Connection].
  - \* The procedure in the case of the classic start menu
    - 1) Click Start menu, click [Settings] and click [Network Connections].

The [Network Connections] dialog box appears.
    - 2) Right-click [Local Area Connection] and click [Properties] from pop-up menu.
- 2.** Click [Configure].

The property dialog box for network adapter appears.
- 3.** Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
- 4.** Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.
  - \* The procedure in the case of the standard start menu  
Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, point to [Settings] and click [Control Panel].
    2. Click [administrative tools].
    3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.
2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.
3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

---

**NOTE:** We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

---

---

## Re-install the Network Driver

The network driver will be installed automatically.

---

## Re-install the Optional Network Board Driver

If you want to utilize optional Network Board (N8104-112/119/111/86/120/121), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER CD-ROM.

In case of utilizing (N8104-86/111)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS3XPX64"

In case of utilizing (N8104-112/119/120/121)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS3XPX64"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

---

## Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].  
[(Network Adapter Name) Properties] appears.

---

**NOTE:** [(Intel (R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

---

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-86/111)], specify  
[DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS3XPX64].  
Then click [Next].  
When using [(N8104-112/119/120/121)], specify  
[DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS3XPX64].  
Then click [Next].
7. Click [Finish].

---

## Graphics Accelerator Driver

The graphics accelerator driver will be automatically installed by Express Setup or system update.

---

**NOTE:** Please refer to the following <reinstalling> when the graphics accelerator driver is deleted, and reinstalled after OS is installed.

---

<About the driver of graphics accelerator (N8105-45)>

When graphics accelerator (N8105-45) board is installed or it separates, the deletion of the graphics accelerator driver which has already been installed is necessary.

The procedure is as follows.

1. Click Start menu, point to [Setting] and click [Control Panel].
2. Click [Add/Remove Programs].
3. Select the graphics accelerator driver from the program list and click "Change/Remove".

To delete a standard graphics accelerator driver, select:  
[Matrox Graphics Software (remove only)]

To delete a graphics accelerator (N8105-45) driver, select:  
[ATI Display Driver]

---

**NOTE:** Please choose the graphics accelerator driver which has already been installed.

---

4. Follow the message to continue the uninstallation and restart the system.
5. Installing graphics accelerator driver.

Manually installation:

Make installation in the way of "Reinstallation of graphics accelerator driver"

Automatic installation:

You should execute the system update again referring to "Updating the system".

End of installation.

<Reinstallation of graphics accelerator driver>

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "SETUP.EXE" which is in the following directory.

To install a standard graphics accelerator driver:

<DVD-ROM Drive Letter>:\WINNT\W2K3AMD\VIDEO\MATROX\SETUP.EXE.

To install a graphics accelerator (N8105-45) driver:

<DVD-ROM Drive Letter>:\WINNT\W2K3AMD\VIDEO\ES1000\SETUP.EXE.

---

**NOTE:** Please choose one of above to be installed.

---

4. Follow the message to continue the installation.  
If the dialog message "Digital Signature could not be found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive, and restart the system.  
End of installation.

## Optional Network Board Driver

If you want to utilize optional Network Board (N8104-112/119/111/86/120/121), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER CD-ROM.

In case of utilizing (N8104-86/111)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS03\_32E"

In case of utilizing (N8104-112/119/120/121)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS03\_32E"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

## Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and Double-click [(Network Adapter Name)].  
[(Network Adapter Name) Properties] appears.  
NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter.  
All other names show the Optional Network Board.
3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location(Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-86/111)], specify  
[DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS03\_32E].  
Then click [Next].  
When using [(N8104-112/119/120/121)], specify  
[DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS03\_32E].  
Then click [Next].
7. Click [Finish].

---

## **Installing SCSI Controller Driver (N8103-75)**

If you utilize SCSI controller driver (N8103-75), update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

The SCSI controller driver will be installed automatically.

---

## **Installing SCSI Controller Driver (N8103-95)**

The SCSI controller driver will be installed automatically.

---

## **Installing Disk Array Controller Driver (N8103-80F)**

To additionally install the N8103-80F in a system containing Windows Server 2003 x64 Edition, connect the controller and take the following steps to install the driver:

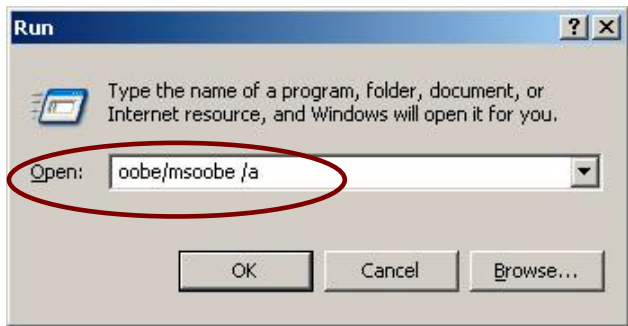
1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click [LSI Logic Megaraid SCSI 320-1] which Device Manager lists.
3. Click the [Driver] tab and click [Update Driver...].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select the "Search for the best driver in these locations." and check the "Search removable media [floppy, CD-ROM...]" check box.
6. Insert "Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, and click [Next].
7. Copying of the driver is completed, and the [Completing the Hardware Update Wizard] dialog box below appears. Click [Finish].

## About Windows Activation

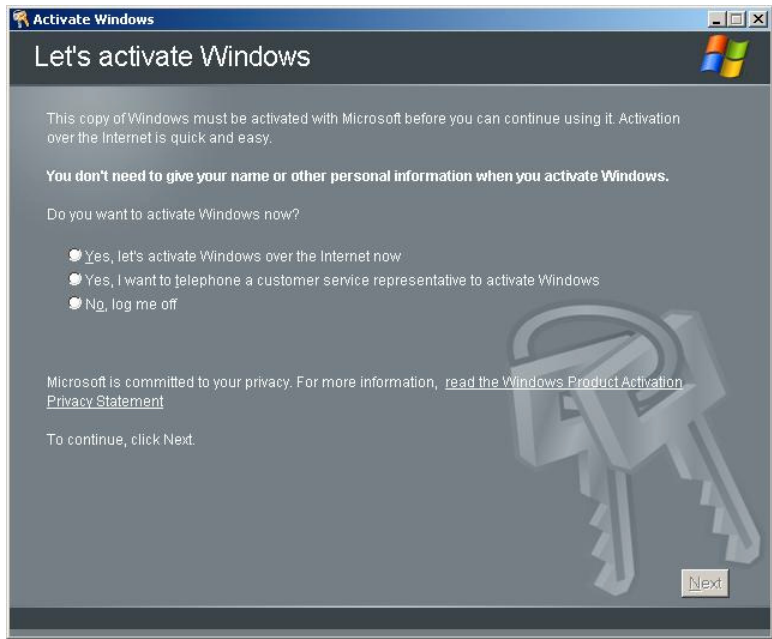
Windows Server 2003 x64 Editions must be activated before you can use Windows Server 2003 x64 Editions.

Windows activation process is as follows.

1. Click [Run] on [Start] menu.  
Type as follows in the [Open:] box, and click [OK].  
oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].





The following screen is displayed.

Generating new Installation ID...

3. Process "Windows activation" according to the following message.

**Activate Windows**

### Activate Windows by phone

Just four steps, and you're done...

**Step 1:**

**Step 2:** Call a number below to speak with a customer service representative:  
Toll-free number:  
Toll number:

**Step 3:** Provide the customer service representative with the following installation ID:  
**000000-000000-000000-000000-000000-000000-000000-000000**  
(Click **Change product key** only if requested to do so by the customer service representative)

**Step 4:** Type the confirmation ID that the customer service representative gave you:  
A B C D E F G  
 -  -  -  -  -  -

To continue, click Next.

## **SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)**

Set for collecting memory dump using the procedure described in Chapter 5.

# Appendix E

---

## Installing Windows Server 2003

This section explains how to install the Windows Server 2003.

### BEFORE INSTALLING WINDOWS SERVER 2003

Read the following notes or information before installing the Windows Server 2003.

---

#### Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER CD-ROM attached to your server supports the following optional boards;

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6.

---

#### <SAS Hard Disk Model>

- Controllers supporting installation of OS with Express Setup
  - N8103-91 Disk Array Controller (Internal SAS HDD)\*
  - N8103-99 Disk Array Controller(0ch)\*
  - LSI Logic Embedded MegaRAID™ (embedded on the mother board)
- Other controllers
  - N8103-80F Disk Array Controller (SCSI 1ch)\*
  - N8103-75 SCSI Controller\*
  - N8103-95 SCSI Controller\*

#### <SATA Hard Disk Model>

- Controllers supporting installation of OS with Express Setup
    - N8103-101 Disk Array Controller (SATA2)\*
    - LSI Logic Embedded MegaRAID™ (embedded on the mother board)
  - Other controllers
    - N8103-80F Disk Array Controller (SCSI 1ch)\*
    - N8103-75 SCSI Controller\*
    - N8103-95 SCSI Controller\*
- \* Option.

---

## **Installing Service Pack**

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

---

## **Updating System**

If you modified the Windows system, execute "Update Express5800 system" in Master Control Menu.

---

## **Re-installing to the Hard Disk which has been upgraded to Dynamic Disk**

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

---

## **Manual Installation when N8103-80F Keeps Connection**

If you keep those controllers connecting during installation process, pop-up messages may appear. This does not affect on system behavior. Click [YES] and continue the installation. Follow the message hereafter.

---

## **Mounting MO Device**

Do not mount an MO device on your server during the Windows installation.

---

## **About Removable Media**

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

---

## **Application of Service Pack**

When using Windows Server 2003 with this equipment, surely apply ServicePack 1. When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

## Creating Partition Size

The size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system =	3500MB (Windows Server 2003 R2) 3500MB (Windows Server 2003 with Service Pack1) 4400MB (Windows Server 2003 + Service Pack1 CD-ROM)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 12MB
Application Size	= Required Size

---

### IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
  - The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
- 

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

$$3500\text{MB} + (512\text{MB} * 1.5) + (512\text{MB} + 12\text{MB}) + \text{Application Size} \\ = 4792\text{MB} + \text{Application Size}$$

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

(If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

## INSTALLING WINDOWS SERVER 2003

### Preparations for Installation

- NEC EXPRESSBUILDER CD-ROM
- Microsoft Windows Server 2003 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 Enterprise Edition (CD-ROM), Microsoft Windows Server 2003 R2 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 R2 Enterprise Edition (CD-ROM)
- Windows Server 2003 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER

---

### Creating "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER.

---

**NOTE:** If you have already "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

---

You can create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER, use this procedure.

If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.
4. Press the RESET switch or press **Ctrl + Alt + Delete** to reboot the server .(You may also turn off and then on again to reboot the server.)  
The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create Support Disk] from [Tools].

6. Select [Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER] from [Create Support Disk] menu.
7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen. Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER will be created. Write-protect and attach a label, then keep it safely.

■ Create from [Master Control Menu]

[Master Control Menu] runs on the following operating systems.

- Windows Server 2003 x64 Editions
- Windows Server 2003
- Windows Vista
- Windows XP x64 Edition
- Windows XP
- Windows 2000
- Windows Me/98/95
- Windows NT 4.0

You can create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER from [Master Control Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Run the operating system.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server. [Master Control Menu] will appear.
4. Click on [Setup] with left mouse button and click [Make OEM-DISK] and then [for Windows Server 2003].

---

**NOTE:** You can do the same operation with the menu appeared by the Right-click.

---

5. Insert the floppy disk into the floppy disk drive according to the message. Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER will be created. Write-protect and attach a label, then keep it safely.

---

## Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the DVD-ROM drive.
3. Press **Ctrl + Alt + Delete** to reset the system.

After a bootable operating system has been installed on the hard disk, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

If no bootable operating system exists on the hard disk, this step is unnecessary.

The Windows Server 2003 setup screen will appear.

If the screen is not displayed, **Enter** was not pressed properly.

Begin after turning on the system power again.

4. If the RAID controller or SCSI controller is installed in the system, press **F6** in a few seconds when the window is in either of the following states.
  - "Setup is inspecting your computer's hardware configuration ..." is displayed.
  - A screen with a solid blue background is displayed.

---

**IMPORTANT:** There is no visible indication on screen when **F6** has been pressed.

---

5. When the following message is displayed, press **S**.

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices.

The following message is displayed.

Please insert the disk labeled  
manufacturer-supplied hardware support disk  
into Drive A:  
\*Press ENTER when ready.

6. Insert the Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

A list of mass storage devices is displayed.

Select the [LSI Logic Fusion-MPT SAS Driver (Server 2003 32-bit)] and press **Enter**.



7. Select the proper SCSI Adapter and press **Enter**.
  - [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)] (When N8103-91 board is installed.)
  - [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)] (When N8103-99 board is installed.)
  - [Promise SuperTrak EX8350/8300 Controller-Intel x86 platform] (When N8103-101 board is installed.)
  - [LSI MegaRAID Software RAID (Windows XP/2003)] (When LSI Logic Embedded MegaRAID™ is used.)Continue performing tasks according to the subsequent messages that appear.
8. When the following message is shown, press **Enter** to start "Welcome to Setup".
9. When the installation of Windows Server 2003 has finished, the system reboots automatically.
  - Windows Server 2003 has installed: Go on the step 13
  - Windows Server 2003 R2 has installed: Go on the step 10
10. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.



---

**IMPORTANT:**

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.
  - You can install Microsoft Windows Server 2003 R2 DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 DISC 2. In this case, note that the [Windows Setup] screen is not displayed.
-

- 11.** Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the DVD-ROM drive. Confirm the parameters and click [OK].
- 12.** When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the DVD-ROM drive, and restart the system.
- 13.** When the installation has completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of manual.

---

## Reinstallation to Multiple Logical Drives

This subsection describes the procedure for reinstalling the operation system if the multiple logical drives exist.

### Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

### Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

The following list shows the existing partitions and unpartitioned space on this computer.

Use the UP and DOWN ARROW keys to select an item in the list.

- \* Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.

3. Continue the clean installation again following the procedure described earlier in this chapter.

The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

## Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?
---

8. Close the [Computer Management].

---

## Re-installing the Operation System if Multiple Logical Drives Exist

### [Before Re-installing the Operation System]

Be sure to make backup copies before re-installing the operation system just in case.

### [Re-installing the Operation System]

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

The following list shows the existing partitions and unpartitioned space on this computer.

Use the UP and DOWN ARROW keys to select an item in the list.

\* Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.

3. Continue the clean installation again following the procedure described in this manual.
4. The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

### [Procedure for Modifying the Drive Letter]

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

---

## Updating the System

To ensure normal system operation you should update your system using the following procedures.

1. Logon to the system using the administrator account or other account which is a member of the Administrators group.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.  
Master Control Menu is automatically appeared on the screen.
3. Click on [Setup] with left mouse button and click on [Update NEC Express5800 system] section.
4. Continue your work for system update as the following message.
5. Click on [OK] to restart the system.
6. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive immediately after clicking on [OK].

---

**IMPORTANT:** If you change the configuration of the system (by adding or removing hardware or Operating system software components) or repair the system, you must run the system update again.

---

## DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

### **PROSet**

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. The [Windows Explorer] dialog starts.
  - \* The procedure in the case of the standard start menu  
Click Start menu and click [Windows Explorer].
  - \* The procedure in the case of the classic start menu  
Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "DXSETUP.EXE" in the following directory.  
<DVD-ROM Drive Letter>:\WINNT\DOTNET\NS4\PROSET\2KXPWS03  
The [Intel® PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Complete" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

## Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.
  - \* The procedure in the case of the standard start menu
    1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, Click [Settings] and Click [Network Connections].  
The [Network Connections] dialog box appears.
    2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.
2. Click [Configure].  
The property dialog box for network adapter appears.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.
  - \* The procedure in the case of the standard start menu  
Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.
  - \* The procedure in the case of the classic start menu
    1. Click Start menu, point to [Settings] and click [Control Panel].
    2. Click [administrative tools].
    3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.
2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.
3. Click [Apply] and click [OK].



Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

---

**NOTE:** We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setup for Trouble Process" later in this document.

---

---

## Re-install the Network Driver

The network driver will be installed automatically.

See "Optional Network Board Driver" in Chapter 5 for re-install the Optional Network Board Driver.

---

## Graphics Accelerator Driver

The graphics accelerator driver will be automatically installed by Express Setup or system update.

---

**NOTE:** Please refer to the following < reinstalling > when the graphics accelerator driver is deleted, and reinstalled after OS is installed.

---

<About the driver of graphics accelerator (N8105-45)>

When graphics accelerator (N8105-45) board is installed or it separates, the deletion of the graphics accelerator driver which has already been installed is necessary.

The procedure is as follows.

1. Click Start menu, point to [Setting] and click [Control Panel].
2. Click [Add/Remove Programs].
3. Select the graphics accelerator driver from the program list and click "Change/Remove".

To delete a standard graphics accelerator driver, select:  
[Matrox Graphics Software (remove only)]

To delete a graphics accelerator (N8105-45) driver, select:  
[ATI Display Driver]

---

**NOTE:** Please choose the graphics accelerator driver which has already been installed.

---

4. Follow the message to continue the uninstallation and restart the system.
5. Installing graphics accelerator driver.

Manually installation:

Make installation in the way of "Reinstallation of graphics accelerator driver"

Automatic installation:

You should execute the system update again referring to "Updating the system".

End of installation.

<Reinstallation of graphics accelerator driver>

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "SETUP.EXE" which is in the following directory.

To install a standard graphics accelerator driver:

<DVD-ROM Drive Letter>:\WINNT\DOTNET\VIDEO\MATROX\SETUP.EXE.

To install a graphics accelerator (N8105-45) driver:

<DVD-ROM Drive Letter>:\WINNT\DOTNET\VIDEO\ES1000\SETUP.EXE.

---

**NOTE:** Please choose one of above to be installed.

---

4. Follow the message to continue the installation.  
If the dialog message "Digital Signature could not be found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive, and restart the system.

End of installation.

---

## **Installing SCSI Controller Driver (N8103-75/95)**

If you utilize SCSI controller driver (N8103-75/95), update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

The SCSI controller driver will be installed automatically.

---

## **Installing Disk Array Controller Driver (N8103-80F)**

To additionally install the N8103-80F in a system containing Windows Server 2003, connect the controller and take the following steps to install the driver:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click [LSI Logic Megaraid SCSI 320-1] which Device Manager lists.
3. Click the [Driver] tab and click [Update Driver...].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select the "Search for the best driver in these locations." and check the "Search removable media [floppy, CD-ROM...]" check box.
6. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, and click [Next].
7. Copying of the driver is completed, and the [Completing the Hardware Update Wizard] dialog box below appears. Click [Finish].

---

## Notes of N8103-75

After installing OS, the driver may not be installed depending on the method of installing OS occasionally.

In that case, please install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click the SCSI Controller driver which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
  - [Adaptec SCSI Card 29320ALP -Ultra320 SCSI ]

The installation of the driver is completed.

Restart the system according to the message appeared on the screen.

## About Windows Activation

Windows Server 2003 must be activated before you can use Windows Server 2003.

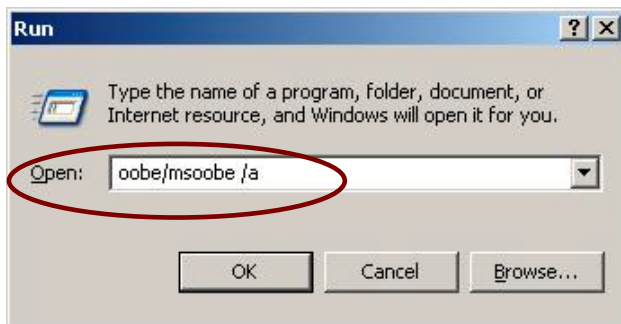
Windows activation process is as follows.

---

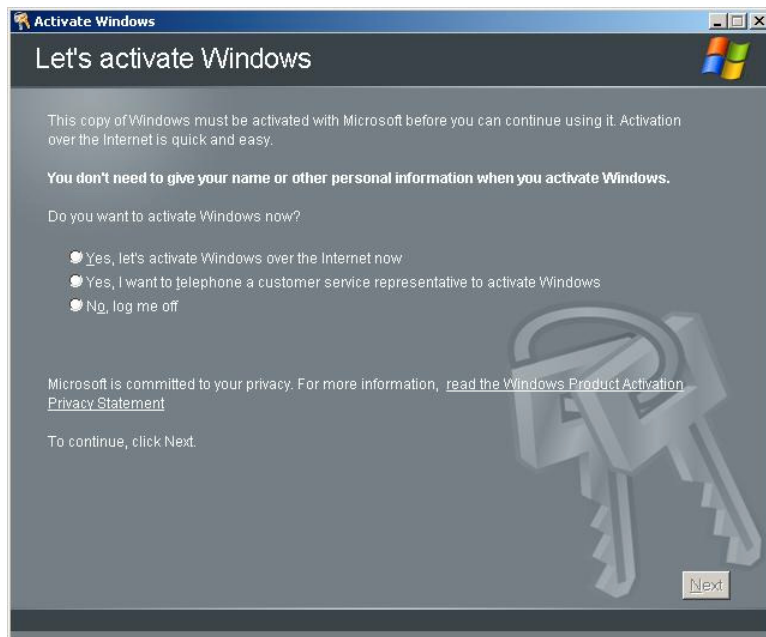
**NOTE:** When you use Windows Server 2003 R2, activation process is not needed.

---

1. Click [Run] on [Start] menu.  
Type as follows in the [Open:] box, and click [OK].  
oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].



The following screen is displayed.

Generating new Installation ID...

3. Process "Windows activation" according to the following message.

Activate Windows

### Activate Windows by phone

Just four steps, and you're done...

**Step 1:**

**Step 2:** Call a number below to speak with a customer service representative:  
Toll-free number:  
Toll number:

**Step 3:** Provide the customer service representative with the following installation ID:  
**000000-000000-000000-000000-000000-000000-000000-000000**  
(Click **Change product key** only if requested to do so by the customer service representative)

**Step 4:** Type the confirmation ID that the customer service representative gave you:  
A B C D E F G  
 -  -  -  -  -  -

To continue, click Next.

---

## Available Switch Options for Windows Server 2003 Boot.ini File

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

"Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

"A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

<Example of Boot.ini file>

```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
/PAE
C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
```

This is the end of editing Boot.ini file.

---

**NOTE:** If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

---



## **SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)**

Set for collecting memory dump using the procedure described in Chapter 5.

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# Appendix F

## Product Configuration Record Table

Use this table for information about setup and system environment change.

### Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
CPU						
#1	Clock		Serial No.		Date Installed	
Memory						
#1	Size		Serial No.		Date Installed	
#2	Size		Serial No.		Date Installed	
#3	Size		Serial No.		Date Installed	
#4	Size		Serial No.		Date Installed	
Monitor						
	Type		Model name		Serial No.	
					Date Installed	
Hard Disk						
Bay #1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Bay #2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Bay #3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Hard Disk (optional SCSI controller installed)						
Bay #1 (ID0)	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Bay #2 (ID1)	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Bay #3 (ID2)	Type			Serial No.		
	Capacity			Date Installed		
	Type number					

F-2 Product Configuration Record Table

5.25-inch Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 2 (standard ATAPI DVD-ROM drive)	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
3.5-inch Device						
Slot 1 (standard 1.44-MB floppy disk drive)	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 2	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #1						
	Model name				Serial No.	
					Date Installed	
PCI Slot #2						
	Model name				Serial No.	
					Date Installed	
PCI Slot #3						
	Model name				Serial No.	
					Date Installed	
PCI Slot #4						
	Model name				Serial No.	
					Date Installed	
PCI Slot #5						
	Model name				Serial No.	
					Date Installed	
AGP Board Slot						
	Model name				Serial No.	
					Date Installed	
Printer						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Additional Cabinet for Disk						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 3						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 4						
	Model name				Serial No.	
	Manufacturer				Date Installed	

**Software**

Firmware version	
OS Application of RUR media	<input type="checkbox"/> Apply      Name: _____      Version: _____ Name: _____      Version: _____
File system	<input type="checkbox"/> FAT <input type="checkbox"/> HPFS <input type="checkbox"/> NTFS <input type="checkbox"/> Others ( _____ )
Bundled software installed	
Licensed software installed	
Application running when a failure occurred	
Remarks	

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