Express**5800**

NEC

NEC Express Server
Express5800 Series

Express5800/B120e
User's Guide

Model Number (B120d): N8400-221F/222F/223F/224F/225F

Chapter 1   General Description

Chapter 2   Preparations

Chapter 3   Setup

Chapter 4   Appendix

Documents for This Product

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

📖	Precautions for Use	Describes points of caution to ensure the safe use of this server. **Read these cautions before using this server.**
📖	Getting Started	Describes how to use this server, from unpacking to operations. See this guide at first and confirm an outline of this product.

💿 EXPRESSBUILDER

User's Guide

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

Installation Guide (Windows)

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

Maintenance Guide

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

Other documents

Provides the detail of NEC ESMPRO, Universal RAID Utility, and the other features.

Contents

Notations Used in This Document

Notations used in the text

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

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

Optical disk drive

This server is equipped with one of the following drives. These drives are referred to as *optical disk drive* in this document.

- **DVD-ROM drive**
- **DVD Super MULTI drive**

Hard disk drive

Unless otherwise stated, *hard disk drive* (HDD) described in this document refer to both of the following.

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

Removable media

Unless otherwise stated, *removable media* described in this document refer to both of the following.

- **USB flash drive**
- **Flash FDD**

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

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

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

*   Includes 64-bit and 32-bit Editions unless otherwise stated.
    The following appears on EXPRESSBUILDER.

- Windows Server 2008 64-bit Edition: Windows Server 2008 x64
- Windows Server 2008 32-bit Edition: Windows Server 2008 x86

Trademarks

EXPRESSSCOPE is a registered trademark of NEC Corporation.

Microsoft, Windows, Windows Server, and MS-DOS are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries. Intel, Pentium, and Xeon are registered trademarks of Intel Corporation of the United States.

AT is a registered trademark of International Business Machines Corporation of the United States and other countries.

Adaptec, its logo, and SCSI*Select* are registered trademarks or trademarks of Adaptec, Inc. of the United States.

LSI and the LSI logo design are trademarks or registered trademarks of LSI Corporation.

Adobe, the Adobe logo, and Acrobat are trademarks of Adobe Systems Incorporated.

DLT and DLTtape are trademarks of Quantum Corporation of the United States.

PCI Express is a trademark of Peripheral Component Interconnect Special Interest Group.

Linux is a trademark or registered trademark of Linus Torvalds in Japan and other countries.

Red Hat® and Red Hat Enterprise Linux are trademarks or registered trademarks of Red Hat, Inc. in the United States and other countries.

All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners.

Regulatory Notices

FCC Statement

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

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CE Statement

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

BSMI Statement

警告使用者：

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

WEEE

Disposing of your used product

In the European Union

EU-wide legislation as implemented in each Member State requires that used electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes Information and Communication Technology (ICT) equipment or electrical accessories, such as cables or DVDs.

When disposing of used products, you should comply with applicable legislation or agreements you may have. The mark on the electrical and electronic products only applies to the current European Union Member States.

Outside the European Union

If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority and ask for the correct method of disposal.

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

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

The content of hazardous substance with the exemption of the applications listed in the Annex №2 of TR on RoHS:
1. Lead (Pb) – not over 0,1wt % or 1000wt ppm;
2. Cadmium (Cd) – not over 0,01wt % or 100wt ppm;
3. Mercury (Hg) – not over 0,1wt % or 1000wt ppm;
4. Hexavalent chromium (Cr^{6+}) – not over 0,1wt % or 1000wt ppm;
5. Polybrominated biphenyls (PBBs) – not over 0,1wt % or 1000wt ppm;
6. Polybrominated diphenyl ethers (PBDEs) – not over 0,1wt % or 1000wt ppm.

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

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

Вміст небезпечних речовин у випадках, не обумовлених в Додатку №2 ТР ОВНР, :
1. свинець(Pb) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
2. кадмій (Cd)– не перевищує 0,01 % ваги речовини або в концентрації до 100 частин на мільйон;
3. ртуть(Hg) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
4. шестивалентний хром (Cr^{6+}) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
5. полібромбіфеноли (PBB) – не перевищує 0,1% ваги речовини або в концентрації до 1000 частин на мільйон;
6. полібромдефенілові ефіри (PBDE) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон.

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

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

Содержание вредных веществ в случаях, не предусмотренных Дополнением №2 ТР ОИВВ:
1. свинец (Pb) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
2. кадмий (Cd) – не превышает 0,01 % веса вещества или в концентрации до 100 миллионных частей;
3. ртуть (Hg) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
4. шестивалентный хром (Cr^{6+})– не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
5. полибромбифенолы (PBB) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
6. полибромдифеноловые эфиры (PBDE) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей.

Turkish RoHS information relevant for Turkish market

EEE Yönetmeliğine Uygundur

Vietnam RoHS information relevant for Vietnam market

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

警告：
如果更換錯誤池會產生爆炸請以相同或同型電池更換使用

廢電池請回收

CCC声明

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

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板	×	○	○	○	○	○
HDD、DVD等	×	○	○	○	○	○
机箱、支架	○	○	○	○	○	○
电源	×	○	○	○	○	○
键盘	×	○	○	○	○	○
其他（电缆、鼠标等）	×	○	○	○	○	○
○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。 ×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。						

Warnings and Additions to This Document

1. Unauthorized reproduction of the contents of this document, in part or in its entirety, is prohibited.

2. This document is subject to change at any time without notice.

3. Do not make copies or alter the document content without permission from NEC Corporation.

4. If you have any concerns, or discover errors or omissions in this document, contact your sales representative.

5. Regardless of article 4, NEC Corporation assumes no responsibility for effects resulting from your operations.

6. The sample values used in this document are not actual values.

> **Keep this document for future reference.**

Latest editions

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

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

http://www.nec.com/

⚠ Precautions for Use (Be Sure to Read)

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

Safety precautions

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

This User's Guide describes hazardous parts of the server, possible hazards, and how to avoid them. Server components with possible danger are indicated with a warning label placed on or around them (or, in some cases, by printing the warnings on the server).

In User's Guide or on warning labels, **WARNING** or **CAUTION** is used to indicate a degree of danger. These terms are defined as follows:

⚠ WARNING	Indicates there is a risk of death or serious personal injury
⚠ CAUTION	Indicates there is a risk of burns, other personal injury, or property damage

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

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

(A label example used in this User's Guide)

Symbol to draw attention | Description of a warning | Term indicating a degree of danger

⚠ WARNING

Use only the specified outlet
Use a grounded outlet with the specified voltage. Use of an improper power source may cause a fire or a power leak.
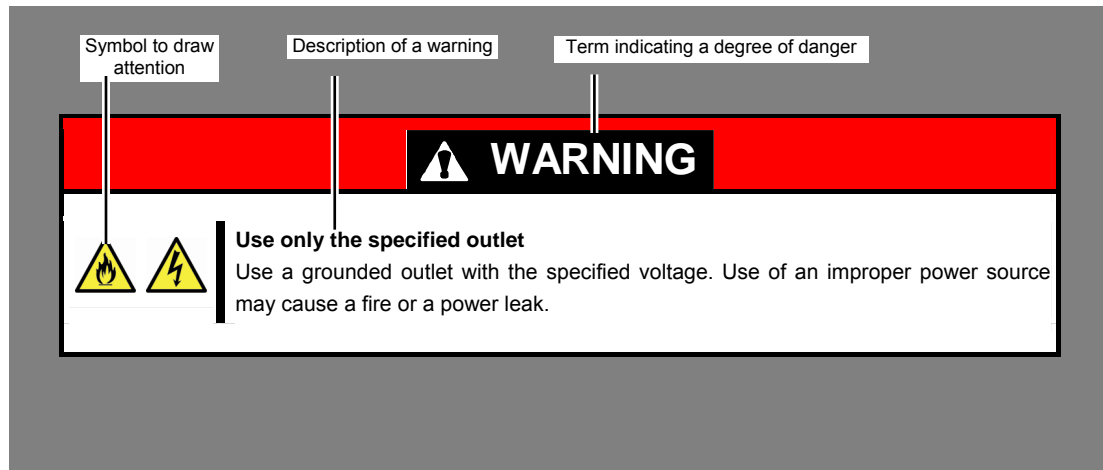
Symbols used in this document and on warning labels

Attentions

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

Prohibited Actions

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

Mandatory Actions

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

Safety notes

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

⚠ WARNING

Do not use the server for services where human life may be at stake or high reliability is required.

This server is not intended for use in medical, nuclear, aerospace, mass transit or other applications where human life may be at stake or high reliability is required, nor is it intended for use in controlling such applications. We disclaim liability for any personal injury and property damages caused by such use of this server.

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 User's Guide. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.

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

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

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

Do not use the server if any smoke, odor, or noise is present.
If smoke, odor, or noise is present, immediately turn off the power of all of the CPU blades, turn off the power of Blade Enclosure, then contact your sales representative. Using the server in such conditions may cause a fire.

Do not insert needles or metal objects.

Do not insert needles or metal objects into ventilation holes in the server or openings in the optical disk drive. Doing so may cause an electric shock.

Do not install devices in any other chassis than the specified Blade Enclosure.
Devices including CPU blades should be installed in the dedicated Blade Enclosure for their uses. Do not install the CPU blades and other devices in a chassis other than the Blade Enclosure. Failure to follow it may result in fire and/or electric shock to occur.

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

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

⚠ WARNING

Do not handle the CPU blade if it is installed in the Blade Enclosure.
To install or remove an option from the CPU blade, first turn off the power of the CPU blade and remove the CPU blade from the Blade Enclosure.
If you touch any components on the CPU blade with it connected to Blade Enclosure, you may get an electric shock.

Do not install or remove more than one CPU blade at a time.
Install or remove CPU blades one by one. If you install or remove more than one CPU blade at a time or a CPU blade with the cover of another slot removed, you may be electrically shocked.

⚠ CAUTION

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

Make sure to complete device installation.
Always install an interface cable, CPU blade, Solid State Drive, and option board firmly. An incompletely installed device may cause a contact failure, resulting in smoking or fire.

Use only the specified interface cable.
Use only interface cables authorized by NEC and locate a proper device and connector before connecting a cable. Using an unauthorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire.
Also, observe the following notes on using and connecting an interface cable.

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

High temperature
Components including internal Solid State Drives in the server are extremely hot just after the server is turned off. Allow the surface to cool before installing/removing.

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

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

Handling precautions (for proper operations)

Be sure to observe the following precautions for the proper functioning of the server. Ignoring the precautions may cause server malfunction or failure.

- **General**
    - Do not block air vents of the CPU blades, Blade Enclosures, power supply units, and additional FAN units.
    - The CPU blade and internal option devices contain precision component that is easily affected by drastic temperature change. If the device is used after storage or relocation, make sure that the device is fully adapted to the operating environment.
    - Do not touch the CPU blade terminals or on-board components by a bare hand nor place the CPU blade directly on the desk.
    - It is recommended to use options provided by NEC. Some memory devices and Solid State Drives of other vendors are designed to be available for the server. If such an option causes the server to be defected or damaged, you will be charged for the repair within the warranty period.
    - Turn off the cellular phone or pager around the server. Radio interference may cause malfunctions of the server.
- **CPU blade**
    - N8400-221F/222F/223F/224F/225F CPU blade should be installed in the Blade Enclosure (SIGMABLADE).
    - Install or remove CPU blades one by one.
    - Hold the portions covered with metal plates when a CPU blade is installed or removed. To carry a CPU blade, put it into the case in which the CPU blade was contained at the purchase and pack it into the package.
    - Check and adjust the system clock before the operation if any of the following conditions is applicable.
      □ After transportation
      □ After storage
      □ After the server is used following a period of disuse, in which storage conditions did not conform to those that guarantee server operations (temperature: 10°C to 35°C; humidity: 20% to 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 sales representative to ask maintenance.
    - Store the unit under the storage condition (temperature: –10°C to 55°C, humidity: 20% to 80%, without condensation).
    - Turn on the power of each CPU blade by pressing the POWER switch or the remote power-on operation after the period of 60 seconds or longer has passed from the supply of power (the POWER lamp of the CPU blade goes on amber). The power of the CPU blade may not be turned on if the power-on operation is done within the period of less than 60 seconds from the supply of power. After

making sure that the power is supplied to every CPU blade, turn on the power of each CPU blade by pressing the POWER switch.

- After turning off the power of a CPU blade once, turn on the power again after 30 seconds have passed from the power-off.

- Remove a CPU blade after turning off the power of the CPU blade.

- Do not perform any of the following operation during POST (including similar operations from EM card and external applications).

  ☐ Press the POWER switch of the CPU blade.

  ☐ Press the RESET switch of the CPU blade.

  ☐ Remove the CPU blade from the Blade Enclosure.

  ☐ Disconnect the power cord from the power unit of the Blade Enclosure.

- **Hard disk drive**

  - Confirm the slot to which the Hard Disk Drive is inserted. The slot for the Hard Disk Drive to be connected to each CPU blade is defined previously.

Tips	Maintenance service We offer periodic diagnosis and maintenance services by staff with expert knowledge of the maintenance of this server. We recommend that you make a periodic maintenance service contract with your maintenance service company to keep your server in good condition.

Handling precautions (for Anti-static Measures)

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

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

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

- **Checking the Workplace**

  – Work on an anti-static floor or concrete floor.

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

- **Using the Work Table**

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

- **Clothing**

  – Do not wear wool or synthetic clothes.

  – Wear anti-static shoes.

  – Remove any kind of metal accessories such as a ring, bracelet or wrist watch.

- **Handling of Components**

  – Keep the component in an anti-static bag until you install it to the server.

  – Hold the component by the edges to avoid touching any terminals or mounting parts.

  – Place the component in an anti-static bag when storing or moving them.

- **Handling of Cables**

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

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

- **Installing and Uninstalling the Optional Device**

  – To avoid electric hazard and malfunction, be sure to turn off the power switch of the server and unplug the power cord from the outlet before installing or uninstalling any optional device. If the device is hot-swappable, you do not need to turn off the power switch and unplug the power cord.

  – The device contains static-sensitive electronic components. When installing or uninstalling the optional device, wear an anti-static wrist strap on your wrist to avoid a failure caused by the static electricity. To use the strap, connect the wire to the chassis.

Handling precautions (Power-saving feature)

The server does not support power-saving features of OS such as Standby, Hibernate, and Sleep mode.

Tips for your health and safety

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

Keep proper posture

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

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

Adjust the angle of your display

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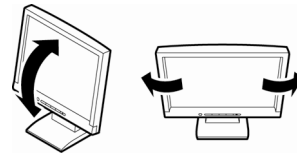
Adjust the brightness and contrast of the display

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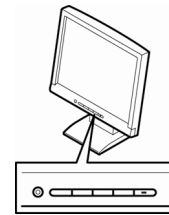
Adjust the angle of keyboard

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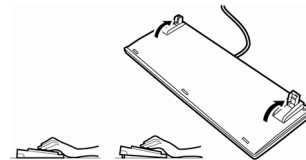
Clean your equipment

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

Take rest breaks

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

1

NEC Express5800 Series
Express5800/B120e

General Description

This chapter describes the features of the server and bundled software, and precautions on installation.

1. Introduction

2. Accessories

Verify the condition of your server's accessories.

3. Standard Features

Describes standard features of the server and system management utilities.

4. Names and Functions of Parts

This section describes the name of each part contained in this server.

1. Introduction

Welcome to the NEC Express5800/BladeServer series server.

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

NEC's latest technology and architectures realize more space-saving and reduction of running cost than ever.

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

Read this document before using the server thoroughly to fully understand handling of Express5800 Series Server and appreciate its functions to the maximum extent.

2. Accessories

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

- EXPRESSBUILDER [1]

- Getting Started

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

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

Important	The chassis serial number plate and maintenance label is located on the server. If the serial number does not match the number on the warranty, you may not be guaranteed against failure even within the warranty period. Contact your sales representative if they do not match.

3. Standard Features

The server has the following standard features:
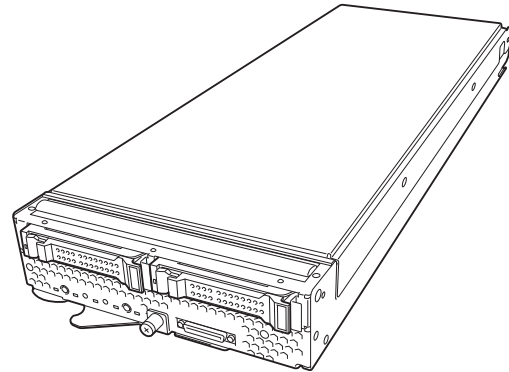
High performance

- Intel® Xeon® E5 processor
- DDR3-1333/1600 Registered DIMM and DDR3-1600 Unbuffered DIMM
- High-speed 10GBASE-KR interface (10Gbps supported), 2 ports
- High-speed disk access

High reliability

- Memory monitoring feature (correction of correctable error/detection of uncorrectable error (when registered DIMM is used))
- Forced start-up with failed memory
- Bus parity error detection
- Temperature detection
- Error detection
- Internal voltage monitoring feature
- BIOS password feature

Management Utilities

- NEC ESMPRO
- Remote controlling featuer (EXPRESSSCOPE Engine 3)
- ExpressUpdate
- RAID System management utility (Universal RAID Utility)

Expandability

- Slot for Mezzanine card
- Large capacity memory of up to 384 GB
- Can upgrade to multi-processor system with up to two processors
- Two network ports
- Up to two Hard Disk Drives (2.5-inch SAS or SATA drives) or up to two Solid State Drives (2.5-inch SATA drives) can be connected.
- USB2.0 interface (2 ports)

Many built-in Features

- Software power-off
- Remote power-on feature
- AC-Link feature

Self-diagnosis

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

Easy setup

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

Maintenance features

- Off-line Tools
- Memory dump feature using the DUMP switch

3.1   **Overview of Blade Server**

In the Internet society diversified increasingly, every system administrator should have a request of "run many servers in less installation spaces".

If a server has only one server function, installation space increases at every extension even if the chassis size is minimized. In addition, an unexpected expenses, such as construction of a power supply and the purchase of the rack for storage, may occur.

With "Express5800/BladeSever Series", the server function is narrowed to necessity minimum and condensed on one board (CPU Blade) to realize space-saving and and intensive server.
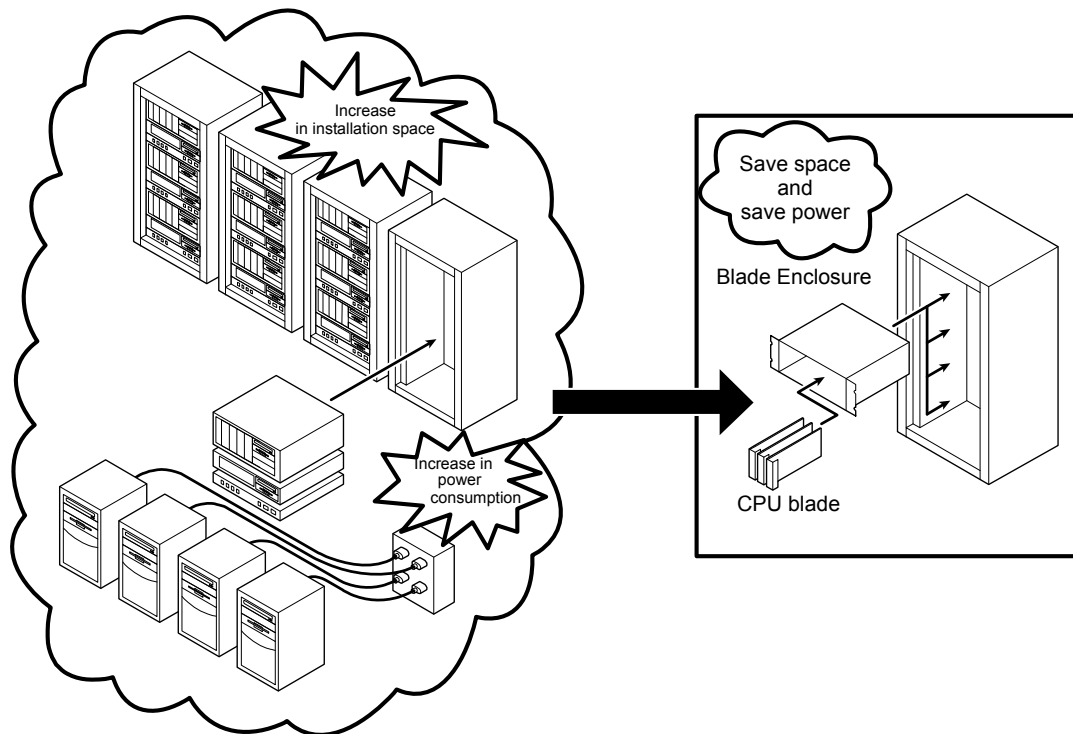
The CPU Blade does not require any wiring or connection of a power supply and a cable.

Moreover, a processor, a memory, solid state drive, a PCI option card, and others can be installed as an option in the CPU Blade that has a server function.

3.2   **Management Features**

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

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

Function		Availability	Description
Hardware			Shows physical hardware information.
	Memory bank	○	Shows physical memory information.
	Device info	○	Shows information specific to the server.
	CPU	○	Shows physical CPU information.
System		○	Shows logical CPU information and monitors the load factor. Shows logical memory information and monitors the status.
I/O device		○	Shows information on I/O devices (floppy disk drive, serial ports, parallel port, keyboard, mouse, and video).
System environment			Monitors temperatures, fans, voltage, power supply, door, and others.
	Temperature	○	Monitors the temperature inside of the chassis.
	Fan	×	Monitors the fans.
	Voltage	○	Monitors the voltage inside of the chassis.
	Power supply	×	Monitors the power supply unit.
	Door	×	Monitors Chassis Intrusion (open/close state of chassis cover or door).
Software		○	Shows service, driver, and OS information.
Network		○	Shows network (LAN) information and monitors packets.
BIOS		○	Shows BIOS information.
Local polling		○	Monitors the values of MIB items obtained by NEC ESMPRO Agent.
Storage		○	Monitors controllers and storage devices including Solid State Drives.
File system		○	Shows the file system configuration and monitors the free space.
RAID System		○	Monitors the following RAID Controller: N8404-003F Storage and I/O Blade AD106b
Others*		○	Monitors OS stall using the Watch Dog Timer.
		○	Performs alert processing after an OS STOP error occurs.

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

*: Not displayed on the NEC ESMPRO Manager screen.

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

3.3   **About the Monitoring of Chassis Sensors**

The fan and the power supply units installed in Blade Enclosure (SIGMABLADE) are monitored by the EM card. The information that the EM card monitors can be confirmed by the **Information of EM Card state/constitution** of NEC ESMPRO Manager.

In **Enclosure** → **Power Supply** tree in the **Information of server state/constitution** of NEC ESMPRO Manager, the status of the power circuit of CPU blade is displayed.

3.4   **Firmware and Software Version Management**

Use of NEC ESMPRO Manager and ExpressUpdate Agent allows you to manage versions of firmware and software as well as update them by applying update packages.

This function automatically updates multiple modules without stopping the system just by specifying the application of an update package from NEC ESMPRO Manager.

4. Names and Features of Component

This section describes the names and features of the components in the device.

4.1   CPU Blade

This section describes the names, installation positions, and features of the sections on the CPU blade.

CPU blade

(1) Connector for HDD cage cable
Connect a cable when connecting HDD cage (not used in HDD-less configuration).

(2) Connector for RAID Controller
Connect a cable when connecting RAID Controller (N8403-059).

(3) Socket for processor #2 (CPU #2)
Socket tor optional processor #2 (CPU #2)
(CPU#2 and CPU heat sink are not installed.)

(4) Socket for processor #1 (CPU #1)
Socket for processor #1 (CPU #1)
(CPU #1 and CPU heat sink are factory-installed.)

(5) DIMM socket (CPU#2)
CPU2_DIMM6, CPU2_DIMM3, CPU2_DIMM5,
CPU2_DIMM2, CPU2_DIMM4, CPU2_DIMM1
from top

(6) DIMM socket (CPU#1)
CPU1_DIMM1, CPU1_DIMM4, CPU1_DIMM2,
CPU1_DIMM5, CPU2_DIMM3, CPU2_DIMM6
from top

(7) Connector for HDD cable
Connect a cable when connecting HDD (not used in HDD-less configuration).

(8) Mezzanine card slot (Type 2)
Slot to install mezzanine card for blade. The slot number is "MEZ2".

(9) Mezzanine card slot (Type 1)
Slot to install mezzanine card for blade. The slot number is "MEZ1".

(10) Connector for Internal Flash Memory
Connector to install Internal Flash Memory .

(11) Connector for Trusted Platform Module kit
Connector to install Trusted Platform Module kit .

(12) Connector for LAN riser card
Connector to install LAN riser card.

(13) SUV connector

(14) Eject lever

CPU Blade Access Side: With hard disk drives installed

(1)   POWER lamp
The lamp goes on green when the CPU blade is powered on.
The lamp goes on amber when the CPU blade is powered off but the power is supplied from the power supply unit.

(2)   POWER switch
The switch is intended to turn on or off the power of the CPU blade itself. Pressing the switch for 4 seconds or longer causes the power supply to be turned off forcibly.

(3)   STATUS lamp (green/amber/red)
The lamp indicates the status of the CPU blade. See "Lamp Indications" described later for the indications and meanings of the lamp.

(4)   DUMP switch
Press this switch to run the memory dump.

(5)   LAN1 Link/Access lamp (green)
The lamp goes on when LAN port 1 is connected to the network. The lamp blinks when data is being transmitted.

(6)   RESET switch
Press this switch to reset the CPU blade.

(7)   LAN2 Link/Access lamp (green)
The lamp lights when LAN port 2 is connected to the network. The lamp blinks when data is being transmitted.

(8)   ID/BMC RESET switch
Press the ID switch to turn on or off the ID lamp.
Pressing the ID switch toggles lamp ON/OFF.
For BMC RESET switch, refer to *Chapter 1 (7.2 BMC Reset)* in Maintenance Guide.

(9)   ID lamp
The lamp is intended to identify the CPU blade in the system. The lamp is lit by a switch or software command.
When the recognize command is received from NEC ESMPRO Manager and when the ID switch is pressed, the lamp goes on.
You may use the remote control feature of EXPRESSSCOPE Engine 3 (BMC) to perform the same operation as using the ID switch on the server.

(10) Eject lever
Pull the lever to remove the CPU blade from the Blade Enclosure.

(11) SUV connector
This connector sends or receives various signals.
The K410-150(00) SUV cable (separately-priced or provided with the SIGMABLADE) is connected to this connector.

(12) Hard Disk Drive
Upper slot: Slot 0
Lower slot: Slot 1

(13) Slide tag
A label on which the model number and serial number are described is attached this slide tag. You can check the label contents by pulling this slide tag.

CPU Blade Access Side: With no hard disk drives installed

(1) POWER lamp
The lamp goes on green when the CPU blade is powered on.
The lamp goes on amber when the CPU blade is powered off but the power is supplied from the power supply unit.

(2) POWER switch
The switch is intended to turn on or off the power of the CPU blade itself. Pressing the switch for 4 seconds or longer causes the power supply to be turned off forcibly.

(3) STATUS lamp (green/amber/red)
The lamp indicates the status of the CPU blade. See "Lamp Indications" described later for the indications and meanings of the lamp.

(4) DUMP switch
Press this switch to run the memory dump.

(5) LAN1 Link/Access lamp (green)
The lamp goes on when LAN port 1 is connected to the network. The lamp blinks when data is being transmitted.

(6) RESET switch
Press this switch to reset the CPU blade.

(7) LAN2 Link/Access lamp (green)
The lamp lights when LAN port 2 is connected to the network. The lamp blinks when data is being transmitted.

(8) ID/BMC RESET switch
Press the ID switch to turn on or off the ID lamp. Pressing the ID switch toggles lamp ON/OFF.
For BMC RESET switch, refer to *Chapter 1 (7.2 BMC Reset)* in Maintenance Guide.

(9) ID lamp
The lamp is intended to identify the CPU blade in the system. The lamp is lit by a switch or software command.
When the recognize command is received from NEC ESMPRO Manager and when the ID switch is pressed, the lamp goes on.
You may use the remote control feature of EXPRESSSCOPE Engine 3 (BMC) to perform the same operation as using the ID switch on the server.

(10) Eject lever
Pull the lever to remove the CPU blade from the Blade Enclosure.

(11) SUV connector
This connector sends or receives various signals.
The K410-150(00) SUV cable (separately-priced or provided with the SIGMABLADE) is connected to this connector.

(12) Slide tag
A label on which the model number and serial number are described is attached this slide tag. You can check the label contents by pulling this slide tag.

External View

With top cover installed

(1)

(2)
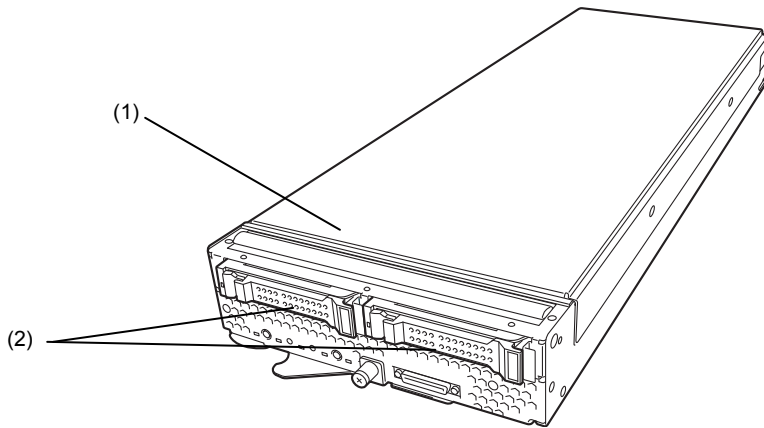
(1)   Top cover   **(2)   Front frame**

With top cover removed

(1)

(2)
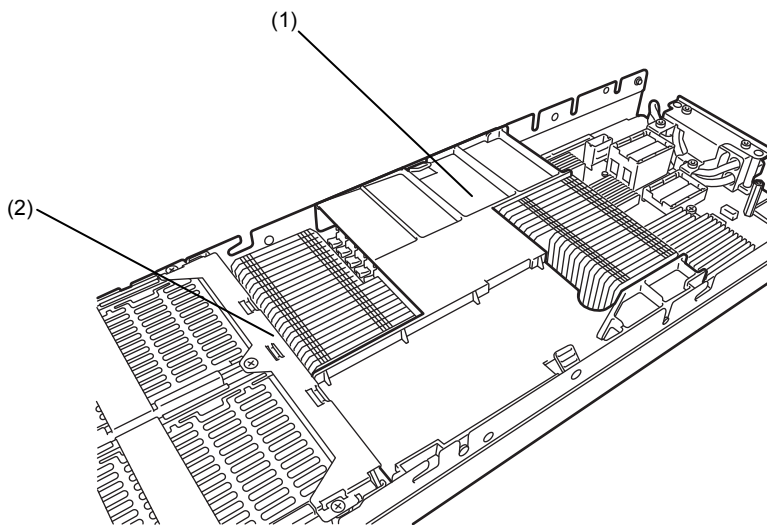
(1)   Air duct   **(2)   HSBP bracket**

4.2   **Hard Disk Drive (HDD)**

Hard disk drives are optional.

- The CPU blade can contain the following type of hard disk drives:Hard Disk Drive (SAS or SATA)
- Solid State Drive (SATA)

With the hard disk drive that contains an operating system, pay strict attention to handle it.

This section describes SAS Hard Disk Drives, as an example.

(1)   Hard Disk Drive

(2)   BP connector
Connect SSD cable to this connector.

(3)   Drive carrier

(4)   DISK Access lamp (green/amber)
Goes on green while accessing the hard disk drive.
Goes on amber if failure occurs on hard disk drive.
Blinks green and amber alternately or blinks amber while array disks are rebuilt.
If hard disk drives are operating in array configuration, this lamp works only while the OS is running.

(5)   Lever
Use this lever when installing or removing hard disk drive.

4.3   **Lamp Indications**

This section describes the positions and display meanings of the lamps on the CPU blade and other devices.

CPU Blade

The CPU blade has 7 lamps. (The CPU blade of diskless model does not have any Hard Disk Access lamp.)
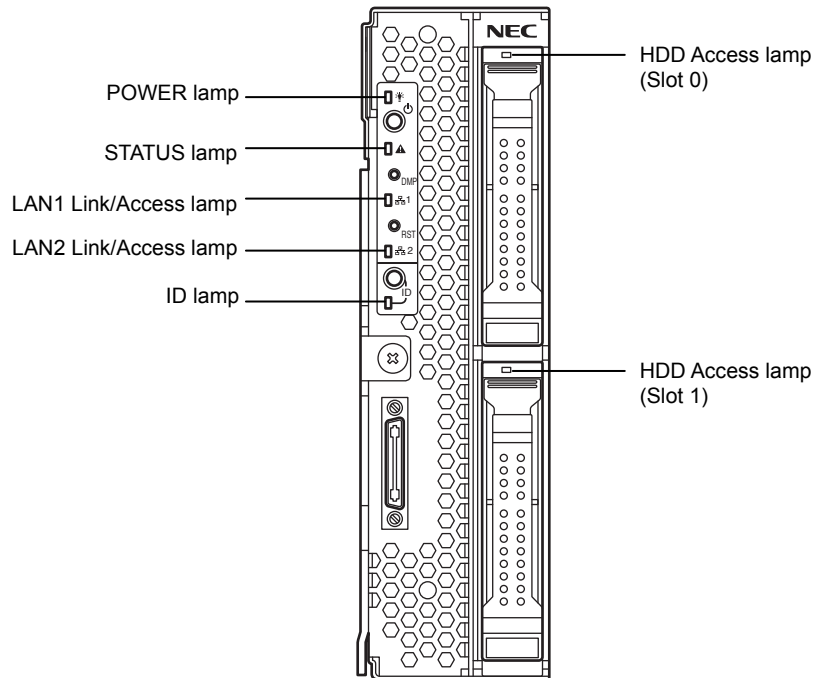
4.3.1   **POWER Lamp**

The POWER lamp lights green while the power of the CPU blade is on. The lamp lights amber when the CPU blade is powered off but the power is supplied from the power supply unit. The lamp is off if the power is not supplied to the system.

4.3.2 STATUS Lamp

The STATUS lamp stays lit in green when the CPU blade is in successful operation. When the STATUS lamp is flashing in amber or red, it indicates that the system has failed.
In addition, you can view the detailed information on error message on virtual LCD when the STATUS lamp is flashing in amber or red.
You can use the virtual LCD through the Web browser of EXPRESSSCOPE Engine 3 (BMC) or NEC ESMPRO Manager.

The following table lists indications of the STATUS lamp, descriptions, and actions to take.

If an error occurs, contact your sales representative.

Tips	If the CPU blade has the NEC ESMPRO installed, you can view the error log to identify the cause of a trouble.

Status of STATUS lamp	Color	Description	Action
On	Green	The CPU blade is operating normally.	–
Off	–	The power is turned off.	Turn on the power.
On	Red	BMC is being initialized.	1. Wait until the lamp goes off. 2. If the lamp still goes on, check installation status of the CPU blade.
Flash	Red	BMC does not work normally due to incorrect installation of LAN riser card.	If the indication of ID lamp does not change even when the ID switch is pressed, contact your sales representative. The virtual LCD indication cannot be obtained because BMC is not working.
		An error occurred. Identify the error cause according to Chapter 3 (1. POST "Error messages on a virtual LCD") in Maintenance Guide.	
Flash	Amber	A warning level error occurred. Identify the error cause according to Chapter 3 (1. POST "Error messages on a virtual LCD") in Maintenance Guide.	

Tips	If the CPU blade is powered off while the STATUS lamp is flashing in amber or red, the indication of the STATUS lamp is retained except for certain factors. When the CPU blade is powered on, the STATUS lamp goes on green (normal status).

4.3.3   LAN (1 - 2) Link/Access Lamps

The lamp blinks when data is being transmitted through the LAN port. When the CPU blade is powered on and the LAN cable is connected, the lamp on LAN port for which the link is being established goes on. The connection of LAN port is physically controlled by the EM card and the switch module installed in the Blade Enclosure.

To check connection status of LAN port, refer to the User's Guides of the EM card and the switch module installed in the Blade Enclosure.

4.3.4   ID Lamp

Pressing the ID switch brings the lamp to light, and pressing again brings the lamp to go off. The ID lamp is intended to identify a specific CPU blade in the rack in which more than one CPU blade is installed. Making this lamp being lit can help the maintenance work to identify the faulty device.

If you press the ID switch, the lamp goes on. When the recognize command is received from management software such as NEC ESMPRO Manager, the lamp blinks.

You may use the remote control feature of EXPRESSSCOPE Engine 3 (BMC) to perform the same operation as using the ID switch on the server.

4.3.5   Hard Disk Access Lamp

The lamp lights while accessing to a Hard Disk Drive occurs (however, if the Hard Disk Drives are operated in the RAID System, the lamp operates only in the OS boot status).

The lamp is lit amber if a Hard Disk Drive cannot be interfaced with the CPU blade correctly due to a hardware fault in the CPU blade or another failure.

In the RAID System, the lamp blinks green or amber alternately while the Logical Drives are rebuilt (this does not indicate an error).
After the rebuilding completes, the lamp returns to the normal indication. If the rebuilding fails, the lamp is lit amber.

2

NEC Express5800 Series
Express5800/B120e

Preparations

This chapter describes preparations for using this server.

1. **Installing Internal Optional Devices**

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

2. **Ideal Location and Connection**

   You must place the server in an ideal location and connect cables following this section.

1. Installing Internal Optional Devices

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

Important	• We recommend that optional devices be installed by a maintenance service staff from your maintenance service company, who has specialized knowledge of this server. • Use only the devices and cables specified by NEC. You will be charged to repair damages, malfunctions, and failures caused by the use of any devices or cables not specified for use with this server even within the warranty period. • When you made any change to the hardware configuration, make sure to update the system (Refer to the *Installation Guide* for details.).

1.1   Safety Precautions

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

⚠ WARNING

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

• Do not disassemble, repair, or modify the server.
• Do not remove the lithium battery, NiMH battery, or Li-ion battery.
• Disconnect the power plug when installing and removing devices.

⚠ CAUTION

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

• Pay attention to hot surface.
• Make sure to complete installation.
• Do not install with the top cover, air duct, and/or front frame removed.
• Do not get your fingers caught.

1.2 Overview of Installation and Removal

To install or remove an optional device, Hard Disk Drive, or Solid State Drive installed in the CPU blade, you may need to remove the CPU blade from the Blade Enclosure if the CPU blade is installed in Blade Enclosure. Refer to *Chapter 3, (2. Installation and Connection)* for details.

Important	Remove the target CPU blade only. Do not remove any other blank cover or CPU blade from another slot. Be sure to install or remove the CPU blade one by one.

⚠ CAUTION
Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, refer to *Safety precautions* in *Precautions for Use.*   • **Pay attention to hot surface.**   • **Make sure to complete installation.**   • **Do not install with the top cover, air duct, and/or front frame removed.**   • **Do not get your fingers caught when installing components**

1. After the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.

    Refer to *Chapter 3 (7 Turning off the server).*

2. Take the CPU blade out from the Blade Enclosure.

    Refer to the User's Guide of the Blade Enclosure.

3. Put the CPU blade on an anti-static sheet with little dust.

4. Remove the top cover. In addition, remove the air duct if needed.

    Refer to *Chapter 2 (1.3 Installation and Removal Procedure (Common section)).*

5. Perform installation or removal procedure for the component required for your system.

    Refer to sections in *Chapter 2 (1.4 Processor (CPU)* through *1.10 Internal Flash Memory*).

6. Install the top cover. In addition, install the air duct if needed.

    Refer to *Chapter 2 (1.3 Installation and Removal Procedure (Common section)).*

7. Install the CPU blade in Blade Enclosure.

    Refer to the User's Guide of Blade Enclosure.

This completes installation or removal of internal optional devices.

Continue the setup with reference to *Chapter 2 (2.2 Connecting Peripheral Devices).*

1.3   Installation and Removal Procedure (Common section)

Take steps below to install or remove top cover and air duct.

1.3.1   Removal of top cover

Take steps below to remove the top cover.

1.   After the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.

2.   Take the CPU blade out from the Blade Enclosure.

   Refer to the *User's Guide* of the Blade Enclosure.

3.   Put the CPU blade on an anti-static sheet with little dust.

4.   Remove the two screws that secure the top cover.
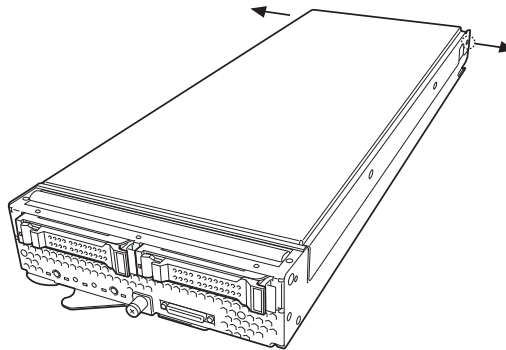
5.   Firmly hold the top cover, move it slightly toward the rear of the CPU blade, then lift the cover to
   remove it from the CPU blade.
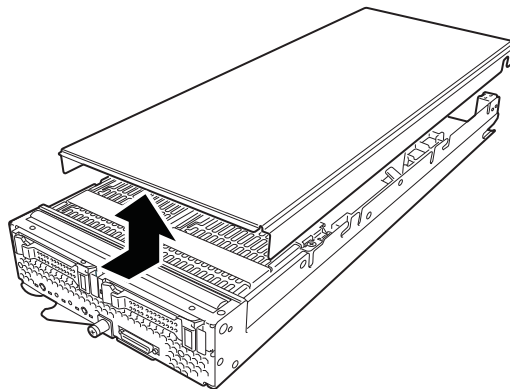
Important	**Pay attention not to make the cover hit any electronic component on the CPU blade.**

1.3.2   **Removal of air duct**

Take steps below to remove air duct. (Required when installing CPU and DIMMs)

1.   While pushing latches on both sides of air duct, slowly pull the air duct upward to remove it.
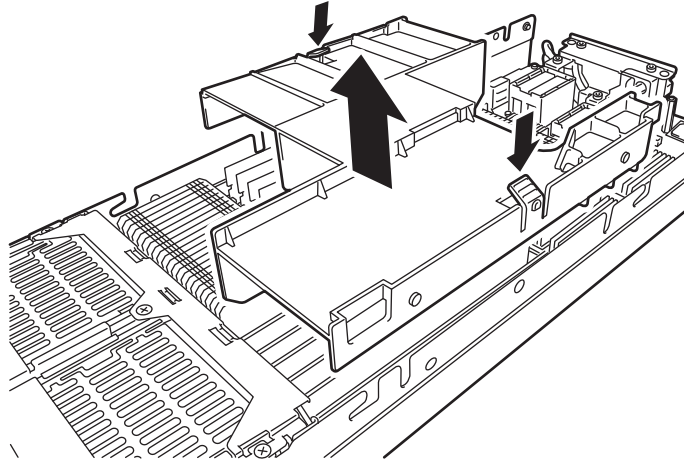
Important	Make sure the front-rear direction of air duct according to markings on top face.

1.3.3　Removal of HSBP bracket

1.　Remove both HDDs.
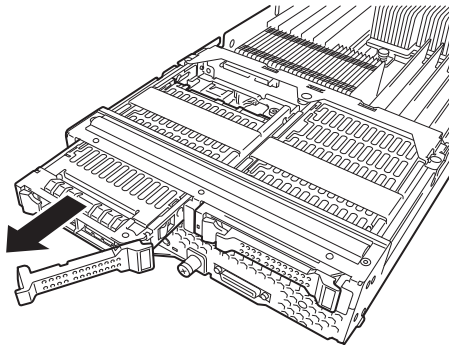
2.　Remove three screws from the HSBP bracket.
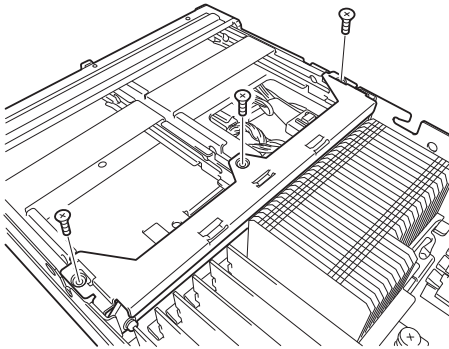
3.　Lift the HSBP bracket and remove it.

Internal HDD cable and power cable are connected to HSBP. Pay attention not to forcedly pull or bent the HSBP.
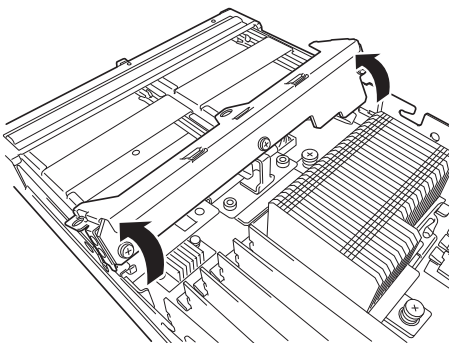
Important	• Pay attention not to make the air duct hit any electronic component on the CPU blade.
	• Pay attention not to damage internal cables.

1.3.4 Installation of top cover, air duct, HSBP cover

To install top cover and air duct, perform installation steps *Chapter 2 (1.3.1 Removal of top cover, 1.3.2 Removal of air duct, and 1.3.3 Removal of HSBP bracket)* in reverse order.

Note the following when installing these components.

Confirm the following after installing an additional option and removing a component:

● **Installing removed components exactly as they were**

Install the components and cables, which were removed and disconnected for addition of an option, exactly as they were. Assembling without a component being installed or a cable being disconnected causes the server to malfunction.

● **Confirming that no parts such as screws are left in the server**

Confirm that particularly conductive parts such as screws are not left in the server. Turning on the power with a conductive part on the mother board or cable terminal causes the server to malfunction.

● **Confirming the cooling effect in the server**

Confirm that the ventilating holes are not covered with an internally connected cable. Insufficient cooling effect raises the internal temperature, which causes the server to malfunction.

● **Confirming operation with a tool**

Some additional devices require the diagnostic utility or BIOS SETUP utility to check if they are installed correctly. For details, see the procedure for installing the target device.

1.4   Processor (CPU)

The server may have another CPU installed in addition to the factory-installed CPU (Intel® Xeon® Processor).

Important	• **The CPU to be added must have the same specification (the core voltage, clock, and others) as the CPU already installed.**
	• **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, refer to "Handling precautions (for Anti-static Measures)".**
	• **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 server. Repair of the server due to failures or damage resulted from installing such a CPU will be charged.**

CPU blade

CPU #2
(Optional)

CPU #1
(Factory-installed)
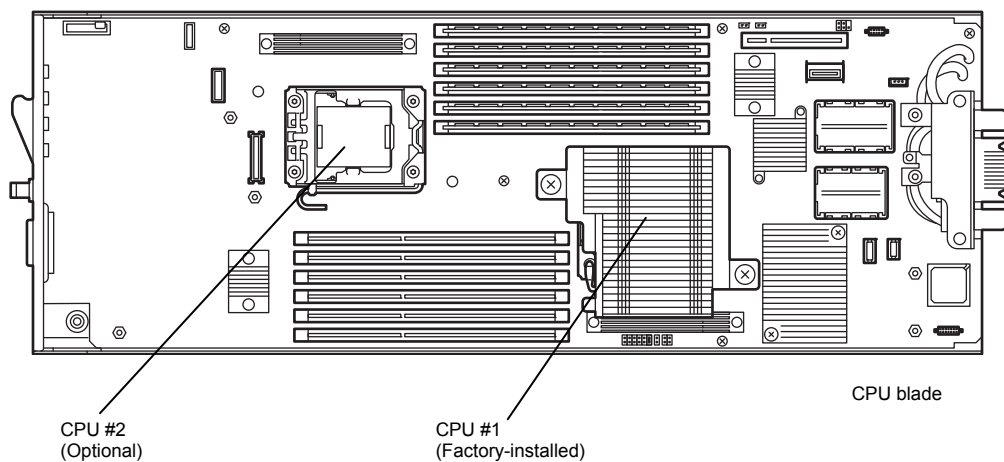
Tips	If the different revision of the processors are installed in the multiprocessor system, Windows logs the following information in system log of Event Viewer. However, this event does not affect the system operation.
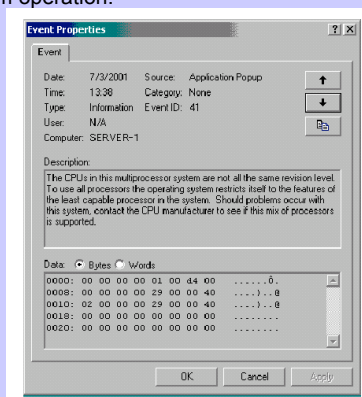
1.4.1   Installation

Install the CPU in the following procedure.

1. Remove the top cover and air duct according to *Chapter 2 (1.3.1 Removal of top cover, 1.3.2 Removal of air duct, and 1.3.3 Removal of HSBP bracket).*

2. Confirm the position of the CPU socket.

3. Push down the socket lever once to unlatch it from the hook, then slowly open the lever until it stops.
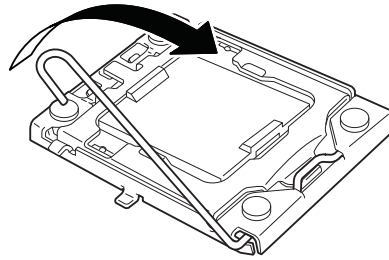
4. Lift the CPU socket holder.
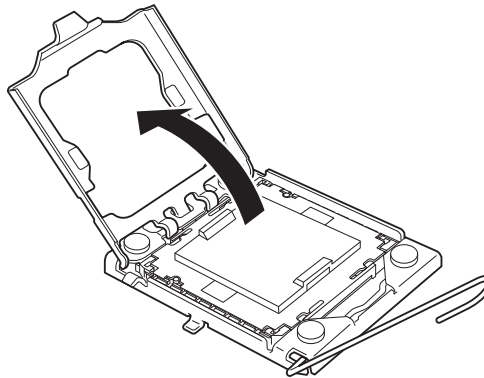
| Important | You will see the CPU socket contacts. Do not touch the socket contacts. |

5. Remove the socket cover.
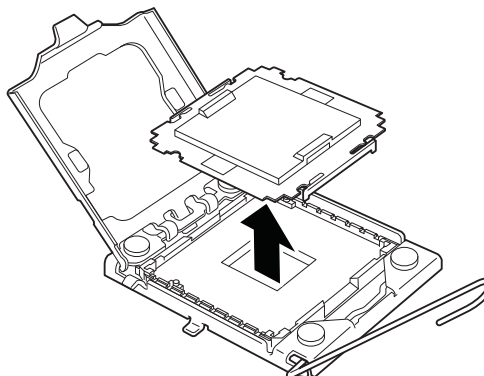
| Important | Keep the removed socket cover for future use. Always attach the socket cover if the processor is removed from the socket. |

6.   Put the additional processor on the CPU socket slowly and gently.

For easy installation, hold edges of processor with your thumb and index fingers so that the notch is

aligned with the key on the CPU socket.
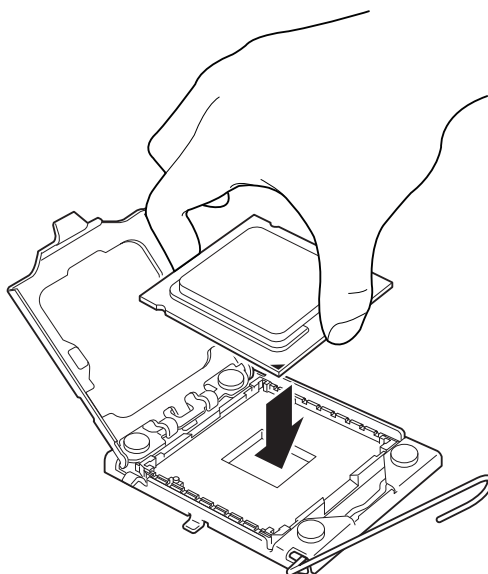
Important
- Be sure to hold the processor only at the edges. Pay attention not to touch the bottom of the processor (pin section).
- Note the direction of the CPU. To prevent the CPU from being inserted into the mating socket incorrectly, a pin mark is put on each of the CPU and the socket. Check the pin marks to insert the CPU into the socket correctly.
- Insert the processor while aligning the notch on the processor with the key section on the CPU socket.

7.   Push the CPU lightly to the socket, and push down the CPU socket holder.
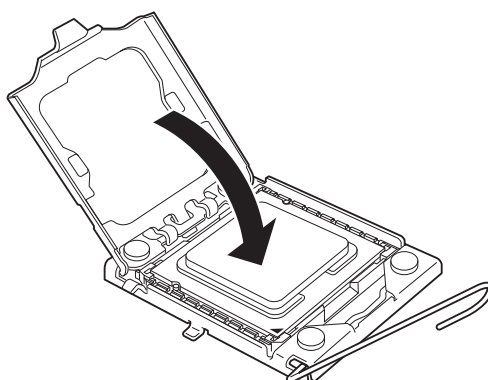
8.   Push down the lever to secure the CPU.
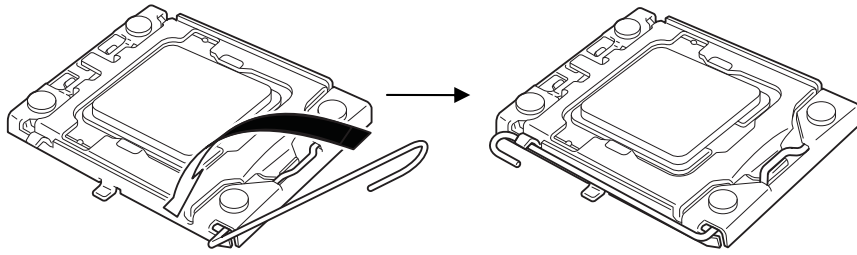
9.   Put the heat sink on the CPU.

Take care not to touch the cool sheet with your hand.
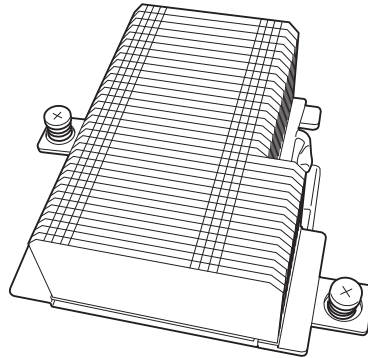
Important   Install the heat sink in correct direction as shown in the figure below.

Front   Rear
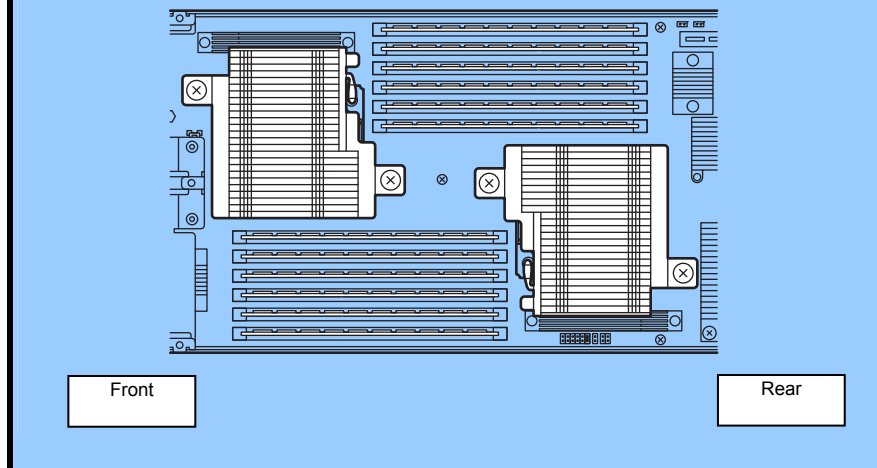
10.   Secure the heat sink with four screws.

When installing the CPU heat sink, temporarily tighten the four screws on cater corner, then tighten them securely after making sure that the heat sink has been seated in parallel with the CPU socket.

<1>   **<2>**
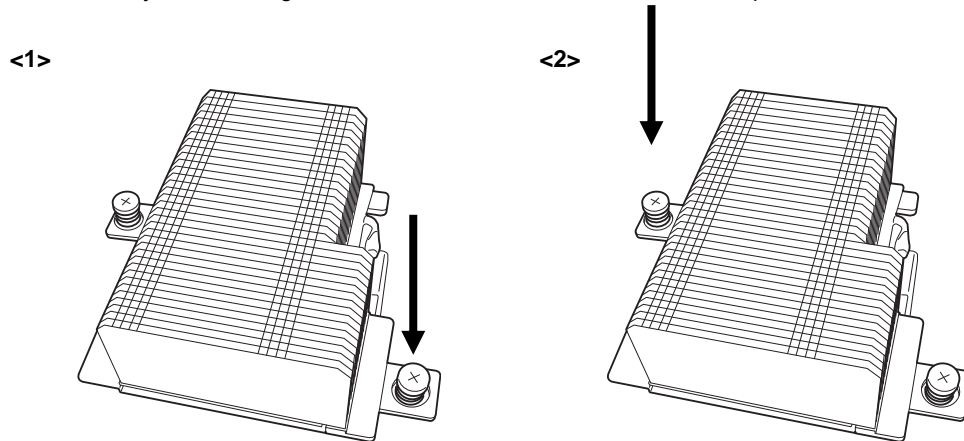
11.   Install the components having been removed.

12.   Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of the Blade Enclosure.

13.   If "**ACPI uni-processor PC**" or "**ACPI single-processor PC**" is shown in **Driver** tab under **Computer**, change it to "**ACPI multi-processor PC**". Reboot the system according to the message, and update the system. (Refer to *Installation Guide.*)

Perform the following procedure if:

–   The system is running under the Windows operating system

–   The system is under the 1-CPU configuration

Any change is not required if "**ACPI multi-processor PC**" is set in **Driver** tab under **Computer**.

1.4.2   Removal

To remove the CPU, first remove the top cover, air duct, and HSBP bracket referring to *Chapter 2 (1.3.1 Removal of top cover, 1.3.2 Removal of air duct, and 1.3.3 Removal of HSBP bracket)*, and then perform the steps 3 to 10 of *Chapter 2 (1.4.1 Installation*) in the reverse order. To remove the heat sink, slide it a little on the level and remove it. See the second item of *Important* in below.

Important	• **Remove the CPU only when it is defected.** • **After operation, the cool sheet at the bottom of the heat sink may adhere to the CPU. To remove the heat sink, first turn it left and right to detach it from the CPU. If you remove the heat sink with the cool sheet adhering to the CPU, the CPU and/or the socket may be damaged.** • **Put a socket cover on Processor #2 if it is equipped with no CPU.** • **The operation of the CPU blade cannot be secured if the CPU is installed only on the Processor #2 socket.** • **To reinstall the CPU having been removed, the cool sheet should be replaced with a new one. Contact you sales representative.**

1.5   DIMM

The DIMM (Dual Inline Memory Module) is inserted into the DIMM socket on the CPU blade.

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. For static notes, refer to "Handling precautions (for Anti-static Measures)".**
	• **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 CPU blade 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 CPU blade includes 12 DIMM sockets.

Note	• Up to 384 GB memory can be added.
	• In the standard configuration, the CPU blade does not contain memory. The memory is a required option.

DIMM socket (CPU#1)
(From top:
CPU1_DIMM1,
CPU1_DIMM4,
CPU1_DIMM2,
CPU1_DIMM5,
CPU1_DIMM3,
CPU1_DIMM6)

CPU blade

DIMM socket (CPU#2)
(From top:
CPU2_DIMM6,
CPU2_DIMM3,
CPU2_DIMM5,
CPU2_DIMM2,
CPU2_DIMM4,
CPU2_DIMM1)
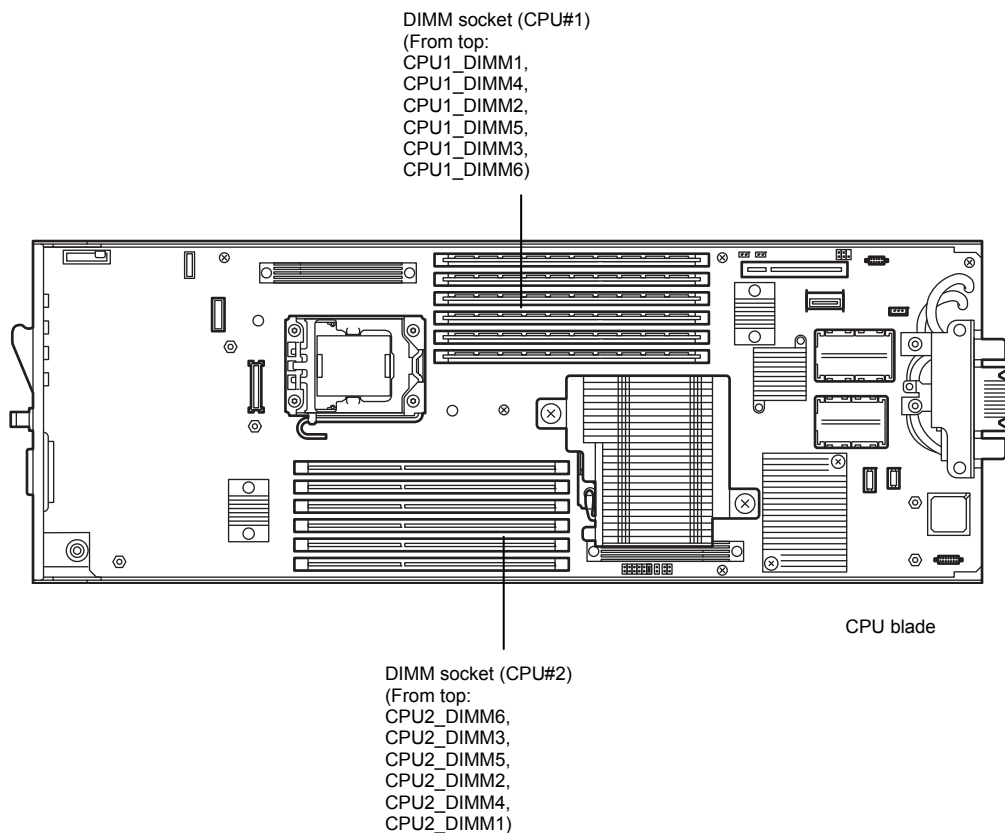
1.5.1   Adding Order and Precautions

- Adding order depends on the number of CPUs installed.
    - 1-CPU configuration:

        Install DIMMs starting from the smallest DIMM slot number.
    - 2-CPU configuration:

        Alternately install DIMMs starting from the smallest DIMM slot number of each CPU.
- Install DIMM one by one.
- Install DIMMs starting from the largest capacity and from the smallest slot number.
- Registered DIMMs and Unbuffered DIMMs cannot be mixedly installed. If installed mixedly, the CPU blade will fail to operate correctly.
- If the CPU blade does not have CPU#2 installed, DIMM slots CPU2_DIMM1 to CPU2_DIMM6 are unavailable.
- To run the system in single-unit SATA HDD configuration or RAID configuration using onboard RAID Controller, the upper part of DIMM slot is used to connect internal HDD cable. Pay attention not to pinch the cable when installing/removing a DIMM to/from CPU_DIMM1 slot. The pinched cable may cause malfunction of the server.
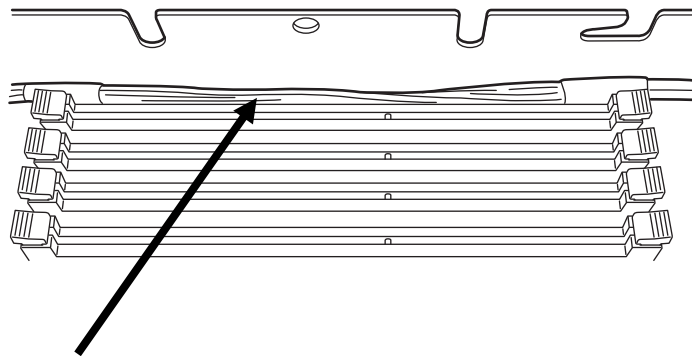
1.5.2   Installation

Install the DIMM on the CPU blade according to the following procedure:

1. DIMM installation order in 1-CPU configuration differs from that in 2-CPU configuration.

    <In 1-CPU configuration>

    Remove the top cover and air duct according to *Chapter 2 (1.3.1 Removal of top cover* and *1.3.2 Removal of air duct).*

    If Mezzanine Card (Type 2) for blade is installed, remove it according to *Chapter 2 (1.6.3   Removal).*

    <In 2-CPU configuration>

    Remove the top cover, air duct, and HSBP according to *Chapter 2 (1.3.1 Removal of top cover, 1.3.2 Removal of air duct, and 1.3.3 Removal of HSBP bracket).*

    If Mezzanine Card (Type 2) for blade is installed, remove it according to *Chapter 2 (1.6.3   Removal).*

2.   Push the DIMM into the socket straight.

If the DIMM is inserted into the DIMM socket, the lever is automatically closed.
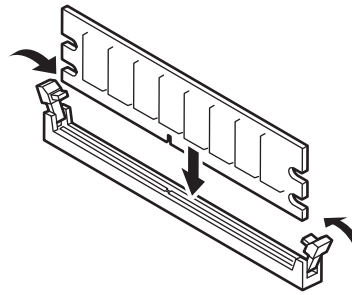
> **Important**
>
> - **Make sure of the orientation of the DIMM. The connecting side of the DIMM has a cut-out to prevent an incorrect insertion.**
> - **Use extreme care when inserting a DIMM. Applying too much pressure can damage the DIMM and/or connector.**

3.   Close the lever firmly.

4.   If you need to install two or more DIMMs, install them according to steps 2 through 4.

5.   Install the top cover and air duct according to *Chapter 2 (1.3.4   Installation of top cover, air duct, HSBP cover).*

If Mezzanine Card (Type 2) for blade is installed, remove it according to *Chapter 2 (1.6.2 Installation).*

6.   Install the CPU blade having been removed to the Blade Enclosure according to the *User's Guide* of the Blade Enclosure.

7.   Make sure that no error message appears on the POST screen.

If any error messages are displayed, refer to *Chapter 3 (1. Error Message of POST and Virtual LCD)* in "*Maintenance Guide*".

8.   Run SETUP and select menus in the order of **Advanced** and **Memory Configuration** to make sure that the status of installed DIMM is "**Normal**" (refer to *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".).

9.   Set the paging file size to a value larger than the recommended value (installed memory * 1.5) (for Windows). Refer to *Installation Guide* for more information.

1.5.3 Removal

To remove DIMMs, first remove the top cover, air duct, and HSBP bracket referring to *Chapter 2 (1.3.1 Removal of top cover, 1.3.2 Removal of air duct, and 1.3.3 Removal of HSBP bracket)*, and then perform steps in *Chapter 2 (1.5.2 Installation*) in reverse order.

After DIMMs are removed, make sure that no error message appears in POST.

If any error messages are displayed, refer to *Chapter 3 (1. Error Message of POST and Virtual LCD)* in "*Maintenance Guide*".

Run SETUP and select **Yes** after selecting **Advanced** → **Memory Configuration** → **Memory Retest**. Restart the CPU blade to clear the error information of the removed DIMM (refer to *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".).

Set the paging file size to a value larger than the recommended value (installed memory * 1.5) (for Windows). Refer to the *Installation Guide* for more information.

Note	To remove the defective DIMM, check the error message appearing in POST or NEC ESMPRO to confirm the CPU blade on which the defective DIMM is installed.

1.6   **Mezzanine Card**

The CPU blade can contain two mezzanine cards for blade which allows an extension of network or a file device feature.

With B120e, if themezzanine card for blade is installed in slot for Type 1, CPU #2 must be installed.

To install a mezzanine card, use the mezzanine card slot installed on the CPU blade. The mezzanine card slot is factory-installed on the CPU blade.

Important	• The mezzanine card 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 mezzanine card. Do not touch the terminals and parts on the mezzanine card by a bare hand and place the cards directly on the desk. For static notes, refer to "Handling precautions (for Anti-static Measures)". • A combination of boards which can be installed in the Blade Enclosure under certain restrictions. Contact your sales representative for details.

Note	Some optional mezzanine cards use expansion ROMs on the boards. Refer to the manual shipped with the board to check whether the expansion ROMs should be required. Use the BIOS setup utility "SETUP" for the setting. Refer to *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".

Mezzanine card slot (Type 2)

Mezzanine card slot (Type 1)

CPU blade
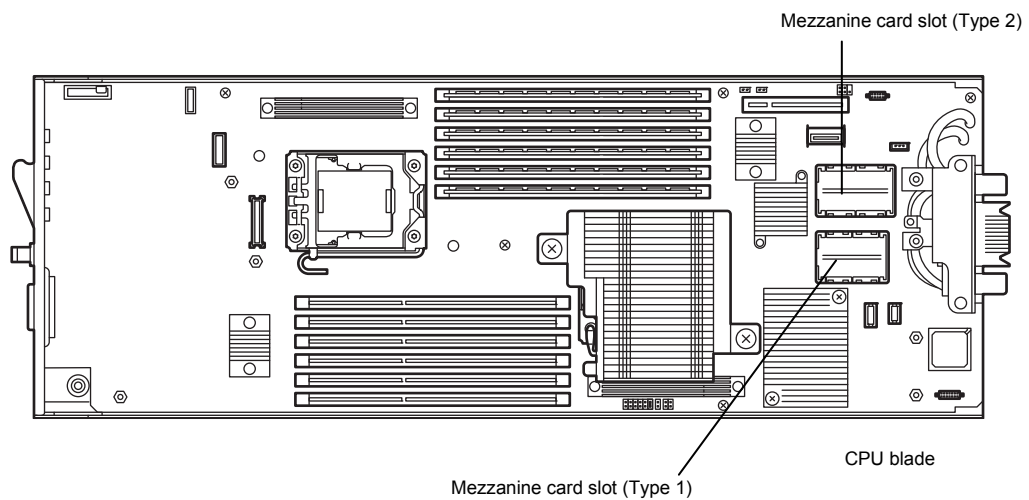
1.6.1 Notes

Note the followings in the installation or removal of the mezzanine card.

*   Be careful not to make your hands touch the terminals of the mezzanine card slot directly. If you do not keep it, the oil and/or dirt on the hands may adhere to the terminals to result in contact failure.
*   For the optional ROMs on the unbootable LAN device, set "Disabled" with the BIOS SETUP utility.
*   If a bootable mezzanine card (such as Fibre Channel controller or LAN card) is installed, check the boot priority on the **Boot** menu of the BIOS SETUP utility.
*   The slot number for the Type 1 mezzanine card is "MEZ1", and "MEZ2" for Type 2 mezzanine card.
*   1000BASE Adapter (4ch) (N8403-077F) can be installed only in the Type 2 mezzanine card slot.

1.6.2 Installation

Install a mezzanine card in mezzanine card slot in the following procedure.

Important	There are two types of mezzanine card for blade, Type 1 and Type 2.
	The Type 1 mezzanine card can be installed in either of connectors Type 1 and Type 2.
	The Type 2 mezzanine card can be installed in Type 2 connector only.
	To install the mezzanine card, start installation from the bottom slot (for Type 1).

Note	Before installing mezzanine card, make sure that the connection port on the card engages with the connector on the mezzanine card slot.

1.   Remove the top cover and air duct according to *Chapter 2 (1.3.1 Removal of top cover* and *1.3.2 Removal of air duct*).

2.   Confirm the position of the slot to install the mezzanine card.

3.   From top of the CPU blade, position the connector of the mezzanine so that it aligns the connector of
      the mezzanine card slot, and insert the mezzanine card straight into the slot.
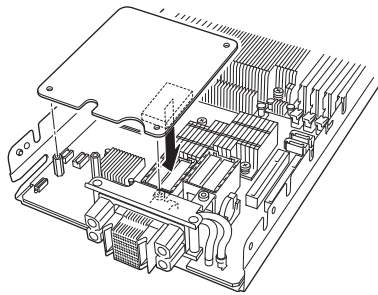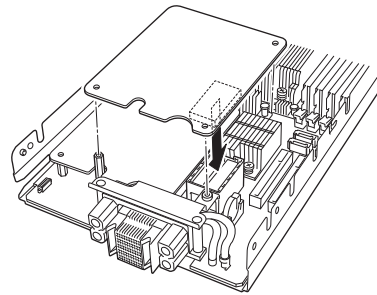
Type 1   Type 2

Important	• Do not make your body contact with the terminals on the board. Some malfunction may occur if the board is installed with dirt and/or oil adhering to the terminals. • Insert the mezzanine card straight into the connector. The terminal or connector may be damaged if it is inclined. • If the board cannot be installed securely, remove the board once and then install it again. Adding excess force to the board may cause the board to be damaged.

4.   Push the connector of mezzanine card with fingers firmly toward the CPU blade to connect the card to
      the slot.

5.   Tighten the two fixing screws to fix the mezzanine card to the spacer on the CPU blade.

6.   Install the top cover and air duct according to *Chapter 2 (1.3.4 Installation of top cover, air duct).*

7.   Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of
      the Blade Enclosure.

8.   Turn on the power of the CPU blade. Make sure that no error message appears in POST.
      If any error messages are displayed, refer to *Chapter 3 (1. Error Message of POST and Virtual LCD)*
      in "*Maintenance Guide*".

9.   If needed, run the BIOS configuration utility of the installed board to provide setup for the board.
      The existence of the utility and its start and operation procedures vary depending on the type of the
      board. Refer to the documentation coming with the board for details.

1.6.3 **Removal**

To remove Mezzanine card, remove the top cover and air duct according to *Chapter 2 (1.3.1 Removal of top cover* and *1.3.2 Removal of air duct)*, and then perform steps in *Chapter 2 (1.6.2 Installation)* in reverse order.

After Mezzanine card is removed, make sure that no error message appears in POST.

If any error messages are displayed, refer to *Chapter 3 (1. Error Message of POST and Virtual LCD)* in "*Maintenance Guide*".

Important	Pay attention not to make the air duct hit any electronic component on the CPU blade.

1.7 Hard Disk Drive (HDD) / Solid State Drive (SSD)

The CPU blade can contain up to two 2.5-inch hard disk drives (SAS/SATA) or solid state drive (SATA). This section describes SAS hard disk drive as an example.

See the next and the subsequent sections for installation order and installation location.

BP connector

Hook

Lever

Lock
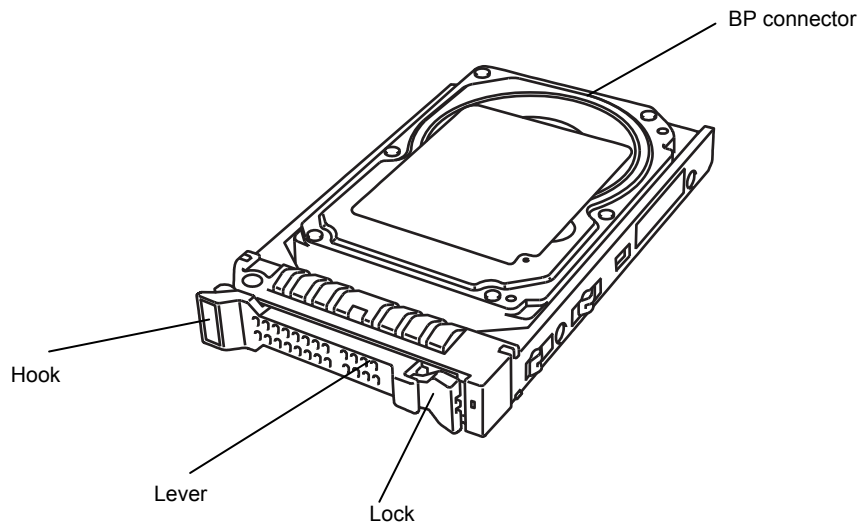
Important	• The Hard Disk Drive is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the Hard Disk Drive. Do not touch the terminals and parts on the Hard Disk Drive by a bare hand and place the Hard Disk Drive directly on the desk. For static notes, refer to "Handling precautions (for Anti-static Measures)".
	• An optional Hard Disk Drive may contain operating system. Be very careful when handling the drive.
	• Do not use any Hard Disk Drives not approved by NEC. If an unapproved third party's Hard Disk Drive is installed in the CPU blade, not only the Hard Disk Drive but also the CPU blade may be defected.
	• If Hard Disk Drives of different disk capacities co-exist in the CPU Blade, the system can operate normally. However, to use the Hard Disk Drives in RAID configuration, use Hard Disk Drives of the same model number.
	• An SSD bracket and screws are not provided with the optional Hard Disk Drive. Use them that come with the CPU blade.

1.7.1   **Installation**

Install the Solid State Drive in the following procedure.

Install the first hard disk drive in slot 0 (upper), then the second hard disk drive in slot 1 (lower)

1. Remove the dummy tray from the slot, if installed.
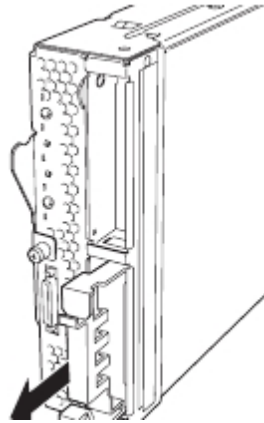
Important	• **Keep the removed dummy tray for future use**

2. Release the lock of the lever on the hard disk drive to make the lever opened
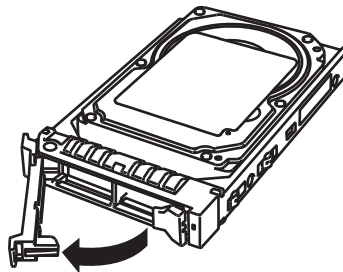
3.   Hold the hard disk drive so that the lever on the drive faces upward and the BP connector faces the CPU blade. Insert the hard disk drive into the slot slowly and gently.
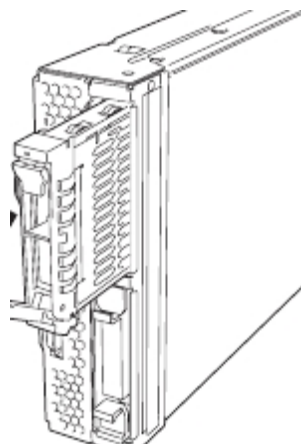
4.   Insert the hard disk drive until it hits the slot end, and close the lever. A click occurs when the hard disk drive is locked
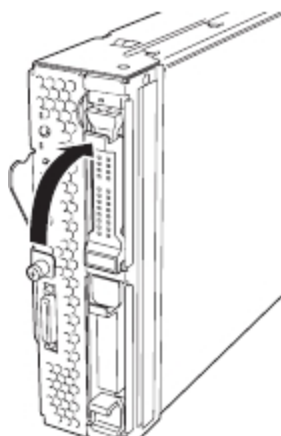
Important	• Make sure that the lever hook is engaged with the frame.

1.7.2 Removal

To remove the Solid State Drive, reverse the installation procedure referring to *Chapter 2 (1.7.1 Installation).*

Important	• Be sure to install dummy SSD after the Solid State Drive is removed. If not, the CPU blade may fail to work properly.

1.7.3 Replacement

Depending on the operating system and/or server management software to be used, Hard Disk Drives must be replaced in the defined procedure to manage the Hard Disk Drives appropriately.

If Windows is used as OS and NEC ESMPRO Manager and NEC ESMPRO Agent are used as the server management software, replace the Hard Disk Drives in the following procedure. To do these jobs, you should log on to the system as a user having the administrator authority.

The working procedure varies depending on the existence of the system partition and mirrored volume. Replace the Hard Disk Drives in the procedure meeting your system environment based on the figure on the next page.

To replace a Hard Disk Drive in a RAID system (RAID 1), you can use the auto rebuild feature. If auto rebuild feature is disabled due to some reason, perform manual rebuild using the configuration tool.

If you are using the RAID controller, refer to the manual that comes with the optional RAID controller to replace a Hard Disk Drive.

```
                          ┌─────────┐
                          │  START  │
                          └────┬────┘
                               │
              ┌────────────────────────────────┐
              │ Is the solid disk drive configured │────────────┐
              │           as RAID1?            │      Yes       │
              └────────────────┬───────────────┘                │
                               │                                 │
                              No                                 ▼
                               │               ┌────────────────────────────────┐
                               │               │ Replace the solid state drive,  │
                               │               │     and rebuild the drive.      │
                               ▼               └────────────────┬───────────────┘
              ┌────────────────────────────────┐                │
              │     Is mirror volume used?     │───┐            ▼
              └────────────────┬───────────────┘   │          ( A )
                              Yes                   No
                               │                    │
              ┌────────────────────────────────┐   │
          ┌───│ Does system partition exist in  │   │
         No   │ solid state drive to be replaced?│   │
              └────────────────┬───────────────┘   ▼
               │              Yes    ┌────────────────────────────────┐
               │               │     │ Does system partition exist in  │───┐
               │               ▼     │ solid state drive to be replaced?│   │
       ┌──────────────────────────┐ └────────────────┬───────────────┘   │
   No──│  Is the source drive for │         Yes              No
       │     creating mirror?     │          │                │
       └──────────┬───────────────┘          │                │
                 Yes                          │                │
  ┌──────────────────┐ ┌──────────────────┐ │  ┌──────────────────┐
  │ See Procedure 3. │ │ See Procedure 1. │◄─┘  │ See Procedure 2. │
  └──────────────────┘ └──────────────────┘     └──────────────────┘
```
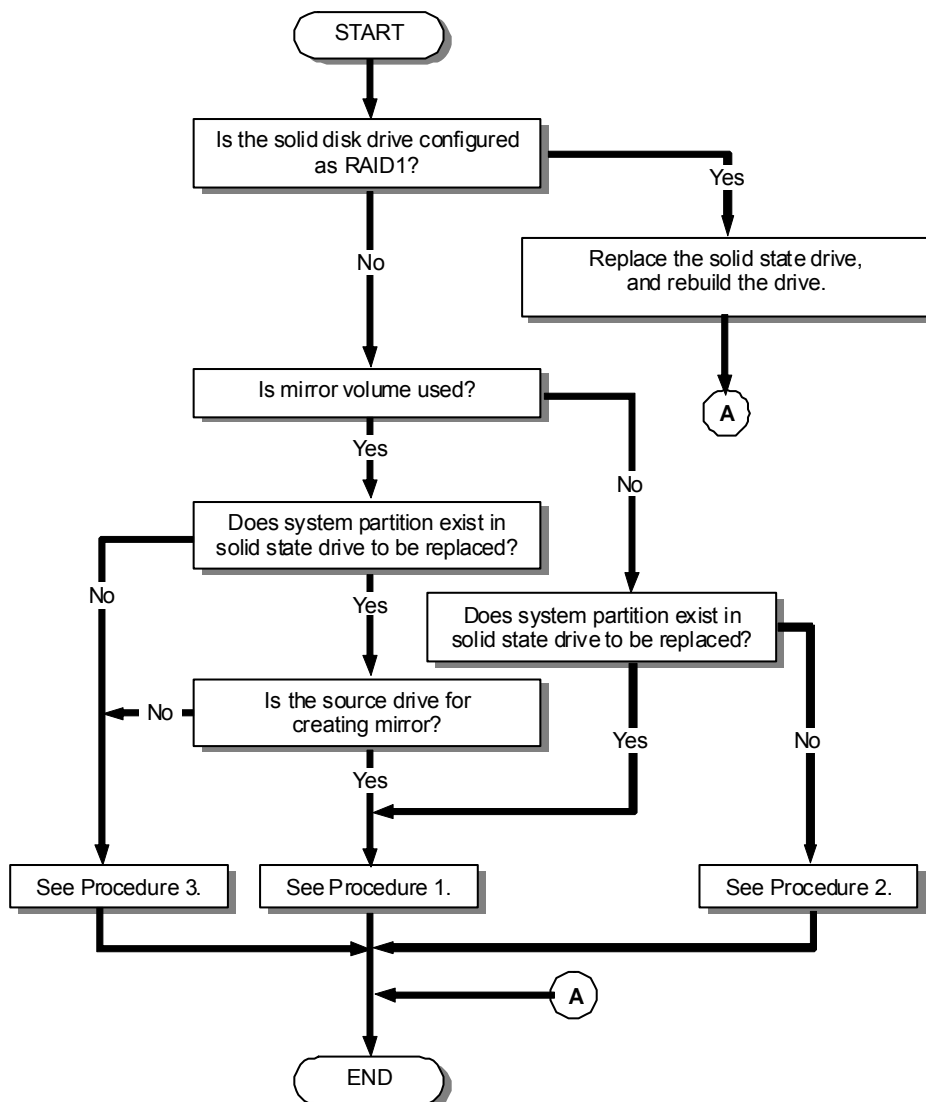
(1) Procedure 1

1. Shutdown the CPU blade system and turn off the power of the CPU blade.

2. Replace the Hard Disk Drive.

3. Set up the system again.

> **Important**
>
> Because the data cannot be recovered in this procedure, take the proper action such as data backup if necessary.

(2) Procedure 2

1. Delete all the volumes and partitions on the Hard Disk Drive to be removed.

   To delete volumes and partitions, select **Programs** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

   Select **Delete volume** / **Delete partition** from the menu appearing by right-clicking on **Volume/Partition**.

   > **Important**
   >
   > - Delete volumes and partitions carefully. Pay attention not to delete volumes and partitions from a normal disk.
   > - The volume and partition deletion disables the data to be recovered. Take the proper action such as data backup if necessary.

2. Shutdown the CPU blade system and turn off the power of the CPU blade.

3. Remove the Hard Disk Drive.

4. Install the Hard Disk Drive.

5. Turn on the power of the CPU blade.

6. Delete the removed disk.

   To delete the disk, select **Program** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

   Right-click the removed disk in the **Disk Management** menu to select **Delete disk**.

7. Import the installed Hard Disk Drive.

   To import the disk, select **Program** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

   The installed drive has a different format. Right-click on the installed drive and select **Import disk of different format**.

8. If NEC ESMPRO Agent is used, reset the Hard Disk Drive (refer to *Chapter 2 (1.7.4 Resetting Management Information)*).

(3) Procedure 3

1.   Cancel the mirroring configuration.

    To release the mirror, select **Program** →**Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

    Select **Cancel mirroring** from the menu appearing by right-clicking on the mirrored volume.

2.   Delete all the volumes and partitions on the Hard Disk Drive to be removed.

    To delete the volume/partition, select **Program** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

    Select **Delete volume** / **Delete partition** from the menu appearing by right-clicking on the **volume/partition**.

> **Important**
> - **Delete volumes and partitions carefully. Pay attention not to delete volumes and partitions from a normal disk.**
> - **The volume and partition deletion disables the data to be recovered. Take the proper action such as data backup if necessary.**

3.   Shutdown the CPU blade system and turn off the power of the CPU blade.

4.   Remove the Hard Disk Drive.

5.   Install a Hard Disk Drive.

6.   Turn on the power of the CPU blade.

7.   Delete the removed disk.

    To delete the disk, select **Program** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

    Right-click on the removed disk in the **Disk Management** screen and select **Remove disk**.

8.   Import the installed Hard Disk Drive.

    To import the disk, select **Program** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

    The installed drive has a different format. Right-click on the installed drive and select **Import disk of different format**.

9.   Add the mirrored volume.

    To add the mirrored volume, select **Program** → **Administrative Tool** → **Computer Management** → **Disk Management** from the **Start** menu.

    Select **Add mirror** from the menu appearing by right-clicking on the volume to which the mirror is desired to be added.

10.   If NEC ESMPRO Agent is used, reset the Hard Disk Drive (refer to *Chapter 2 (1.7.4 Resetting Management Information)*).

1.7.4 Resetting Management Information

Reset the management information on the replaced Hard Disk Drive in the following procedure.

1. Select **Settings** → **Control Panel** → **NEC ESMPRO Agent** from the **Start** menu.

    NEC ESMPRO Agent Properties is displayed.

2. Click on the **General** tab in **NEC ESMPRO Agent Properties**.

3. Select **Storage Setting…** in the **General** tab.

    Storage is displayed.

4. Click on the **Reset** tab in **Storage**.

5. After selecting the replaced Hard Disk Drive in **Hard disk drive list**, click on **OK**. (The Hard Disk

    Drives are also listed in **Hard disk drive list**.)

    The management information on the replaced Hard Disk Drive is reset.

6. Close the dialog box.

7. Close **NEC ESMPRO Agent Properties**.

1.8   Use of Internal Hard Disk Drives in the RAID System

This section describes how to use the Hard Disk Drives installed in the HDD cage at the front of the server in the RAID System.

Important	• **If you use Hard Disk Drives in the RAID System or change the RAID level, initialize the Hard Disk Drives. If the Hard Disk Drive contains valuable data, be sure to backup the Hard Disk Drive before installing the RAID Controller and configuring the RAID System.** • **Do not change the mode to hibernate when building a RAID System.**

Note	In the RAID System, use Hard Disk Drives that have the same specifications (capacity, rotational speed, and standard) for each Disk Array.

Tips	• Logical Drives can be created even with only one Physical Device. • Understand the characteristics of each RAID Controller such as available RAID levels or Hard Disk Drives and choose an appropriate RAID Controller. • Logical Drives except for RAID0 have a smaller usable capacity compared to the total capacity of the Hard Disk Drive in the Logical Drive, while disk reliability increases.

You can set up a RAID system by using the on-board RAID controller (LSI Embedded MegaRAID™).

To use this RAID system, it is necessary to install two Hard Disk Drives on the server. For details on the procedure of installing Hard Disk Drives, refer to *Chapter 2 (1.7 Hard Disk Drive (HDD) / Solid State Drive (SSD))* in this manual.

1.8.1   Enabling a RAID System

You can use the installed Hard Disk Drives as single hard disk drives or as a RAID system.

To set up the installed Hard Disk Drives as a RAID system, select **Advanced**, **PCI Configuration**, and **Onboard SCSI** from the **BIOS Setup** menu, and then set **Option ROM Scan** to **Enabled**. (For details, refer to *Chapter 2 (1. System BIOS)* in the *"Maintenance Guide".*)

Tips	The Hard Disk Drives are set to be used as a RAID system as the factory default.

1.8.2   Notes on setting up a RAID System

Note the following points when setting up a RAID System.

- The number of Hard Disk Drives required varies in each RAID level.

RAID level	The number of Hard Disk Drives required to set up a RAID System	
	Minimum	Maximum
RAID 0	1	2
RAID 1	2	2

- It is recommended to install Hard Disk Drives with the same model number.
- If you intend to install the OS to the RAID System, the process from RAID configuration to OS installation can be easily completed by using the EXPRESSBUILDER. If you wish to install the OS manually, use a RAID System Configuration utility (WebBIOS or SuperBuild Utility). The utility can be run during POST which starts immediately after the server is turned on. For details on the procedure of configuring a Logical Drive, refer to *Chapter 2 (4. RAID System Configuration)* in "*Maintenance Guide*".

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

1.9   TPM (Trusted Platform Module) Kit

The CPU blade can be equipped with TPM (Trusted Platform Module) kit used for encryption of Solid State Drive.

Use the factory-installed TPM kit connector on CPU blade to install TPM kit.

TPM kit connector

CPU blade
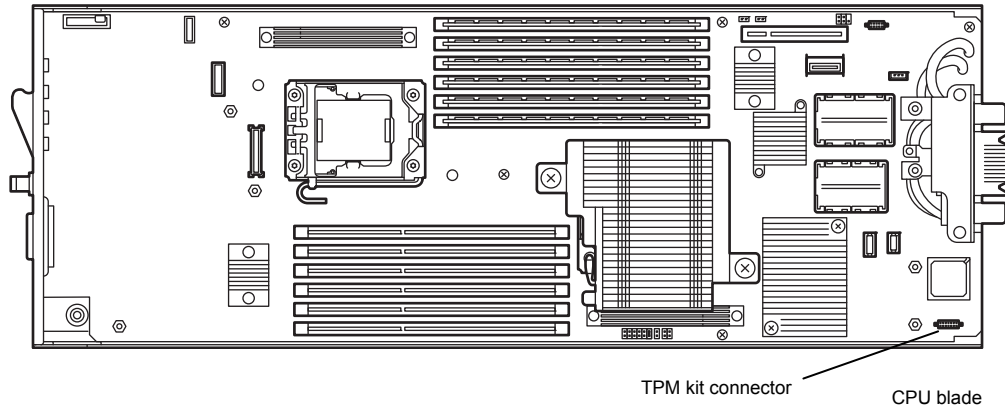
| Important | TPM kit is extremely sensitive to static electricity. Be sure to touch the metal frame of the server to discharge static electricity from your body before handling the TPM kit. Do not touch the TPM kit terminals or parts with bare hand or place the TPM directly on the desk. For static notes, refer to "Handling precautions (for Anti-static Measures)". |

1.9.1   Installation

Install the TPM kit according to the following procedure:

1.   Remove the top cover according to *Chapter 2 (1.3.1 Removal of top cover)*.

2.   Insert the projection of TPM kit into the groove on CPU blade chassis, and slowly move TPM kit until the connector on TPM kit is aligned with TPM kit connector on CPU blade.
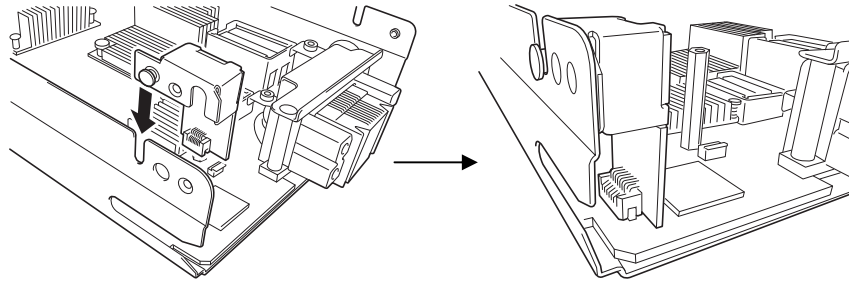
Important	• Do not touch the terminals of the card with your bare hand. Fingerprints and dust left on it causes the CPU blade to malfunction. • Insert TPM kit perpendicularly into the connector. Inserting TPM kit with being inclined may damage connector pins and/or connectors. • If you have trouble installing the TPM kit, remove the TPM kit once and try again. If you apply excessive pressure on TPM kit, a TPM kit might be damaged.

3.   Mount TPM kit to the CPU blade and secure it with a single screw.
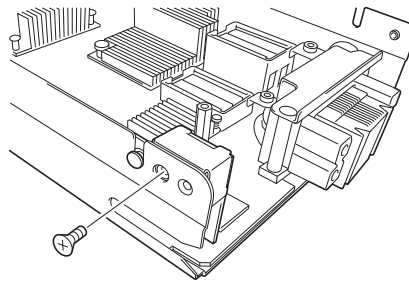
4.   Mount the support bracket for TPM kit.

Align the positioning key with the groove, and secure it with two screws. (Two types of screws are provided. Use the flat head screw for TPM Kit side, and the pan head screw for center side of chassis.)
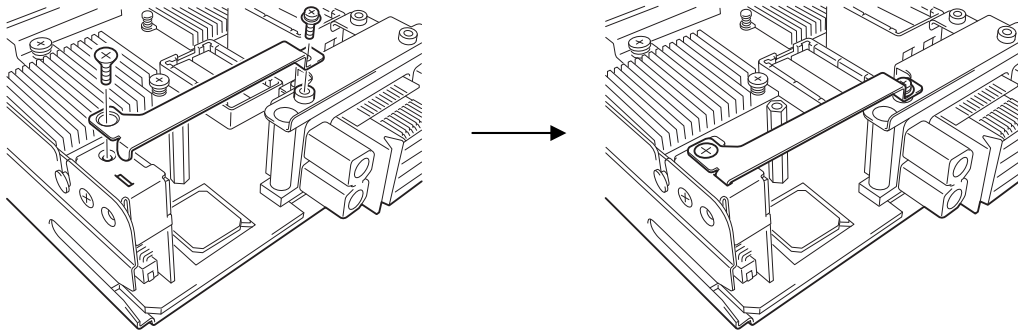
5.   Install the components you removed in earlier steps.

6.   Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of the Blade Enclosure.

7.   Turn on the power of the CPU blade. Make sure that no error message appears in POST.

If any error messages are displayed, refer to *Chapter 3 (1. Error Message of POST and Virtual LCD)* in "Maintenance Guide".

1.9.2 **Removal**

To remove the TPM kit, remove the top cover according to *Chapter 2 (1.3.1 Removal of top cover)*, and then perform steps 2 and 3 of *Chapter 2 (1.9.1 Installation)* in reverse order.

1.10   Internal Flash Memory

The CPU blade can be equipped with Internal Flash Memory (USB memory embedded card) that contains information of EXPRESSBUILDER.

Use the connector for Internal Flash Memory on CPU blade to install Internal Flash Memory . (The connector for Internal Flash Memory is factory-installed on CPU blade.)

Connector for Internal Flash Memory

CPU blade
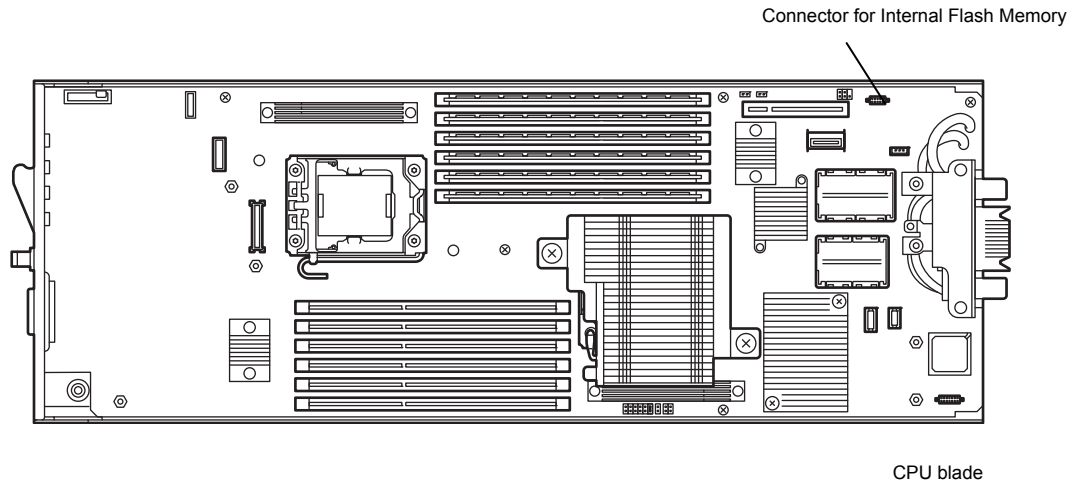
Important	Internal Flash Memory is extremely sensitive to static electricity. Be sure to touch the metal frame of the server to discharge static electricity from your body before handling the Internal Flash Memory. Do not touch the terminals or parts of Internal Flash Memory with bare hand or place the Internal Flash Memory directly on the desk. For static notes, refer to "Handling precautions (for Anti-static Measures)".

1.10.1   Notes

The data in EXPRESSBUILDER is not copied in Internal Flash Memory.

Refer to *Chapter 2 (5.3 Utilities Provided by EXPRESSBUILDER)* on in "*Maintenance Guide*".

1.10.2 Installation

Install the Internal Flash Memory according to the following procedure:

1. Remove the top cover according to *Chapter 2 (1.3.1 Removal of top cover)*.
2. Insert the projection of Internal Flash Memory into the groove on CPU blade chassis, and slowly move Internal Flash Memory until the connector on Internal Flash Memory is aligned with Internal Flash Memory connector on CPU blade.
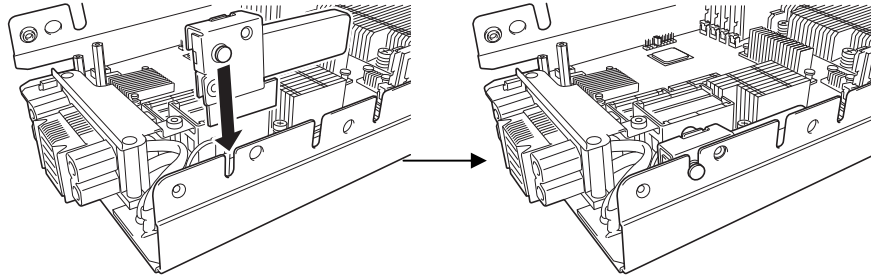
Important	• Do not touch the terminals of the card with your bare hand. Fingerprints and dust left on it causes the CPU blade to malfunction. • Insert Internal Flash Memory perpendicularly into the connector. Inserting Internal Flash Memory with being inclined may damage connector pins and/or connectors. • If you have trouble installing the Internal Flash Memory, remove the Internal Flash Memory once and try again. If you apply excessive pressure on Internal Flash Memory, the Internal Flash Memory might be damaged.

3. Mount Internal Flash Memory to the CPU blade and secure it with a single screw.
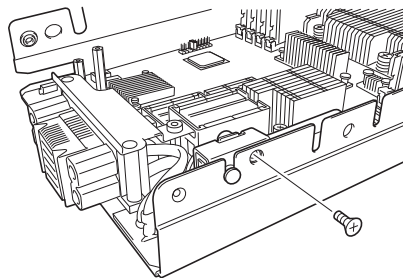
4. Mount the support bracket for Internal Flash Memory .

   Align the positioning key with the groove, and secure it with two screws. (Two types of screws are provided. Use the flat head screw for Internal Flash Memory side, and the pan head screw for center side of chassis.)
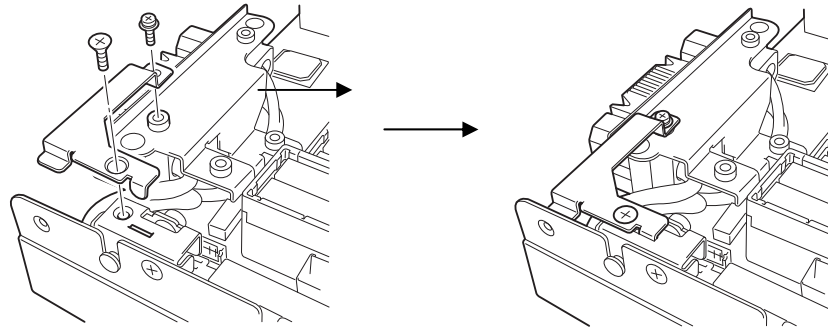
5. Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of the Blade Enclosure.

6. Turn on the power of the CPU blade. Make sure that no error message appears in POST.

   If any error messages are displayed, refer to *Chapter 3 (1. Error Message of POST and Virtual LCD)* in "*Maintenance Guide*".

1.10.3 Removal

To remove the Internal Flash Memory, remove the top cover according to *Chapter 2 (1.3.1 Removal of top cover)*, and then perform steps 2 and 3 of *Chapter 2 (1.10.2 Installation)* in reverse order.

2. Installation and Connection

This section describes how to position the CPU blade and connect cables.

2.1 Installation

Install the CPU blade in the dedicated Blade Enclosure. Refer to the User's Guide of Blade Enclosure for location appropriate to Blade Enclosure, and how to install the CPU blade.

Important	• **The CPU blade is extremely sensitive to static electricity. Make sure to touch the metal frame of the CPU blade to discharge static electricity from your body before handling the CPU blade. Do not touch the pins, leads, or circuitry and place the CPU blade directly on the desk. For static notes, refer to "Handling precautions (for Anti-static Measures)".** • **Do not block air vents of the CPU blades, Blade Enclosures, power supply units, and additional FAN units.**

2.1.1 Checking MAC Address

Be sure to check the MAC addresses before installing a CPU blade in the Blade Enclosure.

A MAC address indicates the address specific for the network. It is expressed by 12-digit alphanumeric. MAC addresses are stored in LAN riser card which is a required option of CPU blade.

The number of MAC addresses stored in card depends on type of LAN riser card.

- 1G-LAN (N8403-061): 2

- 10G-LAN (N8403-062): 8

- 10G-iSCSI (N8403-064): 16

A MAC address is indicated in the area of LAN riser card as shown in the figure below.

Label indicating MAC address

DG7xxx
xxxxxxxxx
XXXXXXXXXXXX

MAC address (12 characters)
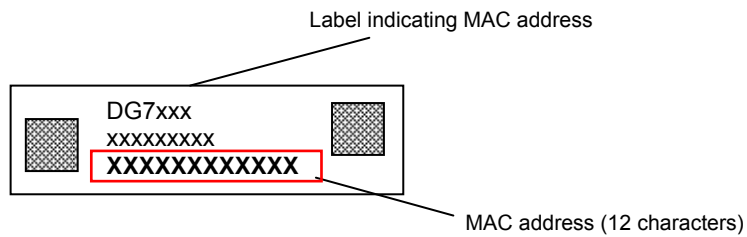
The MAC address of LAN port is derived by adding the base value in the table below for the address.

For convenience, the added values of in the table below are quoted in decimal number. The MAC address is actually used, so will be shown in a hexadecimal number, please be careful.

Important f the NPAR feature is disabled, MAC addresses which can be used one (or two; iSCSI offload type) will be per physical port. To derive the MAC address, please refer to the PF0 of each physical port in the table below.

- Dual Port 1GBASE riser card kit(N8403-061F):

LAN port number	Network MAC address
1	0
2	+2

- Dual Port 10GBASE riser card kit(N8403-062F):

LAN port number	LAN port partition number (PF*)	Network MAC address
1	0	0
	2	+4
	4	+8
	6	+12
2	1	+2
	3	+6
	5	+10
	7	+14

- Dual Port 10GBASE riser card kit(N8403-064F):

LAN port number	LAN port partition number (PF*)	Network MAC address	iSCSI MAC address
1	0	0	+1
	2	+4	+5
	4	+8	+9
	6	+12	+13
2	1	+2	+3
	3	+6	+7
	5	+10	+11
	7	+14	+15

＊PF : Physical   Function

The MAC addresses can be checked from the proper Windows command.

- Windows

  Enter "ipconfig /all" for the command prompt or from Run in the Start menu to see the indicated physical

  address part.

- Linux

  Enter "ifconfig" for prompt to see the indicated HWaddr.

- You may use the remote control feature of EXPRESSSCOPE Engine 3 (BMC) to check the MAC address.

2.2   Connecting Peripheral Devices

Connect peripheral devices to the CPU blade.

Tips | Contact the maintenance engineer in your sales representative if you have any requests on the system configuration including the connection to the uninterruptible power supply system or auto power controller and the time schedule operation.

Important | **If you are installing the CPU blade in the Blade Enclosure (SIGMABLADE), follow instructions described in the User's Guide of the Blade Enclosure.**

⚠ WARNING

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

- **Do not hold the power plug with a wet hand.**
- **Do not connect earth lines to any gas tubes.**

⚠ CAUTION

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

- **Do not 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.**
- **Do not connect or disconnect any interface cable with the power cord of the server plugged to a power source.**
- **Do not use any unauthorized interface cable.**

In the ordinary operation, any cables may not be connected to a CPU blade. Proper cable(s) should be connected to the USB, serial, and/or VGA ports on the CPU blade in the following cases:

- Using a Flash FDD with the server installed in the N8405-016F/016AF/016BF/040F/040AF Blade Enclosure

- Performing maintenance work

- Updating BIOS and firmware

Use K410-150(00) SUV cable for connection of CPU blade. (K410-150(00) SUV cable is a standard accessory for the Blade Enclosure (SIGMABLADE)).

Important	• Do not use an external DVD-ROM drive connected via the K410-150(00) SUV cable to install an operating system. • Use the internal DVD-ROM drive of Blade Enclosure to install an operating system.

The K410-150(00) SUV cable has the USB, serial interface, and monitor connectors at the ends. Connect a proper device at each of the ends.

To serial interface device

To monitor

To USB devices

To CPU blade

To CPU blade

To USB devices
(This connector has two ports.)

To monitor

To serial interface device
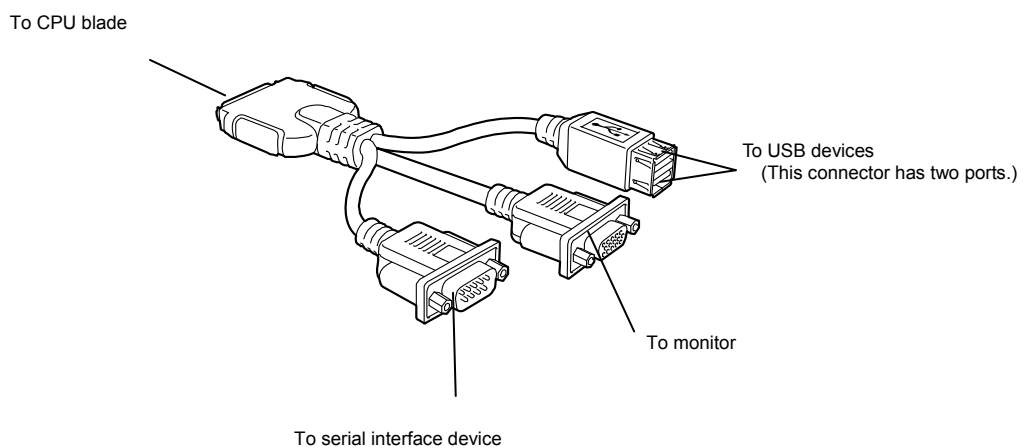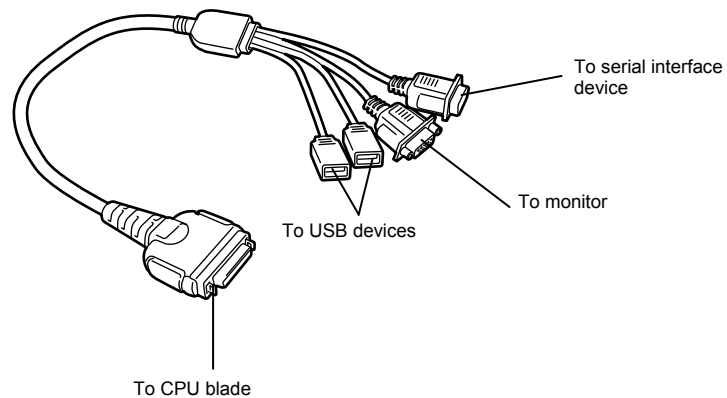
Important

- To connect a peripheral or interface cable provided by a vendor other than NEC (or third party) to the CPU blade, make sure that the device is available for the CPU blade. Some third party devices are not available for the CPU blade.
- The serial port connector cannot be directly connected with the leased line.
- Do not connect/disconnect the SUV cable or add/remove the USB device until the operating system starts running.

  To connect/disconnect the SUV cable or add/remove the USB device after OS startup, follow restrictions of operating system.

  If the device having serial interface is connected, first power off the CPU blade and destination device, and remove the power cord from the destination device before connecting/disconnecting SUV cable or serial cable. Failure to follow it may cause the devices to be defected due to the potential difference between them.

- The USB device may not work correctly in USB 2.0 High Speed mode depending on type of USB device or cable length. In such a case, use a shorter cable, or use a USB hub that supports USB2.0 High Speed mode.

2.2.1 USB Connection by K410-150(00) SUV Cable

Connect a floppy disk drive, external DVD-ROM drive, keyboard, and mouse according to the figure shown below. Use the separately priced K410-150(00) SUV cable (or a standard accessory for the Blade Enclosure (SIGMABLADE).

However, when using a display unit, keyboard, and mouse connected to the Blade Enclosure by using the KVM selection feature of the Blade Enclosure, do not connect those devices by way of a SUV cable.
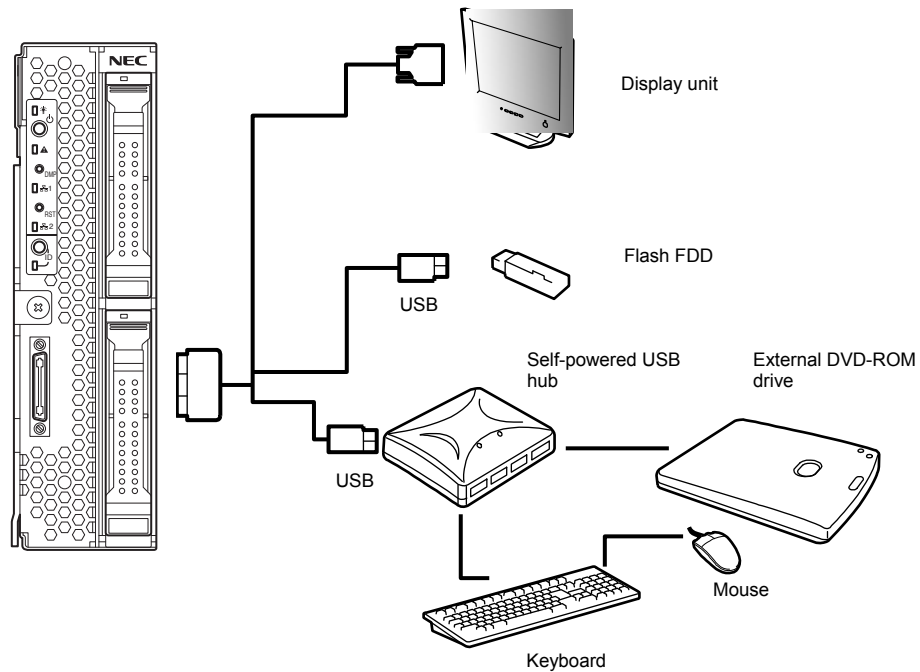
*   Use the USB hub and external DVD-ROM drive supported by this CPU blade.

2.2.2 Connecting with Network

The CPU blade is connected with network via the Blade Enclosure. Refer to the User's Guide of the Blade Enclosure for details.

2.2.3 Connecting with UPS

To connect the power cord from the Blade Enclosure to an interruptive power supply (UPS), use outlet socket on the rear of the UPS. Refer to the manual that comes with the UPS for details.
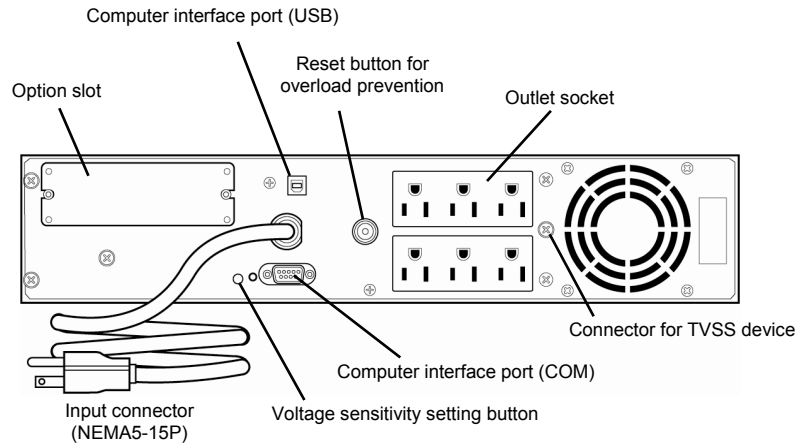
When the power cord from the Blade Enclosure is connected to a UPS, you may need to change the BIOS SETUP of the CPU blade to link with power supply from the UPS.

Run BIOS SETUP, and select **Server -> AC-LINK** and change parameter appropriately. Select **Power On** for automatic operation via UPS. For more information, refer to *Chapter 2 (1.2.4 Server)* in "*Maintenance Guide*".

NEC Express5800 Series
Express5800/B120e

3

Setup

This chapter describes how to set up the CPU blade.

1. **Turning on the Server**

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

2. **System BIOS (Setup)**

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

3. **EXPRESSSCOPE Engine 3**

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

4. **EXPRESSBUILDER**

   EXPRESSBUILDER helps you to install Windows and maintain the server.

5. **Installing Software Components**

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

6. **Device Identification**

   Describes ID lamp provided in the server.

7. **Turning off the Server**

   Turn off power when not using the server.

1. Power-on of Blade Server

There are the following three ways to turn on the power of the CPU blade. Turn on the power of the CPU blade in any of the three ways after turning on the powers of the display unit and peripherals connected to the CPU blade.

Important

Perform the power-on operation of the CPU blade by either the use of the POWER switch or the remote power-on after the period of 60 seconds or longer has passed from the supply of AC power to every power unit (POWER lamp on CPU blade is lit amber). The power-on operation within the period of 60 seconds from the supply of AC power to every power unit may not turn on the power of the CPU blade. If so, turn on the power of the CPU blade by using the POWER switch after making sure that the AC power is supplied to every power unit.

Note

If a power cord on the Blade Enclosure is connected to a power controller including an uninterruptible power supply (UPS), make sure that the power of the power controller is turned on.

Tips

When the power is supplied to the CPU blade, the initial diagnosis is executed for about 60 seconds. In this period, the POWER switch is disabled. Power on the CPU blade about 60 seconds immediately after you installed the CPU blade or turned on the power.

1.1   Power ON from CPU Blade

Press the POWER switch on the panel of the CPU blade (the POWER lamp on the CPU blade goes on green).
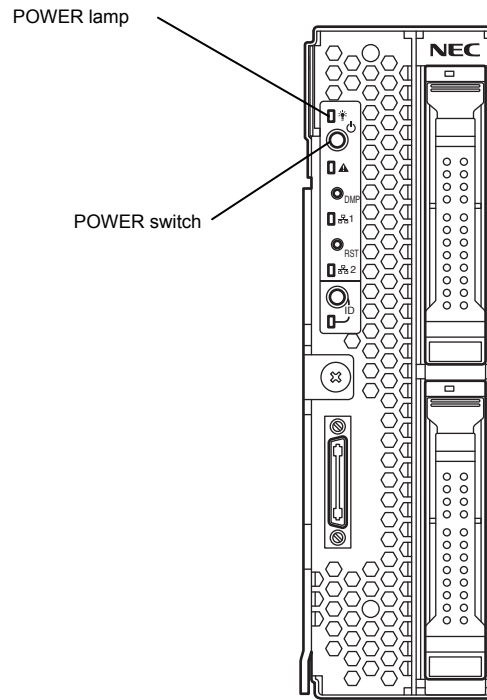
1.2   Power ON from Network Serial Port

Depending on the BIOS setting of the CPU blade, the power of the CPU blade may be automatically turned on by a proper packet received from the network or via the modem connected to the serial port.

This power-on procedure can be specified by setting **Wake On Events** of **System Hardware** in the BIOS SETUP Utility.

1.3   Power ON from Remote Console

The power of the CPU blade can be turned on by using remote control feature of EXPRESSSCOPE Engine 3 (BMC).

1.4   Operation after Power ON

If the CPU blade is connected with a display unit, the NEC logo appears on the screen of the display unit after a while from the power-on.

Important	**Do not power off the server until NEC logo and some message appears.**

While the NEC logo appears, the CPU blade runs the self-diagnosis program (POST) to diagnose the

CPU blade itself. Refer to *Chapter 3 (1.5 POST)*.

1.5   POST

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

When you power on the CPU blade, the system automatically runs POST to check the motherboard, memory module, processor (CPU), keyboard, and mouse. POST also displays the start-up message of utilities, while in progress.

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

- When you use the CPU blade for the first time.

- When the CPU blade appears to fail.

- When any error message is displayed

1.5.1   POST Execution Flow

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

Important	• **Do not make unnecessary 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 mezzanine card, may display the message that indicates incorrect board configuration and suspend POST.** **In such a case, press the <F1> key to continue POST. Board configuration can be made using the utility described later.**

1.   When the server is turned on, POST starts running, and displays messages indicating initialization of memory and PCI devices. After messages are displayed, the LOGO appears.

NEC

Note	• The keyboard becomes available after the logo is displayed. • The screen may be switched to black (nothing is displayed) several times while the initialization message is being displayed, however, it is not the problem. • The initialization message may not appear depending on setting of BIOS SETUP, or when optional VGA controller is connected. • The initialization message does not appear on Console Redirection screen of serial port.

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

> **Tips**   You can set it to show the details of POST to be displayed from **BIOS** menu without
>   requiring the <ESC> key to be pressed. From the System BIOS Setup, set **Quiet Boot** to
>   **Disabled** in the **Boot** menu, by referring to *Chapter 2 (1. Details of System BIOS) in*
>   *"Maintenance Guide"*.

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

> **Tips**   Depending on the installed PCI card configuration, the memory capacity might be
>   displayed less than actually installed physical memory. (This applies to the display of
>   BIOS Setup utility or OS system information.)

4.   After a while, POST displays the following message.

    `Press <F2> SETUP, <F3> Internal flash memory, <F4> ROM Utility, <F12> Network`

    By pressing the designated function key following messages, you can call the functions below
    upon completion of POST.

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

> **Note**   • If the optional Internal Flash Memory is not installed in the system, the <F3> key
>   message will not be displayed.
>   • The <F3> key must be pressed within 5 seconds of the message being displayed.
>   • Note that the server will not boot from the Internal Flash Memory even if it is specified
>   to do so by pressing the <F3> key, as long as a bootable CD/DVD-ROM is set on the
>   drive with the boot priority of CD/DVD-ROM is set to higher than Solid State Drive.

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

Important	• To start a dedicated utility for the RAID controller and so on when POST is running, do as follows.
	1. Make sure that you do not press any key before beginning this work.
	2. Press a "Modifier Key" (such as <Ctrl> key) first, and hold down the "Modifier Key" and press a "Character key" (such as <H> key) with the "Modifier Key" pressed repeatedly until the dedicated utility starts.
	• If you have failed to start the dedicated utility, please restart the server and rerun POST to try again.

Example: SCSI BIOS Setup utility

```
Press <Ctrl> <A> for SCSISelect(TM) Utility!
```

The utility starts by pressing the <Ctrl> + <A> keys.

Example: If the jumper setting for an on-board RAID Controller is enabled

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

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

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

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

6. If you have set the 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 system to boot. In such a case, turn off the power and wait about 10 seconds before turning on to boot the CPU blade.

Important	Do not set a password before installing an OS.

7. The OS starts when POST completes.

1.5.2 POST Error Messages

When POST detects an error, it displays an error message on the screen. For descriptions of error messages, causes, and countermeasures, refer to "*Maintenance Guide*".

Important	Take notes on the messages displayed before consulting with your maintenance service company. Alarm messages are useful information for maintenance.

2. BIOS Setup Utility (SETUP)

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

Before you install the server and add or remove optional devices, make sure you have read and understood this section to configure properly.

2.1 Overview

BIOS Setup Utility (SETUP) is a utility to do basic hardware settings. This utility is installed in a flash memory in the server as standard and can be run without requiring a media for boot.

BIOS settings were configured with optimal settings before the server was shipped to you. Therefore, in most of cases, you should not need to use the SETUP.

2.2 Starting and Exiting SETUP Utility

- Starting SETUP Utility

   Run POST following Chapter 3 (1.5.1 POST Execution Flow).

   After a while, the following message will be displayed on the lower left of the screen.

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

   If you press <F2> key at this time, SETUP runs and displays Main menu upon completion of POST. (You can also press <F2> key while NEC logo appears to display Main menu.)

Tips	If the password has been set, you will be prompted to enter the password at the next startup of SETUP. (The timing when prompt message appears depends on password setting.) 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.

- Exiting SETUP Utility

   To save changes, select **Save changes and Exit** in **Save & Exit** menu. To discard changes, select **Discard changes and Exit** in **Save & Exit** menu.

Tips	To restore the default setting, select Load Setup Defaults in Save & Exit menu. (The default setting may differ from that of shipping defaults.)

2.3   Description on On-Screen Items and Key Usage

This section shows display examples and how to control the key. Use the keyboard to work with the SETUP utility.

Indicates the currently displayed menu

Indicates the menu has submenus.

Help

Setting items

Parameters (highlighted when selected*)
*: Items that cannot be specified are dimmed.
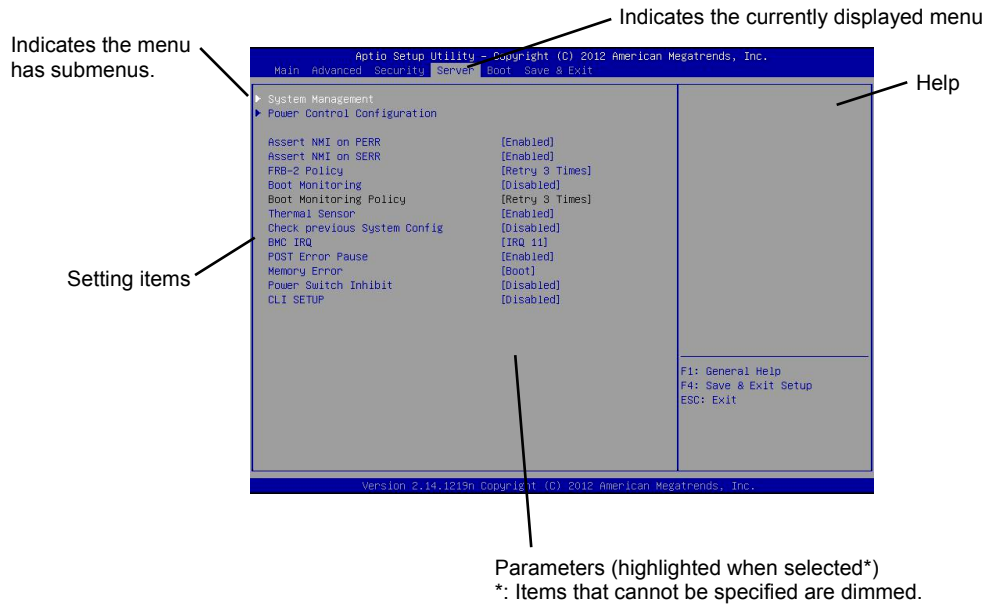
□ Cursor keys (<↑>, <↓>)
Select an item displayed on the screen. If characters of an item are highlighted, that means the item is currently selected.

□ Cursor keys (<←>, <→>)
Select top menus including **Main**, **Advanced**, **Security**, **Server**, **Boot**, and **Save & Exit**.

□ <−> key/<+> key
Change the value (parameter) of the selected item. You cannot use this key when a menu which has ▶ on the left is selected.

□ <Enter> key
Press this key to confirm the selected parameter.

□ <Esc> key
Press this key to cancel pop up menu. In sub menu, press this key takes you to the previous screen. In top menu, press this key takes the following window is displayed. If you select **Yes**, the SETUP closes without saving the changed parameters.

Quit without saving?
[Yes]   No

□ <F1> key
Press this key to display help information of key usage. If you need help using the SETUP, press this key. Press the <Esc> key to go back to the original screen.

☐ <F2> key
If you press this key, the following window appears. If you select **Yes**, the previous parameter(s) are restored. However if you save parameter(s) using [Save Changes], the saved parameter(s) are restored.

Load Previous Values?
[Yes]   No

☐ <F3> key
If you press this key, the following window appears. If you select **Yes**, restore the SETUP parameters of the currently selected item to the default setting. (**This might be different from the parameters configured before shipment.**)

Load Setup Defaults?
[Yes]   No

☐ <F4> key
If you press this key, the following window appears. If you select **Yes**, the parameter you configured is saved and SETUP closes.

Save configuration and exit?
[Yes]   No

2.4   Cases that Require Configuration

Only if a case applies to any of following cases, use the SETUP utility to change a parameter which was configured as factory setting. Other than cases described below, do not change the settings. A list of SETUP parameters and factory settings are descrbed in **_Chapter 2 (1. System BIOS)_** in "**_Maintenance Guide_**".

Category	Description	To be changed	Remark
Basic	Change date and time	**Main → System Date** **Main → System Time**	Configurable on OS
	On/Off NumLock on power ON	**Boot → Bootup Numlock State**	
	On/Off the function to display the NEC logo during POST	**Boot → Quite Boot → Disabled**	Pressing the <Esc> key can hide the logo.
Optional board	Install RAID Controller board	**Advanced → PCI Configuration → PCI Slot n Option ROM → Enabled**	n is PCI slot number of the RAID Controller
Boot	Change the boot order of devices	**Boot → Boot Option Priorities →** Change the boot priority	
	Use remote power on function (from modem)	**Advanced → Advanced Chipset Configuration → Wake On Ring → Enabled**	
	Use remote power on function (from RTC alarm)	**Advanced → Advanced Chipset Configuration → Wake On RTC Alarm → Enabled**	
	Control from HW console terminal	**Advanced → Serial Port Configuration →** Change respective setting.	
Security	Set a password	**Security → Administrator Password →** Enter a password (Set a password for Administrator first and then User)	There are two types of password; Administrator and User. Settings for User password is limited compared to for Administrator.
UPS Powerlink	When the server is supplied with power from UPS, always turn on the power.	**Server → AC-LINK → Power On**	
	If the server is turned off by using POWER switch, leave it OFF even when UPS supplies power.	**Server → AC-LINK → Last State**	
	Keep the power OFF even when UPS supplies power.	**Server → AC-LINK → Stay off**	

Password

If you have set a password, a message prompt you to enter password will be displayed from the next time.

```
Enter password [                    ]
```

You can attempt password entry up to 3 times. **If you entered a wrong password 3 times, operation stops.** (You cannot operate further.) Turn off the power.

Saving changes

If you finish configuration, select **Save & Exit** and then **Save Changes and Exit** to save changes and exit. If you wish to exit without saving the changed parameters, select **Save & Exit** and then **Discard Changes and Exit**.

Or if you wish to restore the setting to default values, select **Save & Exit** and then **Load Setup Defaults**. (**The default value might be different from the factory setting.**)

3. EXPRESSSCOPE ENGINE 3

3.1 Overview

EXPRESSSCOPE Engine 3 provides a variety of features using Baseboard Management Controller (BMC), which is a system management LSI.

EXPRESSSCOPE Engine 3 monitors the temperature and voltage of the server. If you have the management LAN port connected to the network, you can remotely perform the following over a web browser or SSH client:

- Manage the server

- Remotely control the keyboard, video, and mouse (KVM)*

- Remotely access a CD/DVD/floppy disk/ISO image/USB memory*.

* To actualize these functions, virtual USB mass storage device (Remote FD, Remote CD/DVD, Remote USB Memory, or Vritual Flash) is always connected as USB mass storage devices for CPU blade.

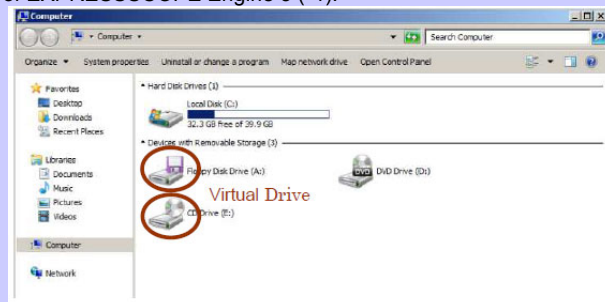| Tips	More than one removable drives other than the actual drive are displayed on the operating system of the host system. This is a normal operation and these added removable drives are the virtual removable drives reserved for the remote media function of EXPRESSSCOPE Engine 3 (*1).

Fig. 1 Exp. Windows Server 2008 R2 Computer Folder (*2)
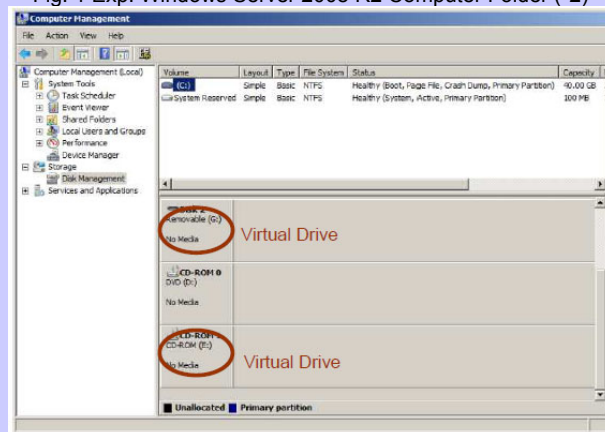
Fig. 2 Exp. Windows Server 2008 R2 Server Manager (*2)

*1   A function to use FD/CD/DVD drives, ISO images and USB memories connected to the management PC as drives virtually connected to the host system.

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

3.2   EXPRESSSCOPE ENGINE 3 Network Configuration

The network configuration of management LAN of EXPRESSSCOPE Engine 3 is obtained automatically from the Enclosure Manager which has DHCP server function. For detailed information on DHCP server of EM card, refer to *EM Card User's Guide* or *Blade Enclosure User's Guide*. By the factory default, **DHCP** is set to **Enabled**.

If **DHCP** is set to **Disabled** and you want to use the management LAN of EXPRESSSCOPE Engine 3, follow steps below to configure the network.

1.   Run POST following *Chapter 3 (1.5.1 POST Execution Flow)*. Wait until the following message appears

     on the lower left of the screen.

```
Press <F2> SETUP, <F3> Internal flash memory, <F4> ROM Utility, <F12> Network
```

2.   If you press the <F4> key at this time, ROM utility starts upon completion of POST.

     You can also press the <F4> key while the NEC logo is being displayed to open the Off-line TOOL MENU

     screen.

3.   The keyboard selection screen appears. Select your keyboard type.

     After that, the Off-line TOOL MENU screen appears. On this screen, specify the network settings for

     EXPRESSSCOPE Engine 3.

4.   When the Off-line TOOL MENU appears, select **BMC Configuration**, **BMC Configuration**, **Network**,

     and then **Property**.
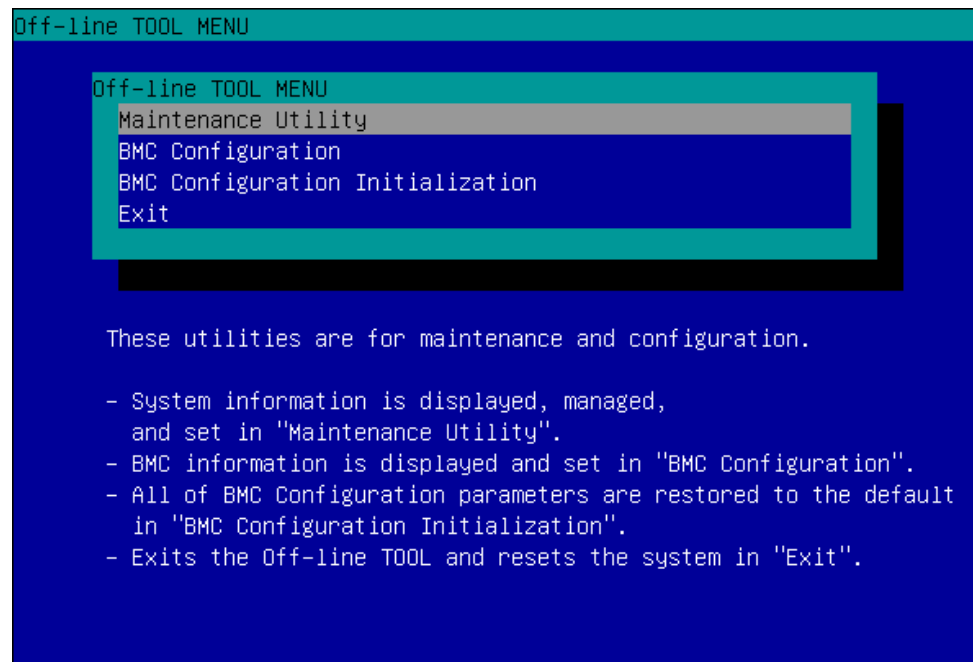
5.   If **Property** is selected, the following screen is displayed. On this screen, specify whether to use DHCP and if DHCP is not used, configure IP Address/Subnet Mask.

```
Network(Property)
Items                           : Values
Connection Type                 : [Auto Negotiation]
BMC MAC Address                 : 00-11-22-AA-BB-CC
DHCP                            : [Disable]
  IP Address [Required]         : [192.168.0.1]
  Subnet Mask [Required]        : [255.255.255.0]
  Default Gateway               : [192.168.0.2]
  DNS Server                    : [192.168.0.3]
Host Name                       : [HostName]
Domain Name                     : [DomainName]
< OK >
< Cancel >
< Load Default Value >




    Select:[Enter] Cancel:[ESC] Help:[Home or ?]

```

6.   It will be available for use if you access EXPRESSSCOPE Engine 3 via Web browser of management PC according to the setting.

4. EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows or maintain the server.

4.1 Features of EXPRESSBUILDER

EXPRESSBUILDER provides the following features.

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

 * Manuals and some software components are not stored in Internal Flash Memory.

4.2 Starting EXPRESSBUILDER

If you want to configure RAID System or install Windows, start EXPRESSBUILDER by using any of the following.

EXPRESSBUILDER disc (DVD):

Set the DVD on the drive and either turn on the server or restart the server by pressing <Ctrl> + <Alt> + <Delete> keys. EXPRESSBUILDER is booted from DVD.

Internal Flash Memory (optional):

Press <F3> key during POST. When using this option, **make sure that the media was removed from the drive.**

If you want to install any bundled software or see documents, set the DVD to a computer running Windows. Autorun menu appears automatically. If the menu does not appear, double-click the icon of the optical disc drive that the media is set.

5. Installing Software Components

Continue to install software components such as OS.

Refer to the instructions below.

- Installation Guide (Windows)

Tips   If you are using Red Hat Enterprise Linux 6, see *(5.1 Notes on using Red Hat Enterprise Linux 6)*.

5.1   Notes on using Red Hat Enterprise Linux 6

5.1.1 About the message caused by power consumption control in Red Hat Enterprise Linux 6

The following messages may be logged to "syslog", but these do not indicate that failures have occurred in the server.

These messages indicate that the power consumption of a CPU blade has reached the upper limit value for ceiling control.

The power consumption in the entire system is controlled by the EM card installed in the blade enclosure, and the EM card controls the upper limit values of the CPU blades for ceiling control dynamically according to the power consumption of each CPU blade.

When the power consumption of a CPU blade has reached the upper limit value, the value is changed automatically by optimally allocating the power across the CPU blades, therefore, there will be no impact in the operation.

Please refer to the user's guide of the EM card for setting the power consumption control on the EM card.

■ Sample Message 1

kernel: CPU6: Core power limit notification (total events = 196670)

kernel: CPU21: Package power limit notification (total events = 196453)

kernel: CPU17: Core power limit normal

kernel: CPU23: Package power limit normal

mcelog: Processor 3 below trip temperature. Throttling disabled

These messages will be logged as many times as the number of logical CPU.

■ Sample Message 2

[Hardware Error]: Machine check events logged

You can distinguish between the messages for failures and for power capping by checking the Machine Check Events (MCE) logs (in /var/log/mcelog).

If a message that is similar to the following and that contains "THERMAL EVENT" is repeatedly logged in 8 lines in /var/log/mcelog at around the time (within 5 minutes) when the message containing "Hardware Error" is

logged in /var/log/messages, the "Hardware Error" is logged by the OS when the OS receives a request to perform the power cutting operation, which does not indicate an failure in the server.

Ex.)

MCE 0

CPU 23 THERMAL EVENT TSC 3559f8b98fe2

TIME 1331221119 Fri Mar   9 00:38:39 2012

Processor 23 below trip temperature. Throttling disabled

STATUS 40000000882e0800 MCGSTATUS 0

MCGCAP 1000c14 APICID f SOCKETID 0

CPUID Vendor Intel Family 6 Model 45

Hardware event. This is not a software error.

It's possible to be to change the power control mode of this product to "Static mode" from "Dynamic mode" of default and reduce the output frequency of the message.

The power control mode is established in the EM card.

■ In the case of SIGMABLADE-M(N8405-016F/016AF/016BF)

See the section of "Using Command Line Console Feature" - "Command Reference" - "srvpwrmode" in the User's Guide of the EM card.

■ In the case of SIGMABLADE-Hv2(N8405-040F/040AF)

See the section of "Using Command Line Console Feature" - "Command Specification" - "CPU blade management commands" - "Setting power control mode of CPU blade" and "Displaying power control mode of CPU blade" in the User's Guide of the EM card.

6. Device Identification

To identify the device to be maintained among more than one device, ID lamp is used.
The ID lamp is located on the CPU blade installed in the Blade Enclosure.
The ID lamp allows you to identify the device subject to maintenance among more than one CPU blade installed in the Blade Enclosure.

The ID lamp on CPU blade can be made lit blue by proper software commands (NEC ESMPRO Manager) from the management PC on the network or by pressing the ID switch on the CPU blade.

You may use the remote control feature of EXPRESSSCOPE Engine 3 (BMC) to perform the same operation as using the ID switch on the CPU blade.
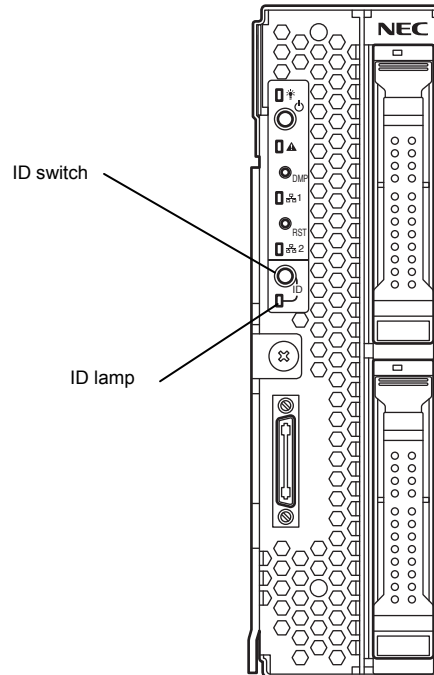
7. Power-off of Blade Server

There are the following three ways to turn off the power of the CPU blade.

- Power-off by OS shutdown
- Power-off from CPU Blade

  Press the POWER switch on the panel of the CPU blade
- Power-off from Remote Console

  The power of the CPU blade can be turned off by using "OS Shutdown" in remote control feature of
  EXPRESSSCOPE Engine 3 (BMC).

The POWER lamp on the CPU blade of which power was turned off goes on amber.

Tips   To power-off from CPU blade or remote console, the OS must be set so that it starts shutdown process when the POWER switch on the CPU blade is pressed.

NEC Express5800 Series
Express5800/B120e

4

Appendix

1. Specifications

Describes the specifications of this server.

2. Interrupt Lines

Describes the interrupt lines assigned to this server.

1. **Specifications**

Product name	Express5800/B120e		
Product model	N8400-221F	N8400-222F	N8400-223F
CPU	Type	Intel® Xeon® processor (E5-2470v2)	Intel® Xeon® processor (E5-2450v2)	Intel® Xeon® processor (E5-2430v2)
	Clock	2.40 GHz	2.50 GHz	2.50 GHz
	CORE / thread	10C / 20T	8C / 16T	6C / 12T
	3rd cache	20 MB	20MB	15MB
	Standard (Maximum)	1 (2)		
Chipset		Intel® C602 chipset		
Memory	Standard	None (Required option)		
	Maximum	384 GB (when additional CPU is installed)		
	Adding time	12 (when additional CPU is installed)		
	Memory module	DDR3-1600/1333 Registered DIMM DDR3-1600 Unbuffered DIMM		
	Error check	ECC		
HardDisk drive	Standard	None		
	Maximum	SATA_SSD x2 or SATA_HDD x2 or SAS_HDD x2		
Graphics (VRAM)		640×480 to 1280×1024 (VRAM 32 MB)		
Auxiliary input device	Floppy disk drive	Option (USB)		
	CD/DVD-ROM drive	Option (USB)		
Mezzanine card slot	Type 1	2 slots (when Mezzanine Card Type 2 is not used)		
	Type 2	1		
LAN Riser Card Kit	Standard	None		
	Required option	1G_LAN(2ch) / 10G_LAN(2ch) / 10G_iSCSI(2ch)		
External interface		SUV connector (to be connected to the front panel, serial ×1, VGA×1, USB×2) ×1		
External dimensions (mm)		181 (H) × 516 (D) × 53 (W)		
Weight		5.0 kg max.		
Power supply		+12 Vdc and +5 VS (supplied from the power unit on Blade Enclosure)		
Environmental requirements	Temperature	10 to 35°C		
	Humidity	20 to 80% RH (no condensation)		
Accessories		EXPRESSBUILDER ® DVD (User's Guide included), Packing list, Getting Started!		
Bundled software		NEC ESMPRO Agent, NEC ESMPRO Agent Extension, NEC ESMPRO Manager, ExpressUpdate Agent, Virtual media, remote KVM		

Product name	Express5800/B120e	
Product model	N8400-224F	N8400-225F
CPU Type	Intel® Xeon® processor (E5-2430Lv2)	Intel® Xeon® processor (E5-2403v2)
Clock	2.40 GHz	2.50 GHz
CORE / thread	6C / 12T	4C / 4T
3rd cache	15 MB	10MB
Standard (Maximum)	1 (2)	
Chipset	Intel® C602 chipset	
Memory Standard	None (Required option)	
Maximum	384 GB (when additional CPU is installed)	
Adding time	12 (when additional CPU is installed)	
Memory module	DDR3-1600/1333 Registered DIMM DDR3-1600 Unbuffered DIMM	
Error check	ECC	
HardDisk drive Standard	None	
Maximum	SATA_SSD x2 or SATA_HDD x2 or SAS_HDD x2	
Graphics (VRAM)	640×480 to 1280×1024 (VRAM 32 MB)	
Auxiliary input device Floppy disk drive	Option (USB)	
CD/DVD-ROM drive	Option (USB)	
Mezzanine card slot Type 1	2 slots (when Mezzanine Card Type 2 is not used)	
Type 2	1	
LAN Riser Card Kit Standard	None	
Required option	1G_LAN(2ch) / 10G_LAN(2ch) / 10G_iSCSI(2ch)	
External interface	SUV connector (to be connected to the front panel, serial ×1, VGA×1, USB×2) ×1	
External dimensions (mm)	181 (H) × 516 (D) × 53 (W)	
Weight	5.0 kg max.	
Power supply	+12 Vdc and +5 VS (supplied from the power unit on Blade Enclosure)	
Environmental requirements Temperature	10 to 35°C	
Humidity	20 to 80% RH (no condensation)	
Accessories	EXPRESSBUILDER ® DVD (User's Guide included), Packing list, Getting Started!	
Bundled software	NEC ESMPRO Agent, NEC ESMPRO Agent Extension, NEC ESMPRO Manager, ExpressUpdate Agent, Virtual media, remote KVM	

2. Interrupt Lines

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

● **Interrupt lines**

As factory settings, interrupt lines are assigned as follows.

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