

User's Guide

NEC Express Server
Express5800 Series

Express5800/R310g-E4
Express5800/R320g-E4
Express5800/R320g-M4
EXP320T, EXP320V

Chapter 1 General Description

Chapter 2 Preparations

Chapter 3 Setup

Chapter 4 Appendix

Manuals

Attached as a book

Safety Precautions and Regulatory Notices	Describes points of caution to ensure the safe use of this server. <u>Read these cautions before using this server.</u>
--	---

Included in EXPRESSBUILDER as an electric manual

User's Guide

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

Installation Guide

Chapter 1: Installing Operating System	Installation of OS and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, BMC Configuration, and other bundled software
Chapter 3: Configuring the Separate Log Server	Procedure used to set up as the log server, a server that is separate from the ftSys Management Appliance (only in "VMware").

Maintenance Guide

Chapter 1: Maintenance	Server maintenance, error messages, and troubleshooting
Chapter 2: Configuring and Upgrading the System	Changing hardware configuration, installing additional devices and setting up management tools
Chapter 3: Useful Features	The detail of system BIOS settings, SAS Configuration Utility, and EXPRESSBUILDER

Other manuals

The detail of NEC ESMPRO, BMC Configuration, and other features.
--

Contents

Manuals.....	2
Contents.....	3
Conventions Used in This Document	5
Signs and symbols for safety	5
Notations used in the text	6
Optical disk drive.....	6
Hard disk drive	6
Abbreviations of Operating Systems (Windows).....	7
Abbreviations of Operating Systems (VMware)	7
POST	7
BMC.....	7
Trademarks	8
License Notification	9
Warnings and Additions to This Product and Document	11
Latest editions.....	11
Safety notes.....	11
Warning labels	12
Handling precautions	14
Chapter 1 General Description	17
1. Preface	18
2. Accessories	19
3. Features	20
3.1 Features of the Server	20
3.2 Fault-Tolerant Features.....	23
3.3 Management Features.....	25
3.4 Firmware and Software Version Management for Windows	26
4. Names and Functions of Components	27
4.1 Front View.....	27
4.2 Front View (Without Front Bezel).....	28
4.3 Rear View	29
4.4 External View.....	31
4.5 Optical Disk Drive	32
4.6 CPU/IO Module.....	33
4.7 CPU/IO Board.....	35
4.8 LEDs	37
Chapter 2 Preparations	38
1. Installing Internal Optional Devices	39
2. Installation and Connection	40
2.1 Installing/Removing the front bezel.....	40
2.2 Rack.....	41
2.2.1 Installing Rack	41
2.2.2 Installing the server to the rack	43
2.2.3 Removing the device from the rack	51
2.3 Tower Conversion Kit.....	52

2.3.1 Installing the Tower Conversion Kit	52
2.3.2 Installing the Rack-mount Model to the Tower Conversion Kit	54
2.4 Connection	60
2.4.1 Connecting to a uninterruptible power supply (UPS)	62
Chapter 3 Setup	63
1. Turning on the Server	64
1.1 POST	66
1.1.1 POST process.....	66
1.1.2 POST Error Messages.....	67
1.1.3 Switching of boot pair.....	67
2. BIOS Setup Utility (SETUP)	68
2.1 Overview	68
2.2 Starting and Exiting SETUP	68
2.2.1 Starting SETUP	68
2.2.2 Exiting SETUP	68
2.3 Usage of SETUP	69
2.4 Cases that Require Changes	71
3. EXPRESSSCOPE Engine 3	72
3.1 Overview	72
3.2 EXPRESSSCOPE ENGINE 3 Network configuration	73
4. EXPRESSBUILDER	75
4.1 Features of EXPRESSBUILDER	75
4.2 Usage of EXPRESSBUILDER	75
5. Installing Software Components	76
6. Turning off the Server	77
Chapter 4 Appendix	78
1. Specifications	79
2. Glossary	81
3. Revision Record	82

Conventions Used in This Document

Signs and symbols for safety

WARNING and CAUTION are used in this guide as following meaning.



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)

(Example in this guide)

Symbol to draw attention

Description of a warning

Term indicating a degree of danger

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.

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, <u>hardware failure, data loss, and other serious malfunctions could occur.</u>
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 the following drive. This drive is referred to as *optical disk drive* in this document.

- DVD Super MULTI drive

Hard disk drive

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

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

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

Operating Systems which is being supported is different depending on product model.
See *Chapter 1 (1.2 Supported Windows OS) in Installation Guide (Windows)* for detailed information.

Notations in this document	Official names of OS
Windows Server 2016	Windows Server 2016 Standard
	Windows Server 2016 Datacenter

Abbreviations of Operating Systems (VMware)

VMware are referred to as follows.

Notations in this document	Official names of OS
VMware ESXi or ESXi	VMware ESXi 6.7 Update1

POST

POST described in this document refers to the following.

- Power On Self-Test

BMC

BMC described in this document refers to the following.

- Baseboard Management Controller

Trademarks

EXPRESSSCOPE and GeminiEngine is a registered trademark of NEC Corporation in Japan.

Microsoft, Windows, and Windows Serve are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.

Intel, and Xeon are registered trademarks of Intel Corporation of the United States.

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

VMware products are covered by one or more patents listed at <http://www.vmware.com/go/patents>. VMware is a registered trademark or trademark of VMware, Inc in the United States and/or other jurisdictions.

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

License Notification

Open source software of following license is included in the part of this product (system BIOS).

- EDK/EDKII
- OpenSSL
- AMI CRYPTO LIBRARY USING WPA SUPPLICANT

Open source software of following license is included in the part of this product (Off-line Tools).

- EDK/EDKII

EDK/EDKII

BSD License from Intel

Copyright (c) 2012, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

OpenSSL

OpenSSL License

Copyright (c) 1998-2011 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.
(<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit
(<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).
This product includes software written by Tim Hudson (tjh@cryptsoft.com).

AMI CRYPTO LIBRARY USING WPA SUPPLICANT

WPA Supplicant

Copyright (c) 2003-2016, Jouni Malinen <j@w1.fi> and contributors
All Rights Reserved.

This program is licensed under the BSD license (the one with advertisement clause removed).
If you are submitting changes to the project, please see CONTRIBUTIONS file for more instructions.

License

This software may be distributed, used, and modified under the terms of
BSD license:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name(s) of the above-listed copyright holder(s) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Warnings and Additions to This Product and 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 the actual values.

Keep this document for future use.

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.

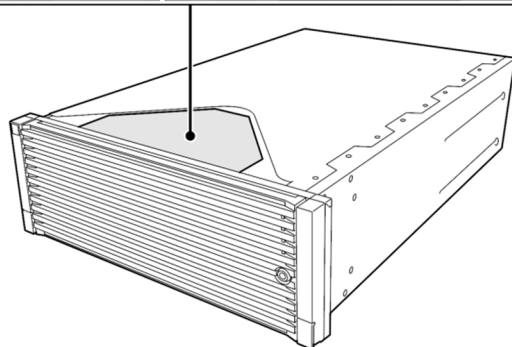
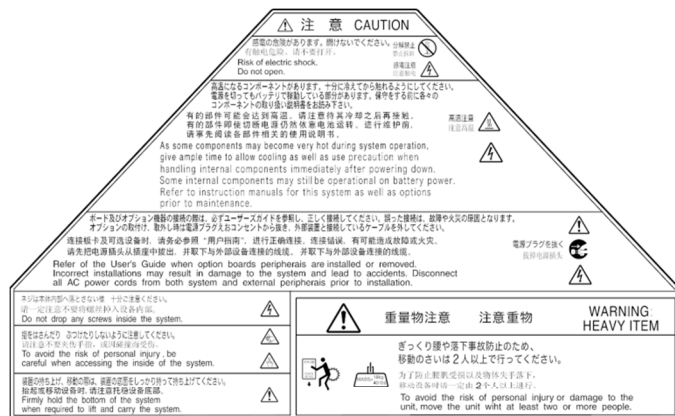
<https://www.nec.com/>

Safety notes

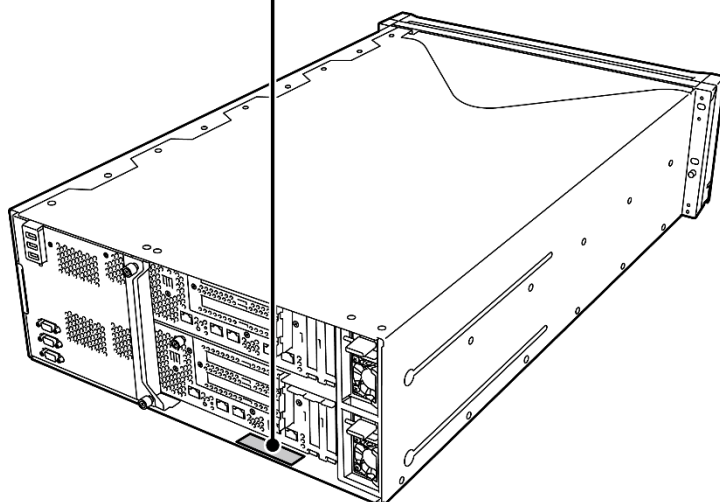
To use this server safely, read thoroughly *Safety Precautions and Regulatory Notices* that comes with your server.

Warning labels

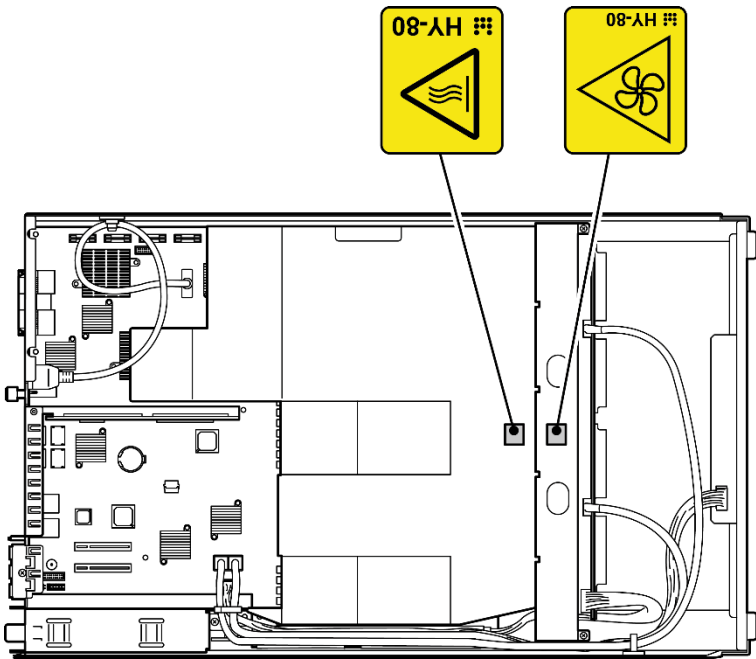
Warning labels are attached on or near the components. This label is either attached or printed on the component. Do not remove or black out this label and keep it clean. If no label is attached or printed on the server, contact your sales representative.



Front view



Rear view



Internal CPU/IO module

Handling precautions

Be sure to observe the following precautions to ensure that the server functions properly. Ignoring these precautions may cause server malfunction or failure.

Installation site

- Install the server in an appropriate place. See *Chapter 2 Preparations (2. Installation and Connection)*.
- Before connecting or removing the cable to or from a peripheral device that does not support the Plug and Play function, make sure that the power to the server is off and remove the power cord from the outlet.
- Switch off all cell phones in the proximity of the server. Electric waves from these devices can cause the server to malfunction.
- Regularly clean the server to prevent failure. See *Chapter 1 Maintenance (2. Daily Maintenance)* in “Maintenance Guide” for information about cleaning.
- When storing the server for a long time, be sure to satisfy the storage environment conditions (temperature: –10 to 55°C, humidity: 20 to 80%, non-condensing).
- Turn off the server and unplug the power cord before moving it.
- In the following cases, check and adjust the system clock before operation.
 - After transportation
 - After storage
 - After the server is used following a period of disuse, in which the storage conditions did not conform to the conditions that guarantee server operations (temperature 10 to 40°C, humidity 20 to 80%)
- Check the system clock approximately once per month. Use of a time server (NTP server) is recommended if highly accurate timing is required by the system.
- The voltage may drop momentarily, for example, due to a lightning strike. To take measures against this, it is recommended to use an uninterruptible power supply (UPS).

Power supply

- Be sure to use this server within the rated current and voltage.
- Power supply cord is not provided as a standard accessory with this server. Be sure to use power supply cord specified by our company based on the power supply voltage and current depending on the environment for use.
- An uninterruptible power supply (UPS) is used to prevent momentary voltage drops.
The server does not support UPS connection through the serial port (RS-232C) or power control by PowerChute Plus.

Power-on/Power-off

- Do not turn on the server after connecting the power cord to the outlet before the Module POWER LED on the front of the device (see *Chapter 1 (4.8 LEDs)*) blinks in green (90 seconds).
- If an uninterruptible power supply (UPS) is connected, set the schedule to wait for at least 90 seconds before turning on the server.
- Do not power off or reset the server, nor disconnect the power cord before POST completes.
- Make sure that the DISK ACCESS LED or Optical DISK ACCESS LED is off before turning off the power or ejecting media from a hard disk drive or an optical disk.
- Allow 30 seconds or more to elapse when turning ON the power of the unit again after turning it to OFF.
- When disconnecting power cord from the outlet, wait at least 30 seconds before connecting the power cord again.
- For stable operation, it is recommended to restart the OS after the system has been duplexed.

- When the power is supplied to both CPU/IO modules at about the same time, 'CPU/IO module 0' is recognized as a primary module. In order for 'CPU/IO module 1' to be recognized as a primary module, connect the power cord to CPU/IO module 1 first, wait for a certain amount of time (15 seconds at least), and then connect the power cord to CPU/IO module 0.
- If a UPS is connected and you want to make CPU/IO module 1 recognized as a primary module, set the schedule so that the power will be supplied to CPU/IO module 1 first, and then CPU/IO module 0, at least 15 seconds later.
- When you power off the server, "Power ON" may be displayed on the following screen of NEC ESMPRO Manager.
 - [Remote Control]tab – [Remote Power Control] – [System Power Status]
 - [optional group] – [Server Control]tab – [Remote Power Control] – [Power Status]
 - [Constitution]tab – [Server Status] – [Common Information] – [System Power Status]

Therefore, when checking whether this server is powered off, please check that both CPU/IO modules of the following are "Power OFF".

 - [Constitution]tab – [Server Status] – [CPU/IO module 0 Information] – [Module POWER LED]
 - [Constitution]tab – [Server Status] – [CPU/IO module 1 Information] – [Module POWER LED]

Optional devices

- We do not guarantee reproduction of copy-protected DVDs and CDs using reproduction equipment if such disks do not comply with the relevant standards.
- If this server, internal optional devices, and media used as backup devices (tape cartridges) are moved from a cold place to a warm place in a short period of time, condensation may occur, causing malfunction or failure when these devices are next used. To protect important stored data and assets, make sure to wait for a sufficient period before using the server and components in the operating environment.

Reference: Time effective for avoiding condensation in winter (more than 10°C difference between the room temperature and atmospheric temperature)

Disk devices: Approximately 2 to 3 hours

Tape media: Approximately 1 day

- For optional devices, we recommend you use NEC products. Even if they are successfully installed or connected, installation of unsupported devices can cause the server to malfunction or fail. You will be charged to repair failures or damage caused by the use of such products even if it is within the warranty period.

Tips for your health and safety

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

Keep proper posture

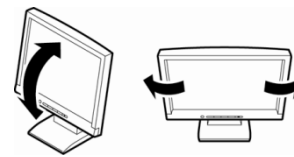
The basic body position for using a computer is sitting straight with your hands on the keyboard parallel with the floor, and your eyes directed slightly downward toward the monitor. With the proper posture described above, no unnecessary strain is applied on any part of your body, in other words when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

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



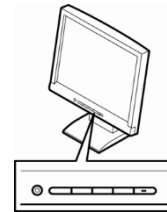
Adjust the angle of your display

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



Adjust the brightness and contrast of the display

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



Adjust the angle of keyboard

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



Clean your equipment

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

Take rest breaks

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



NEC Express5800 Series Express5800/R310g-E4, R320g-E4, R320g-M4

1

General Description

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

1. Preface

2. Accessories

Describes the server's accessories.

3. Features

Describes the server's features and the system management.

4. Names and Functions of Components

Describes the name of each part contained in this server.

1. Preface

Welcome to the NEC Express5800 Series product.

This server is a "fault-tolerant (ft)" server focusing on "high reliability" in terms of fault-tolerance, in addition to "high performance", "scalability", and "general versatility" provided by Express5800 series.

In the event of trouble, its dual configuration will allow the system to instantaneously isolate the failed parts to assure non-stop running; operation will be moved smoothly from one module to the other, minimizing damage to it. You can use this server in a mission-critical system where high availability is required. By the use of Windows operating system or VMware ESXi, it also provides outstanding openness for general-purpose applications, etc.

To make the best use of these features, read this User's Guide thoroughly to understand how to operate the server.

2. Accessories

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

- Front bezel
- Bezel lock key (attached to front bezel)
- Slide rails and screws for rack mount
- Cable tie
- EXPRESSBUILDER
- User's Guide (this document)/Installation Guide/Maintenance Guide/Safety Precautions and Regulatory Notices
- Software CD/DVD (differs in product models)

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

3. Features

3.1 Features of the Server

The server contains two server modules in one enclosure. Each module has the following features:

High performance

- Intel® Xeon® processor
 - Express5800/R310g-E4, R320g-E4: Intel Xeon Silver 4114 processor (2.2GHz, 10cores)
 - Express5800/R320g-M4: Intel Xeon Gold 6127M processor (2.2GHz, 16cores)
- Intel hyper threading technology features
- High-speed memory access

DDR4 supported, Max. operation speed 2400MHz supported.
- High-speed disk access (SAS 12Gbps supported)
- High-speed Ethernet
 - Express5800/R310g-E4, R320g-E4:

1000BASE-T/100BASE-TX (2 ports) interface (1Gbps/100Mbps supported)

10GBASE-T/1000BASE-T/100BASE-TX (2 ports) interface (10Gbps/1Gbps/100Mbps supported option)
 - Express5800/R320g-M4:

1000BASE-T/100BASE-TX (2 ports) interface (1Gbps/100Mbps supported)

10GBASE-T/1000BASE-T/100BASE-TX (2 ports) interface (10Gbps/1Gbps/100Mbps supported)

High reliability

- Memory monitoring feature (error correction/error detection)
- Bus parity error detection
- Temperature detection
- Error detection
- Internal fan monitoring feature
- Internal voltage monitoring feature
- BIOS password feature
- The security lock that comes with Front Bezel

Management Utilities

- NEC ESMPRO
- System BIOS firmware management feature (NEC ExpressUpdate for Windows)
- Remote management feature (EXPRESSSCOPE Engine 3)
- Hard disk drive monitoring

Power saving

- Power monitoring feature
- 80 PLUS® Platinum certified high efficiency power supply
- Fan control appropriate to environment, work load, and configuration

Expandability

- Option slots
 - Express5800/R310g-E4, R320g-E4:
PCI Express 3.0 (x8 lanes) : 2 slots (Low profile)
 - Express5800/R320g-M4:
PCI Express 3.0 (x8 lanes) : 2 slots (Low profile)
PCI Express 3.0 (x8 lanes) : 2 slots (Full Height)
- Large capacity memory of up to 640GB
 - Express5800/R310g-E4: up to 256GB
 - Express5800/R320g-E4, R320g-M4: up to 640GB
- Can upgrade to multi-processor system with up to two processors
 - Express5800/R310g-E4: up to one processor
 - Express5800/R320g-E4, R320g-M4: up to two processors
- Expansion Bay (for 2.5-inch hard disk drives): 8 slots
- Optical disk drive bay provided as standard
- USB2.0 interface (Front: 1 port, rear: 3 ports)
- USB3.0 interface (Rear: 2 ports, option) *1
- Onboard LAN
 - Express5800/R310g-E4, R320g-E4: 2 ports
 - Express5800/R320g-M4: 4 ports
- Management LAN port (1 port)

Ready to use

- Options are installed by BTO (Build to Order)
- No cable connection is required to install a hard disk drive (hot swap supported).

Many built-in Features

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

Self-diagnosis

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

Easy setup

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

Maintenance features

- Off-line Tools
- Memory dump feature using DUMP Switch
- Feature to back up and restore BIOS/BMC configuration information

*1. USB3.0 may be unsupported depending on your operating system.

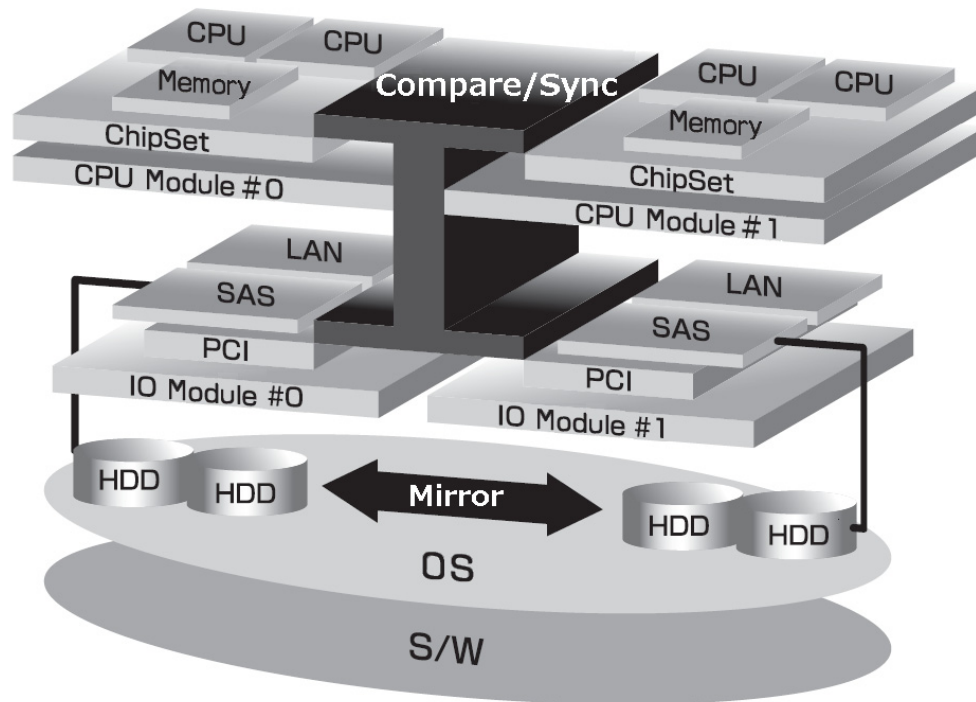
3.2 Fault-Tolerant Features

Hardware modules work while synchronizing and comparing with each other. Even if one hardware module stops, the server can continue its operation as the service with the other hardware module.

Major components are duplexed:

Even if one hardware module stops, the server can continue operation with the other module.

After the failed module is replaced, the new module obtains information from the other and resumes operation.



This server is a highly fault-tolerant server that achieves continuous computing operations, data storage mirror, and continuous network connection. This server is capable of executing applications running on Windows operating system or a guest operating system supported by VMware ESXi.

This server achieves continuous computing operations for the server and server-based applications with its redundant CPU processing and redundant memory. It assures data redundancy through duplication of server data on an independent storage system. These features eliminate server downtime that is usually caused by network disconnection or trouble with the I/O controller, network adapter or hard disk drive, and support operation of the network and server applications continuously.

This server detects status changes, errors and logs of these events. If you use an alarm notification tool, you can configure this server to notify you when certain events occur.

This server is installed on the system as a server management solution. NEC ESMPro, a GUI-based management tool, allows you to monitor, view, and configure the server. This tool also supports both local and remote management of the server.

(a) Advantages of this server

- Highly fault-tolerant processing and I/O subsystems

This server uses redundant hardware and software to assure server operation even if one module suffers trouble with its processor, memory, I/O (including trouble related to the I/O controller), hard disk drive, or network adapter.

- Continuous network connection

This server maintains continuous network connection by detecting any trouble with the network adapter, connection, etc. If trouble occurs, the standby network connection will take over all network traffic processing and thus securely maintain the network system connection of the server without losing network traffic or client connection.

- Support of multiple network connections

Since this server can support multiple network connections, you can add network redundant control or network traffic control.

- No need to modify applications

You can run the each OS-compliant application on this server. Thus, unlike other highly fault-tolerant products, special API or scripts are not necessary.

- Automatic mirroring

This server automatically maintains data as the current data.

- Transparent migration

This server constantly monitors events. If trouble occurs on server module of this server, it will transparently use a redundant module of the failed module. This feature maintains data and user access without stopping application service.

- Automatic reconfiguration

When the failed module restarts after the trouble is corrected, the server will perform reconfiguration automatically, and if necessary, resynchronize the affected modules. Reconfiguration can include CPU processing (e.g., CPU memory), server's operating system (and related applications), and system data stored on the hard disk drive. In most cases, the server automatically restores redundancy of the server modules after recovery.

- Event notification function (Windows)

When trouble or other events are detected on the server, they will be notified to Log and saved. Therefore, you can view the log items locally or remotely by a usual OS operation. Since an events use unique IDs, they are easy to distinguish. In addition, you can use alert notification software such as Express Report Service or Express Report Service (HTTPS) to manage the server. It is recommended to use such software to cope with system failure quickly. Ask your service representative for details.

- syslog function (VMware)

All events and failures detected by the server are saved in syslog. In addition, you can use alarm report software, such as Express Report Service, for management of this server. It is recommended that Express Report Service be used also to cope with system failures quickly. Ask your sales representative for details.

- In-service repairing

You can repair or replace a failed module even if the server is operating.

3.3 Management Features

NEC ESMPRO Agent enables you to collectively manage the state of your systems. You can also monitor the server states from a management PC on network where NEC ESMPRO Manager 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 (serial ports, keyboard, mouse, and video). It may not be displayed depending OS.
System environment		Monitors temperatures, fans, voltage, power supply, 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.
Cover / 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 hard disk drives.
File system	○	Shows the file system configuration and monitors the free space.
Others*	×	Monitors OS stall using the Watch Dog Timer.
	△	Performs alert processing after an OS STOP error occurs.

○: Supported. △: Supported on Windows OS and Linux OS. ×: 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.

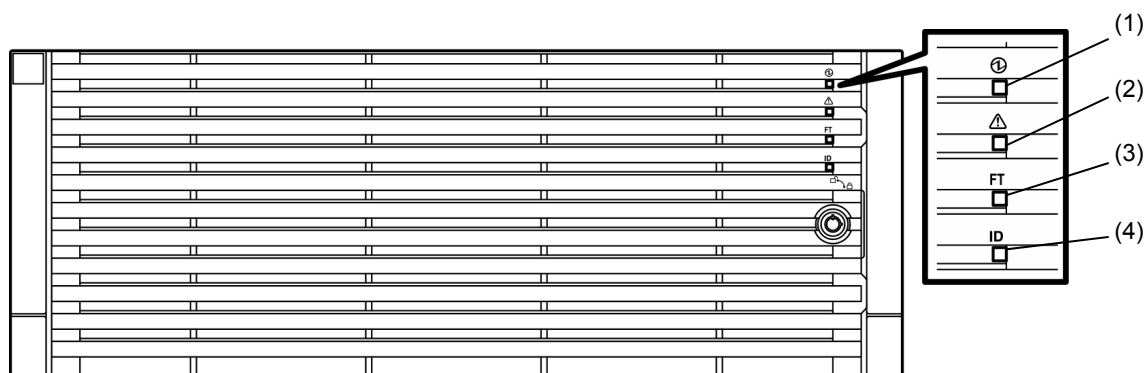
3.4 Firmware and Software Version Management for Windows

Use of NEC ESMPRO Manager and NEC ExpressUpdate Agent can manage or update versions of firmware and software easily.

This feature easily updates the update packages downloaded from NEC ESMPRO Manager.

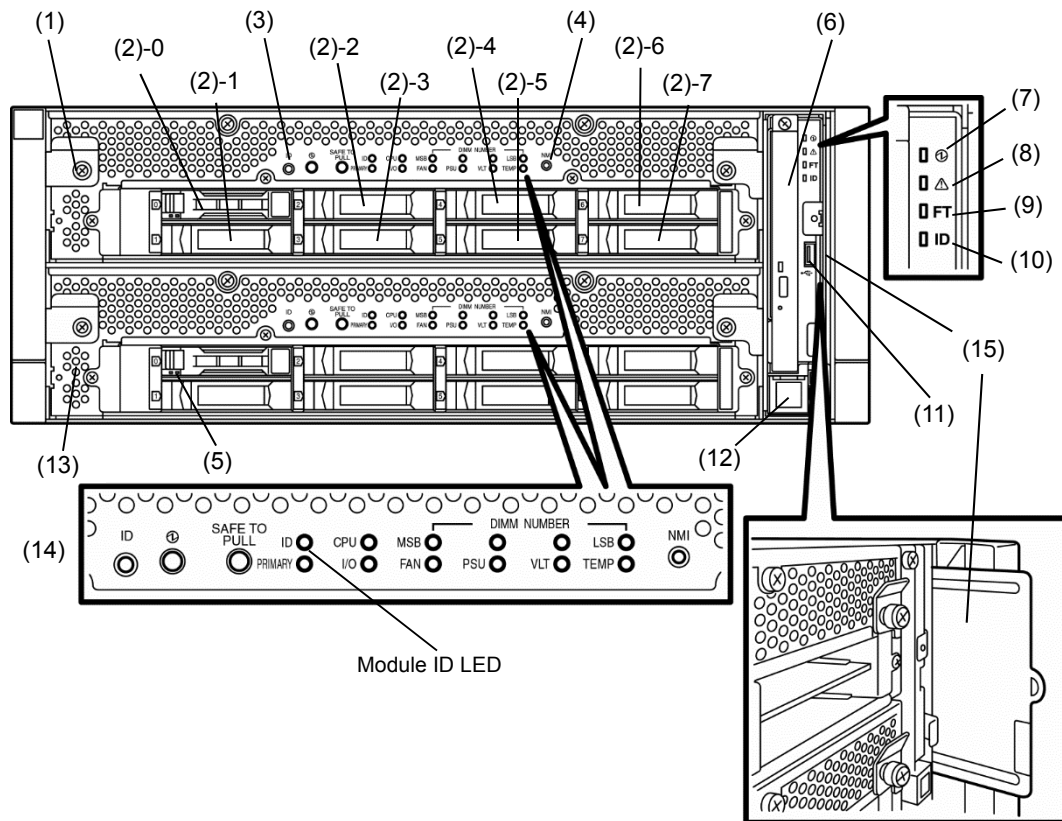
4. Names and Functions of Components

4.1 Front View



(1) System POWER LED	Goes on green when either of the powers of the CPU/IO modules is on. The LED goes off when both powers of CPU/IO module are off.
(2) System FAULT LED	Goes on amber if one of the CPU/IO modules fails. You can know the details by checking (14) EXPRESSSCOPE. The LED blinks in amber if the failed CPU/IO module cannot be identified.
(3) System FT LED	Displays the device status: Green: operating under duplex condition Off: not in duplex condition
(4) System ID LED	Identifies the system to maintain. Blue: UID switch was pressed. Blinking in blue: The software command was sent from remote terminal.

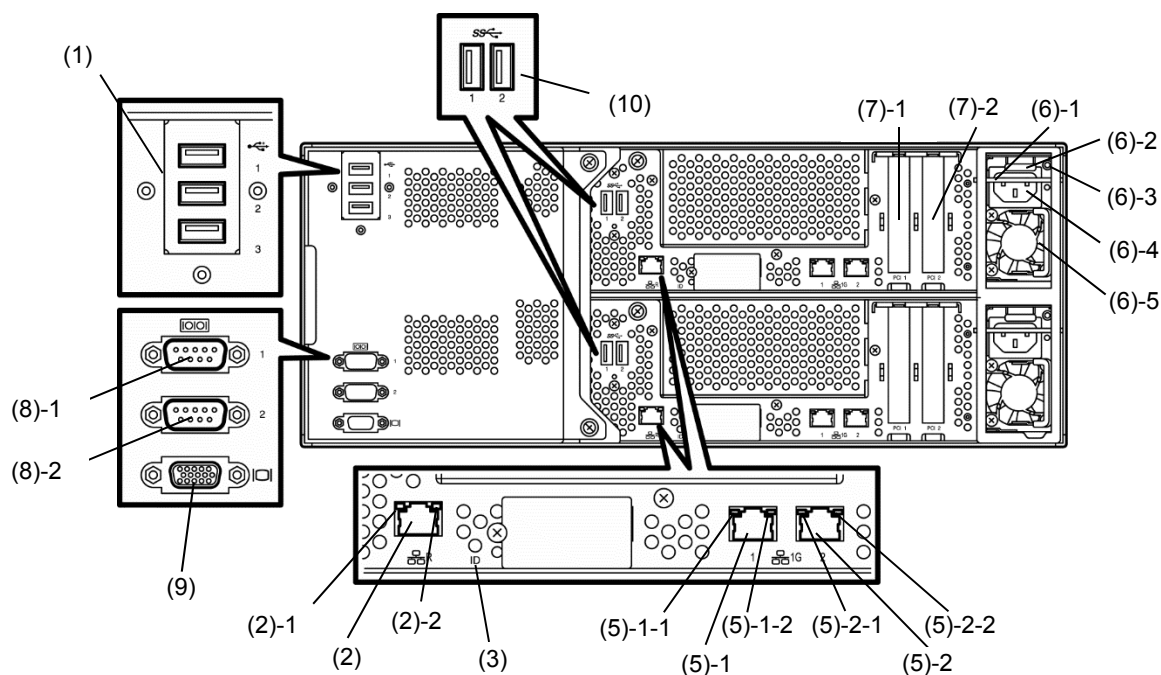
4.2 Front View (Without Front Bezel)



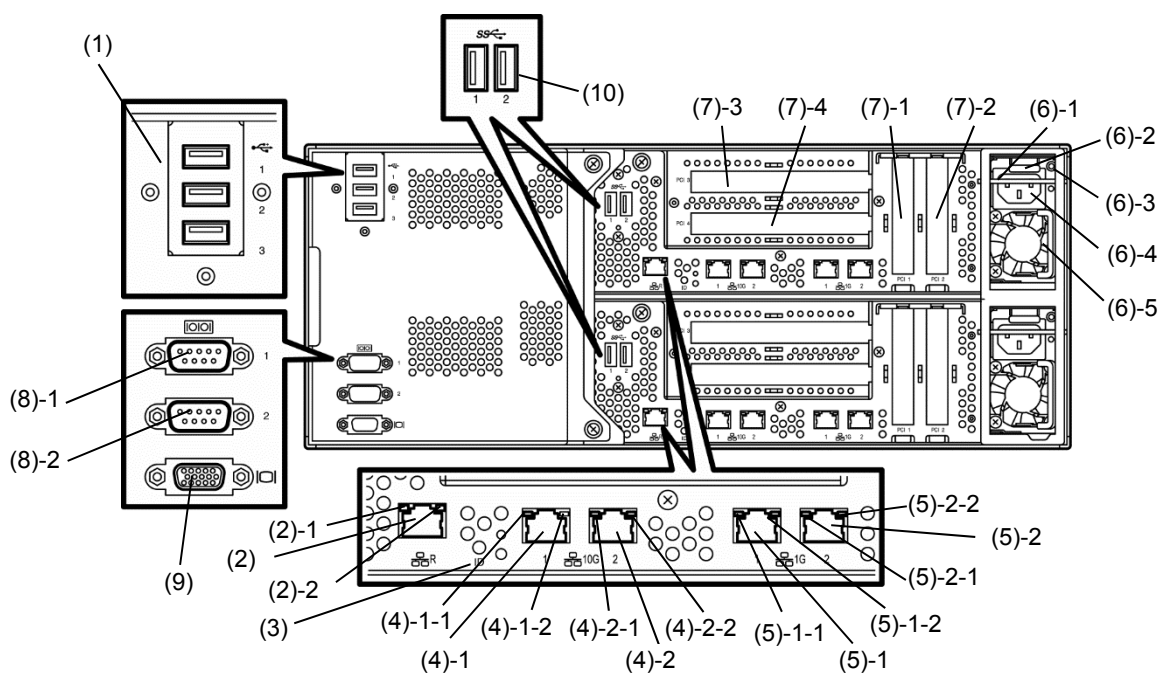
(1) CPU/IO module 0	Installs CPU (processor), memory (DIMM), PCI card, cooling fan, and hard disk drive.
(2) Hard disk drive bay	Installs hard disk drives. The last-digit number indicates a slot number.
(3) UID (Unit ID) switch	Turns on/off the Module ID LED on the front and rear of the device. When pressing the switch once, Module ID LED lights and it goes off when pressing it again.
(4) Dump (NMI) switch	Performs the memory dump when pressing the button of primary CPU/IO module for 4 to 8 seconds.
(5) DISK ACCESS LED	Lights/blinks while accessing the installed hard disk drives.
(6) Optical disk drive	Reads/writes from/to a CD/DVD.
(7) System POWER LED	Lights in green when one of the powers of the CPU/IO modules is on. LED goes off when both powers of CPU/IO module are off.
(8) System FAULT LED	Goes on amber if one of the CPU/IO modules fails. You can know the details by checking (14) EXPRESSSCOPE. The LED also goes on amber if the failed CPU/IO module cannot be identified.
(9) System FT LED	Displays the device status: Green: operating under duplex condition Off: not in duplex condition
(10) System ID LED	Identifies the device to maintain. Blue: UID switch was pressed. Blinking in blue: The software command was sent from remote terminal.
(11) USB connector	Connects to the device supporting USB interface.
(12) Power switch	Turns on/off the power. When pressing it once, the power turns on. When pressing it again, the power turns off. Forced shutdown takes place when pressing it for 4 seconds or longer.
(13) CPU/IO module 1	Installs CPU (processor), memory (DIMM), PCI card, cooling fan unit, and hard disk drive. The names of each part are the same as CPU/IO module 0.
(14) EXPRESSSCOPE	Indicates the status of CPU/IO modules. Lights or flashes green or amber.
(15) Pull-out Tab	Shows the product number and serial number of the server.

4.3 Rear View

R310g-E4, R320g-E4 model

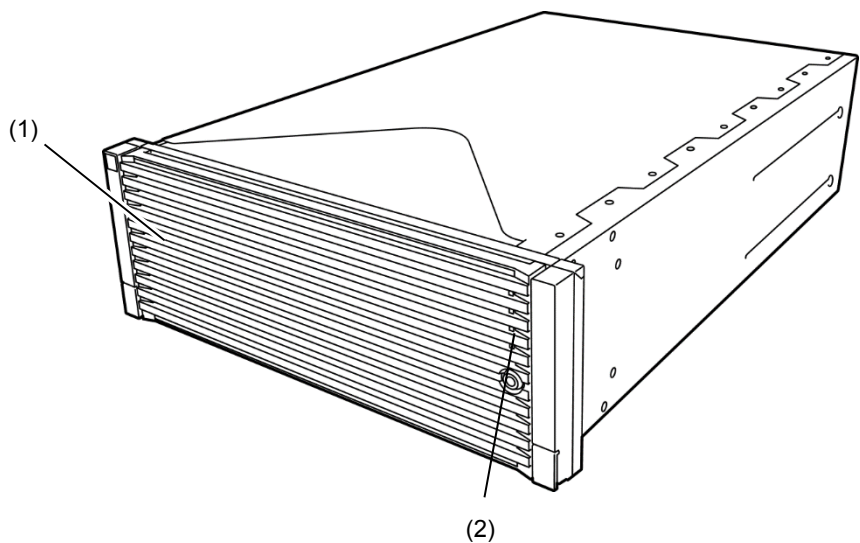


R320g-M4 model



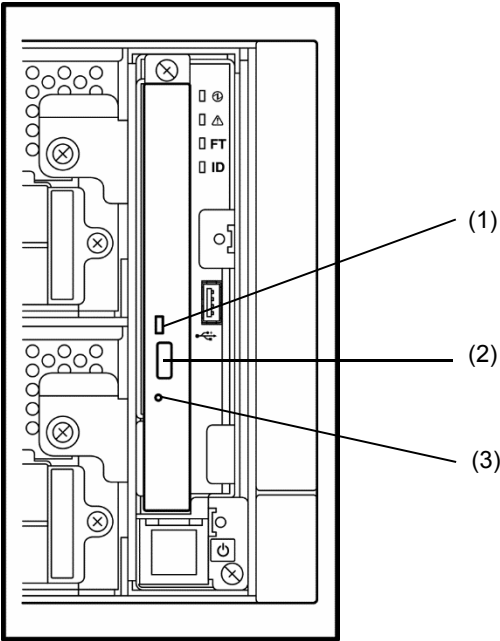
(1) USB connector (3 ports)	Connects to the device supporting USB interface.
(2) Management LAN connector	Connects to the network connector supporting 100BASE-TX/10BASE-T interface. (2)-1 LINK/ACT LED (2)-2 SPEED LED
(3) Module ID LED	Identifies the module to maintain. This LED goes on green when UID switch is pressed. This LED blinks green when remote command is received.
(4) 10G LAN connector (R320g-M4 model only)	Connects to the network connector supporting 10GBASE-T/1000BASE-T/100BASE-TX. (4)-1 LAN1 (4)-1-1 LINK/ACT LED (4)-1-2 SPEED LED (4)-2 LAN2 (4)-2-1 LINK/ACT LED (4)-2-2 SPEED LED
(5) 1G LAN connector	Connects to the network connector supporting 1000BASE-T/100BASE-TX. (5)-1 LAN1 (5)-1-1 LINK/ACT LED (5)-1-2 SPEED LED (5)-2 LAN2 (5)-2-1 LINK/ACT LED (5)-2-2 SPEED LED
(6) Power unit	Supplies the power. (6)-1 Stopper Bar to prevent the CPU/IO module from falling off the server while the power cord is connected. Ensure that the bar is not unset to remove CPU/IO module. (6)-2 Ejector (6)-3 Power Unit LED (6)-4 AC inlet Socket to connect power code. Slide the stopper to connect the power cable. (6)-5 Handle
(7) PCI slot	Installs an optional PCI card. (7)-1 Slot 1 (7)-2 Slot 2 (7)-3 Slot 3 (R320g-M4 model only) (7)-4 Slot 4 (R320g-M4 model only)
(8) Serial Port for maintenance (COM)	(8)-1 COM1 not available (8)-2 COM2 not available
(9) Monitor connector	Connects to a display.
(10) USB connector (2 ports) (option)	Connects to the device supporting USB interface. Ports to connect backup devices (internal / external RDX) supported by NEC

4.4 External View



(1) Front bezel	The cover to protect devices in the front.
(2) LEDs	For more information, see <i>Chapter 1 (4.8 LEDs)</i> .

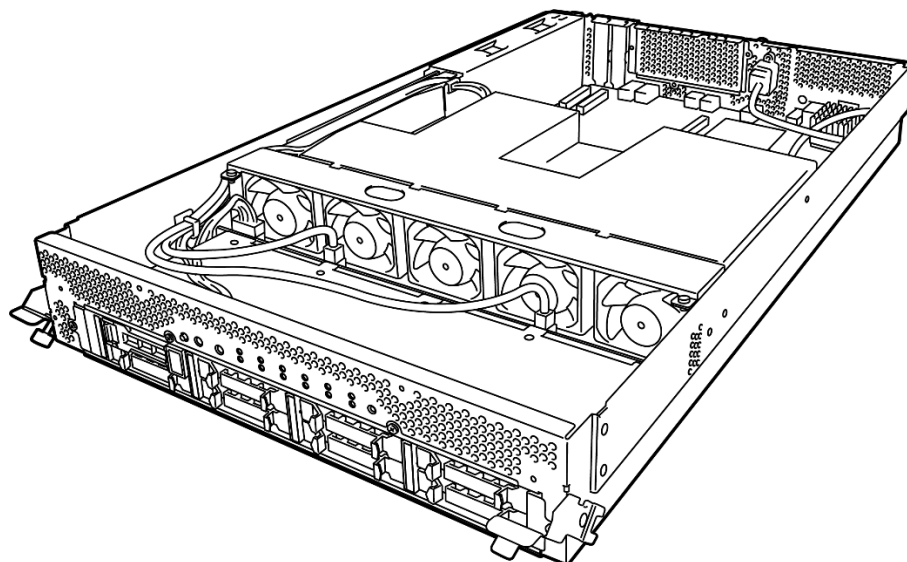
4.5 Optical Disk Drive



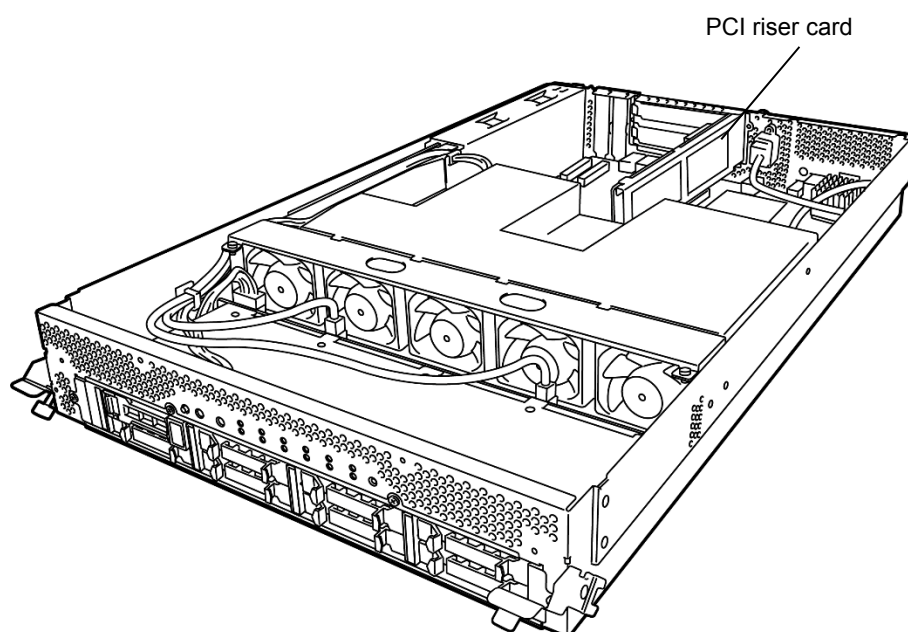
(1) Optical DISK ACCESS LED	Lights while accessing the loaded optical disk.
(2) Tray eject button	Ejects the tray.
(3) Emergency hole	If the tray eject button fails to eject tray, insert a metal pin into this hole to forcibly eject the tray.

4.6 CPU/IO Module

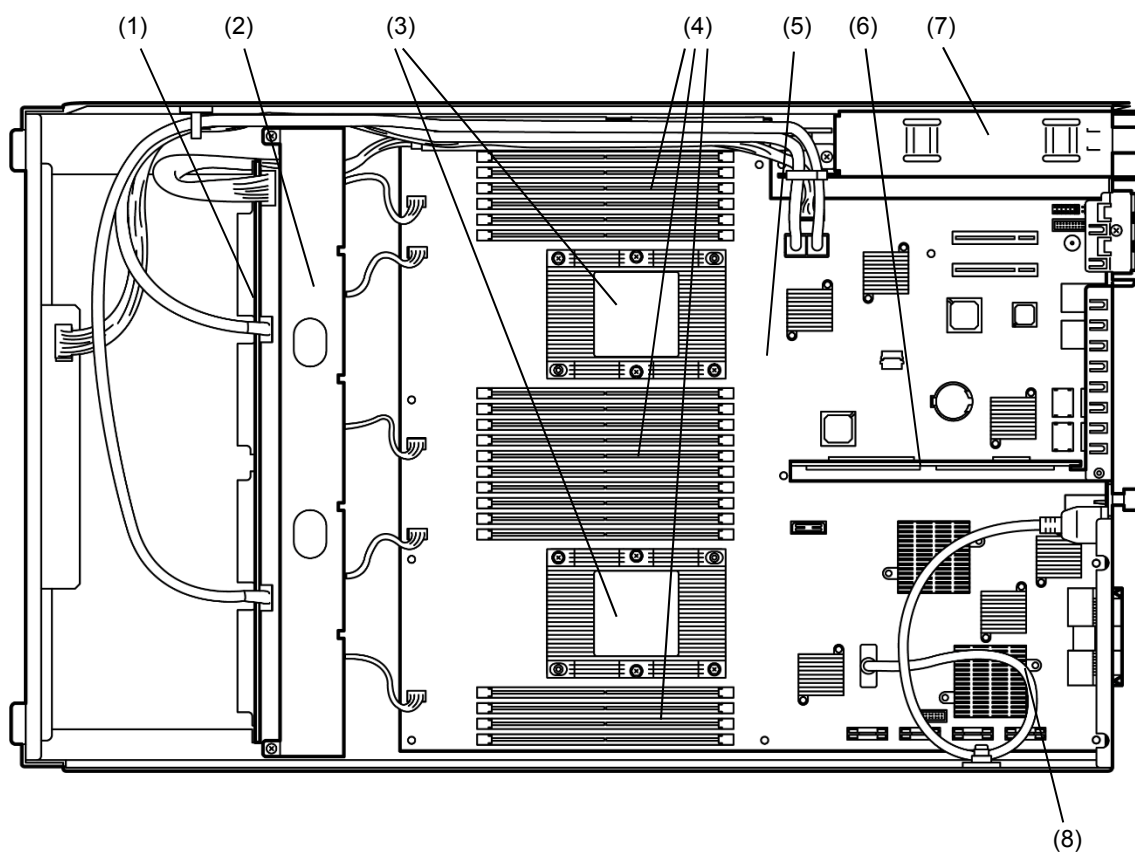
R310g-E4, R320g-E4 model (without top cover)



R320g-M4 model (without top cover)



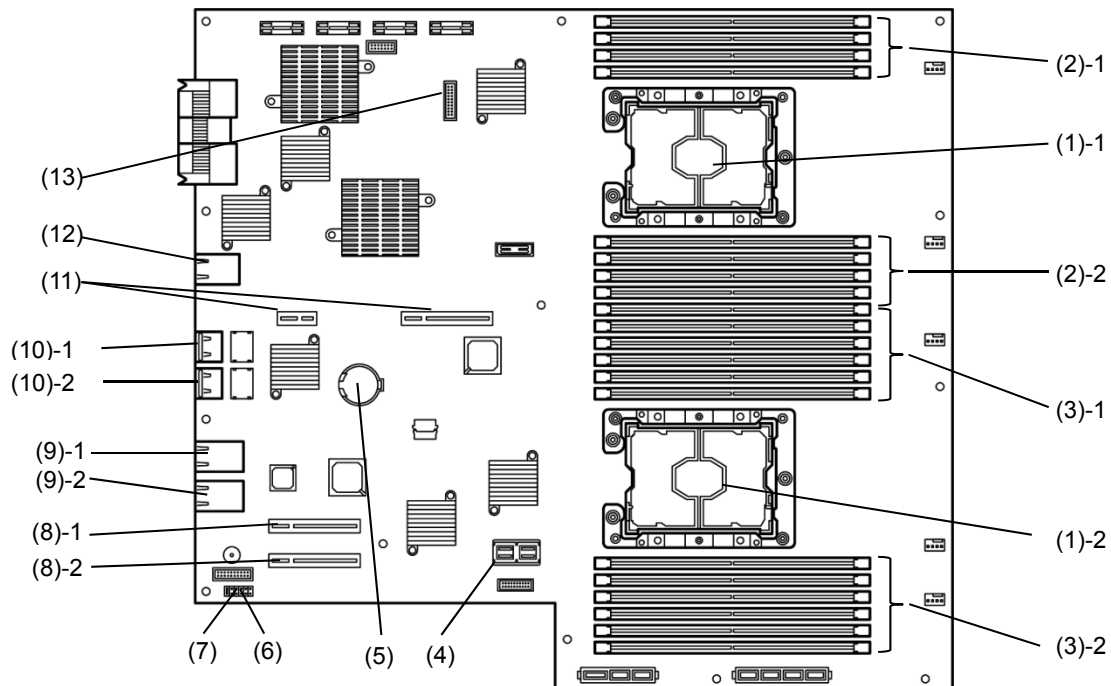
The figure below shows internal view of CPU/IO module without ducts.



(1) HDD BP (Backplane)	-
(2) Cooling fan	-
(3) Processor (CPU)	Mounted below the heat sink. Processor #1 is standard installation. Processor #2 is optional.
(4) DIMM	Option
(5) CPU/IO board	-
(6) PCI Riser card (R320g-M4 model only)	-
(7) Power unit	-
(8) Internal USB cable	Option

4.7 CPU/IO Board

CPU/IO board on CPU/IO module



(1) Processor (CPU) socket	(1)-1 Processor #1(CPU#1) (1)-2 Processor #2(CPU#2)
(2) DIMM slot	(2)-1 DIMM1 to DIMM4 from top (2)-2 DIMM8 to DIMM5 from top
(3) DIMM slot	(3)-1 DIMM9 to DIMM14 from top (3)-2 DIMM20 to DIMM15 from top Available only when Processor #2 (CPU#2) is installed.
(4) HDD BP connector	-
(5) Lithium battery	-
(6) CMOS Clear jumper	See the following for details. <i>Chapter 1 (10.3 Clearing BIOS Settings (CMOS Memory)) in Maintenance Guide (Windows).</i> <i>Chapter 1 (9.3 Clearing BIOS Settings (CMOS Memory)) in Maintenance Guide (VMware).</i>
(7) Password Clear jumper	See the following for details. <i>See Chapter 1 (10.3 Clearing BIOS Settings (CMOS Memory)) in Maintenance Guide (Windows).</i> <i>Chapter 1 (9.3 Clearing BIOS Settings (CMOS Memory)) in Maintenance Guide (VMware).</i>
(8) Connector for PCIe card	(8)-1 PCI slot #1 (8)-2 PCI slot #2
(9) 1G LAN connector	(9)-1 LAN1 (9)-2 LAN2
(10) 10G LAN connector (R320g-M4 model only)	(10)-1 LAN1 (10)-2 LAN2

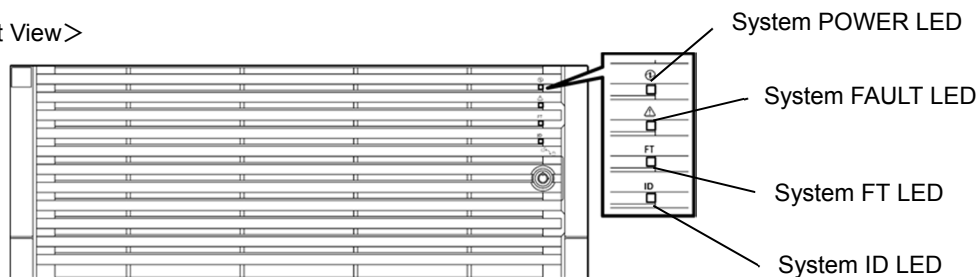
(11) Connector for PCI riser card (R320g-M4 model only)	-
(12) Management LAN connector	-
(13) Internal USB cable connector	Internal USB cable is optional.

4.8 LEDs

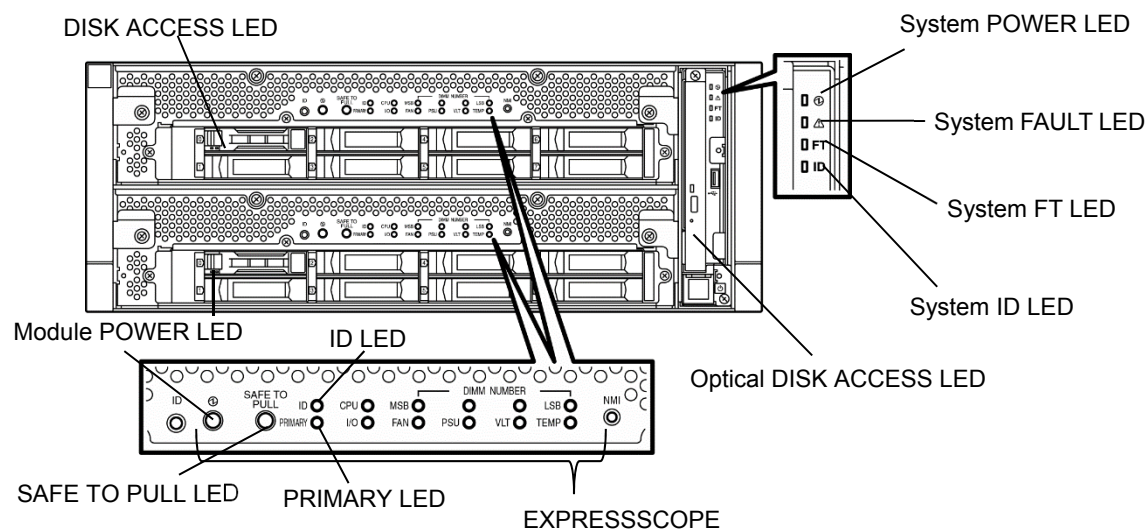
The figures below show the location of LEDs on server.

For details, see *Chapter 1 (6.1 Error Indication by LED)* in *Maintenance Guide*.

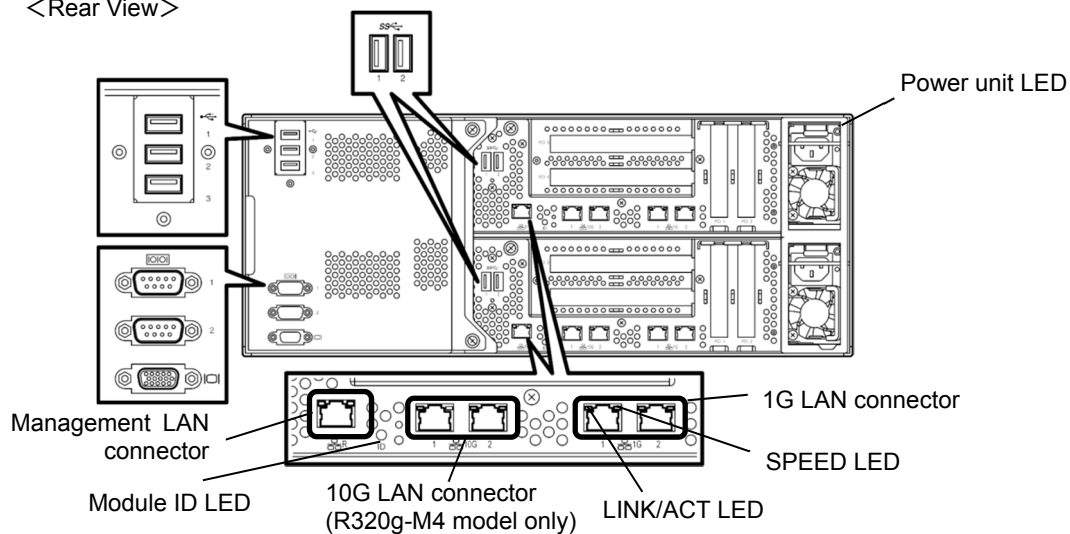
<Front View>



<Front View Without Front Bezel>



<Rear View>



NEC Express5800 Series Express5800/R310g-E4, R320g-E4, R320g-M4

2

Preparations

This chapter describes preparations for using this server.

1. Installing Internal Optional Devices

Describes how to install or remove optional devices.

2. Installation and Connection

Describes how to place the server in a suitable location and connect some cables.

1. Installing Internal Optional Devices

See the following sections in the Maintenance Guide for how to install internal optional devices.

Chapter 2 (5. Installing Optional Devices) in Maintenance Guide (Windows)

Chapter 2 (5. Installing Optional Devices) in Maintenance Guide (VMware)

You do not need to provide any settings for software.

Important

- We recommend that optional devices be installed by a maintenance service staff from your maintenance service company authorized by NEC.
- Use only the devices and cables provided 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.

2. Installation and Connection

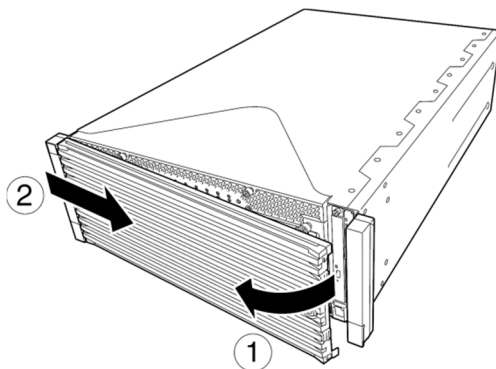
This section describes procedure to install the server and connect to peripheral devices.

2.1 Installing/Removing the front bezel

When you power on/off the server, handle the optical disk drive, or remove/install a hard disk drive or CPU/IO module, remove the front bezel.

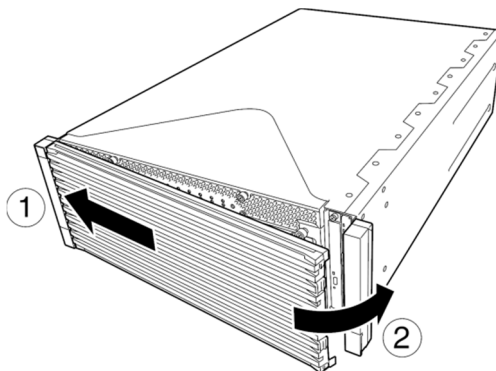
Removal

1. Insert the provided bezel lock key into the key slot and turn it to the left while pushing lightly.
2. Hold the right edge of the bezel and pull it forward.
3. Slide the bezel right a little to take the hook off the frame and remove the bezel.



Installation

1. Engage the left hook with the server's frame.
2. Push the right side of the frame to mount it.







2.2 Rack

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

2.2.1 Installing Rack

Refer to the manual that comes with your rack for how to install the rack, or consult with your sales representative.

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

 CAUTION	
	<p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see <i>Safety Precautions and Regulatory Notices</i>.</p> <ul style="list-style-type: none"> • Do not carry or install the server only by a single person. • Remove the CPU/IO module from the server and 4U chassis before moving the server. • Do not install the server so that the load may be concentrated on a specific point. • Do not install any components only by a single person. • Confirm that hinge pins of the door are completely secured in place. • Do not pull out the CPU/IO module from the rack when the rack is unstable. • Do not provide the wiring for the server to exceed the rating of the power supply. • Do not use the server in the environment where corrosive gas is generated.

Do not install the rack or server under the following environment. Doing so may cause malfunction of the server.


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




Tips

See Chapter 4 *Appendix (1. Specifications)* for details.

2.2.2 Installing the server to the rack


Mount the server to the rack.




 **WARNING**

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices*.

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

 **CAUTION**

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices*.

- Do not drop the server.
- 4U chassis weighs about 15 kgs. At least two persons are required to install it.
- CPU/IO module weighs about 18 kgs. At least two persons are required to install it.
- Do not leave the CPU/IO module of the server being pulled out.
- Do not install the CPU/IO module with its cover removed.
- Do not get your fingers caught.

Important

Temperature increases and airflow in the rack

If multiple devices are installed, or if the inside of the rack is not sufficiently ventilated, the internal temperature rises due to the heat emitted from each device, which may result in a malfunction. Review airflow in the rack and room and take sufficient measures so that the internal temperature will not exceed the operational temperature during operation.

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

Mount the server to a rack in the following procedure.

Checking accessories

The following are the required accessories. Check if you have them all.

- Bracket: 2
- Plain washer: 4
- Flat head screw: 8
- Pan head screw: 8

Cage nuts (two pieces) are not included. Use the cage nuts provided with the rack.

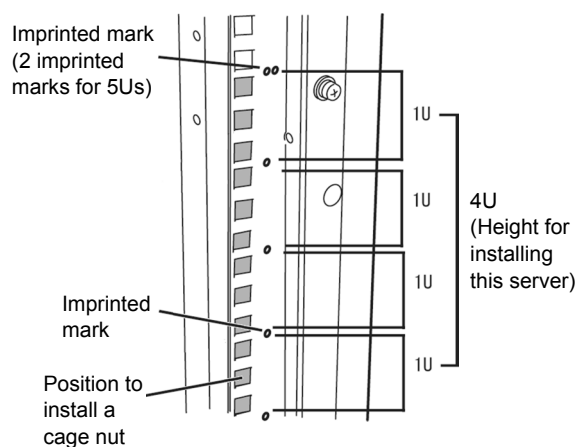
Locating

Locate the square holes of rack to install the server.

Next to the square hole of the rack, an imprinted mark is placed for 1U. This server is as high as 4U (about 176 mm), and install it between the imprinted marks that indicate the height of 4U.

Note

To keep balance, install the server as low as you can on the rack.



Installing the chassis

Follow the steps below to set the 4U chassis to the rack.

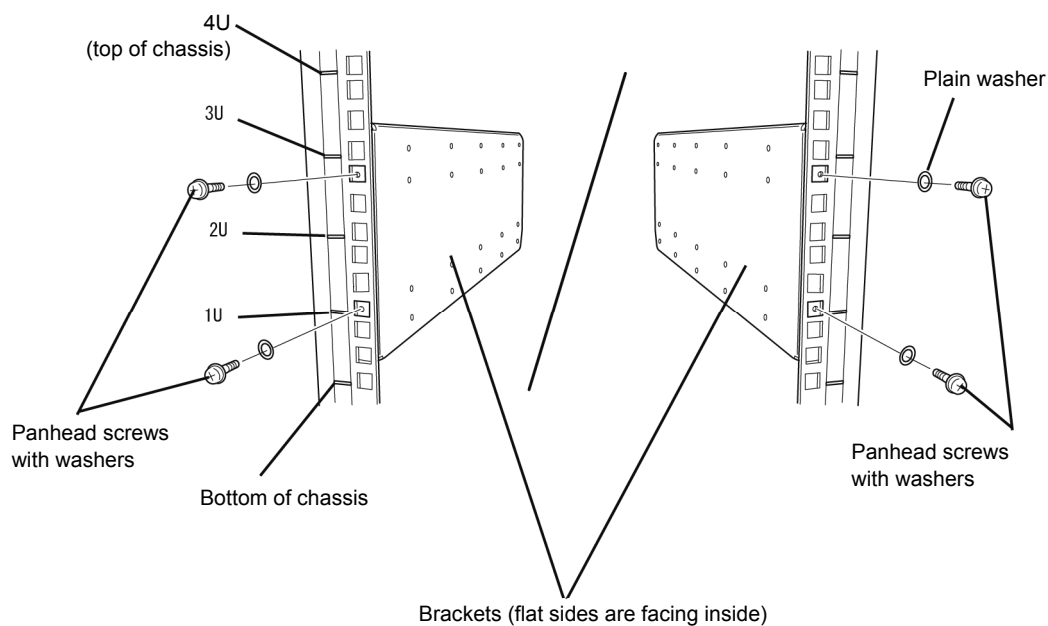
1. If the rack has front and rear doors, open them.

Tips

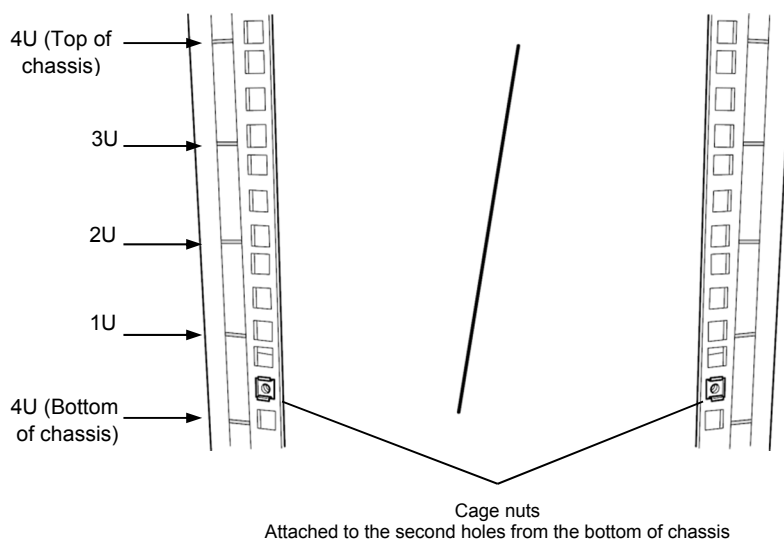
Refer to the instruction manual that comes with the rack.

2. Install the brackets from the rear side of the rack.

Install the brackets with its flat side facing inside. Place them with four pan head screws with washers that come with the server symmetrically. Tighten the screws temporarily.



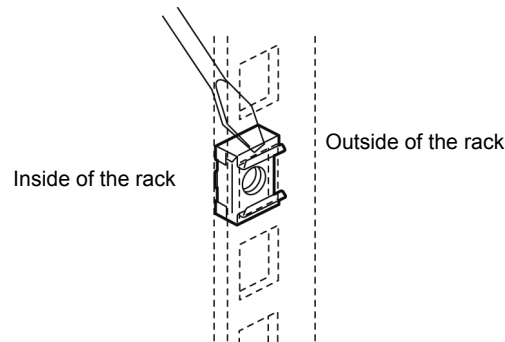
3. Attach two cage nuts symmetrically into the second square holes from the bottom of chassis.



Fix a cage nut from inside of the rack. Hook either of the clips of the cage nut to a square hole of the rack, and hook the other clip to a hole by a flat-bladed screwdriver.

Note

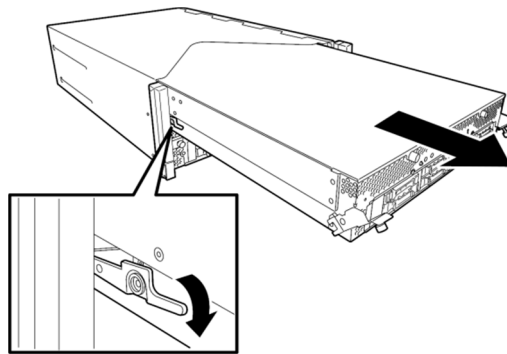
Make sure that the cage nuts on left and right sides are level.



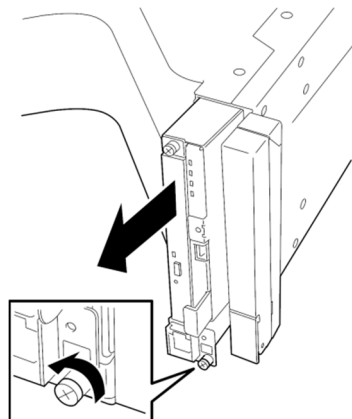
4. Remove two CPU/IO modules from the chassis.

Tips

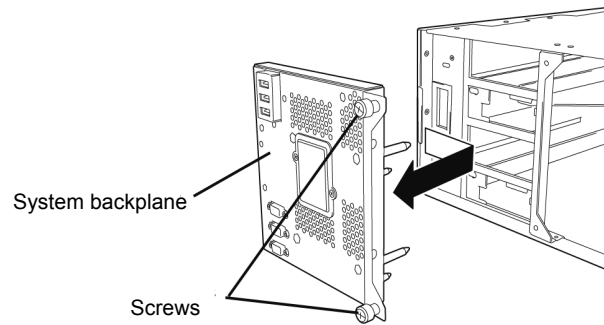
Remove the module while lowering the lock lever.



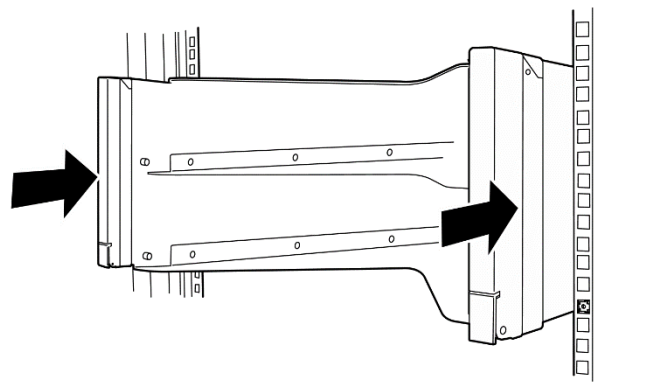
5. Loosen the screw, and remove the DVD drive unit from the chassis.



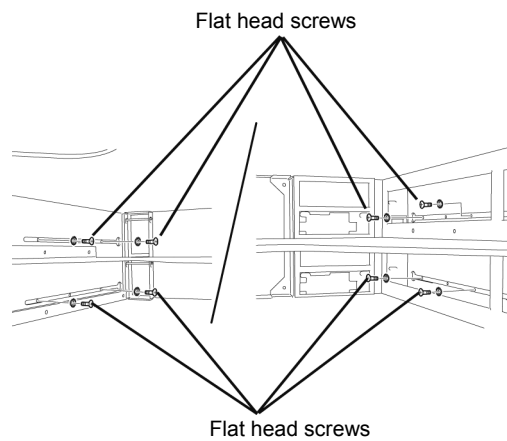
6. Loosen the screws, and remove the system backplane from the chassis.



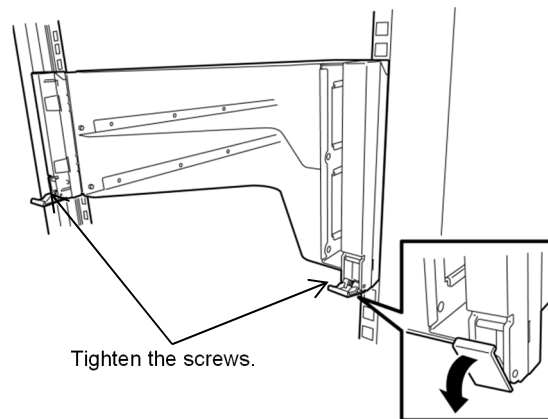
7. Insert the chassis from the front side of the rack.



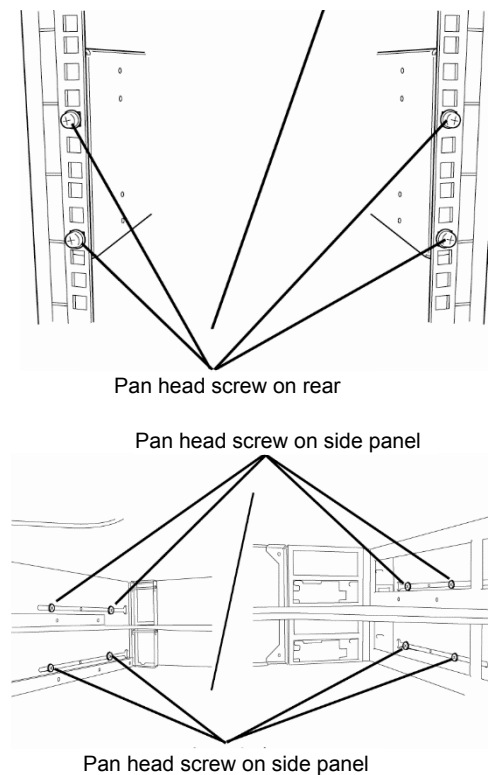
8. Temporarily tighten flat head screws attached to the server to the four places at the top and the bottom on front, and back sides (total: 8) from the rear of the rack.



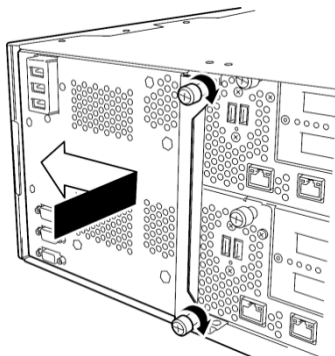
9. Open the covers and tighten tightly the screws to each two places, right and left from the front.



10. Tighten tightly the four pan head screws on the rear side and the eight flat head screws on the side panels.

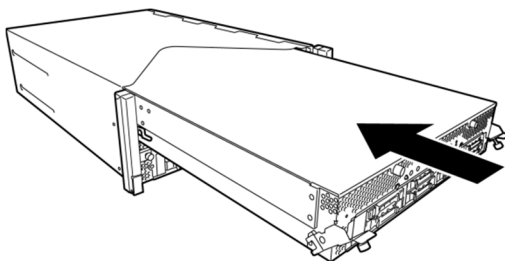


11. Mount the System Backplane removed in Step 6, and secure it with screws.

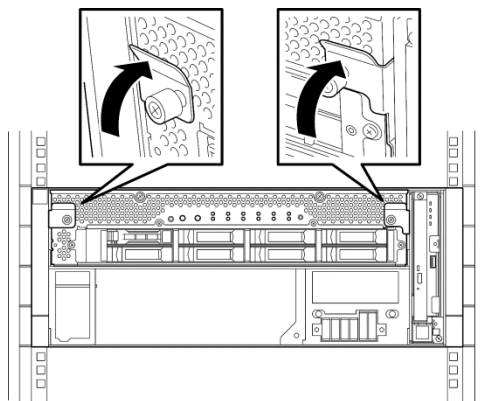


12. Mount the DVD drive unit removed in Step 5, and secure it with screws.

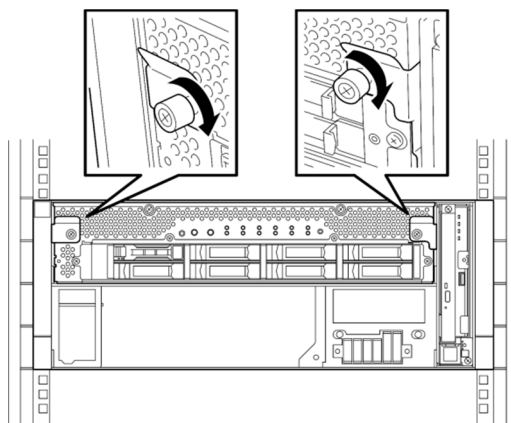
13. Mount the CPU/IO module 0 removed in Step 4.



14. Raise the lock levers on the left and right sides.



15. Fasten the levers on the left and right sides with screws.




16. Mount the CPU/IO module 1 in the same way as described in Steps 13 through 15.

2.2.3 Removing the device from the rack

Remove the server from the rack in the following procedure.

⚠ 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, see *Safety Precautions and Regulatory Notices*.

- Do not drop the server.
- 4U chassis weighs about 15 kgs. At least two persons are required to install it.
- CPU/IO module weighs about 18 kgs. At least two persons are required to install it.
- Do not leave the CPU/IO module of the server being pulled out.
- Do not get your fingers caught.

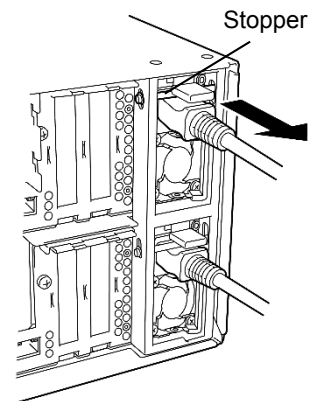
Follow the steps below and unmount the server from the rack.

1. Check that the server is powered off, and remove all the power cords and interface cables from the server.

Important

Check whether the stopper goes down after disconnecting the power cord. If you disconnect the cable and the stopper does not go down, you cannot pull out the CPU/IO module in the next step.

In case the stopper does not go down, insert CPU/IO module deeply once again.



2. Remove the front bezel.
3. Loosen the screws on the left and right sides of the front panel of the CPU/IO module and release the lock by pulling the ejector toward you.
4. Pull out the CPU/IO module carefully from the rack.

Important

- When you pull out the device, do not load anything on its top. It is dangerous, since the device becomes unstable and it may fall.
- Do not hold the handle on the front side or the convex part on the back side. To move the device, hold the bottom.
- Since the device is locked and cannot be pulled out, pull it out after releasing the lock by lowering the lock on the side of the CPU/IO module.

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

Tips


To remove the mechanical component of the rack, see *Chapter 2 (2.2.2 Installing the server to the rack)*.

2.3 Tower Conversion Kit

By using the tower conversion kit, you can install the server without using the dedicated rack.

2.3.1 Installing the Tower Conversion Kit


⚠ WARNING



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices*.

- Use only under the specified environment.
- Do not connect the ground wire to a gas pipe

⚠ 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, see *Safety Precautions and Regulatory Notices*.

- Do not carry or install the server only by a single person.
- Remove the CPU/IO module from the server before moving the server.
- Do not install the server so that the load may be concentrated on a specific point.
- Do not install any components only by a single person.
- Do not pull out the CPU/IO module from the rack when the tower conversion kit is unstable.
- Do not leave the CPU/IO module of the server being pulled out from tower conversion kit.
- Do not use the server while the lock of caster is released.
- Do not provide the wiring for the server to exceed the rating of the power supply.
- Do not use the server in the environment where corrosive gas is generated.

Do not install the tower conversion kit in such places as listed below. Otherwise, the server may malfunction.

- Narrow space from which devices cannot be pulled out from the tower conversion kit completely
- Place that cannot bear the total weights of the devices mounted on tower conversion kit
- Place where stabilizers cannot be installed or where the tower conversion kit can be installed only after the practice of proper earthquake-resistant construction
- Place of uneven or slanting floor
- Place where temperatures change widely (near a heater, air conditioner, or refrigerator)
- Place where intense vibration may be generated
- Place where sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, and other corrosive gases existPlace where chemicals may be accidentally sprayed over
- Place whose floor is covered with non-antistatic carpet
- Place that may be subject to falling objects
- Place that is close to some equipment that generates intense magnetic field (such as TV set, radio, broadcasting/communications antenna, power transmission wire, and electromagnetic crane)
- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption
- Place that is close to some equipment that causes power noises (such as sparks caused by power-on/off using a relay)
- Environment where operation of the server is not guaranteed

When you have selected a site, carry the tower conversion kit to the site, then place it slowly and gently.

Important


Do not hold the tower conversion kit by its front door to lift it. The front door may be disengaged and damage the device.

After placing the tower conversion kit, lock its two rear wheels out of four.

2.3.2 Installing the Rack-mount Model to the Tower Conversion Kit

Follow the procedure below to install the devices to the tower conversion kit.

⚠ CAUTION



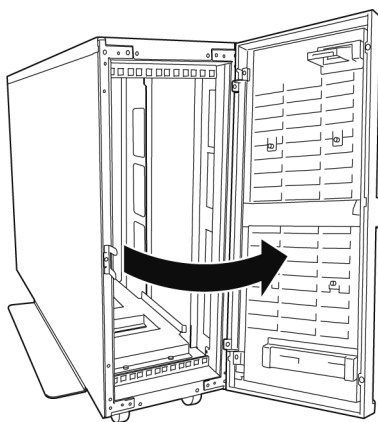
Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices*.

- Do not drop the server.
- 4U chassis weighs about 15 kgs. At least two persons are required to install it.
- CPU/IO module weighs about 18 kgs. At least two persons are required to install it.
- Do not leave the CPU/IO module of the server being pulled out.
- Do not install the CPU/IO module with its cover removed.
- Do not install the CPU/IO module while the lock of caster is released.
- Do not get your fingers caught.

1. Open the front door of the tower conversion kit.

Note

If the door is locked, use the provided security key to unlock.

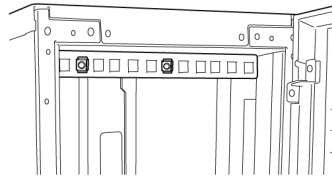


2. Confirm the location of four cage nuts on the front of the kit.

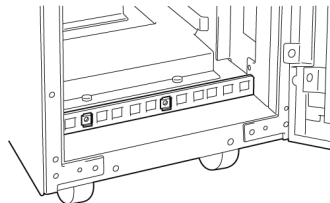
See the figure below for locations of the core nuts (two on the front top and two on the front bottom.)

Note

Four cage nuts have been installed on the chassis of the kit at shipment.

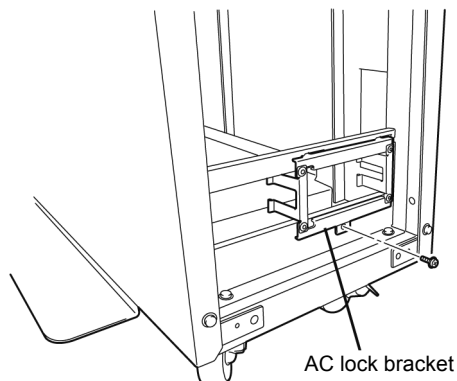


Tower conversion kit (on the front top)

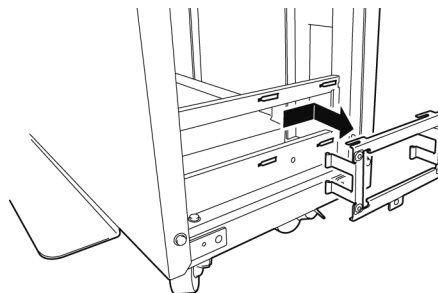


Tower conversion kit (on the front bottom)

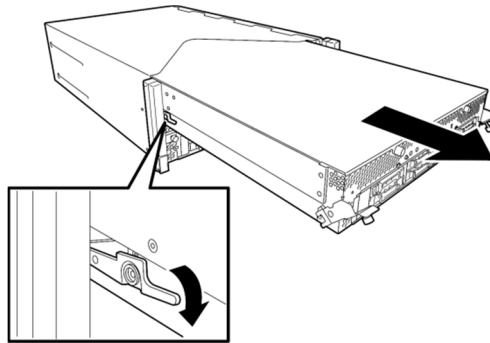
3. Remove one screw from the AC lock bracket on the rear of the tower conversion kit.



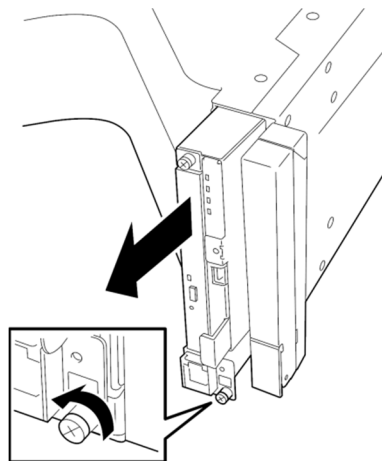
4. Remove the AC lock bracket.



5. Remove two CPU/IO modules from the chassis.

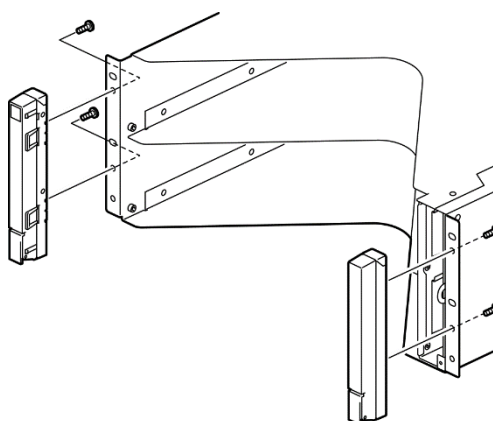


6. Remove the DVD drive unit from the chassis.



7. Remove the rack mount bracket (handle) from the front of chassis.

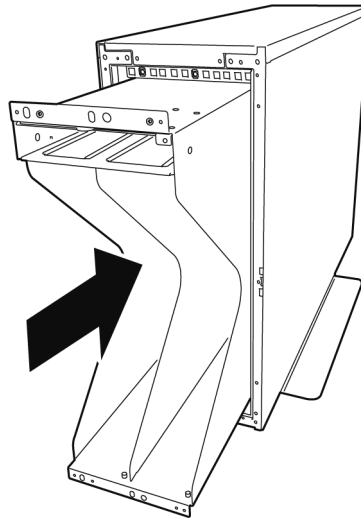
Important You cannot close the door with the handle being mounted.
Keep the removed handle and screws for future use.



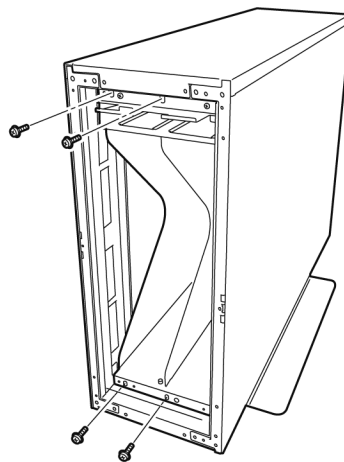
8. Insert the chassis from the front side of the tower conversion kit.

Note

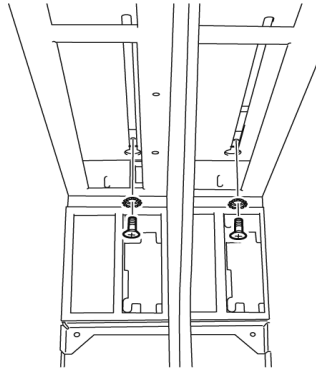
Push the chassis to the end of tower conversion kit.



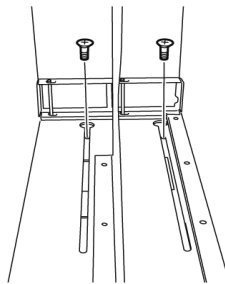
9. Fix the chassis to the tower conversion kit with the provided four pan head screws (two for the top side and two for the bottom side).



10. Fix the chassis to the tower conversion kit with four flat head screws.

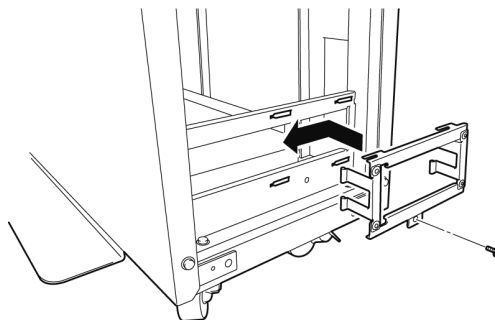


Tower conversion kit (on the rear top)

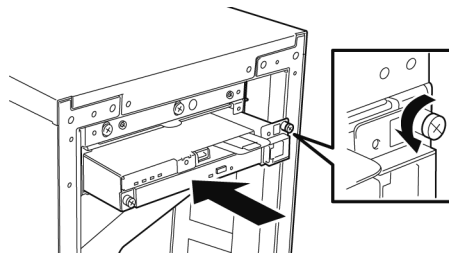


Tower conversion kit (on the rear bottom)

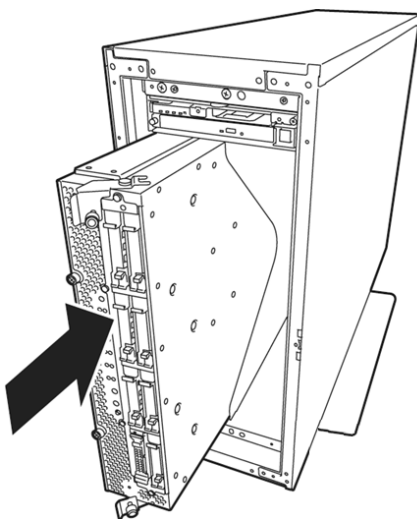
11. Mount the AC lock bracket and secure it with one screw.



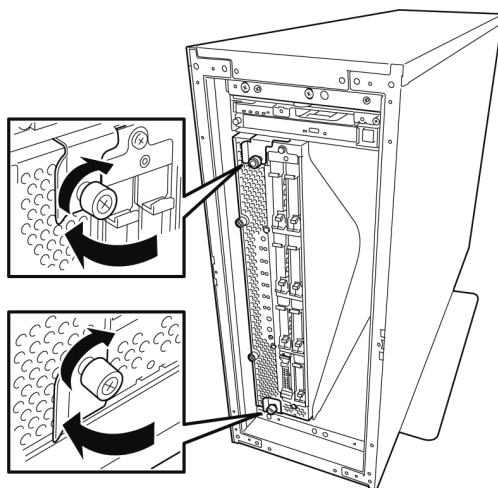
12. Insert the DVD drive unit to the chassis and secure it with a screw.



13. Slowly and carefully insert the CPU/IO module 0 into the chassis.



14. Close the levers on the top and the bottom, and then secure the CPU/IO module with screws.







15. Install the CPU/IO module 1 to the chassis with the same procedures.

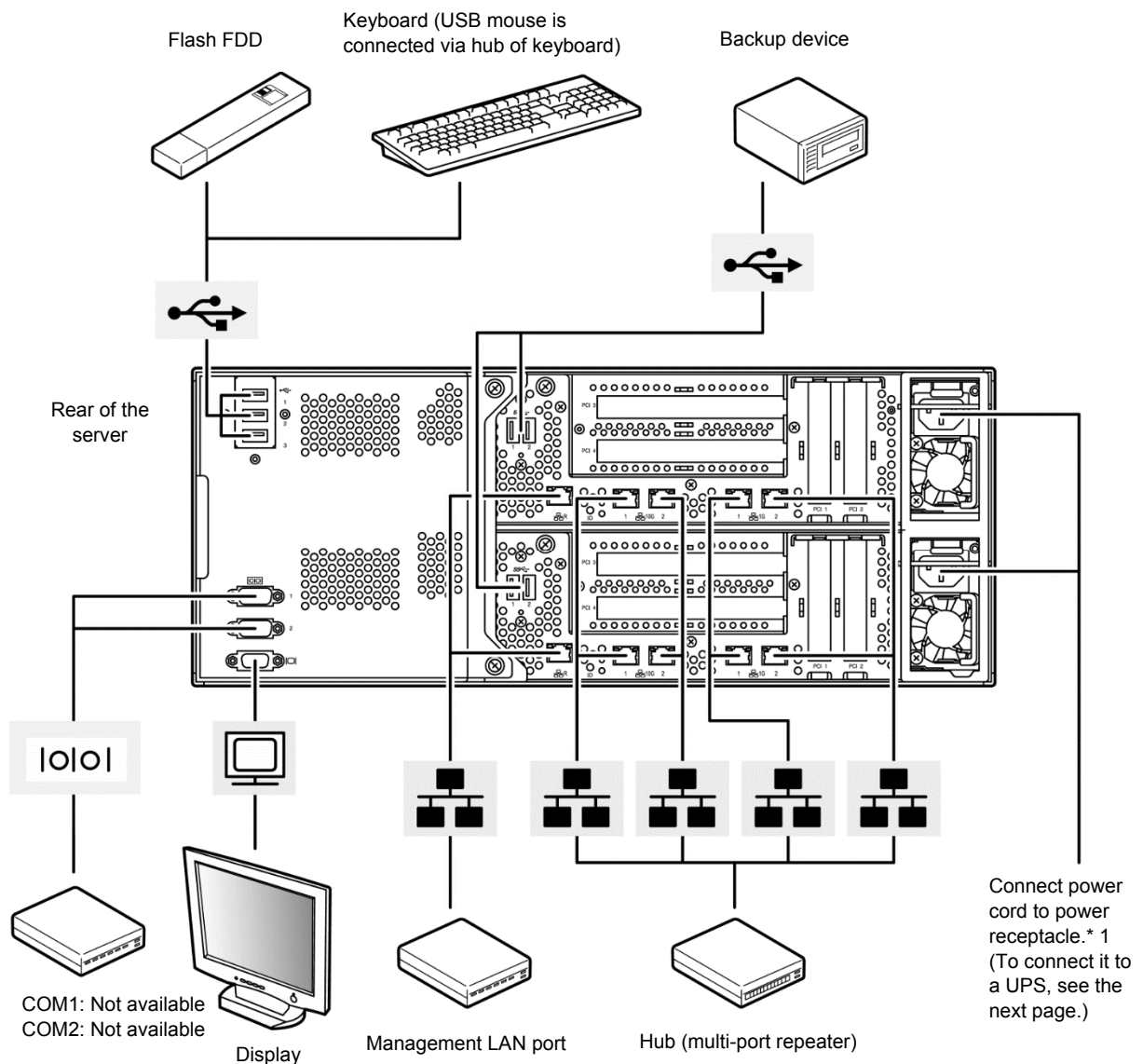
2.4 Connection

Connect peripheral devices to the server.

Connectors that allow a variety of peripheral devices to be connected are provided at the front and rear of the server. Figures on the next page show the peripheral devices that can be connected as standard and connector positions.

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

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



*1. Connect the power cord to a circuit breaker of 15 A or less.

Note the following precautions to connect cables.

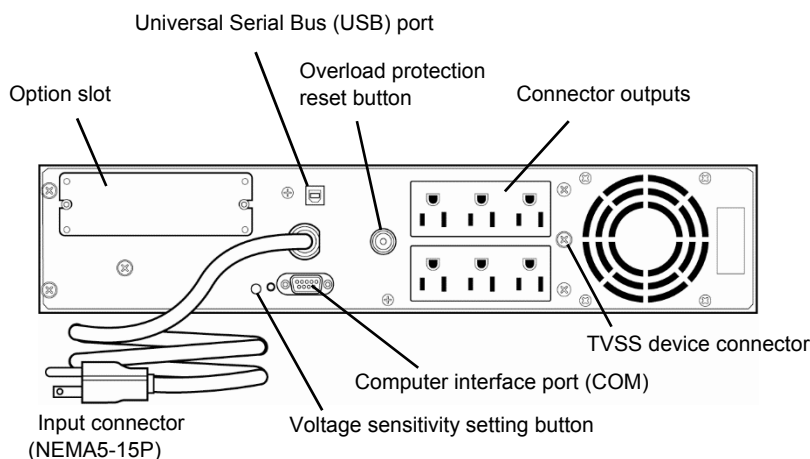
- If connecting any peripheral device and its interface cable made by other companies (a third party), contact your sales representative to check if they can be used with the server beforehand.
- USB devices supported by the server are Flash FDD, keyboard (including a mouse), and Server Switch Unit (SSU) designated by NEC. Connecting USB devices other than the above will cause malfunctions and failures.
- Power off the server before connecting peripheral devices, with the exception of peripherals with USB interface. Connecting a powered peripheral device to the powered server will cause malfunctions and failures.
- If you purchase the Internal USB cable and expand USB ports, the port supports a USB device that is the backup device (internal / external RDX) designated by NEC.
- If you purchase the Internal USB cable and both USB ports are installed on both CPU/IO modules, backup devices connected to these ports are not configured for duplication by using hardware.
- In the case of standard configuration, you need to complete setup of the operating system before installing external file backup device.
- The serial port connectors are reserved for maintenance.

- When the device is not Plug and Play device, turn off the server and devices to be connected before connecting.
- Fix the power cord or interface cable with cable ties.
- Make sure that no pressure is applied on the plug of power cord.

2.4.1 Connecting to a uninterruptible power supply (UPS)

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

Example



If you want to control the power of server with the output of UPS, change the following BIOS settings.

[Server] - [Power Control Configuration] - [AC-LINK]

Select **Power On** to perform automatic operations by using the UPS.

See the following for details.

Chapter 3 (2. BIOS Setup Utility (SETUP)).

Chapter 3 (1. System BIOS) in Maintenance Guide

NEC Express5800 Series

Express5800/R310g-E4, R320g-E4, R320g-M4

3

Setup

This chapter describes how to set up the server.

1. Turning on the Server

Describes how to turn on the server.

2. BIOS Setup Utility (SETUP)

Describes how to start BIOS Setup Utility.

3. EXPRESSSCOPE Engine 3

Describes how to use EXPRESSSCOPE Engine 3.

4. EXPRESSBUILDER

Describes how to use EXPRESSBUILDER.

5. Installing Software Components

Describes how to install an operating system and bundled software.

6. Turning off the Server

Describes how to turn off the server.

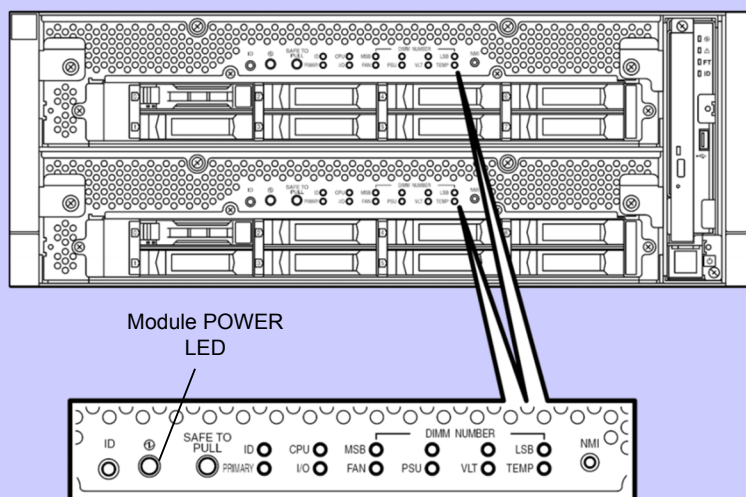
1. Turning on the Server

Follow the steps below to turn on the power.

1. Connect the power cord to this server and wait until the Module POWER LED on CPU/IO modules 0 and 1 start blinking green.

Tips

- It takes about 90 seconds for LEDs on the front side of the server to turn on or start blinking after the power cord is connected to the server.



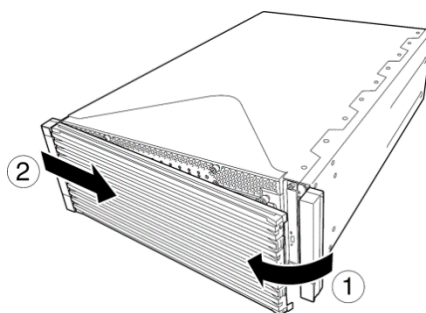
- If you power off the server, wait at least 30 seconds before turning it on again.

2. Power on the display unit and other peripherals connected to the server.

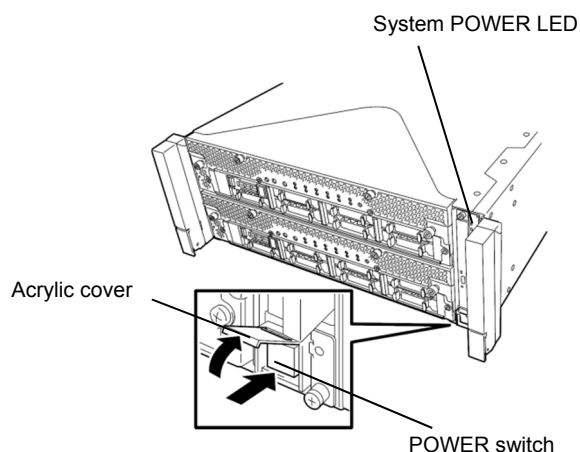
Note

If the power cord is connected to a power controller (such as UPS), ensure that the controller is powered on.

3. Remove the front bezel.



4. Open the acrylic cover, and press the POWER switch.



The System POWER LED goes on green, the server starts.

When the server starts, the server runs a power-on self test (POST) to check hardware. For details, see *Chapter 3 (1.1 POST)*.

After a while, the logo will appear on the screen.

Important

- Do not connect or disconnect USB device while POST is running.
- Do not power off the server while POST is running.

1.1 POST

Power-On Self Test (POST) is a self-test feature stored on the motherboard of the server. When you power on the server, POST will start automatically to check the CPU/IO board, DIMM, processor (CPU), and other devices. POST also displays startup messages for various utilities.

Usually, you do not need to check the POST message, but you should check messages when:

- You install a new server.
- You suspect a failure.
- An error message appears.

1.1.1 POST process

1. When you power on the server, it starts from the primary CPU/IO module. Then, POST begins, and messages are displayed on the display to notify of initialization of the memory, PCI device, and so on. After the initialization messages, the logo appears on the display.

Note

- Keyboard becomes operable after the logo appears.
- While the initialization messages are appearing, they may disappear on the screen (black screen) a moment but there is no problem.
- Depending on the setting of BIOS setup utility (SETUP), the logo or initialization message does not appear.

If Enabled is specified for Password On Boot in Security menu of SETUP, you will be prompted to enter password after the logo is displayed. If you enter the incorrect password three times consecutively, POST is stopped. In this case, power off the server, and power it on.

Important

Do not set a password before installing an OS.

2. Press the Esc key to clear the log. Then, the contents of POST are displayed. It includes messages to notify of the installed CPU, the memory capacity, and others.

Tips

If you set "Quiet Boot" to [Disabled] in the "Boot" menu in the BIOS setup utility (SETUP), the contents of logo will be shown without the logo itself.

3. After a while, the following message appears on the screen. (* The on-screen message depends on your system environment.)

Press <F2> SETUP, <F4> ROM Utility, <F12> Network

You can run the various functions by pressing the following function key:

<F2> key: Runs BIOS Setup Utility (SETUP). For details, see *Chapter 3 (2. BIOS Setup Utility (SETUP)) on this guide*.

<F4> key: Runs Offline Tools. For details, see *Chapter 1 (12. Offline Tools) in Maintenance Guide (Windows) or Chapter 1 (11. Offline Tools) in Maintenance Guide (VMware)*.

<F12> key: Starts from network.

4. The OS starts when POST is completed.

1.1.2 POST Error Messages

If POST detects an error, an error message appears on the screen. For descriptions of error messages, causes, and countermeasures, see *Chapter 1 (6.2. POST Error Message) in Maintenance Guide*.

1.1.3 Switching of boot pair

The CPU/IO module 0 or 1 is started depending on the primary/secondary status of modules when the server was shut down the last time. At the first startup after AC OFF, the CPU/IO module (0 or 1) powered on first is managed as primary, and the module powered on later is managed as secondary.

If POST or OS startup does not complete normally, the server will automatically restart. In this case, the other CPU/IO module (secondary) is determined as primary module, and POST or OS runs on that module (switching of boot pair).

If POST does not complete normally on both CPU/IO modules, the server will stop with the state of DC OFF or POST halts with an error message displayed.

The following devices are connected to the primary CPU/IO module. When one CPU/IO module is disconnected because of a failure, the other module is selected automatically to continue operating.

- VGA (display)
- USB device (keyboard, mouse, server switch unit, Flash FDD, optical disk drive)

Note

- If the Flash FDD is connected to a Windows model, the drive letter may change from A to B by switching CPU/IO modules. Changing of the drive letter does not affect the operation of the server. If the drive letter is changed, access the Flash FDD with the changed drive letter.
- For Windows models, the drive letter of the optical disk drive is re-assigned automatically. The unused letter is assigned to the drive in the order of D to Z. If you want to set the fixed drive letter to the optical disk drive, specify the letter which is not assigned in the order of D to Z after setting the hard disk drive letter.

2. BIOS Setup Utility (SETUP)

This section describes how to configure basic input/output system (BIOS). Make sure that you understand the descriptions in this chapter to configure BIOS properly.

2.1 Overview

BIOS Setup Utility (SETUP) is a utility to set basic hardware settings. This utility is installed in a flash memory on the server as standard.

Factory settings of BIOS are set with optimal values. Usually, you do not need to run SETUP. **Modify the settings only at the cases described in Chapter 3 (2.4 Cases that Require Changes).**

2.2 Starting and Exiting SETUP

2.2.1 Starting SETUP

Run POST following *Chapter 3 (1.1.1 POST process)*.

After a while, the following message will be displayed on the lower left of the screen. The on-screen message depends on your system environment.

Press <F2> SETUP, <F4> ROM Utility, <F12> Network

If you press <F2> key, SETUP starts upon completion of POST, and the **Main** menu appears .

If you have set a password, the following message appears and prompts you to enter the password.

Enter Password [

If you enter incorrect password consecutively three times, the operation stops and you cannot proceed. No more operations can be done. Turn off the power.

2.2.2 Exiting SETUP

To exit SETUP after saving changes, choose **Save & Exit** → **Save Changes and Exit**.

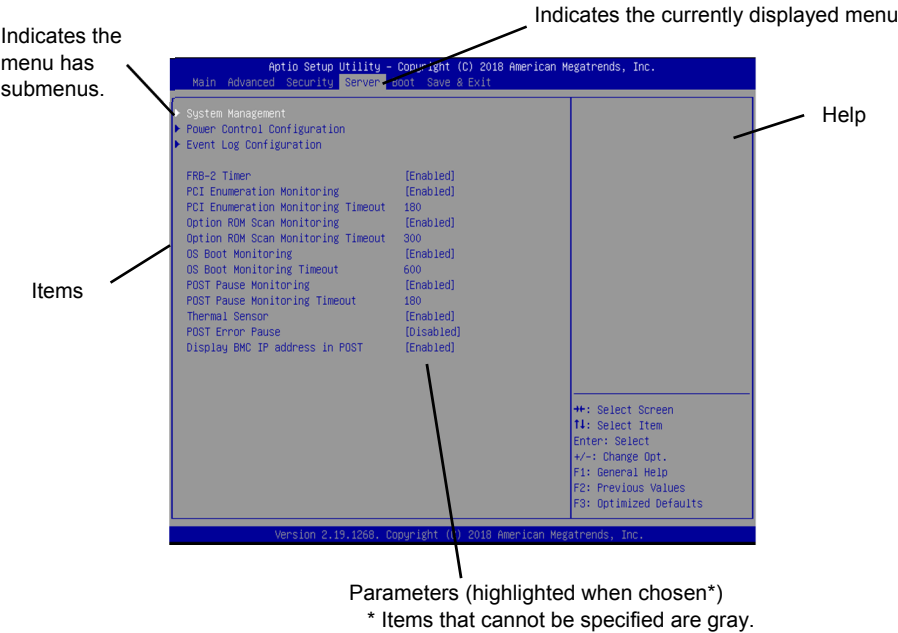
To exit SETUP without saving changes, choose **Save & Exit** → **Discard Changes and Exit**.

Tips

- To restore the default value, choose **Save & Exit** → **Load Setup Defaults**. Some values are different from the factory settings.
- Values of **ISCSI Configuration** submenu of **Advanced** menu and **UEFI Driver Configuration** submenu do not return to default values.

2.3 Usage of SETUP

Use the following keys to operate SETUP.



- ☐ Cursor keys (<↑>, <↓>)
Chooses an item displayed on the screen. If characters of an item are highlighted, that means the item is currently chosen.
- ☐ Cursor keys (<←>, <→>)
Chooses Main, Advanced, Security, Server, Boot, or Save & Exit from the top menu.
- ☐ <→> key/<+> key
Changes the value (parameter) of the chosen item. You cannot use this key when a menu which has ► on the left is chosen.
- ☐ <Enter> key
Determines the chosen parameter by pressing this key.
- ☐ <Esc> key
Cancels pop-up window. On the submenu, pressing this key takes you to the previous screen. On the top menu, the following window appears. If you choose **Yes**, SETUP closes without saving the changes.

Quit without saving?	
[Yes]	No

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

☐ <F2> key

Displays the following window. If you choose **Yes**, the previous parameter(s) are restored. If the value has been saved with **Save & Changes**, the stored values are restored.

Load Previous Values?
[Yes] No

☐ <F3> key

Displays the following window. If you choose **Yes**, restore the parameters of the currently selected item to the default setting. **Some default parameters are different from the factory settings.**

Load Setup Defaults?
[Yes] No

Note

Values of **ISCSI Configuration** submenu of **Advanced** menu and **UEFI Driver Configuration** submenu do not return to default values.

☐ <F4> key

Displays the following window. If you choose **Yes**, the changes are saved and SETUP closes. After closing, the server restarts automatically.

Save configuration and exit?
[Yes] No

2.4 Cases that Require Changes

Use SETUP to change a parameter in the following cases. Other than cases described below, do not change the settings. A list of SETUP parameters and factory settings are described in [Chapter 3 \(1. System BIOS\)](#) in "[Maintenance Guide](#)".

Category	Description	To be changed	Remark
Basic	Change date and time	Main → System Date Main → System Time	
	On/Off NumLock at power ON	Boot → Bootup Numlock State → ON	
	Hide the NEC logo during POST	Boot → Quite Boot → Disabled	Pressing <Esc> key hides the NEC logo tentatively.
Option board	Enable Option ROM Scan of installed option board	Advanced → PCI Configuration → PCI Device Controller and Option ROM Settings → PCIx Slot Option ROM → Enabled	X is PCI slot number of the option board
Boot	To perform physical formatting, set a Legacy BIOS mode temporarily.	Boot → Boot Mode → Legacy	For physical formatting, see Chapter 3 (3.3 Physical Formatting of the Hard Disk Drive) in " Maintenance Guide ".
	To perform physical formatting, set a Legacy BIOS mode temporarily and reset.	Boot → Boot Mode → UEFI	
	Change the boot order of devices	Boot → Boot Option Priorities → Change the boot priority	When you use EXPRESSBUILDER, set the highest priority to CD/DVD.
Security	Set a password	Security → Administrator Password → Set a password Security → User Password → Set a password	If password is set, a message requesting password is displayed at the next SETUP execution.
	Restrict bootup by entering password	Security → Password on Boot → Enabled	Can be selected when password is set.
UPS Power link	When the server is supplied with power from UPS, always turn on the power.	Server → Power Control Configuration → AC-LINK → Power ON	
	If the server is turned off by using POWER switch, leave it OFF even when UPS supplies power.	Server → Power Control Configuration → AC-LINK → Last State	
	Keep the power OFF even when UPS supplies power.	Server → Power Control Configuration → AC-LINK → Stay off	

3. EXPRESSSCOPE Engine 3

3.1 Overview

EXPRESSSCOPE Engine 3 provides a variety of features using Baseboard Management Controller (BMC). For details, see *EXPRESSSCOPE Engine 3 User's Guide* in EXPRESSBUILDER.

EXPRESSSCOPE Engine 3 monitors the power unit, fans, temperature, and voltage of the server. Connecting the management LAN connector (see *Chapter 1 (4.3 Rear View)*) to your network enables you to do the following from a remote site through a web browser and 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 (Remote FD, Remote CD/DVD, Remote USB Memory, or Virtual Flash) is always connected as USB mass storage.

Tips

Use Offline Tools of the server to reset BMC.
See *Chapter 3 (2. BMC Configuration)* in “Maintenance Guide” for more information.

Note

EXPRESSSCOPE Engine 3 is implemented on both CPU/IO modules (module 0 and 1) and configuration is required on both modules. (Namely, different IP addresses for CPU/IO module 0 and 1 need to be set.)

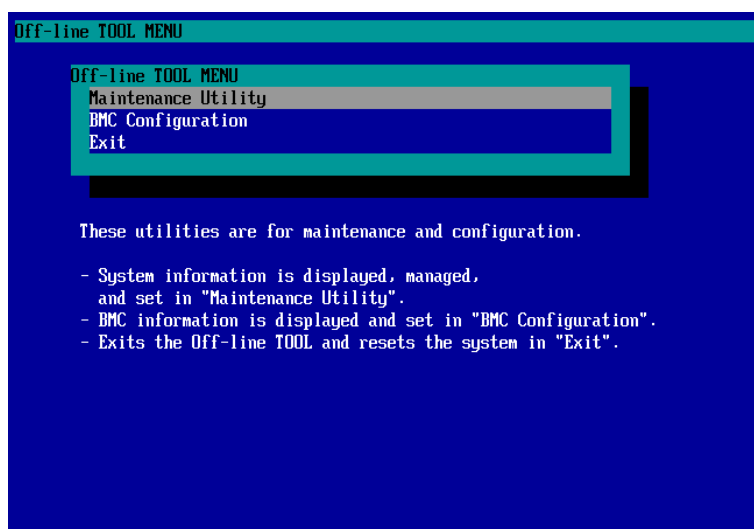
3.2 EXPRESSSCOPE ENGINE 3 Network configuration

Below is an example of the configuration procedure which enables EXPRESSSCOPE Engine 3 to be used via a web browser.

1. Run POST according to *Chapter 3 (1.1.1 POST process)*. After a while, the following message appears on the lower left of the screen. (* The on-screen message depends on your system environment.)

Press <F2> SETUP, <F4> ROM Utility, <F12> Network

2. Press the <F4> key to launch Off-line TOOL while the message is displayed.
3. Select your keyboard type on keyboard selection screen.
4. When the Off-line TOOL MENU appears, select **BMC Configuration**, **BMC Configuration**, **Network: CPU/IO module 0/1**, and then **IPv4 Property** or **IPv6 Property**.



5. Configure IPv4 or IPv6 network settings.

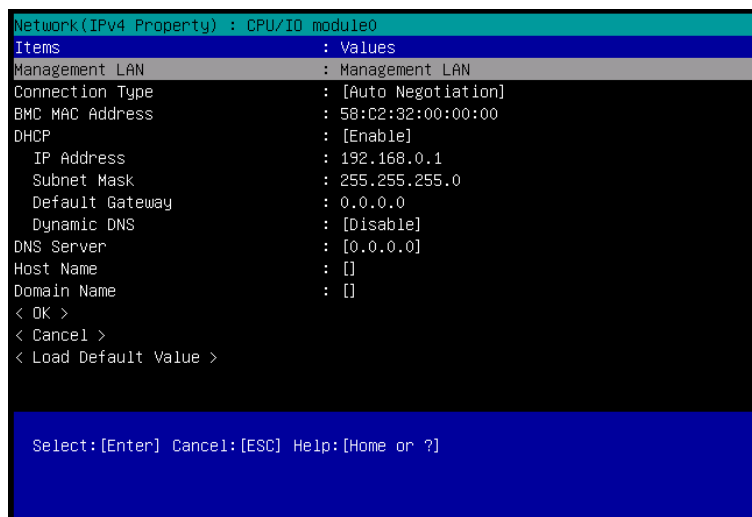


Figure of IPv4 Property

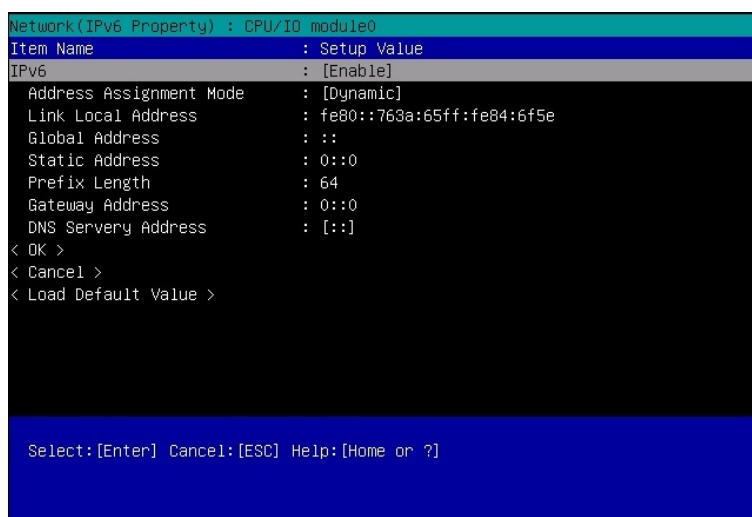


Figure of IPv6 Property

6. Connect the LAN cable to the management LAN connector in order to connect to the network. Access EXPRESSSCOPE Engine 3 by using a web browser of management PC according to the settings in Step 5.

4. EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows or maintain the server.

4.1 Features of EXPRESSBUILDER

EXPRESSBUILDER provides the following features.

Feature	Description
Setup (Windows reinstallation)	Installs Windows on your server. Easily completes the process to installation of applications. To use this feature, choose OS installation in Boot Selection Menu.
Bundled software	Stores NEC ESMPRO, BMC Configuration, and other bundled software.
Maintenance	Diagnoses the server. To use this feature, choose Tool menu in Boot Selection Menu.
Manuals	Stores manuals, including this User's Guide.

4.2 Usage of EXPRESSBUILDER

To install the Windows OS or diagnose the system, you can use EXPRESSBUILDER, which comes with the server.

Start EXPRESSBUILDER in either of the following procedure.

- Insert the DVD into the server, and then restart it.
- Insert the DVD into a computer running Windows. Autorun menu appears automatically.
If the menu does not appear automatically, run the following file.
`\autorun\dispatcher_x64.exe.`

For details, see *Chapter 3 (5. Details of EXPRESSBUILDER) in Maintenance Guide.*

5. Installing Software Components

Continue to install software components such as OS.

See the instructions below.

- To install Windows: *Installation Guide (Windows)*
- To install VMware: *Installation Guide (VMware)*

6. Turning off the Server

Follow the steps below to turn off the power. If the server is connected to a UPS, refer to manuals provided with the UPS or the application that controls the UPS.

1. Shut down the OS.
2. The server automatically turns off after the OS shuts down.
The Module POWER LED on each CPU/IO module will be blinking while AC power is supplied.
3. Power off all peripheral devices.

Tips

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

NEC Express5800 Series

Express5800/R310g-E4, R320g-E4, R320g-M4

4

Appendix

1. Specifications

Describes specifications of the server.

2. Glossary

Describes glossaries of this document.

3. Revision Record

Describes revision history of this document.

I. Specifications

Model		N8800-240F	N8800-241F
CPU	Type	Intel Xeon Processor (*1)	
		Silver 4114	Gold 6127M
	Clock speed	2.20 GHz	
	Standard / Maximum	1/2 (per one module)	
	Tertiary cache	13.75 MB	22 MB
Chipset		Intel C621 Chipset (*2) / GeminiEngine™	
Memory	Capacity Standard / Maximum	Not pre-installed / 640 GB (20x 32 GB) (per module)	
	Memory module	DDR4-2666 16 GB/32 GB RDIMM	
	Maximum clock speed	2400 MHz	
	Error check, correction	ECC, x4 SDDC	
Storage	Hard disk drive	Standard	—
		Maximum	2.5-inch HDD: SAS 19.2TB (16x 1.2TB) The user area is reduced to a half of the physical capacity due to duplication.
		Hot swap	Supported
	Interface	SAS 12 Gb/s	
	Optical disk drive	Built-in	
	FDD	Option: Flash FDD (1.44 MB) Prepare as required. See Chapter 3 (4. Flash FDD) in Maintenance Guide for more information.	
Expansion slots	Supported slot	2x PCI EXPRESS 3.0 (x8 lane, x8 slot) (Low profile)	2x PCI EXPRESS 3.0 (x8 lane, x8 slot) (Full height) 2x PCI EXPRESS 3.0 (x8 lane, x8 slot) (Low profile)
Graphics	Chip / Video RAM	Management controller chip / 32 MB	
	Graphic display / resolution	16,770,000 colors: 800x600, 1,024x768, 1,280x1,024, 1,600x1,200	
Interface		4xUSB 2.0 (1x Front, 3x Rear) (Option, 2xUSB 3.0 per CPU/IO module (2x Rear, for backup devices) (*3) 1x Analog RGB (Mini D-sub 15 pin, 1x Rear) 2x1000BASE-T LAN connector (1000BASE-T/100BASE-TX, RJ45, 2x Rear) 1x Management LAN connector (100BASE-TX/10BASE-T, RJ45, 1x Rear)	4xUSB 2.0 (1x Front, 3x Rear) (Option, 2xUSB 3.0 per CPU/IO module (2x Rear, for backup devices) (*3) 1x Analog RGB (Mini D-sub 15 pin, 1x Rear) 2x1000BASE-T LAN connector (1000BASE-T/100BASE-TX, RJ45, 2x Rear) 2x10GBASE-T LAN connector (10GBASE-T/1000BASE-T/100BASE-TX, RJ45, 2x Rear) 1x Management LAN connector (100BASE-TX/10BASE-T, RJ45, 1x Rear)
Power supply		800 W 80 Plus Platinum compliant (bipolar grounded outlet) 100-127 / 200-240 VAC ±10%, 50/60 Hz ± 3 Hz	1200 W 80 Plus Platinum compliant (bipolar grounded outlet) 100-127 / 200-240 VAC ±10%, 50/60 Hz ± 3 Hz
External dimensions (width × depth × height)		483 mm (width) × 734 mm (depth) × 176 mm (height) (Front bezel included)	
Weight (Standard/ Max.)		46 kg / 53 kg	
Power consumption (100V at maximum configuration)		1274 VA/1272 W	1463 VA/1461 W
Environmental requirements Temperature/Humidity		Operating: 10 to 40°C / 20 to 80%, Storage: -10 to 55°C / 20 to 80% (No condensation either when operating or when stored)	
Accessories		EXPRESSBUILDER(NEC ESMPRO Manager (Windows), NEC ESMPRO Agent (Windows), User's Guide, Installation Guide, Maintenance Guide, Safety Precautions and Regulatory Notices, Slide rails, Front bezel	
Installed OS		—	
Supported OS		Microsoft Windows Server 2016 Standard Microsoft Windows Server 2016 Datacenter VMware ESXi 6.7 Update1 Unsupported functions: • VMware Fault Tolerance (FT) • VMware Distributed Power Management (DPM) • Fibre Channel N-Port ID Virtualization (NPV) • Modifying the DVSwitch Configuration • RAW Device Mapping (RDM) (only for internal HDD) • VMDirectPath • Single-Root I/O Virtualization • VMware vSphere Flash Read Cache • vCenter Server lockdown mode • LACP	

*1 This server does not support the following features:

- Intel(R) Secure Key (RD RAND)
- Intel(R) Turbo Boost Technology
- Intel(R) Virtualization Technology (VT-d)
- Enhanced Intel(R) SpeedStep Technology
- Intel(R) Demand Based Switching
- Intel(R) I/O Acceleration Technology
- Thermal Monitoring Technologies
- Intel(R) AVX (Advanced Vector Extensions)
- Intel(R) AVX2 (Advanced Vector Extensions 2)
- XCR0_MASTER_YMM_H
- TXT(Trusted Execution Technology)

*2 This server does not support the following features:

- Intel(R) Node Manager

*3 Not supported in VMware

Model		N8800-244F
CPU	Type	Intel Xeon Processor (*1) Silver 4114
	Clock speed	2.20 GHz
	Standard / Maximum	1/1 (per one module)
	Tertiary cache	13.75 MB
	Number of cores (C) / Number of threads (T) (1CPU)	10C/20T
Chipset		Intel C621 Chipset (*2) / GeminiEngine™
Memory	Capacity Standard / Maximum	Not pre-installed / 256 GB (8x 32 GB) (per module)
	Memory module	DDR4-2666 16GB/32GB RDIMM
	Maximum clock speed	2400 MHz
	Error check, correction	ECC, x4 SDDC
Storage	Hard disk drive	Standard –
		Maximum 2.5-inch HDD: SAS 19.2TB (16x 1.2TB) The user area is reduced to a half of the physical capacity due to duplication.
		Hot swap Supported
	Interface	SAS 12 Gb/s
	Optical disk drive	Built-in
	FDD	Option: Flash FDD (1.44 MB) Prepare as required. See <i>Chapter 3 (4. Flash FDD)</i> in <i>Maintenance Guide</i> for more information.
Expansion slots	Supported slot	2x PCI EXPRESS 3.0 (x8 lane, x8 slot) (Low profile)
Graphics	Chip / Video RAM	Management controller chip / 32 MB
	Graphic display / resolution	16,770,000 colors: 800x600, 1,024x768, 1,280x1,024, 1,600x1,200
Interface		4xUSB 2.0 (1x Front, 3x Rear) (Option, 2xUSB 3.0 per CPU/IO module (2x Rear, for backup devices) 1x Analog RGB (Mini D-sub 15 pin, 1x Rear) 2x1000BASE-T LAN connector (1000BASE-T/100BASE-TX, RJ45, 2x Rear) 1x Management LAN connector (100BASE-TX/10BASE-T, RJ45, 1x Rear)
Power supply		800 W 80 Plus Platinum compliant (bipolar grounded outlet) 100-127 / 200-240 VAC ±10%, 50/60 Hz ± 3 Hz
External dimensions (width × depth × height)		483 mm (width) × 734 mm (depth) × 176 mm (height) (Front bezel included)
Weight (Standard/ Max.)		46 kg / 53 kg
Power consumption (100V at maximum configuration)		1274 VA/1272 W
Environmental requirements Temperature/Humidity		Operating: 10 to 40°C / 20 to 80%, Storage: –10 to 55°C / 20 to 80% (No condensation either when operating or when stored)
Accessories		EXPRESSBUILDER(NEC ESMPro Manager (Windows), NEC ESMPro Agent (Windows), User's Guide, Installation Guide, Maintenance Guide, Safety Precautions and Regulatory Notices, Slide rails, Front bezel
Installed OS		–
Supported OS		Microsoft Windows Server 2016 Standard Microsoft Windows Server 2016 Datacenter

*1 This server does not support the following features:

- Intel(R) Secure Key (RDRAND)
- Intel(R) Turbo Boost Technology
- Intel(R) Virtualization Technology (VT-d)
- Enhanced Intel(R) SpeedStep Technology
- Intel(R) Demand Based Switching
- Intel(R) I/O Acceleration Technology
- Thermal Monitoring Technologies
- Intel(R) AVX (Advanced Vector Extensions)
- Intel(R) AVX2 (Advanced Vector Extensions 2)
- XCR0_MASTER_YMM_H
- TXT(Trusted Execution Technology)

*2 This server does not support the following features:

- Intel(R) Node Manager

2. Glossary

Term	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <F2> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
BMC Configuration Utility	Software for setting BIOS and BMC. You can use as Windows application or run this software when pressing <F4> key during POST.
CPU/IO module	A module that includes CPUs (processors), memory, PCI boards, a cooling fan, hard disk drives and power supply units.
DUMP Switch	A switch that is used for collecting the memory dump if an error occurs. You can specify the destination of the dump by using the OS function.
EXPRESSBUILDER	Standard software with a feature that makes it easier to install Windows OS in Windows model. This also includes several useful applications and instruction manuals. (When installing OS other than Windows in ft server, the feature that helps easy OS installation is not available.)
EXPRESSSCOPE ENGINE 3	A name of BMC for NEC Express5800 series.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO Agent to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS.
ExpressUpdate	A feature for updating BIOS, firmware, driver, and other software of the server. This feature is available when NEC ESMPRO Manager cooperates with EXPRESSSCOPE ENGINE 3 and ExpressUpdate Agent.
ExpressUpdate Agent	Software for performing ExpressUpdate. This is installed to the server.
Flash FDD	An optional USB device that can use as a floppy disk drive.
NEC ESMPRO	Standard software for the server management. This consists of several applications for managing or monitoring.
NEC ESMPRO Agent	Software for monitoring the server. This works with NEC ESMPRO Manager and resides as the OS service.
NEC ESMPRO Agent Extension	Software for performing the scheduled operations. This works with NEC ESMPRO Manager.
NEC ESMPRO Manager	Software for managing a number of servers on network.
OEM driver	A Windows driver for the mass storage device.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can read and change SEL, SDR, FRU and other IPMI data. You can start Offline tools when pressing <F4> key during POST.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
Product Info Collection Utility	Software for collecting several hardware/software statuses and event logs. You can easily collect the data for the server maintenance by using this software.
Starter Pack	Software package for the server. This software includes the customized drivers for Windows. This must be installed before using Windows on the server.
Windows OS parameter file	A file that saved settings for installing Windows. You can install with the saved settings in this file when installing Windows with EXPRESSBUILDER.

3. Revision Record

Document Number	Date Issued	Description
30.104.01-101.01	February 2019	Newly created
30.104.01-101.02	July 2019	Added the description about VMware

[MEMO]

NEC Express Server
Express5800/R310g-E4, R320g-E4, R320g-M4
User's Guide

July 2019

NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan

© NEC Corporation 2019

The contents of this manual may not be copied or altered without the prior written permission of NEC Corporation.