



**N8100-1601F**  
**NEC Express5800/R140b-4**  
**User's Guide**

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Keep this User's Guide at hand for quick reference at anytime necessary.



## SAFETY INDICATIONS

Follow the instructions in this User's Guide for your safety to use the server.




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

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

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

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




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

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

(Example)

Symbol to draw attention

Term indicating a degree of danger










 <b>CAUTION</b>	
 	<p>Plug in to a proper power source. Use a proper wall outlet of the specified voltage. Use of an improper power source may cause a fire or a power leak.</p>

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







Description of a danger

# SYMBOLS USED IN THIS MANUAL AND WARNING LABELS




## Attentions

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

## Prohibited Actions

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

## Mandatory Action

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



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

### CE Statement

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

## BSMI Statement

警告使用者：

此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

有毒有害物质或元素的名称及含量

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板	×	○	○	○	○	○
处理器、内存	×	○	○	○	○	○
内置硬盘、光盘驱动器等	×	○	○	○	○	○
机箱、支架	○	○	○	○	○	○
电源	×	○	○	○	○	○
键盘	×	○	○	○	○	○
其他(电缆、鼠标等)	×	○	○	○	○	○

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Windows Server 2008 R2 stands for Microsoft® Windows Server® 2008 R2 Standard operating system and Microsoft® Windows Server® 2008 R2 Enterprise operating system. Windows 7 stands for Microsoft® Windows® 7 Professional operating system. Windows Server 2008 stands for Microsoft® Windows Server® 2008 Standard operating system and Microsoft® Windows Server® 2008 Enterprise operating system. Windows Vista stands for Microsoft® Windows Vista® Business operating system. Windows Server 2003 x64 Editions stands for Microsoft® Windows Server® 2003 R2, Standard x64 Edition Operating system and Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition operating system, or Microsoft® Windows Server® 2003, Standard x64 Edition operating system and Microsoft® Windows Server® 2003, Enterprise x64 Edition operating system. Windows Server 2003 stands for Microsoft® Windows Server® 2003 R2, Standard Edition operating system and Microsoft® Windows Server® 2003 R2, Enterprise Edition operating system, or Microsoft® Windows Server® 2003, Standard Edition operating system and Microsoft® Windows Server® 2003, Enterprise Edition operating system. Windows XP x64 Edition stands for Microsoft® Windows® XP Professional x64 Edition operating system. Windows XP stands for Microsoft® Windows® XP Home Edition operating system and Microsoft® Windows® XP Professional operating system. Windows 2000 stands for Microsoft® Windows® 2000 Server operating system and Microsoft® Windows® 2000 Advanced Server operating system, and Microsoft® Windows® 2000 Professional operating system. Windows NT stands for Microsoft® Windows NT® Server network operating system version 3.51/4.0 and Microsoft® Windows NT® Workstation operating system version 3.51/4.0. Windows Me stands for Microsoft® Windows® Millennium Edition operating system. Windows 98 stands for Microsoft® Windows®98 operating system. Windows 95 stands for Microsoft® Windows®95 operating system. WinPE stands for Microsoft® Windows® Preinstallation Environment.

## Momentary voltage drop prevention:

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

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## **PREFACE**

Welcome to the NEC Express5800/R140b-4 server.

The NEC Express5800 server holds powerful performance and employs the latest technology to implement a computer for the next generation. With its potential capabilities, the server may be used as the workstation PC that configures a client-server system and provides high-speed processing and superior reliability.

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

## ABOUT THIS USER'S GUIDE

This User's Guide is a guide for proper setup and use of the server.

This User's Guide also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of the server. Keep this manual for future use.

The following describes how to proceed with this User's Guide.

### How to Use This User's Guide

To aid you in finding information quickly, this User's Guide contains the following information:

**Chapter 1 Notes on Using Your Server**

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

**Chapter 2 General Description**

includes information necessary to use the server, such as names and functions of its components, handling of the optical disk drive.

**Chapter 3 Setting Up Your Server**

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

**Chapter 4 Configuring Your Server**

tells you how to configure the system and provides instructions for running the BIOS SETUP Utility and the RAID configuration utility, which is used to configure RAID drives in your system.

This chapter also provides information on mother board jumper settings.

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

describes how to install the operating system.

**Chapter 6 Installing and Using Utilities**

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

**Chapter 7 Maintenance**

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

**Chapter 8 Troubleshooting**

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

**Chapter 9 Upgrading Your Server**

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

**Appendix A Specification**

provides specifications for your server.

**Appendix B Other Precautions**

provides supplementary notes on using the server.

**Appendix C IRQ**

provides a list of factory-set IRQs.

**Appendix D Installing Windows Server 2008 R2**

describes how to install Microsoft Windows Server 2008 R2 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2008 R2. See Chapter 5 for details.

**Appendix E Installing Windows Server 2008**

describes how to install Microsoft Windows Server 2008 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2008. See Chapter 5 for details.

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

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

**Appendix G Installing Windows Server 2003**

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

**Appendix H Using a Client Computer Which Has a CD Drive**

describes how to install the management software of EXPRESSBUILDER to the client computer without the DVD drive.

**Appendix I Accessing Power and Performance Data**

describes how to collect the power and performance data, including power consumption, inlet air temperature, and processor utilization of NEC Express server.

**Appendix J Product Configuration Record Table**

provides a table to be filled with your server configuration.

**Text Conventions**

The following conventions are used throughout this User's Guide. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

**IMPORTANT:** Items that are mandatory or require attention when using the server.

**NOTE:** Notes give important information about the material being described.

**IN THE PACKAGE**

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

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

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## CONTENTS

Preface .....	i
About This User's Guide .....	ii
In the Package .....	iii
 <b>Chapter 1 Notes on Using Your Server .....</b>	 <b>1-1</b>
Warning Labels .....	1-2
Safety Notes .....	1-3
General .....	1-3
Rack .....	1-5
Power Supply and Power Cord Use .....	1-6
Installation, Relocation, Storage, and Connection .....	1-8
Cleaning and Working with Internal Devices .....	1-10
During Operation .....	1-12
For Proper Operation .....	1-13
Transfer to Third Party .....	1-15
Consumables .....	1-16
Disposal of the Server .....	1-16
Regarding the Transportation of this System .....	1-16
User Support .....	1-17
 <b>Chapter 2 General Description .....</b>	 <b>2-1</b>
Overview .....	2-2
External View .....	2-3
Front View .....	2-4
Front View (with Front Bezel Removed) .....	2-5
Front View (Control Panel) .....	2-6
Rear View .....	2-7
Internal View .....	2-8
Mother Board .....	2-9
Memory Back Board .....	2-11
I/O Riser Board .....	2-12
SAS RAID Controller (for internal hard disk drive, option) .....	2-13
Standard Features .....	2-14
Remote Management Feature .....	2-15
Degradation Feature .....	2-16
Memory RAS Features .....	2-16
Remote Power-On Feature (Wake On LAN) .....	2-16
AC-Link Feature .....	2-16
System Security .....	2-17
NEC EXPRESSBUILDER .....	2-18
NEC ESMPRO .....	2-19
Maintenance Tools .....	2-19
System Diagnostic Utility .....	2-19

---

Using Your Server.....	2-20
Front Bezel.....	2-20
POWER Switch.....	2-21
POST.....	2-23
Floppy Disk Drive.....	2-27
Optical Disk Drive.....	2-28
<b>Chapter 3 Setting Up Your Server.....</b>	<b>3-1</b>
Setup Flow.....	3-2
Selecting a Site.....	3-3
Installing or Removing the Server into/from the Rack.....	3-6
Required Tools.....	3-6
Preparation.....	3-7
Connecting Peripheral Devices.....	3-17
Connecting Power Cord.....	3-19
Turning On the Server.....	3-22
Installing Operating System.....	3-24
Installing Utilities.....	3-24
Making Backup Copies of System Information.....	3-24
<b>Chapter 4 Configuring Your Server.....</b>	<b>4-1</b>
System BIOS ~ SETUP ~.....	4-1
Starting SETUP Utility.....	4-2
Description on On-Screen Items and Key Usage.....	4-3
Configuration Examples.....	4-4
Menu and Parameter Descriptions.....	4-9
RAID System Configuration.....	4-30
RAID.....	4-30
Configuration by N8103-129/130 RAID Controller.....	4-37
Using WebBIOS.....	4-37
Configuring Virtual Drive.....	4-54
Operation of Various Features.....	4-71
Locate.....	4-82
Slow Initialize.....	4-83
WebBIOS and Universal RAID Utility.....	4-84
Configuration by N8103-134 RAID Controller.....	4-86
Starting and Exiting SuperBuild Utility.....	4-86
Configuring RAID System.....	4-110
Deleting RAID System.....	4-118
Configuring Mother board Jumpers.....	4-119
Clearing CMOS Data.....	4-121
Clearing Password.....	4-122

<b>Chapter 5 Installing the Operating System with Express Setup .....</b>	<b>5-1</b>
About Express Setup.....	5-2
Windows Server 2008 R2 .....	5-3
Notes on Windows Installation.....	5-3
Flow of Setup .....	5-8
Installing the Windows Server 2008 R2 .....	5-9
Installing and Setting Device Drivers.....	5-22
Setting for Solving Problems.....	5-28
BitLocker.....	5-28
Windows Server 2008 .....	5-29
Notes on Windows Installation.....	5-29
Flow of Setup .....	5-35
Installing the Windows Server 2008.....	5-36
Installing and Setting Device Drivers.....	5-50
The procedure to set PAE option .....	5-57
Setting for Solving Problems.....	5-57
Windows Server 2003 .....	5-58
Notes on Windows Installation.....	5-58
Flow of Setup.....	5-63
Installing Windows Server 2003 .....	5-64
Installing and Setting Device Drivers .....	5-74
PROSet .....	5-74
Network Driver.....	5-76
Optional Network Board Driver (N8104-121/125A/126) .....	5-77
Optional Network Board Driver (N8104-123A) .....	5-77
Setup Team .....	5-78
Setting WOL.....	5-80
Graphics Accelerator Driver .....	5-82
Installing SCSI Controller Driver (N8103-107) .....	5-82
Installing RAID Controller Driver (N8103-115).....	5-82
Installing SAS Controller Driver (N8103-104A) .....	5-82
The procedure to set PAE option .....	5-83
Setting for Solving Problems.....	5-84
Setting for Solving Problems .....	5-85
Memory Dump (Debug Information) .....	5-85
How to Create a User-mode Process Dump File .....	5-92
Network Monitor.....	5-95
Re-installing the Operation System if Multiple Logical Drives Exist .....	5-97
Installing Maintenance Utilities .....	5-99
Updating the System .....	5-99
Making Backup Copies of System Information.....	5-99
Installing with the OEM-Disk for Mass Storage Device .....	5-100
Installation of Mass Storage Device not to be Supported by Express Setup .....	5-100



---

<b>Chapter 6 Installing and Using Utilities .....</b>	<b>6-1</b>
NEC EXPRESSBUILDER .....	6-2
Autorun Menu .....	6-7
Parameter File Creator .....	6-8
Parameter File .....	6-9
NEC ESMPRO .....	6-22
Functions and Features .....	6-22
NEC ESMPRO Agent Extension .....	6-23
NEC ExpressUpdate Agent .....	6-23
Universal RAID Utility .....	6-24
Setup with Express Setup .....	6-24
Manual Setup .....	6-25
Management of RAID System using NEC ESMPRO Manager .....	6-26
Creating Logical Drive of RAID 6 .....	6-26
NEC Product Info Collection Utility .....	6-27
Installation .....	6-27
Using Utility .....	6-28
Uninstallation .....	6-28
 <b>Chapter 7 Maintenance .....</b>	 <b>7-1</b>
Making Backup Copies .....	7-1
Cleaning .....	7-2
Cleaning the Server .....	7-2
Cleaning the Keyboard/Mouse .....	7-3
Cleaning CD/DVD-ROM .....	7-4
Maintenance Tools .....	7-5
Starting Maintenance Tools .....	7-5
Function of Maintenance Tools .....	7-8
Maintenance Tools with Remote Console .....	7-10
System Diagnostics .....	7-12
Test Items .....	7-12
Startup and Exit of System Diagnostics .....	7-12
Relocating/Storing the Server .....	7-15

<b>Chapter 8 Troubleshooting .....</b>	<b>8-1</b>
System Viewers.....	8-2
Processor Degradation .....	8-3
Checking the Degraded Processor .....	8-3
Memory Degradation .....	8-5
Checking the Degraded System Memory DIMM.....	8-5
Memory Sparing .....	8-7
Memory Mirroring.....	8-7
Memory Hot-Plug .....	8-8
Lamps .....	8-11
POWER Lamp.....	8-11
DISK ACCESS Lamp.....	8-12
LAN ACCESS Lamp.....	8-13
UID Lamp.....	8-14
Fan Lamp.....	8-15
STATUS Lamp .....	8-16
Power Unit Lamp .....	8-18
Fan Error Lamp .....	8-19
Memory Backboard Lamp.....	8-20
Hard Disk Drive Lamp (DISK Lamp).....	8-21
Error Messages .....	8-23
Error Messages after Power-on .....	8-23
POST Error .....	8-24
Beep Codes.....	8-53
Error Messages on Virtual LCD .....	8-54
Solving Problems .....	8-93
Problems with Server .....	8-93
Problems with Windows.....	8-100
Problems with NEC EXPRESSBUILDER.....	8-110
Problems with Express Setup .....	8-112
Problems with Windows Autorun Menu.....	8-113
Problems with RAID System and RAID Controller .....	8-114
Problems with N8190-127/131/153/154 FibreChannel Controller.....	8-116
Problems with Parameter File Creator.....	8-116
Collecting Event Log.....	8-117
Collect Configuration Information .....	8-118
Collecting Dr. Watson Diagnostic Information.....	8-118
Memory Dump .....	8-119
Recovery for Windows System.....	8-121
Remote Management Feature .....	8-122
Changing Setting for Management LAN.....	8-122
Resetting the Server .....	8-123
Forced Shutdown .....	8-124

---

<b>Chapter 9 Upgrading Your Server .....</b>	<b>9-1</b>
Safety Notes.....	9-2
Anti-static Measures .....	9-3
Preparing for Installation and Removal .....	9-4
Device Installation or Removal Procedure .....	9-5
2.5-inch Hard Disk Drive .....	9-5
Power Supply Unit .....	9-10
PIA Update Procedure.....	9-11
Top Cover.....	9-17
Memory Backboard.....	9-18
Memory Air Baffle.....	9-21
DIMM .....	9-22
Processor .....	9-37
5.25-inch Device Bay.....	9-43
Optical Disk Drive .....	9-45
PCI Board.....	9-49
 <b>Appendix A Specifications.....</b>	<b>A-1</b>
 <b>Appendix B Other Precautions.....</b>	<b>B-1</b>
Transfer Rate of the On-board LAN Controller .....	B-1
Server Management Software .....	B-1
Floppy Disk.....	B-1
CD/DVD-ROM .....	B-2
Tape Media.....	B-3
Keyboard.....	B-3
Mouse.....	B-4
 <b>Appendix C PCI-related Assignments .....</b>	<b>C-1</b>
 <b>Appendix D Installing Windows Server 2008 R2 .....</b>	<b>D-1</b>
Notice .....	D-1
Optional Board Supported by NEC EXPRESSBUILDER.....	D-1
Service Pack Which EXPRESSBUILDER Supports .....	D-2
Connecting Hard Disk Drive.....	D-2
Updating System .....	D-2
Installing on the Mirrored Volume .....	D-2
Mounting MO Device .....	D-2
About Removable Media .....	D-2
Floppy Disk Drive.....	D-2
About the System Partition Size.....	D-3
BitLocker .....	D-5
Installing Windows Server 2008 R2 .....	D-6
Preparations for Installation .....	D-6
Windows Server 2008 R2 Clean Installation.....	D-6
Procedure for License Authentication .....	D-16
Updating the System .....	D-16

Driver Installation and Advanced Settings .....	D-19
LAN Driver and PROSet .....	D-19
Network Driver .....	D-20
Optional Network Board Driver (N8104-121/125A/126) .....	D-20
Setup Team .....	D-21
Setting WOL .....	D-24
Graphics Accelerator Driver .....	D-25
Installing SCSI Controller Driver (N8103-107) .....	D-26
Installing SAS Controller Driver (N8103-104A) .....	D-26
Installing RAID Controller Driver (N8103-115) .....	D-26
Installing the Fibre Channel Controller Driver (N8190-127/131/153/154) .....	D-26
About Windows Activation .....	D-27
Setting for Solving Problems .....	D-32

## **Appendix E Installing Windows Server 2008 .....E-1**

Notice .....	E-1
Optional Board Supported by NEC EXPRESSBUILDER .....	E-1
Service Pack Which EXPRESSBUILDER Supports .....	E-2
Installing Service Pack .....	E-2
Connecting Hard Disk Drive .....	E-2
Updating System .....	E-2
Installing on the Mirrored Volume .....	E-2
Mounting MO Device .....	E-2
About Removable Media .....	E-3
Floppy Disk Drive .....	E-3
About the System Partition Size .....	E-4
BitLocker .....	E-7
Installing Windows Server 2008 .....	E-8
Preparations for Installation .....	E-8
Windows Server 2008 Clean Installation .....	E-8
Procedure for License Authentication .....	E-18
Updating the System .....	E-18
Driver Installation and Advanced Settings .....	E-21
LAN Driver and PROSet .....	E-21
Network Driver .....	E-23
Optional Network Board Driver (N8104-121/125A/126) .....	E-23
Setup Team .....	E-24
Setting WOL .....	E-26
Graphics Accelerator Driver .....	E-27
Installing SCSI Controller Driver (N8103-107) .....	E-28
Installing SAS Controller Driver (N8103-104A) .....	E-28
Installing RAID Controller Driver (N8103-115) .....	E-28
Installing the Fibre Channel Controller Driver (N8190-127/131) .....	E-28
About Windows Activation .....	E-29
The procedure to set PAE option .....	E-33
Setting for Solving Problems .....	E-34

---

**Appendix F Installing Windows Server 2003 x64 Editions ..... F-1**

Notice .....	F-1
Optional Board Supported by NEC EXPRESSBUILDER.....	F-1
Service Pack Which EXPRESSBUILDER Supports .....	F-2
Installing Service Pack .....	F-2
Connecting Hard Disk Drive .....	F-2
Updating System .....	F-2
Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk .....	F-2
Mounting MO Device .....	F-2
About Removable Media .....	F-3
Floppy Disk Drive .....	F-3
About the System Partition Size .....	F-4
Installing Windows Server 2003 x64 Editions.....	F-5
Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" .....	F-5
Windows Server 2003 x64 Editions Clean Installation .....	F-8
Procedure for License Authentication .....	F-12
Updating the System - Applying Service Pack - .....	F-13
Driver Installation and Advanced Settings .....	F-20
PROSet .....	F-20
Network Driver .....	F-22
Optional Network Board Driver (N8104-121/125A/126) .....	F-23
Optional Network Board Driver (N8104-123A) .....	F-23
Setup Team .....	F-24
Setting WOL .....	F-26
Graphics Accelerator Driver.....	F-28
Installing SCSI Controller Driver (N8103-107) .....	F-28
Installing SAS Controller Driver (N8103-104A) .....	F-28
Installing RAID Controller Driver (N8103-115).....	F-29
About Windows Activation .....	F-30
Setting for Solving Problems.....	F-32

**Appendix G Installing Windows Server 2003.....G-1**

BEFORE INSTALLING WINDOWS SERVER 2003 .....	G-1
Optional Board Supported by NEC EXPRESSBUILDER.....	G-1
Service Pack Which EXPRESSBUILDER Supports .....	G-2
Application of Service Pack .....	G-2
Connecting Hard Disk Drive .....	G-2
Updating System .....	G-2
Re-installing to the Hard Disk which has been upgraded to Dynamic Disk .....	G-2
Mounting MO Device .....	G-2
About Removable Media .....	G-3
Floppy Disk Drive .....	G-3
About the System Partition Size .....	G-4

---

Installing Windows Server 2003 .....	G-5
Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" .....	G-5
Windows Server 2003 Clean Installation .....	G-7
Procedure for License Authentication .....	G-11
Updating the System - Applying Service Pack - .....	G-11
Driver Installation and Advanced Settings .....	G-17
PROSet .....	G-17
Network Driver .....	G-18
Optional Network Board Driver (N8104-121/125A/126) .....	G-19
Optional Network Board Driver (N8104-123A) .....	G-19
Setup Team .....	G-20
Setting WOL .....	G-20
Graphics Accelerator Driver .....	G-22
Installing SCSI Controller Driver (N8103-107) .....	G-22
Installing SAS Controller Driver (N8103-104A) .....	G-22
Installing RAID Controller Driver (N8103-115) .....	G-23
About Windows Activation .....	G-24
The procedure to set PAE option .....	G-26
Setting for Solving Problems .....	G-27
<b>Appendix H Using a Client Computer Which Has a CD Drive .....</b>	<b>H-1</b>
<b>Appendix I Accessing Power and Performance Data .....</b>	<b>I-1</b>
Windows .....	I-1
Power Consumption .....	I-1
Inlet Air Temperature .....	I-3
Processor Utilization .....	I-8
Linux .....	I-10
Power Consumption .....	I-10
Inlet Air Temperature .....	I-11
Processor Utilization .....	I-12
<b>Appendix J Product Configuration Record Table .....</b>	<b>J-1</b>
Hardware .....	J-1
Software .....	J-5

# **Chapter 1**

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## **Notes on Using Your Server**

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

## WARNING LABELS

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

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

<p><b>⚠ 注意 CAUTION</b></p> <p>オプションの付け、取外し時はすべての電源プラグをコンセントから抜き、外部装置と接続したケーブルを外して下さい。</p> <p>進行可能部品の安裝和拆卸时，请先从电源插头从插座中拔出，并取下与外部设备连接的线轴。</p> <p>Disconnect all AC power cords from both system and external peripherals prior to installing/removing options.</p>	 <p>電源プラグを抜く 抜き方を見てください。 感電注意 有触电危险</p>
<p>ネジは本体内部へ落とさない様、十分ご注意ください。</p> <p>请一定注意不要将螺丝掉落在主机内部。</p> <p>Do not drop any screws inside the system.</p>	
<p>PCI及びUSB機器の接続の際は、必ずユーザーズガイドを参照し、正しく接続して下さい。</p> <p>请注意：即使用户的画面显示为“用户指南”，对板卡以及可选设备的连接时，请务必参阅“用户指南”。</p> <p>正确进行连接。如果错误连接，可能会导致故障或火灾的发生。</p> <p>Refer to the User's Guide when option cards or peripherals are installed. Incorrect installations may result in damage to the system and lead to accidents.</p>	
<p>装置の持ち上げ、移動の際は、装置の底面をしっかり持って持ち上げて下さい。</p> <p>抬起或移动设备时，请注意托稳设备底部。</p> <p>Firmly hold the bottom of the system when required to lift and carry the system.</p> <p>電源を切ってもバッテリーで稼働している部分があります。保守をするまえに各々のコンポーネントの取り除き説明書をお読みください。</p> <p>有的部件即使切断电源仍然使用电池在运行。进行设备维护前，请事先阅读各部件相关的说明书。</p>	
<p>Some internal components may still be operational with battery power. Refer to instruction manuals for this system as well as options prior to maintenance.</p> <p>高温になるコンポーネントがあります。十分に冷えてから触れるようにしてください。</p> <p>有的部件可能会达到高温，请注意等待其冷却之后再接触。</p> <p>As some components may become very hot during system operation give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down.</p>	
<p>動作時および電源を切った直後は、ハードディスクの表面が高温になっているので注意して下さい。</p> <p>设备运行时以及刚刚切断电源后，硬盘表面温度会很高，请注意注意。</p> <p>As the hard disk drives may retain heat after powering down allow ample for cooling prior to handling.</p>	
<p>Diskトレイを抜き差しする際は、指を挟まないよう注意して下さい。</p> <p>插拔磁盘托架时请务必不要夹手。</p> <p>To avoid the risk of personal injury, handle the disk tray with care when inserting/removing from the system.</p>	 <p>手指被夹伤的危险</p>

重量物注意  
注意重荷  
WARNING:  
HEAVY ITEM



ぎっくり腰や落下事故防止のため移動のさいは3人以上で行って下さい。

为防止腰肌受损以及物体失手落下，移动设备时请一定由3人以上进行。

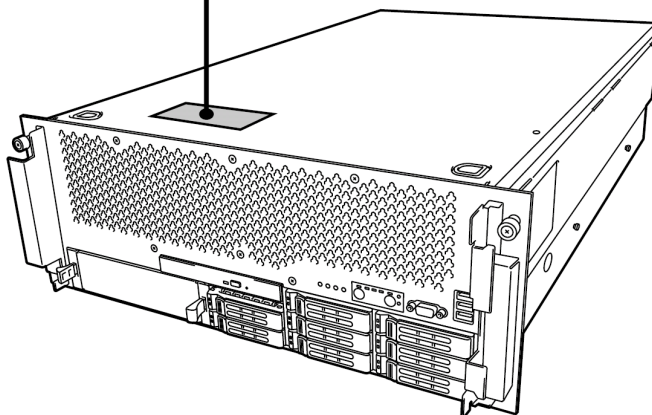
To avoid the risk of personal injury or damage to the unit, move the unit with at least three or more people.



BOXING OVER THE HEADS



TRIPPING OVER CABLES















## SAFETY NOTES

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

For part names described in the safety instruction chapter in this guide, refer to "Features and Controls" in Chapter 2.

### General

 <b>WARNING</b>	
	<p>Do not use the server for services where critical high availability may directly affect human lives.</p> <p>Your server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.</p>
 	<p>Do not use the server if any smoke, odor, or noise is present.</p> <p>If smoke, odor, or noise is present, immediately turn off the server and disconnect the power plug from the outlet, then contact your service representative. Using the server in such conditions may cause a fire.</p>
 	<p>Keep needles or metal objects away from the server.</p> <p>Do not insert needles or metal objects into ventilation holes in the server or openings in the floppy disk or optical disk drive. Doing so may cause an electric shock.</p>
	<p>Always install the server on a rack conforming to the relevant standard.</p> <p>Install the server on a rack confirming to the EIA standard for the server to be used. Do not use the server with installed on any other rack than standard EIA 19-inch rack or without the installation on a proper rack. Failure to follow these instructions may cause your server to operate incorrectly and/or personal injury or damages of surrounding devices to occur. Contact your service representative for the racks available for your server.</p>
  	<p>Do not use the server in any unapproved place.</p> <p>Install the server on a standard EIA 19-inch rack cabinet. Do not install the rack containing the server in a place inappropriate to the rack installation environment.</p> <p>Failure to follow these instructions may cause some bad influences to be imposed on your server and other systems installed on the rack and also a fire or personal injury due to falling of the rack may occur. For the detailed explanation on the place where your server should be installed and the earthquake-resistant construction for the rack, refer to the manual attached to the rack or contact your service representative.</p>

**⚠ CAUTION**



Keep water or foreign matter away from the server.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server. Contact your service representative.

## Rack

### ⚠ CAUTION



Do not provide the wiring for the server to exceed the rating of the power supply.

To prevent burns, fires, and server damages, the power supplied to the power supply in the rack shall not exceed the rating load of the power branch circuit. Contact your electric constructor or the local power company for the requirements on the wiring and installation of electric facilities.



Do not carry or install the server only by a single person.

More than one person is required to carry or install the rack. Failure to follow this instruction may cause the rack to fall to result in personal injury and/or breakages of surrounding servers. In particular, a high rack (such as 44U rack) is unstable if it is not fixed by stabilizers. More than one person must always carry or install the rack while they support it.



Do not install the server so that the load may be concentrated on a specific point.

Install stabilizers on the rack so that the total load of the rack and servers mounted on the rack is not concentrated on a single point or join more than one rack with each other to distribute the load. Failure to follow this instruction may cause the rack to fall to result in personal injury.



Do not install components on the server only by a single person.

More than one person is required to install parts including the doors and trays for the rack. Failure to follow this instruction may cause some parts to fall to be broken and/or to result in personal injury.



Insert hinges completely.

When installing the rack door, make sure that hinge pins at top and bottom of the door are completely inserted into the rack. Failure to follow this instruction may cause the door to fall to be broken and/or to result in personal injury.



Do not pull out a server from the rack if the rack is unstable.

Always pull out a server from the rack in the state that the rack is made stable (by the installation of stabilizers or earthquake-resistant construction). Failure to follow this instruction may cause the rack to fall to result in personal injury.



Do not leave more than one server being pulled out from the rack.

Pulling out more than one server from the rack may cause the rack to be fallen. Only pull out a single server from the rack at a time. Failure to follow this instruction may cause the rack to fall to result in personal injury.

## Power Supply and Power Cord Use

### WARNING



Do not hold the power plug with a wet hand.

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

### CAUTION



Plug in to a proper power source.

Use a grounded wall outlet of specified voltage. Use of an improper power source may cause a fire or a power leak.

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



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

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



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

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

**⚠ CAUTION**

Use the authorized power cord only.

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

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



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

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



Do not pull the cable when disconnecting it.

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

## Installation, Relocation, Storage, and Connection

### ⚠ WARNING



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

### ⚠ CAUTION



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

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



Do not use the equipment in the place where corrosive gases exist. Make sure not to locate or use the server in the place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist. Also, do not set it in the environment where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals. There is a risk of a fire due to corrosion and shorts of an internal printed board.



Pay attention not to drop the server. Firmly hold the bottom of the server when installing/removing it in/from the rack. The server is locked temporarily at installation or removal. However, if the server is unlocked, it will be disengaged from the rack, and may fall. Failure to follow this instruction may cause personal injury.



Do not install the server on a rack with leaving covers removed. Do not install the server on a rack with the cover being removed. Failure to follow this instruction may reduce the cooling effect in the server to result in some malfunction and/or dusts to enter the server to result in a fire or electric shock.



Do not pinch your finger with rails or other components. Note sufficiently that your fingers may not be caught between a rail and another mechanical part or cut by a rail at installation or removal of the server from the rack.

**⚠ CAUTION**

Do not connect any interface cable with the power cord of the server plugged to a power source.

Except for hot-swap replaceable device, make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.



Never attempt to lift the server by two or less persons.

The server weighs max. 47 kg (depending on its hardware configuration). Carrying the server by two or less persons may strain their back. Hold the server firmly by its bottom with at least three persons to carry it. Be sure to remove the front bezel before carrying the server.



Do not use any unauthorized interface cable.

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

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

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

## Cleaning and Working with Internal Devices

### WARNING



Do not disassemble, repair, or alter the server.

Never attempt to disassemble, repair, or alter the server on any occasion other than described in this manual. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.



Do not look into the optical disk drive.

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



Do not remove the lithium and NiMH (or Li-Ion) batteries.

Your server contains the lithium and NiMH (or Li-Ion) batteries. Do not remove the battery. Danger of explosion if the battery is incorrectly replaced. Placing the battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium and NiMH (or Li-Ion) batteries, contact your service representative to replace only with the same or equivalent type recommended by NEC. Do not disassemble the server to replace or recharge the battery by yourself.



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

Except for hot-swap replaceable device, make sure to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even if the server is off-powered.

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



**⚠ CAUTION**

Avoid installation in extreme temperature conditions.

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



Make sure to complete installation.

Always install a power cable, interface cable, and/or board firmly. An incompletely installed component may cause a contact failure, resulting in smoking or fire.



Protect the unused connectors with the protective cap.

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



Avoid electric shock

All power flows inside the server while the hot-swap replaceable components (PCI add-in cards, hard disk drive, cooling fan, and power supply unit). Do not touch the electrical components inside the server to avoid an electric shock.

## During Operation

### ⚠ CAUTION



Avoid contact with the server during thunderstorms.

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



Keep animals away from the server.

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



Do not leave the server with its optical disk drive tray ejected.

Dust may enter the server through openings and cause malfunctions of the server. Any person may also bump it and get injured.



Do not place any object on top of the server.

An object placed on top of the server may fall down, resulting in damage to your property around the server.



Do not pull out or remove the server from the rack unnecessarily.

Do not pull out or remove the server from the rack unnecessarily. Pulling out or removing the server from the rack may cause not only the server to operate incorrectly but also the server to fall on people to make them injured.



Stay away from the fan.

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



Do not remove the cooling fans.

Only an authorized NEC service technician can remove the cooling fans from the server. Removing the rotating fan causes personal injury.

## FOR PROPER OPERATION

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

- Install the server in a place that meets requirements for successful operation. For details, see Chapter 3, "Setting Up Your Server".
- Make sure to power off the server before connecting or disconnecting cables between the server and peripheral devices (except for hot-swap replaceable device).
- Verify that the access lamp on the server is unlit before turning off the server or ejecting the floppy disk or CD/DVD-ROM.
- When plugging the power cord to the system, you may wait at least 30 seconds before turning on the server.
- When you have just turned off the DC power of the server, wait at least 30 seconds before turning it back on.
- When you have just turned off the AC power of the server, wait at least 60 seconds before turning it back on.
- Do not turn off the server until characters following the "NEC" logo appear on the screen. The time until the characters appear depends on your system configuration. Approximately, it may take one to five minutes.
- Turn off the power and unplug the power cord from the outlet before relocating the server.
- Clean the server on a regular basis. (See Chapter 7 for cleaning.) Regular cleaning proactively prevents various failures of the server.
- Lightning may cause a momentary voltage drop. To prevent this problem, it is recommended to use of an uninterruptible power supply unit.
- Check and adjust the system clock before the operation if any of the following conditions is applicable.
  - After carriage of the server
  - After storage of the server
  - After the server is entered into the pause state under the environmental condition enduring the server operation (temperature: 10°C - 35°C, humidity: 20% - 80%)
- Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).

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

- Store the unit under the storage condition (temperature: -10°C - 55°C, humidity: 20% - 80%, without condensation) to allow built-in devices and the unit to operate correctly in the next operation.
- Make sure to use optional devices supported by the server. Some non-supported devices may be physically installed/connected but cause failures of the server as well as malfunctions of the server.
- If the server or the internal option device is brought from a cold place to a warm place suddenly, the dew condensation may be generated resulting in malfunction or failure of the unit. Leave the unit in the operating environment until it fully adapts to the surroundings to protect the valuable data or property.

Guideline to eliminate dew condensation in winter time (10 degrees or more temperature difference from the room temperature exists):

- Disk drive: Two or three hours (approx.)
- Media: One day (approx.)
- Make sure to use optional devices supported by the server. Some non-supported devices may be physically installed/connected but cause failures of the server as well as malfunctions of the server.
- Some software includes a command to eject the tray or media (e.g., DAT) from the 5.25-inch device. Make sure that the front bezel is removed before running the command. Running this command with the front bezel installed may cause the optical disk drive tray or the media to hit against the front bezel, resulting in a failure of the server
- NEC recommends you use NEC's genuine products. Some third-party products claim that they support the server. However, repair of the server due to a failure or damage resulted from use of such third-party products will be charged.
- For the disk which does not conform to the CD or DVD standard, the playback of such a disk with the DVD drive is not guaranteed.
- Turn off the cellular phone or pager. Radio interference may cause malfunctions of the server.

## TRANSFER TO THIRD PARTY

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

### NEC Express server

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

---

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

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

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

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

---

### Provided software

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

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

## CONSUMABLES

Your server contains some components that are only good for a limited period of time and require replacement, such as batteries, fans, the internal optical disk drive, the floppy disk drive, and the mouse. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your service representative for replacement or the product lives.

## DISPOSAL OF THE SERVER

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

---

### IMPORTANT:

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

## REGARDING THE TRANSPORTATION OF THIS SYSTEM

This system and/or associated options and accessories may be using lithium metal batteries or lithium ion batteries.

There may be restrictions regarding the air or sea transportation of such lithium batteries.

Please contact your reseller or service company prior to transporting this system and/or its options.

## USER SUPPORT

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

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

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

## Advice for Health

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

### Good Working Posture

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

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

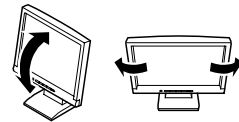
You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

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



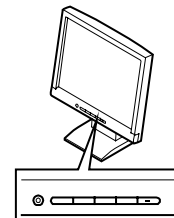
### Adjustment of Display Unit Angles

Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.



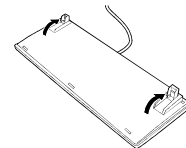
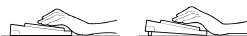
### Adjustment of Screen Brightness and Contrast

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



### Adjustment of Keyboard Angle

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



### Cleaning of Equipment

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

### Fatigue and Rest

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





# Chapter 2

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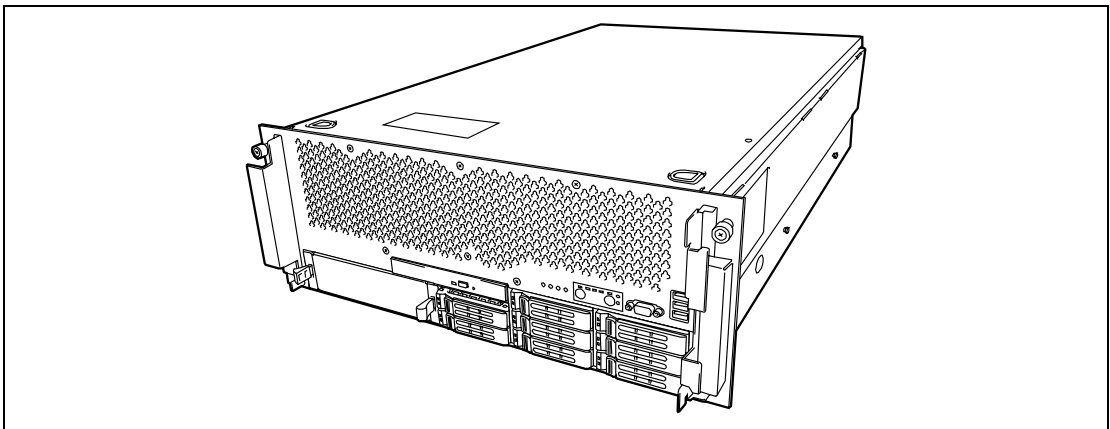
## General Description

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

### OVERVIEW

Your server is a highly reliable, high-powered, fault-tolerant, high-capacity, multiprocessing server based on the Intel® Xeon® Processor 7500 series. It is a solid performer and offers the latest technology. The combination of compute performance, memory capacity, and integrated I/O provides a high performance environment for many server market applications. These range from large corporations supporting remote offices to small companies looking to obtain basic connectivity capability such as file and print services, e-mail, web access, web site server, etc.

Your server is housed and available as a rack-mount system. Your server conveniently installs into a standard EIA 19-inch rack cabinet.



Your server includes an optical disk drive (option), a 2.5-inch hard disk drive bay, and removable media device bay (option). The 2.5-inch hard disk drive bay can contain up to eight hard disk drives.

As application requirements increase, you can expand your server with an additional processor, additional memory, add-in boards and peripheral devices.

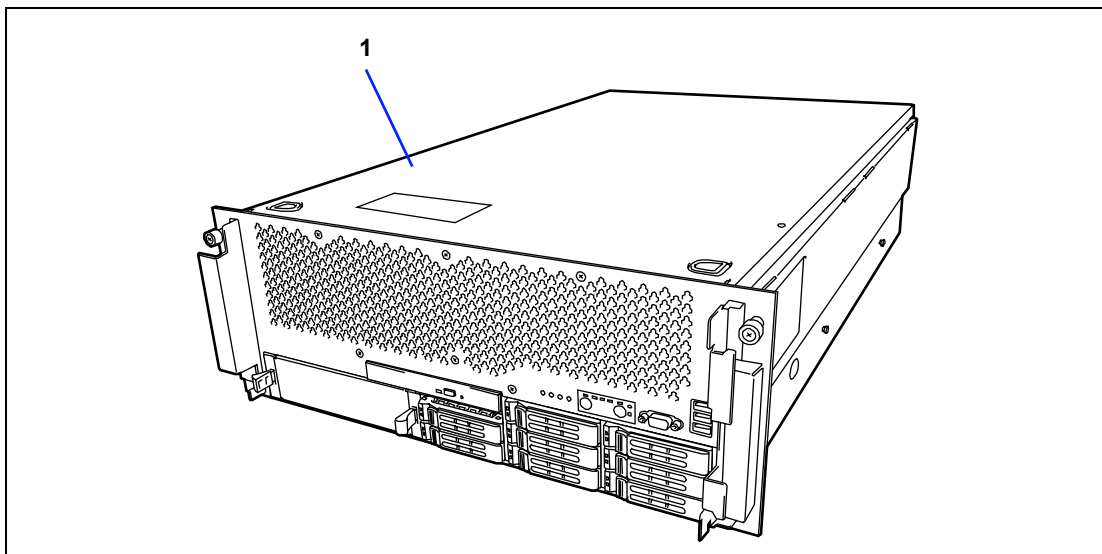
---

**IMPORTANT:** This guide contains procedures to use a floppy disk, however, your server is not equipped with factory-installed floppy disk drive and optical disk drive. Use the optional USB FDD and Flash FDD.

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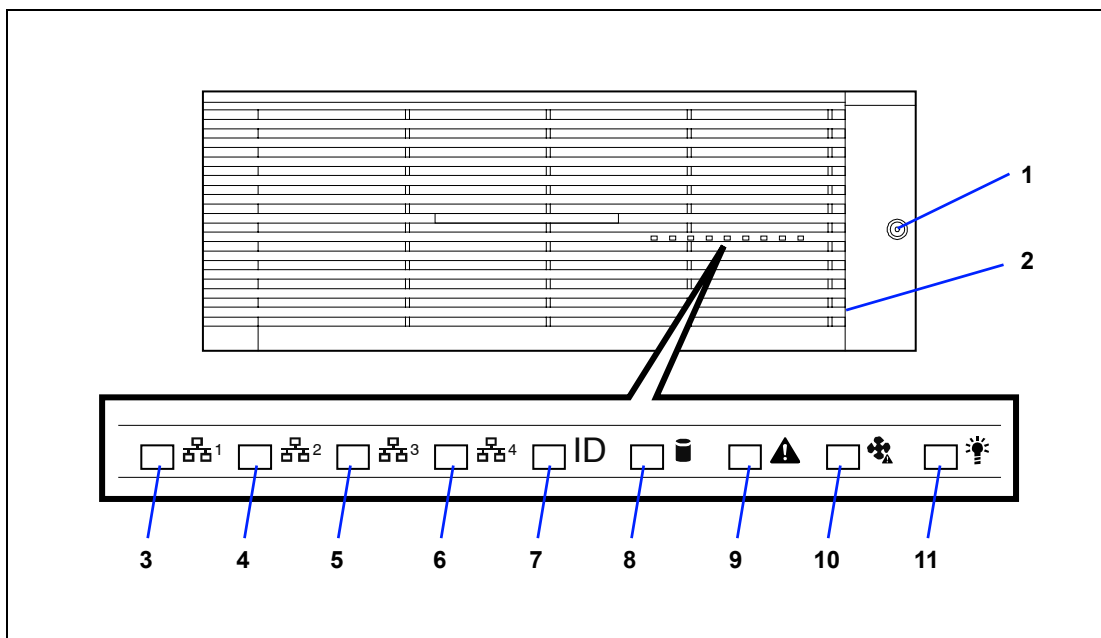
## External View



### 1 Top cover

Open the top cover to install or remove PCI boards and fans.

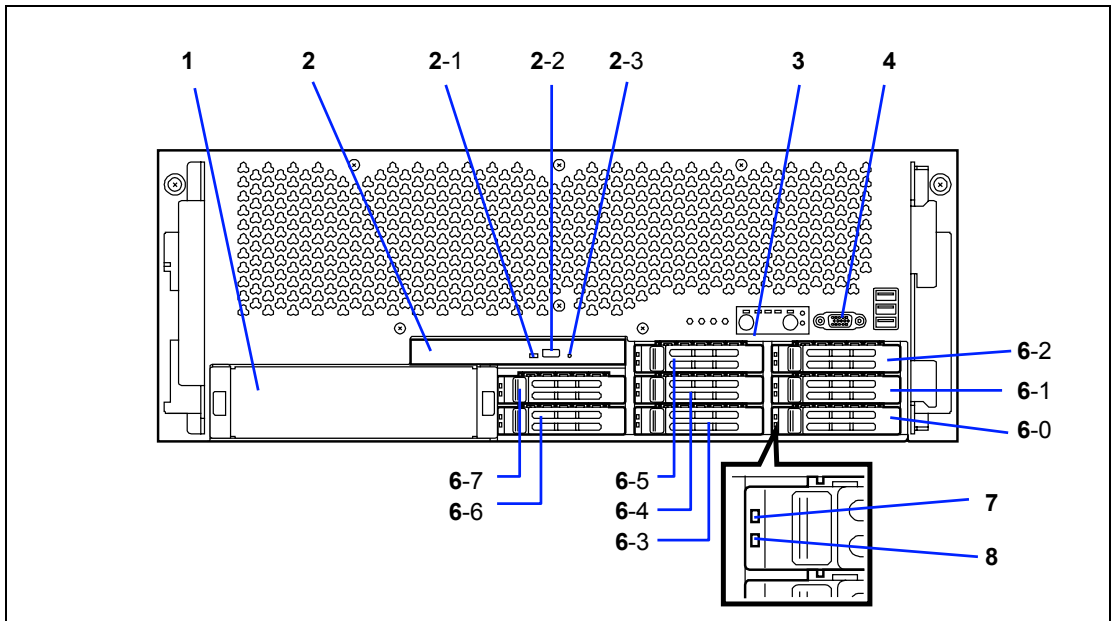
## Front View



- 1 Key slot**  
Insert the security key to lock/unlock the front bezel
- 2 Front bezel**  
Open the front bezel when you access to the POWER switch or optical disk drive, or install (or remove) 5.25-inch device (option), USB floppy disk drive, Flash FDD, hard disk drive, processor, memory back board, and DIMM.
- 3 LAN1 access lamp**
- 4 LAN2 access lamp**
- 5 LAN3 access lamp**
- 6 LAN4 access lamp**
- 7 UID (Unit ID) lamp**
- 8 DISK access lamp**
- 9 STATUS lamp**
- 10 Fan lamp**
- 11 POWER lamp**

## Front View (with Front Bezel Removed)

See Chapter 8 for detail information on lamp indication.



**1 5.25-inch device bay**

Install a 5.25-inch device into this slot.

**2 Optical disk drive (option)**

The optical disk drive reads data from the inserted CD/DVD-ROM.

The following drive can be installed.

- DVD-ROM drive

2-1: Access lamp

2-2: Tray eject button

2-3: Emergency hole

**3 Control panel**

**4 Monitor connector (only for maintenance use)**

Do not connect any display unit. This connector is exclusively used for maintenance.

**5 Front USB1 (top) / Front USB2 (middle) / Front USB3 (bottom) connectors**

Connect a device supporting US 2.0 (Hi-speed) interface.

**6 2.5-inch disk bay**

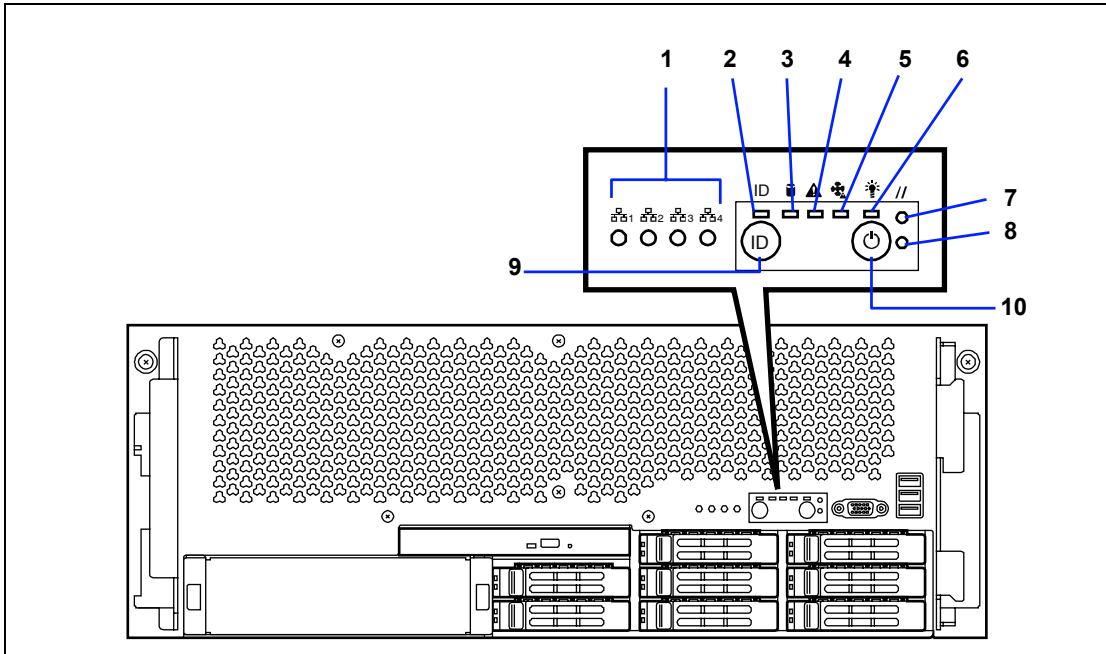
Install a 2.5-inch hard disk drive. The last digit represents a channel number.

**7 DISK Access lamp**

**8 DISK Error lamp**

## Front View (Control Panel)

See Chapter 8 for detail information on lamp indication.



**1 LAN1 lamp / LAN2 lamp / LAN3 lamp / LAN4 lamp** (from left to right)

**2 UID (Unit ID) lamp**

**3 DISK Access lamp**

**4 STATUS lamp**

**5 FAN lamp**

**6 POWER lamp**

**7 RESET switch**

**8 DUMP (NMI) switch**

Press this switch to dump system memory. In normal operation, this switch is not used.

**9 UID (Unit ID) switch**

Use this switch to turn on or off the ID lamp located on the front and rear panels of the server. Pressing this switch once turns on the UID lamp, and pressing again turns off.

**10 POWER switch**

Use this switch to power on/off the server. If you press the switch once, then the POWER lamp goes on and the power is turned on. If you press the switch again, the power is turned off. The system is forcibly shutdown when the power switch is pressed continuously for four seconds or longer.

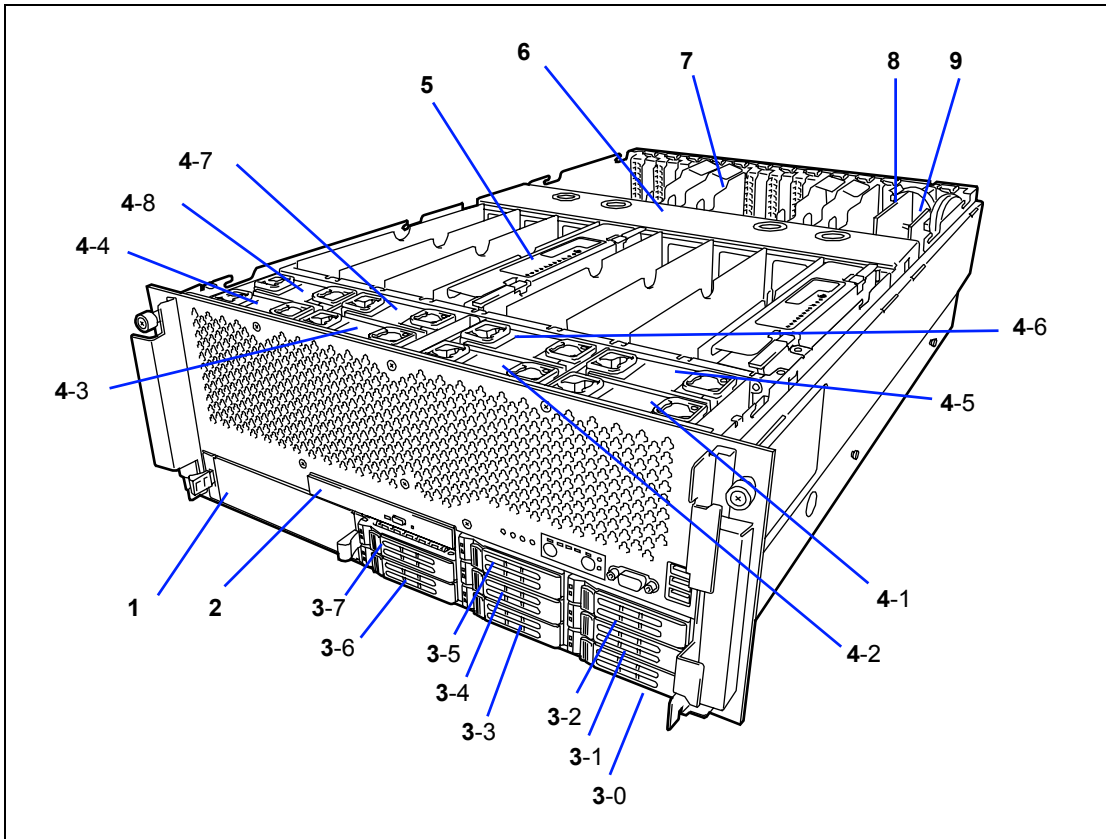
- 1 LAN connector**  
Used to connect with a network system on LAN. The last digit represents the port number.  
\* The number may differ from that shown on OS.
- 2 Management LAN port**  
The connector is used to connect with 100BASE-TX/10BASE-T interface.  
Cannot be used for data transmission. Used to connect with EXPRESSSCOPE Engine 2.
- 3 SAS riser card slot**  
Used to connect a RAID Controller for internal hard disk drives.
- 4 POST code lamp**  
Displays the POST progress code. The bottom lamp indicates the Most Significant Bit (MSB), and the top lamp indicates the Least Significant Bit (LSB).
- 5 Rear USB1, Rear USB2 connectors**  
Used to connect with devices accepting the USB 2.0 interface. The last digit represents the connector number.
- 6 STATUS lamp (green/amber)**  
This lamp indicates the server status. The lamp is green during normal operation. The lamp turns amber or blinks when the server enters the abnormal state.
- 7 UID lamp / UID switch**  

7-1: UID lamp

7-2: UID switch

Press the UID switch to turn on/off the UID lamp. Pressing the switch once turns on the lamp. Pressing it again turns it off.
- 8 Monitor connector**  
Used to connect with the display unit.
- 9 Serial port A connector**  
Used to connect with a device having the serial interface.  
The server cannot directly be connected to a leased line through the connector.
- 10 PCIe slot (#1 to #11 from left)**  
Used to install the optional PCI board.
- 11 AC inlet**  
Used to connect with the power cord of the server.
- 12 Power supply unit**  
The power supply unit supplies DC powers to the server. The last digit represents the slot number. Slots 3 and 4 are for additional power supply unit (option).

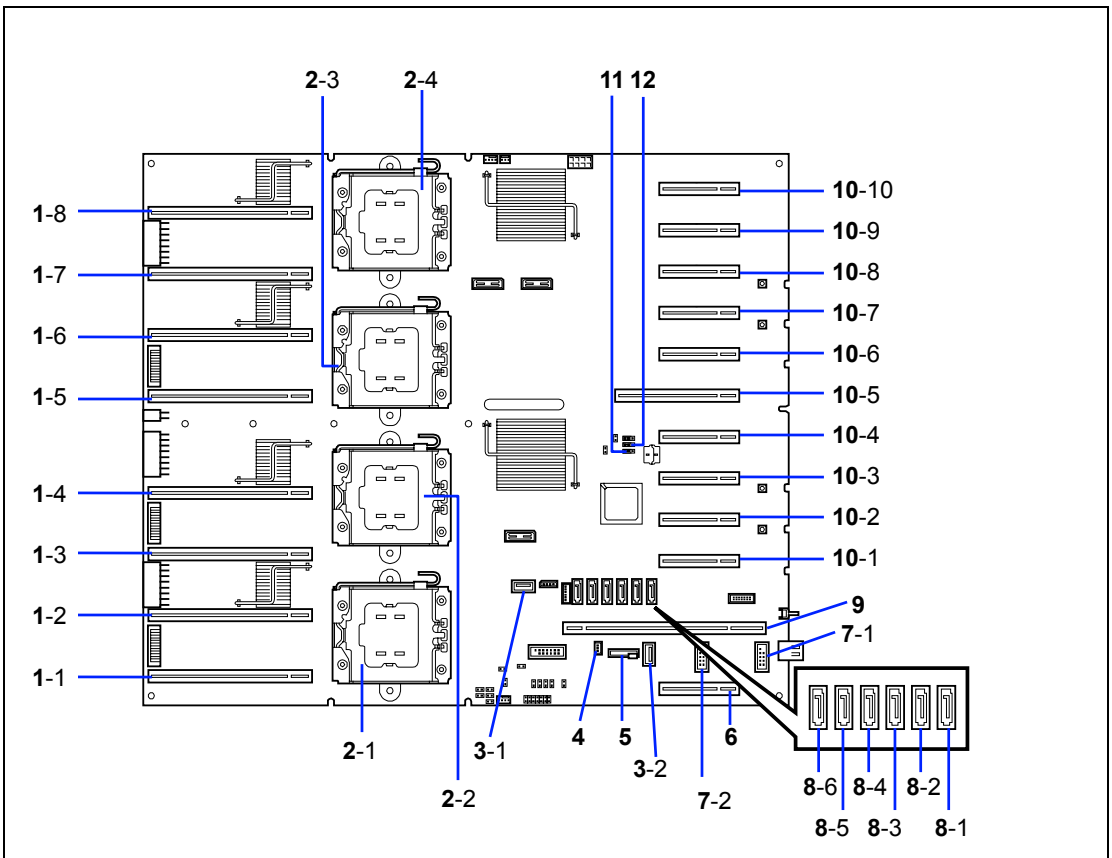
## Internal View



- 1 5.25-inch device bay**
- 2 Optical disk drive bay**
- 3 Hard disk drive bay**  
The last digit represents a drive bay number.
- 4 Cooling fan**  
The last digit indicates a fan number.
- 5 Memory back board**  
Slots 1 to 8 from right to left.
- 6 CPU cover**
- 7 PCI-Express slot**
- 8 I/O riser board**
- 9 SAS RAID controller board**



## Mother Board



- 1 Memory back board slot**  
The last digit represents slot number.  
In 2-CPU configuration:  
1-1, 1-5: Installation order: First  
1-2, 1-6: Installation order: Second  
In 4-CPU configuration:  
1-1, 1-3, 1-5, 1-7: Installation order: First  
1-2, 1-6: Installation order: Second  
1-4, 1-8: Installation order: Third
- 2 Processor (CPU) socket**  
The last digit represents socket number.  
2-1, 2-3: Installation order: First  
2-2, 2-4: Installation order: Second
- 3 Internal USB connector (Type A)**  
The last digit represents slot number.
- 4 Disk activity cable connector**
- 5 Lithium battery**

**6 SAS riser card slot**

**7 Internal USB connector (BOX)**

The last digit represents slot number.

**8 SATA connector**

8-1: SATA connector 0 (for optical disk drive)

8-2: SATA connector 1

8-3: SATA connector 2

8-4: SATA connector 3

8-5: SATA connector 4

8-6: SATA connector 5

**9 I/O riser card slot**

**10 PCI-Express board slot**

The last digit represents slot number.

10-1: PCI Express 2.0, 8-lane, hot-plug available

10-2: PCI Express 2.0, 8-lane, hot-plug available

10-3: PCI Express 2.0, 4-lane (connector for 8-lane)

10-4: PCI Express 2.0, 4-lane (connector for 8-lane)

10-5: PCI Express 2.0, 16-lane

10-6: PCI Express 2.0, 8-lane, hot-plug available

10-7: PCI Express 2.0, 8-lane, hot-plug available

10-8: PCI Express 2.0, 4-lane (connector for 8-lane)

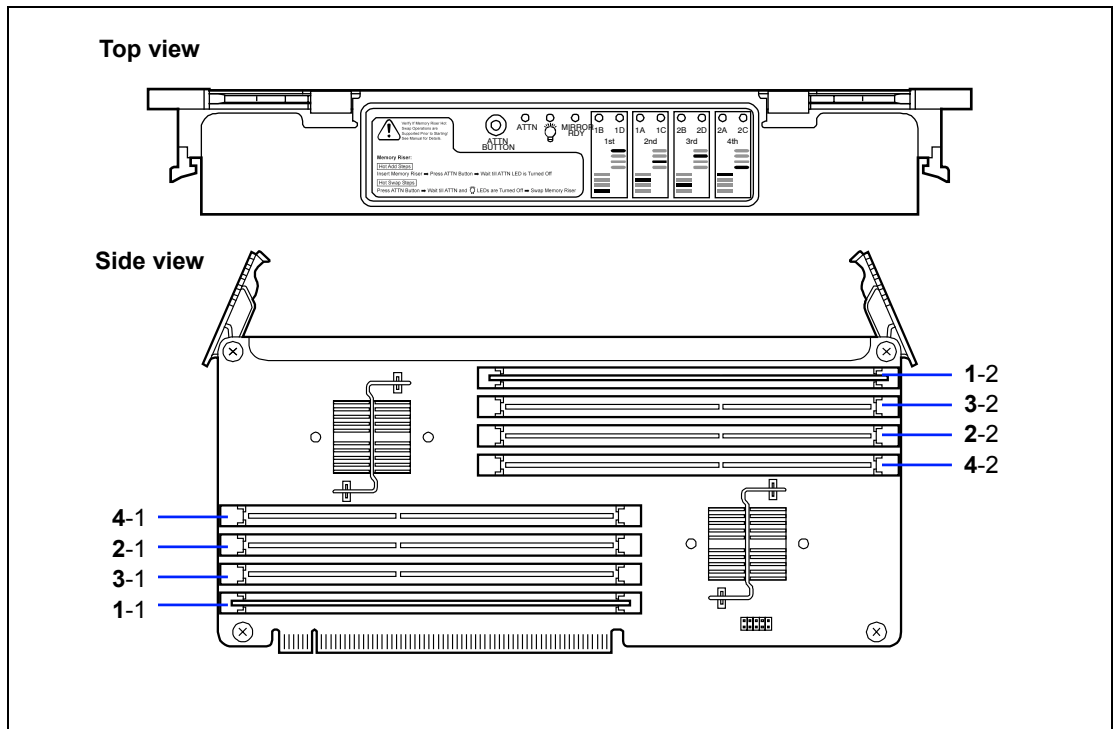
10-9: 4-lane (connector for 8-lane)

10-10: 4-lane (connector for 8-lane)

**11 CMOS clear jumper switch**

**12 Password clear jumper switch**

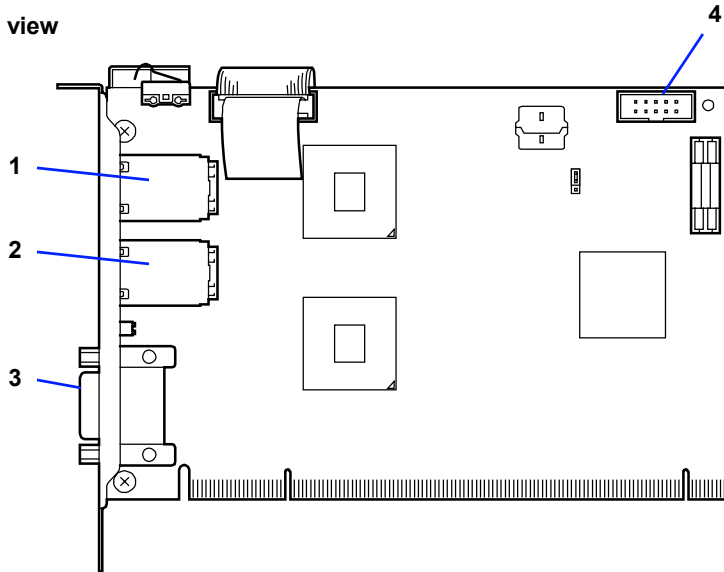
## Memory Back Board



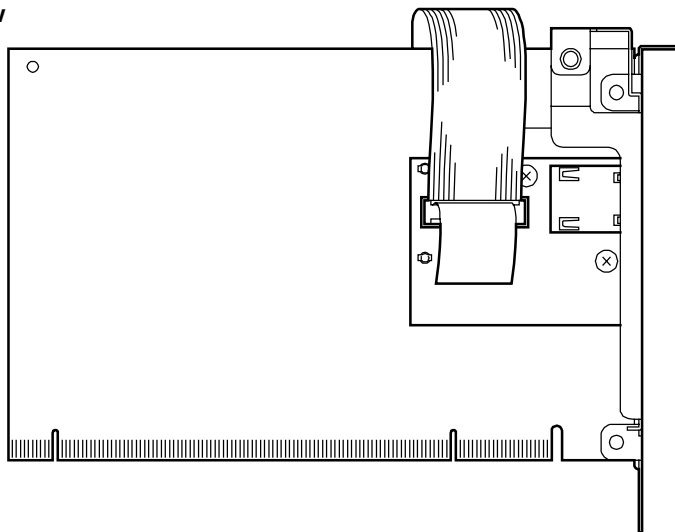
- 1 DIMM slot 1 (Installation order: First)**
  - 1-1: DIMM 1B
  - 1-2: DIMM 1D
- 2 DIMM slot 2 (Installation order: Second)**
  - 2-1: DIMM 1A
  - 2-2: DIMM 1C
- 3 DIMM slot 3 (Installation order: Third)**
  - 3-1: DIMM 2B
  - 3-2: DIMM 2D
- 4 DIMM slot 4 (Installation order: Fourth)**
  - 4-1: DIMM 2A
  - 4-2: DIMM 2C

## I/O Riser Board

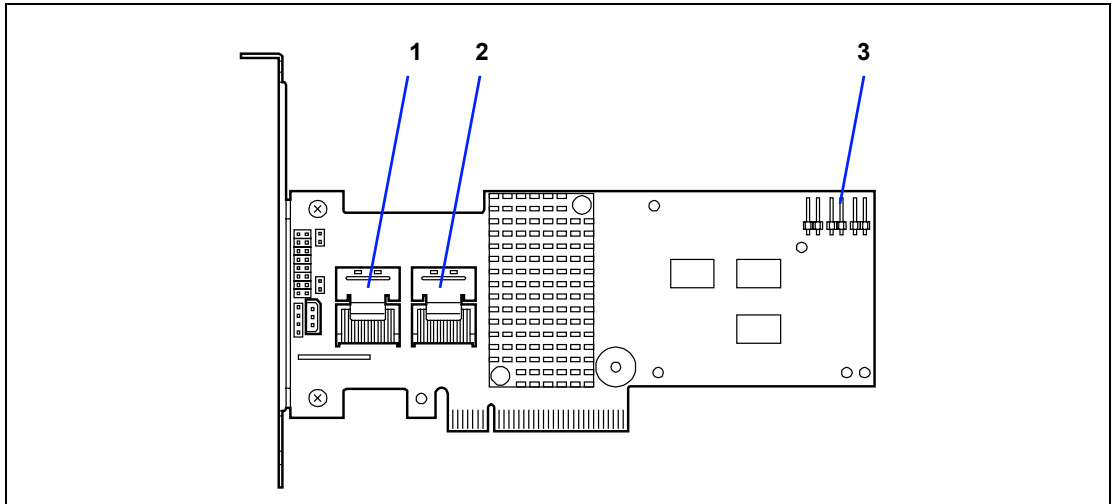
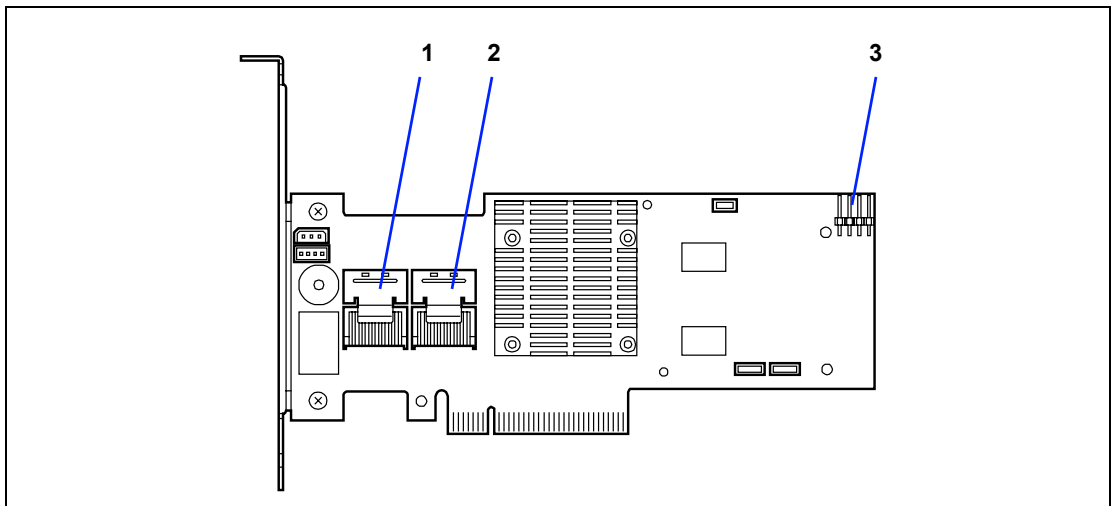
Front view



Rear view



- 1 LAN port connector
- 2 LAN port connector
- 3 Serial port A connector
- 4 Serial port B connector

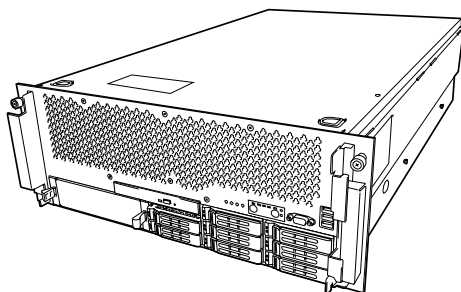
**SAS RAID Controller (for internal hard disk drive, option)****N8103-129/130****N8103-134**

- 1 SAS ports 7 - 4
- 2 SAS ports 3 - 0
- 3 Disk activity cable connector

## STANDARD FEATURES

### High performance

- Intel® Xeon® Processor 7500 series  
Available processors:
  - N8101-449: E7520 (1.86GHz 4-core, Third level cache: 18MB)
  - N8101-450: E7530 (1.86GHz, 6-core, Third level cache: 12MB)
  - N8101-451: X7560 (2.26GHz 8-core, Third level cache: 24MB)
- High-speed memory access  
(Supports DDR3 1066-compliant interleaved memory)
- High-speed 1000BASE-T/100BASE-TX/10BASE-T interface (4 ports)  
(1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access (SAS (Serial Attached SCSI) supported)



### High-reliability

- Memory mirroring feature
- Online sparing memory feature
- Memory monitoring feature (error correction/error detection)
- LockStep feature
- Memory/processor degradation feature (logical isolation of a failed device)
- Bus parity error detection
- Thermal sensor
- Error notification
- Internal cooling fan monitoring feature
- Internal voltage monitoring feature
- Redundant power supply (hot-swap)
- RAID feature
- Security feature (security lock)
- BIOS password feature

### Expandability

- Wide variety of optional I/O slots
  - PCI Express 2.0 (4-lane): 2 slots
  - PCI Express 2.0 (4-lane): 3 slots
  - PCI Express 2.0 (8-lane): 4 slots (hot-plug supported)
  - PCI Express 2.0 (16-lane): 1 slot
  - PCI Express 2.0 (8-lane): 1 slot (dedicated to RAID card)
- Large memory of up to 512 GB
- Up to four multi-processors are available for upgrade.
- Five network connectors (one for management LAN)
- 2.5-inch hard disk drive bay holds 8 hard disk drives (hot-swap supported)
- USB 2.0 interface
- Backup device bay

### Many Available Features

- El Torito Bootable CD-ROM (no emulation mode) format support
- POWER switch mask
- Software power-off
- Remote power-on feature
- AC-LINK feature
- Intelligent Platform Management Interface (IPMI) feature
- Baseboard Management Controller (BMC)
- Remote console feature

### Self-diagnosis

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

### Maintenance Features

- Off-line Maintenance Utility
- Memory dump feature using the DUMP switch

### Power Saving Feature

- Sleep feature

### Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- Express Setup
- SETUP (BIOS setup utility)
- RAID Configuration Utility

### Management Utilities

- NEC ESMPro product
- Remote Management Feature
- NEC ExpressUpdate feature

---

## Remote Management Feature

Server management is concentrated in the Remote Management Controller (RMC). The RMC and associated circuitry are powered from a 5Vdc standby voltage, which remains active when system power is switched off, but the ac power source is still on and connected.

The RMC supports the NEC ESMPRO Manager, which allows remote server management through networks. Events monitored by the manager system include over-temperature and over-voltage conditions, fan failure, or chassis intrusion.

Information on NEC ESMPRO Manager may be found in the NEC EXPRESSBUILDER DVD.

One major function of the RMC is to autonomously monitor system management events, and log their occurrence in the nonvolatile System Event Log (SEL). The events being monitored include over-temperature and over-voltage conditions, fan failure, or chassis intrusion. To enable accurate monitoring, the RMC maintains the nonvolatile Sensor Data Records (SDRs), from which sensor information can be retrieved. The RMC provides an ISA host interface to SCR sensor information, so that software running on the server can poll and retrieve the server's current status.

The RMC performs the following:

- Monitors server board temperature and voltage\*
- Monitors processor presence and controls Fault Resilient Boot (FRB)
- Detects and indicates mother board fan failure\*
- Manages the SEL interface
- Manages the SDR Repository interface
- Monitors the SDR/SEL timestamp clock
- Monitors the system management watchdog timer
- Monitors the periodic SMI timer
- Monitors the event receiver
- Controls secure mode, including video blanking, diskette write-protect monitoring, and front panel lock/unlock initiation
- Controls Wake On LAN via Magic Packet support.
- Monitors the hard disk drives
- Verifies system configuration data (CPU, memory, and others)

\*Also, NEC ESMPRO supports these features.

---

**NOTE:** To use the Remote Management Extended License (N8115-03), visit our Web site to see the latest information about remote console/remote media feature.

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---

## Degradation Feature

The degradation feature automatically isolates a failed DIMM to assure continuous operation of the server when the POST (Power On Self-Test, self-diagnosis program after power on) detects such a DIMM group.

---

**NOTE:** The degradation feature is only available when at least two DIMM groups are installed.

---

Failed DIMM groups may be identified on the screen that the POST displays, or with the BIOS setup utility of the server, "SETUP". They may also be identified on the system that has the NEC ESMPRO installed.

---

## Memory RAS Features

Your server board has the memory mirroring, memory sparing and LockStep features. For detail explanation, refer to Chapter 9.

---

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

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

To enable this feature, use the BIOS setup utility, "SETUP". (See Chapter 4.)

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

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

---

## AC-Link Feature

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



---

## System Security

To help prevent unauthorized entry or use of the system, the system includes a full lockable front bezel and Server Management software that monitors the front bezel intrusion switch.

### Security with Mechanical Locks and Monitoring

To unlock the bezel, insert the key in the lock and turn the lock counterclockwise until it stops (about a quarter turn). The bezel is now unlocked and can be opened.

To lock the bezel, insert the key in the lock. Turn the lock clockwise until it stops (about a quarter turn). The bezel is now locked and cannot be opened.

### Software Locks via the BIOS SETUP Utility

The BIOS SETUP Utility provides a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, you can access the system only after you enter the correct password(s). For example:

- Mask the power switch function after the power-on.
- Set and enable a supervisor password.
- Set and enable a user password.
- Disable access to the boot sector of the operating system hard disk drive.

---

## NEC EXPRESSBUILDER

The DVD of this server's accessories contains a setup utility called "NEC EXPRESSBUILDER".

The major functions of the NEC EXPRESSBUILDER are:

- To install the Operating System.

"Express Setup" helps you to install the Windows Operating System. (See Chapter 5)

- To diagnose the server.

NEC EXPRESSBUILDER includes System Diagnostics to check this server. (See Chapter 7)

- To create a driver disk.

Use this function to create "OEM-disk for Windows" used for a manual installation of Windows. (See Appendix D-F)

- To update System BIOS

Use this function to update the server's system BIOS or firmware. (See Chapter 8)

- To update Windows system\*

"Update the system" in the Autorun menu (See Chapter 6) updates the several drivers of Windows on the server.

- To install several management utilities\*

NEC EXPRESSBUILDER includes the management utilities (NEC ESMPRO, Universal RAID utility and so on). You can install the applications from NEC EXPRESSBUILDER. (See Chapter 6)

- To read several documents\*

You can refer to the documents from the Autorun menu. (See Chapter 6)

\* These functions are available on Windows system.

---

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

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## NEC ESMPRO

The NEC ESMPRO is server management software that runs on the OS. The NEC ESMPRO Manager is a management software that enables you to manage and monitor the servers remotely. To use this software, it is required to install apposite bundled software on the server.

---

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

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## Maintenance Tools

The Maintenance Tools is used for maintenance and fault analysis of the server. This tool is usually used by the service representative.

See Chapter 8 for details.

---

## System Diagnostic Utility

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

## USING YOUR SERVER

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

---

### Front Bezel

Your server is not equipped with front bezel. Use an optional front bezel as needed. The following description is for optional front bezel.

Remove the front bezel to power on/off the server, to access optical disk drive or 5.25-inch device, and to install/remove hard disk drives, processor board, and memory backboard.

---

**IMPORTANT:** To open the front bezel, you must unlock the door with the provided security key.

---

### Installing or Removing the Front Bezel

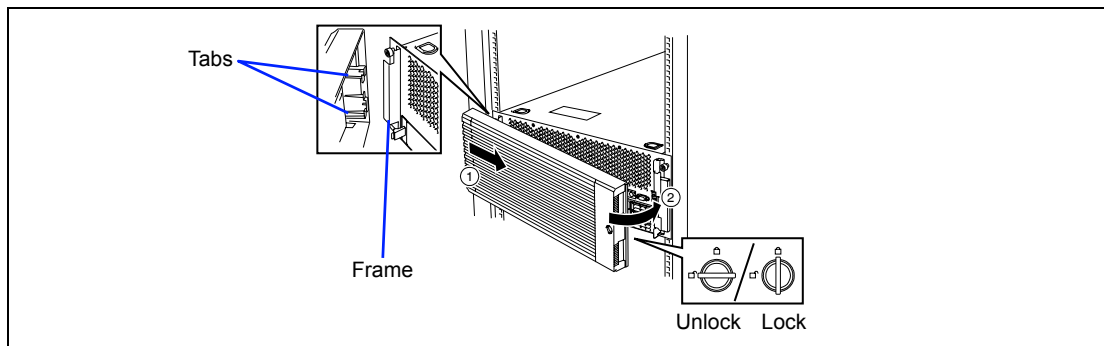
When turning the power of the server on/off, accessing to the optical disk drive, or installing or removing a hard disk drive on or from the 2.5-inch hard disk drive bay, or removing the top cover, first remove the front bezel.

---

**IMPORTANT:** The front bezel can be opened only when you unlock it by using the attached security key.

---

1. Insert the attached security key into the key slot and rotate it to left while pressing lightly to release the lock.
2. Hold the right end of the front bezel lightly to pull it toward you.
3. Slide the front bezel to the left a little to remove the tab from the frame and then remove the front bezel from the server.



To install the front bezel, latch the tab at the left side of the front bezel on the server frame. After the installation, lock the front bezel by using the key for security.

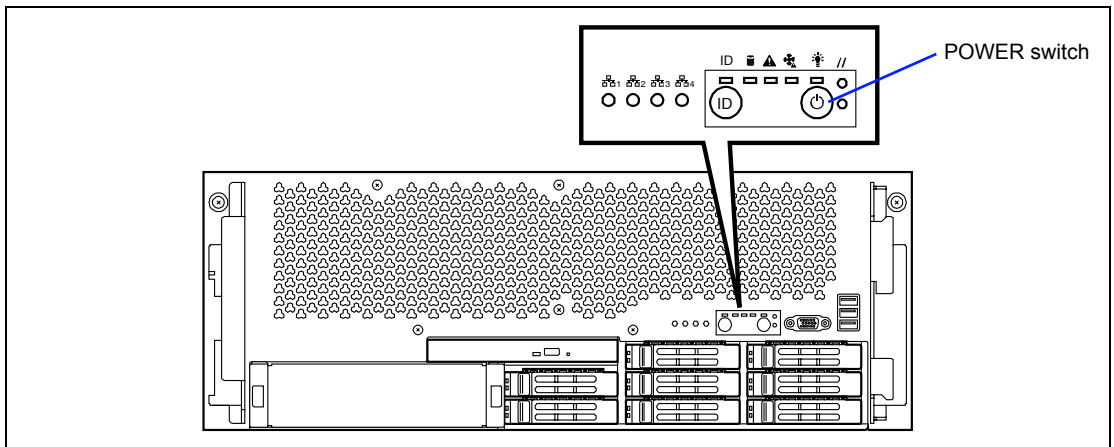
## POWER Switch

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

### Power On

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

The POWER lamp lights in green.



### IMPORTANT:

- If the power cord is connected to a power control device such as a UPS (Uninterruptible Power Supply), make sure that the power control device is powered.
- If the power cord is connected to the server, an initial diagnosis of the hardware starts. The POWER switch does not work while in diagnosis. Wait for about 30 seconds, then press the POWER switch.
- Do not turn off the server until the "NEC" logo or characters appear on the screen. The time until the characters appear depends on your system configuration. Approximately, it may take one to five minutes.
- It may take a certain time until the POST screen appears if any of the following operation was performed, because the optimization of PCI resources (PCI I/O, memory space, and others) is executed.
  - PCI board was installed or removed in/from PCI slot 1, 2, 3, 4, or 10.
  - Processor 3 or 4 was installed or removed.
  - On BIOS SETUP, [Load Setup Default] and [Exit Saving Changes] was executed.
  - On BIOS SETUP, parameter for [Memory Retest] or [Clear FRU LED] was changed to "Yes", then [Exit Saving Changes] was executed.

## Power-saving Mode

The server supports ACPI mode. You can use the POWER switch to save almost all power of the server (standby state).

---

**NOTE:** To use the SLEEP switch, an OS supporting the ACPI mode is required. (Available on Windows system)

---

Provide setting for power saving on operating system, then press the POWER switch on the front of the server to place the server in the power-saving mode. (The POWER lamp blinks.) In the power-saving mode, the server retains the memory data and the status of the previous operations.

To resume the original state, press the POWER switch.

---

**NOTE:** The operational level in the power-saving mode depends on the OS in use.

---

---

**IMPORTANT:** Do not change system configuration while turning into the power-saving mode or in the power-saving mode. Otherwise, you may fail to resume the original state.

---

---

## POST

POST (Power On Self-Test) is the self-diagnosis feature saved in the mother board of the server.

When the power of the server is turned on, POST automatically runs to check the mother board, I/O riser board, memory backboard, processor, keyboard, and mouse. During POST messages indicating the starts of several BIOS setup utilities may also appear.

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



---

**NOTE:** You can set the POST check results to appear on the display unit without pressing **Esc**. To do so, select "Enabled" for "Boot-time Diagnostic Screen" under the Advanced menu of the BIOS SETUP utility.

---

The POST check results should be checked in the following cases.

- When the server is used for the first time.
- When the server appears to fail.
- When the server beeps for many times between power-on and OS start-up.
- When an error message appears on the display unit.

## POST Execution Flow

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

---

**IMPORTANT:** Some system configurations may display the message "Press Any Key" to prompt a key entry. This message is driven by BIOS of an installed optional board. Make sure to read the manual that comes with the optional board before any key entry.

---

1. After power-on, POST is activated to start the memory check. The message indicating the counted size of the base memory and that of the additional memory appears at the upper left corner of the display screen. In addition, the following message appears at the bottom of the screen.

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

---

**NOTE:** If you change the factory-default for [Extended RAM Step] in [Advanced] menu of BIOS SETUP and execute the memory test, pressing **Space** allows the memory test to be skipped.

---

It may take several minutes to complete the memory check depending on the size of the memory installed in the server. Similarly, it may take about a minute to display the proper information on the screen at rebooting.

2. If your server has some option boards such as RAID Controller installed, POST displays the message prompting the start of the BIOS setup utility for the option board.

Refer to the manual that comes with the option board for details.

When you press **Ctrl** and any other key at the same time to start the setup utility of the option board, the subsequent key entry may sometime fails (e.g., key entry is not accepted or incorrectly recognized). In the case, press **Ctrl** again to recover.

3. POST displays SCSI ID numbers used by the connected SCSI devices on the screen.
4. POST detects the optional RAID Controller and displays the message prompting the start of the RAID configuration utility (without any key entry for several seconds, POST is automatically continued). Press the proper keys according to the screen display.

[When N8103-129/130 RAID Controller is installed]

LSI MegaRAID SAS - MFI BIOS  
Version XXXX (Build MMM DD, YYYY)  
Copyright (c) 20XX LSI Corporation

HA - X (Bus X Dev X) MegaRAID SAS 9264-8i  
FW package: X.X.X - XXXX

0 Virtual Drive(s) found on the host adapter.

0 Virtual Drive(s) handled by BIOS.  
Press <Ctrl> <H> for WebBIOS.....

Press **Ctrl** + **H** while the message is displayed to run the configuration utility.



[When N8103-134 RAID Controller is installed]

```

SuperTrak EX SAS 6G RAID Controller BIOS Version X.X.XX.XX VPD(XX.XX)
(c) 20XX Promise Technology, Inc. All rights reserved.

Summary of Controller X      : ST EX8760T-XXX
> Single Image Version      : X.X.XX.XX
> Number of Physical Dev    : X
> Number of Disk Array      : X
> Number of Logical Dev     : X
Summary of Controller X      : ST EX8760T-XXX
> Single Image Version      : X.X.XX.XX
> Number of Physical Dev    : X
> Number of Disk Array      : X
> Number of Logical Dev     : X

Press <Ctrl> + <S> to enter SuperBuild (tm) Configuration Utility
Press <Esc> or <Space> to Continue

```

Press **Ctrl + S** while the message is displayed to run the configuration utility.

#### NOTES:

- Using WebBIOS allows you to build or change RAID configuration with internal SAS hard disk drives.
- To build or change RAID configuration with SAS hard disk drives connected to N8103-115 RAID Controller, use Universal RAID Utility.

5. POST displays the message notifying you of the detection of the processor and the connected keyboard and mouse.
6. POST displays any of the following messages.

Pattern 1:

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

Pattern 2:

Press <F1> to resume, <F2> to enter Setup, <F12> to Network

\* The displayed message may vary depending on the server status.

---

**NOTE:** The operation or utility to be started at each key entry is described below. These operations or utilities may not always be started.

■ **F2**

Press **F2** to start the BIOS SETUP utility. Start the utility to change the setting of the server to that fit to the environment in which the server is used. In general, the setting may not be particularly changed by starting the utility excluding the case in which the previous message accompanying by an error message appears. See Chapter 4 for the setting procedures and features of the parameters.

■ **F12**

Press **F12** to run the network boot.

■ **F1**

If message "Press <F1> to resume" appears, an error is detected during POST. See "Error messages during POST" for the information on the messages and the proper actions against the errors. If an error message appears, pressing **F1** allows the BIOS setup utility to be started.

---

7. When a password is set in the BIOS SETUP utility, the screen prompting you to enter the password appears after the normal termination of POST.

The password can be entered for up to three times. If you enter the password incorrectly all the time, the server cannot be started. In this case, turn off the power of the server, wait for about 10 seconds, and then turn on the power to start the server again.

---

**IMPORTANT:** Set the password only after OS is installed.

---

8. Starts OS at the termination of POST.

## POST Error Messages

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

---

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

---

## Power Off

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

---

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

---

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

---

## Floppy Disk Drive

Your server is not equipped with floppy disk drive. Use the optional USB floppy disk drive or Flash FDD if necessary.



---

## Optical Disk Drive

The optical disk drive is installed in the front of the server. The following optical disk drive can be used.

- DVD-ROM drive (option)

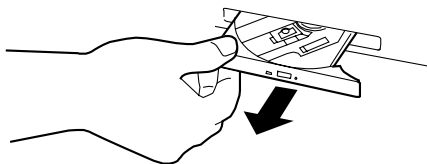
Reads data from various optical disks.

 <b>CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"><li>■ Do not leave the tray ejected from the optical disk drive.</li></ul>

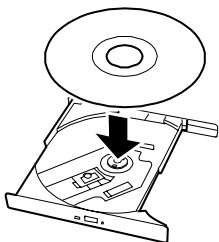
### Setting/Removing the Disc

Set a disc on the optical disk drive in the following procedure.

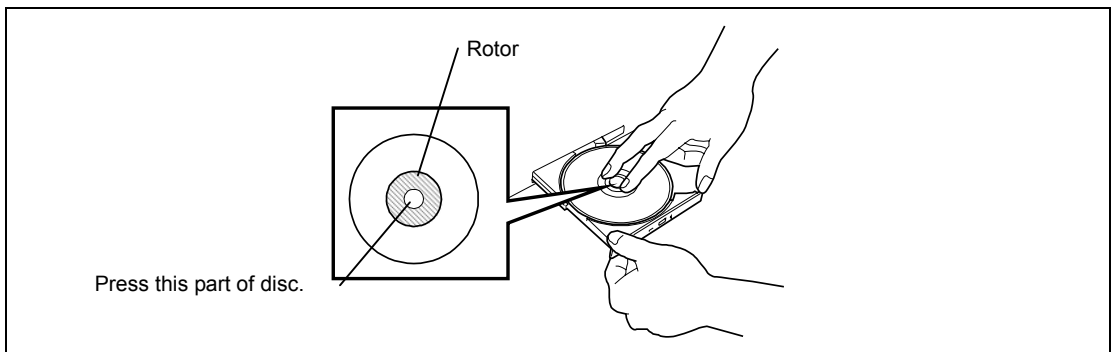
1. Confirm that the power of the server is on (with the POWER lamp being lit) before setting the disc on the optical disk drive.
2. Press the tray eject button on the front of the optical disk drive.  
The tray comes out a little.
3. Hold the tray lightly and pull it out toward you until the tray stops.



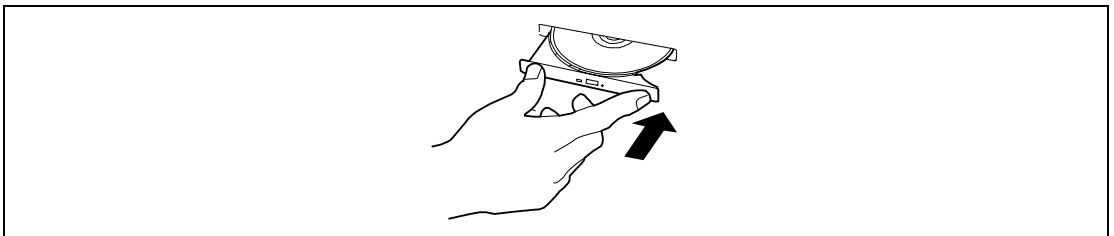
4. Put the disc on the tray carefully and securely with the character printed surface facing upward.



5. As shown in the figure below, hold the tray with a hand and press the disc with fingers of another hand to make the hole of the disc fit to the rotor at the center of the tray.



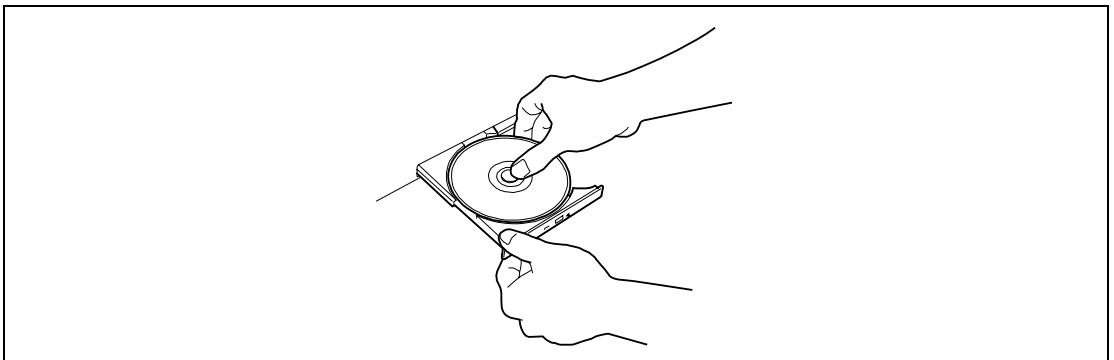
6. Push the front of the tray lightly to retract it into the drive.



To take out the disc from the optical disk drive, press the Eject button in the similar way in setting the disc to make the tray go out.

If the access lamp is lit, the disc is being accessed. Confirm that the access lamp is not lit before pressing the tray eject button.

As shown in the figure below, hold the tray with a hand and take the end of the disc lightly by the fingers of another hand with the suppression of the rotor at the center of the tray to remove the disc from the tray.

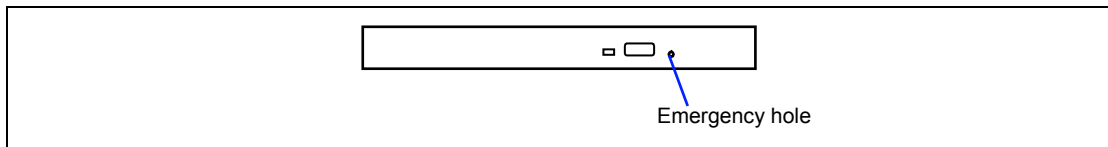


After taking out the disc, return the tray into the drive.

**When you fail to eject:**

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

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



---

**IMPORTANT:**

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

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

## Precautions

Observe the following instructions when using the server. The server itself or your property (data and other devices) might be destroyed if you use the server disregarding these instructions.

### Use of the Optical Disk

Keep the following notes in mind to use the optical disk for the server:

- For the disk which does not conform to the CD standard, the playback of such a disk with the optical disk drive is not guaranteed.
- Do not drop the optical disk.
- Do not place anything on the optical disk or bend the optical disk.
- Do not attach any label onto the optical disk.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the optical disk with its printed side upward and gently put it on the tray.
- Do not scratch the optical disk or write anything directly on it with a pencil or ball-point pen.
- Keep the optical disk away from cigarette smoke.
- Do not leave the optical disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the optical disk, wipe the optical disk from its center to edge with a dry soft cloth slowly and gently.
- Use the dedicated cleaner to clean the optical disk. Do not use record spray/cleaner, benzene, or thinner.
- Keep the optical disk in an optical disk case when not in use.
- Use a non-printable disk recommended in the User's Guide of the server and/or the device.
- Optical disk is a data storage media with delicate structure and requires care. Clean the tray and optical regularly according to "Cleaning Disc" in Chapter 7.

### Writing Data onto Disk

- After writing the data onto disk, be sure to perform data compare process.
- An operator should always be concerned with data writing (unattended writing should not be performed).

### Handling of Optical Disk Drive

- Do not leave the tray ejected from the optical disk drive.
- Do not leave the drive with an optical disk being contained.
- Clean the disk and drive in regular basis. For the slim type drive, be careful not to touch the lens while cleaning the drive.
- Make sure that the drive works normally by reading a disk such as NEC EXPRESSBUILDER.

### About Write Error

A write error might occur when writing a data by using the optical disk drive due to the operating environment or characteristics of disk, etc.

If a write error occurs even after the cleaning, try another disk.

### Before Writing onto Disk

- It is prohibited by the law to reproduce audio CD and the application without the permission of the writer except for the personal use.
- The data stored in DVD-R, DVD+R, or CD-R may be destroyed partially or entirely due to write error. To prevent the data loss, observe the following instructions.
  - Quit the program including an application software that might consume a large amount of memory.
  - Disable the screen saver utility.
  - Quit the program to check the disk such as virus checker or system agency.
  - Disable the utility that might start during writing, such as scheduler or timer.
  - Disable the power-saving feature in power management.
  - Do not boot any application while writing.

### Writing/reading Time Fluctuation

The optical disk drive has a feature to detect the disk condition and determine the optimum writing or reading speed for the disk. Accordingly, the time required for writing or reading data may not be constant, depending on disk condition.



# Chapter 3

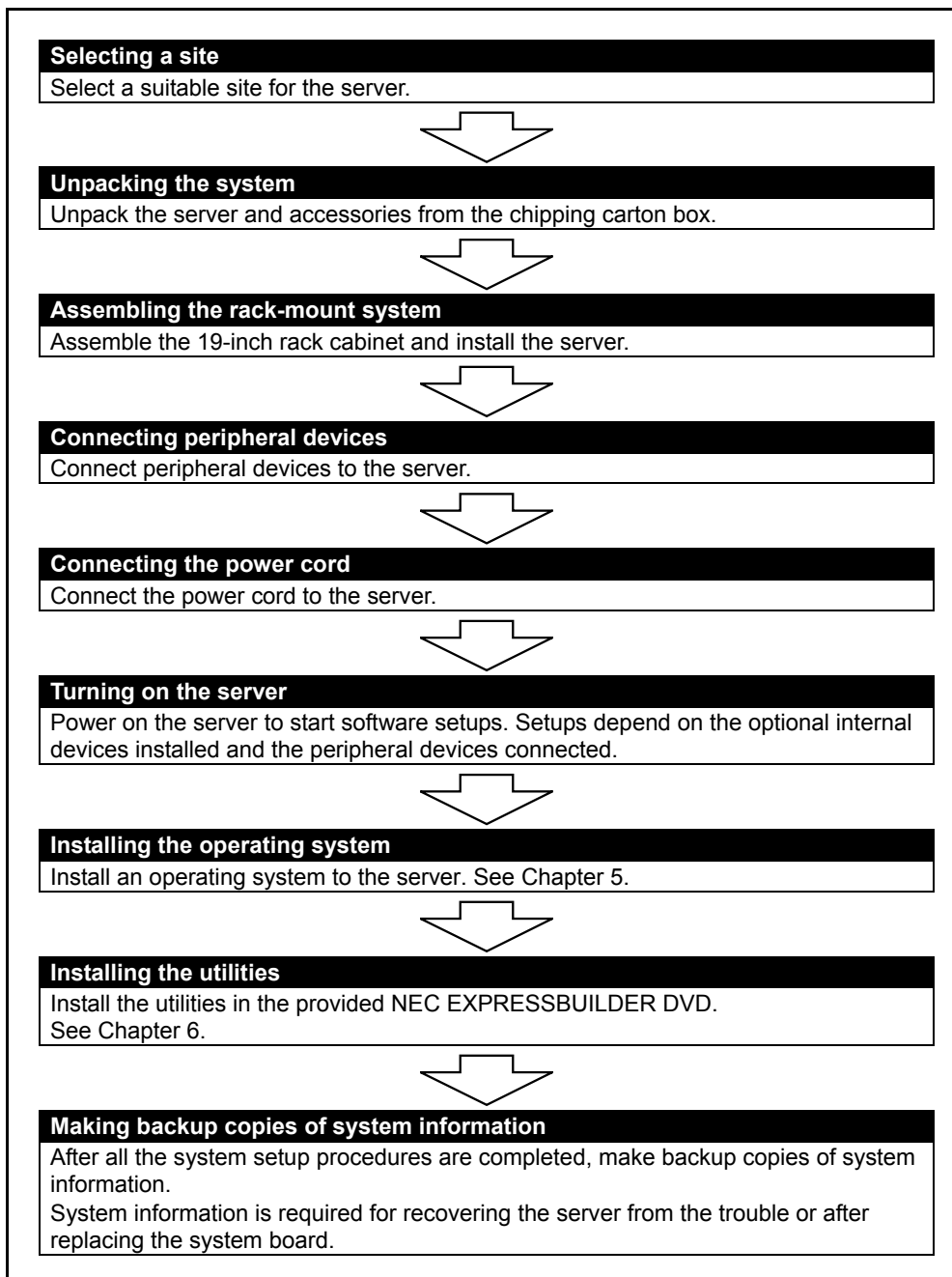
---

## Setting Up Your Server

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

## SETUP FLOW

Follow the flowchart below to set up the server.



## SELECTING A SITE

Your server unit should be mounted in a standard EIA rack cabinet.

Refer to the documentation attached to the rack or contact your service representative for installation of the rack.

### WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.

- Do not use the server in any unapproved place.

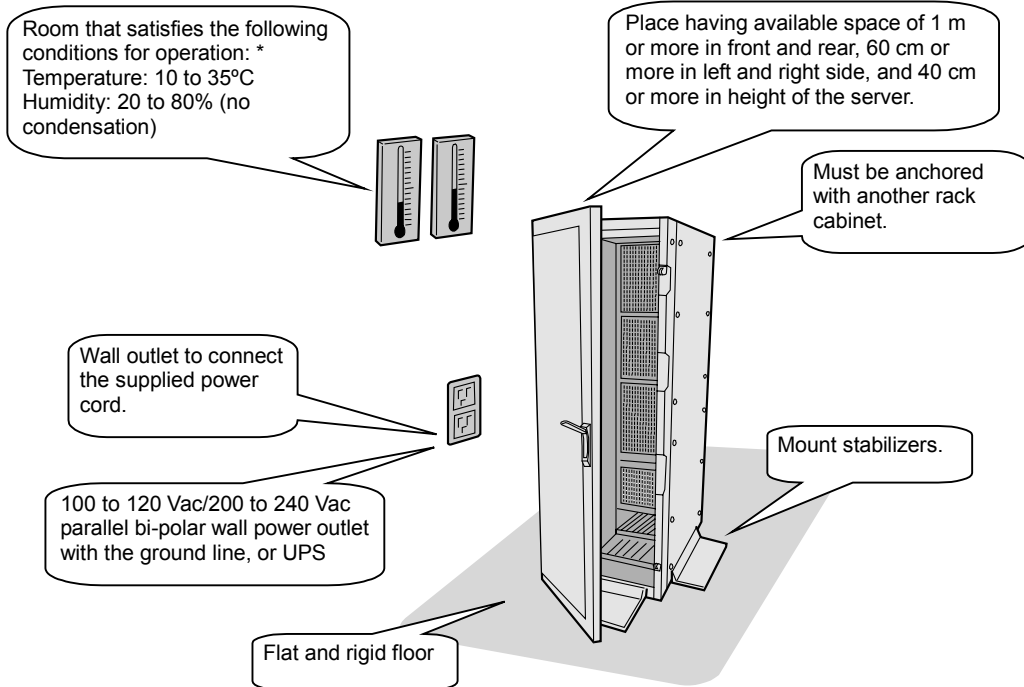
### CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

- Do not carry or install the server only by a single person.
- Do not install any component on the server only by a single person.
- Do not install the server where the load may be concentrated on a specific point.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not provide the wiring exceeding the rating power.

The following figure illustrates a site suitable for installing the rack cabinet.



\* It is recommended that the server should be used in a room where temperature is in the range between 15 to 25°C.

---

**IMPORTANT:** Increase in temperature within rack and air flow

If two or more servers are installed on the rack or the ventilation within the rack is not enough, the temperature in the rack may be raised by the heat generated from the units to be higher than the operation temperature of the server (10 to 35°C).

It causes the server to operate improperly. Review the air flow within the rack or in the room and take sufficient measures so that the temperature within the rack does not exceed the warranted temperature range during the system operation.

---

Do not install the rack in the places listed below. Installing the rack or mounting the server on the rack in such a place may cause some malfunction to occur.

Do Not:

- Locate a rack in a narrow space that would inhibit devices from being pulled out from the rack completely.
- Locate the rack on a floor that cannot bear the total weight of the rack and devices mounted in the rack.
- Locate the rack in a place where stabilizers cannot be installed or where the rack can be installed only after proper earthquake-resistant is constructed.
- Locate the rack on an uneven or slanting floor
- Locate the rack in an area that has drastic temperature change (near a heater, air conditioner, or refrigerator).
- Locate the rack where intense vibration may be generated.
- Locate the rack where corrosive gas is generated (ex. the area, where the vapor of sulphur is generated), chemicals are nearby, or chemicals may be sprayed accidentally.
- Place the rack on a carpet not subject to the anti-static process.
- Locate the rack where some objects may fall on the rack.
- Locate the rack near a device that is generating intense magnetic fields (such as a TV, radio, broadcast/communication antenna, power transmission wire, and electromagnetic crane.) If unavoidable, contact your service representative to request proper shielding.)
- Locate the rack where the power cord of the server must be connected to an AC outlet that shares other devices with large power consumption.
- Locate the rack next to equipment that generates power noise (e.g., contact spark at power-on/power-off of commercial power supply through a relay). If you must install the server close to such equipment, request your service representative for separate power cabling or noise filter installation.

---

## Installing or Removing the Server into/from the Rack

This section describes the procedure to install or remove the server into/from the rack cabinet. If you have any separately priced internal devices, install them before installing the server in the rack cabinet.

### **WARNING**



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.

- Do not use any rack which does not conform to the relevant standard.
- Always install the server in the specified place.
- Disconnect the power cord(s) before installing or removing the server.

### **CAUTION**



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

- Do not lift the server by two or less persons.
- Do not leave more than one device being pulled out from the rack.
- Do not install the server on the rack leaving the cover removed.
- Do not pinch your finger with mechanical components.

---

## Required Tools

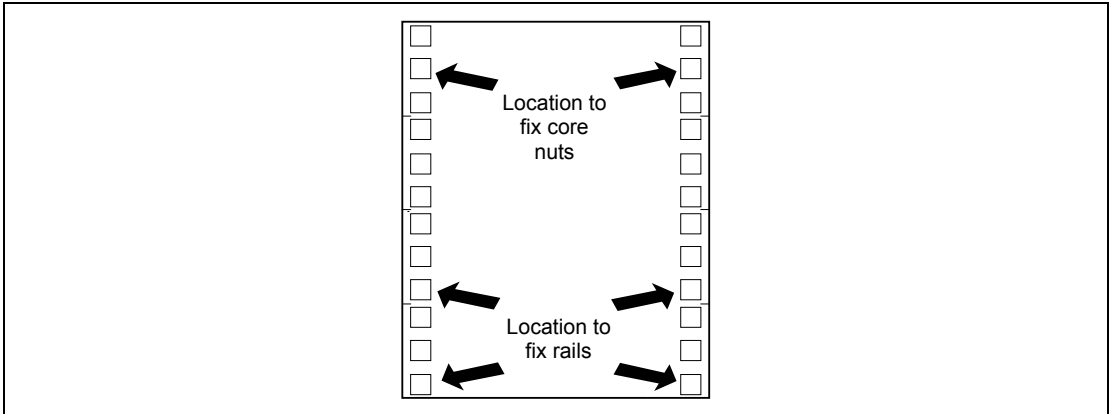
#2 Phillips screwdriver and flat tip screwdriver are required for assembling the rack-mount system.

---

## Preparation

1. Define the position of core nuts and rails at which the server is installed.

The server has 4U high. The bottom of the rail aligns with the bottom of server.



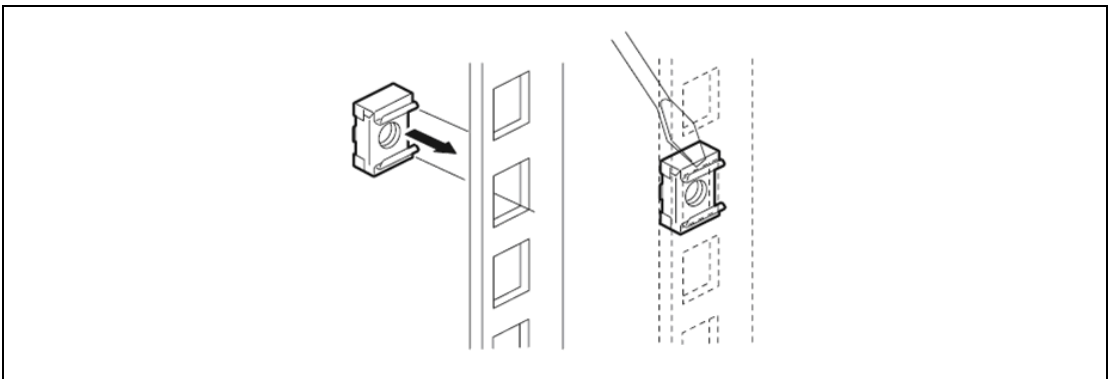
2. Install the core nuts.

Install core nuts to the second holes at the left and right side, from the front inner side of the rack.

---

**NOTE:** Use the core nuts provided with the rack.

---



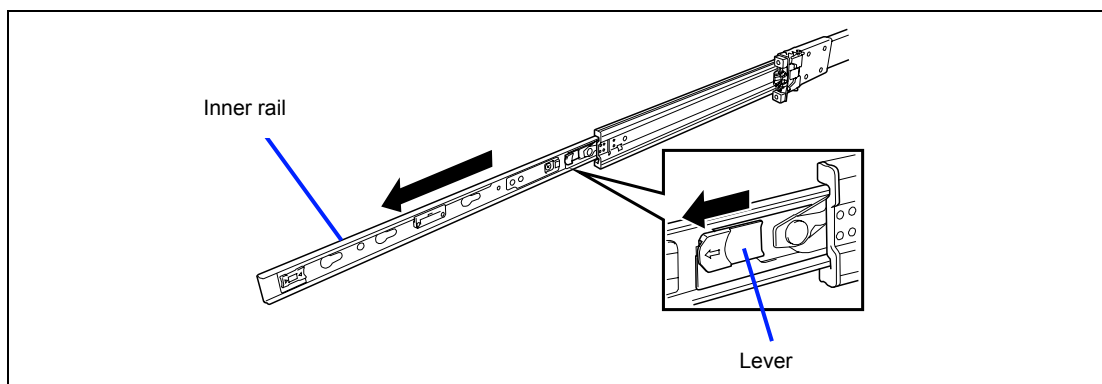
3. Take out the slide rails from the carton.

---

### IMPORTANT:

- The rails may rush out from the slide rail assembly. Take sufficient care when handling the slide rail assembly.
  - Be very careful not to get your finger caught in the rails.
-

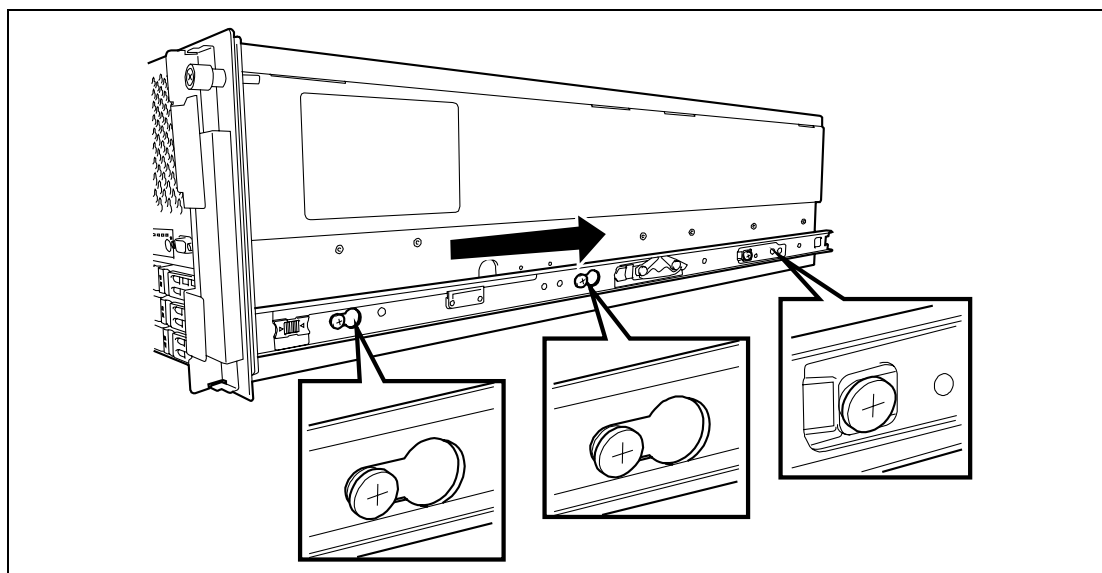
4. Move the blue lever near the center of the rail to front side to unlock the inner rail, then remove the inner rail.



5. Install the inner rail to the server.

Align the hole on the inner rail with the screw at the side of server, then move the inner rail forward slowly until it clicks.

The figure below shows right side of the server. Install the inner rail on the other side.



---

**IMPORTANT:** Make sure that the left and right inner rails are firmly fixed to the server.

---

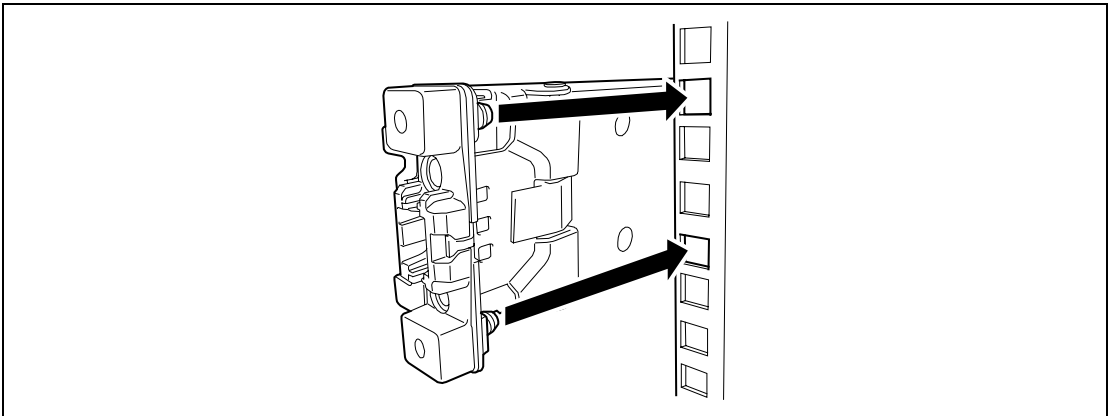


## Installing Rail Assemblies

1. Insert the square projection of the rail assembly into the angle hole on the 19-inch rack until it is locked with clicking sound.

The figure below shows the right side (front) of the rack. Install the rail assemblies to the right side (rear), and left side (front and rear) of the rack in the same procedure.

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



---

### NOTES:

- There may be some backlashes in the front and rear, however, it is not a deficiency.
  - Make sure that the rail assembly is surely locked to the rack.
-

## Installing the Server

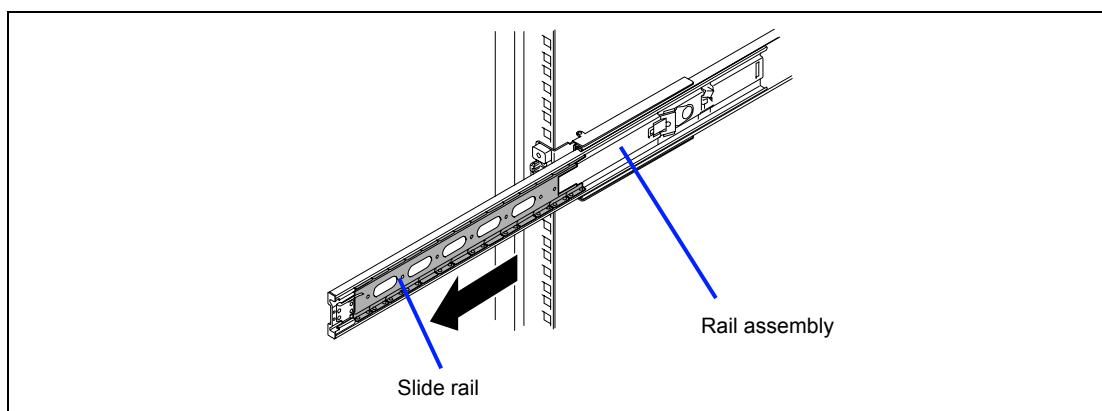
### ⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

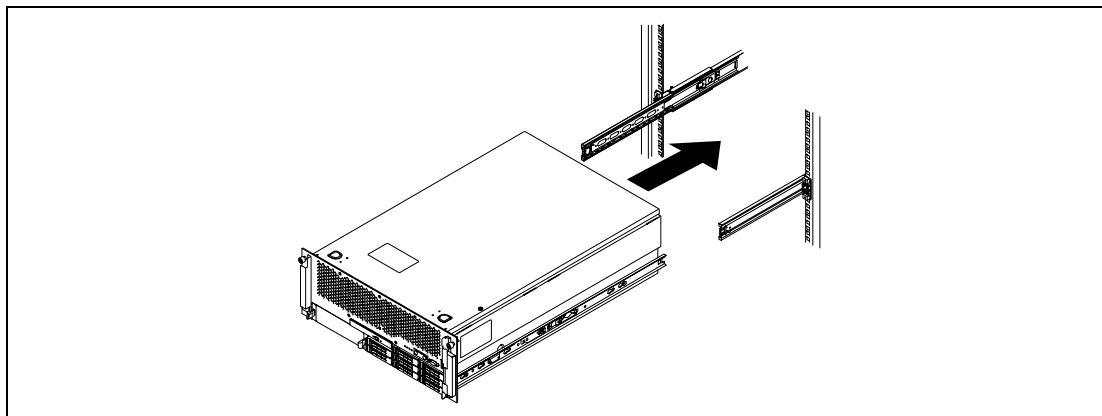
- Do not lift the server by two or less persons.
- Do not pinch your finger with mechanical components.

1. Pull out the sliding rails (bearing portions) of the right and left rail assemblies until they are locked.



2. At least three persons are required to install the server. Securely hold the server and install it in the rack.

Firmly fit the inner rails on the sides of the server into the rail assemblies that are installed on the rack, and then slowly push the server into the rack.



The server is locked on its way into the rack.

---

**IMPORTANT:**

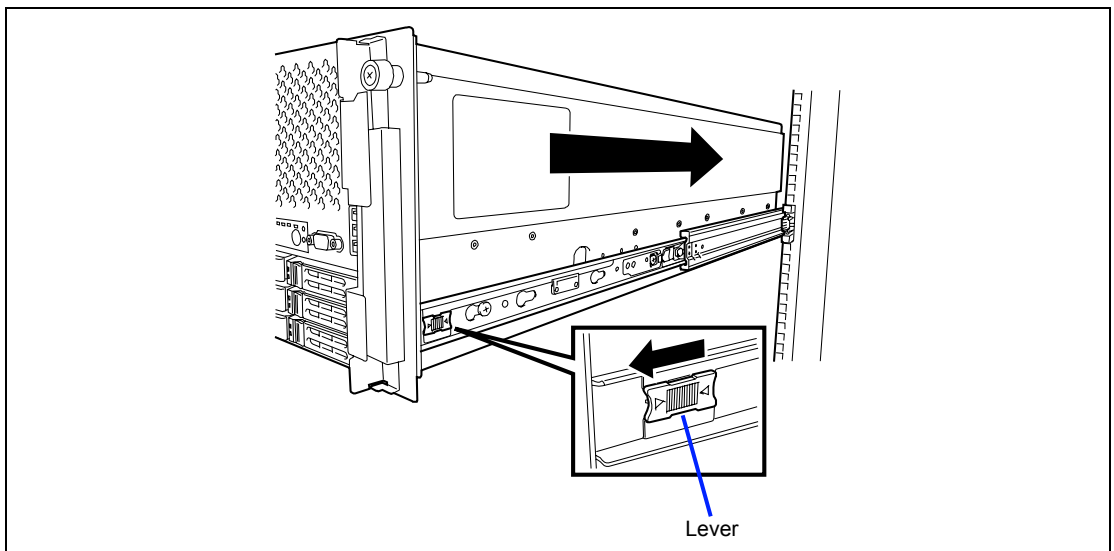
- Be very careful not to get your finger caught in the levers or rails.
  - Insert both sides of inner rails straight into the rack.
  - Hold the thumbscrews on both sides of the server, and install the server carefully while making sure the installation position.
- 

---

**NOTES:**

- Make sure that the server is firmly fixed to the rail assembly.
  - At the first installation, you may feel strong friction in pushing because the mechanical components cannot be completely engaged with each other. Push the server intensely.
- 

3. While pulling the blue lever at the front side of the inner rail, push the server into the rack completely.



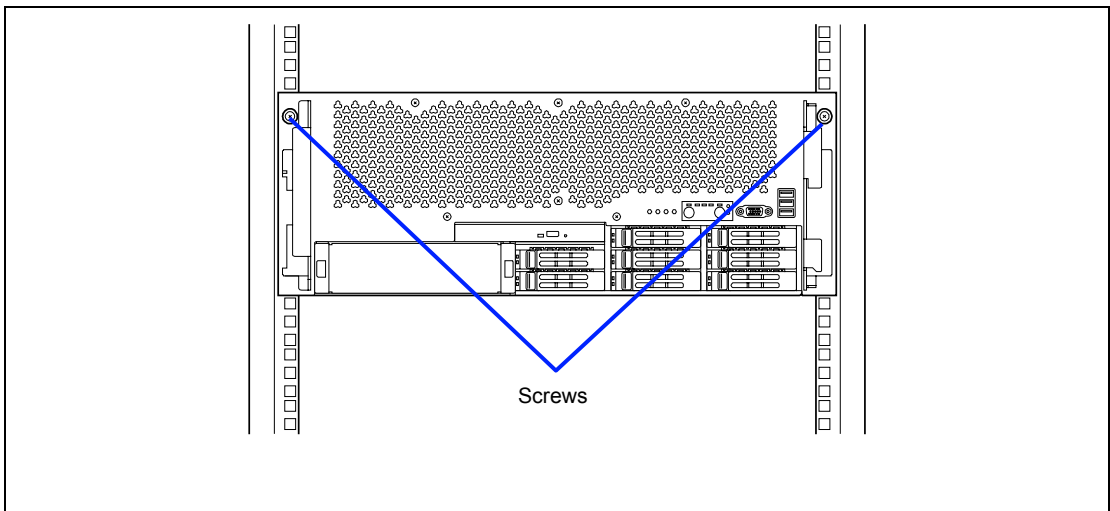
4. Make sure that the sliding rails move smoothly by pulling the server out of the rack and pushing it in several times.

---

**NOTE:** To install the server in the location adjacent to the other device, pay attention to interference. If the installing server disturbs the other devices already been installed, adjust the position, and install the rail assembly again.

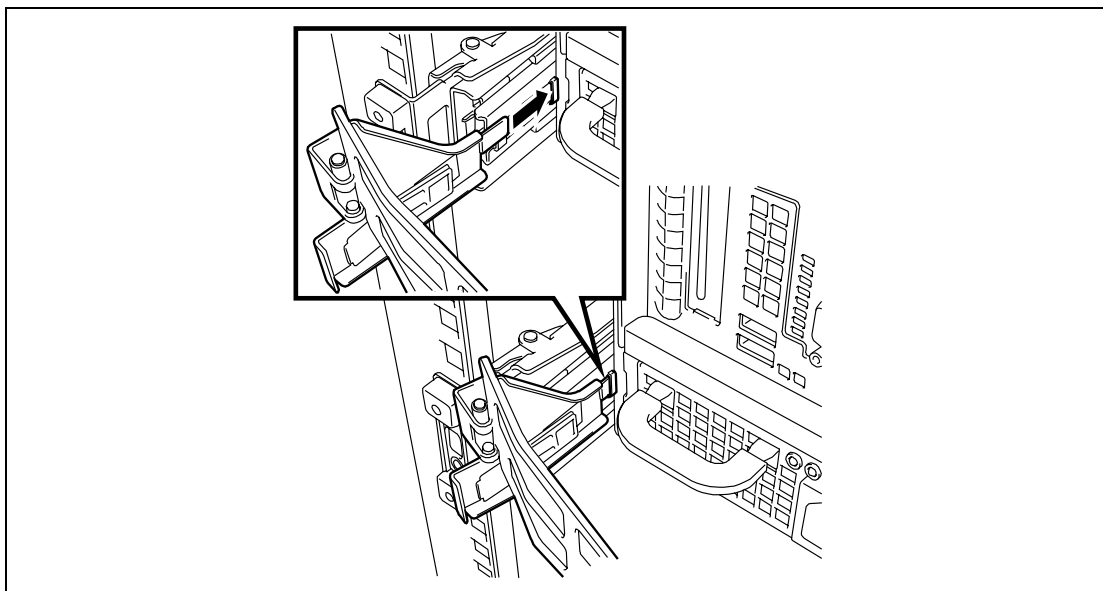
---

**5.** Secure the server with screws.

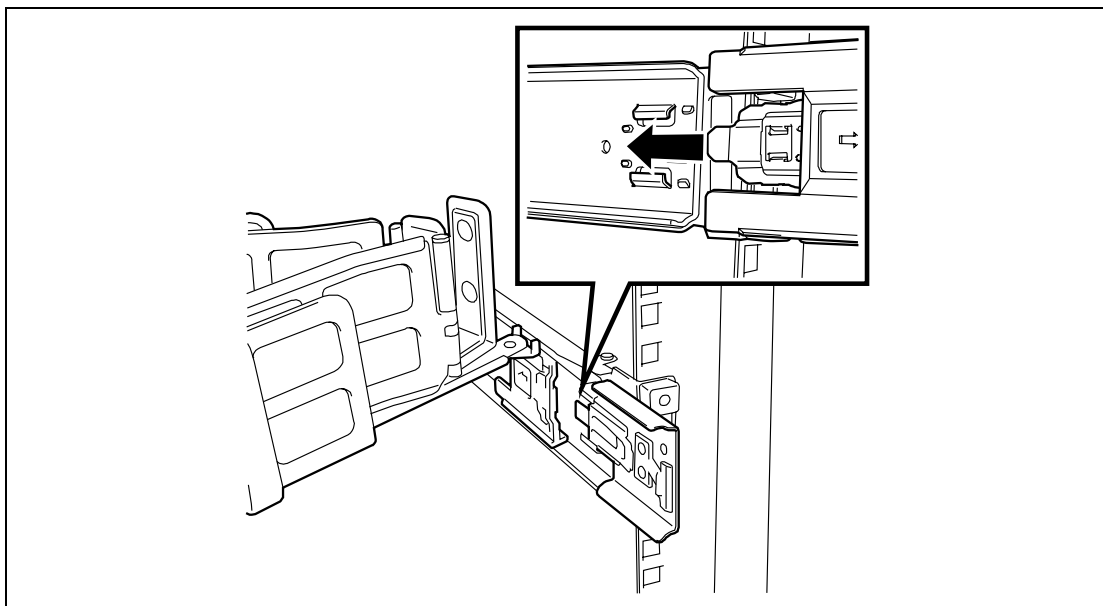


## Installing Cable Arm

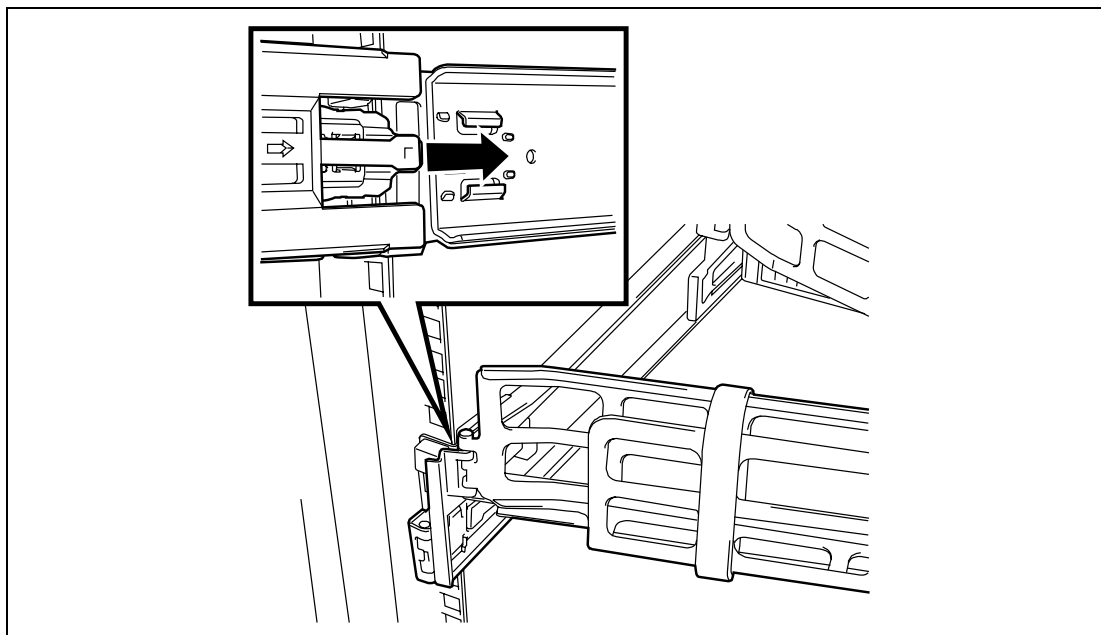
1. Install the inner arm of the cable arm to the inner rail (left side viewed from rear of the server).



2. Install the inner arm of the cable arm to the outer rail (right side viewed from rear of the server).



3. Install the outer arm of the cable arm to the outer rail (left side viewed from rear of the server).



---

**IMPORTANT:** When pulling out the server with the cable arm being installed, make sure that the slide rails of both left and right rail assemblies are surely locked.

Be sure to pull the server straight toward you.

If either of the slide rails of rail assembly is not locked, the cable arm may be damaged when pushing the server into the rack.

---

## Removing the Server

Remove the server from the rack in the following procedure. At least three persons are required to remove the server from the rack.

### CAUTION



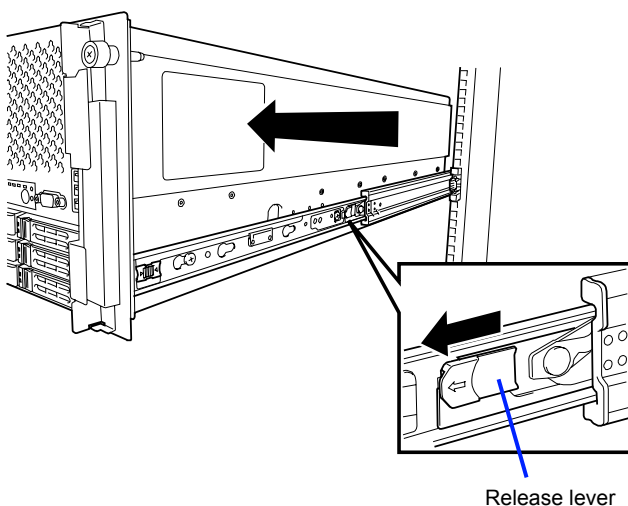
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

- Do not pinch your finger with mechanical components.
- Do not pull out a device from the rack if the rack is unstable.
- Pay attention not to drop the server.
- Do not apply any load on the server being pulled out from the rack.
- Do not leave more than one device being pulled out from the rack.
- Do not pull out the server from the rack while it is operating.

1. Make sure that the server is off-powered, and disconnect the power cords and all the interface cables from the server.
2. Remove the front bezel.
3. Remove the two screws from the front of the server.
4. Hold the lever, and pull out the server from the rack.

The server clicks to be latched.

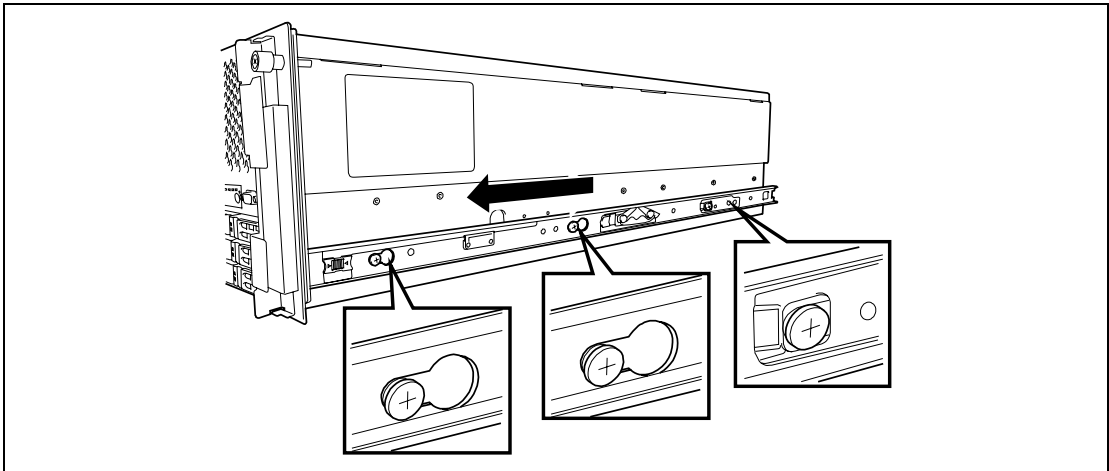
5. While pushing the right and left release levers toward you to unlock, slowly pull out the server from the rack.



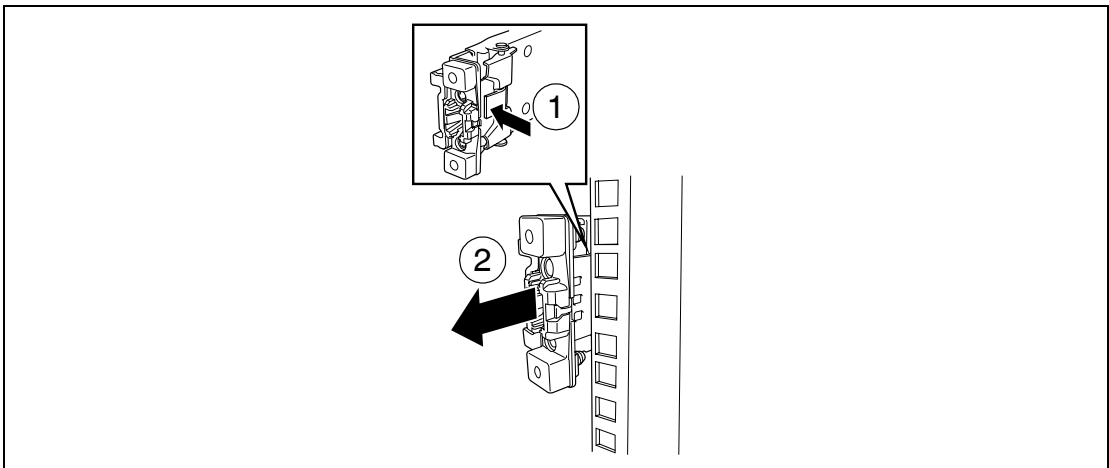
**IMPORTANT:**

- The server weighs 47 kg at the maximum configuration.
- Pull out the server slowly while holding the bottom of the server by at least three persons.
- Do not apply any load on the server pulled out from the rack. Doing so may cause personal injury if the server drops.
- Be very careful not to get your finger caught in the levers or rails.

6. Remove the inner rails from the server, and put them in the rail assembly. While lifting the green portion, and move the inner rail forward.






7. To remove the rail assembly from the rack, pull the rail to the direction shown by an arrow while pushing the lever (see the figure below).





## CONNECTING PERIPHERAL DEVICES

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

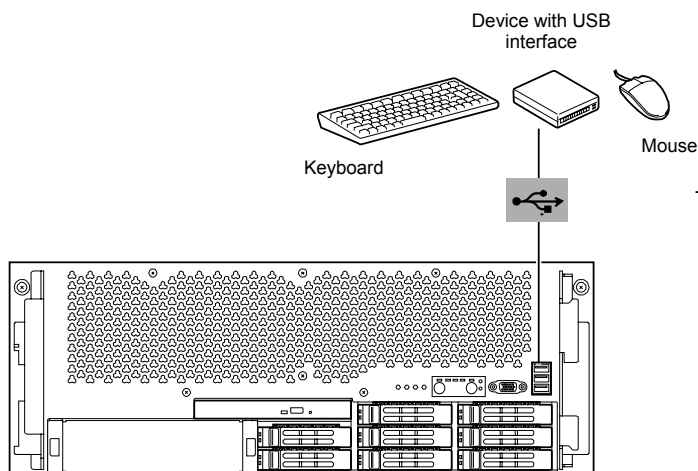
 <b>CAUTION</b>	
 	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"><li>■ Do not connect any interface cable with the power cord of the NEC Express Server plugged to a power source.</li><li>■ Do not use any unauthorized interface cable.</li></ul>

---

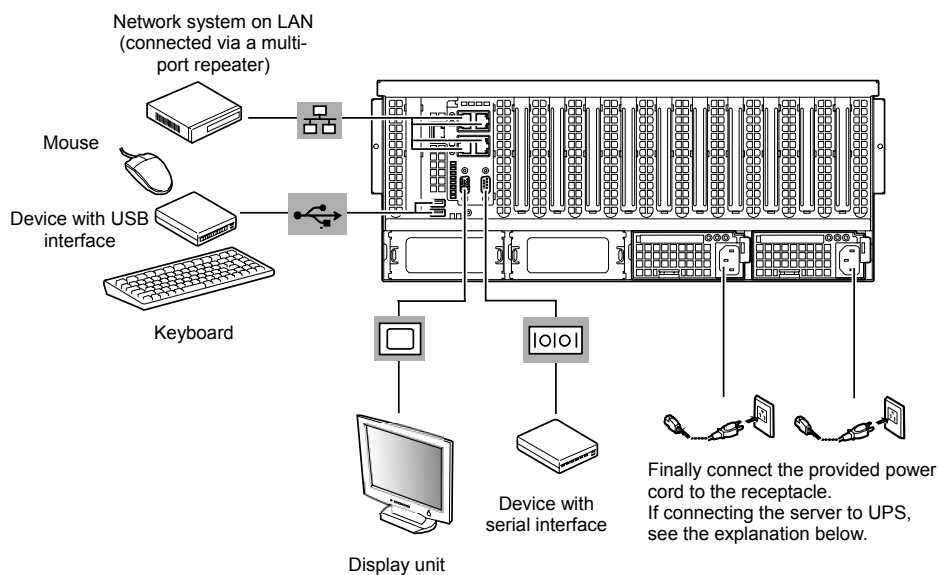
### IMPORTANT:

- Power off the server and a peripheral device before connection. Connecting a powered peripheral device to the powered server will cause malfunctions and failures (excluding the USB device).
  - To connect a third-party peripheral device or interface cable to the server, consult with your service representative for availability of such a device or cable. Some third-party devices may not be used for the server.
  - A leased line cannot be connected directly to the serial port connectors.
  - Secure the power cord(s) and interface cables with a tie wrap.
  - Form the cables in such a way that they will not come into contact with the door or the guide rails on the sides of the server.
-

## FRONT



## REAR



## CONNECTING POWER CORD

Connect the provided power cord to the server.

### WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.

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

### CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

- Do not plug the power cord in to an improper power source.
- Do not connect the power cord to an outlet that has an illegal number of connections.
- Insert the power plug into the outlet as far as it goes.
- Use the authorized power cord only.

---

### IMPORTANT:

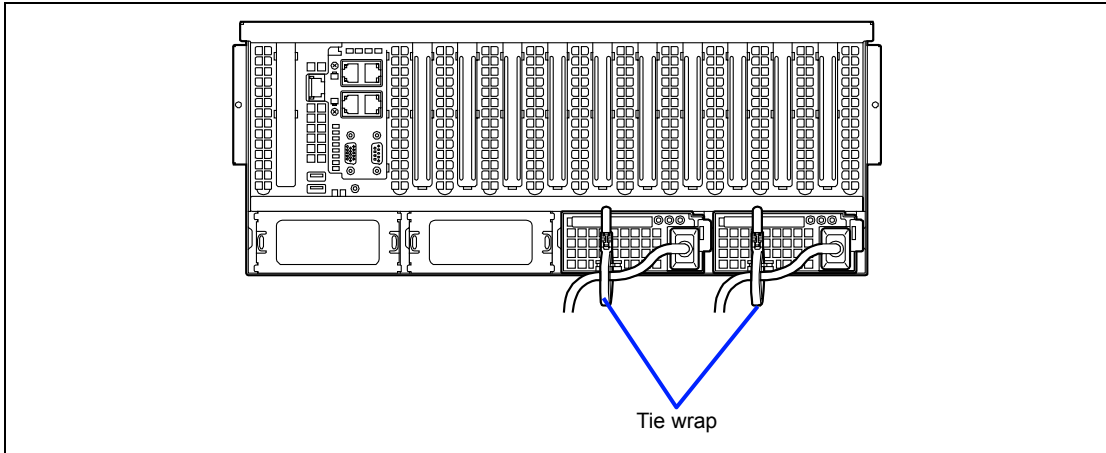
- Form the power cord so that it will slack slightly at around the AC inlet of the server. This is to prevent the cord from coming off when the server is pulled out.
  - Confirm that no pressure is applied to the power cord plug.
-

1. Plug the provided power cord into the AC inlet on the rear of the server.
2. Plug the other end of the power cord into the wall outlet.
3. Secure the power cord with a tie wrap.

---

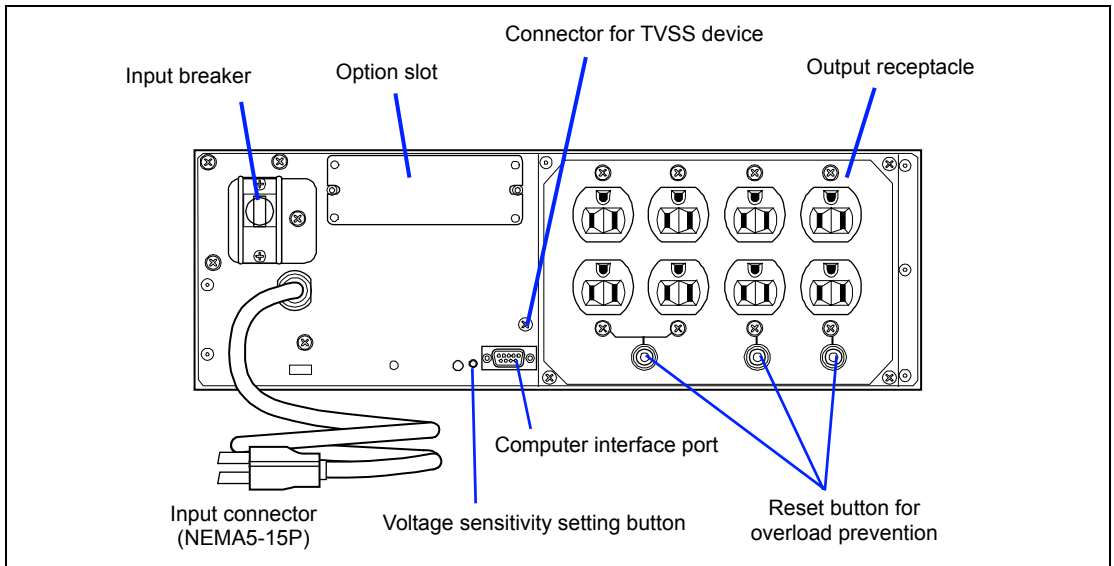
**IMPORTANT:** After connected the power cord, wait for at least 30 seconds before pressing the POWER switch.

---



## Connecting with UPS

To connect the power cord from the server to Uninterruptible Power Supply (UPS), use service outlets on the rear of the UPS. Refer to the manual that comes with the UPS for details.



When the power cord from the server is connected to a UPS, change the BIOS setup of the server to link with power supply from the UPS.

Change a parameter for [AC-LINK] under the Server menu of the BIOS SETUP utility. See Chapter 4 for details.

## TURNING ON THE SERVER

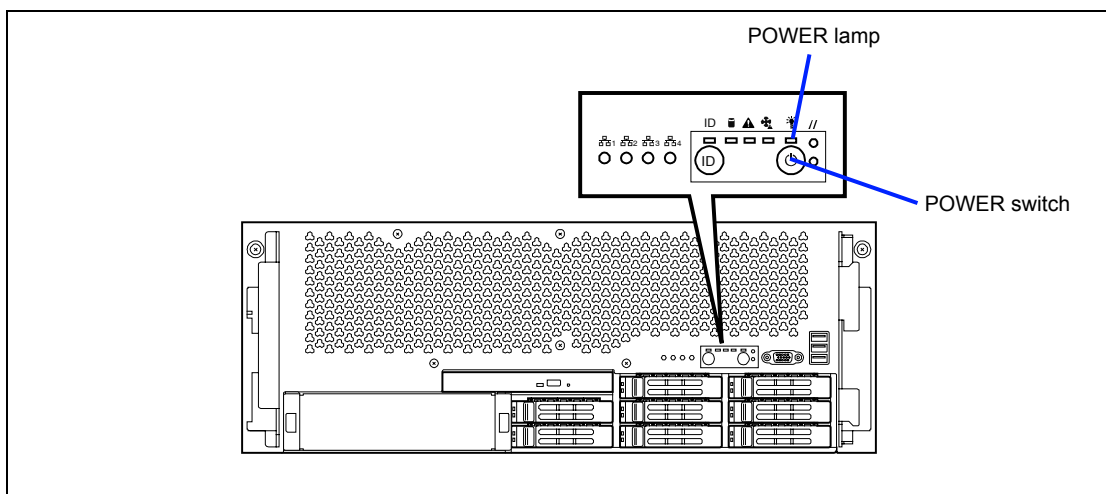
Turn on the server and follow the on-screen instructions for setup.

1. Make sure that the floppy disk drive contains no floppy disk and the optical disk drive contains no bootable CD/DVD-ROM.
2. Press the POWER switch.

---

### NOTES:

- If the power cord is connected to the power control unit such as the UPS, turn on the power control unit.
  - Connect the power cord and wait about 30 seconds before pressing the POWER switch. The POWER switch does not work in about 30 seconds after connecting the power cord due to BMC (Baseboard Management Controller) firmware start-up.
  - Do not turn off the server until NEC logo or POST screen appears. It may take one to five minutes until they appears, depending on system configuration.
  - It may take a certain time until the POST screen appears if any of the following operation was performed, because the optimization of PCI resources (PCI I/O, memory space, and others) is executed.
    - PCI board was installed or removed in/from PCI slot 1, 2, 3, 4, or 10.
    - Processor 3 or 4 was installed or removed.
    - On BIOS SETUP, [Load Setup Default] and [Exit Saving Changes] was executed.
    - On BIOS SETUP, parameter for [Memory Retest] or [Clear FRU LED] was changed to "Yes", then [Exit Saving Changes] was executed.
- 



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

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

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

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

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

---

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

---

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

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

## INSTALLING OPERATING SYSTEM

See Chapter 5 for installing Microsoft Windows Server 2008 and Microsoft Windows Server 2003.

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

---

**IMPORTANT:** Use NEC EXPRESSBUILDER for initial setup of your server. The NEC EXPRESSBUILDER is a support software for the server. It simplifies the process of installing and configuring your server. See Chapter 6 for details on NEC EXPRESSBUILDER.

---

## INSTALLING UTILITIES

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

## MAKING BACKUP COPIES OF SYSTEM INFORMATION

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

Save the information after completing the system setup.

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

You can save the information by the following process.

1. Connect Flash FDD or USB FDD to the USB connector.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive and reboot the system.
3. Select [Tool menu (Normal mode)].
4. Select [English].
5. Select [Maintenance Utility].
6. Select [System Information Management].
7. Select [Save].



# Chapter 4

---

## Configuring Your Server

This chapter describes Basic Input Output System (BIOS) configuration.

When you install the server for the first time or install/remove optional devices, thoroughly read this chapter for better understanding and correct setups.

### SYSTEM BIOS ~ SETUP ~

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

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

---

#### **IMPORTANT:**

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

---

### Starting SETUP Utility

To run the SETUP utility, perform the following procedures:

1. Turn on the power of the server.

The NEC logo appears on the screen (the POST screen may appear depending on the setting in SETUP.).

After a while, the following message appears at the bottom of the screen.

Press <F2> to enter SETUP

2. Press **F2** to start the SETUP utility and display its Main menu.

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

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

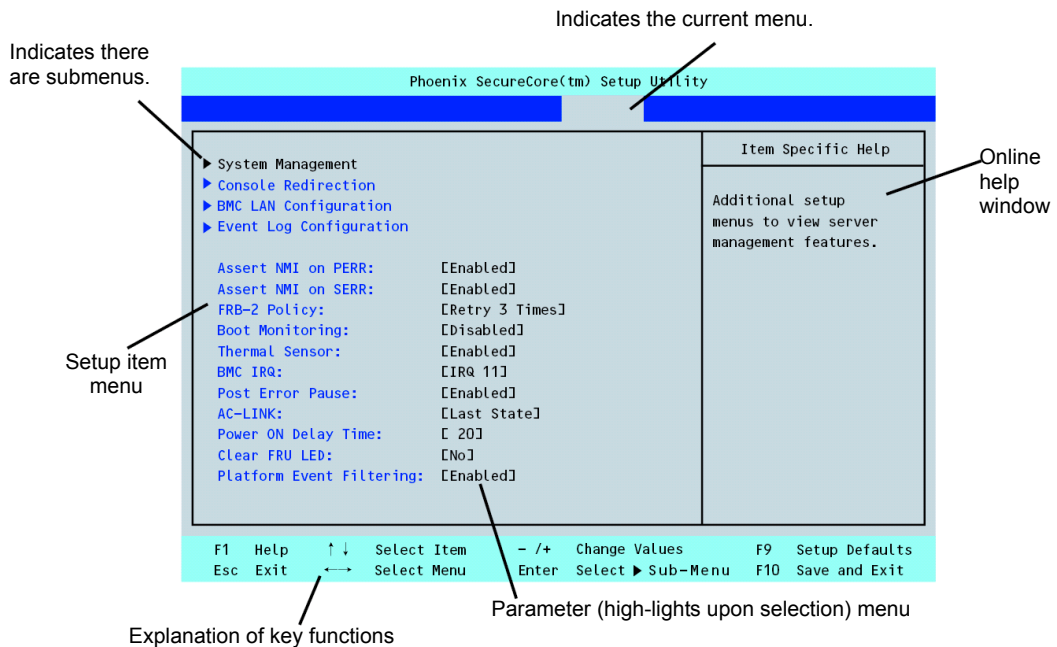
---

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

---

## Description on On-Screen Items and Key Usage

Use the following keyboard keys to work with the SETUP utility. (Key functions are also listed at the bottom of the screen.)



\* The menus displayed in gray indicates the information only or unchangeable secured by BIOS password.

- |                       |   |
|-----------------------|---|
| <b>Cursor</b> (↑, ↓): | Selects an item on the screen. The highlighted item is currently selected.  |
| <b>Cursor</b> (←, →): | Selects the Main, Advanced, Security, Server, Boot, or Exit menu.   |
| <b>- and +:</b>       | Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "➤") is selected, these keys are disabled. |
| <b>Enter</b>          | Press <b>Enter</b> to select (determine) parameters.  |
| <b>Esc</b>            | Displays the previous screen. Press repeatedly to go to Exit menu.  |
| <b>F9:</b>            | Sets the parameter of the currently displayed item back to the factory set parameter.   |
| <b>F10:</b>           | Saves the parameter value and exit SETUP utility.   |

---

### Configuration Examples

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

#### Link with Management Software

To link with the temperature monitoring feature of NEC ESMPRO Agent

Select [Server] - [Thermal Sensor] - [Enabled].

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

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

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

---

#### NOTES:

- [Wake On Lan/PME] feature is supported by the onboard LAN controller (1000BASE-T/100BASE-TX).
  - Immediately after AC power is turned on, [Wake On Lan/PME] feature is enabled regardless of BIOS settings.
- 

#### UPS

To link power supply with the UPS

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

#### Boot

To change the boot order of devices connected to the server

Select [Boot] and specify the boot order.

To display POST check results

Select [Advanced] - [Boot-time Diagnostic Screen] - [Enabled].

You can also press **Esc** while the NEC log is on the screen to display POST check results.

To control from the HW console

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

## Memory

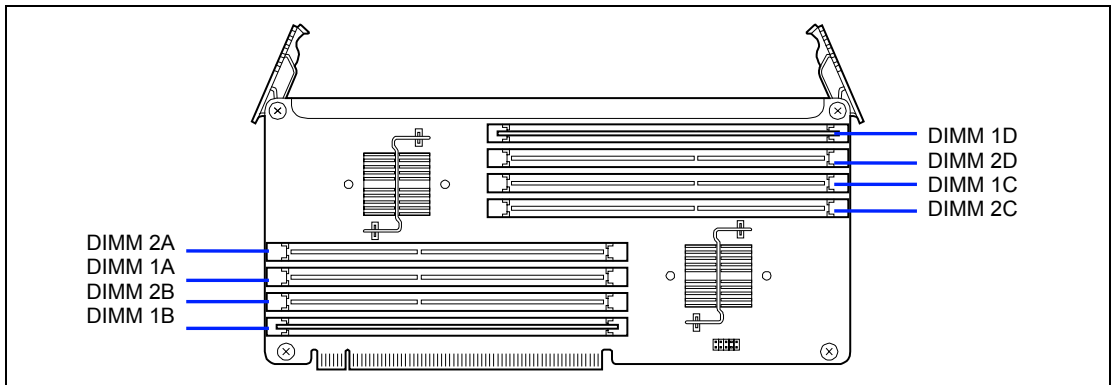
To check the installed memory (DIMM) status

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

The on-screen DIMM socket locations on the memory backboard are associated as shown in the figure below.

To clear the memory (DIMM) error information

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



To enable the memory sparing feature

Select [Advanced] - [Memory Configuration] - [Memory RAS Feature], and select [Spare].

To enable the memory mirroring feature

Select [Advanced] - [Memory Configuration] - [Memory RAS Feature], and select [Mirror].

The memory backboard is connected to the processor as shown in the table below.

Memory backboard number	Processor number
1	1
2	
3	
4	2
5	
6	
7	3
8	
	4

## Memory Hot-Plug

To hot-add the memory backboard

Select [Advanced] - [Memory Configuration] - [Hot-Add Memory Support] - [Enabled].

## Processor

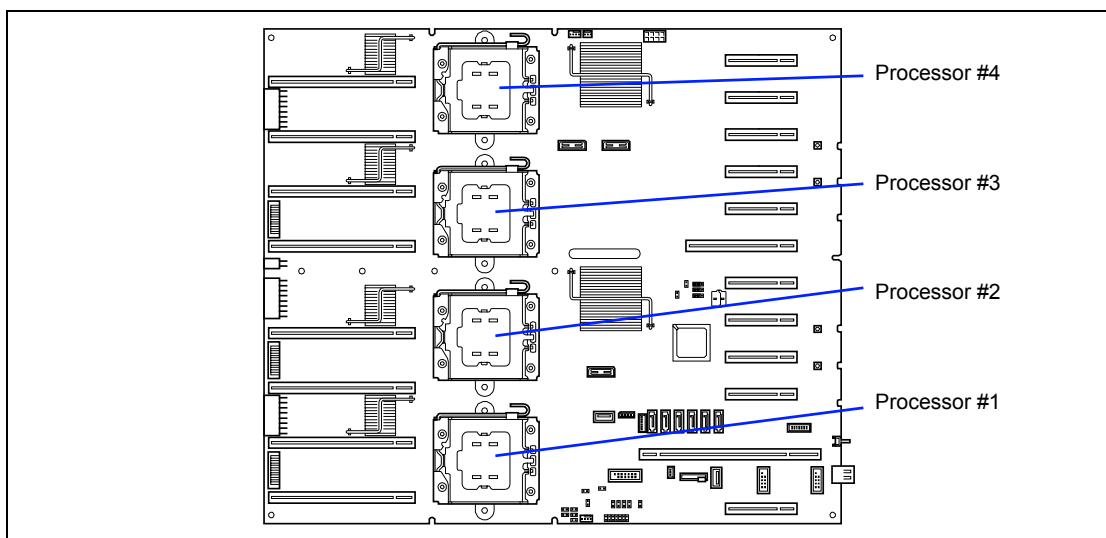
To interrupt POST execution at degradation of processor

Select [Advanced] - [Memory/Processor Error] - [Halt].

To check the installed processor status

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

The on-screen processor numbers and socket locations on the mother board are associated as shown in the following figure.



## Security

To set passwords on the BIOS

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

Set Supervisor password first, then set User password, and only User password has a restriction to access to SETUP utility.

To enable/disable the POWER switch

- To disable

Select [Security] - [Power Switch Inhibit] - [Enabled].

- To enable

Select [Security] - [Power Switch Inhibit] - [Disabled].

---

**IMPORTANT:** Enabling [Power Switch Inhibit] disables forced shutdown (see Chapter 8) as well as power on/off using the POWER switch.

---

## External Devices

To set up external devices

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

## Internal Devices

To set up internal PCI devices of the server

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

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

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

## PCI Hot Plug

To install the PCI board with the PCI hot plug

Select [Advanced] - [PCI Configuration] - [Hot Plug PCI Control] - [PCI Hot-Plug Support]→[Enabled]

\* To execute Hot Add on the slot that does not contain PCI board, you need to configure the slot according to the table below.

N code	Board name	I/O	Memory	Prefetchable memory
N8104-121	1000BASE-T Adapter (2ch)	Minimum	Minimum	None

## Saving the Configuration Data

To save the BIOS configuration data

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

To discard changes to the BIOS configuration data

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

To resume the default BIOS configuration data (may differ from factory-set value)

Select [Exit] - [Load Setup Defaults].



## Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

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

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

### Main

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Set the time.	
System Date	MM/DD/YYYY	Set the date.	
SATA Port 0	–	Displays the information on the device connected to channel on the submenu. (View only)	
SATA Port 1			
SATA Port 2			
SATA Port 3			
SATA Port 4			
SATA Port 5			
Language	[English (US)] French German Spanish Italian	Select the language used for SETUP.	

[ ]: Factory-set

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

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

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

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

## Processor Settings

Option	Parameter	Description	Your Setting
Processor Retest	[No] Yes	If set to "Yes", BIOS will clear historical processor status and retest the processor. This parameter is changed to "No" at the next boot.	
Processor Speed Setting	–	Indicates the clock speed of the processor.	
Processor 1 CPUID	Numeral (000206Ex) Disabled Error Not Installed	Numeral indicates the ID of processor 1. "Disabled" or "Error" indicates processor failure. "Not Installed" indicates that the processor is not installed. (View only)	
Processor 1 L2 Cache	–	Indicates the L2 cache of processor 1. (View only)	
Processor 1 L3 Cache	–	Indicates the L3 cache of processor 1. (View only)	
Processor 2 CPUID	Numeral (000206Ex) Disabled Error Not Installed	Numeral indicates the ID of processor 2. "Disabled" or "Error" indicates processor failure. "Not Installed" indicates that the processor is not installed. (View only)	
Processor 2 L2 Cache	–	Indicates the L2 cache of processor 2. (View only)	
Processor 2 L3 Cache	–	Indicates the L3 cache of processor 2. (View only)	
Processor 3 CPUID	Numeral (000206Ex) Disabled Error Not Installed	Numeral indicates the ID of processor 3. "Disabled" or "Error" indicates processor failure. "Not Installed" indicates that the processor is not installed. (View only)	
Processor 3 L2 Cache	–	Indicates the L2 cache of processor 3. (View only)	
Processor 3 L3 Cache	–	Indicates the L3 cache of processor 3. (View only)	
Processor 4 CPUID	Numeral (000206Ex) Disabled Error Not Installed	Numeral indicates the ID of processor 4. "Disabled" or "Error" indicates processor failure. "Not Installed" indicates that the processor is not installed. (View only)	
Processor 4 L2 Cache	–	Indicates the L2 cache of processor 4. (View only)	
Processor 4 L3 Cache	–	Indicates the L3 cache of processor 4. (View only)	
Active Processor Cores	1 2 [All]	Specifies the number of valid cores in the processor.	
Hyper-Threading Technology	Disabled [Enabled]	Enables or disables the Intel(R) Hyper Threading technology. This menu appears only when the processor supports this feature.	

Option	Parameter	Description	Your Setting
Execute Disable Bit	[Enabled] Disabled	Disables or enables the Execute Disable Bit of the processor.	
Intel SpeedStep(R) Technology	[Enabled] Disabled	Disables or enables the enhanced Speed Step technology of Intel processor. This menu appears only when the processor supports this feature.	
Turbo Boost Technology	[Enabled] Disabled	Enables or disables the Intel(R) Turbo Boost Technology. This menu appears only when the processor supports this feature.	
Performance/Watt	[PowerOptimized] Traditional	Specify when to start the Intel® Turbo Boost Technology feature.	
C1 Enhanced Mode	Disabled [Enabled]	Disables or enables the Enhanced Halt State (C1E) feature of Intel processor. This menu appears only when the processor supports this feature.	
Virtualization Technology	Disabled [Enabled]	This menu appears only when the processor supports Intel® Virtualization Technology. Specify whether the Intel® Virtualization Technology is enabled or disabled. If the parameter is changed, the DC power of the system must be turned off. Select [Exit] → [Exit Saving Changes] and restart the system. Then, turn off the DC power on POST screen.	
Hardware Prefetcher	Disabled [Enabled]	Disables or enables the Hardware Prefetcher of the processor.	
Adjacent Cache Line Prefetch	Disabled [Enabled]	Disables or enables the Adjacent Cache Line Prefetch of the processor.	
Processor Error Mode	[Auto] Legacy OS Poison Poison+Viral	Indicates the Processor Error Mode. Do not change the factory-set value.	

[ ]: Factory-set

**NOTES:** Parameters for [Performance/Watt]

- PowerOptimized:  
The Turbo Boost Technology starts after the request from OS is issued continuously for two seconds.
- Traditional:  
The Turbo Boost Technology starts immediately after the request is issued from OS.

**Advanced**

Option	Parameter	Description	Your Setting
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether the self-diagnosis (POST) running screen is displayed or not on booting. If this item is set to "Disabled", the "NEC" logo appears during POST. (Pressing <b>Esc</b> in the status causes the screen display to be switched to the POST execution screen. The Boot-time Diagnostic Screen is automatically enabled if the [Console Redirection] is enabled.	
Reset Configuration Data	[No] Yes	Select "Yes" to clear the system configuration data (system information stored by POST). The parameter is changed to "No" after the system is booted.	
NumLock	On [Off]	Specify whether the Numlock feature is enabled or disabled on booting.	
Memory/ Processor Error	[Boot] Halt	Specify whether POST is paused at the end of POST if a processor or memory error has occurred during POST. This option is available only when "Enabled" is specified for [POST Error Pause] in [Server] menu. If the system memory does not work normally, POST will pause at the end of the POST, even if "Boot" is selected.	

[    ]: Factory-set

## Memory Configuration

Option	Parameter	Description	Your Setting
Installed memory	–	Indicates the capacity of mounted memory. (View only)	
Available under 4GB	–	Indicates the capacity of memory available in the area smaller than 4GB. (View only)	
Memory Retest	[No] Yes	Clears the DIMM group error status information. Run this menu when the failed DIMM(s) are replaced. Automatically reset to "No" at the next boot.	
Extended RAM Step	1MB 1KB Every Location [Disabled]	"1MB" indicates that the memory test is done in the unit of 1MB. "1KB" indicates that the memory test is done in the unit of 1KB. "Every-Location" indicates that every memory device is tested. "Disabled" indicates that only memory initialization is done.	
Memory RAS Feature	[Normal] Spare Mirror	Select "Spare" to enable the memory sparing function. Select "Mirror" to enable the memory mirroring function.	
Hot-Add Memory Support	[Disabled] Enabled	Disables or enables memory hot-add feature.	
NUMA configuration	Disabled [Enabled]	Disables or enables Non-Uniform Memory Access feature.	
Interleave Mode	None [2 Way] 4 Way 8 Way	Select the memory interleave mode. This item is available only when [NUMA configuration] is set to "Disabled".	
Patrol Scrubbing	Disabled [Enabled]	Do not change the factory-set value. Disables or enables Patrol Scrubbing feature.	

[ ]: Factory-set

### NOTES:

- When [Hot-Add Memory Support] is enabled:
  - Interleave feature is always set to "None" regardless of setting for [Interleave Mode].
  - NUMA feature is always set to "Enabled" regardless of setting for [NUMA configuration].
- In the following cases, the available interleave is configured in the order, 2Way → None.
  - When [NUMA configuration] is set to "Enabled".
  - When [NUMA configuration] is set to "Disabled" and [Interleave Mode] is set to "None" or "2Way".
- If [Interleave Mode] is set to "8Way", the available interleave is configured in the order, 8Way → 4Way → 2Way → None.
- If [Interleave Mode] is set to "4Way", the available interleave is configured in the order, 4Way → 2Way → None.

**Memory Riser Board x**

Option	Parameter	Description	Your Setting
DIMM_1B Status	Normal	Indicates the current memory status for each memory back board. "Normal" indicates that the memory devices operate normally. "Not Installed" indicates that no memory devices are installed. "Disabled" indicates that one or more memory devices are defected. For the DIMM socket associated with the DIMM number on this menu, see page 4-5.	
DIMM_1D Status	Not Installed		
DIMM_1A Status	Disabled		
DIMM_1C Status			
DIMM_2B Status			
DIMM_2D Status			
DIMM_2A Status			
DIMM_2C Status			

[ ]: Factory-set

**PCI Configuration**

Option	Parameter	Description	Your Setting
PCI Slot 1-10 Option ROM	[Enabled] Disabled	Disables/enables the Option ROM on the PCI board.	

[ ]: Factory-set

**IMPORTANT:** If the RAID Controller, LAN board (network boot), or Fibre Channel controller is connected with the hard disk drive that does not contain an OS, set the parameter for "PCI Slot x Option ROM" (x: slot containing the PCI card) to "Disabled".

**Hot-plug PCI Control**

Option	Parameter	Description	Your Setting
PCI Hot-Plug Support	[Disabled] Enabled	Enables or disables PCI hot-plug feature.	
PCI Slot 1/2/6/7 I/O	[None] Minimum Middle Maximum	Specify the I/O resource size to be allocated to the slot not containing the PCI board. Displayed only when [PCI Hot-Plug Support] is set to [Enabled].	
PCI Slot 1/2/6/7 Memory	[None] Minimum Middle Maximum	Specify the memory size to be allocated to the slot not containing the PCI board. Displayed only when [PCI Hot-Plug Support] is set to [Enabled].	
PCI Slot 1/2/6/7 Prefetchable Memory	[None] Minimum Middle Maximum	Specify the prefetchable memory resource size to be allocated to the slot not containing the PCI board. Displayed only when [PCI Hot-Plug Support] is set to [Enabled].	

[ ]: Factory-set

## Onboard SAS

Option	Parameter	Description	Your Setting
Option ROM Scan	[Enabled] Disabled	Disables or enables option ROM scan for the device in SAS slot.	

[    ]: Factory-set

## Onboard NIC

Option	Parameter	Description	Your Setting
LAN#1 Option ROM Scan	Disabled [Enabled]	Enables or disables an Option ROM Scan of onboard LAN controller 1.	
PXE/iSCSI Select	[PXE] iSCSI	Specify the ROM to be expanded to onboard LAN controller 1.	
LAN#2 Option ROM Scan	Disabled [Enabled]	Enables or disables an Option ROM Scan of onboard LAN controller 2.	
PXE/iSCSI Select	[PXE] iSCSI	Specify the ROM to be expanded to onboard LAN controller 2.	
LAN#3 Option ROM Scan	Disabled [Enabled]	Enables or disables an Option ROM Scan of onboard LAN controller 3.	
PXE/iSCSI Select	[PXE] iSCSI	Specify the ROM to be expanded to onboard LAN controller 3.	
LAN#4 Option ROM Scan	Disabled [Enabled]	Enables or disables an Option ROM Scan of onboard LAN controller 4.	
PXE/iSCSI Select	[PXE] iSCSI	Specify the ROM to be expanded to onboard LAN controller 4.	

[    ]: Factory-set

## Peripheral Configuration

**IMPORTANT:** Note that the interrupt and/or base I/O address are not conflicted with others.

Option	Parameter	Description	Your Setting
Serial Port A	Disabled [Enabled]	Specify whether serial port A is enabled or disabled.	
Base I/O Address	[3F8] 2F8 3E8 2E8	Selects the base address for serial port A.	
Interrupt	IRQ 3 [IRQ 4]	Selects the interrupt (IRQ) for serial port A.	
Serial Port B	Disabled [Enabled]	Specify whether serial port B is enabled or disabled.	
Base I/O Address	3F8 [2F8] 3E8 2E8	Selects the base address for serial port B.	
Interrupt	[IRQ 3] IRQ 4	Selects the interrupt (IRQ) for serial port B.	
USB 2.0 Controller	Disabled [Enabled]	Specify whether the USB 2.0 controller is enabled or disabled.	
Legacy USB Support	Disabled [Enabled]	Specify whether the USB keyboard is made available in OS which does not support USB formally.	
Serial ATA	Disabled [Enabled]	Specify whether the onboard SATA controller is enabled or disabled.	
SATA AHCI	Disabled	The AHCI (Advanced HostController Interface) is always disabled on this server. This option is display only. This menu appears only when [Serial ATA] is enabled.	

[ ]: Factory-set



**Advanced Chipset Control**

Option	Parameter	Description	Your Setting
Multimedia Timer	[Enabled] Disabled	Specify whether the system supports the multimedia timer feature.	
Intel(R) I/OAT	[Enabled] Disabled	Specify whether the Intel(R) I/O Acceleration Technology is enabled or disabled.	
Intel(R) VT-d	[Enabled] Disabled	Specify whether the Intel(R) Virtualization Technology for Directed I/O feature is enabled or disabled.	
SR-IOV	[Enabled] Disabled	Specify whether the Single Root I/O Virtualization feature is enabled or disabled.	
Wake On LAN/PME	[Enabled] Disabled	Specify whether the remote power-on function through network is enabled or disabled.	
Wake On Ring	[Disabled] Enabled	Specify whether the remote power-on function through a serial port (modem) is enabled or disabled.	
Wake On RTC Alarm	[Disabled] Enabled	Specify whether the remote power-on function through an RTC alarm is enabled or disabled.	
PCI Bus Static Allocation	Disabled [Enabled]	Specify whether static allocation of PCI bus number feature is enabled or disabled. Do not change the factory-set value.	

[    ]: Factory-set

---

**IMPORTANT:** If the AC power is turned off while the Wake On Ring feature is enabled, this feature is disabled at the next system boot after AC power-on. You need to press the Power switch to boot the system. If the AC power is turned off, Wake On Ring feature on power management chip is disabled until the next DC power-on.

---

## Security

Press **Enter** on "Set Supervisor Password" or "Set User Password", to display the password entry screen.

Enter the passwords on the dialog box.

---

### IMPORTANT:

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

Option	Parameter	Description	Your Setting
User Password Is	Clear Set	Indicates the user password setting status.	
Supervisor Password Is	Clear Set	Indicates the supervisor password setting status.	
Set User Password	Up to eight alphanumeics	Press <b>Enter</b> to display the user password input screen. For this password, accessing to the SETUP menu is restricted. This item becomes accessible after the Supervisor password is registered. This setting can be done only on login with the password input of "Supervisor" at start of SETUP.	
Set Supervisor Password	Up to eight alphanumeics	Press <b>Enter</b> to display the supervisor password input screen. This password enables all the SETUP menus to be accessed. This setting can be done only on login with the password input of "Supervisor" at start of SETUP.	
Password on boot	[Disabled] Enabled	Specify whether the passwords are entered or not on booting. At first, the supervisor password must be set. If the supervisor password is set and this option is disabled, BIOS determines that a user is booting.	
Fixed disk boot sector	[Normal] Write Protect	Specify whether to permit writing into boot sector of the IDE hard disk drive or not. The server does not support IDE hard disk drive.	
Power Switch Inhibit	[Disabled] Enabled	Specify whether the power switch is enabled or disabled. If this item is set to "Enabled", the power cannot be turned off by using the POWER switch (including the forced shutdown).	

Option	Parameter	Description	Your Setting
Disable USB Ports	Disable USB Ports [Disabled] Front Rear Internal Front + Rear Front + Internal Rear + Internal Front + Rear + Internal	Specify whether the USB port is enabled or disabled.	

[ ☐ ]: Factory-set

### Security Chip Configuration

Option	Parameter	Description	Your Setting
TPM Support	[Disabled] Enabled	Specify whether the TPM (Trusted Platform Module) is enabled or disabled.	
Current TPM State	–	Indicates the TPM State currently being set. This menu appears only when "Enabled" is selected in [TPM Support].	
Change TPM State	[No Change] Enable & Activate Deactivate & Disable Clear	Change TPM feature. This menu appears only when "Enabled" is selected in [TPM Support].	

[ ☐ ]: Factory-set

**IMPORTANT:** If you select any parameter except for [No Change] to change TPM State, a confirmation screen as shown below appears at the end of POST after restarting the system. Select [Execute] on the confirmation screen to determine the change you have made.

When [Enable & Activate] is selected:

Physical Presence operations

TPM configuration change was requested to  
State:    Enable & Activate

Note:  
This section will switch on the TPM

Reject  
Execute

When [Deactivate & Disable] is selected:

Physical Presence operations

TPM configuration change was requested to  
State:    Deactivate & Disable

Note:  
This action will switch off the TPM

**WARNING!!!**

Doing so might prevent security applications  
that rely on the TPM from functioning  
as expected

Reject  
Execute

When [Clear] is selected:

Physical Presence operations

TPM configuration change was requested to  
State:    Clear

**WARNING!!!**

Clearing erases information stored on the TPM.  
You will lose all created keys and access to  
data encrypted by these keys.

Reject  
Execute

## Server

Option	Parameter	Description	Your Setting
Assert NMI on PERR	Disabled [Enabled]	Indicates whether PCI PERR is supported or not.	
Assert NMI on SERR	Disabled [Enabled]	Indicates whether PCI SERR is supported or not.	
FRB-2 Policy	Disable FRB2 Timer [Retry 3 Times] Always Reset	Specify whether the processor is disabled or not when FRB-2 error occurred in BSP.	
Boot Monitoring	[Disabled] 5 minutes 10 minutes 15 minutes 20 minutes 25 minutes 30 minutes 35 minutes 40 minutes 45 minutes 50 minutes 55 minutes 60 minutes	Specify whether to enable or disable the boot monitoring function on booting, or select the time limit for timeout.  To use this function, install NEC ESM PRO Agent. Set this item to "Disabled" if the system is booted from OS without installation of NEC ESM PRO Agent.	
Boot Monitoring Policy	[Retry 3 Times] Always Reset	This item indicates the processing at the occurrence of timeout during boot monitoring. If [Retry 3 times] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. If [Always Reset] is selected, the system is reset after the occurrence of timeout and OS boot is retried repeatedly.	
Thermal Sensor	Disabled [Enabled]	Specify whether to enable or disable the thermal sensor monitoring function. If a thermal error is detected with this item being set to "Enabled", the system stops at the end of POST.	
BMC IRQ	Disabled [IRQ 11]	Specify whether to assign IRQ for BMC.	
Post Error Pause	Disabled [Enabled]	Indicates whether POST is aborted once at the end of POST if an error occurs during the execution of POST.	
AC-LINK	Stay Off [Last State] Power On	Indicates the AC-LINK function. Shows the state of the power of the server. (See the table below.)	
Power ON Delay Time (Sec)	[20] - 255	Sets the power-on delay time when "Power On" or "Last State" is specified for AC LINK.	
Clear FRU LED	[No] Yes	If set to [Yes], an error lamp to indicate the error location is turned off. Automatically reset to [No] at the next boot.	
Platform Event Filtering	Disabled [Enabled]	Enables or disables the Platform Event Filtering feature of the baseboard management controller (BMC).	

[ ]: Factory-set

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

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

\* Press the POWER switch continuously at least four seconds. This forcibly turns off the power.

---

**IMPORTANT:** Set this item to "Power on" in order to link the AC power source supplied from UPS when the server is connected to UPS.

---

## System Management

Option	Parameter	Description	Your Setting
BIOS Version	–	Indicates the version of BIOS. (View only)	
Board Part Number	–	Indicates the IO board information. (View only)	
Board Serial Number	–		
System Part Number	–	Indicates the system information. (View only)	
System Serial Number	–		
Chassis Part Number	–	Indicates the chassis information. (View only)	
Chassis Serial Number	–		
Onboard LAN 1 MAC Address	–	Indicates the MAC address for onboard LAN port 1. (View only)	
Onboard LAN 2 MAC Address	–	Indicates the MAC address for onboard LAN port 2. (View only)	
Onboard LAN 3 MAC Address	–	Indicates the MAC address for onboard LAN port 3. (View only)	
Onboard LAN 4 MAC Address	–	Indicates the MAC address for onboard LAN port 4. (View only)	
Management LAN MAC Address	–	Indicates the MAC address for management LAN port. (View only)	
BMC Device ID	–	Indicates the device information of BMC. (View only)	
BMC Device Revision	–	Indicates the revision of BMC. (View only)	
BMC Firmware Revision	–	Indicates the revision of BMC firmware. (View only)	
SDR Revision	–	Indicates the revision of SDR (Sensor Data Record). (View only)	
PIA Revision	–	Indicates the revision of PIA (Platform Information Area). (View only)	
HSC Firmware Revision	–	Indicates the revision of HSC (Hot Swap Controller) firmware.	

[     ]: Factory-set

**Console Redirection**

Option	Parameter	Description	Your Setting
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Enables or disables direct connection from the management PC that uses NEC ESMPRO Manager or hyper terminal through the port specified here.	
Baud Rate	9600 [19.2K] 38.4K 57.6K 115.2K	Specify the baud rate used for the interface with hardware console to be connected.	
Flow Control	None XON/XOFF [CTS/RTS] CTS/RTS+CD	Specify the flow control method.	
Terminal Type	PC ANSI [VT100+] VT-UTF8	Specify the console type.	
Continue Redirection after POST	Disabled [Enabled]	Specify whether the console redirection feature is continuously executed after POST or not.	
Remote Console Reset	[Disabled] Enabled	Specify whether to enable or disable resetting by Escape command (Esc R) sent from the remote console.  If the server is connected with the management PC that uses NEC ESMPRO Manager, this option is always enabled even if "Disabled" is specified here.	

[    ]: Factory-set



**BMC LAN Configuration**

Option	Parameter	Description	Your Setting
Shared BMC LAN	[Disabled] Enabled	Set to [Disabled] to use the management LAN port for management LAN. When set to [Enabled], the LAN port 1 can be used for management LAN while sharing with the standard LAN. When set to [Enabled], the management LAN port is disabled.	
LAN Connection Type	[Auto Negotiation] 100Mbps Full Duplex 100Mbps Half Duplex 10Mbps Full Duplex 10Mbps Half Duplex	Specify the connection type for management LAN port.	
IP Address	[192.168.001.001]	Specify an IP address for management LAN.	
Subnet Mask	[255.255.255.000]	Specify a subnet mask for management LAN.	
Default Gateway	[000.000.000.000]	Specify a default gateway for management LAN.	
DHCP	[Disabled] Enabled	Set to [Enabled] to obtain an IP address from DHCP server automatically. If you intend to specify an IP address manually, set to [Disabled].	
Web Interface	–	–	
HTTP	[Disabled] Enabled	Set to [Enabled] to use HTTP communication for Web interface.	
HTTP Port Number	[80]	Specify the TCP port number which the management LAN uses for HTTP communication.	
HTTPS	[Disabled] Enabled	Set to [Enabled] to use HTTPS communication for Web interface.	
HTTPS Port Number	[443]	Specify the TCP port number which the management LAN uses for HTTPS communication.	
Command Line Interface	–	–	
Telnet	[Disabled] Enabled	Set to [Enabled] to use Telnet communication as a command line interface.	
Telnet Port Number	[23]	Specify the TCP port number to be used for Telnet communication.	
SSH	[Disabled] Enabled	Set to [Enabled] to use SSH communication as a command line interface.	

Option	Parameter	Description	Your Setting
SSH Port Number	[22]	Specify the TCP port number to be used for SSH communication.	
Clear BMC Configuration	[Enter]	Press <b>Enter</b> and select "Yes" to initialize the BMC configuration.	

[ ]: Factory-set

---

**IMPORTANT:** Notes on performing Clear BMC Configuration

- Executing "Load Setup Defaults" in BIOS SETUP utility does not restore the default value for settings related to management LAN of BMC. To restore the default value, you need to execute Clear BMC Configuration.
  - It takes about several tens seconds until initialization completes after execution of Clear BMC Configuration.
- 

---

**NOTE:** Executing [Save Custom Defaults/Load Custom Defaults] of BIOS SETUP does not save the settings you have made in BMC LAN Configuration menu.

---

Event Log Configuration

Option	Parameter	Description	Your Setting
Auto Clear Event Logs	Enabled [Disabled]	If set to "Enabled", logs are automatically cleared when the error log area is fulfilled.	
Clear All Event Log	Enter	Press <b>Enter</b> and select "Yes" to clear the system event log.	

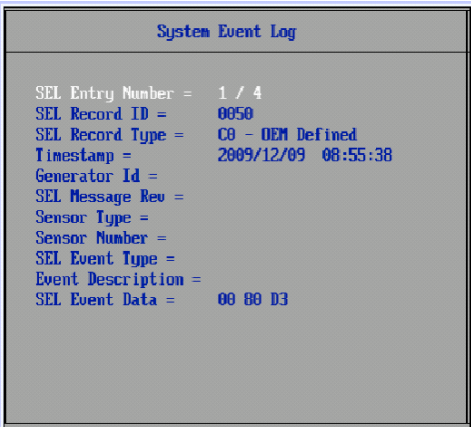
[ ]: Factory-set

System Event Log

Use **↑**, **↓**, **+**, **−**, **Home**, or **End** to view the newer or older system event logs recorded.

NOTES:

- If a lot of event logs are recorded in the system, it takes about two minutes at the longest until they are displayed on the screen.
- If "SEL Record Type= C0 - OEM Defined" is displayed in System Event Log, it is only an incidental information. You can ignore it.



## Boot

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

Indication	Device
USB CD/DVD-ROM	USB CD/DVD-ROM drive
IDE CD/DVD-ROM	SATA CD/DVD-ROM drive
USB FDC	USB floppy disk drive
USB KEY	USB flash memory device or Flash FDD
IDE HDD	SATA hard disk drives (not supported)
USB HDD	USB hard disk drives
PCI SCSI	Internal hard disk drives installed in SAS slots or PCI slots
PCI BEV	IBA GE Slot xxxx: Onboard LAN [Slot 0100]: LAN1, [Slot 0101]: LAN2, [Slot 0900]: LAN3, [Slot 0901]: LAN4 Other indication: Optional PCI board.

1. When BIOS detects a bootable device, it displays the information on the device in the relevant indication.  
  
To boot the server from a desired device, the device must be registered as a boot device. (Up to eight boot devices can be registered.)
2. Pressing **X** after selecting a device allows the selected device to be registered as a boot device or deleted from the registration.  
  
With eight boot devices being registered, any other device cannot be registered as a boot device even if you press **X**. To register a device as a boot device newly, first delete the registration of a device registered as a boot device but not booted any more.
3. You can change the boot priority (first to eighth) of each device by using **↑**, **↓**, **+** and/or **−**.  
  
To change the priority of a device, move the cursor to the device by using the **↑** or **↓**, and press **+** or **−**.

## Exit

The options on the menu are described below.

### Exit Saving Changes

Select this item to exit from SETUP after saving the newly selected information in CMOS (non-volatile memory). The selection of "Exit Saving Changes" causes the confirmation screen to appear.

If you select "Yes", SETUP is terminated with the newly selected information saved in CMOS (non-volatile memory). Then the server automatically reboots the system.

### Exit Discarding Changes

Select this item to exit from SETUP without saving the newly selected information in CMOS (non-volatile memory).

Selecting "No" on the confirmation screen [Save before exiting?] allows SETUP to be terminated without storage of the modified information. If you select "Yes", SETUP is terminated with the modified information saved in CMOS. Then the server automatically reboots the system.

### Load Setup Defaults

Select this item to return all the values of SETUP to the default values. Selecting "Load Setup Defaults" causes the confirmation screen to appear.

Select "Yes" to return the values to the default values. Select "No" to return to the Exit menu screen.

### Save Custom Defaults

Selecting the Save Custom Defaults menu and pressing **Enter** saves the current SETUP parameters as the user-defined SETUP defaults. When saved, [Load Custom Defaults] menu is displayed.

### Discard Changes

Select this item to return the values modified to the previous values before saving the values to CMOS. Selecting "Discard Changes" causes the confirmation screen to appear.

Select "Yes" to discard the newly selected information and return to the previous values.

### Save Changes

Select this item to save the newly selected information to CMOS (non-volatile memory) without the termination of SETUP. Selecting "Save Changes" causes the confirmation screen to appear.

Select "Yes" to save the newly selected information to CMOS (non-volatile memory)

## RAID SYSTEM CONFIGURATION

This section describes how to use the internal hard disk drives as RAID System.

To use the internal hard disk drives as RAID System, an optional RAID Controller is required. About the optional RAID Controller, refer to the documents provided with optional RAID Controller.

---

### NOTES:

- The RAID Controller (N8103-129, N8103-130, N8103-134) does not support hibernation and standby mode. Do not let the system enter hibernation or standby mode.
  - To use the internal hard disk drives as RAID System, an optional RAID Controller is required.
- 

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## RAID

### Overview of RAID System

#### What is RAID (Redundant Array of Inexpensive Disks)?

RAID is an abbreviation for "Redundant Array of Inexpensive Disks". The RAID technology allows more than one hard disk drive (HDD) to be handled collectively.

In actual, RAID can configure more than one hard disk drives as a single disk array (disk group) to operate the hard disk drives effectively. This can bring higher performance than a single hard disk drive of a large capacity.

The optional RAID Controller has a feature to divide a single disk array (disk group) into several logical drives (virtual disks). The RAID Controller recognizes these virtual disks as if it were a single hard disk drive. The RAID Controller accesses to more than one hard disk drive configuring a disk array (disk group) in parallel.

Some RAID levels can recover data from remaining data and parity by using rebuild feature if an error occurs in a single hard disk drive. This can provide high reliability for the system.

RAID Levels

The record mode enabling the RAID feature includes several levels. Among the levels, the optional RAID Controller supports RAID levels 0, 1, 5, 6, 10, and 50. The number of hard disk drives required to create a disk group varies depending on the RAID level as shown in the table below.

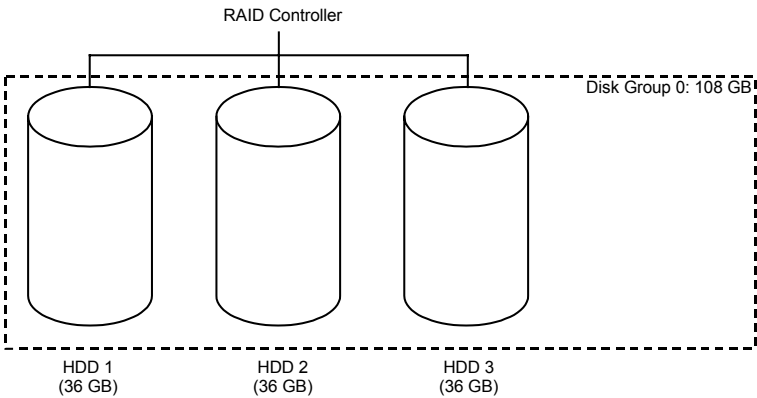
RAID level	Number of required hard disk drives	
	Min.	Max.
RAID 0	1	8
RAID 1	2	2
RAID 5	3	8
RAID 6	3 <sup>*1, *2</sup>	8
RAID 10	4	8
RAID 50	6	8

- \*1 To configure RAID6 using Express Setup, at least four hard disk drives of same capacity must be installed.
- \*2 To configure RAID6 on the RAID Controller (N8103-134), at least four hard disk drives must be installed.

**NOTE:** For details of the RAID levels, see "RAID Levels" described later in this chapter.

Disk Array (Disk Group)

A disk array (disk group) is configured with more than one hard disk drives. The allowable number of disk array (disk groups) is equal to the number of hard disk drives. The figure below shows a sample configuration. The three hard disk drives are connected to the optional RAID Controller, creating one disk array (disk group).



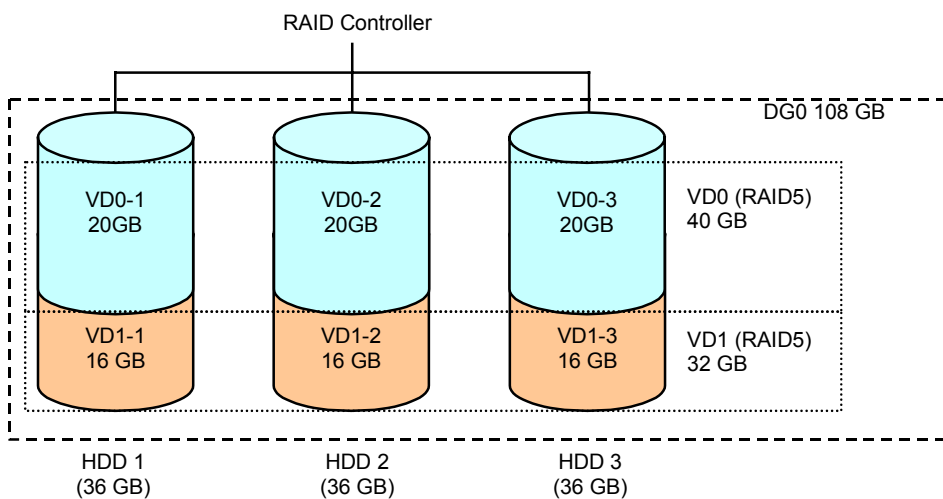
## Virtual Disk

Virtual disk is a logical drive defined in disk array (disk group). It is recognized as a physical drive by OS.

The allowable number of virtual disks is up to 16 per disk group, or up to 64 per controller on the RAID Controller (N8103-129/130).

The allowable number of virtual disks is up to 32 per controller on the RAID Controller (N8103-134).

The figure below shows a sample configuration in which the optional RAID Controller is connected with three hard disk drives, creating one Disk Group. Two RAID5 virtual disks (VD) are defined in the Disk Group.



## Parity

The parity means redundant data. A single set of redundant data is created from the data saved in more than one hard disk drive.

The created redundant data is used for data recovery when a hard disk drive is defected.

## Hot-Swap

The hot-swap enables a hard disk drive to be removed (or replaced) under system operation.

## Hot-Spare

The hot-spare is prepared as an auxiliary hard disk drive substituting for a defected hard disk drive included in a logical drive which is configured at a redundant RAID level. Detecting a hard disk drive fault, the system disconnects the hard disk drive (or makes it offline) and starts rebuild using the hot-spare.



## RAID Levels

### Characteristics of RAID Levels

The table below lists the characteristics of the RAID levels.

Level	Function	Redundancy	Characteristics
RAID0	Striping	No	<ul style="list-style-type: none"> <li>• Data read/write at the highest rate</li> <li>• Largest capacity</li> <li>• Capacity: (capacity of single hard disk drive) × (number of hard disk drives)</li> </ul>
RAID1	Mirroring	Yes	<ul style="list-style-type: none"> <li>• Two hard disk drives required</li> <li>• Capacity: capacity of single hard disk drive</li> </ul>
RAID5	Striping of both data and redundant data	Yes	<ul style="list-style-type: none"> <li>• Three or more hard disk drives required</li> <li>• Capacity: (capacity of single hard disk drive) × ((number of hard disk drives) - 1)</li> </ul>
RAID6	Striping of both data and redundant data	Yes	<ul style="list-style-type: none"> <li>• Three* or more hard disk drives required.</li> <li>• Capacity: (capacity of single hard disk drive) × ((number of hard disk drives) - 2)</li> </ul>
RAID10	Striping of RAID1	Yes	<ul style="list-style-type: none"> <li>• Four or more hard disk drives required</li> <li>• Capacity: (capacity of single hard disk drive) × ((number of hard disk drives) - 2)</li> </ul>
RAID50	Striping of RAID5	Yes	<ul style="list-style-type: none"> <li>• Six or more hard disk drives required</li> <li>• Capacity: (capacity of single hard disk drive) × ((number of hard disk drives) - 2)</li> </ul>

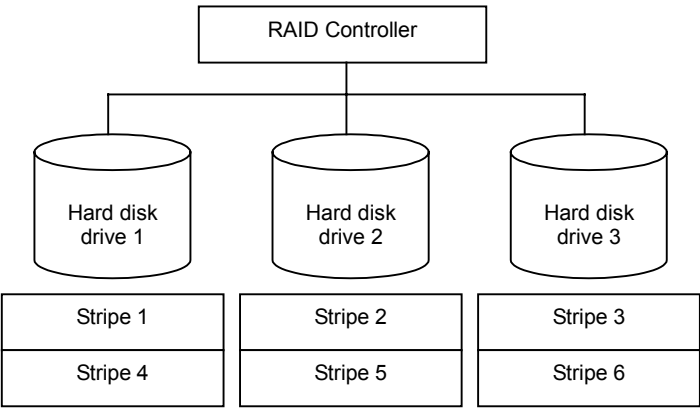
\* To configure RAID6 on the RAID Controller (N8103-134), at least four hard disk drives must be installed.

**RAID0**

In RAID0, data to be recorded is distributed to hard disk drives. The mode is called "striping".

In the figure below, data is recorded in stripe 1 (disk 1), stripe 2 (disk 2), and stripe 3 (disk 3)... in the order. Because RAID0 allows all hard disk drives to be accessed collectively, it can provide the best disk access performance.

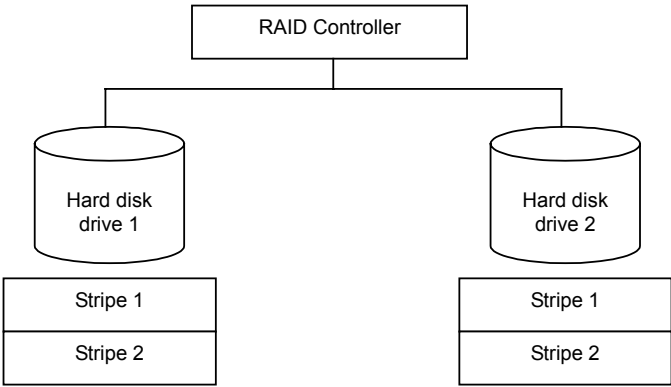
**IMPORTANT:** RAID0 cannot have data redundancy. If a hard disk drive is defected, the data saved in the hard disk drive cannot be recovered.



**RAID1**

In the RAID1 level, data saved in a hard disk drive is written to another hard disk drive without change. The mode is called "mirroring".

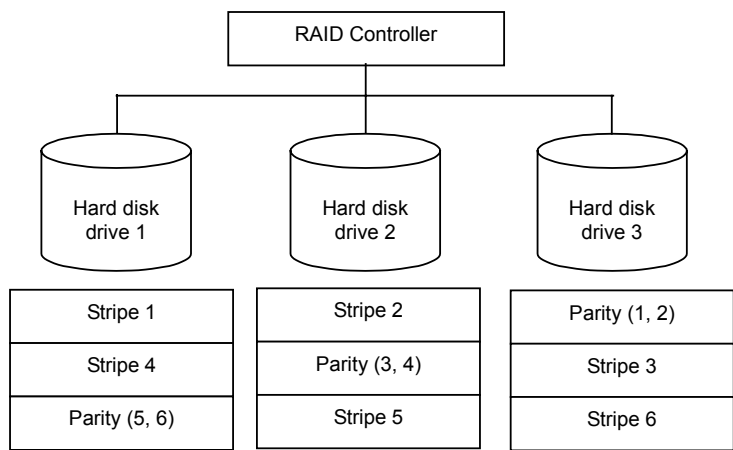
When data is written onto a single hard disk drive, the same data is written onto another hard disk drive. If either of the hard disk drives is defected, the other hard disk drive containing the same data can substitute for the defected hard disk drive. Thus, the system can continue to operate without interruption.



RAID5

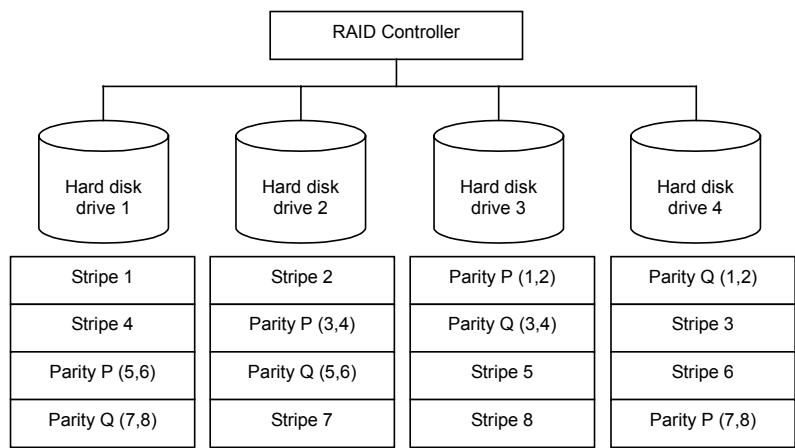
In RAID5, data is distributed to hard disk drives by striping and, at the same time, the parity (redundant data) is distributed to the hard disk drives. This mode is called "striping with distributed parity".

Each of stripe x, stripe x+1, and parity (x, x+1) created from stripe x and stripe x+1 is written onto a specific hard disk drive. Accordingly, the total capacity assigned to the parity is just the same as the capacity of a single hard disk drive. If any one of the hard disk drives configuring a logical drive is defected, data is still available with no problems.



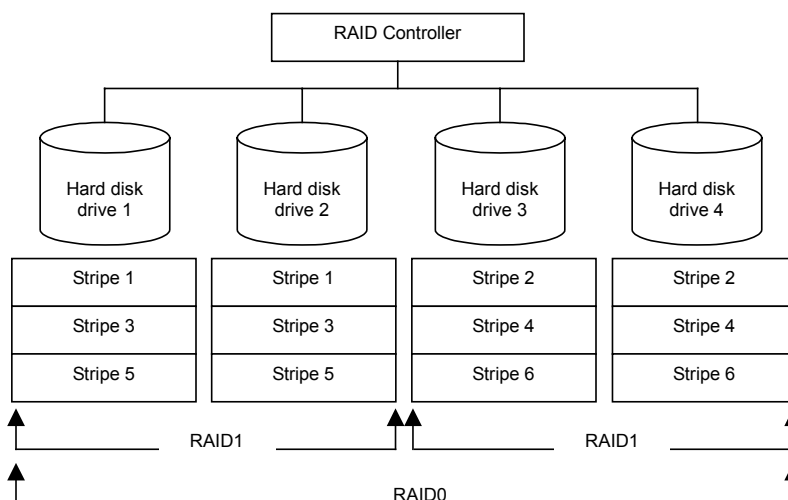
RAID6

A RAID 6 extends RAID 5 by adding an additional parity block (Q) created by different calculation method such as weighting by some factor, thus it uses block-level striping with two parity blocks distributed across all member disks. This mode is called "striping with duplex and distributed parity". Accordingly, the total capacity assigned to the parity is just the same as the capacity of two hard disk drives. If any two of the hard disk drives configuring a logical drive are defected, data is still available with no problems.



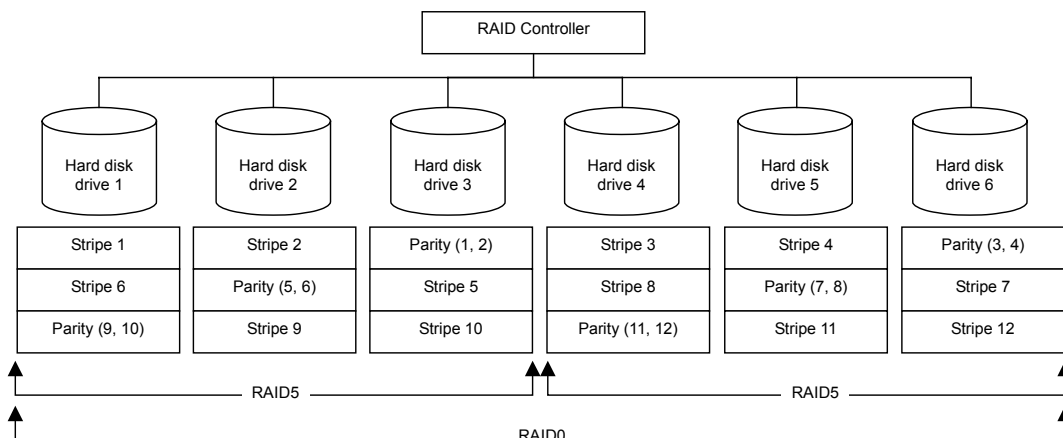
## RAID10

Data to be recorded is distributed to two hard disk drives in mirroring mode. Then, each mirrored data is written onto hard disk drive by striping. Owing to this feature, high disk access performance of RAID0 and, in addition, high reliability of RAID1 can be achieved.



## RAID50

Data is distributed to hard disk drives by striping with distributed parity, and then written onto hard disk drives by striping. Owing to this feature, high disk access performance of RAID0 and, in addition, high reliability of RAID5 can be achieved.



## CONFIGURATION BY N8103-129/130 RAID CONTROLLER

The management utility for N8103-129/130 RAID Controller is WebBIOS.

---

### Using WebBIOS

#### Starting WebBIOS

When the screen as shown below appears, press **Ctrl + H** to start WebBIOS.

```
LSI MegaRAID SAS - MFI BIOS
Version XXXX (Build MMM DD, YYYY)
Copyright (c) 20XX LSI Corporation

HA - X (Bus X Dev X) MegaRAID SAS 9264-8i
FW package: X.X.X - XXXX

0 Virtual Drive(s) found on the host adapter.

0 Virtual Drive(s) handled by BIOS.
Press <Ctrl> <H> for WebBIOS.....
```

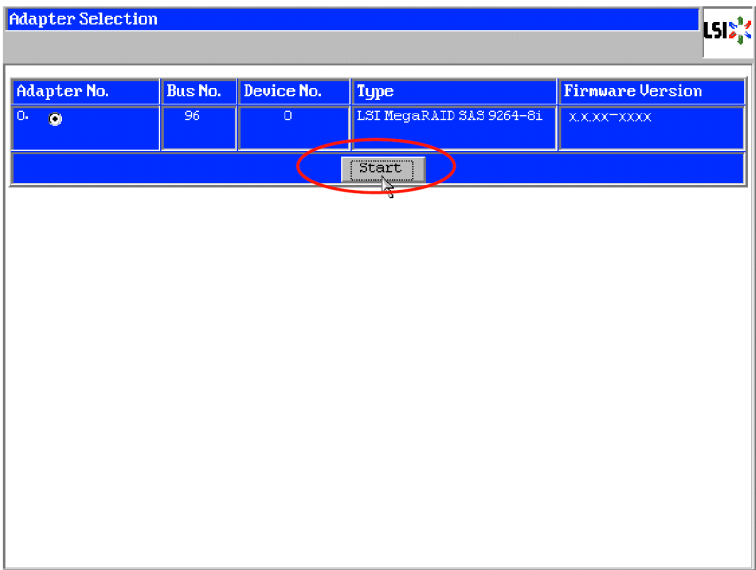
***POST screen image (with no virtual drive assigned)***

---

#### IMPORTANT:

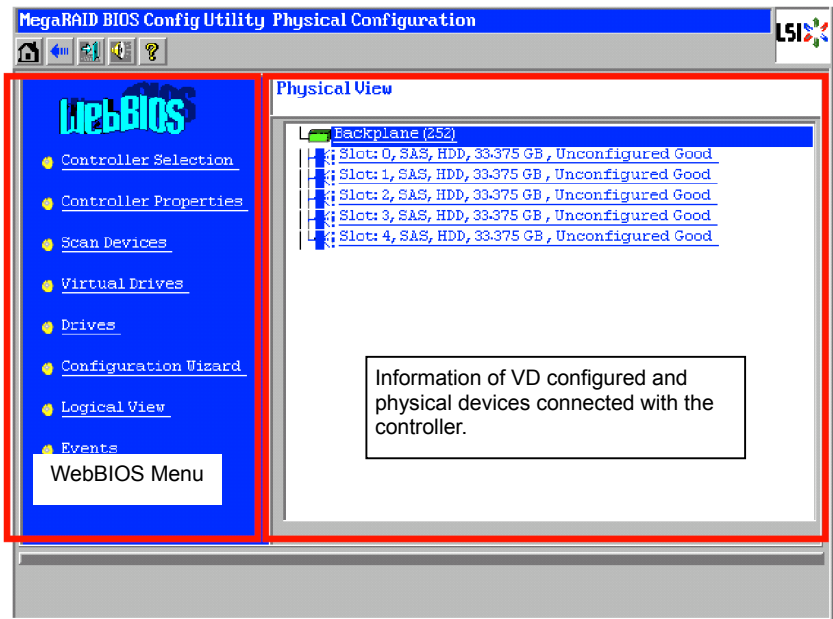
- Do not press unnecessary key such as **Pause** during POST.
  - If you fail to press **Ctrl + H** or the system proceeds without displaying the WebBIOS main menu (shown on the next page), restart the system, and press **Ctrl + H** on POST screen.
-

When POST completes, the screen as shown below appears. On [Adapter No.] box, select an adapter you want to operate with WebBIOS, then click [Start].



## Main Menu

When the adapter is selected on [Adapter Selection], the WebBIOS Top Menu appears.



**WebBIOS Menu**

Controller Selection	Goes back to Adapter Selection menu.
Controller Properties	Displays properties of the controller.
Scan Devices	Detects Hard Disk Drives connected with the controller again.
Virtual Drives	Opens operation window for VD that has already been configured.
Drives	Opens operation window for Hard Disk Drive connected with the controller.
Configuration Wizard	Displays the wizard to configure VD.
Physical View / Logical View	Switches indication between Hard Disk Drives and VD configuration.
Events	Displays event data.
Exit	Goes to Exit menu of WebBIOS.

**Status Indication of Virtual Drive (not shown on Physical View)**

Optimal	Indicates that the VD is in normal state. The indication is green.
Partially Degraded	Indicates that one of the Hard Disk Drives in the relevant VD is degraded in RAID6 configuration. The indication is blue.
Degraded	Indicates that one or two of the Hard Disk Drives in the relevant VD is degraded in RAID6 configuration. The indication is blue.
Offline	The relevant VD is in offline state. The indication is red.
Initialization	The relevant VD is being initialized.
ConsistencyCheck	Consistency Check is being performed to the relevant VD.
Rebuild	The relevant VD is being rebuilt.
BackGroundInitialize	The relevant VD is being initialized in background.
Reconstruction	The relevant VD is being reconstructed.

**Status Indication of Hard Disk Drive**

Unconfigured Good	The Hard Disk Drive connected with the controller is not in use. The indication is blue.
Online	Indicates that the Hard Disk Drive in configuration is in normal state. The indication is green.
Offline	Indicates that the Hard Disk Drive in configuration is in offline state. The indication is red.
Unconfigured Bad	The relevant Hard Disk Drive is faulty. (The Hard Disk Drive in this status can be checked only on Physical View.) The indication is black.
Rebuild	The relevant Hard Disk Drive is being rebuilt. The indication is yellow.
Hotspare	Indicates the Hard Disk Drive that is assigned to hot-spare. The indication is pink.



---

**IMPORTANT:**

- The right frame of Physical View shows slot number, type, capacity, and status of Hard Disk Drive.
  - The slot number is represented by the number between 0 and 7. It indicates the slot number of the Hard Disk Drive bay.
  - The controller does not support the Events feature.
- 

---

**NOTE:** S.M.A.R.T status

- The information of the Hard Disk Drive that has one or more Pred Fail Count is displayed in yellow.
  - Indicates that the device has failed in the past. You can use the device as usual, however, we recommend you to replace it with new one.
-

## Controller Properties

When you click [Controller Properties] on WebBIOS Top Menu, the configuration information is displayed.



LSI MegaRAID SAS 9264-8i			
Serial Number	xxxxxxxxxx	FRU	None
SubVendorID	0x1000	Drive Security Capable	No
SubDeviceID	0x9264	NVRAMSize	32 KB
PortCount	8	Memory Size	xxx MB
HostInterface	PCI-E	Min Stripe Size	8 KB
Firmware Version	x.x-xx-xxxx	Max Stripe Size	1 MB
FW Package Version	xxxx-xxxx	Virtual Drive Count	x
Firmware Time	mmm dd yyyy;ttttt	Drive Count	x
WebBIOS Version	x.x-xx-xxx		

Next

Home Back

Click [Next] to see the detailed settings of this controller.



Properties			
Battery Backup	Present	Coercion Mode	None
Set Factory Defaults	No	S.M.A.R.T Polling	300 seconds
Cluster Mode	Disabled	Alarm Control	Disabled
Rebuild Rate	30	Patrol Read Rate	30
BGI Rate	30	Cache Flush Interval	4
CC Rate	30	Spinup Drive Count	2
Reconstruction Rate	30	Spinup Delay	12
Controller BIOS	Enabled	StopOnError	Disabled
NCQ	Enabled	Drive Powersave	Disabled

Submit Reset Next

Home Back

Next page

The detailed setting is continued on the next page. Click [Next] to view more information.

The screenshot shows the 'MegaRAID BIOS Config Utility Controller Properties' window. It has a blue header bar with the title and the LSI logo. Below the header is a navigation bar with icons for Home, Back, Forward, and Help. The main content area is titled 'Properties' and contains two rows of settings: 'Stop CC On Error' set to 'No' and 'Schedule CC' set to 'Supported'. Below these is 'Maintain PD Fail History' set to 'Enabled'. At the bottom of the main area are 'Submit' and 'Reset' buttons. The footer bar contains a 'Home' button and a 'Back' button.

Properties	
Stop CC On Error	No
Maintain PD Fail History	Enabled
Schedule CC	Supported

Submit Reset

Home Back

Clicking [Supported] in "Schedule CC" opens the screen for setting scheduled consistency check.

The screenshot shows the 'MegaRAID BIOS Config Utility Schedule CC Page' window. It has a blue header bar with the title and the LSI logo. Below the header is a navigation bar with icons for Home, Back, Forward, and Help. The main content area is titled 'Schedule Consistency Check' and contains four rows of settings: 'CC Frequency' set to 'Disable', 'CC Start (mm/dd/yyyy)' set to '01/01/2000', 'CC Start Time' set to '12:00 AM', and 'CC Mode' set to 'Sequential'. Below these is a checkbox labeled 'Select VDs to Exclude CC'. At the bottom of the main area are 'Submit' and 'Reset' buttons. The footer bar contains a 'Home' button and a 'Back' button.

Schedule Consistency Check	
CC Frequency	Disable
CC Start (mm/dd/yyyy)	01/01/2000
CC Start Time	12:00 AM
CC Mode	Sequential

☐ Select VDs to Exclude CC

Submit Reset

Home Back

**Default settings and their explanation**

Item	Default	Description	Change
Battery Backup	Present None	Displays Properties of additional battery. • When battery is installed: Present • When battery is not installed: None	–
Set Factory Defaults	No	–	Prohibited *1
Cluster Mode	Disabled	–	Prohibited
Rebuild Rate	30	Recommended value: 30	Permitted
BGI Rate	30	Recommended value: 30	Permitted
CC Rate	30	Recommended value: 30	Permitted
Reconstruction Rate	30	Recommended value: 30	Permitted
Controller BIOS	Enabled	–	Prohibited
NCQ	Disabled	–	Prohibited
Coercion Mode	None	–	Prohibited
S.M.A.R.T Polling	300	–	Prohibited
Alarm Control	Disabled	Disabled: Does not issue an alarm. Enabled: Issues an alarm. Silence: Stops an alarm if beeped.	Permitted *2
Patrol Read Rate	30	Recommended value: 30	Permitted
Cache Flush Interval	4	–	Prohibited
Spinup Drive Count	2	–	Prohibited
Spinup Delay	12	–	Prohibited
StopOnError	Disabled	–	Prohibited
Drive Powersave	Disabled	–	Prohibited
Stop CC On Error	No Yes	Specify the operation at error detection in Consistency Check. No: Recover and resume. Yes: Abort	Permitted
Maintain PD Fail History	Enabled	–	Prohibited
Schedule CC	Supported	Set the scheduled consistency check.	Permitted
CC Frequency	Disabled	Set the interval of scheduled consistency check. <sup>*3</sup> Disabled: Disables the scheduled consistency check. Continuous: Checks consistency continuously. Hourly: Checks consistency every hour. Daily: Checks consistency every day. Weekly: Checks consistency every week (recommended value). Monthly: Checks consistency every month (recommended value).	Permitted
CC Start Time	12:00 AM	Set the time to start the first consistency check.	Permitted

Item	Default	Description	Change
Select VDs to Exclude CC	Unchecked	Specify the VD to which the scheduled consistency check is not performed. Checked: Consistency check is not performed on the selected VD. Unchecked: Consistency check is performed on every VD.	Permitted
CC Start (mm/dd/yyyy)	01/01/2000	Set the date to start the first consistency check.	Permitted
CC Mode	Sequential	Sequential: Consistency check is performed on several VDs sequentially. Concurrent: Consistency check is performed on several VDs simultaneously.	Permitted

- \*1 Do not perform "Set Factory Defaults". If performed, the NEC's factory-set value will no longer be restored.
- \*2 If Alarm Control is set to "Enabled", the server issues an alarm sound when the VD is degraded due to failure of Hard Disk Drive.
- \*3 Set interval of scheduled consistency check in "CC Frequency" with sufficient allowance because it is based on "CC Start Time".

## How to change setting value

On [Controller Properties] screen, change a parameter to desired value, and then click [Submit] at the center of the screen to determine the new value.

If the additional battery is installed, the status of "Battery Backup" is indicated as "Present". Clicking [Present] opens the Battery Status screen as shown below.

MegaRAID BIOS Config Utility Battery Module	
<b>Battery Type:</b> iBBU <b>Voltage:</b> 4054 mV <b>Current:</b> 0 mA <b>Temperature:</b> 34 deg.centigrade <b>Status:</b> gas Gauge Status : Discharging Full Charge Capacity remaining : 96% Design Charge Capacity remaining: 99% expected margin of error : 2%	<b>Design Info</b> <b>Mfg. Name:</b> LSI113000F <b>Mfg. Date:</b> 5/20/2008 <b>Serial No.:</b> 2332 <b>FRU:</b> None <b>Design Capacity:</b> 675 mAh <b>Design Voltage:</b> 3700 mV <b>Device Name:</b> 2970700 <b>Device Chemistry:</b> LION
<b>Capacity Info</b> <b>FullCharge Capacity:</b> 686 mAh <b>Remaining Capacity:</b> 669 mAh	<b>Properties</b> <b>Auto Learn Period(days)</b> 30 <b>Next Learn Time</b> Not Available <b>Learn Delay Interval(Hrs)</b> 0 <b>Auto Learn Mode</b> Disable ▼ <input type="button" value="Go"/>

Home Back

---

**IMPORTANT:** You cannot change values for "Auto Learn Period" and "Learn Delay Interval (hrs)".

---

### NOTES:

- The value shown in "Current" field indicates battery status.
    - Positive value: Battery is being charged
    - Negative value: Battery is being discharged.
  - WebBIOS does not refresh the indication on window. To view the indication, change window (e.g., go back to Top Menu), then check status again.
-

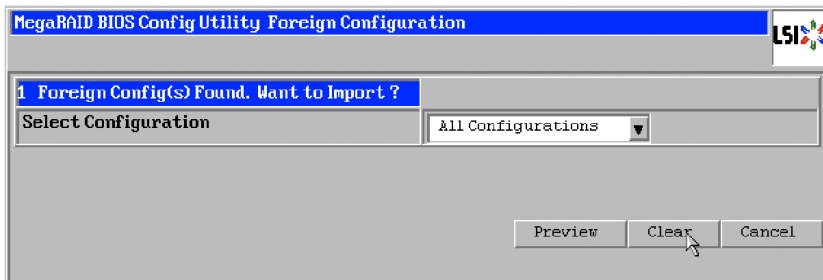
## Scan Devices

When you click [Scan Devices] on WebBIOS Top Menu, the connected Hard Disk Drives are detected again. Use this feature when you have installed a new Hard Disk Drive additionally while the WebBIOS is running.

---

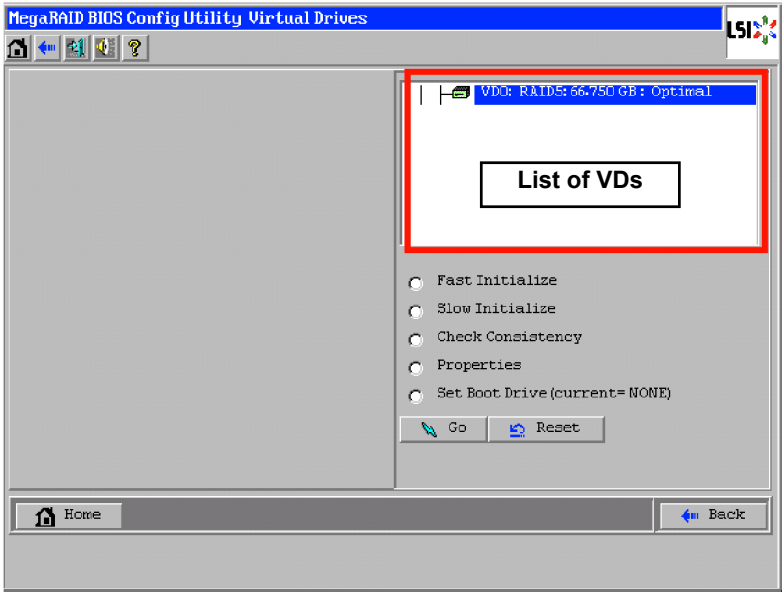
### IMPORTANT:

- If the newly connected Hard Disk Drive contains another configuration information, [Foreign Configuration] screen as shown below appears. To use the Hard Disk Drive as new one, click [Clear] to clear the configuration information in Hard Disk Drive.
  - If you want to create a logical drive by using the Universal RAID Utility with the newly connected Hard Disk Drive containing another configuration information, first clear another configuration information using this Scan Devices feature.  
(\* ) Universal RAID Utility does not have this feature.
- 



Virtual Drives

When you click [Virtual Drives] on WebBIOS Top Menu, the screen for operating the VD that has already been configured. List of VDs box shows existing VDs.



Fast Initialize	Clears the top area of the VD being selected in List of VDs box.
Slow Initialize	Clears whole area of the VD being selected in List of VDs box.
Check Consistency	Checks consistency in the whole area of the VD being selected in List of VDs box. If inconsistency is found, correct it.
Properties	Displays the properties of the VD being selected in List of VDs box.
Set Boot Drive (Current =XX) Default: NONE	Selects a VD to start operating system. If the system contains several VDs and you want to start the operating system from the VD other than VD0, you need to specify the boot drive manually as shown below. Use the default setting in any other cases. [Setting procedure] 1. Select a VD you want to start operating system from the List of VDs box. 2. Put a checkmark on "Set Boot Drive (Current =XX)". 3. Click [Go].

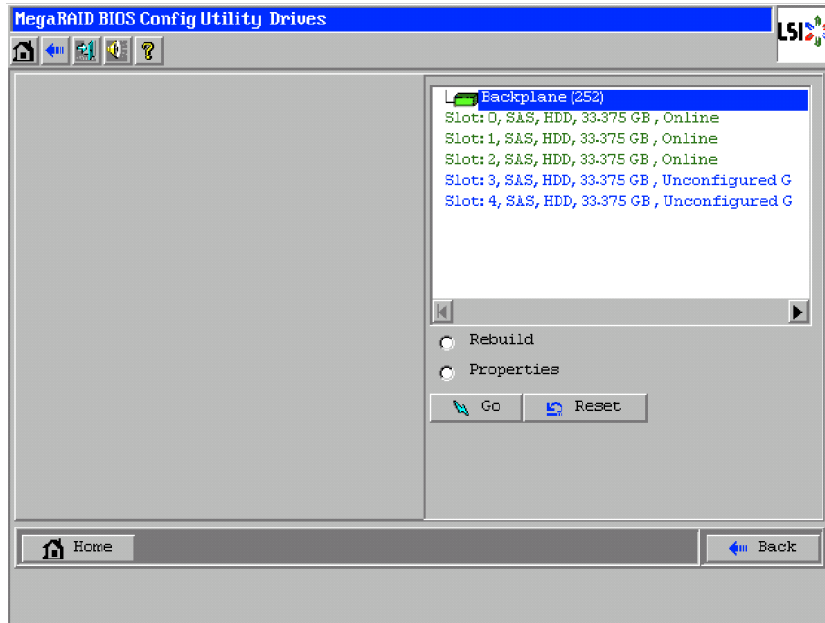
IMPORTANT:

- If no virtual drive exists, the List of VDs box will be blank. Use this menu only when a virtual drive exists.
- Even the "Set Boot Drive" is properly specified, the operating system may fail to start due to Boot Priority specified in BIOS SETUP of the server.
- Inconsistency may be detected at the first Check Consistency performed after the VD was configured.



## Drives

When you click [Drives] on WebBIOS Top Menu, the screen for operating the connected physical drive appears.

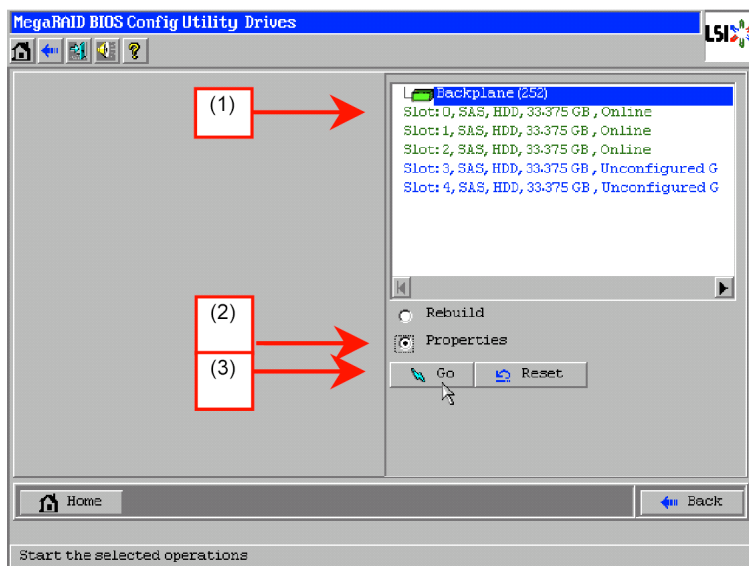


**IMPORTANT:** If no device is connected, the upper right column of the screen will be blank. Use this menu only when a Hard Disk Drive is being connected.

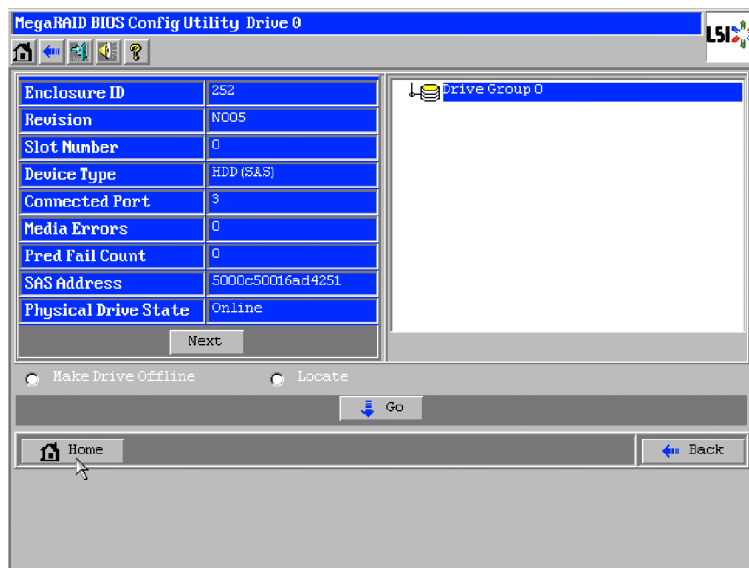
## Physical Drive Properties

Take the following procedures to check Physical Drive Properties. Shown below is an example to check property of physical drive.

1. Click the Physical Drive you want to check.
2. Click the checkbox for [Properties].
3. Click [Go].



The Properties screen as shown below appears.



**Physical Drive Properties**

Locate	Let Disk Status lamp light or blinks.
Make Global HSP	The selected Hard Disk Drive is assigned as hot-spare available for all DGs.
Make Dedicated HSP	The selected Hard Disk Drive is assigned as hot-spare available only for the specific DG.
Remove HOTSPARE	The selected Hard Disk Drive is unassigned from hot-spare and made Unconfigured Good state.
Make Unconf Bad	Make the selected Hard Disk Drive in faulty state. This is indicated on the Hard Disk Drive of which status is "Unconfigured Good".
Make Unconf Good	Make the selected Hard Disk Drive in "Unconfigured Good" state. This is indicated on the Hard Disk Drive of which status is "Unconfigured Bad".
Prepare Removal	Make the power status of the selected Hard Disk Drive in "Powersave" state. This is indicated on the Hard Disk Drive of which power status is "On" and the status is "Unconfigured Good".
Undo Removal	Make the power status of the selected Hard Disk Drive in "On". This is indicated on the Hard Disk Drive of which power status is "Powersave".
Make Drive Offline	Make the selected Hard Disk Drive in "Offline" state. This is indicated on the Hard Disk Drive of which status is "Online".
Make Drive Online	Make the selected Hard Disk Drive in "Online" state. This is indicated on the Hard Disk Drive of which status is "Offline".
Rebuild Drive	Start rebuilding VD that contains the selected Hard Disk Drive. This is indicated for the Hard Disk Drive of which status is "Offline".
Mark as Missing	Remove the VD that contains the selected Hard Disk Drive from the DG. This is indicated on the Hard Disk Drive of which status is "Offline".

---

**IMPORTANT:** The RAID Controller does not support Events feature.

---

## Configuration Wizard

Use this wizard to configure a virtual drive using the Hard Disk Drives connected. The detailed explanation of this feature is given in "Configuring Virtual Drive".

## Controller Selection

If one or more RAID Controllers are installed in the server, you need to select an adapter controlled by WebBIOS to configure each adapter. Clicking [Controller Selection] on WebBIOS top menu opens the [Adapter Selection] screen.

## Physical View / Logical View

If the virtual drive has been configured, DG (drive group) is displayed on WebBIOS Top Menu. Clicking [Physical View] displays information for Hard Disk Drives in DG. Clicking [Logical View] displays virtual drive in DG.

## Events

The Events screen is used to confirm the system events.

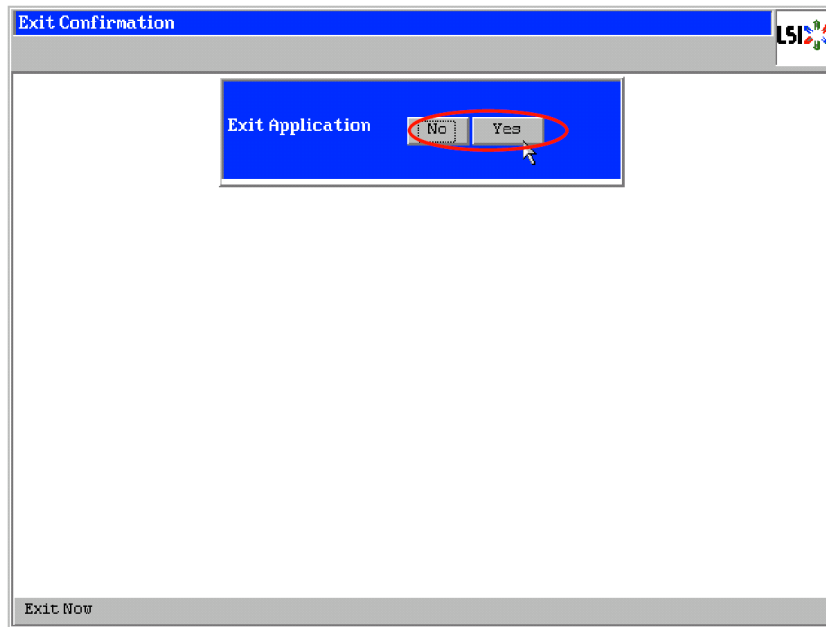
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**IMPORTANT:** The RAID Controller does not support Events feature.

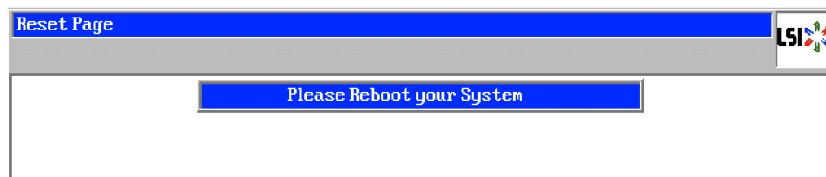
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## Exit

When you click [Exit] on WebBIOS Top Menu, a confirmation screen to exit from WebBIOS is displayed. Click [Yes] to exit from WebBIOS.



The screen as shown below appears when WebBIOS is terminated. Restart the server.



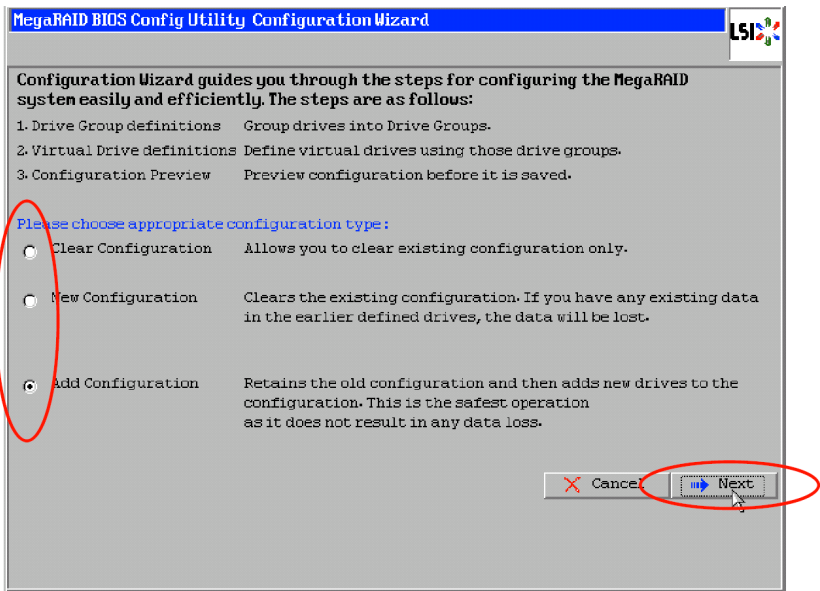
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## Configuring Virtual Drive

This section describes the procedures for configuration of VD (virtual drive) using WebBIOS.

### Configuration Wizard

When you click [Configuration Wizard] on WebBIOS Top Menu, the screen as shown below appears. Select the relevant operation, and click [Next] at lower right of the screen.



Clear Configuration	Allows you to clear existing configuration (RAID information).
New Configuration	Clears the existing configuration and creates a new VD.
Add Configuration	Retains the old VD and then adds new virtual drive.

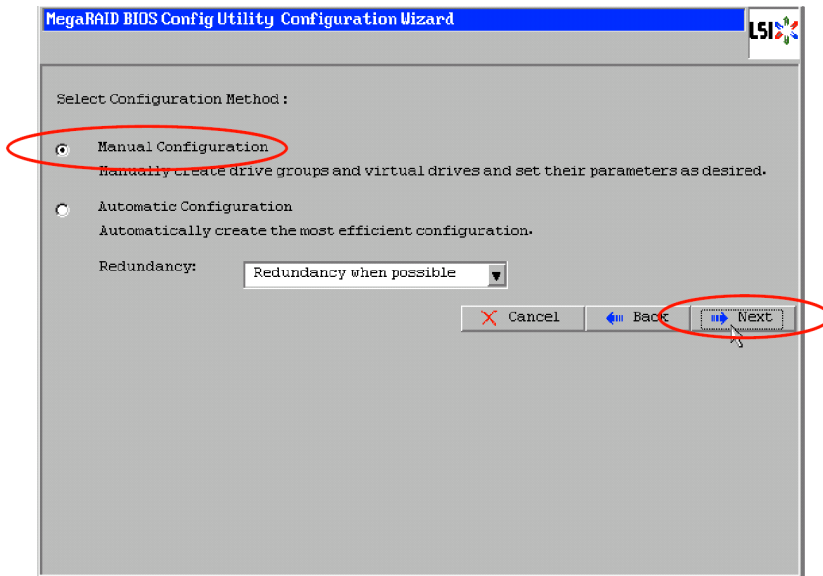
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**IMPORTANT:** If you create a VD by New Configuration, any existing data in the earlier defined drives will be lost.

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When you select [Add Configuration], the screen as shown below appears.

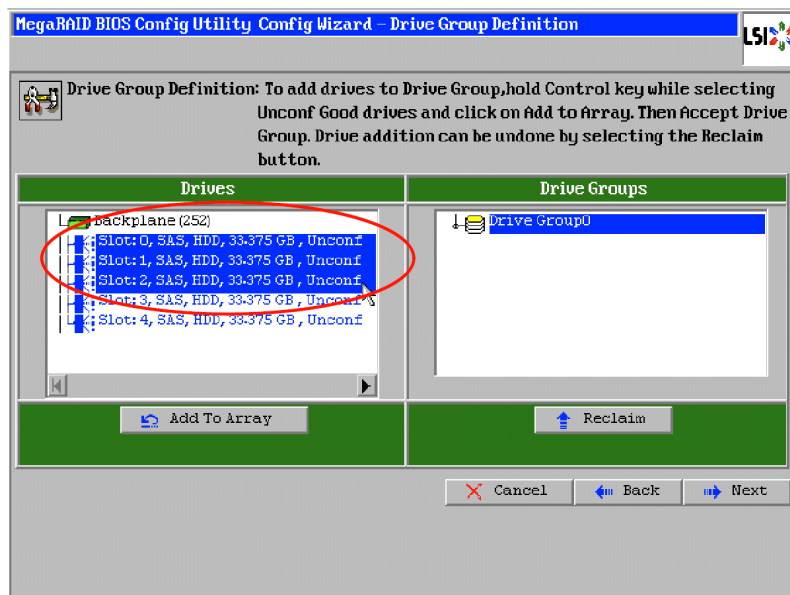
Be sure to select [Manual Configuration], and click [Next].



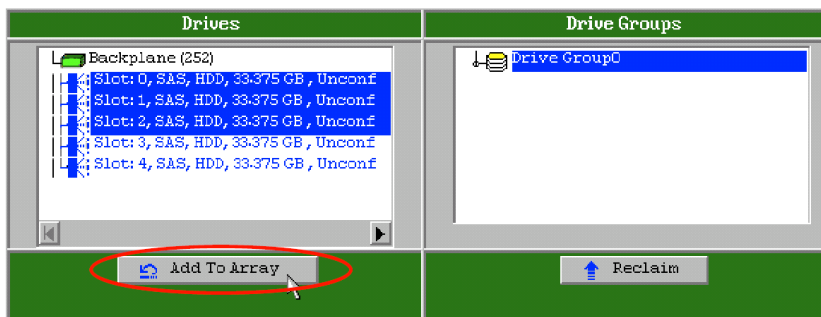
**IMPORTANT:** The RAID Controller does not support "Automatic Configuration" feature.

Use this menu to define several Hard Disk Drives as a drive group (DG).

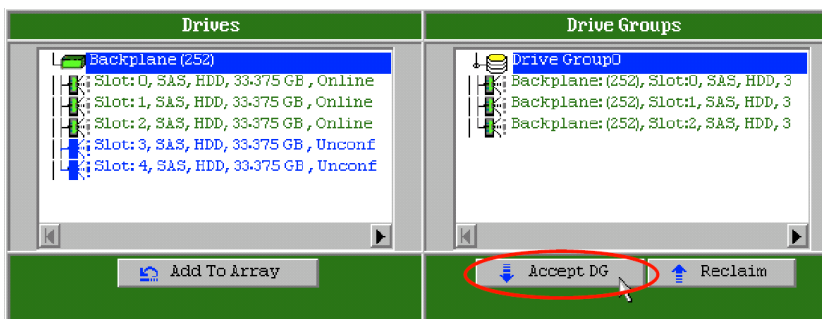
1. While pressing **Ctrl**, click the Hard Disk Drives to be included in DG.



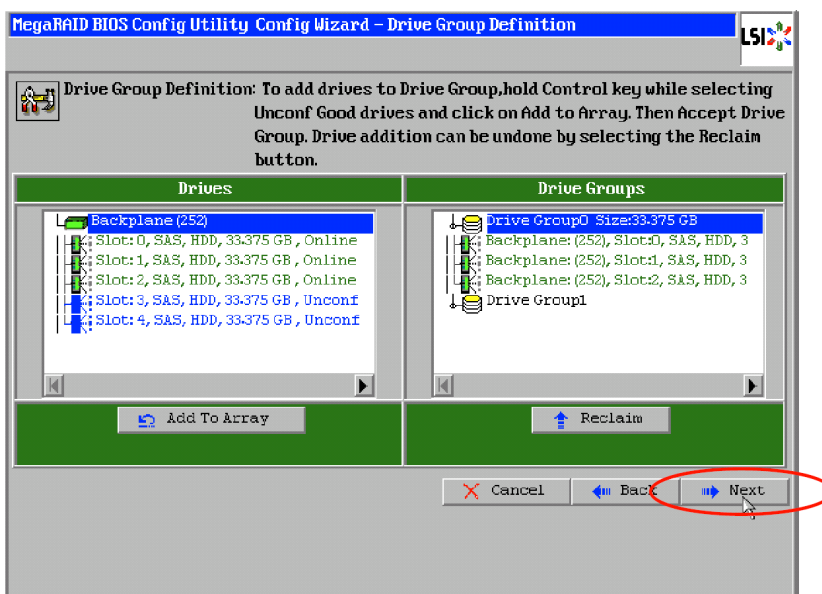
2. Upon completion of selection, click [Add to Array] at the lower left of the screen.



3. A new DG is defined in the Drive Groups frame. To define the new DG, click [Accept DG] at the lower right of the screen.

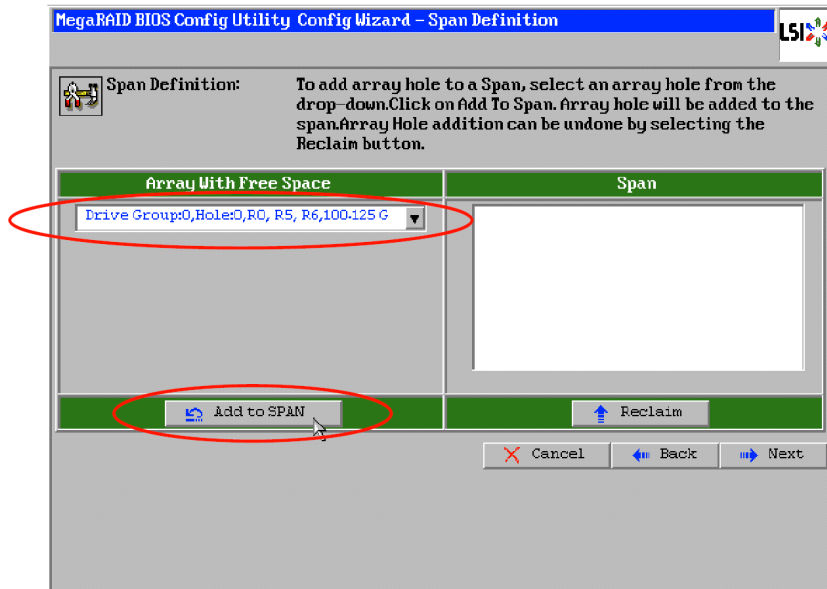


4. After the DG has been defined, click [Next] at the lower right of the screen.

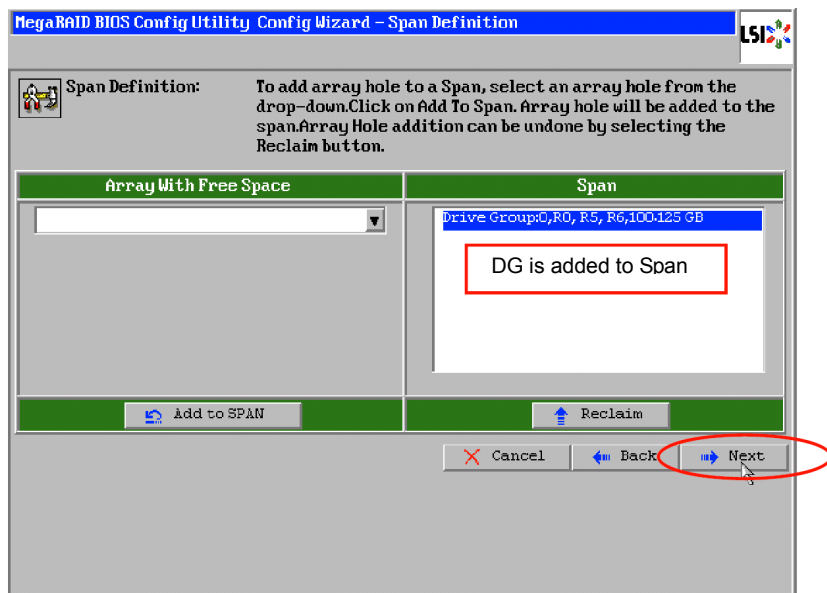




5. Then, the Span Definition screen appears.
6. Select a DG to define VD from "Array With Free Space" frame, then click [Add to SPAN]. The DG is defined in the "Span" field to the right.



7. After the Span has been defined, click [Next] at the lower right of the screen.



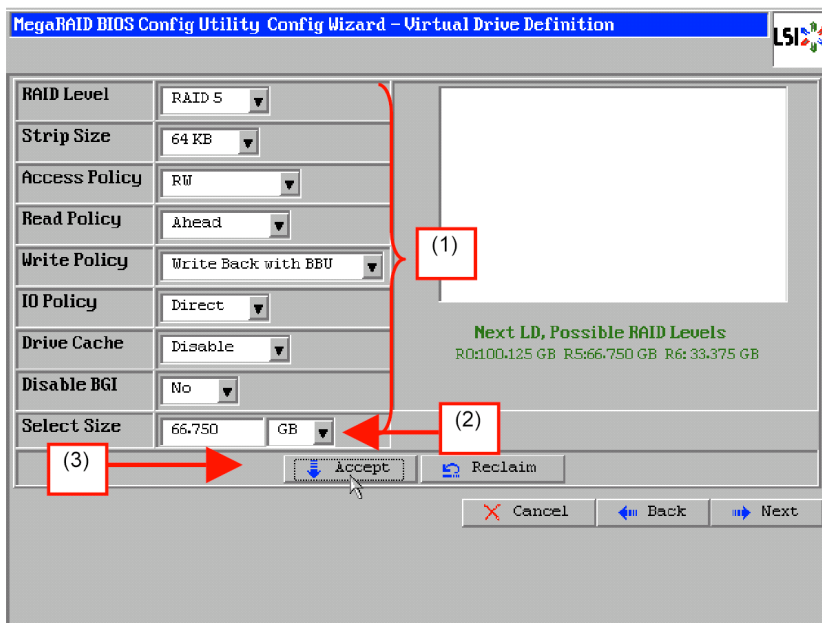
**IMPORTANT:**

- To configure RAID0, 1, 5, or 6, perform Span Definition to a single DG only. If you need to perform Span Definition to several DGs, define VD for the first DG, then select the next DG to define VD.
- To configure RAID10 or 50, select several DGs containing the same number of Hard Disk Drives for Span Definition.
- Span Definition cannot be performed to DGs containing the different number of Hard Disk Drives.

Define the virtual drive (VD) in DG that has been created in previous step. When DG was defined, [VD Definition] screen is displayed. In the "Next LD, Possible RAID Levels" column, available RAID levels and maximum size for VD are displayed.

As an example, define a RAID5 VD of 67.75GB.

1. Specify the necessary parameters in left columns.
2. Enter "67.75" in "Select Size" field, and select "GB" as a unit.
3. Click [Accept] at the lower center of the screen.
4. If you want to define another VD, click [Back] and repeat steps starting from Span Definition screen.

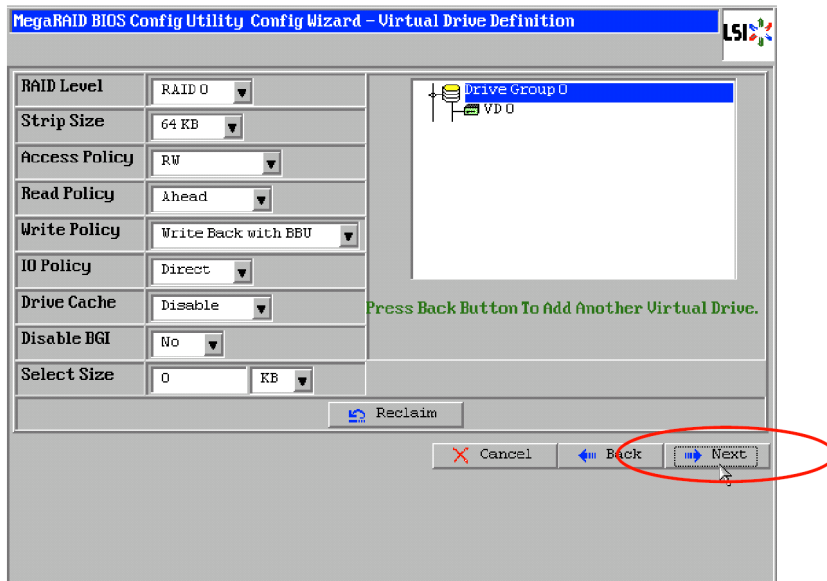


---

**IMPORTANT:** The value shown in "Select Size" indicates the maximum size allowed for RAID1 (two Hard Disk Drives) or RAID6 (three or more Hard Disk Drives). You need to specify the maximum size for any other RAID levels according to "Next LD, Possible RAID Levels".

---

5. Upon completion of VD definition, click [Next].



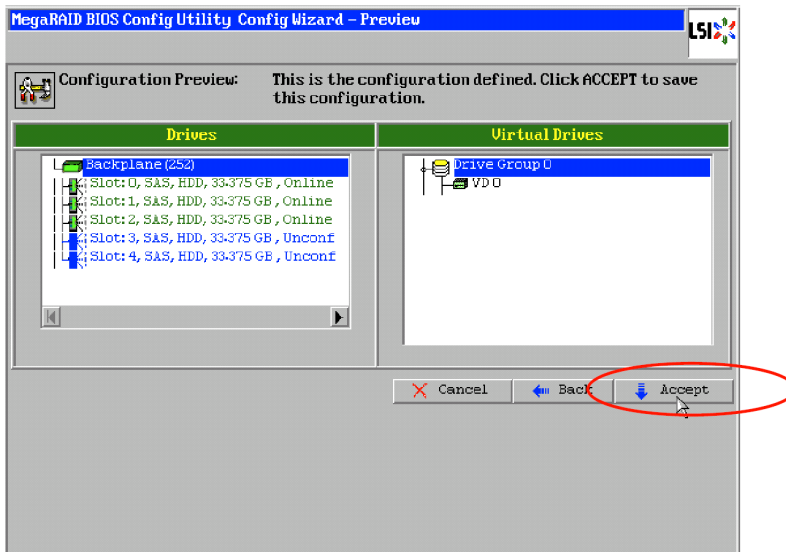

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**IMPORTANT:**

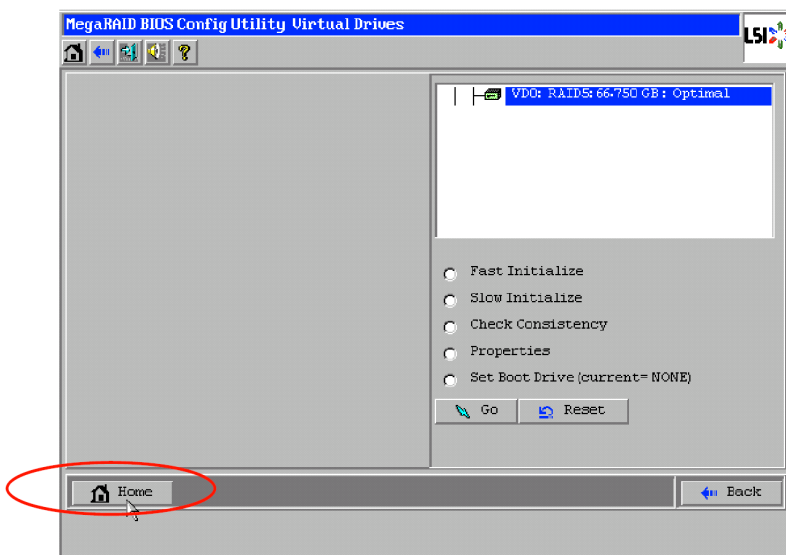
- RAID1 may be configured with three or more Hard Disk Drives in drive group. However, with this controller, the drive group must contain only two Hard Disk Drives.
  - WebBIOS does not support the RAID6 logical drive having Stripe Size: 8KB composed of three Hard Disk Drives.
-

6. VD is created in DG as shown in the screen below.

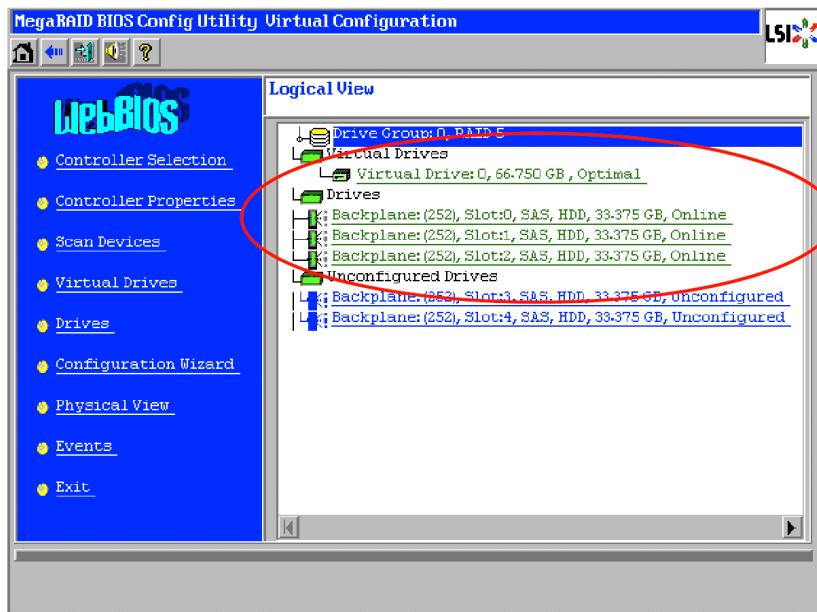
After making sure that the VD is created correctly, click [Accept] at the lower right of the screen.



7. The confirmation message "Save this Configuration?" appears. Click "Yes" to save the configuration.
8. The confirmation message "Want to Initialize the New Virtual Drives?" appears. To perform "Fast Initialize", select "Yes".
9. "Virtual Drives" operation screen is displayed. If no other operation is required, click [Home] at the lower left of the screen.



10. If you click [Home] or you do not select [Fast Initialize] in Step 8, WebBIOS Top Menu is displayed. Virtual Drives you have created is displayed in the right frame of the screen.

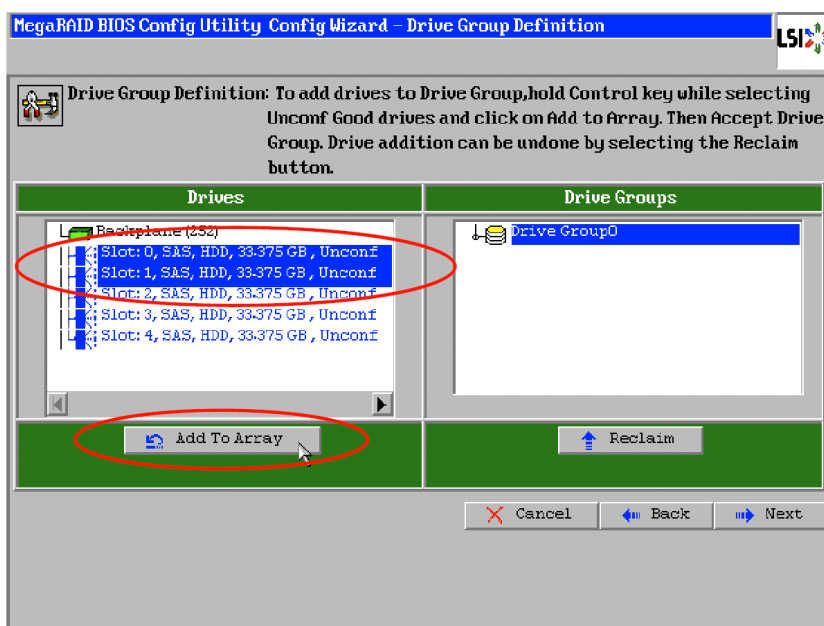


## Configure SPAN

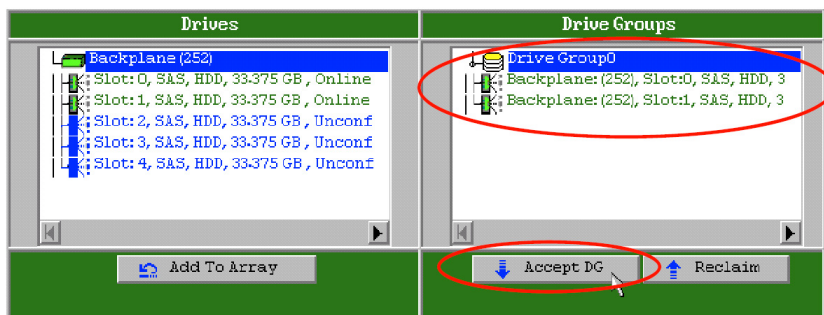
The following explains the sample procedure to configure RAID10 (spanning of RAID1) with four Hard Disk Drives.

**IMPORTANT:** Do not attempt to configure RAID00 or RAID60. They are not supported.

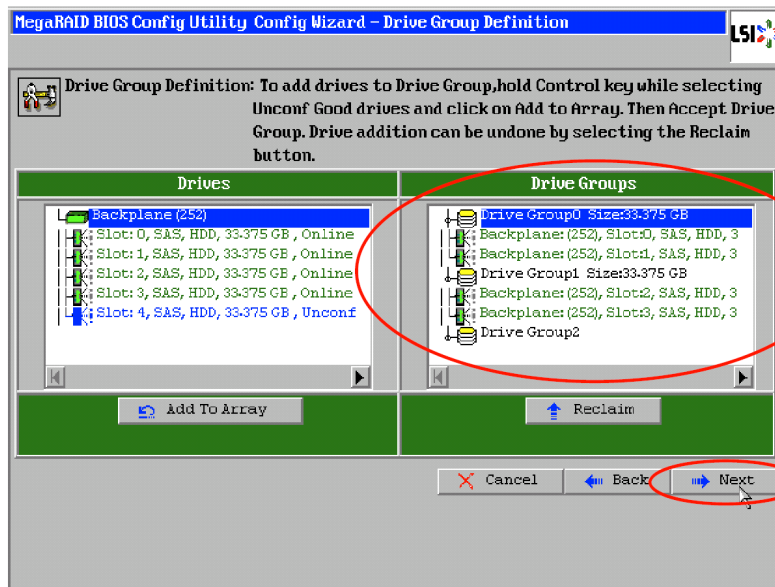
1. Click [Configuration Wizard] on WebBIOS Top Menu to start Wizard.
2. While pressing **Ctrl**, click the Hard Disk Drives to be included in DG. (In the example, two DGs will be configured and spanned.)



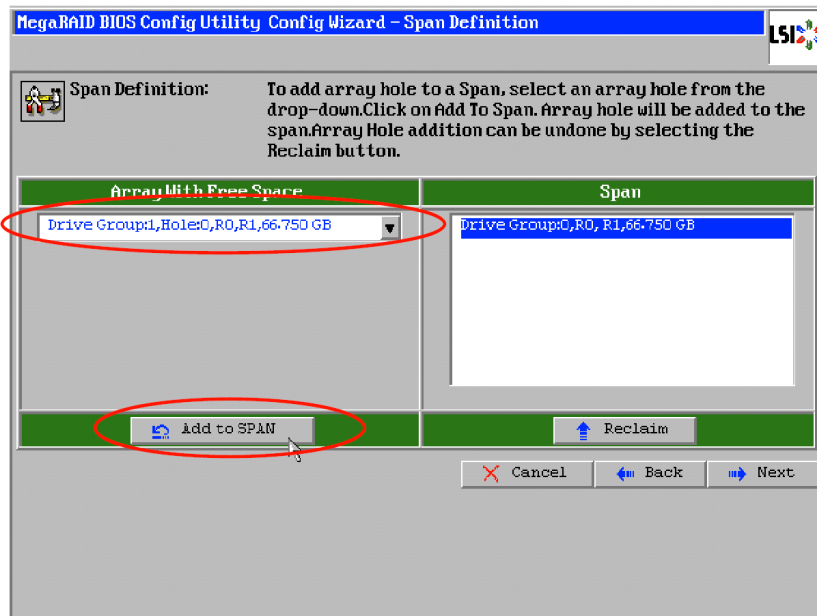
3. Upon completion of selection, click [Add to Array] at the lower left of the screen. After making sure that the new DG has been defined in Drive Groups frame to the right, click [Accept DG].



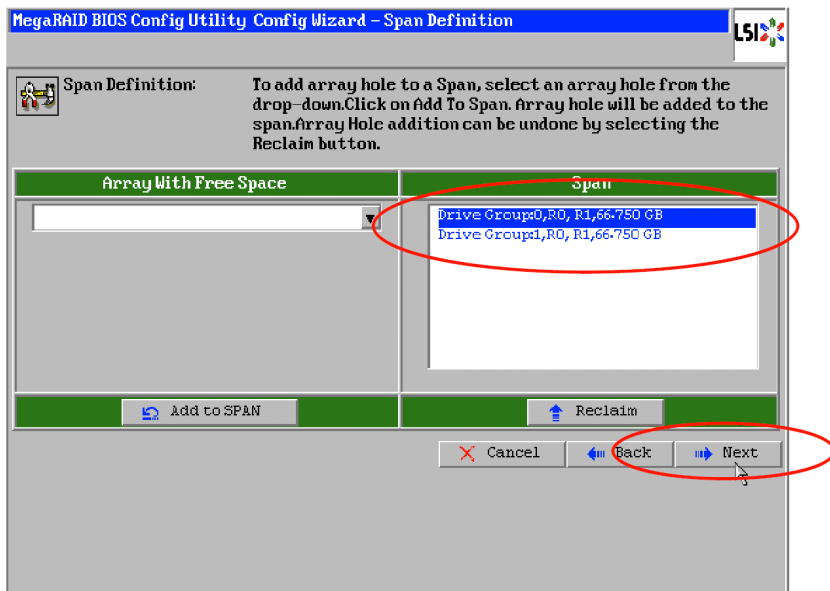
4. A new DG is defined in the Drive Groups frame. Define another DG in the similar procedures. After DGs have been defined, click [Next] at the lower right of the screen.



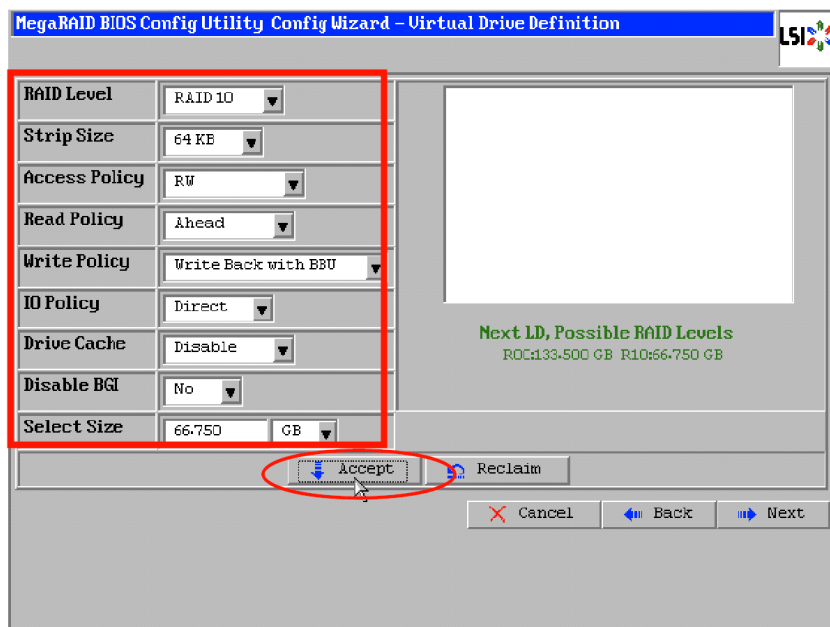
5. When DGs were defined, [Span Definition] screen is displayed.
6. Select DG0 from "Array With Free Space" frame, then click [Add to SPAN]. The DG is defined in the "Span" field to the right.



7. Then, select DG1 and click [Add to SPAN]. When the two DGs are defined in the "Span" field to the right, click [Next] at the lower right of the screen.

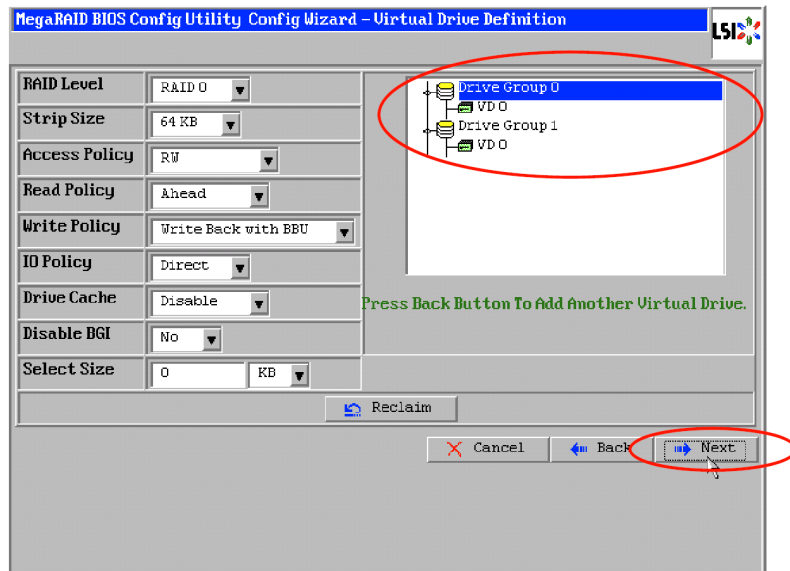


8. The VD Definition screen is displayed. Enter the necessary parameters, and click [Accept].



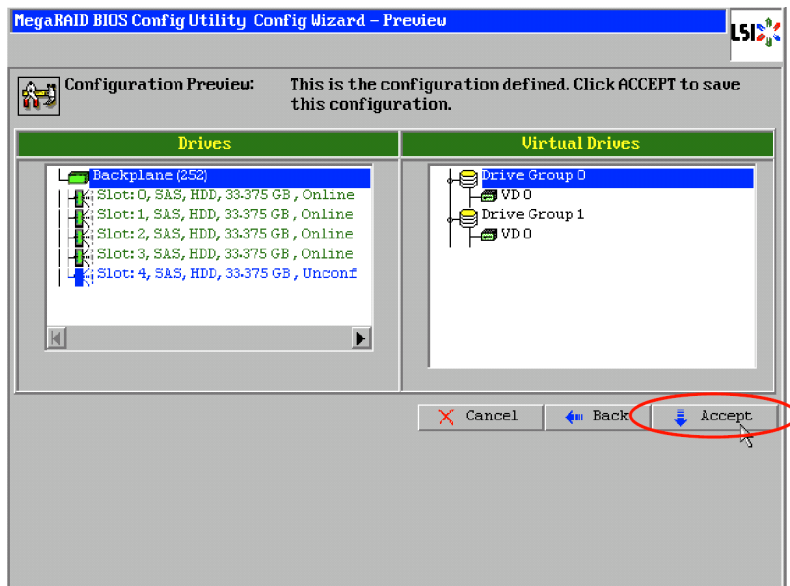


9. Make sure that both DG0 and DG1 are defined as VD 0, then click [Next] at the lower right of the screen.

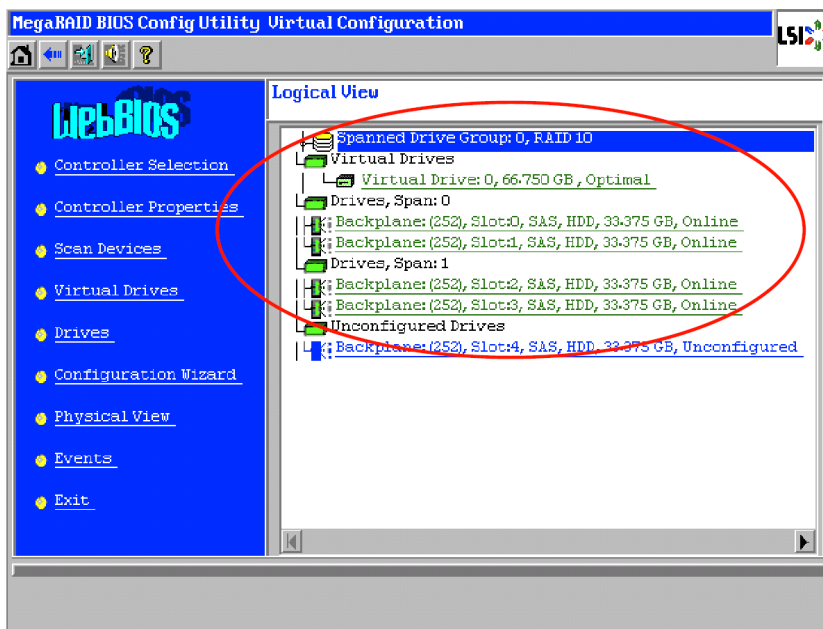


**IMPORTANT:** RAID10 may be configured with three or more Hard Disk Drives in each span. However, with this controller, each drive group must contain only two Hard Disk Drives.

10. On the "Preview" screen, make sure the VD is defined correctly, then click [Accept] at the lower right of the screen.



11. The confirmation message "Save this Configuration?" appears. Click "Yes" to save the configuration.
12. The confirmation message "All data on the new Virtual Drives will be lost. Want to Initialize?" appears. Click "Yes" to perform "Fast Initialize".
13. "Virtual Drives" operation screen is displayed. If no other operation is required, click [Home] at the lower left of the screen.
14. If you click [Home] or you do not select [Fast Initialize] in Step 12, WebBIOS Top Menu is displayed. Virtual Drives you have created are displayed in the right frame of the screen.



## Parameters for VD Definition

Listed below are parameters for Configuration Wizard.

Item	Parameter	Remarks
RAID Level	<b>RAID 0 / RAID 1 / RAID 5 / RAID 6 / RAID 00 / RAID 10 / RAID 50 / RAID60</b>	RAID 00 and RAID 60 are not supported.
Strip Size	8 KB / 16 KB / 32 KB / <b>64 KB</b> / 128 KB / 256 KB / 512 KB / 1024 KB	Recommended value: 64KB
Access Policy	<b>RW</b> / Read Only / Blocked	Recommended value: RW
Read Policy	<b>Normal</b> / Ahead / Adaptive	Recommended value: Normal
Write Policy	<b>Write Back with BBU</b> / Always Write Back / Write Through	Recommended value: Write Back with BBU
IO Policy	<b>Direct</b> / Cached	Recommended value: Direct
Disk CachePolicy	NoChange / Enable / <b>Disable</b>	Recommended value: Disable
Disable BGI	<b>No</b> / Yes	Specify whether to perform Background Initialize after creation of VD. Recommended value: No

---

**IMPORTANT:** BGI (Back Ground Initialize) is available only for the following VDs:

- RAID5 VD configured with five or more physical devices.
  - RAID6 VD configured with seven or more physical devices.
-

The Write Policy has the following modes. Select a mode suitable for your environment.

Item		Description
Write Policy	Write Back with BBU	Normal write back mode The controller uses cache memory for writing. However, if the battery is being charged or failed, the controller operates in write through mode automatically. Thus, this mode can provide higher data security.
	Always Write Back	Constant write back mode The controller always uses cache memory for writing regardless of battery charged status or existence of battery. Be sure to use UPS when specifying this mode for write policy.
	Write Through	Write through mode The controller does not use cache memory for writing data. This mode can provide the highest data security, however, the writing performance is lower than that in write back mode.

---

**IMPORTANT:**

- If constant write back mode is selected, the controller operates in write back mode even if the battery has failed or insufficiently charged. The data in cache memory may be lost at an occurrence of power failure.
  - Be sure to use UPS when specifying the constant write back mode for write policy.
-

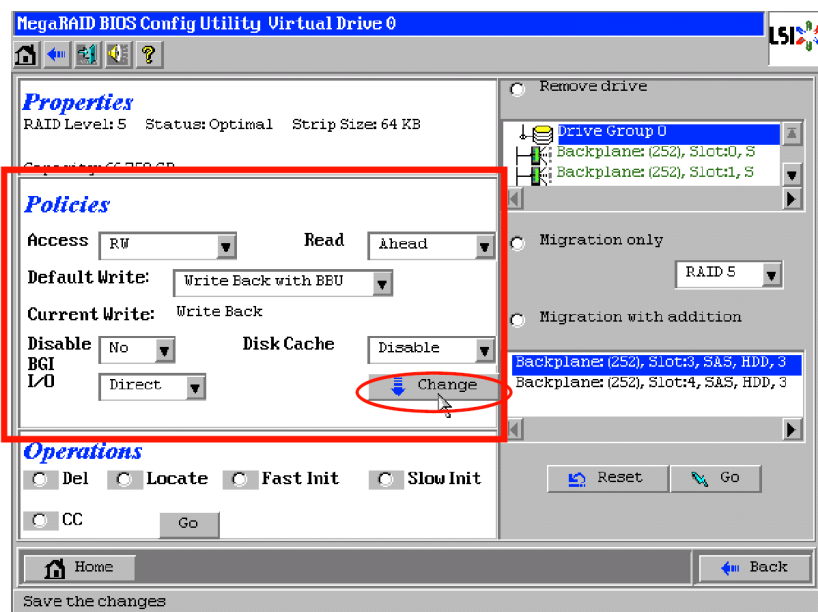
The Disk Cache Policy has the following modes. Select a mode suitable for your environment.

NoChange	<ul style="list-style-type: none"> <li>The controller uses the default write cache policy of hard disk drive.</li> <li>The default value may not be identical to the factory-set value, therefore, do not specify this mode.</li> </ul>
Enable	<ul style="list-style-type: none"> <li>The controller always uses the write cache policy of hard disk drive.</li> <li>Be sure to use UPS when specifying this mode for disk cache policy.</li> </ul>
Disable	<ul style="list-style-type: none"> <li>The controller does not use the write cache policy of the hard disk drive.</li> <li>This mode can provide the highest data security, however, the writing performance is lower than that in Enable mode.</li> <li>It is recommended to use this mode for the sake of data security.</li> </ul>

### IMPORTANT:

- If "NoChange" is specified for Disk Cache Policy, the default value may not be identical to the factory-set value, therefore, do not specify this mode.
- If Enable is specified for Disk Cache Policy, the controller uses the write cache policy of the hard disk drive. Accordingly, the data in cache memory of the hard disk drive may be lost at an occurrence of power failure.
- Be sure to use UPS when using the cache memory of the hard disk drive.

You can change parameters for VD definition except for RAID Level and Stripe Size. On the WebBIOS Top Menu, click [Virtual Drives] and specify parameters in "Policies" frame, then click [Change].



If the Write Policy is changed to write through mode even "Write Back with BBU" is specified, the reason of change will be displayed in [Reason for Diff in Write].

**Indication on [Reason for Diff in Write]**

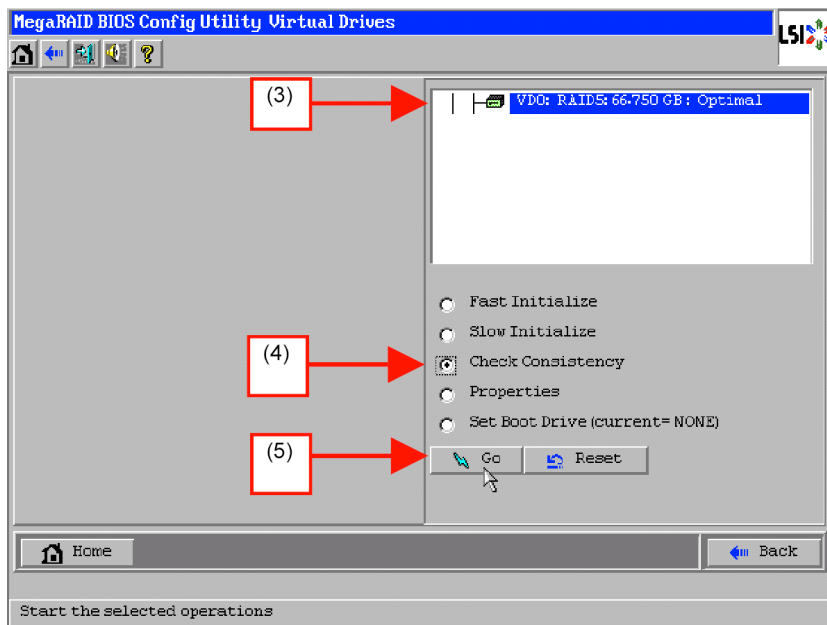
- BBU not installed
- BBU is failed
- BBU is discharged
- BBU in re-learn cycle
- Reconstruction

## Operation of Various Features

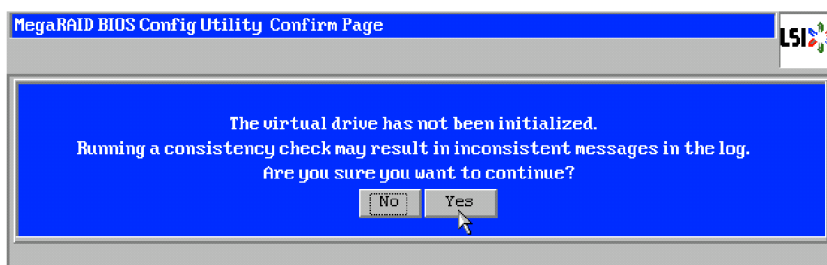
### Check Consistency

Check Consistency is used to check consistency among virtual drives.

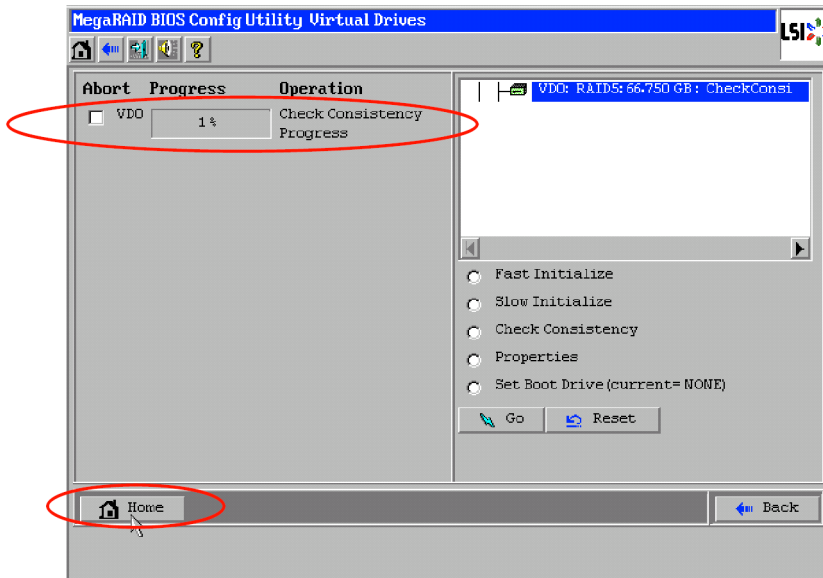
1. Start WebBIOS.
2. Click [Virtual Drives] on WebBIOS Top Menu.
3. Select a VD to perform Check Consistency from the upper right frame of Virtual Drives screen.
4. Click the checkmark column for Check Consistency from the lower right frame of Virtual Drives screen.
5. Make sure that Check Consistency is checked, and click [Go].



6. Inconsistency may be detected at Check Consistency performed immediately after the VD was configured. If the following alert is displayed, click [Yes] to perform Check Consistency. A lot of inconsistency may be detected, however, it is not a failure.



7. The progress of Check Consistency is displayed on the left frame of Virtual Drives screen.
8. Click [Home] at the lower left of Virtual Drives screen to return to the Top Menu.



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**IMPORTANT:** A lot of inconsistency may be detected at the first Check Consistency performed after the VD was configured due to inconsistencies in the unused area. In such a case, an alert may be logged.

---



## Manual Rebuild

Rebuild can be performed automatically when the failed Hard Disk Drive is replaced in hot-swap mode. However, if the failed Hard Disk Drive is replaced after turning off the power of the server, Rebuild will not start automatically. Use Manual Rebuild feature to recover the virtual drives as described below.

---

### IMPORTANT:

- To perform rebuild by replacing the Hard Disk Drive in hot-swap mode, be sure to replace the device while the operating system or WebBIOS is running.
  - You can view the progress of rebuild process on Universal RAID Utility screen or click [Virtual Drive] on WebBIOS Top Menu.
  - With the progress indication being displayed, the rebuild may be processed at slow rate. Go to WebBIOS Top Menu after making sure the rebuild progress.
-

Described below are procedures based on assumption:

One of the Hard Disk Drives failed in a RAID5 VD configured with three Hard Disk Drives.

Replace the failed Hard Disk Drive with new one after turning off the power of the server. Auto Rebuild feature is disabled for non-hot-swap replacement. Use Manual Rebuild feature to recover the virtual drives as described below.

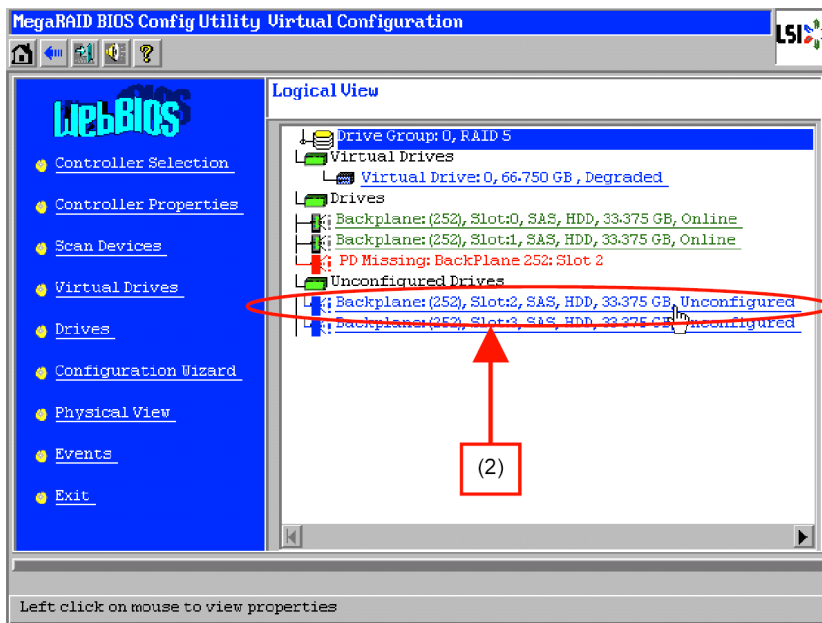
1. Start WebBIOS.

Make sure that the status for the replaced Hard Disk Drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

In the example below, the Hard Disk Drive in slot number 2 has been replaced.

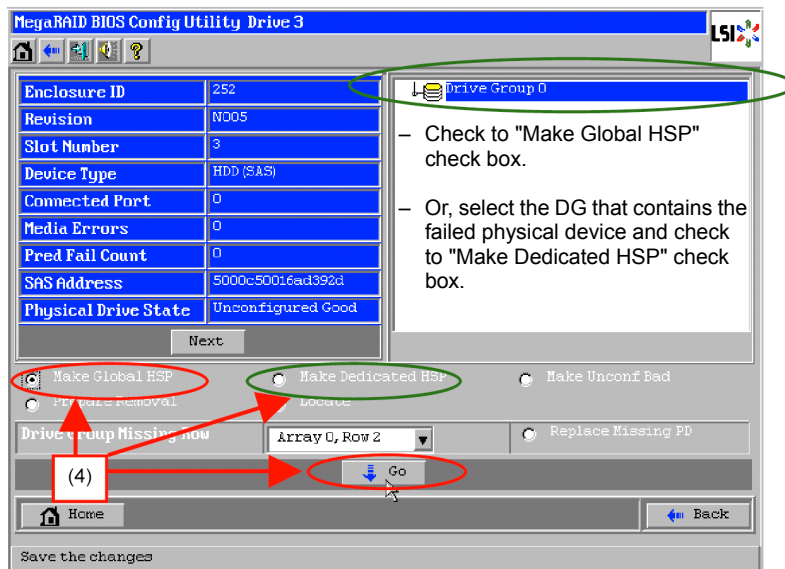
The indication "PD Missing: BackPlane 252: Slot2" represents that the Hard Disk Drive in VD having been installed in slot number 2 was removed.

2. Select the newly connected Hard Disk Drive (the Hard Disk Drive in slot number 2 in the example) from the right frame of Top Menu.

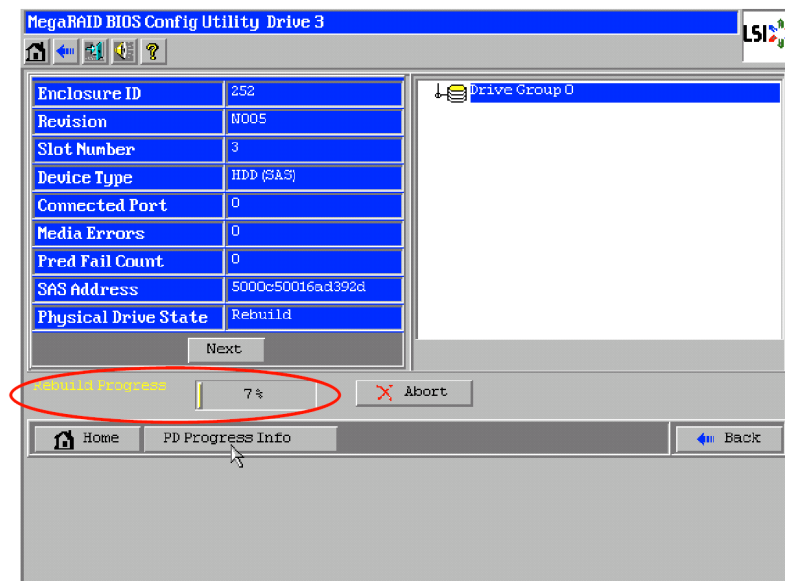


3. The properties for Physical Drive is displayed.

4. Check to "Make Global HSP" or select the DG you want to rebuild and check to "Make Dedicated HSP", and then click [Go] on the lower center of the screen.

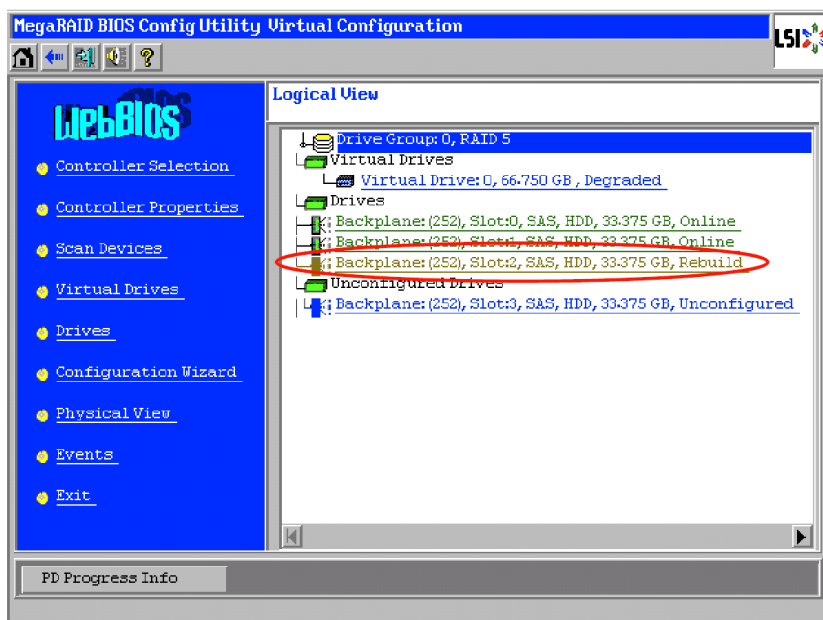


5. When [Rebuild Progress] is displayed, click [Home] at the lower left of the screen to go back to WebBIOS Top Menu.

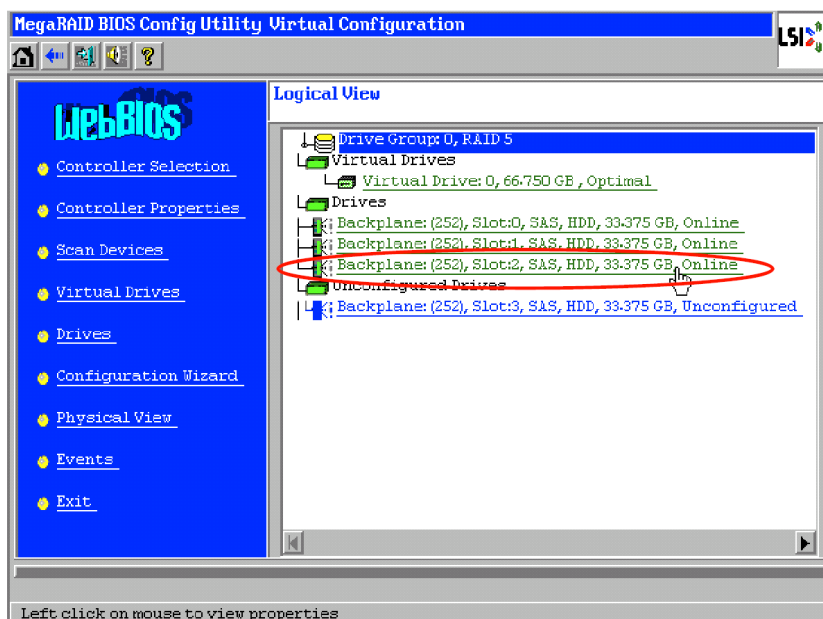


**IMPORTANT:** Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.

6. The WebBIOS Top Menu changes as shown below during rebuild. If you click on Physical Drive being rebuilt, the progress of rebuild is displayed.



7. When the rebuild completes, the status for the Physical Drive is "Online" and that of the Virtual Drive is "Optimal".



## Setting Hot Spare

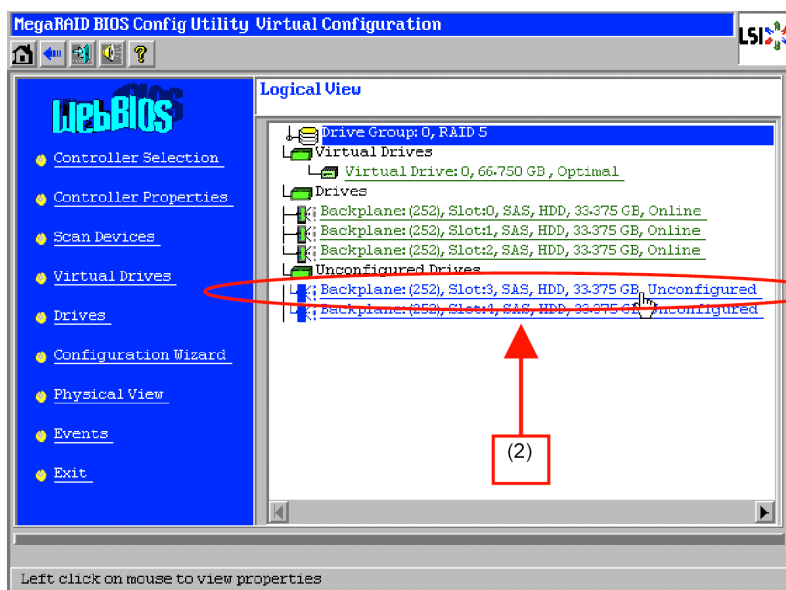
Described below are procedures based on assumption:

Add a Hard Disk Drive to a RAID5 VD configured with three Hard Disk Drives and assign a newly added Hard Disk Drive as Hot Spare Disk.

1. Start WebBIOS.

Make sure that the status for the added Hard Disk Drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

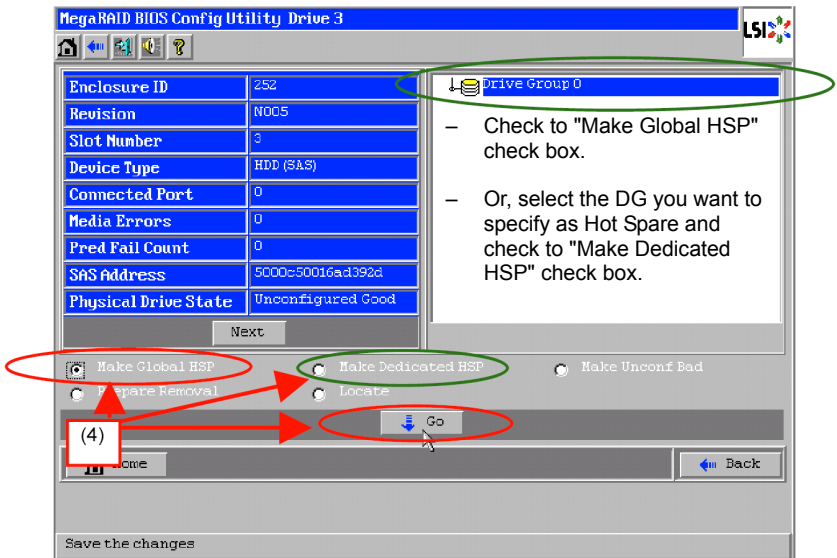
2. Select the newly connected Hard Disk Drive (the Hard Disk Drive in slot number 3 in the example) from the right frame of Top Menu.



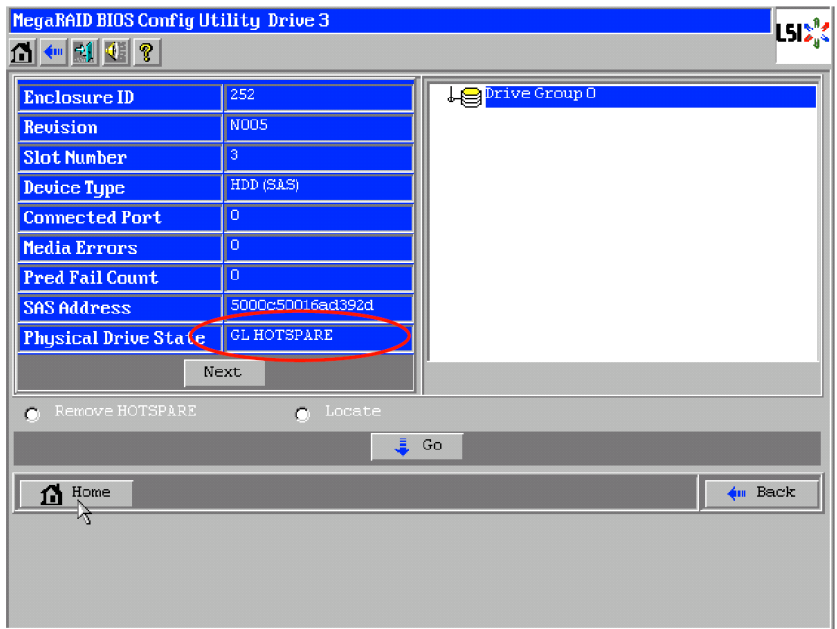
3. The properties for Physical Drive is displayed.

4. Check to "Make Global HSP" or select the DG you want to specify as Hot Spare and check to "Make Dedicated HSP", and then click [Go] on the lower center of the screen.

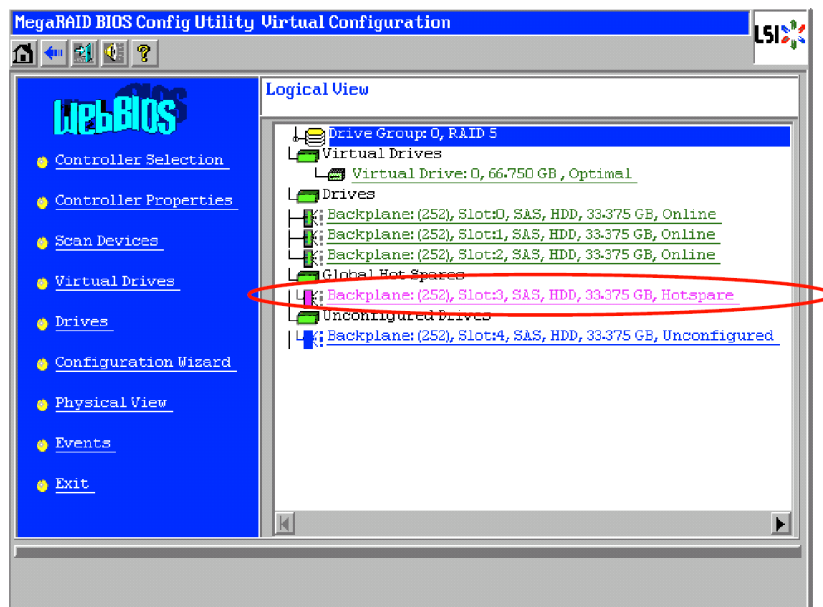
Global HSP:	Indicates the Hot Spare available for all DGs.
Dedicated HSP:	Indicates the Hot Spare available only for the specific DG. You need to specify the target DG.



5. The status for the newly connected Hard Disk Drive changes to "GL HOTSPARE" or "DED HOTSPARE".



6. Click [Home] at the lower left of the screen to go back to WebBIOS Top Menu.



## Reconstruction

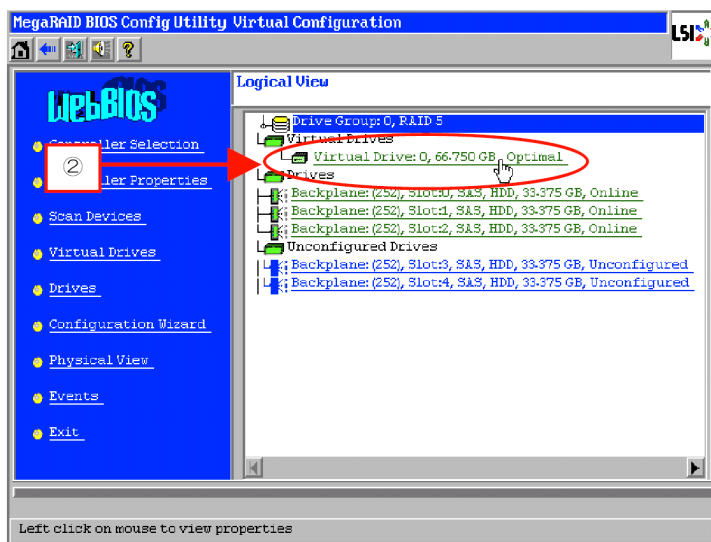
Described below are procedures based on assumption:

Add a Hard Disk Drive to a RAID5 VD configured with three Hard Disk Drives to make a RAID5 VD configured with four Hard Disk Drives.

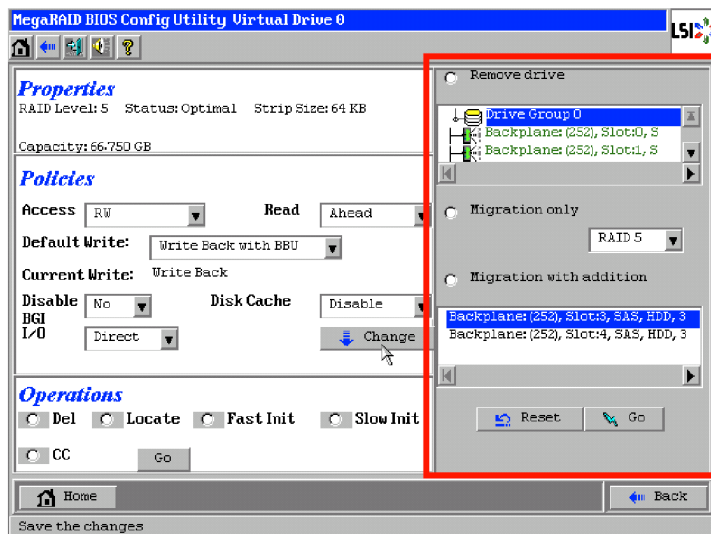
1. Start WebBIOS.

Make sure that the status for the added Hard Disk Drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

2. Select a VD you want to reconstruct (VD 0 in the example) from the right frame of Top Menu.

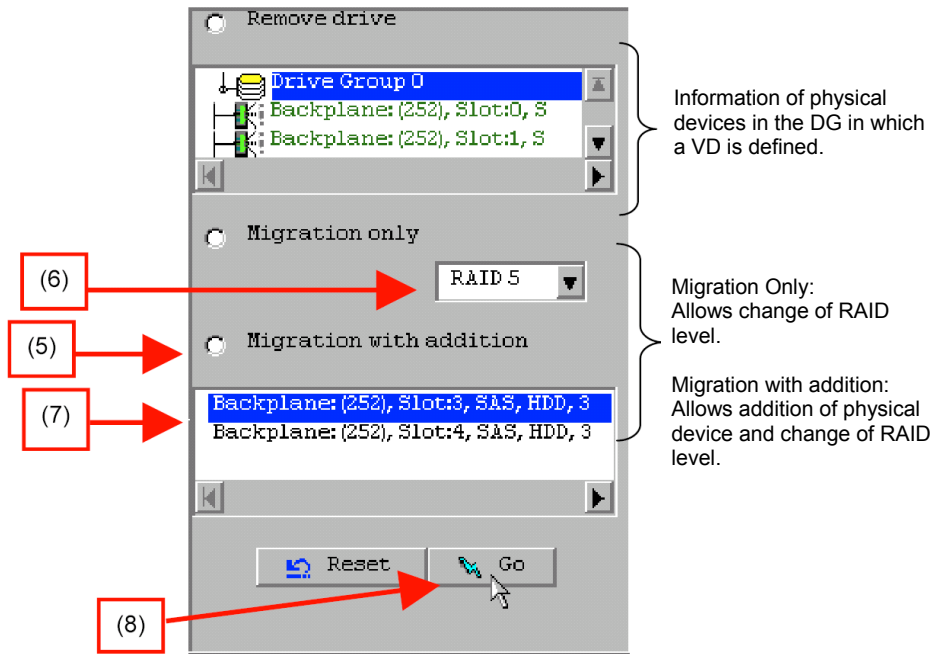


3. Setting menu for VD is displayed.





4. On the right of the screen, items required for reconstruction are displayed.



5. Select "Migration with addition".
6. Specify the RAID level used after reconstruction.
7. Select a Hard Disk Drive to be added.
8. When you finished Steps 5 to 7, click [Go] at the lower right of the screen.
9. The progress of reconstruction is displayed on the lower left of the screen. Click [Home] at the lower left of the screen to return to the WebBIOS Top Menu.

### IMPORTANT:

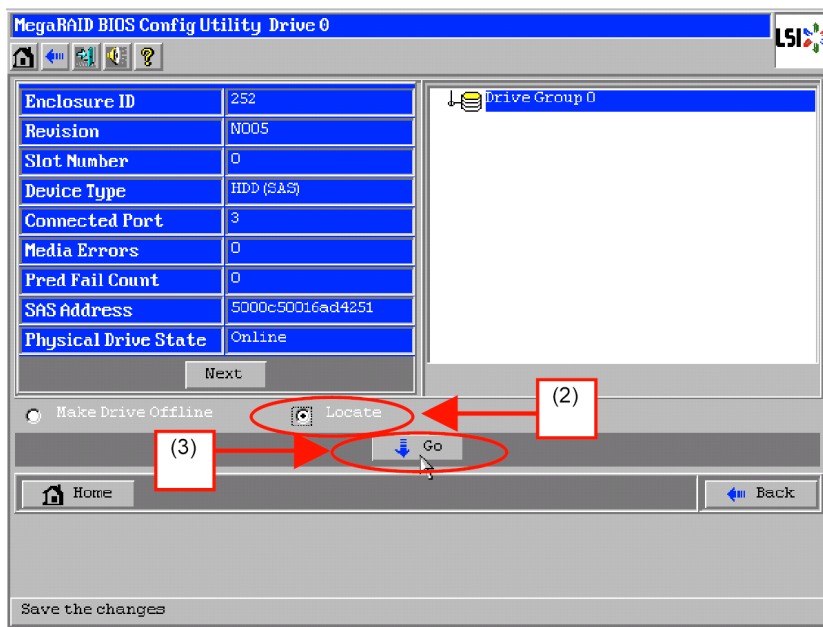
- Do not power off or reset the server while the Reconstruction is being executed.
- The capacity of virtual drive may be incorrectly displayed after reconstruction. In this case, perform Scan Devices from the Top Menu.
- Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.
- The following policies are temporarily changed while reconstruction is being executed. When reconstruction is finished, the previous values are restored.
  - Read Policy: Normal
  - Write Policy: Write Through
  - Access Policy: Cached I/O

## Locate

The Locate command makes a lamp on Hard Disk Drive light or blink to confirm the location of the slot. We recommend you to check the slot of Hard Disk Drive before adding VD or hot spare disks, reconstructing VD, or replacing Hard Disk Drive.

### How to execute Locate command on WebBIOS

1. Click a Physical Drive to check the location on the WebBIOS Top Menu.
2. The Physical Drive properties are displayed. Click [Locate].
3. Click [Go]. The lamp of the Hard Disk Drive lights or blinks.

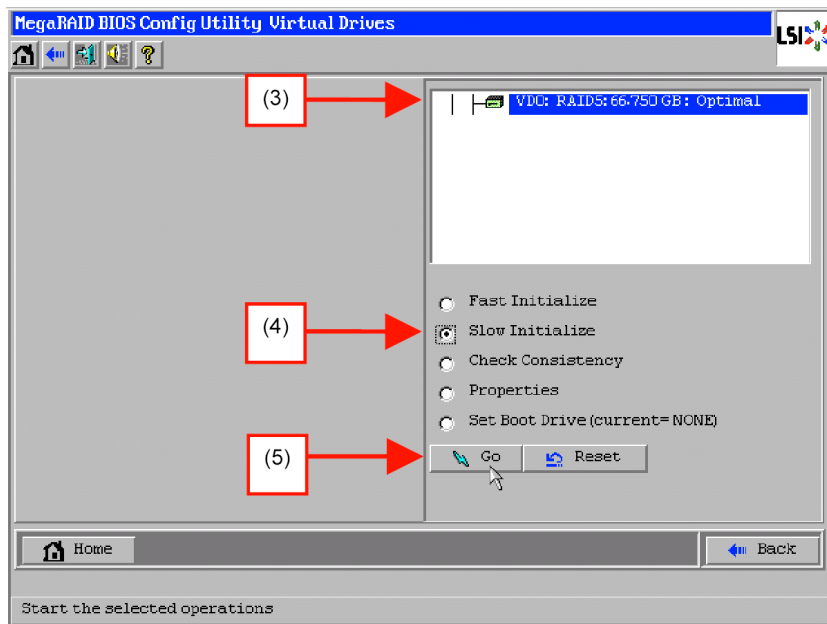


---

## Slow Initialize

Slow Initialize writes zero to all the sectors of the data area in the VD.

1. Start WebBIOS.
2. Click [Virtual Drives] on the WebBIOS Top Menu.
3. Select a VD to perform Slow Initialize from the upper right frame of the Virtual Drives screen.
4. Click the checkmark column for Slow Initialize from the lower right frame of the Virtual Drives screen.
5. Make sure that Slow Initialize is checked, and click [Go].



---

### IMPORTANT:

- To create a VD using the Configuration Wizard of WebBIOS, execute Fast Initialize to clear the first sector that contains partition information.
  - Slow Initialize takes a long time to complete.
-

## WebBIOS and Universal RAID Utility

You can use Universal RAID Utility for configuration and management, monitoring of RAID System after start up operating system.

The point to be kept in mind when using Universal RAID Utility together with WebBIOS is as follows.

### Terms

Terms used in WebBIOS differs from those used in Universal RAID Utility.

When you use Universal RAID Utility together with WebBIOS, substitute terms according to the following list.

Term of WebBIOS	Term of Universal RAID Utility
Adapter	RAID Controller
Virtual Disk	Logical Drive
Drive Group	Disk Array
Physical Drive	Physical Device

### Number and ID

The number to manage each component of RAID System used in Universal RAID Utility differs from that used in WebBIOS.

### Adapter and RAID Controller

Numbers for RAID Controller information used in WebBIOS differs from those used in Universal RAID Utility, as shown in the table below. For more information, refer to "Universal RAID Utility Ver 2.3 User's Guide".

Item	Management Number	
	WebBIOS	Universal RAID Utility
Adapter (RAID Controller)	Number beginning with 0	Number beginning with 1
Virtual Disk (Logical Drive)	Number beginning with 0	Number beginning with 1
Drive Group (Disk Array)	Number beginning with 0	Number beginning with 1
Physical Drive (Physical Device)	Number beginning with 0	Number beginning with 1

## Setting of Priority for Background Tasks

WebBIOS displays and sets Rebuild Priority, Patrol Read Priority, and Consistency Check Priority of RAID Controller by percentage. However, Universal RAID Utility uses three levels as High/Mid/Low for them.

---

### NOTES:

- WebBIOS can set BGI Rate (Background Initialize Priority). However, Universal RAID Utility cannot set it.
  - Universal RAID Utility can set Initialization Priority (Slow Initialize). However, this Controller does not support the function of the setting of Initialization Priority.
- 

See the table below for correspondence.

### *Setting value of WebBIOS and the display level of Universal RAID Utility*

Item	Setting value of WebBIOS	Universal RAID Utility level
Rebuild Priority Rebuild Rate (WebBIOS)	80 to 100	High
	31 to 79	Mid
	0 to 30	Low
Patrol Read Priority Patrol Read Rate (WebBIOS)	80 to 100	High
	31 to 79	Mid
	0 to 30	Low
Consistency Check Priority CC Rate (WebBIOS)	80 to 100	High
	31 to 79	Mid
	0 to 30	Low

### *Setting level of Universal RAID Utility and the setting value*

Item	Setting level of Universal RAID Utility	Value shown on WebBIOS (%)
Rebuild Priority Rebuild Rate (WebBIOS)	High	90
	Mid	50
	Low	10
Patrol Read Priority Patrol Read Rate (WebBIOS)	High	90
	Mid	50
	Low	10
Consistency Check Priority CC Rate (WebBIOS)	High	90
	Mid	50
	Low	10

## CONFIGURATION BY N8103-134 RAID CONTROLLER

The management utility for N8103-134 RAID Controller is SuperBuild Utility

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### Starting and Exiting SuperBuild Utility

When the screen as shown below appears, press **Ctrl + S** to start SuperBuild Utility.

```
SuperTrak EX SAS 6G RAID Controller BIOS Version 5.0.70.40 UPD(00.00)
(c) 2009 Promise Technology, Inc. All rights reserved.

Summary of Controller 1 : ST EXB760T-512
> Single Image Version : 5.0.70.40
> Number of Physical Dev : 0
> Number of Disk Array : 0
> Number of Logical Dev : 0
Summary of Controller 2 : ST EXB760T-512
> Single Image Version : 5.0.70.40
> Number of Physical Dev : 3
> Number of Disk Array : 0
> Number of Logical Dev : 0

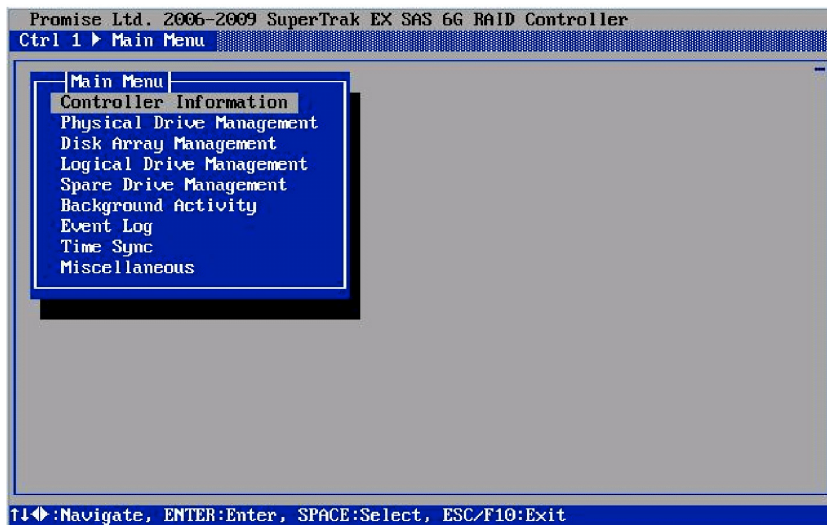
Press <Ctrl> + <S> to enter SuperBuild (tm) Configuration Utility
Press <Esc> or <Space> to continue
```

---

**NOTE:** POST displays the information about controllers installed in the server. In the example above, two controllers, Controller 1 and Controller 2, are installed.

---

The Main menu of the RAID Controller appears.

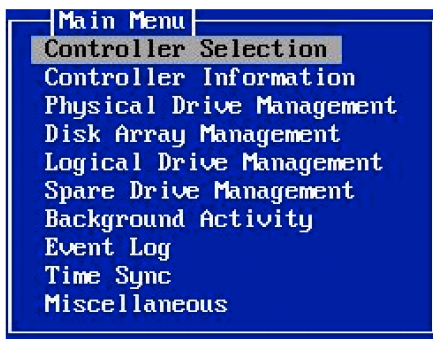


To exit the utility, press **Esc** or **F10** on the Main Menu screen. Then, press **Y** when the confirmation message appears.

Exit Configuration Utility? [Y]

## Main Menu

Use the arrow key on this screen to select the desired menu.



- **Controller Selection**  
You can select a RAID Controller you want to access. This menu does not appear if the installed controller is only one.
- **Controller Information**  
You can view information of RAID Controller including firmware and BIOS version numbers.
- **Physical Drive Management**  
You can view information about hard disk drives and their status.
- **Disk Array Management**  
You can create and delete a disk array. You can check the configuration of existing disk arrays and their status.
- **Logical Drive Management**  
You can create and delete a logical drive. You can check the configuration of existing logical drives and their status.
- **Spare Drive Management**  
You can create and delete a hot spare disk. You can check the configuration of existing hot spare disks and their status.
- **Background Activity**  
You can view the progress of background tasks (e.g., rebuild and initialization) performed to the logical drives.
- **Event Log**  
Events including background tasks performed are stored together with the timestamp. You can view the information about the controller, configured RAID System, status of hard disk drives or solid state drives.
- **Time Sync**  
Used to change Time Zone. Do not use this feature.
- **Miscellaneous**  
Used for various settings including lamp and buzzer settings for RAID Controller.



## Controller Selection

When you select [Controller Selection] from [Main Menu], the screen as shown below appears. If two or more controllers are installed in the server, you can select a controller which the utility accesses.



The controllers are displayed in ascending order of the PCI slot number. Select [Controller Information] menu to make sure that the controller you have selected is correct.

The selected controller is displayed at the upper left of the screen.



## Controller Information

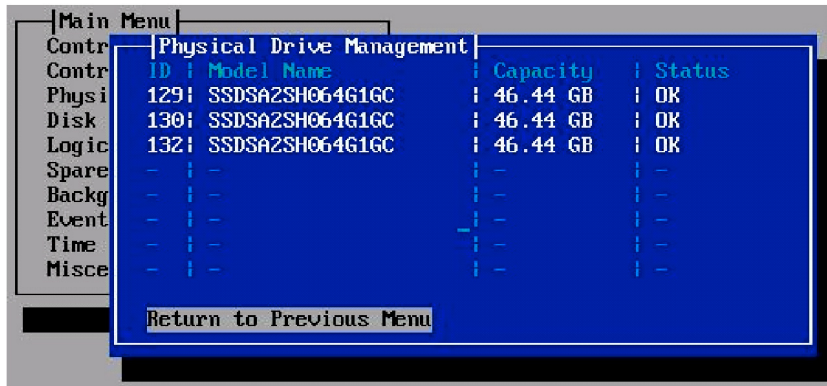
When you select [Controller Information] from [Main Menu], the screen as shown below appears. You can view the information about the selected controller.



- Vendor/Model  
Shows vendor name and model name.
- WWN  
Shows World Wide Number of the controller.
- Memory Type/Size  
Shows type and capacity of the installed memory.
- Single Image Ver / Firmware Version / BIOS Version  
Shows version numbers of the single image, firmware, and BIOS.
- PCI Func Address / PCI Link Width / PCI Speed  
Shows information related to PCI.
- Return to Previous Menu  
Goes back to previous menu.

## Physical Drive Management

When you select [Physical Drive Management] from [Main Menu], the screen as shown below appears. You can view the information about the HDD or SSD connected to the controller.



### ■ ID

Shows slot IDs of the connected HDD or SSD.

- ID 1 to 4: HDD or SSD connected to ports 1 to 4
- ID 129 to 132: HDD or SSD connected to ports 5-8

### ■ Model Name

Shows model name of HDD or SSD.

### ■ Capacity

Shows capacity.

### ■ Status

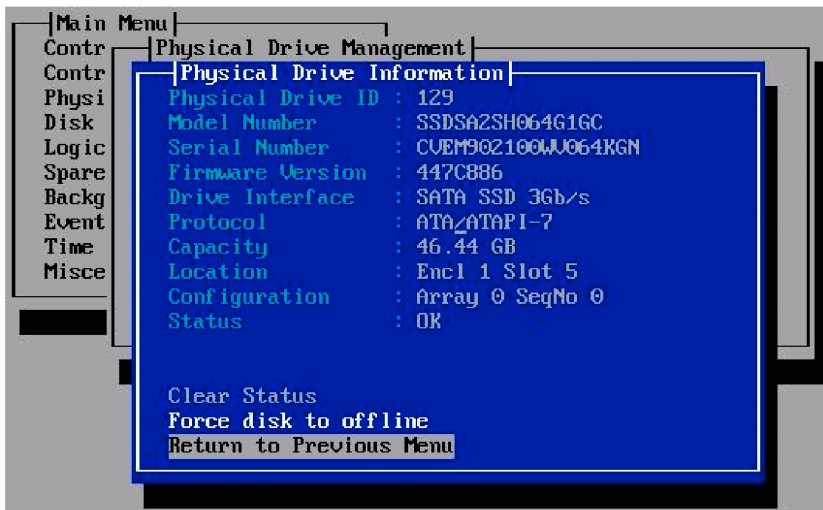
Shows the current status.

Status	Description
OK	HDD or SSD is in online state and works normally.
PFA	Failure is predicted due to an error occurred on HDD or SSD.
DEAD	HDD or SSD is inaccessible. HDD or SSD may be faulty.
Rebuild	Rebuild of HDD or SSD is in progress.
Md.Patrol	Patrol Read (by Universal RAID Utility) to HDD or SSD is in progress.
stale	HDD has previous array configuration.

### ■ Return to Previous Menu

Goes back to previous menu.

To view the detailed information of HDD or SSD, select the desired HDD or SSD and press **Enter**.



- **Physical Drive ID**  
Shows slot IDs of the connected HDD or SSD.
  - ID 1 to 4: HDD or SSD connected to ports 1 to 4
  - ID 129 to 132: HDD or SSD connected to ports 5-8
- **Model Name**  
Shows the drive manufacturer's model name.
- **Serial Number**  
Shows the drive manufacturer's serial number.
- **Firmware Version**  
Shows the drive's firmware version number.
- **Drive Interface**  
Shows the maximum PCI bus transfer rate.
- **Protocol**  
Not supported.
- **Capacity**  
Shows the capacity of the drive.
- **Location**  
Shows the location where HDD or SSD is installed.

- Configuration

Shows information about disk array in which HDD or SSD is configured.

- Status

Shows the current status of HDD or SSD.

- Force disk to online (offline)

Use this option to assign a HDD or SSD as a member of logical drive (or re-assign it) forcibly.

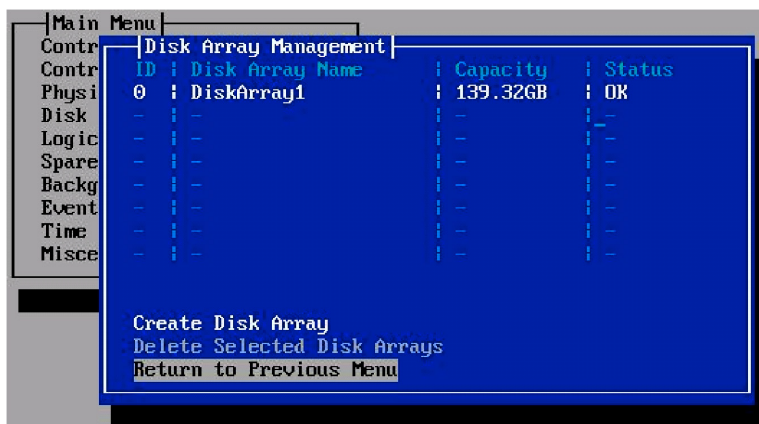
This option can be performed only on the slot in the disk array.

- Return to Previous Menu

Goes back to previous menu.

## Disk Array Management

When you select [Disk Array Management] from [Main Menu], the screen as shown below appears. You can create or delete the disk array.

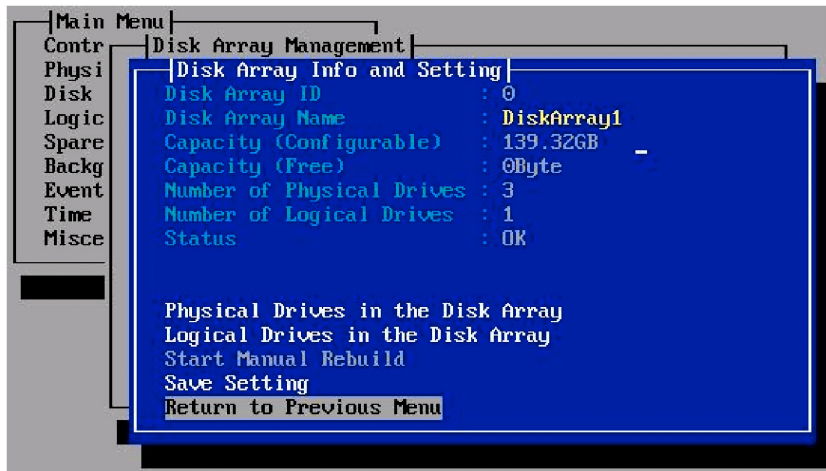


- ID  
Shows the disk array number.
- Disk Array Name  
Shows the name you assigned to the disk array.
- Capacity  
Shows the capacity of the disk array.
- Status  
Shows the current status.

Status	Description
OK	The disk array is in online state and works normally.
Degraded	One or more HDD or SSD in the disk array is faulty or disconnected.
Rebuild	The logical drive is being rebuilt.
Offline	Offline state. All of the HDDs or SSDs in the disk array are faulty or disconnected.
Miss PD	The HDD or SSD actually connected to the controller is not found in configuration information stored in disk array. If the relevant HDD or SSD has no other configuration information, the controller determines that the HDD or SSD is lost.
Incomplete	If a HDD or SSD in the slot that is used by a disk array has any other configuration information, the HDD or SSD is considered as incomplete.

- Create Disk Array  
Select this menu to create a disk array. See "Creating Disk Array" described later.
- Delete Selected Disk Array  
Select this menu to delete a disk array. See "Deleting RAID System" described later.

To view the detailed information of disk array, select the desired disk array and press **Enter**.



- Disk Array ID  
Shows the disk array number.
- Disk Array Name  
Shows the name you assigned to the disk array. You may change it on this menu.
- Capacity (Configurable)  
Shows the usable capacity of the disk array.
- Capacity (Free)  
Shows the total capacity allowable for logical drive.
- Number of Physical Drives  
Shows the number of HDDs or SSDs in the disk array.
- Number of Logical Drives  
Shows the number of logical drives created in the disk array.
- Status  
Shows the current status.

## ■ Physical Drives in the Disk Array

Shows HDDs or SSDs in the disk array. See "Physical Drive Management" described earlier.

The screenshot shows the HP BIOS Setup Utility interface. The left sidebar contains the following menu items: Main Menu, Contr, Physi, Disk, Logic, Spare, Backg, Event, Time, and Misce. The main display area is titled 'Physical Drives in the Disk Array' and contains a table with the following data:

ID	Model Name	Capacity	Status
129	SSDSA2SH064G1GC	46.44 GB	OK
130	SSDSA2SH064G1GC	46.44 GB	OK
132	SSDSA2SH064G1GC	46.44 GB	OK
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

At the bottom of the main display area, there is a button labeled 'Return to Previous Menu'.

## ■ Logical Drives in the Disk Array

Shows information about logical drives created in disk array. See "Logical Drive Management" described later.

The screenshot shows the HP BIOS Setup Utility interface. On the left is a vertical navigation menu with options: Main Menu, Contr, Physi, Disk, Logic, Spare, Backg, Event, Time, and Misce. The 'Disk' option is highlighted, leading to the 'Disk Array Management' screen. Within this screen, 'Logical Drives in the Disk Array' is selected, displaying a table of logical drives.

ID	Logical Drive Name	Capacity	Status
0	LogicalDrive1	92.88GB	OK
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

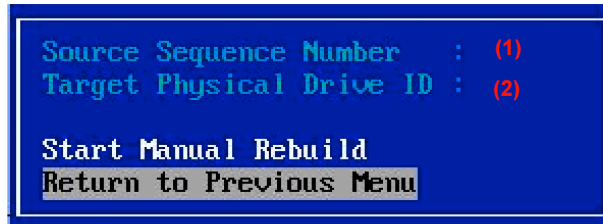
At the bottom of the screen, there is a button labeled 'Return to Previous Menu'.



#### ■ Start Manual Rebuild

Use this menu to perform Manual Rebuild to recover the disk array. Start Manual Rebuild is selectable only when the status of logical drive in target disk array is Critical or Degrade. The disk array can be recovered by Manual Rebuild without replacing any HDD or SSD.

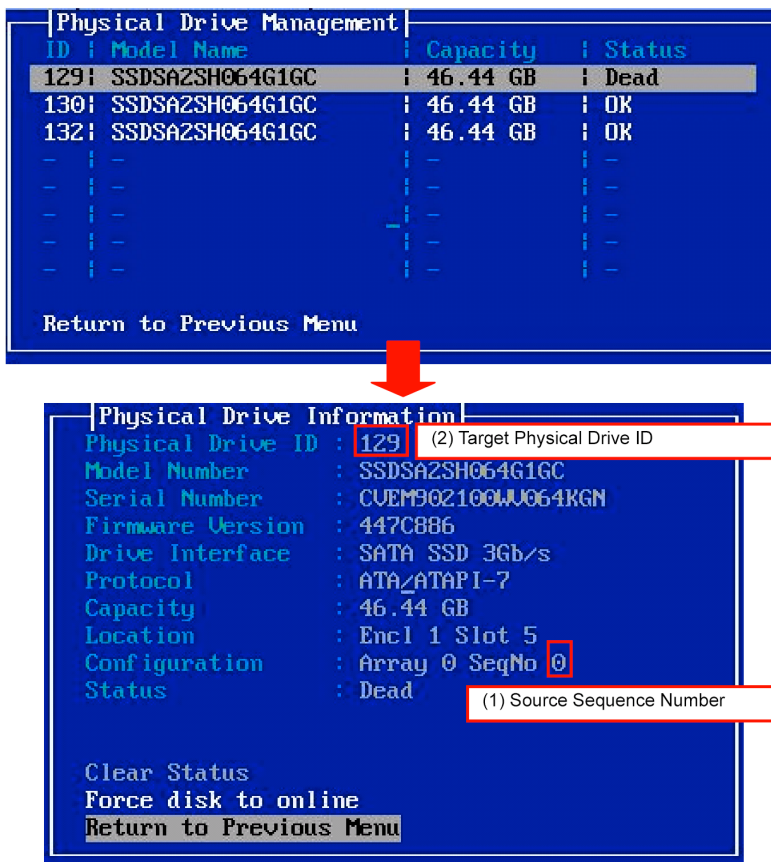
If the failed HDD or SSD is replaced with new one, rebuild starts automatically (Auto Rebuild feature).



Specify Source Sequence Number (1) and Target Physical Drive ID (2), then select Start Manual Rebuild to start manual rebuild process.

The values for (1) and (2) can be viewed on [Physical Drive Information] as shown below.

Select the HDD (its status is shown as "Dead") on [Main Menu] - [Physical Drive Management], and press **Enter** to display [Physical Drive Information].



In the example, (1) Source Sequence Number is "0", and (2) Target Physical Drive ID is "129".

#### ■ Save Setting

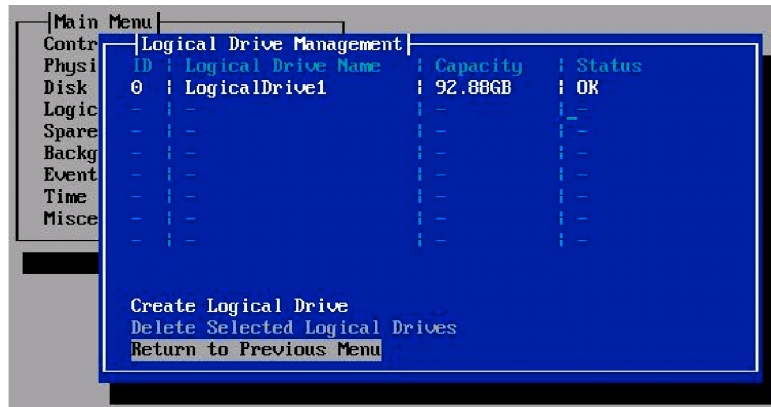
The items shown by white character can be changed on this menu. The items shown by gray character cannot be changed. Move the cursor to the desired item, press **Enter**, and enter the new value. When you select Save Setting, the new value is reflected to the controller.

#### ■ Return to Previous Menu

Goes back to previous menu.

## Logical Drive Management

When you select [Logical Drive Management] from [Main Menu], the screen as shown below appears. You can create or delete a logical drive on this menu.



- ID

Shows the logical drive number.

- Logical Drive Name

Shows the logical drive name you assigned at creation of the logical drive.

- Capacity

Shows capacity of logical drive.

- Status

Shows the current status of logical drive.

Status	Description
OK	The logical drive in online state and works normally.
Degrade	The logical drive is in degraded state. One HDD or SSD in RAID6 logical drive is in offline state. The logical drive still has redundancy and can continue operation. If two HDDs or SSDs fail, you can continue operation, however, it is recommended to replace the failed HDD or SSD as soon as possible.
Critical	The logical drive is in critical state. RAID1, RAID5, and RAID10 logical drives go critical when one HDD or SSD fails. RAID6 logical drive goes critical when two HDDs or SSDs fail. A critical logical drive can still work but it has lost redundancy. An immediate recovery is required. If any other HDD or SSD fails, the logical drive is unable to continue operation.
Offline	One or more HDD or SSD in RAID0 logical drive goes offline, two or more HDDs or SSDs in RAID1, 5, 10 logical drive go offline, three or more HDDs or SSDs in RAID6 logical drive go offline. Unable to process data with the logical drive being offline.
Initial	The logical drive is being initialized.
Redun.Chk	Consistency Check is being performed to the logical drive (by Universal RAID Utility).

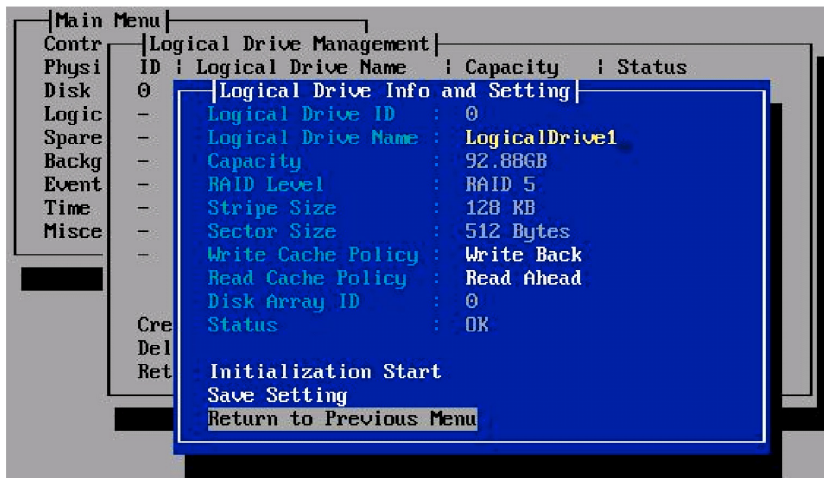
- Create Logical Drive

Select this menu to create a logical drive. See "Creating Logical Drive" described later.

- Delete Logical Drive

Select this menu to delete a logical drive. See "Deleting Logical Drive" described later.

To view the detailed information of logical drive, select the desired logical drive and press **Enter**.



- Logical Drive ID

Shows the logical drive number.

- Logical Drive Name

Shows the logical drive name you assigned at creation of the logical drive. You can change the logical drive name on this menu.

- Capacity

Shows capacity of logical drive.

- RAID Level

Shows RAID level of logical drive.

- Stripe Size

Shows stripe size of logical drive.

- Sector Size

Shows sector size of logical drive.

- Write Cache Policy

Shows Write Cache Policy defined to the logical drive. You can change the setting on this menu.

- Read Cache Policy

Shows Read Cache Policy defined to the logical drive. You can change the setting on this menu.

- Disk Array ID

Shows disk array number that contains this logical drive.

- Status

Shows current status of the logical drive.

- Initialization Start

Use this menu to initialize the logical drive. Two options are available. Press F for Full Initialization, and Q for Quick Initialization. Press C to cancel.

[Initialization Start] is changed to [Initialization Stop] if initialization is being performed. Select [Initialization Stop] to stop initialization. See "Initializing Logical Drive" for details.

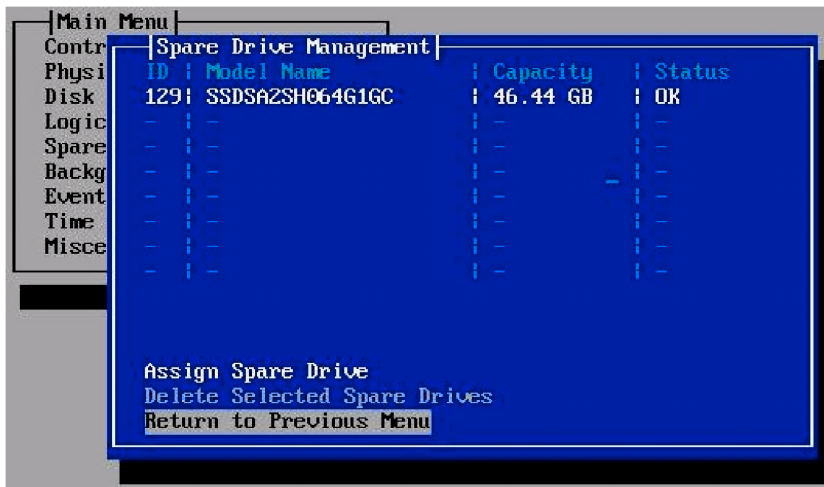
- Save Setting

The items shown by white character can be changed on this menu.

When you finish, select Save Setting to reflect the new setting to the controller.

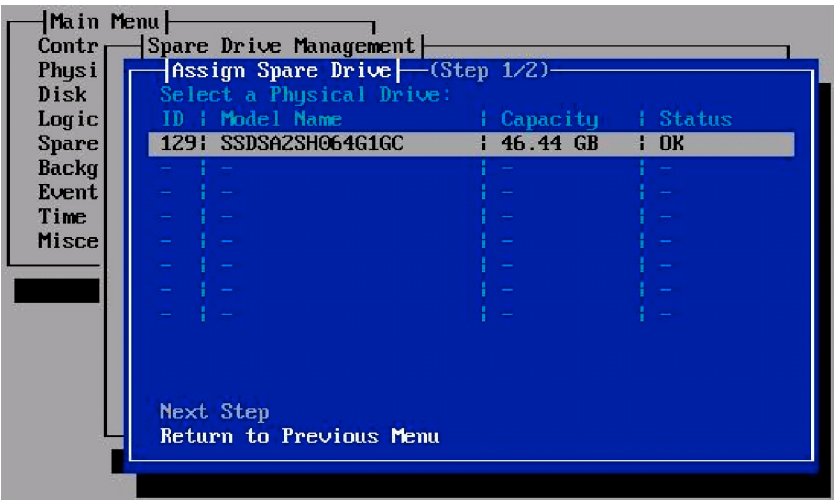
## Spare Drive Management

When you select [Spare Drive Management] from [Main Menu], the screen as shown below appears. Use this menu to assign a HDD or SSD as a hot spare disk. If a failure occurs in disk array, the assigned hot spare disk starts rebuild automatically to recover from the degraded state. You can view the assigned hot spare disk on this window, or change it.

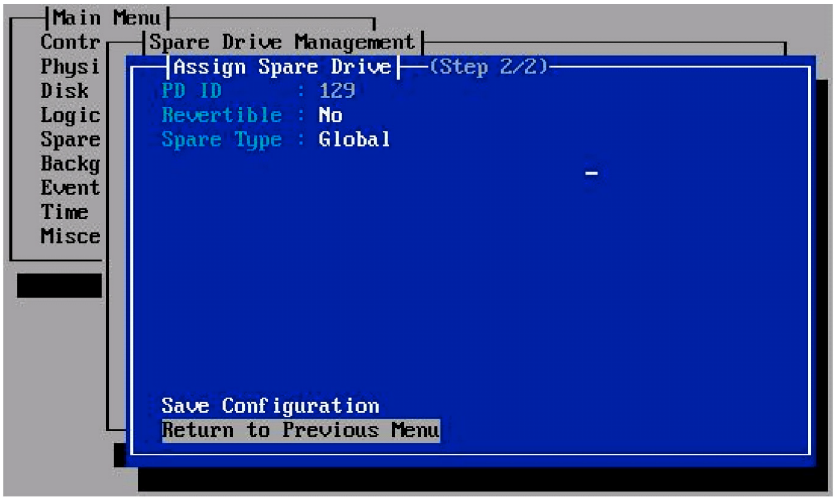


- ID  
Shows port number of the connected HDD or SSD.
- Model Name  
Shows model name of the vendor.
- Capacity  
Shows capacity of HDD or SSD.
- Status  
Shows current status of HDD or SSD. The information is identical to that shown on [Physical Drive Management].
- Assign Spare Drive  
Use this menu to assign the HDD or SSD, which is not assigned as a member of logical drive, as the hot spare disk.
- Delete Selected Spare Drive  
Use this menu to delete the existing hot spare disk.
- Return to Previous Menu  
Goes back to previous menu.

If no HDD or SSD is assigned as hot spare disk, the window is blank. To assign a hot spare disk, select [Assign Spare Drive].



The window shows available HDDs or SSDs. Select one of them you want to assign.



- PD ID  
Shows ID of HDD or SSD to be assigned as hot spare disk.
- Revertible  
Creating a revertible hot spare disk can be selected, however, always set to "No".

■ Spare Type

– Global

The hot spare disk is available for all disk arrays.

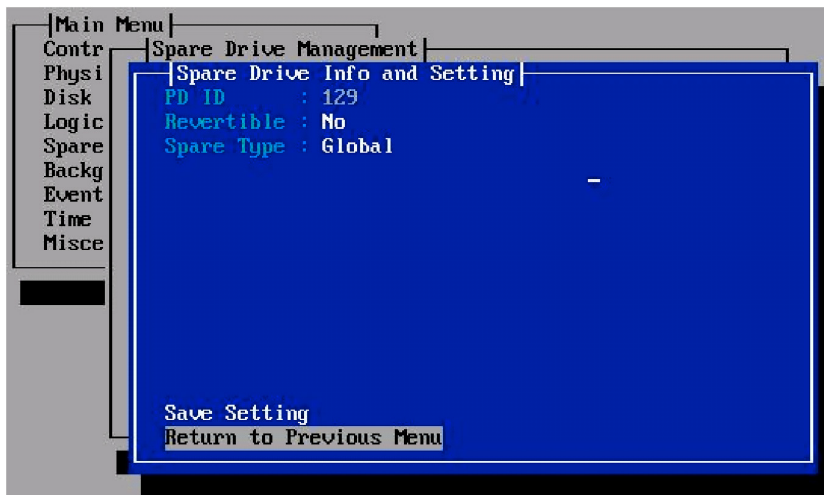
– Dedicated

The hot spare disk is available only for the specified disk array.

[Dedicated] can be specified only for the disk array configured by the same interface as the hot spare disk.



You can view information about the hot spare disks already been assigned on [Spare Drive Management] window.



When you move the cursor onto the hot spare disk and press **Enter**, [Spare Drive Info and Setting] window appears. Select "Spare Type" to change setting, and then "Save Setting" to determine it.



### Background Activity

When you select [Background Activity] from [Main Menu], the screen as shown below appears. You can view the progress of background tasks (rebuild or initialization) performed on the logical drive.



- **Device**  
Shows the existing logical drive.
- **Type**  
Shows the type of registered background task. (The task status is shown in "Status" field.)

Type	Description
Rebuild	Tasks related to Rebuild are registered.
Md.Patrol	Tasks related to Patrol Read are registered.
Initial	Tasks related to Initialization are registered.
Redun.Chk	Tasks related to Consistency Check are registered.

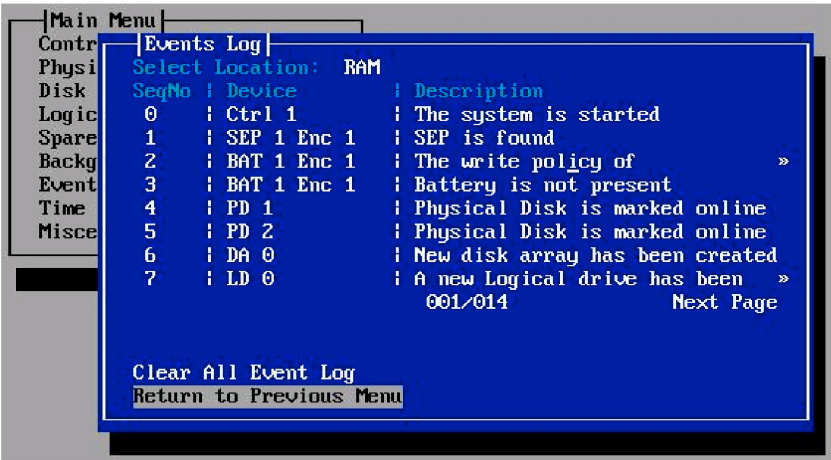
- **Status**  
Shows execution status of background task.

Status	Description
Running	The background task shown in Type field is running.
Paused	The background task shown in Type field is being paused.
Queued	The background task is in queue state.

- **%**  
Shows progress of background task in percentage (%).

### Event Log

If an event (e.g., start, running, or finish of the background task) occurs, the information is stored in Event Log. You can view the NvRAM information as well as the RAM information. To clear the log, select Clear All Event Log.

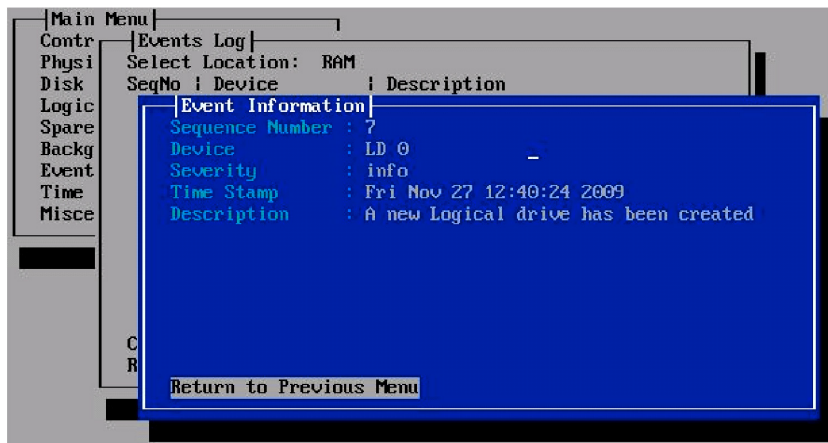


---

**NOTE:** The running background task such as Initialization is logged every 10% of progress. When the task is finished, 10 events of the same contents are logged, however, this is not an error.

---

To view the detailed information of events, select the desired event and press **Enter**. [Event Information] will appear.



- Sequence Number  
Shows sequence number of the event.
- Device  
Shows device on which the event occurred.
- Severity  
Shows type of the event.
- Time Stamp  
Shows date and time when the event occurred.
- Description  
Shows contents of the event.

## Time Sync

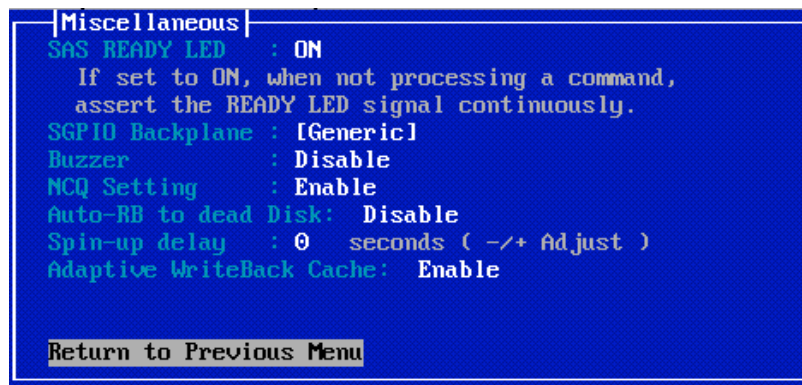


Use this menu to change Time Zone. The correct time zone is factory set, and you do not need to change it in usual case.

To change Time Zone, select Current Time Zone and press **-** or **+** key.

Select Sync Time With Embedded Site to save the new setting.

## Miscellaneous



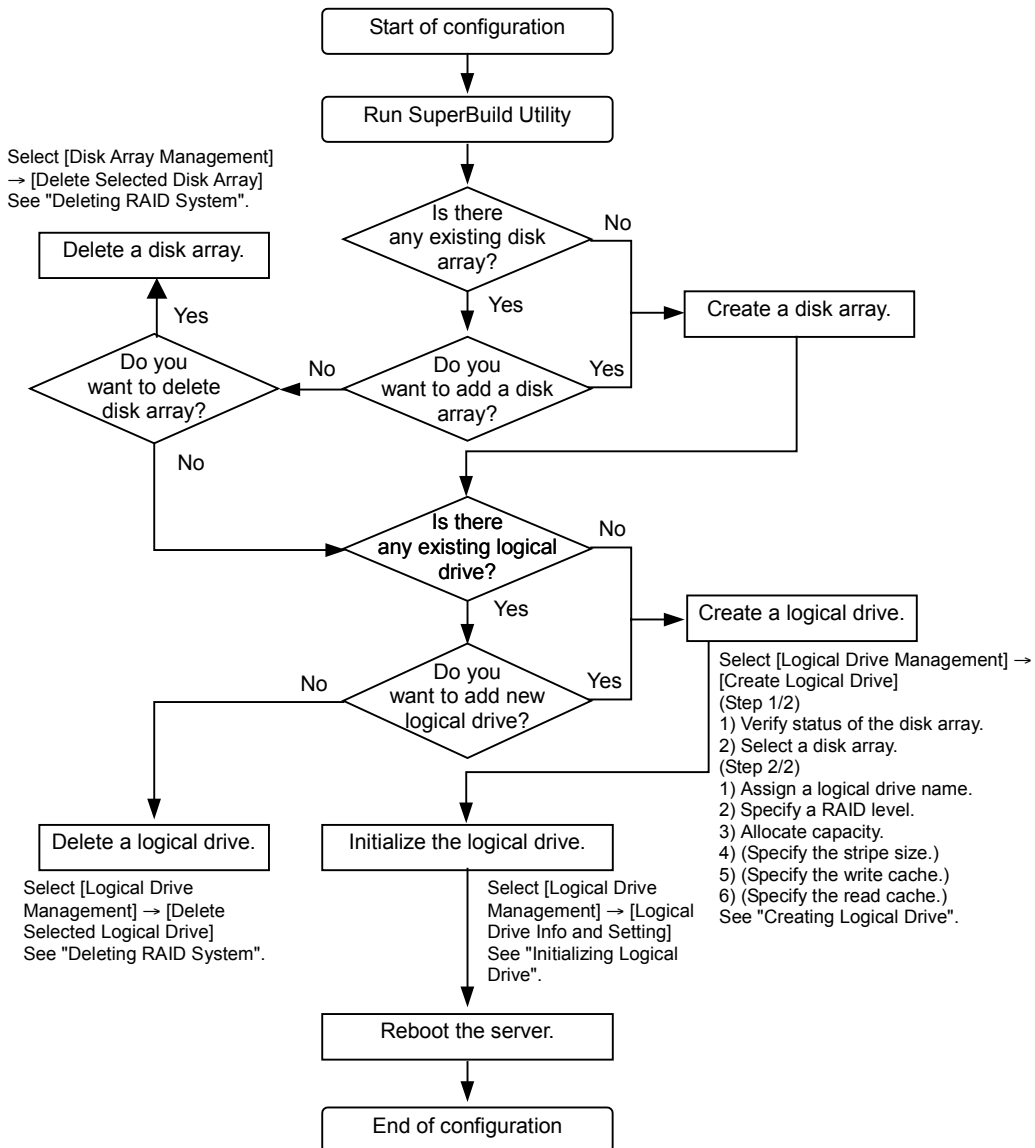
This menu is used to change various settings for RAID Controller. However, do not change any item than "Buzzer", "Auto-RB to dead Disk", and "Adaptive WriteBack Cache".

- SAS Ready lamp  
Always use the default value.
- SGPIO Backplane  
Always set to Generic.
- Buzzer  
If set to ON, buzzer sounds at occurrence of an error. If set to OFF, buzzer is silent in any case.
- NCQ Setting  
Always use the default value.
- Auto-RB to dead disk  
Always use the default value.
- Spin-up delay  
Always use the default value.
- Adaptive WriteBack Cache  
Select whether the Write Policy is changed or not when the battery fails. "Enable" is recommended to protect your data.

## Configuring RAID System

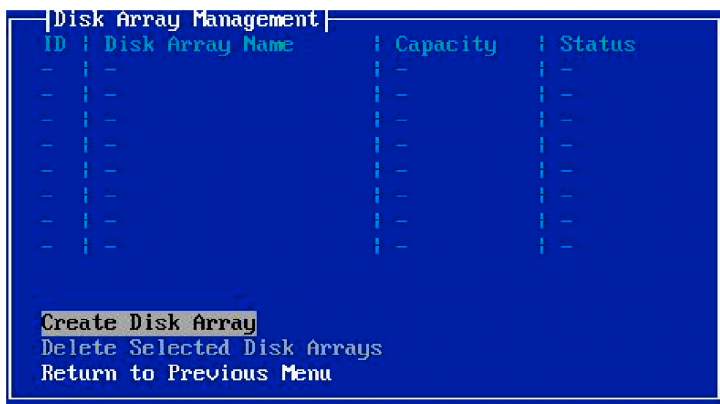
This section describes how to configure the RAID System. For how to assign a hot spare disk, see "Spare Drive Management" described earlier.

### Configuration Flow

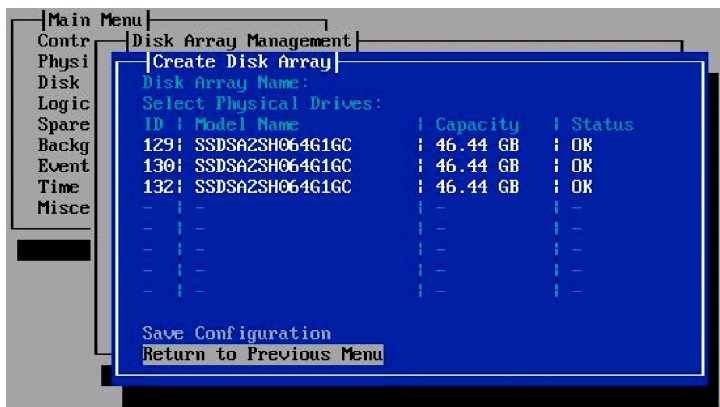


## Creating Disk Array

1. Select [Disk Array Management] from [Main Menu].
2. The window shows disk array, if exist. If no disk array is displayed or you want to create additional disk array, move the cursor onto [Create Disk Array], and press **Enter** to proceed.



3. HDDs or SSDs available for disk array are displayed. Select HDDs or SSDs to configure the disk array using **Spacebar**, then select [Save Configuration] to create a disk array.



**NOTE:** If the HDD or SSD being connected is not displayed in the list, check the following:

- Check if the HDD or SSD has been assigned as hot spare disk. (The HDD or SSD assigned as a hot spare disk is not displayed. Make sure the disk status on [Spare Drive Management] menu.)
- Contact your service representative in the following cases:
  - The [Status] is other than [OK] when a new HDD or maintenance HDD is connected.
  - The capacity of HDD or SSD differs from that of actually connected device.

## Creating Logical Drive

1. Select [Logical Drive Management] from [Main Menu].
2. The window shows the existing logical drives. To create a logical drive, move the cursor onto [Create Logical Drive] using the arrow key, and press **Enter** to proceed.

Logical Drive Management			
ID	Logical Drive Name	Capacity	Status
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
Create Logical Drive			
Delete Selected Logical Drives			
Return to Previous Menu			

3. The existing disk arrays are displayed. Make sure that the status of the disk array in which you want to create a logical drive is "OK". Then, select the disk array using **Spacebar** and select [Next Step] to proceed.

If no disk array is displayed, create a disk array according to "Creating Disk Array".

[Create Logical Drive] - (Step 1/2)			
Select a Disk Array:			
ID	Disk Array Name	Capacity	Status
0	DiskArray1	139.32GB	OK
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
Next Step			
Return to Previous Menu			



4. Provide settings required for creating a logical drive.

```

[Create Logical Drive] - (Step 2/2)
Disk Array ID      : 0
Capacity (Free)   : 139          GB

Logical Drive Name : LogicalDrive1
RAID Level         : RAID 0
Capacity           : 0          GB ( 0:Auto )
Stripe Size       : 128KB
Sector Size        : 512 Bytes
Write Cache Policy : Write Back
Read Cache Policy  : Read Ahead

Save Configuration
Return to Previous Menu

```

Item	Default setting	Remarks
Disk Array ID	x	Cannot be changed.
Capacity (Free)	xxxx GB	Maximum usable area size. Cannot be changed.
Logical Drive Name	–	Only Alphanumeric characters are acceptable.
RAID Level	RAID0	RAID0/RAID1/RAID5/RAID6/RAID10/RAID 50
Capacity	0 GB (maximum)	The minimum is 1 GB. 0 GB represents the maximum capacity.
Stripe Size	128 KB	64KB/128KB/256KB/512KB/1024KB
Sector Size	512 Bytes	Cannot be changed.
Write Cache Policy	Write Back	Write Back/Write Through
Read Cache Policy	Read Ahead	No Cache/ Read Cache/ Read ahead

■ Disk Array ID

Shows the disk array number to be created. You cannot change this setting.

■ Capacity (Free)

Shows the maximum capacity available for logical drive. This value is determined automatically depending on the selected disk array and RAID level, thus you cannot change the value.

■ Logical Drive Name

Specify the desired name to the logical drive to be created. Only the alphanumeric characters are acceptable.

**■ RAID Level**

Select a RAID level. The default setting is RAID0.

**■ Capacity**

Specify the capacity of logical drive. Enter the value not exceeding the value shown in [Capacity (Free)].

If you specify 0 GB (default), the maximum available capacity is determined. The minimum value is 1 GB.

**■ Stripe Size**

Specify the size to divide the data for striping. 128KB is recommended.

**■ Sector Size**

The sector size of the selected disk array is displayed. You cannot change the value.

**■ Write Cache Policy**

Specify the Write Cache mode of RAID Controller.

Cache Mode	Description
Write Back (Default)	The data is written in cache memory in the controller, then the cached data is written in the hard disk drive. The access performance is higher than Write Through mode, however, data may be lost if power failure occurs.
Write Through	The data is written in cache memory and hard disk drive at the same time. The access performance is lower than Write Back mode.

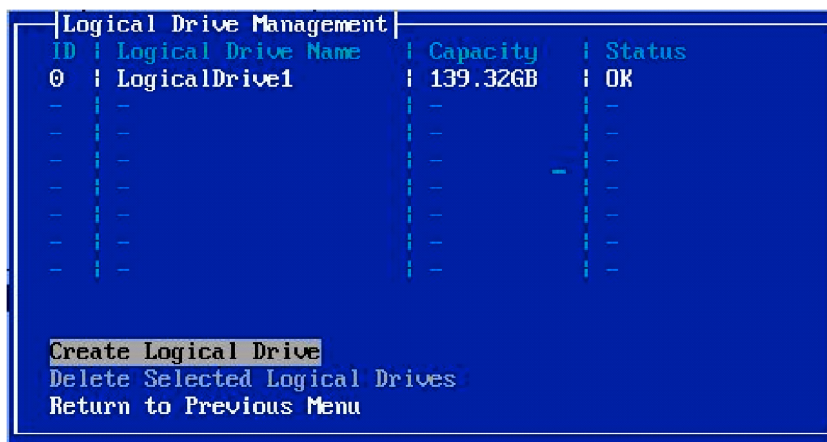
**■ Read Cache Policy**

Cache Mode	Description
No Cache	The controller does not use cache memory for reading data.
Read Cache	The controller uses cache memory for reading for higher access performance.
Read Ahead (Default)	The controller reads the next data in cache memory prior to read request is issued. The performance is higher than Read Cache mode.

- 5.** When you finished setup, move the cursor onto [Save Configuration] and press **Enter** to save the configuration information.

6. When the configuration information is saved, the screen returns to [Logical Drive Management]. Check the status of the created logical drive.

If you want to another logical drive, select [Create Logical Drive] and repeat Steps 2 through Step 5.



ID	Logical Drive Name	Capacity	Status
0	LogicalDrive1	139.32GB	OK
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Create Logical Drive  
Delete Selected Logical Drives  
Return to Previous Menu

7. When setup of logical drive completes, exit SuperBuild Utility and reboot the server.
8. When POST starts, make sure that the disk array and logical drives you have created are correctly displayed, and that no error message such as Critical or Offline is displayed.

Example 1: One disk array configured with six HDDs and one RAID5 logical drive are created (normal state)

```
SuperTrak EX SAS 6G RAID Controller BIOS Version 5.0.70.40 UPD(00.00)
(c) 2009 Promise Technology, Inc. All rights reserved.

Summary of Controller 1 : ST EXB760T-512
> Single Image Version : 5.0.70.40
> Number of Physical Dev : 6
> Number of Disk Array : 1
> Number of Logical Dev : 1

Press <Ctrl> + <S> to enter SuperBuild (tm) Configuration Utility
Press <Esc> or <Space> to continue
```

\* Only one controller is installed.

Example 2: One disk array configured with six HDDs, and two RAID5 logical drives are created. One is Critical, and another is Degraded (abnormal state).

```
SuperTrak EX SAS 6G RAID Controller BIOS Version 5.0.70.40 UPD(00.00)
(c) 2009 Promise Technology, Inc. All rights reserved.

Summary of Controller 1 : ST EXB760T-512
> Single Image Version : 5.0.70.40
> Number of Physical Dev : 6
> Number of Disk Array : 1
> Number of Logical Dev : 2 ▶ Critical: 1 ▶ Degraded: 1

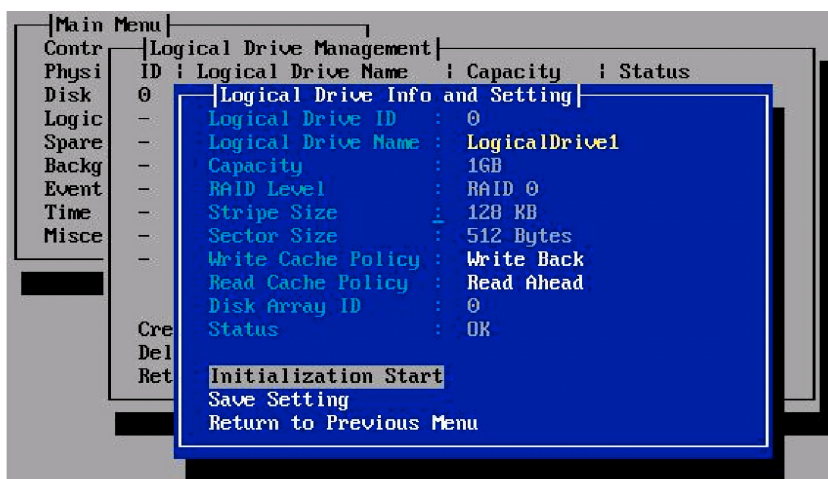
Press <Ctrl> + <S> to enter SuperBuild (tm) Configuration Utility
Press <Esc> or <Space> to continue
```

\* Only one controller is installed.

## Initializing Logical Drive

You must initialize the logical drives immediately after you create them. Take following steps to initialize the logical drives.

Select [Logical Drive Management] from [Main Menu]. The logical drive you created are displayed. Put the cursor onto it, and press **Enter**.



The [Logical Drive Info and Setting] window opens. Put the cursor onto [Initialization Start], and press **Enter**.

- For a Full Initialization, press **F**.
- For a Quick Initialization, press **Q**.
- To cancel Initialization, press **C**.

If you select Quick Initialization, only a part of area including RAID information is initialized. It takes very short time regardless of capacity of the logical drive.

If you select Full Initialization, all the data in logical drive is initialized. It may take long time depending on capacity of the logical drive.

[Initialization Stop] will appear during initialization. Select [Initialization Stop] to stop initialization.

---

## Deleting RAID System

Described below are procedures for removing the logical drive. Take the same procedure to delete a disk array.

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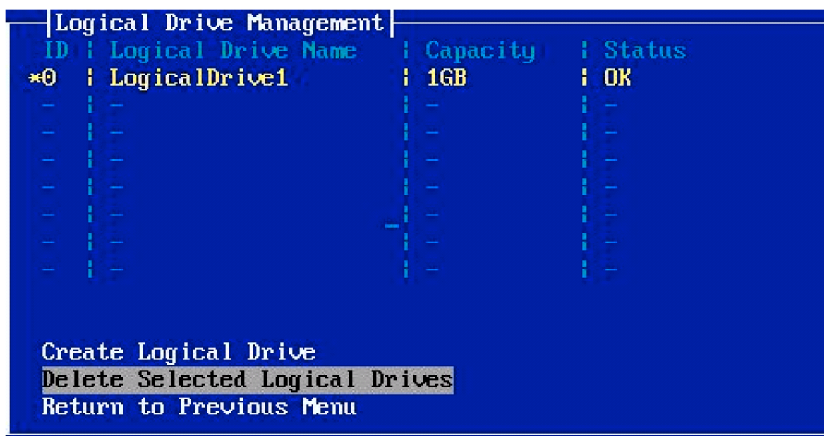
**IMPORTANT:** If you delete the disk array using the procedure described below, all logical drives created in the disk array are also deleted.

When you delete a logical drive or disk array, be sure to backup any important data before you start.

---

## Deleting a Logical Drive

1. Run SuperBuild Utility.
2. Select [Logical Drive Management] from [Main Menu].
3. Select the logical drive you want to delete and press **Spacebar** to mark the logical drive. An asterisk (\*) appears at the left of the selected logical drive ID.



---

**NOTE:** You may select several logical drives.

---

4. Move the cursor on [Delete Selected Logical Drives] and press **Enter**. Press **Y** to confirm logical drive deletion. The selected logical drive is removed from the list.

To cancel deletion, press any other key other than **Y** (e.g., **Esc**).

**You are about to delete selected devices. Proceed? [Y]**

5. If no more logical drive you want to remove exists on [Logical Drive Management], the deletion is completed.

## CONFIGURING MOTHER BOARD JUMPERS



With the pre-installed SETUP utility, you can set desired passwords to protect the data stored in the server against access from unauthorized users. When you forget the passwords, however, you may want clear them. The following describes how to clear these passwords. You can also use the following procedure to clear the CMOS data in the server.



### IMPORTANT:

- Clearing the CMOS data resumes the factory-set configuration data.
- Use the clip over jumper pins (pins 1 and 2) on the mother board.
- Place the clip over the jumper pins 1 and 2 after use to keep the pin. Placing the clip over any other pins may cause malfunction of the server.
- Do not change any other switch settings. Any change may cause the server to fail or malfunction.
- Do not lose the clip.

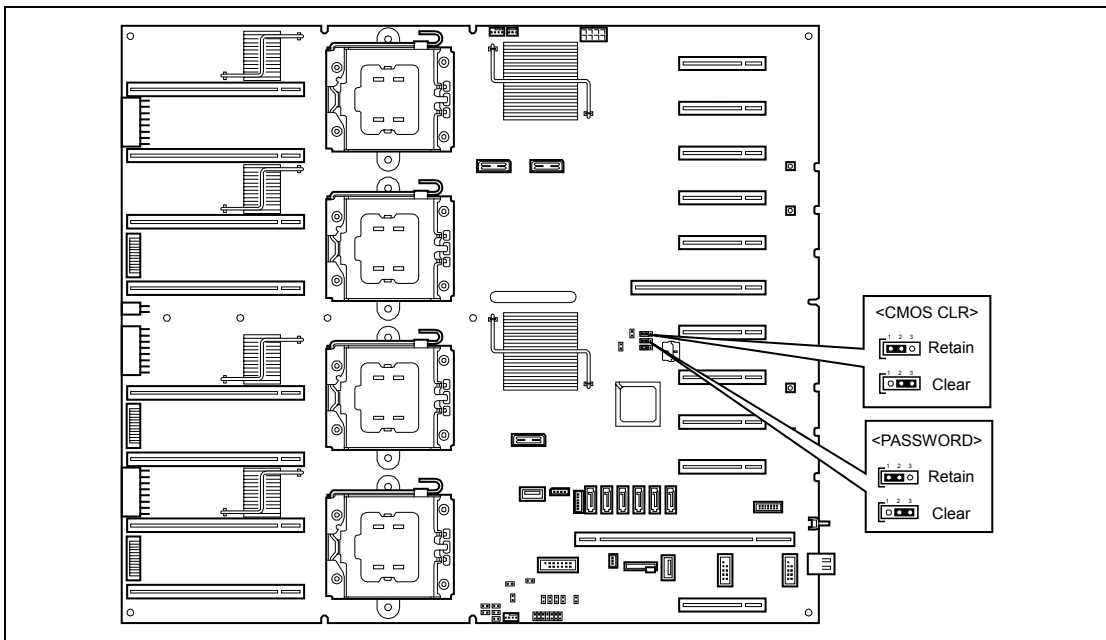
To clear passwords or the CMOS data, use the jumper switch on the mother board of the server.

The following describe the clearing procedure.

 <b>WARNING</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"> <li>■ Do not disassemble, repair, or alter the server.</li> <li>■ Do not remove the lithium battery.</li> </ul>

 <b>CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"> <li>■ Never attempt to lift the server by two or less persons.</li> <li>■ Make sure to complete component installation.</li> <li>■ Do not install the server on a rack with leaving covers removed.</li> <li>■ Do not pinch your finger with mechanical components.</li> <li>■ Note high temperature.</li> <li>■ Do not pull out a device from the rack if the rack is unstable.</li> <li>■ Do not leave more than one device being pulled out from the rack.</li> </ul>

The following figure illustrates the jumper switch location.





---

## Clearing CMOS Data

1. Record the current BIOS settings.
2. Power off the server and take the server out from the rack according to Chapter 3. (Pay attention not to disconnect the AC cord.)
3. Remove the top cover from the server (see Chapter 9).
4. Move the clip to the CMOS clear position. Then put it back over pins 1 and 2.  
Short-circuit pins 1 and 2 to protect the CMOS data.  
Short-circuit pins 2 and 3 to clear the CMOS data.
5. Reassemble the server and press the POWER switch.
6. Run BIOS SETUP utility and restore the parameter settings recorded in Step 1.
7. Save and exit the SETUP utility.

---

## Clearing Password

1. Power off the server and unplug the power cord.
2. Take the server out from the rack according to Chapter 3.
3. Remove the top cover from the server (see Chapter 9).
4. Move the clip to the password clear position.  
Short-circuit pins 1 and 2 to protect the password.  
Short-circuit pins 2 and 3 to clear the password.
5. Reassemble the server and press the POWER switch.
6. When the POST screen appears, power off the server and unplug the power cord.
7. Remove the top cover.
8. Put the clip back over pins 1 and 2.
9. Reassemble the server and press the POWER switch.
10. Run BIOS SETUP utility, and set the password as needed.
11. Save and exit the SETUP utility.

## Chapter 5

---

# Installing the Operating System with Express Setup

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

- Microsoft® Windows Server® 2008 R2 Standard
- Microsoft® Windows Server® 2008 R2 Enterprise
- Microsoft® Windows Server® 2008 Standard 64-bit (x64) Edition
- Microsoft® Windows Server® 2008 Enterprise 64-bit (x64) Edition
- Microsoft® Windows Server® 2008 Standard 32-bit (x86) Edition
- Microsoft® Windows Server® 2008 Enterprise 32-bit (x86) Edition
- Microsoft® Windows Server® 2003 R2 Standard Edition
- Microsoft® Windows Server® 2003 R2 Enterprise Edition

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

---

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

---

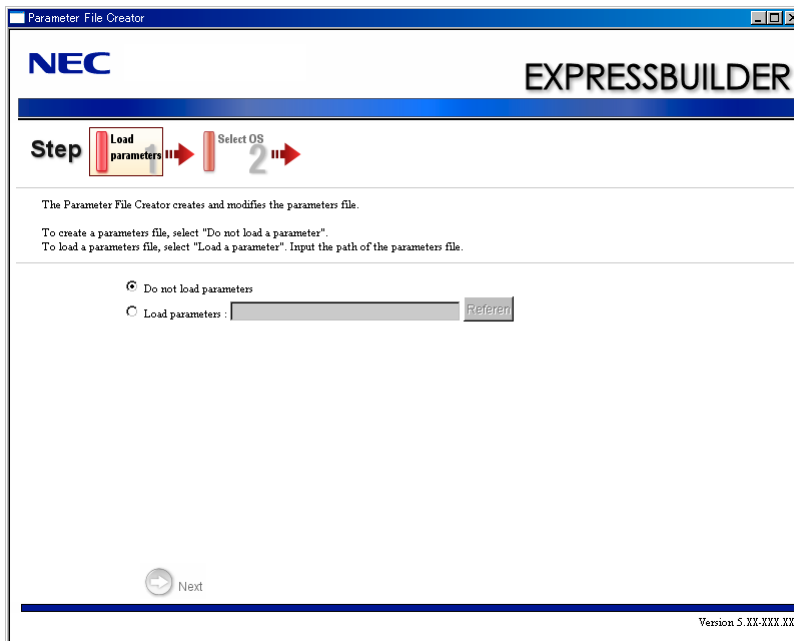
### About Express Setup

"Express Setup" helps you to install the Windows Operating System. The setup automatically configures the RAID System and installs the Operating System and some management software.

---

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

---



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

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

---

#### NOTES:

- If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
  - When using a floppy disk, a USB floppy disk drive is required.
  - If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
  - You can create a parameters file in advance using "Parameter File Creator" included in NEC EXPRESSBUILDER.
-

## Windows Server 2008 R2

This section explains how to install Windows Server 2008 R2 by using the Express Setup.

---

**IMPORTANT:** The Scalable Networking Pack (SNP) function is disabled in the system that installed by Express Setup.

The setting of SNP function may affect the system performance, so please refer to the attention of SNP detail in the following site before setting it.

<http://www.nec.com/global/prod/express/>

---

---

**NOTE:** If you install Windows Server 2008 R2 without using Express Setup, see Appendix D.

---

---

## Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

## About the Windows Family

This computer supports the following Windows editions:

- Windows Server 2008 R2 Standard  
(hereinafter, referred to as "Windows Server 2008 R2")
- Windows Server 2008 R2 Enterprise  
(hereinafter, referred to as "Windows Server 2008 R2")

On installing other OS, contact sales dealer or the maintenance service representative.

## BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2008 R2.

## Service Pack Which NEC EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008 R2
  - OS installation media (No Service Pack)

### Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

- Controllers supporting installation of OS with Express Setup
    - N8103-129 RAID Controller (256 MB, RAID0/1)\*
    - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
    - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
  - Other controllers
    - N8103-104A SAS Controller\*
    - N8103-107 SCSI Controller\*
    - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*
    - N8190-127 Fibre Channel Controller (4Gbps/Optical)\*
    - N8190-131 Fibre Channel Controller (2ch) (4Gbps/Optical)\*
    - N8190-153 Fibre Channel Controller (1ch) (8Gbps/Optical)\*
    - N8190-154 Fibre Channel Controller (2ch) (8Gbps/Optical)\*
- \* Option

### About the Hardware Components

When you install the Windows Server 2008 R2, Express Setup requires several preparations if this computer uses the following hardware components.

### Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using Disk Management, invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using Disk Management in Computer Management.

### Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

### About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

## **Connecting Hard Disk Drive**

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

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" (5-97).

## **Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk**

You cannot re-install Windows Server 2008 R2 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

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

## **Peripheral Devices such as RDX**

Depending on your hardware configuration, some peripheral devices need to be removed or disabled before starting setup. Refer to the instruction manual which came with the peripheral device for pertinent information, and proceed accordingly.

## About the System Partition Size

### When the system is Windows Server 2008 R2

Required partition size =

size required to install OS + paging file size + dump file size + application size

Size required to install OS = 8,000MB (Full Installation)

or

= 3,500MB (Server Core Installation)

Paging file size (recommended) = Installed memory size \* 1.5

Dump file size = Installed memory size + 300MB

Application size = Required size

---

#### IMPORTANT:

- The above-mentioned partition size is the minimum partition size required for system installation. Ensure sufficient partition size for system operation.

Following numbers are the recommended size.

- Full Installation: 32,768MB (32GB) or more
- Server Core Installation: 10,240MB (10GB) or more

\*1GB = 1,024MB

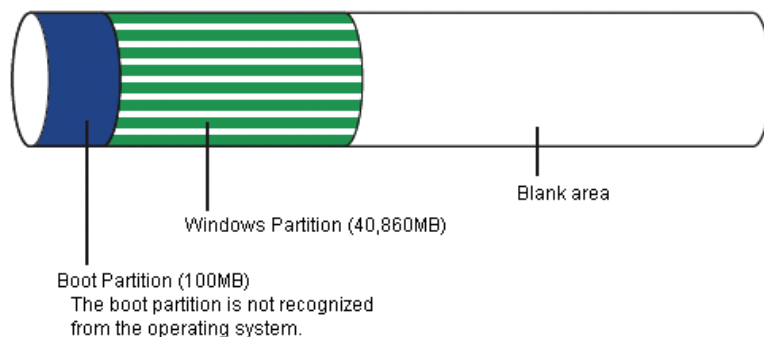
- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the Windows Partition is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
-



**NOTE:** When new partition is created, initial 100MB is assigned as boot partition by Windows OS.

Example:

If you make a partition of 40,960MB (40GB), usable space will be  $40,960\text{MB} - 100\text{MB} = 40,860\text{MB}$ .



The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

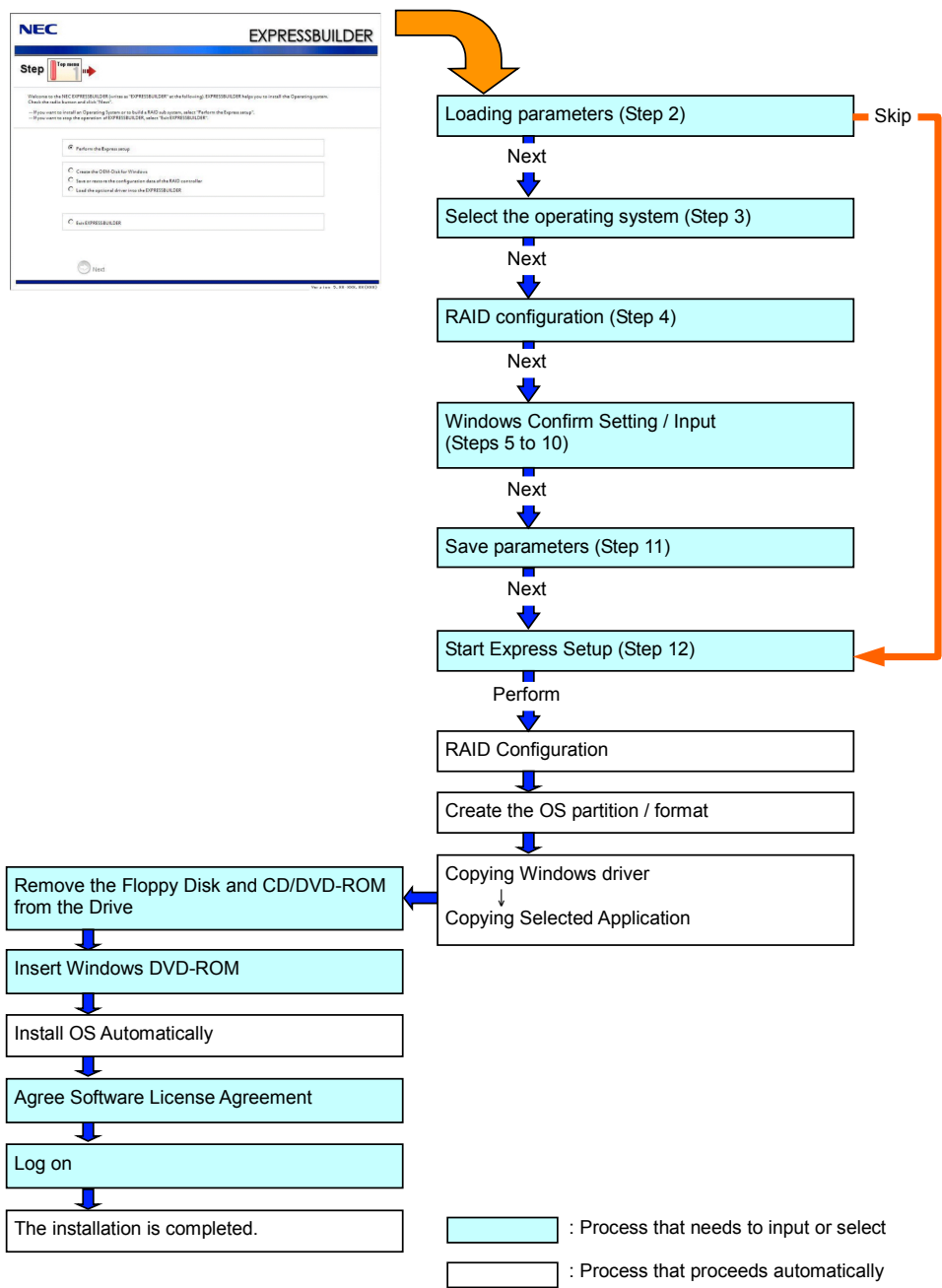
$$\begin{aligned} &8,000\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 300\text{MB}) + \text{application size} \\ &= 10,860\text{MB} + \text{application size.} \end{aligned}$$

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

Flow of Setup



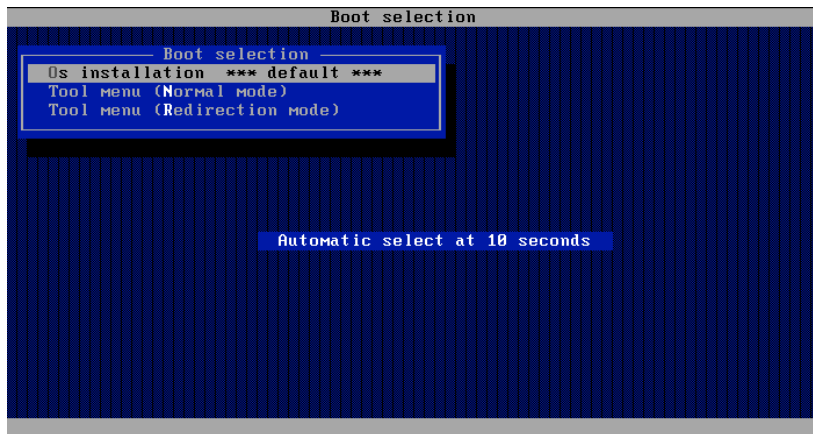
## Installing the Windows Server 2008 R2

Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

The system will boot from the DVD and NEC EXPRESSBUILDER starts.

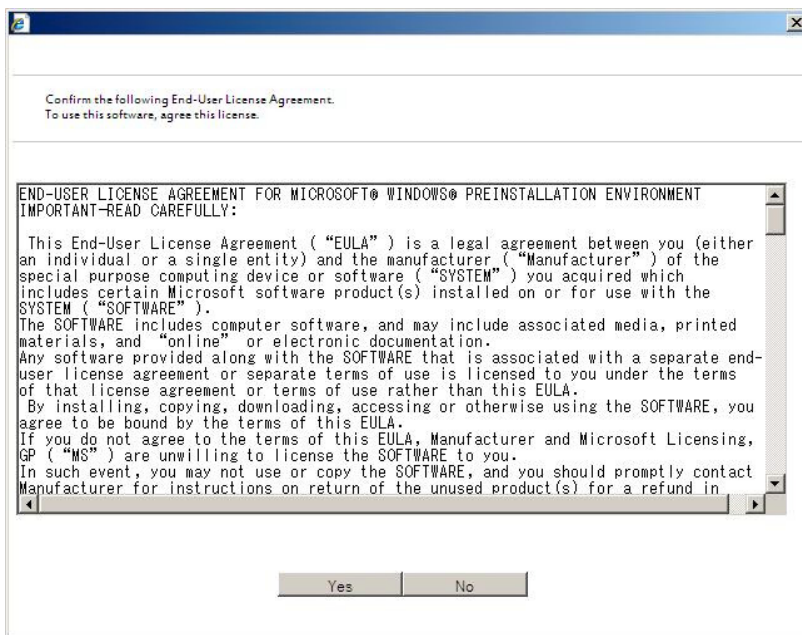
Select "Os installation \*\*\* default \*\*\*" from the Boot selection menu.  
(If you do not hit any key, "Os installation" is selected automatically.)



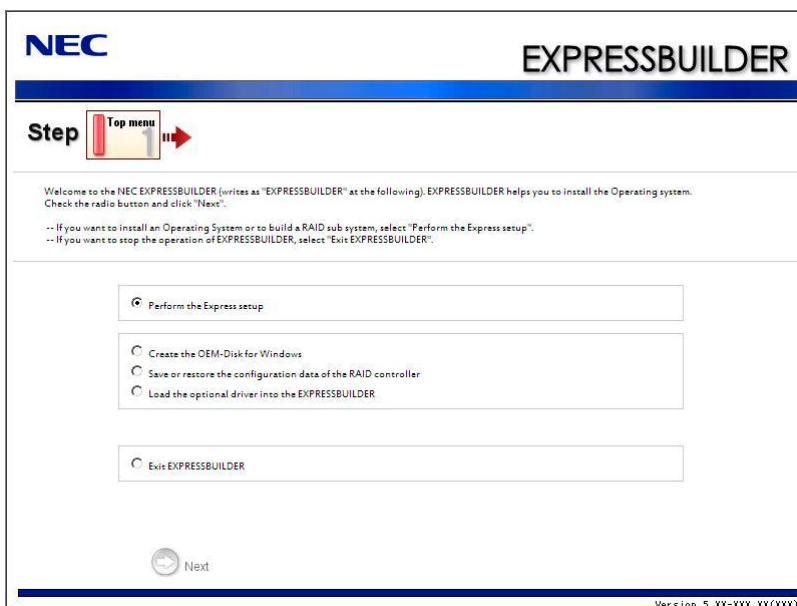
4. Select [English] from the Select Language, click [OK].



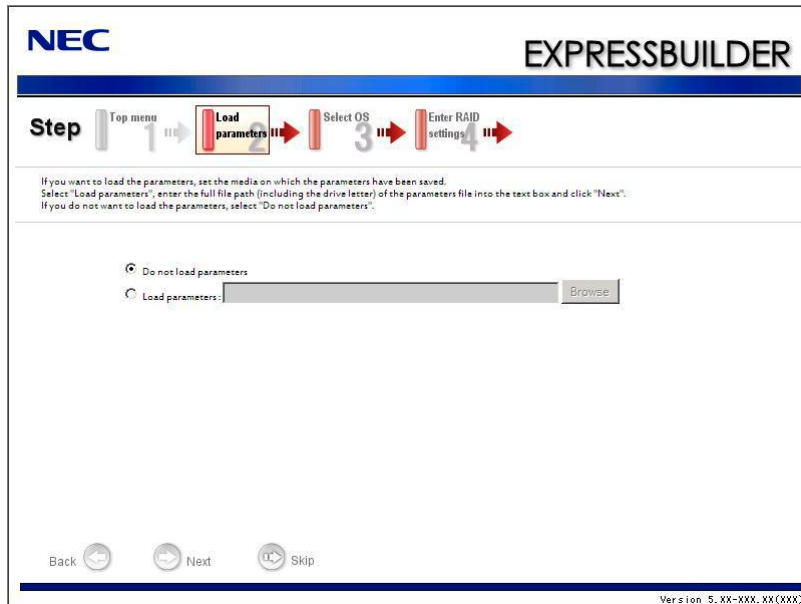
- When the Software License Agreement screen of Windows PE appears, click [Yes].



- Select [Perform the Express setup] from the Top Menu, click [Next].



7. [Load parameters] steps are displayed.



[Do not load parameters]

- (1) Select [Do not load parameters].
- (2) Click [Next].

---

**IMPORTANT:** The setup using a parameter file saved in the Flash FDD is not supported.

---



---

**NOTE:** If a floppy disk drive is not connected, select this item.

---

[Load parameters]

- (1) Insert the floppy disk containing the parameters file.
- (2) Select [Load parameters], enter the file path of the parameters file into the text box.
- (3) Click [Next].

### 8. Select the installing Operating System.

Select [Install the Windows (64bit editions)] from the menu, click [Next].

The screenshot shows the NEC EXPRESSBUILDER interface at Step 3, "Select OS". The progress bar at the top indicates the sequence: Step 1 (Top menu), Step 2 (Load parameters), Step 3 (Select OS), and Step 4 (Enter RAID settings). The main text area contains instructions: "Select the installing Operating System." followed by two notes: "\*\*\*\* If 'Install other Operating System' is selected, EXPRESSBUILDER only creates a Logical Drive and finishes the setup." and "\*\*\*\* If you want to create new logical drive to install Windows Server 2008, select 'Install other Operating System' to complete RAID configuration, and then perform the Express setup again." Below the text are two radio button options: "Install the Windows(32bit editions)" and "Install the Windows(64bit editions)" (which is selected), and "Install other Operating System". At the bottom are "Back", "Next", and "Top" buttons. The version number "Version 5.XX-XXX.XX(XXX)" is displayed in the bottom right corner.

### 9. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the NEC EXPRESSBUILDER interface at Step 4, "Enter RAID settings". The progress bar at the top indicates the sequence: Step 1 (Top menu), Step 2 (Load parameters), Step 3 (Select OS), Step 4 (Enter RAID settings), Step 5 (Specify medium/partition), and Step 6 (Enter basic parameters). The main text area contains instructions: "Set a parameter to create a logical drive." followed by two notes: "If you are not using a RAID controller, select 'Skip the logical drive creation' and press the 'Next' button." and "If you want to use the existing logical drive, select 'Skip the logical drive creation' and press the 'Next' button." Below the text are two radio button options: "Skip the logical drive creation" (which is selected) and "Create a logical drive using the settings that follow: (If a logical drive already exists, all the data stored on the logical drive will be deleted.)". Below these are several input fields for RAID configuration: "RAID controller", "The number of the total physical devices", "Number of physical devices used to create the logical drive", "RAID level", "The number of the physical devices specified as the hot spare", and "The number of the free physical devices". At the bottom are "Back", "Next", "Top", and "Default" buttons. The version number "Version 5.XX-XXX.XX(XXX)" is displayed in the bottom right corner.

**NOTES:**

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the NEC EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

**10.** Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

**NEC EXPRESSBUILDER**

**Step** 1 Top menu 2 Load parameters 3 Select OS 4 Enter RAID settings 5 **Specify medium / partition** 6 Enter basic parameters

Specify the installing medium and the Windows system partition.  
 \*\*\* Refer to the User's guide about the Service Pack installation.  
 If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.\*

**Medium selection**

Windows family/edition: Windows Server 2008 R2 Standard(Full Installation)  
 Language: English  
☐ Install the Service Pack  
 Keyboard layout: Default  
 Timezone: (GMT-08:00) Pacific Time (US & Canada)

**Windows system drive settings**

☐ Use existing partitions (only the 1st partition is formatted and its data is erased)  
☒ Create a new partition (all of the data in the disk is erased)  
☐ Use disk space as large as possible  
☒ Specify the size of the system partition: 33000 (MB)  
 (14,737MB - 1,907,726MB) \*1GB=1,024MB

Back Next Top Default

Version 5.00x00x.03(00x)

---

**IMPORTANT:**

- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, NEC EXPRESSBUILDER installs the Operating System to the Windows partition (The Boot partition (if it exists) and the Windows partition are deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

Boot Partition Deleted	Windows Partition Deleted	User Data Partition Retained
------------------------------	---------------------------------	------------------------------------

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".
-



## 11. Enter the user information.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the NEC EXPRESSBUILDER installation window. At the top, the NEC logo is on the left and 'EXPRESSBUILDER' is on the right. Below the title bar, a progress bar shows six steps: 'Top menu', 'Load parameters', 'Select OS', 'Enter RAID settings', 'Specify medium/partition', and 'Enter basic parameters'. The 'Enter basic parameters' step is highlighted with a red arrow and the number '6'. Below the progress bar, the text 'Enter the basic parameters.' is displayed. Underneath, there are four lines of instructions: 'The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)', 'The user name and the organization's name are less than 50 characters.', 'The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, \$, #, ...)).', and 'The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, \$, #, ...)).'. Below the instructions is a 'User Information' section with four input fields: 'Computer name' (with a '(necessary)' label), 'User name' (with 'Administrator' entered), 'Administrator password' (with a '(necessary)' label), and 'Confirm password' (with a '(necessary)' label). At the bottom of the window, there are four buttons: 'Back', 'Next', 'Top', and 'Default'. The 'Next' button is highlighted. The version number 'Version 5.XX-XXX.XX(XXX)' is displayed at the bottom right.

**IMPORTANT:** Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

**12.** Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the NEC EXPRESSBUILDER installation window at Step 7, 'Enter network protocol'. The progress bar at the top indicates the current step. Below the progress bar, instructions state: 'Enter the settings of the network protocol. If you want to set the IP address, select "Customized settings" and click "Detail settings". If not, select "Standard setting" and click "Next".' The 'Standard setting' radio button is selected. A list box shows four options: 'standard adapter -- internet protocol', 'standard adapter -- internet protocol2', 'standard adapter -- internet protocol3', and 'standard adapter -- internet protocol4'. A 'Detail settings' button is to the right of the list. At the bottom, there are 'Back', 'Next', 'Top', and 'Default' buttons. The version number 'Version 5.XX-XXX.XX(XXX)' is displayed at the bottom right.

**13.** Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the NEC EXPRESSBUILDER installation window at Step 8, 'Enter domain account'. The progress bar at the top indicates the current step. Below the progress bar, instructions state: 'If you want to join in a domain, enter the account name/password of the domain. If not, select "Join in a workgroup" and click "Next".' The 'Join in a workgroup' radio button is selected. A text box labeled 'Workgroup name' contains the text 'WORKGROUP'. Below this, the 'Join in a domain' radio button is unselected, and its associated text boxes for 'Domain name', 'Account name', 'Password', and 'Confirm password' are empty. At the bottom, there are 'Back', 'Next', 'Top', and 'Default' buttons. The version number 'Version 5.XX-XXX.XX(XXX)' is displayed at the bottom right.

## <Full Installation>

## <Server Core Installation>

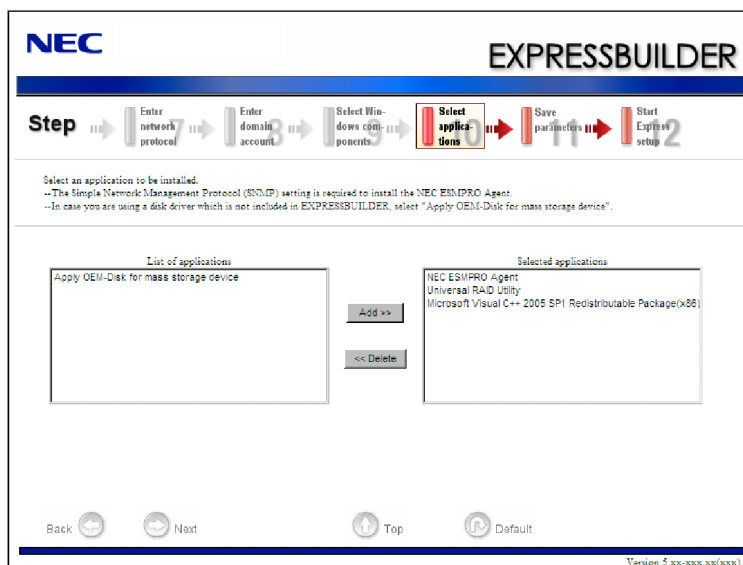
The diagram illustrates the ExpressBuilder installation process, which consists of five steps:

- Step 1: Enter network protocol
- Step 2: Enter domain account
- Step 3: Select Windows components (highlighted with a red box)
- Step 4: Select applications
- Step 5: Save parameters

Below the steps, a screenshot of the 'Server Roles' and 'Windows features' selection window is shown. In the 'Server Roles' section, 'Web Server(IIS)' is selected. In the 'Windows features' section, 'SNMP Services' is selected. A 'Detail settings' button is visible next to the 'SNMP Services' selection.

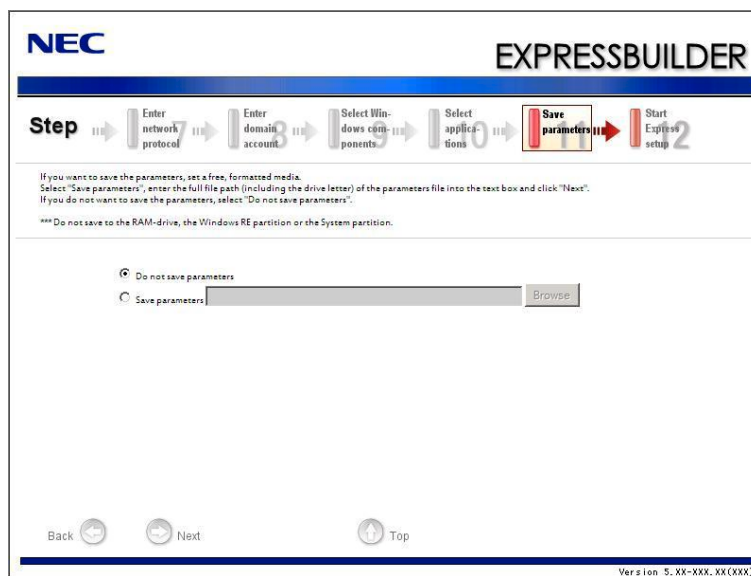
## 15. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



## 16. Save the parameters.

[Save parameters] steps are displayed.

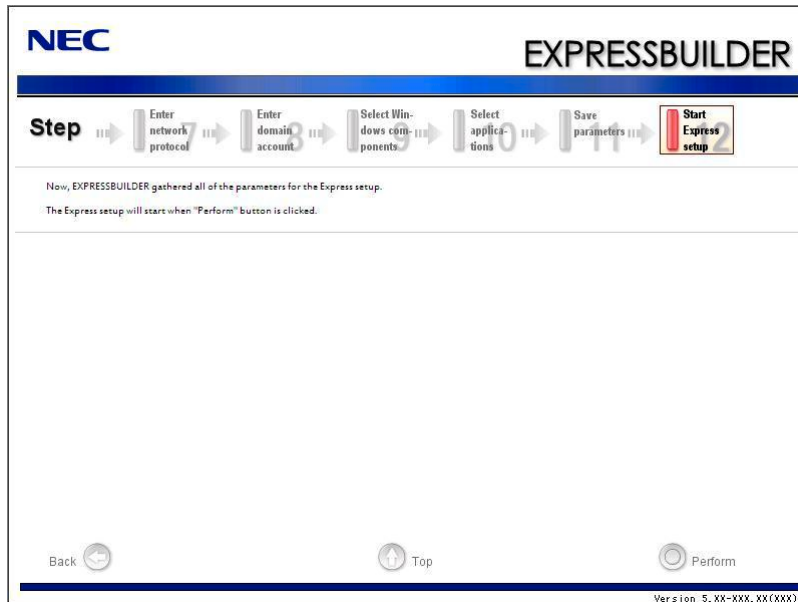


If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

17. The Express Setup will start when you click [Perform] in [Start Express setup] step.



18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.
- If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.
19. Insert Windows Server 2008 R2 DVD-ROM into the optical disk drive.

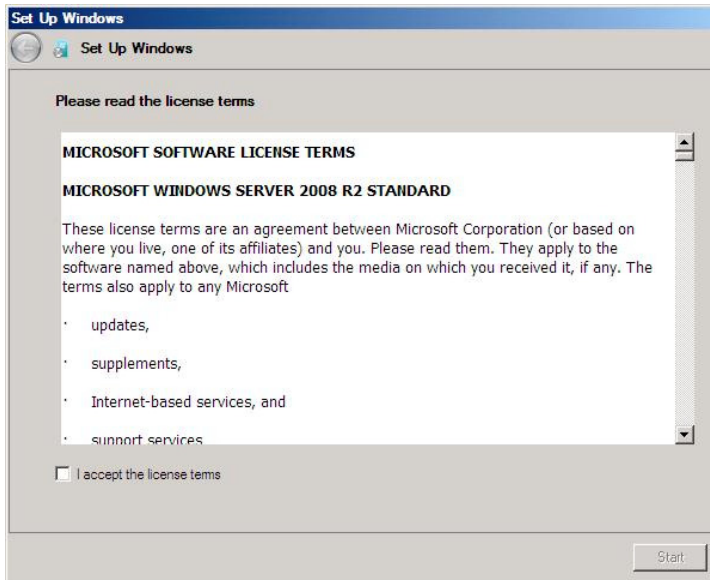
---

**NOTE:** Windows Server 2008 R2 and selected applications will be installed automatically and reboots several times.

---

20. [Agree Software License Agreement] screen appears. (Full Installation only)

Read the license terms carefully. If you agree, select I accept the license terms, and then click [Next].




21. When the following message appears, press **Ctrl + Alt + Del**.

Press CTRL + ALT + DELETE to log on


22. Log on to the system.

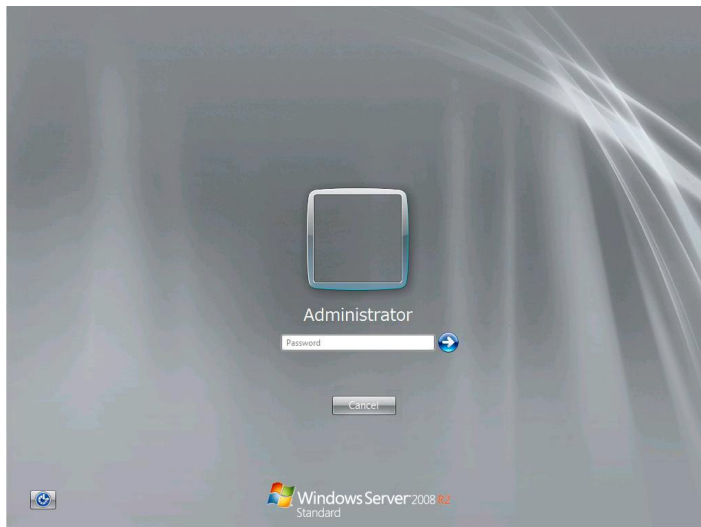
<Full Installation>

When the following screen appears, enter your password into "Password", and click .



## &lt;Server Core Installation&gt;

In the following screen, enter your password into "Password", and click .



Hereinafter, proceed operations according to the message.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Installing and Setting Device Drivers".

---

## Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

### LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

---

**NOTE:** To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.

---

### Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

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

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

---

**NOTE:** We recommend you to add [Network Monitor] at [Adding Services].

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

---



## Optional Network Board Driver (N8104-121/125A/126)

The drivers for Optional Network Board Driver (N8104-121/125A/126) are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

## Setup Team

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

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

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

---

### IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
  - The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
  - When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
  - Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
  - Teaming is not supported with Windows Server Core.
-

## Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.  
Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].
6. Select a team mode, and then click [Next].

---

**IMPORTANT:** Following team types are supported

- Adapter Fault Tolerance
  - Adaptive Load Balancing
  - Static Link Aggregation
  - Switch Fault Tolerance
- 

7. Click [Finish].

---

**IMPORTANT:** Teaming an adapter with standard network adapter and optional network adapter will cause the following message to appear.

Click [OK] and continue the setting.

"One or more adapters in the team do not support true NDIS6.20 Receive-Side Scaling, Receive-Side Scaling will be disabled for the team, Disabling Receive-Side Scaling will negatively impact the performance of the team."

---

8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team.

Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.

- Set Primary  
Point the adapter and click [Set Primary] button.
- Set Secondary  
Point the adapter and click [Set Secondary] button.

---

**NOTE:** Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager]→[Network adapters].
  2. Click [Settings] and confirm Adapters in team list.
- 

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.  
Confirm the result in [Test results]
11. Restart the system.

### Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and reboot the system.

## Setting WOL

Refer to the following procedure to enable WOL.

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF
"Wake on Pattern Match "	OFF	OFF

---

### NOTES:

- [Power Saver Options] setting is not necessary to change.
  - Above setting will be maintained until manually resetting are executed.
- 

---

**IMPORTANT:** The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

---

4. Click [OK].
5. Restart the system.

## **Graphics Accelerator Driver**

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Please refer to "Graphics Accelerator Driver" described in Appendix D when you want to reinstall the driver individually.

## **Installing SCSI Controller Driver (N8103-107)**

If you use the SCSI Controller N8103-107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## **Installing SAS Controller Driver (N8103-104A)**

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## **Installing RAID Controller Driver (N8103-115)**

If you use the RAID Controller N8103-115, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## **Installing the Fibre Channel Controller Driver (N8190-127/131/153/154)**

If you use the Fibre Channel Controller (N8190-127/131/153/154), you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

## **Setting for Solving Problems**

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

For more information, refer to Page 5-85.

---

## **BitLocker**

For BitLocker, hotfix is provided by Microsoft. Before applying hotfix, please check the information written by Microsoft carefully.

For more information, please visit

<http://support.microsoft.com/kb/975496/en-us>

## Windows Server 2008

This section explains how to install Windows Server 2008 by using the Express Setup.

---

**IMPORTANT:**

- The Scalable Networking Pack (SNP) function is disabled in the system that installed by Express Setup.  
The setting of SNP function may affect the system performance, so please refer to the attention of SNP detail in the following site before setting it.  
<http://www.nec.com/global/prod/express/>
  - Refer to the public information of SNP function when KB967224 is not applied.  
Notes are described about KB967224.
- 

---

**NOTE:** If you install Windows Server 2008 without using Express Setup, see Appendix E.

---

---

## Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

### About the Windows Family

This computer supports the following Windows editions:

- Windows Server 2008 Standard 64-bit (x64) Edition  
(hereinafter, referred to as "Windows Server 2008")
- Windows Server 2008 Enterprise 64-bit (x64) Edition  
(hereinafter, referred to as "Windows Server 2008")
- Windows Server 2008 Standard 32-bit (x86) Edition  
(hereinafter, referred to as "Windows Server 2008")
- Windows Server 2008 Enterprise 32-bit (x86) Edition  
(hereinafter, referred to as "Windows Server 2008")

On installing other OS, contact sales dealer or the maintenance service representative.

### BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2008.

## Service Pack Which NEC EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

## Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

- Controllers supporting installation of OS with Express Setup
    - N8103-129 RAID Controller (256 MB, RAID0/1)\*
    - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
    - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
  - Other controllers
    - N8103-104A SAS Controller\*
    - N8103-107 SCSI Controller\*
    - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*
    - N8190-127 Fibre Channel Controller (4Gbps/Optical)\*
    - N8190-131 Fibre Channel Controller (2ch) (4Gbps/Optical)\*
- \* Option

## About the Hardware Components

When you install the Windows Server 2008, Express Setup requires several preparations if this computer uses the following hardware components.

### Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using Disk Management, invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using Disk Management in Computer Management.



## **Mounting MO Device**

Do not mount an MO device on this computer during the Windows installation.

## **About Removable Media**

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

## **Connecting Hard Disk Drive**

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

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" (5-97).

## **Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk**

You cannot re-install Windows Server 2008 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

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

## **Peripheral Devices such as RDX**

Depending on your hardware configuration, some peripheral devices need to be removed or disabled before starting setup. Refer to the instruction manual which came with the peripheral device for pertinent information, and proceed accordingly.

## About the System Partition Size

### When the system is Windows Server 2008 64-bit (x64) Edition:

Required partition size =

size required to install OS + paging file size + dump file size + application size

Size required to install OS       = 11,600MB (Full Installation)  
  12,300MB (Full Installation with Service Pack 2)  
  16,720MB (Full Installation + Service Pack 2)  
  or  
  = 4,100MB (Server Core Installation)  
  4,800MB (Server Core Installation with Service Pack 2)  
  9,220MB (Server Core Installation + Service Pack 2)

Paging file size (recommended) = Installed memory size \* 1.5

Dump file size                     = Installed memory size + 300MB

Application size                 = Required size

---

#### IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
- 

#### Example:

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

$11,600\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 300\text{MB}) + \text{application size}$   
 $= 14,460\text{MB} + \text{application size}.$

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

**When the system is Windows Server 2008 32-bit (x86) Edition**

Required partition size	=	size required to install OS + paging file size + dump file size + application size
Size required to install OS	=	6,300MB (Full Installation) 9,300MB (Full Installation with Service Pack 2) 9,400MB (Full Installation + Service Pack 2) or 2,200MB (Server Core Installation) 5,200MB (Server Core Installation with Service Pack 2) 5,300MB (Server Core Installation + Service Pack 2)
Paging file size (recommended)	=	Installed memory size * 1.5
Dump file size	=	Installed memory size + 300MB
Application size	=	Required size

---

**IMPORTANT:**

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - Depending on system configuration, 4096MB or more per partition might not be able to be set to the paging file size.  
Set it to 4095MB when the message to ask a value that is smaller than 4096MB is displayed.
  - The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
-

### Example:

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

$$\begin{aligned} &6,300\text{MB} + (1,024\text{MB} * 1.5) + 1,024\text{MB} + 300\text{MB} + \text{application size} \\ &= 9,160\text{MB} + \text{application size.} \end{aligned}$$

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file on to another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.



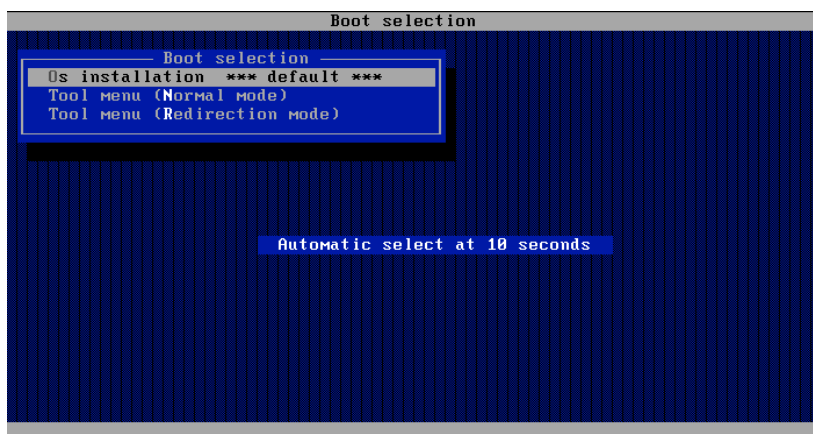
## Installing the Windows Server 2008

Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

The system will boot from the DVD and NEC EXPRESSBUILDER starts.

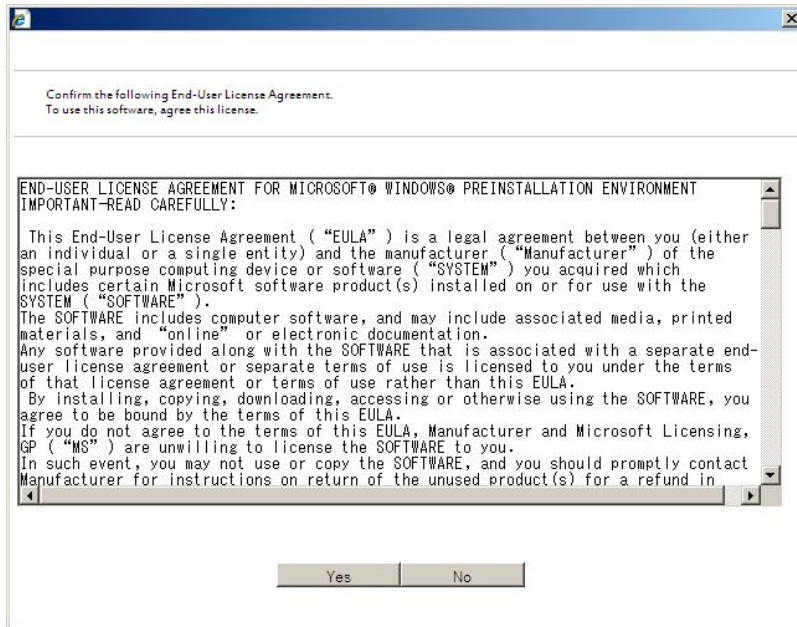
Select "Os installation \*\*\* default \*\*\*" from the Boot selection menu.  
(If you do not hit any key, "Os installation" is selected automatically.)



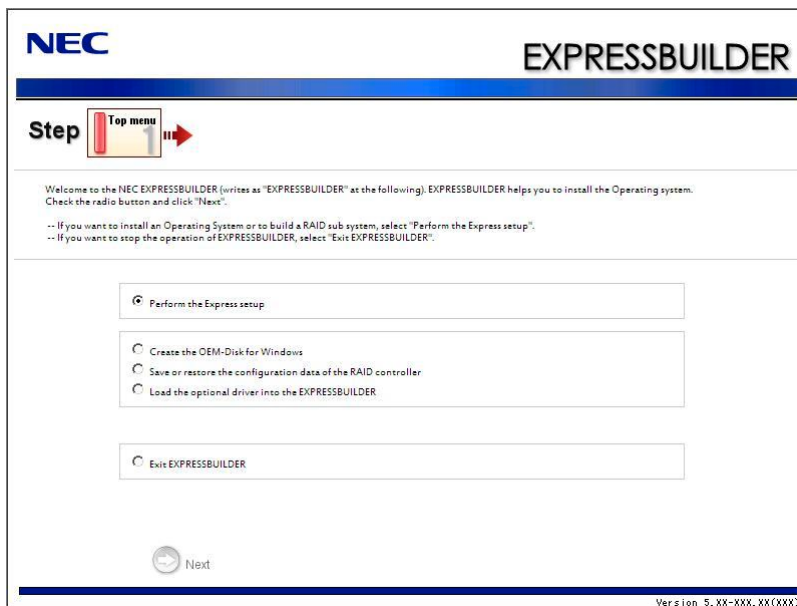
4. Select [English] from the Select Language, click [OK].



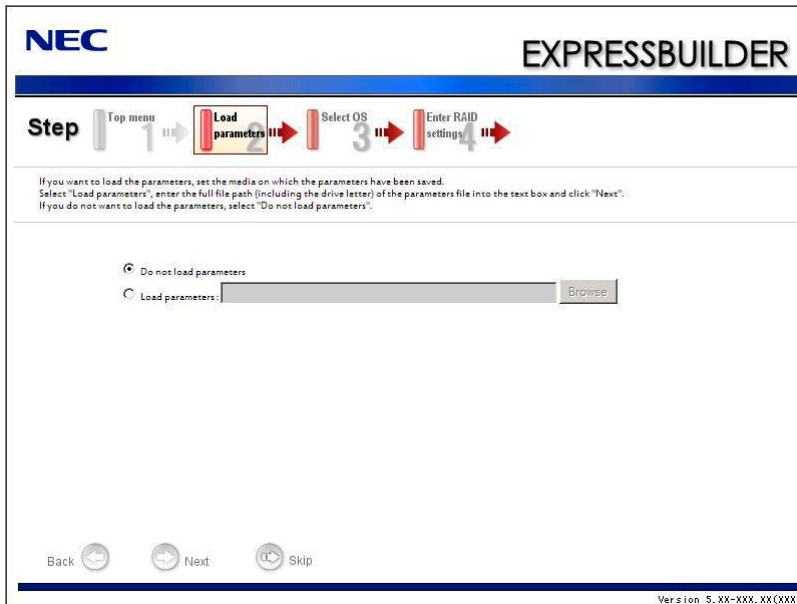
5. When the Software License Agreement screen of Windows PE appears, click [Yes].



6. Select [Perform the Express setup] from the Top Menu, click [Next].



7. [Load parameters] steps are displayed.



[Do not load parameters]

- (1) Select [Do not load parameters].
- (2) Click [Next].

---

**IMPORTANT:** The setup using a parameter file saved in the Flash FDD is not supported.

---

---

**NOTE:** If a floppy disk drive is not connected, select this item.

---

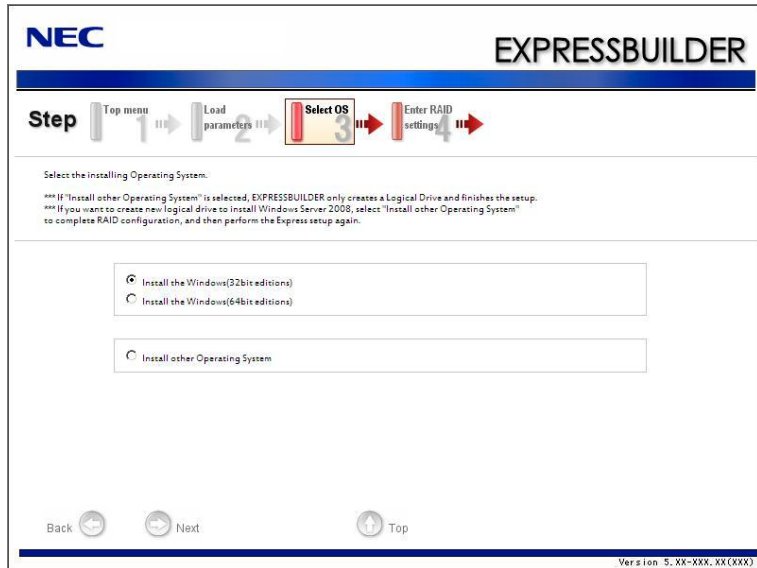
[Load parameters]

- (1) Insert the floppy disk containing the parameters file.
- (2) Select [Load parameters], enter the file path of the parameters file into the text box.
- (3) Click [Next].



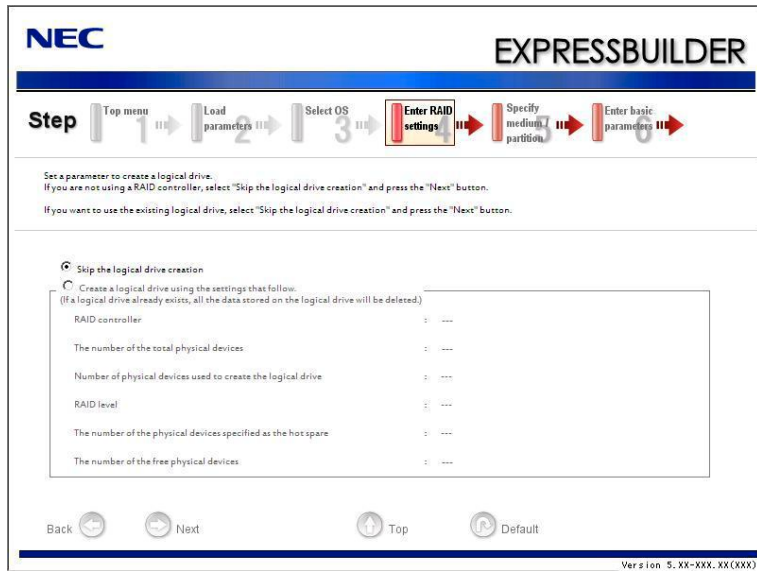
## 8. Select the installing Operating System.

Select [Install the Windows (32bit editions)] or [Install the Windows (64bit editions)] from the menu, click [Next].



## 9. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



**NOTES:**

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the NEC EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

**10.** Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

**NEC EXPRESSBUILDER**

**Step** 1 Top menu 2 Load parameters 3 Select OS 4 Enter RAID settings 5 **Specify medium / partition** 6 Enter basic parameters

Specify the installing medium and the Windows system partition.  
 \*\*\* Refer to the User's guide about the Service Pack installation.  
 If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."

**Medium selection**

Windows family/edition : Windows Server 2008 Standard(Full installation)

Language : English

☐ Install the Service Pack

Keyboard layout : Default

Time zone : (GMT-08:00) Pacific Time (US & Canada)

**Windows system drive settings**

☐ Use existing partitions (only the 1st partition is formatted and its data is erased)

☒ Create a new partition (all of the data in the disk is erased)

☐ Use disk space as large as possible

☒ Specify the size of the system partition : 40960 (1GB)  
 (9,455MB - 2,097,144MB) \* 1GB=1,024MB

Back Next Top Default

Version 5.30X-30XX.XXX(30XX)

---

**IMPORTANT:**

- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, NEC EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained
-------------------------------	---------------------------------	--------------------------------

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".
-

**11.** Enter the user information.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

**NEC EXPRESSBUILDER**

**Step** Top menu 1 Load parameters 2 Select OS 3 Enter RAID settings 4 Specify medium / partition 5 **Enter basic parameters 6**

Enter the basic parameters.

The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)  
The user name and the organization's name are less than 50 characters.  
The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, \$, #, ...)).

**User Information**

Computer name	<input type="text"/>	(necessary)
User name	<input type="text" value="Administrator"/>	
Administrator password	<input type="password"/>	(necessary)
Confirm password	<input type="password"/>	(necessary)

Back Next Top Default

Version 5.XX-XXX.XX(XXX)

**IMPORTANT:** Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

## 12. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the NEC EXPRESSBUILDER installation window. At the top, the NEC logo and 'EXPRESSBUILDER' are displayed. Below the title bar, a progress bar shows 12 steps, with 'Enter network protocol' (Step 7) highlighted. The main area contains the following text:

Enter the settings of the network protocol.  
If you want to set the IP address, select "Customized settings" and click "Detail settings".  
If not, select "Standard setting" and click "Next".

There are two radio buttons: ☒ Standard setting and ☐ Customized settings. Below the Customized settings button is a list box containing four items: 'standard adapter -- internet protocol', 'standard adapter -- internet protocol2', 'standard adapter -- internet protocol3', and 'standard adapter -- internet protocol4'. To the right of the list box is a 'Detail settings' button.

At the bottom, there are four buttons: 'Back', 'Next', 'Top', and 'Default'. The version 'Version 5.XX-XXX.XX(XXX)' is displayed at the bottom right.

## 13. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the NEC EXPRESSBUILDER installation window. At the top, the NEC logo and 'EXPRESSBUILDER' are displayed. Below the title bar, a progress bar shows 12 steps, with 'Enter domain account' (Step 8) highlighted. The main area contains the following text:

If you want to join in a domain, enter the account name/password of the domain.  
If not, select "Join in a workgroup" and click "Next".

There are two radio buttons: ☒ Join in a workgroup and ☐ Join in a domain. Below the 'Join in a workgroup' button is a text box labeled 'Workgroup name' with the value 'WORKGROUP' entered. Below the 'Join in a domain' button are four text boxes labeled 'Domain name', 'Account name', 'Password', and 'Confirm password', each with a placeholder icon.

At the bottom, there are four buttons: 'Back', 'Next', 'Top', and 'Default'. The version 'Version 5.XX-XXX.XX(XXX)' is displayed at the bottom right.

#### 14. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

<Full Installation>

**NEC EXPRESSBUILDER**

**Step** 1 Enter network protocol 2 Enter domain account 3 **9 Select Windows components** 10 Select applications 11 Save parameters 12 Start Express setup

Enabling the Windows features and Server Roles and please.

**Server Roles**

- ☐ Web Server(IIS)
- ☐ DHCP Server
- ☐ DNS Server
- ☐ File Services
- ☐ Print Services

**Windows features**

- ☒ SNMP Services [Detail settings](#)
- ☐ Simple TCP/IP Services
- ☐ WINS Server

Back Next Top Default

Version 5.50-001.02(001)

<Server Core Installation>

**NEC EXPRESSBUILDER**

**Step** 1 Enter network protocol 2 Enter domain account 3 **9 Select Windows components** 10 Select applications 11 Save parameters 12 Start Express setup

Enabling the Windows features and Server Roles and please.

**Server Roles**

- ☐ Web Server(IIS)
- ☐ DHCP Server
- ☐ DNS Server
- ☐ File Services
- ☐ Print Services

**Windows features**

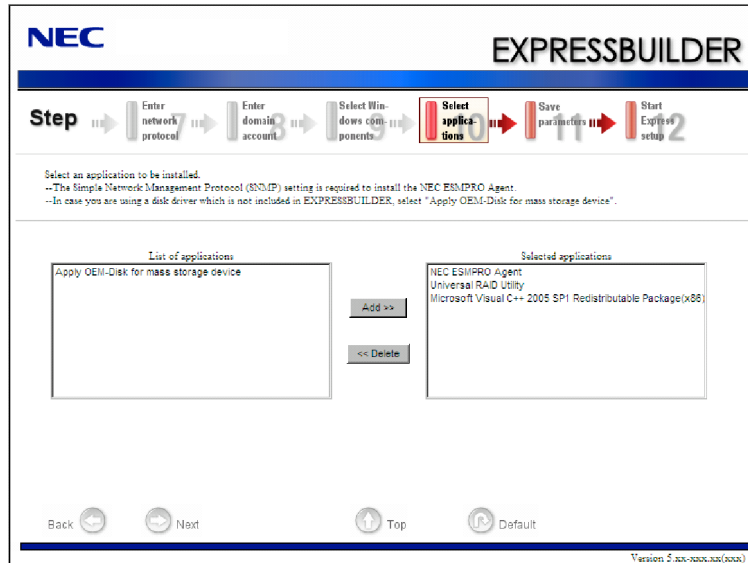
- ☒ SNMP Services [Detail settings](#)
- ☐ Simple TCP/IP Services
- ☐ WINS Server

Back Next Top Default

Version 5.50-001.02(001)

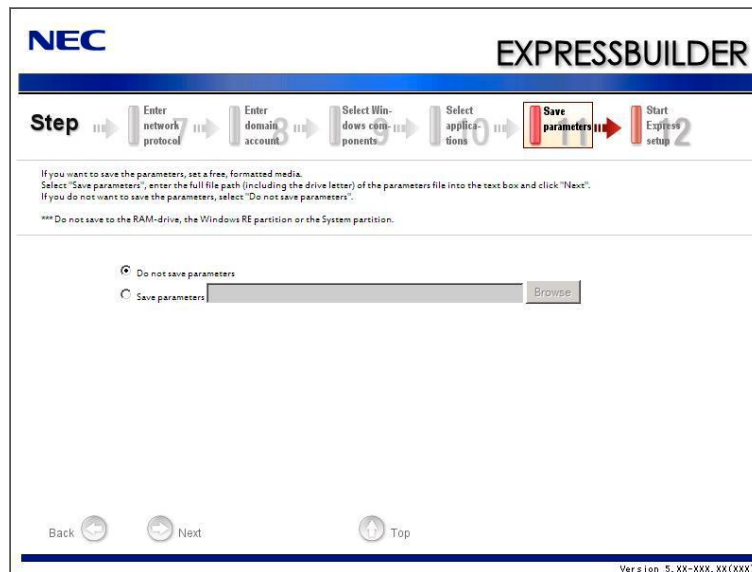
## 15. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



## 16. Save the parameters.

[Save parameters] steps are displayed.

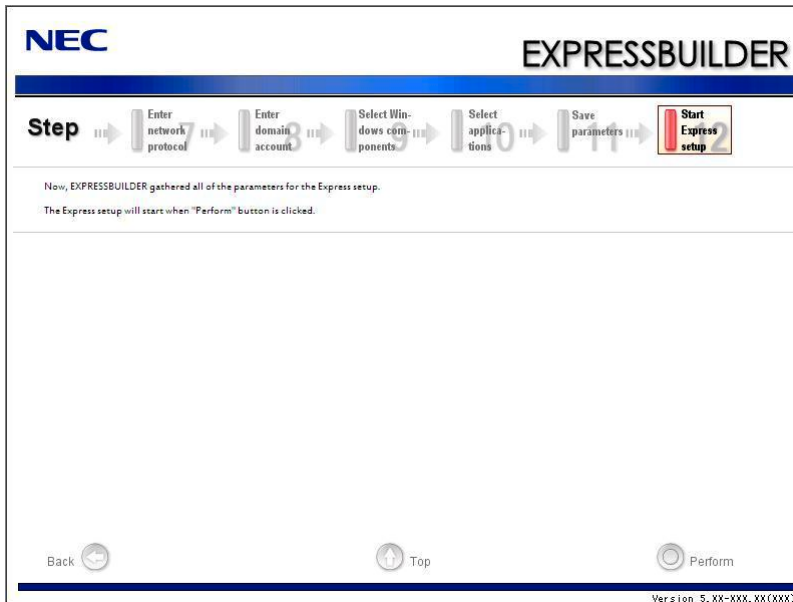


If you want to save the parameters, set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

17. The Express Setup will start when you click [Perform] in [Start Express setup] step.



18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

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

19. Insert Windows Server 2008 DVD-ROM into the optical disk drive.

---

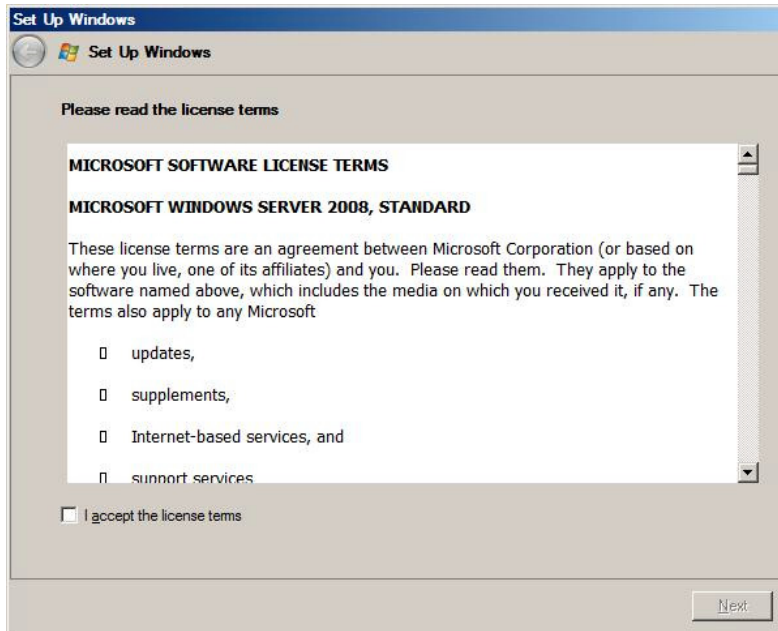
**NOTE:** Windows Server 2008 and selected applications will be installed automatically and reboots several times.

---

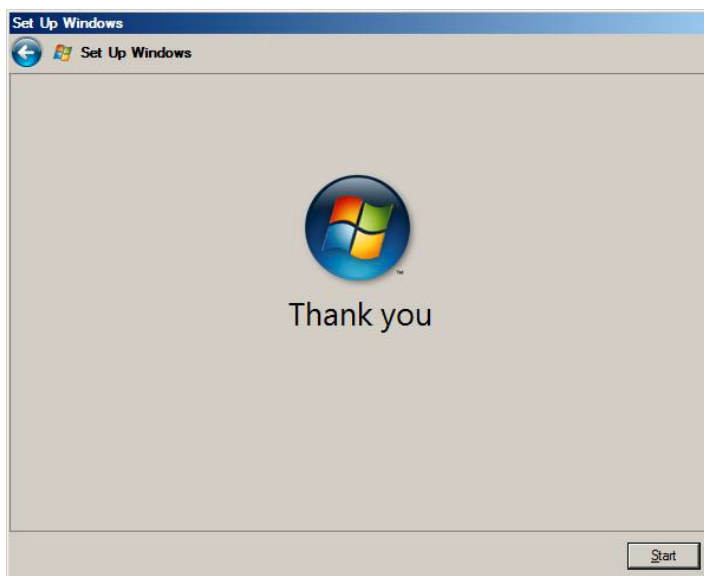


20. [Agree Software License Agreement] screen appears.

Read the license terms carefully. If you agree, select I accept the license terms, and then click [Next].



21. When the following message appears, click [Start].




22. When the following message appears, press **Ctrl + Alt + Del**.

Press CTRL + ALT + DELETE to log on

23. Log on to the system.

<Full Installation>


When the following screen appears, enter your password into "Password", and click .



<Server Core Installation>

When the following screen appears, click "Other User".



In the following screen, enter "Administrator" into [UserName], your password into "Password", and click .



Hereinafter, proceed operations according to the message.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Installing and Setting Device Drivers".

---

## Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

### LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

---

**NOTE:** To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.

---

### Using N8104-125A Adapter after System Update

To use the N8104-125A Adapter after updating your system, you must first uninstall the LAN driver and PROSet, and then update your system with the N8104-125A Adapter connected.

#### For a server running a full installation

1. Remove a team of network adapters.

---

**NOTE:** Before you remove, note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy.

Configure the settings after reinstalling the LAN driver and PROSet.

To remove the team, see "Setup Team".

---

2. In [Control Panel], click [Uninstall Program].
3. Double-click [Intel(R) Network Connections 14.8.43.0].  
[Intel(R) Network Connections (Remove Options)] appears.
4. In [Remove Options], click [Remove].  
[Intel(R) Network Connections - Remove Software] appears.
5. Select [Yes].  
The uninstallation starts automatically.
6. When [InstallShield Wizard Completed] appears. Click [Finish].  
Restart the system.

**For a server running a Server Core installation**

1. Note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy before uninstalling LAN driver.  
Configure the settings after reinstalling the LAN driver.
2. At a command prompt, run dxsetup.exe in your removable medium containing the Driver Set.
  - Windows Server 2008 64-bit (x64) Editions:  
    <drive letter>: \016\win\winnt\ws2008x64\r148\apps\prosetdx\vistax64\dxsetup.exe
  - Windows Server 2008 32-bit (x86) Editions:  
    <drive letter>: \016\win\winnt\ws2008\r148\apps\prosetdx\vista32\dxsetup.exe
3. In [Intel(R) Network Connections - InstallShield Wizard], click [Next].
4. Select [Remove], and click [Next].
5. Click [Remove].  
Uninstallation starts automatically.
6. When [InstallShield Wizard Completed] appears, click [Finish].  
Restart the system.

## Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

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

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

---

**NOTE:** We recommend you to add [Network Monitor] at [Adding Services].

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

---

## Optional Network Board Driver (N8104-121/125A/126)

The following optional network boards are available for the N8104-121/125A/126.

To use the N8104-125A Adapter, see "Using N8104-125A Adapter after System Update" in the previous page.

The drivers for other network boards are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

## Setup Team

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

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

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

---

### IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
  - The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
  - When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
  - Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
  - Teaming is not supported with Windows Server Core.
- 

## Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box. Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].

6. Select a team mode, and then click [Next].

---

**IMPORTANT:** Following team types are supported

- Adapter Fault Tolerance
  - Adaptive Load Balancing
  - Static Link Aggregation
  - Switch Fault Tolerance
- 

7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team.

Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.

- Set Primary  
Point the adapter and click [Set Primary] button.
- Set Secondary  
Point the adapter and click [Set Secondary] button.

---

**NOTE:** Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager]→[Network adapters].
  2. Click [Settings] and confirm Adapters in team list.
- 

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.  
Confirm the result in [Test results]

11. Restart the system.

## Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and reboot the system.



## Setting WOL

Refer the following procedure for setting WOL.

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

---

### IMPORTANT:

- Directed Packet<sup>(\*)</sup> will not wake up the system on Shutdown state even "Wake On Directed Packet" is set to "ON".  
Only on Sleep or Hibernate state will wake up by a Directed Packet.

\*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.

- The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.
- 

### NOTES:

- [Power Saver Options] setting is not necessary to change.
  - Above setting will be maintained until manually resetting are executed.
- 

4. Click [OK].
5. Restart the system.

## **Graphics Accelerator Driver**

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Please refer to "Graphics Accelerator Driver" described in Appendix E when you want to reinstall the driver individually.

## **Installing SCSI Controller Driver (N8103-107)**

If you use the SCSI Controller N8103-107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## **Installing SAS Controller Driver (N8103-104A)**

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## **Installing RAID Controller Driver (N8103-115)**

If you use the RAID Controller N8103-115, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## **Installing the Fibre Channel Controller Driver (N8190-127/131)**

If you use the Fibre Channel Controller (N8190-127/131), you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

## The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

---

**IMPORTANT:** "PAE option" is not supported on Windows Server 2008 Standard.

---

In Windows Server 2008 system, the PAE option can be set by using Bcdedit.exe.

The setting procedure is as follows.

1. Click [Run] on [Start] menu.
2. Type "cmd.exe" in the [Open:] box to start command prompt.
3. Execute following command line.

bcdedit /set pae forceenable

4. Reboot the system.

The setting mentioned above enables after reboot.

5. Execute following command line on command prompt.

bcdedit

Confirm "pae ForceEnable" exists in "Windows boot loader".

The setting for PAE option is now completed.

Refer following site about Bcdedit.exe

"Boot Configuration Data Editor Frequently Asked Questions"

[http://technet.microsoft.com/en-us/library/cc721886\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc721886(WS.10).aspx)

---

## Setting for Solving Problems

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

For more information, refer to Page 5-85.

## Windows Server 2003

This section explains how to install Microsoft® Windows Server® 2003 by using the Express Setup.

---

### NOTES:

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

---

## Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

### About the Windows family

This computer supports the following Windows editions:

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

---

**NOTE:** Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix F.

---

On installing other OS, contact sales dealer or the maintenance service representative.

### BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2003.

## Service Pack Which NEC EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

## Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

---

- Controllers supporting installation of OS with Express Setup
    - N8103-129 RAID Controller (256 MB, RAID0/1)\*
    - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
    - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
  - Other controllers
    - N8103-104A SAS Controller\*
    - N8103-107 SCSI Controller\*
    - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*
- \* Option

---

### NOTES:

- The driver of option card mentioned above is stored in the NEC EXPRESSBUILDER DVD.
  - If you use the board not mentioned above, the Express Setup will fail. Refer to the instructions attached to the board.
-

## **About the Hardware Components**

When you install the Windows Server 2003, Express Setup requires several preparations if this computer uses the following hardware components.

### **Installing on the Mirrored Volume**

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

You can create, invalidate or delete the mirror volume by using "Disk Management" in "Computer Management".

### **Mounting MO Device**

Do not mount an MO device on this computer during the Windows installation.

### **About Removable Media**

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

### **Connecting Hard Disk Drive**

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

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" (5-97).

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

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

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

### **Peripheral Devices such as RDX**

Depending on your hardware configuration, some peripheral devices need to be removed or disabled before starting setup. Refer to the instruction manual which came with the peripheral device for pertinent information, and proceed accordingly.

## About the System Partition Size

The system partition size can be calculated from the following formula.

$$\begin{aligned} & \text{Size necessary to install the system} + \text{Paging File Size} + \text{Dump File Size} \\ & \quad + \text{Application Size} \\ \text{Size necessary to install the system} &= 3500\text{MB (Windows Server 2003 R2)} \\ &= 3500\text{MB (Windows Server 2003 R2 with Service Pack 2)} \\ &= 5300\text{MB (Windows Server 2003 R2 + Service Pack 2 CD-ROM)} \\ \text{Paging File Size (Recommended)} &= \text{Mounted Memory Size} * 1.5 \\ \text{Dump File Size} &= \text{Mounted Memory Size} + 12\text{MB} \\ \text{Application Size} &= \text{Required Size} \end{aligned}$$

---

### IMPORTANT:

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

For example, if the mounted memory size is 1GB (1,024MB), the partition size will be calculated by the above formula as follows:

$$\begin{aligned} & 3,500\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 12\text{MB}) + \text{Application Size} \\ &= 6,072\text{MB} + \text{Application Size} \end{aligned}$$

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

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

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

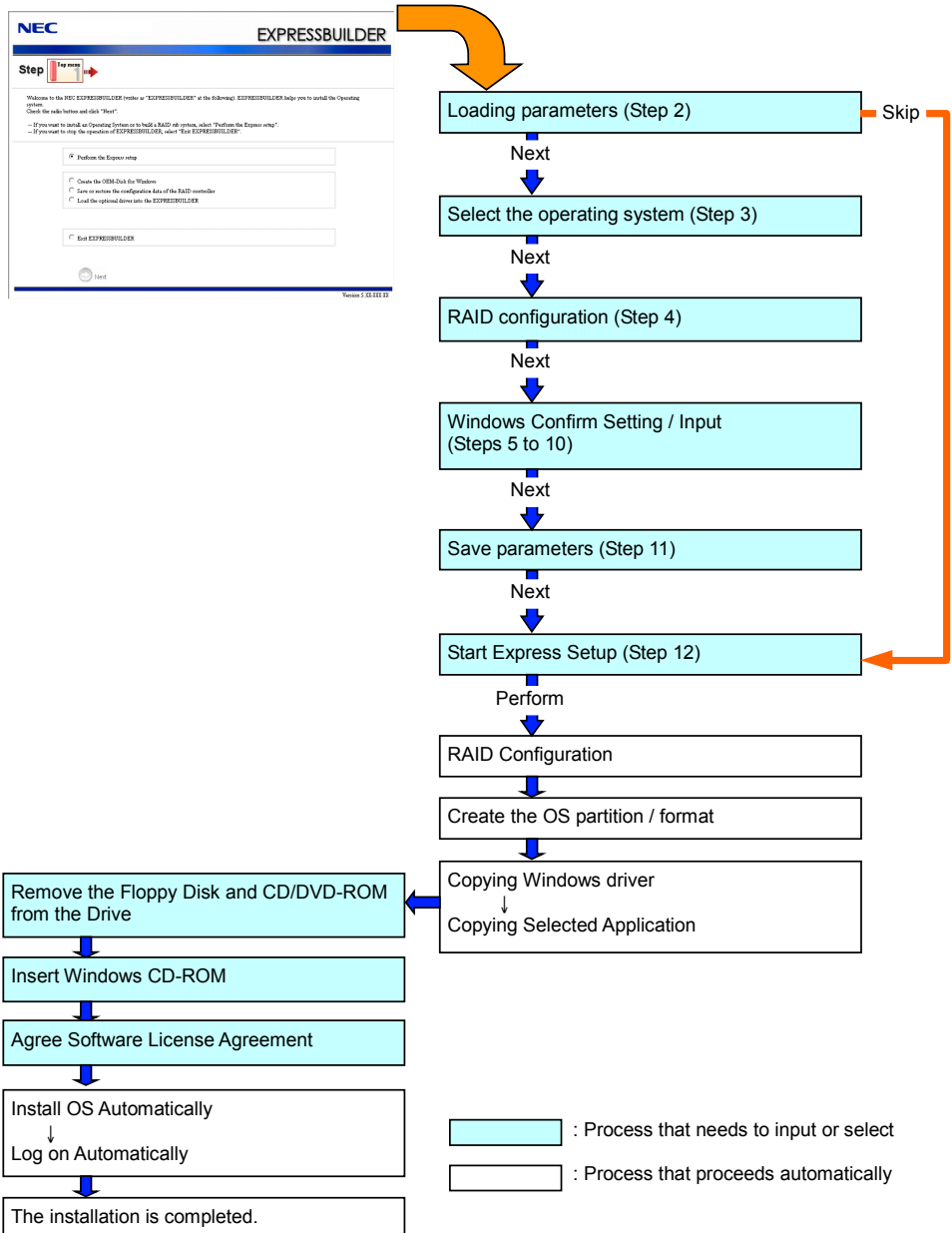
### **Installing the Service Pack**

When installing Windows Server 2003 R2, it is not necessary to install the Service Pack 1.



## FLOW OF SETUP

This section visually describes the flow of the setup operated by Express Setup.



## INSTALLING Windows Server 2003

Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl, Alt, and Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

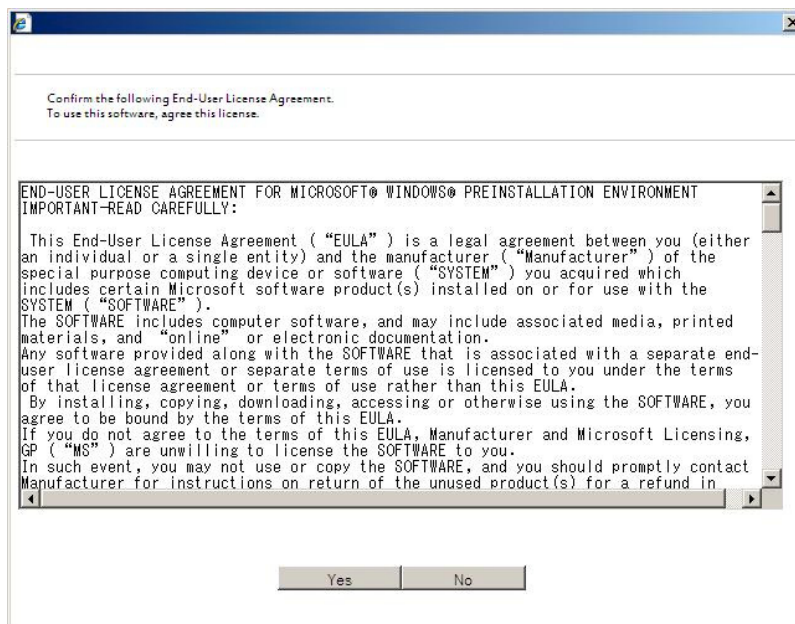
The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.

Select "Os installation \*\*\* default \*\*\*" from the Boot selection menu. (If you do not hit any key, "Os installation" is selected automatically.)

4. Select [English] from the [Select Language], click [OK].




5. When the Software License Agreement screen of Windows PE appears, click [Yes].



6. Select [Perform the Express setup] from the Top Menu, click [Next].

NEC EXPRESSBUILDER

Step 

Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.  
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".  
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".


☒ Perform the Express setup

☐ Create the OEM-Disk for Windows

☐ Save or restore the configuration data of the RAID controller

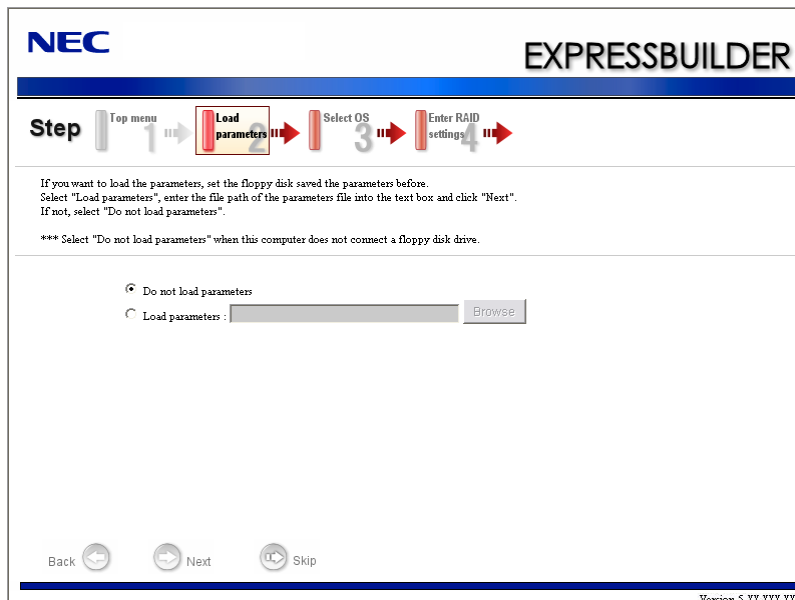
☐ Load the optional driver into the EXPRESSBUILDER

☐ Exit EXPRESSBUILDER

 Next

Version 5.XX-XXX.XX

7. [Load parameters] steps are displayed.



[Do not load parameters]

- (1) Select [Do not load parameters].
- (2) Click [Next].

---

**IMPORTANT:** The setup using a parameter file saved in the Flash FDD is not supported.

---



---

**NOTE:** If a floppy disk drive is not connected, select this item.

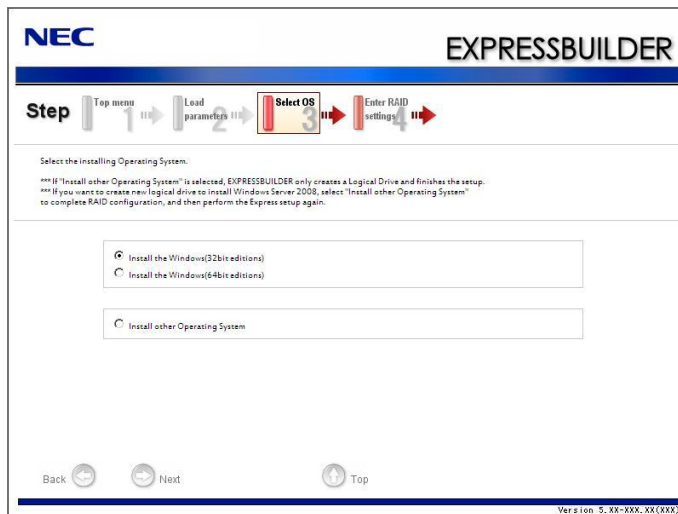
---

[Load parameters]

- (1) Insert the floppy disk containing the parameters file.
- (2) Select [Load parameters], enter the file path of the parameters file into the text box.
- (3) Click [Next].

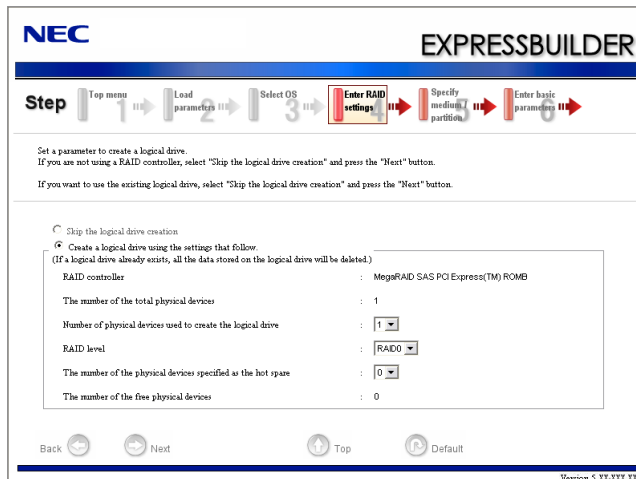
## 8. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



## 9. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



### NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the NEC EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

**10.** Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

**IMPORTANT:**

- If you install Windows Server 2003 R2 and Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, NEC EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained
-------------------------------	---------------------------------	--------------------------------

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

## 11. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

**NEC EXPRESSBUILDER**

**Step** 1 Top menu 2 Load parameters 3 Select OS 4 Enter RAID settings 5 Specify medium / partition 6 **Enter basic parameters**

Enter the basically parameters.

The computer name is less than 15 characters. (Do not set the same name as other computer name, domain name or workgroup name)  
The user name and the organization's name are less than 50 characters.

**User information**

Computer name :  (necessary)

User name :  (necessary)

Organization's name :

Administrator password :

Confirm password :

**Client licence**

☒ Per server mode : 5

☐ Per user or per device mode

Back Next Top Default

Version 5.XX.XXX.XX

**NOTE:** Even if you do not input value into "Administrator password", "Confirm password", "●●●●●" is displayed.

## 12. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

**NEC EXPRESSBUILDER**

**Step** 1 **Enter network protocol** 2 Enter domain account 3 Select Windows components 4 Select applications 5 Save parameters 6 Start Express setup

Enter the settings of the network protocol.

If you want to set the IP address, select "Customized settings" and click "Detail settings".  
If not, select "Standard setting" and click "Next".

☒ Standard setting

☐ Customized settings

standard adapter -- internet protocol2

Detail settings

Back Next Top Default

Version 5.XX.XXX.XX

13. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

NEC

EXPRESSBUILDER

Step

1

2

3

4

5

6

7

8

9

10

11

12

If you want to join in a domain, enter the account name/password of the domain.  
If not, select "Join in a workgroup" and click "Next".

Join in a workgroup

Workgroup name : WORKGROUP

Join in a domain

Domain name :

Account name :

Password :

Confirm password :

Back

Next

Top

Default

Version 5.XX-XXX.XX

14. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

NEC

EXPRESSBUILDER

Step

1

2

3

4

5

6

7

8

9

10

11

12

Select the installing Windows components.

Application Server

☐ Internet Information Services(IIS) 

Detail settings

Management and Monitoring Tools

☒ Simple Network Management Protocol 

Detail settings

☐ Network Monitor Tools

Networking Services

☐ Simple TCP/IP Services

☐ Dynamic Host Configuration Protocol(DHCP)

☐ Domain Name System(DNS)

☐ Windows Internet Name Services(WINS)

Other Network File and Print Services

☐ File Services for Macintosh

☐ Print Services for Macintosh

☐ Print Services for Unix

Back

Next

Top

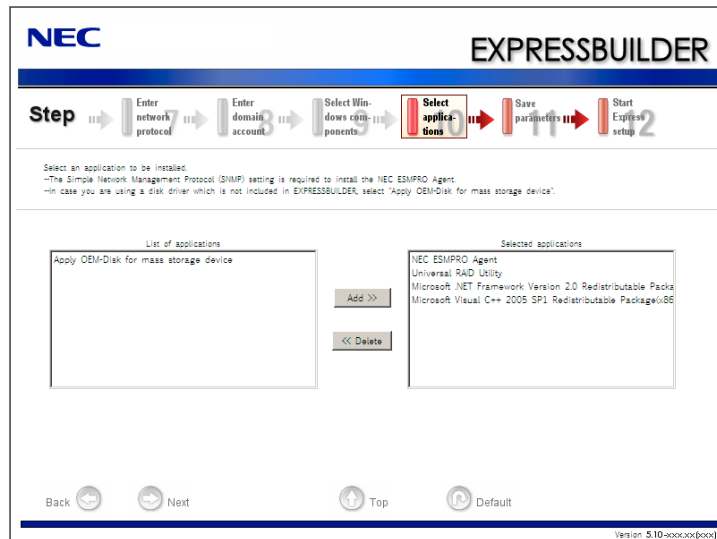
Default

Version 5.XX-XXX.XX



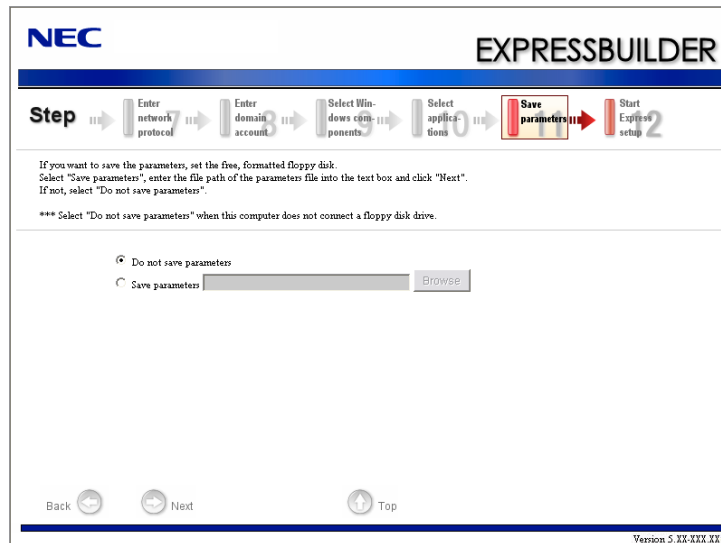
## 15. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



## 16. Save the parameters.

[Save parameters] steps are displayed.

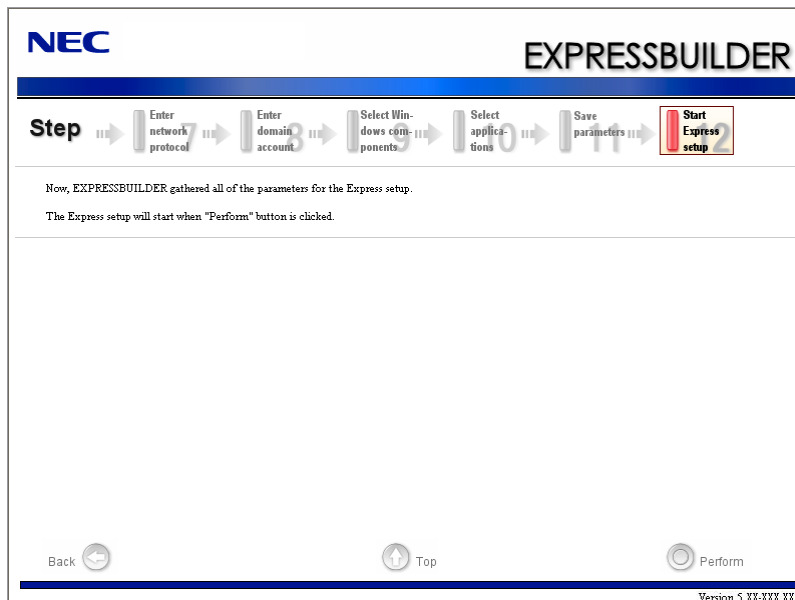


If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

17. The Express Setup will start when you click [Perform] in [Start Express setup] step.



18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

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

Insert Windows Server 2003 CD-ROM into the optical disk drive.

[Agree Software License Agreement] screen appears.

- 19.** Read the contents carefully and click [Yes] if you do agree. If you do not agree, click [No].

---

**IMPORTANT:**

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.
- When the following message is displayed, click [OK] and input the product key.

The setup script file does not contain a valid Product ID.  
Contact your system administrator for a valid Product ID.

---

- 20.** Insert Microsoft Windows Server 2003 R2 DISC 2 into the optical disk drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 DISC 2 from the optical disk drive, and restart the system.

Now the Setup using Express Setup has completed.

## INSTALLING AND SETTING DEVICE DRIVERS

Follow these steps to install and configure the device drivers.

---

### PROSet

---

**NOTE:** All of the operation that related to Intel® PROSet must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.

Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog.

Click [OK] button will cause temporary loss of network connectivity.

---

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

Utilizing PROSet enables the following items:

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

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

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
2. The [Windows Explorer] dialog starts.
  - \* The procedure in the case of the standard start menu  
Click Start menu and click [Windows Explorer].
  - \* The procedure in the case of the classic start menu  
Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "dxsetup.exe" in the following directory.  
\\016\win\winnt\dotnet\r148\apps\prosetdx\win32  
The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].

- 6.** Click [Next].
- 7.** Click [Install].
- 8.** When [InstallShield Wizard Completed] window is displayed, click [Finished].
- 9.** Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

## Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

### When PROSet is not installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

### When PROSet is installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

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

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

---

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

---

---

## Optional Network Board Driver (N8104-121/125A/126)

Install the driver stored in NEC EXPRESSBUILDER DVD.

### Installation of the Optional Network Board Driver

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

---

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

---

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and uncheck the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(121/125A/126)], specify  
[\\016\\win\\winnt\\dotnet\\r148\\pro1000\\win32\\ndis5x].  
Then click [Next].
7. Click [Finish].
8. Restart the system.

---

## Optional Network Board Driver (N8104-123A)

To install the driver, refer to the installation manual provided with the board and according to the installation manual, use the driver stored in attached CD-ROM.

---

## Setup Team

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

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

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

---

### IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers/PROSet and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
  - The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
  - When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
  - Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- 

## Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box. Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].



6. Select a team mode, and then click [Next].

---

**IMPORTANT:** Following team types are supported

- Adapter Fault Tolerance
  - Adaptive Load Balancing
  - Static Link Aggregation
  - Switch Fault Tolerance
- 

7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
  - Set Primary  
Point the adapter and click [Set Primary] button.
  - Set Secondary  
Point the adapter and click [Set Secondary] button.

---

**NOTE:** Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
  2. Click [Settings] and confirm Adapters in team list.
- 

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.  
Confirm the result in [Test results]
11. Restart the system.

## Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and reboot the system.

---

## Setting WOL

Refer to the following procedure to enable WOL.

### When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	ON or OFF	OFF

---

#### IMPORTANT:

- If "Allow this device to bring..." is set to "ON", WOL by DirectedPacket (\*1) or MagicPacket will be available on Standby and Hibernate state.
  - WOL by Directed Packet is not available on Shutdown state.
- \*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- 

4. Click [Advanced] tab and point to [Enable PME].
5. Set in [Value] as follows.
  - Using WOL: ON
  - Not using WOL: OFF
6. Click [OK].
7. Restart the system.

**When PROSet is installed**

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

---

**IMPORTANT:**

- Directed Packet (\*1) will not wake up the system on Shutdown state even "Wake On Directed Packet" is set to "ON".  
Only on Standby or Hibernation state will wake up by a Directed Packet.
  - The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.  
\*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- 

---

**NOTES:**

- [Power Saver Options] setting is not necessary to change.
  - Above setting will be maintained until manually resetting are executed.
- 

4. Click [OK].
5. Restart the system.

---

## Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Please refer to "Graphics Accelerator Driver" described in Appendix G when you want to reinstall the driver individually.

---

## Installing SCSI Controller Driver (N8103-107)

If you use the SCSI Controller N8103-107, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI Controller driver will be installed automatically.

---

## Installing RAID Controller Driver (N8103-115)

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

- If the RAID Controller (N8103-129/130) is used:  
You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.
- If the RAID Controller (N8103-129/130) is not used:  
Update your system with NEC EXPRESSBUILDER DVD attached to your system.  
The RAID Controller driver will be installed automatically.

---

## Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS Controller driver will be installed automatically.

---

## The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

---

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

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

Microsoft Knowledge Base - Article ID: 291988  
"A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

---

In Windows Server 2003 system, the PAE option can be set by editing boot.ini.

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

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

<Example of Boot.ini file>

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

This is the end of editing Boot.ini file.

---

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

---

---

## **Setting for Solving Problems**

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

For more information, refer to Page 5-85.

## SETTING FOR SOLVING PROBLEMS

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

---

### Memory Dump (Debug Information)

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

---

**IMPORTANT:** Cautions for the Memory Dump

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

### When the system is Windows Server 2008 R2

Follow the procedure below to specify.

1. Click Start and select [Control Panel].  
The [Control Panel] window appears.
2. Click [System and Security] and then select [System].

---

**NOTE:** If [View by] is not set as [Category], start [System] from Control Panel directly.

---

3. Click [Advanced system settings].  
The [System Properties] dialog box appears.
4. Select [Advanced] tab.
5. Click [Settings] on the [Startup and Recovery] group box.
6. Modify [Dump file] in the [Write debugging information] group box, and click [OK].  
e.g. Write the debug information in D drive with the file name  
"MEMORY.DMP".  
D:\MEMORY.DMP

---

**IMPORTANT:**

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
  - Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB".
  - In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory.  
The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.
- 

7. Click [Settings] in the [Performance] group box.  
The [Performance Options] window appears.
8. Click [Advanced] tab on the [Performance Options] window.
9. Click [Change] on the [Virtual memory] group box.
10. Uncheck the [Automatically manage paging file size for all drives] box, and check [Custom size].
11. On the [Paging file size for each drive] box, specify as follows:
  - A value larger than the recommended size shown in [Total paging file size for all drives] for [Initial size]
  - A value larger than the [Initial size] for [Maximum size]Then click [Set].

---

**IMPORTANT:**

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



**12.** Click [OK].

The message to restart the system may appear according to the modified specification.

In such case, follow the message to restart the system.

### **When the system is Windows Server 2008**

Follow the procedure below to specify.

**1.** Select [Control Panel] and click [System].

The [System] dialog box appears.

**2.** Click [Advanced system settings].

The [System Properties] dialog box appears.

**3.** Select [Advanced] tab.

Click [Settings] on the [Startup and Recovery] group box.

**4.** Modify [Dump file:] in the [Write debugging information] group box.

e.g. Write the debug information in D drive with the file name "MEMORY.DMP".

D:\MEMORY.DMP

---

**IMPORTANT:**

Windows Server 2008 64-bit (x64) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2008 32-bit (x86) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
  - Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB" (In case the memory capacity is more than 2GB, a free area of "2048+300MB" or more).
  - In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.
- 

5. Click [Settings] on the [Performance] group box.  
The [Performance Options] window appears.
6. Click [Advanced] tab on the [Performance Options] window.
7. Click [Change] on the [Virtual memory] group box.
8. Uncheck the [Automatically manage paging file size for all drives] box, and check [Custom size].

9. On the [Paging file size for each drive] box, specify as follows:
- A value larger than the recommended size shown in [Total paging file size for all drives] for [Initial size]
  - A value larger than the [Initial size] for [Maximum size]
- Then click [Set].

---

**IMPORTANT:**

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

10. Click [OK].

The message to restart the system may appear according to the modified specification.

In such case, follow the message to restart the system.

## **When the system is Windows Server 2003**

Follow the procedure below to specify.

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

---

**IMPORTANT:**

Windows Server 2003 x64 Editions

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

Windows Server 2003

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

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

---

**IMPORTANT:**

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

9. Click [OK].

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

---

## How to Create a User-mode Process Dump File

### When the system is Windows Server 2008 R2

"User-mode Process Dump" is the file that records information when any application error occurs.

When any application error occurs, do not close the pop-up window that notifies the error, and then collect a dump using following process.

1. Right-click a blank part of the taskbar and click [Task Manager], or press Ctrl + Shift + Esc to start [Task Manager].
2. Click [Processes] tab.
3. Right-click on process name that you want to collect dump, and then click [Create Dump File].
4. The dump file is stored in following directory.

C:\Users\<User Name>\AppData\Local\Temp

---

**NOTE:** The folder may be treated as hidden folder. If the folder does not appear, run Explorer and select [Organize] - [Folder and search options] - [View], and check to [Show hidden files, folders, and drives].

---

When the User-mode Process Dump is created, pick up the file from the directory described in Step 4.

Refer to Knowledge Base of Microsoft web-site for more information about the User-mode Process Dump file collection.

"How to create a user-mode process dump file in Windows Server 2008"

<http://support.microsoft.com/kb/949180/en-us>

---

**NOTE:** For Windows Server 2008, Dr. Watson is replaced by [Problem Reports and Solutions], therefore, you can not collect the Crash Dump file by existing Dr. Watson.

The above process provides you the information same level as the Crash Dump file.

---

**When the system is Windows Server 2008**

"User-mode Process Dump" is the file that records information when any application error occurs.

When any application error occurs, do not close the pop-up window that notifies the error, and then collect a dump using following process.

1. Right-click a blank part of the taskbar and click [Task Manager], or press Ctrl + Shift + Esc to start [Task Manager].
2. Click [Processes] tab.
3. Right-click on process name that you want to collect dump, and then click [Create Dump File].
4. The dump file is stored in following directory.

C:\Users\<User Name>\AppData\Local\Temp

---

**NOTE:** The folder may be treated as hidden folder. If the folder does not appear, run Explorer and select [Tools] - [Folder Options...] - [View], and check to [Show hidden files and folders].

---

When the User-mode Process Dump is created, pick up the file from the directory described in Step 4.

Refer to Knowledge Base of Microsoft web-site for more information about the User-mode Process Dump file collection.

"How to create a user-mode process dump file in Windows Server 2008"

<http://support.microsoft.com/kb/949180/en-us>

---

**NOTE:** For Windows Server 2008, Dr. Watson is replaced by [Problem Reports and Solutions], therefore, you can not collect the Crash Dump file by existing Dr. Watson.

The above process provides you the information same level as the Crash Dump file.

---

### When the system is Windows Server 2003 (Dr. Watson)

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

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

---

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

---

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

---

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

---

5. Select [Full] radio button from [Crash Dump Type].
6. Check the following check box on the [Options] box.
  - ☐ Dump Symbol Table
  - ☐ Dump All Thread Contexts
  - ☐ Append TO Existing Log File
  - ☐ Create Crash Dump File

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

7. Click [OK].



---

## Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble.

### Network Monitor Setup (Windows Server 2008 R2 / Windows Server 2008)

Microsoft Network Monitor allows you to examine and troubleshoot network problems.

---

**NOTE:** Windows Server 2008 R2 / Windows Server 2008 does not provide Network Monitor.

To use Network Monitor on Windows Server 2008 R2 / Windows Server 2008, install Network Monitor by following the steps below.

---

1. Download Microsoft Network Monitor from the following web site:  
<http://support.microsoft.com/kb/933741/en-us>

2. Run the downloaded file to start the installer.

Follow the on-screen instructions to install Network Monitor.

---

**NOTE:** If a Security Alert appears, click [Run]. Select [Complete] for a setup format.

---

3. Network Monitor is installed.

---

**NOTE:** To remove Network Monitor, go to [Programs and Features].

---

### Network Trace Capture (Windows Server 2008 R2 / Windows Server 2008)

1. On the Start menu, start Microsoft Network Monitor.
2. On [Start Page], select [Create a new capture tab...] or select [New] in the [File] menu, and click [Capture...].

A new tab for capturing a network trace is created.

3. On the [Select Networks] window, select a network you want to capture a trace.
4. On the [Capture] menu, click [Start] to start capturing a network trace.
5. On the [Capture] menu, click [Stop] to stop capturing a network trace.
6. On the [File] menu, select [Save As...].

The [Save As] window appears. Select [All captured frames] from [Frame selection], and enter the names of a folder and a file.

---

**NOTE:** The default folder name is:  
C:\Users\<User name>\Documents\Network Monitor 3\Captures

---

7. Click **Save** to create the file in the folder selected in step 6.

## Network Monitor (Windows Server 2003)

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

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

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

---

## Re-installing the Operation System if Multiple Logical Drives Exist

### Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

### Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

<Windows Server 2008 R2/Windows Server 2008>

Where do you want to install Windows?

---

#### **IMPORTANT:** Windows Server 2008 R2/Windows Server 2008

When you install the Windows OS in the environment with which several hard disk drives are connected, more than one hard disk drives are displayed as installation target.

In this case, displayed sequence or number may not correspond with the sequence of the hard disk drive that connected with drive bay. Distinguish the hard disk drive for installation by displayed disk capacity or the size of partitions.

If you select wrong hard disk drive, the existing contents may be deleted unexpectedly.

Pay enough attention when you select the hard disk drive for installation.

Refer to following Microsoft web-site for more details.

<http://support.microsoft.com/kb/937251/en-us>

---

<Windows Server 2003>

The following list shows the existing partitions and unpartitioned space on this computer.

Use the UP and DOWN ARROW keys to select an item in the list.

- \* Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.
3. Continue the clean installation again following the procedure described in this manual.
  4. The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

## Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot be modified with the following procedure.

<Windows Server 2008 R2 / Windows Server 2008>

1. Click Start menu, right-click [Computer], and specify [Manage] to start [Server Manager].
2. Specify the [Storage] - [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Paths...].
4. Click [Change...].
5. Choose the [Assign the following drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

Some programs that rely on drive letters might not run correctly.  
Do you want to continue?

8. Close the [Server Manager].

<Windows Server 2003>

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Paths...].
4. Click [Change...].
5. Choose the [Assign the following drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

Changing the drive letter of a volume might cause programs to no longer run.  
Are you sure you want to change this drive letter?

8. Close the [Computer Management].

## INSTALLING MAINTENANCE UTILITIES

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

## UPDATING THE SYSTEM

---

**IMPORTANT:** If you install Windows Server 2003 CD-ROM which contains Service Pack 2 to your system, you do not have to apply Service Pack 2 again.

---

"Updating the System" is executed by Express Setup automatically.

Execute "Updating the System" in following cases.

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

See "Updating the System" section in Appendix D for detail of update process.

## MAKING BACKUP COPIES OF SYSTEM INFORMATION

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

Save the information after completing the system setup.

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

You can save the information by the following process.

1. Connect Flash FDD or USB FDD to the USB connector.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive and reboot the system.
3. Select [Tool menu (Normal mode)].
4. Select [English].
5. Select [Maintenance Utility].
6. Select [System Information Management].
7. Select [Save].

## INSTALLING WITH THE OEM-DISK FOR MASS STORAGE DEVICE

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

---

### Installation of Mass Storage Device not to be Supported by Express Setup

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

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is RAID Controller, configure the RAID System before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER DVD.
4. Select [Load the optional driver into the EXPRESSBUILDER] from the Top menu, click [Next].

Setting the driver disk for the mass storage controller. Press the "Perform" button.

---

**NOTE:** By choosing this option, you can load the driver provided by CD-ROM or floppy disk to proceed with the Express Setup.

---

5. Perform Express Setup with the following settings.
  - (a) When "Enter RAID settings" appears, check "Skip the logical drive creation".
  - (b) Confirm [Apply OEM-Disk for mass storage device] is displayed in [Selected applications] box at "Select applications" steps.

# Chapter 6

---

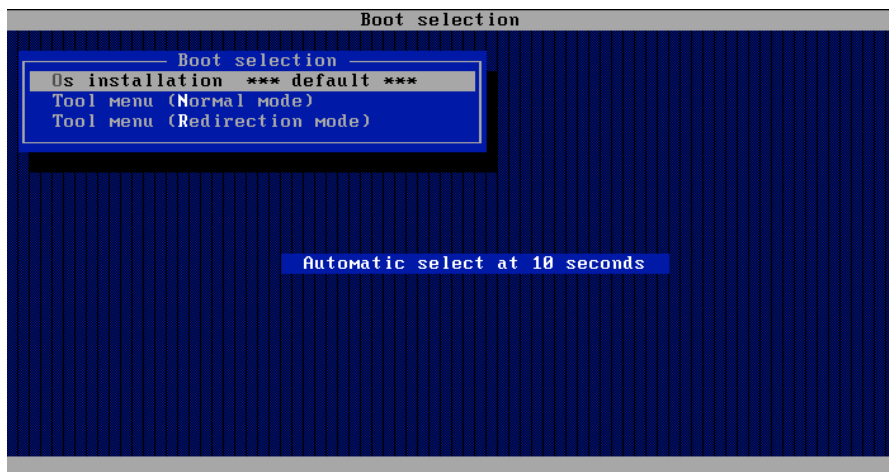
## Installing and Using Utilities

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

## NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER helps you install the Operating system/the Management software or use the maintenance utilities.

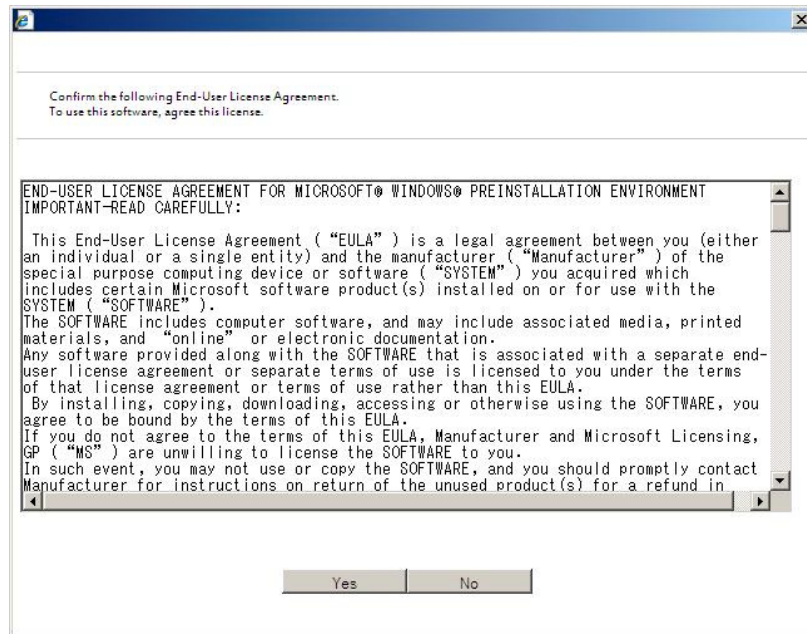
When you insert the NEC EXPRESSBUILDER DVD into the optical disk drive and reboot the system, the following menu appears.



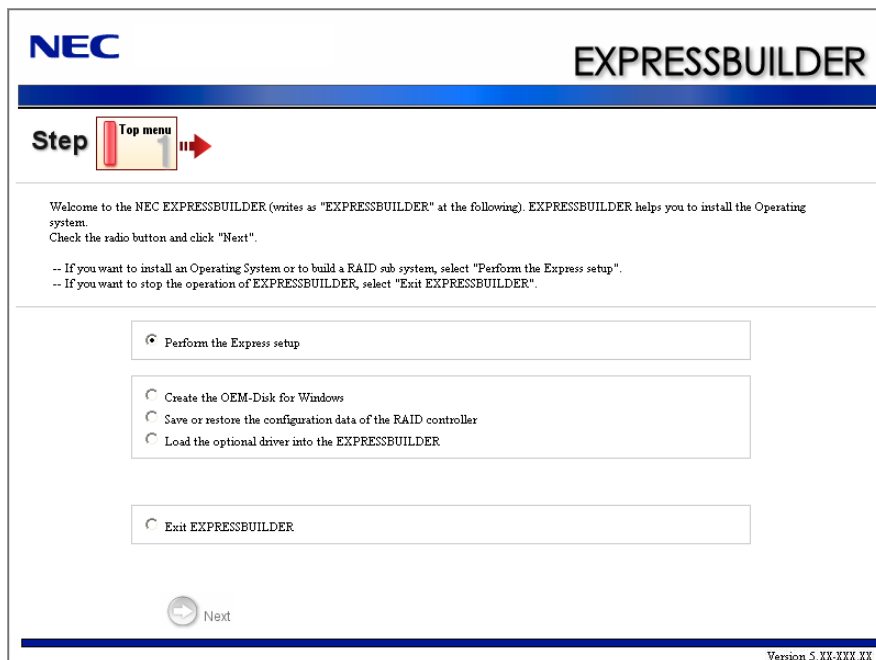


## ■ OS installation

If you select this item, the Software License Agreement screen of Windows PE appears.



If you click [Yes], the Top menu appears.



---

**IMPORTANT:** This tool is Configuration Tool that built on Windows PE 3.0 technology.  
Pay attention to the automatic reboot that occurs after 72 hours from start.

---

You can use the Express Setup (see Chapter 5) or the following functions from this menu.

- Create the OEM-Disk

You can create the Windows OEM-Disk to use at the Windows manual setup.

- Load the driver

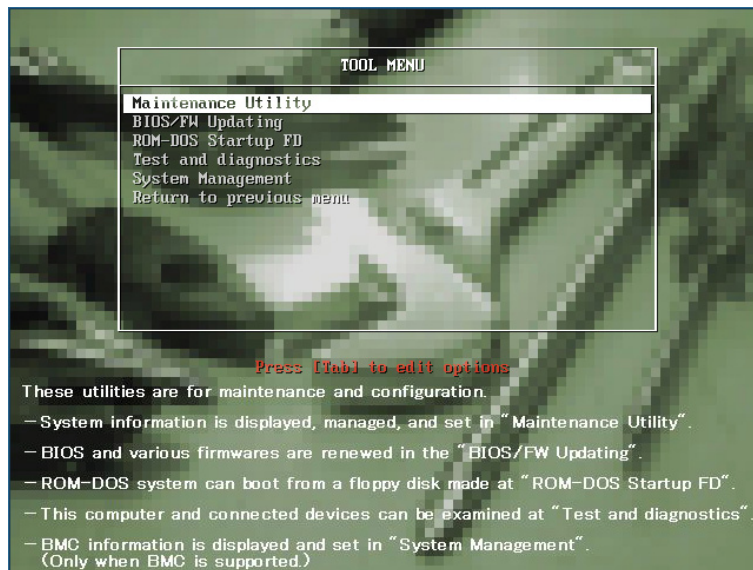
This function is not usually used. If you add the new device to the server, this function may be used. (See Chapter 5.)

- Save/load the RAID configuration data

You can save the RAID configuration data stored in RAID Controller, or restore it.

■ Tool menu (Normal mode)

If you select this item, the Tool menu appears.



You can use the below functions for maintenance.

– Maintenance Utility

The Maintenance Utility is usually used by the service representative. (See Chapter 8.)

– BIOS/FW Updating

You can update the system BIOS by using the Flash FDD or USB FDD.

– ROM-DOS Startup FD

The ROM-DOS Startup FD is used for starting the ROM-DOS system.

– Test and diagnostics

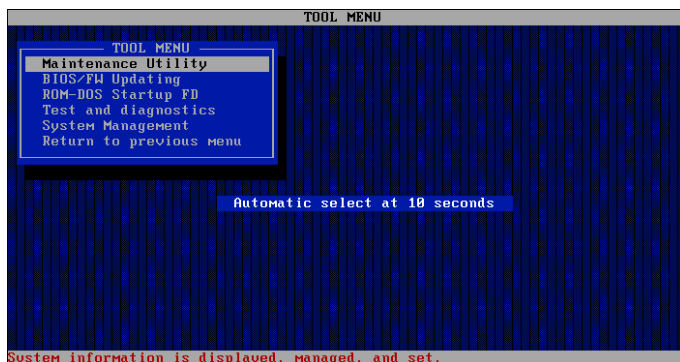
This function allows you to diagnose this computer. (See Chapter 7.)

– System Management

You can configure the parameters of BMC (Baseboard Management Controller).  
This function is not supported in this server.

### ■ Tool menu (Redirection mode)

If you want to operate this computer via the BIOS redirection (the console-less function), select this item.



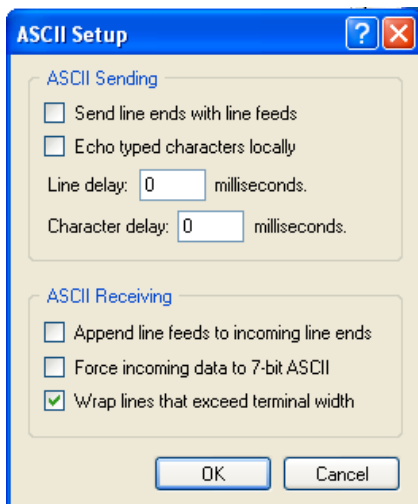
The menu's functions are the same as the "Tool menu (Normal mode)".

---

**IMPORTANT:** To use the Windows HyperTerminal Emulation program on serial console, setup as shown below is required.

<Example: On Windows XP>

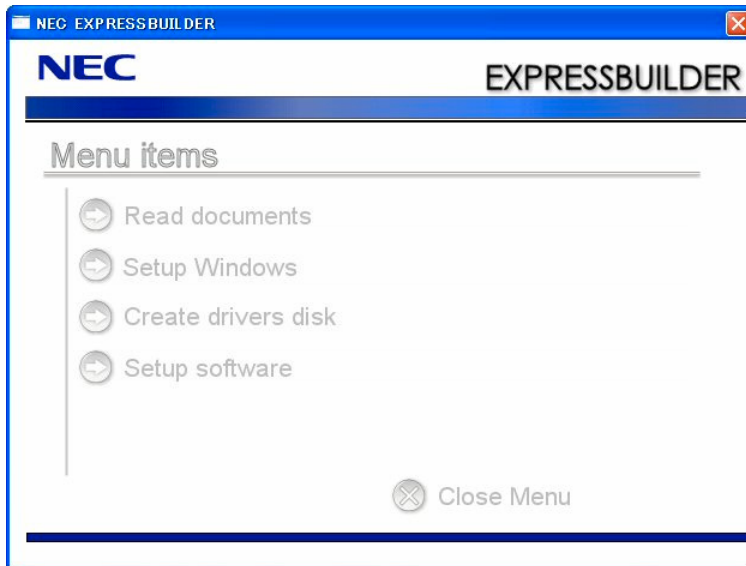
1. From the menu bar of HyperTerminal, select [File] - [Properties].
2. In the [Properties] dialog box, select [Settings] - [ASCII Setup].  
Remove a checkmark from "Wrap lines that exceed terminal width" checkbox.



---

## Autorun Menu

When the NEC EXPRESSBUILDER DVD is inserted into the optical disk drive, Windows automatically launches the menu as shown below.



This menu is used to,

- Read the User's Guide or the other documents,
- Update the server system (Windows drivers), and
- Install the management software.

---

### NOTES:

- This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).
  - Some documents are provided in PDF format. Use the Adobe Reader to view or print these documents.
- 

If the menu does not appear, select "My computer" by using the Explorer, and double-click the icon of the optical disk drive that contains the NEC EXPRESSBUILDER DVD.

Some menu items are grayed-out when the logon user does not have the authority of the administrator or the menu item is not available for your system.

To use the menu,

- Click on the menu items, or
- Click the right mouse button on the menu window.

## PARAMETER FILE CREATOR

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

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

When using a floppy disk, a USB floppy disk drive is required.

---

### IMPORTANT:

- You can not create [Parameter file] for Windows Server 2003 x64 Editions.
  - The setup using a parameter file saved in the Flash FDD is not supported.
- 

---

**NOTE:** You can install Windows Server 2008 R2/Windows Server 2008/Windows Server 2003 without [Parameter file]. Also, you can modify/newly create [Parameter file] during the setup with NEC EXPRESSBUILDER.

---

---

## Parameter File

This section describes about specifying setup information that is necessary for OS installation and creating [Parameter file].

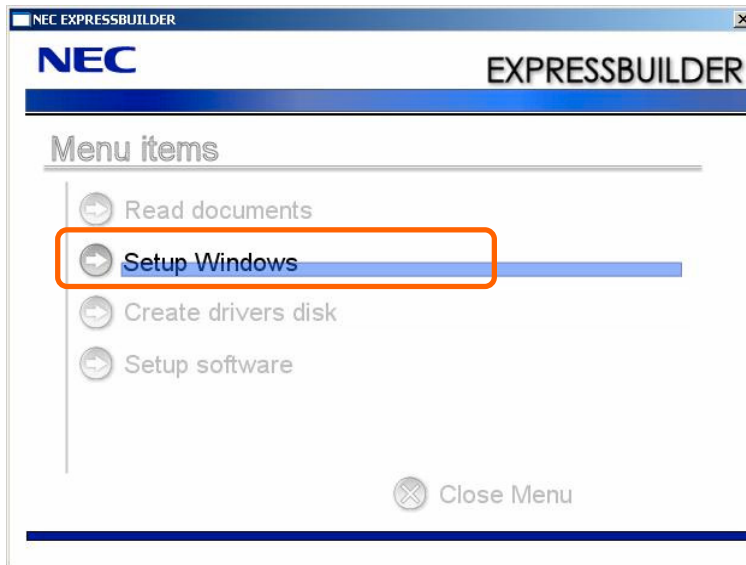
Follow the procedure below.

---

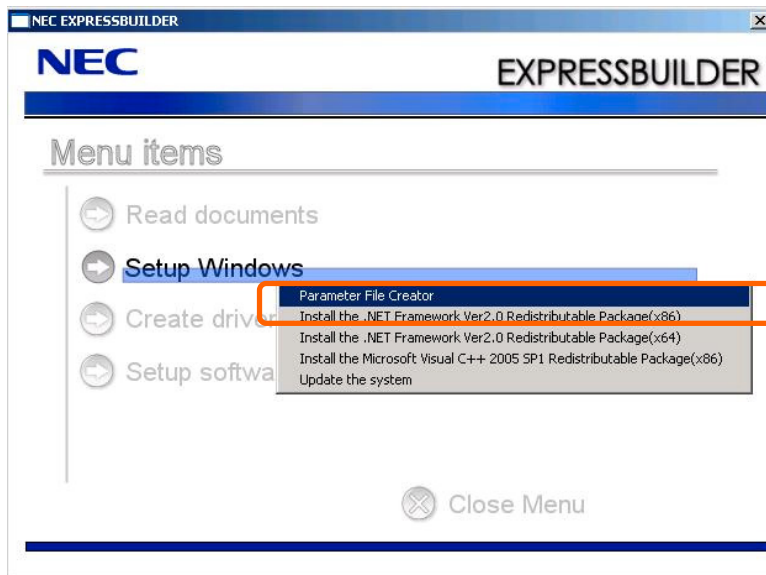
**IMPORTANT:** Do not remove NEC EXPRESSBUILDER DVD from drive during a parameter file creation.

---

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
The menu will appear.
3. Right-click on the screen or left-click [Setup Windows]. The menu will appear.



4. Click [Parameter File Creator].



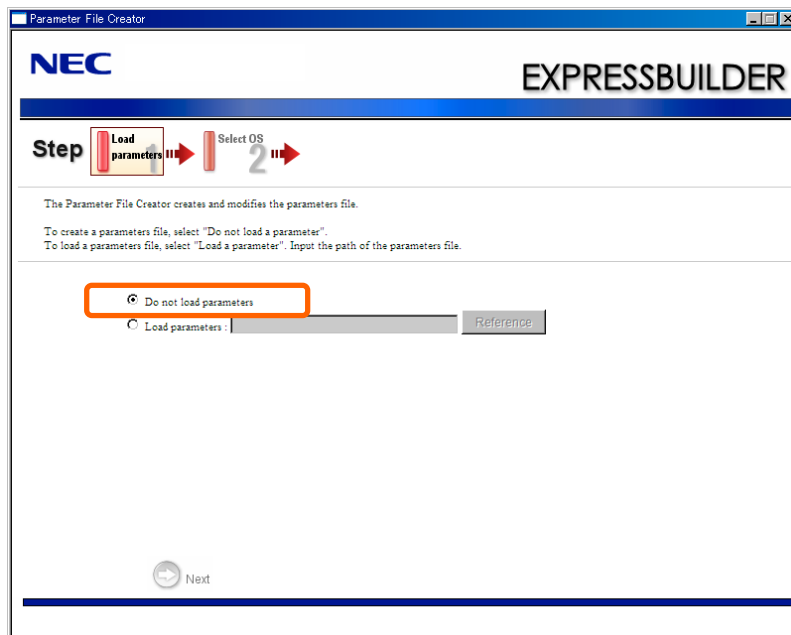
Parameter File Creator will appear.





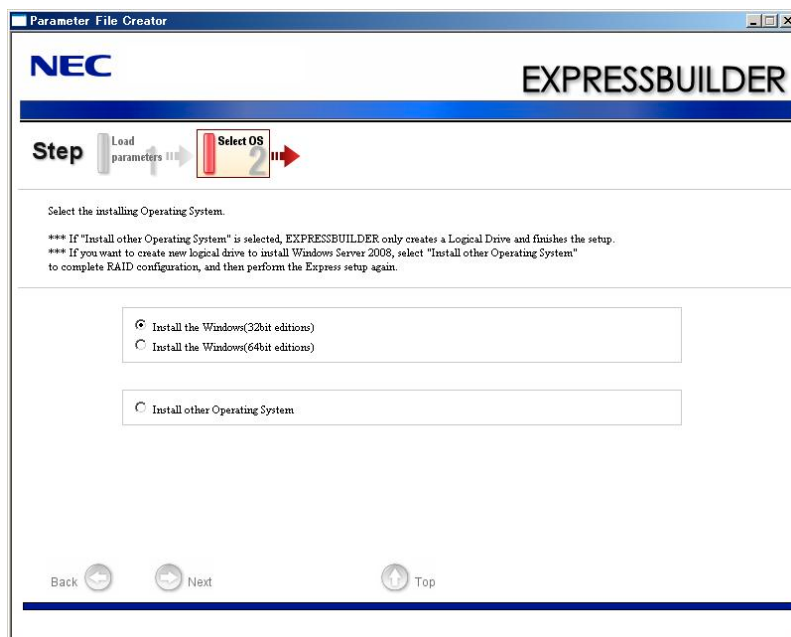
5. [Load Parameters] step is displayed.

Select [Do not load parameters] from the menu, click [Next].



6. Select the installing Operating System.

Select [Install the Windows (32bit editions)] or [Install the Windows (64bit editions)] from the menu, click [Next].



## 7. Enter the setting of a logical drive.

[Enter RAID setting] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the 'Parameter File Creator' window for NEC EXPRESSBUILDER. The title bar reads 'Parameter File Creator'. The window has a blue header with the NEC logo and 'EXPRESSBUILDER' text. Below the header is a progress bar with six steps: 1. Load parameters, 2. Select OS, 3. Enter RAID settings (highlighted in red), 4. Specify medium/partition, 5. Enter basic parameters, and 6. Enter network protocol. Below the progress bar, there is instructional text: 'Set a parameter to create a logical drive. If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button. If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.' The main content area has two radio buttons: 'Skip the logical drive creation' (selected) and 'Create a logical drive using the settings that follow. (If a logical drive already exists, all the data stored on the logical drive will be deleted.)'. Below these are several input fields with labels and values: 'RAID controller' (---), 'The number of the total physical devices' (---), 'Number of physical devices used to create the logical drive' (---), 'RAID level' (---), 'The number of the physical devices specified as the hot spare' (---), and 'The number of the free physical devices' (---). At the bottom, there are four buttons: 'Back', 'Next', 'Top', and 'Default'.

**IMPORTANT:** At "The number of the total physical devices", Parameter File Creator displays upper limit that the RAID Controller can support.  
The total of "The number of physical devices used to create the logical drive" and "The number of the physical devices specified as the hot spare" must not exceed "The number of the total physical devices" which connected to the target system.

**NOTE:** You can use only the physical devices that have same model number to configure logical drive.

## 8. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008 R2]

Parameter File Creator

NEC EXPRESSBUILDER

Step 1 Load parameters 2 Select OS 3 Enter RAID settings 4 Specify medium / partition 5 Enter basic parameters 6 Enter network protocol

Specify the installing medium and the Windows system partition.  
 \*\*\* Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.

Medium selection

Windows family/edition : Windows Server 2008 R2 Standard(Full Installation)

Language : English

Install the Service Pack ☐

Keyboard layout : Default

Time zone : (GMT-08:00) Pacific Time (US & Canada)

Windows system drive settings

☐ Use existing partitions (only the 1st partition is formatted and its data is erased)

☒ Create a new partition (all of the data in the disk is erased)

☐ Use disk space as large as possible

☒ Specify the size of the system partition : 33000 (MB)  
 (13,480MB - 2,097,144MB) \* 1GB=1,024MB

Back Next Top Default

[Windows Server 2008]

Parameter File Creator

NEC EXPRESSBUILDER

Step 1 Load parameters 2 Select OS 3 Enter RAID settings 4 Specify medium / partition 5 Enter basic parameters 6 Enter network protocol

Specify the installing medium and the Windows system partition.  
 \*\*\* Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.

Medium selection

Windows family/edition : Windows Server 2008 Standard(Full Installation)

Language : English

Install the Service Pack ☐

Keyboard layout : Default

Time zone : (GMT-08:00) Pacific Time (US & Canada)

Windows system drive settings

☐ Use existing partitions (only the 1st partition is formatted and its data is erased)

☒ Create a new partition (all of the data in the disk is erased)

☐ Use disk space as large as possible

☒ Specify the size of the system partition : 40960 (MB)  
 (8,180MB - 2,097,144MB) \* 1GB=1,024MB

Back Next Top Default

[Windows Server 2003]

Parameter File Creator

**NEC EXPRESSBUILDER**

**Step** 1 Load parameters 2 Select OS 3 Enter RAID settings 4 **Specify medium / partition** 5 Enter basic parameters 6 Enter network protocols

Specify the installing medium and the Windows system partition.  
\*\*\* Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.

Medium selection

Windows family/edition: Windows Server 2003 Standard Edition

Language: English

☐ Install the Service Pack

Keyboard layout: Default

Time zone: (GMT-08:00) Pacific Time (US and Canada); Tijuana

Windows system drive settings

☐ Use existing partitions (only the 1st partition is formatted and its data is erased)

☒ Create a new partition (all of the data in the disk is erased)

☐ Use disk space as large as possible

☒ Specify the size of the system partition: 12288 (MB)  
( 5,092MB - 2,097,144MB ) \*1GB=1,024MB

Back Next Top Default

**IMPORTANT:**

- If you install Windows Server 2003 R2 and Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected when you operate Windows Server 2008 R2, NEC EXPRESSBUILDER installs the Operating System to the Windows partition (The Boot partition (if it exists) and the Windows partition are deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

Boot Partition Deleted	Windows Partition Deleted	User Data Partition Retained
------------------------------	---------------------------------	------------------------------------

- If "Use existing partitions" is selected when you operate Windows Server 2008 or Windows Server 2003, NEC EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained
-------------------------------	---------------------------------	--------------------------------

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".
-

9. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed.

Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008 R2/Windows Server 2008]

[Windows Server 2003]

---

**IMPORTANT:** Computer name and User name are required parameters.

---



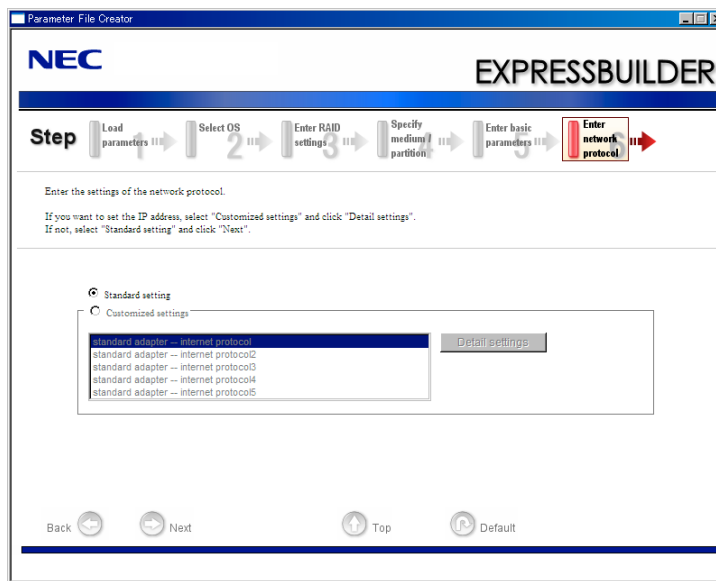
---

**NOTE:** Even if you do not input value into "Administrator password", "●●●●●" is displayed.

---

**10.** Enter the setting of the network protocol.

[Enter network protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].




---

**NOTE:** The order of entry in custom setting may differ from the numbering of LAN port.

---

**11.** Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

The screenshot shows the 'Parameter File Creator' window for NEC EXPRESSBUILDER. The title bar reads 'Parameter File Creator'. The window has a blue header with the NEC logo and 'EXPRESSBUILDER'. Below the header is a progress bar with five steps: 'Enter domain account' (Step 7, highlighted), 'Select Windows components' (Step 8), 'Select applications' (Step 9), and 'Save parameters' (Step 10). Below the progress bar, there is instructional text: 'If you want to join in a domain, enter the account name/password of the domain. If not, select "Join in a workgroup" and click "Next".' The main area contains two radio button options: 'Join in a workgroup' (selected) and 'Join in a domain'. Under 'Join in a workgroup', there is a text field for 'Workgroup name' containing 'WORKGROUP'. Under 'Join in a domain', there are text fields for 'Domain name', 'Account name', 'Password', and 'Confirm password'. At the bottom, there are four buttons: 'Back', 'Next', 'Top', and 'Default'.

**12.** Select the installing components.

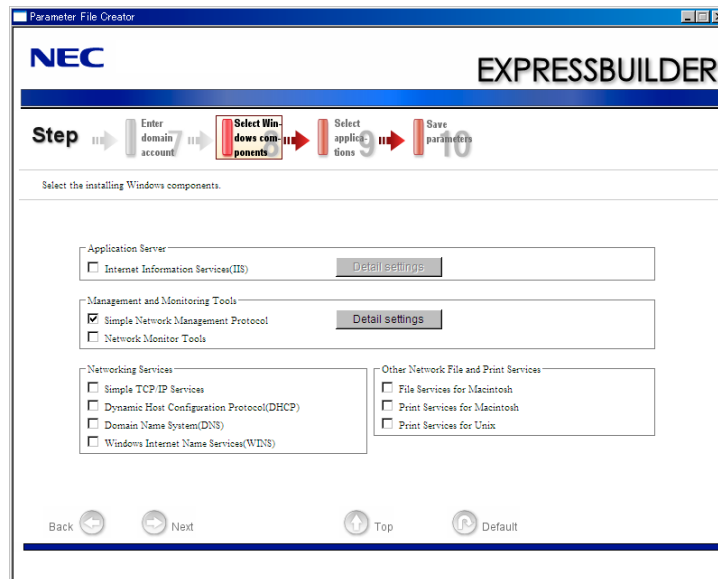
[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next]

[Windows Server 2008 R2/Windows Server 2008]

The screenshot shows the 'Parameter File Creator' window for NEC EXPRESSBUILDER. The title bar reads 'Parameter File Creator'. The window has a blue header with the NEC logo and 'EXPRESSBUILDER'. Below the header is a progress bar with five steps: 'Enter domain account' (Step 7), 'Select Windows components' (Step 8, highlighted), 'Select applications' (Step 9), and 'Save parameters' (Step 10). Below the progress bar, there is instructional text: 'Enabling the "Windows functionality" and Server Roles and please.' The main area contains two sections: 'Server Roles' and 'Windows Features'. Under 'Server Roles', there are five checkboxes: 'Web Server(IIS)', 'DHCP Server', 'DNS Server', 'File Services', and 'Print Services'. Under 'Windows Features', there are three checkboxes: 'SNMP Services' (checked), 'Simple TCP/IP Services', and 'WINS Server'. There is a 'Detail settings' button next to the 'SNMP Services' checkbox. At the bottom, there are four buttons: 'Back', 'Next', 'Top', and 'Default'.



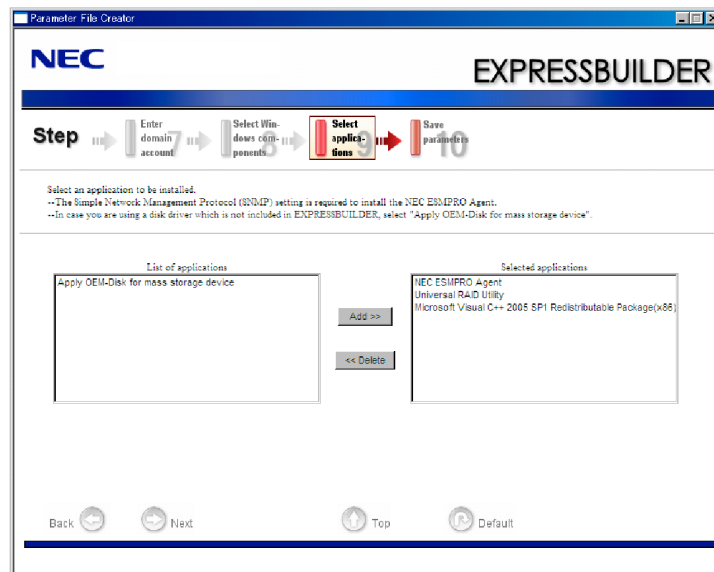
[Windows Server 2003]



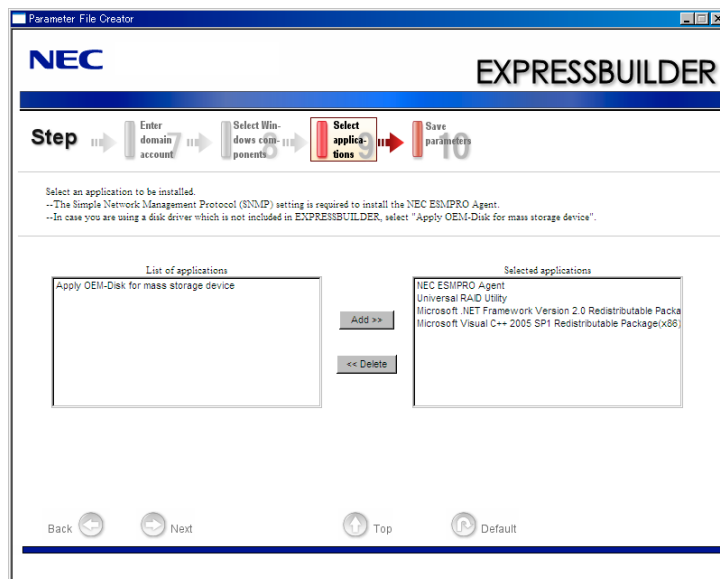
**13. Select the installing applications.**

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008 R2/Windows Server 2008]

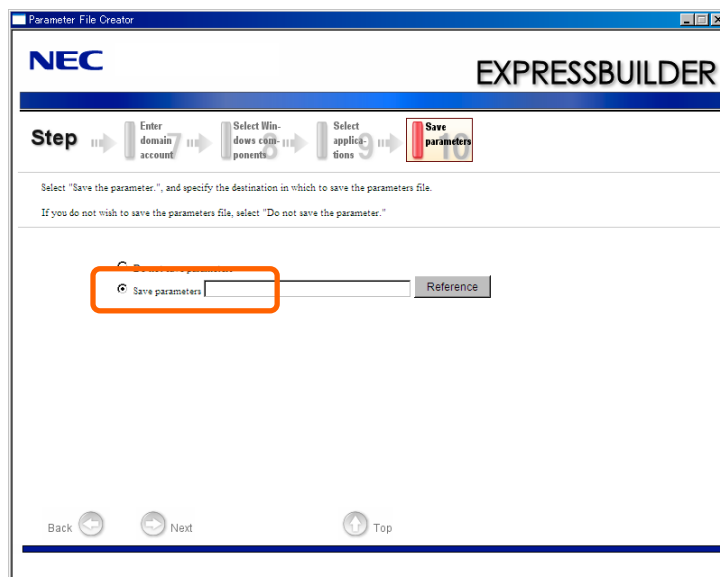


[Windows Server 2003]



#### 14. Save the parameters.

[Save parameters] steps are displayed.

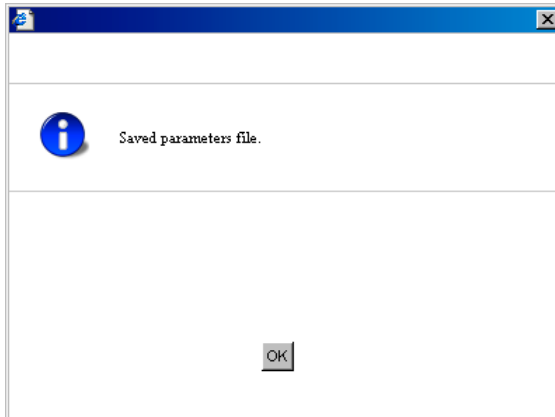


If you want to save the parameters, set the free formatted floppy disk.

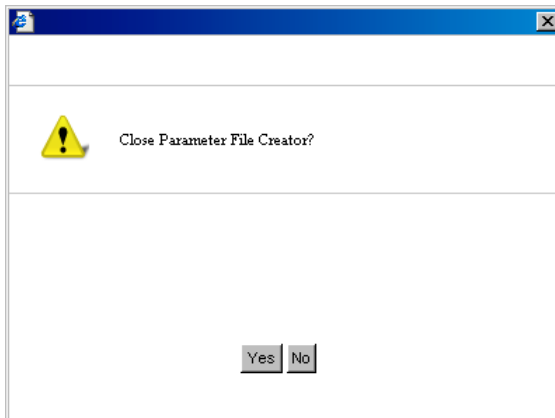
Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

**15.** Saved to a floppy disk.




Now [the floppy disk containing the parameters file] has been created.



Click [Yes] to exit Parameter File Creator.

---

**NOTES:**

- If you modify existing information file (parameter file), click "Load Parameters" at [Load Parameters] screen. Refer to help to modify information file.
  - If you cancel operation on the way, click  at the upper-right corner of the screen.
-

## NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, and check server failure rates.

The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

---

### Functions and Features

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

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

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

## NEC ESMPRO Agent Extension

The NEC ESMPRO Agent Extension is software for the remote management of this server.

See the online documents for details on the functions and installation of the NEC ESMPRO Agent Extension.

## NEC ExpressUpdate Agent

The NEC ExpressUpdate Agent enables you to control the version of the firmware and software that are installed on the server.

Using the NEC ESMPRO Manager, you can download update packages automatically and install them simply without terminating the system.

Refer to "Installation Manual" in the NEC EXPRESSBUILDER for more information about an installation and functions of the NEC ExpressUpdate Agent.

---

**IMPORTANT:** To get the information of the update package which does not support NEC ExpressUpdate, please refer to the web site below.

<http://www.nec.com/global/prod/express/index.html>

---

## Universal RAID Utility

Universal RAID Utility is an application to manage or monitor the following RAID Controllers.

- N8103-129 RAID Controller (256 MB, RAID0/1)
- N8103-130 RAID Controller (256 MB, RAID0/1/5/6)
- N8103-134 RAID Controller (512 MB, RAID0/1/5/6)
- N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

Before attempting to operate Universal RAID Utility, read the "Universal RAID Utility Ver 2.3 User's Guide" contained in NEC EXPRESSBUILDER DVD. The manual explains the installation procedure and notes on operating Universal RAID Utility.

---

## Setup with Express Setup

You can install Universal RAID Utility with Express Setup contained in NEC EXPRESSBUILDER DVD. When you start the Express Setup, a dialog to specify an application appears. Select [Universal RAID Utility] on the dialog.

## Manual Setup

You can start the setup program of Universal RAID Utility from [Autorun Menu].

Click [Setup Software] → [Universal RAID Utility] in [Autorun Menu].

You need to install the following software.

- Microsoft .NET Framework 2.0 or later
- The Runtime component of the Microsoft Visual C++ 2005 SP1

You can install these software from [Autorun Menu] too.

Click [Setup Windows] → [Install the .NET Framework Ver 2.0 Redistributable Package (x86)] (If CPU architecture is x64, [Install the .NET Framework Ver2.0 Redistributable Package (x64)]) in [Autorun Menu] for the setup of Microsoft.NET Framework 2.0.

Click [Setup Windows] → [Install the Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)] (Use the x86 package whatever the CPU architecture may be.) for the setup of the Runtime component of the Microsoft Visual C++ 2005 SP1.

- Microsoft .NET Framework

To use the RAID Viewer and Log Viewer, Microsoft .NET Framework Version 2.0 or higher is required.

Windows Server 2008 and Windows Server 2008 R2, Windows Vista, Windows 7 include .NET Framework Version 2.0 or higher. Therefore, you do not need to install .NET Framework in case of using them.

- Runtime component of Microsoft Visual C++ 2005 SP1 library

To use the RAID Viewer, the runtime component of the Microsoft Visual C++ 2005 SP1 library is required.

Windows Server 2008 and Windows Server 2008 R2, Windows Vista SP1 or later, Windows 7 include the runtime component of the Microsoft Visual C++ 2005 SP1 library. Therefore, you do not need to install the runtime component of the Microsoft Visual C++ 2005 SP1 library in case of using them as operating system.

---

## **Management of RAID System using NEC ESMPRO Manager**

Using NEC ESMPRO Manager (Ver. 5.2 or later) allows you to view, monitor, and operate the RAID System managed by the Universal RAID Utility. This feature is available on Windows system only.

See the instruction of NEC ESMPRO Manager about system requirements and how to use.

---

## **Creating Logical Drive of RAID 6**

Please use WebBIOS when you create the Logical Drive of RAID 6 by using three Physical Devices. Universal RAID Utility cannot create the Logical Drive of RAID 6 by using three Physical Devices.



## NEC PRODUCT INFO COLLECTION UTILITY

The NEC Product Info Collection Utility is used to collect various system configuration and log information for maintenance or troubleshooting purpose of the server.

This utility can be installed from NEC EXPRESSBUILDER DVD.

---

**NOTE:** Supported Operating Systems of this utility is as follows.

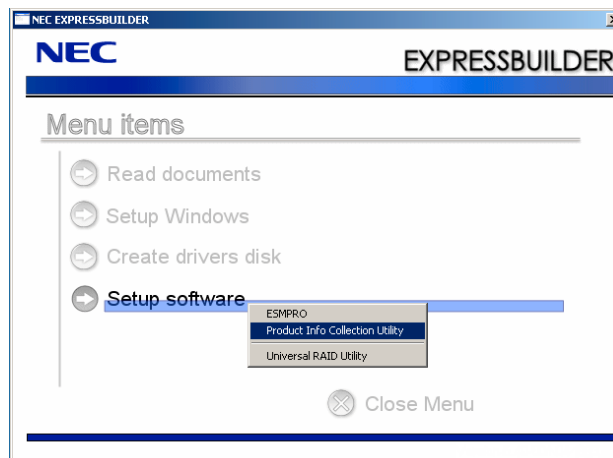
- Windows Server 2003
  - Windows Server 2003 x64 Editions
  - Windows Server 2008
- 

---

### Installation

You can install this utility according to the following procedure.

1. Insert NEC EXPRESSBUILDER DVD in the optical disk drive after OS starts.
2. Click from the menu displayed with Auto-run in order of [Setup software] → [Product Info Collection Utility].
3. The installation of this utility is started. Thereafter, install it according to the message in the dialog box. (In default, it is installed in "System drive: \ezclet" folder.)



---

### IMPORTANT:

- Please log-in the system in account with the administrator authority.
  - 2.5GB or more free space is required for the installation drive.
-

---

## Using Utility

Execute \stdclct\collect.exe in the installation folder of this utility.

The log folder is made in the above-mentioned folder, and various information on this device is stored in the data compressed file (zip form).

---

## Uninstallation

### Except for Server Core

Choose [Add or Remove Programs] - [Product Info Collection Utility (Vx.x.x)] from the control panel. Thereafter, uninstall it according to the message in the dialog box.

### For Server Core

Enter the following command from the command prompt.

Wmic product where name="Product Info Collection Utility" call uninstall

# Chapter 7

---

## Maintenance

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

### MAKING BACKUP COPIES



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

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

Also make a backup copy of the RAID System configuration data if your system is in the RAID System configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, see "NEC EXPRESSBUILDER" in Chapter 6.

## CLEANING

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

 <b>WARNING</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"><li>■ Do not disassemble, repair, or alter the server.</li><li>■ Do not look into the optical disk drive.</li><li>■ Disconnect the power plug before cleaning the server.</li></ul>

---

### Cleaning the Server

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

---

#### IMPORTANT:

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

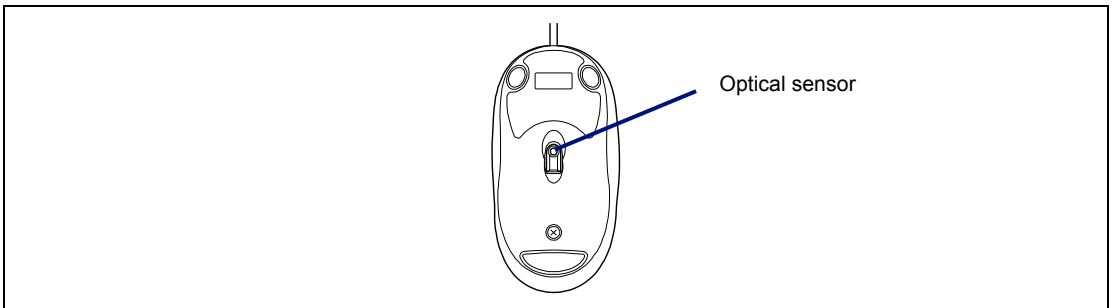
1. Make sure that the server is off-powered (the POWER lamp goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.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

---

## Cleaning the Keyboard/Mouse

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

The mouse does not work normally if its optical sensor is stained. Wipe the optical sensor with a dry cloth.



---

## Cleaning CD/DVD-ROM

A dusty CD/DVD-ROM or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and CD/DVD-ROM regularly:

1. Make sure that the server is powered (the POWER lamp is lit).
2. Press the Eject button on the front of the optical disk drive.  
The tray comes out.
3. Hold the CD/DVD-ROM lightly and take it out from the tray.

---

**NOTE:** Do not touch the signal side of the CD/DVD-ROM with your hand.

---

4. Wipe the tray with a dry soft cloth.

---

**IMPORTANT:** Do not wipe the lens of the optical disk drive. Doing so may damage the lens and may cause a malfunction of the drive.

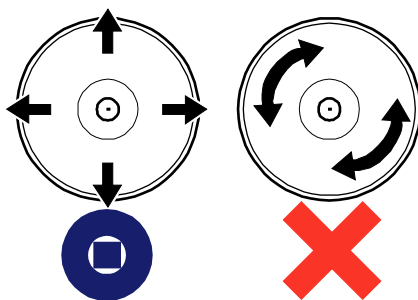
---

5. Gently push on the tray front to close the tray.
6. Wipe the signal side of the CD/DVD-ROM with a dry soft cloth.

---

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

---



## MAINTENANCE TOOLS

The Maintenance Tools is a tool of this product prevention to maintain, and to analyze the trouble.

---

**IMPORTANT:** This guide contains procedures to use a floppy disk, however, your server is not equipped with factory-installed floppy disk drive and optical disk drive. Use the optional Flash FDD or USB FDD.

---

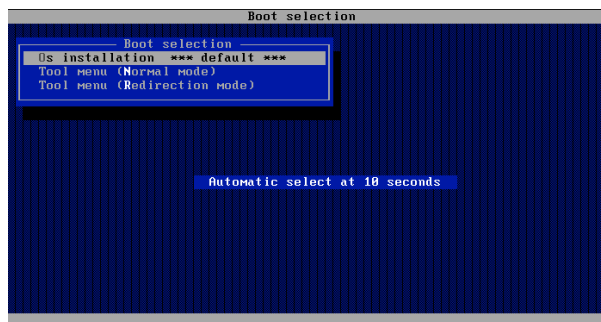
---

### Starting Maintenance Tools

The Maintenance Tools is started according to the following procedure.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER DVD supplied with your server into the optical disk drive of your server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot the server from the NEC EXPRESSBUILDER.  
(You may also turn off and then on again to reboot the server.)

System boots up displaying Boot selection menu.

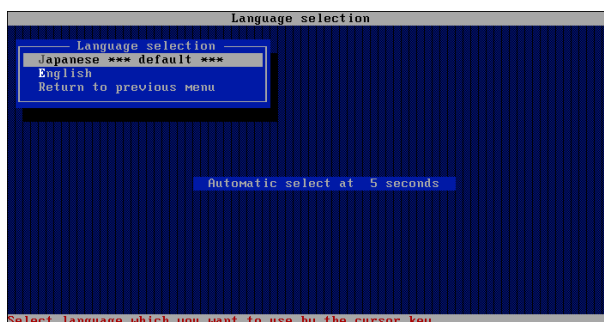


---

**IMPORTANT:** An initial selection of the menu is "Os installation".  
"Os installation" starts by the automatic after the Boot selection menu is displayed.

---

4. When a local console is used, "Tool menu (Normal mode)" is selected.  
Moreover, "Tool menu (Redirection mode)" is selected when using it with remote console.  
The Language selection menu is displayed.



---

**IMPORTANT:** An initial selection of the menu is "Japanese".  
"Japanese" starts by the automatic operation when the operation is not done for five seconds after the Language selection menu is displayed.

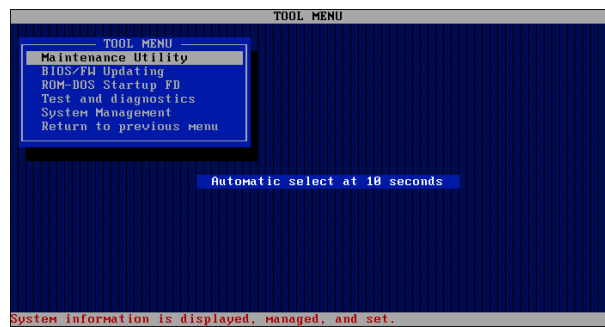
---

5. Select "English".  
The tool menu is displayed.



***When you use a local console***





***When you use a remote console***

6. Each tool is selected, and it starts.

---

## Function of Maintenance Tools

The following functions can be executed in the Maintenance Tools.

- Maintenance Utility

The Off-line Maintenance Utility is started in Maintenance Utility. The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

---

### IMPORTANT:

- The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER DVD contains a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
  - See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.
- 

The Off-line Maintenance Utility provides the following features.

- IPMI Information Viewer

Provides the functions to view the system event log (SEL), sensor data record (SDR), and field replaceable unit (FRU) and to make a backup copy of them.

Using this feature, you can find system errors and events to determine a maintenance part.

- BIOS Setup Viewer

Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

- System Information Viewer

Provides the functions to view information on the processor and the BIOS and export it to a text file.

- System Information Management

Provides the function to make a back-up copy of your data.

Without the backup data, the system-specific information and/or configuration may not be restored.

Only the authorized personnel is allowed to restore the backup data.

- System Management

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

- BIOS/FW Updating

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

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

---

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

---

- ROM-DOS startup FD

Creates a support disk for starting the ROM-DOS system.

- Test and diagnostics

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

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

- System Management

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

This menu's function is the same as the "System Management" of the "Maintenance Utility".

---

## Maintenance Tools with Remote Console

This subsection describes the procedures for using Maintenance Tools with remote console.

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

---

### IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
  - Be sure to select [Tool menu (Redirection mode)] in [Boot selection] menu from the remote console.
- 

### Starting

The following two methods are available to start the server.

- Running Maintenance Tools from the management PC via LAN
- Running Maintenance Tools from the management PC via direct connection (COM B)

For the procedure for starting Maintenance Tools with Remote Console, refer to the online document of NEC ESMPRO Manager.

---

### IMPORTANT:

- Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the DVD-ROM drive is not the first device to launch the system.
  - Use the management LAN port for LAN connection.
  - Use the serial port B for direct connection. If you select [Server] - [BMC LAN Configuration] - [Shared BMC LAN] - [Enabled], the LAN port 1 can be used as a management LAN port.
  - To use this feature, you need to create a configuration file (3.5-inch floppy disk) that includes communication method between the server and the management PC, and various setup parameters. Use NEC ESMPRO BMC Configuration or NEC ESMPRO Agent Extension or run "System Management" menu from NEC EXPRESSBUILDER to create a configuration file. Save the configuration file into the root directory of the floppy disk as the following file name.  
– File name: CSL\_LESS.cfg
  - If you exit the BIOS SETUP by unusual way (e.g., forced power-off or reset), the redirection process may fail. In such a case, setup again by using the configuration file.
  - On Windows Server 2008, you need to open Device Manager, disable the COM port, and restart the system to use the direct connection through COM port.
-

---

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

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

## SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tool menu] - [Test and diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

---

### Test Items

The following items are tested in system diagnostics.

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

---

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

---

---

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

---

---

### Startup and Exit of System Diagnostics

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

---

**IMPORTANT:** Two methods of LAN and the serial port are mentioned in "MAINTENANCE TOOLS" in the way of communicating in remote console.

Use the serial port to execute System Diagnostics with remote console.  
The LAN connection is not for System Diagnostics.

---

Procedures to start the diagnostics program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER DVD to start the system.
5. Select [Tool menu (Normal mode)] when local console of the server is used for, or select [Tool menu (Redirection mode)] when remote console is used for.

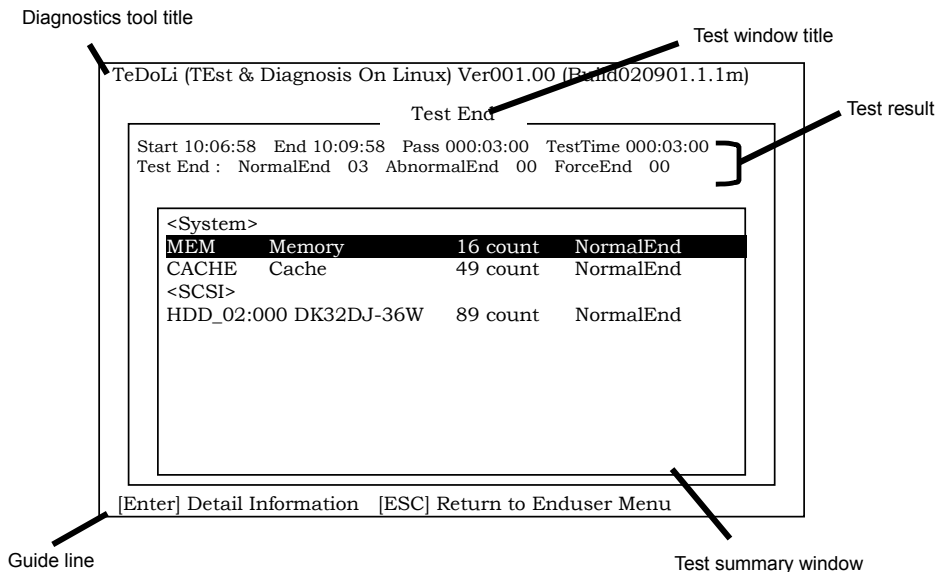
---

**NOTE:** If the system displays the [Language selection] menu, select [English].

---

## 6. Select [Test and diagnostics].

Select [End-User Mode] and the system diagnostics starts. The diagnostics will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:



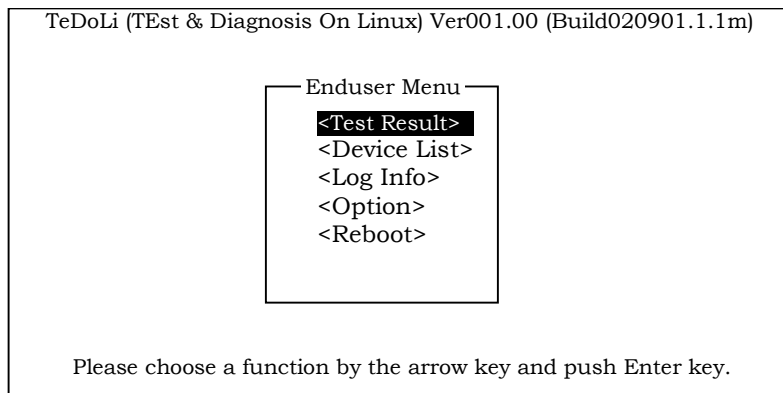
- **Diagnostics tool title**  
Shows the name and version of the diagnostic tool.
- **Test window title**  
Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.
- **Test result**  
Shows the start, end, and elapsed time and completion status of the diagnostics.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

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

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

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

The [Enduser Menu] below is displayed.



- <Test Result>** Shows the diagnostics completion screen of the above diagnostics.
- <Device List>** Shows a list of connected devices.
- <Log Info>** Shows the log information of the diagnostics. Log information can be saved.  
To save it, connect a FAT formatted removable media, and select **<Save(F)>**.
- <Option>** Optional features can be used from this menu.
- <Reboot>** Reboots the system.

8. Select **<Reboot>** in the [Enduser Menu] above.

The server restarts and the system is started from the NEC EXPRESSBUILDER.



9. Exit the NEC EXPRESSBUILDER, and remove the DVD from the optical disk drive.
10. Power off the server and unplug the power cord from the receptacle.
11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.
12. Plug in the power cord.



This completes the system diagnostics.



## RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

 <b>WARNING</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"><li>■ Do not disassemble, repair, or alter the server.</li><li>■ Do not remove the lithium battery.</li><li>■ Disconnect the power plug before working with the server.</li></ul>

 <b>CAUTION</b>	
	<p>Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.</p> <ul style="list-style-type: none"><li>■ Never attempt to lift the server only by two or less persons.</li><li>■ Do not install the server in any place other than specified.</li><li>■ Do not pinch your finger with mechanical component.</li><li>■ Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.</li><li>■ Avoid installation in extreme temperature conditions.</li></ul>

---

**IMPORTANT:**

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the service representative.
  - Make sure to make a backup copy of your valuable data in the hard disk drive, if any.
  - Make sure not to apply a shock to hard disk drives to relocated the server if the contains any.
  - It is recommended that the server and the internal devices should be stored in a place where the room temperature can be maintained. It is important for the server or internal devices to work normally after storage. Store the device in the place where temperature ranges between -10 to 55°C and humidity ranges between 20 to 80%, without dew condensation.
  - If you use the server after transported or relocated, check the system timer and adjust it if necessary. If the system timer advances or delays remarkably with the passage of time, contact your service representative to repair it.  
The server or internal option device may be dewed if it is brought to a warm place from a cold place suddenly. Using a server or an internal device with dew attached may cause malfunction or failure. Make sure to adapt them to the operating environment before using them.
- 

1. Take a floppy disk and a CD/DVD-ROM out of the server, if any.
2. Power off the server (the POWER lamp goes off).
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Remove the server from the rack cabinet.  
See Chapter 3 for details.
6. Hold the server by its bottom with at least three persons to carry the server.

---

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

---

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

# Chapter 8

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## Troubleshooting

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

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**NOTE:** For provision against an unexpected failure, it is recommended to install NEC ESMPRO to your computer.

---

## SYSTEM VIEWERS

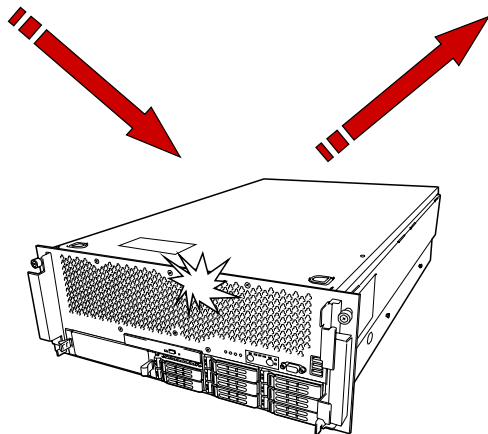
Monitor the occurrence of fault by NEC ESMPRO during the system operation.

Check that the status color of monitoring server is normal, and no warning/abnormal alert is reported.

[Example]

The image shows two screenshots of NEC ESMPRO Manager. The left screenshot displays the 'Server Status' page for 'Server1', showing various system information such as Model Name (Express7000), Serial Number (700120), and OS Version (Windows Server 2003 R2). The right screenshot shows the 'AlertViewer' window, displaying a list of alerts. The table below represents the data shown in the AlertViewer window.

Index	Summary	Real/Level	Type	Manager	Component	Address	Received	Source
1	No Response from the server	S-0	Server Recovery	esp_MANAGER	Server	102.100.1.102	05/20/2012 10:40:17	ESMDEV101
2	CPU Load Warning	S-2	CPU	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
3	CPU Load Error	S-3	CPU	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
4	Virtual Memory Low Warning Received	S-2	VirtualMem	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
5	Temp. Upper Limit	S-2	Temperature	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
6	Local Disk Space Warning Received	S-2	LocalDisk	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
7	CPU Load Received	S-2	CPU	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
8	Temp. Upper Warning	S-2	Temperature	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
9	Fan List Warning	S-2	Fan	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
10	Temp. Upper Received	S-2	Temperature	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
11	Fan List Error Received	S-3	Fan	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
12	Local Disk Error	S-3	LocalDisk	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
13	Power Unit Received	S-2	Power	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
14	Local Disk Space Error Received	S-3	LocalDisk	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
15	Virtual Memory Error	S-3	VirtualMem	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
16	Temp. Upper Warning	S-2	Temperature	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
17	CPU Load Warning	S-2	CPU	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
18	Power Unit Warning	S-2	Power	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
19	Fan List Warning	S-2	Fan	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
20	Local Disk Space Error Received	S-3	LocalDisk	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
21	Fan List Error Received	S-3	Fan	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
22	CPU Load Error Received	S-3	CPU	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101
23	Local Disk Space Warning Received	S-2	LocalDisk	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
24	Fan List Warning	S-2	Fan	esp_MANAGER	Server	102.100.1.102	05/20/2012 15:40:20	ESMDEV101
25	CPU Load Warning	S-2	CPU	esp_MANAGER	Server	102.100.1.103	05/20/2012 15:40:20	ESMDEV101



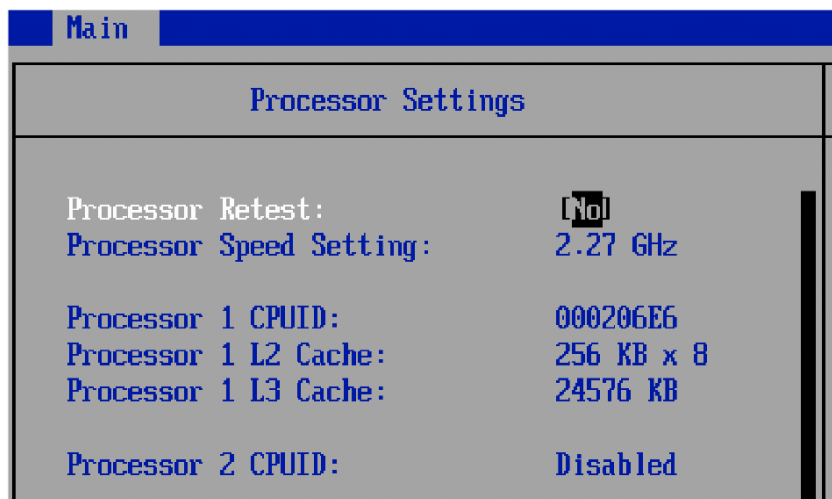
## PROCESSOR DEGRADATION

The degradation feature isolates a failed processor to assure continuous operation of the server when the processor error is detected by NEC EXPRESSSCOPE Engine 2 (BMC) and POST (system BIOS). The degradation is performed for the processor socket (including memory backboard).

### Checking the Degraded Processor

The degraded processor is indicated as follows:

- "Disabled" is shown in [Main] - [Processor Settings] - [Processor CPU ID] on BIOS SETUP.



- "Invalid" is shown in [Information] - [System Information] - [CPU#] on Web browser of EXPRESSSCOPE Engine 2.
- "CPU is not running" is shown in [Information of server state/constitution] of NEC ESMPRO Manager Ver.5.
- POST displays an error message "0B5x: Processor #y with error taken off line". See "POST Error" described later for more information. You can view the degraded processor number by viewing the POST error code logged in IPMI System Event Log.

## Precautions

- The failed processor may not be degraded depending on the hardware configuration.
- The degradation is performed for the processor socket. Accordingly, the system memory (memory backboard and DIMMs on the memory backboard) connected with the degraded processor is made unavailable. The DIMMs are regarded as "uninstalled".

The memory backboard is connected to the processor as shown in the table below.

Processor number	Memory backboard number
1	1
	2
2	3
	4
3	5
	6
4	7
	8

- The system power is turned off then on automatically due to change in processor status when:
  - degrading the processor.
  - changing parameter for [Processor Retest] to "Yes" and performing [Exit Save Changes] in BIOS SETUP while the processor is being degraded.

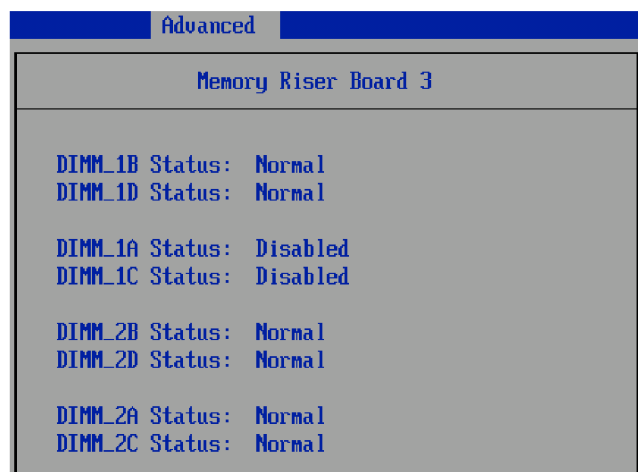
## MEMORY DEGRADATION

The degradation feature isolates a failed system memory DIMM to assure continuous operation of the server when the DIMM error is detected by NEC EXPRESSSCOPE Engine 2 (BMC) and POST (system BIOS).

### Checking the Degraded System Memory DIMM

The degraded system memory DIMM (including memory backboard number) is indicated as follows:

- "Disabled" is shown in [Advanced] - [Memory Configuration] - [Memory Riser Board x] - [DIMM\_yy Status] on BIOS SETUP.



- "Invalid" is shown in [Information] - [System Information] - [DIMM#] on Web browser of EXPRESSSCOPE Engine 2.
- The memory banks are shown as below in [Information of server state/constitution] - [Hardware] of NEC ESMPRO Manager Ver.5.
- POST displays an error message "87xx: Memory Riser x – DIMM yy and zz have been disabled". See "POST Error" described later for more information. You can view the degraded system memory DIMM number by viewing the POST error code logged in IPMI System Event Log.

- The following table shows relationship between the tree view under the [Information of server state/constitution] - [Hardware] of NEC ESMPro Manager Ver.5 and the memory backboard/DIMM numbers.

Memory bank	Memory backboard number and DIMM number
Memory bank [1]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 1
Memory bank [2]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 1
Memory bank [3]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 1
Memory bank [4]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 1
Memory bank [5]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 2
Memory bank [6]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 2
Memory bank [7]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 2
Memory bank [8]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 2
Memory bank [9]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 3
Memory bank [10]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 3
Memory bank [11]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 3
Memory bank [12]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 3
Memory bank [13]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 4
Memory bank [14]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 4
Memory bank [15]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 4
Memory bank [16]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 4
Memory bank [17]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 5
Memory bank [18]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 5
Memory bank [19]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 5
Memory bank [20]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 5
Memory bank [21]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 6
Memory bank [22]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 6
Memory bank [23]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 6
Memory bank [24]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 6
Memory bank [25]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 7
Memory bank [26]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 7
Memory bank [27]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 7
Memory bank [28]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 7
Memory bank [29]	A pair of DIMM 1A and DIMM 1C installed on memory backboard 8
Memory bank [30]	A pair of DIMM 1B and DIMM 1D installed on memory backboard 8
Memory bank [31]	A pair of DIMM 2A and DIMM 2C installed on memory backboard 8
Memory bank [32]	A pair of DIMM 2B and DIMM 2D installed on memory backboard 8



## MEMORY SPARING

The memory sparing (online spare memory) feature of the server supports the DIMM Rank Sparing.

## MEMORY MIRRORING

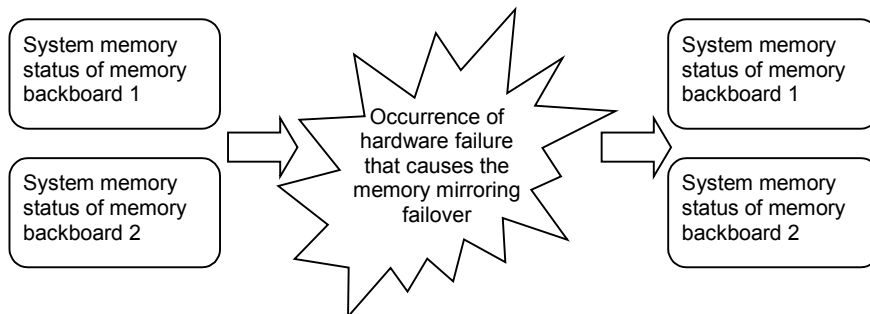
The following table shows relationship between memory backboard numbers and system memory statuses in memory mirroring mode.

Memory backboard number	Partner memory board number	System status before memory mirroring failover occurs
1	2	Running
2	1	Standby
3	4	Running
4	3	Standby
5	6	Running
6	5	Standby
7	8	Running
8	7	Standby

Status transition of memory mirroring failover is as shown below.

Example: The mirroring is configured between the memory backboards 1 and 2.

< When the hardware failure occurred on memory backboard 1 >



## MEMORY HOT-PLUG

The following table shows relationship between parameter setting on BIOS SETUP menu and available operations.

Setting on BIOS SETUP		Operation	
Memory RAS Feature	Hot-Add Memory Support	Hot Replace	Hot Add
Normal	Disabled	Unavailable	Unavailable
	Enabled		Available
Spare	Disabled		Unavailable
	Enabled		Available
Mirror	Disabled	Available	Unavailable
	Enabled		Available

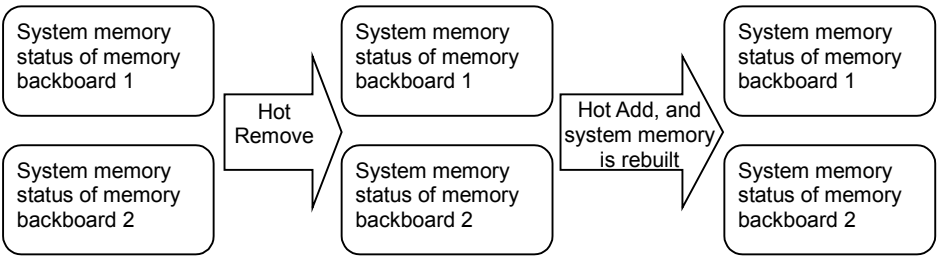
Operation of memory hot-plug feature depends on OS as shown below.

Operation	Depenence on OS
Hot Replace	Does not depend on OS type.
Hot Add	Can be performed only on the OS that supports Hot-Add Memory feature.

Status transition of hot replace operation is as shown below.

Example: The mirroring is configured between the memory backboards 1 and 2.

< When Hot Replace is performed on memory backboard 1 >



## Time required to complete Hot-Plug operation

Use the following formula to calculate the time to complete the memory hot-plug operation.

- Time required to complete Hot Replace operation  
40 to 60 minutes + Installed memory capacity (Unit = GB) \* 10 minutes
- Time to complete Hot Add operation  
40 to 60 minutes

[Example: Hot Replace]

The mirroring is configured between memory backboards 1 and 2 as follows:

- DIMMs installed on memory backboard 1: 2GB-DIMM \* 8  
(installed memory capacity = 16GB)
- DIMMs installed on memory backboard 2: 2GB-DIMM \* 8  
(installed memory capacity = 16GB)

To perform Hot Replace operation on memory backboard 1, the required time is calculated as follows:

$$40 + 16 * 10 = 200 \text{ minutes}$$

$$50 + 16 * 10 = 210 \text{ minutes}$$

$$60 + 16 * 10 = 220 \text{ minutes}$$

From the equation above, the time required to complete Hot Replace is between 200 and 220 minutes.

## Precautions

- The information in [Information] - [System Info] - [Memory] displayed on Web browser of NEC EXPRESSSCOPE Engine 2 is not refreshed when the POST is completed.
- Note the following while the hot-plug process is being performed:

Web browser of NEC EXPRESSSCOPE Engine 2

- The FRU information (Mx DIMM yy SPD) is not displayed in [Information] - [IPMI information] - [FRU]. Check the FRU information after the hot-plug process is completed.
- If you perform [Backup IPMI Information] in [Information] - [IPMI information], the FRU information of system memory DIMM (Mx DIMM yy SPD) is not stored in IPMI information file. Perform the backup operation after the hot-plug process is completed.
- The system memory temperature (Mx DIMM yy Temp) is not displayed in [Information] - [System Environment]. Check the temperature after the hot-plug process is completed.

NEC ESMPRO Manager Ver.5

- Check the sensor information shown on [Information of server state/constitution] - [System environment] after the hot-plug process is completed.
- If you try to obtain the system memory temperature (Mx DIMM yy Temp) or memory board voltage (MEMx PWGD FAIL) by executing [Remote Control] - [IPMI information] - [Sensor Information], a message "Failed to get sensor status" is displayed. Check the sensor information after the hot-plug process is completed.
- The details of FRU information of system memory DIMM (Mx DIMM yy SPD) is not displayed in [Remote Control] - [Information] - [IPMI Information] - [FRU]. Check the FRU information after the hot-plug process is completed.
- If you perform [Remote Control] - [IPMI Information] - [Save], the FRU information of system memory DIMM (Mx DIMM yy SPD) is not stored in IPMI information file. Perform the backup operation after the hot-plug process is completed.
- If you hot-add a memory backboard, the additionally installed memory size is not reflected on [Bank Size] and [Module Size] in [Information of server state/constitution] - [Hardware] - [Memory Bank] - [Memory Bank X] of NEC ESMPRO Manager Ver.5. (X denotes the memory bank number to which the DIMM is dynamically inserted or removed.) However, it is not the problem in operating the system.  
The actual memory size will be displayed after rebooting the system.

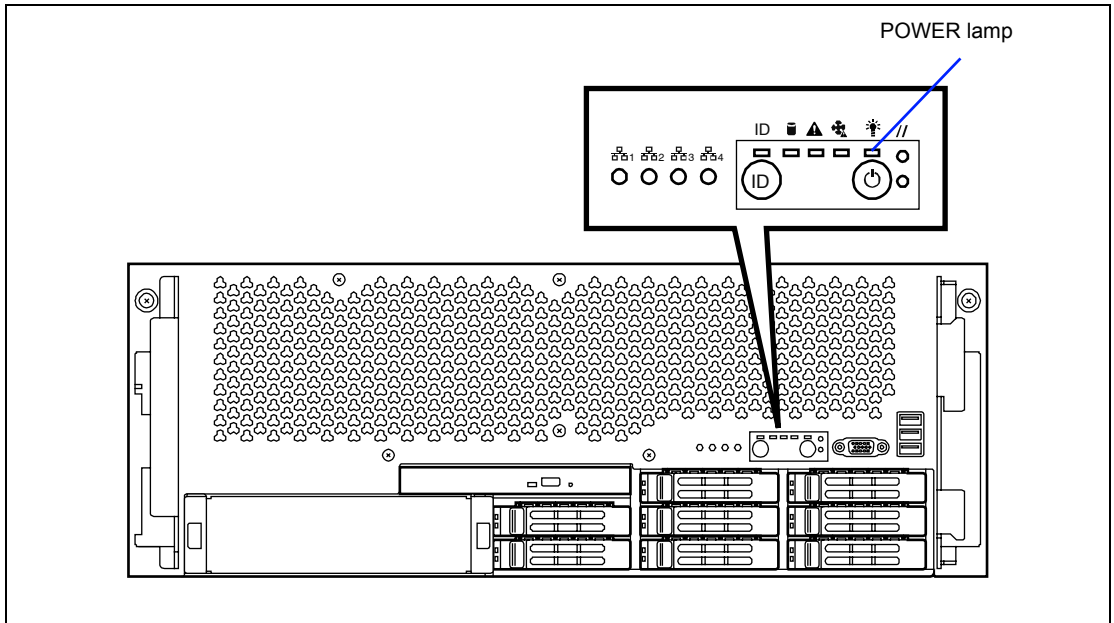
ESRAS utility

- The details of FRU information of system memory DIMM (Mx DIMM yy SPD) is not displayed in [Latest Information] - [FRU] - [List]. Check the FRU information after the hot-plug process is completed.
- If you perform [Backup the Current IPMI Information], the FRU information of system memory DIMM (Mx DIMM yy SPD) is not stored in IPMI information file. Perform the backup operation after the hot-plug process is completed.

## LAMPS

The following describes lamps on the server and their indications.

### POWER Lamp



The green POWER lamp lights to indicate normal operation while the server is powered. (If an error occurred immediately after the power-on, the lamp may not be lit.) When the server is off-powered, the POWER lamp stays unlit.

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

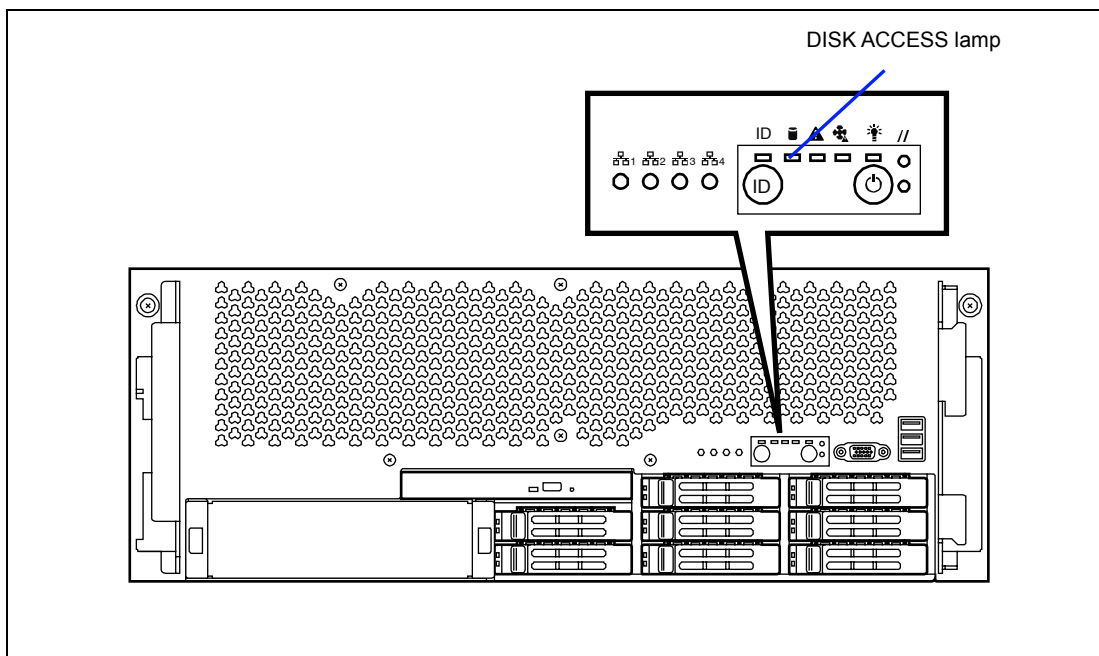
The power-saving mode is only available when the OS supports the power-saving feature. Some OS's allow you to set the server to automatically turn in the power-saving mode when no access is made to the server for a certain period of time or to select the power-saving mode with a command.

## DISK ACCESS Lamp

The DISK ACCESS lamp indicates the state of hard disk drives in the 2.5-inch disk bay.

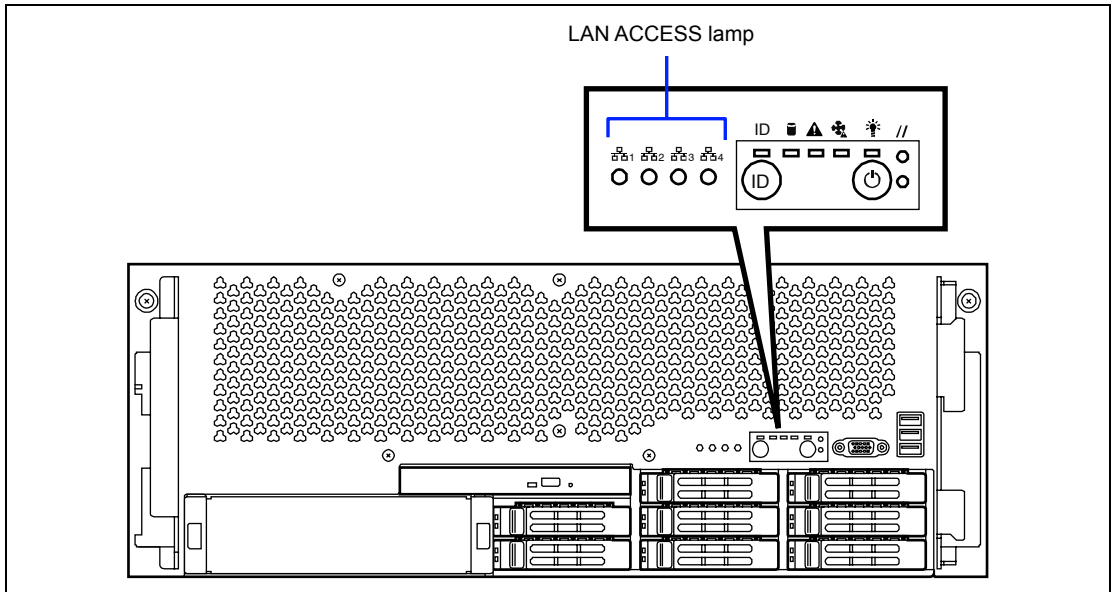
This lamp lights green every time any of hard disk drives is accessed.

To identify a failed hard disk drive, see the lamps located on each hard disk drive.



## LAN ACCESS Lamp

The LAN ACCESS lamp lights green when the server is connected to LAN. The lamp blinks while the server is accessed through the LAN (for packet transmission).

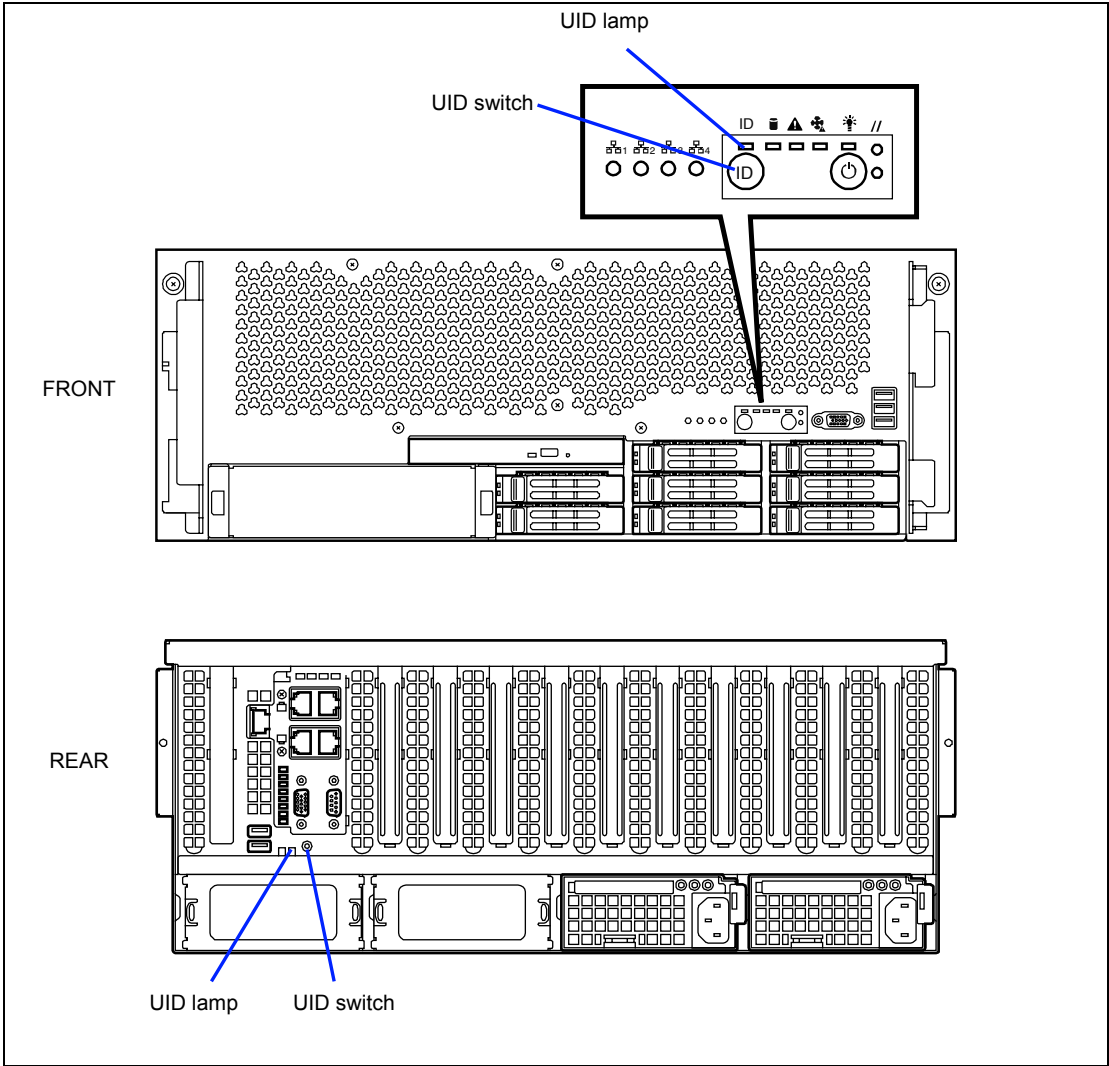


UID Lamp

The UID lamp lights blue when the UID switch located at the front and rear of the server is pressed. The blue UID lamp allows you to locate the server you are working on.

Pressing the UID switch again turns off the UID lamp.

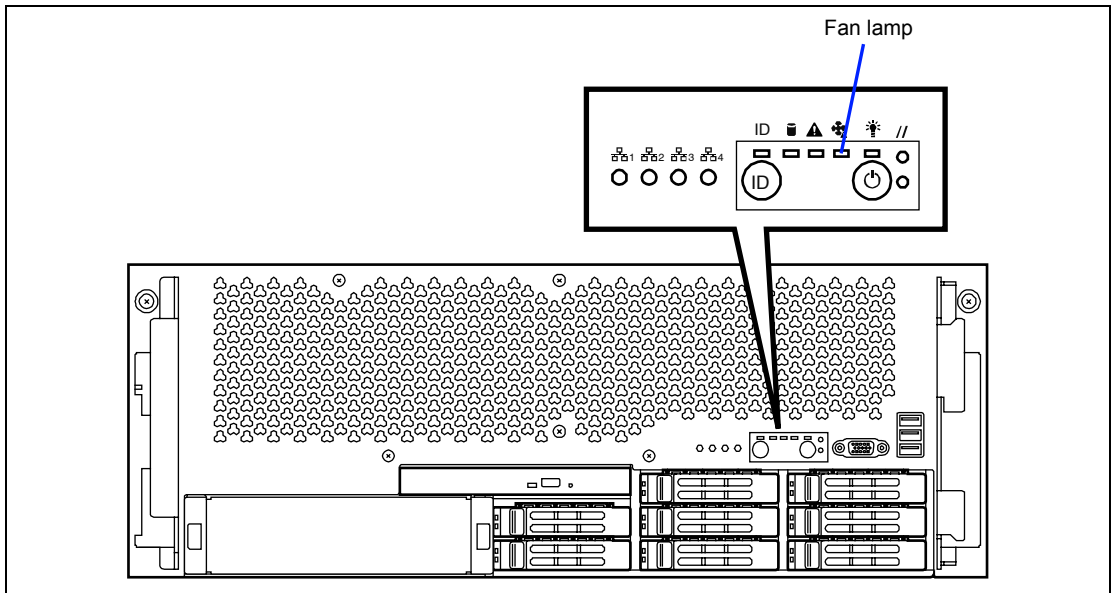
You can make the NEC ESMPRO Manager or the remote management feature of Web server to blink the UID lamp. When you finished working, turn off the UID lamp.





## Fan Lamp

If a cooling fan fails, the Fan lamp lights in amber.



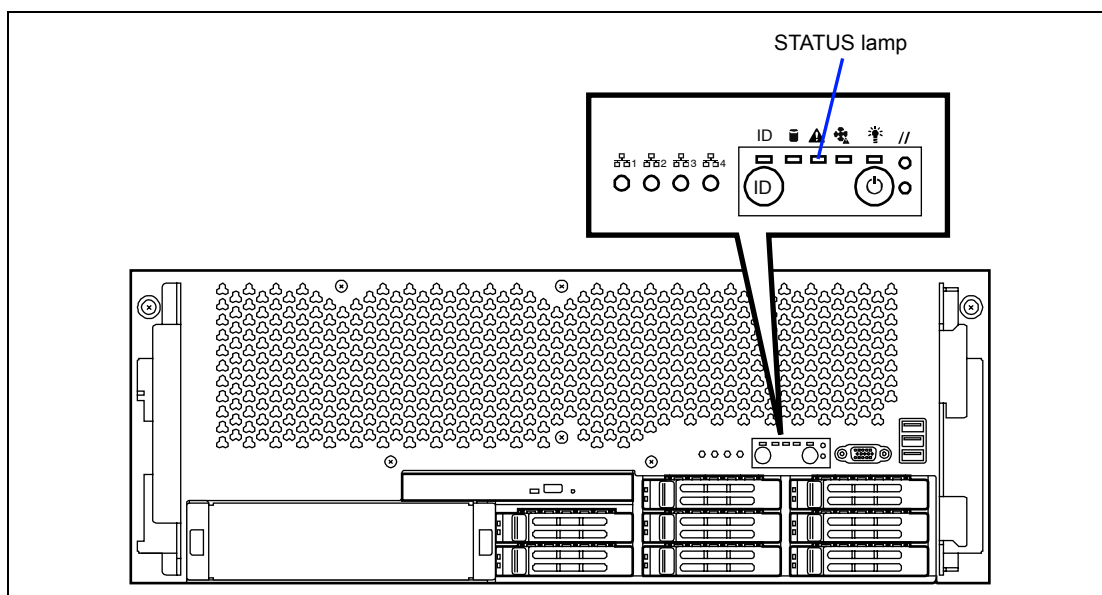
## STATUS Lamp

The STATUS lamp stays lit in green when the server is in successful operation. When the STATUS lamp is unlit, blinking in green or lit/blinking in amber, it indicates that the server has failed.

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

### NOTES:

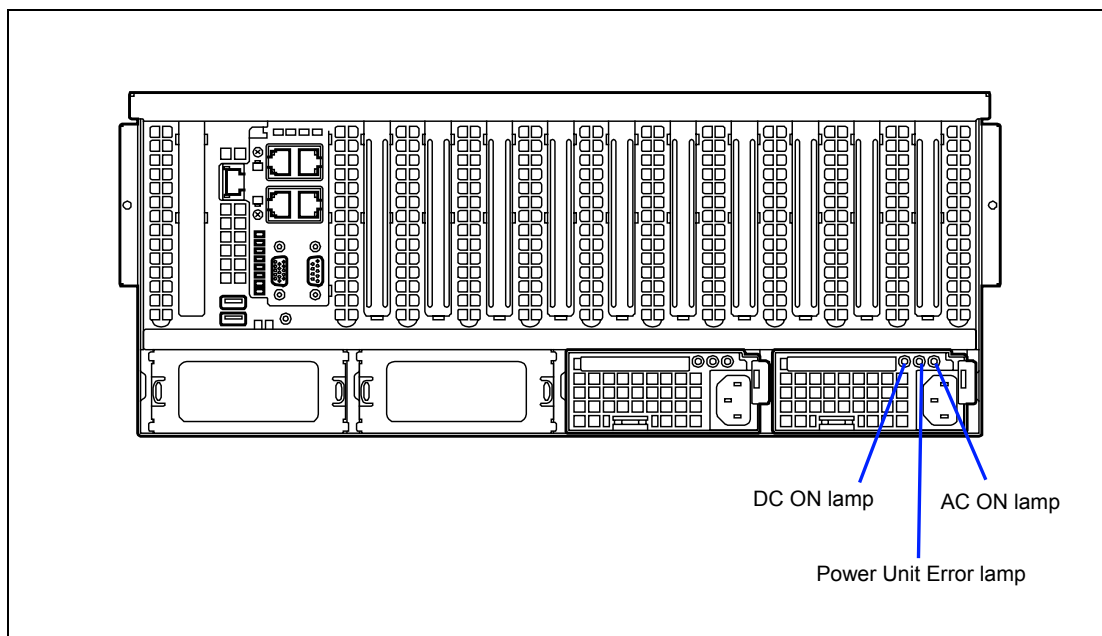
- You can use NEC ESMPRO or Off-line Maintenance Utility to confirm the cause of a failure by referring to the system event log (SEL).
- To cycle power to the server, shutdown the server from the OS and reboot it, if available. If the shutdown from the OS is unavailable, reset or execute the forced shutdown or disconnect and connect the power cord to reboot the server.



STATUS lamp indication	Description	Action
On (green)	The server is operating normally.	—
Flashing (green)	The server is operating with the memory in degraded state.	Identify the device in degraded state by using the BIOS SETUP, and replace the DIMM as soon as possible.
	The server is operating with the CPU error detected.	Identify the device in failed state by using the BIOS SETUP, and replace the CPU as soon as possible.
Off	The power is off.	Turn on the power.
	POST is in progress.	Wait for a while. The STATUS lamp turns green when POST is completed.
	A CPU error occurred.	Turn the power off and then turn it on. If the POST screen displays an error message, take notes of the message, and contact your service representative.
	A temperature alarm was detected on CPU.	
	A timeout occurred when the time set for the watchdog timer arrived.	
	An uncorrectable memory error was detected.	
	A PCI system error occurred.	
	A PCI parity error occurred.	
	A PCI bus error occurred.	
	A memory dump request is made.	Wait until the memory dump is completed.
On (amber)	A temperature alarm was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS lamp indication does not change when the fans are normal, contact your service representative.
	A voltage alarm was detected.	Contact your service representative.
Flashing (amber)	A fan alarm was detected.	Check if the fan units are firmly connected. If the STATUS lamp indication does not change when the fans are normal, contact your service representative.
	A temperature warning was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS lamp indication does not change when the fans are normal, contact your service representative.
	A voltage warning was detected	Contact your service representative.
	Failure on the hard disk drive was detected.	Replace the hard disk drive.

---

## Power Unit Lamp



### Power Unit Error Lamp

The Power Unit Error lamp lights amber when an error occurs on the power supply unit. Check the power unit error lamp to identify the failed power supply unit.

### AC ON Lamp

The AC ON lamp lights green while the AC power is supplied to the power supply unit.

### DC ON Lamp

The DC ON lamp lights green while the DC power is normally output.

## Fan Error Lamp

FAN Error lamp is adjacent to each fan module. If a fan fails, the lamp lights in amber. The failed fan may be hot-swapped.

### ⚠ CAUTION



Pay strict attention not to touch the rotating fan blades. Doing so may cause personal injury.

### IMPORTANT:

- Do not remove the fan that is normally operating. If a cooling fan fails, do not continue to operate the system, but ask your service representative for replacement as soon as you can.
- Cooling components must be hot-swapped within two minutes. This time period applies only to the time that the cooling component is physically removed, not from the time of failure.
- Ask your service representative for replacement of the cooling fan.

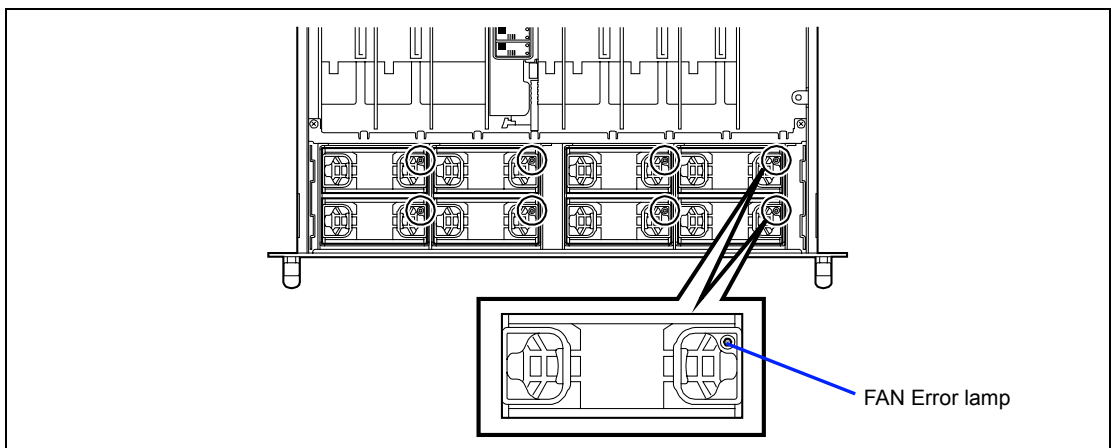
**NOTE:** If the redundant fan is removed/inserted in hot-swap mode, the latest configuration information may not be displayed on [Information of server state/constitution] of NEC ESMPRO Manager.

The following event is logged when the redundant fan is removed/inserted. If the latest configuration information is not displayed, restart the SNMP service.

Source: ESMCommonService

ID: 1602

Description: A new device is connected to the slot or the connector.

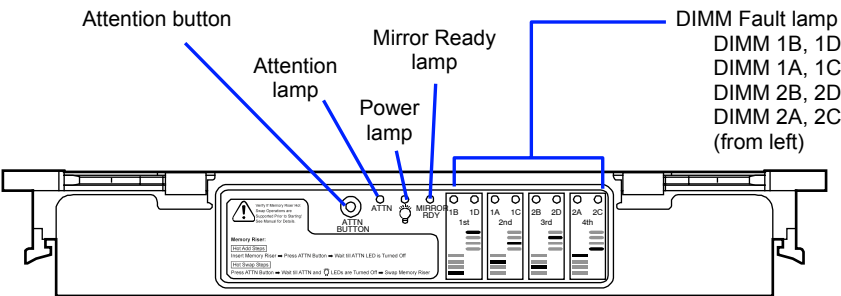


# Memory Backboard Lamp

The lamps on memory backboard show the various status of memory backboard and DIMMs contained in it.

**IMPORTANT:**

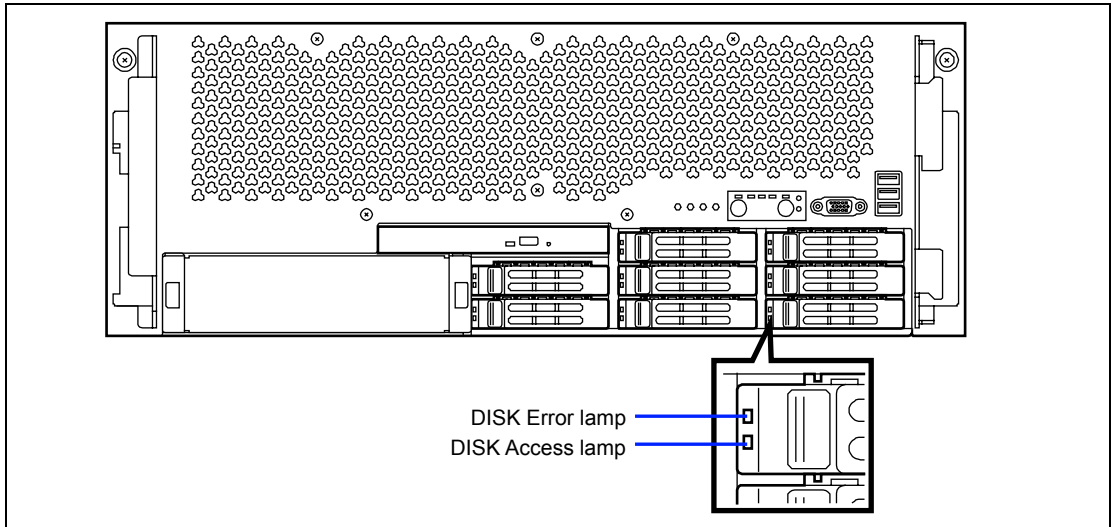
- Be sure to install or remove two DIMMs in pair. Two DIMMs must have same size and capacity. If the DIMMs are incorrectly installed, the system will fail to start.
- The memory backboard becomes very hot while being powered. When removing the board, turn off the power and wait for several minutes before pulling it out.
- The memory backboard becomes very heavy if many DIMMs are installed. When handling the memory backboard, securely hold the ejector not to drop the board.



Name	No.	Lamp indication	Status
Attention button		—	
Power lamp		On (green)	Power is on.
		Blinking (green)	Installation or removal of DIMM is in progress.
		Off	Power is off.
Attention lamp		On (amber)	Installation of DIMM failed.
		Blinking (amber)	Installation or removal of DIMM has started.
Mirror Ready lamp		On (green)	Mirror mode is enabled and DIMMs are in redundant configuration.
		Off	Mirror mode is disabled or DIMMs are not in redundant configuration.
DIMM Fault lamp	1B	On (amber)	DIMM 1B failed
	1D	On (amber)	DIMM 1D failed
	1A	On (amber)	DIMM 1A failed
	1C	On (amber)	DIMM 1C failed
	2B	On (amber)	DIMM 2B failed
	2D	On (amber)	DIMM 2D failed
	2A	On (amber)	DIMM 2A failed
	2C	On (amber)	DIMM 2C failed

## Hard Disk Drive Lamp (DISK Lamp)

The disk lamp on the 2.5-inch disk bay has different meanings depending on the display status.



### DISK Access Lamp

- Blinking green  
Indicates that the hard disk drive is accessed.

### DISK Error Lamp

- Lighting amber  
Indicates that the installed hard disk drive is defected in the RAID System configuration.

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

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- Blinking amber  
Indicates that the hard disk drive is being rebuilt or locate command is being executed (this status is not a failure). If the defected hard disk drive is replaced with a new one in the RAID System configuration, the data is automatically rebuilt (auto rebuild function). During the rebuild operation, the lamp blinks amber.  
The lamp goes off when the rebuild or locate command is completed normally. The lamp goes on amber if the rebuild fails.

---

**IMPORTANT:** Observe the following notes to use the auto-rebuild feature.

- Do not power off or reset the server.
  - When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive again.
  - Do not replace another hard disk drive while rebuilding is in progress.
-



## ERROR MESSAGES

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

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### Error Messages after Power-on

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors. However, even when there is no hardware failure, use of the keyboard or mouse at the following timing causes the POST to assume a keyboard controller error and stop processing.

- Immediately after the server is powered
- Immediately after the system is rebooted in response to a keyboard instruction (simultaneous key entry of **Ctrl + Alt + Delete**)
- Immediately after the system is rebooted in response to an OS instruction
- During hardware initialization following restart of the POST

When the POST detects a hardware failure due to the above reason, restart the server once again. If the same error message reappears, you may assume there is no hardware error. To ensure normal operation of the server, however, make sure to follow the following restrictions.

- Do not make any keyboard entry or use the mouse before the memory count appears on the screen following the server power-on.
- Do not make any keyboard entry or use the mouse before the start-up message of the SCSI Configuration Utility appears on the screen following the server reboot.

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**IMPORTANT:** Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.

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## POST Error

When POST detects an error, it displays an error message on the display unit screen or emits the beep sound.

### Memory Backboard Number and Processor Number

The memory backboard is connected to the processor as shown in the table below.

Memory backboard number	Processor number
1	1
2	
3	2
4	
5	3
6	
7	4
8	

### Measures

If "Reboot the server." is instructed in "Recommended Action", take one of the following measures to reboot (reset) the server.

- Issue an OS command to reset the server.
- Shutdown the server from OS, then press the POWER switch to power on.
- Press the POWER switch to power off the server, then press it again to power on.
- Press the POWER switch for 4 seconds or longer to power off the server, then press it again to power on.
- Press **Ctrl + Alt + Del** to reset the server (while POST is running).
- Press the RESET switch.
- Reboot the server from management PC (e.g., power cycle or system reset).
- Power off the server, disconnect the power cord, connect the power cord again, then power on the server.

## On-screen Error Message

The following table lists error messages, descriptions, and actions to take.

On-screen error messages related to devices such as processor, memory, and fans and installation locations are associated as shown in the figure below.

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### **IMPORTANT:**

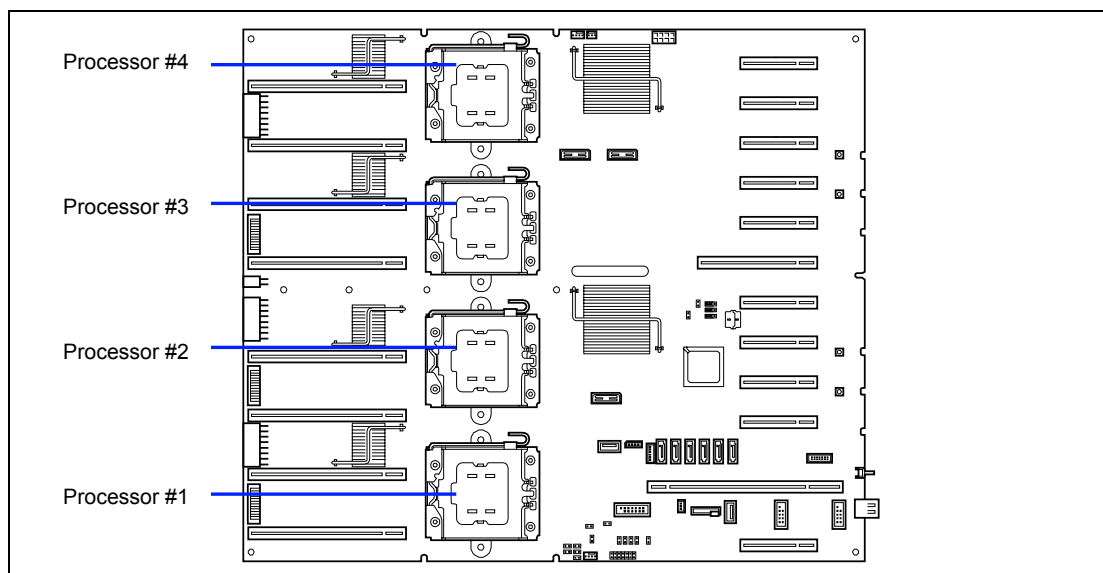
- Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.
  - IPMI information is also useful for maintenance. See Chapter 6 for how to collect IPMI information.
  - You may ask your service representative for checking installation status or replacing any devices.
- 

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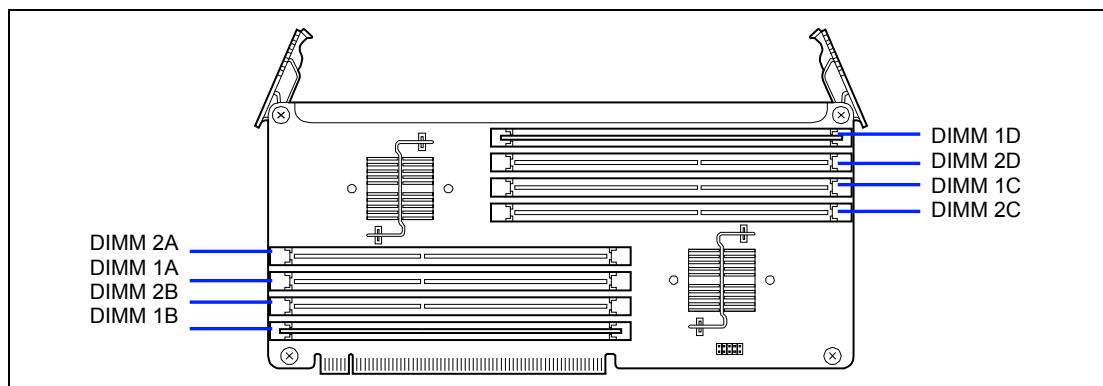
**NOTE:** Failed processor or memory backboards can be also identified with the BIOS SETUP utility.

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■ Processors



■ DIMMs

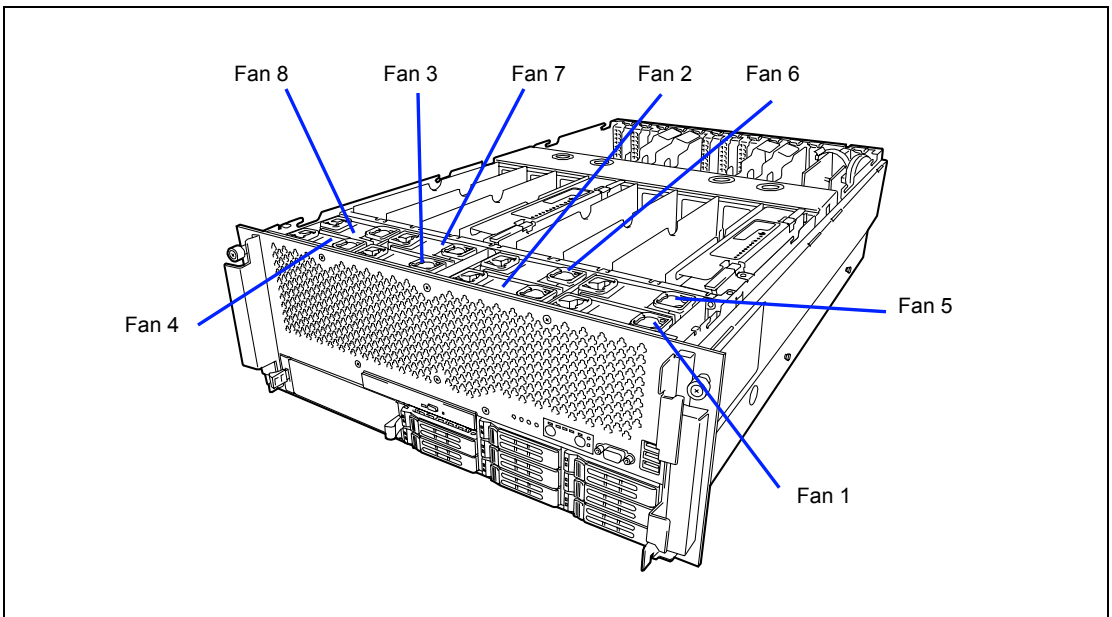


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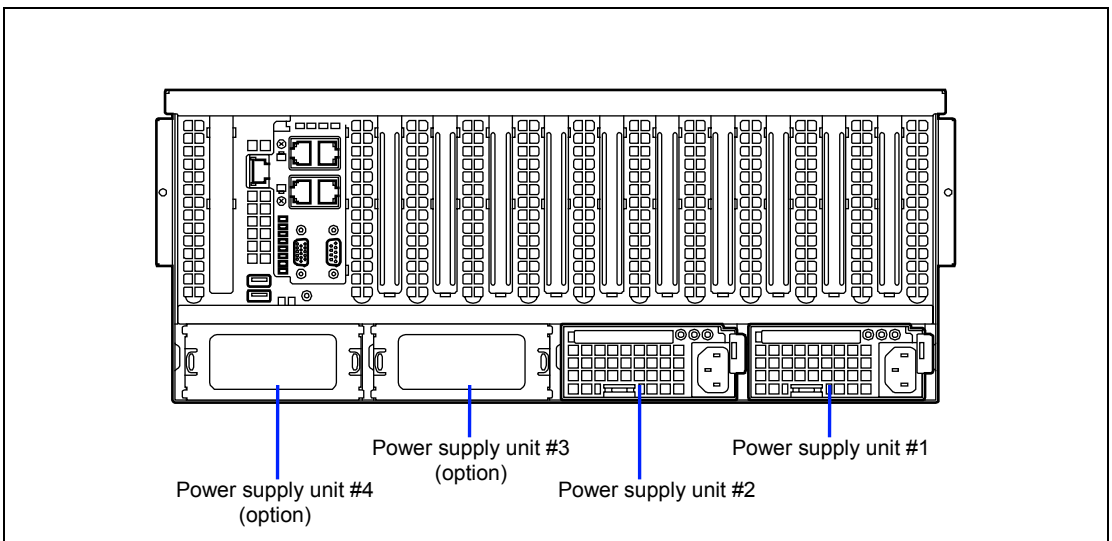
**IMPORTANT:** Two DIMMs to be installed must have same size and capacity. If the DIMMs are incorrectly installed, the system will fail to start.

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■ Fans



■ Power supply unit



Error code	On-screen message
	Recommended action
0232	Extended RAM Failed
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the memory backboard.</li> <li>3. If the same error persists, re-install the DIMMs on memory backboard.</li> <li>4. If the same error persists, replace the memory backboard.</li> <li>5. If the same error persists, replace the DIMMs on memory backboard.</li> <li>6. If the same error persists, re-install the processor.</li> <li>7. If the same error persists, replace the processor.</li> <li>8. If the same error persists, contact your service representative.</li> </ol> <p>Note: Restart the server, run BIOS SETUP, and provide settings for date, time, and others.</p>
0250	System battery is dead - Replace and run SETUP
	<ol style="list-style-type: none"> <li>1. Power off the server, then power it on.</li> <li>2. If the same error persists, replace the lithium battery on mother board.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0251	System CMOS checksum bad - Default configuration used
	<ol style="list-style-type: none"> <li>1. Run BIOS SETUP and change parameters appropriately, then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0252	Password checksum bad - Passwords cleared
	<ol style="list-style-type: none"> <li>1. Run BIOS SETUP and set password again, then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0260	System timer error
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0270	Real time clock error
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0271	Check date and time setting
	<ol style="list-style-type: none"> <li>1. Run BIOS SETUP, and provide settings for date and time.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0613 0614	COM A configuration changed
	<p>COM A config. error - device disabled.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, run BIOS SETUP and change parameters appropriately, then select [Exit] - [Exit Saving Changes].</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0615 0616	COM B configuration changed
	<p>COM B config. error - device disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP and change parameters appropriately, then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0701	USB Over Current On HC/Port - Bus:00H Dev:xxH Fun:yyH / Port zzH
	<ol style="list-style-type: none"> <li>1. Power off the server, then on again.</li> <li>2. If the same error persists, disconnect the USB device from the server to identify the error cause. Then, check USB connector on the server or the connector on the USB device.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
0B28 0B29 0B2A 0B2B	<p>Unsupported Processor detected on Processor 1 Unsupported Processor detected on Processor 2 Unsupported Processor detected on Processor 3 Unsupported Processor detected on Processor 4</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, replace the added or replaced processor.</li> <li>3. If the same error persists, replace the failed processor.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
0B30 0B31 0B32 0B33 0B34 0B35 0B36 0B37	<p>Fan 1 Alarm occurred. Fan 2 Alarm occurred. Fan 3 Alarm occurred. Fan 4 Alarm occurred. Fan 5 Alarm occurred. Fan 6 Alarm occurred. Fan 7 Alarm occurred. Fan 8 Alarm occurred.</p> <ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B50 0B51 0B52 0B53	<p>Processor #1 with error taken off line. Processor #2 with error taken off line. Processor #3 with error taken off line. Processor #4 with error taken off line.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Main] - [Processor Settings] - [Processor Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install the processor.</li> <li>3. If the same error persists, replace the processor.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
0B5F	<p>Forced to use Processor with error.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Main] - [Processor Settings] - [Processor Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0B70	<p>The error occurred during temperature sensor reading.</p> <ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B71	<p>System Temperature out of the range.</p> <ol style="list-style-type: none"> <li>1. Check if the operating environment satisfies the required guaranteed temperature.</li> <li>2. Power off the server, then press the POWER switch to power on the server.</li> <li>3. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
0B74	The error occurred during voltage sensor reading.
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B75	System voltage out of the range.
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B78	The error occurred during fan sensor reading.
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B7C	The error occurred during redundant power module confirmation
	<ol style="list-style-type: none"> <li>1. Check if the power supply unit is properly inserted into the slot.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B7D	The normal operation can't be guaranteed with use of only one PSU.
	<ol style="list-style-type: none"> <li>1. Check if the power cord is properly connected to the power supply unit.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B7F	Insufficient Power Supply Unit Configuration.
	<ol style="list-style-type: none"> <li>1. Check if the power supply unit is properly inserted into the slot.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
0B80 0B81 0B82 0B83	BMC Memory Test Failed.
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0B8A	BMC SEL area full
	<ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Server] - [Event Log Configuration] - [Clear All Error Logs] to clear the IPMI system event logs.</li> <li>2. If the same error persists, contact your service representative.</li> </ol> <p>Note: It is recommended to make a backup copy of IPMI information before clearing the IPMI system event logs on BIOS SETUP. IPMI system event logs can be cleared automatically when log area reaches nearly full, if [Server] - [Event Log Configuration] - [Auto Clear Event Logs] is set to "Enabled" on BIOS SETUP.</p>



Error code	On-screen message
	Recommended action
0B8B 0B8C 0B8D 0B8E 0B8F 0B90 0B91 0B92 0B93 0B94 0B95 0B96 0B97 0B98 0B99	<p>BMC progress check timeout.</p> <p>BMC command access failed.</p> <p>Could not redirect the console - BMC Busy -</p> <p>Could not redirect the console - BMC Error -</p> <p>Could not redirect the console - BMC Parameter Error -</p> <p>BMC Platform Information Area corrupted.</p> <p>BMC update firmware corrupted.</p> <p>Internal Use Area of BMC FRU corrupted.</p> <p>BMC SDR Repository empty.</p> <p>IPMB signal lines do not respond.</p> <p>BMC FRU device failure.</p> <p>BMC SDR Repository failure.</p> <p>BMC SEL device failure.</p> <p>BMC RAM test error.</p> <p>BMC Fatal hardware error.</p>
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0BB0 0BB1	<p>SMBIOS - SROM data read error.</p> <p>SMBIOS - SROM data checksum bad.</p>
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
0BB2	<p>SMBIOS - IO Riser SROM error</p> <p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p>
	<ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
0BB8 0BB9 0BBA 0BBB 0BBC 0BBD 0BBE 0BBF	<p>SMBIOS - Memory Riser 1 SROM error SMBIOS - Memory Riser 2 SROM error SMBIOS - Memory Riser 3 SROM error SMBIOS - Memory Riser 4 SROM error SMBIOS - Memory Riser 5 SROM error SMBIOS - Memory Riser 6 SROM error SMBIOS - Memory Riser 7 SROM error SMBIOS - Memory Riser 8 SROM error</p> <p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, re-install the failed memory backboard.</li> <li>4. If the same error persists, replace the failed memory backboard with new one.</li> <li>5. If the same error persists, re-install the processor which is connected with the failed memory backboard.</li> <li>6. If the same error persists, replace the processor which is connected with the failed memory backboard with new one.</li> <li>7. If the same error persists, contact your service representative.</li> </ol>
0BD1 0BD4 0BD7 0BDA 0BDD 0BE0	<p>1st SMBus device Error detected. 2nd SMBus device Error detected. 3rd SMBus device Error detected. 4th SMBus device Error detected. 5th SMBus device Error detected. 6th SMBus device Error detected.</p> <ol style="list-style-type: none"> <li>1. Power off the server, then press the POWER switch to power on the server.</li> <li>2. If the same error persists, power off the server, disconnect the power cord, connect it again, and power on the server.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
8150	<p>NVRAM Cleared By Jumper.</p> <ol style="list-style-type: none"> <li>1. If you intentionally cleared the NVRAM, this message does not indicate an error. Reboot the server.</li> <li>2. Otherwise, check if jumper switch on mother board is properly set.</li> <li>3. If the same error persists, contact your service representative.</li> </ol> <p>Note: The default BIOS SETUP parameters are restored. Run BIOS SETUP and change parameters appropriately, then select [Exit] - [Exit Saving Changes].</p>
8151	<p>Password Cleared By Jumper.</p> <ol style="list-style-type: none"> <li>1. If you intentionally cleared the password, this message does not indicate an error. Reboot the server.</li> <li>2. Otherwise, check if jumper switch on mother board is properly set.</li> <li>3. If the same error persists, contact your service representative.</li> </ol> <p>Note: The password is cleared. Run BIOS SETUP and set password again, then select [Exit] - [Exit Saving Changes].</p>

Error code	On-screen message
	Recommended action
8160	Mismatch Processor Speed detected on Processor 1.
8161	Mismatch Processor Speed detected on Processor 2.
8162	Mismatch Processor Speed detected on Processor 3.
8163	Mismatch Processor Speed detected on Processor 4.
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check the failed processor.</li> <li>3. If the same error persists, re-install the failed processor.</li> <li>4. If the same error persists, replace the failed processor with new one.</li> <li>5. If the same error persists, contact your service representative.</li> </ol>
8180	Processor #1 Error
8181	Processor #2 Error
8182	Processor #3 Error
8183	Processor #4 Error
	<p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, re-install the memory backboard which is connected with the failed processor.</li> <li>4. If the same error persists, re-install the DIMMs on memory backboard which is connected with the failed processor.</li> <li>5. If the same error persists, replace the failed processor.</li> <li>6. If the same error persists, replace the memory backboard which is connected with the failed processor.</li> <li>7. If the same error persists, replace the DIMMs on memory backboard which is connected with the failed processor.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
81A0	Cache Cautionary status detected on Processor 1.
81A1	Cache Cautionary status detected on Processor 2.
81A2	Cache Cautionary status detected on Processor 3.
81A3	Cache Cautionary status detected on Processor 4.
	<p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
8200	Online Spare Memory was not ready.
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. Run BIOS SETUP, select [Advanced] - [Memory Configuration] and check if parameters are correctly set.</li> <li>3. If the same error persists, re-install DIMMs on memory backboard.</li> <li>4. If the same error persists, re-install the memory backboard.</li> <li>5. If the same error persists, replace DIMMs on memory backboard.</li> <li>6. If the same error persists, replace the memory backboard.</li> <li>7. If the same error persists, re-install the processor.</li> <li>8. If the same error persists, replace the processor.</li> <li>9. If the same error persists, contact your service representative.</li> </ol> <p>Note: You can identify the failed component by viewing the following information:</p> <ul style="list-style-type: none"> <li>• Indication of DIMM Fault lamp on memory backboard</li> <li>• Other POST error message (POST error code)</li> <li>• IPMI information file</li> </ul>
8201	Mirroring Memory was not ready.
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. Run BIOS SETUP, select [Advanced] - [Memory Configuration] and check if parameters are correctly set.</li> <li>3. If the same error persists, re-install DIMMs on memory backboard.</li> <li>4. If the same error persists, re-install the memory backboard.</li> <li>5. If the same error persists, replace DIMMs on memory backboard.</li> <li>6. If the same error persists, replace the memory backboard.</li> <li>7. If the same error persists, re-install the processor.</li> <li>8. If the same error persists, replace the processor.</li> <li>9. If the same error persists, contact your service representative.</li> </ol> <p>Note: You can identify the failed component by viewing the following information:</p> <ul style="list-style-type: none"> <li>• Indication of DIMM Fault lamp on memory backboard</li> <li>• Other POST error message (POST error code)</li> <li>• IPMI information file</li> </ul>
8400	IO Riser - Network 1 PCIE Link Failure
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
8401	IO Riser - Network 2 PCIE Link Failure
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
8402	SAS Slot - PCIE Link Failure
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the PCI board in SAS slot.</li> <li>3. If the same error persists, replace the PCI board in SAS slot with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
8410	PCI Slot 1 - PCIE Link Failure
8411	PCI Slot 2 - PCIE Link Failure
8412	PCI Slot 3 - PCIE Link Failure
8413	PCI Slot 4 - PCIE Link Failure
8414	PCI Slot 5 - PCIE Link Failure
8415	PCI Slot 6 - PCIE Link Failure
8416	PCI Slot 7 - PCIE Link Failure
8417	PCI Slot 8 - PCIE Link Failure
8418	PCI Slot 9 - PCIE Link Failure
8419	PCI Slot 10 - PCIE Link Failure
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed PCI board.</li> <li>3. If the same error persists, replace the failed PCI board with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
8420	IO Riser - Network 1 PCIE Link Width Error
	<p>You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. Check ambient temperature and humidity of the installation site.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
8421	IO Riser - Network 2 PCIE Link Width Error
	<p>You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. Check ambient temperature and humidity of the installation site.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
8422	SAS Slot - PCIE Link Width Error
	<p>You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the PCI board in SAS slot.</li> <li>3. If the same error persists, replace the PCI board in SAS slot with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
8430 8431 8432 8433 8434 8435 8436 8437 8438 8439	PCI Slot 1 - PCIE Link Width Error PCI Slot 2 - PCIE Link Width Error PCI Slot 3 - PCIE Link Width Error PCI Slot 4 - PCIE Link Width Error PCI Slot 5 - PCIE Link Width Error PCI Slot 6 - PCIE Link Width Error PCI Slot 7 - PCIE Link Width Error PCI Slot 8 - PCIE Link Width Error PCI Slot 9 - PCIE Link Width Error PCI Slot 10 - PCIE Link Width Error
	You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered. Perform the following: <ol style="list-style-type: none"><li>1. Reboot the server.</li><li>2. If the same error persists, re-install the failed PCI board.</li><li>3. If the same error persists, replace the failed PCI board with new one.</li><li>4. If the same error persists, contact your service representative.</li></ol>
8460	IO Riser - Network 1 PCIE Link Speed Error
	You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered. Perform the following: <ol style="list-style-type: none"><li>1. Reboot the server.</li><li>2. Check ambient temperature and humidity of the installation site.</li><li>3. If the same error persists, contact your service representative.</li></ol>
8461	IO Riser - Network 2 PCIE Link Speed Error
	You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered. Perform the following: <ol style="list-style-type: none"><li>1. Reboot the server.</li><li>2. Check ambient temperature and humidity of the installation site.</li><li>3. If the same error persists, contact your service representative.</li></ol>
8462	SAS Slot - PCIE Link Speed Error
	You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered. Perform the following: <ol style="list-style-type: none"><li>1. Reboot the server.</li><li>2. If the same error persists, re-install the PCI board in SAS slot.</li><li>3. If the same error persists, replace the PCI board in SAS slot with new one.</li><li>4. If the same error persists, contact your service representative.</li></ol>

Error code	On-screen message
	Recommended action
8470 8471 8472 8473 8474 8475 8476 8477 8478 8479	<p>PCI Slot 1 - PCIE Link Speed Error            PCI Slot 2 - PCIE Link Speed Error            PCI Slot 3 - PCIE Link Speed Error            PCI Slot 4 - PCIE Link Speed Error            PCI Slot 5 - PCIE Link Speed Error            PCI Slot 6 - PCIE Link Speed Error            PCI Slot 7 - PCIE Link Speed Error            PCI Slot 8 - PCIE Link Speed Error            PCI Slot 9 - PCIE Link Speed Error            PCI Slot 10 - PCIE Link Speed Error</p> <p>You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered.            Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed PCI board.</li> <li>3. If the same error persists, replace the failed PCI board with new one.</li> <li>4. If the same error persists, contact your service representative</li> </ol>
8480 8481 8482 8483 8484 8485	<p>Link Failure between Processor 1 and Processor 2            Link Failure between Processor 1 and Processor 3            Link Failure between Processor 1 and Processor 4            Link Failure between Processor 2 and Processor 3            Link Failure between Processor 2 and Processor 4            Link Failure between Processor 3 and Processor 4</p> <p>You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered.            Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
8486 8487 8488 8489	<p>Link Failure between Processor 1 and IO Hub 1            Link Failure between Processor 2 and IO Hub 1            Link Failure between Processor 3 and IO Hub 2            Link Failure between Processor 4 and IO Hub 2</p> <p>You need not to replace immediately. You can continue to operate the server, however, system performance may be lowered.            Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
8490 8491 8492 8493 8494 8495	<p>Link Width Error between Processor 1 and processor 2 Link Width Error between Processor 1 and processor 3 Link Width Error between Processor 1 and processor 4 Link Width Error between Processor 2 and processor 3 Link Width Error between Processor 2 and processor 4 Link Width Error between Processor 3 and processor 4</p> <p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
8496 8497 8498 8499	<p>Link Width Error between Processor 1 and IO Hub 1 Link Width Error between Processor 2 and IO Hub 1 Link Width Error between Processor 3 and IO Hub 2 Link Width Error between Processor 4 and IO Hub 2</p> <p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
84A0 84A1 84A2 84A3 84A4 84A5	<p>Link Speed Error between Processor 1 and Processor 2 Link Speed Error between Processor 1 and Processor 3 Link Speed Error between Processor 1 and Processor 4 Link Speed Error between Processor 2 and Processor 3 Link Speed Error between Processor 2 and Processor 4 Link Speed Error between Processor 3 and Processor 4</p> <p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>
84A6 84A7 84A8 84A9	<p>Link Speed Error between Processor 1 and IO Hub 1 Link Speed Error between Processor 2 and IO Hub 1 Link Speed Error between Processor 3 and IO Hub 2 Link Speed Error between processor 4 and IO Hub 2</p> <p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the failed processor.</li> <li>3. If the same error persists, replace the failed processor with new one.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>



Error code	On-screen message
	Recommended action
84B0	Link Failure between Processor 1 and Memory Riser 1
84B1	Link Failure between Processor 1 and Memory Riser 2
84B2	Link Failure between Processor 2 and Memory Riser 3
84B3	Link Failure between Processor 2 and Memory Riser 4
84B4	Link Failure between Processor 3 and Memory Riser 5
84B5	Link Failure between Processor 3 and Memory Riser 6
84B6	Link Failure between Processor 4 and Memory Riser 7
84B7	Link Failure between Processor 4 and Memory Riser 8
	<p>You can continue to operate the server, however, system performance may be lowered because all of DIMMs on failed memory backboard are disabled.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the DIMMs on failed memory backboard.</li> <li>3. If the same error persists, re-install the failed memory backboard.</li> <li>4. If the same error persists, replace the failed memory backboard with new one.</li> <li>5. If the same error persists, replace the DIMMs on failed memory backboard.</li> <li>6. If the same error persists, re-install the failed processor.</li> <li>7. If the same error persists, replace the failed processor with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
84C0	Link Degraded between Processor 1 and Memory Riser 1
84C1	Link Degraded between Processor 1 and Memory Riser 2
84C2	Link Degraded between Processor 2 and Memory Riser 3
84C3	Link Degraded between Processor 2 and Memory Riser 4
84C4	Link Degraded between Processor 3 and Memory Riser 5
84C5	Link Degraded between Processor 3 and Memory Riser 6
84C6	Link Degraded between Processor 4 and Memory Riser 7
84C7	Link Degraded between Processor 4 and Memory Riser 8
	<p>You need not to replace immediately. You can continue to operate the server, however, perform the following:</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the DIMMs on failed memory backboard.</li> <li>3. If the same error persists, re-install the failed memory backboard.</li> <li>4. If the same error persists, replace the failed memory backboard with new one.</li> <li>5. If the same error persists, replace the DIMMs on failed memory backboard.</li> <li>6. If the same error persists, re-install the failed processor.</li> <li>7. If the same error persists, replace the failed processor with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
8703	PIA mismatch error. Please change PIA.
	<ol style="list-style-type: none"> <li>1. Incorrect hardware configuration may be detected. Reboot the server.</li> <li>2. If the same error persists, update the PIA.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>
8704	SDR mismatch error. Please change SDR.
	<ol style="list-style-type: none"> <li>1. Incorrect hardware configuration may be detected. Reboot the server.</li> <li>2. If the same error persists, update the SDR.</li> <li>3. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
8780 8781 8782 8783	<p>Memory Riser 1 - DIMM 1A and 1C have been disabled.  Memory Riser 1 - DIMM 1B and 1D have been disabled.  Memory Riser 1 - DIMM 2A and 2C have been disabled.  Memory Riser 1 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 1.</li> <li>3. If the same error persists, re-install the memory backboard 1.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 1 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 1.</li> <li>6. If the same error persists, re-install the processor 1.</li> <li>7. If the same error persists, replace the processor 1 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
8784 8785 8786 8787	<p>Memory Riser 2 - DIMM 1A and 1C have been disabled.  Memory Riser 2 - DIMM 1B and 1D have been disabled.  Memory Riser 2 - DIMM 2A and 2C have been disabled.  Memory Riser 2 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 2.</li> <li>3. If the same error persists, re-install the memory backboard 2.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 2 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 2.</li> <li>6. If the same error persists, re-install the processor 1.</li> <li>7. If the same error persists, replace the processor 1 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
8788 8789 878A 878B	<p>Memory Riser 3 - DIMM 1A and 1C have been disabled.  Memory Riser 3 - DIMM 1B and 1D have been disabled.  Memory Riser 3 - DIMM 2A and 2C have been disabled.  Memory Riser 3 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 3.</li> <li>3. If the same error persists, re-install the memory backboard 3.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 3 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 3.</li> <li>6. If the same error persists, re-install the processor 2.</li> <li>7. If the same error persists, replace the processor 2 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
878C 878D 878E 878F	<p>Memory Riser 4 - DIMM 1A and 1C have been disabled. Memory Riser 4 - DIMM 1B and 1D have been disabled. Memory Riser 4 - DIMM 2A and 2C have been disabled. Memory Riser 4 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 4.</li> <li>3. If the same error persists, re-install the memory backboard 4.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 4 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 4.</li> <li>6. If the same error persists, re-install the processor 2.</li> <li>7. If the same error persists, replace the processor 2 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
8790 8791 8792 8793	<p>Memory Riser 5 - DIMM 1A and 1C have been disabled. Memory Riser 5 - DIMM 1B and 1D have been disabled. Memory Riser 5 - DIMM 2A and 2C have been disabled. Memory Riser 5 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 5.</li> <li>3. If the same error persists, re-install the memory backboard 5.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 5 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 5.</li> <li>6. If the same error persists, re-install the processor 3.</li> <li>7. If the same error persists, replace the processor 3 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
8794 8795 8796 8797	<p>Memory Riser 6 - DIMM 1A and 1C have been disabled. Memory Riser 6 - DIMM 1B and 1D have been disabled. Memory Riser 6 - DIMM 2A and 2C have been disabled. Memory Riser 6 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 6.</li> <li>3. If the same error persists, re-install the memory backboard 6.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 6 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 6.</li> <li>6. If the same error persists, re-install the processor 3.</li> <li>7. If the same error persists, replace the processor 3 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
8798 8799 879A 879B	<p>Memory Riser 7 - DIMM 1A and 1C have been disabled. Memory Riser 7 - DIMM 1B and 1D have been disabled. Memory Riser 7 - DIMM 2A and 2C have been disabled. Memory Riser 7 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 7.</li> <li>3. If the same error persists, re-install the memory backboard 7.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 7 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 7.</li> <li>6. If the same error persists, re-install the processor 4.</li> <li>7. If the same error persists, replace the processor 4 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
879C 879D 879E 879F	<p>Memory Riser 8 - DIMM 1A and 1C have been disabled. Memory Riser 8 - DIMM 1B and 1D have been disabled. Memory Riser 8 - DIMM 2A and 2C have been disabled. Memory Riser 8 - DIMM 2B and 2D have been disabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 8.</li> <li>3. If the same error persists, re-install the memory backboard 8.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 8 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 8.</li> <li>6. If the same error persists, re-install the processor 4.</li> <li>7. If the same error persists, replace the processor 4 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
87A0 87A1 87A2 87A3	<p>Memory Riser 1 - DIMM 1A and 1C with error are enabled. Memory Riser 1 - DIMM 1B and 1D with error are enabled. Memory Riser 1 - DIMM 2A and 2C with error are enabled. Memory Riser 1 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 1.</li> <li>3. If the same error persists, re-install the memory backboard 1.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 1 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 1.</li> <li>6. If the same error persists, re-install the processor 1.</li> <li>7. If the same error persists, replace the processor 1 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87A4 87A5 87A6 87A7	<p>Memory Riser 2 - DIMM 1A and 1C with error are enabled. Memory Riser 2 - DIMM 1B and 1D with error are enabled. Memory Riser 2 - DIMM 2A and 2C with error are enabled. Memory Riser 2 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 2.</li> <li>3. If the same error persists, re-install the memory backboard 2.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 2 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 2.</li> <li>6. If the same error persists, re-install the processor 1.</li> <li>7. If the same error persists, replace the processor 1 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
87A8 87A9 87AA 87AB	<p>Memory Riser 3 - DIMM 1A and 1C with error are enabled. Memory Riser 3 - DIMM 1B and 1D with error are enabled. Memory Riser 3 - DIMM 2A and 2C with error are enabled. Memory Riser 3 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 3.</li> <li>3. If the same error persists, re-install the memory backboard 3.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 3 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 3.</li> <li>6. If the same error persists, re-install the processor 2.</li> <li>7. If the same error persists, replace the processor 2 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
87AC 87AD 87AE 87AF	<p>Memory Riser 4 - DIMM 1A and 1C with error are enabled. Memory Riser 4 - DIMM 1B and 1D with error are enabled. Memory Riser 4 - DIMM 2A and 2C with error are enabled. Memory Riser 4 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 4.</li> <li>3. If the same error persists, re-install the memory backboard 4.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 4 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 4.</li> <li>6. If the same error persists, re-install the processor 2.</li> <li>7. If the same error persists, replace the processor 2 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87B0 87B1 87B2 87B3	<p>Memory Riser 5 - DIMM 1A and 1C with error are enabled.  Memory Riser 5 - DIMM 1B and 1D with error are enabled.  Memory Riser 5 - DIMM 2A and 2C with error are enabled.  Memory Riser 5 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 5.</li> <li>3. If the same error persists, re-install the memory backboard 5.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 5 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 5.</li> <li>6. If the same error persists, re-install the processor 3.</li> <li>7. If the same error persists, replace the processor 3 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
87B4 87B5 87B6 87B7	<p>Memory Riser 6 - DIMM 1A and 1C with error are enabled.  Memory Riser 6 - DIMM 1B and 1D with error are enabled.  Memory Riser 6 - DIMM 2A and 2C with error are enabled.  Memory Riser 6 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 6.</li> <li>3. If the same error persists, re-install the memory backboard 6.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 6 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 6.</li> <li>6. If the same error persists, re-install the processor 3.</li> <li>7. If the same error persists, replace the processor 3 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
87B8 87B9 87BA 87BB	<p>Memory Riser 7 - DIMM 1A and 1C with error are enabled.  Memory Riser 7 - DIMM 1B and 1D with error are enabled.  Memory Riser 7 - DIMM 2A and 2C with error are enabled.  Memory Riser 7 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 7.</li> <li>3. If the same error persists, re-install the memory backboard 7.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 7 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 7.</li> <li>6. If the same error persists, re-install the processor 4.</li> <li>7. If the same error persists, replace the processor 4 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87BC 87BD 87BE 87BF	<p>Memory Riser 8 - DIMM 1A and 1C with error are enabled.  Memory Riser 8 - DIMM 1B and 1D with error are enabled.  Memory Riser 8 - DIMM 2A and 2C with error are enabled.  Memory Riser 8 - DIMM 2B and 2D with error are enabled.</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>2. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 8.</li> <li>3. If the same error persists, re-install the memory backboard 8.</li> <li>4. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 8 with new ones.</li> <li>5. If the same error persists, replace the memory backboard 8.</li> <li>6. If the same error persists, re-install the processor 4.</li> <li>7. If the same error persists, replace the processor 4 with new one.</li> <li>8. If the same error persists, contact your service representative.</li> </ol>
87C0 87C1 87C2 87C3	<p>Unsupported DIMM detected in Memory Riser 1 - DIMM 1A and 1C.  Unsupported DIMM detected in Memory Riser 1 - DIMM 1B and 1D.  Unsupported DIMM detected in Memory Riser 1 - DIMM 2A and 2C.  Unsupported DIMM detected in Memory Riser 1 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 1.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 1.</li> <li>4. If the same error persists, re-install the memory backboard 1.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 1 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 1.</li> <li>7. If the same error persists, re-install the processor 1.</li> <li>8. If the same error persists, replace the processor 1 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87C4 87C5 87C6 87C7	<p>Unsupported DIMM detected in Memory Riser 2 - DIMM 1A and 1C.  Unsupported DIMM detected in Memory Riser 2 - DIMM 1B and 1D.  Unsupported DIMM detected in Memory Riser 2 - DIMM 2A and 2C.  Unsupported DIMM detected in Memory Riser 2 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 2.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 2.</li> <li>4. If the same error persists, re-install the memory backboard 2.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 2 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 2.</li> <li>7. If the same error persists, re-install the processor 1.</li> <li>8. If the same error persists, replace the processor 1 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87C8 87C9 87CA 87CB	<p>Unsupported DIMM detected in Memory Riser 3 - DIMM 1A and 1C.            Unsupported DIMM detected in Memory Riser 3 - DIMM 1B and 1D.            Unsupported DIMM detected in Memory Riser 3 - DIMM 2A and 2C.            Unsupported DIMM detected in Memory Riser 3 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 3.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 3.</li> <li>4. If the same error persists, re-install the memory backboard 3.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 3 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 3.</li> <li>7. If the same error persists, re-install the processor 2.</li> <li>8. If the same error persists, replace the processor 2 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87CC 87CD 87CE 87CF	<p>Unsupported DIMM detected in Memory Riser 4 - DIMM 1A and 1C.            Unsupported DIMM detected in Memory Riser 4 - DIMM 1B and 1D.            Unsupported DIMM detected in Memory Riser 4 - DIMM 2A and 2C.            Unsupported DIMM detected in Memory Riser 4 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 4.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 4.</li> <li>4. If the same error persists, re-install the memory backboard 4.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 4 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 4.</li> <li>7. If the same error persists, re-install the processor 2.</li> <li>8. If the same error persists, replace the processor 2 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87D0 87D1 87D2 87D3	<p>Unsupported DIMM detected in Memory Riser 5 - DIMM 1A and 1C.            Unsupported DIMM detected in Memory Riser 5 - DIMM 1B and 1D.            Unsupported DIMM detected in Memory Riser 5 - DIMM 2A and 2C.            Unsupported DIMM detected in Memory Riser 5 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 5.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 5.</li> <li>4. If the same error persists, re-install the memory backboard 5.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 5 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 5.</li> <li>7. If the same error persists, re-install the processor 3.</li> <li>8. If the same error persists, replace the processor 3 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>



Error code	On-screen message
	Recommended action
87D4 87D5 87D6 87D7	<p>Unsupported DIMM detected in Memory Riser 6 - DIMM 1A and 1C.            Unsupported DIMM detected in Memory Riser 6 - DIMM 1B and 1D.            Unsupported DIMM detected in Memory Riser 6 - DIMM 2A and 2C.            Unsupported DIMM detected in Memory Riser 6 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 6.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 6.</li> <li>4. If the same error persists, re-install the memory backboard 6.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 6 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 6.</li> <li>7. If the same error persists, re-install the processor 3.</li> <li>8. If the same error persists, replace the processor 3 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87D8 87D9 87DA 87DB	<p>Unsupported DIMM detected in Memory Riser 7 - DIMM 1A and 1C.            Unsupported DIMM detected in Memory Riser 7 - DIMM 1B and 1D.            Unsupported DIMM detected in Memory Riser 7 - DIMM 2A and 2C.            Unsupported DIMM detected in Memory Riser 7 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 7.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 7.</li> <li>4. If the same error persists, re-install the memory backboard 7.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 7 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 7.</li> <li>7. If the same error persists, re-install the processor 4.</li> <li>8. If the same error persists, replace the processor 4 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87DC 87DD 87DE 87DF	<p>Unsupported DIMM detected in Memory Riser 8 - DIMM 1A and 1C.            Unsupported DIMM detected in Memory Riser 8 - DIMM 1B and 1D.            Unsupported DIMM detected in Memory Riser 8 - DIMM 2A and 2C.            Unsupported DIMM detected in Memory Riser 8 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 8.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 8.</li> <li>4. If the same error persists, re-install the memory backboard 8.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 7 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 8.</li> <li>7. If the same error persists, re-install the processor 4.</li> <li>8. If the same error persists, replace the processor 4 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87E0 87E1 87E2 87E3	<p>Mismatch DIMM Type detected in Memory Riser 1 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 1 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 1 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 1 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 1.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 1.</li> <li>4. If the same error persists, re-install the memory backboard 1.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 1 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 1.</li> <li>7. If the same error persists, re-install the processor 1.</li> <li>8. If the same error persists, replace the processor 1 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87E4 87E5 87E6 87E7	<p>Mismatch DIMM Type detected in Memory Riser 2 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 2 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 2 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 2 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 2.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 2.</li> <li>4. If the same error persists, re-install the memory backboard 2.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 2 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 2.</li> <li>7. If the same error persists, re-install the processor 1.</li> <li>8. If the same error persists, replace the processor 1 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87E8 87E9 87EA 87EB	<p>Mismatch DIMM Type detected in Memory Riser 3 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 3 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 3 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 3 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 3.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 3.</li> <li>4. If the same error persists, re-install the memory backboard 3.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 3 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 3.</li> <li>7. If the same error persists, re-install the processor 2.</li> <li>8. If the same error persists, replace the processor 2 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87EC 87ED 87EE 87EF	<p>Mismatch DIMM Type detected in Memory Riser 4 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 4 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 4 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 4 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 4.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 4.</li> <li>4. If the same error persists, re-install the memory backboard 4.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 4 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 4.</li> <li>7. If the same error persists, re-install the processor 2.</li> <li>8. If the same error persists, replace the processor 2 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87F0 87F1 87F2 87F3	<p>Mismatch DIMM Type detected in Memory Riser 5 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 5 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 5 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 5 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 5.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 5.</li> <li>4. If the same error persists, re-install the memory backboard 5.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 5 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 5.</li> <li>7. If the same error persists, re-install the processor 3.</li> <li>8. If the same error persists, replace the processor 3 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87F4 87F5 87F6 87F7	<p>Mismatch DIMM Type detected in Memory Riser 6 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 6 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 6 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 6 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 6.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 6.</li> <li>4. If the same error persists, re-install the memory backboard 6.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 6 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 6.</li> <li>7. If the same error persists, re-install the processor 3.</li> <li>8. If the same error persists, replace the processor 3 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
87F8 87F9 87FA 87FB	<p>Mismatch DIMM Type detected in Memory Riser 7 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 7 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 7 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 7 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 7.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 7.</li> <li>4. If the same error persists, re-install the memory backboard 7.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 7 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 7.</li> <li>7. If the same error persists, re-install the processor 4.</li> <li>8. If the same error persists, replace the processor 4 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
87FC 87FD 87FE 87FF	<p>Mismatch DIMM Type detected in Memory Riser 8 - DIMM 1A and 1C. Mismatch DIMM Type detected in Memory Riser 8 - DIMM 1B and 1D. Mismatch DIMM Type detected in Memory Riser 8 - DIMM 2A and 2C. Mismatch DIMM Type detected in Memory Riser 8 - DIMM 2B and 2D.</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check a pair of failing DIMMs installed on memory backboard 8.</li> <li>3. If the same error persists, re-install a pair of failing DIMMs installed on memory backboard 8.</li> <li>4. If the same error persists, re-install the memory backboard 8.</li> <li>5. If the same error persists, replace a pair of failing DIMMs installed on memory backboard 8 with new ones.</li> <li>6. If the same error persists, replace the memory backboard 8.</li> <li>7. If the same error persists, re-install the processor 4.</li> <li>8. If the same error persists, replace the processor 4 with new one.</li> <li>9. If the same error persists, contact your service representative.</li> </ol>
	<p>Resource conflict</p> <ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, check the number of installed PCI boards. PCI I/O area is limited to 64 KB.</li> <li>3. If the same error persists, re-install the PCI board in failed PCI slot.</li> <li>4. If the same error persists, replace the PCI board in failed PCI slot.</li> <li>5. If the same error persists, contact your service representative.</li> </ol>
	<p>Expansion Rom not initialized</p> <ol style="list-style-type: none"> <li>1. Run BIOS SETUP, select [Advanced] - [PCI Configuration] - [Advanced] - [PCI Configuration] - [Onboard NIC] - [Option ROM Scan] or select [Advanced] - [PCI Configuration] - [Onboard SAS] - [Option ROM Scan], and change parameter to "Disabled" for the device of which option ROM is not so frequently used.</li> <li>2. If the same error persists, re-install the PCI board in failed PCI slot. Then, select [Exit] - [Exit Saving Changes] to save the new setting.</li> <li>3. If the same error persists, replace the PCI board in failed PCI slot.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

Error code	On-screen message
	Recommended action
	Invalid System Configuration Data
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
	System Configuration Data Read Error
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
	System Configuration Data Write Error
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, contact your service representative.</li> </ol>
	WARNING: IRQ not configured
	<ol style="list-style-type: none"> <li>1. Reboot the server.</li> <li>2. If the same error persists, re-install the PCI board in failed PCI slot.</li> <li>3. If the same error persists, replace the PCI board in failed PCI slot.</li> <li>4. If the same error persists, contact your service representative.</li> </ol>

With the PCI-related error message, "slot " indicates the PCI slot.

In the example below, "slot 01" indicates the PCI slot 1.

```

ERROR
Expansion Rom not initialized - PCI Network Controller in slot 01

```

## Other POST Errors

The error messages listed below are not displayed on the screen. They are logged in IPMI system event log.

Error code	On-screen message
	Recommended action
0230	System RAM Failed
	<ol style="list-style-type: none"><li>1. Press the POWER switch for 4 seconds or longer to power off the server. Then, press the POWER switch to power on the server.</li><li>2. Press the RESET switch to reset the server.</li><li>3. If the same error persists, re-install the memory backboard.</li><li>4. If the same error persists, check if DIMMs are properly installed on memory backboard.</li><li>5. If the same error persists, re-install the DIMMs on memory backboard.</li><li>6. If the same error persists, replace the memory backboard.</li><li>7. If the same error persists, replace the DIMMs on memory backboard.</li><li>8. If the same error persists, re-install the processor.</li><li>9. If the same error persists, replace the processor.</li><li>10. If the same error persists, contact your service representative.</li></ol>
0231	Shadow Ram Failed
	<ol style="list-style-type: none"><li>1. Reboot the server.</li><li>2. If the same error persists, re-install the memory backboard.</li><li>3. If the same error persists, check if DIMMs are properly installed on memory backboard.</li><li>4. If the same error persists, re-install the DIMMs on memory backboard.</li><li>5. If the same error persists, replace the memory backboard.</li><li>6. If the same error persists, replace the DIMMs on memory backboard.</li><li>7. If the same error persists, re-install the processor.</li><li>8. If the same error persists, replace the processor.</li><li>9. If the same error persists, contact your service representative.</li></ol>
8302	Previous startup failure
	You can continue to operate the server. If this error frequently occurs or you cannot correct the problem, contact your service representative.

## Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-3-3-1 indicates 1 beep, pause, 3 beeps, pause, 3 beeps, pause, and 1 beep notifying that memory is not detected or DIMM type is incorrect.

Beep code	Description	Recommended action
1-2	Video BIOS initialization error	If nothing is displayed, check if the connector of the display unit is properly connected. If the error persists, contact your service representative to replace the mother board.
1-2	Option ROM initialization error	If an expansion of Option ROM for additionally installed PCI board is not displayed, check if the PCI board is properly installed. If the error persists, contact your service representative to replace the mother board or PCI board.
1-3-3-1	Memory is not detected. Or, DIMM type is incorrect.	Check if the DIMM and memory backboards are properly connected. If the error persists, contact your service representative to replace DIMM or memory backboard.
1-3-4-1	DRAM Address error	
1-3-4-3	DRAM test Low Byte error	
1-4-1-1	DRAM test High Byte error	
1-5-1-1	Processor fails to start.	Check if the processor is properly installed. If the error persists, contact your service representative to replace processor or mother board.
1-5-2-1	Processor missing	
1-5-2-3	Processors of various types and voltages coexist.	Check if the additionally installed processor is supported by the server. Check also the installation of processor. If the error persists, contact your service representative to replace the processor or mother board.
2-2-3-1	Unexpected interrupt test error	Contact your service representative to replace the I/O riser board.

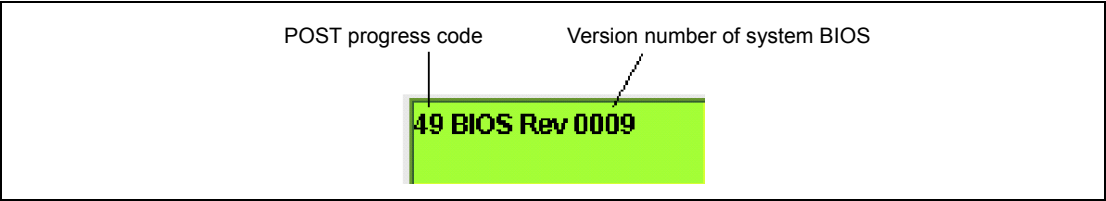
**Error Messages on Virtual LCD**

On the Web browser of EXPRESSSCOPE Engine 2 (BMC), you can view the error messages displayed on virtual LCD. The following table lists error messages displayed on upper and lower lines and actions to take.

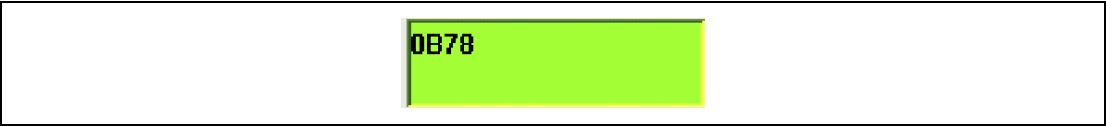
On-screen error messages related to devices such as processor, memory, and fans and installation locations are associated as shown in the figure on pages 8-18 and 8-19.

If POST detects an error, it displays POST error code on Virtual LCD upon completion of POST.

**POST in progress**



**POST error code**





## POST Progress Codes

POST progress code	Description
FCh	Initializing processor, memory, and bus
28h	Initializing and checking memory
2Ah	Zero Clear of memory
2Ch	Address line test of memory
2Eh	Data line test of memory
0Ah	Initializing processor
2Fh	Setting cache for processor
38h	Shadowing system BIOS
67h	Initializing application processor
69h	Initializing SMI (level 1)
49h	Initializing PCI device (Resource assignment)
55h	Initializing USB
4Ah	Initializing video controller
4Ch	Shadowing video BIOS
59h	Initializing display feature of POST
C6h	Initializing console redirection feature
4Eh	Displaying copyright
50h	Displaying processor information
60h	Test for expanded memory
62h	Address test for expanded memory
68h	Configuring cache
6Ah	Displaying cache size
87h	Configuring I/O device
98h	Expanding option ROM of PCI device
93h	Configuring multi-processor
9Ch	Initializing SMI (level 2)
BAh	Initializing SMBIOS
C3h	Displaying POST error
ACH	Starting BIOS SETUP
B0h	Checking POST error
BDh	Displaying Boot menu
97h	Creating MP table
C0h	Starting boot process

## Relation of Memory backboard Numbers and Processor Numbers

The memory backboard is connected to the processor as shown in the table below.

Memory backboard number	Processor number
1	1
2	
3	2
4	
5	3
6	
7	4
8	

## Recommended Action

If "Restart the server" is shown in "Recommended Action" column, take one of the following measures depending on the server status.

- Issue an OS command to reset the server.
- Issue an OS command to power off the server, then press the POWER switch to power on the server.
- Press the POWER switch to power off the server, then press the POWER switch to power on the server.
- Press and hold the POWER switch for 4 seconds or longer to power off the server, then press the POWER switch to power on the server.
- Press **Ctrl + Alt + Del** to reset the server (during POST).
- Press the RESET switch to reset the server.
- Issue a command (e.g., power cycle or system reset) from management PC to restart the server.
- Power off the server, and disconnect AC power cord. Then, connect the AC power cord again, and power on the server.

## Messages displayed on upper line (BIOS Message)

### When STATUS lamp is lighting in green

On-screen message	Description
	Recommended action
Prepare To Boot	POST completes normally.
	This is not an error.

### When STATUS lamp is flashing in green

On-screen message	Description
	Recommended action
CPU Reconfigured	The system has started with the processor degraded.
	<ul style="list-style-type: none"> <li>* Run BIOS SETUP, select [Main] - [Processor Settings] - [Processor Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>* If the same error persists, contact your service representative.</li> </ul>
Mem Reconfigured	The system has started with system memory degraded.
	<ul style="list-style-type: none"> <li>* Run BIOS SETUP, select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then select [Exit] - [Exit Saving Changes].</li> <li>* If the same error persists, contact your service representative.</li> </ul>
MR 1 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 1.
MR 1 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 1.
MR 1 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 1.
MR 1 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 1.
MR 1 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 1.
MR 1 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 1.
MR 1 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 1.
MR 1 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 1.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 1.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 1 with new one.</li> <li>* If the error persists, remove and re-install the processor 1.</li> <li>* If the error persists, replace the processor 1 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
	<p>NOTE: The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 2 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 2.
MR 2 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 2.
MR 2 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 2.
MR 2 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 2.
MR 2 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 2.
MR 2 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 2.
MR 2 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 2.
MR 2 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 2.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 2.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 2 with new one.</li><li>* If the error persists, remove and re-install the processor 1.</li><li>* If the error persists, replace the processor 1 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<p><b>NOTE:</b></p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 3 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 3.
MR 3 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 3.
MR 3 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 3.
MR 3 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 3.
MR 3 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 3.
MR 3 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 3.
MR 3 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 3.
MR 3 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 3.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 3.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 3 with new one.</li> <li>* If the error persists, remove and re-install the processor 2.</li> <li>* If the error persists, replace the processor 2 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE: The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 4 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 4.
MR 4 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 4.
MR 4 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 4.
MR 4 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 4.
MR 4 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 4.
MR 4 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 4.
MR 4 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 4.
MR 4 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 4.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 4.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 4 with new one.</li><li>* If the error persists, remove and re-install the processor 2.</li><li>* If the error persists, replace the processor 2 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<p>NOTE:</p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 5 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 5.
MR 5 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 5.
MR 5 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 5.
MR 5 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 5.
MR 5 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 5.
MR 5 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 5.
MR 5 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 5.
MR 5 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 5.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 5.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 5 with new one.</li> <li>* If the error persists, remove and re-install the processor 3.</li> <li>* If the error persists, replace the processor 3 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE: The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 6 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 6.
MR 6 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 6.
MR 6 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 6.
MR 6 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 6.
MR 6 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 6.
MR 6 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 6.
MR 6 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 6.
MR 6 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 6.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 6.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 6 with new one.</li><li>* If the error persists, remove and re-install the processor 3.</li><li>* If the error persists, replace the processor 3 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<p>NOTE:</p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>



On-screen message	Description
	Recommended action
MR 7 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 7.
MR 7 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 7.
MR 7 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 7.
MR 7 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 7.
MR 7 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 7.
MR 7 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 7.
MR 7 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 7.
MR 7 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 7.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 7.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 7 with new one.</li> <li>* If the error persists, remove and re-install the processor 4.</li> <li>* If the error persists, replace the processor 4 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE: The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 8 DIMM 1A CE	A correctable error frequently occurred on DIMM_1A installed in memory backboard 8.
MR 8 DIMM 1B CE	A correctable error frequently occurred on DIMM_1B installed in memory backboard 8.
MR 8 DIMM 1C CE	A correctable error frequently occurred on DIMM_1C installed in memory backboard 8.
MR 8 DIMM 1D CE	A correctable error frequently occurred on DIMM_1D installed in memory backboard 8.
MR 8 DIMM 2A CE	A correctable error frequently occurred on DIMM_2A installed in memory backboard 8.
MR 8 DIMM 2B CE	A correctable error frequently occurred on DIMM_2B installed in memory backboard 8.
MR 8 DIMM 2C CE	A correctable error frequently occurred on DIMM_2C installed in memory backboard 8.
MR 8 DIMM 2D CE	A correctable error frequently occurred on DIMM_2D installed in memory backboard 8.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 8.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 8 with new one.</li><li>* If the error persists, remove and re-install the processor 4.</li><li>* If the error persists, replace the processor 4 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<p>NOTE:</p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
Mem Riser 1 CE	A correctable bus error frequently occurred on memory backboard 1.
Mem Riser 2 CE	A correctable bus error frequently occurred on memory backboard 2.
Mem Riser 3 CE	A correctable bus error frequently occurred on memory backboard 3.
Mem Riser 4 CE	A correctable bus error frequently occurred on memory backboard 4.
Mem Riser 5 CE	A correctable bus error frequently occurred on memory backboard 5.
Mem Riser 6 CE	A correctable bus error frequently occurred on memory backboard 6.
Mem Riser 7 CE	A correctable bus error frequently occurred on memory backboard 7.
Mem Riser 8 CE	A correctable bus error frequently occurred on memory backboard 8.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed memory backboard.</li> <li>* If the error persists, remove and re-install the DIMMs installed in the failed memory backboard.</li> <li>* If the error persists, replace the failed memory backboard with new one.</li> <li>* If the error persists, replace DIMMs installed in the failed memory backboard with new one.</li> <li>* If the error persists, remove and re-install the failed memory backboard and the relevant processor.</li> <li>* If the error persists, replace the failed memory backboard and the relevant processor with new ones.</li> <li>* If the same error persists, contact your service representative.</li> </ul>

On-screen message	Description
	Recommended action
MR 1 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 1, resulting in memory mirror failover.
MR 1 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 1, resulting in memory mirror failover.
MR 1 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 1, resulting in memory mirror failover.
MR 1 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 1, resulting in memory mirror failover.
	You may continue to use or run the system. However, try the following steps: <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 1.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 1 with new one.</li><li>* If the error persists, remove and re-install the processor 1.</li><li>* If the error persists, replace the processor 1 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<b>NOTE:</b> The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].

On-screen message	Description
	Recommended action
MR 2 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 2, resulting in memory mirror failover.
MR 2 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 2, resulting in memory mirror failover.
MR 2 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 2, resulting in memory mirror failover.
MR 2 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 2, resulting in memory mirror failover.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 3.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 2 with new one.</li> <li>* If the error persists, remove and re-install the processor 1.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p><b>NOTE:</b> The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 3 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 3, resulting in memory mirror failover.
MR 3 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 3, resulting in memory mirror failover.
MR 3 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 3, resulting in memory mirror failover.
MR 3 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 3, resulting in memory mirror failover.
	You may continue to use or run the system. However, try the following steps: <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 3.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 3 with new one.</li><li>* If the error persists, remove and re-install the processor 2.</li><li>* If the error persists, replace the processor 2 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<b>NOTE:</b> The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].

On-screen message	Description
	Recommended action
MR 4 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 4, resulting in memory mirror failover.
MR 4 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 4, resulting in memory mirror failover.
MR 4 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 4, resulting in memory mirror failover.
MR 4 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 4, resulting in memory mirror failover.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 4.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 4 with new one.</li> <li>* If the error persists, remove and re-install the processor 2.</li> <li>* If the error persists, replace the processor 2 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
	<p><b>NOTE:</b></p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 5 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 5, resulting in memory mirror failover.
MR 5 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 5, resulting in memory mirror failover.
MR 5 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 5, resulting in memory mirror failover.
MR 5 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 5, resulting in memory mirror failover.
	You may continue to use or run the system. However, try the following steps: <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 5.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 5 with new one.</li><li>* If the error persists, remove and re-install the processor 3.</li><li>* If the error persists, replace the processor 3 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<b>NOTE:</b> The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].



On-screen message	Description
	Recommended action
MR 6 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 6, resulting in memory mirror failover.
MR 6 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 6, resulting in memory mirror failover.
MR 6 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 6, resulting in memory mirror failover.
MR 6 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 6, resulting in memory mirror failover.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 6.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 6 with new one.</li> <li>* If the error persists, remove and re-install the processor 3.</li> <li>* If the error persists, replace the processor 3 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
	<p><b>NOTE:</b></p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 7 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 7, resulting in memory mirror failover.
MR 7 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 7, resulting in memory mirror failover.
MR 7 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 7, resulting in memory mirror failover.
MR 7 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 7, resulting in memory mirror failover.
	You may continue to use or run the system. However, try the following steps: <ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove and re-install the failed DIMM.</li><li>* If the error persists, remove and re-install the memory backboard 7.</li><li>* If the error persists, replace the failed DIMM with new one.</li><li>* If the error persists, replace the memory backboard 7 with new one.</li><li>* If the error persists, remove and re-install the processor 4.</li><li>* If the error persists, replace the processor 4 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
	<b>NOTE:</b> The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].

On-screen message	Description
	Recommended action
MR 8 D 1A/1C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1A and DIMM_1C in memory backboard 8, resulting in memory mirror failover.
MR 8 D 1B/1D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_1B and DIMM_1D in memory backboard 8, resulting in memory mirror failover.
MR 8 D 2A/2C UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2A and DIMM_2C in memory backboard 8, resulting in memory mirror failover.
MR 8 D 2B/2D UCE	When memory mirroring is configured, an uncorrectable error occurred on DIMM_2B and DIMM_2D in memory backboard 8, resulting in memory mirror failover.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the failed DIMM.</li> <li>* If the error persists, remove and re-install the memory backboard 8.</li> <li>* If the error persists, replace the failed DIMM with new one.</li> <li>* If the error persists, replace the memory backboard 8 with new one.</li> <li>* If the error persists, remove and re-install the processor 4.</li> <li>* If the error persists, replace the processor 4 with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
	<p><b>NOTE:</b></p> <p>The DIMM Fault lamp on memory backboard is lit amber, and the information is stored as DIMM error log. Accordingly, the DIMM Fault lamp on memory backboard is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Advanced] - [Memory Configuration] -[Memory Retest] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
MR 1 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 1, resulting in memory mirror failover.
MR 2 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 2, resulting in memory mirror failover.
MR 3 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 3, resulting in memory mirror failover.
MR 4 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 4, resulting in memory mirror failover.
MR 5 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 5, resulting in memory mirror failover.
MR 6 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 6, resulting in memory mirror failover.
MR 7 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 7, resulting in memory mirror failover.
MR 8 FailOver 1	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 8, resulting in memory mirror failover.
MR 1 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 1, resulting in memory mirror failover.
MR 2 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 2, resulting in memory mirror failover.
MR 3 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 3, resulting in memory mirror failover.
MR 4 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 4, resulting in memory mirror failover.
MR 5 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 5, resulting in memory mirror failover.
MR 6 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 6, resulting in memory mirror failover.
MR 7 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 7, resulting in memory mirror failover.
MR 8 FailOver 2	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 8, resulting in memory mirror failover.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the DIMMs installed in the failed memory backboard.</li> <li>* If the error persists, remove and re-install the failed memory backboard.</li> <li>* If the error persists, replace the failed memory backboard with new one.</li> <li>* If the error persists, replace DIMMs installed in the failed memory backboard with new one.</li> <li>* If the error persists, remove and re-install the failed memory backboard and the relevant processor.</li> <li>* If the error persists, replace the failed memory backboard and the relevant processor with new ones.</li> <li>* If the same error persists, contact your service representative.</li> </ul>

On-screen message	Description
	Recommended action
	<p>Remarks:</p> <p>The failed component may be identified by the following information shown after restart of the server.</p> <ul style="list-style-type: none"> <li>• Status of DIMM Fault lamp on memory backboard</li> <li>• POST error message (POST error code)</li> </ul> <p>IPMI information file (IPMI.DAT file)</p>
MR 1/2 FailOver	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 1/2, resulting in memory mirror failover.
MR 3/4 FailOver	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 3/4, resulting in memory mirror failover.
MR 5/6 FailOver	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 5/6, resulting in memory mirror failover.
MR 7/8 FailOver	When memory mirroring is configured, an uncorrectable error occurred on memory backboard 7/8, resulting in memory mirror failover.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the DIMMs installed in the failed memory backboard.</li> <li>* If the error persists, remove and re-install the failed memory backboard.</li> <li>* If the error persists, replace the failed memory backboard with new one.</li> <li>* If the error persists, replace DIMMs installed in the failed memory backboard with new one.</li> <li>* If the error persists, remove and re-install the failed memory backboard and the relevant processor.</li> <li>* If the error persists, replace the failed memory backboard and the relevant processor with new ones.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>Remarks:</p> <p>The failed component may be identified by the following information shown after restart of the server.</p> <ul style="list-style-type: none"> <li>• Status of DIMM Fault lamp on memory backboard</li> <li>• POST error message (POST error code)</li> </ul> <p>IPMI information file (IPMI.DAT file)</p>

On-screen message	Description
	Recommended action
Mirror FailOver1	When memory mirroring is configured, a memory mirror failover occurred.
Mirror FailOver2	When memory mirroring is configured, a memory mirror failover occurred.
Mirror FailOver3	When memory mirroring is configured, a memory mirror failover occurred.
Mirror FailOver4	When memory mirroring is configured, a memory mirror failover occurred.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the DIMMs installed in the failed memory backboard.</li> <li>* If the error persists, remove and re-install the failed memory backboard.</li> <li>* If the error persists, replace the failed memory backboard with new one.</li> <li>* If the error persists, replace DIMMs installed in the failed memory backboard with new one.</li> <li>* If the error persists, remove and re-install the failed memory backboard and the relevant processor.</li> <li>* If the error persists, replace the failed memory backboard and the relevant processor with new ones.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>Remarks:</p> <p>The failed component may be identified by the following information shown after restart of the server.</p> <ul style="list-style-type: none"> <li>• Status of DIMM Fault lamp on memory backboard</li> <li>• POST error message (POST error code)</li> </ul> <p>IPMI information file (IPMI.DAT file)</p>
Sys Mem UCE PSN	An uncorrectable error occurred on system memory.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>Remarks:</p> <p>The failed component may be identified by the following information shown after restart of the server.</p> <ul style="list-style-type: none"> <li>• Status of DIMM Fault lamp on memory backboard</li> <li>• POST error message (POST error code)</li> </ul> <p>IPMI information file (IPMI.DAT file)</p>
IR NIC 1 CE	A correctable PCI Express bus error occurred on onboard LAN1 or LAN2 controller installed on I/O riser board.
IR NIC 2 CE	A correctable PCI Express bus error occurred on onboard LAN3 or LAN4 controller installed on I/O riser board.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the same error persists, contact your service representative.</li> </ul>

On-screen message	Description
	Recommended action
SR SAS CE	A correctable PCI Express bus error occurred on SAS RAID controller installed in SAS slot.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove the failed PCI board from SAS slot and re-install it.</li> <li>* If the error persists, replace the failed PCI board in SAS slot with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE:</p> <p>The SAS Slot Fault lamp on mother board is lit amber, and the information is stored as PCI bus error log. Accordingly, the SAS Slot Fault lamp on mother board is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Server] - [Clear FRU LED] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>
PCI Slot 01 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 1.
PCI Slot 02 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 2.
PCI Slot 03 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 3.
PCI Slot 04 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 4.
PCI Slot 05 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 5.
PCI Slot 06 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 6.
PCI Slot 07 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 7.
PCI Slot 08 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 8.
PCI Slot 09 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 9.
PCI Slot 10 CE	A correctable bus error frequently occurred on PCI board installed in PCI slot 10.
	<p>You may continue to use or run the system. However, try the following steps:</p> <ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove the failed PCI board and re-install it.</li> <li>* If the error persists, replace the failed PCI board with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE:</p> <p>The PCI Slot Fault lamp on mother board is lit amber, and the information is stored as PCI bus error log. Accordingly, the PCI Slot Fault lamp on mother board is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Server] - [Clear FRU LED] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>

On-screen message	Description
	Recommended action
BB IOH 1 CE 1	A correctable bus error frequently occurred on IO Hub 1 installed on mother board.
BB IOH 2 CE 1	A correctable bus error frequently occurred on IO Hub 2 installed on mother board.
BB IOH 1 CE 2	A correctable bus error frequently occurred on IO Hub 1 installed on mother board.
BB IOH 2 CE 2	A correctable bus error frequently occurred on IO Hub 2 installed on mother board.
BB IOH 1 CE 3	A correctable bus error frequently occurred on IO Hub 1 installed on mother board.
BB IOH 2 CE 3	A correctable bus error frequently occurred on IO Hub 2 installed on mother board.
BB IOH 1 CE 4	A correctable bus error frequently occurred on IO Hub 1 installed on mother board.
BB IOH 2 CE 4	A correctable bus error frequently occurred on IO Hub 2 installed on mother board.
	You may continue to use or run the system. However, try the following steps: * Restart the server. * If the same error persists, contact your service representative.
BB CE 1	A correctable bus error frequently occurred on mother board.
BB CE 2	A correctable bus error frequently occurred on mother board.
BB CE 3	A correctable bus error frequently occurred on mother board.
BB CE 4	A correctable bus error frequently occurred on mother board.
BB CE 5	A correctable bus error frequently occurred on mother board.
	You may continue to use or run the system. However, try the following steps: * Restart the server. * If the same error persists, contact your service representative.
Processor 1 CE 1	A correctable internal error frequently occurred on processor 1.
Processor 2 CE 1	A correctable internal error frequently occurred on processor 2.
Processor 3 CE 1	A correctable internal error frequently occurred on processor 3.
Processor 4 CE 1	A correctable internal error frequently occurred on processor 4.
Processor 1 CE 2	A correctable external bus error frequently occurred on processor 1.
Processor 2 CE 2	A correctable external bus error frequently occurred on processor 2.
Processor 3 CE 2	A correctable external bus error frequently occurred on processor 3.
Processor 4 CE 2	A correctable external bus error frequently occurred on processor 4.
	You may continue to use or run the system. However, try the following steps: * Restart the server. * If the error persists, remove the failed processor and re-install it. * If the error persists, replace the failed processor with new one. * If the same error persists, contact your service representative.



### When STATUS lamp is off

On-screen message	Description
	Recommended action
SystemBIOS Start	System BIOS has started.
	This is not an error.
BIOSRecovery run	A fatal error occurred on system BIOS ROM.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* Make sure that the jumper pin is set at the proper position.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
ErrPause in POST	The system is waiting for key entry due to serious POST error.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* Check POST error messages and POST error code and take actions for the displayed message.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
MEMR 1 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 1.
MEMR 2 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 2.
MEMR 3 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 3.
MEMR 4 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 4.
MEMR 5 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 5.
MEMR 6 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 6.
MEMR 7 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 7.
MEMR 8 DIMMs UCE	An uncorrectable error occurred on DIMM installed on memory backboard 8.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the DIMMs installed in the failed memory backboard.</li> <li>* If the error persists, remove and re-install the failed memory backboard.</li> <li>* If the error persists, replace the failed memory backboard with new one.</li> <li>* If the error persists, replace DIMMs installed in the failed memory backboard with new one.</li> <li>* If the error persists, remove and re-install the failed memory backboard and the relevant processor.</li> <li>* If the error persists, replacethe failed memory backboard and the relevant processor with new ones.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
	<p>Remarks:</p> <p>The failed component may be identified by the following information shown after restart of the server.</p> <ul style="list-style-type: none"> <li>• Status of DIMM Fault lamp on memory backboard</li> <li>• POST error message (POST error code)</li> </ul> <p>IPMI information file (IPMI.DAT file)</p>

On-screen message	Description
	Recommended action
Sys Mem UCE	An uncorrectable error occurred on system memory.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
	<p>Remarks:</p> <p>The failed component may be identified by the following information shown after restart of the server.</p> <ul style="list-style-type: none"> <li>• Status of DIMM Fault lamp on memory backboard</li> <li>• POST error message (POST error code)</li> <li>• IPMI information file (IPMI.DAT file)</li> </ul>
Mem Riser 1 UCE	An uncorrectable bus error occurred on memory backboard 1.
Mem Riser 2 UCE	An uncorrectable bus error occurred on memory backboard 2.
Mem Riser 3 UCE	An uncorrectable bus error occurred on memory backboard 3.
Mem Riser 4 UCE	An uncorrectable bus error occurred on memory backboard 4.
Mem Riser 5 UCE	An uncorrectable bus error occurred on memory backboard 5.
Mem Riser 6 UCE	An uncorrectable bus error occurred on memory backboard 6.
Mem Riser 7 UCE	An uncorrectable bus error occurred on memory backboard 7.
Mem Riser 8 UCE	An uncorrectable bus error occurred on memory backboard 8.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove and re-install the DIMMs installed in the failed memory backboard.</li> <li>* If the error persists, remove and re-install the failed memory backboard.</li> <li>* If the error persists, replace the failed memory backboard with new one.</li> <li>* If the error persists, replace DIMMs installed in the failed memory backboard with new one.</li> <li>* If the error persists, remove and re-install the failed memory backboard and the relevant processor.</li> <li>* If the error persists, replace the failed memory backboard and the relevant processor with new ones.</li> <li>* If the same error persists, contact your service representative.</li> </ul>
IR NIC 1 UCE	An uncorrectable PCI Express bus error occurred on onboard LAN1 or LAN2 controller installed on I/O riser board.
IR NIC 2 UCE	An uncorrectable PCI Express bus error occurred on onboard LAN3 or LAN4 controller installed on I/O riser board.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the same error persists, contact your service representative.</li> </ul>

On-screen message	Description
	Recommended action
SR SAS UCE	An uncorrectable PCI Express bus error occurred on SAS RAID controller installed in SAS slot.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove the failed PCI board from SAS slot and re-install it.</li> <li>* If the error persists, replace the failed PCI board in SAS slot with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE: The SAS Slot Fault lamp on mother board is lit amber, and the information is stored as PCI bus error log. Accordingly, the SAS Slot Fault lamp on mother board is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Server] - [Clear FRU LED] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>
PCI Slot 01 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 1.
PCI Slot 02 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 2.
PCI Slot 03 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 3.
PCI Slot 04 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 4.
PCI Slot 05 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 5.
PCI Slot 06 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 6.
PCI Slot 07 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 7.
PCI Slot 08 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 8.
PCI Slot 09 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 9.
PCI Slot 10 UCE	An uncorrectable bus error occurred on PCI board installed in PCI slot 10.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the error persists, remove the failed PCI board and re-install it.</li> <li>* If the error persists, replace the failed PCI board with new one.</li> <li>* If the same error persists, contact your service representative.</li> </ul> <p>NOTE: The PCI Slot Fault lamp on mother board is lit amber, and the information is stored as PCI bus error log. Accordingly, the PCI Slot Fault lamp on mother board is lit amber when the server restarts. To turn it off, run BIOS SETUP and select [Server] - [Clear FRU LED] - [Yes], then execute [Exit] - [Exit Saving Changes].</p>
BB IOH 1 UCE 1	An uncorrectable bus error occurred on IO Hub 1 installed on mother board.
BB IOH 2 UCE 1	An uncorrectable bus error occurred on IO Hub 2 installed on mother board.
BB IOH 1 UCE 2	An uncorrectable bus error occurred on IO Hub 1 installed on mother board.
BB IOH 2 UCE 2	An uncorrectable bus error occurred on IO Hub 2 installed on mother board.
BB IOH 1 UCE 3	An uncorrectable bus error occurred on IO Hub 1 installed on mother board.
BB IOH 2 UCE 3	An uncorrectable bus error occurred on IO Hub 2 installed on mother board.
BB IOH 1 UCE 4	An uncorrectable bus error occurred on IO Hub 1 installed on mother board.
BB IOH 2 UCE 4	An uncorrectable bus error occurred on IO Hub 2 installed on mother board.
	<ul style="list-style-type: none"> <li>* Restart the server.</li> <li>* If the same error persists, contact your service representative.</li> </ul>

On-screen message	Description
	Recommended action
BB UCE 1	An uncorrectable bus error occurred on mother board.
BB UCE 2	An uncorrectable bus error occurred on mother board.
BB UCE 3	An uncorrectable bus error occurred on mother board.
BB UCE 4	An uncorrectable bus error occurred on mother board.
BB UCE 5	An uncorrectable bus error occurred on mother board.
	* Restart the server. * If the same error persists, contact your service representative.
Processor 1 UCE1	An uncorrectable internal error occurred on processor 1.
Processor 2 UCE1	An uncorrectable internal error occurred on processor 2.
Processor 3 UCE1	An uncorrectable internal error occurred on processor 3.
Processor 4 UCE1	An uncorrectable internal error occurred on processor 4.
Processor 1 UCE2	An uncorrectable external bus error occurred on processor 1.
Processor 2 UCE2	An uncorrectable external bus error occurred on processor 2.
Processor 3 UCE2	An uncorrectable external bus error occurred on processor 3.
Processor 4 UCE2	An uncorrectable external bus error occurred on processor 4.
	* Restart the server. * If the error persists, remove the failed processor and re-install it. * If the error persists, replace the failed processor with new one. * If the same error persists, contact your service representative.

## Messages displayed on lower line (BMC Message)

### When STATUS lamp is off

On-screen message	Description
	Recommended action
DUMP Request!	DUMP switch was pressed. Wait until OS dump process completes. If the dump process is not complete, take one of the following steps. 1. Reboot (reset) the server. 2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server. If the same error persists, contact your service representative.
SMI Timeout	A timeout error occurred during system management interrupt.
WDT Timeout	Watchdog timer timeout error occurred.
WDT Power Cycle	The system is rebooted due to watchdog timer timeout error.
	1. Reboot (reset) the server. 2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server. If the same error persists, contact your service representative.
Proc1 Thermal Trip	Forced power-off occurred due to a thermal error in processor #1.
Proc2 Thermal Trip	Forced power-off occurred due to a thermal error in processor #2.
Proc3 Thermal Trip	Forced power-off occurred due to a thermal error in processor #3.
Proc4 Thermal Trip	Forced power-off occurred due to a thermal error in processor #4.
	1. Reboot (reset) the server. 2. Check if fans in the server work normally. 3. Check installation status of failed processor. 4. Replace the failed processor. If the same error persists, contact your service representative.
Proc1 IERR	An internal error (IERR) was detected in processor #1.
Proc2 IERR	An internal error (IERR) was detected in processor #2.
Proc3 IERR	An internal error (IERR) was detected in processor #3.
Proc4 IERR	An internal error (IERR) was detected in processor #4.
Proc1 Config Err	The processor installed in the processor #1 slot is unsupported, failed, or its combination is illegal.
Proc2 Config Err	The processor installed in the processor #2 slot is unsupported, failed, or its combination is illegal.
Proc3 Config Err	The processor installed in the processor #3 slot is unsupported, failed, or its combination is illegal.
Proc4 Config Err	The processor installed in the processor #4 slot is unsupported, failed, or its combination is illegal.
	1. Reboot (reset) the server. 2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server. 3. Check installation status of the failed rocessor. 4. Replace the failed processor. If the same error persists, contact your service representative.

On-screen message	Description
	Recommended action
Memory Failure	No system memory DIMM was detected, or a fatal error was found on DIMM, thus there is no available memory.
	<ul style="list-style-type: none"><li>* Restart the server.</li><li>* If the error persists, remove DIMMs installed on memory backboard and re-install them.</li><li>* If the error persists, remove the memory backboard and re-install it.</li><li>* If the error persists, remove processor 1 or 2, then re-install it.</li><li>* If the error persists, replace DIMMs on memory backboard with new ones.</li><li>* If the error persists, replace the memory backboard.</li><li>* If the error persists, replace the processor 1 or 2 with new one.</li><li>* If the same error persists, contact your service representative.</li></ul>
Entering Setup	Operation is performed in BIOS SETUP.
	This is not an error.

**When STATUS lamp is lighting in amber**

On-screen message	Description
	Recommended action
Proc Missing	No processor is installed.
	1. Check installation status of processor. 2. Replace the processor. If the same error persists, contact your service representative.
PS1 AC Lost Alm	The power supply unit #1 failed to supply AC power.
PS2 AC Lost Alm	The power supply unit #2 failed to supply AC power.
PS3 AC Lost Alm	The power supply unit #3 failed to supply AC power.
PS4 AC Lost Alm	The power supply unit #4 failed to supply AC power.
	1. Check connection status of AC power cord of failed power supply unit. 2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server. If the same error persists, contact your service representative.
Unexpected Pw Lost	A power failure occurred.
	Contact your service representative.
Power On Ctrl Fault	A power failure occurred.
	Contact your service representative.
IOR Power Fault	An error was detected in power circuit of I/O riser board.
FPPB Power Fault	An error was detected in power circuit of front panel fan board.
PSU Power Fault	An error was detected in power circuit of power distribution board.
BB Power Fault	An error was detected in power circuit of mother board.
	1. Reboot (reset) the server. 2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server. If the same error persists, contact your service representative.
Mem1 Power Fault	An error was detected in power circuit of memory back board #1.
Mem2 Power Fault	An error was detected in power circuit of memory back board #2.
Mem3 Power Fault	An error was detected in power circuit of memory back board #3.
Mem4 Power Fault	An error was detected in power circuit of memory back board #4.
Mem5 Power Fault	An error was detected in power circuit of memory back board #5.
Mem6 Power Fault	An error was detected in power circuit of memory back board #6.
Mem7 Power Fault	An error was detected in power circuit of memory back board #7.
Mem8 Power Fault	An error was detected in power circuit of memory back board #8.
	1. Reboot (reset) the server. 2. Check installation status of the failed memory backboard. 3. Replace the failed memory backboard. If the same error persists, contact your service representative.

On-screen message	Description
	Recommended action
Proc1 CacheAlm02	A cache voltage alarm (lower limit) was detected in processor #1.
Proc1 CacheAlm09	A cache voltage alarm (upper limit) was detected in processor #1.
Proc2 CacheAlm02	A cache voltage alarm (lower limit) was detected in processor #2.
Proc2 CacheAlm09	A cache voltage alarm (upper limit) was detected in processor #2.
Proc3 CacheAlm02	A cache voltage alarm (lower limit) was detected in processor #3.
Proc3 CacheAlm09	A cache voltage alarm (upper limit) was detected in processor #3.
Proc4 CacheAlm02	A cache voltage alarm (lower limit) was detected in processor #4.
Proc4 CacheAlm09	A cache voltage alarm (upper limit) was detected in processor #4.
Proc1 Core Alm02	A core voltage alarm (lower limit) was detected in processor #1.
Proc1 Core Alm09	A core voltage alarm (upper limit) was detected in processor #1.
Proc2 Core Alm02	A core voltage alarm (lower limit) was detected in processor #2.
Proc2 Core Alm09	A core voltage alarm (upper limit) was detected in processor #2.
Proc3 Core Alm02	A core voltage alarm (lower limit) was detected in processor #3.
Proc3 Core Alm09	A core voltage alarm (upper limit) was detected in processor #3.
Proc4 Core Alm02	A core voltage alarm (lower limit) was detected in processor #4.
Proc4 Core Alm09	A core voltage alarm (upper limit) was detected in processor #4.
	<ol style="list-style-type: none"> <li>1. Reboot (reset) the server.</li> <li>2. Check installation status of the failed processor.</li> </ol> <p>If the same error persists, contact your service representative.</p>
BB +3V BAT Alm02	A voltage alarm (lower limit) was detected on lithium battery.
BB +3V BAT Alm09	A voltage alarm (upper limit) was detected on lithium battery.
	<ol style="list-style-type: none"> <li>1. Reboot (reset) the server.</li> <li>2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>3. Check installation status of the lithium battery mounted on mother board.</li> </ol> <p>If the same error persists, contact your service representative.</p>



On-screen message	Description
	Recommended action
Proc12 VIO Alm02	A VIO voltage alarm (lower limit) was detected in processor #1, #2.
Proc12 VIO Alm09	A VIO voltage alarm (upper limit) was detected in processor #1, #2.
IOR+1.0VAUX Alm02	+1.0V AUX voltage alarm (lower limit) was detected on I/O riser board.
IOR+1.0VAUX Alm09	+1.0V AUX voltage alarm (upper limit) was detected on I/O riser board.
IOR+1.5VAUX Alm02	+1.5V AUX voltage alarm (lower limit) was detected on I/O riser board.
IOR+1.5VAUX Alm09	+1.5V AUX voltage alarm (upper limit) was detected on I/O riser board.
IOR+1.8VAUX Alm02	+1.8V AUX voltage alarm (lower limit) was detected on I/O riser board.
IOR+1.8VAUX Alm09	+1.8V AUX voltage alarm (upper limit) was detected on I/O riser board.
BB +1.1Vs Alm02	+1.1Vs voltage alarm (lower limit) was detected
BB +1.1Vs Alm09	+1.1Vs voltage alarm (upper limit) was detected
BB +1.1V Alm02	+1.1V voltage alarm (lower limit) was detected
BB +1.1V Alm09	+1.1V voltage alarm (upper limit) was detected
BB +1.5V Alm02	+1.5V voltage alarm (lower limit) was detected
BB +1.5V Alm09	+1.5V voltage alarm (upper limit) was detected
BB +1.8V Alm02	+1.8V voltage alarm (lower limit) was detected
BB +1.8V Alm09	+1.8V voltage alarm (upper limit) was detected
IOR +3.3Vs Alm02	+3.3Vs voltage alarm (lower limit) was detected on I/O riser board.
IOR +3.3Vs Alm09	+3.3Vs voltage alarm (upper limit) was detected on I/O riser board.
IOR +3.3V Alm02	+3.3Vs voltage alarm (lower limit) was detected on I/O riser board.
IOR +3.3V Alm09	+3.3Vs voltage alarm (upper limit) was detected on I/O riser board.
Proc34 VIO Alm02	A VIO voltage alarm (lower limit) was detected in processor #3, #4.
Proc34 VIO Alm09	A VIO voltage alarm (upper limit) was detected in processor #3, #4.
IOR +12V Alm02	+12V voltage alarm (lower limit) was detected on I/O riser board.
IOR +12V Alm09	+12V voltage alarm (upper limit) was detected on I/O riser board.
	<ol style="list-style-type: none"> <li>1. Reboot (reset) the server.</li> <li>2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>3. Check installation status of I/O riser board.</li> </ol> <p>If the same error persists, contact your service representative.</p>
FP Temp Alm02	A low temperature alarm was detected in front panel.
FP Temp Alm09	A high temperature alarm was detected in front panel.
BB Temp1 Alm02	A low temperature alarm was detected in mother board.
BB Temp1 Alm09	A high temperature alarm was detected in mother board.
BB Temp2 Alm02	A low temperature alarm was detected in mother board.
BB Temp2 Alm09	A high temperature alarm was detected in mother board.
IOR Temp Alm02	A low temperature alarm was detected in I/O riser board.
IOR Temp Alm09	A high temperature alarm was detected in I/O riser board.
	<p>Check if fans in the server work normally.</p> <p>If the same error persists, contact your service representative.</p>

On-screen message	Description
	Recommended action
MEM1 Temp Alm02	A low temperature alarm was detected in memory backboard #1.
MEM1 Temp Alm09	A high temperature alarm was detected in memory backboard #1.
MEM2 Temp Alm02	A low temperature alarm was detected in memory backboard #2.
MEM2 Temp Alm09	A high temperature alarm was detected in memory backboard #2.
MEM3 Temp Alm02	A low temperature alarm was detected in memory backboard #3.
MEM3 Temp Alm09	A high temperature alarm was detected in memory backboard #3.
MEM4 Temp Alm02	A low temperature alarm was detected in memory backboard #4.
MEM4 Temp Alm09	A high temperature alarm was detected in memory backboard #4.
MEM5 Temp Alm02	A low temperature alarm was detected in memory backboard #5.
MEM5 Temp Alm09	A high temperature alarm was detected in memory backboard #5.
MEM6 Temp Alm02	A low temperature alarm was detected in memory backboard #6.
MEM6 Temp Alm09	A high temperature alarm was detected in memory backboard #6.
MEM7 Temp Alm02	A low temperature alarm was detected in memory backboard #7.
MEM7 Temp Alm09	A high temperature alarm was detected in memory backboard #7.
MEM8 Temp Alm02	A low temperature alarm was detected in memory backboard #8.
MEM8 Temp Alm09	<p>A high temperature alarm was detected in memory backboard #8.</p> <ol style="list-style-type: none"> <li>1. Check if fans in the server work normally.</li> <li>2. Check installation status of the failed memory backboard and DIMMs.</li> </ol> <p>If the same error persists, contact your service representative.</p>
PS1 Temp Alm02	A low temperature alarm was detected in power supply unit #1.
PS1 Temp Alm09	A high temperature alarm was detected in power supply unit #1.
PS2 Temp Alm02	A low temperature alarm was detected in power supply unit #2.
PS2 Temp Alm09	A high temperature alarm was detected in power supply unit #2.
PS3 Temp Alm02	A low temperature alarm was detected in power supply unit #3.
PS3 Temp Alm09	A high temperature alarm was detected in power supply unit #3.
PS4 Temp Alm02	A low temperature alarm was detected in power supply unit #4.
PS4 Temp Alm09	<p>A high temperature alarm was detected in power supply unit #4.</p> <ol style="list-style-type: none"> <li>1. Check if fans in the power supply unit work normally.</li> <li>2. Check if fans in the server work normally.</li> <li>3. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>4. Check installation status of the failed power supply unit.</li> <li>5. Replace the failed power supply unit with new one.</li> </ol> <p>If the same error persists, contact your service representative.</p>
Proc1 Therm % 09	A high temperature alarm was detected in processor #1.
Proc2 Therm % 09	A high temperature alarm was detected in processor #2.
Proc3 Therm % 09	A high temperature alarm was detected in processor #3.
Proc4 Therm % 09	A high temperature alarm was detected in processor #4.
	<ol style="list-style-type: none"> <li>1. Check if fans in the server work normally.</li> <li>2. Check installation status of the failed processor and processor heat sink.</li> </ol> <p>If the same error persists, contact your service representative.</p>

On-screen message	Description
	Recommended action
HDD Fault	An error was detected in hard disk drive.
	<ol style="list-style-type: none"> <li>1. Check installation status of the failed hard disk drive.</li> <li>2. While hard disk drives are in RAID configuration, a single failed hard disk drive does not affect the operation of the server. However, it is recommended to replace the failed hard disk drive and rebuild the hard disk drives as soon as possible.</li> </ol> <p>If the same error persists, contact your service representative.</p>

### When STATUS lamp is flashing in amber

On-screen message	Description
	Recommended action
PS1 Supply Alm	An error was detected in power supply unit #1.
PS2 Supply Alm	An error was detected in power supply unit #2.
PS3 Supply Alm	An error was detected in power supply unit #3.
PS4 Supply Alm	An error was detected in power supply unit #4.
	<ol style="list-style-type: none"> <li>1. Check installation status of the failed power supply unit.</li> <li>2. Replace the failed power supply unit with new one.</li> </ol> <p>If the same error persists, contact your service representative.</p>
Cover Open	Cover is open.
	<ol style="list-style-type: none"> <li>1. Check installation status of the top cover.</li> </ol> <p>If the same error persists, contact your service representative.</p>
Proc1 CacheAlm00	A cache voltage warning (lower limit) was detected in processor #1.
Proc1 CacheAlm07	A cache voltage warning (upper limit) was detected in processor #1.
Proc2 CacheAlm00	A cache voltage warning (lower limit) was detected in processor #2.
Proc2 CacheAlm07	A cache voltage warning (upper limit) was detected in processor #2.
Proc3 CacheAlm00	A cache voltage warning (lower limit) was detected in processor #3.
Proc3 CacheAlm07	A cache voltage warning (upper limit) was detected in processor #3.
Proc4 CacheAlm00	A cache voltage warning (lower limit) was detected in processor #4.
Proc4 CacheAlm07	A cache voltage warning (upper limit) was detected in processor #4.
Proc1 Core Alm00	A core voltage warning (lower limit) was detected in processor #1.
Proc1 Core Alm07	A core voltage warning (upper limit) was detected in processor #1.
Proc2 Core Alm00	A core voltage warning (lower limit) was detected in processor #2.
Proc2 Core Alm07	A core voltage warning (upper limit) was detected in processor #2.
Proc3 Core Alm00	A core voltage warning (lower limit) was detected in processor #3.
Proc3 Core Alm07	A core voltage warning (upper limit) was detected in processor #3.
Proc4 Core Alm00	A core voltage warning (lower limit) was detected in processor #4.
Proc4 Core Alm07	A core voltage warning (upper limit) was detected in processor #4.
	<ol style="list-style-type: none"> <li>1. Reboot (reset) the server.</li> <li>2. Check installation status of the failed processor.</li> </ol> <p>If the same error persists, contact your service representative.</p>

On-screen message	Description
	Recommended action
BB +3V BAT Alm00	A voltage warning (lower limit) was detected on lithium battery.
BB +3V BAT Alm07	A voltage warning (upper limit) was detected on lithium battery.
	<ol style="list-style-type: none"> <li>1. Reboot (reset) the server.</li> <li>2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>3. Check installation status of the lithium battery mounted on mother board.</li> </ol> <p>If the same error persists, contact your service representative.</p>
Proc12 VIO Alm00	A VIO voltage warning (lower limit) was detected in processor #1, #2.
Proc12 VIO Alm07	A VIO voltage warning (upper limit) was detected in processor #1, #2.
IOR+1.0VAUX Alm00	+1.0V AUX voltage warning (lower limit) was detected on I/O riser board.
IOR+1.0VAUX Alm07	+1.0V AUX voltage warning (upper limit) was detected on I/O riser board.
IOR+1.5VAUX Alm00	+1.5V AUX voltage warning (lower limit) was detected on I/O riser board.
IOR+1.5VAUX Alm07	+1.5V AUX voltage warning (upper limit) was detected on I/O riser board.
IOR+1.8VAUX Alm00	+1.8V AUX voltage warning (lower limit) was detected on I/O riser board.
IOR+1.8VAUX Alm07	+1.8V AUX voltage warning (upper limit) was detected on I/O riser board.
BB +1.1Vs Alm00	+1.1Vs voltage warning (lower limit) was detected
BB +1.1Vs Alm07	+1.1Vs voltage warning (upper limit) was detected
BB +1.1V Alm00	+1.1V voltage warning (lower limit) was detected
BB +1.1V Alm07	+1.1V voltage warning (upper limit) was detected
BB +1.5V Alm00	+1.5V voltage warning (lower limit) was detected
BB +1.5V Alm07	+1.5V voltage warning (upper limit) was detected
BB +1.8V Alm00	+1.8V voltage warning (lower limit) was detected
BB +1.8V Alm07	+1.8V voltage warning (upper limit) was detected
IOR +3.3Vs Alm00	+3.3Vs voltage warning (lower limit) was detected on I/O riser board.
IOR +3.3Vs Alm07	+3.3Vs voltage warning (upper limit) was detected on I/O riser board.
IOR +3.3V Alm00	+3.3Vs voltage warning (lower limit) was detected on I/O riser board.
IOR +3.3V Alm07	+3.3Vs voltage warning (upper limit) was detected on I/O riser board.
Proc34 VIO Alm00	A VIO voltage warning (lower limit) was detected in processor #3, #4.
Proc34 VIO Alm07	A VIO voltage warning (upper limit) was detected in processor #3, #4.
IOR +12V Alm00	+12V voltage warning (lower limit) was detected on I/O riser board.
IOR +12V Alm07	+12V voltage warning (upper limit) was detected on I/O riser board.
	<ol style="list-style-type: none"> <li>1. Reboot (reset) the server.</li> <li>2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>3. Check installation status of I/O riser board.</li> </ol> <p>If the same error persists, contact your service representative.</p>

On-screen message	Description
	Recommended action
PS1FAN1 Alm 00	A warning was detected on FAN #1 in power supply unit #1.
PS1FAN2 Alm 00	A warning was detected on FAN #2 in power supply unit #1.
PS1FAN3 Alm 00	A warning was detected on FAN #3 in power supply unit #1.
PS1FAN4 Alm 00	A warning was detected on FAN #4 in power supply unit #1.
PS2FAN1 Alm 00	A warning was detected on FAN #1 in power supply unit #2.
PS2FAN2 Alm 00	A warning was detected on FAN #2 in power supply unit #2.
PS2FAN3 Alm 00	A warning was detected on FAN #3 in power supply unit #2.
PS2FAN4 Alm 00	A warning was detected on FAN #4 in power supply unit #2.
PS3FAN1 Alm 00	A warning was detected on FAN #1 in power supply unit #3.
PS3FAN2 Alm 00	A warning was detected on FAN #2 in power supply unit #3.
PS3FAN3 Alm 00	A warning was detected on FAN #3 in power supply unit #3.
PS3FAN4 Alm 00	A warning was detected on FAN #4 in power supply unit #3.
PS4FAN1 Alm 00	A warning was detected on FAN #1 in power supply unit #4.
PS4FAN2 Alm 00	A warning was detected on FAN #2 in power supply unit #4.
PS4FAN3 Alm 00	A warning was detected on FAN #3 in power supply unit #4.
PS4FAN4 Alm 00	A warning was detected on FAN #4 in power supply unit #4.
	<ol style="list-style-type: none"> <li>1. Check if the fans in power supply unit work normally.</li> <li>2. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>3. Check installation status of failed power supply unit.</li> </ol> If the same error persists, contact your service representative.
FAN1 Alm 00	A warning was detected on system FAN #1.
FAN2 Alm 00	A warning was detected on system FAN #2.
FAN3 Alm 00	A warning was detected on system FAN #3.
FAN4 Alm 00	A warning was detected on system FAN #4.
FAN5 Alm 00	A warning was detected on system FAN #5.
FAN6 Alm 00	A warning was detected on system FAN #6.
FAN7 Alm 00	A warning was detected on system FAN #7.
FAN8 Alm 00	A warning was detected on system FAN #8.
	Check if the fans in the server work normally. If the same error persists, contact your service representative.
FP Temp Alm00	A low temperature warning was detected in front panel.
FP Temp Alm07	A high temperature warning was detected in front panel.
BB Temp1 Alm00	A low temperature warning was detected in mother board.
BB Temp1 Alm07	A high temperature warning was detected in mother board.
BB Temp2 Alm00	A low temperature warning was detected in mother board.
BB Temp2 Alm07	A high temperature warning was detected in mother board.
IOR Temp Alm00	A low temperature warning was detected in I/O riser board.
IOR Temp Alm07	A high temperature warning was detected in I/O riser board.
	Check if fans in the server work normally. If the same error persists, contact your service representative.

On-screen message	Description
	Recommended action
MEM1 Temp Alm00	A low temperature warning was detected in memory backboard #1.
MEM1 Temp Alm07	A high temperature warning was detected in memory backboard #1.
MEM2 Temp Alm00	A low temperature warning was detected in memory backboard #2.
MEM2 Temp Alm07	A high temperature warning was detected in memory backboard #2.
MEM3 Temp Alm00	A low temperature warning was detected in memory backboard #3.
MEM3 Temp Alm07	A high temperature warning was detected in memory backboard #3.
MEM4 Temp Alm00	A low temperature warning was detected in memory backboard #4.
MEM4 Temp Alm07	A high temperature warning was detected in memory backboard #4.
MEM5 Temp Alm00	A low temperature warning was detected in memory backboard #5.
MEM5 Temp Alm07	A high temperature warning was detected in memory backboard #5.
MEM6 Temp Alm00	A low temperature warning was detected in memory backboard #6.
MEM6 Temp Alm07	A high temperature warning was detected in memory backboard #6.
MEM7 Temp Alm00	A low temperature warning was detected in memory backboard #7.
MEM7 Temp Alm07	A high temperature warning was detected in memory backboard #7.
MEM8 Temp Alm00	A low temperature warning was detected in memory backboard #8.
MEM8 Temp Alm07	A high temperature warning was detected in memory backboard #8.
	<ol style="list-style-type: none"> <li>1. Check if fans in the server work normally.</li> <li>2. Check installation status of the failed memory backboard and DIMMs.</li> </ol> If the same error persists, contact your service representative.
PS1 Temp Alm00	A low temperature warning was detected in power supply unit #1.
PS1 Temp Alm07	A high temperature warning was detected in power supply unit #1.
PS2 Temp Alm00	A low temperature warning was detected in power supply unit #2.
PS2 Temp Alm07	A high temperature warning was detected in power supply unit #2.
PS3 Temp Alm00	A low temperature warning was detected in power supply unit #3.
PS3 Temp Alm07	A high temperature warning was detected in power supply unit #3.
PS4 Temp Alm00	A low temperature warning was detected in power supply unit #4.
PS4 Temp Alm07	A high temperature warning was detected in power supply unit #4.
	<ol style="list-style-type: none"> <li>1. Check if fans in the power supply unit work normally.</li> <li>2. Check if fans in the server work normally.</li> <li>3. Turn off the DC power of the server, and disconnect the AC power cord. Then, connect the AC power cord again, and reboot the server.</li> <li>4. Check installation status of the failed power supply unit.</li> </ol> If the same error persists, contact your service representative.
Proc1 Therm % 07	A high temperature warning was detected in processor #1.
Proc2 Therm % 07	A high temperature warning was detected in processor #2.
Proc3 Therm % 07	A high temperature warning was detected in processor #3.
Proc4 Therm % 07	A high temperature warning was detected in processor #4.
	<ol style="list-style-type: none"> <li>1. Check if fans in the server work normally.</li> <li>2. Check installation status of the failed processor and processor heat sink.</li> </ol> If the same error persists, contact your service representative.

## SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

### Problems with Server

#### No screen display appears with beep:

- ❑ Are DIMMs installed securely?
  - Check whether DIMMs are connected to the mating connectors firmly.
  - Check whether DIMMs of different specifications are installed in the specific bank. See Chapter 9 for the specifications of DIMMs.
  - Depending on your system configuration, it may take one to ten minutes until some characters appear on the screen after you pressed the POWER switch. If the lamp indication is normal and no beep sounds, wait for a while.

#### Fail to power on the server:

- ❑ Is the server properly supplied with power?
  - Check if the power cord that meets the power specifications for the server is connected to a power outlet (or UPS).
  - Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.
  - Make sure the power breaker for the connected power outlet is on.
  - If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. Refer to the manual that comes with the UPS for details.

Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

<Menu to check: [Server] - [AC-LINK]>
- ❑ Did you press the POWER switch?
  - Press the POWER switch on the front of the server to turn on the power (the POWER lamp lights).

#### Fail to power off the server or POWER switch is disabled:

- ❑ Is the POWER switch enabled?
  - Restart the server and start the BIOS setup utility.

<Menu to check: [Security] - [Power Switch Inhibit]>

**POST fails to complete:**

- ❑ Is the DIMM board properly installed?
  - At least two DIMM boards are required for operation.
- ❑ Is the memory size large?
  - The memory check may take a few minutes if the memory size is large. Wait for a while.
- ❑ Did you perform any keyboard or mouse operation immediately after you started the server?
  - If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.
- ❑ Does the server have contains appropriate memory backboards or PCI devices?
  - Operation of the server with unauthorized devices is not guaranteed.

**Fail to access to internal or external devices (or such devices fail to operate):**

- ❑ Are cables properly connected?
  - Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.
- ❑ Is the power-on order correct?
  - When the server has any external devices connected, power on the external devices first, then the server.
- ❑ Did you install drivers for connected optional devices?
  - Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.
- ❑ Is BIOS configuration correct?
  - When the server has PCI devices connected, make sure to set the PCI device interrupt and others with the BIOS SETUP utility of the server. (Most PCI devices generally do not require any change to the configuration, but some boards do require specific settings. Refer to the manual that comes with the board for details to make correct settings.
    - <Menus to check: [Advanced] - [Peripheral Configuration]  
[Advanced] - [PCI Configuration]  
[Advanced] - [Advanced Chipset Control]>
  - Some devices connected to the serial port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.
    - <Menu to check: : [Advanced] - [Peripheral Configuration]>



**The keyboard or mouse fails to operate:**

- ❑ Is the cable properly connected?
  - Make sure that the cable is connected to the correct connector on the server.
- ❑ Are the server drivers installed?
  - Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

**Fail to access (read or write) to the floppy disk:**

- ❑ Does the floppy disk drive contain a floppy disk?
  - Insert a floppy disk into the floppy disk drive until it clicks.
- ❑ Is the floppy disk write-protected?
  - Place the write-protect switch on the floppy disk to the "Write-enabled" position.
- ❑ Is the floppy disk formatted?
  - Use a formatted floppy disk or format the floppy disk in the floppy disk drive. Refer to the manual that comes with the OS for formatting a floppy disk.

**Fail to access to the CD/DVD-ROM:**

- ❑ Is the CD/DVD-ROM properly set in the optical disk drive tray?
  - The tray is provided with a holder to secure the CD/DVD-ROM. Make sure that the CD/DVD-ROM is placed properly in the holder.
- ❑ Is the CD/DVD-ROM applicable to the server?
  - The CD/DVD-ROM for Macintosh is not available for use.

**Fail to access to the CD-R disk:**

- ❑ Is the mounting surface correct?
  - Take out the CD-R disk from the tray, and then set it again with its labeled surface upward.
- ❑ Is there any soil or crack on CD-R disk?
  - Make sure there is no soil due to fingerprint or others on the disk surface. Also make sure that there is no crack on the disk surface. Clean the disk surface if it is soiled.  
  
If read-out still fails, set another disk of which data has been successfully read out to check if the drive can read the disk.
- ❑ Is the CD-R disk closed?
  - Close the session or set the disk in closed status, and try to read again.
- ❑ Are the CD-R disk and writing software appropriate to the disk drive?
  - The optical disk drive of the server may fail if the combination of disk drive, writing software, and CD-R is not correct.

**Fail to access the hard disk drive:**

- ❑ Is the hard disk drive applicable to the server?
  - Operation of any device that is not authorized by NEC is not guaranteed.
- ❑ Is the hard disk drive properly installed?
  - Make sure to lock the hard disk drive with the lever on its handle. The hard disk drive is not connected to the internal connector when it is not completely installed (see Chapter 9).

**Fail to access the (internal or external) SCSI devices:**

- ❑ Is the SCSI device applicable to the server?
  - Operation of any device that is not authorized by NEC is not guaranteed.
- ❑ Are the SCSI controllers properly configured?
  - If the server has an optional SCSI controller installed and SCSI devices connected to it, use the BIOS setup utility that comes with the optional SCSI controller for proper configuration. Refer to the manual that comes with the optional SCSI controller for details.
- ❑ Are SCSI devices properly configured?
  - When the server has external SCSI devices connected, device settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.

**After a PCI device is installed additionally, the system fails to operate correctly:**

- ❑ Is the board installed correctly?
  - Reinstall the board correctly referring to Chapter 9.
- ❑ Is "Disabled" specified in [Option ROM] for the slot to install the board (excluding the board used for OS boot)?
  - Check the settings with the BIOS SETUP utility.
    - <Menus to check: [Advanced] - [PCI Configuration] - [PCI Slot n] (n: PCI slot number of installed board) - [Option ROM Scan]>
- ❑ Is "Disabled" specified in [Option ROM] for the slot for added network board which is not used for network boot?
  - Check the settings with the BIOS SETUP utility.
    - <Menus to check: [Advanced] - [PCI Configuration] - [PCI Slot n] (n: PCI slot number of installed board) - [Option ROM Scan]>

**Fail to start the OS:**

- ❑ Is a floppy disk in the floppy disk drive?
  - Take out the floppy disk and restart the server.
- ❑ Is the NEC EXPRESSBUILDER DVD in the optical disk drive?
  - Take out the NEC EXPRESSBUILDER DVD and restart the server.
- ❑ Is the OS broken?
  - Use recovery process to recover the system.

**After changed transfer rate of giga driver from 1000Mbps to 100Mbps, the [Information of server state/constitution] of NEC ESMPro Manager of NEC ESMPro shows an illegal value (1000Mbps is still displayed):**

- The indication may be illegal, however, it does not affect the operation of LAN driver.

**The server is not found on the network:**

- ❑ Is the LAN cable connected?
  - Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure that the LAN cable to use conforms to the network interface standard.
- ❑ Have the protocol and service already configured?
  - Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.
- ❑ Is the transfer speed correct?
  - Open the network property dialog box in Control Panel to specify the "Link Speed & Duplex" value the same as the value specified for HUB.

**PCI hot-plug fails:**

- ❑ Is BIOS configuration correct?
  - You must change the BIOS SETUP configuration to use the PCI hot-plug feature.  
<Menus to check: [Advanced] - [PCI Configuration] - [Hot Plug PCI Control] - [Minimum/Middle/Maximum\*]>
    - \* Setting value depends on the board to be installed. See Chapter 4 for details.

**The driver of a PCI board cannot be stopped from the OS when Hot Remove or Hot Replace is executed for the PCI board:**

- ❑ Is another software using the PCI board for which Hot Remove or Hot Replace is to be executed?
  - If another software is using the PCI board for which Hot Remove or Hot Replace is to be executed, the driver of the PCI board cannot be stopped.  
Quit the software, then stop the driver of the PCI board. If executing Hot Replace, restart the software after having installed a new PCI board.

**Management PC fail to detect the server:**

- ❑ Is LAN cable properly connected?
  - Make sure that the cable is properly connected to the management LAN port. If the cable is incorrectly connected, the sensor of the server will not be monitored.
- ❑ Is the IP address unique in the network?
  - The IP address for management LAN port is factory-set to 192.168.1.1. If the same address exists in the same network, the server will not be detected correctly. Change the IP address appropriately.
- ❑ Is the server specified to be monitored by NEC ESMPRO Agent?
  - Change setting of NEC ESMPRO Agent.  
Run NEC ESMPRO Agent from Windows control panel, select [System] - [Express5800 Server] → [Monitor]. (The default is [Does not monitor].)  
Monitoring starts automatically. You need not to restart the system, however, reconfigure the tree may be needed if the server is not detected.
- ❑ Is connection suppressed by settings of firewall or gateway?
  - The connection may be restricted by settings of firewall or gateway. Connect the client PC by using the LAN cross cable and try again. If the problem is dissolved, confirm settings of firewall and gateway.

**Forgotten the login name/password to use the remote management feature through Web browser:**

→ If you have forgotten the login name or password, restore the factory default including password by BIOS SETUP utility.

<Menus to check: [Server] - [BMC LAN Configuration] - [Clear BMC Configuration]>

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**IMPORTANT:** Restoring the factory default clears BMC configuration that is used for NEC ESMPRO Manager to connect with the server.

If you are using the NEC ESMPRO Manager, you need to save the configuration data into the floppy disk before clearing password.

BMC can be configured and saved with NEC ESMPRO Agent Extension and the system management feature of NEC EXPRESSBUILDER.

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## Problems with Windows

**The following warnings are logged when you start Windows Server 2008 R2:**

Event ID: 27  
Source: e1qexpress  
Level: Warning  
Description: Intel(R) xxxxx Gigabit Dual Port Server Network ...  
Network link has been disconnected.

→ If the above event is logged when you start the system, this event does not affect system operation. Ignore this message.

Event ID: 63  
Source: Microsoft-Windows-WMI  
Level: Warning  
Description: A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\Intel\NCS2 to use the LocalSystem account.  
This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

→ This event does not affect system operation. Ignore this message.

**The following system event is logged when Windows Server 2008 R2 is installed:**

Event ID: 134  
Source: Microsoft-Windows-Time-Service  
Level: Warning  
Description: NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on ".  
NtpClient will try again in 3473457 minutes and double the reattempt interval thereafter.  
The error was: No such host is known. (0x80072AF9)

→ This event does not affect system operation. Ignore this message.

**The following application event is logged when Windows Server 2008 R2 is installed:**

Event ID: 1534  
Source: Microsoft-Windows-User Profiles Service  
Level: Warning  
Description: Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is The revision level is unknown.

→ This event does not affect system operation. Ignore this message.

**The following system events are logged when I use the system:**

Event ID: 1  
 Source: iScsiPrt  
 Level: Error  
 Description: Initiator failed to connect to the target. Target IP address and TCP Port number are given in dump data.

→ Go to the Microsoft website:  
<http://support.microsoft.com/default.aspx/kb/976072/en-us>

**The following warnings are logged to application event log when you import a transportable shadow-copy to another server that has a read-only volume while operating Windows Server 2008 R2:**

Event ID: 8193  
 Source: VSS  
 Level: Error  
 Description: Volume Shadow Copy Service error: Unexpected error calling routine IOCTL\_DISK\_GET\_DRIVE\_LAYOUT\_EX(\\?\mpio#disk&ven\_nec&prod\_istorage\_2000&rev\_2800#1&7f6ac24&0&303030303030303933313030303735373030323934#{ GUID }) - BuildLunInfoForDrive. hr = 0x80070013, This media is write-protected.

Event ID: 12289  
 Source: VSS  
 Level: Error  
 Description: Volume Shadow Copy Service error: Unexpected error DeviceIoControl(\\?\storage#volume#{ GUID }#0000000000010000#{ GUID } -00000000000002B8,0x00560000,0000000000000000,0,00000000002BE0C0,4096,[0]). hr = 0x80070013, This media is write-protected.

→ Go to the Microsoft website:  
<http://support.microsoft.com/kb/2003016/en-us>

**The following warnings are logged to application event log when I import a transportable shadow-copy to another server that has a floppy disk drive while operating Windows Server 2008 R2:**

Event ID: 12289  
 Source: VSS  
 Level: Error  
 Description: Volume shadow copy service error: unexpected error DeviceIoControl (\\? # 6 \usbstor#sfloppy &ven\_teac&prod\_fd-05pub &rev\_3000 & 158e20d0 & 0 # { GUID }-00000000000002B8,0x00560000,0000000000000000,0,0000000000327C70,4096,[0]). HR = 0x80070032, this request is not supported.

→ Go to the Microsoft website:  
<http://support.microsoft.com/kb/2003968/en-us>

**The following system events are logged when Windows Server 2008 is installed:**

Event ID: 134  
Source: Microsoft-Windows-Time-Service  
Level: Warning  
Description: NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter.  
The error was: No such host is known. (0x80072AF9)

Event ID: 263  
Source: PlugPlayManager  
Level: Warning  
Description: The service 'ShellHWDetection' may not have unregistered for device event notifications before it was stopped.

Event ID: 7000  
Source: Service Control Manager  
Level: Error  
Description: The Parallel port driver service failed to start due to the following error:  
The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.

Event ID: 15016  
Source: Microsoft-Windows-Http  
Level: Error  
Description: Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.

→ These events do not affect system operation. Ignore these messages.



**The following application events are logged when Windows Server 2008 is installed.**

Event ID: 63  
 Source: Microsoft-Windows-WMI  
 Level: Warning  
 Description: A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\cimv2 to use the LocalSystem account.  
 This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.  
 A provider, IntelEthernetDiag, has been registered in the Windows Management Instrumentation namespace Root\CIMv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.  
 A provider, WmiPerfClass, has been registered in the Windows Management Instrumentation namespace root\cimv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

Event ID: 6000  
 Source: Microsoft-Windows-Winlogon  
 Level: Warning  
 Description: The winlogon notification subscriber <GPClient> was unavailable to handle a notification event.

Event ID: 6001  
 Source: Microsoft-Windows-Winlogon  
 Level: Warning  
 Description: The winlogon notification subscriber <GPClient> failed a notification event.

→ These events do not affect system operation. Ignore these messages.

**The following system event is logged when Windows Server 2008 is installed.**

Event ID: 10  
 Source: VDS Dynamic Provider  
 Description: The provider failed while storing notifications from the driver.  
 The Virtual Disk Service should be restarted. hr=80042505

→ Go to the Microsoft website:  
<http://support.microsoft.com/kb/948275/en-us/>

**The following application events are logged when Windows Server 2008 is installed.**

Event ID: 1021  
Source: Microsoft-Windows-Security-Licensing-SLC  
Level: Warning  
Description: SLUINotify service has failed to start. hr=0x80070424

Event ID: 1534  
Source: Microsoft-Windows-User Profiles Service  
Level: Warning  
Description: Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is -2147023591.

→ These events do not affect system operation. Ignore these messages.

**There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.**

Source: DCOM  
Category: Error  
Event ID: 10016  
Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user {NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.  
This security permission can be modified using the component Services administrative tool.

→ It is not a problem in operating the system.

**There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.**

Source: Service Control Manager  
Event Type: Error  
Event ID: 7011  
Description: Timeout (30000 milliseconds) waiting for a transaction response from the IMAP4Svc service.

→ When this event is not registered by rebooting the system, it is not a problem in operating the system.

**Installed Service Pack before application of Windows Server 2003 R2 DISC 2 during Windows Server 2003 R2 installation.**

→ Apply Windows Server 2003 R2 DISC 2, and then install Service Pack again by "Updating the System".

**There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2.**

Source: IPMIDRV  
 Type: Error  
 Event ID: 1001  
 Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver.  
 If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

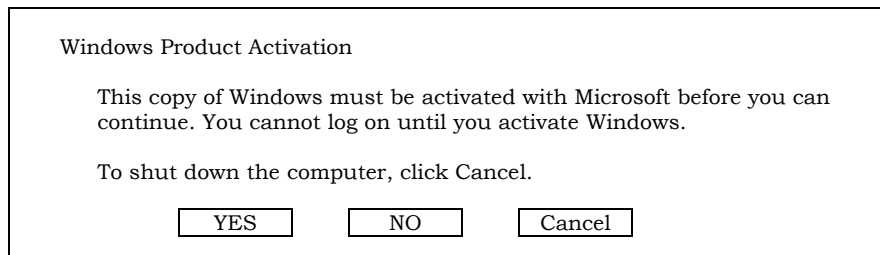
→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

[NEC Express5800 Web Site]

[http://www.nec.com/global/prod/express/download/W2K3\\_R2/index.html](http://www.nec.com/global/prod/express/download/W2K3_R2/index.html)

**The system displays the message below and fails to log on.**



→ In Windows Server 2003, the above message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.

**Cannot install the operating system correctly.**

☐ Did you confirm the notes on installing the operating system?

→ See Chapter 6.

**Fail to start the OS with the /3GB switch**

→ System often fails to start the OS with the /3GB switch.

In this case, please adjust the capacity of the user mode area using the /userva switch in reference to the following URL.

<http://support.microsoft.com/kb/316739/en>

**During installation, the following warning is registered in the System Log of the Event Viewer:**

Error detected on the device \Device\CdRom0 during the paging operation.
--

→ There is no problem on this issue.

**Fail to start the OS:**

- ☐ Is a floppy disk in the floppy disk drive?
  - Take out the floppy disk and restart the server.
- ☐ Is the NEC EXPRESSBUILDER DVD in the optical disk drive?
  - Take out the NEC EXPRESSBUILDER DVD and restart the server.
- ☐ Is the OS broken?
  - Use recovery process to recover the system.

**The OS presents unstable operation:**

- ☐ Did you update the system?
  - Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER DVD to update the system. (See Chapter 6.)

**The system does not restart automatically when a stop error occurs, though the system is adjusted to automatically restarting:**

→ When the system does not restart automatically, restart it manually.

**The system restarts automatically when a stop error occurs, though the system is NOT adjusted to automatically restarting:**

→ There is no problem about this issue.  
Check the System Event Log to confirm that STOP error occurred.

**Cannot turn the power OFF at the blue screen:**

→ If you want to turn off the power at the blue screen, execute forced shutdown (forced shutdown: continue to press POWER/SLEEP switch for 4 seconds). The power will not be turned off if you press the switch for less than 3 seconds.

**The PXE boot (network boot) fails or the server is not found on the network:**

- ❑ Is the cable connected properly?
  - Connect the proper cable to the network port on the rear of the Express server. In addition, make sure that the used cable conforms to the network interface standard.
- ❑ Is BIOS configuration correct?
  - The internal LAN controller may be disabled with the BIOS SETUP utility of the server. Check the setting with the BIOS setup utility.
- ❑ Have the protocol and service already configured?
  - Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.
- ❑ Is the transfer speed correct?
  - Open the network property dialog box in control panel to specify the link speed and duplex value the same as the value specified for HUB.

**The Telnet Service is not installed.**

- Adjust the computer name to 14 characters or less, and then install the Telnet Service according to <How to install the Telnet Service>.

<How to install the Telnet Service>

1. Click [Run] on Start menu.
  2. Type "tlntsvr /service" in the [Open] box, and click [OK].
  3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.
- \* When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

**Power ON/OFF (Wake On LAN) feature does not work:**

- Immediately after the AC power is turned on, the Remote Power ON/OFF feature (Wake ON LAN) is disabled. Start Windows Server 2003 once, provide settings as shown below, then shutdown the system. After restart, the Remote Power On/Off feature is available unless the AC power is turned off.

Select [Start] → [Administrative Tools] → [Computer Management].

Select Device Manager, double-click [Intel(R) PRO/1000EB Network Connection with I/O Acceleration #n] under Network Adapter, and specify as follows in [Detail] tab.

PME: [ON]

Wake On: [Magic Packet]

**The system time lags:**

- If you do not use the server that adjust time such as NTP (Network Time Protocol) Server, the system time may differ from actual time.  
In this case, use NTP server or disable "Windows Time Service".

**Fail to access to USB devices on Windows Server 2003 x64 Edition or Windows Server 2003:**

- ❑ Did you apply [Hotfix for Windows x64 "KB921411"] or [Hotfix for Windows Server 2003 (KB921411)] prior to the "Updating the System" process?

Specify whether "!" is displayed or not on the USB root hub.

<verification process>

Click Start menu, right-click [My Computer], and click [Manage] to start Device Manager.

And then, select [Device Manager] from the left side window.

- If "!" is displayed on the USB root hub, apply the Hotfix according to the "Recovery process".

For "Recovery process", see Appendix F or Appendix G for details.

**Fail to restart the system with the message means "pci.sys missing or corrupt" after you executed "Updating the System" process to Windows Server 2003 x64 Edition or Windows Server 2003:**

- ❑ During the application of the ChipSet driver by "Updating the System" process, the driver for the USB device may be deleted.

Follow the process detailed below.

- (1) Start the Recovery console.
- (2) Copy "<Systemdrive>\system32\dlcache\pci.sys" to under "<Systemdrive>\system32\drivers".
- (3) Exit the Recovery console, and restart the system.
- (4) Refer to "Recovery process" and follow to the process detailed to apply [Hotfix for Windows x64 "KB921411"] or [Hotfix for Windows Server 2003 (KB921411)] and "Updating the System".

For "Recovery process", see Appendix F or Appendix G for details.

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## Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER DVD, check the following:

- ❑ Did you set the NEC EXPRESSBUILDER during POST and restart the server?
  - If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.
- ❑ Is BIOS configuration correct?
  - The boot device order may be specified with the BIOS SETUP utility of the server. Use the BIOS SETUP utility to change the boot device order to boot the system from the optical disk drive first.  
    <Menu to check: [Boot]>
- ❑ Is the connected Flash FDD or inserted floppy disk formatted?
  - Make sure that the Windows recognizes that the connected Flash FDD or inserted floppy disk is formatted. If not, format it.
- ❑ Is an error message appeared?
  - When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears.

After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.



- ❑ If [Os installation \*\*\*default\*\*\*] is selected at Boot selection screen, following message is displayed.  
→ After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause
This EXPRESSBUILDER version was not designed for this computer. Insert the correct version and click [OK]. (When you click [OK], the computer reboots.)	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
EXPRESSBUILDER could not get the hardware parameters written in this motherboard. This version is not designed for this computer or the motherboard may be broken. (When you click [OK], the computer reboots.)	This message is shown when NEC EXPRESSBUILDER could not find system-specific information because of mother board exchange and so on.
The hardware parameters written in this motherboard are incorrect. This version is not designed for this computer or the motherboard may be broken.	

- ❑ If the creation of the OEM-Disk for Windows failed, the following message will be displayed.  
Confirm the message, and then try the solution described in the "Cause".

Error message	Cause
The format went wrong. It is write-protected or the floppy disk may be damaged. Please check a floppy disk and perform creation of OEM-Disk again.	The Flash FDD or the floppy disk is write-protected. Cancel write-protected state. If you have already cancelled write-protected state, connect the USB floppy disk drive again.
Failed in the deletion of the file. Please confirm whether the media is not write-protected state or not.	

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## Problems with Express Setup

### **Specified to join the Domain, but the system is installed as Workgroup:**

- If LAN cable is not connected, the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

### **There is unused area on the lead of HDD:**

- ☐ Did you install Windows Server 2003?
  - If you had installed Windows Server 2003 by Express Setup, the head 8MB of HDD may be unused area. It is not a problem in operating the system.

### **Product key was not asked:**

- ☐ Case of Windows Server 2008
  - If you install using BackUp DVD-ROM, product key is not required.  
If you install using the DVD-ROM other than BackUp DVD-ROM, product key screen is displayed twice, at "during OS installation" and "before [MICROSOFT SOFTWARE LICENSE TERMS] dialog, which displayed after OS installation".  
Enter product key following the message.
- ☐ Case of Windows Server 2003
  - If you install using BackUp CD-ROM, product key is not required.  
If you install using the DVD-ROM other than BackUp DVD-ROM, product key screen is displayed during OS installation.  
Enter Product Key following the message.

### **When IIS is installed with Windows Server 2008 by Express Setup, following feature is installed:**

- ☐ Windows Process Activation Service
    - Process Model
    - Configuration APIs
  - ☐ Remote Server Administration Tool
    - Role Administration Tools
    - Web Server (IIS) Tools
- The feature listed above is activated because they are required for the installation of IIS basic feature.

## Problems with Windows Autorun Menu

### Cannot read online document:

- ❑ Do you have Adobe Reader installed correctly in your system?
  - Some online documents are supplied with PDF format. To read the document of PDF format, Adobe Reader is required in your system.
- ❑ Is the operating system Windows XP SP2?
  - With Windows XP SP2, the following information may appear in browser.  
 "To help protect your security, Internet Explorer has restricted this file from showing active content that could access your computer. Click here for options..."
    1. Click the Information Bar.  
The shortcut menu appears.
    2. Click [Allow blocked content].  
The security alert dialog box appears.
    3. Click [Yes] on dialog box.

### The menu fails to appear:

- ❑ Is your system Windows XP or later, or Windows Server 2003 or later?
  - The Autorun menu is supported by Windows XP/Windows Server 2003 or later.
  - If your system runs on Windows Autorun Menu on Windows 2000 system, you need to setup IE6.0 before using Windows Autorun Menu.
- ❑ Is **Shift** pressed?
  - Setting the DVD/CD-ROM with **Shift** pressed down cancels the Autorun feature.
- ❑ Is the operating system in the proper state?
  - The menu may not appear depending on the system registry setting or the timing to set the DVD. In such a case, start the Explorer, select [My Computer], and double-click the icon of the optical disk drive.

### Some menu items are grayed-out:

- ❑ Is your system environment correct?
  - The menu items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application. Login with the user having the proper authority on the proper system, and try again.

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## Problems with RAID System and RAID Controller

### Fail to install the OS:

- ❑ Is the RAID Controller configured?
  - Provide proper configuration for the RAID Controller by using the WebBIOS.

### Fail to start the OS:

- ❑ Is the BIOS of the RAID Controller changed?
  - Set the BIOS correctly by using the WebBIOS.
- ❑ Does POST detect the RAID Controller?
  - After making sure that the RAID Controller is connected correctly, then power on the server.
  - If the RAID Controller is not detected correctly despite correct connection, the RAID Controller may be failed. Contact your service representative.

### Rebuild fails:

- ❑ Is the capacity of the hard disk drive to be rebuilt sufficient?
  - The hard disk drive to be rebuilt should have the same capacity of the failed hard disk drive.
- ❑ Is RAID0 configured?
  - RAID0 has no data redundancy, therefore, Rebuild is disabled in the RAID0 configuration. Replace the failed hard disk drive, create the configuration data again and initialize the hard disk drives. Then recover the data by using backup data.

### Auto rebuild fails:

- ❑ Was a sufficient time taken for hot swap of hard disk drives?
  - To allow the auto rebuild to operate correctly, it should take 90 seconds or longer for the interval between the removal of the failed hard disk drive and the installation of a new hard disk drive.

### A hard disk drive fails:

- Contact your service representative.

**An event "Drive Fault Recovered" or "Drive Fault" is logged several times:**

- ❑ Did you execute locate command to the failing hard disk drive?
  - If the locate command for the failing hard disk drive is executed from the management utility, an event "Drive Fault recovered" may be logged in AlertViewer and "Drive Slot (Bay) Error Recovery: Drive Fault" in ESRAS Utility. However, the hard disk drive is still unavailable. If the location identification feature is turned off, an event "Drive Fault" is logged in AlertViewer and "Drive Slot (Bay) Error: Drive Fault" in ESRAS Utility again. Be sure to turn off the location identification feature before confirming the drive status.
  - Contact your service representative to replace the failed hard disk drive.

**Consistency Check cannot be performed:**

- ❑ Is logical drive indicated as "Degraded"?
  - Replace the failed hard disk drive and execute rebuild process.
- ❑ Is RAID level of logical drive "RAID0"?
  - The Consistency Check does not work on RAID0 because it has no redundancy.

---

## Problems with N8190-127/131/153/154 FibreChannel Controller

**When N8190-127/131/153/154 is used, the names of the Fibre Channel controllers may appear with different names on Device Manager:**

- It is not a problem in operating the system. To display correct controller name, run following command in the driver software NEC EXPRESSBUILDER DVD and restart the system.

[Windows Server 2008 R2]

<Drive Letter>:\016\win\winnt\ws2008x64\r2\elxstor\friendlyname.exe

[Windows Server 2008 64-bit (x64) Edition]

<Drive Letter>:\016\win\winnt\ws2008x64\r1\elxstor\friendlyname.exe

[Windows Server 2008 32-bit (x86) Edition]

<Drive Letter>:\016\win\winnt\ws2008\elxstor\friendlyname.exe

---

## Problems with Parameter File Creator

**Fail to start Parameter File Creator:**

- ❑ Parameter File Creator requires to run by "Microsoft® HTML Application host".
  - If Parameter File Creator does not start, associate the file type with "Microsoft® HTML Application host" via following process.
    - 1) Click [Run] on Start menu.
    - 2) Type "%windir%\system32\mshta.exe /register" in the [Open] box, and click [OK].

## Collecting Event Log

This section describes on how to collect the log of various events that occurred on the server.

---

**IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

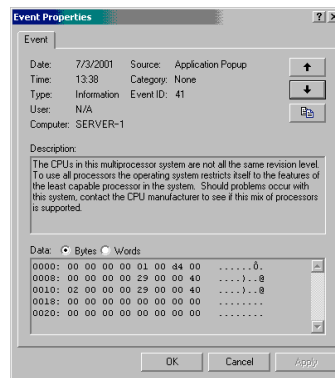
---



---

**NOTE:** The different revision processor may be mixed in additional CPU kit. When Windows is used, following message may be appeared in the System Log of the Event Viewer after extension the different revision of two or more processors in the NEC Express server. If this message is logged, it is no problem for operation.

---



1. Click [Management Tool] → [Event Viewer] from the Control Panel.
2. Select the type of the log to collect.  
On [Application Log], the events related to the running application is archived. On [Security Log], the events related to the security is archived. On [System Log], the events occurred at the item which configures Windows system is archived.
3. Click [Save as...] in the [Run] menu.
4. Input the file name of archived log in the [File Name] box.
5. Select the type of the log file you want to save in the [File Type] list box and click [OK].

For more information, refer to Windows Online Help.

---

## Collect Configuration Information

This section describes on how to collect the information on hardware configuration and inside specification.

In order to collect information, "Diagnostic Program" is used.

---

**IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

---

1. Point to [Settings] in Start menu, and click [Control Panel].  
The [Control Panel] dialog box appears.
2. Double-click [Management Tool], and double-click [Computer Management].  
The [Computer Management] dialog box appears.
3. Click [System Tool] → [System Information].
4. Click [Save as System Information File] in the [Operation] menu.
5. Input the file name to save in the [File Name] box.
6. Click [Save].

---

## Collecting Dr. Watson Diagnostic Information

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, see Chapter 5.



---

## Memory Dump

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the desired location to save the diagnostic information. For more information, see Chapter 5.

---

### IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
  - Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.
- 

## Preparing for Memory Dumping

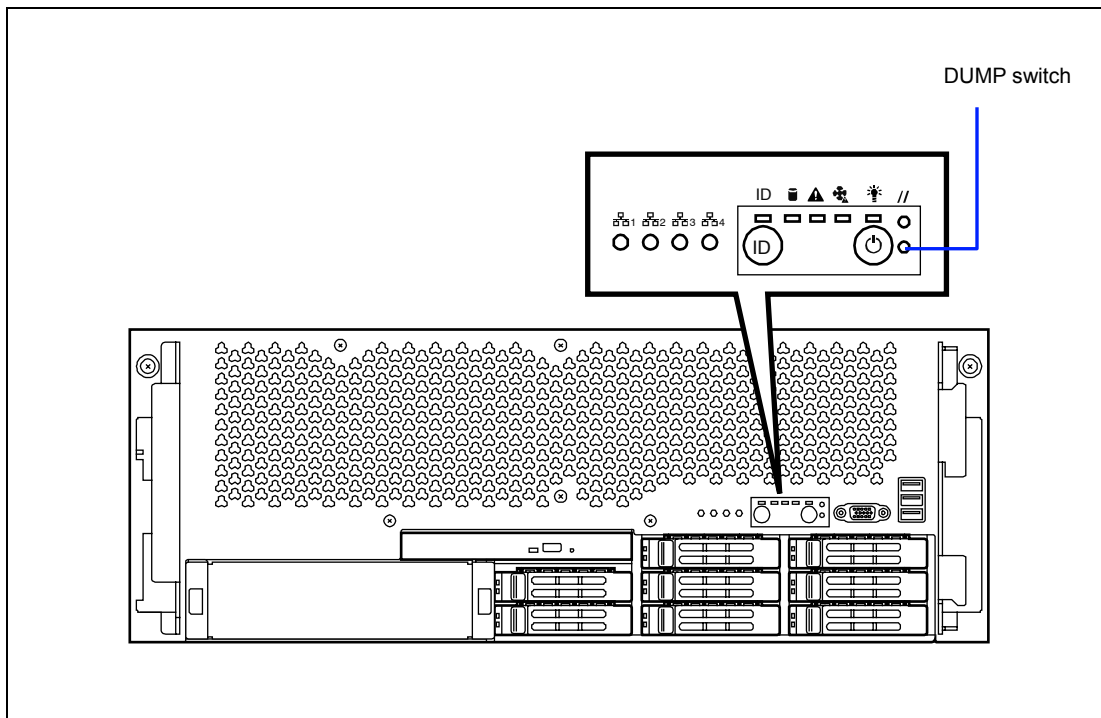
Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shutdown. This forced shutdown, however, is not available if "Enable" is selected for [Power Switch Inhibit] on the Security menu of the BIOS SETUP utility,, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and run the BIOS SETUP.
2. Select "Disable" for [Power Switch Inhibit] in the Security menu.
3. Save the configuration data and exit the SETUP.

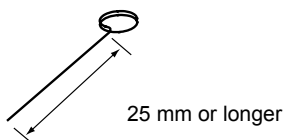
## Saving the Dump File

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.



Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the processor stalls.)

**IMPORTANT:** Do not use a toothpick or plastic stick that is easy to break. Use a pin having the length of 1 inch (25 mm) or longer.



## RECOVERY FOR Windows SYSTEM

### For Windows Server 2008 R2

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

### For Windows Server 2008

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

### For Windows Server 2003 x64 Editions

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

### For Windows Server 2003

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

---

#### **IMPORTANT:**

- After recovering the system, see "Updating the System" in Chapter 5 and be sure to update the system. Also, you need to update all the drivers after the system update. For more information, see "Installing and Setting Device Drivers" in Chapter 5.
  - If the hard disk drive can not be detected, you can not recover the system.
-

## REMOTE MANAGEMENT FEATURE

The server uses BMC (Baseboard Management Controller) which is the system management LSI, to monitor the internal hardware status including system temperature, voltage, and electric power. It also generates System Event Log (SEL) at occurrence of hardware failure, and notifies it. When a management LAN is connected with network, the server may be managed from the remote console via BMC by using Web browser or Telnet/SSH client. If an optional N8115-03 Remote Management Enhanced License is installed, the remote device feature becomes available. With the remote device feature, the remote console can use KVM (keyboard, video, and mouse) of the server. The server can access the optical disk drive, floppy disk drive, ISO image, and USB memory device of the remote site.

For more information about remote management using Web browser and remote device feature, refer to the "EXPRESSSCOPE Engine 2 User's Guide" stored in NEC EXPRESSBUILDER DVD.

---

**NOTE:** The measured value of temperature, voltage, fan, or electric power may contain an error. Depending on operating environment, an error may be several tens percent.

---

---

## Changing Setting for Management LAN

The management LAN uses the management LAN port in ordinary case.

To make the LAN port 1 to be shared with the management LAN, run SETUP and select [Server] - [BMC LAN Configuration] - [Shared BMC LAN] - [Enabled]. When set to [Enabled], the management LAN port is disabled.

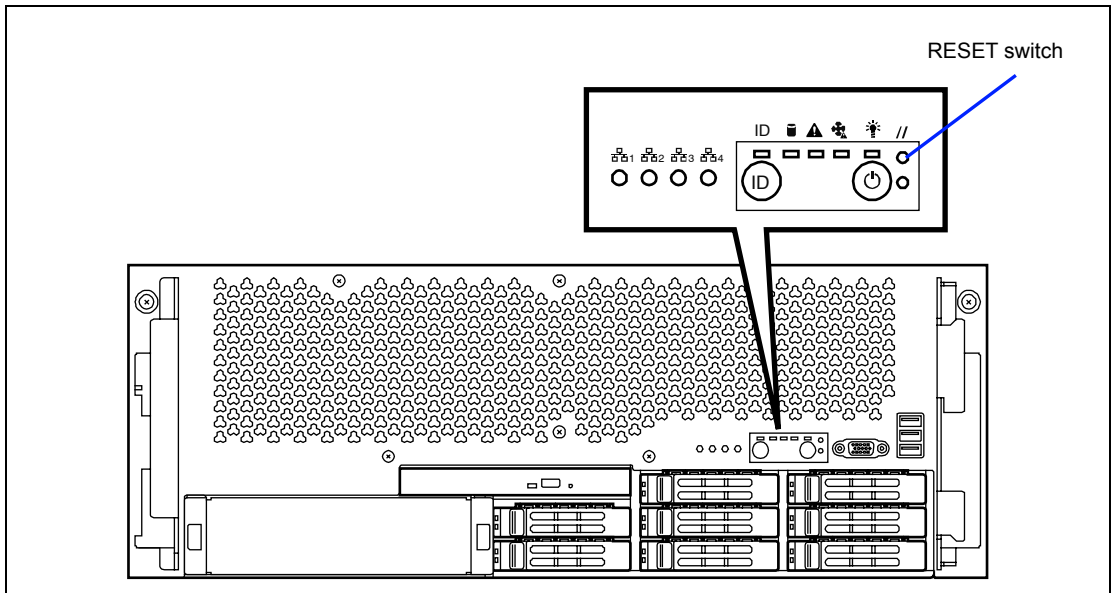
---

### IMPORTANT:

- When the management LAN port is used as a management LAN, the link speed is fixed to 100Mbps. When the LAN port 1 is used as a management LAN, the link speed is 10Mbps in standby state, or 100Mbps in power-on state. (Up to 1.0Gbps is available for the shared standard LAN.) Accordingly, if the LAN cross cable is used for connection, the LAN cable seems to be disconnected when the link speed is switched. Do not use the LAN cross cable for connection.
  - When the LAN port 1 is used as a management LAN, the network performance may be reduced because the data of both LANs must be transmitted or received.
  - Management LAN port cannot be used for data transmission. It is exclusive for management LAN.
-

## RESETTING THE SERVER

- If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.
- Pressing the RESET switch on the front panel reboots the server.

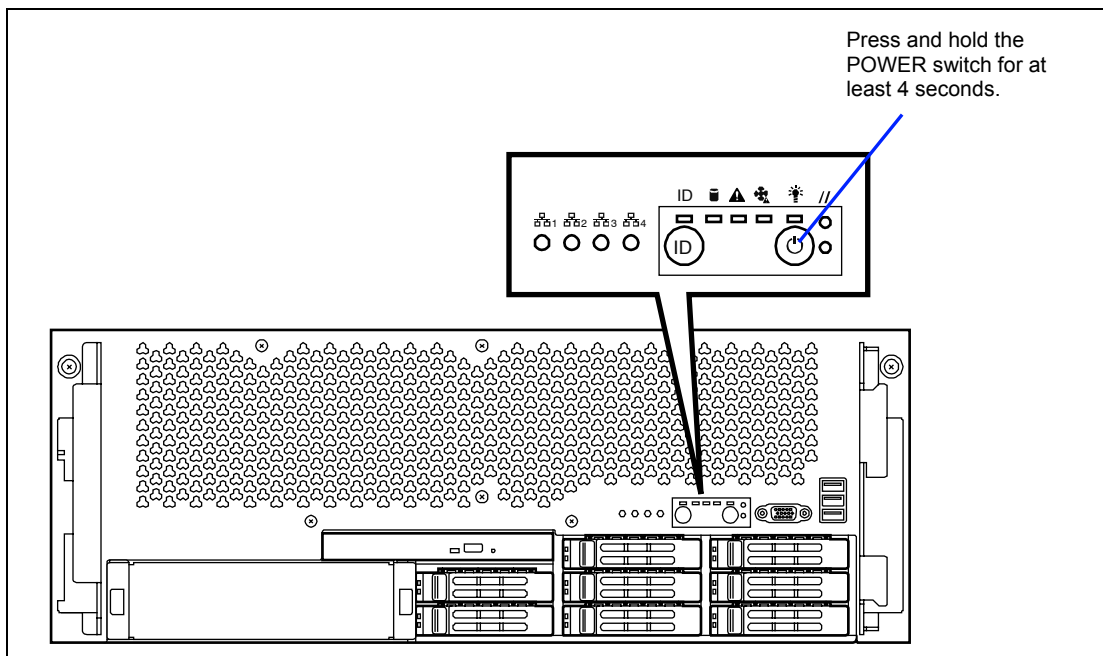


**IMPORTANT:** Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

## FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 10 seconds after turning off the power (forced shutdown).



---

**IMPORTANT:** If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.

---

# Chapter 9

---

## Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for install or removing such optional devices, and notes on using them.

---

### **IMPORTANT:**

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for install or removing any optional devices.
  - Make sure to use only optional devices and cables authorized by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing inappropriate devices or cables will be charged.
  - When you made any change to the hardware configuration, make sure to update the system (see Chapter 5 for details.).
-

## SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

### WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.

- Do not disassemble, repair, or alter the server.
- Do not look into the optical disk drive.
- Do not remove the lithium, NiMH, and/or Li-Ion battery.
- Disconnect the power plug before working with the server.

### CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

- Do not lift the server by two or less persons.
- Do not leave any device being pulled out from the rack.
- Make sure to complete component installation.
- Do not install the server on the rack leaving the cover removed.
- Do not pinch your fingers with mechanical component.
- Avoid installation in extreme temperature conditions.



## ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear a wrist strap (an arm belt or anti-static glove).

Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.

- Work with the server on the anti-static or concrete floor.
- When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.

- Use a work table.

Place the server on an anti-static mat to work with it.

- Cloth

- Do not wear a wool or synthetic cloth to work with the server.
- Wear anti-static shoes to work with the server.
- Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.

- Handling of components

- Keep any component in an anti-static bag until you actually install it to the server.
- Hold a component by its edge to avoid touching any terminals or components.
- To store or carry any component, place it in an anti-static bag.

## PREPARING FOR INSTALLATION AND REMOVAL

Follow the procedure below to prepare for installing or removing components.

1. Shut down the OS.
2. Press the POWER switch to power off the server (the POWER lamp goes off).
3. Unplug the power cord from the AC inlet on the server.  
The AC Standby lamps on the power supply module located at rear of the server go off.
4. Remove all the cables connected to the server on the rear panel.
5. Make the clearance of 1m to 2m in the front and rear sides and left and right sides of the server.

---

### IMPORTANT:

- When you remove the power cord from the server, wait for about 20 seconds before proceeding work. Some components on mother board may still work for 10 to 20 seconds after the power cord is disconnected.
  - Do not leave the server being pulled out from the rack.
- 

---

**NOTE:** Make sure to disconnect the power cord from the outlet before installing or removing the option devices. If you remove the internal cable with the power cord being connected, the STATUS lamp will light amber when the server is powered. Disconnect the power cord, connect it again, and then restart the server.

---

## DEVICE INSTALLATION OR REMOVAL PROCEDURE

Install or remove a component from the server in the following procedure.

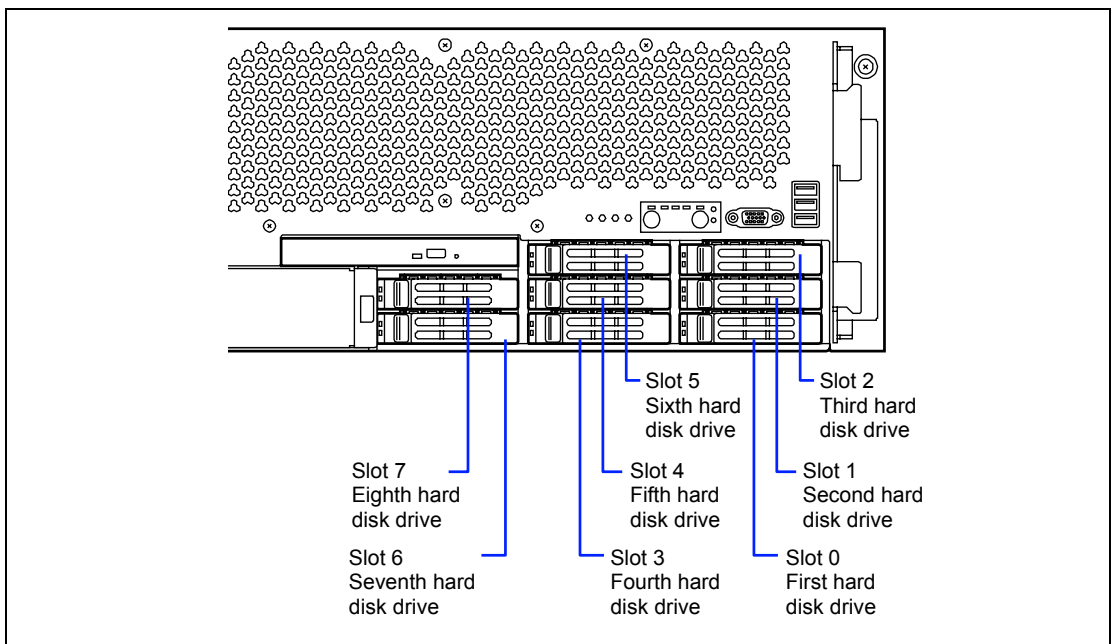
### 2.5-inch Hard Disk Drive

The 2.5-inch device bay can contain up to eight 2.5-inch hard disk drives.

A dummy tray is installed in the 2.5-inch disk bay. The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.

#### IMPORTANT:

- Do not use any hard disk drives that are not authorized by NEC.  
Installing a third-party's hard disk drive may cause a failure of the server as well as the hard disk drive.
- All hard disk drives to be installed in the device bay must accept the same interface.
- Use the dummy tray dedicated to this server.



## Installation

Take the following steps to install a hard disk drive. This procedure applies to all the slots.

1. Locate the slot in which you are going to install a hard disk drive.

The server has eight slots. Fill the bays with hard disk drives sequentially starting from slot 0 (lower right slot).

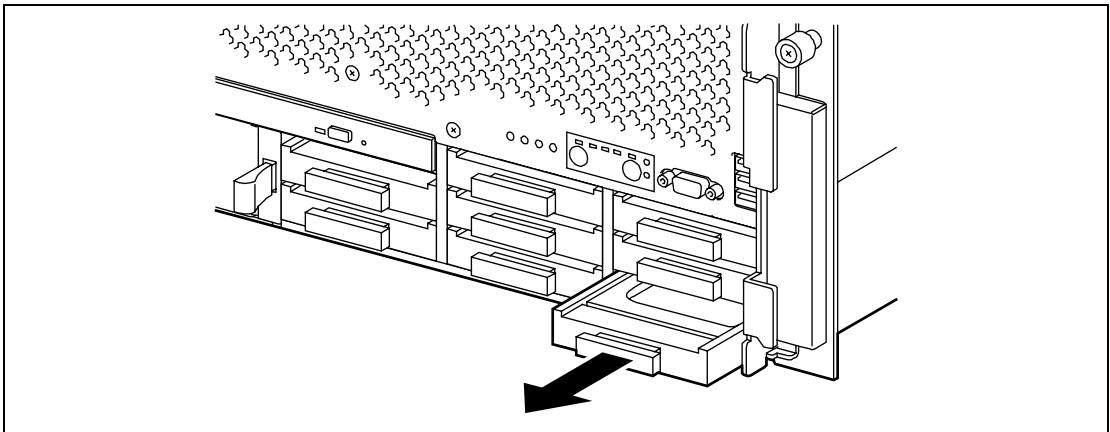
2. Remove the dummy tray.

Every drive bay contains a dummy tray.

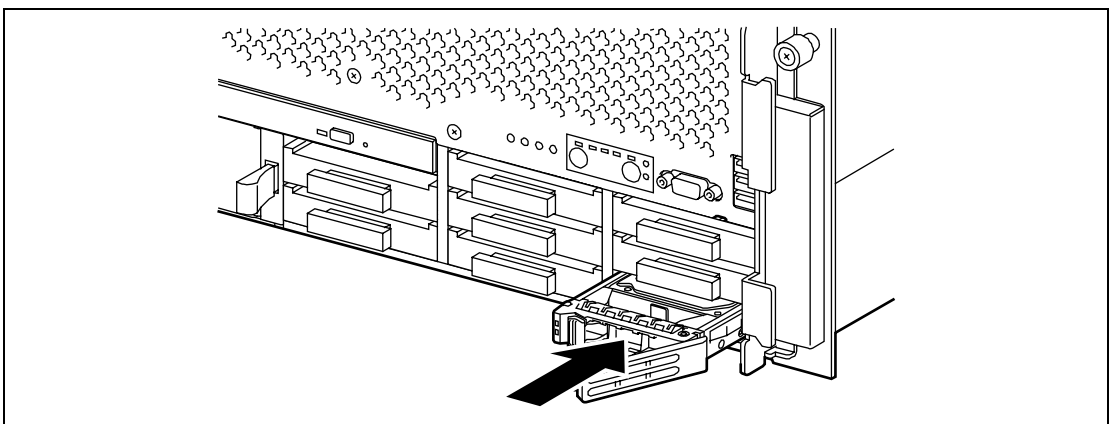
---

**IMPORTANT:** Keep the dummy tray for future use.

---



3. Firmly hold the hard disk drive and handle, and insert it into the slot.



---

**IMPORTANT:**

- Push the hard disk drive until the handle hook butts to the frame.
  - Carefully hold the hard disk drive with both hands.
  - Slowly and carefully push the hard disk drive straight into the slot so that no vibration is given.
- 

---

**NOTE:** The hard disk drive bay 2 is located close to the POWER switch. Pay attention not to press the POWER switch when installing or removing the hard disk drive. If the POWER switch is pressed carelessly, the system will be shutdown.

---

4. Slowly close the handle.

The handle is locked when a "click" is heard.

---

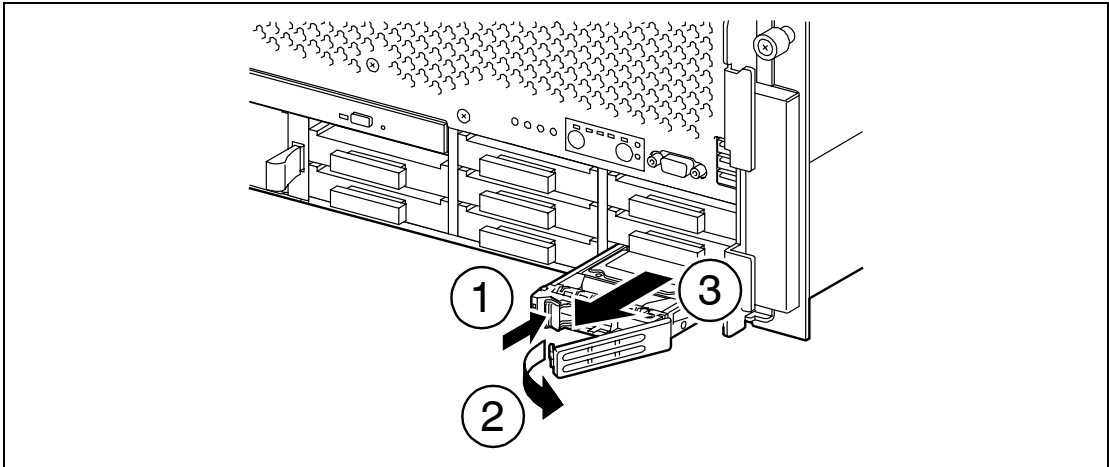
**IMPORTANT:** Be careful not to get your finger caught between the handle and tray. Make sure that the hard disk drive is fully seated.

---

## Removal

Take the following steps to remove the hard disk drive. To use the server with the hard disk drive removed, insert a dummy tray into the empty slot.

1. Shutdown the system and press the POWER switch to turn off the power.
2. Unlock the hard disk drive, and firmly hold the hard disk drive and handle, then take it out.



---

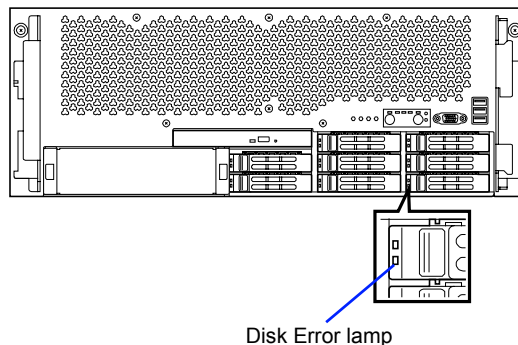
**IMPORTANT:** Take out the hard disk drive straight from the slot slowly and carefully so that no vibration is given.

---

---

**NOTE:** If removing a failing hard disk drive, confirm the slot in which the DISK Error lamp of the hard disk drive is amber before starting the removal.

---



When the hard disk drives are in the RAID System configuration, you can restore the state before an error using the auto-rebuild feature that stores the data in the old hard disk drive into a new one. The auto-rebuild feature may be enabled or disabled depending on the RAID level.

Auto-rebuild is automatically carried out when you hot-swap a failed hard disk drive with a new one (replace the disk while the server is powered). While auto-rebuild is in progress, the DISK Access lamp or DISK Error lamp flashes alternatively to indicate it.

Observe the following notes for auto-rebuild.

- Do not power off or reset the server in the period between a hard disk drive failure and completion of auto-rebuild.
- When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive back again.
- Do not replace another hard disk drive while rebuilding is in progress. (The DISK Access lamp or DISK Error lamp flashes alternatively while rebuilding the hard disk drive.)

---

## Power Supply Unit

To use your server with the configuration exceeding the specific configuration<sup>\*1</sup>, you need to install an additional power supply unit (N8181-68F) and update the configuration information<sup>\*3</sup>.

When an optional power supply unit is additionally installed but the server is running with the configuration not exceeding the specific configuration<sup>\*1</sup>, or two optional power supply units are additionally installed, the server can continue its operation without power interruption even if one of the power supply unit fails (power redundant configuration).

In addition, if the AC power of each power supply unit is divided into two lines, the server can continue its operation without power interruption even if either of AC power line fails (AC power redundant configuration).

- \*1 Specific configuration (maximum configuration with two factory-installed power supply units)
  - Additional memory backboard: 1 set (4 boards including factory-installed boards)Except for memory backboard, no restriction is imposed. (\*2)
- \*2 If the memory module having larger capacity than N8102-349 (16-GB additional memory (two 8GB DIMMs)) is supported in future, additional restriction may be imposed to memory configuration.
- \*3 If you additionally install the optional device that exceeds the specific configuration as described in \*1, you need to update the configuration information PIA (Platform Information Area). See "Updating PIA" described later.

If the power cord is disconnected from the power supply unit immediately after it is connected, the event "power degraded" may not be registered in OS event log, and only the event "power recovered" is registered.



## PIA Update Procedure

If you additionally install the optional device that exceeds the specific configuration as described earlier, you need to update the configuration information PIA (Platform Information Area).

The data for updating PIA is stored in the NEC EXPRESSBUILDER DVD. Also, visit NEC Corporate site (<http://www.nec.com>) to make sure the latest version of PIA.

Take the following steps to update PIA.

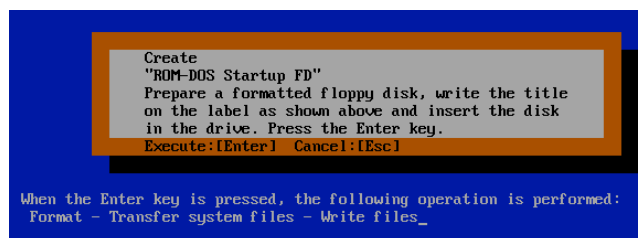
### Preparation

- Prepare the USB floppy disk drive and a floppy disk or Flash FDD.
- Prepare the NEC EXPRESSBUILDER DVD that comes with your server.

### Creating ROM-DOS Startup Disk

Create the ROM-DOS Startup Disk as shown below.

1. Connect the USB floppy disk drive or Flash FDD with the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Boot the system from the optical disk drive.
4. Select "Maintenance Tools (Normal mode)".
5. Select "English".
6. Select "ROM-DOS Startup FD".
7. When the screen as shown below appears, insert the floppy disk into the drive (or with the Flash FDD being connected), then press **Enter**.



8. The following screen appears when ROM-DOS Startup Disk has been created. Press **Enter**.



Then, the media (floppy disk or Flash FDD) can be used as ROM-DOS Startup disk.

### Creating Install Media

---

**NOTE:** You need to use another computer (e.g., personal computer) to create an install media.

---

Copy all the files stored under the directory \016\piasdr of NEC EXPRESSBUILDER to the root directory of ROM-DOS Startup media. (If any file of the same file name exists, overwrite it.)

Now the "PIA/SDR Update Media" has been created.

You can obtain the latest PIA from NEC Corporate site (<http://www.nec.com>).

### Updating PIA/SDR

Use the "PIA/SDR Update Media" you have created in the earlier step to update PIA.

1. Connect the "PIA/SDR Update Media" with the server.
2. When the server is booted from the media, the PIA/SDR appropriate to your system configuration is automatically applied.
3. When the updating completes successfully, the following message appears. Power off the server by pressing the Power switch.

SDR file was successfully written!  
Programming complete, reboot server for normal operation.
4. Disconnect AC cable from the power supply unit of the server, wait for 60 seconds, connect AC cable again, and wait for about 10 seconds.
5. Remove the "PIA/SDR Update Media", and power on the server by pressing the Power switch of the server.

**6.** Press **F2** on POST screen to launch the BIOS SETUP menu.

Make sure that POST error code 8703 nor 8704 is not displayed. Also make sure that [PIA Revision] in [System Management] of [Server] menu is correct.

The PIA Revision depends on your system configuration.

- With the configuration not exceeding the specific configuration<sup>\*1</sup>: PIA Revision 01.22
- With the configuration exceeding the specific configuration<sup>\*3</sup>: PIA Revision 01.32

The SDR Revision depends on the installed CPU.

- When additional CPU N8101-449 is installed: SDR Revision 00.44
- When additional CPU N8101-450 is installed: SDR Revision 00.24
- When additional CPU N8101-451 is installed: SDR Revision 00.04

<sup>\*1</sup> Specific configuration (maximum configuration with two factory-installed power supply units)

Additional memory backboard: 1 set (4 boards including factory-installed boards)  
Except for memory backboard, no restriction is imposed. <sup>\*2</sup>

<sup>\*2</sup> If the memory module having larger capacity than N8102-349 (16-GB additional memory (two 8GB DIMMs)) is supported in future, additional restriction may be imposed to memory configuration.

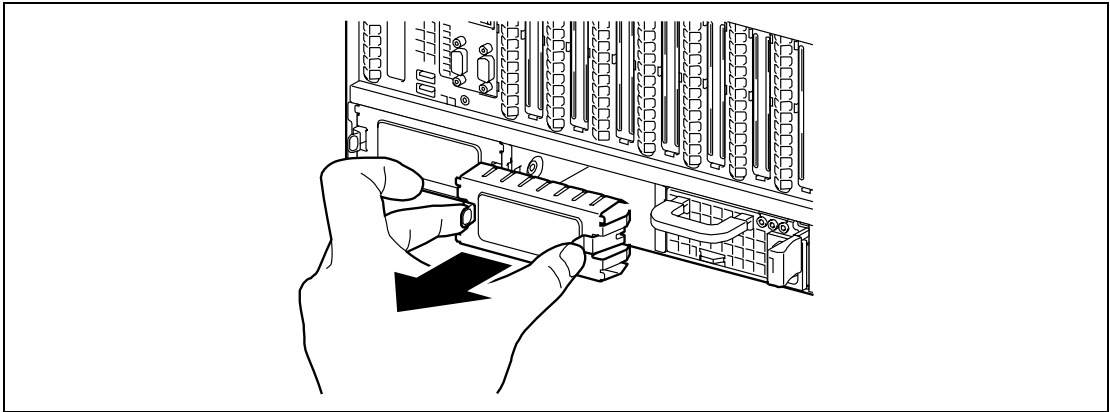
<sup>\*3</sup> For the system exceeding the specific configuration, at least three power supply units including the factory-installed power supply unit must be connected. You need to install N8181-68 additional power supply units.

**7.** Run BIOS SETUP, select [Server] - [Event Log Configuration] - [Clear All Event Logs] and press **Enter** to clear the error log.

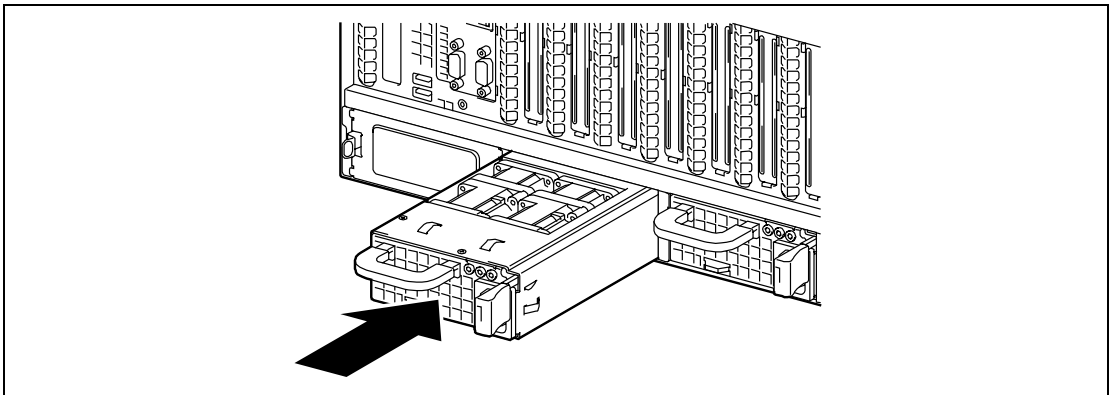
This completes update process.

## Installation

1. Shutdown the system, and press the POWER switch to power off the server.
2. Remove the dummy cover from the slot you are going to install the power supply unit.



3. Insert the power supply unit.



---

**IMPORTANT:** Insert the power supply unit straight into the slot. To avoid damaging the fan and connector of power supply unit, do not tilt or twist the unit or apply force vertically or horizontally.

---

## Replacing a Failing Power Supply Unit

Replace only a failing power supply unit.

---

**IMPORTANT:** Do not remove a power supply unit operating normally.

---

---

**NOTE:** While the server is operating in power redundant configuration and if either of the power supply unit works normally (the POWER lamp on the power supply unit is lit), the failing power supply unit can be replaced with the system operating (power-on state). (Skip step 2.)

---

1. Check the POWER lamp on the power supply unit to determine which unit needs to be replaced.

The lamp of the failing power supply unit is off.

2. Shutdown the system, and press the POWER switch to turn off the server.
3. Disconnect the power cord.

---

**IMPORTANT:** When you remove the power cord from the server, wait for about 20 seconds before proceeding work. Some components on mother board may still work for 10 to 20 seconds after the power cord is disconnected.

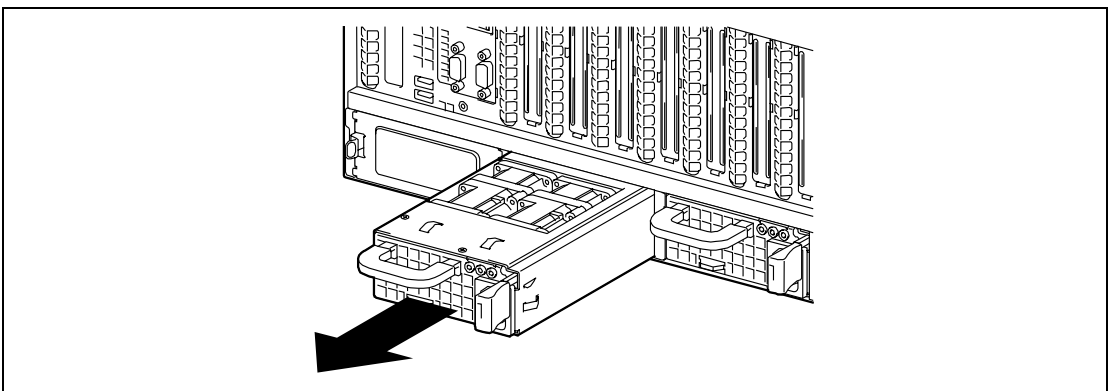
---

4. Unlock the power supply unit, hold the handle, and slowly pull out the power supply unit toward you.

---

**IMPORTANT:** To avoid damaging the power supply unit and/or connector, do not tilt or twist the unit as you pull it from the power supply bay. Use even, steady force to remove the unit.

---



5. Install the new power supply unit taking reverse steps 1 to 4 of "Installation", and confirm that the power supply unit is installed normally.

---

**NOTE:** If the power supply unit that is working with power redundant configuration is replaced while the power is on, the POWER lamp of the new power supply unit goes on. (If it is replaced while the power is off, the lamp goes on after the power is turned on.)

---

---

## Top Cover

To install or remove the DIMM, PCI board, or to change connections of internal cable, you will need to remove the top cover.

### ⚠ CAUTION



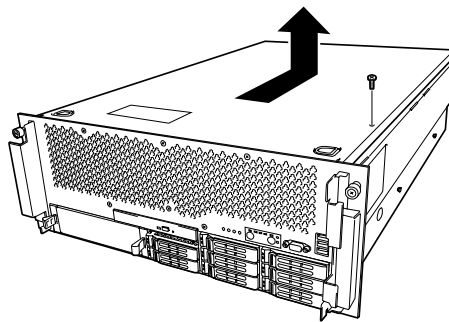
Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-14 for details.

- Be sure to power off the server before removing the top cover (except when installing/removing hot-plug PCI board or hot-swap fan).

## Removal

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Loosen the single screw on the front panel, and slide the top cover toward the rear of the chassis.

Lift the cover and take it off from the chassis.



## Installation

---

**IMPORTANT:** Before installing the top cover, check that you have not left tools or screws inside the system.

---

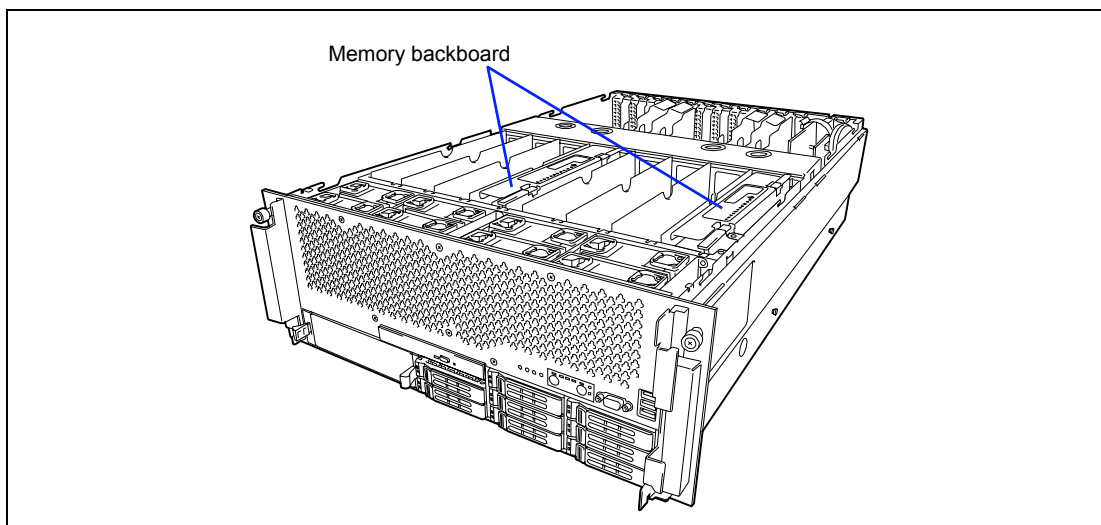
1. Position the cover on the chassis so that the cover tabs align with the chassis slots.
2. While lightly pressing down on the cover, slide it toward the front of the chassis.
3. Attach the cover to the chassis with the single screw.

---

## Memory Backboard

To install or remove the DIMM, remove the memory backboard first.

Two memory backboards are factory-installed in the server. A single memory backboard can contain up to eight DIMMs (64GB max.). Up to eight memory backboards (512GB max.) can be installed in the server.



## Removal

Remove the memory backboard in the following procedure.

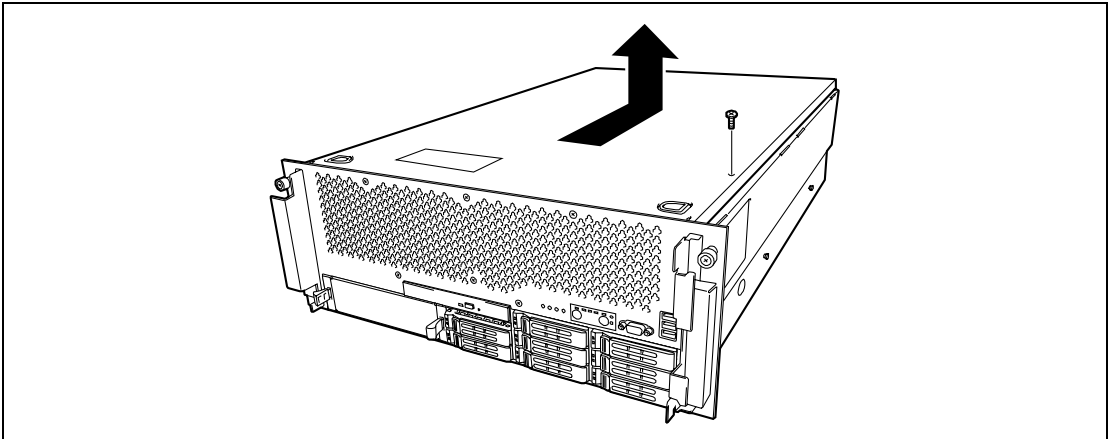
---

### IMPORTANT:

- The memory backboard is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the memory backboard. Do not touch the memory backboard terminals or on-board parts by a bare hand or place the memory backboard directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
  - The memory backboard becomes very hot while being powered. When removing the board, turn off the power and wait for several minutes before pulling it out.
-



1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove a screw from the top surface of the server. Slide the top cover toward the rear of the server, then remove it.



4. Unlock the memory backboard to open the ejector.

---

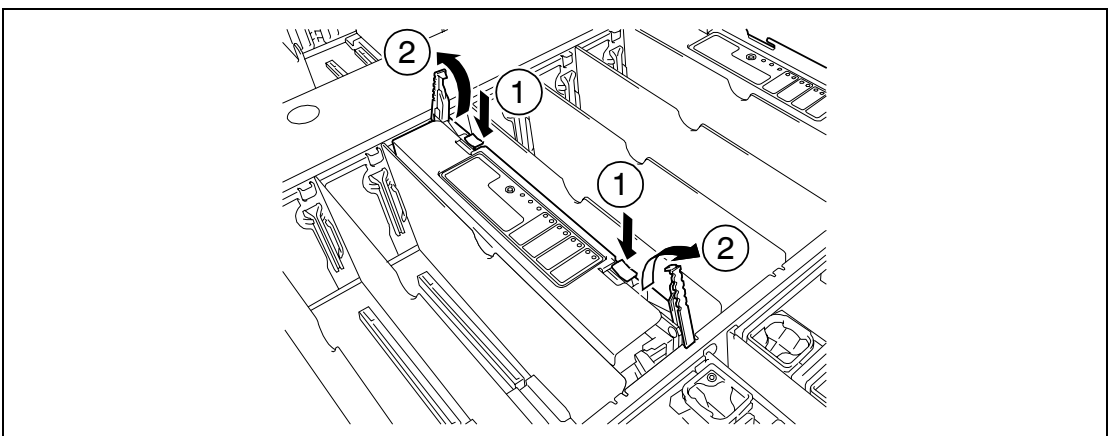
**IMPORTANT:** The memory backboard becomes very hot while being powered. When removing the board, turn off the power and wait for several minutes before pulling it out.

---

---

**NOTE:** Be sure to open the both sides of ejector at the same time.

---

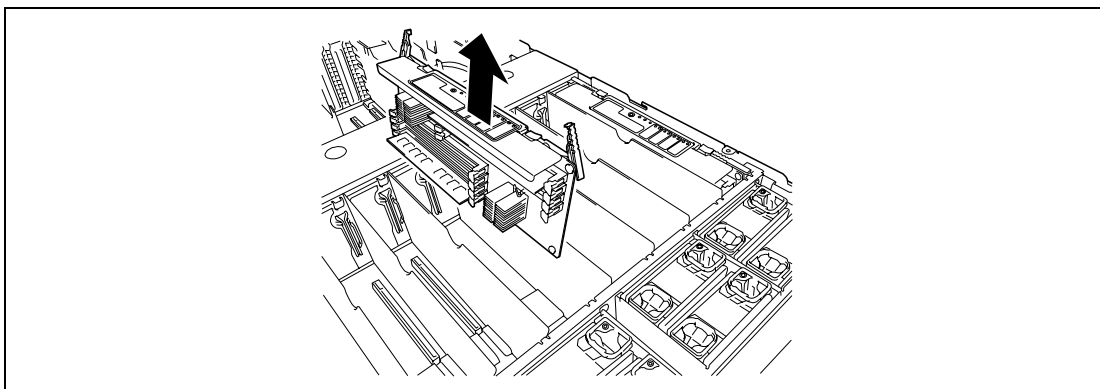


5. Hold the ejector and pull the memory backboard out from the server.

---

**IMPORTANT:**

- The memory backboard becomes very heavy if many number of DIMMs are installed. When handling the memory backboard, securely hold the ejector not to drop the board.
  - Pay attention not to touch the edge of the card (connector pins). Doing so may cause a contact failure.
- 



6. Put the memory backboard on a dry, clean, and static-free place.

## Installation

Install the memory backboard in reverse order of the removal steps.

---

**IMPORTANT:**

- Installation order
    - In 2-CPU configuration:
      - Slots 1 and 5: Installation order: First
      - Slots 2 and 6: Installation order: Second
    - In 4-CPU configuration:
      - Slots 1, 3, 5, and 7: Installation order: First
      - Slots 2 and 6: Installation order: Second
      - Slots 4 and 8: Installation order: Third
  - If five or more memory backboards are installed, perform PIA/SDR update procedure. See "Power Supply Unit" described earlier in this chapter.
-

---

## Memory Air Baffle

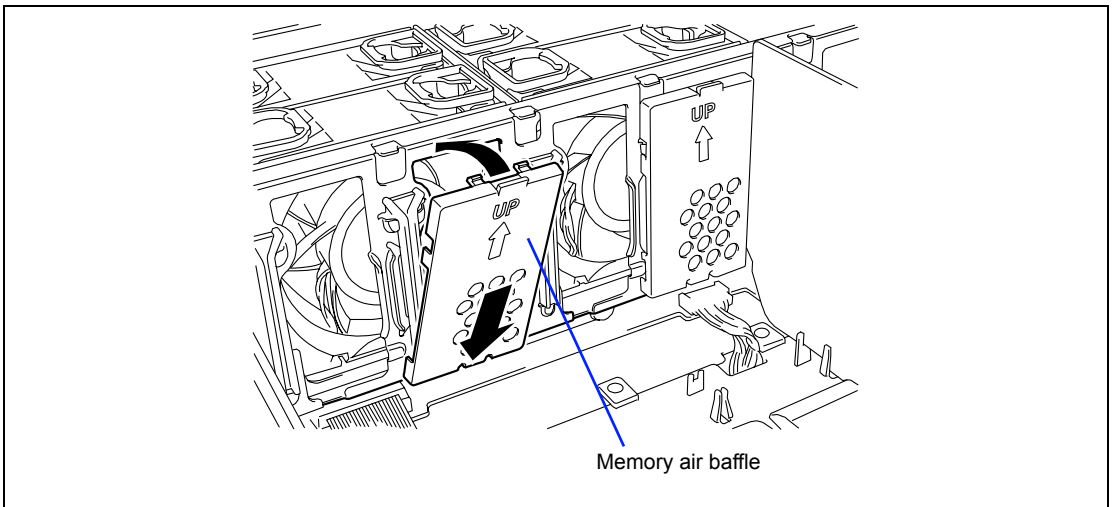
### Installation

---

**IMPORTANT:** If the server is operated with no memory backboard installed, you must install the memory air baffle to the vacant slot.

---

1. Align the bottom of memory air baffle with the frame at front of the slot.
2. While pushing the upper portion of memory air baffle, install the air baffle in the frame.



### Removal

Remove the memory air baffle taking reverse steps of installation.

## DIMM

Install the additional DIMM (Dual Inline Memory Module) to the DIMM socket on the memory backboard in the server.

DIMMs must be populated in pair.

---

### IMPORTANT:

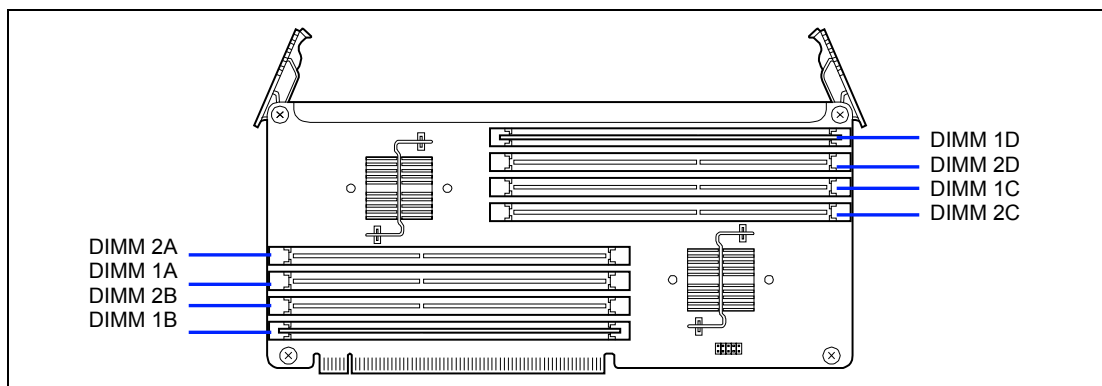
- A pair of two DIMMs must have same size and capacity.  
Installation order is as follows:  
First: DIMM 1B / DIMM 1D  
Second: DIMM 1A / DIMM 1C  
Third: DIMM 2B / DIMM 2D  
Fourth: DIMM 2A / DIMM 2C
- Consider the following when installing DIMMs of different rank.
  - Between DIMM 1B/DIMM 1D and DIMM 2B/ DIMM 2D:  
DIMMs of larger rank must be installed in DIMM 1B/DIMM 1D.
  - Between DIMM 1A/DIMM 1C and DIMM 2A/ DIMM 2C:  
DIMMs of larger rank must be installed in DIMM 1A/DIMM 1C.

If DIMMs are incorrectly installed, the system will fail to start.

---

**NOTE:** Up to 64GB of memory (8GB DIMM × 8) can be installed per a memory backboard.

---



## Installation

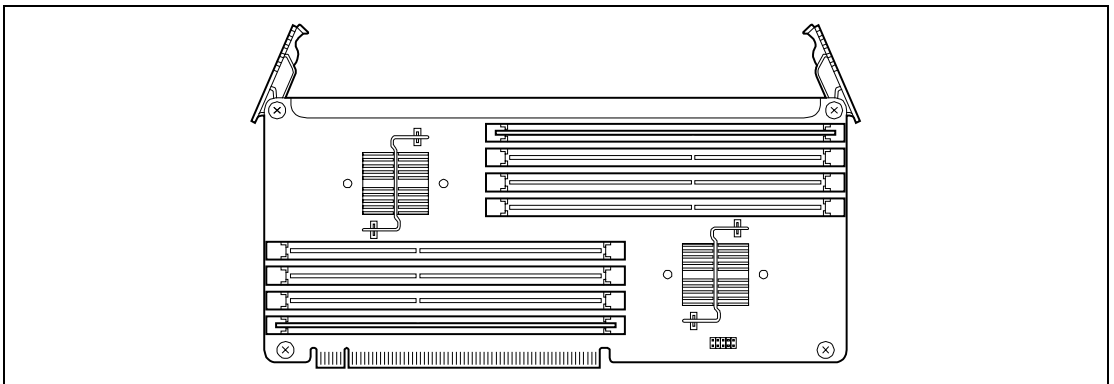
Install a DIMM in the following procedure.

---

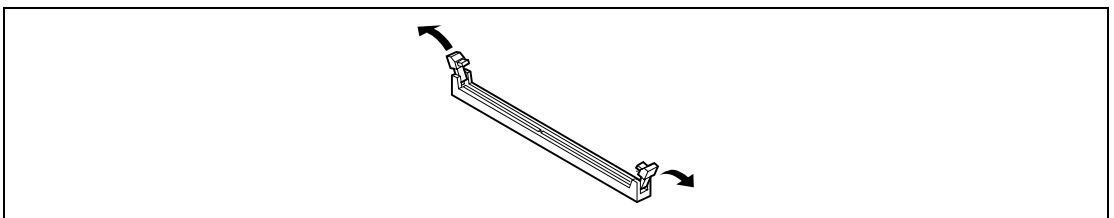
### IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or on-board parts by a bare hand or place the DIMM directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
  - Make sure to use the DIMM authorized by NEC. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.
  - Install two additional DIMMs for each group because the server uses interleaved memory. If DIMMs of different specifications are installed in a group, the server does not operate normally.
- 

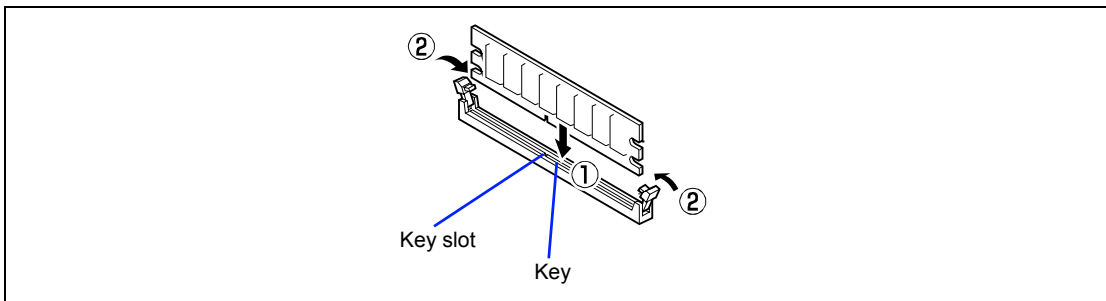
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the memory backboard according to "Memory Backboard" described earlier.
3. Locate the DIMM socket in which you are going to install DIMMs.



4. Open the levers at both ends of the socket.



5. Push the DIMM straight into the socket.



---

**NOTE:** Make sure of the orientation of DIMM. The terminal side of the DIMM has cutout to prevent incorrect insertion.

---

---

**IMPORTANT:** To avoid damaging the lever, do not apply an excess force to the lever.

---

The levers automatically close when the DIMM is inserted into the socket.

6. Close the levers securely.
7. Install DIMM in the other DIMM connector similarly to Steps 5 through 8.
8. Install the memory backboard.
9. Power on the server and verify that POST displays no error messages.  
If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
10. Run SETUP and select [Advanced] → [Memory Configuration] to verify that the installed DIMM slot shows the status "Normal". (See Chapter 4 for details.)
11. Select "Yes" for [Reset Configuration Data] on the [Advanced] menu.  
This setting is required to change the hardware configuration data. See Chapter 4 for details.
12. If Windows Server 2003 is in use, set the paging file size to the recommended value (total memory size \* 1.5) or a greater value. See Chapter 5 for details.

## Removal

Remove the DIMM in the following procedure.

---

**IMPORTANT:** The DIMM unit and DIMM are extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM unit and DIMM. Do not touch the DIMM unit and DIMM terminals or on-board parts by a bare hand or place the DIMM unit and DIMM directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.

---

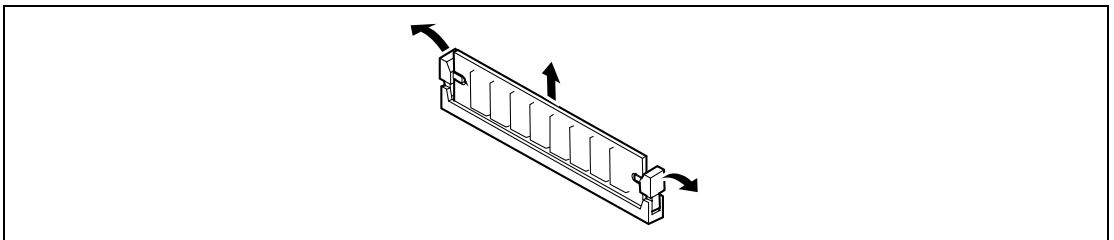
---

**NOTE:** To remove the failed DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket in which the failed DIMM is installed.

---

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the memory backboard according to "Memory backboard" described earlier.
3. Locate the sockets to remove the DIMMs.
4. Open the levers at both sides of the socket from which you remove the DIMM.

The DIMM is unlocked and ready for removal.



5. Remove a DIMM from the other connector that composes a pair.

---

**NOTE:** Be sure to close the slot lever from which the DIMM is removed.

---

6. Install the memory backboard removed in Steps 3.
7. Power on the server and verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

8. Run SETUP and select [Advanced] → [Memory Configuration] → [Memory Retest] → [Enabled] to clear the error information of the removed DIMM slot. (See Chapter 4 for details.)

9. Select "Yes" for [Reset Configuration Data] on the Advanced menu.

This setting is required to change the hardware configuration data. See Chapter 4 for details.

## Memory Mirroring Feature

The server supports the Memory Mirroring feature.

To use this feature, select the supported function from the BIOS SETUP Utility in the configuration enabling the relevant environment build-up.

### Enabling Memory Mirroring Feature

The memory mirroring feature puts a memory backboard as spare memory in standby state. If the current memory backboard encounters an uncorrectable error, the memory mirroring feature switches to the standby memory backboard. When this feature is used, the active and standby memory backboards should be combined.

Mirroring must be configured with a pair of memory backboards (slot 1/2, 3/4, 5/6, and 7/8) for each processor.

To enable the memory mirroring feature, the combined memory backboards must have the DIMM of same size and capacities.

### Setting BIOS

Run SETUP and select [Advanced] → [Memory Configuration] → [Memory RAS Feature] in order and set as follows:

- To enable the memory mirroring feature: Select [Mirror].



## Others

- Memory capacity displayed on the OS = total capacity of physically installed memory – capacity of standby memory  
Memory mirroring feature: 1/2 of actually installed memory capacity
- Enabling the memory mirroring feature does not affect the operations of applications.
- The Memory Mirroring feature is automatically disabled when the following error message is displayed:

8201	Mirroring Memory was not ready.
------	---------------------------------

Check installation status of DIMM.

The following indicates that the memory mirroring feature has worked:

- a) If NEC ESMPRO Agent has been installed, the following log is registered as a system log of Event Viewer:

Source name: ESMCommonService

Event ID: 2313

Explanation: Part of the DIMM was isolated due to a memory error.

Memory number: XX

Date/time: XX

- b) If report setting is made through NEC ESMPRO Agent, Manager reporting and ALIVE reporting is performed. The report contents are as follows:

Explanation: Part of the DIMM was isolated due to a memory error.

Memory number: XX

Date/time: XX

## Memory Sparing

The server supports the Memory Sparing feature.

To use this feature, select the supported function from the BIOS SETUP Utility in the configuration enabling the relevant environment build-up.

### Enabling Memory Sparing Feature

The memory sparing feature puts a group of DIMMs (or Rank, if DIMMs of multiple rank are installed) on the memory backboard into standby status as spare devices. If an incorrectable error occurs in a DIMM (or Rank) of the running group, the feature automatically changes the running DIMM (or Rank) from the failed one to a DIMM (or Rank) in the standby group to continue the processing.

To enable the memory sparing feature, the memory backboards must have the DIMMs of same size and capacities.

### Setting BIOS

Run SETUP and select [Advanced] → [Memory Configuration] → [Memory RAS Feature] in order and set as follows:

- To enable the memory sparing feature: Select [Spare].

## Others

- Memory capacity displayed on the OS = total capacity of physically installed memory – capacity of standby memory

(The table below shows an example of memory size for each memory backboard when memory sparing is configured. The total capacity of combination is the system memory size.)

No. of DIMMs in memory backboard	1GB DIMM (Single Rank)	2GB DIMM (Single Rank)	4GB DIMM (Dual Rank)	8GB DIMM (Dual Rank)
2	–	–	4GB	8GB
4	2GB	4GB	12GB	24GB
6	4GB	8GB	20GB	40GB
8	6GB	12GB	28GB	56GB

- Enabling the memory sparing feature does not affect the operations of applications.
- The Memory Sparing feature is automatically disabled when the following error message is displayed:

8200 Online Spare Memory was not ready.
---

Check installation status of DIMM.

The following indicates that the memory sparing feature has worked:

- If NEC ESMPRO Agent has been installed, the following log is registered as a system log of Event Viewer:

Source name: ESMCommonService  
 Event ID: 2313  
 Explanation: Part of the DIMM was isolated due to a memory error.  
 Memory number: XX  
 Date/time: XX

- If report setting is made through NEC ESMPRO Agent, Manager reporting and ALIVE reporting is performed. The report contents are as follows:

Explanation: Part of the DIMM was isolated due to a memory error.  
 Memory number: XX  
 Date/time: XX

## Memory Hot-Plug Feature

The DIMMs can be additionally installed or replaced with the system power being on. Adding or replacing DIMMs must be performed on each memory backboard.

---

**NOTE:** Replacing the memory backboard with the system power being on is available only in memory mirroring configuration.

---

- Hot Add:

Use Hot Add to additionally install DIMMs while the system is powered on.

- Hot Replace:

Use Hot Replace to replace DIMMs while the system is powered on.

- Hot Remove:

Use Hot Remove to remove DIMMs while the system is powered on. The DIMMs can be removed only in Hot Replace mode.

---

**IMPORTANT:**

- The memory Hot Add feature is available only on the OS that supports this feature.
  - Use the BIOS SETUP utility to set the following before executing the Hot Add feature:  
Select [Advanced] → [Memory Configuration] → [Hot-Add Memory Support] → [Enabled].  
While the Hot Add feature is enabled, the interleave mode is fixed to "None" regardless of setting for [Interleave Mode].
  - The memory Hot Replace feature is available only in memory mirroring configuration.  
Use the BIOS SETUP utility to set the following before executing the memory Hot Replace feature:  
Select [Advanced] → [Memory Configuration] → [Memory RAS Feature] → [Mirror].
-

## Checking Status Lamps

Check the lamps on the memory backboard before installing/removing the memory backboard in hot-plug mode.

- **Attention lamp**

The Attention lamp goes on when the hot-plug operation starts or when DIMM failure occurs.

The Attention lamp blinks amber for five seconds when the Attention button is pressed.

If the Attention button is pressed again while the Attention lamp is blinking, the hot-plug operation is aborted and the Attention lamp goes off. If the hot-plug operation fails, the Attention lamp goes on amber.

- **Power lamp**

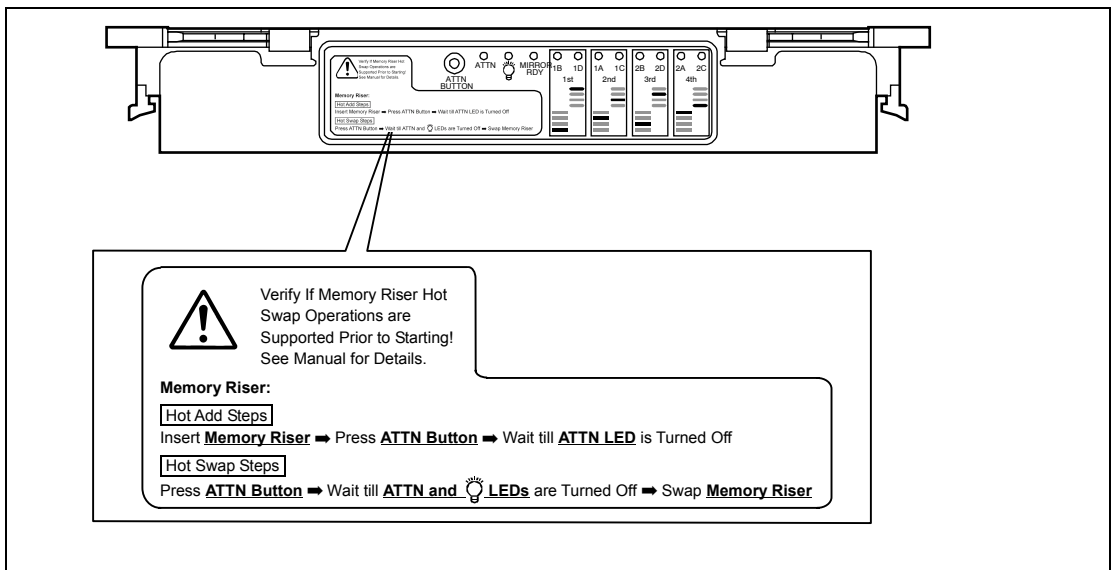
The Power lamp goes on green while the power is supplied to the memory backboard. It goes off when the power is not supplied to the memory backboard.

- **Mirror Ready lamp**

The Mirror Activity lamp goes on green when the mirroring mode is enabled in memory redundant configuration. It goes off if mirroring mode is disabled or DIMMs are out of redundant configuration.

- **DIMM Fault lamp**

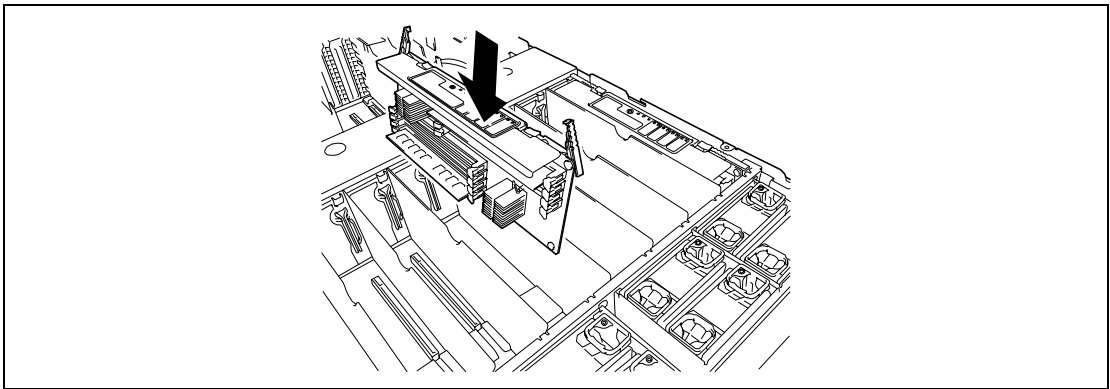
The DIMM Fault lamp on the failed DIMM goes on amber.



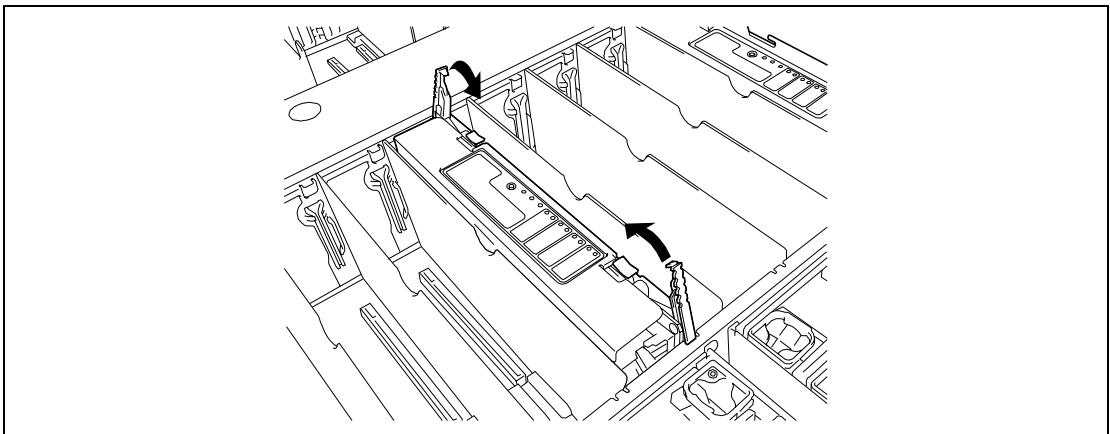
### Hot Add

Take the following procedure to perform Hot Add:

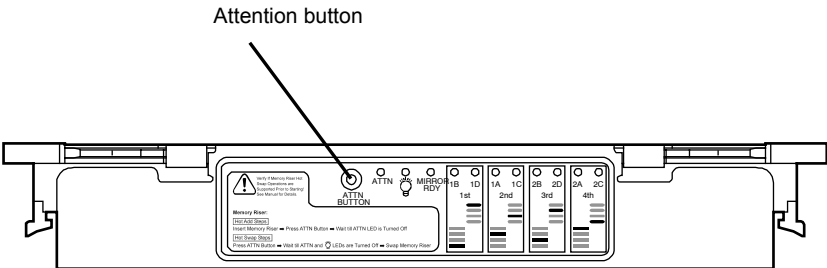
1. Pull out the server from the rack with the power being on.
2. Remove the top cover.
3. Locate the slot in which you are going to install the memory backboard.
4. Push the memory backboard slowly and carefully into the slot.



5. Close the stopper to secure the memory backboard.



- The Attention lamp blinks for five seconds, then the Power lamp starts blinking in green.



- NOTE:** The Attention lamp goes on amber if any abnormal condition is detected in memory sparing or memory mirroring configuration, or installation status of DIMMs. Press the Attention button, make sure that the Power lamp and the Attention lamp is unlit, then remove the memory backboard to check if DIMMs are correctly installed.

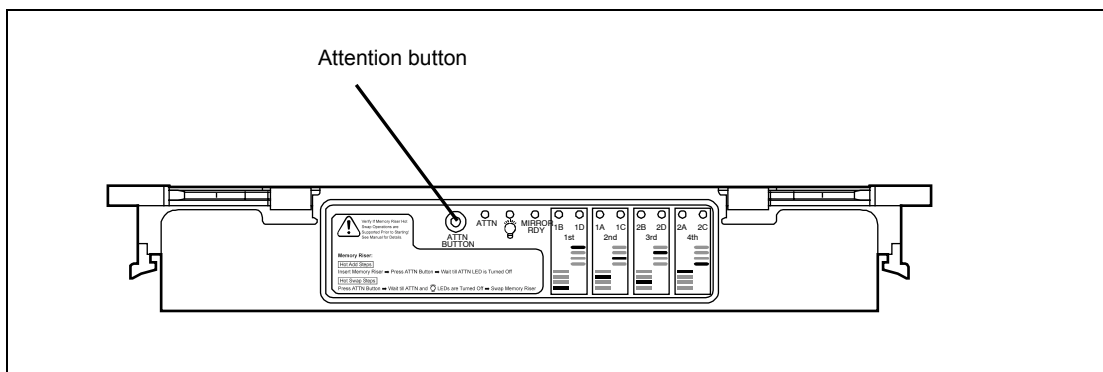
**IMPORTANT:** The memory backboard cannot be removed while the Power lamp is lit. Remove the memory backboard after making sure that the Power lamp is unlit.

8. Reinstall the top cover and place the server into the rack.
9. Make sure that the OS can detect the DIMMs additionally installed.

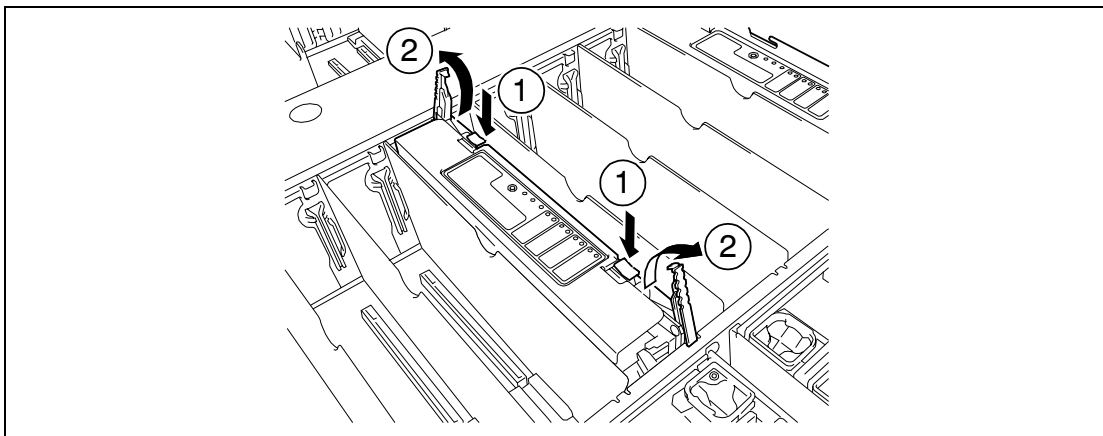
## Hot Replace

Take the following procedure to execute the Hot Replace:

1. Pull out the server from the rack with the power being on.
2. Remove the top cover.
3. Press the Attention button on the memory backboard which you are going to remove.  
The Attention lamp blinks for five seconds, then the Power lamp starts blinking in green.

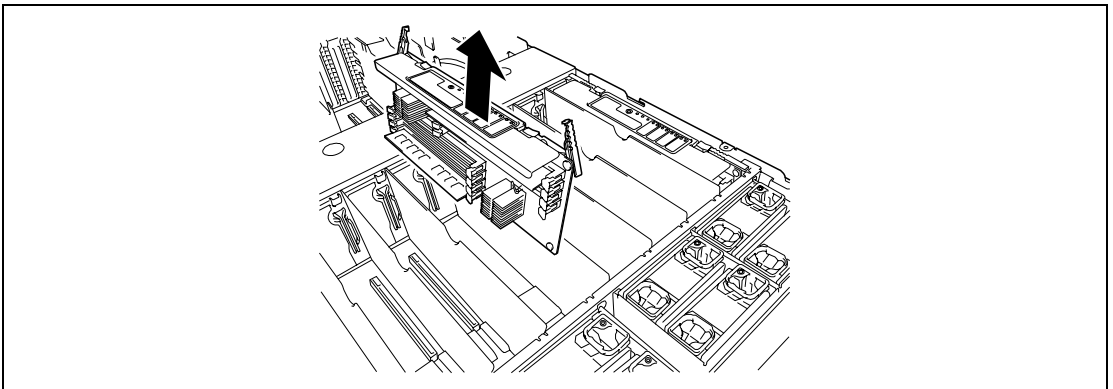


4. When the blinking Power lamp goes off, the memory backboard is ready to be removed.
5. Unlock the stopper of the memory backboard.





6. Remove the memory backboard from the chassis slowly and carefully.



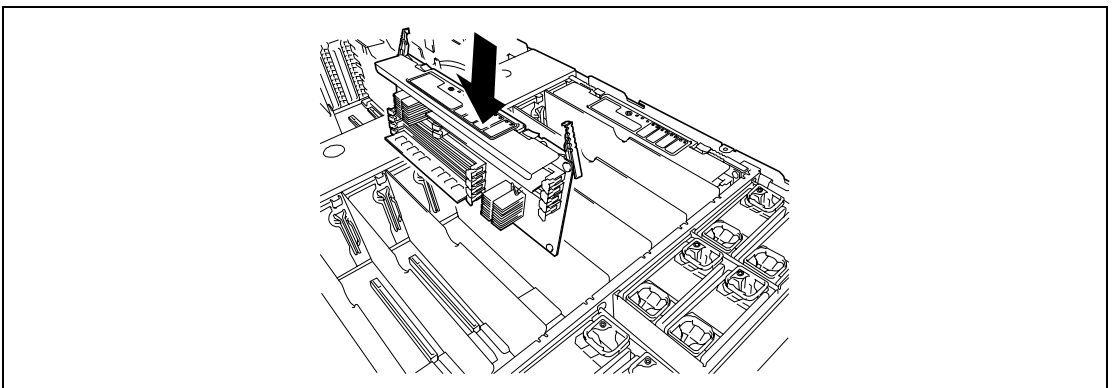
7. Replace DIMMs installed in the removed memory backboard.

---

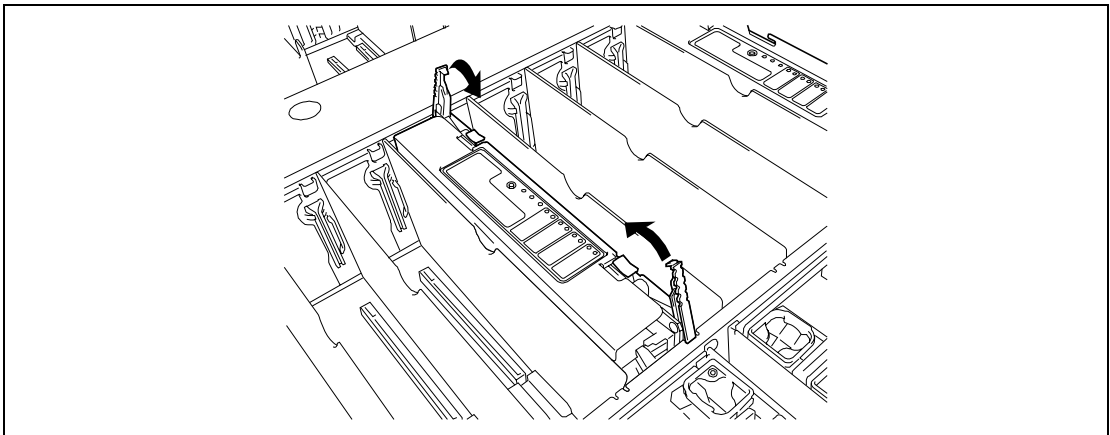
**IMPORTANT:** The DIMM to be replaced must be the same model as that have been removed, and must be installed in the same slot.

---

8. Locate the slot in which you are going to install the memory backboard.
9. Push the memory backboard slowly and carefully into the slot.



- 10.** Close the stopper to secure the memory backboard.



- 11.** Press the Attention button on the memory backboard you have installed.  
The Attention lamp blinks for five seconds, then the Power lamp starts blinking in green.
- 12.** When the blinking Power lamp goes on, the Hot Replace completes.  
Make sure that the Mirror lamp on the memory backboard is lit.

---

**IMPORTANT:** The memory backboard cannot be removed while the Power lamp is lit. Remove the memory backboard after making sure that the Power lamp is unlit.

---

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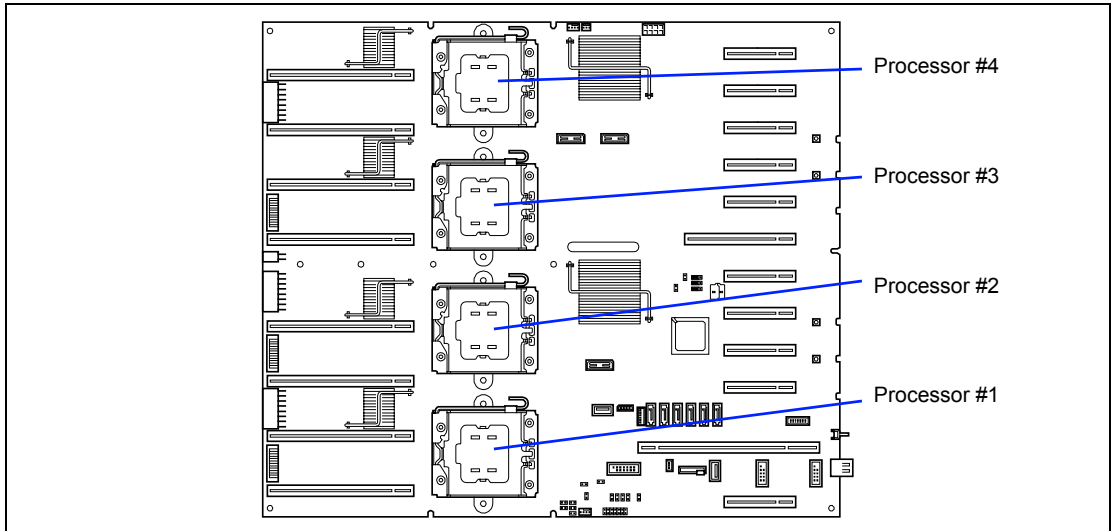
**NOTES:**

- The Attention lamp goes on amber if any abnormal condition is detected in memory sparing or memory mirroring configuration, or installation status of DIMMs. Press the Attention button, make sure that the Power lamp and the Attention lamp is unlit, then remove the memory backboard to check if DIMMs are correctly installed.
  - The Hot Replace feature is available only in memory mirroring configuration. If "Normal" or "Spare" is selected for [Memory RAS Feature] in BIOS SETUP, you cannot remove the memory backboard while the server is powered on.
- 

- 13.** Reinstall the top cover and place the server into the rack.

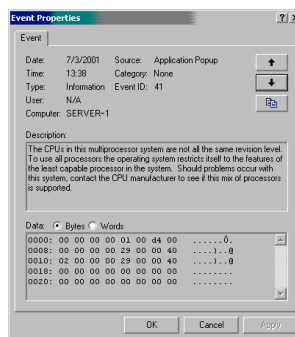
## Processor

The mother board has sockets to install four processors. (The processors must be installed in pair.)



### NOTES:

- The processors to be installed must have the same N codes.
- If the different revision of the processor is installed in the multiprocessor system, Windows logs the following information every startup. If this message is logged, it is no problem for operation.



## Installation

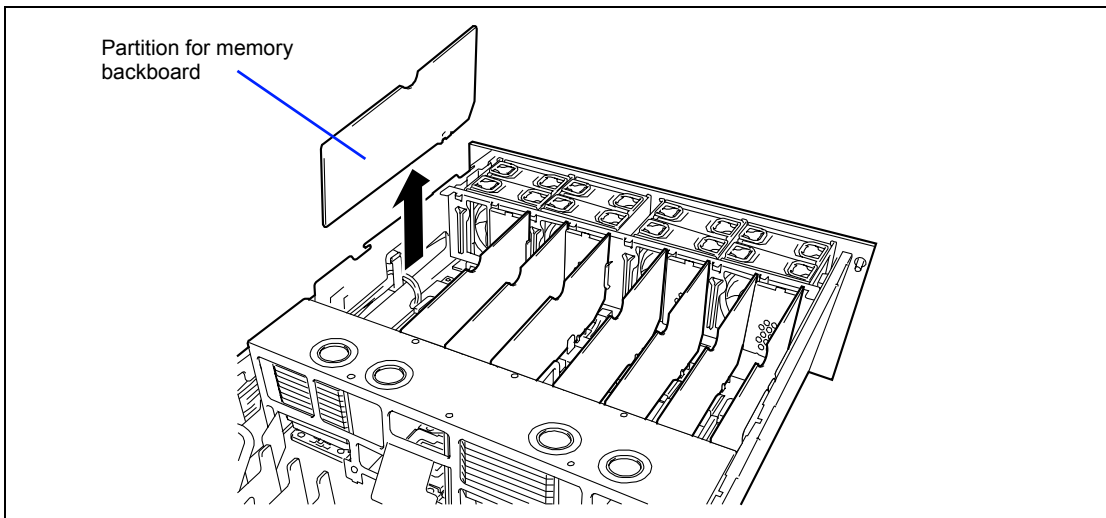
Take the following steps to install the processor.

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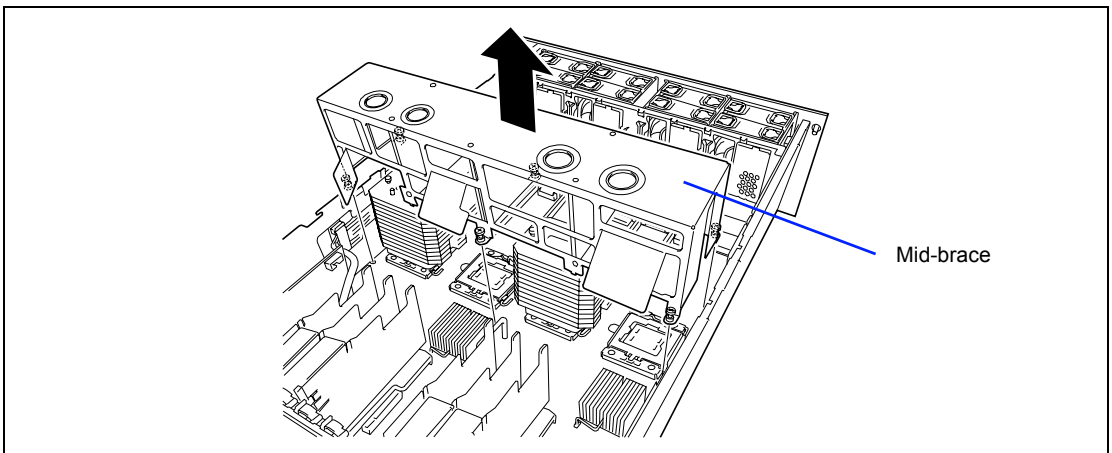
### IMPORTANT:

- The processor is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the processor. Do not touch the processor pins by a bare hand or place the processor directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
  - Always install two processors in pair.
  - When using the server with the 2-CPU configuration, processor must be installed on the sockets #1 and #3.
  - Install the processor in the order of #1, #3, #2, then #4.
  - Be sure to install the dummy cover to empty slot for protection of socket pins and dust-proofing.
- 

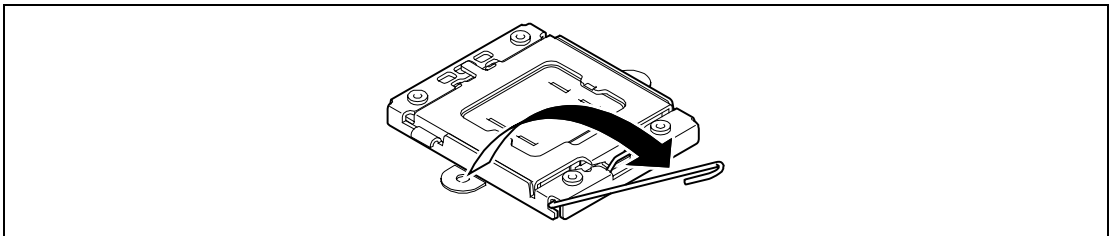
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove all the memory backboards.
3. Remove all the partitions for memory backboard.



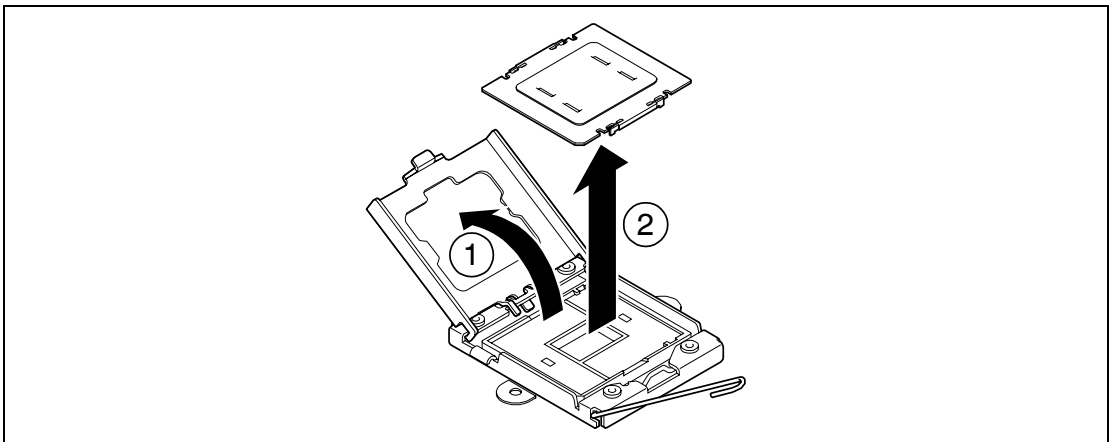
4. Loosen the six screws on mid-brace at the center of the server, then remove the mid-brace.



5. Raise the locking lever on the socket.

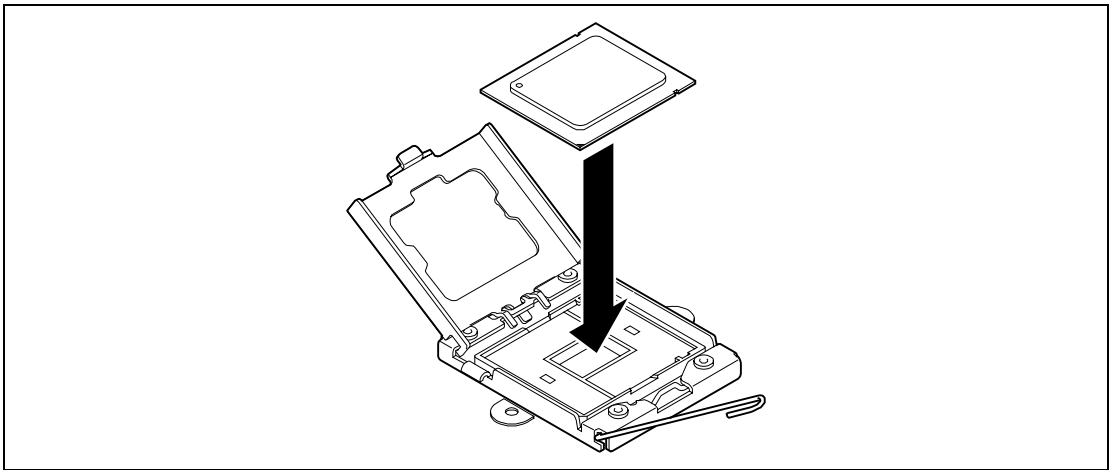


6. Open the socket plate and remove the protective cover.



**IMPORTANT:** Pay attention not to bend or fold the pins below the protective cover.

7. Put the processor on the socket slowly and gently.



---

**IMPORTANT:** Hold the processor by its edge to avoid touching any terminals at the bottom.

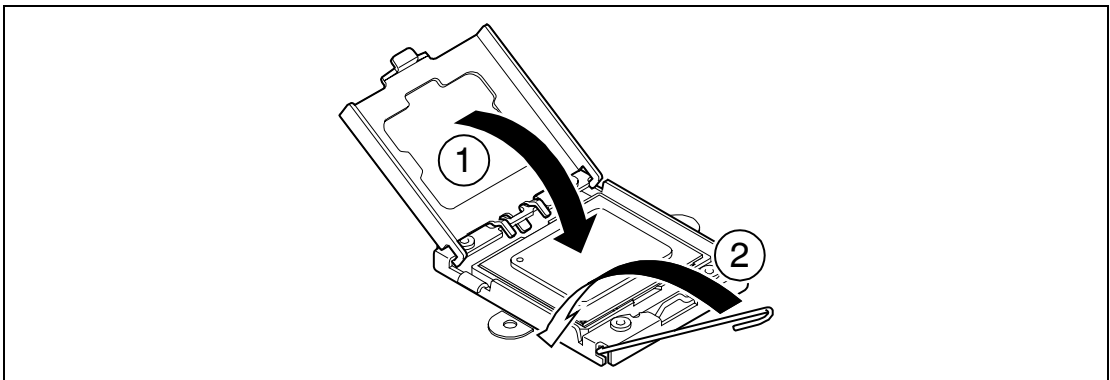
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**NOTES:**

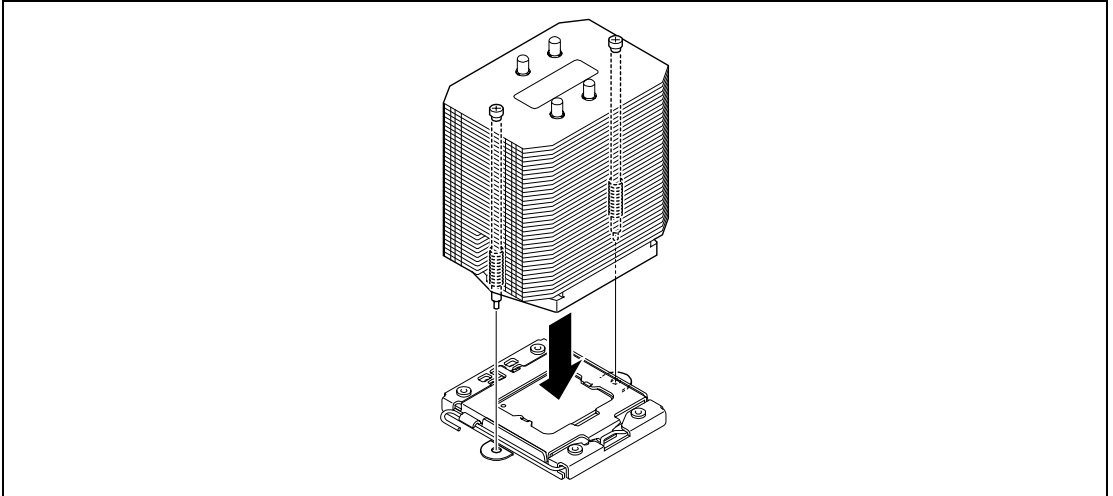
- Align notches of the processor with the key portion of the socket.
  - Do not tilt or slide the processor, put the processor straight on the socket.
- 

8. Close the socket plate and fix it with the lever.



9. Put the heat sink on processor.

Tighten the two screws to secure the heat sink. Make sure that the heat sink is level.



---

**IMPORTANT:** If the heat sink is not level, remove it, and install it again.

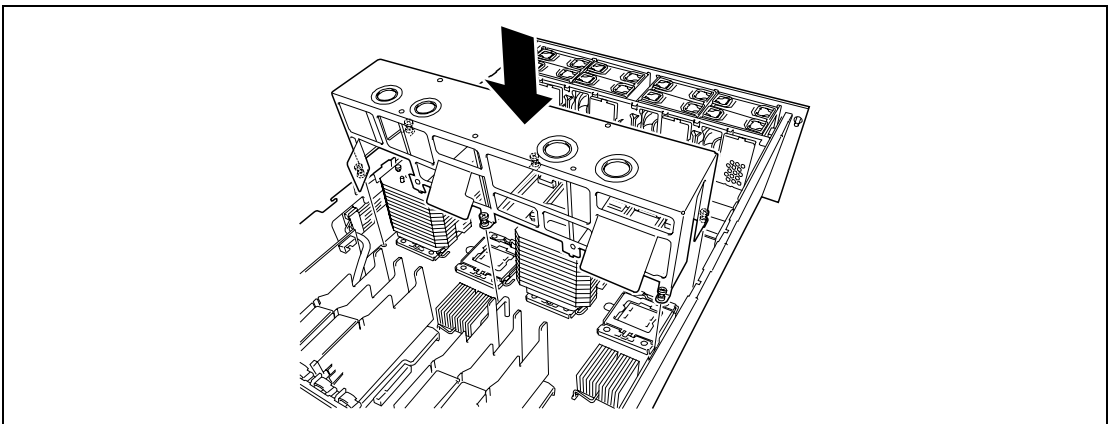
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---

**NOTE:** You need not to care the direction of heat sink.

---

10. Install the mid-brace.



11. Install all the partitions and memory backboards removed in earlier steps.
12. Install the top cover.
13. Run SETUP and select "Yes" for [Reset Configuration Data] on the [Advanced] menu.  
This setting is required to change the hardware configuration data. See Chapter 4 for details.

## Removal

To remove the processor, prepare the removal referring to steps 1 and 3 in the installation procedure and do the reverse procedure of steps 4 to 10.

---

### **IMPORTANT:**

- Do not remove any processor unless it is failed.
  - After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the processor. To remove the heat sink from the processor, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the processor. Removing the heat sink with it adhering to the processor may cause the processor and/or socket to be defected.
- 

Take the following procedure if a processor is removed (or replaced).

- Select "Yes" for [Reset Configuration Data] on the Advanced menu.

This is required to update the hardware configuration information. See Chapter 4 for details.



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## 5.25-inch Device Bay

The server has one slot for backup device such as a magnetic tape drive.

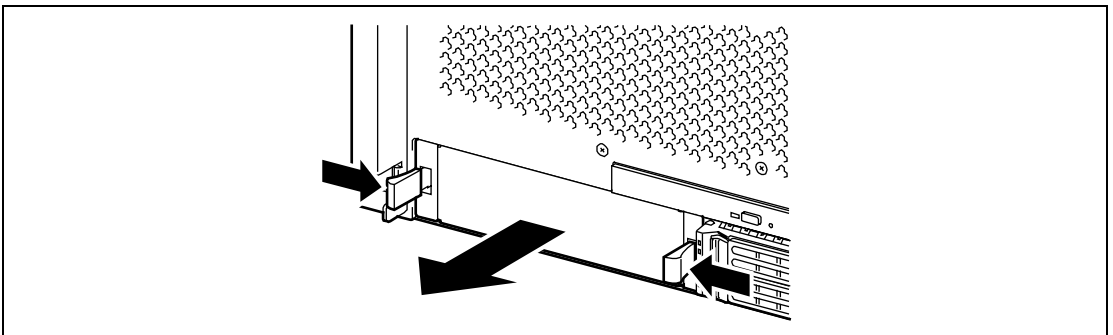
### Available Devices

The 5.25-inch device slot can contain a half-height SAS device or USB device.

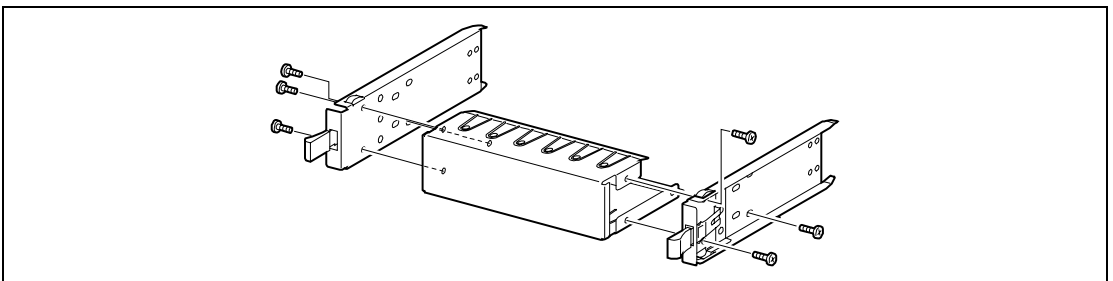
### Installation

Take the following steps to install the 5.25-inch device.

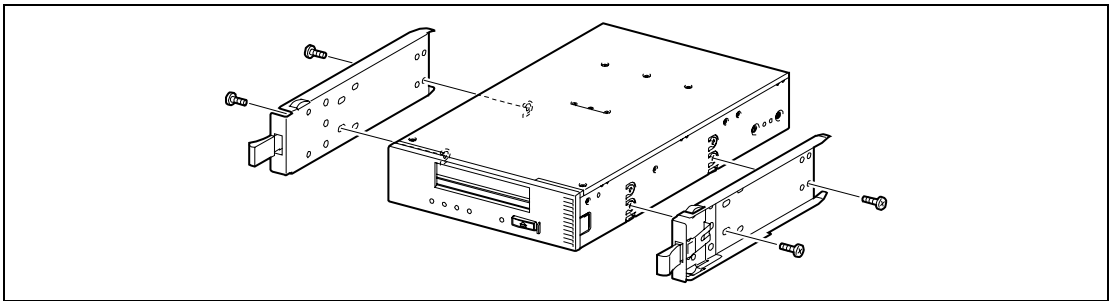
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. While pushing the tabs on both sides of 5.25-inch device bay to unlatch the bay, then pull out the bay toward the front.



3. Remove the screws from both sides of the bay, then remove the slide rails.



4. Attach the slide rails to both sides of 5.25-inch device.

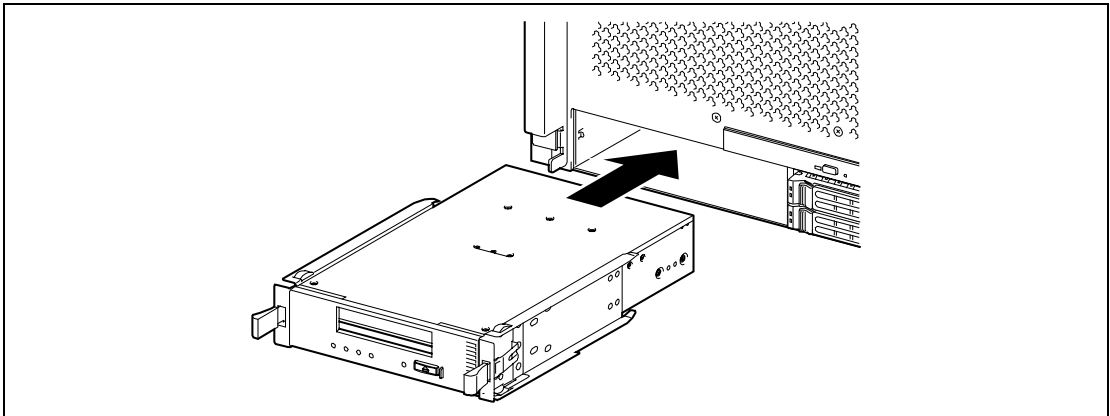


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**NOTE:** Use screws provided with the additional device, if any.

---

5. Connect the power cable of the server, and connect the USB or SAS cable coming with the device.
6. Insert the 5.25-inch device into the server chassis until it is locked.



---

**NOTE:** Some devices may protrude from the chassis by several millimeters.

---

## Removal

Remove the 5.25-inch device in the reverse procedure of the installation.

---

## Optical Disk Drive

The optical disk drive is installed in the front of the server. The following optical disk drive can be used.

- DVD-ROM drive (option)  
Reads data from various optical disks.

### ⚠ CAUTION



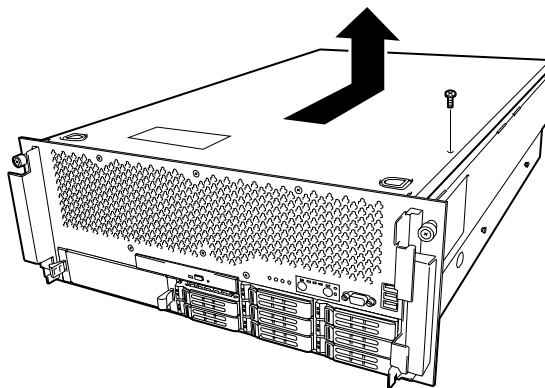
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-14 for details.

- Do not leave the tray ejected from the optical disk drive.

## Installation

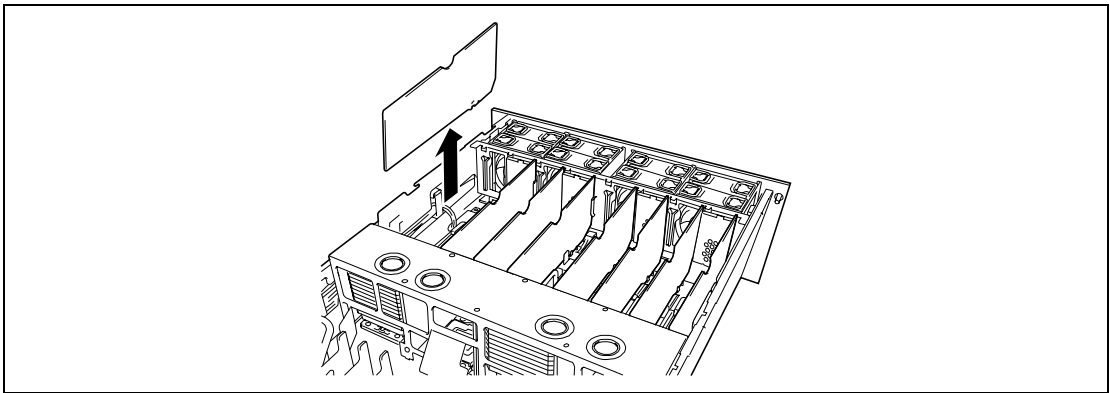
Take the following steps to install the optical disk drive.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove a screw from the top surface of the server, and remove the top cover.

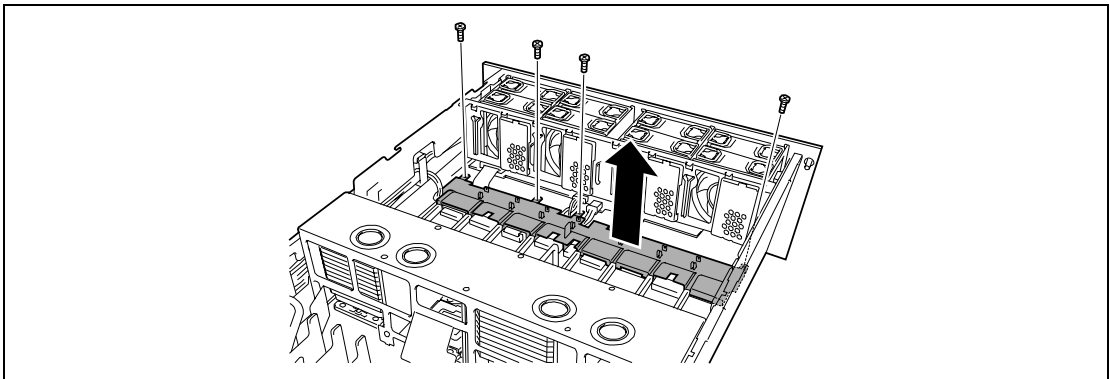


3. Remove all the memory backboards.

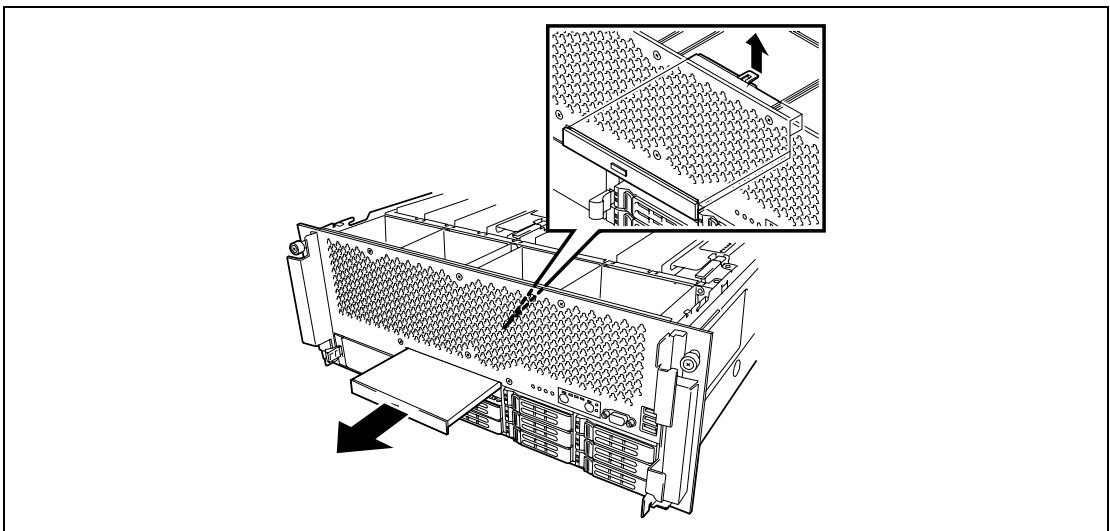
4. Remove all the partitions for memory backboard.



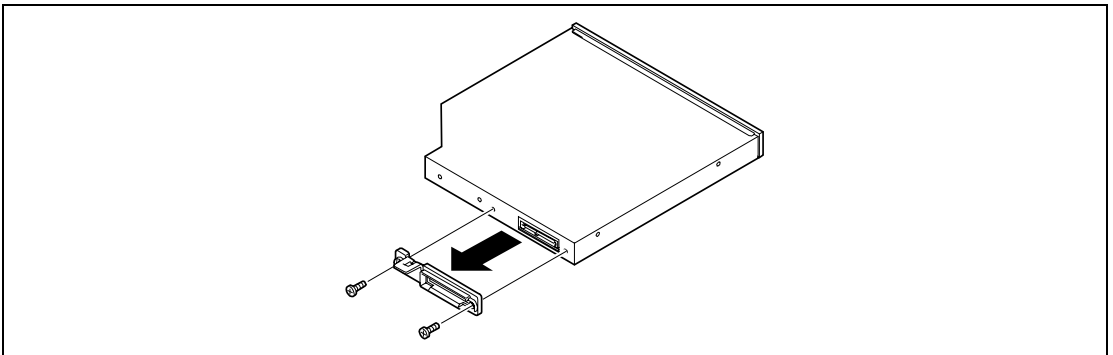
5. Loosen the four screws and remove the memory rug.



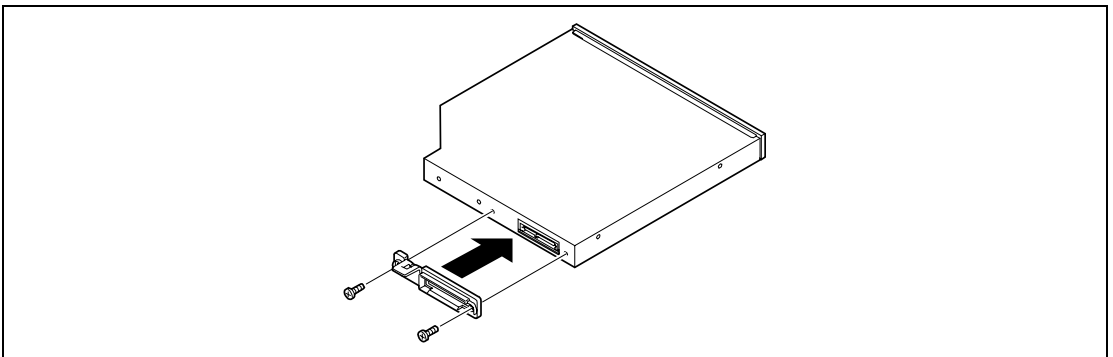
6. Remove the dummy tray.



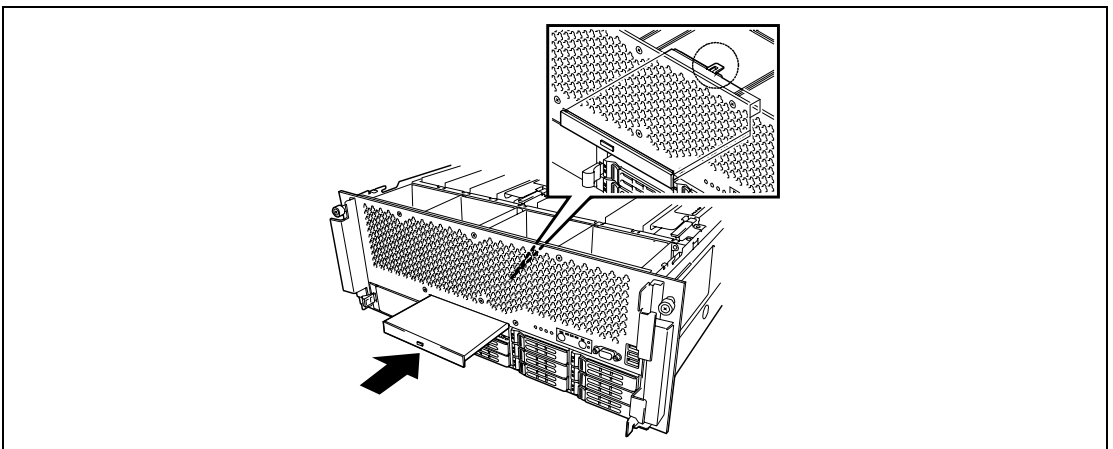
7. Remove the bracket located behind the dummy tray.



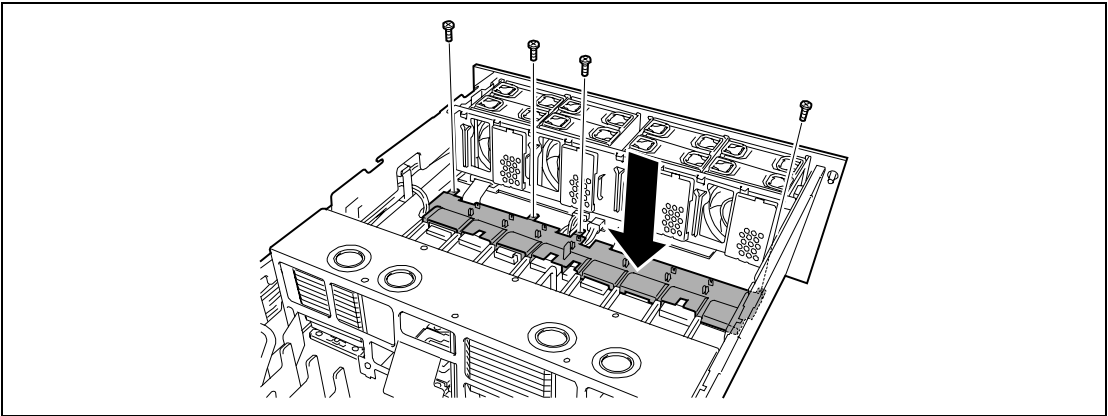
8. Install the bracket to the optical disk drive.



9. Insert the optical disk drive into the slot until it is locked.



- 10.** Install the memory rug.



- 11.** Install all the partitions and memory backboards removed in earlier steps.
- 12.** Install the top cover.

---

## PCI Board

The server contains ten slots for PCI Express board.

Some PCI Express boards support the hot-plug function by which they may be installed or removed with the power of the server being on. Your server supports the hot-plug function if the Windows Server is used as an operating system. See "List of Optional Devices and their Available Slots" for the PCI boards supporting the hot-plug function.

---

**IMPORTANT:** The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or on-board parts by a bare hand or place the PCI board directly on the desk. For static notes, see the section "Anti-static Measures".

---

---

### NOTES:

- Hot-plug indication:  
The PCI board slots #1, #2, #6, and #7 supports hot-plug PCI board. The partition plates for these slots have an indication "Hot Swap PCI Slots" on their top face.  
Other slots (#3 to #5, #8 to #10) have not indications.
  - The tab on the PCI board slot indicates hot-plug or non-hot-plug by its color. Hot-plug slot has the green tab (PCI slots #1 and #2), and non-hot-plug slot has the blue tab (PCI slots #3 through #7).
  - There are four types of PCI Express board, x1, x4, x8, and x16. Only the PCI board slot #5 can contain x16 board. The other slots can contain x1, x4, or x8 board.
-

## RAID Controller Considerations

Note the following on the configuration of a RAID System by using optional RAID Controller (Disk Array Controller).

- To change the RAID System configuration or the RAID level, the hard disk drives must be initialized. If important data is stored in the hard disk drives used to constitute a RAID System, first back up the data in other hard disk drives before installing boards and configuring the RAID System.
- More than one hard disk drive is required to configure a RAID System.
- Hard disk drives used in the RAID System configuration should have the same disk revolution rate and capacity in each disk array.
- See the table on the next page for the slot in which an optional board can be installed.
- Up to three RAID Controllers can be installed in the server.
- Several RAID (Redundant Arrays of Inexpensive [Independent] Disks) levels can be set for the RAID System configuration in the server. See "RAID System Configuration" described later for available RAIDs, data transfer rate, and array configuration. For optional RAID Controller (Disk Array Controller), refer to the documentation coming with the RAID Controller for details.
- The available capacity of the hard disk drives in the RAID System configuration is lower than the total capacity of the hard disk drives while the disk reliability is improved (for RAID 1, 5, 6, 10, or 50).
- Set [Option ROM Scan], a parameter of the slot in which a hard disk drive is installed, to "Disabled" in [PCI Configuration] on the Advanced menu of the BIOS SETUP. (The "Enabled" is factory-set.) If two or more RAID Controllers are installed, set only the slot containing the board to boot-up to "Enabled". Do not set "Option ROM Scan" for Onboard SAS Controller to "Disabled".
- In RAID System configuration, the total physical capacity of hard disk drives contained in Disk Array or Logical Drive must not exceed 2TB (terra bytes).
- Linux cannot be installed in a Logical Drive having capacity of 1TB or larger.
- Replacement of optional RAID Controller (Disk Array Controller)  
Back up the RAID System configuration information in the RAID Controller to the floppy disk and restore it to the replaced RAID Controller. Refer to the manual that comes with the RAID Controller for details.



- When two or more RAID Controllers are installed in the server, install the RAID Controller to which the system disk used for boot-up is connected in the PCI slot having the youngest PCI bus number.

The system BIOS assigns the PCI bus number in the order shown below:

[When PCI Static Allocation is enabled on BIOS SETUP (factory-set)]

Onboard LAN#1/#2 → Onboard LAN#3/#4 → SAS RAID (exclusive slot for RAID) → PCI#10 → PCI#1 → PCI#2 → PCI#3 → PCI#4 → PCI#5 → PCI#6 → PCI#7 → PCI#8 → PCI#9

[When PCI Static Allocation is disabled on BIOS SETUP]

Onboard LAN#1/#2 → Onboard LAN#3/#4 → SAS RAID (exclusive slot for RAID) → PCI#1 → PCI#2 → PCI#3 → PCI#4 → PCI#10 → PCI#9 → PCI#8 → PCI#5 → PCI#6 → PCI#7

## List of Optional Boards and their Available Slots

N Code	Product name		PCI EXPRESS 2.0										PCI EXPRESS 1.1	Remarks	
		Exclu- sive for RAID	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10			
	Capacity	x8			x4		x16		x8		x4		x4		
	PCI slot size	Full height													
	PCI socket type	x8					x16		x8						
	Available board size	Exclus ive for RAID	Short (up to 234 mm)		Short (up to 167.6 mm)		Short (up to 234 mm)				Short (up to 167.6 mm)				
	Hot-plug support		√	√				√	√						
	N8103-104A	SAS Controller PCI EXPRESS (x8)	—	—	—	√	√	—	—	—	√	√	√		5 max. Cannot be connected with internal hard disk drive. For connection with internal/external tape device and disk array unit. Slot 3/4 cannot contain internal tape device.
N8103-107	SCSI Controller (1ch) (Ultra320) PCI EXPRESS (x1)	—	—	—	√	√	—	—	—	√	√	√	3 max. For connection with external tape device		
N8103-115	RAID Controller (512 MB, RAID 0/1/5/6) PCI EXPRESS (x8)	—	√	√	√	√	√	√	√	√	—	—	4 max., including internal and external RAID Controllers. RAID battery: 2 max. To be installed in a dedicated battery holder.		
N8103-134	RAID Controller (512 MB, RAID 0/1/5/6) PCIEXPRESS 2.0 (x8)	√	—	—	—	—	—	—	—	—	—	—			
N8103-129	RAID Controller (256 MB, RAID 0/1) PCIEXPRESS 2.0 (x8)	√	—	—	—	—	—	—	—	—	—	—			
N8103-130	RAID Controller (256 MB, RAID 0/1/5/6) PCIEXPRESS 2.0 (x8)	√	—	—	—	—	—	—	—	—	—	—			
N8104-126	1000BASE-T Adapter PCI EXPRESS (x1)	—	—	—	√	√	—	—	—	√	√	√	Teaming (AFT/SFT/ALB) and Bonding with another N8104- 126 is allowed. 10BASE-T is unsupported.		
N8104-121	1000BASE-T Adapter (2ch) PCI EXPRESS (x4)	—	√	√	√	√	—	√	√	√	—	—	Teaming (AFT/SFT/ALB) with another N8104-121 or onboard LAN is allowed.		
N8104-125A	1000BASE-T Adapter (4ch) PCI EXPRESS (x4)	—	√	√	√	√	√	√	√	√	—	—	5 max. Teaming (AFT/SFT/ALB) with another N8104-125A or onboard LAN is available. Use of LAN cable with plug boots is not allowed. 10BASE-T is unsupported. Teaming with more than 3ch is not allowed on Windows Server 2008. See "Note" below for restriction on configuration.		
N8104-123A	10GBASE-SR Adapter PCI EXPRESS (x8)	—	√	√	—	—	√	√	√	—	—	—	2 max. Mixed configuration with N8104-128 is unsupported. Only for Windows Server 2003 R2.		

N Code	Product name		PCI EXPRESS 2.0								PCI EXPRESS 1.1		Remarks
		Exclu- sive for RAID	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
	Capacity	x8		x4		x16	x8	x4	x4				
	PCI slot size	Full height											
	PCI socket type	x8				x16	x8						
	Available board size	Exclus ive for RAID	Short (up to 234 mm)		Short (up to 167.6 mm)		Short (up to 234 mm)			Short (up to 167.6 mm)			
	Hot-plug support		√	√				√	√				
	N8104-128	10GBASE Adapter (SFP+/2ch) PCIEXPRESS 2.0 (x8)	—	√	√	—	—	√	√	√	—	—	
N8190-127	Fibre Channel Controller (4Gbps/Optical) PCI EXPRESS (x4)	—	√	√	√	√	√	√	√	√	—	—	
N8190-131	Fibre Channel Controller (2ch) (4Gbps/Optical) PCI EXPRESS (x4)	—	√	√	√	√	√	√	√	√	—	—	
N8190-153	Fibre Channel Controller (8Gbps/Optical) PCI EXPRESS 2.0 (x8)	—	√	√	√	√	√	√	√	√	—	—	
N8190-154	Fibre Channel Controller (2ch) (8Gbps/Optical) PCI EXPRESS 2.0 (x8)	—	√	√	√	√	√	√	√	√	—	—	
N8117-01A	Additional RS232-C Connector	—	√	—	—	—	—	—	—	—	—	—	1 max.

✓: Can be installed. –: Cannot be installed.

Note: Restriction on configuration when N8104-125A is installed

Number of installed N8104-125A	Allowable number of other PCI boards
5	One in the slot exclusive for RAID
4	One in the slot exclusive for RAID and up to two boards
3	One in the slot exclusive for RAID and up to four boards
2	One in the slot exclusive for RAID and up to six boards
1	One in the slot exclusive for RAID and up to eight boards

## Onboard LAN Controller Considerations

It is possible to configure the Teaming function of AFT (Adapter Fault Tolerance)/ALB (Adaptive Load Balancing) in a standard network controller (onboard LAN controller).

However, it is impossible to configure the Teaming function of the same AFT/ALB on a standard network controller and an optional LAN board.

When teaming is configured among onboard LANs, the following system event log appears when Windows starts. You can ignore this message and continue operation.

Type: Warning

Source: iANSMiniport

Event IDs: 11/13/16/22

The secondary port of standard network is indicated as "Intel(R) PRO/1000MT Dual PortNetwork Connectio..." on event log, however, it is not an error.

## Non-hot-plug PCI Boards

This section describes the procedure of installing or removing a non-hot-plug PCI board.

### Installation

Take the following steps to install a board in a PCI board slot.

---

**IMPORTANT:**

- All of the PCI board slots can accept x8 PCI Express boards. However, ports #3, #4, #8, #9, #10 works at x4.
  - PCI board slots #5 can accept x16 PCI Express boards.
  - Only the short-type board can be installed in the server.
- 

---

**NOTES:**

- Before installing the PCI board, make sure that the terminal section of the board mates with the connector of the PCI board slot.
  - On some PCI board slots, the insulators are installed between them. They are for protecting the PCI board already been installed. Take care not to remove or damage the insulator when installing or removing the PCI board. If the insulator is taken off, reinstall the insulator in place.
- 

1. See the section "Preparing for Installation and Removal" described earlier to prepare.

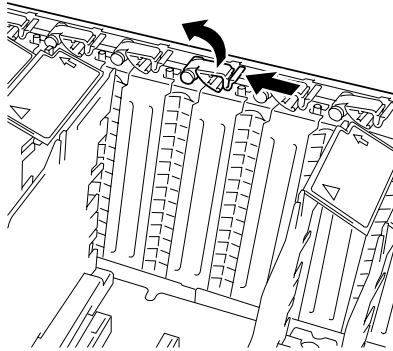
---

**IMPORTANT:** To avoid damage to the system and devices, always turn off the system before installing the non-hot-plug PCI board.

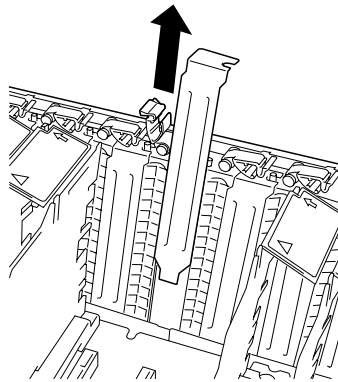
---

2. Pull out the server from the rack.
3. Remove the top cover.
4. Locate the slot to install a board.

5. Unlock the stopper at the tip of the additional slot cover.



6. Remove the slot cover.

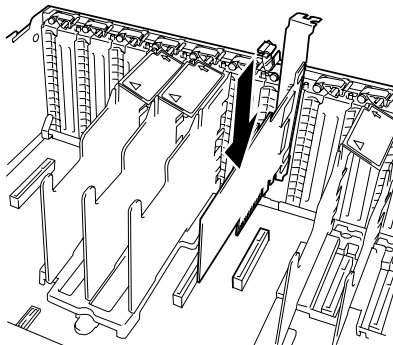


---

**IMPORTANT:** Keep the slot cover being removed for future use.

---

7. Align the board with the grooves of the guide rail, and insert the board slowly and gently.

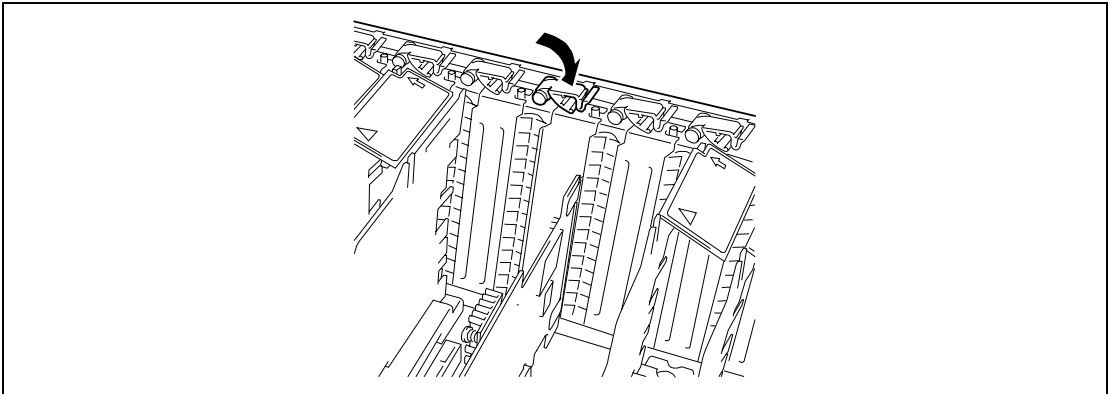


8. Close the stopper to lock the board.

---

**NOTE:** Make sure that the stopper is firmly locked. If the tab is unlocked, the PCI board and/or mother board may be damaged due to unstable PCI board.

---



9. Reinstall the removed components.
10. Turn on the power of the server. Then make sure that any error message does not appear in POST.  
  
If an error message appears, write down the message and review the error message list in Chapter 8.
11. Run BIOS SETUP Utility to set the [Reset Configuration Data] in the [Advanced] menu to "Yes".  
  
This is required to update the hardware configuration information. See Chapter 4 for details.

## Removal

Remove the board in the reverse procedure of the installation.

## Hot-plug PCI Board

On the PCI board slots #3, #4, #6 and #7, you can replace or add a hot-plug PCI board while the server is operating.

See "List of Optional Devices and their Available Slots" described earlier for the PCI boards supporting the hot-plug function.

The PCI hot-plug includes the following functions:

- Hot Add  
Use Hot Add to install a Hot Plug PCI board while the server is operating.
- Hot Remove  
Use Hot Remove to remove a Hot Plug PCI board while the server is operating.
- Hot Replace  
Use Hot Replace to replace a Hot Plug PCI board while the server is operating.

---

### IMPORTANT:

- Before removing a PCI board, be sure to stop the device driver of the slot that contains the PCI board from the operating system. Failure to do so may cause the system to fail.
  - For Windows Server operating system, do not use a function in hibernate state after executing the PCI Hot-plug function. The system fails to return to the original state when a function in hibernate state is restarted.
  - Use the BIOS SETUP utility to set the following before executing the PCI Hot Plug function:  
Select [Advanced] → [PCI Configuration] → [Hot-plug PCI Control] → [PCI Hot-Plug Support] → [Enabled].  
To execute Hot Add, you need to reserve PCI resources required for the slot you are going to execute Hot Add. Specifying "Minimum" for I/O, Memory, and Pre-fetchable Memory allows the hot-plug PCI board to be hot-added.
  - To execute the PCI Hot-plug function, be sure to login the system as Administrator.
-



## PCI Status Lamps

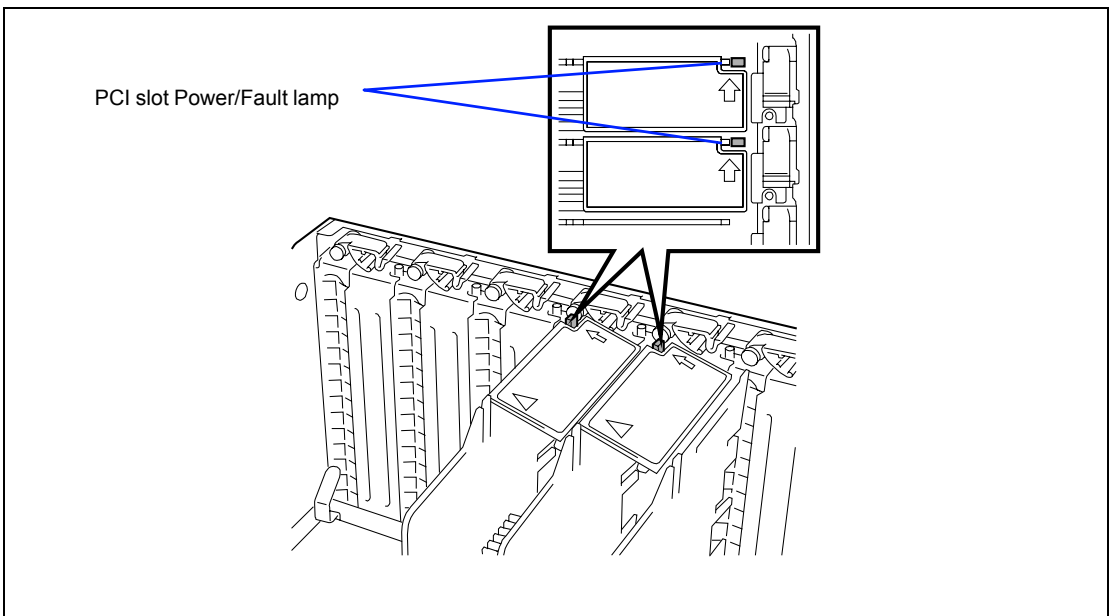
Check the lamps on the rear of the server before installing/removing the hot-plug PCI board. Two lamps indicate the status of the hot-plug PCI boards. You can check the indication by lamps from the inside of the chassis.

- **PCI slot Power lamp (green)**

Lights when power is supplied normally to the PCI board installed.

- **PCI slot Fault lamp (amber)**

Lights when an error occurs on PCI board or the slot containing the PCI board.



## Hot Add

Take the following procedure to execute Hot Add:

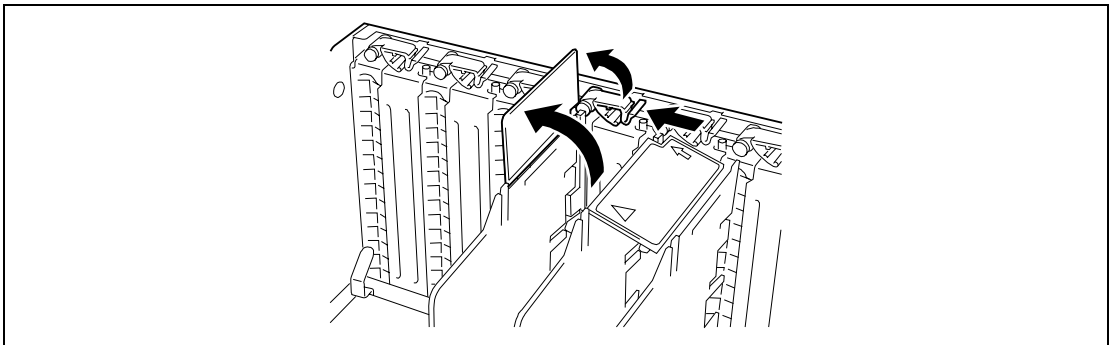
1. Pull out the server from the rack with the power being on.
2. Remove the top cover.
3. Locate the slot in which you are going to install an additional board.

---

**NOTE:** Confirm that the PCI Slot Power lamp of the slot in which you are going to install the PCI board is off.

---

4. Unlock the stopper at the tip of the additional slot cover.

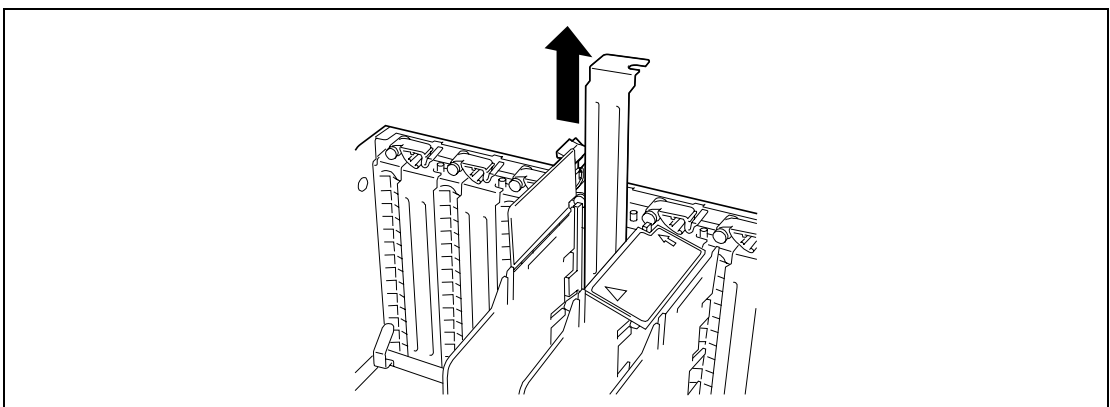


5. Remove the slot cover.

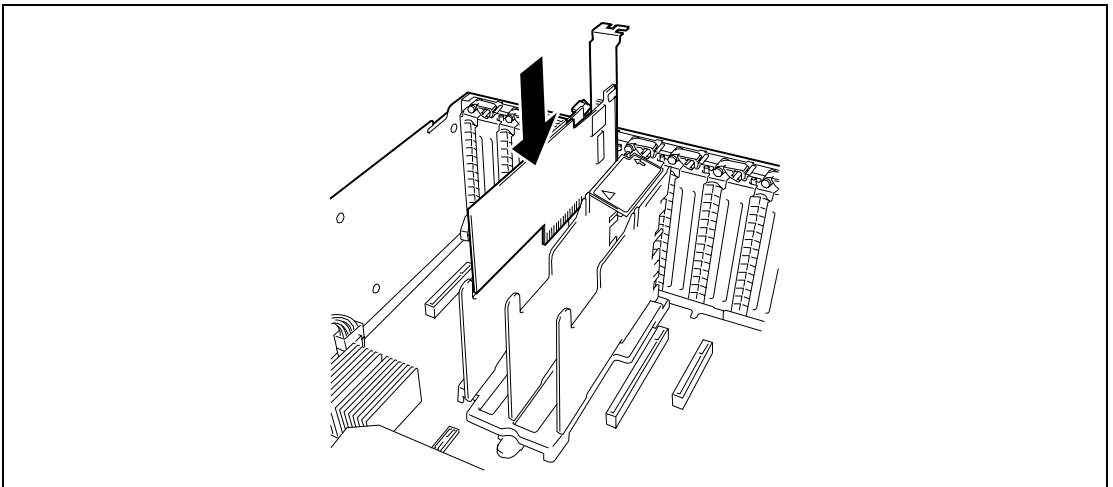
---

**IMPORTANT:** Keep the removed additional slot cover for future use.

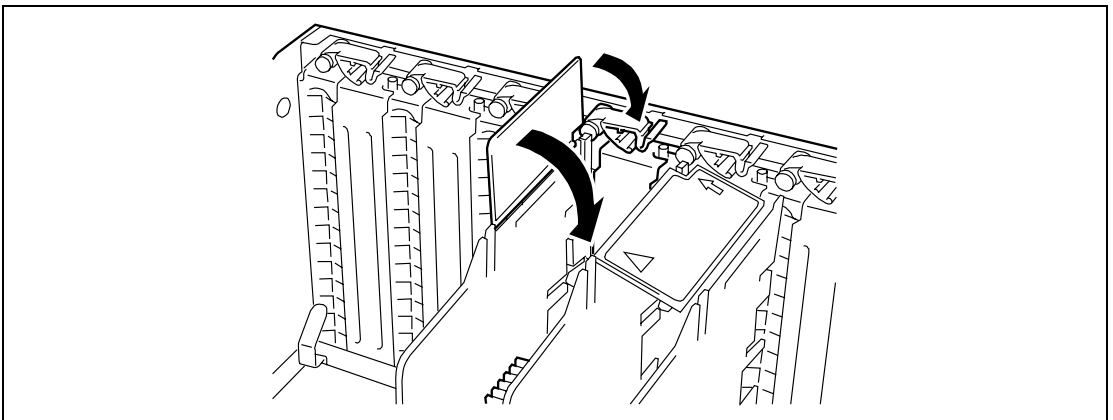
---



- 6.** Push the PCI board slowly and carefully into the slot.



- 7.** Slowly close the stopper to secure the PCI board.



- 8.** Connect the cable while holding the PCI board with your hand.

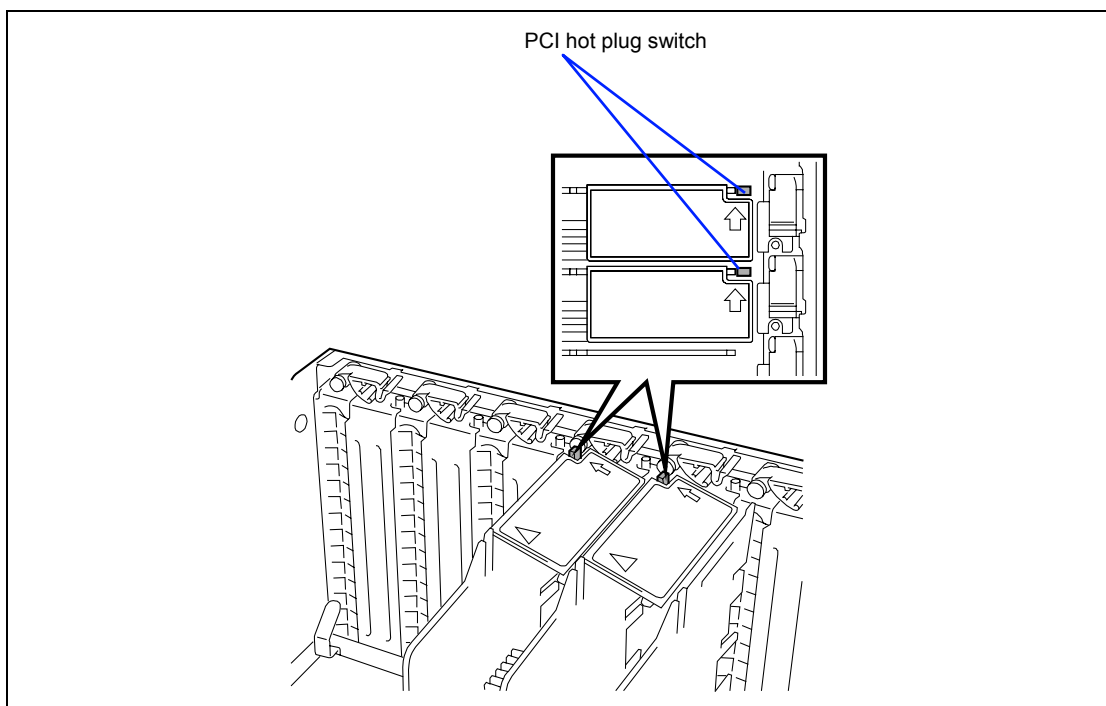
**9.** Press the PCI Hot Plug switch.

The PCI Slot Power lamp flashes for a while, and then goes on.

---

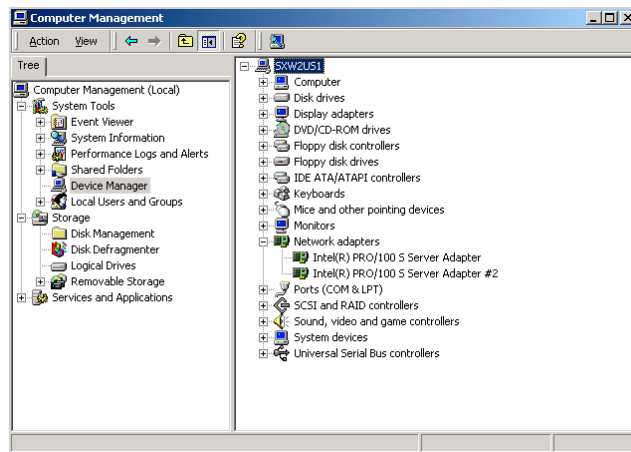
**NOTES:**

- If the server runs on Windows Server OS, the operating system automatically recognizes the additionally installed PCI board and installs the driver.
  - If an error occurred in the installed board or slot, the PCI Slot Fault lamp goes on (amber).
- 

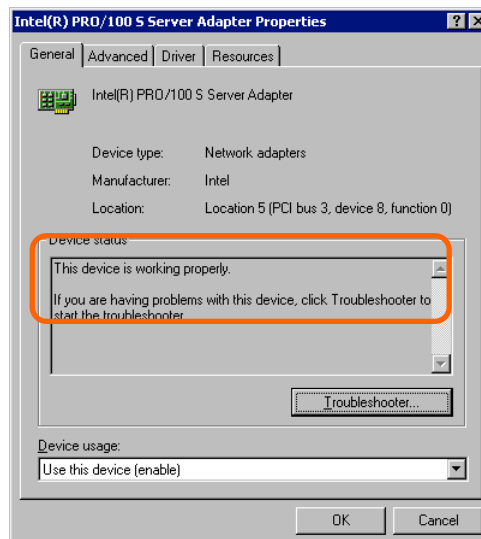


**10.** Reinstall the top cover and place the server into the rack.

11. Take the following steps to check if the additionally installed PCI board is recognized and operating properly:
- (1) Select [Control Panel], [Administrative Tools], [Computer Management], and [Device Manager] in the order to start the Device Manager.
  - (2) Move the cursor to the added board.



- (3) Click the [General] tab to display the property to confirm that the device is normally operated.



\* The message in the "property" depends on the location of the PCI board slot.

## Hot Remove

Take the following procedure to execute Hot Remove:

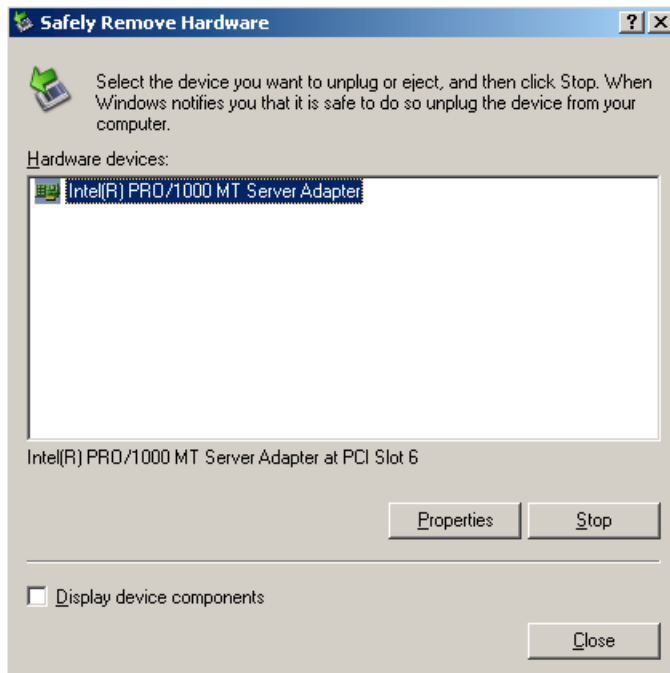
1. Take the following steps to stop the device driver used by the Hot-plug PCI board you want to remove:

---

**IMPORTANT:** Before removing a PCI board, be sure to stop the driver of the slot that contains the PCI board from the operating system. Failure to do so may cause the system to fail.

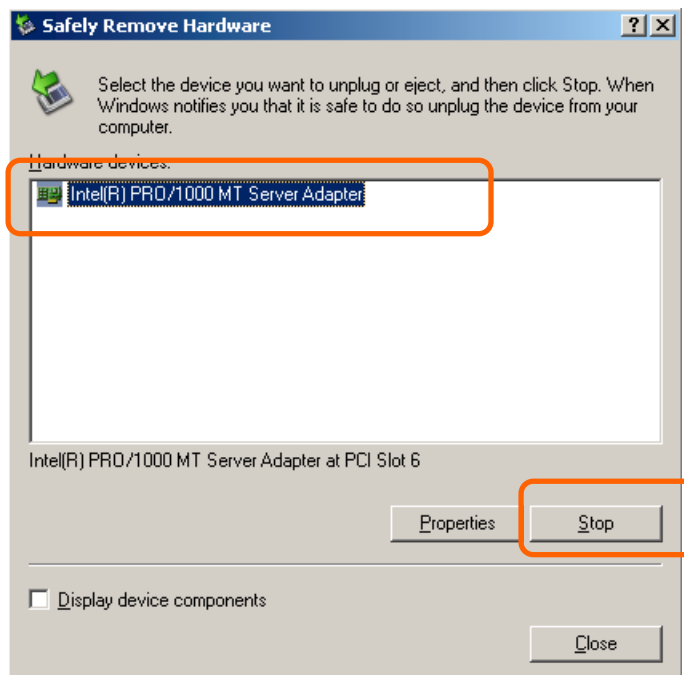
---

- (1) Double click the [Safely Remove Hardware] icon at the lower right side of the display.  
Following window will appear.

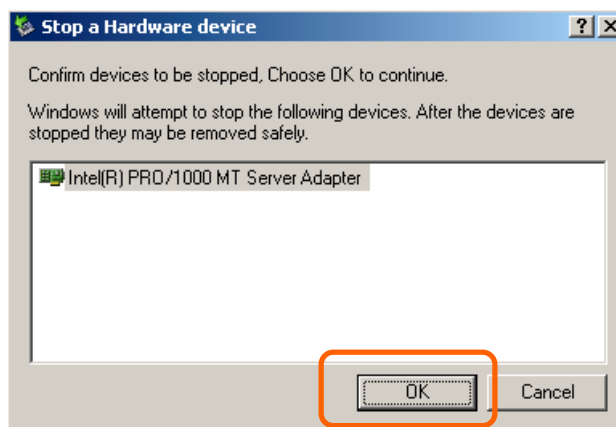


\*The message in the "Hardware devices:" depends on the location of the PCI board slot and number of the PCI board installed.

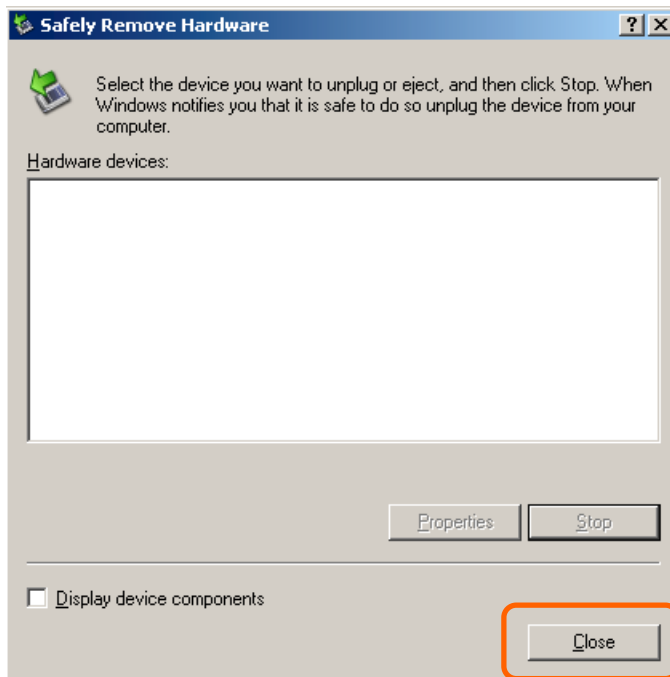
- (2) Select the target device, then click on [Stop].



- (3) Confirm that the driver is used by the device you want to remove, then click on [OK].



- (4) Click on [Close].



- (5) Pull out the server from the rack with the power being on.  
(6) Remove the top cover and locate the board to be removed.

---

**NOTE:** Confirm that the PCI Slot Power lamp of the target PCI slot is off.

---

To stop the device driver using the PCI hot-plug switch:

- (1) Pull out the server from the rack with the its power being on.  
(2) Remove the top cover and confirm the slot to remove the PCI board.  
(3) Press the PCI hot-plug switch on the slot from which the PCI board is to be removed.

---

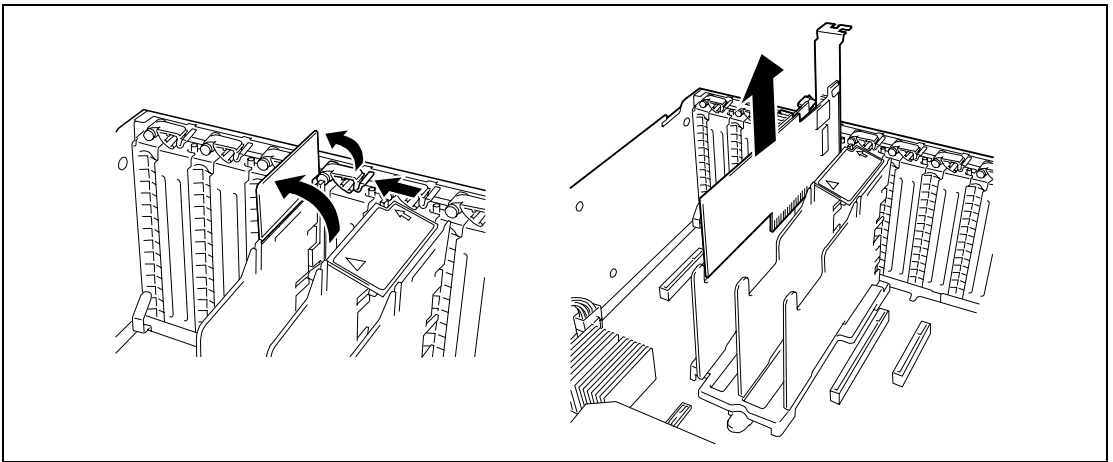
**NOTE:** The PCI Slot Power lamp on the slot flashes for a while. Wait until the lamp turns off.

---

2. Disconnect all the cables from the PCI board.



3. Unlock the stopper, slowly open the tab, then remove the PCI board.

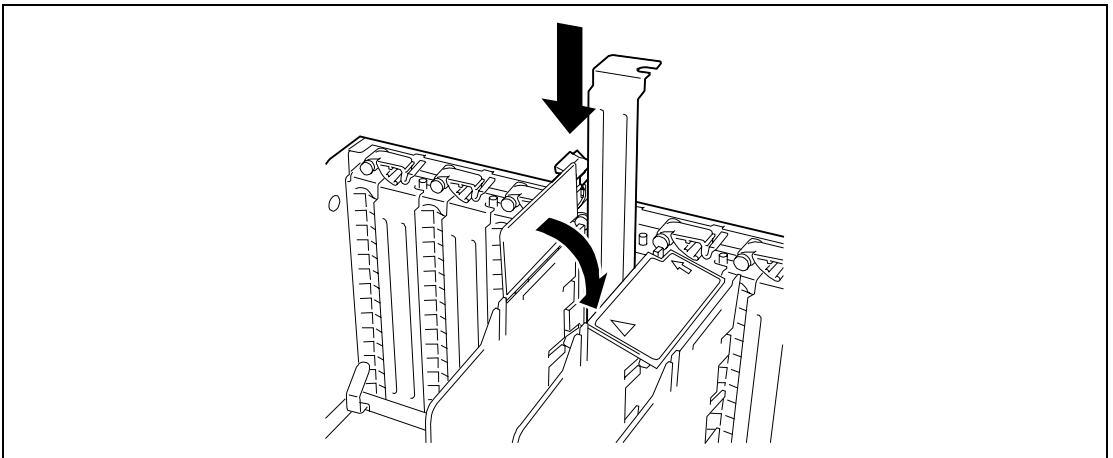


4. Install the additional slot cover on the slot from which you remove the PCI board, then slowly close the tab.

---

**IMPORTANT:** To maintain the dust-proofing and electromagnetic radiation characteristics and cooling performance of the server, be sure to install the blank plate on the slot from which you removed the PCI board.

---



5. Reinstall the top cover and place the server into the rack.

## Hot Replace

Take the following procedure to execute the Hot Replace:

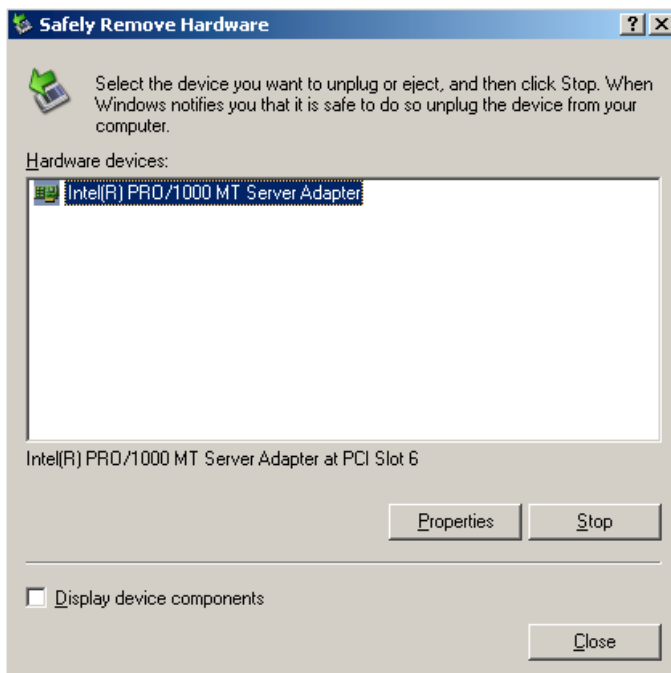
1. Take the following steps to stop the device driver used by the Hot Plug PCI board you want to replace:

---

**IMPORTANT:** Before removing a PCI board, be sure to stop the driver of the slot (containing the PCI board) from the operating system. Failure to do so may cause the system to fail.

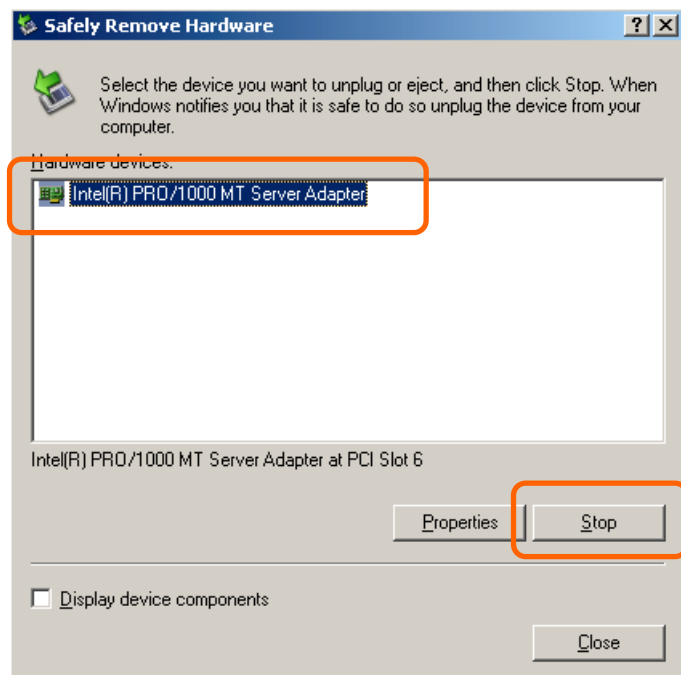
---

- (1) Double click the [Safely Remove Hardware] icon at the lower right side of the display.  
Following window will appear.



- \* The message in the "Hardware devices:" depends on the location of the PCI board slot and number of the PCI board installed.

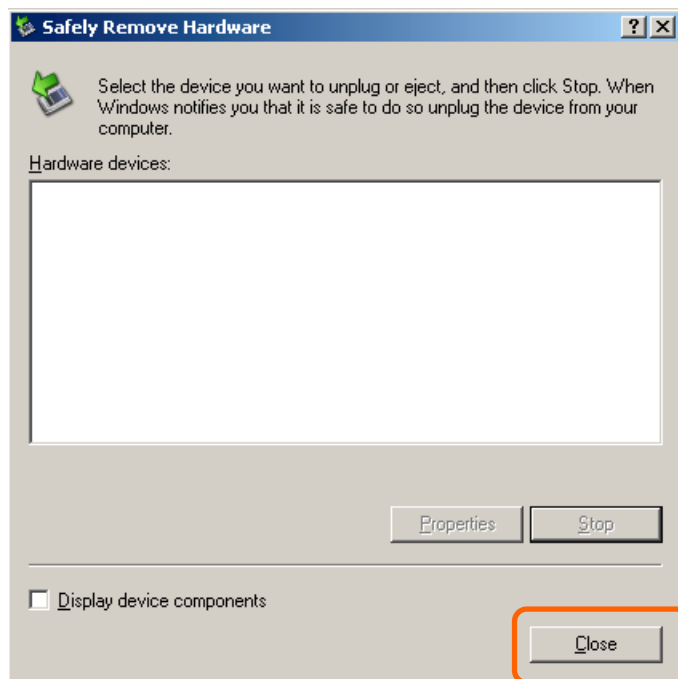
- (2) Select the target device, then click on [Stop].



- (3) Confirm that the driver is used by the device you want to remove then, click on [OK].



- (4) Click on [Close].



- (5) Pull out the server from the rack with the power being on.  
(6) Remove the top cover and locate the board to be removed.

---

**NOTE:** Confirm that the PCI Slot Power lamp of the target PCI slot is off.

---

To stop the device driver using the PCI hot-plug switch:

- (1) Remove the top cover and confirm the slot to remove the PCI board.  
(2) Press the PCI hot-plug switch on the slot from which the PCI board is to be removed.

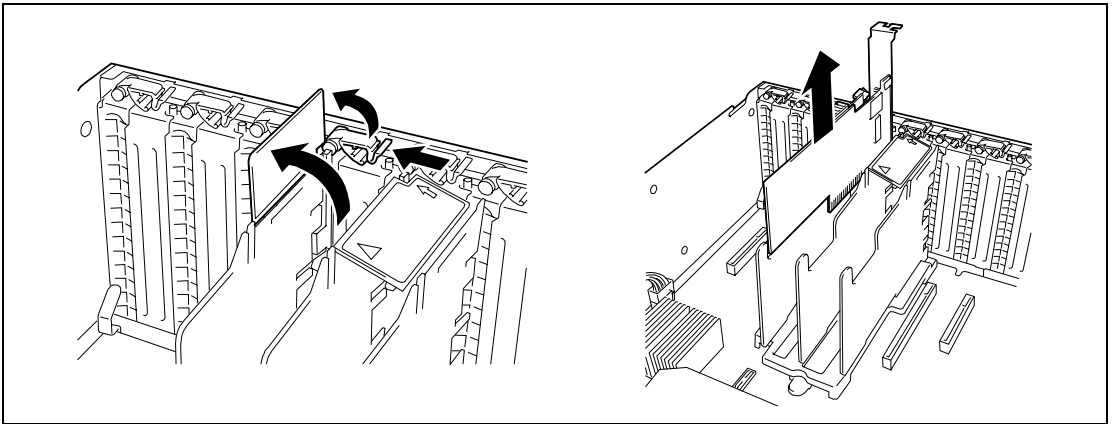
---

**NOTE:** The PCI Slot Power lamp on the slot flashes for a while. Wait until the lamp turns off.

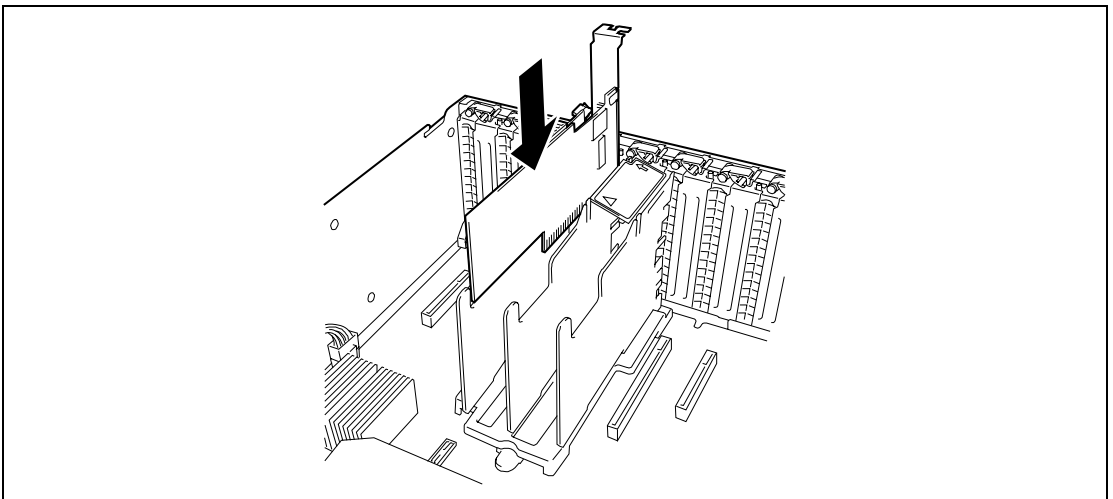
---

2. Disconnect all the cables from the PCI board.

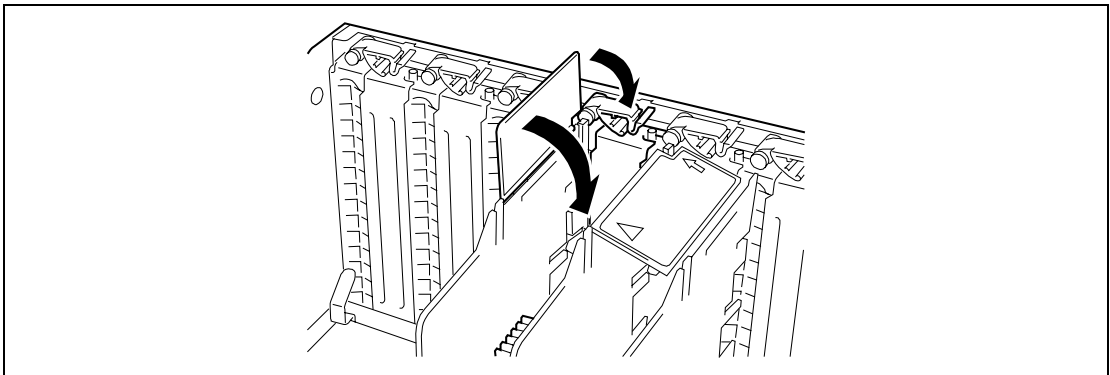
3. Unlock the stopper, slowly open the tab, then remove the PCI board.



4. Slowly insert the PCI board into the server.



5. Close the stopper to secure the PCI board.



---

**NOTES:**

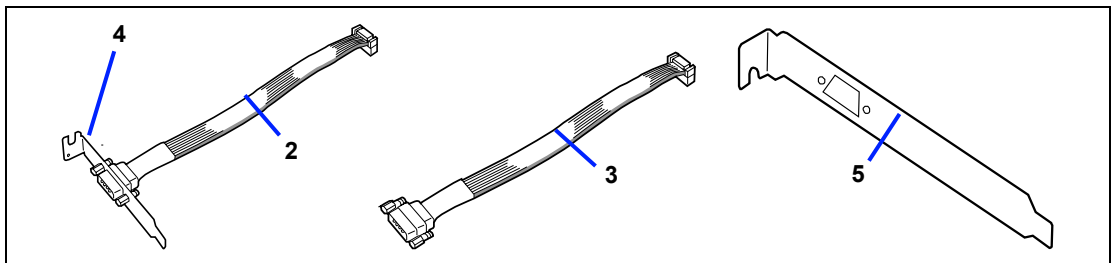
- If the server runs on Windows Server OS, the operating system automatically recognizes the additionally installed PCI board and installs the driver.
  - If an error occurred in the installed board or slot, the PCI Slot Fault lamp goes on (amber).
- 

6. Reinstall the top cover and place the server into the rack.

## Installation of N8117-01A RS-232C Connector Kit

The shipping carton contains the following components.

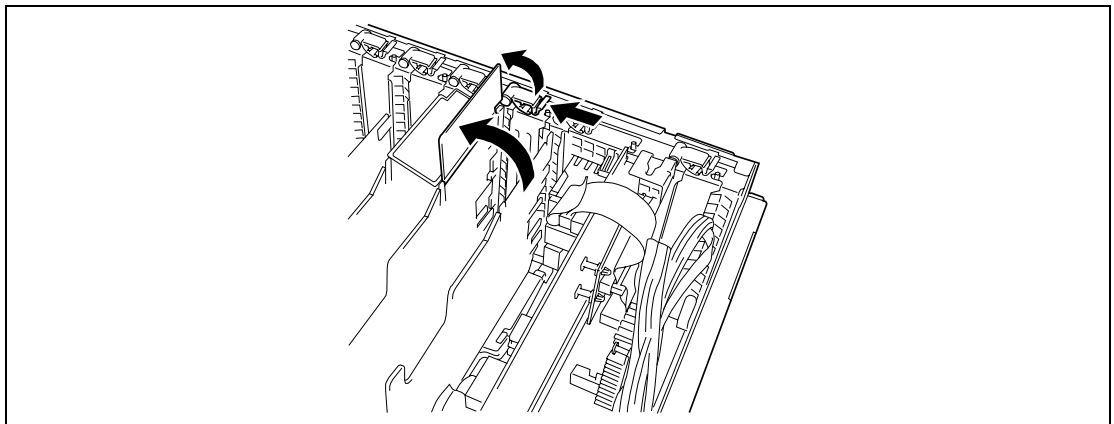
Item No.	Name	Specification No.	Q'ty	Remarks
1	RS-232C Connector Kit Handling Guide	856-125671-002	1	
2	RS-232C cable (A)	804-063264-020	1	
3	RS-232C cable (B)	804-062746-820	1	
4	PCI bracket (1)	243-112122-001	1	Attached to the cable
5	PCI bracket (2)	243-112122-002	1	For Full Height PCI board



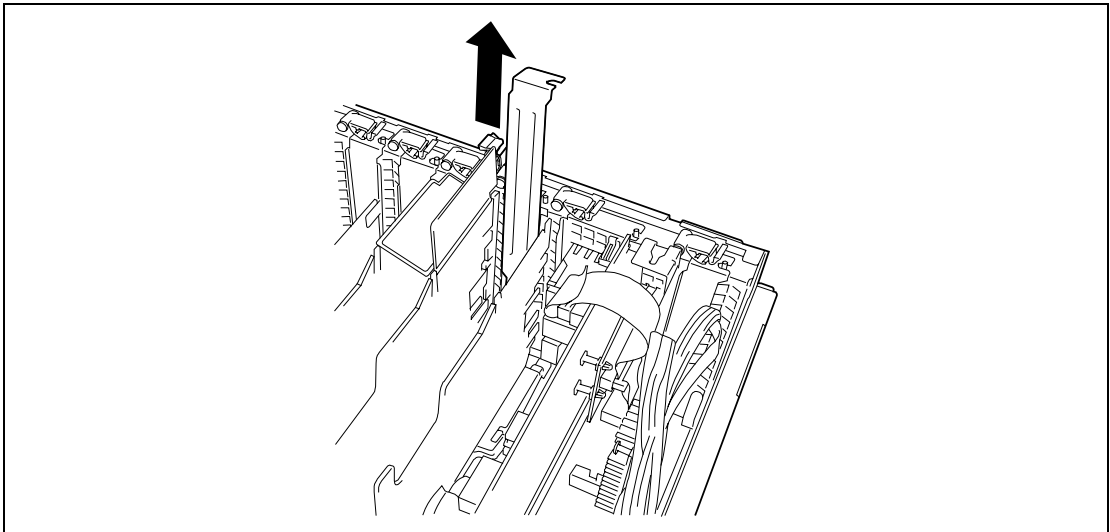
Use Item No. 3 (RS-232C cable (B)) and No. 5 (PCI bracket (2)).

Install N8117-01A in the following procedure.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the top cover.
3. Assemble the RS232C cable (B) with the PCI bracket (2).
4. Unlock the stopper at the tip of the additional slot cover in slot #1.



5. Remove the additional slot cover at the same location (height) as the installation slot.

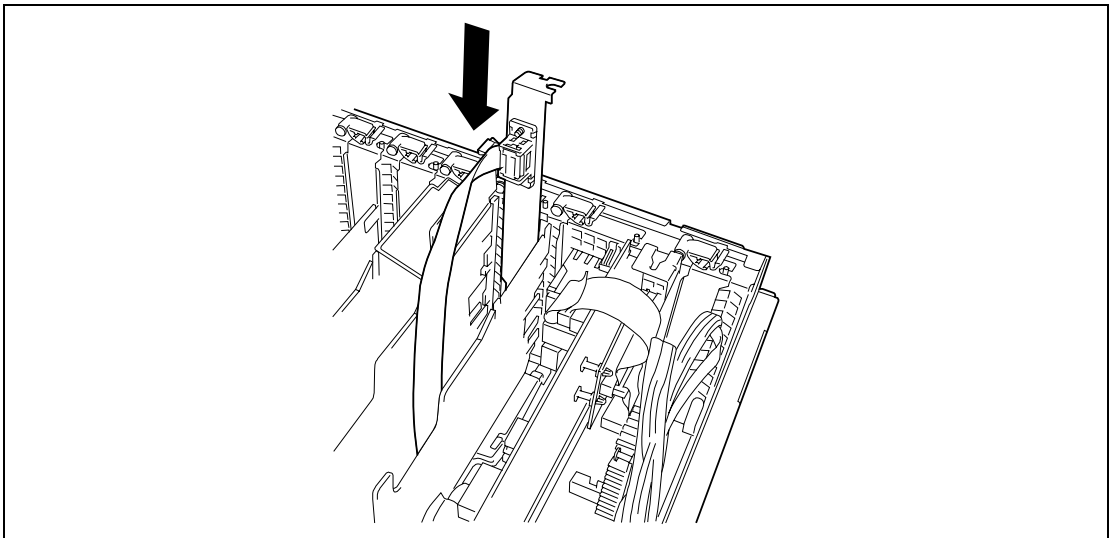


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**IMPORTANT:** Save the removed slot cover carefully.

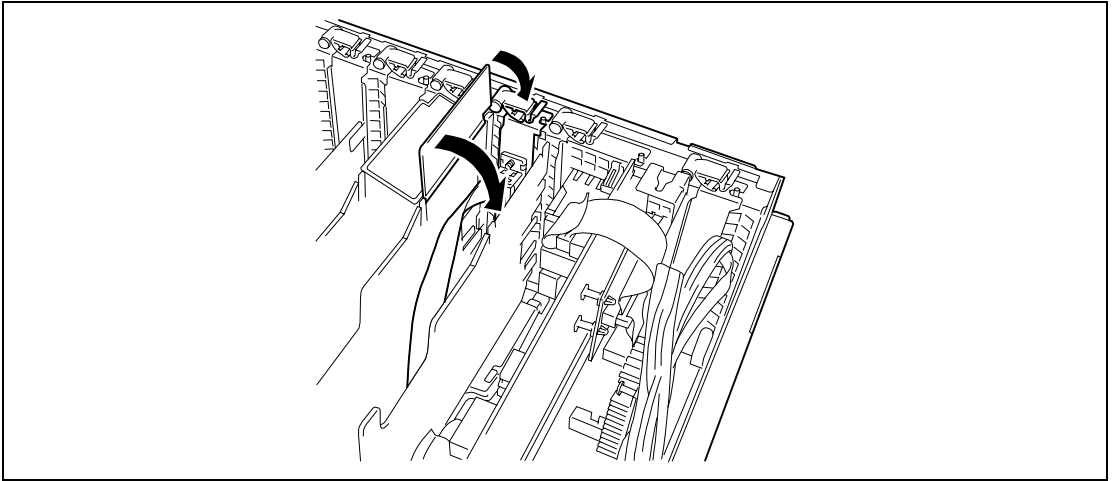
---

6. Insert the PCI bracket (2) into the slot.

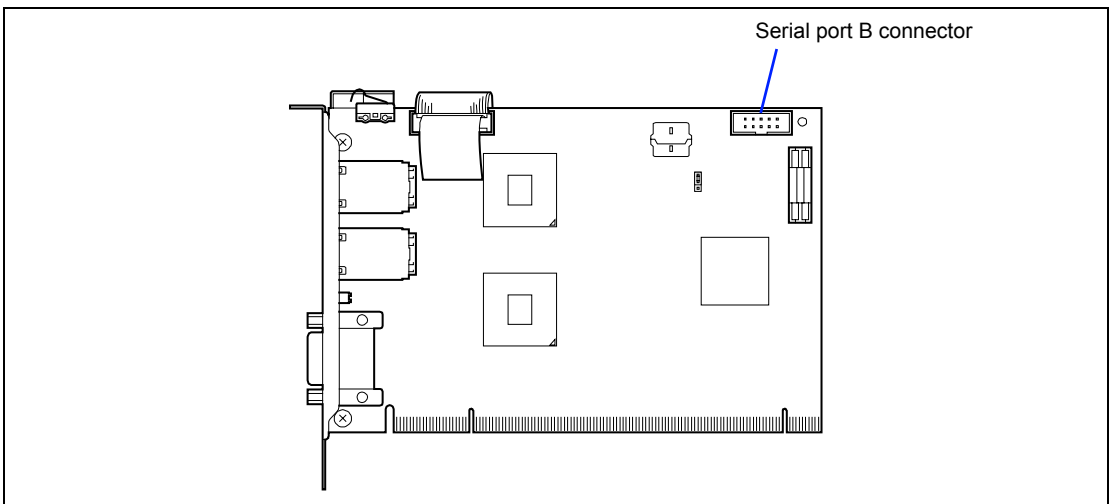




7. Close the stopper to lock the bracket.



8. Route the cable so that it does not interfere with any other components, and connect the cable to serial port B on I/O riser board.  
See the figure below for location of serial port B.



9. Check that you have not left the removed slot cover, tools, or screws inside the chassis, and assemble the server.
10. Run BIOS SETUP and select [Advanced] - [Peripheral Configuration] - [Serial Port B] - [Enabled].

When this parameter is enabled, [Base I/O Address] and [Interrupt] menus are displayed.

The factory-set values for these parameter are:

Base I/O Address: 2F8h

Interrupt: IRQ 3

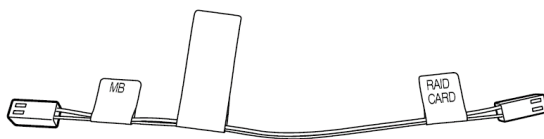
## RAID Controller for Internal Hard Disk Drives (Option)

### Installation

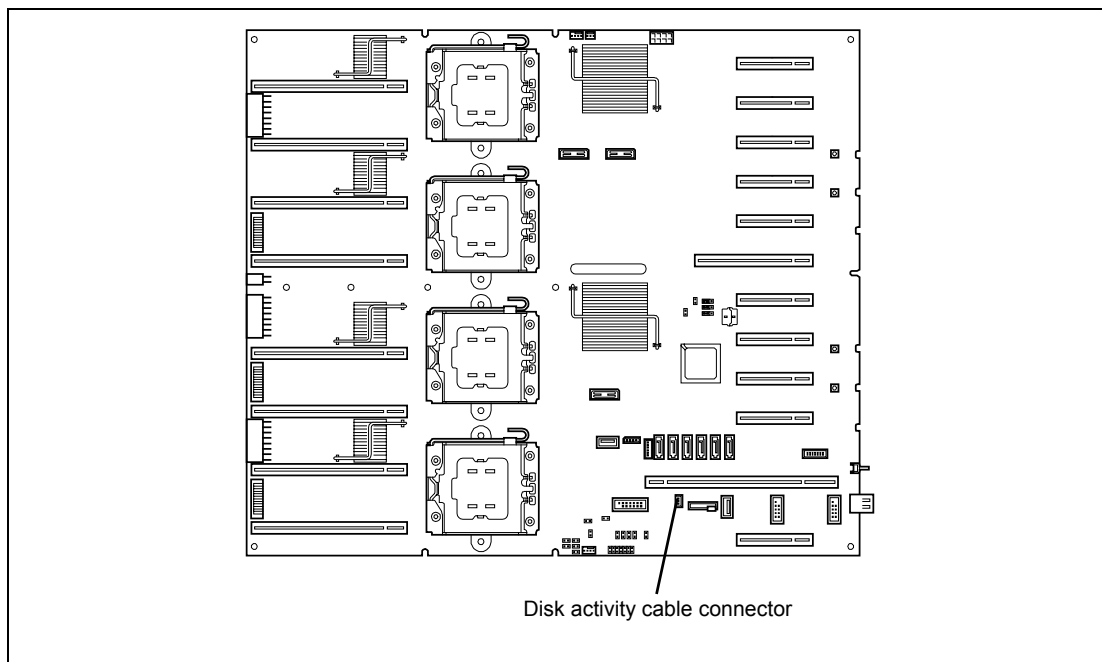
1. Install the RAID Controller to the SAS riser card slot. See "Installation" in "Non-hot-plug PCI Boards" for installation procedure.
2. Connect one end of disk activity cable which has a tag marked as "MB" or "BASE BOARD" to the Disk Activity Cable connector on mother board. See the figure below for location of connector.

---

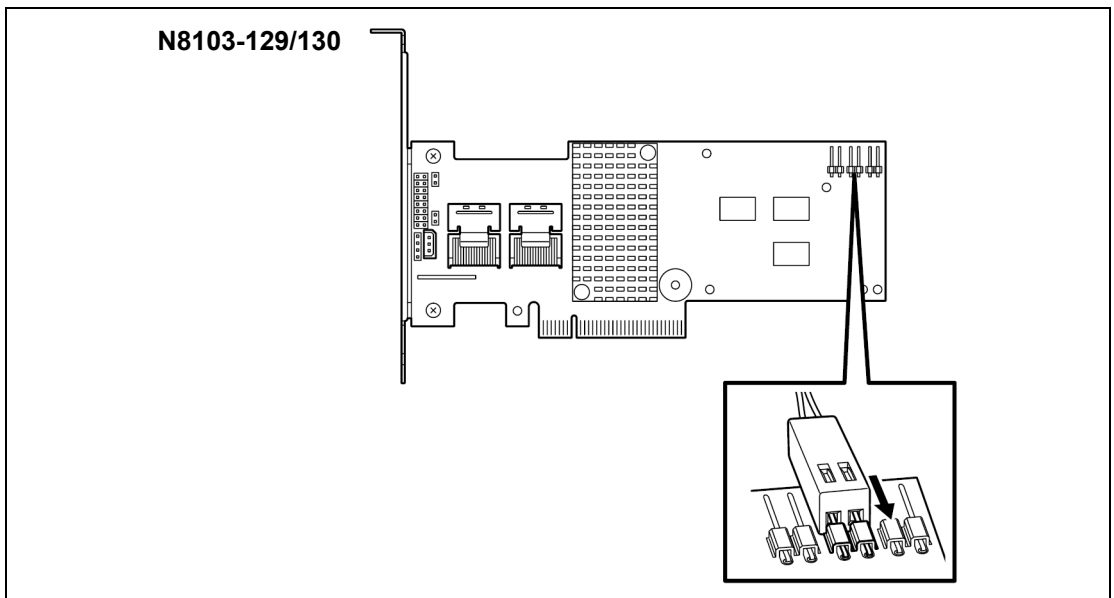
**NOTE:** The battery cable for N8103-129/130 is equipped with two cables, as shown in the figure below.



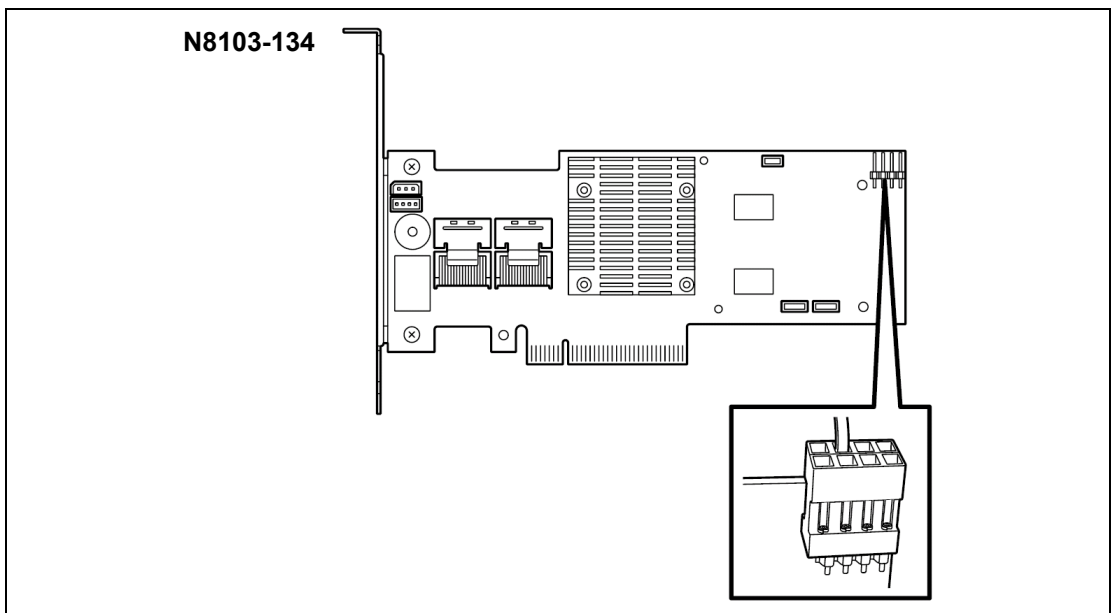
The battery cable for N8103-134 is equipped with a single cable, as shown in the figure below.



3. Connect the other end of cable to the RAID Controller.



Connect the battery cable connector to the third and fourth pins among the six pins, as shown in the figure above.



Connect the cable connector as shown in the figure above.

4. Make sure that you have not left the removed slot cover, tools, or screws inside the chassis, then assemble the server.

## Additional Battery for RAID Controller

Install an additional battery on RAID Controller to protect the data in cache memory (in Write Back mode) from being lost due to unexpected power failure.

Use the additional battery unit appropriate to your RAID Controller.

- N8103-129/130 RAID Controller  
N8103-124 Additional battery unit
- N8103-134 RAID Controller  
N8103-136 Additional battery unit
- N8103-115 RAID Controller  
N8103-126 Additional battery unit

---

**NOTE:** This section describes how to install an additional battery unit to the battery bracket and install the battery bracket to the server chassis, using the RAID Controller for internal hard disk drives.

Install the additional battery unit of other type in similar way.

For more information, refer to the manual provided with your additional battery unit and optional RAID Controller.

When installing an additional battery unit N8103-126, use the 95-cm cable provided with the battery unit.

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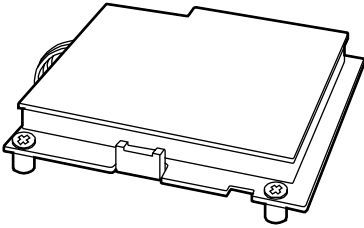
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**IMPORTANT:** Observe the following instructions to use the additional battery unit. Failure to follow these instructions may cause a property damage.

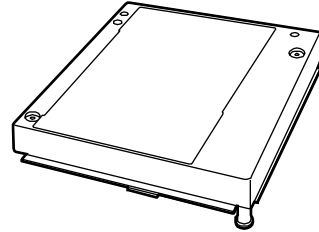
- Use an additional battery unit appropriate to the RAID Controller you are using.
  - An additional battery unit is easily affected by static electricity. Handle an additional battery unit after making your body contact with a metallic frame section of the server to discharge the static electricity on your body.
  - Do not drop or hit the additional battery unit.
  - For recycling and disposal of additional battery unit, refer to the User's Guide provided with the additional battery unit.
-

## Components required for installing additional battery unit

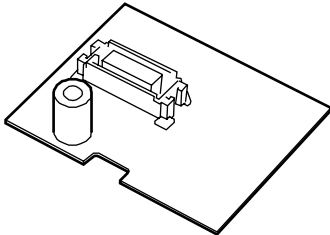
N8103-124 additional battery  
(for N8103-129/130)



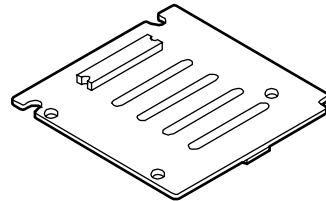
N8103-136 additional battery  
(for N8103-134)



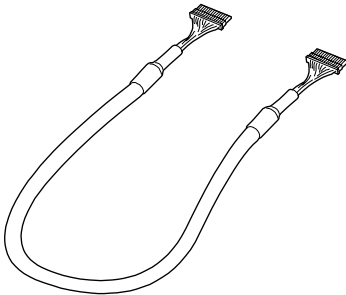
Connector board for N8103-124



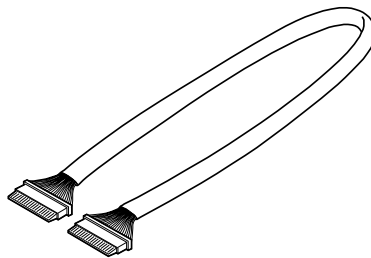
Connector board for N8103-136



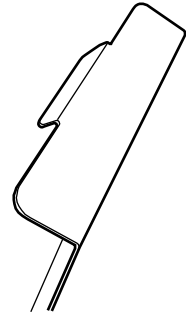
Battery cable for N8103-124



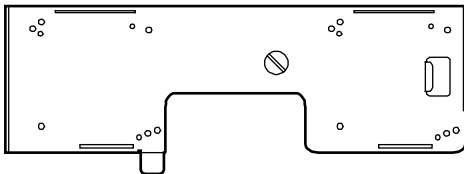
Battery cable for N8103-136



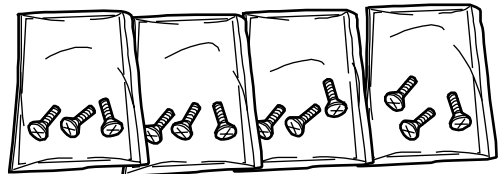
Battery cover



Battery bracket



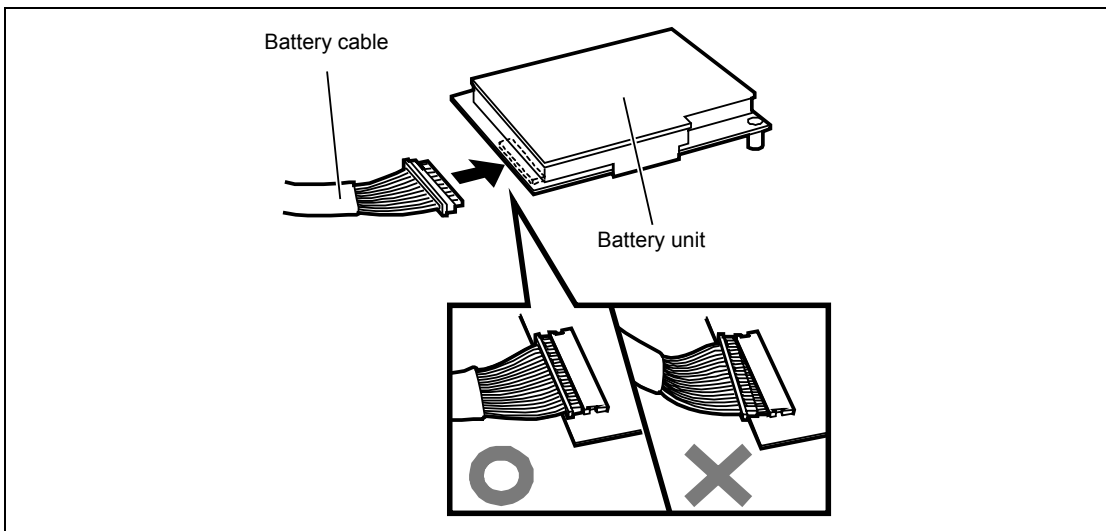
Battery screws



## Installation

This section describes how to install an additional battery unit N8103-124 to the battery bracket and install the battery bracket to the server chassis, using the RAID Controller for internal hard disk drives.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Connect the battery cable to the additional battery unit.



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**NOTE:** The figure above shows N8103-124 additional battery unit. You can connect other battery units in similar way.

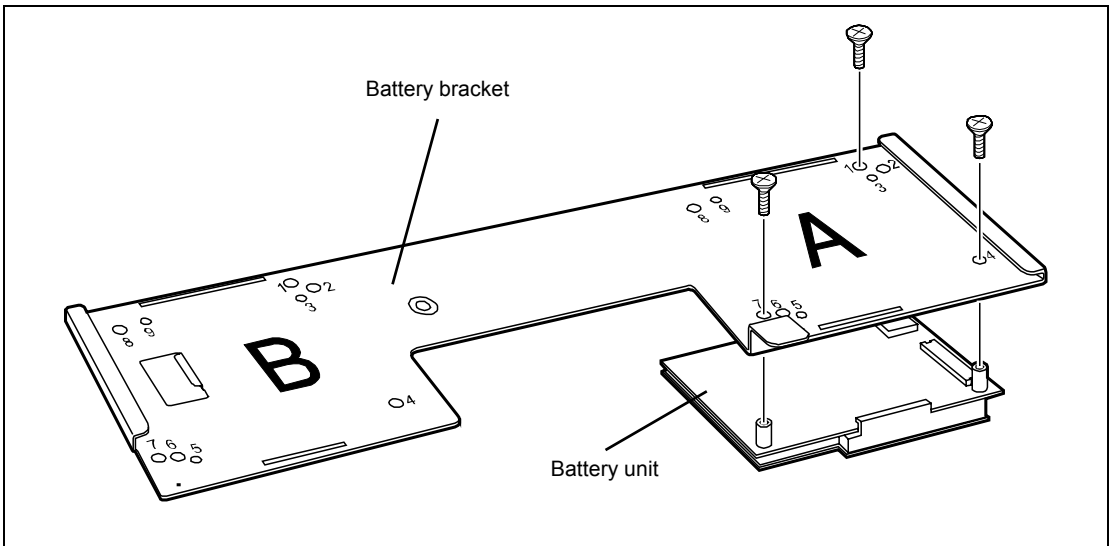
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**IMPORTANT:** Connect the battery cable to the battery unit, then install the battery unit on the battery bracket. It is hard to connect the battery cable to the battery unit already been installed to the battery bracket, resulting in contact failure.

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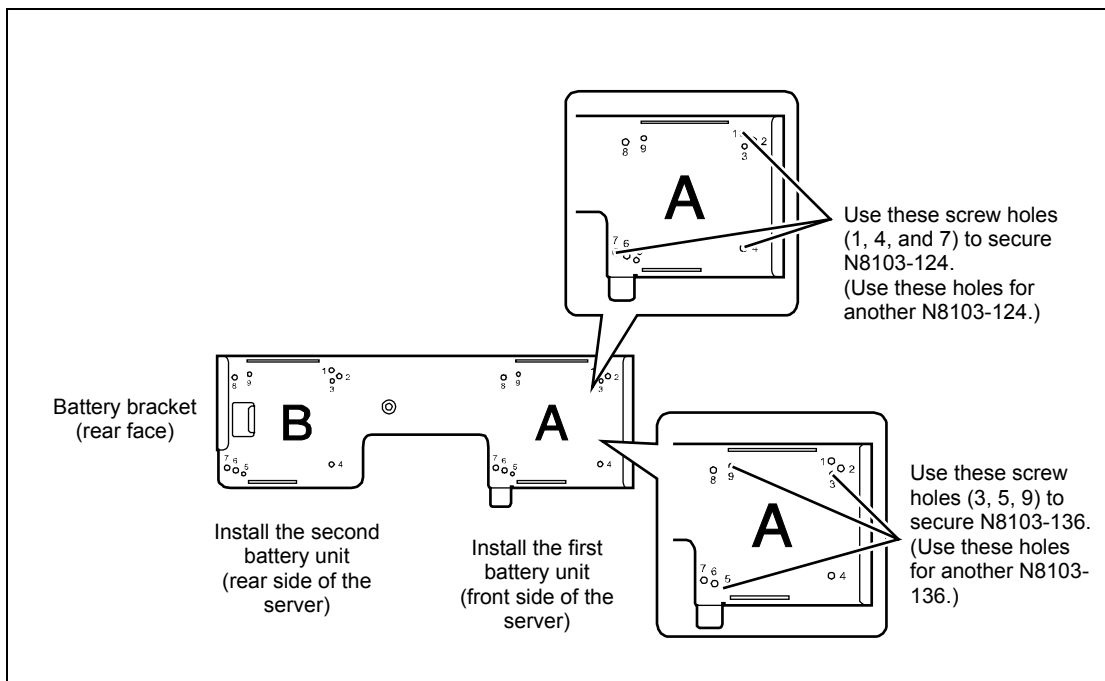
5. Install the additional battery unit to the battery bracket with three battery screws provided with your server.



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**NOTES:**

- Install the additional battery unit so that the battery cable comes out from the rear of the server. Put the additional battery unit on the front face of the battery bracket, then fix it with screws from the rear face of the bracket.
  - The server is provided with screws with two kinds. Use the battery screws marked as "M2.5" for securing the N8103-124, and "M2" for securing the N8103-136.
-




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**NOTES:**

- The additional battery unit can be installed on either of left or right of the battery bracket.
  - Use the battery screws provided with your server.
-



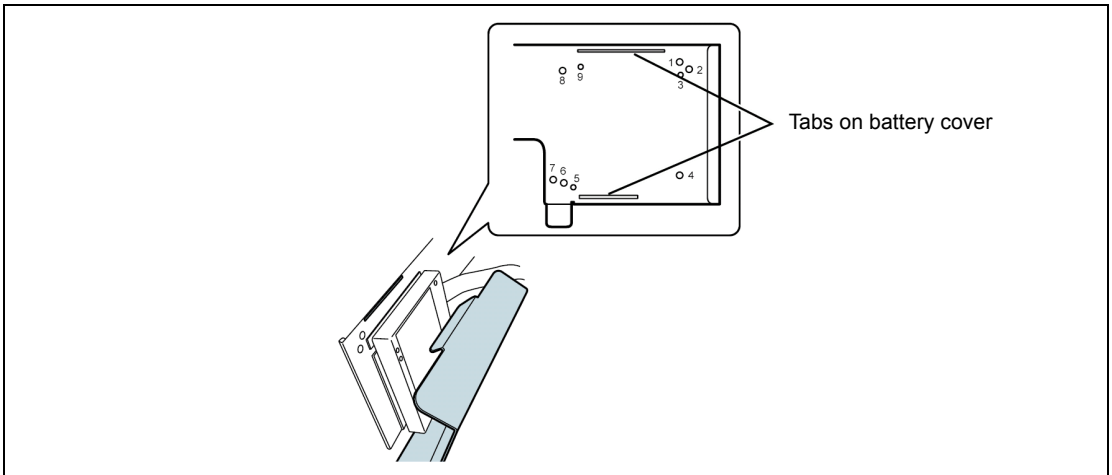
**6.** Install the battery unit cover.

Engage the tabs (top and bottom) of the battery unit cover with the holes on battery bracket.

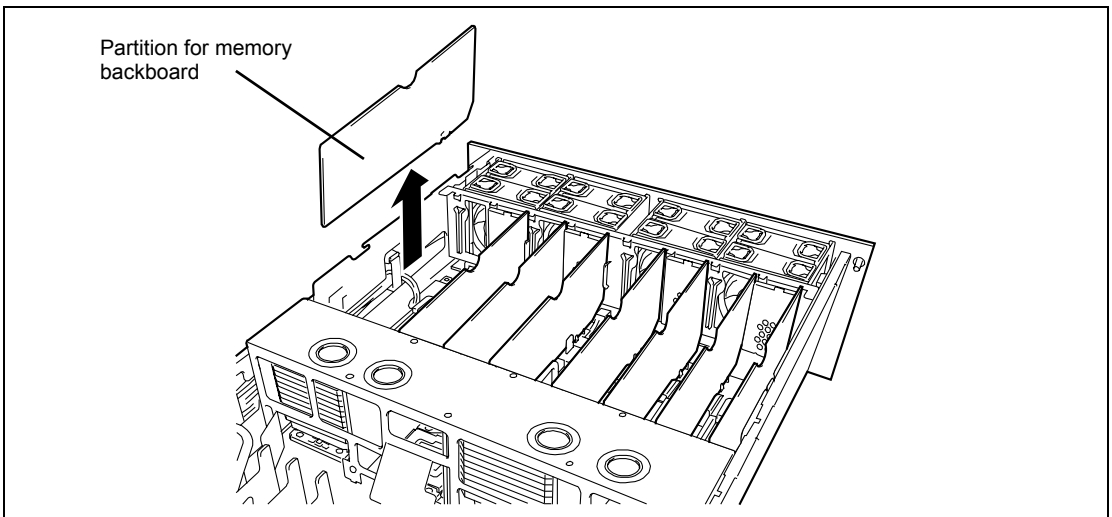
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**NOTE:** Insert the top tab of the battery unit cover into the upper hole on battery bracket first, then the bottom tab.

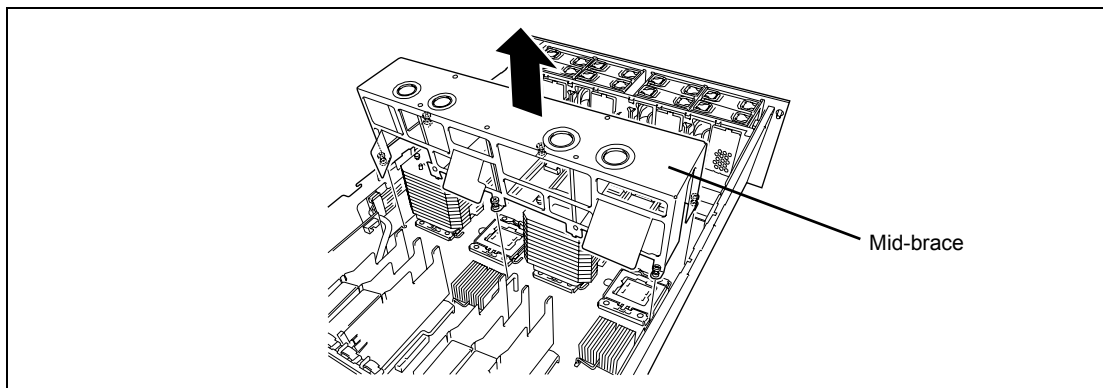
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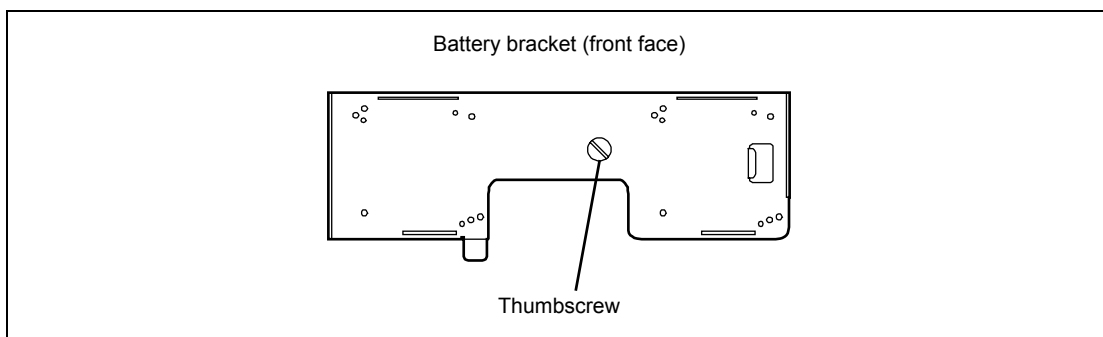
- 7.** See the section "Preparing for Installation and Removal" described earlier to prepare.
- 8.** Remove all the memory backboards.
- 9.** Remove all the partitions for memory backboard.



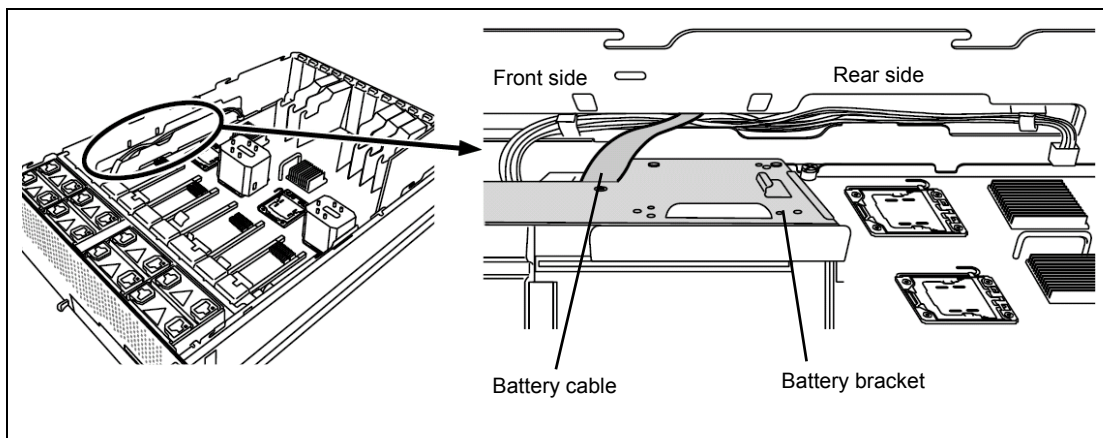
10. Loosen the six screws on mid-brace at the center of the server, then remove the mid-brace.



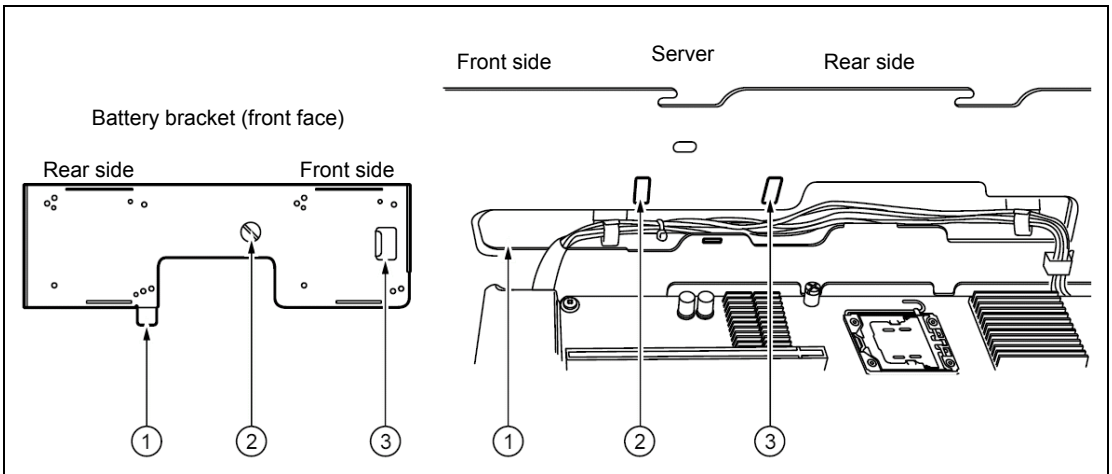
11. Loosen the thumbscrew on the battery bracket until its end does not protrude from the rear face of the bracket.



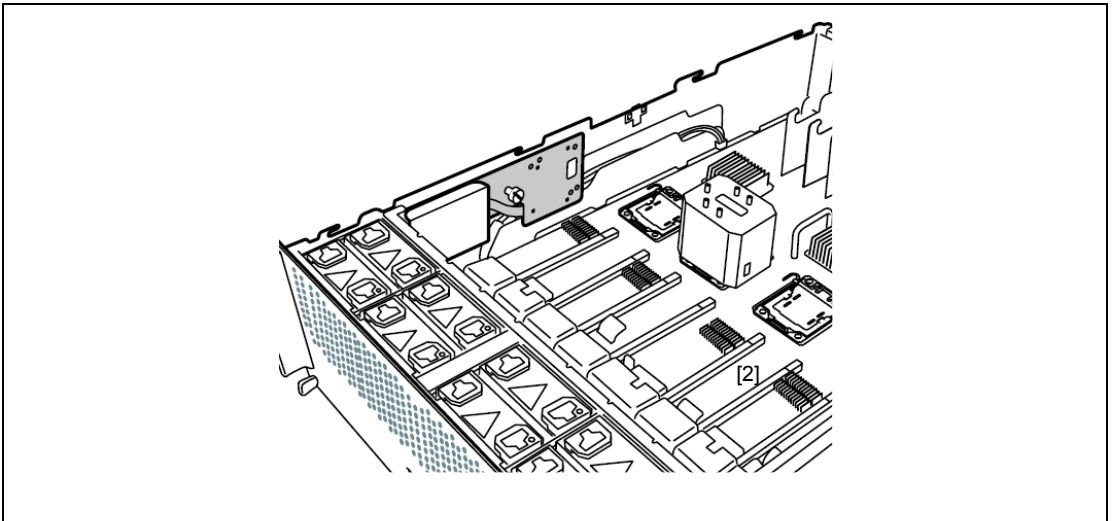
12. Route the battery cable behind the battery bracket and put it in the cable storage area in the server.



13. Align [1] and [3] of the battery bracket with [1] and [3] on the server chassis, and slide them toward the front rear of the server.



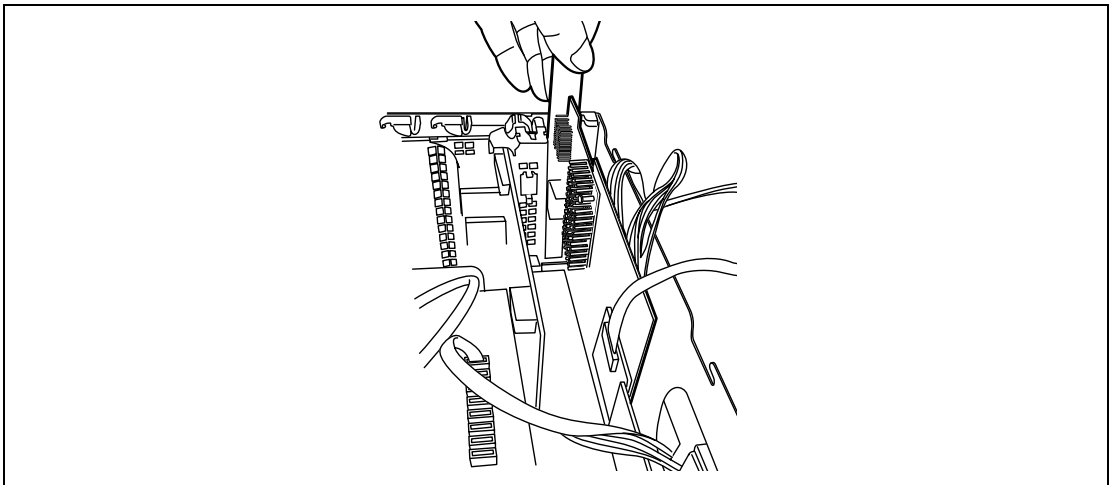
14. Insert [3] of the battery bracket into the hole [3] on the server, then tighten the screw [2] to fix the battery bracket.  
(The hole [2] on the server has no taps for screw.)



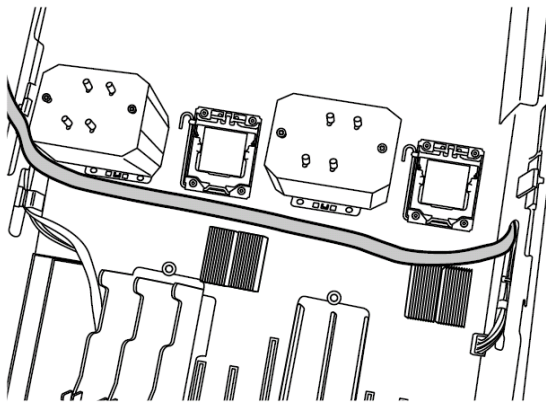
15. Connect the other end of battery cable to the RAID Controller.

**NOTE:** Refer to the manual provided with your additional battery unit for how to connect the battery cable to the RAID Controller.

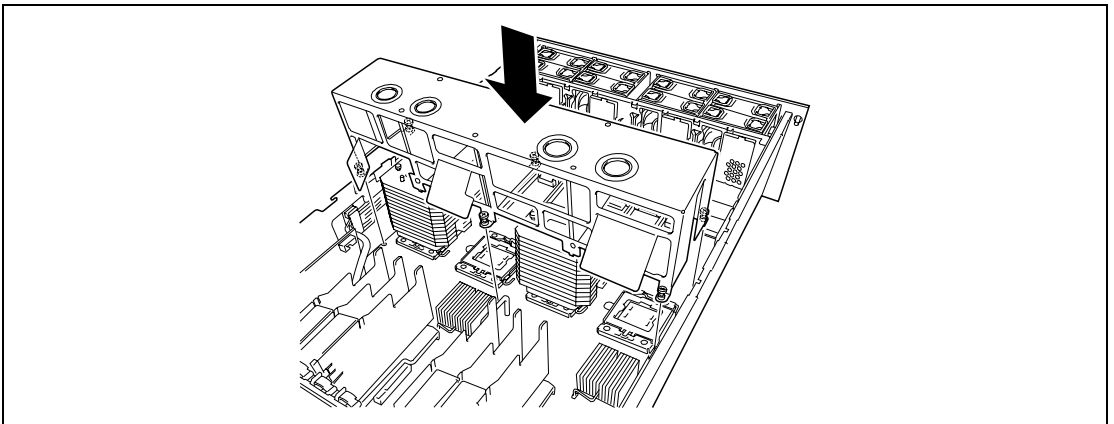
- 16.** Form the cable, and connect the RAID Controller to mother board.



**IMPORTANT:** Route the battery cable as shown in the figure below. Make sure the cable is not twisted or caught with the cover or socket inside the server.



17. Install the mid-brace.



18. Install all the partitions and memory backboards removed in earlier steps.
19. Install the top cover.

### Removal

Perform Steps 1 to 3 of installation procedure to prepare, then perform Steps 4 to 16 in reverse order to remove the additional battery unit.

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# Appendix A

## Specifications

Item		NEC Express5800/R140b-4		
		N8100-1601F		
Model type at shipment		Bare model		
Processor	Type	Intel® Xeon® Processor 7500 series		
	Model	E7520	E7530	X7560
	Clock	1.86GHz	1.86GHz	2.26GHz
	2nd cache	1.0MB	1.5MB	2MB
	3rd cache	18MB	12MB	24MB
	Number of cores	4	6	8
	Standard	–		
	Maximum	4		
	Intel® Hyper Threading Technology	Supported		
	Intel® Turbo Boost Technology	Supported		
	Intel® 64 Architecture	Supported		
	Intel® Virtualization Technology	Supported		
Chipset		Intel® 7500 chipset + ICH10		
Memory	Standard	–		
	Maximum	512GB (8GB x 64)		
	Expansion unit	2 DIMMs (1024/2048/4096/8192MB)		
	Expansion times	Maximum 32 times (4 times per each memory backboard)		
	Memory module	DDR3-1066		
	Error check	ECC		
	Memory mirroring feature	Supported		
	Memory sparing feature	Supported		
File bay	LockStep feature	Supported		
	5.25-inch drive	1		
Hard disk drive	2.5-inch drive	8		
	Standard	–		
	Maximum	SAS: 4.8TB(600GBx8) SATA: 4TB(500GBx8) SSD: 400GB(50GBx8)		
	Hot-plug	Supported		
	RAID level	RAID0/1/5/6/10/50 (option)		
		RAID Controller		
		6Gbps RAID Controller (option)		

## A-2 Specifications

Item		NEC Express5800/R140b-4 N8100-1601F		
Optical disk drive		Slim DVD bay (SATA) (option)		
Additional slot	PCI Express x4	2 slots (connector: 8-lane)		
	PCI Express 2.0 x4	3 slots (connector: 8-lane)		
	PCI Express 2.0 x8	4 slots (hot-plug supported)		
	PCI Express 2.0 x16	1 slot		
	PCI Express 2.0 x8	1 slot (exclusive for RAID Controller)		
External interface (front)	Display	MINI D-sub 15-pin (1 port)		
	USB	4-pin (3 ports, USB 2.0)		
External interface (rear)	Display	MINI D-sub 15-pin (1 port)		
	Serial	D-sub 9-pin (1 port)		
	Network	RJ-45 (4 ports, 1000BASE-T/100BASE-TX/10BASE-T)		
	Management LAN	RJ-45 (1 port, 100BASE-TX/10BASE-T)		
	USB	4-pin (2 ports, USB 2.0)		
Fan	Redundancy	Supported		
	Hot-plug	Supported		
Power module	Redundancy	Supported		
	Hot-plug	Supported		
External dimensions	Front bezel excluded	483 (width) × 757 (depth) × 176 (height) mm		
	Front bezel included	485 (width) × 783 (depth) × 177 (height) mm		
Weight		47 kg (Max.)		
Power supply		100 to 120 Vac ±10% or 200 to 240 Vac ±10%, 50/60 Hz ±3% (100 Vac: parallel bi-polar power outlet with the ground line, 200 Vac: separately priced AC cable required)		
Power consumption (Max.)		2290VA / 2240W	2350VA / 2300W	2430VA / 2383W
Environmental requirements	Operating	Temperature: 10 to 35°C Humidity: 20 to 80% RH (no condensation)		
	Storage	Temperature: 10 to 55°C Humidity: 20 to 80% RH (no condensation) *1		

\*1 If the server is stored in a place where the ambient temperature is extremely high or low, the system clock may be delayed or advanced. If the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).



# Appendix B

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## Other Precautions

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### Transfer Rate of the On-board LAN Controller

The LAN controller on the mother board has two ports, and another two ports on I/O riser board. Each port supports 10Base-T, 100Base-TX, and 1000Base-T networks and is capable of full or half duplex.

The controller can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the "Link Speed & Duplex" value the same as the value specified for HUB.

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### Server Management Software

The NEC EXPRESSBUILDER DVD that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

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### Floppy Disk

Your server is not equipped with floppy disk drive. Use the optional USB floppy disk drive or Flash FDD if necessary.

---

## **CD/DVD-ROM**

Keep the following notes in mind to use the CD/DVD-ROM for the server:

- Press the center of the storage case to remove the CD/DVD-ROM from the case.
- Do not drop the CD/DVD-ROM.
- Do not place anything on the CD/DVD-ROM or bend the CD/DVD-ROM.
- Do not attach any label onto the CD/DVD-ROM.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the CD/DVD-ROM with its printed side upward and gently put it on the tray.
- Do not scratch the CD/DVD-ROM or write anything directly on it with a pencil or ball-point pen.
- Do not leave the CD/DVD-ROM with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the CD/DVD-ROM in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the CD/DVD-ROM, wipe the CD/DVD-ROM from its center to edge with a dry soft cloth slowly and gently.
- Use the CD/DVD cleaner to clean the CD/DVD-ROM. Do not use record spray/cleaner, benzene, or thinner.
- Keep the CD/DVD-ROM in a CD/DVD-ROM case when not in use.
- Do not hit the CD/DVD-ROM to the screw fixing the top cover when setting or removing disc.

---

## Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- **Saving your valuable data**

When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- **Three-generation data management**

NEC recommends that you should employ three-generation data management for data storage.

Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the fourth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.

This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

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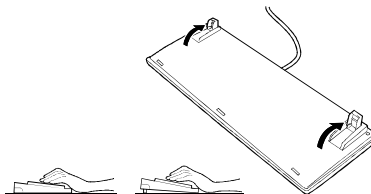
## Keyboard

The keyboard is a device to instruct your computer by entering alphanumeric characters or symbols.

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### IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



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**NOTE:** The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

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## Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

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### NOTES:

- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)



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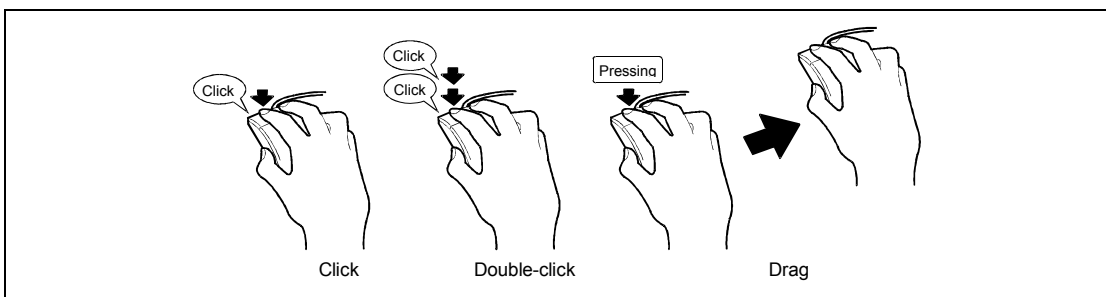
Mouse operation includes "Click", "Double-click", and "Drag".

Click: Press the button only once and release it.

Double-click: Press the button twice consecutively and release it.

Drag: Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



# Appendix C

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## PCI-related Assignments

### Bus Number

When [Advanced] - [Advanced Chipset] - [PCI Bus Static Allocation] is set to "Enabled" (factory-set value) on BIOS SETUP, the PCI bus numbers are assigned as shown below.

PCI bus range	Device
1(01h) – 8(08h)	Onboard LAN1 and Onboard LAN2 controller on I/O riser board
9(09h) – 16(10h)	Onboard LAN3 and Onboard LAN4 controller on I/O riser board
17(11h) – 24(18h)	SAS RAID controller on PCI board installed in SAS slot
25(19h) – 48(30h)	PCI board installed in PCI slot 10
49(31h) – 64(40h)	PCI board installed in PCI slot 1
65(41h) – 80(50h)	PCI board installed in PCI slot 2
81(51h) – 96(60h)	PCI board installed in PCI slot 3
97(61h) – 125(7Dh)	PCI board installed in PCI slot 4
126(7Eh)	Onboard VGA controller on I/O riser board
129(81h) – 160(A0h)	PCI board installed in PCI slot 5
161(A1h) – 176(B0h)	PCI board installed in PCI slot 6
177(B1h) – 192(C0h)	PCI board installed in PCI slot 7
193(C1h) – 208(D0h)	PCI board installed in PCI slot 8
209(D1h) – 224(E0h)	PCI board installed in PCI slot 9

( ): Hexadecimal notation

When [Advanced] - [Advanced Chipset] - [PCI Bus Static Allocation] is set to "Disabled", assignment of PCI bus numbers are not assigned statically, depending on the following conditions.

- Whether [SR-IOV] in [Advanced] - [Advanced Chipset] of BIOS SETUP is enabled or disabled
- Status of the PCI slot to which the PCI board is installed
- Type of the PCI board installed in PCI slot

The PCI bus numbers are assigned to devices in the order shown below:

PCI bus range	Device
1(01h) – 127(7Fh)	Onboard LAN1 and Onboard LAN2 controller on I/O riser board
	Onboard LAN3 and Onboard LAN4 controller on I/O riser board
	SAS RAID controller on PCI board installed in SAS slot
	PCI board installed in PCI slot 1
	PCI board installed in PCI slot 2
	PCI board installed in PCI slot 3
	PCI board installed in PCI slot 4
	PCI board installed in PCI slot 10
	Onboard VGA controller on I/O riser board
129(81h)- 251(FBh)	PCI board installed in PCI slot 9
	PCI board installed in PCI slot 8
	PCI board installed in PCI slot 5
	PCI board installed in PCI slot 6
	PCI board installed in PCI slot 7

( ): Hexadecimal notation

### Onboard LAN

The device and function numbers of onboard LAN are associated as shown below. See "Bus Number" described earlier for the PCI bus numbers.

Onboard LAN	Device number (Device#)	Function number (Function#)
Onboard LAN1	0	0
Onboard LAN2	0	1
Onboard LAN3	0	0
Onboard LAN4	0	1

### SAS Slot

On Windows Server 2003, The SAS controller on PCI board that is installed in SAS slot is indicated as "PCI Slot 241" in the [General] tab in [Properties] of Device Manager.

Location: PCI Slot 241 (PCI bus 17, Device 0, Function 0)

## Interrupt Request

The interrupt requests are assigned as shown below. Find an appropriate one to install a PCI board (PCI Express board).

"Slot 1: INTA" denotes INTA of PCI board installed in PCI slot 1.

If the operating system and device driver support MSI/MSI-X (Message Signaled Interrupts), assignments differ from those shown in the table below.

PIRQ	Onboard device / slot	PIRQ	Onboard device / slot	PIRQ	Onboard device / slot
0(00h)	Omitted	24(18h)	Onboard SAS: INTA	48(30h)	Slot 5: INTA
1(01h)		25(19h)	Slot 1: INTB	49(31h)	-
2(02h)		26(1Ah)	Slot 1: INTA	50(32h)	-
3(03h)		27(1Bh)	Slot 1: INTC	51(33h)	-
4(04h)		28(1Ch)	Onboard LAN 1	52(34h)	Slot 8: INTA
5(05h)		29(1Dh)	Onboard LAN 3 Slot 1: INTD	53(35h)	-
6(06h)		30(1Eh)	Slot 2: INTA	54(36h)	Slot 6: INTA
7(07h)		31(1Fh)	Slot 4: INTB	55(37h)	-
8(08h)		32(20h)	Slot 3: INTA	56(38h)	Slot 7: INTA
9(09h)		33(21h)	Slot 4: INTA	57(39h)	-
10(0Ah)		34(22h)	Onboard SAS: INTB	58(3Ah)	Slot 5: INTB
11(0Bh)		35(23h)	Onboard SAS: INTC	59(3Bh)	Slot 5: INTC
12(0Ch)		36(24h)	Onboard SAS: INTD	60(3Ch)	Slot 5: INTD
13(0Dh)		37(25h)	Slot 2: INTB	61(3Dh)	Slot 6: INTB
14(0Eh)		38(26h)	Slot 2: INTD	62(3Eh)	Slot 6: INTD
15(0Fh)		39(27h)	Slot 2: INTC	63(3Fh)	Slot 6: INTC
16(10h)	Onboard VGA Slot 10: INTA	40(28h)	Onboard LAN 2	64(40h)	Slot 8: INTB
17(11h)	SMBus Primary SATA: INTB Slot 10: INTB	41(29h)	Onboard NIC 4 Slot 3: INTD	65(41h)	Slot 8: INTC Slot 7: INTD
18(12h)	Secondary SATA: INTC Slot 10: INTC	42(2Ah)	Slot 3: INTB	66(42h)	Slot 7: INTB
19(13h)	Slot 10: INTD	43(2Bh)	Primary IOA/T: INTA	67(43h)	Secondary IOA/T: INTA
20(14h)	UHCI#1/2/3	44(2Ch)	Primary IOA/T: INTB	68(44h)	Secondary IOA/T: INTB
21(15h)	EHCI#1	45(2Dh)	Primary IOA/T: INTC Slot 4: INTD	69(45h)	Secondary IOA/T: INTC Slot 9: INTD
22(16h)	UHCI#4/5/6	46(2Eh)	Primary IOA/T: INTD Slot 4: INTC	70(46h)	Secondary IOA/T: INTD Slot 9: INTB Slot 9: INTC
23(17h)	EHCI#2	47(2Fh)	Slot 3: INTC	71(47h)	Slot 8: INTD Slot 7: INTC Slot 9: INTA

( ): Hexadecimal notation

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# Appendix D

---

## Installing Windows Server 2008 R2

This section explains how to install the Windows Server 2008 R2.

### NOTICE

Read the following notes or information before installing the Windows Server 2008 R2.

---

### Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

---

- Controllers supporting installation of OS with Express Setup
    - N8103-129 RAID Controller (256 MB, RAID0/1)\*
    - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
    - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
  - Other controllers
    - N8103-104A SAS Controller\*
    - N8103-107 SCSI Controller\*
    - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*
    - N8190-127 Fibre Channel Controller (4Gbps/Optical)\*
    - N8190-131 Fibre Channel Controller (2ch) (4Gbps/Optical)\*
    - N8190-153 Fibre Channel Controller (1ch) (8Gbps/Optical)\*
    - N8190-154 Fibre Channel Controller (2ch) (8Gbps/Optical)\*
- \* Option.

---

## Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008 R2
  - OS installation media (No Service Pack)

---

## Connecting Hard Disk Drive

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" in Chapter 5.

---

## Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

---

## Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using [Disk Management], invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using [Disk Management] in [Computer Management].

---

## Mounting MO Device

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

---

## About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

---

## Floppy Disk Drive

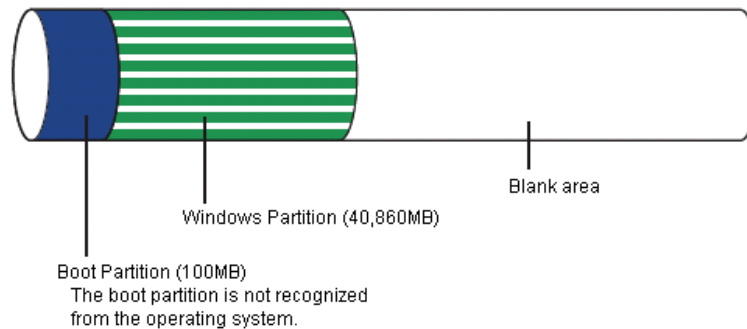
The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive or Flash FDD if necessary.



**NOTE:** When new partition is created, initial 100MB is assigned as boot partition by Windows OS.

Example:

If you make a partition of 40,960MB (40GB), usable space will be 40,960MB – 100MB = 40,860MB.



The partition size required for a system with an installed memory size of 1GB(1,024MB) and a full installation of the operating system:

$$8,000\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 300\text{MB}) + \text{application size} \\ = 10,860\text{MB} + \text{application size}.$$

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

---

## BitLocker

If you use BitLocker, note the following:

- Be sure to keep the recovery password secure. Do not keep it around a server running BitLocker.

---

**IMPORTANT:** Without the recovery password, you cannot start the operating system and see the partition content encrypted by BitLocker.

The recovery password may be needed when you start the operating system after performing the following tasks:

- Replacing the motherboard
  - Initializing the TPM
  - Changing the BIOS setting
- 

- Windows Server 2008 R2 is not installed in the partition encrypted by BitLocker.
- For BitLocker, hotfix is provided by Microsoft.

Before applying hotfix, please check the information written by Microsoft carefully.

For more information, please visit

<http://support.microsoft.com/kb/975496/en-us>

## INSTALLING Windows Server 2008 R2

---

### Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2008 R2 Standard (DVD-ROM) / Microsoft Windows Server 2008 R2 Enterprise (DVD-ROM)
- User's Guide
- Getting Started

---

### Windows Server 2008 R2 Clean Installation

This section explains how to perform a clean installation of Windows Server 2008 R2.

Follow steps below appropriate to your environment.

1. Turn on your system.

---

**IMPORTANT:** To install Windows Server 2008 R2, you may need to update BIOS.

To check if your system needs a BIOS update, go to:

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

---

2. Insert the Windows Server 2008 R2 DVD-ROM into your DVD-ROM drive.
3. Restart the system.

To restart the system, press **Ctrl + Alt + Del** or turn off the system once, and then turn it on again.

---

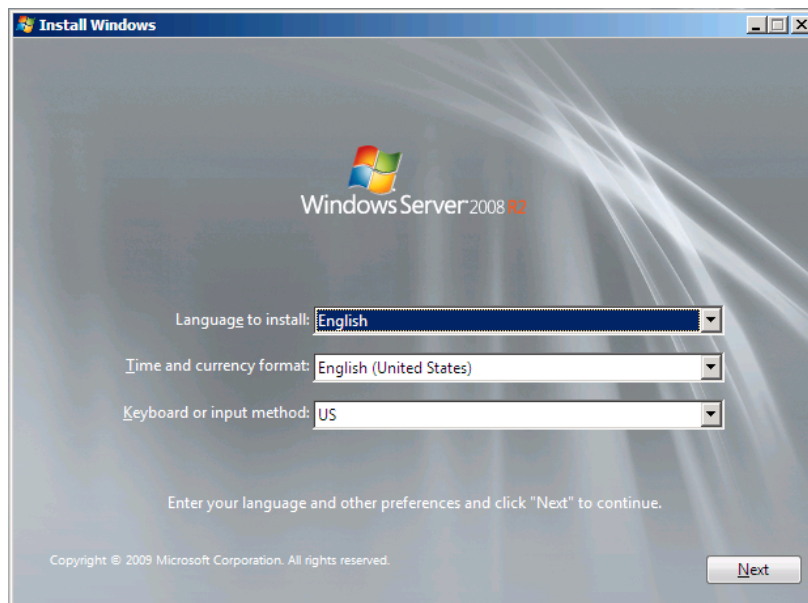
**IMPORTANT:** When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed.


If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

---

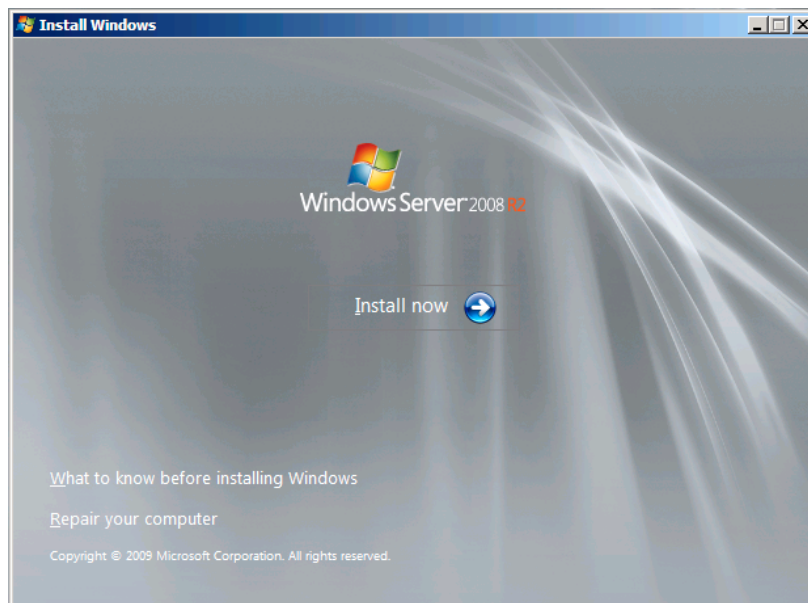
The DVD-ROM starts. A message "Windows is loading files ..." appears.

4. Select a language and other options from the drop-down lists, and then click [Next].

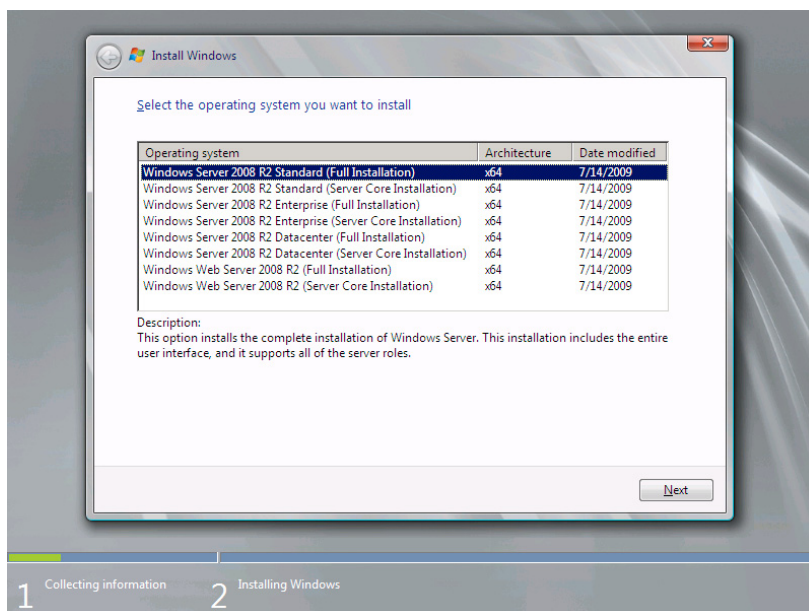


5. Click the [Install now ] button.

The installation starts.

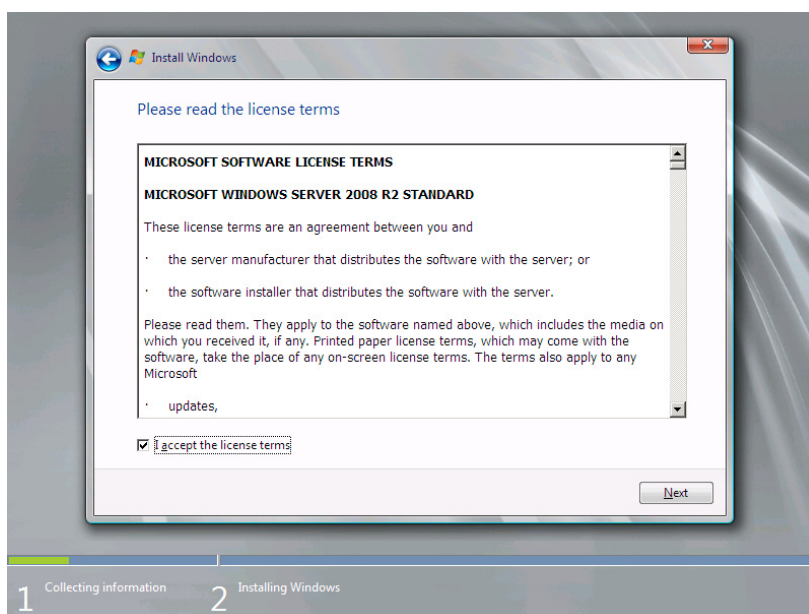


6. Select the edition of the Windows operating system that you purchased.



**NOTE:** The Windows versions listed on the screen vary depending on the Windows Server 2008 R2 DVD-ROM you are using.

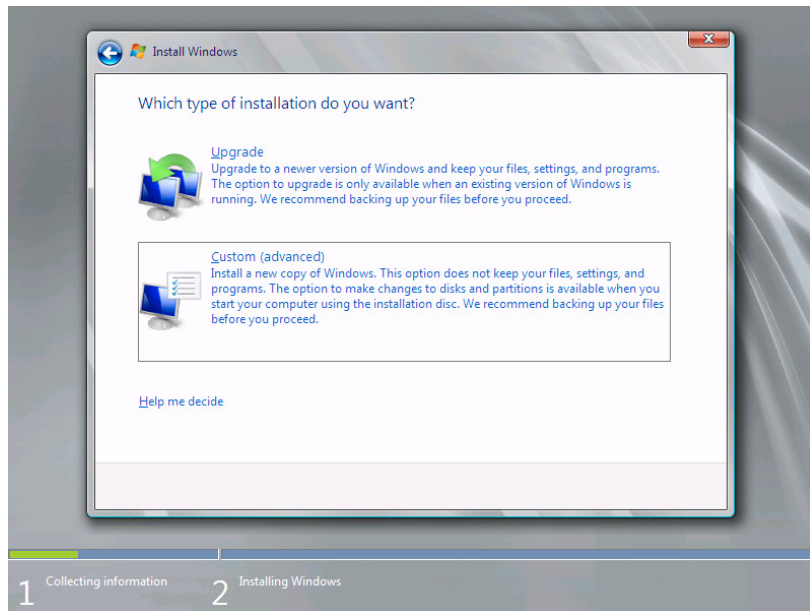
7. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].





8. Select the type of installation you want.

[Custom (advanced)] is selected below.



9. The screen of "Where do you want to install Windows?" is displayed.

Remove the Backup DVD-ROM or Windows Server 2008 R2 DVD-ROM, set NEC EXPRESSBUILDER DVD, and select [Load Driver].

#### Load Driver

To install the device driver needed to access your hard drive, insert the installation media containing the driver files, and then click OK.

NOTE: The installation media can be a floppy disk, CD, DVD, or USB flash drive.

[Browse]

[OK]

[Cancel]

Click [Browse], and go to Step 10.

**10.** The folder reference dialog box appears.

Select a path in the NEC EXPRESSBUILDER DVD, and then click [OK].

- ☐ If the N8103-129/130 RAID Controller is used:  
<drive letter>:\016\win\winnt\oemfd\ws2008r2\fd1\megasas2
- ☐ If the N8103-134 RAID Controller is used:  
<drive letter>:\016\win\winnt\oemfd\ws2008r2\fd1\stexstpt

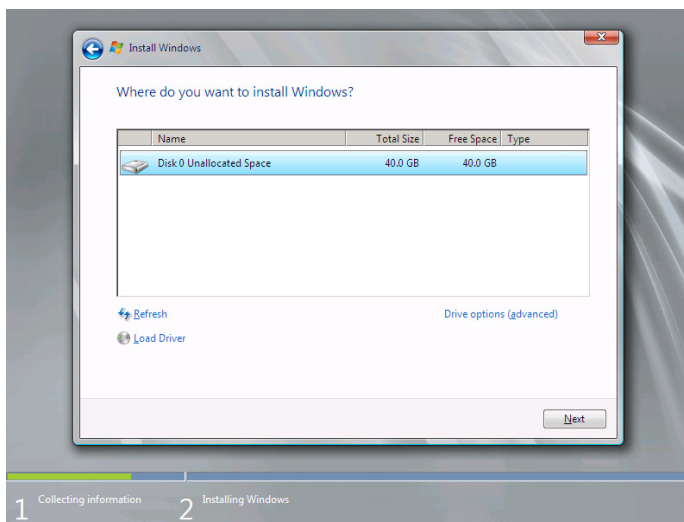
After you select the path, a list of drivers is displayed.

Select the following driver, and then click [OK]. Go to Step 11.

- ☐ If the N8103-129/130 RAID Controller is used:  
[LSI MegaRAID SAS 9264-8i]
- ☐ If the N8103-134 RAID Controller is used:  
[Promise SuperTrak SAS 6G RAID Controller]

**11.** Remove the NEC EXPRESSBUILDER DVD and set Backup DVD-ROM or Windows Server 2008 R2 DVD-ROM.

**12.** Select the disk where a partition will be created, and then click [Drive options (advanced)].



---

**IMPORTANT:** If the partition has already been created, go to step 15.

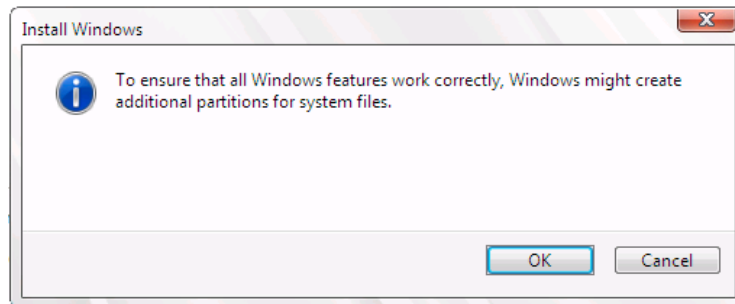
---

**NOTE:** The following message might be displayed when not replacing it with OS installation media after driver's reading. Please replace with OS installation media when it is displayed, and click "Refresh".

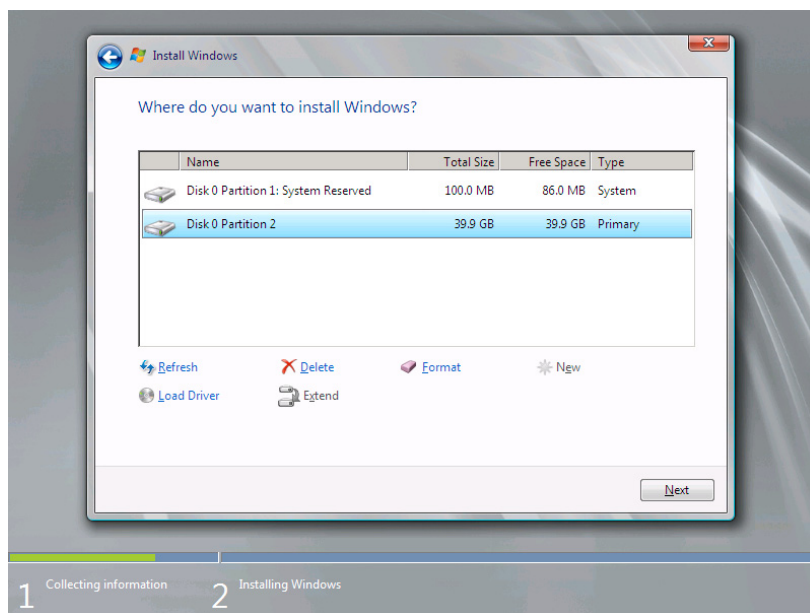


13. Click [New], enter a partition size, and then click [Apply].

**NOTE:** When new partition is created, initial 100MB is assigned as boot partition by Windows OS.

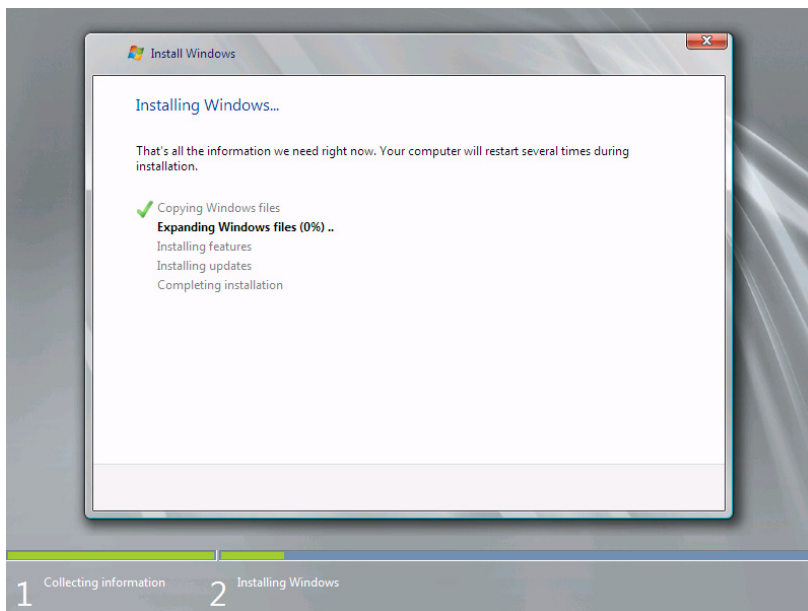


14. Select the partition created in step 13, and then click [Format].
15. Select the partition created, and then click [Next].



**NOTE:** The number of partitions displayed on a screen depends on your system configuration.

When the following message appears, the installation starts automatically.

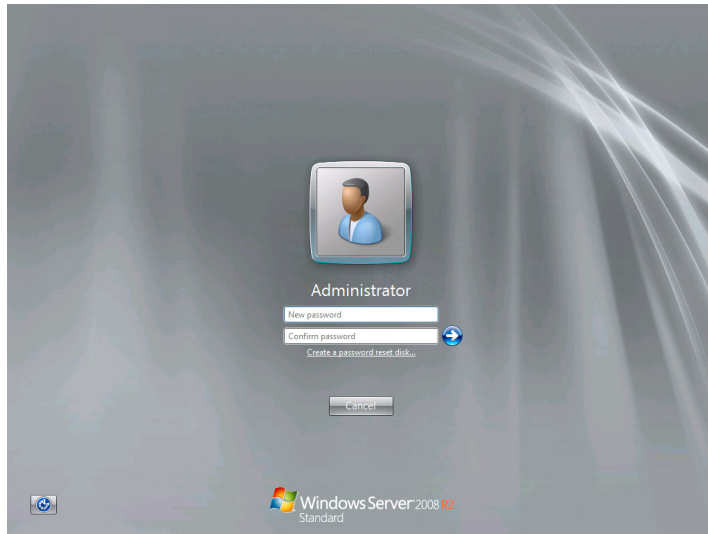


16. After a full installation of Windows Server 2008 R2 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].

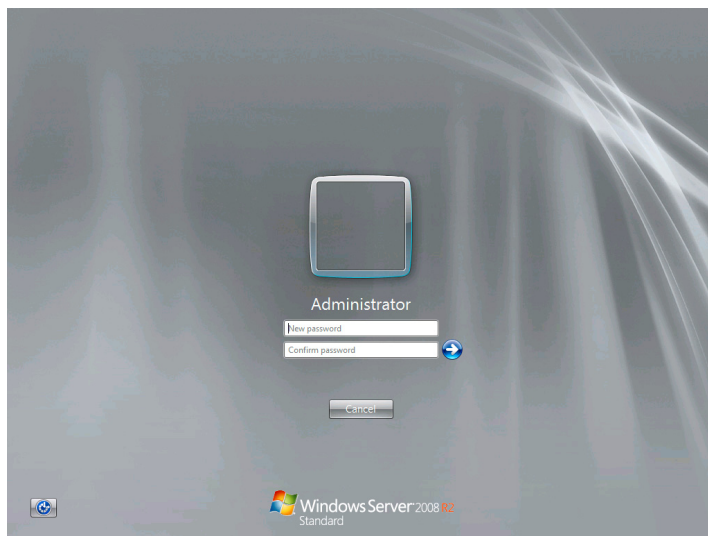


17. Change the password, and then click the [➡] button.

- If you have selected a full installation



- If you have selected a Server Core installation

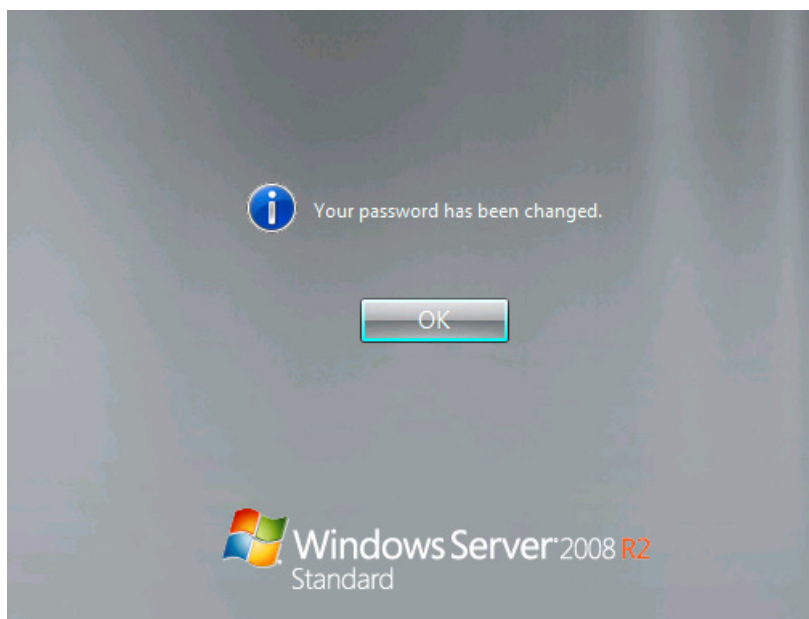


---

**NOTE:** Administrator password that satisfy the next condition, are required.

- More than 6 characters
  - Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs)
-

18. When the following message appears, click [OK] to log on.

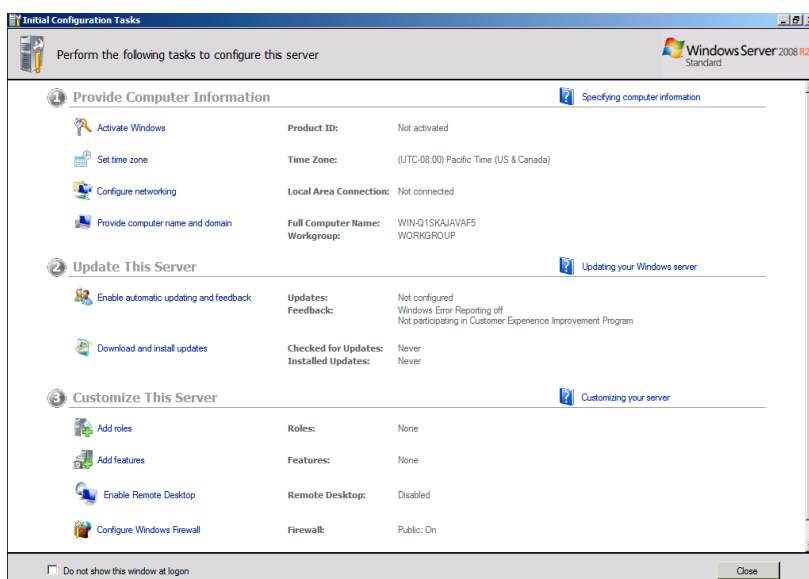


19. Log on to the system.

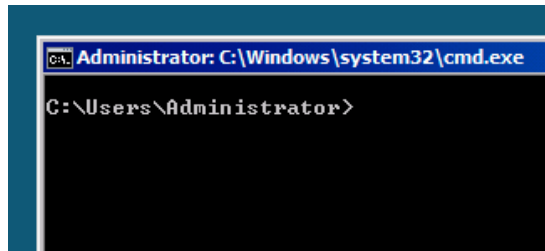
The steps vary depending on the edition you selected in step 9.

- If you have selected a full installation

On the [Initial Configuration Tasks] window, enter user information.



- If you have selected a Server Core installation  
At the command prompt, enter user information.



---

**NOTE:** For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide".

---

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

---

## Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2008 R2 is written.

---

### NOTES:

- Execute the activation within 30 days.
  - COA label may be attached to your server.
- 

---

## Updating the System

---

**IMPORTANT:** "Updating the System" disables the Scalable Networking Pack (SNP) function.

The setting of SNP function may affect the system performance, so please refer to the attention of SNP detail in the following site before setting it.

<http://www.nec.com/global/prod/express/>

---

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security.

The system update is recommended.



## Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

1. Log on to the system using an administrator account.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.
3. Hereinafter, the setup process is depending on the content selected at [Installing Windows Server 2008], follow each of the instructions.

– If you have selected a full installation

If the menu is displayed, click [Setup Windows] and click [Update the system].

**NOTE:** Right-clicking on the Menu produces the same outcome.

– If you have selected a Server Core installation

- 1) Execute the following command line from command prompt to specify the optical disk drive (e.g. D drive).

```
cd /d d:\016\win\winnt\bin\oschk
```

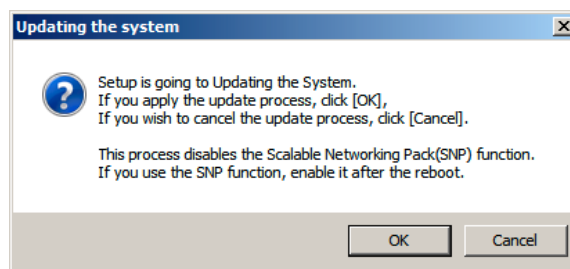
```
C:\Users\administrator>cd /d D:\016\win\winnt\bin\oschk
```

- 2) Type following command line and press **Enter**.

```
oschk.bat
```

```
D:\016\win\winnt\bin\oschk>oschk.bat
```

4. The following box appears.

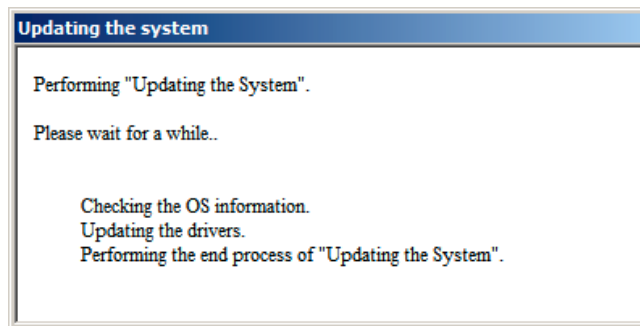


5. Read the message, and then click [OK].

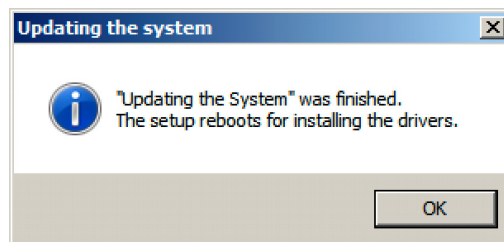
The update starts.

---

**NOTE:** The following box appears during the update if you have deployed a full installation of Windows Server 2008 R2. Wait until the update completes.



- 
6. When the following message appears, click [OK] to restart the system.



The system has been updated.

## DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

---

### LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

---

**NOTE:** To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.

---

---

## Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system

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

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

---

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

---

---

## Optional Network Board Driver (N8104-121/125A/126)

The drivers for Optional Network Board Driver (N8104-121/125A/126) are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

---

## Setup Team

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

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

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

---

### IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
  - The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
  - When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
  - Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
  - Teaming is not supported with Windows Server Core.
- 

## Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box. Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].

6. Select a team mode, and then click [Next].

---

**IMPORTANT:** Following team types are supported

- Adapter Fault Tolerance
  - Adaptive Load Balancing
  - Static Link Aggregation
  - Switch Fault Tolerance
- 

7. Click [Finish].

---

**IMPORTANT:** Teaming an adapter with standard network adapter and optional network adapter will cause the following message to appear. Click [OK] and continue the setting.

"One or more adapters in the team do not support true NDIS6.20 Receive-Side Scaling, Receive-Side Scaling will be disabled for the team, Disabling Receive-Side Scaling will negatively impact the performance of the team."

---

8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.

- Set Primary

Point the adapter and click [Set Primary] button.

- Set Secondary

Point the adapter and click [Set Secondary] button.

---

**NOTE:** Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
  2. Click [Settings] and confirm Adapters in team list.
- 

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup. Confirm the result in [Test results].
11. Restart the system

**Remove Team**

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and reboot the system.

---

## Setting WOL

Refer to the following procedure to enable WOL.

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF
"Wake on Pattern Match "	OFF	OFF

---

### NOTES:

- [Power Saver Options] setting is not necessary to change.
  - Above setting will be maintained until manually resetting are executed.
- 

---

**IMPORTANT:** The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

---

4. Click [OK].
5. Restart the system



---

## Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

---

**NOTE:** <Windows Server 2008>

The graphics accelerator driver is supported only on a server running a full installation. Use VGA on a server running a Server Core installation.

---

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "install.bat" in the following directory.  
\\016\\win\\winnt\\ws2008x64\\video
4. Follow the message to continue the installation.  
If the dialog message "Digital Signature could not be found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

### **Installing SCSI Controller Driver (N8103-107)**

If you use the SCSI Controller N8103-107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

### **Installing SAS Controller Driver (N8103-104A)**

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

### **Installing RAID Controller Driver (N8103-115)**

If you use the RAID Controller N8103-115, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

### **Installing the Fibre Channel Controller Driver (N8190-127/131/153/154)**

If you use the Fibre Channel Controller (N8190-127/131/153/154), you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

## About Windows Activation

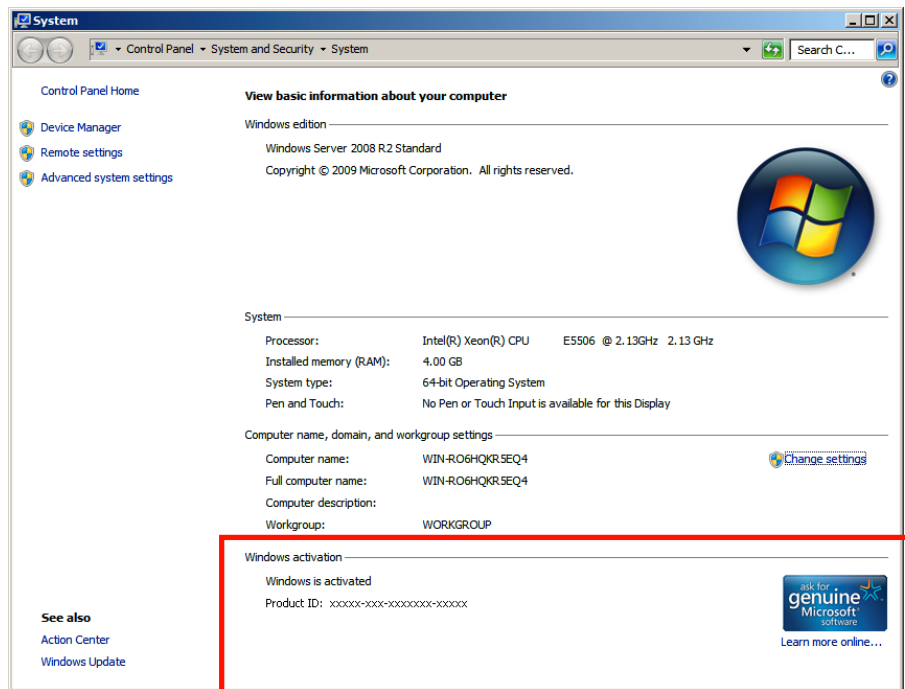
Windows Server 2008 R2 must be activated before you can use Windows Server 2008 R2.

Windows activation process is as follows.

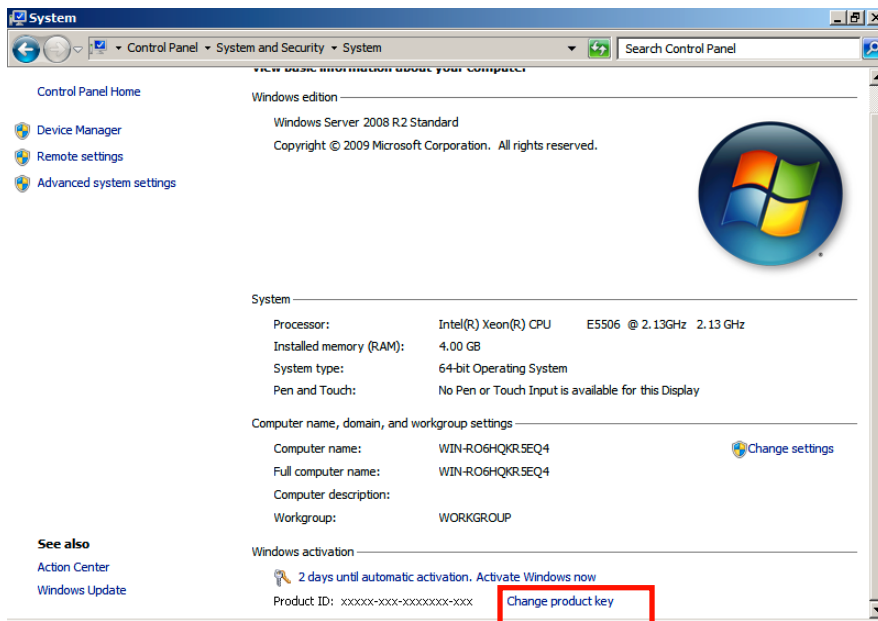
### For a server running a full installation

1. Select [Control Panel] and click [System and Security], then select [System].

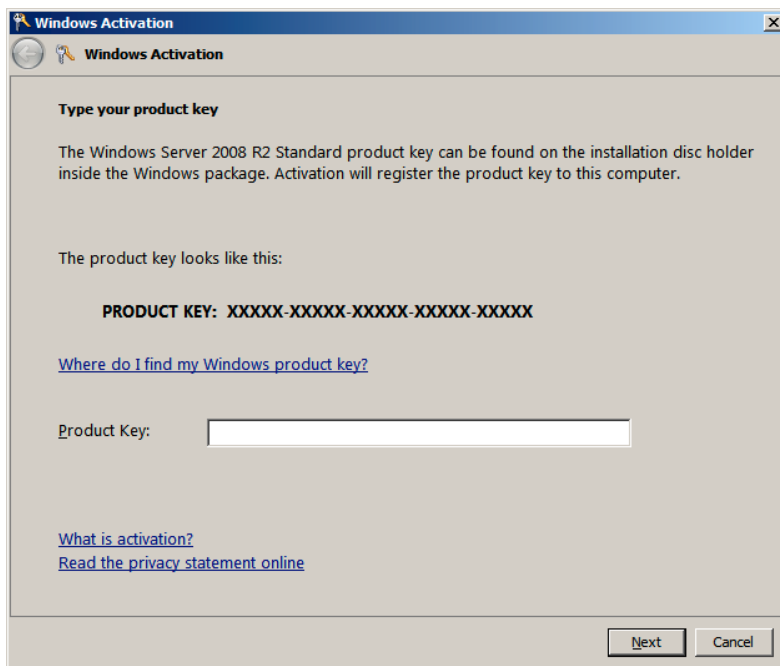
**IMPORTANT:** If the following message appears, Windows has already been activated on your system.



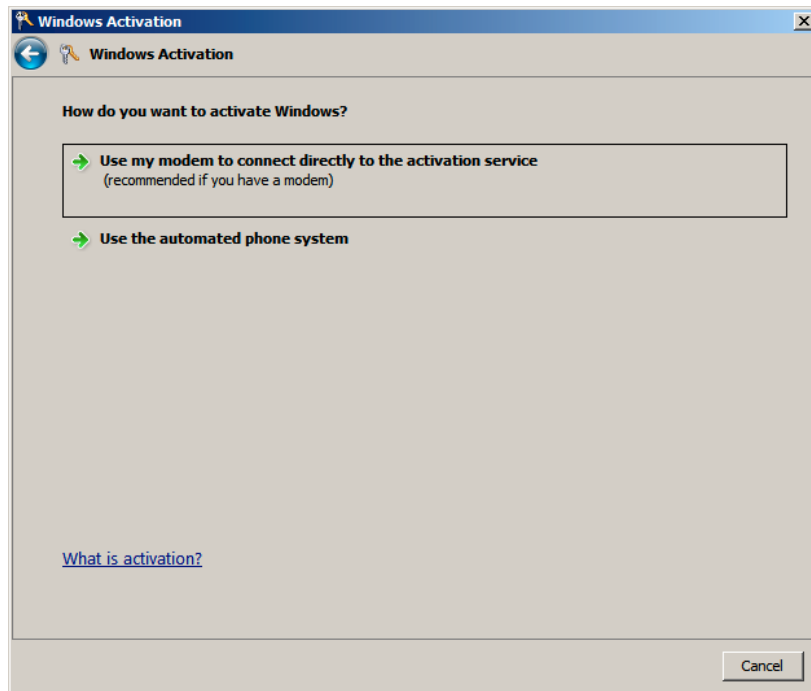
2. In the following screen, click [Change product key].



3. Type the product key shown on your COA label, and click [Next].



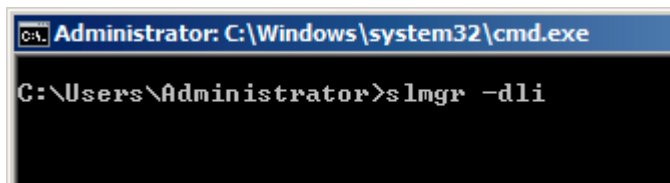
4. Activate Windows.




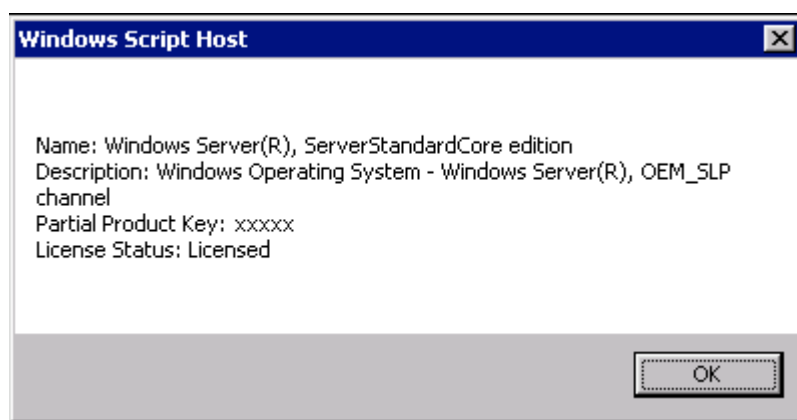
The Windows activation is complete.

**For a server running a Server Core installation**

1. At the command prompt, type **slmgr -dli**, and press **Enter**.

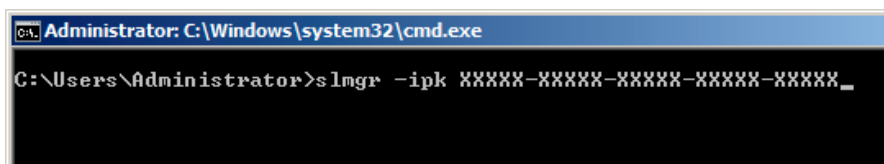


**IMPORTANT:** If the following message appears, Windows has already been activated on your system. Click  to exit.

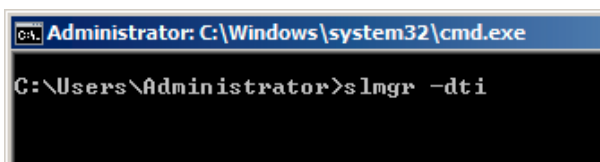


2. Type **slmgr -ipk <PID>**, and press **Enter**.

\* PID is your product key on the COA label.

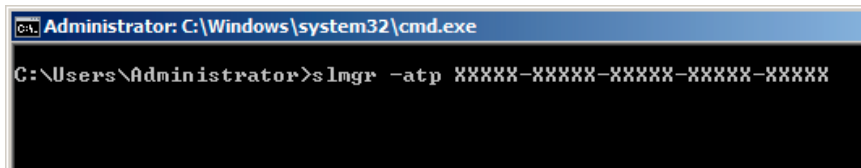


3. Type **slmgr -dti** to obtain an installation ID for Windows activation, and press **Enter**.



4. See "%systemroot%\system32\sppui\phone.inf" for the phone number of the Microsoft customer service.

5. Call the above number, inform the representative of the installation ID which you obtained in step 3, and receive a confirmation ID.
6. At the command prompt, type **slmgr -atp <CID>**, and press **Enter**.  
\* CID is the confirmation ID that you received from the call center.

A screenshot of a Windows command prompt window. The title bar at the top reads "Administrator: C:\Windows\system32\cmd.exe". The command prompt shows the command "C:\Users\Administrator>slmgr -atp XXXXX-XXXXX-XXXXX-XXXXX-XXXXX" entered at the prompt. The background of the command prompt is black, and the text is white.

```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\Administrator>slmgr -atp XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
```

The Windows activation is complete.

## **SETTING FOR SOLVING PROBLEMS**

Set for collecting memory dump using the procedure described in Chapter 5.



# Appendix E

---

## Installing Windows Server 2008

This section explains how to install the Windows Server 2008.

### NOTICE

Read the following notes or information before installing the Windows Server 2008.

---

### Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

---

- Controllers supporting installation of OS with Express Setup
    - N8103-129 RAID Controller (256 MB, RAID0/1)\*
    - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
    - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
  - Other controllers
    - N8103-104A SAS Controller\*
    - N8103-107 SCSI Controller\*
    - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*
    - N8190-127 Fibre Channel Controller (4Gbps/Optical)\*
    - N8190-131 Fibre Channel Controller (2ch) (4Gbps/Optical)\*
- \* Option.

---

## Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

---

## Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

---

## Connecting Hard Disk Drive

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" in Chapter 5.

---

## Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

---

## Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using [Disk Management], invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using [Disk Management] in [Computer Management].

---

## Mounting MO Device

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

---

## **About Removable Media**

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

---

## **Floppy Disk Drive**

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive or Flash FDD if necessary.

---

## About the System Partition Size

The system partition size can be calculated from the following formula.

### When the system is Windows Server 2008 64-bit (x64) Edition:

Required partition size =

size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 11,600MB (Full Installation) 12,300MB (Full Installation with Service Pack 2) 16,720MB (Full Installation + Service Pack 2) or = 4,100MB (Server Core Installation) 4,800MB (Server Core Installation with Service Pack 2) 9,220MB (Server Core Installation + Service Pack 2)
Paging file size (recommended)	= Installed memory size * 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

---

#### IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
- 

#### Example:

The partition size required for a system with an installed memory size of 1GB(1,024MB) and a full installation of the operating system:

$$11,600\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 300\text{MB}) + \text{application size} \\ = 14,460\text{MB} + \text{application size}.$$

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

**When the system is Windows Server 2008 32-bit (x86) Edition**

Required partition size =

size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 6,300MB (Full Installation) 9,300MB (Full Installation with Service Pack2) 9,400MB (Full Installation + Service Pack 2) or = 2,200MB (Server Core Installation) 5,200MB (Server Core Installation with Service Pack2) 5,300MB (Server Core Installation + Service Pack 2)
Paging file size (recommended)	= Installed memory size * 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

---

**IMPORTANT:**

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - Depending on system configuration, 4096MB or more per partition might not be able to be set to the paging file size.  
Set it to 4095MB when the message to ask a value that is smaller than 4096MB is displayed.
  - The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
-

**Example:**

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

$$\begin{aligned} &6,300\text{MB} + (1,024\text{MB} * 1.5) + 1,024\text{MB} + 300\text{MB} + \text{application size} \\ &= 9,160\text{MB} + \text{application size.} \end{aligned}$$

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

---

## BitLocker

If you use BitLocker, note the following:

- Before you install Windows Server 2008, create two partitions:
  - System partition for a loader
  - Boot partition for the operating system

---

**NOTE:** For more information, see the following documentation in Microsoft TechNet.

"Windows BitLocker Drive Encryption Step-by-Step Guide"

---

- Be sure to keep the recovery password secure. Do not keep it around a server running BitLocker.

---

**IMPORTANT:** Without the recovery password, you cannot start the operating system and see the partition content encrypted by BitLocker.

The recovery password may be needed when you start the operating system after performing the following tasks:

- Replacing the motherboard
  - Initializing the TPM
  - Changing the BIOS setting
- 

- Windows Server 2008 is not installed in the partition encrypted by BitLocker.

## INSTALLING Windows Server 2008

---

### Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2008 Standard (DVD-ROM) / Microsoft Windows Server 2008 Enterprise (DVD-ROM)
- User's Guide
- Getting Started

---

### Windows Server 2008 Clean Installation

This section explains how to perform a clean installation of Windows Server 2008.

---

**IMPORTANT:** The installation procedure depends on your environment.

---

Follow steps below appropriate to your environment.

1. Turn on your system.

---

**IMPORTANT:** To install Windows Server 2008, you may need to update BIOS. To check if your system needs a BIOS update, go to:  
<http://www.nec.com/express/>

---

2. Insert the Windows Server 2008 DVD-ROM into your DVD-ROM drive.
3. Restart the system.  
To restart the system, press **Ctrl + Alt + Del** or turn off the system once, and then turn it on again.

---

**IMPORTANT:** When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed. If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

---

The DVD-ROM starts. A message "Windows is loading files ..." appears.



4. Select a language and other options from the drop-down lists, and then click [Next].

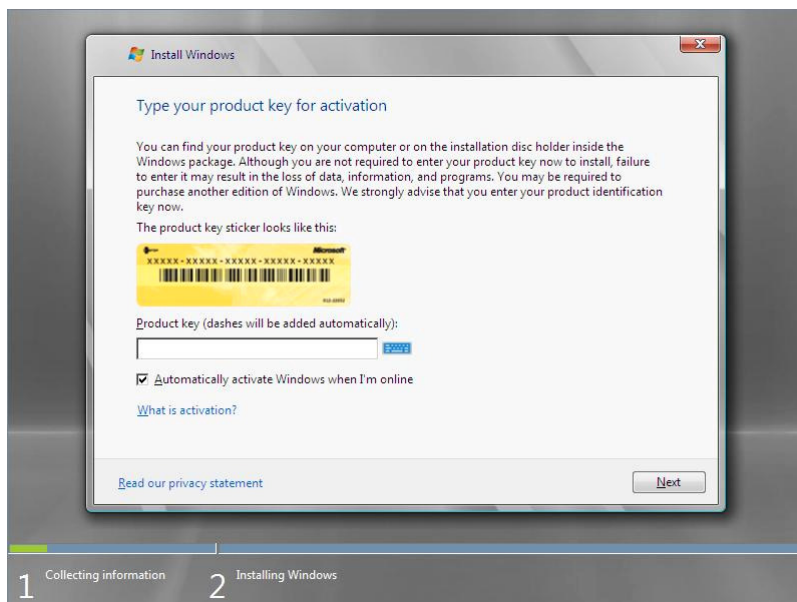


5. Click the [Install now ➡] button.

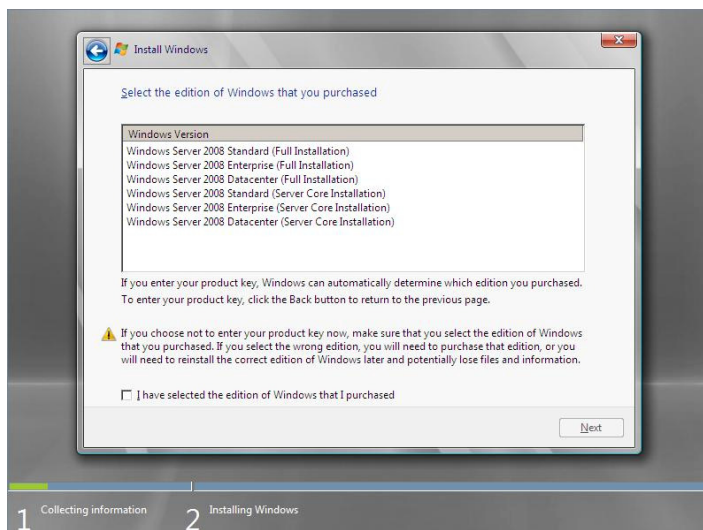
The installation starts.



6. Enter your product key, and then click [Next].



7. Select the edition of the Windows operating system that you purchased.
- Select [I have selected the edition of Windows that I purchased], and then click [Next].
- You will see only possible editions that have been determined by Windows based on the key you entered in step 6.

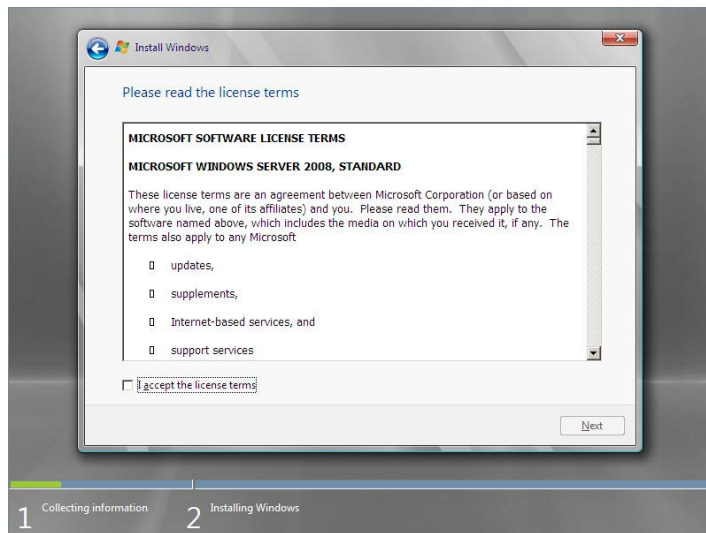


---

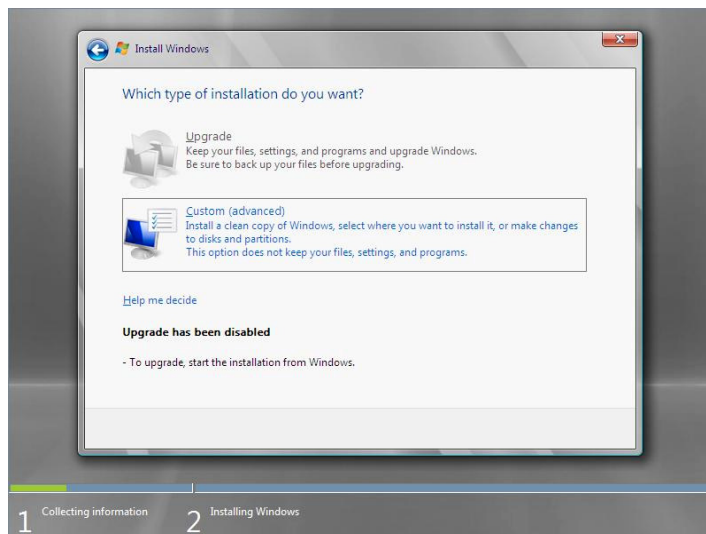
**NOTE:** The Windows versions listed on the screen vary depending on the Windows Server 2008 DVD-ROM you are using.

---

8. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].



9. Select the type of installation you want.  
[Custom (advanced)] is selected below.



- 10.** The screen of "Where do you want to install Windows?" is displayed.

Remove the Backup DVD-ROM or Windows Server 2008 DVD-ROM and set NEC EXPRESSBUILDER DVD, and select [Load Driver].

Load Driver

To install the device driver needed to access your hard drive, insert the installation media containing the driver files, and then click OK.

NOTE: The installation media can be a floppy disk, CD, DVD, or USB flash drive.

[Browse] [OK] [Cancel]

Click [Browse], and go to Step 11.

- 11.** The folder reference dialog box appears.

Select a path in the NEC EXPRESSBUILDER DVD, and then click [OK].

- ☐ If the N8103-129/130 RAID Controller is used:
  - Windows Server 2008 32-bit (x86) Edition  
<drive letter>:\016\win\winnt\oemfd\ws2008\fd1\megasas2
  - Windows Server 2008 64-bit (x64) Edition  
<drive letter>:\016\win\winnt\oemfd\ws2008x64\fd1\megasas2
- ☐ If the N8103-134 RAID Controller is used:
  - Windows Server 2008 32-bit (x86) Edition  
<drive letter>:\016\win\winnt\oemfd\ws2008\fd1\stexstpt
  - Windows Server 2008 64-bit (x64) Edition  
<drive letter>:\016\win\winnt\oemfd\ws2008x64\fd1\stexstpt

After you select the path, a list of drivers is displayed.

Select the following driver, and then click [OK]. Go to Step 12.

- ☐ If the N8103-129/130 RAID Controller is used:  
[LSI MegaRAID SAS 9264-8i]
- ☐ If the N8103-134 RAID Controller is used:  
[Promise SuperTrak SAS 6G RAID Controller]

- 12.** Remove the NEC EXPRESSBUILDER DVD and set Backup DVD-ROM or Windows Server 2008 DVD-ROM.

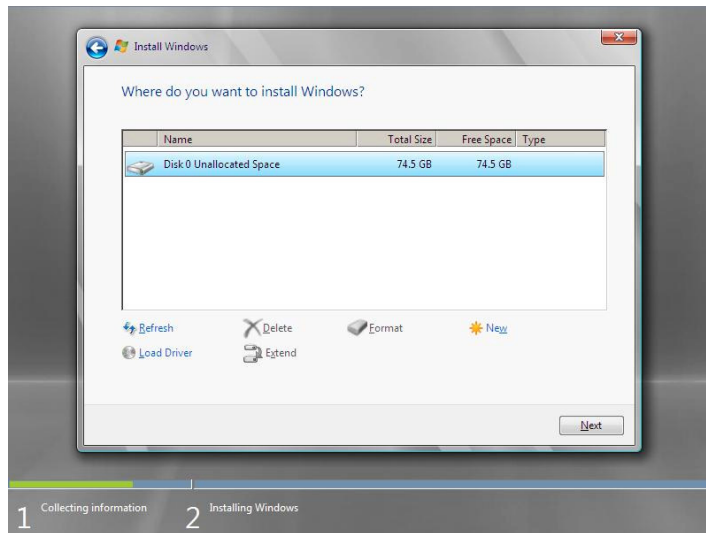
- 13.** Select the disk where a partition will be created, and then click [Drive Option].

---

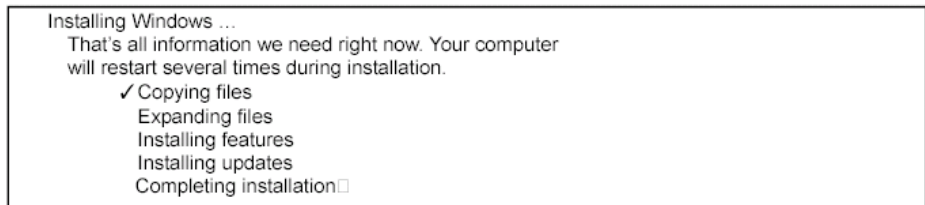
**IMPORTANT:** If the partition has already been created, go to step 16.

---

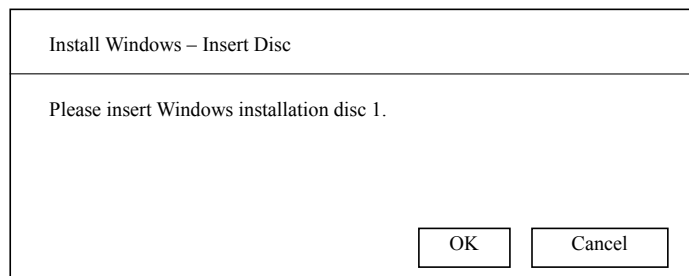
14. Click [New], enter a partition size, and then click [Apply].
15. Select the partition created in step 14, and then click [Format].
16. Select the partition created, and then click [Next].



When the following message appears, the installation starts automatically.



**NOTE:** If the disk drive contains NEC EXPRESSBUILDER DVD, you will be prompted to replace a media with that for OS installation. Insert the install media according to the on-screen message.




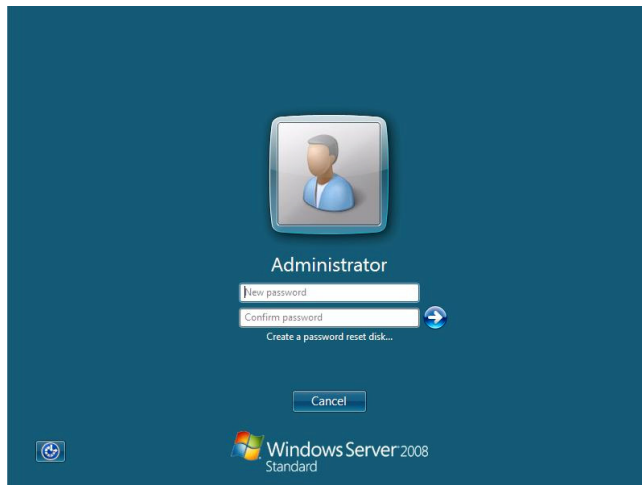
17. Log on to the system. The steps vary depending on the edition you selected in step 10.

**If you have selected a full installation**

1. After a full installation of Windows Server 2008 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].



2. Change the password, and then click the  button.



---

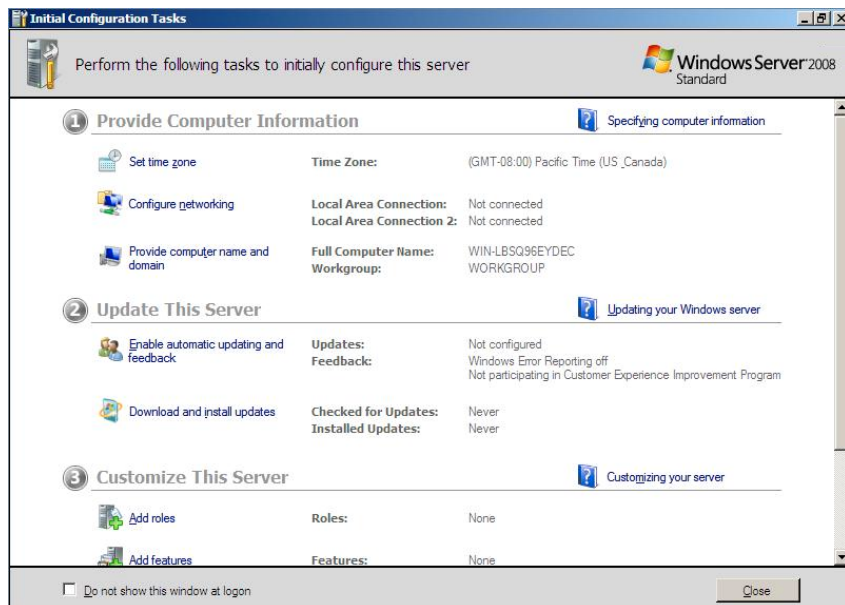
**NOTE:** Administrator password that satisfy the next condition, are required.

- More than 6 characters
  - Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs)
- 

3. When the following message appears, click [OK] to log on.



4. On the [Initial Configuration Tasks] window, enter user information.




### If you have selected a Server Core installation

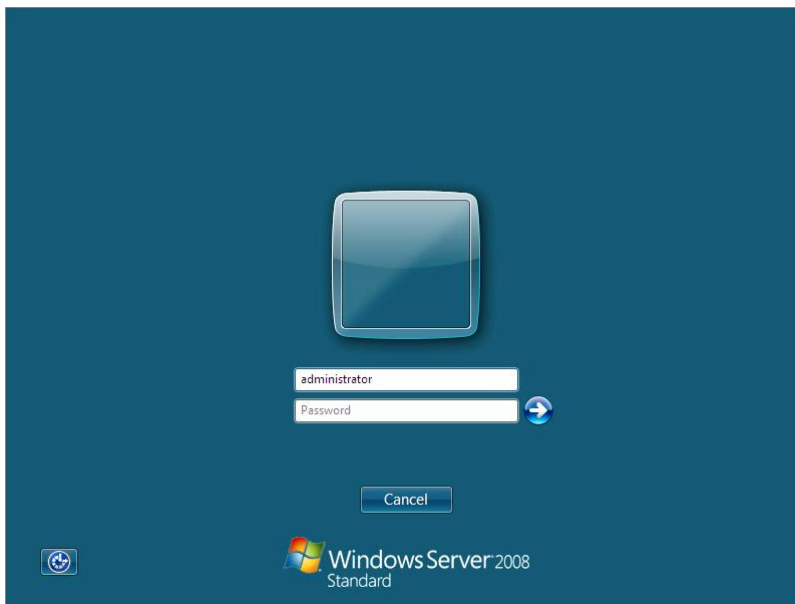
1. After a Server Core installation of Windows Server 2008 is completed, press **Ctrl + Alt + Del**.



2. Select [Other User].




3. Log on to the system as an administrator.  
You need not enter your password in this dialog box. Click the  button.

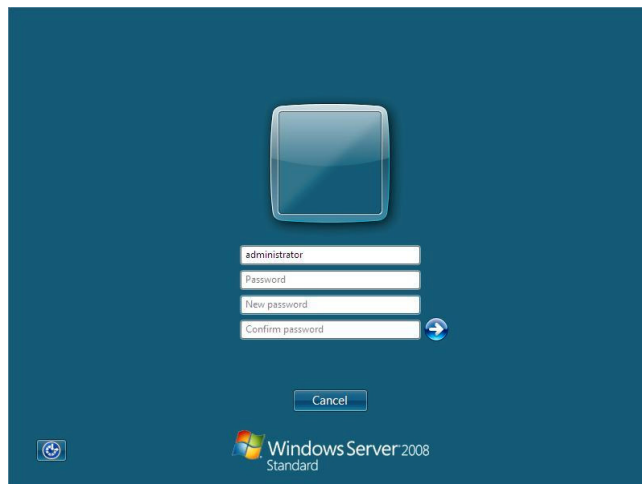


4. Before you log on, you will be prompted to change the password. Click [OK].





5. Change the password, and then click the  button.



---

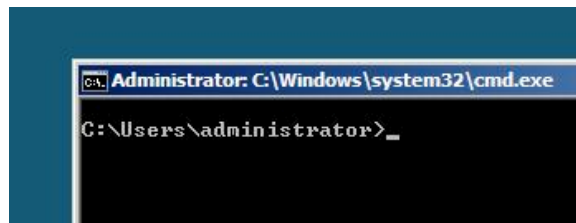
**NOTE:** Administrator password that satisfy the next condition, are required.

- More than 6 characters
  - Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs)
- 

6. When the following message appears, click [OK].



7. At the command prompt, enter user information.



---

**NOTE:** For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide".

---

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

---

## Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2008 is written.

---

### NOTES:

- Execute the activation within 60 days.
  - COA label may be attached to your server.
- 

---

## Updating the System

---

### IMPORTANT:

- "Updating the System" disables the Scalable Networking Pack (SNP) function.  
The setting of SNP function may affect the system performance, so please refer to the attention of SNP detail in the following site before setting it.  
<http://www.nec.com/global/prod/express/>
  - Refer to the public information of SNP function when KB967224 is not applied.  
Notes are described about KB967224.
- 

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security.

The system update is recommended.

## Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

1. Log on to the system using an administrator account.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.
3. Hereinafter, the setup process is depending on the content selected at [Installing Windows Server 2008], follow each of the instructions.

– If you have selected a full installation

If the menu is displayed, click [Setup Windows] and click [Update the system].

**NOTE:** Right-clicking on the Menu produces the same outcome.

– If you have selected a Server Core installation

- 1) Execute the following command line from command prompt to specify the optical disk drive (e.g. D drive).

```
cd /d d:\016\win\winnt\bin\oschk
```

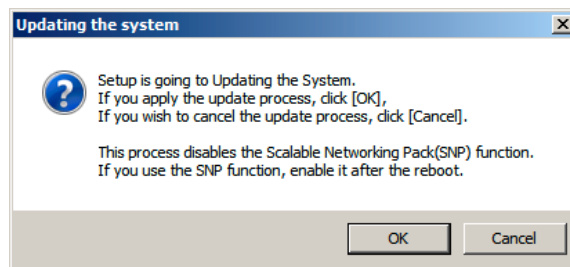
```
C:\Users\administrator>cd /d D:\016\win\winnt\bin\oschk
```

- 2) Type following command line and press **Enter**.

```
oschk.bat
```

```
D:\016\win\winnt\bin\oschk>oschk.bat
```

4. The following box appears.

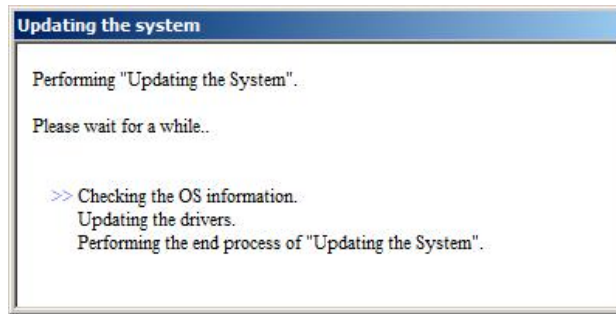


5. Read the message, and then click [OK].

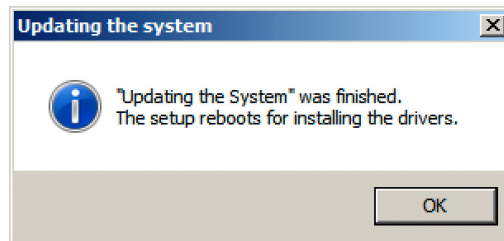
The update starts.

---

**NOTE:** The following box appears during the update if you have deployed a full installation of Windows Server 2008. Wait until the update completes.



- 
6. When the following message appears, click [OK] to restart the system.



The system has been updated.

## DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

---

### LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

---

**NOTE:** To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.

---

### Using N8104-125A Adapter after System Update

To use the N8104-125A Adapter after updating your system, you must first uninstall the LAN driver and PROSet, and then update your system with the N8104-125A Adapter connected.

#### For a server running a full installation

1. Remove a team of network adapters.

---

**NOTE:** Before you remove, note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy.  
Configure the settings after reinstalling the LAN driver and PROSet. To remove the team, see "Setup Team".

---

2. In [Control Panel], click [Uninstall Program].
3. Double-click [Intel(R) Network Connections 14.8.43.0].  
Intel(R) Network Connections (Remove Options)] appears.
4. In [Remove Options], click [Remove].  
[Intel(R) Network Connections - Remove Software] appears.
5. Select [Yes].  
The uninstallation starts automatically.
6. When [InstallShield Wizard Completed] appears. Click [Finish].  
Restart the system.

### For a server running a Server Core installation

1. Note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy before uninstalling LAN driver.

Configure the settings after reinstalling the LAN driver.

2. At a command prompt, run "dxsetup.exe" in your removable medium containing the Driver Set.

– Windows Server 2008 64-bit (x64) Editions:

<drive letter>: \016\win\winnt\ws2008x64\r148\apps\prosetdx\vistax64\dxsetup.exe

– Windows Server 2008 32-bit (x86) Editions:

<drive letter>: \016\win\winnt\ws2008\r148\apps\prosetdx\vista32\dxsetup.exe

3. In [IntelR Network Connections - InstallShield Wizard], click [Next].

4. Select [Remove], and click [Next].

5. Click [Remove].

Uninstallation starts automatically.

6. When [InstallShield Wizard Completed] appears, click [Finish].

Restart the system.

---

## Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system

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

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

---

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

---

---

## Optional Network Board Driver (N8104-121/125A/126)

The following optional network boards are available for the N8104-121/125A/126.

To use the N8104-125A Adapter, see "Using N8104-125A Adapter after System Update" in the previous page.

The drivers for other network boards are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

---

## Setup Team

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

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

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

---

### IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
  - The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
  - When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
  - Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
  - Teaming is not supported with Windows Server Core.
- 

## Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box. Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].



6. Select a team mode, and then click [Next].

---

**IMPORTANT:** Following team types are supported

- Adapter Fault Tolerance
  - Adaptive Load Balancing
  - Static Link Aggregation
  - Switch Fault Tolerance
- 

7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
  - Set Primary  
Point the adapter and click [Set Primary] button.
  - Set Secondary  
Point the adapter and click [Set Secondary] button.

---

**NOTE:** Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
  2. Click [Settings] and confirm Adapters in team list.
- 

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup. Confirm the result in [Test results].
11. Restart the system

## Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and reboot the system.

---

## Setting WOL

Refer the following procedure for setting WOL.

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

---

### IMPORTANT:

- Directed Packet<sup>(\*)</sup> will not wake up the system on Shutdown state even "Wake On Directed Packet" is set to "ON".  
Only on Sleep or Hibernate state will wake up by a Directed Packet.  
\*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

---

### NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

- 
4. Click [OK].
  5. Restart the system

---

## Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

---

**NOTE:** <Windows Server 2008>

The graphics accelerator driver is supported only on a server running a full installation. Use VGA on a server running a Server Core installation.

---

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "install.bat" in the following directory.
  - Windows Server 2008 64-bit (x64) Edition:  
  \016\win\winnt\ws2008x64\video
  - Windows Server 2008 32-bit (x86) Edition:  
  \016\win\winnt\ws2008\video
4. Follow the message to continue the installation.  
If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

### **Installing SCSI Controller Driver (N8103-107)**

If you use the SCSI Controller N8103-107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

### **Installing SAS Controller Driver (N8103-104A)**

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

### **Installing RAID Controller Driver (N8103-115)**

If you use the RAID Controller N8103-115, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

### **Installing the Fibre Channel Controller Driver (N8190-127/131)**

If you use the Fibre Channel Controller (N8190-127/131), you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

---

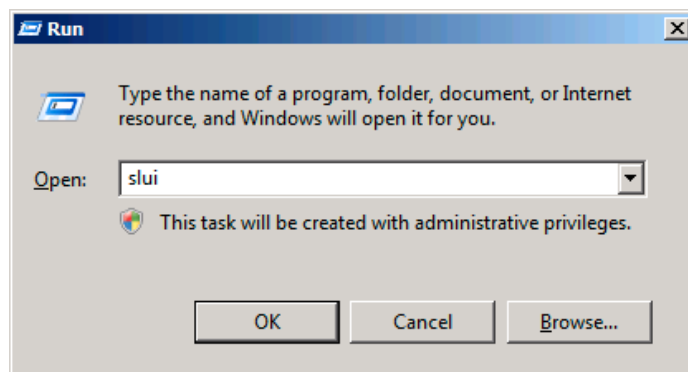
## About Windows Activation

Windows Server 2008 must be activated before you can use Windows Server 2008.

Windows activation process is as follows.

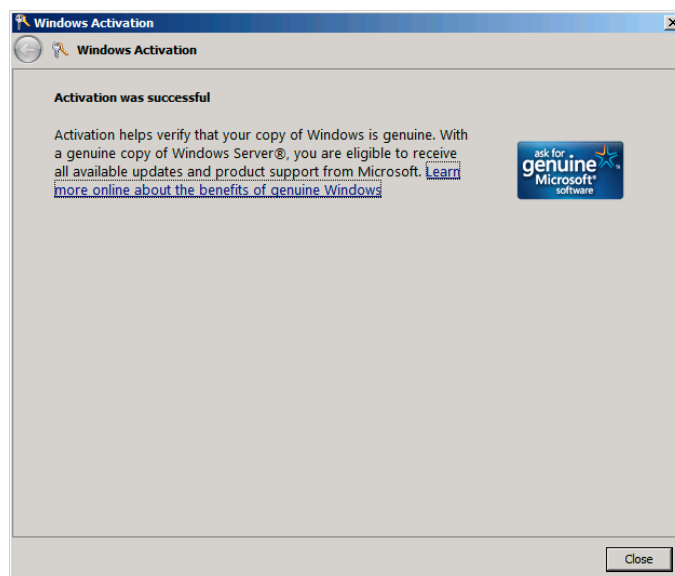
### For a server running a full installation

1. Go to the Start menu, and in the Run dialog box, type **slui**, and press **Enter**.

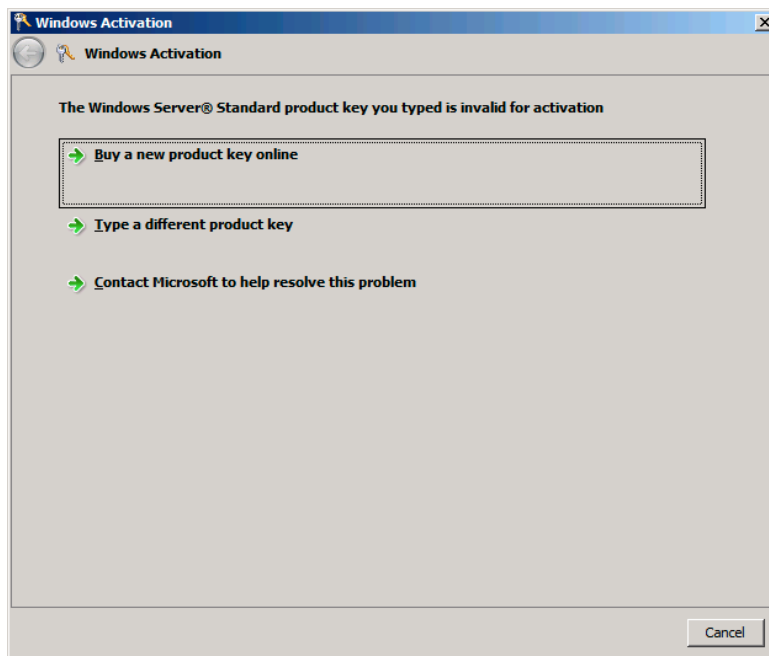


---

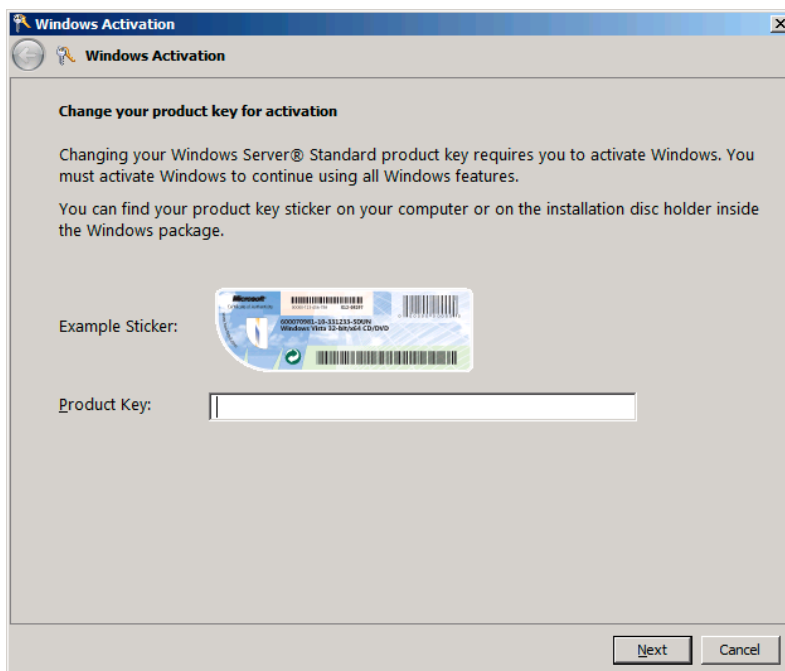
**IMPORTANT:** If the following message appears, Windows has already been activated on your system. Click [Close] to exit.



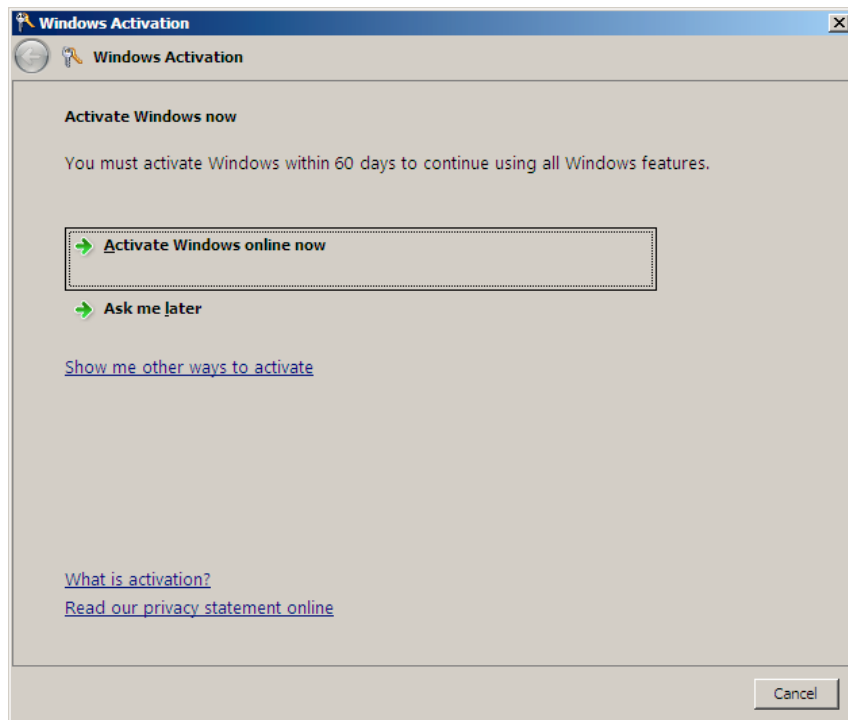
2. In the following screen, click [Type a different product key].



3. Type the product key shown on your COA label, and click [Next].



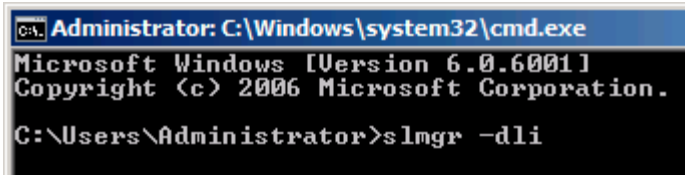
#### 4. Activate Windows.



The Windows activation is complete.


**For a server running a Server Core installation**

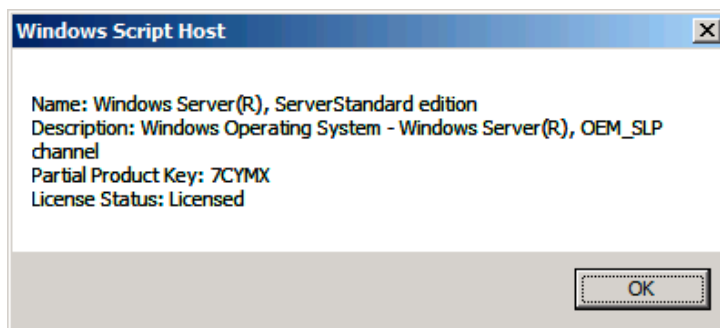
1. At the command prompt, type **slmgr -dli**, and press **Enter**.



```
C:\>Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.

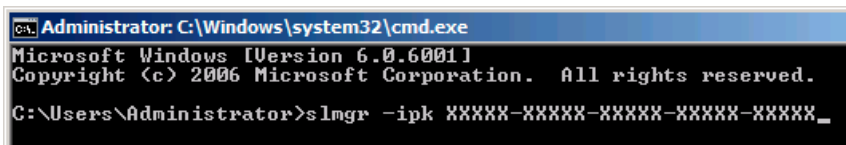
C:\Users\Administrator>slmgr -dli
```

**IMPORTANT:** If the following message appears, Windows has already been activated on your system. Click  to exit.



2. Type **slmgr -ipk <PID>**, and press **Enter**.

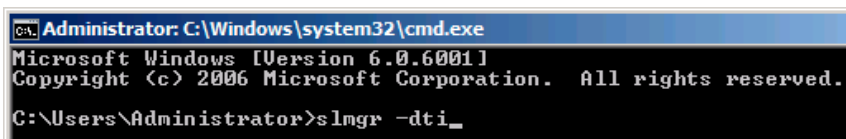
\* PID is your product key on the COA label.



```
C:\>Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>slmgr -ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX_
```

3. Type **slmgr -dti** to obtain an installation ID for Windows activation, and press **Enter**.



```
C:\>Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

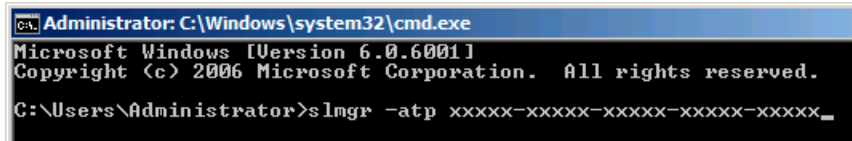
C:\Users\Administrator>slmgr -dti_
```

4. See "%systemroot%\system32\slui\phone.inf" for the phone number of the Microsoft customer service.
5. Call the above number, inform the representative of the installation ID which you obtained in step 3, and receive a confirmation ID.



6. At the command prompt, type **slmgr -atp <CID>**, and press **Enter**.

\* CID is the confirmation ID that you received from the call center.



```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>slmgr -atp xxxxx-xxxxx-xxxxx-xxxxx-xxxxx_
```

The Windows activation is complete.

---

## The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

---

**IMPORTANT:** "PAE option" is not supported on Windows Server 2008 Standard.

---

In Windows Server 2008 system, the PAE option can be set by using Bcdedit.exe.

The setting procedure is as follows.

1. Click [Run] on [Start] menu.
2. Type "cmd.exe" in the [Open:] box to start command prompt.
3. Execute following command line.

bcdedit /set pae forceenable

4. Reboot the system.

The setting mentioned above enables after reboot.

5. Execute following command line on command prompt.

bcdedit

Confirm "pae ForceEnable" exists in "Windows boot loader".

The setting for PAE option is now completed.

Refer following site about Bcdedit.exe.

"Boot Configuration Data Editor Frequently Asked Questions"

[http://technet.microsoft.com/en-us/library/cc721886\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc721886(WS.10).aspx)

## **SETTING FOR SOLVING PROBLEMS**

Set for collecting memory dump using the procedure described in Chapter 5.

# Appendix F

---

## Installing Windows Server 2003 x64 Editions

This section explains how to install the Windows Server 2003 x64 Editions.

### NOTICE

Read the following notes or information before installing the Windows Server 2003 x64 Editions.

---

### Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

---

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID Controller (256 MB, RAID0/1)\*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
  - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
- Other controllers
  - N8103-104A SAS Controller\*
  - N8103-107 SCSI Controller\*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*

\* Option.

---

## Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

---

## Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

---

## Connecting Hard Disk Drive

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" in Chapter 5.

---

## Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

---

## Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk drive upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

---

## Mounting MO Device

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

---

## **About Removable Media**

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

---

## **Floppy Disk Drive**

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive or Flash FDD if necessary.

---

## About the System Partition Size

The system partition size can be calculated from the following formula.

$$\begin{aligned} &\text{Size necessary to install the system} + \text{Paging File Size} + \text{Dump File Size} \\ &\quad + \text{Application Size} \\ \text{Size necessary to install the system} &= 4100\text{MB (Windows Server 2003 x64 Editions)} \\ &= 4100\text{MB (Windows Server 2003 x64 Editions with} \\ &\quad \text{ServicePack 2)} \\ &= 5900\text{MB (Windows Server 2003 x64 Editions +} \\ &\quad \text{Service Pack 2 CD-ROM)} \\ \text{Paging File Size (Recommended)} &= \text{Mounted Memory Size} * 1.5 \\ \text{Dump file Size} &= \text{Mounted Memory Size} + 1\text{MB} \\ \text{Application Size} &= \text{Required Size} \end{aligned}$$

---

### IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.  
Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
  - Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 1MB'.
  - If you install any application program or the like, add necessary space to the partition to install these programs.
- 

For example, if the mounted memory size is 1G(1,024MB), the partition size will be calculated by the above formula as follows:

$$\begin{aligned} &4,100\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 1\text{MB}) + \text{Application Size} \\ &= 6,661\text{MB} + \text{Application Size} \end{aligned}$$

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

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

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

## INSTALLING Windows Server 2003 x64 Editions

### Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2003 R2 Standard x64 Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise x64 Edition (CD-ROM)
- Windows Server 2003 x64 Editions Service Pack 2 (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER

---

### Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.

---

**NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Editions, you do not need to create it again.

---

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER with the following two procedures.

**Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.**

If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl, Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.

5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Connect the Flash FDD or the USB floppy disk drive. (If you use the floppy disk drive, insert a floppy disk into it.)
7. Select [Create an Windows Server 2003 x64 Editions OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

Write-protect and attach a label, then keep it safely.

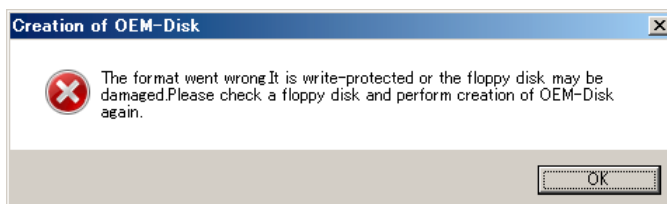
---

**IMPORTANT:** If you have created "OEM-Disk" into the Flash FDD, disconnect it after the NEC EXPRESSBUILDER had been shutdown.

---

---

**NOTE:** If the following message is displayed, the floppy disk is write-protected.



Cancel write-protected state.

If you have already cancelled write-protected state, connect the floppy disk drive again.

---



**Create from [Autorun Menu]**

This menu requires Microsoft Windows XP, Vista or Windows Server 2003(or later).

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.  
The Menu will appear.
4. Connect the Flash FDD or the USB floppy disk drive. (If you use the floppy disk drive, insert a floppy disk into it.)
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003 x64 Edition].

---

**NOTE:** You can do the same operation with the menu appeared by the Right-click.

---

6. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.  
Write-protect and attach a label, then keep it safely.

---

## Windows Server 2003 x64 Editions Clean Installation

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

---

### IMPORTANT:

- If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
  - If you have created OEM-Disk into the floppy disk, connect the USB floppy disk drive before you start the system.
- 

1. Turn on the system power.
2. Insert the Windows Server 2003 x64 Edition CD-ROM into the optical disk drive.
3. Press **Ctrl + Alt + Delete** to reset the system.

After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

If no bootable operating system exists on the hard disk drive, this step is unnecessary.

The Windows Server 2003 x64 Editions setup screen will appear.

If the screen is not displayed, **Enter** was not pressed properly.

Begin after turning on the system power again.

4. Press **F6** in a few seconds when the window is in either of the following states.
  - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
  - A screen with a solid blue background is displayed.

---

**IMPORTANT:** There is no visible indication on screen when **F6** has been pressed.

---

5. The following message is displayed.

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices.

Press **S**.

6. The following message is displayed.

Please insert the disk labeled  
manufacturer-supplied hardware support disk  
into Drive A:  
\*Press ENTER when ready.

If you use the floppy disk drive, insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

---

**NOTE:** If you use the Flash FDD, the message above is not displayed.

---

A list of mass storage devices is displayed.

---

**IMPORTANT:** If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.

---

7. Select the proper RAID Controller and press **Enter**.
- [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]  
(When N8103-129/130 RAID Controller is installed.)
  - [Promise SuperTrak EX Family Controller - 64bits platform]  
(When N8103-134 RAID Controller is installed.)

The screen of Step 5 is displayed.

8. <If the SCSI Controller N8103-107 is connected>

Press **S**.

---

**IMPORTANT:**

- Insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive. If the floppy disk drive has already contained Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, you do not need to insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.
  - If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
- 

The screen of Step 6 is displayed. Press **Enter**, and go to Step 9.

<If the SCSI Controller N8103-107 is not connected>

Go to Step 10.

9. A list of mass storage devices is displayed.

Select the [Adaptec Ultra320 SCSI Cards (Windows 64-bit)] and press **Enter**.

---

**IMPORTANT:** If the following message is displayed when you use the N8103-107 SCSI controller, press **S**.

The driver you provided seems to be newer than the Windows default driver. Windows already has a driver that you can use for "Adaptec Ultra 320 SCSI Cards (Windows64-bit)" Unless the device manufacturer prefers that you use the driver on the floppy disk, you should use the driver in Windows.

---

The screen of Step 5 is displayed.

Go to Step 10.

10. <If the SAS Controller N8103-104A is connected>

Press **S**.

---

**IMPORTANT:**

- Insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive. If the floppy disk drive has already contained Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, you do not need to insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.
  - If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
- 

The screen of Step 6 is displayed. Press **Enter**, and go to Step 11.

<If the SAS Controller N8103-104A is not connected>

Press **Enter**, and go to Step 12.

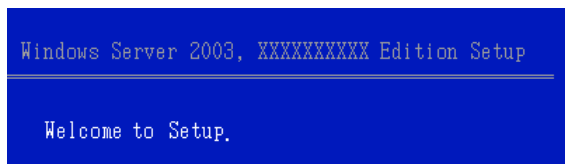
11. A list of mass storage devices is displayed.

Select the [LSI Fusion-MPT SAS Driver (Server 2003 x64)] and press **Enter**.

The screen of Step 5 is displayed.

Press **Enter**, and go to Step 12.

12. When the following message is shown, press **Enter** to start "Welcome to Setup".



---

**IMPORTANT:** If you install Windows Server 2003 x64 Editions on the hard disk larger than 2,097,152MB (2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

---

13. When the installation of Windows Server 2003 x64 Edition has finished, the system reboots automatically.
14. The [Windows Setup] screen will be displayed after logged on to the system.



---

**IMPORTANT:**

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.
  - You can install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2.  
In this case, note that the [Windows Setup] screen is not displayed.
- 

15. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the optical disk drive.  
Confirm the parameters and click [OK].
16. When the installation has completed, remove Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM from the optical disk drive, and restart the system.  
After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this chapter.

---

## Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 x64 Editions is written.

---

### NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
  - COA label may be attached to your server.
-

---

## Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

It is necessary to use ServicePack2 or more. ServicePack 2 need not be applied again when Windows Server 2003 x64 Editions CD-ROM where ServicePack 2 is included is used and it is installed.

If you install Windows Server 2003 x64 Editions CD-ROM which contains Service Pack 2, you do not have to apply "Hotfix for Windows x64" or "Hotfix for Windows Server 2003 (KB921411)".

Go to the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

---

**IMPORTANT:** In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

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

---

### NOTES:

- If you use Windows Server 2003 x64 Editions CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.
- A computer may stop responding on the Resuming Windows screen when the computer resumes from hibernation if running an x64-based version of Windows.

Consider the following scenario:

\* A computer has three or more processors.

\* X64-based version of Windows that is older than Service Pack 2.

In this scenario, the computer may stop responding on the Resuming Windows screen.

When the computer resumes from hibernation, the program to correct the problem of Service Pack 2 or KB902839 (\*) is necessary.

(\*) KB902839 can be obtained as follows.

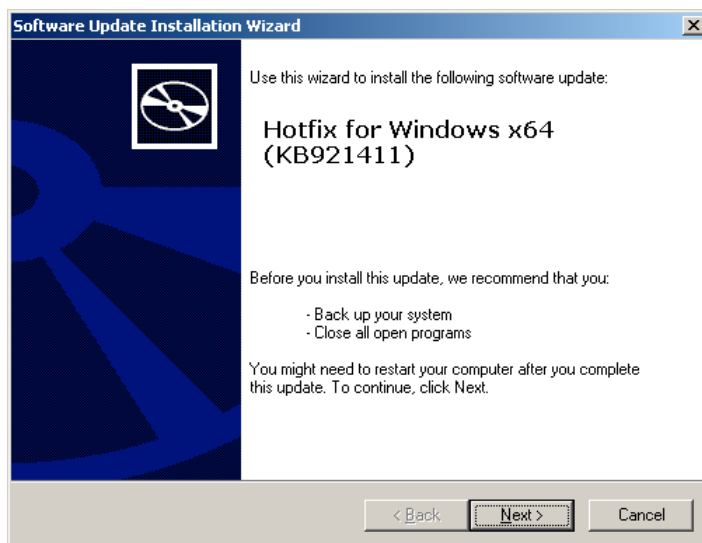
<http://support.microsoft.com/kb/902839>

---

## Application Process of the Hotfix (KB921411)

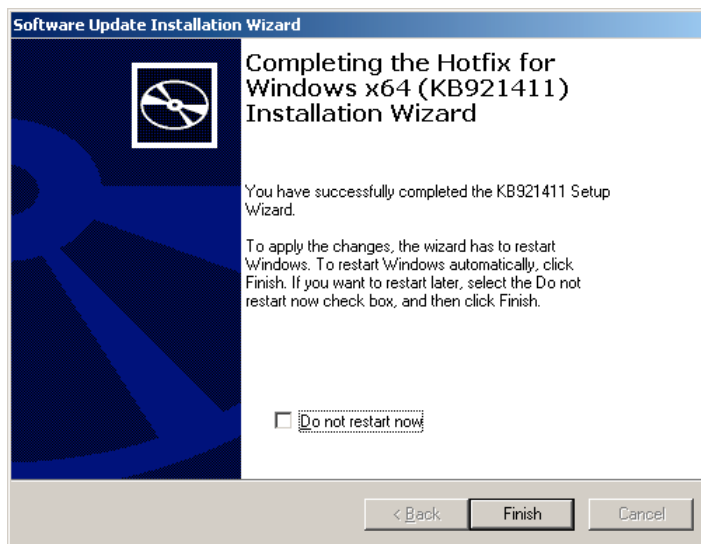
Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.  
<When Windows Server 2003 x64 Editions is used>  
`\016\win\winnt\w2k3amd\qfe\enu\kb921411.exe`
4. When the following message is displayed, click [Next].  
After that, follow the message to continue the process.





5. When the following message is displayed, make sure to click [Finish] to restart the system.



With that, application process of the Hotfix (KB921411) is finished.

## Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows x64 (KB921411) or Hotfix for Windows Server 2003 (KB921411) had been applied.

---

**NOTE:** If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

---

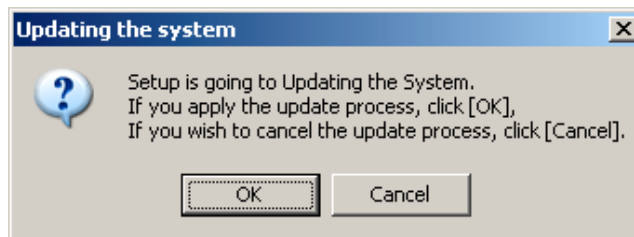
1. Log on to the system with the account that has administrative privilege (e.g.administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of server.  
The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

---

**NOTE:** Right-clicking on the Autorun Menu produces the same outcome.

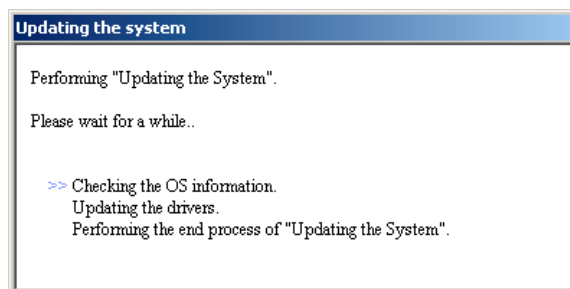
---

4. Follow the message of the screen to proceed the application.  
[OK] dialog box will be displayed.

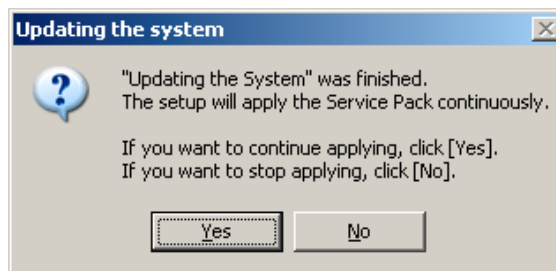


---

**NOTE:** The following box appears during the update if you have deployed a full installation of Windows Server 2003 x64 Edition. Wait until the update completes.



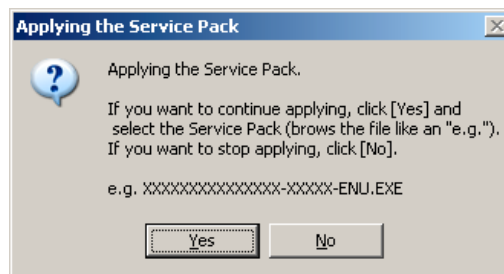
5. When the following message appears, "Updating the System" was finished.



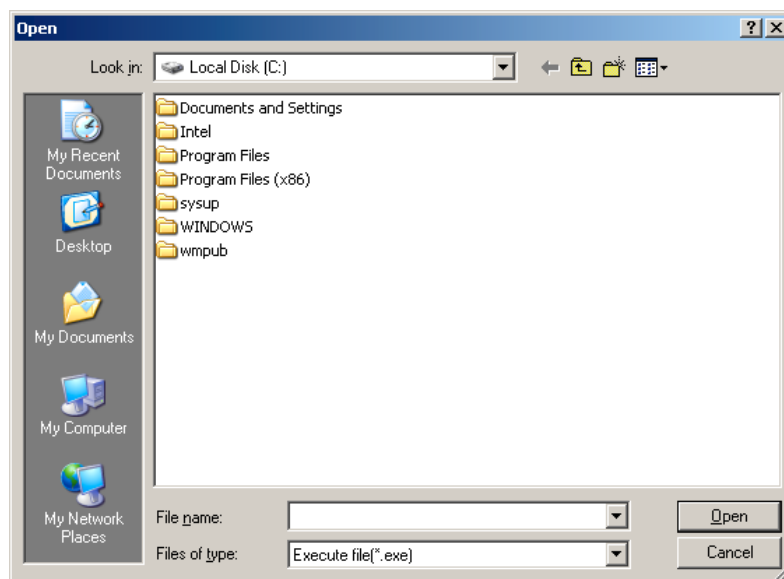
When you apply Service Pack: Click [Yes], and then go to Step 6.

When you don't apply Service Pack: Click [No], and then go to Step 8.

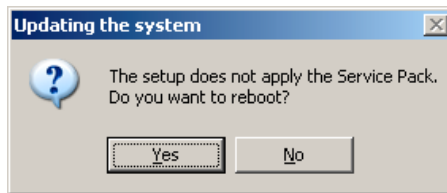
6. When the following message appears, click [Yes].



7. When the following message appears, select a Service Pack and click [Open] and then, according to a message, please apply it.



8. When the following message appears, click [Yes] to restart the system.



The system has been updated.

## Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows x64 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows x64 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].
  - ☐ Hide extensions for know file type
  - ☐ Hide protected operating system files [Recommended]

When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].

4. Make sure of the files.

Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

If you can not found them, copy the files according to the following process.

- (1) Open "<System drive:>\WINDOWS\system32\dlldata" directory.
- (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".

5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows x64 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

With that, process is finished.

## DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

---

### PROSet

---

**NOTE:** All of the operation that related to Intel® PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.

Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog.

Click [OK] button will cause temporary loss of network connectivity.

---

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

Utilizing PROSet enables the following items:

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

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

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

- 1.** Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
- 2.** The [Windows Explorer] dialog starts.
  - \* The procedure in the case of the standard start menu  
Click Start menu and click [Windows Explorer].
  - \* The procedure in the case of the classic start menu  
Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
- 3.** Run "dxsetup.exe" in the following directory.  
\\016\\win\\winnt\\w2k3amd\\r148\\apps\\prosetdx\\winx64  
The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
- 4.** Click [Next].
- 5.** Choose "I accept the terms in the license agreement" and click [Next].
- 6.** Click [Next].
- 7.** Click [Install].
- 8.** When [InstallShield Wizard Completed] window is displayed, click[Finished].
- 9.** Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

## Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

### When PROSet is not installed

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system

### When PROSet is installed

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system

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

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

---

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

---



---

## Optional Network Board Driver (N8104-121/125A/126)

Install the driver stored in NEC EXPRESSBUILDER DVD.

### Installation of the Optional Network Board Driver

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

---

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

---

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and uncheck the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(121/125A/126)], specify [\016\win\winnt\w2k3amd\r148\pro1000\winx64\ndis5x].  
Then click [Next].
7. Click [Finish].
8. Restart the system

---

## Optional Network Board Driver (N8104-123A)

To install the driver, refer to the installation manual provided with the board and according to the installation manual, use the driver stored in attached CD-ROM.

---

## Setup Team

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

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

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

---

### IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers/PROSet and restarting the system.
  - All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
  - The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
  - When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
  - Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- 

### Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.  
Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].

6. Select a team mode, and then click [Next].

---

**IMPORTANT:** Following team types are supported

- Adapter Fault Tolerance
  - Adaptive Load Balancing
  - Static Link Aggregation
  - Switch Fault Tolerance
- 

7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
  - Set Primary  
Point the adapter and click [Set Primary] button.
  - Set Secondary  
Point the adapter and click [Set Secondary] button.

---

**NOTE:** Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
  2. Click [Settings] and confirm Adapters in team list.
- 

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup. Confirm the result in [Test results].
11. Restart the system

## Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and reboot the system.

---

## Setting WOL

Refer to the following procedure to enable WOL.

### When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	ON or OFF	OFF

---

#### IMPORTANT:

- If "Allow this device to bring..." is set to "ON", WOL by DirectedPacket (\*1) or MagicPacket will be available on Standby and Hibernate state.
  - WOL by Directed Packet is not available on Shutdown state.
    - \*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- 

4. Click [Advanced] tab and point to [Enable PME].
5. Set in [Value] as follows.
  - Using WOL: ON
  - Not using WOL: OFF
6. Click [OK].
7. Restart the system

**When PROSet is installed**

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

---

**IMPORTANT:**

- Directed Packet (\*1) will not wake up the system on Shutdown state even "Wake On Directed Packet" is set to "ON".  
Only on Standby or Hibernate state will wake up by a Directed Packet.
  - The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.  
  
\*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- 

---

**NOTES:**

- [Power Saver Options] setting is not necessary to change.
  - Above setting will be maintained until manually resetting are executed.
- 

4. Click [OK].
5. Restart the system

---

## Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "install.bat" in the following directory.  
\\016\\win\\winnt\\w2k3amd\\video
4. Follow the message to continue the installation.  
If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

## Installing SCSI Controller Driver (N8103-107)

If you use the SCSI Controller N8103-107, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI Controller driver will be installed automatically.

---

## Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS Controller driver will be installed automatically.

---

## **Installing RAID Controller Driver (N8103-115)**

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

- If the RAID Controller (N8103-129/130) is used:  
You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.
- If the RAID Controller (N8103-129/130) is not used:  
Update your system with NEC EXPRESSBUILDER DVD attached to your system.  
The RAID Controller driver will be installed automatically.

## About Windows Activation

Windows Server 2003 x64 Editions must be activated before you can use Windows Server 2003 x64 Editions.

Windows activation process is as follows.

---

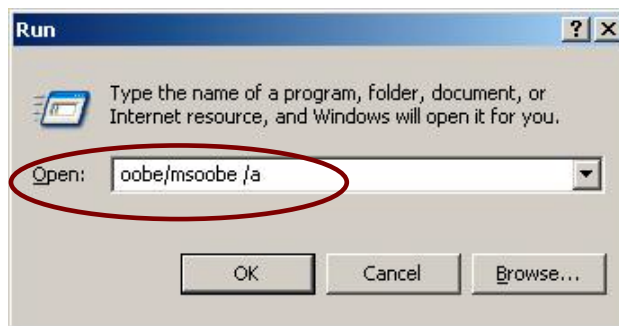
**NOTE:** When you use Windows Server 2003 R2 x64 Editions BackUp CD-ROM, activation process is not needed.

---

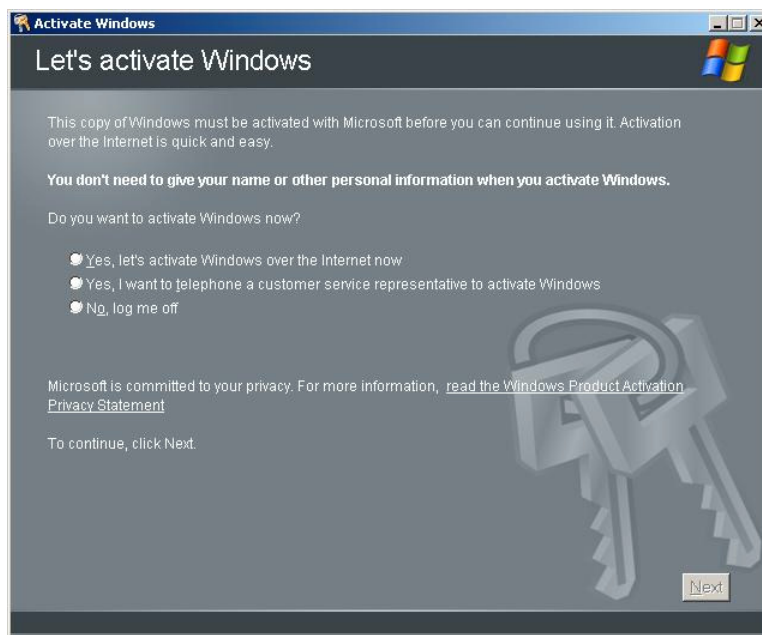
1. Click [Run] on [Start] menu.

Type as follows in the [Open:] box, and click [OK].

oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].





The following screen is displayed.

Generating new Installation ID...

3. Process "Windows activation" according to the following message.

**Activate Windows**

Activate Windows by phone

Just four steps, and you're done...

**Step 1:** Select your location

**Step 2:** Call a number below to speak with a customer service representative:  
Toll-free number:  
Toll number:

**Step 3:** Provide the customer service representative with the following installation ID:  
000000-000000-000000-000000-000000-000000-000000-000000  
(Click **Change product key** only if requested to do so by the customer service representative)

**Step 4:** Type the confirmation ID that the customer service representative gave you:  
A B C D E F G  
- - - - -

To continue, click Next.

Back Change Product key Remind Me Later Next

## **SETTING FOR SOLVING PROBLEMS**

Set for collecting memory dump using the procedure described in Chapter 5.

# Appendix G

---

## Installing Windows Server 2003

This section explains how to install the Windows Server 2003.

### BEFORE INSTALLING WINDOWS SERVER 2003

Read the following notes or information before installing the Windows Server 2003.

---

#### Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

---

**NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

---

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID Controller (256 MB, RAID0/1)\*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)\*
  - N8103-134 RAID Controller (512 MB, RAID0/1/5/6)\*
- Other controllers
  - N8103-104A SAS Controller\*
  - N8103-107 SCSI Controller\*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)\*

\* Option.

---

## **Service Pack Which EXPRESSBUILDER Supports**

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

---

## **Application of Service Pack**

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

---

## **Connecting Hard Disk Drive**

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" in Chapter 5.

---

## **Updating System**

If you modified the Windows system, execute "Update Express5800 system" in the Autorun Menu.

---

## **Re-installing to the Hard Disk which has been upgraded to Dynamic Disk**

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

---

## **Mounting MO Device**

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

---

## **About Removable Media**

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

---

## **Floppy Disk Drive**

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive or Flash FDD if necessary.

---

## About the System Partition Size

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

$$\begin{aligned} &\text{Size necessary to install the system} + \text{Paging File Size} + \text{Dump File Size} \\ &\quad + \text{Application Size} \\ \text{Size necessary to install the system} &= 3500\text{MB (Windows Server 2003 R2)} \\ &= 3500\text{MB (Windows Server 2003 R2 with Service} \\ &\quad \text{Pack 2)} \\ &= 5300\text{MB (Windows Server 2003 R2 + Service Pack} \\ &\quad \text{2)} \\ \text{Paging File Size (Recommended)} &= \text{Mounted Memory Size} * 1.5 \\ \text{Dump file Size} &= \text{Mounted Memory Size} + 12\text{MB} \\ \text{Application Size} &= \text{Required Size} \end{aligned}$$

---

### IMPORTANT:

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

For example, if the mounted memory size is 1GB (1,024MB), the partition size will be calculated by the above formula as follows:

$$\begin{aligned} &3,500\text{MB} + (1,024\text{MB} * 1.5) + (1,024\text{MB} + 12\text{MB}) + \text{Application Size} \\ &= 6,072\text{MB} + \text{Application Size} \end{aligned}$$

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

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.  
(If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

## INSTALLING WINDOWS SERVER 2003

### Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2003 R2 Standard Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise Edition (CD-ROM)
- Windows Server 2003 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-Disk for EXPRESSBUILDER

---

### Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-Disk for EXPRESSBUILDER.

---

**NOTE:** If you have already "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

---

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER with the following two procedures.

#### **Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.**

If you have only NEC Express5800 Server to create Windows Server 2003 OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.

5. Select [Create the OEM-DISK for Windows] from [Tools Menu] step.
6. Connect the Flash FDD or the USB floppy disk drive. (If you use the floppy disk drive, insert a floppy disk into it.)

7. Select [Create an Windows Server 2003 OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.  
Write-protect and attach a label, then keep it safely.

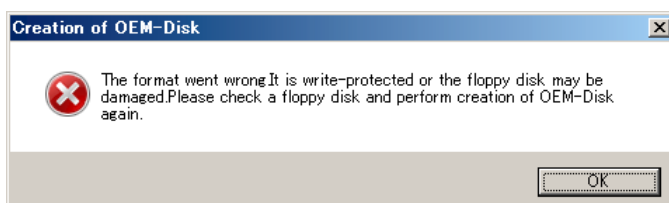
---

**IMPORTANT:** If you have created "OEM-Disk" into the Flash FDD, disconnect it after the NEC EXPRESSBUILDER had been shutdown.

---

---

**NOTE:** If the following message is displayed, the floppy disk is write-protected.



Cancel write-protected state.

If you have already cancelled write-protected state, connect the floppy disk drive again.

---

### Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.  
The Menu will appear.
4. Connect the Flash FDD or the USB floppy disk drive. (If you use the floppy disk drive, insert a floppy disk into it.)
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003].

---

**NOTE:** You can do the same operation with the menu appeared by the Right-click.

---

6. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.  
Write-protect and attach a label, then keep it safely.



---

## Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

---

### IMPORTANT:

- If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
  - If you have created OEM-Disk into the floppy disk, connect the USB floppy disk drive before you start the system.
- 

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the optical disk drive.
3. Press **Ctrl + Alt + Delete** to reset the system.

After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

If no bootable operating system exists on the hard disk drive, this step is unnecessary.

The Windows Server 2003 setup screen will appear.

If the screen is not displayed, **Enter** was not pressed properly.

Begin after turning on the system power again.

4. Press **F6** in a few seconds when the window is in either of the following states.
  - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
  - A screen with a solid blue background is displayed.

---

**IMPORTANT:** There is no visible indication on screen when **F6** has been pressed.

---

5. The following message is displayed.

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices.

Press **S**.

6. The following message is displayed.

Please insert the disk labeled  
manufacturer-supplied hardware support disk  
into Drive A:  
\*Press ENTER when ready.

If you use the floppy disk drive, insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

---

**NOTE:** If you use the Flash FDD, the message above is not displayed.

---

A list of mass storage devices is displayed.

---

**IMPORTANT:** If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.

---

7. Select the proper RAID Controller and press **Enter**.
- [LSI MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)]  
(When N8103-129/130 RAID Controller is installed.)
  - [Promise SuperTrak EX SAS 6G RAID Controller-32bits platform]  
(When N8103-134 RAID Controller is installed.)

The screen of Step 5 is displayed.

8. <If the SCSI Controller N8103-107 is connected>

Press **S**.

---

**IMPORTANT:**

- Insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive. If the floppy disk drive has already contained Windows Server 2003 OEM-Disk for EXPRESSBUILDER, you do not need to insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER.
  - If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
- 

The screen of Step 6 is displayed. Press **Enter**, and go to Step 9.

<If the SCSI Controller N8103-107 is not connected>

Go to Step 10.

9. A list of mass storage devices is displayed.

Select the [Adaptec Ultra320 SCSI Cards (Windows 32-bit)] and press **Enter**.

---

**IMPORTANT:** If the following message is displayed when you use the N8103-107 SCSI controller, press **S**.

The driver you provided seems to be newer than the Windows default driver. Windows already has a driver that you can use for "Adaptec Ultra320 SCSI Cards (Windows 32-bit)". Unless the device manufacturer prefers that you use the driver on the floppy disk, you should use the driver in Windows.

---

The screen of Step 5 is displayed.

Go to Step 10.

10. <If the SAS Controller N8103-104A is connected>

Press **S**.

---

**IMPORTANT:**

- Insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive. If the floppy disk drive has already contained Windows Server 2003 OEM-Disk for EXPRESSBUILDER, you do not need to insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER.
  - If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
- 

The screen of Step 6 is displayed. Press **Enter**, and go to Step 11.

<If the SAS Controller N8103-104A is not connected>

Press **Enter**, and go to Step 12.

11. A list of mass storage devices is displayed.

Select the [LSI Fusion-MPT SAS Driver (Server 2003 32-bit)] and press **Enter**.

The screen of Step 5 is displayed.

Press **Enter**, and go to Step 12.

12. When the following message is shown, press **Enter** to start "Welcome to Setup".



---

**IMPORTANT:** If you install Windows Server 2003 on the hard disk larger than 2,097,152MB(2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

---

13. When the installation of Windows Server 2003 has finished, the system reboots automatically.
14. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.



---

**IMPORTANT:**

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.
  - You can install Microsoft Windows Server 2003 R2 DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 DISC 2. In this case, note that the [Windows Setup] screen is not displayed.
- 

15. Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the optical disk drive. Confirm the parameters and click [OK].
16. When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the optical disk drive, and restart the system.
17. When the installation has completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of manual.

---

## Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

---

### NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
  - COA label may be attached to your server.
- 

---

## Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

Service Pack 2 need not be applied again when Windows Server 2003 CD-ROM which Service Pack 2 is included is used and it is installed.

Go to the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

---

**IMPORTANT:** In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

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

---

**NOTE:** If you use Windows Server 2003 CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

---

## Application Process of the Hotfix (KB921411)

Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

<When the English version of Windows Server 2003 R2 is used>

\016\win\winnt\dotnet\qfe\enu\kb921411.exe

<When the Simplified Chinese version of Windows Server 2003 R2 is used>

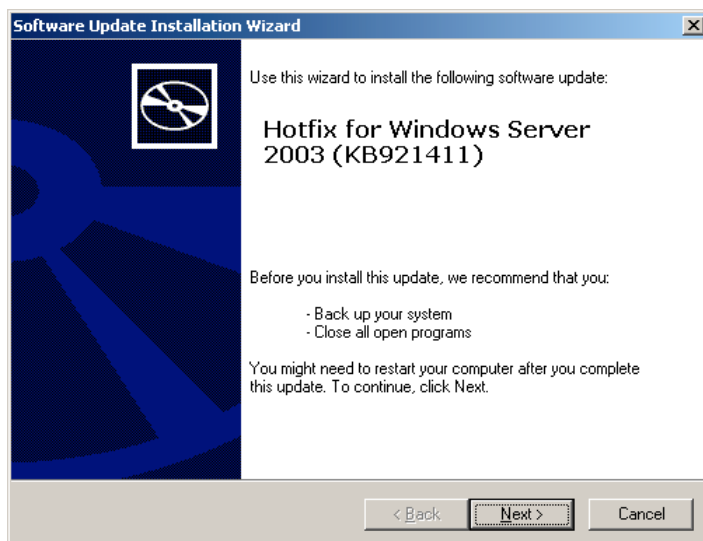
\016\win\winnt\dotnet\qfe\chs\kb921411.exe

<When the Traditional Chinese version of Windows Server 2003 R2 is used>

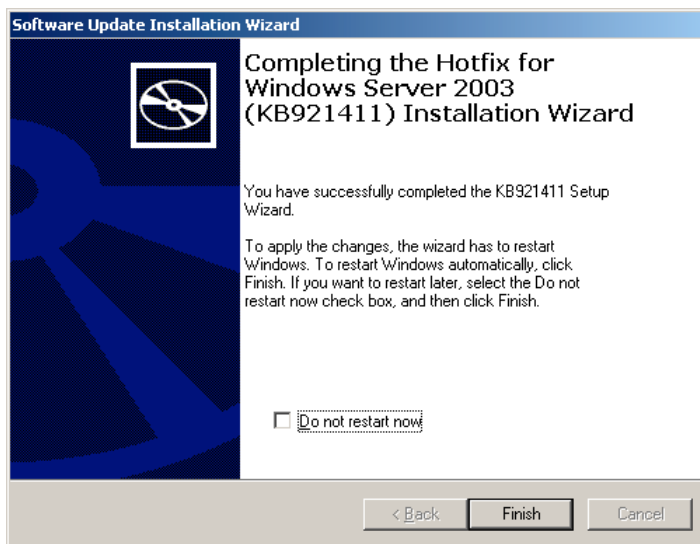
\016\win\winnt\dotnet\qfe\cht\kb921411.exe

4. When the following message is displayed, click [Next].

After that, follow the message to continue the process.



5. When the following message is displayed, make sure to click [Finish] to restart the system.



With that, application process of the Hotfix (KB921411) is finished.

## Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows Server 2003 (KB921411) had been applied.

---

**NOTE:** If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

---

1. Log on to the system with the account that has administrative privilege (e.g. administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of server.  
The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

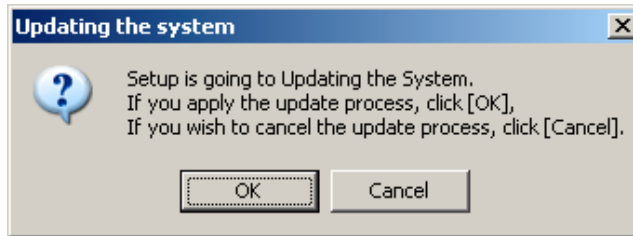
---

**NOTE:** Right-clicking on the Autorun Menu produces the same outcome.

---

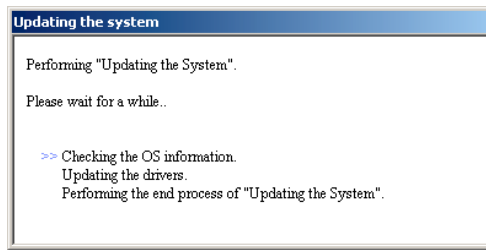
4. Follow the message of the screen to proceed the application.

[OK] dialog box will be displayed.

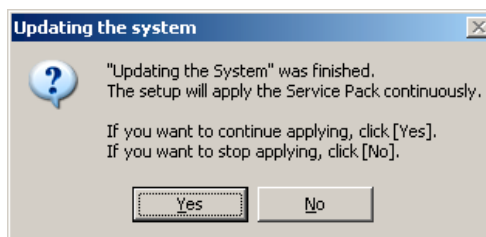


---

**NOTE:** The following box appears during the update if you have deployed a full installation of Windows Server 2003.  
Wait until the update completes.



- 
5. When the following message appears, "Updating the System" was finished.

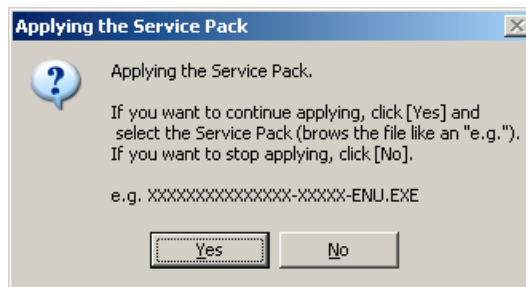


When you apply Service Pack: Click [Yes], and then go to Step 6.

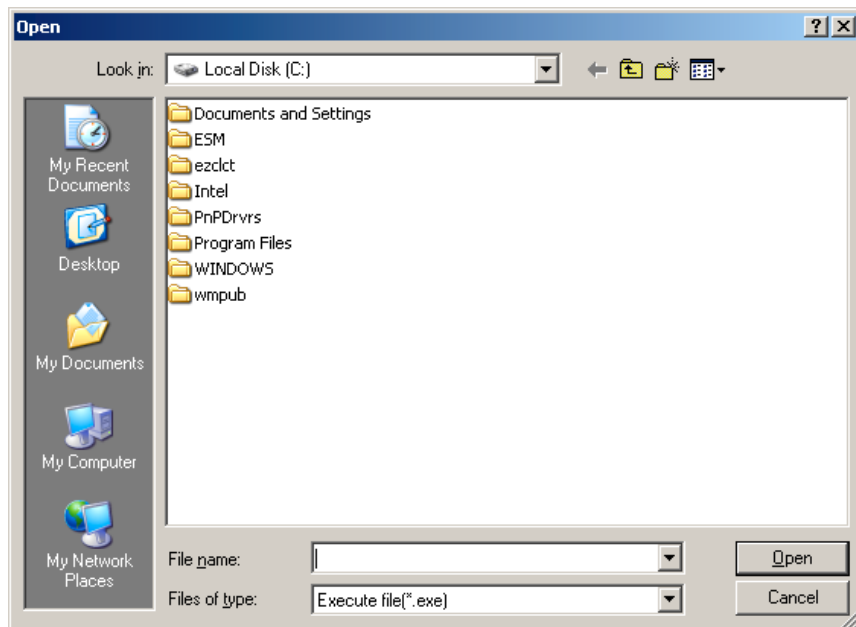
When you don't apply Service Pack: Click [No], and then go to Step 8.



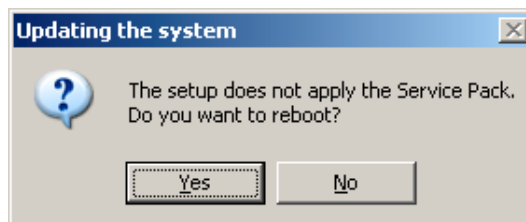
6. When the following message appears, click [Yes].



7. When the following message appears, select a Service Pack and click [Open] and then, according to a message, please apply it.



8. When the following message appears, click [Yes] to restart the system.



The system has been updated.

## Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows Server 2003 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows Server 2003 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].
  - ☐ Hide extensions for know file type
  - ☐ Hide protected operating system files [Recommended]

When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].

4. Make sure of the files.

Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

If you can not found them, copy the files according to the following process.

- (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.
- (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".

5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows Server 2003 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

With that, process is finished.

## DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

---

### PROSet

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

Utilizing PROSet enables the following items:

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

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

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
2. The [Windows Explorer] dialog starts.
  - \* The procedure in the case of the standard start menu  
Click Start menu and click [Windows Explorer].
  - \* The procedure in the case of the classic start menu  
Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "dxsetup.exe" in the following directory.  
\\016\win\winnt\dotnet\r148\apps\prosetdx\win32  
The [IntelR PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finished].
9. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

## Network Driver

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

### When PROSet is not installed

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system

### When PROSet is installed

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system

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

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

---

**NOTE:** We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setup for Trouble Process" later in this document.

---

---

### **Optional Network Board Driver (N8104-121/125A/126)**

See Chapter 5, "Optional Network Board Driver (N8104-121/125A/126)" for re-installing the optional network board driver.

---

### **Optional Network Board Driver (N8104-123A)**

See Chapter 5, "Optional Network Board Driver (N8104-123A)".

---

## Setup Team

See Chapter 5, "Setup Team" for re-setting the Team.

---

## Setting WOL

Refer to the following procedure to enable WOL.

### When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	ON or OFF	OFF

---

#### IMPORTANT:

- If "Allow this device to bring..." is set to "ON", WOL by DirectedPacket (\*1) or MagicPacket will be available on Standby and Hibernate state.
  - WOL by Directed Packet is not available on Shutdown state.
- \*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- 

4. Click [Advanced] tab and point to [Enable PME].
5. Set in [Value] as follows.
  - Using WOL: ON
  - Not using WOL: OFF
6. Click [OK].
7. Restart the system

**When PROSet is installed**

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576NS Gigabit Network Connection (#2, #3, #4)] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Enabled WOL	Disabled WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

---

**IMPORTANT:**

- Directed Packet (\*1) will not wake up the system on Shutdown state even "Wake On Directed Packet" is set to "ON".  
Only on Standby or Hibernate state will wake up by a Directed Packet.
  - The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.  
  
\*1 Packet with the Ethernet address of the adapter in ethernet header or Packet with an IP address assigned to the adapter in IP header.
- 

---

**NOTES:**

- [Power Saver Options] setting is not necessary to change.
  - Above setting will be maintained until manually resetting are executed.
- 

4. Click [OK].
5. Restart the system

---

## Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.  
If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "install.bat" in the following directory.  
\\016\\win\\winnt\\dotnet\\video
4. Follow the message to continue the installation.  
If the dialog message "Digital Signature could not be found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

---

## Installing SCSI Controller Driver (N8103-107)

If you use the SCSI Controller N8103-107, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI Controller driver will be installed automatically.

---

## Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS Controller driver will be installed automatically.



---

## **Installing RAID Controller Driver (N8103-115)**

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

- If the RAID Controller (N8103-129/130) is used:  
You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.
- If the RAID Controller (N8103-129/130) is not used:  
Update your system with NEC EXPRESSBUILDER DVD attached to your system.  
The RAID Controller driver will be installed automatically.

## About Windows Activation

Windows Server 2003 must be activated before you can use Windows Server 2003.

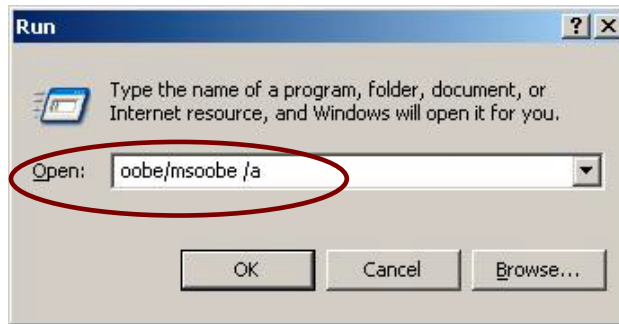
Windows activation process is as follows.

---

**NOTE:** When you use Windows Server 2003 R2 BackUp CD-ROM, activation process is not needed.

---

1. Click [Run] on [Start] menu.  
Type as follows in the [Open:] box, and click [OK].  
oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].



The following screen is displayed.

Generating new Installation ID...

3. Process "Windows activation" according to the following message.

**Activate Windows**

### Activate Windows by phone

Just four steps, and you're done...

**Step 1:**

**Step 2:** Call a number below to speak with a customer service representative:  
Toll-free number:  
Toll number:

**Step 3:** Provide the customer service representative with the following installation ID:  
**000000-000000-000000-000000-000000-000000-000000-000000**  
(Click **Change product key** only if requested to do so by the customer service representative)

**Step 4:** Type the confirmation ID that the customer service representative gave you:

A B C D E F G

-  -  -  -  -  -

To continue, click Next.

---

## The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

---

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

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

Microsoft Knowledge Base - Article ID: 291988  
"A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

---

In Windows Server 2003 system, the PAE option can be set by editing boot.ini.

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

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

<Example of Boot.ini file>

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

This is the end of editing Boot.ini file.

---

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

---

## **SETTING FOR SOLVING PROBLEMS**

Set for collecting memory dump using the procedure described in Chapter 5.

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# Appendix H

---

## Using a Client Computer Which Has a CD Drive

The NEC EXPRESSBUILDER disk is DVD so that a client computer which you want to use for managing the server needs a DVD drive.

If you want to install the management software of EXPRESSBUILDER to the client without the DVD drive, make a CD-R from EXPRESSBUILDER DVD according to the following steps.

---

**NOTE:** This procedure can copy only one CD at the purpose of installing the management software to the client.

---

1. Insert the EXPRESSBUILDER DVD to the computer which has a DVD drive.
2. If Autorun menu appears, close the menu.
3. Copy the below files of EXPRESSBUILDER to a hard disk by using Explorer.

```
\(root folder) : copy version.xml
|
|016
|
|---\ar_menu : copy this sub-folder
|
|---\doc : copy this sub-folder
|
|---\win : copy this sub-folder
```

4. Delete the ar\_menu\autorun\_menu.xml on the hard disk, and rename the ar\_menu\autorun\_en.xml on the hard disk to the autorun\_menu.xml.
5. Copy the above files/folders to a CD-R.  
Match the root folder when you burn a CD-R.
6. Delete the files/folders that you copied at step 3.
7. Insert the CD-R to a client computer which you want to install the management software.
8. Kick the below file of the CD-R by using Explorer.

```
\016\ar_menu\autorun_menu.exe    (for Windows 32 bit edition)
autorun_menu_x64.exe             (for Windows 64 bit edition)
```

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# Appendix I

---

## Accessing Power and Performance Data

This chapter describes how to collect the power and performance data, including power consumption, inlet air temperature, and processor utilization of NEC Express server in usual operation. These are defined in ENERGY STAR® Program Requirements for Computer Servers and must be available to users.

### Windows

The sample program shown below is verified to be run normally on Windows Server® 2008 Enterprise 32bit (x86) Edition.

---

### Power Consumption

Run the following commands to access power consumption readings on BMC (Baseboard Management Controller) via IPMI (Intelligent Platform Management Interface).

Network Function Code: 3Eh (Controller-specific OEM)

Command Code: 0Bh (Get Current Sensor Data)

Shown below is a sample file created by Visual Basic Script (e.g. Power.vbs).

```
' Start Script
Option Explicit

' Prepare for IPMI Driver
Dim osvc, oclass
Dim oinstance, oipmi
set osvc = getobject("winmgmts:root\wmi")
set oclass = osvc.get("microsoft_ipmi")
for each oinstance in osvc.instancesof("microsoft_ipmi")
    set oipmi = oinstance
next

'Format the IPMI command request
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
oinparams.networkfunction = &h3e ' OEM NetworkFunction
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h0b ' Get Current Sensor Data Command
oinparams.requestdatasize = 0
```

```
'call the driver
Dim outparams
set outparams = oipmi.execmethod_("requestresponse",oinparams)

WScript.Echo " Completion Code = 0x" & hex(outparams.Completioncode)
If outparams.Completioncode <> 0 Then
    Wscript.Echo " Not supported"
Else
    'WScript.Echo " Data LS Byte    = 0x" & hex(outparams.ResponseData(1))
    'WScript.Echo " Data MS Byte    = 0x" & hex(outparams.ResponseData(2))
    WScript.Echo " Power Consumption = " & outparams.ResponseData(2)*256 + _
        outparams.ResponseData(1) & " watts"
End If
' End Script
```

### Command Line (Example)

```
C:\VBS> cscript //nologo Power.vbs
```

### Execution Result (Example)

```
Completion Code = 0x0
Power Consumption = 528 watts
```

The power consumption is 528 watts.

---

**NOTE:** Power consumption may not be collected depending on power supply configuration of the server. In such a case, Completion Code is shown as 0xC1 or 0xCB.

---

---

## Inlet Air Temperature

Run the following IPMI commands to access the SDR (Sensor Data Record) and obtain an inlet air temperature data.

Get SDR Repository Info

Reserve SDR Repository

Get SDR

Get Sensor Reading

Shown below is an example of the file created by Visual Basic Script (e.g. Sensor.vbs).

```
'Start Script
Option Explicit

' Prepare for MS IPMI Driver
Dim osvc, oclass
Dim oinstance, oipmi
set osvc = getobject("winmgmts:root\wmi")
set oclass = osvc.get("microsoft_ipmi")
for each oinstance in osvc.instancesof("microsoft_ipmi")
    set oipmi = oinstance
next

' (Get SDR Repository Info)
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
' (Get SDR Repository Info)
oinparams.networkfunction = &ha
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h20
oinparams.requestdatasize = 0
' Fire IPMI Command
Dim outparams
Dim i, RecordCount
set outparams = oipmi.execmethod_("requestresponse",oinparams)
RecordCount = outparams.ResponseData(3)*256 + outparams.ResponseData(2)

' (Reserve SDR Repository)
oinparams.networkfunction = &ha
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h22
oinparams.requestdatasize = 0
Dim Reserve_LS, Reserve_MS
set outparams = oipmi.execmethod_("requestresponse",oinparams)
Reserve_LS = outparams.ResponseData(1)
Reserve_MS = outparams.ResponseData(2)
```

## I-4 Accessing Power and Performance Data

---

```
' (Get SDR) for each record
Dim Record_LS, Record_MS, Offset, Length
Dim cnt, sensorNum, sensorType
' First Record
Record_LS = 0
Record_MS = 0
For cnt = 0 to RecordCount-1
    Offset = 0
    Length = 9
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(Reserve_LS, Reserve_MS, Record_LS, Record_MS, Offset, Length)
h)
    oinparams.requestdatasize = 6
    set outparams = oipmi.execmethod("requestresponse", oinparams)
    If outparams.Completioncode = 0 Then
        If outparams.ResponseData(6) = 1 Then ' Full Sensor Record
            call GetSensorType(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorType)
            If sensorType = 1 Then ' Temperature
                WScript.Echo "===== "
                call GetIDString(Reserve_LS, Reserve_MS, Record_LS, Record_MS)
                WScript.Echo " Sensor Type = Temperature"
                sensorNum = outparams.ResponseData(10)
                call GetSensor(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorNum)
            End If
        End If
        Record_LS = outparams.ResponseData(1)
        Record_MS = outparams.ResponseData(2)
        If Record_LS = &hff And Record_MS = &hff Then
            exit For
        End If
    End If
Next

Sub GetSensorType(rv_ls, rv_ms, rc_ls, rc_ms, sensorType)
    Dim outtmp
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 12, 2)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod("requestresponse", oinparams)
    sensorType = outtmp.ResponseData(3)
End Sub
```

```

Sub GetSensor(rv_ls, rv_ms, rc_ls, rc_ms, sensorNum)
    Dim outtmp, units1, units2, sensortype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 20, 14)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse",oinparams)

    units1 = outtmp.ResponseData(3)
    Select Case outtmp.ResponseData(4)
        case 0: units2 = "unspecified"
        case 1: units2 = "degrees C"
        case 6: units2 = "Watts"
        case else: units2 = "Refer to IPMI Specification: Type=0x" _
            & hex(outtmp.ResponseData(4))
    End Select

    ' (Get Sensor Reading)
    Dim sensorData, rawData, currentValue
    oinparams.networkfunction = &h4
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h2d
    oinparams.requestdata = array(sensorNum)
    oinparams.requestdatasize = 1
    set sensorData = oipmi.execmethod_("requestresponse",oinparams)
    If sensorData.Completioncode <> 0 Then
        WScript.Echo " Sensor Not Available"
        exit Sub
    End If
    rawData = sensorData.ResponseData(1)
    If units1 and &h40 Then
        If rawData And &h80 Then
            rawData = rawData Xor &hff
        End If
    ElseIf units1 and &h80 Then
        call get2complement(rawData, rawData, 8)
    End If
    If (sensorData.ResponseData(2) And &h80) = 0 Or _
        (sensorData.ResponseData(2) And &h40) = 0 Or _
        (sensorData.ResponseData(2) And &h20) Then
        WScript.Echo " Event Status: Unavailable"
    Else
        WScript.Echo " Event Status: ok"
        Dim M,B,k1,k2
        Dim ret
        M = (outtmp.ResponseData(8) And &hc0) * 4 + outtmp.ResponseData(7)
        B = (outtmp.ResponseData(10) And &hc0) * 4 + outtmp.ResponseData(9)
        call get2complement(M, M, 10)
        call get2complement(B, B, 10)
        call get2complement(outtmp.ResponseData(12) And &h0f, k1, 4)
        call get2complement((outtmp.ResponseData(12) And &hf0)/16, k2, 4)
        currentValue = CDb1 (((M * rawData) + (B * (10 ^ k1))) * (10 ^ k2))
        WScript.Echo " Current Value = " & currentValue & " " & units2
    End If
End Sub

```

```

Sub get2complement(raw, rv, bit)
  Select Case bit
    case 4:
      If raw And &h8 Then
        rv = 0 - ((&h10 - raw) and &h0f)
      Else
        rv = raw
      End If
    case 8:
      If raw And &h80 Then
        rv = 0 - ((&h100 - raw) and &h0ff)
      Else
        rv = raw
      End If
    case 10:
      If raw And &h200 Then
        rv = 0 - ((&h400 - raw) and &h3ff)
      Else
        rv = raw
      End If
  End Select
End Sub

Sub GetIDString(rv_ls, rv_ms, rc_ls, rc_ms)
  Dim tmpMessage
  Dim outsdridstringtype
  oinparams.networkfunction = &ha
  oinparams.lun = 0
  oinparams.responderaddress = &h20
  oinparams.command = &h23
  oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 47, 1)
  oinparams.requestdatasize = 6
  set outsdridstringtype = oipmi.execmethod_("requestresponse",oinparams)

  Dim outsdridstring
  Dim idlength, j
  idlength = outsdridstringtype.ResponseData(3) and 31
  oinparams.networkfunction = &ha
  oinparams.lun = 0
  oinparams.responderaddress = &h20
  oinparams.command = &h23
  oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 48, idlength)
  oinparams.requestdatasize = 6
  set outsdridstring = oipmi.execmethod_("requestresponse",oinparams)
  tmpMessage = " ID String = "
  For j = 3 to idlength + 2
    tmpMessage = tmpMessage & Chr(outsdridstring.ResponseData(j))
  Next
  WScript.Echo tmpMessage
End Sub
'End Script

```

## Command Line (Example)

```
C:\VBS> cscript //nologo Sensor.vbs
```

## Execution Result (Example)

```
=====
ID String = Front Panel Temp
Sensor Type = Temperature
Current Value = 27 degrees C
=====
ID String = Baseboard Temp1
Sensor Type = Temperature
Current Value = 50 degrees C
=====
ID String = Baseboard Temp2
Sensor Type = Temperature
Current Value = 53 degrees C
=====
ID String = IO Riser Temp
Sensor Type = Temperature
Current Value = 43 degrees C
=====
ID String = M1 DIMM 1A Temp
Sensor Type = Temperature
Current Value = 37 degrees C
=====
:
:
```

Inlet air temperature data is obtained from the sensor that contains the character string "Amb", "Ambient", or "Front Panel" in its ID String.

In the example above, the data is obtained from "Front Panel Temp" sensor, and the sensor reading is 27°C.

### Processor Utilization

To collect the utilization of processors, use Win32\_PerfFormattedData\_PerfOS\_Processor class provided with the Windows OS.

Shown below is a sample file created by Visual Basic Script (e.g. Proc.vbs).

In this script, the processor utilization is collected every 30 seconds.

```
' Start Script
strComputer = "."
Set objWMIService = GetObject("winmgmts:"
    & "{impersonationLevel=impersonate}!\\" & strComputer & "\root\cimv2")
set objRefresher = CreateObject("WbemScripting.Swbemrefresher")
Set objProcessor = objRefresher.AddEnum _
    (objWMIService, "Win32_PerfFormattedData_PerfOS_Processor").objectSet
objRefresher.Refresh
Dim first
first = true
Do
    For each intProcessorUse in objProcessor
        If first Then
            If intProcessorUse.Name = "_Total" Then
                first = false
            End If
        else
            Wscript.Echo "Proc" & intProcessorUse.Name & " : " & _
                "PercentProcessorTime=" & _
                intProcessorUse.PercentProcessorTime
        End If
    Next
    Wscript.Sleep 30*1000 'sleep 30 * 1000ms
    objRefresher.Refresh
Loop
' End Script
```

### Command Line (Example)

```
C:\VBS> cscript //nologo Proc.vbs
```



**Execution Result (Example)**

```
Proc0 : PercentProcessorTime=9
Proc1 : PercentProcessorTime=0
Proc2 : PercentProcessorTime=0
Proc3 : PercentProcessorTime=0
Proc4 : PercentProcessorTime=0
Proc5 : PercentProcessorTime=1
Proc6 : PercentProcessorTime=6
Proc7 : PercentProcessorTime=41
Proc8 : PercentProcessorTime=0
Proc9 : PercentProcessorTime=0
Proc10 : PercentProcessorTime=0
Proc11 : PercentProcessorTime=0
Proc12 : PercentProcessorTime=0
Proc13 : PercentProcessorTime=7
Proc14 : PercentProcessorTime=20
Proc15 : PercentProcessorTime=63
:
:
Proc_Total : PercentProcessorTime=8
```

Proc0 to Proc64 represents utilization of individual processor, and Proc\_Total represents utilization of overall processors.

---

**NOTE:** The processor number indicates a logical CPU number, not a physical CPU number. The maximum processor number depends on processor type and how they are configured.

---

## Linux

The sample program shown below is verified to be run normally on Red Hat Enterprise Linux 5.5.

---

### Power Consumption

Run the following commands to access power consumption readings on BMC (Baseboard Management Controller) via IPMI (Intelligent Platform Management Interface).

Network Function Code: 3Eh (Controller-specific OEM)

Command Code: 0Bh (Get Current Sensor Data)

Shown below is a sample file created by the open software, OpenIPMI driver and IPMITool. With Red Hat Enterprise Linux 5.5, the OpenIPMI is included in Inbox driver. The IPMITool is included in OpenIPMI-tools-[version].rpm.

### Command Line (Example)

```
# ipmitool raw 0x3e 0x0b
```

### Execution Result (Example)

```
E0 01
```

The power consumption is obtained from 2 bytes (16-bit) data.

The lower byte: 0x01 [15:8]

The upper byte: 0xE0 [7:0]

From the execution result, power consumption is calculated as follows:

Power consumption = 0x01E0 (hexadecimal value) = 480 (decimal value) watts.

---

**NOTE:** Power consumption may not be collected depending on power supply configuration of the server. In such a case, a message as shown below will be displayed.

```
Unable to send RAW command (channel=0x0 netfn=0x3e lun=0x0 cmd=0xb  
rsp=0xc1): Invalid Command  
or  
Unable to send RAW command (channel=0x0 netfn=0x3e lun=0x0 cmd=0xb  
rsp=0xcb): Requested sensor, data, or record not found
```

---

## Inlet Air Temperature

Run the following IPMI command to access the BMC and obtain an inlet air temperature data.

Shown below is a sample file created by the open software, OpenIPMI driver and IPMITool. With Red Hat Enterprise Linux 5.5, the OpenIPMI is included in Inbox driver. The IPMITool is included in OpenIPMI-tools-[version].rpm.

### Command Line (Example)

```
# ipmitool sdr type Temperature
```

### Execution Result (Example)

Front Panel Temp	30h	ok	12.1	26 degrees C
Baseboard Temp1	31h	ok	7.1	49 degrees C
Baseboard Temp2	32h	ok	7.1	51 degrees C
IO Riser Temp	33h	ok	11.1	41 degrees C
M1 DIMM 1A Temp	3Fh	ok	32.1	37 degrees C
M1 DIMM 1C Temp	40h	ok	32.2	33 degrees C
M1 DIMM 1B Temp	41h	ok	32.3	35 degrees C
M1 DIMM 1D Temp	42h	ok	32.4	33 degrees C
M1 DIMM 2A Temp	43h	ns	32.5	No Reading
M1 DIMM 2C Temp	44h	ns	32.6	No Reading
:				
:				

Explanation of output is as follows:

First column: Sensor name

Second column: Sensor number

Third column: Sensor status

"ok" indicates the current temperature does not reach the threshold value to issue a warning or alarm.

Fourth column: Monitored location

Fifth column: Current value

Inlet air temperature data is obtained from the sensor that contains the character string "Front Panel Temp" in its ID String.

In the example above, the data is obtained from "Front Panel Temp" sensor, and the sensor reading is 26°C.

---

## Processor Utilization

To access the processor utilization data, use the `mpstat` command that is included in Linux distribution.

With Red Hat Enterprise Linux 5.5, the `mpstat` command is included in `sysstat-[version].rpm`.

### Command Line (Example)

```
# mpstat -P ALL
```

### Execution Result (Example)

```
Linux 2.6.18-164.el5 (localhost.localdomain) 2010/01/05
```

	CPU	%user	%nice	%sys	%iowait	%irq	%soft	%steal	%idle	intr/s
16:01:09	all	0.07	0.00	0.03	0.18	0.00	0.00	0.00	99.71	1148.94
16:01:09	0	0.50	0.00	0.67	1.81	0.00	0.02	0.00	96.99	1107.74
16:01:09	1	0.03	0.00	0.11	0.07	0.00	0.00	0.00	99.79	8.85
16:01:09	2	0.10	0.00	0.04	1.13	0.00	0.00	0.00	98.73	2.14
16:01:09	3	1.17	0.00	0.09	0.02	0.00	0.00	0.00	98.72	18.86
16:01:09	4	0.00	0.00	0.01	0.00	0.00	0.00	0.00	99.99	0.00
16:01:09	5	0.00	0.00	0.01	0.01	0.00	0.00	0.00	99.98	0.00
16:01:09	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.99	0.00
16:01:09	7	0.01	0.00	0.01	0.02	0.00	0.00	0.00	99.96	0.00
16:01:09	8	0.00	0.00	0.06	0.02	0.00	0.00	0.00	99.92	0.00
16:01:09	9	0.02	0.00	0.02	0.03	0.00	0.00	0.00	99.93	0.00
16:01:09	10	0.00	0.00	0.01	0.02	0.00	0.00	0.00	99.97	0.00
16:01:09	11	0.00	0.00	0.01	0.00	0.00	0.00	0.00	99.98	0.00
16:01:09	12	0.01	0.00	0.01	0.03	0.00	0.00	0.00	99.95	0.00
16:01:09	13	0.02	0.00	0.01	0.01	0.00	0.00	0.00	99.96	0.00
16:01:09	14	0.22	0.00	0.03	0.03	0.00	0.00	0.00	99.71	1.79
16:01:09	15	0.02	0.00	0.01	0.00	0.00	0.00	0.00	99.97	0.00
16:01:09	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.99	0.00
	:									
	:									

The processor utilization percentage would be calculated to be 100% minus the "%idle" data.

# Appendix J

---

## Product Configuration Record Table

Use this table for information about setup and system environment change.

### Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
Processor						
#1	Clock		Serial No.		Date Installed	
#2	Clock		Serial No.		Date Installed	
#3	Clock		Serial No.		Date Installed	
#4	Clock		Serial No.		Date Installed	
Memory Backboard 1						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	
Memory Backboard 2						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	
Memory Backboard 3						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	

## J-2 Product Configuration Record Table

Memory Backboard 4						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	
Memory Backboard 5						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	
Memory Backboard 6						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	
Memory Backboard 7						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	
Memory Backboard 8						
Slot 1A	Size		Serial No.		Date Installed	
Slot 2A	Size		Serial No.		Date Installed	
Slot 1B	Size		Serial No.		Date Installed	
Slot 2B	Size		Serial No.		Date Installed	
Slot 1C	Size		Serial No.		Date Installed	
Slot 2C	Size		Serial No.		Date Installed	
Slot 1D	Size		Serial No.		Date Installed	
Slot 2D	Size		Serial No.		Date Installed	

Hard Disk Drive						
Slot 0	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 4	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 5	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 6	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Slot 7	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Backup Device						
Slot 1 (Optional)	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #1						
	Model name				Serial No.	
					Date Installed	
PCI Slot #2						
	Model name				Serial No.	
					Date Installed	
PCI Slot #3						
	Model name				Serial No.	
					Date Installed	
PCI Slot #4						
	Model name				Serial No.	
					Date Installed	
PCI Slot #5						
	Model name				Serial No.	
					Date Installed	
PCI Slot #6						
	Model name				Serial No.	
					Date Installed	
PCI Slot #7						
	Model name				Serial No.	
					Date Installed	

#### J-4 Product Configuration Record Table

---

PCI Slot #8						
	Model name				Serial No.	
					Date Installed	
PCI Slot #9						
	Model name				Serial No.	
					Date Installed	
PCI Slot #10						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Display						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Keyboard						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Mouse						
	Model name				Serial No.	
	Manufacturer				Date Installed	



**Software**

Firmware version	
OS	Name: Version:
Application of RUR media	<input type="checkbox"/> Apply Name: Version:
File system	<input type="checkbox"/> FAT <input type="checkbox"/> HPFS <input type="checkbox"/> NTFS <input type="checkbox"/> Others ( )
Bundled software installed	
Licensed software installed	
Application running when a failure occurred	

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## **Important Instructions**

### **NEC Express5800/R140b-4**

Thank you for choosing NEC Express5800 series servers.

This document describes important instructions for use in the User's Guide. Please read all the instructions below and observe caution when using your system.  
Keep this paper carefully for quick reference.

#### **Caution**

#### **Multiple Power Supply Sources**

- This unit may have more than one power supply source. Before servicing, disconnect all power sources.

#### **Instructions**

#### **Internal Hard Disk Drive Locate Instruction**

- If the internal Hard Disk Drive failed, and you can confirm the location of the slot with the locate command\* for the failed Hard Disk Drive from the RAID system management utility, following events may be logged. However, the Hard Disk Drive is still unavailable.
  - ESMPRO/Server Manager Alert Viewer : "Drive Fault Recovered"
  - ESRAS Utility : "Drive Slot(Bay) Error Recovery: Drive Fault"
- Before confirming the internal Hard Disk Drive status, please be sure off the location identification (turn off the DISK Error lamp), and confirm all kind of event logs.

If the Internal Hard Disk Drive failed, following events may be logged on ESMPRO/Server Manager Alert Viewer and ESRAS Utility.

ESMPRO/Server Manager Alert Viewer : "Drive Fault"  
ESRAS Utility : "Drive Slot(Bay) Error: Drive Fault"

On this occasion, you can confirm the location of the slot with the locate command from the RAID system management utility, "Recovery" events are logged as above. However, the Hard Disk Drive is still unavailable. After that, if the location identification feature is off (DISK Error lamp is turned off), "Fault" events shown correct condition are logged again.

\*Locate command is function to turn on the DISK Error lamp for specific Hard Disk Drive from RAID system management utility. DISK Error lamp is turned off automatically after a fixed period of time. And specific RAID controller can also turn off the DISK Error lamp.



## **STATUS lamp at the hard disk drive failure**

STATUS lamp of front panel of the server is turned off during the Hard Disk Drive Rebuilding. Check the Disk error lamp of each hard disk drive in the 2.5type disk bay in stead of checking STATUS lamp.

## **Field Replaceable Unit(FRU) for Processor(CPU)**

Field Replaceable Unit(FRU) is sometime shown like follows from ESRAS utility. But it has no problem.

-----  
No Information.  
The Field Replaceable Unit information is broken.  
Incorrect checksum  
-----

Please confirm Processor(CPU)'s FRU from ESM server manager or Maintenance Utility.

## **Instructions on the use of Adapter Teaming:**

When you use Adapter Teaming on network adapter on mother board with Windows Server 2008, Windows Server 2008 x64 Edition or Windows Server 2008 R2, Keep in mind the following restrictions.

- You cannot use the function of Receive Load Balancing (RLB) with Adaptive Load Balancing (ALB).  
After setting up the LAN team, Set RLB to "Disabled" as below.
  - (1) Open [Control Panel] -> [Device Manager]
  - (2) Right click the Adapter Teaming under [Network adapters], then open [properties].
  - (3) Select [Advanced] tab, then change [Receive Load Balancing] to [Disabled].
  - (4) Click [OK].
  - (5) Reboot your system.