Maintenance Guide (Windows)

NEC Express Server
Express5800 Series

Express5800/R310e-E4
Express5800/R320e-E4
Express5800/R320e-M4
Express5800/R310f-E4
Express5800/R320f-E4
Express5800/R320f-M4
EXP320R, EXP320S

Chapter 1 Maintenance

Chapter 2 Configuring and Upgrading the System

Chapter 3 Useful Features

Manuals

Manuals for this product are provided as booklets (📖) and as electronic manuals (📄) in the EXPRESSBUILDER DVD (💿).

💿 EXPRESSBUILDER

Safety Precautions and Regulatory Notices	
	Describes points of caution to ensure the safe use of this server. **Read these cautions before using this server.**
User's Guide	
Chapter 1: General Description	Overviews, names, and functions of the server components
Chapter 2: Preparations	Installation of additional options, connection of peripheral devices, and suitable location for this server
Chapter 3: Setup	System BIOS configurations and summary of EXPRESSBUILDER
Chapter 4: Appendix	Specifications
Installation Guide	
Chapter 1: Installing Operating System	Installation of OS and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, BMC Configuration, and other bundled software
Maintenance Guide	
Chapter 1: Maintenance	Server maintenance, error messages, and troubleshooting
Chapter 2 Configuring and Upgrading the System	Changing hardware configuration, installing additional devices and setting up management tools
Chapter 3: Useful Features	The detail of system BIOS settings, SAS Configuration Utility, and EXPRESSBUILDER
Other manuals	
The detail of NEC ESMPRO, BMC Configuration, and other features.	

Contents

Conventions Used in This Document

Signs and symbols for safety

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

⚠ **WARNING**   Indicates there is a risk of death or serious personal injury

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

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

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

(Example in this guide)

Symbol to draw attention

Description of a warning

Term indicating a degree of danger

⚠ **WARNING**

Use only the specified outlet

Use a grounded outlet with the specified voltage. Use of an improper power source may cause a fire or a power leak.
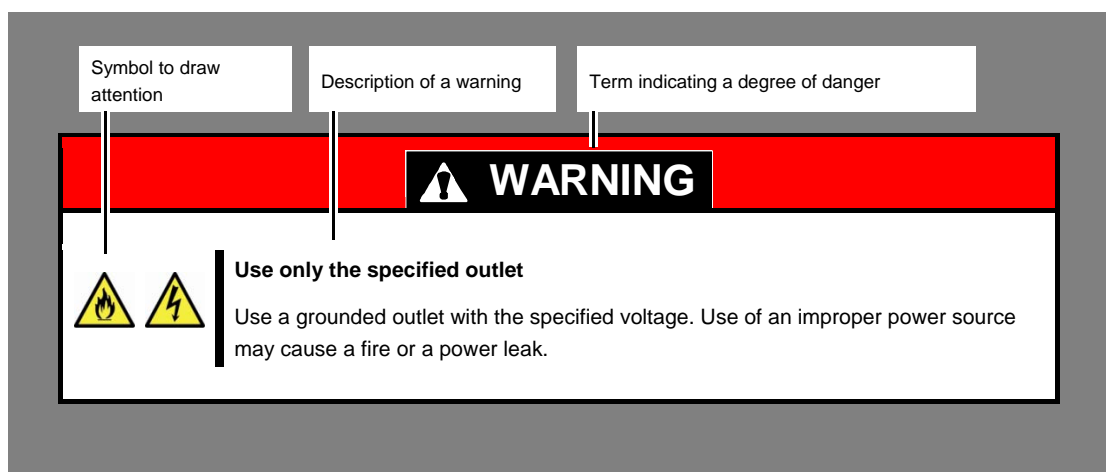
Notations used in the text

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

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

Optical disk drive

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

- DVD Super MULTI drive

Hard disk drive

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

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

Removable media

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

- USB flash drive
- Flash FDD

Abbreviations of Operating Systems

Windows Operating Systems are referred to as follows.

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

Notations in this document	Official names of OS
Windows Server 2016	Windows Server 2016 Standard
	Windows Server 2016 Datacenter
Windows Server 2012 R2	Windows Server 2012 R2 Standard
	Windows Server 2012 R2 Datacenter
Windows Server 2008 R2	Windows Server 2008 R2 Standard
	Windows Server 2008 R2 Enterprise

POST

POST described in this document refers to the following.

- Power On Self-Test

BMC

BMC described in this document refers to the following.

- Baseboard Management Controller

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- EDK/EDKII
- UEFI Network Stack II and iSCSI
- Crypto package using WPA Supplicant

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- EDK/EDKII

EDK/EDKII

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UEFI NETWORK STACK II and iSCSI

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).
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This document was created based on the information available at the time of its creation. The screen images, messages and procedures are subject to change without notice. Substitute as appropriate when content has been modified.

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

http://www.nec.com/

Safety notes

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

NEC Express5800 Series
Express5800/R310e-E4, R320e-E4, R320e-M4, R310f-E4, R320f-E4, R320f-M4

1

Maintenance

This chapter explains maintenance of server, and what actions are to be taken in case of trouble when operating this server.

1. Relocation and Storage
Describes how to move and store this server.

2. Daily Maintenance
Describes what you must confirm for daily use, how to manage files, and how to clean the server.

3. User Support
Describes various services on this product.

4. Maintenance of Express5800/ft series
Describes how to start, stop, diagnose each components of this server, and how to update firmware.

5. Checking the Duplex State of Modules
Describes how to check if the system runs properly after system installation or reinstallation.

6. Error Messages
Describes error messages and actions to be taken at occurrence of an error.

7. Collecting Failure Information
Describes how to collect information about the location where a failure occurred and its cause if the server malfunctions. See this section in case of a failure.

8. Troubleshooting
Describes how to identify the causes of problems and what actions are to be taken to address them. See this section if you suspect a failure.

9. Windows System Recovery
Describes Windows recovery setup. See this section if Windows is corrupt.

10. Resetting and Clearing the Server
Describes how to reset or clear the server. See this section if the server is not working or if you want to restore BIOS settings to the factory settings.

11. System Diagnostics
Describes the system diagnostics of this server.

12. Offline Tools
Describes tools for preventive maintenance of this product.

1. Relocation and Storage

Follow the steps below if you want to relocate or store this server.

⚠ WARNING

Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices.*
- **Do not disassemble, repair, or alter the server.**
- **Do not remove the lithium battery, NiMH, or Li-ion battery.**
- **Disconnect the power plug before installing or removing the server.**

⚠ CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*
- **Make sure to complete installation.**
- **Do not get your fingers caught.**
- **Be careful of handling internal components that may be at high temperatures.**

Note	• If the server has hard disk drives, move the server while being careful not to damage the drive.
	
	• When storing the server, monitor the environmental conditions of the storage area.
	  Temperature: −10°C to 55°C, Humidity: 20% to 80%
	  (No dew condensation is permitted)

Tips	Make backup copies of important data stored in the hard disk drive.

1. Remove the disc from the optical disk drive.

2. Power off the server (POWER LED goes off).

3. Unplug the power cord of the server from the power outlet.

4. Disconnect all the cables from the server.

5. Remove both of installed CPU/IO modules and 4U frame.

6. Carry the removed CPU/IO modules and 4U frame separately.

7. Pack the server securely to protect from damage, shock, and vibration.

Important	If this server and internal optional devices are suddenly moved from a cold place to a warm place, condensation will occur. Wait for a sufficient period of time before using the server and other components in the operating environment.

Note	Check and adjust the system clock before operating after relocating or storing the server.

2. Daily Maintenance

To use this server under good conditions at all times, periodically check and maintain as follows. If failures are found, ask your sales representative, avoiding impossible operation.

2.1 Checking and Applying Updates

Express5800 Series posts update information for BIOS, firmware (FW), driver, and others of the server and peripheral devices on our website. We recommend that the latest update always be applied for stable system.

NEC corporate site: http://www.nec.com/

[Support & Downloads]

NEC also provides NEC ExpressUpdate that helps you to download and install the updates that must be applied to BIOS and FW of the server.

NEC ExpressUpdate is contained in EXPRESSBUILDER provided with the server.

Tips	NEC recommends that you back up data before applying the latest update.

2.2 Checking Alerts

Use NEC ESMPRO Manager (for Windows) to constantly verify that no abnormalities are detected on the monitored server and that no alerts have been issued.

Example image of NEC ESMPRO Manager

NEC ESMPRO Manager   AlertViewer

2.3 **Checking STATUS LED**

Check that the LEDs at front do not indicate error after turning on this server or before shutting down the server.
Check that the LEDs do not indicate error also while operating the system.

Check LED indication when:

- Just after turning on the power of the server

- While the server is running.

- Before shutting down the server.

LEDs to be checked:

- LEDs located at front
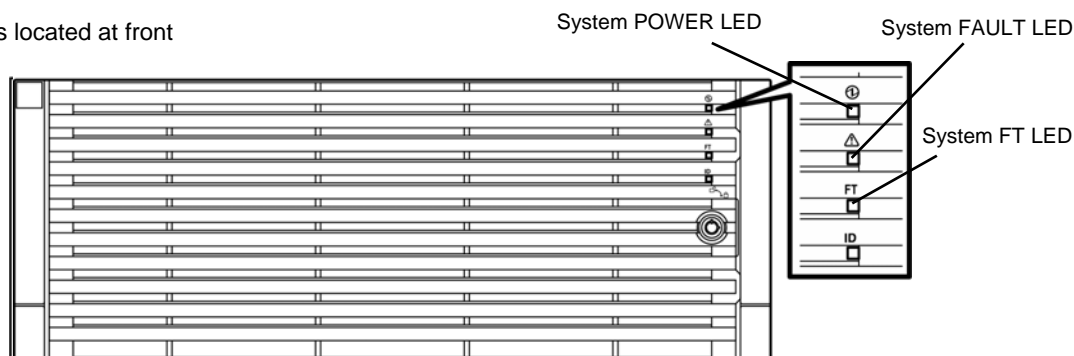
- LEDs on hard disk drives
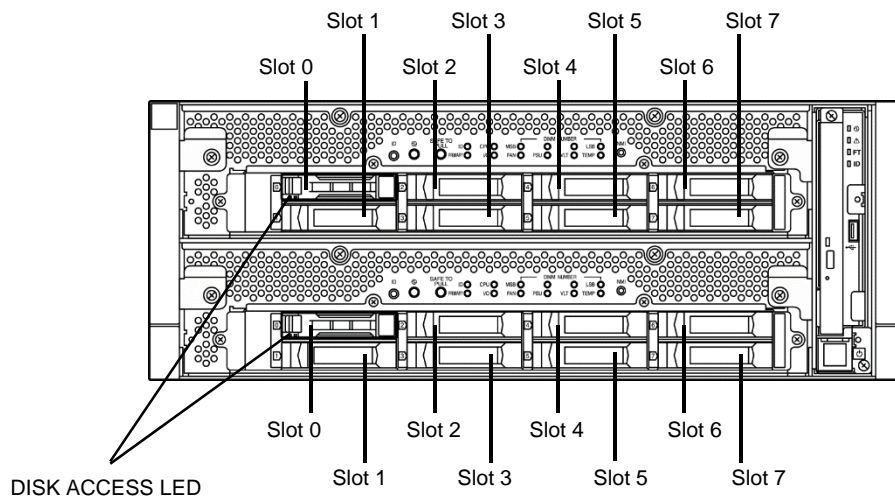
If the indicator shows the server abnormality, contact your sales representative.

For the functions and descriptions of the LED, see *Chapter 1* (*6.1 Error Indication by LED*).

2.4 **Making Backup Copies**

NEC recommends you make backup copies of your valuable data stored in hard disks of the server on a regular basis.

When you have changed the hardware configuration or BIOS configuration, take a note of the system information according to Chapter 1 (8. Backing Up System Information) in Installation Guide.

2.5 **Cleaning**

Regularly clean the server to keep it in good condition.

⚠ WARNING

Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, see *Safety precautions and Regulatory Notices.*
- **Do not disassemble, repair, or alter the server.**
- **Disconnect the power plug before cleaning the server.**

2.5.1 Cleaning the Express5800/ft series

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	• Do not use thinner, benzene, and other volatile solvents to clean the server.
	• The power sockets, cables, connectors on the rear panel of server, and the inside of the server must be kept dry.

1. Power off the server.
   ・ Make sure that the server is powered off.
   ・ Unplug the power cord of the server from a power outlet.

2. Clean the power plug.
   Wipe off dust from the power cord plug with a dry cloth.

3. Clean the server.
   ・ Soak a soft cloth in neutral detergent that is diluted with cold or warm water, and squeeze it firmly.
   ・ Rub off stains on the server with the cloth prepared in Step 1.
   ・ Soak a soft cloth in water, squeeze it firmly and wipe the server with it once again.
   ・ Wipe the server with a dry cloth.

4. Clean the rear panel of the server.
   Wipe off dust from the fan exhaust opening on the rear with a dry cloth.

2.5.2 Cleaning Tape Drive

A dirty tape drive head causes unsuccessful file backup and damages the tape cartridge. Periodically clean the tape drive with the designated cleaning tape.

For the cleaning interval and method, the estimated usable period and lifetime of the tape cartridge, refer to the instructions attached to the tape drive.

2.5.3 Cleaning the Keyboard and Mouse

Wipe the surface of the keyboard with a dry cloth after confirming that whole the system including this server and peripheral devices are turned off (POWER LED is not lit).

Mouse will not work correctly if the optical censor is stained. Wipe the optical censor with a dry cloth.

3. User Support

Before getting after-sales service, check the contents of the warranty and service.

3.1 Maintenance Services

Service representatives from NEC subsidiary companies or companies authorized by NEC provide maintenance services. For the services, contact your sales representative.

When contacting your sales representative, tell them the model type and serial number referring to your warranty card. Serial number and other information are printed on the name plate attached on this server. **Confirm that the serial number on the name plate (device number) and the number on the warranty card are matched.** If they are not matched, your warranty card may not be valid even if the device has a trouble within warranty period. If they are not matched, contact your sales representative.

● We will not take any responsibility for malfunctions caused by using third party products or unauthorized devices or cables.

● Product model number, serial number (device number), rating, manufacturer name, and country of manufacture are printed on the name plate put on the top of this server.

Name Plate
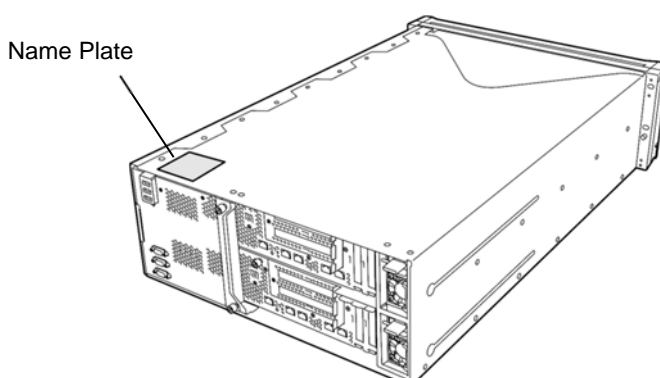
● Product model number and serial number (device number) are also printed on a label put on the pull-out tag at front.

Pull-out Tag

Label
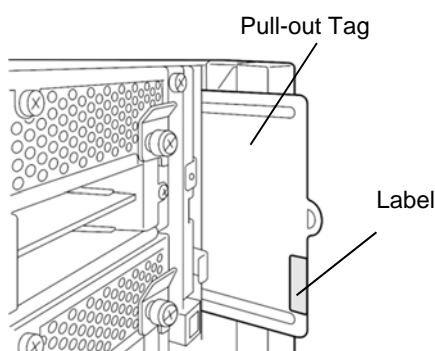
3.2 **Before Asking for Repair**

If you think that a failure occurred, follow the steps below:

1.   Check if the power cord and cables to other products are properly connected.

2.   Check LED indications and alarm messages on display unit. See *Chapter 1 (6. Error Messages).*

3.   See *Chapter 1 (8. Troubleshooting).* If you find a symptom similar to your problem, take the action as instructed. The LED indications and the display on the screen at the failure will be useful information for the repair.

4.   Confirm that the required software has been properly installed.

5.   Scan for viruses using a commercial Antivirus Software.

If the problem persists after taking the measures above, contact your sales representative. Take notes on LED indications and the display on the screen at the failure, which will be useful information for the repair.

4. Maintenance of Express5800/ft series

Express5800/ft series (ft server) can be maintained by the following ways:

- Using NEC ESMPRO Manager for remote maintenance

- Using the ft server utility on the ft server for local maintenance

Tips	To start the ft server utility, select menus as follows: **Start Screen →** ⏻ **→ ft server utility** （**Start → All Programs → NEC ESMPRO Agent → ft server utility**）

The table below lists the maintenance way (remote or local) of each feature on the components.

Maintenance features \ Component	General	CPU module	PCI module	SCSI enclosure	BMC Firmware
Start	–	Remote / Local	Remote / Local	–	–
Stop	–	Remote / Local	Remote / Local	–	–
View MTBF information	–	Remote / Local	Remote / Local	–	–
MTBF clear	–	Remote / Local	Remote / Local	–	–
Diagnosis	–	Remote / Local	Remote / Local	–	–
Dump collection	–	Remote / Local	–	–	–
Board switch	–	Remote / Local	–	–	–
BIOS Update	–	Remote / Local	–	–	–
F/W update	–	–	–	–	Local
Quick dump	Local	–	–	–	–
Auto firmware update	Local	–	–	–	–
Auto module start	Local	–	–	–	–

Remote: Executable by using NEC ESMPRO Manager remotely
Local: Executable on local server by using ft server utility
–:   Not supported

Tips	The server does not support maintenance feature for the components listed below.
	• Internal devices
	  SCSI adapter under PCI module
	  Ethernet board under PCI module
	  Network port of Ethernet board under PCI module
	  SCSI enclosure and SCSI slots under the enclosure
	
	• Optional devices

Important	• **Consult with your maintenance personnel to use the maintenance features.**
	
	• **Perform the following steps before replacing component.**
	  1. Clear MTBF information of relevant component.
	  2. Stop the relevant CPU module and PCI module.

4.1 **Starting and Stopping the Components**

If the component of ft server fails or needs to be replaced, you can forcibly stop the component. The stopped component can also be restarted.

Important	**Use this feature to stop the relevant CPU module and PCI module before replacing component.**

4.1.1 **Available status**

You can start or stop the component of ft server when the status of component is the following state.

Component	Status of component	
	Can Start	**Can Stop**
CPU module	・Power supply stop ・Broken ・Forced stop ・Firmware Update Complete ・Diagnostics Passed	・Duplex
PCI module	・Power supply stop ・Broken ・Forced stop ・Firmware Update Complete ・Diagnostics Passed	・Duplex

Tips	You can view the state of component by NEC ESMPRO Manager or ft server utility.

4.1.2 Procedure in NEC ESMPRO Manager

Follow the steps below to start a component.

1. Choose **General** of the target component under the **ft System** tree in **Information of server state/constitution**.

2. Check the current status of **Status Information** in **General**.
   See *4.1.1 Available Status*.

3. Choose **Maintenance**, and then click the **Execute** button of **Bring Up**.

Tips	• The target component starts after a while. • The start result can be checked by **Status** in **General** of target component. The result of the start operation is reported by the ft server as an alert.

Follow the steps below to stop a component.

1. Choose **General** of the target component under the **ft System** tree in **Information of server state/constitution**.

2. Check the current status of **Status Information** in **General**.
   See *4.1.1 Available Status*.

3. Choose **Maintenance**, and then click the **Execute** button of **Bring Down**.

Tips	• The target component stops after a while. • The stop result can be checked by **Status** in **General** of target component. The result of the stop operation is reported by the ft server as an alert.
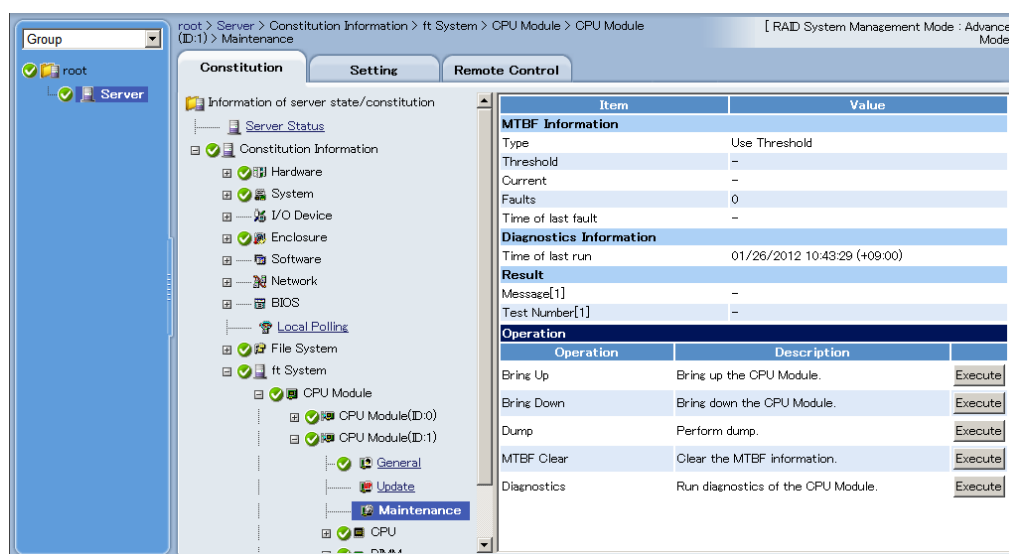
Sample screen of Maintenance in NEC ESMPRO Manager

4.1.3 **Procedure in the ft server utility**

Follow the steps below to start component.

1. Choose the target component by using the ft server utility.

2. Check the current state of the target component by selecting **View** menu → **Refresh** on the utility.
   See *4.1.1 Available Status.*

3. Click the **Up** button of the target component.

Tips	• The target component starts after a while. • The start result can be checked by **Status** of target component. The status is not refreshed automatically. Choose **View** menu → **Refresh** on the utility to check the current status.

Follow the steps below to stop the component.

1. Choose the target component by using the ft server utility.

2. Check the current state of the target component by selecting **View** menu → **Refresh** on the utility.
   See *4.1.1 Available Status.*

3. Click the **Down** button of the target component.

Tips	• The target component stops after a while. • The stop result can be checked by **Status** of target component. The status is not refreshed automatically. Choose **View** menu → **Refresh** on the utility to check the current status.
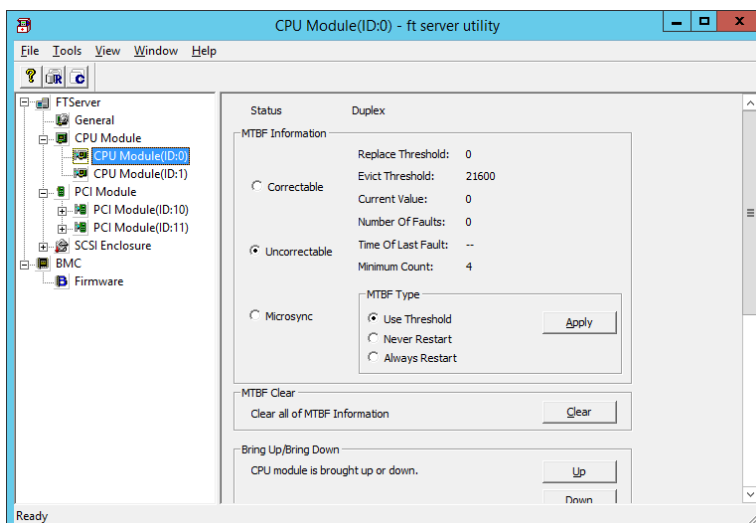
Sample screen of ft server utility

4.2　**Checking and Clearing the MTBF**

The ft server manages Mean Time Between Failures (MTBF) of each component. If a fault occurs in a component, the ft server calculates the MTBF of the component again. If the calculated value is lower than the defined threshold, the ft server disables the component to be used.

A disabled component with the MTBF lower than the threshold can be forcibly enabled by clearing the MTBF.

Important	**Before clearing MTBF and forcedly enable the component, contact your maintenance personnel for the forced use of such a component.**

4.2.1　**Available status**

You can clear the MTBF when the status of component is the following state.

Component	Status of component
CPU module	・Broken ・MTBF is lower than the threshold.
PCI module	・Broken ・MTBF is lower than the threshold.

Tips	The status of component can be checked on the screen of NEC ESMPRO Manager or ft server utility.

4.2.2 Procedure in NEC ESMPRO Manager

Follow the steps below to clear the MTBF of component.

1. Choose **General** of the target component under the **ft System** tree in **Information of server state/constitution**.

2. Check the current status of **Status Information** in **General**.
   See *4.2.1 Available Status*.

3. Choose **Maintenance**, and then click the **Execute** button of **MTBF Clear**.

Tips	The MTBF clearing result can be checked by **Status Information** in **General** on the target component screen. The result of the MTBF clearing operation is reported by the ft server as an alert.

4. Start the target component.
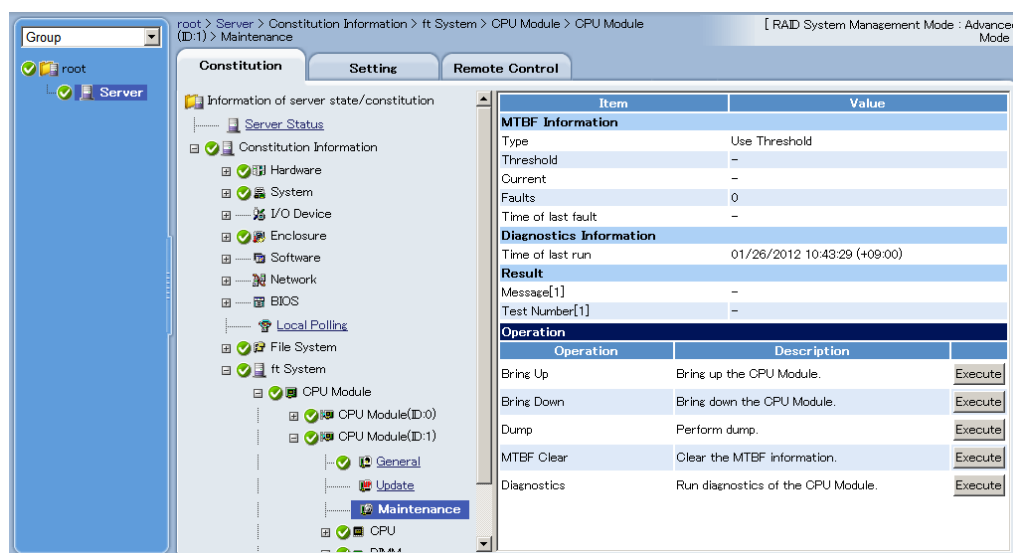
Sample screen of Maintenance in NEC ESMPRO Manager

4.2.3 **Procedure in the ft server utility**

Follow the steps below to clear the MTBF of component.

1. Choose the target component by using the ft server utility.

2. Check the current state of the target component by selecting **View** menu → **Refresh** on the utility.
   See *4.2.1 Available Status.*

3. Click the **Clear** button in **MTBF Clear** of the target component.

Tips	• The MTBF clearing result can be checked by **Status** of the target component.
	• The status is not refreshed automatically. Choose **View** menu → **Refresh** on the utility to check the current status.

4. Start the component.
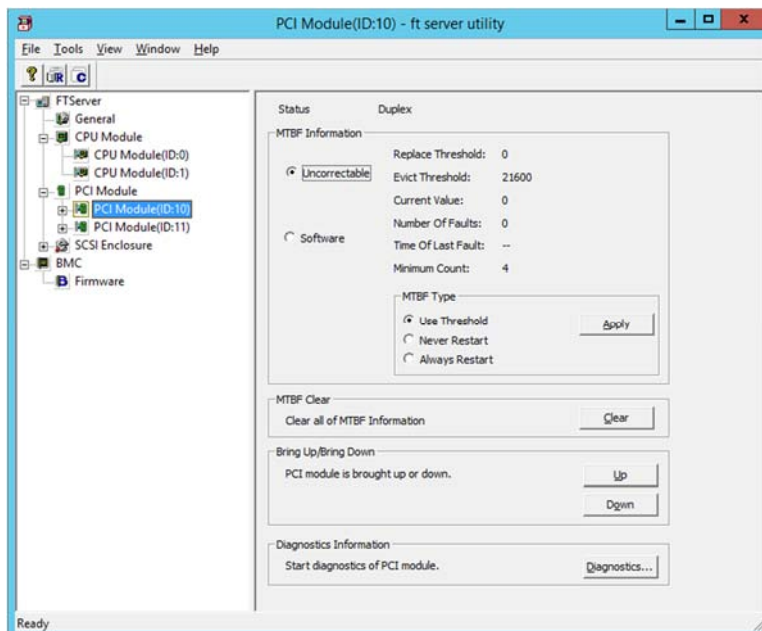
Sample screen of PCI Module in ft server utility

4.3 Diagnosing

The ft server provides the self-check diagnosis feature for some components. If a fault occurs on the component, the ft server can diagnose the component to detect the fault.

Note	Stop the target component before starting diagnostics on the running component.

4.3.1 Available status

You can diagnose the component of ft server when the status of component is the following state.

Component	Status of component
CPU module	・Power supply stopped ・Broken ・Forcibly stopped ・Firmware Update Complete
PCI module	・Power supply stopped ・Broken ・Forcibly stopped ・Firmware Update Complete

Tips	The status of component can be checked on the screen of NEC ESMPRO Manager or ft server utility.

4.3.2 Procedure in NEC ESMPRO Manager

Follow the steps below to diagnose the component.

1. Choose **General** of the target component under the **ft System** tree in **Information of server state/constitution**.

2. Check the current status of **Status Information** in **General**.
   See *4.3.1 Available Status.*

3. Choose **Maintenance**, and then click the **Execute** button of **Diagnostics**.

Tips	• The diagnosis result can be checked by **Diagnostics Information** in **Maintenance** . If a fault is detected by the result of the diagnosis, the status of **General** in the component is changed. In addition, the result of the diagnosis is reported by the ft server as an alert.
	• The result of diagnosis executed last is displayed in the **Diagnostics Information** in **Maintenance** screen.
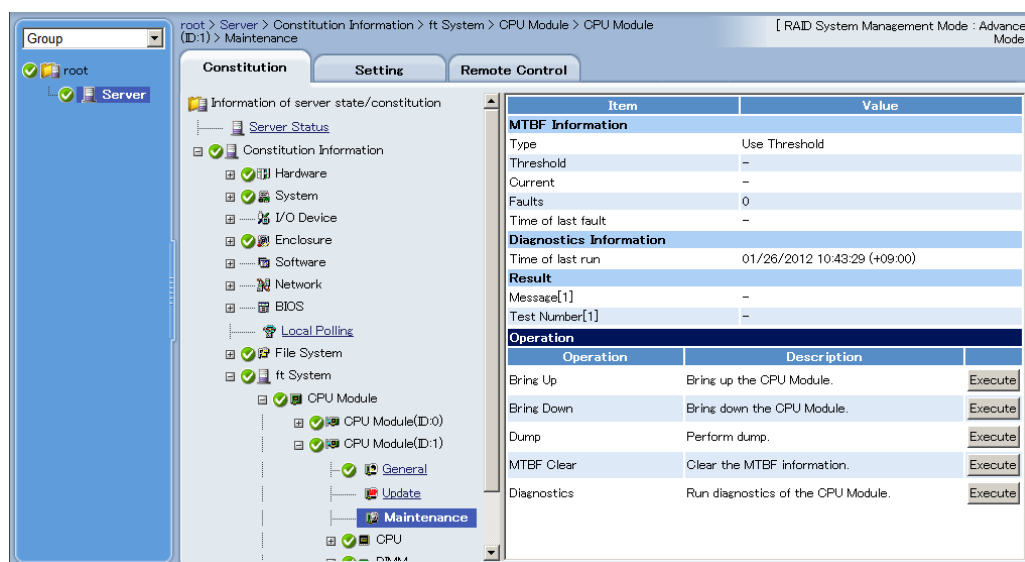
Sample screen of Maintenance in NEC ESMPRO Manager

4.3.3 **Procedure in the ft server utility**

Follow the steps below to diagnose the component.

1. Choose the target component by using the ft server utility.

2. Check the current status of the target component by selecting **View** menu → **Refresh** on the utility.
    See *4.3.1 Available Status.*

3. Click the **Diagnostics** button in the **Diagnosis Information** on the target component.

Tips	The diagnosis result can be checked in **Result** on the target component. The result of diagnosis executed last is displayed in the **Diagnosis Information**.
	The status is not refreshed automatically. Choose **View** menu → **Refresh** on the utility to check the current status.

4. Start the component.
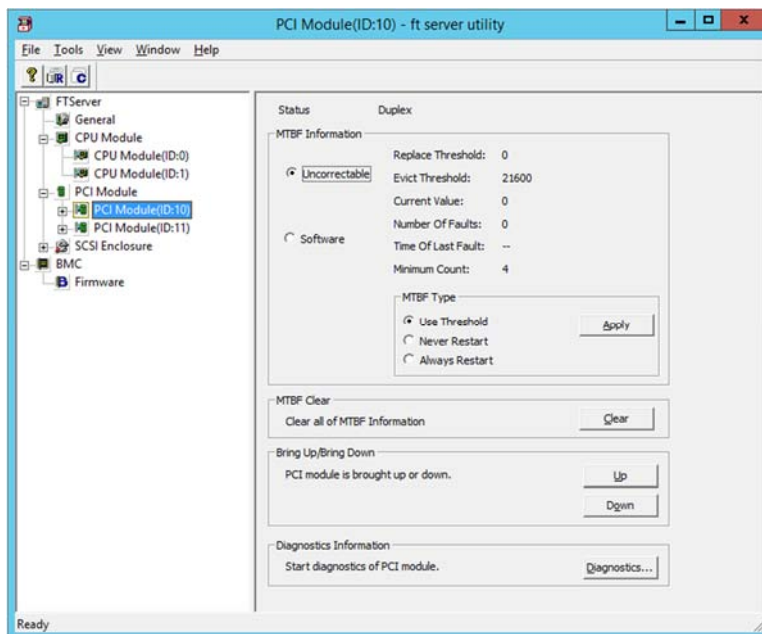
Sample screen of PCI Module in ft server utility

4.4 Online dump feature

If a failure or malfunction occurs on the ft server, you can collect memory dump by Online dump feature for investigating the failure.

Important	Collect dump upon request from maintenance personnel.

The dump file is collected with the same path and file name "`%SystemDrive%\NECDump\MEMORY.DMP`" as the dump file of the OS standard.

Note	- Dump collection can be performed only in the duplex system. - When memory dump is collected by Online dump feature, the CPU module becomes the simplex state and memory dump is collected by one side of the CPU module while the system is running. Therefore, if the system failure occurs while collecting memory dump, there is a possibility that collecting memory dump is failed or the system stops. - The duplicate of the CPU module after collecting memory dump depends on the setting **Enable automatic module start**. If the setting **Enable automatic module start** is disabled, the CPU module does not become the duplex state automatically. - The CPU module changes to simplex state until the completion of writing memory dump image. Therefore, please note that it takes a longer time than usual to be duplex state. (Example: When the size of dump file which is saved is 96GB, it takes about 120 minutes.) - If you shutdown the system while collecting memory dump, the collecting is failed. - If installed memory size is greater than 32GB, there are precautions. Refer to *Chapter 1 (6.1.4 The installed memory size which exceeds 32GB)* in Installation Guide (Windows).

4.4.1 Available status

You can collect the memory dump by Online dump feature when the status of component is the following state.

Component	Status of component
CPU module	Duplex

Tips	The status of component can be checked on the screen of NEC ESMPRO Manager or ft server utility.

4.4.2 **Procedure in NEC ESMPRO Manager**

Follow the steps below to collect memory dump by Online dump feature.

1. Choose **General** of the target CPU module under the **ft System** tree in **Information of server state/constitution**.

2. Check the current status of **Status Information** in **General**.
   See *4.4.1 Available Status*.

3. Choose **Maintenance**, and then click the **Execute** button of **Dump**.

Tips	• A certain time is required for the dump saving.
	• The dump is saved at `%SystemDrive%\NECDump\MEMORY.DMP` on the managed server.
	• The result of the dump saving is reported by the ft server as an alert.
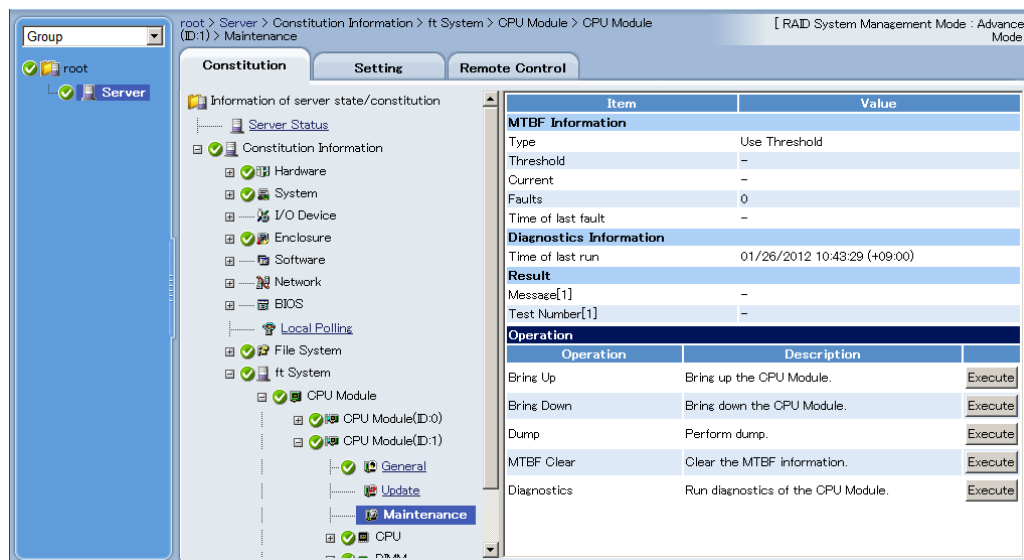
Sample screen of Maintenance in NEC ESMPRO Manager

4.4.3 **Procedure in ft server utility**

Follow the steps below to collect memory dump by Online dump feature.

1. Choose the target CPU module by using the ft server utility.

2. Check the current status of the target component by selecting **View** menu → **Refresh** on the utility.
   See *4.4.1 Available Status*.

3. Click the **Harvest** button in **Dump**.

Tips	• A certain time is required for the dump acquisition.
	• The dump is stored as `%SystemDrive%\NECDump\MEMORY.DMP` on the server.
	• The result of the dump acquisition can be checked in the event log.
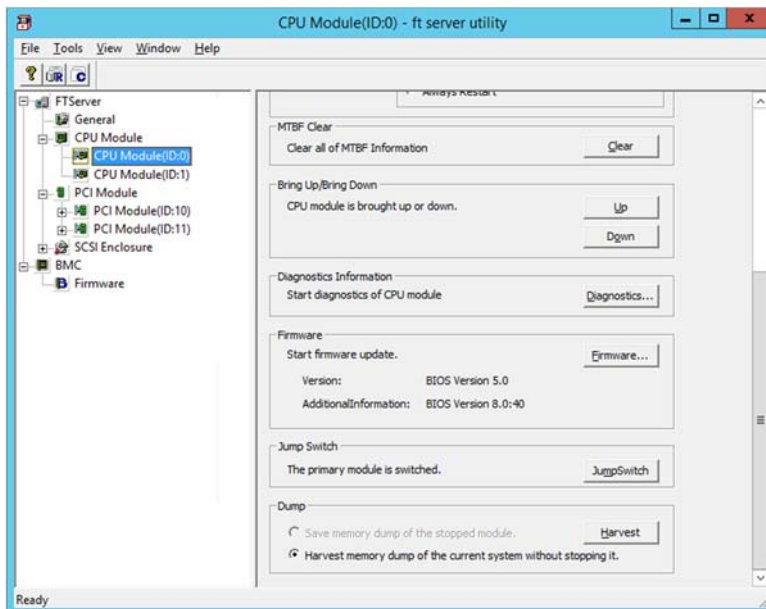
Sample screen of CPU Module in ft server utility

4.5 **Updating the BIOS**

You can update the BIOS of CPU module when the CPU module is in online state (system is continuously running, but the target CPU module is in halt state).

4.5.1 **Available status**

You can update the BIOS of CPU modules when the status of component is the following state.

Component	Status of component
CPU module	・Power supply stopped

|	
Tips	The status of component can be checked on the screen of NEC ESMPRO Manager or ft server utility.

4.5.2 Procedure in NEC ESMPRO Manager

Follow the steps below to update BIOS of CPU module.

Important	To update BIOS of CPU module, a BIOS image file for updating needs to be stored on the ft server.

1. Save the BIOS image file for update in a folder on the ft server. Take a note of path to that folder.

2. Choose **General** of the target CPU module under the **ft System** tree in **Information of server state/constitution**.

3. Check the current status of **Status Information** in **General**.
    See *4.5.1 Available Status.*

4. Choose **Update**, and then click the **Execute** button of **Firmware Update**.
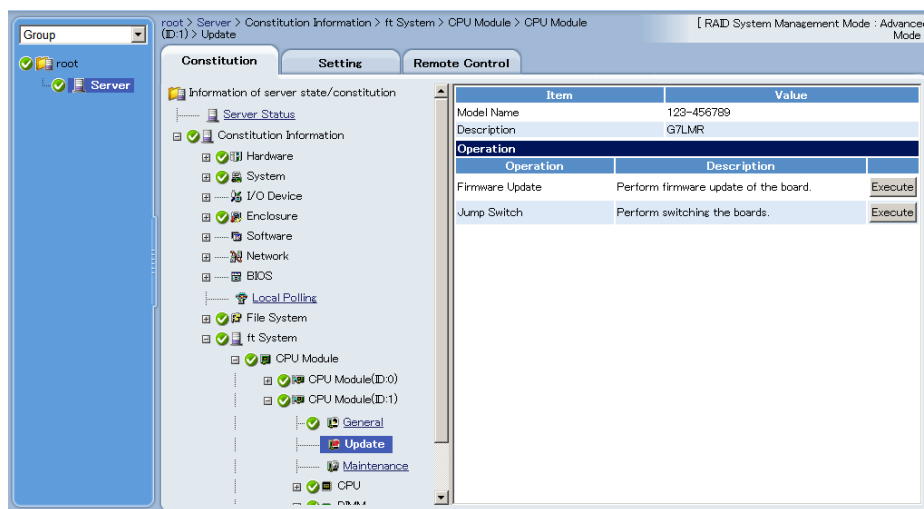
Sample screen of Update in CPU Module

5. Choose **Specify the file path to update**, type the path to the BIOS image file entered in Step 1 into **absolute path**, and click **Apply**.
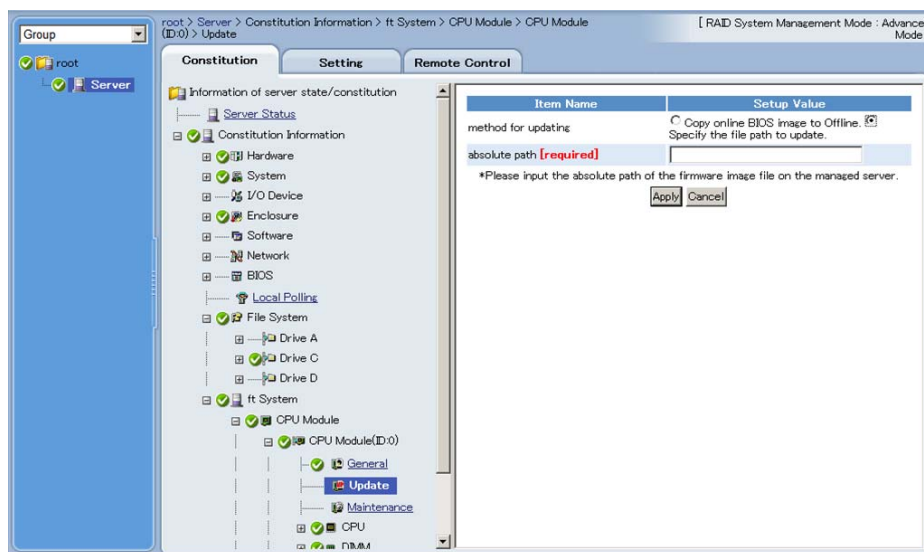
6. When you click **OK** on confirmation dialog box, the firmware update starts.

| Tips | • The update result can be checked by **Status Information** of **General** in target component ("Firmware update complete" is displayed). In addition, the result of the update is reported by the ft server as an alert. |
| | • It takes about 15 minutes until the update of either of CPU module is completed. |

When the firmware update is completed, check that the firmware revision is modified as you expect.

7. When BIOS update completes, choose **Update**, and then click the **Execute** button of **Jump Switch**.
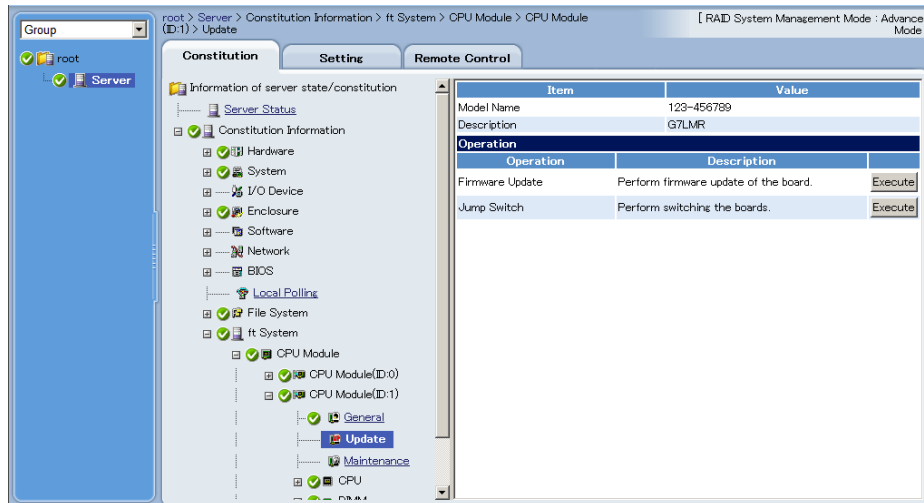
("Jump Switch" can be carried out to module of "Power supply stopped".)

8. When you click **OK** on confirmation dialog box, the CPU module of which BIOS has been updated starts, and the other CPU module stops.

9. Click the **Execute** button of **Firmware Update** on **Update** screen of the CPU module in halt status.
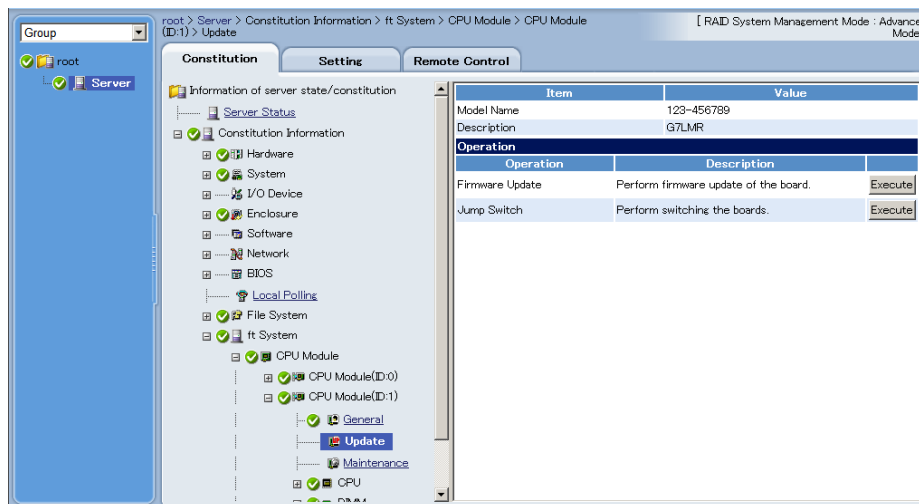
10. Choose **Copy online BIOS image to Offline** and click **Apply**.
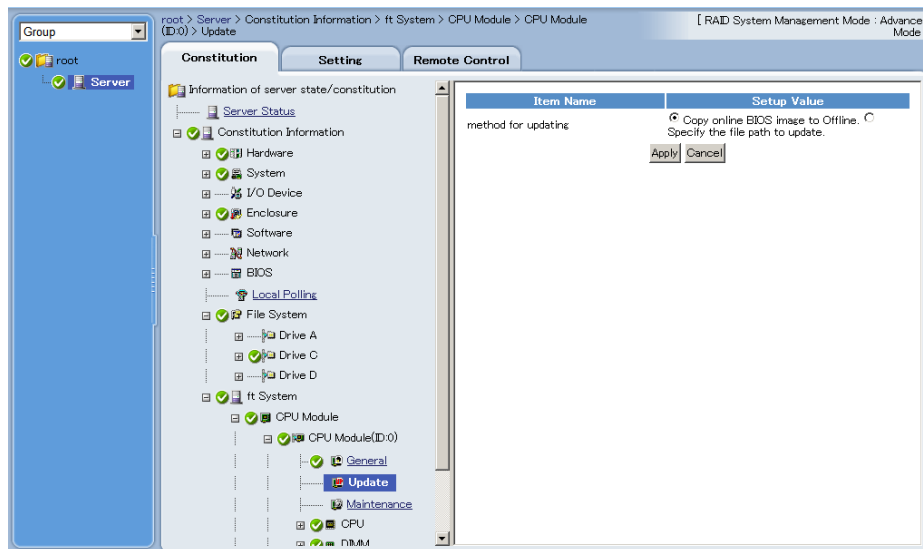
11. When you click **OK** on confirmation dialog box, the firmware update starts.

Tips	• The update result can be checked by **Status Information** of **General** in target component ("Firmware update complete" is displayed). In addition, the result of the update is reported by the ft server as an alert.
	• It takes about 15 minutes until the update of either of CPU module is completed.

When the firmware update is completed, check that the firmware revision is modified as you expect.

12. Confirm that the update is finished, and then start CPU module.

13. When **Status Information** of **General** of the target component is "Duplex", the update is finished.

4.5.3 Procedure in the ft server utility

Follow the steps below to update BIOS of CPU module.

Important	**To update BIOS of CPU module, a BIOS image file for updating needs to be stored on the ft server.**

1. Save the BIOS image file for update in a folder in the ft server. Take a note of path to that folder.

2. Select either one CPU module from ft server utility.

3. Check the current status of the target CPU module by selecting **View** menu → **Refresh** on ft server utility. If the target CPU module is operating, stop it. See *4.5.1 Available Status*.

4. Click **Firmware** on **Firmware** of CPU module screen.
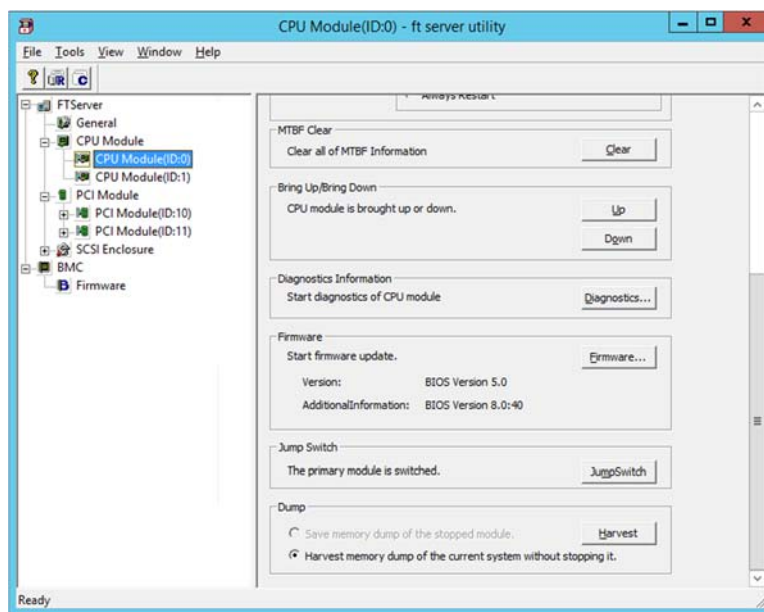
Sample screen of CPU module in ft server utility

5. Choose **Specify new firmware for update**, type the path to the BIOS image file entered in Step 1 into the text box, and click **Activate**.
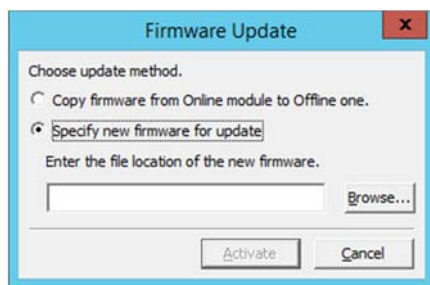
| Tips | The update result can be checked by **State** of target component. The status is not refreshed automatically. Choose **View** menu → **Refresh** on the utility to check the current status. |

The firmware update starts.

6. Check the firmware update status.

| Tips | • Pressing <F5> key refreshes the display of ft server utility. Display changes according to progress of update process. Updating firmware → " Firmware Update", Firmware update is completed → "Firmware update complete" • It takes about 15 minutes until the update of either of CPU module is completed. |

When the firmware update is completed, check that the firmware revision is modified as you expect.

7. When the BIOS update completes, click **JumpSwitch**.
    The CPU module of which BIOS has been updated starts, and the other CPU module stops.
        ("Jump Switch" can be carried out to module of "Power supply stopped".)

8. Click **Firmware Update** on **Update** screen of the CPU module in halt status.

9. Select **Copy firmware from Online module to Offline one** on **Firmware Update** screen, and click **Activate**.
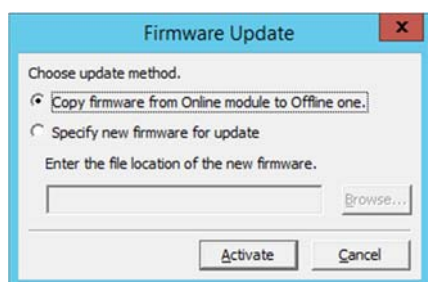
Another CPU/IO module BIOS update is executed.

10. Confirm the firmware update status.

| Tips | • Pressing <F5> key refreshes the display of ft server utility. Display changes according to progress of update process. Updating firmware → " Firmware Update", Firmware update is completed → "Firmware update complete" • It takes about 15 minutes until the update of either of CPU module is completed. |

When the firmware update is completed, check that the firmware revision is modified as you expect.

11. Confirm the update, and then start CPU module.

12. When **Status Information** of the CPU module screen is "Duplex", the update is finished.

4.6 Updating the BMC Firmware

The ft server has BMC on each of PCI modules 0 and 1, and the both BMCs are automatically updated by the following procedure.

Important	**Consult with your maintenance personnel before updating BMC firmware.**

4.6.1 Available status

You can update the BMC firmware when the status of component is the following state.

Component	Status of component
Firmware under BMC	・Duplex, Duplex

Tips	The status of component can be checked on screen of ft server utility.

4.6.2 Procedure in the ft server utility

Follow the steps below to update BMC firmware.

Important	To update BMC firmware, a firmware image file for updating needs to be stored on the ft server.

1. Click the **Firmware** button on **Firmware**.

    The **Firmware Update** dialog box appears.
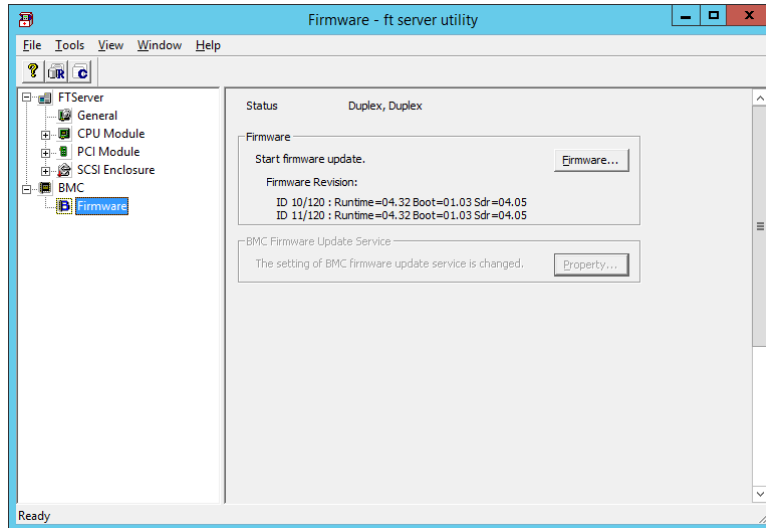
2. Specify the path to the firmware, and then click **Activate**.
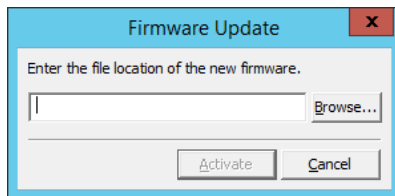
    Confirmation dialog box appears.

3. Click **OK** on the Confirmation dialog box.
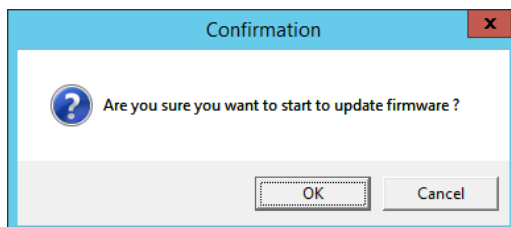
    The firmware update starts.

4. When the firmware update is completed, check that the firmware revision is modified as you expect.

    Confirm the BMC firmware status. Pressing <F5> key refreshes the display of the BMC firmware status.

    If the status is "**Duplex**, **Duplex**", the update is complete.

    It takes about 30 minutes until the update of BMC firmware on both systems is completed.

4.7 Setting the System Operation

The following properties can be set as the common operation.

Quick dump

When this property is enabled (by checking Enable on the setup screen), the memory dump is collected by Quick dump feature in parallel with the system startup if a fault occurs in the system. When this property is disabled, the dump is performed by OS standard feature.

The default value is **Disable**.

Note	- When memory dump is collected by Quick dump feature, the CPU module becomes the simplex state after starting the system and memory dump is collected by one side of the CPU module. Therefore, if the system failure occurs while collecting memory dump, there is a possibility that collecting memory dump is failed or the system stops. - The duplicate of the CPU module after collecting memory dump depends on the setting **Enable automatic module start**. If the setting **Enable automatic module start** is disabled, the CPU module does not become the duplex state automatically. - The CPU module changes to simplex state until the completion of writing memory dump image. Therefore, please note that it takes a longer time than usual to be duplex state. (Example: When the size of dump file which is saved is 96GB, it takes about 120 minutes.) - If you shutdown the system while collecting memory dump, the collecting is failed. - If installed memory size is greater than 32GB, there are precautions. Refer to *Chapter 1 (6.1.4 The installed memory size which exceeds 32GB)* in Installation Guide (Windows).

Auto firmware update

If a new CPU module containing BIOS different from that of the existing CPU module in version with this property being enabled (by checking **Enable** on the setup screen), the BIOS of the new CPU module is updated to the BIOS of the existing CPU module to match with each other. If this property is disabled, the BIOS of the new CPU module is not updated automatically.

The default value is **Enable**.

Auto module start

When this property is set to **Enable** (select it on the setting screen), synchronization of CPU module starts automatically at the time of OS starting or after exchanging module. If this property is set to **Disable**, synchronization of CPU module does not start automatically, so start the CPU module by the ft server utility or the like to start synchronization. In addition, PCI module starts automatically regardless of the property (**Enable/Disable**).

The default value is **Enable**.

4.7.1 Procedure in the ft server utility

Follow the steps below to set the system operation.

Important	• **Consult with your maintenance personnel before changing setting for system operation.**
	• **The new setting becomes valid after restarting the server.** **Be sure to restart the system though you are not prompted on utility screen.**

1. Choose **General** in the **ft server** tree.

2. Check or cancel the options of **System Settings** if necessary.

3. Click the **Apply** button.
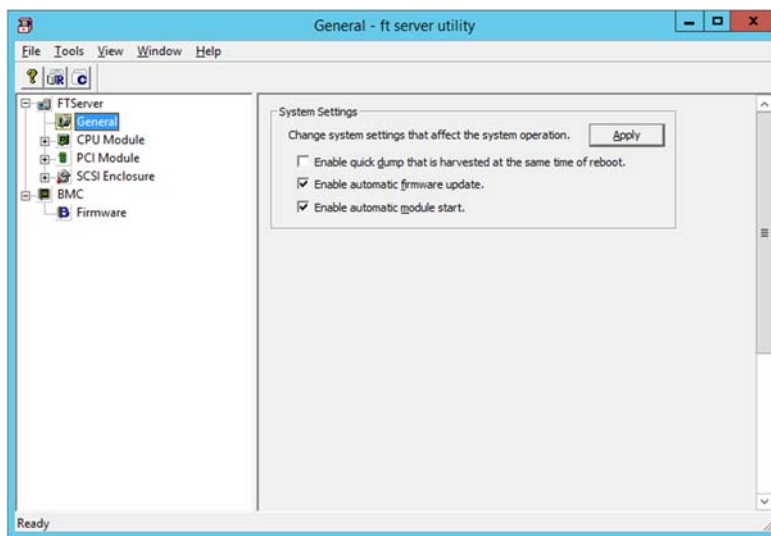
Sample screen of ft server utility

$\mathcal{5}.$ Checking the Duplex State of Modules

This section describes how to check if the system runs properly after system installation or reinstallation.

Tips	CPU/IO module has a processor function part and IO function part. Each part is monitored and managed by the module. In this section, the processor function part is referred to as CPU module and IO function part PCI module.

$\mathcal{5}.1$ Confirming the Startup and Stop of PCI Modules

This section describes how to confirm the continuous system operation by failover after stopping the primary CPU/IO module.

1. Check which is the primary CPU/IO module.

Tips	CPU/IO module with the PRIMARY LED illuminated is the primary module.

2. Check whether the CPU/IO modules are duplex.

Tips	To check if the CPU/IO modules are duplex, see the System FT LED.
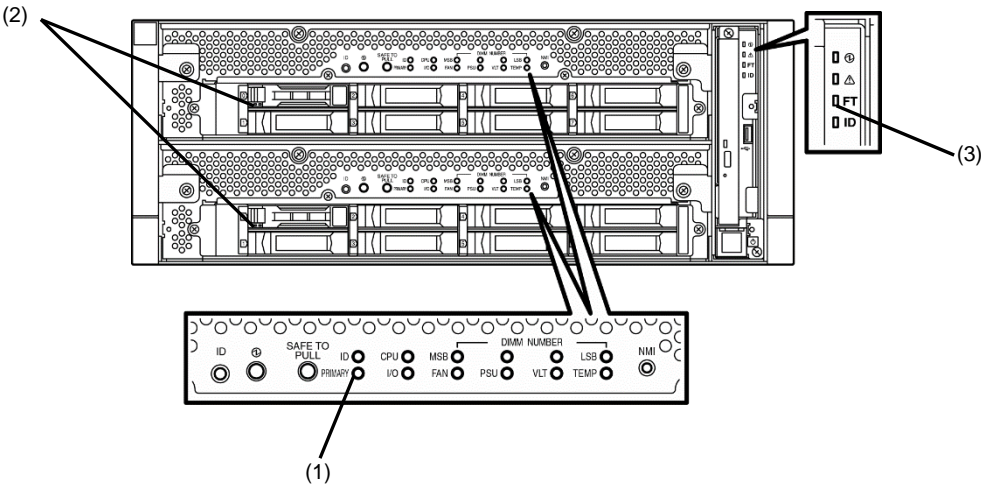
Indications of the status LEDs when CPU/IO modules are duplex

	LED	Primary	Secondary
1	PRIMARY LED	On (Green)	–
2	DISK ACCESS LED	Blinking (Green)	Blinking (Green)

	LED	System
3	System FT LED	On (Green)

* The numbers in table above correspond to those shown in figure above.
  DISK ACCESS LED (2) lights only when hard disk drive is accessed.

3. From **Start Screen**, select ⏻ and **ft server utility (or Start – All Programs – NEC ESMPRO Agent –**

   ft server utility) to start the ft server utility.

4. On the left pane, select the primary PCI module as follows:
   - Select **PCI module (ID:10)** when CPU/IO module 0 is primary module.
   - Select **PCI module (ID:11)** when CPU/IO module 1 is a primary module.

5. Click **Down** of **Bring Up/Bring Down**

Tips	When you stop the operation of the primary PCI module, a failover occurs and the secondary PCI module becomes the primary module.
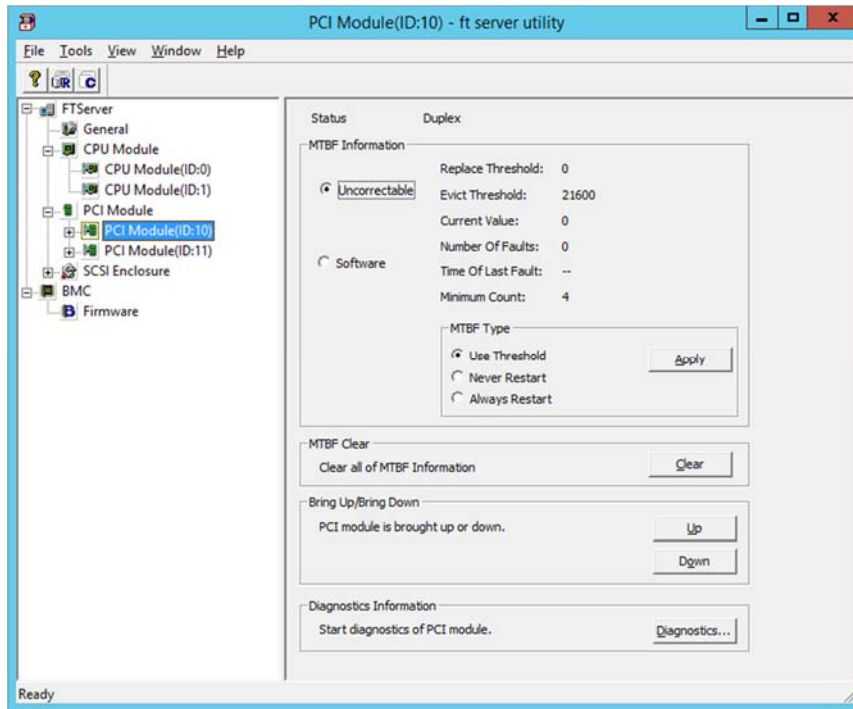
When the primary PCI module is stopped, the screen temporarily blacks out and then displayed again, and the status changes as follows. This indicates that PCI module is failed over.

Indications of status LEDs

	LED	Secondary*	Primary*
1	PRIMARY LED	–	On (Green)
2	DISK ACCESS LED	–	Blinking amber or green (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	–

* The primary and secondary modules after failover

6. Restart the stopped PCI module.

   Click **Up** of **Bring Up/Bring Down** to the PCI module which has been stopped, and the PCI module will be started.

Tips	When the PCI module is started, PCI module diagnosis, mirror volume duplication and PCI module duplication are performed.

Important	**If ARCserve Backup or Backup Exec is installed and the backup software related services are operating at the time of PCI module startup, the PCI module is not duplexed properly may occur or backup software may not work properly.**
	
	Be sure to stop the services before starting the PCI module.
	
	   1. Start Services from Administrative Tools of Control Panel.
	
	   2. Select a service of backup software.
	
	   3. Choose "Stop" from the "Action" menu.
	
	   4. Repeat steps 2 and 3 for all services of the backup software.
	
	If the PCI module is started with these services being operated, stop the PCI module first, then stop the services related to backup software, then try again.

Tips	You can stop or start services collectively by using the batch file.
	
	ARCserve Backup (Stop collectively)
	   C:\Program Files (x86)\CA\ARCserve Backup\cstop.bat
	
	ARCserve Backup (Start collectively)
	   C:\Program Files (x86)\CA\ARCserve Backup\cstart.bat
	
	Backup Exec (Stop collectively)
	
	   ・For Backup Exec 15
	
	      C:\Program Files\Symantec\Backup Exec\bestop.bat
	
	   ・For Backup Exec 16 which was upgraded from pre-Backup Exec 15 version
	
	      C:\Program Files\Symantec\Backup Exec\bestop.bat
	
	   ・For Backup Exec 16 which was new installed
	
	      C:\Program Files\Veritas\Backup Exec\bestop.bat
	
	Backup Exec (Start collectively)・For Backup Exec 15
	
	      C:\Program Files\Symantec\Backup Exec\bestart.bat
	
	   ・For Backup Exec 16 which was upgraded from pre-Backup Exec 15 version
	
	      C:\Program Files\Symantec\Backup Exec\bestart.bat
	
	   ・For Backup Exec 16 which was new installed
	
	      C:\Program Files\Veritas\Backup Exec\bestart.bat
	
	The path name shown above is assigned when the software is installed with default setting. Please note that the default path name for Backup Exec depends on Backup Exec version and whether Backup Exec was upgraded or new installed.

The status LED of PCI modules changes as shown below:

Indications of the status LEDs

Immediately after the PCI module startup until the completion of diagnosis:

	LED	Secondary	Primary
1	PRIMARY LED	–	On (Green)
2	DISK ACCESS LED	–	Blinking amber or green (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	–

When duplication of disks is started after the completion of PCI module diagnosis:

* The status of LEDs varies depending on the method of disk duplication.

	LED	Secondary	Primary
1	PRIMARY LED	–	On (Green)
2	DISK ACCESS LED	Blinking amber or green (Lights green when accessing the disk drive)	Blinking amber or green (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	–

After the completion of mirror volume duplication and when the PCI modules are duplicated:

	LED	Secondary	Primary
1	PRIMARY LED	–	On (Green)
2	DISK ACCESS LED	Blinking (Green) (Lights green when accessing the disk drive)	Blinking (Green) (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	On (Green)

Important	**After duplication is completed, the FT LED lights in green. Do not perform the evaluation of start and stop unless the above process is completed.**

5.2 **Confirming the Startup and Stop of CPU Modules**

This section describes how to confirm the continuous system operation after stopping one of the CPU modules.

1. Confirm that the CPU modules are duplex.

Tips	To check if the CPU modules are duplex, see the System FT LED.
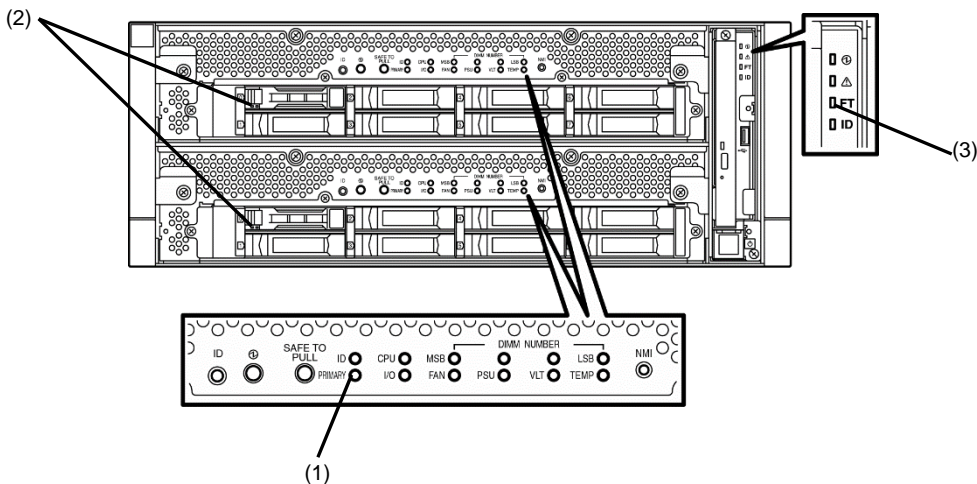
Indications of the status LEDs when CPU modules are duplex

	LED	CPU/IO module 0 (Operating)	CPU/IO module 1 (Operating)
1	PRIMARY LED	On (Green)	–
2	DISK ACCESS LED	Blinking (Green) (Lights green when accessing the disk drive)	Blinking (Green) (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	On (Green)

* The numbers in table above correspond to those shown in figure above.
   DISK ACCESS LED (2) lights only when hard disk drive is accessed.

2. From **Start Screen**, select ⓘ and **ft server utility (or Start – All programs – NEC ESMPRO Agent – ft server utility)** to start the ft server utility.

3. On the left pane, select the CPU module as follows:
   - Select **CPU module (ID:0)** to stop CPU/IO module 0.
   - Select **CPU module (ID:1)** to stop CPU/IO module 1.

4. Click **Down** of **Bring Up/Bring Down**.
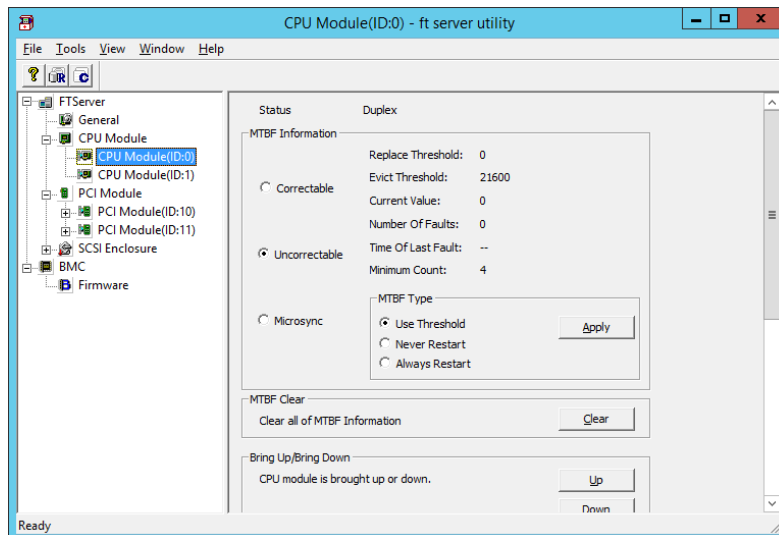
When you stop a CPU module, the indications of the status LEDs change as follows.
Below denotes that the only one CPU module is operating.

Indications of status LEDs

	LED	CPU/IO module 0 (Stopped)*	CPU/IO module 1 (Operating)
1	PRIMARY LED	On (Green)	–
2	DISK ACCESS LED	Blinking (Green) (Lights green when accessing the disk drive)	Blinking (Green) (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	–

* As an example, the indications of when CPU/IO module 0 is stopped are shown.

5. Click the **Start** button of the CPU module stopped by ft server utility.
    Select the stopped CPU module and click **Up** of **Bring Up/Bring Down**.

Tips	When the CPU module is started, **hardware diagnosis** and then **synchronization of memory (memory copy)** are performed, and the duplication process is completed. Note that the system is paused temporarily for copying memory during memory synchronization.

Indications of status LEDs after completion of duplication

	LED	CPU/IO module 0 (Operating)	CPU/IO module 1 (Operating)
1	PRIMARY LED	On (Green)	–
2	DISK ACCESS LED	Blinking (Green) (Lights green when accessing the disk drive)	Blinking (Green) (Lights green when accessing the disk drive)

	LED	System
3	System FT LED	On (Green)

Important	After duplication is completed, the System FT LED lights in green. Do not perform the evaluation of start and stop unless the above process is completed.

6. Error Messages

Take an action below if the server is faulty.

- If LED indicates an error state, see *6.1 Error Indication by LED*.

- If an error message appears, see *6.2 POST Error Message*.

- If a warning or error message appears on event log, see *6.3 List of Windows Event Logs*.

- If a blue screen appears, see *6.4 Error Message on Windows Server*.

6.1 **Error Indication by LED**

LEDs on the front and rear panels of the server and near the handles of hard disk drives notify the various server statuses, with lighting, blinking, and lighting-out patterns or colors. If trouble seems to have occurred, check the LED indication. States of LEDs, their meanings, and how to approach the situation are described below, but when you need to replace the module, be sure to contact your sales representative.

System POWER LED

System FAULT LED

System FT LED

< Front (With Bezel) >

DISK ACCESS LED   Module POWER LED   System POWER LED

System FAULT LED

System FT LED

Optical DISK ACCESS LED

EXPRESSSCOPE

< Front (Without Bezel)>

Power Unit LED

1GLAN connector

SPEED LED

Management LAN
connector

Module ID LED

LINK/ACT LED

10GLAN connector
(R320e-M4, R320f-M4 only)

< Rear >
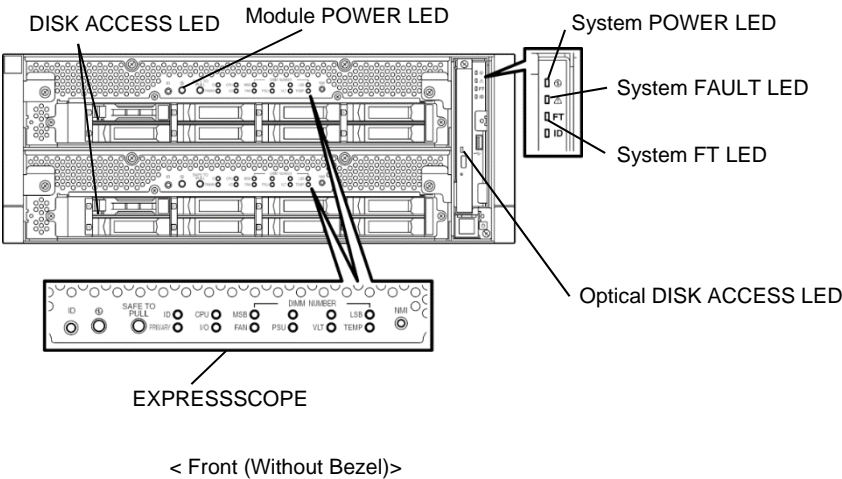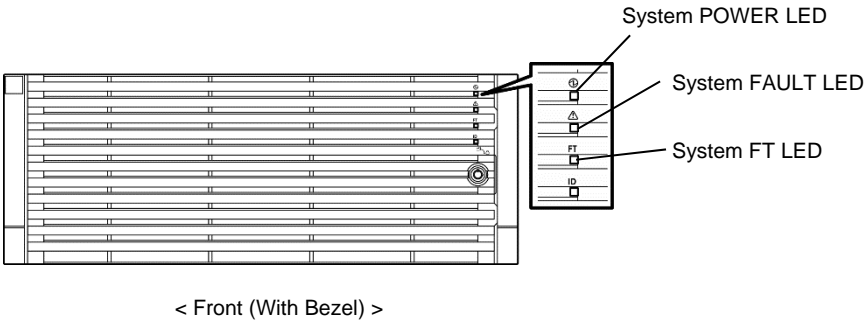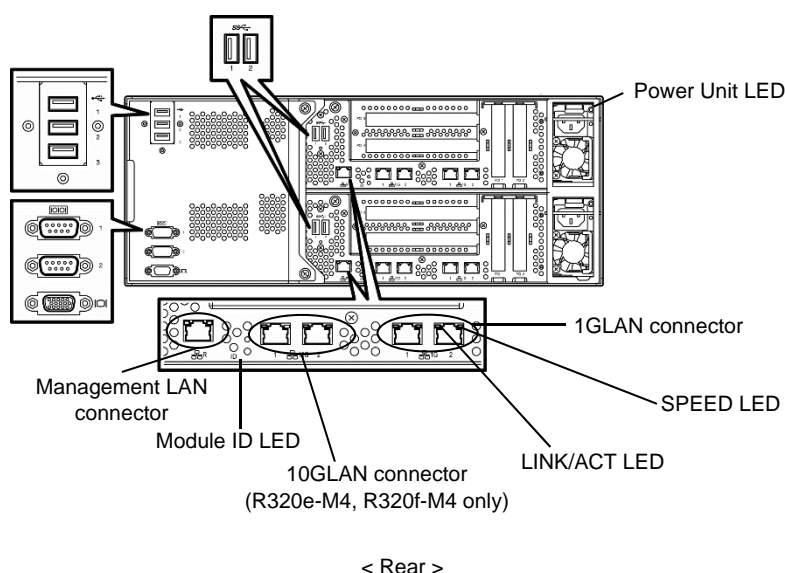
(1) System POWER LED

LED indication	Description	Action
On (green)	Either or both of CPU/IO modules are powered on.	–
Off	Both of CPU/IO modules are powered off.	–

(2) System FAULT LED

LED indication	Description	Action
Off	Both of CPU/IO modules are offline or normal.	System FAULT LED does NOT notify of disk statuses. Check it according to *(5) DISK ACCESS LED* indication.
On (amber)	One of the CPU/IO modules failed.	Take a note of LED indications on EXPRESSSCOPE, and then contact your sales representative.
Blinking (amber)	One of the CPU/IO modules failed. Failed CPU/IO module cannot be identified.	Contact your sales representative.

(3) System FT LED

LED indication	Description	Action
On (green)	System is operating under duplex condition.	–
Off	System is not duplexed.	–

(4) System ID LED

LED indication	Description	Action
On (blue)	UID switch is pressed.	–
Blinking (blue)	The server is receiving an identification request sent by remote.	–
Off	–	–

(5) DISK ACCESS LED

DISK LED 2 (amber)
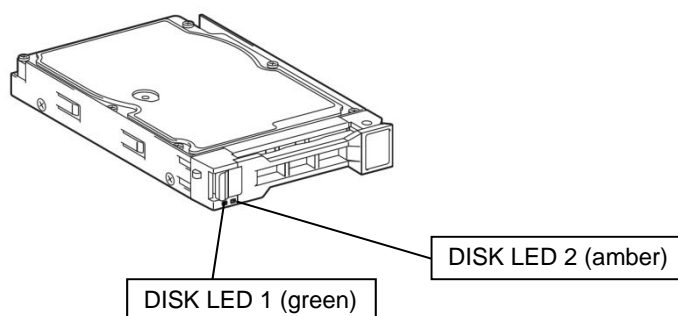
DISK LED 1 (green)

Status of DISK LED 1 and 2		Description	Action
DISK LED 1	DISK LED 2		
Off	Off	Disk is in the idle state.	–
Blinking (green)	Off	Disk is being accessed.	–
Off	On (amber)	Disk is faulty.	Contact your sales representative.
Off	Blinking (amber)	Disks are not mirroring.	Perform mirroring.
Blinking in green and amber alternately		Rebuilding is in progress or disks are not mirroring.	Confirm that the disk mirroring is complete.

(6) Optical DISK ACCESS LED

LED indication	Description	Action
Off	Optical disk is not accessed.	–
On	Optical disk is being accessed.	–

(7) LEDs on Management LAN connector and LAN connectors

LINK/ACT LED

LED indication	Description	Action
On (green)	Power is supplied to the server and hub, and they are connected correctly (LINK state).	–
Blinking (green)	The port is sending or receiving data (ACT state).	–
Off	Disconnected from network.	Check the condition and connection of network cables.

SPEED LED (Management LAN connector)

LED indication	Description	Action
On (green)	Port is operating on 100BASE-TX.	–
Off	Port is operating on 10BASE-T.	–

SPEED LED (1G LAN connector)

LED indication	Description	Action
On (amber)	Port is operating on 1000BASE-T.	–
On (green)	Port is operating on 100BASE-TX.	–

SPEED LED (10G LAN connector)

LED indication	Description	Action
On (amber)	Port is operating on 1000BASE-T.	–
On (green)	Port is operating on 10GBASE-T.	–
Off	Port is operating on 100BASE-TX.	–

(8) EXPRESSSCOPE

Corresponding LED lights amber if modules have failures.
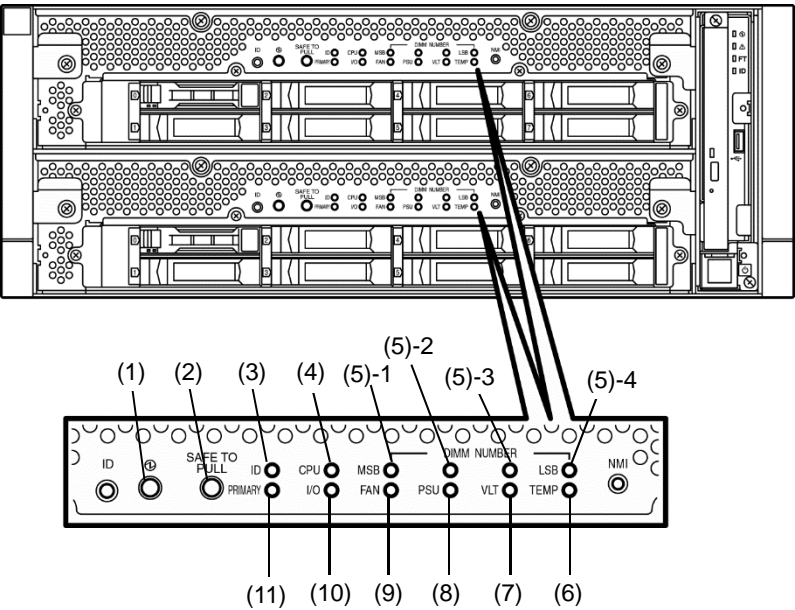
(1) Module POWER LED

LED indication	Description	Action
On (green)	The power of CPU/IO module is ON.	–
Off	AC power is not supplied to CPU/IO module. The server becomes the standby state (blinking in green) in about one minute after AC power is supplied.	–
Blinking (green)	CPU/IO module is in standby state.	–

(2) SAFE TO PULL (SAFE TO PULL LED)

This LED indicates the possibility to remove CPU/IO module safely.

LED indication	Description	Action
On (green)	CPU/IO module can be removed.	–
Blinking (green)	CPU/IO module cannot be removed.	–
Off	CPU/IO module is in offline state.	–

(3) Module ID (ID LED)

Module ID LED is used for identifying the server that requires maintenance among servers mounted on a rack.

LED indication	Description	Action
On (green)	UID switch is pressed.	–
Blinking (green)	The server is receiving an identification request sent by remote.	–
Off	–	–

(4) CPU (CPU FAULT LED)

The LED lights amber when the CPU part of CPU/IO modules fails.

(5) MEM NUMBER (Memory slot error LED)

The LED lights amber when failure occurs on the memory slot 0 of CPU/IO module.
Memory slots with errors can be identified by illumination status of the following (5)-1 to (5)-4.

Status of memory slot error LED				Description	Action
(5)-1 (MSB)	(5)-2	(5)-3	(5)-4 (LSB)		
–	–	–	–	Operating normally	–
–	–	–	○	Error at memory slot 1	Contact your sales representative.
–	–	○	–	Error at memory slot 2	Contact your sales representative.
–	–	○	○	Error at memory slot 3	Contact your sales representative.
–	○	–	–	Error at memory slot 4	Contact your sales representative.
–	○	–	○	Error at memory slot 5	Contact your sales representative.
–	○	○	–	Error at memory slot 6	Contact your sales representative.
–	○	○	○	Error at memory slot 7	Contact your sales representative.
○	–	–	–	Error at memory slot 8	Contact your sales representative.
–	–	–	●	Error at memory slot 9	Contact your sales representative.
–	–	●	–	Error at memory slot 10	Contact your sales representative.
–	–	●	●	Error at memory slot 11	Contact your sales representative.
–	●	–	–	Error at memory slot 12	Contact your sales representative.
–	●	–	●	Error at memory slot 13	Contact your sales representative.
–	●	●	–	Error at memory slot 14	Contact your sales representative.
–	●	●	●	Error at memory slot 15	Contact your sales representative.
●	–	–	–	Error at memory slot 16	Contact your sales representative.
●	●	●	●	Error at unknown memory slot, or memory is not installed.	Contact your sales representative.

○:   LED is lit.
●:   LED is blinking.
–:   LED is unlit.

(6) TEMP (Abnormal temperature LED)

Amber: Temperature in CPU/IO module becomes abnormal.

(7) VLT (Power error LED)

Amber: Electric voltage failure occurs in CPU/IO module.

(8) PSU(Power supply unit error LED)

Amber: Failure occurs on the power supply unit of CPU/IO module.

(9) FAN (Fan error LED)

Amber: Failure occurs on the cooling fan for CPU of CPU/IO module.

(10) I/O (I/O FAULT LED)

Amber: Failure occurs on the I/O (PCI) part of CPU/IO module.

(11) PRIMARY (Primary LED)

Green: CPU/IO module is primary. Pressing DUMP (NMI) switch may blink LED in green.

(9) Power Unit LED

Power Unit LED is located at power supply unit at the rear of the server.

LED indication	Description	Action
Off	The server is not receiving AC power.	
Blinking (green)	The server is receiving AC power.	–
On (green)	The server is powered on.	–
On (amber) Blinking (amber)	The power supply unit fails.	Contact your sales representative.

6.2 **POST Error Message**

If POST detects an error, an error message appears on the display.

```
System Monitoring Check
... Passed
ERROR
8002: Check date and time settings

Press <F1> to resume, <F2> to setup
```

Example:
This message indicates that date and time
set on realtime clock is incorrect.
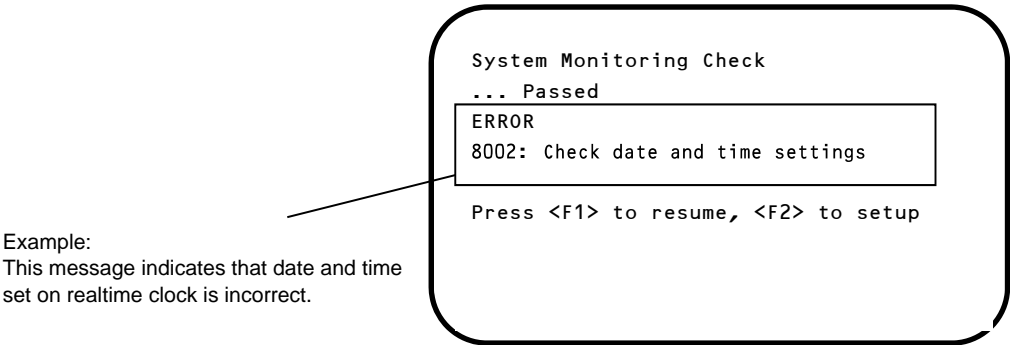
The next table lists error messages and the actions to take in response to them.

If the same error appears even if the action is performed, contact your sales representative.

(1) Error messages

	Error Message	Description	Action
8000	System variable is corrupted.	Illegal setup information of BIOS was detected.	Start BIOS Setup Utility (SETUP), and then select **Load Setup Defaults** and specify the necessary settings.
8001	Real time clock error	Real time clock error was detected.	Start SETUP, and then specify the correct date and time.
8002	Check date and time settings	Incorrect date and time set on real time clock was detected.	
8006	System configuration data cleared by Jumper.	The setup utility settings were cleared using the jumper.	Follow the steps described in *Chapter 1 (10. Resetting and Clearing the Server).*
8007	SETUP Menu Password cleared by Jumper.	The setup utility password was cleared using the jumper.	
8800	DXE_NB_ERROR	An error was detected during initialization of chipset.	Contact your sales representative.
8801	DXE_NO_CON_IN	An error was detected during initialization of console.	
8802	DXE_NO_CON_OUT		
8803	PEI_DXE_CORE_NOT_FOUND	A flash ROM is corrupt.	
8804	PEI_DXEIPL_NOT_FOUND		
8805	DXE_ARCH_PROTOCOL_NOT_A VAILABLE		
8806	PEI_RESET_NOT_AVAILABLE	The system was not reset correctly.	
8807	DXE_RESET_NOT_AVAILABLE		
8808	DXE_FLASH_UPDATE_FAILED	The Flash ROM was not written to correctly.	
B000	Expansion ROM not initialized	Failed to expand option ROM.	Disable expansion of option ROM of the board that is not used for OS boot.
B001	Expansion ROM not initialized - PCI Slot 1	Option ROM expansion in PCI slot 1 failed.	Disable expansion of option ROM of the option board that is not used for OS boot. Start SETUP, and select **Advanced** → **PCI Configuration** → **PCI Device Controller and Option ROM Settings** → **PCIx Slot Option ROM** → **Disabled**. (x: PCI slot number)
B002	Expansion ROM not initialized - PCI Slot 2	Option ROM expansion in PCI slot 2 failed.	
B003	Expansion ROM not initialized - PCI Slot 3	Option ROM expansion in PCI slot 3 failed.	
B004	Expansion ROM not initialized - PCI Slot 4	Option ROM expansion in PCI slot 4 failed.	
B022	Serial Port Configuration Overlapped.	Overlapping serial port configuration was detected.	Start SETUP, select **Advanced** → **Serial Port Configuration**, and specify the setting again in a way that the values of Base I/O or Interrupt in **Serial Port A** and **Serial Port B** will not be the same.
B800	DXE_PCI_BUS_OUT_OF_RESO URCES	Resources to be allocated to PCI expansion card was insufficient	Check the option board connection.
C010	The error occurred during temperature sensor reading	An error was detected while reading temperature sensor.	Contact your sales representative.
C011	System Temperature out of the range.	A temperature abnormality was detected.	It is possible that a cooling fan has failed or is clogged. Contact your sales representative.

	Error Message	Description	Action
C061	1st SMBus device Error detected.	An error was detected on 1st SM Bus.	Contact your sales representative.
C062	2nd SMBus device Error detected.	An error was detected on 2nd SM Bus.	
C063	3rd SMBus device Error detected.	An error was detected on 3rd SM Bus.	
C064	4th SMBus device Error detected.	An error was detected on 4th SM Bus.	
C065	5th SMBus device Error detected.	An error was detected on 5th SM Bus.	
C066	6th SMBus device Error detected.	An error was detected on 6th SM Bus.	
C067	7th SMBus device Error detected.	An error was detected on 7th SM Bus.	
C101	BMC Memory Test Failed..	An error was detected on BMC.	Unplug the power cord, wait for at least 30 seconds, then restart the server.
C102	BMC Firmware Code Area CRC check Failed.		
C103	BMC core hardware failure.		
C104	BMC IBF or OBF check failed.	An error was detected while accessing BMC.	
C105	BMC SEL area full.	There is not enough space to store the system event log.	Start up Offline Tools (*Chapter 1, 12. Offline Tools*) and delete the event logs.
C10C	BMC update firmware corrupted.	An illegality was detected while updating BMC firmware.	Unplug the power cord, wait for at least 30 seconds, then restart the server.
C10D	Internal Use Area of BMC FRU corrupted.	An illegality was detected in FRU containing the device information.	
C10E	BMC SDR Repository empty.	An error was detected on BMC SDR.	
C10F	IPMB signal lines do not respond.	Failure of Satellite Management Controller was detected.	
C110	BMC FRU device failure.	An error was detected in FRU that contains device information.	
C111	BMC SDR Repository failure.	Failure was detected in SROM that stores the SDR.	
C112	BMC SEL device failure.	Device failure was detected in BMC SEL.	
C113	BMC RAM test error.	An error was detected in BMC RAM.	
C114	BMC Fatal hardware error.	A hardware error was detected in BMC.	
C115	Management controller not responding	Management controller does not respond.	Update the BMC firmware.
C116	Private I2C bus not responding.	Private I2C bus does not respond.	Unplug the power cord, wait for at least 30 seconds, then restart the server.
C117	BMC internal exception	BMC internal error was detected.	
C118	BMC A/D timeout error.	BMC A/D timeout error was detected.	
C119	SDR repository corrupt.	BMC error or illegal SDR data was detected.	
C11A	SEL corrupt.	BMC error or illegal system event log data was detected.	

Error Message		Description	Action
C11B	BMC Mezzanine card is not found.	BMC Mezzanine card is not installed.	Contact your sales representative.
C11C	BMC Mezzanine partition is invalid.	A format error was detected in BMC Mezzanine card.	
C11D	BMC is in Forced Boot Mode.	Detected that BMC is in Forced Boot Mode.	Unplug the power cord, wait for at least 30 seconds, then restart the server. At that time, check the jumper switch setting on motherboard.
D483	BP SROM data invalid	An invalid data was detected in system backplane.	Contact your sales representative.
D484	BP SROM data read error	Failed to read data in system backplane.	
D485	MB SROM data invalid	An invalid data was detected in CPU/IO board.	
D486	MB SROM data read error	Failed to read data in CPU/IO board.	

(2) Error messages on a virtual LCD

You can confirm the error messages by using EXPRESSSCOPE Engine 3 web browser window. For details, see *EXPRESSSCOPE Engine 3 User's Guide*.

The table below shows the error messages displayed on upper and lower lines, cause, and action.

If the same error appears even if the action is performed, contact your sales representative.

Message displayed on upper LCD line

Message displayed on lower LCD line
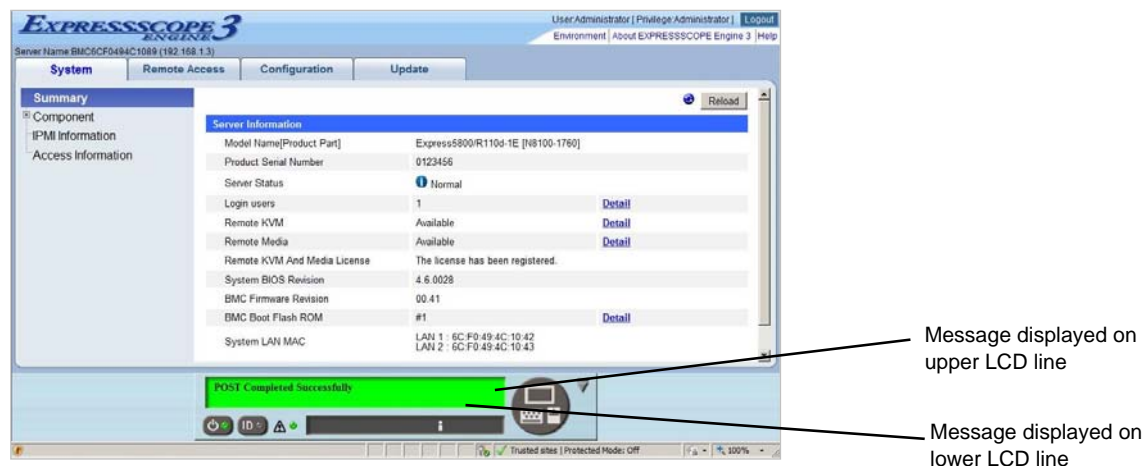
Messages displayed on an upper LCD line

Message on Upper LCD Line	Description	Action
XXXX BIOSXXXX	Displayed while POST is running.	This is not an error.
POST Completed Successfully	Displayed when POST completes normally.	This is not an error.
POST ERROR XXXX	Error XXXX was detected during POST.	Check the message displayed on LCD, and take an appropriate action.
System Simplex	The system is operating in simplex mode.	This is not an error.
System Duplex	CPU/IO module is operating in duplex mode.	This is not an error.
CPU Broken	A CPU failure was detected.	Contact your sales representative.
IO Broken	An I/O unit failure was detected.	Contact your sales representative.

Messages displayed on a lower LCD line

Message on Lower LCD Line	Description	Action
VBAT Lower Non-Critical	A voltage abnormality was detected.	Contact your sales representative.
VBAT Upper Non-Critical		
VBAT Lower Critical		
VBAT Upper Critical		
Baseboard Temperature1 Lower Non-Critical	A temperature abnormality was detected.	It is possible that a cooling fan has failed or is clogged. Contact your sales representative.
Baseboard Temperature1 Upper Non-Critical		
Baseboard Temperature1 Lower Critical		
Baseboard Temperature1 Upper Critical		
Baseboard Temperature2 Lower Non-Critical		
Baseboard Temperature2 Upper Non-Critical		
Baseboard Temperature2 Lower Critical		
Baseboard Temperature2 Upper Critical		
CPU1_DIMM Area Temperature Lower Non-Critical		
CPU1_DIMM Area Temperature Upper Non-Critical		
CPU1_DIMM Area Temperature Lower Critical		
CPU1_DIMM Area Temperature Upper Critical		
CPU2_DIMM Area Temperature Lower Non-Critical		
CPU2_DIMM Area Temperature Upper Non-Critical		
CPU2_DIMM Area Temperature Lower Critical		
CPU2_DIMM Area Temperature Upper Critical		
Processor1 Thermal Control Upper Non-Critical		
Processor1 Thermal Control Upper Critical		
Processor2 Thermal Control Upper Non-Critical		
Processor2 Thermal Control Upper Critical		
DUMP Request !	The dump button was pressed.	Wait until collecting the memory dump data has finished.
Power Supply1 Failure detected	A power supply unit abnormality occurred.	Make sure that the power cord is plugged in.
Processor Missing	No CPU is installed.	Contact your sales representative.
Processor1 Thermal Trip	The power was forcibly turned off due to a CPU temperature abnormality.	Contact your sales representative.
Processor2 Thermal Trip		
Sensor Failure Detected.	Abnormality in a sensor was detected.	Contact your sales representative.
SMI timeout	A timeout occurred while servicing system management interrupts.	
IPMI Watchdog timer timeout (Power off)	A watchdog timer timeout occurred.	

Message on Lower LCD Line	Description	Action
System Front FAN1 Lower Non-Critical	A fan alarm was detected.	It is possible that a cooling fan has failed or is clogged. Contact your sales representative.
System Front FAN2 Lower Non-Critical		
System Front FAN3 Lower Non-Critical		
System Front FAN4 Lower Non-Critical		
System Front FAN5 Lower Non-Critical		

6.3 List of Windows Event Logs

Note	Confirm also *"Chapter 1 (8.11 Event Logs)"*.

OS

■ Event log

ID	Source	Type	Message (Description)
	Timing		Action

System Event Log for all Windows OS

■ System Event Log

ID	Source	Type	Message (Description)
51	Cdrom	Warning	Error detected on the device \Device\CdRom0 during the paging operation.
	Upon OS installation		This event may be registered in the event viewer, but this does not affect system operation.

Windows Server 2016

System Log

ID	Source	Type	Message (Description)
4	`l2nd`	Warning	QLogic BCM57810 10 Gigabit Ethernet (NDIS VBD Client) #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
4	`b57nd60a`	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
27	`ixgbs`	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When starting system or installing Starter Pack		This event does not affect system operation.
27	`ixgbi`	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
219	`Microsoft-Windows-Kernel-PnP`	Warning	The driver \Driver\WudfRd failed to load for the device xxxxxxxxxxxxxxxxx.
	When starting system or connecting a disk		This may be recorded when starting the system or connecting a disk depending on timing, but does not affect system operation.

225	`Kernel-PnP`	Warning	The application YYY with process id XXX stopped the removal or ejection for the device ZZZ. *　ZZZ : Instance name of the device 　YYY : Name of the process that was using the device 　XXX : ID of the process that was using the device
	When applying Starter Pack		This event does not affect system operation if it is logged when applying Starter Pack.
7023	`Service Control Manager`	Error	"xxxxxxxx service terminated with the following error: A device attached to the system is not functioning."
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
7023	`Service Control Manager`	Error	The Data Sharing Service service terminated with the following error: %%3239247874 *　The description for Event ID 7023 from source Service Control Manager cannot be found. Either the component that raises this event is not installed on your local computer or the installation is corrupted. You can install or repair the component on the local computer. If the event originated on another computer, the display information had to be saved with the event. The following information was included with the event: 　　Data Sharing Service 　　%%3239247874 　　The locale specific resource for the desired message is not present
	When running an OS for the first time or rebooting it, or while the system is in use		This event does not affect system operation.
7030	`Service Control Manager`	Error	The Printer Extensions and Notifications service is marked as an interactive service.　However, the system is configured to not allow interactive services.　This service may not function properly.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
10010	`Microsoft-Windows-DistributedCOM`	Error	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX} did not register with DCOM within the required timeout.
	When running an OS for the first time or rebooting it		Refer to the following website. http://support.microsoft.com/kb/956479/
10317	`Microsoft-Windows -NDIS`	Error	Miniport Microsoft Network Adapter Multiplexor Driver, 　{xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx}, had event Network Interface deleted while PNP Device still exists. Note that this event is provided for informational purpose and might not be an error always (Eg: In case of vSwitch which was recently un-installed or a LBFO team was removed)
	When removing a team		This event does not affect system operation.

Application Log

1014	`Microsoft-Windows-Security-SPP`	Warning	Acquisition of End User License failed. hr=0x80072EE7

	When running an OS for the first time		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
1015	`Microsoft-Windows-Security-SPP`	Warning	Detailed HRESULT. Returned hr=0xC004F022, Original hr=0x80049E00
	When running an OS for the first time		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
1534	`Microsoft-Windows-User Profiles Service`	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed, error code is Not implemented.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
8198	`Microsoft-Windows-Security-SPP`	Error	License Activation (slui.exe) failed with the following error code: hr=0x******** Command-line arguments: RuleId=*****************************
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
8200	`Microsoft-Windows-Security-SPP`	Error	License acquisition failure details. hr=0x80072EE7
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.

Applications and Services Logs

69	`Microsoft-Windows-AppModel-Runtime`	Error	Failed with 0x490 modifying AppModel Runtime status for package ************************* for user ********* (current status = 0x0, desired status = 0x20).
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
134	`Microsoft-Windows-Time-Service`	Warning	NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on 'time.windows.com,0x1'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter. The error was: No such host is known. (0x80072AF9)
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
200	`Microsoft-Windows-DeviceSetupManager`	Warning	A connection to the Windows Update service could not be established.
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
201	`Microsoft-Windows-DeviceSetupManager`	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
202	`Microsoft-Windows-DeviceSetupManager`	Warning	The Network List Manager reports no connectivity to the internet.
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.

| 506 | `Microsoft-Windows-DeviceManagement-Pushrouter` | Error | DmWapPushService: Failed to register WNF with EventAggregator for WAP messages received by SMS Router. Result: (0xC002000B). |
| | When running an OS for the first time | | This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly. |

Windows Server 2012 R2

■ System Event Log

46	volmgr	Error	Failed to initialize crash dump.
	When installing an OS		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2756313
134	Microsoft-Windows-Time-Service	Warning	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. Error: (0x80072AF9)
	When installing an OS, starting system, or applying Starter Pack		If this event is not logged after connecting with Internet, this event does not affect system operation.
1500	SNMP	Error	The SNMP Service encountered an error while accessing the registry key SYSTEM\CurrentControlSet\Services\SNMP\Parameters\TrapConfiguration.
	When installing an OS		If this event is logged only when SNMP is enabled and does not occur repeatedly, there is no problem with system operation. Go to the following Microsoft website for details. http://support.microsoft.com/kb/2002303/
7023	Service Control Manager	Error	The Network List Service terminated with the following error: Device is not ready.
	When installing an OS		If this event is logged only upon OS installation and is not logged repeatedly, it does not affect system operation.
7023	Service Control Manager	Error	The IP Helper service terminated with the following error: The specified service is invalid, or valid device is not associated with the service.
	When installing an OS		If this event is logged only upon OS installation and is not logged repeatedly, it does not affect system operation.
7030	Service Control Manager	Error	Printer Extensions and Notifications service is marked as interactive service. However, the system is not allowed to use interactive service. Thus, this service might not work correctly.
	When installing an OS		If this event is logged only upon OS installation and is not logged repeatedly, it does not affect system operation.
10010	Microsoft-Windows-DistributedCOM	Error	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX} did not register with DCOM within the required timeout.
	When installing an OS		Go to the following URL for detailed information. https://support.microsoft.com/ja-jp/kb/956479 (Japanese Only)
10016	Microsoft-Windows-DistributedCOM	Error	In setting of access permission inherent in application, access permission for local activation to CLSID {D63B10C5-BB46-4990-A94F-E40B9D520160} and APPID {9CA88EE3-ACB7-47C8-AFC4-AB702511C276} COM server application cannot be given to a user NT AUTHORITY SYSTEM SID (S-1-5-18) of LocalHost (using LRPC) running in the application container disabled SID (unavailable). This security access permission can be changed by the component service management tool.
	When first installing an OS		If this event is logged only upon OS installation and is not logged repeatedly, it does not affect system operation.
10149	Microsoft-Windows-WinRM	Warning	The WinRM service is not listening for WS-Management requests.
	When installing an OS		If this event is logged together with ID 7036 "Service Control Manager (Windows Remote Management (WS-Management) service is changed to halt state.), it does not affect system operation. If these events are not in pair and WinRM Event 10148 (The WinRM service is not listening for WS-Management requests.) is output immediately after this event, it is not problem in system operation.

■ Application Event Log

1014	Microsoft-Windows-Security-SPP	Error	Failed to obtain end-user license. hr=0x80072EE7
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1015	Microsoft-Windows-Security-SPP	Warning	Description: Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	When installing an OS		Unless the event is registered after license authentication, this event does not affect system operation.
1058	Microsoft-Windows-Security-SPP	Error	Failed to obtain certificate of purchase from ACPI table. Error code: 0xC004F057
	When installing an OS		This event does not affect system operation.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed. Error code is not implemented.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: hr=0xC004F063
	When installing an OS		Unless this event is not logged repeatedly after license authentication, there is no problem in system operation.
8200	Microsoft-Windows-Security-SPP	Error	Detailed information about failure of license authentication hr=0x80072EE7
	When installing an OS		Unless this event is not logged repeatedly after license authentication, there is no problem in system operation.

■ **Application Event Log and Service Log**

2	Microsoft-Windows-Kernel-EventTracing	Error	The session could not start due to the error below: 0xC000000D
	While the system is in use		If the log has been registered when your computer administration screen is displayed, there is no problem.
104	Microsoft-Windows-DeviceSetupManager	Error	Could not start DSM service. Result=0x800706B5
	When installing an OS		If this event is logged only upon OS installation and is not logged repeatedly, it does not affect system operation.
200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update service could not be established.
	While the system is in use		If this event is not logged after connecting with Internet, this event does not affect system operation.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	While the system is in use		If this event is not logged after connecting with Internet, this event does not affect system operation.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	While the system is in use		If this event is not logged after connecting with Internet, this event does not affect system operation.
215	Microsoft-Windows-AppReadiness	Error	'ART:ResolveStoreCategories' of Administrator failed. Error: 'Class not registered' (0.0469065 sec.)
	When installing an OS		If this event is logged only at the first sign-in after OS installation and does not occur repeatedly, there is no problem in system operation.
1001	Microsoft-Windows-Dhcp-Client	Error	Your computer was not assigned an address from the network (by the DHCP Server) for the Network Card with network address <MAC address>. The following error occurred: 0x79. Your computer will continue to try and obtain an address on its own from the network address (DHCP) server.
	Upon OS installation or when applying Starter Pack		This event does not affect system operation unless occurred repeatedly.
12520	Microsoft-Windows-Hyper-V-VMMS	Warning	Auto-generating a self-signed certificate for server authentication.
	While the system is running		This event is logged at shutdown for activation of Windows Server 2012 Hyper-V, however, it does not affect system operation.
14100	Microsoft-Windows-Hyper-V-VMMS	Warning	Shutting down physical computer. Stopping/saving all virtual machines .
	While the system is running		This event is logged at shutdown for activation of Windows Server 2012 Hyper-V, however, it does not affect system operation.
15350	Microsoft-Windows-Hyper-V-VMMS	Error	Virtual Infrastructure Drive (VID) is not running.
	While the system is running		This event is logged at shutdown for activation of Windows Server 2012 Hyper-V, however, it does not affect system operation.

Windows Server 2008 R2

■ System Event Log

1	iScsiPrt	Error	Initiator failed to connect to the target. Target IP address and TCP Port number are given in dump data.
	When Windows Server 2008 R2 is operating while iSCSI is recognized		Go to the following Microsoft website for details. http://support.microsoft.com/kb/976072/en-us
11	Disk	Error	The driver detected a controller error on Device\Harddisk$X$ \DR$X$. **Note**: A different number replaces X depending on the connection status of the disk.

	Upon connecting with a USB device, remote media, and/or Virtual Flash USB Device		When the below values are 00 in **Details in the event logs** $\rightarrow$ **Display**, this event does not affect system operation.
			
			 <Word format>
			 `0000: 0068030E 00000001 00000000 C004000B`
			 `0008: 00000103 00000000 00000000 002D0800`
			 `0010: 00000000 00000000 000427B7 00000000`
			 `0018: FFFFFFFF 00000006 00000040 00000000`
			 `0020: 12060000 10000008 00000000 0000003C`
			 `0028: 00000000 86BAA280 00000000 86BDB008`
			 `0030: 00000000 00000000 00000000 00000000`
			 `0038: 00000000 00000000 00000000 00000000`
			 `0040: 00000000 00000000 00000000 00000000`
			 `0048: 00000000 00000000 00000000 00000000`
			 `0050: 00000000 00000000`

134	Microsoft-Windows-Time-Service	Warning	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.
	Upon OS Installation		This event does not affect system operation.

■ Application Event Log

1015	Microsoft-Windows-Security-SPP	Warning	Description: Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	Upon OS Installation		Unless the application event is registered after license authentication, this event does not affect system operation.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed
	Upon OS Installation		This event does not affect system operation.
8193	VSS	Error	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 &3030303030303039333313030303735373030323934#{ GUID }) - BuildLunInfoForDrive. hr = 0x80070013, This media is write-protected.
	When you import a transportable shadow-copy to another server that has a read-only volume while operating Windows Server 2008 R2:		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2003016/en-us

12289	VSS	Error	Unexpected error DeviceIoControl(¥¥?¥storage#volume#_??_mpio#disk&ven_nec&prod _istorage_1000&rev_1000#1&7f6ac24&0&30303030303030303031303030303032383030304636#{ GUID}#0000000000007 e00#{ GUID }-00000000000002B8, x00560000,0000000000000000,0,00000000004866D0,4096,[0]) Hr = 0x80070013, This media is read-only volume.
	When you import a transportable shadow-copy to another server that has a read-only volume while operating Windows Server 2008 R2:		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2003016/en-us
12289	VSS	Error	Volume shadow copy service error: unexpected error DeviceIoControl(¥¥?¥fdc#generic_floppy_drive#6&6a032c4&0&0 #{ GUID }-00000000000002B0,0x00560000, 0000000000000000,0,00000000001EC0E0,4096,[0]) hr = 0x80070001, function is incorrect.
	When you import a transportable shadow-copy to another server that has a floppy disk drive while operating Windows Server 2008 R2:		This event does not affect system operation.

■ Applications and Services Logs

Microsoft-Windows-Kernel-EventTracing/Admin			
2	Microsoft-Windows-Kernel-EventTracing	Error	Session "" failed to start with the following error: 0xC000000D
	When running an OS for the first time		This event does not affect system operation.
3	Microsoft-Windows-Kernel-EventTracing	Error	Session "Microsoft-Windows-Setup" stopped due to the following error: 0xC000000D
	When running an OS for the first time		This event does not affect system operation.
Microsoft-Windows-Dhcp-Client/Admin			
1001	Microsoft-Windows-Dhcp-Client	Error	Your computer was not assigned an address from the network (by the DHCP Server) for the Network Card with network address 0x50E549A98325. The following error occurred: 0x79. Your computer will continue to try and obtain an address on its own from the network address (DHCP) server.
	When installing an OS, running an OS for the first time, or applying Starter Pack		If this event is logged when installing an OS, running an OS for the first time, or while applying Starter Pack, it does not affect system operation.

6.4 **Error Message on Windows Server**

If a fatal error occurs on Windows Server, the screen changes blue, and detailed error information is displayed.

STOP : C000021A (FATAL SYSTEM ERROR)

The Windows logon process.. System process terminated.

Unexpectedly with a status of 0x00000001
(0x00000000 0x00000000).

The system has been shutdown.

crashdump : initializing miniport driver

crashdump : dumping physical memory to disk

Background color is "Blue".

Your PC ran into a problem and needs to restart. We're just collecting some error info, and then we'll restart for you. (0% complete)

If you'd like to know more, you can search online later for this error: NMI_HARDWARE_FAILURE

Example on Windows Server 2008 R2   Example on Windows Server 2012 R2

Take a note of on-screen message and contact your sales representative.

At the occurrence of error, the server performs memory dump automatically, and saves the memory dump in the specified folder. See *Chapter 1 (6.1 Memory Dump (Debug Information))* in *Installation Guide (Windows).*

Important	**Ignore the virtual memory shortage message and proceed when restarting.**

Note	When the memory dump is saved, one of the following event log is recorded to **System** in **Event Viewer**. - Source: srabid(ID:4096) - Source: Save Dump(ID:1001) - Source: Microsoft-Windows-WER-SystemErrorReporting(ID:1001) Make sure that the memory dump is surely saved by these event log and then, copy the memory dump file onto media.

A message "Virtual memory is short. Add system memory or quit application." may appear during operation.

In such a case, do the following:

    1. Add physical memory.

    2. Change paging file size (physical memory capacity x 1.5 or larger).

Warning messages are also displayed when errors occur with hard disk drive, network, printer, or other internal devices or peripheral devices. Take a note of the message and contact your sales representative.

7. Collecting Failure Information

If the server fails, you can collect failure information by using the following method.

The failure information is to be collected only at the request of your sales representative.

> **Important** **When the system restarts after a failure has occurred, a message may appear indicating virtual memory shortage. Ignore this message and proceed with starting the system. Restarting the system may result in an inability to properly collect information.**

7.1   Collecting Failure Information Occurred on Server

Follow the steps below to collect various logs that occurred on the server.

1.   Run the following file on the server.
     `%EsmDir%\tool\collect.exe`

     `%EsmDir%` means the installation folder of NEC ESMPRO Agent. (Default: `C:\ESM`)

2.   Collect all the logs in `%EsmDir%\tool\log`.

> **Tips** The files under `%EsmDir%\log` folder do not need to be collected.

7.2 **Collecting Event Logs**

Follow the steps below to collect various event logs that occurred on the server.

Tips	If a STOP error, system error, or stall occurs, restart the system and then follow the steps below.

7.2.1 **Windows Server 2016**

1. Right-click the left bottom of screen, and click **Event Viewer** from the menu displayed.
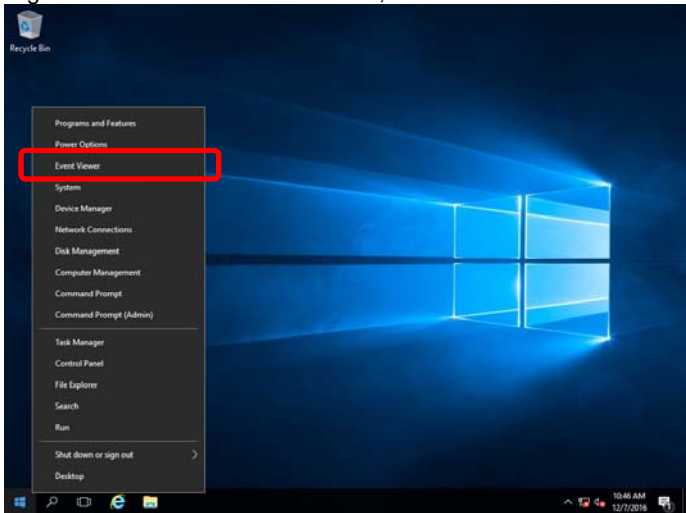
2. Select the type of log in **Windows Logs**.

    Application records events related to running applications.

    Security records events related to security.

    System records events that occur in Windows system components.
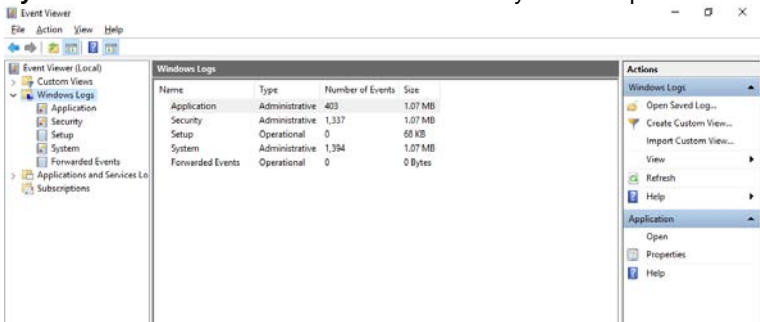
3.   Click **Save All Events As** from **Action** menu.
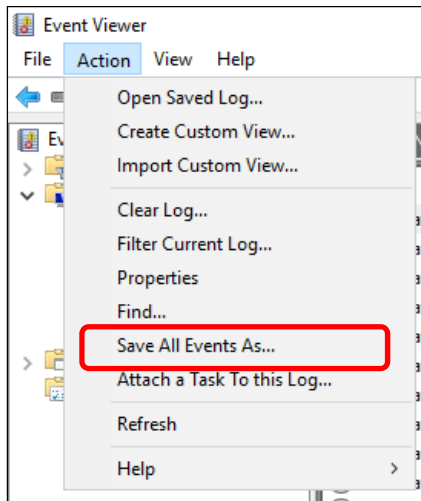
4.   Type the file name of the archived log in **File name**.

5.   Select the type of the log file you want to save in **Save as type**, and then click **Save**.

7.2.2 **Windows Server 2012 R2**

1. Click **Settings** on Charms Bar.
    To go to step 4, you can directly choose **Event Viewer** by right-clicking on the lower left corner of the screen.
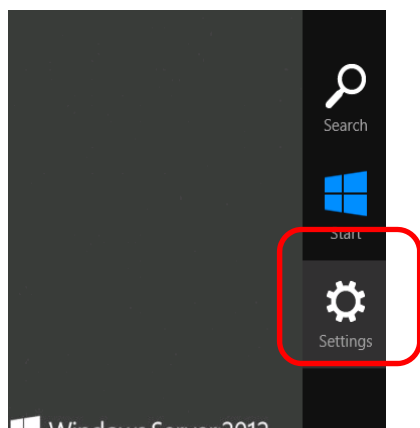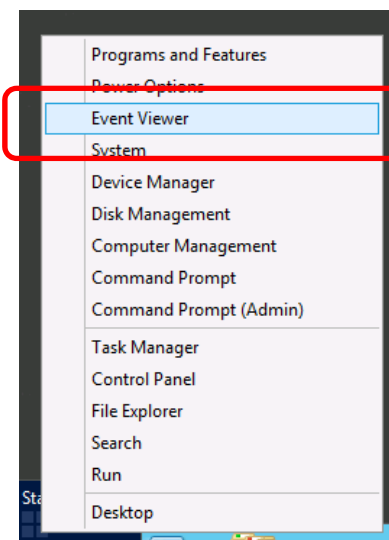
                Charms Bar   Right-click menu

2.   Click **Control Panel** in **Settings**.
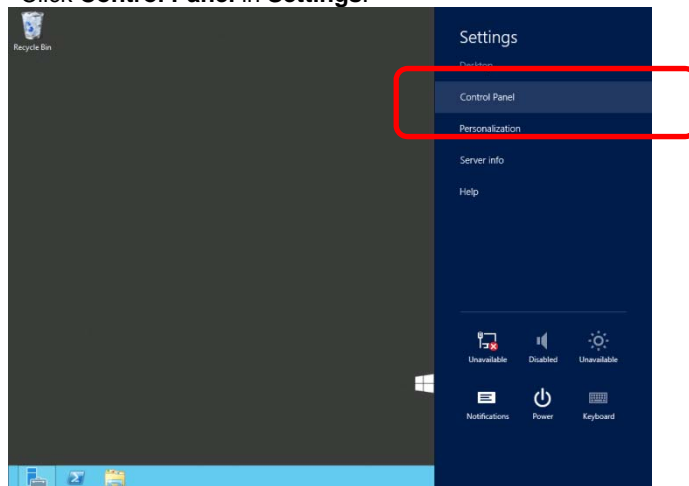
3.   Click **View event logs** under **System and Security**.
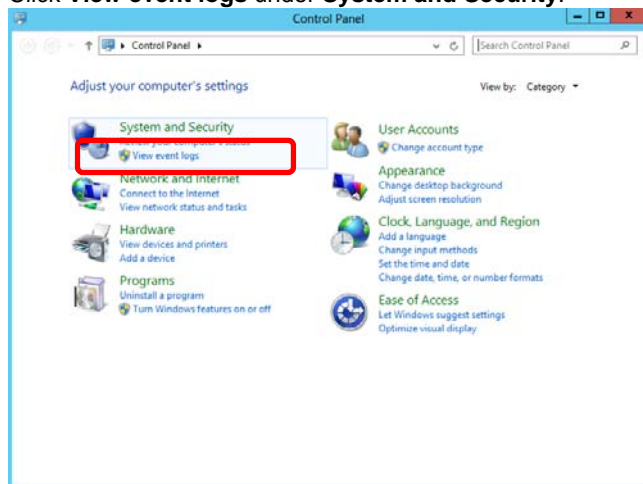
4.   In **Windows Logs**, select the type of log.

Application records events related to applications.

Security records events related to security.

System records events that occurred in Windows system components.
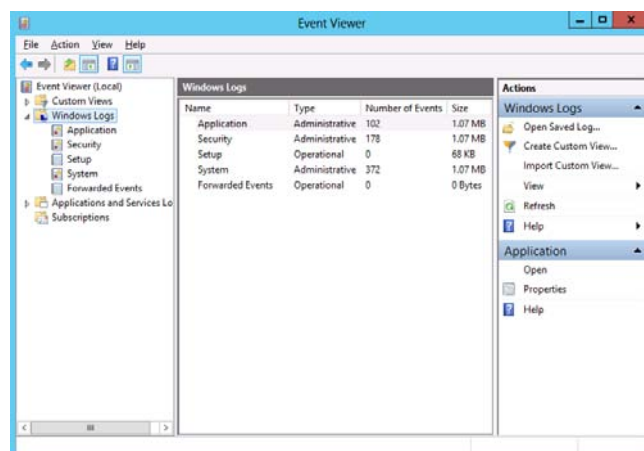
5. On the **Action** menu, click **Save All Events As**.
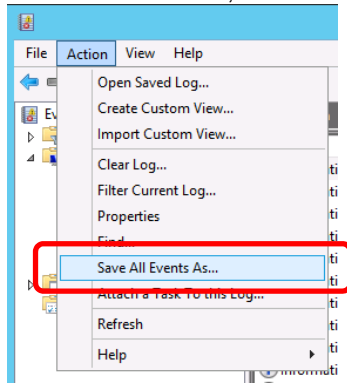
6. In **File name**, type the file name of the log.

7. In **Save as type**, select the type of the log file you want to save, and then click **Save**.

7.2.3 **Windows Server 2008 R2**

1. From **Control Panel**, select **Administrative Tool** and then **Event Viewer**.

2. Select the type of log in **Windows Logs**.

    Application records events related to running applications.

    Security records events related to security.

    System records events that occurred in Windows system components.

3. On the **Action** menu, click **Save All Event As**.

4. In **File name**, type the file name of the log.

5. In **Save as type**, select the type of the log file you want to save, and then click **Save**.

7.3 Collecting Configuration Information

This section describes how to collect hardware information or configuration.

Tips	If a STOP error, system error, or stall occurs, restart the system and then follow the procedure below.

7.3.1 Windows Server 2016

1. Right-click the left bottom of screen, and click **Run** from the menu displayed.
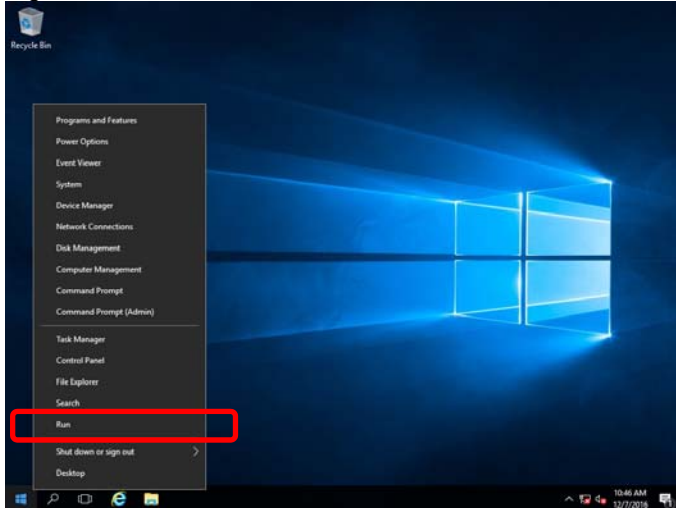
2. Type `msinfo32.exe`, and then press <Enter> key.
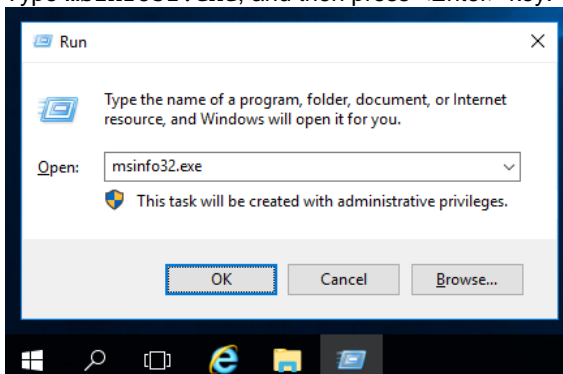
   System Information starts.

3. Click **Export** from File menu.

4. Type a file name to save in **File Name**, and then Click **Save**.

7.3.2 **Windows Server 2012 R2**

1. Click **Search** on Charms Bar.
   You can use **Run** feature by right-clicking on the lower left corner of the screen.
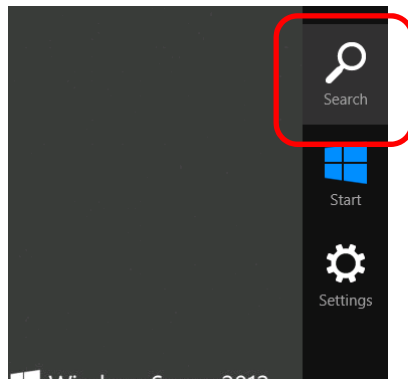
Charms Bar
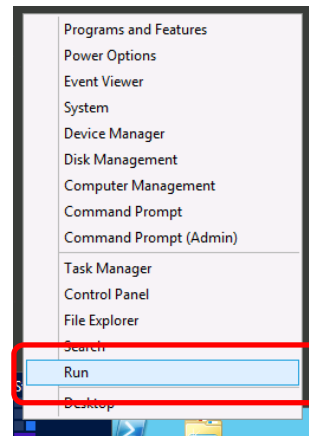
Right-click menu

2. Type `msinfo32.exe` in the text box, and then press <Enter> key.
   System Information dialog box will appear.
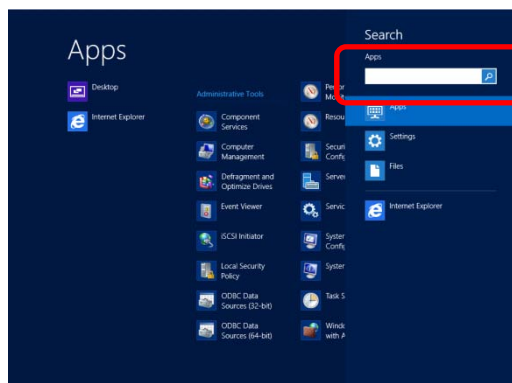
Search   **Run**
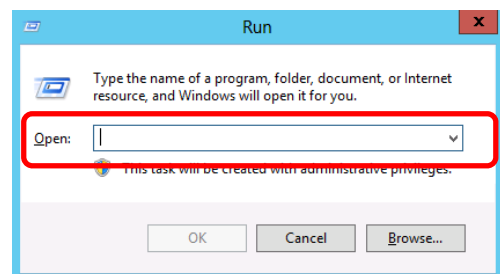
3. From **File** menu, click **Export**.

4. Type a file name in **File Name**, and then click **Save**.

7.3.3 **Windows Server 2008 R2**

1. Select **Run** from **Start** menu.

2. Enter `msinfo32.exe` in **Open** text box, and then click **OK**.

3. **System Information** starts.

4. From **Files** menu, click **Export**.

5. Enter the file name to save in **File Name**, and then Click **Save**.

7.4 **Collecting User-Mode Process Dump**

Diagnostic information related to application errors can be collected.

For details, see *Chapter 1 (6.2 How to Create a User-Mode Process Dump File)* in "*Installation Guide (Windows)*".

7.5 **Collecting Memory Dump**

If an error occurs, the dump file can be saved to acquire necessary information. You can specify any location for saving the dump. For details, see *Chapter 1 (6.1 Memory Dump (Debug Information))* in "*Installation Guide (Windows)*".

Consult with your sales representative before dumping the memory. Dumping the memory while the server is in operating normally will affect the system operation.

Important	**Ignore the virtual memory shortage message and proceed when restarting. Do not reset during dumping memory.**

The following procedure is how to use DUMP (NMI). See the figure on the next page.

1.   If a failure occurs and you want to collect memory dump, press the DUMP switch on CPU/IO module of primary side for 4 to 8 seconds.
     Press the DUMP switch by inserting the pointed tool (such as ballpoint pen) into the switch hole.

Important	• **If the DUMP switch is pressed too short or too long, memory dump will not be collected.** • **Do not use a pencil, toothpicks, plastic, and other fragile pins.**

2.   PRIMARY LED blinks while pressing the DUMP switch. When the PRIMARY LED turns off, release the DUMP switch.

<How to press DUMP switch>

PRIMARY LED blinks   PRIMARY LED off   PRIMARY LED on

| 0 sec | 1s | 2s | 3s | 4s | 5s | 6s | 7s | 8s | 9s | 10s | 11s |

Press DUMP switch.   Keep on pressing.   Release switch here.   Do not press after 9 sec.

<Location of DUMP switch>

DUMP (NMI) switch
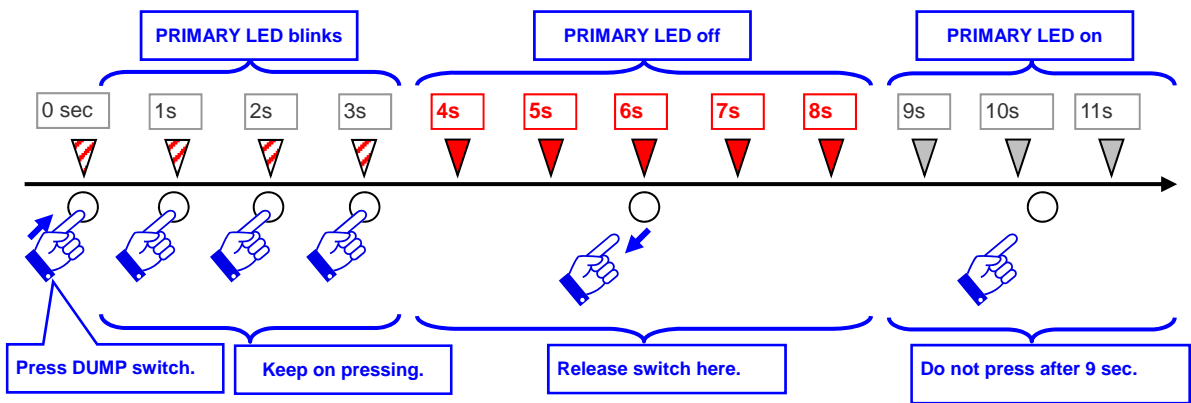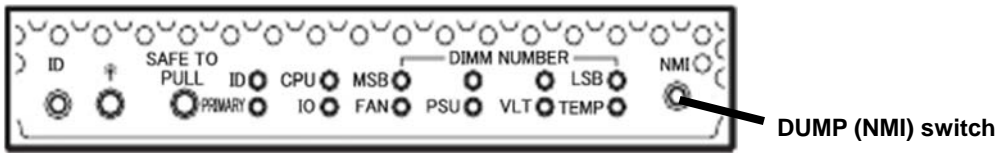
When pressing the DUMP switch, memory dump is saved in the specified location.
Memory dump is not collected depending on CPU status.

Tips	If the server fails to restart after performing memory dump, forcibly reset the server. See *Chapter 1* (*10.2 Forced Shutdown*).

8. Troubleshooting

If this system does not work normally, check it according to the following checklist.

- The server does not work normally.

  → See "*8.1 Problem of Powering on*".

  → See "*8.4 Problem of Starting OS*".

  → See "*8.5 Problem of Windows STOP* Error*".

  → See "*8.6 Problem of Internal Devices and Other Hardware*".

  → See "*8.7 Problem of OS Operation*".

  → See "*8.10 Problem of Optical Disk Drive and Flash FDD*".

- Failed to start from EXPRESSBULDER.

  → See "*8.2 Problem of EXPRESSBUILDER*".

  → See "*8.8 Problem of EXPRESSBUILDER on Windows*".

- Failed to install OS.

  → See "*8.3 Problem of Installing OS*".

- NEC ESMPRO does not work normally.

  → See "*8.9 Problem of Bundled Software*".

  → See "*NEC ESMPRO Agent Installation Guide* (Windows)" in EXPRESSBUILDER.

- Event logs

  → See "*8.11 Event Logs*".

- Failed to setup Windows.

  → See "*8.3 Problem of Installing OS*".

If the server still does not work normally, see the following topics in this chapter before suspecting failure.

- Error message

  → See "*6. Error Messages*".

- NEC ESMPRO Manager

  → See "*NEC ESMPRO Manager Installation Guide*" in EXPRESSBUILDER.

- Collect failure information

  → See "*7. Collecting Failure Information*".

- Recovery of Windows system

  → See "*9. Windows System Recovery*".

If the trouble persists, contact your sales representative.

8.1 **Problem of Powering on**

[?]   **Fail to power on the server:**

❑   Is the server properly supplied with power?

→   Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.

→   Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.

→   Make sure the circuit 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 supplies power. Refer to the manual that comes with the UPS for details.
In addition, be sure to check the power interlock function with the UPS by using BIOS Setup Utility.

❑   Did you press the POWER switch?

→   To power on the server, press the POWER switch after the module POWER LED is lit green. It takes about one minute until the module LED blinks in green after connecting the power cord.

❑   Did you install the CPU/IO module properly?

→   Check if the CPU/IO module is properly installed in the server. Secure the CPU/IO module with screw located on the module removable handle.

[?]   **The screen does not turn on:**

❑   Wait for some time until the NEC logo appears.

[?]   **The screen is sometimes changed to the black screen during POST process:**

❑   Ignore the black screen and wait until POST ends.

[?]   **POST fails to complete:**

❑   Are the DIMMs installed properly?

→   Check if DIMMs are properly installed.

❑   Is the memory size large?

→   Wait for some time until the memory check ends. The time for checking the memory is increased in proportion to the memory size.

❑   Did you perform any keyboard or mouse operation immediately after you started the server?

→   Restart the server and do not perform any keyboard or mouse operation until the BIOS startup message appears.

❑   Are memory and PCI card supported for use with this server?

→   Operation of the server with unauthorized devices is not supported.

❑   Did you install the CPU/IO module properly?

→   Check if the CPU/IO module is properly installed in the server. Secure the CPU/IO module with screw located on the module removable handle.

8.2　**Problem of EXPRESSBUILDER**

[?]　**Unable to start EXPRESSBUILDER:**

❑　Did you insert the EXPRESSBUILDER DVD before starting the server?

→　Insert the EXPRESSBUILDER DVD, and then restart the server.

❑　Are BIOS settings correct?

→　In **Boot** menu of the BIOS setup utility, configure the boot order so that the optical disk drive will be the first to start up.

❑　Is an error message displayed?

→　Take an appropriate action according to the message.

```
Error [Message ID:Z3002] :
Failed to detect a DVD drive or a flash drive.
```
Action: Check if hardware is properly connected.

```
Error [Message ID:Z3003] :
Failed to read a file.
```
Action: Check if the DVD is damaged.

❑　Is a message popped up?

→　Take an appropriate action according to the table below.

Message	Action
EXPRESSBUILDER does not support this computer. Insert EXPRESSBUILDER disc for the computer and click **OK** to restart the computer.	Run the correct version of EXPRESSBUILDER.
Failed to get the hardware parameters on the motherboard. Check if EXPRESSBUILDER is for this computer or if the motherboard has failed.	Contact your sales representative.
Failed to find a file.	EXPRESSBUILDER disc has stains or cracks or the optical disk drive is faulty. Contact your sales representative.
Failed to open a file.	
Failed to get the parameters of a file.	
Failed to save a file.	
Failed to copy a file.	
An undefined error occurred.	Contact your sales representative.

8.3 Problem of Installing OS

[?]   **Unable to create a partition when installing Windows Server 2012 R2:**

❑   Is the following message displayed?

→   Delete the partition created, and then create a new partition.
Be careful to delete what partition if another data disk is connected.

For details, refer to the following website.

https://technet.microsoft.com/en-us/library/dn387077.aspx

[?]   **Unable to install OS:**

❑   Is the hard disk drive properly installed?

→   Make sure that the hard disk drive is installed securely and that cables are properly connected.

❑   Is the disk format correct?

→   Follow the table below to create a partition depending on the boot mode.

Boot mode	Disk format
UEFI	GUID partition table (GPT)
Legacy BIOS	Master boot record (MBR)

For example, the following message appears if an MBR disk is specified as the system drive of Windows on UEFI boot mode.

When the disk format is changed, the disk drive on which OS is installed is cleared and the new partitions are created. Back up necessary data before changing the disk format.

[?]   **Unable to install Windows:**

❑   Have you checked precautions for installation?

→   For details, see Installation Guide (Windows).

[?]   **A product key was not requested:**

❑   Is the OS installation disc the Backup DVD-ROM?

→   You do not need to type the product key when using the Backup DVD-ROM.

[?]   When Starter Pack is run on Windows, the below message is displayed for a moment upon shutdown:

```
1 program still needs to close:
(Waiting for) Task Host Window
```

→   No problems for system operation. For details, refer to the website below:
http://support.microsoft.com/kb/975777/en-us

[?]   The following features are installed when IIS is installed using EXPRESSBUILDER:

❑   Windows Process Activation Service

   –   Process Model

   –   Configuration APIs

❑   Remote Server Administration Tool

   –   Role Administration Tools

   –   Web Server (IIS) Tools

   →   The features listed above are activated because they are required for the installation of IIS basic features.

[?]   Telnet service is not installed:

❑   Does the computer name exceed 14 characters?

   →   Install the telnet service according to the following procedure:

      1.   Adjust the computer name to 14 characters or less.

      2.   Click **Run** on **Start** menu.

      3.   Type tlntsvr/service in **Open**, and then click **OK**.

      4.   Click **Start** menu, point to **Control Panel**, click **Administrative Tools**, and then click **Services (**or select Start Screen - Administrative Tools - Service) to confirm whether the telnet service is registered.

      5.   Specify the computer name with 15 characters or more if necessary.

 [?]   Unable to configure the details of network adapter:

❑   Did you configure the details of network adapter during setting up the server?

   →   Configure the details of network adapter after installing Windows. You cannot configure the details during setup.

[?]   Rebooted during the setup:

❑   Did you specify the correct setting of OS Boot Monitoring?

   →   See Chapter 1 (3.1.3 Disabling OS Boot Monitoring Feature and 4.1.3 Disabling OS Boot Monitoring Feature, 5.1.3 *Disabling OS Boot Monitoring Feature*) in Installation Guide.

[?]   ft Server Control Software UPDATE Disk is not included:

   →   If the update program does not exist, the server does not come with the ft Server Control Software UPDATE disk.

[?]   Windows can be operated after installing but each module or PCI card is not duplex state. (Status LED on the CPU/IO module does not light green):

❑   Did you abort the installation during a setup such as by closing a window of the programs that are running?

   →   Reinstall the Windows according to *Chapter 1* (*2. Setting Up the Operating System*) in *Installation Guide*.

[?]   DISK ACCESS LED is blinking in amber:

❑   Did you properly setup the duplex of HDDs?

→   For details about the indication, see *Chapter 1* (*6.1 Error Indication by LED*).
See *Chapter 2 (1. Hard Disk Drive Operations)*, and set up the duplex of HDDs.

[?]   During setting up, Error or Warning logs are recorded in System and Applications Event Log:

→   Ignore the logs during setting up.

8.4 **Problem of Starting OS**

[?]   Unable to start OS:

❑   Are hard disk drives properly installed?

→   Install hard disk drives properly.

❑   Is the internal SAS cable connected to hard disk drive correctly?

→   Connect the SAS cable properly.

❑   Is the EXPRESSBUILDER DVD inserted?

→   Eject the EXPRESSBUILDER DVD and retry.

❑   Is a Flash FDD connected to the server?

→   Take out the Flash FDD and restart the server.

[?]   The server repeats rebooting at startup:

❑   Is CHKDSK run at startup?

→   Change to **Disabled** in the following BIOS setting by using BIOS Setup Utility.
Server - **OS Boot Monitoring**

For details, see *Chapter 3 (1. System BIOS)*.

*   After completion of CHKDSK, restart the server and change the above setting back to
Enabled.

CHKDSK is run in the following conditions:

– CHKDSK is scheduled to be run at next startup.

– Corruption of file system is detected since the previous startup until shutdown.

– Inconsistency (corruption) of file system is detected while mounting at startup.

❑   Is the setting of **OS Boot Monitoring** appropriate?

→   Change the setting of **OS Boot Monitoring** to suit your system environment. See *Chapter 3 (1. System BIOS)* for details.

[?]   **Unable to work the Wake On LAN feature:**

❑   Is the AC power supplied to both CPU/IO modules?

→   Supply the AC power to both of CPU/IO modules.

❑   Is the network adapter configured on Windows?

→   - Windows Server 2016

Point to **Start Screen** – **Windows Administrative Tools** - **Computer management** and select **Device Manager** (or from **start menu**, click **Windows Administrative Tools** – **Computer management** and select **Device Manager**). Double click **Stratus emb-I350 2-Port Gigabit Adapter #n** under the network adapter, and then select the following option from **Advanced** tab:

Enable PME
Wake On Magic Packet

- Windows Server 2012 R2, Windows Server 2008 R2

Point to **Start Screen** - **Administrative Tools** - **Computer management** and select **Device Manager** (or from start menu, click **Administrative Tools** – **Computer management** and select **Device Manager**). Double click **Stratus emb-I350 2-Port Gigabit Adapter #n** under the network adapter, and then select the following option from **Power Management** tab:
Wake On Magic Packet from power off state

Note   Wake On Magic packet is not available even if it is checked.

❑   Is Hub/Client fixed as 1000M?

→   Check the following configurations:
– Set the Hub as "Auto-Negotiation".
– Set the Client as "Auto-negotiate best speed".

Important   **For both Hub/Client, you cannot use Wake On LAN feature from standby state with the 1000M fixed configuration.**

❑   Do you send Magic Packet to only one of the duplexed LAN?

→   If you use Wake On LAN under duplexed LAN, send Magic Packets to all of the duplexed LAN pair(s).

→   This server uses the MAC Address which you set in LAN teaming as MAC address during OS running. If the server does not wake with MAC address of each CPU/IO modules, you should use the MAC Address which you set in LAN teaming.

❑   Did you send Magic Packet to 10G LAN port?

→   Wake On LAN feature is not supported for 10G LAN port.

[?]   **The following message appears when logging on the system:**
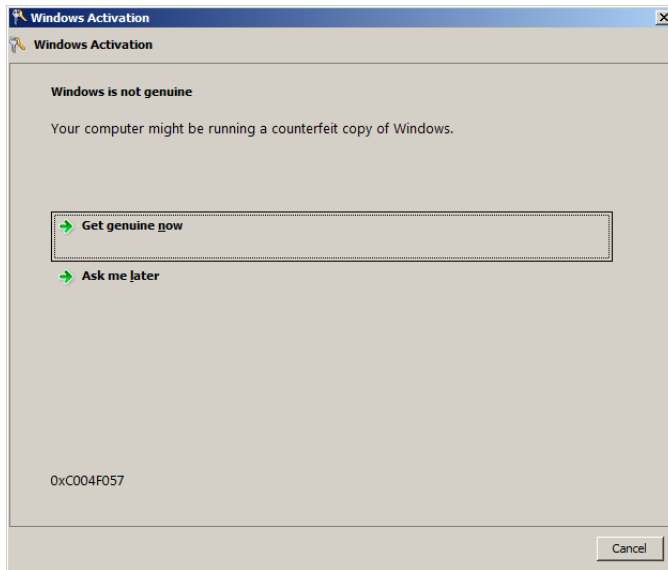
❑   Have you finished license authentication for Windows product?

→   The above message will appear if you use Windows product with the unauthenticated license.
Select **Get genuine now** and proceed to license authentication.
The above message is an example of request for license authentication. The message differs
from this depending on the license.

[?]   **Failed to duplex CPUs:**

❑   Is the memory configuration correct?

→   Check if CPUs or memory (DIMM) authorized by NEC is used.

[?]   **Failed to duplex modules due to difference of BIOS version:**

❑   Is **ft server utility** - **System Configuration** - **Auto Firmware Update** disabled?

→   Change the setting to **Enabled** and integrate the module again. The BIOS of primary module is
automatically used for both modules to duplex the modules. It is recommended to reduce the
system load as much as possible.

8.5 **Problem of Windows STOP Error**

[?]   **The screen turns blue during OS boot:**

→   Wait for the period of time you set at **OS Boot Monitoring Timeout**; after the boot module is automatically swapped, the server will be rebooted and the OS will start up.

→   If **OS Boot Monitoring** is set to **Disabled** or **Start and Recover** - **System Error** - **Restart automatically** in system property is unchecked, you must start OS manually. To start the OS manually, install only a hard disk drive containing system file and start it, or boot from a hard disk drive in another CPU/IO module.

[?]   **Unable to turn the power OFF at the blue screen (STOP error screen):**

→   Continue to press the power switch for at least four seconds (the forced shutdown).

[?]   **The system does not operate according to the configured settings of "Automatic Restart" at the occurrence of error:**

→   If the system does not restart automatically, restart the server manually.

8.6 **Problem of Internal Devices and Other Hardware**

[?]   **Failed to access the 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?

→   Depending on the connected optional device, specific device driver is required.Refer to the manual that comes with the device to install its driver.
* Do not connect an unsupported external device, or install a driver for the unsupported external device.

❑   Is option board setting correct?

→   Usually you do not need to change the settings for PCI devices, but there are some boards that require specific settings. Refer to the manual that comes with the board for details to make correct settings.

[?]   The keyboard or mouse does not work:

❑   Is the cable properly connected?

→   Make sure that the cable is connected to the connector on the front or rear of the server.

❑   Are the keyboard and mouse are compliant with the ft server?

→   Operation of the server with unauthorized devices is not supported.

[?]   Screen freezes, keyboard and mouse are disabled:

→   If the amount of memory is increased, system starting, CPU/IO module duplexing, or memory copying takes time and the system stops working temporarily. This is not malfunction.

[?]   Unable to access the hard disk drive

❑   Is the hard disk drive supported by the server?

→   Operation of any device that is not authorized by NEC is not supported.

❑   Is the hard disk drive properly installed?

→   Check the hard disk drive installation status and the cable connections.

[?]   Unable to duplex disks:
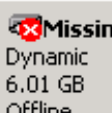
→   Confirm the procedures to duplex disks by referring to User's Guide and Maintenance Guide.

[?]   DISK ACCESS LEDs on the disks are off:

→   The LEDs seem to be off when an excessive amount of access causes the frequent blinking. Check if the LEDs are blinking green when the access is reduced.

[?]   Unavailable disks are displayed on Disk Management:

→   Follow the instruction below:

Disk Status	Description	Action
Disk 3 Dynamic Foreign	A message **Foreign** is displayed when the dynamic disk used on another system is mounted.	[To use data of the disk] Import the disk. [To make the disk usable] Initialization is required to use this disk. Initialize this disk to convert it to a usable disk. <Note> The data on disks are lost when initialized. Make sure to back up the data before initializing disk.
Missing Dynamic 6.01 GB Offline	A message **Missing** is displayed when the dynamic disk is broken or removed.	Delete the mirror on the disk when mirror volume is on missing disk. After deleting the mirror, right-click **Missing** disk and perform **Remove disk**.
Disk 2 Unknown 33.87 GB Not Initialized	A message **Not Initialized** is displayed when there is no signature on the disk.	Right-click on the disk and perform **Initialize Disk** to convert it to a usable disk.

8.7 Problem of OS Operation

[?]   **Windows operation is unstable:**

❑   Have you installed the Starter Pack?

→   Install the Starter Pack by according to *Chapter 1* (*Installing Starter Pack)* in "*Installation Guide (Windows)*".

[?]   **After the Windows is restored from the backup tool, Windows does not work normally:**

→   Install the Starter Pack by according to *Chapter 1 (Installing Starter Pack)* in "*Installation Guide (Windows)*".

[?]   **The server is not found on the network:**

❑   Is the cable connected properly?

→   Securely connect the proper cable to the network port on the rear of the server. Additionally, make sure that the cable conforms to the network interface standards.

❑   Are BIOS settings correct?

→   Check the settings with BIOS Setup Utility.

❑   Have you completed protocol and services settings?

→   Confirm that the network driver has been installed and the network protocol and services have been properly set up.

❑   Is the transfer speed correct?

→   Be sure to specify the same transfer speed and duplex mode as those on connected hub.
If you specify "Auto-Negotiation", make sure that "Auto-Negotiation" is also specified for the connected hub.

❑   Is the transfer speed of 10G LAN port "100Mbps"?

→   If you specify 100Mbps, make sure that Auto-Negotiation is specified for the connected hub.

[?]   **When shutting down the OS, explorer.exe causes an application error:**

→   Ignore the following error at the shutdown.

explorer.exe - application error
xxx instruction referenced xxxxx memory.
The memory could not be written.
Click [OK] to terminate the program,
（xxx、xxxxx are addresses where the error occurred.）

For details, refer to the following website.
https://support.microsoft.com/en-us/kb/2929203

[?]   **Power-saving feature does not work:**

→   The server does not support power-saving feature specified in **Power Option**.
Do not change default setting in **Power Option** except for setting "Turn off the display".

[?]   **Display is unable to recover from power off state:**

→   On the Windows Server 2016 model, the display may be unable to recover from power off state with changing the "Turn off the display" on Power Options from "Never" to other setting.
In this case, recover to shut down the system with pushing the Power switch or shut down/reboot from a remote server after stopping the system operation on this server.
For the setting "Turn off the display" in Power Option, see *Chapter 1 (3.18 Caution when changing Power Options)* in Installation Guide.

[?]   Message "New Hardware Found" appears:

→   Ignore the message at the startup or when a CPU/IO module is replaced and incorporated into the system. This is due to the server's operating specifications and does not cause any problem.

[?]   A CPU/IO module cannot be integrated:

❑   Is an event log recorded on **System** in **Event Viewer**?

→   If the following event is recorded and the duplexing of PCI modules fails, follow the steps below:

Source: srabid

Type: Error

Event ID: 16474

Description: Diagnostics failure of XX: 'IO GbEnet OUI Verification 1, D821 ' (Ftn=xxxx Info=xxxx,xxxx）

Source: srabid

Type: Error

Event ID: 16395

Description: XX is now STATE_BROKEN /REASON_DIAGNOSTICS_FAILED

The value of "xxxx" differs depending on circumstances when the error occurs. If "XX" is "10", it means PCI module 0. If "XX" is "11", it means PCI module 1.

(1) Select the PCI module that failed to integrate on the ft server utility.
(2) Select **Clear** under **MTBF clear**.
(3) Select **Start** to start the PCI module.

→   If the following event is recorded and reintegration fails, contact your sales representative.

Source: srabid

Event ID: 16395

Description: xx is now STATE_BROKEN / REASON_BELLOW_MTBF
(xx denotes device number)

[?]   A disturbed screen appears when the resolution is changed:

❑   Is the system load high?

→   Wait for a while until the screen is displayed normally.

[?]   ESMFTPolicy log is not recorded when CPU module or PCI module changes to SIMPLEX state:

→   ESMFTPolicy log is not recorded immediately when CPU module or PCI module changes to SIMPLEX state. It is recorded if the module is still SIMPLEX state after a certain period.

Source: ESMFTPolicy

Type: Warning

Event ID: 2050

Description: [CPU module or PCI module] changed to SIMPLEX state.

On this server, the above event is recorded as follows:

Immediately after startup:

CPU module or PCI module is still SIMPLEX state after 30 minutes has elapsed from system startup.

While the system is running:

CPU module or PCI module is still SIMPLEX state after 30 minutes has elapsed from change state.

Thus, if the system is recovered to DUPLEX state within 30 minutes after change state, this warning event is not recorded.

[?]   The adapter does not appear in property of the team after integrating CPU/IO module:

$\rightarrow$ If the network is available, there is no effect on the operation.

When integrating CPU / IO module, it may take time before adapter appears.

Please check again after waiting for a while.

When the adapter does not appear, do not perform "setting change of a team" and "remove team".

8.8 **Problem of EXPRESSBUILDER on Windows**

[?]   Unable to read manuals:

❑   Have you installed Adobe Reader to your computer?

$\rightarrow$ To read the manuals, install Adobe Reader in your computer.

❑   Is the error "Internet Explorer has stopped working" displayed?

$\rightarrow$ Close the dialog box, and continue operation. If the same error occurs, double click "version.xml" in root of DVD, and then select **Yes** in the dialog box. After that, click the link in the manual to open the file.

[?]   Autorun menu does not appear:

$\rightarrow$ If the menu does not start automatically, run the following file by Explorer.
\autorun\dispatcher.exe   (on 32 bit edition)
\autorun\dispatcher_x64.exe   (on 64 bit edition)

[?]   The menu item of Integrated Installation is gray:

❑   Is your system environment suitable?

$\rightarrow$ To run **Integrated Installation**, log on to the Windows on the server with an account of administrator.

[?]   The menu is displayed with a wrong language

❑   Is your system environment suitable?

$\rightarrow$ Confirm the settings of **Regional and Language Options**. Specify the language settings of each tab to **English (US)**.

8.9 **Problem of Bundled Software**

[?]   **NEC ESMPRO Agent (for Windows):**

→   For details of NEC ESMPRO Agent (for Windows), see "*NEC ESMPRO Agent Installation Guide (Windows)*" in EXPRESSBUILDER or its help.

Supplementary explanation for NEC ESMPRO Agent (Windows)

❑   Device ID in Alert Report

→   The correspondence between Device name and Device ID is as follows:

Device name	Device ID
CPU module 0	0
DIMM slot 1 on CPU module 0	0/1
DIMM slot 2 on CPU module 0	0/2
DIMM slot 3 on CPU module 0	0/3
DIMM slot 4 on CPU module 0	0/4
DIMM slot 5 on CPU module 0	0/5
DIMM slot 6 on CPU module 0	0/6
DIMM slot 7 on CPU module 0	0/7
DIMM slot 8 on CPU module 0	0/8
DIMM slot 9 on CPU module 0	0/9
DIMM slot 10 on CPU module 0	0/10
DIMM slot 11 on CPU module 0	0/11
DIMM slot 12 on CPU module 0	0/12
DIMM slot 13 on CPU module 0	0/13
DIMM slot 14 on CPU module 0	0/14
DIMM slot 15 on CPU module 0	0/15
DIMM slot 16 on CPU module 0	0/16
CPU1 on CPU module 0	0/21
CPU2 on CPU module 0	0/22
CPU module 1	1
DIMM slot 1 on CPU module 1	1/1
DIMM slot 2 on CPU module 1	1/2
DIMM slot 3 on CPU module 1	1/3
DIMM slot 4 on CPU module 1	1/4
DIMM slot 5 on CPU module 1	1/5
DIMM slot 6 on CPU module 1	1/6
DIMM slot 7 on CPU module 1	1/7
DIMM slot 8 on CPU module 1	1/8
DIMM slot 9 on CPU module 1	1/9
DIMM slot 10 on CPU module 1	1/10
DIMM slot 11 on CPU module 1	1/11
DIMM slot 12 on CPU module 1	1/12
DIMM slot 13 on CPU module 1	1/13
DIMM slot 14 on CPU module 1	1/14
DIMM slot 15 on CPU module 1	1/15
DIMM slot 16 on CPU module 1	1/16

Device name	Device ID
CPU1 on CPU module 1	1/21
CPU2 on CPU module 1	1/22
PCI module 0	10
PCI slot 1 on PCI module 0	10/1
PCI slot 2 on PCI module 0	10/2
PCI slot 3 on PCI module 0	10/3
PCI slot 4 on PCI module 0	10/4
SCSI adaptor on PCI module 0	10/5
Ethernet board 1 on PCI module 0	10/6
Ethernet board 2 on PCI module 0	10/12
PCI module 1	11
PCI slot 1 on PCI module 1	11/1
PCI slot 2 on PCI module 1	11/2
PCI slot 3 on PCI module 1	11/3
PCI slot 4 on PCI module 1	11/4
SCSI adaptor on PCI module 1	11/5
Ethernet board 1 on PCI module 1	11/6
Ethernet board 2 on PCI module 1	11/12
SCSI enclosure 0	10/40
SCSI slot 1 on SCSI enclosure 0	10/40/1
SCSI slot 2 on SCSI enclosure 0	10/40/2
SCSI slot 3 on SCSI enclosure 0	10/40/3
SCSI slot 4 on SCSI enclosure 0	10/40/4
SCSI slot 5 on SCSI enclosure 0	10/40/5
SCSI slot 6 on SCSI enclosure 0	10/40/6
SCSI slot 7 on SCSI enclosure 0	10/40/7
SCSI slot 8 on SCSI enclosure 0	10/40/8
SCSI enclosure 1	11/40
SCSI slot 1 on SCSI enclosure 1	11/40/1
SCSI slot 2 on SCSI enclosure 1	11/40/2
SCSI slot 3 on SCSI enclosure 1	11/40/3
SCSI slot 4 on SCSI enclosure 1	11/40/4
SCSI slot 5 on SCSI enclosure 1	11/40/5
SCSI slot 6 on SCSI enclosure 1	11/40/6
SCSI slot 7 on SCSI enclosure 1	11/40/7
SCSI slot 8 on SCSI enclosure 1	11/40/8

* "SCSI" includes SAS.
* For R310e-E4, R320e-E4, R310f-E4 and R320f-E4, PCI slot 3 and PCI slot 4 do not exist on the PCI module.

❑ LAN Monitoring Threshold

→ Because the ft server detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults. Thus, the setting of **Line fault occurrence rate** on **LAN** tab of **NEC ESMPRO Agent properties** is not used.

❑ Temperature/voltage error occurs on the CPU/PCI modules

→ At the time when a temperature or voltage error occurs on CPU/PCI module (CPU/IO module), necessary actions will differ depending on their status as shown below. You can check the status of each module from the **Information of server state/constitution** of NEC ESMPRO Manager or ft server utility.

Status	Operation
Duplex	Stop the failed CPU/PCI module (CPU/IO module).
Other than Duplex, Empty	Shut down the system.

Tips	• If the status is "**Empty**", the module is not mounted. Sensor monitoring is not conducted.
	• If disks are mounted on CPU/IO modules, the status of both modules is "**Simplex**" while the disks are mirrored. Temperature or voltage error occurring during disk mirroring will result in the system to shut down.

❑ The alerts

→ The detail information of alert is displayed as "Unknown" depending on the alert.

❑ The ft server utility

→ If the tree is not be displayed correctly when you open the ft server utility immediately after the startup, wait for a while, and then start the ft server utility again.

❑ Module status is shown "Fault".

→ PCI modules (IO modules) and modules under the SCSI enclosure affect each other.
For example, when the "Status" item of a module changes to "fault", it may be caused by other module error. Check the status of the other modules referring to alert message.

❑ Various logs cannot be referred in ESRAS Utility.

→ ESRAS Utility is not used with this server model.

❑ The status of network port is displayed as an error.

→ If a network port is not used (not connected to cable), set it to "**Disable**" in **Network Connections** from **Control Panel**. If the network ports to be disabled has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

❑ Alert notification of monitored events

→ In SNMP alert, the message text length is limited to 511 bytes. If the message text exceeds 512 bytes is sent, you need to verify the full length message on Event Viewer of sender machine. To display the message text exceeding 512 bytes on Alert Viewer, use TCP/IP In-Band.
Since the message text exceeds 511 bytes when CPU or PCI module is degraded, you need to verify ESMFTPolicy event on the sender machine.

[?]   NEC ESMPRO Manager:

→ For details of NEC ESMPRO Manager, see "*NEC ESMPRO Manager Installation Guide*" in EXPRESSBUILDER or its help.

Supplementary explanation about Information of server state/constitution of NEC ESMPRO Manager

❑ Status color after mounting a hard disk drive

→ When creating a new mirror, the status of **SCSI Enclosure** and **SCSI Slot** of **Information of server state/constitution** will continue to change frequently after you mount a hard disk until the mirror is completed. During this process, the status color turns to abnormal, but when the mirror is created successfully, it will return normal.

❑ CPU Information

→ The CPU information can be viewed by selecting **System** – **CPU** in the **Information of server state/constitution** screen.

→ If you select **CPU Module** – **CPU** in the **ft System** tree, unknown or incorrect information appears in some information items.

❑ Change of hardware configuration

→ If Information of server state/constitution tree is not be displayed correctly when you dynamically change the configuration of the CPU or PCI module (IO module), wait for at least five minutes, and then open Information of server state/constitution again.

❑ Display immediately after system startup

→ If the tree or the state is not be displayed correctly when you open **Information of server state/constitution** immediately after the startup, wait for at least 20 minutes, and then open **Information of server state/constitution** again.

❑ Flash FDD information

→ After turning on/off the POWER switch of CPU/IO module, the flash FDD name of **I/O Device** in **Information of server state/constitution** may be different from the name that is recognized by the OS.
Check the Flash FDD name on the browser such as Explorer.
If Flash FDD is added or removed while the system is running, the result is reflected to **I/O Device** in **Information of server state/constitution** at the next system startup.

❑ Display when the PCI module (IO module) is running in the simplex mode.

→ When only the PCI modules (IO modules) is running in the simplex mode (non-duplexed mode), the **Information of server state/constitution** cannot display the status of the **SCSI Enclosure** and **Mirror Disk** correctly. To check if the duplex mode is changed to the simplex mode, check the event log or AlertViewer log, or the status color of the PCI module by the **Information of server state/constitution**.

❑ SCSI status while PCI module is starting or being stopped.

→ While the PCI module is starting or being stopped, the status of **SCSI Enclosure**, **SCSI Slot**, and **Mirror Disk** in **Information of server state/constitution** becomes unstable, and incorrect status is displayed temporarily.

❑ Display of an unmounted sensor

→ An unmounted sensor is indicated as "Unknown" on **Information of server state/constitution**.

For example: **Information of server state/constitution** - **Enclosure** - **Temperature**

Temperature information	
Location:	DIMM2 Temp#0
Temperature:	Unknown
Threshold:	Disabled
Status:	Unknown

❑ `"Constitution Information has changed."` is displayed.

→ If you are seeing **Information of server state/constitution**, the message is displayed when hardware constitution on the monitored server is changed (such as attaching or removing CPU module or PCI module). The information on the screen is updated afterwards.

❑ System environment monitoring

→ Monitoring of temperature, fan and voltage under Enclosure in Information of server state/constitution is set to enable and cannot be changed to disable by default.
Information of server state/constitution - Enclosure - Temperature
Information of server state/constitution - Enclosure - Fan
Information of server state/constitution - Enclosure - Voltage

❑ Information of the keyboard/mouse

→ If the keyboard information under the **I/O Device** in the **Information of server state/constitution** is displayed incorrectly, restart the system.

❑ Status of SCSI slots and mirrored disks at high load

→ When the system load is high, incorrect status is displayed temporarily.

❑ Chipset Information of CPU Module

→ If the Grantley platform is mounted, "Haswell" is displayed in CPU Module - CPU Module (ID:X) - General - Chipset Information - Type in the ft System. but the correct information is "Grantley".

8.10 Problem of Optical Disk Drive and Flash FDD

[?]   **Unable to access or play a CD-ROM/DVD-ROM:**

❑   Is the CD/DVD properly set in the optical disk drive tray?

→   There is a holder in the tray to secure the disk. Make sure that the disk is securely placed in the holder.

❑   Is the CD/DVD supported by the server?

→   CD with copy guard feature is not supported.

→   CD/DVD for Macintosh is not supported.

[?]   **Unable to eject a disk using the eject button:**

→   Eject the disk in the following procedure.

1. Press the POWER switch to turn off the server (System POWER LED is off).

2. Use a 100 mm long metal pin that is 1.2 mm in diameter (or uncoil a thick paper clip) and insert it into Eject Hole at the front of the tray. Keep pressing slowly until the tray comes out.

Eject hole
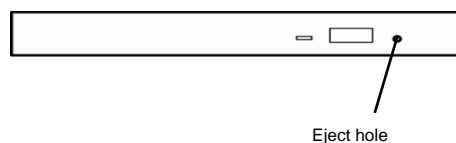
Important	• **Do not use toothpicks, plastic pin, and other fragile pins.**
	• **If you still cannot eject the disk, contact your sales representative.**

3. Pull the tray out with your hands.

4. Remove the disk.

5. Push the tray back to its original position.

[?]   **Failed to access (read or write) to the Flash FDD:**

❑   Is the Flash FDD write-protected?

→   Place the write-protect switch on the Flash FDD to the "Write-enabled" Position.

❑   Is the Flash FDD formatted?

→   Use a formatted Flash FDD.

❑   Are multiple Flash FDDs set?

→   One Flash FDD can only be connected to a USB connector of this server.

[?]   **The Flash FDD does not operate normally after failover:**

❑   Reconnect Flash FDD once after removing.

→   When the server process failover with the Flash FDD connected, the Flash FDD is not normally recognized. In that case, once remove the Flash FDD, and reconnect to this server.

[?]   **Icon of drive A is changed to that of removable disk:**

→   Does not cause any problem.

8.11 **Event Logs**

Note	Confirm also *"Chapter 1 (6.3 List of Windows Event Logs)"*.

Collection of event logs may be requested by maintenance personnel at occurrence of failure.

This section describes collected event logs.

See *Chapter 1* (*7.2 Collecting Event Logs*) for how to collect event logs.

[?]   "The NMS Service terminated unexpectedly" is recorded in the system event log:

→ Although the following log may be recorded in the system event log when starting the system, or after exchanging CPU/IO modules, there is no real problem on operation.

Change of a setup with PROSet II will become invalid if NMS service stops, but you can change a setup normally because NMS service will be automatically started when PROSet II is started.

Source: Service Control Manager

Event ID: 7031

Description: The NMS service terminated unexpectedly. This has occurred 1 time(s). The following corrective action will be taken in 0 milliseconds: No action".

[?]   ACPI log is recorded in the system event log:

→ The following log may be recorded in the system event log when reinstalling OS, but there is no problem with the system operation.

Type: Error

Source: ACPI

Event ID: 6

Description: IRQARB: ACPI BIOS does not contain an IRQ for the device in PCI slot 1, function 0.

[?]   VDS Basic Provider log is recorded in the system event log:

→ The following log may be recorded when starting Virtual Disk Service or setting duplex of disks. This log is recorded because the virtual controller driver involved in the disk duplex does not have path information properties, but there is no problem with the system operation.

Source: VDS Basic Provider

Type: Error

Event ID: 1

Description: Unexpected failure. Error code: 490@01010004

[?]   srae1rexpress, sraixgbt, iANSMiniport-related logs are recorded in the system event log:

→   The logs of the source "srae1rexpress", "sraixgbt", or "iANSMiniport" are the logs about the duplex of the network. The following logs may be recorded in the system event log after starting the system or after setting duplex, but there is no problem on operation.

Source: iANSMiniport

Type: Warning

Event ID: 35

Description: Initializing "Virtual Team Adaptor" that lack adapter "Number of missed adaptors". Check if all adapters exist and function properly.

Source: iANSMiniport

Type: Warning

Event ID: 13

Description: "Physical Adaptor" is invalid in the team.

Source: iANSMiniport

Type: Warning

Event ID: 11

Description: The following adapter link is not connected: "Physical Adaptor".

Source: iANSMiniport

Type: Error

Event ID: 16

Description: "Virtual Team Adaptor": the last adapter lost the link. The team network lost the connection.

Source: iANSMiniport

Type: Warning

Event ID: 22

Description: The primary adapter did not detect the following probe: "Physical Adaptor". Reason: The team may be divided.

Source: srae1rexpress

Type: Warning

Event ID: 27

Description: "Physical Adaptor" Network link has been disconnected.

Source: sraixgbt

Type: Warning

Event ID: 27

Description: "Physical Adaptor" Network link has been disconnected.

The log above gets output in the process of system start up or dual mode setting. When the log is recorded, there is no problem to the system by the above warning if the status of the adapter in the team is "**Active**" or "**Standby**". For the status of the adapter, check in properties of the team adapter from the **Device Manager**.

[?]   srae1rexpress or sraixgbt logs are recorded in System Event Log:

→   The following log may recorded in System Event Log.

Source: srae1rexpress or sraixgbt

Type: Warning

ID: 40

Description: [*physical adapter name*] Intel smart speed feature lowered the link speed than the maximum speed.

This event log is recorded when the initial link speed cannot be retained. Quality defect of cable or noise may cause this event. Check the cable and connection status.

[?]   A Microsoft-Windows-MsLbfoSysEvtProvider warning log will be registered on the system event log.

→   After a virtual switch has been created using the OS Standard NIC Teaming Function (LBFO), the event log below may be registered when starting up or stopping the virtual machine, or when a team member links up or links down.

Source: Microsoft-Windows-MsLbfoSysEvtProvider

Type: Warning

Event ID: 16945

Description: MAC conflict: A port on the virtual switch has the same MAC as one of the underlying team members on Team Nic Microsoft Network Adapter Multiplexor Driver.

This event occurs in order to select an external network when creating a Hyper-V virtual switch as the virtual switch's destination, and in order to assign team members' MAC addresses to the virtual switch if a NIC teamed team is selected on the network adapter.

No problems will occur during this operation when only one virtual switch port is in use or when this event log is not outputted multiple times at once.

[?]   ESMCommonService related log is recorded in the system event log:

→   Following event log is recorded while the system operation in some cases. The log indicates detection of an event that is not critical event for the server operation, and the event is amendable. This does not affect the system as long as the event never occurs repeatedly.

Source: ESMCommonService

Type: Warning

Event ID: 1309

Description: ECC 1 bit error occurred on the system bus.

[?]   EvntAgnt log is recorded in the application event log:

→   This event does not have any influence to the system not to SNMP services. Thus no measurement is required.

Source: EvntAgnt
Event ID: 1003
Description: TraceFileName parameter not located in registry; Default trace file used is ???.
「Source: EvntAgnt
Event ID: 1015
Description: TraceLevel parameter not located in registry; Default trace level used is 32.

[?]   Event log which warn CPU load monitoring is registered:

→   If NEC ESMPRO Agent cannot get performance information from the OS due to a temporary resource shortage or high load ratio on the system, it will record the following event log. However, there is no real problem on operation. (In the description, Y and x represent alphanumeric characters. YYYY may not be acquired.)

Source:	ESMCpuPerf
Type:	Information
Event ID:	9005
Description:	Cannot get system performance information now (YYYY Code=xxxx). （YYYY Code=xxxx）

If NEC ESMPRO Agent cannot get information, it will treat the load ratio as 0%. So, if NEC ESMPRO Agent cannot get information continuously, the CPU load ratio may appear lower than the actual value.

[?]   The following system event of ACPI is logged:

→   This event may be registered during the re-installation, it is not a problem in operating the system.

Source:	ACPI
Type:	Error
Event ID:	6
Description:	ACPI BIOS does not contain an IRQ for the device in PCI slot 1, function 0.

[?]   The following system event of srampt3 is logged:

→   The following events may be recorded at the OS startup or when the module is switched including occurrence of module failure. This log indicates that the system has detected a non-fatal, correctable event for the server operation. This does not affect the system as long as the event never occurs repeatedly.

Source:	srampt3
Type:	Error
Event ID:	11
Description:	Driver detected control error on \Device\Raid\Port?. Note 1: "?" indicates the board number.

[?]   Fibre Channel (N8803-040/040F/040AF) related log is recorded in the System Event log:

→   The following events may be recorded at the OS startup or when the module is switched including occurrence of module failure. This log indicates that the system has detected a non-fatal, correctable event for the server operation. This does not affect the system as long as the event never occurs repeatedly.

Source:	ql2300
Type:	Error
Event ID:	11
Description:	Driver detected control error on \Device\Raid\Port?. Data : Word 0000 : 0018000F 00680001 00000000 C004000B 0010 : F0200000 00000000 00000000 00000000 0020 : 00000000 00000000 00000000 00000000 0030 : 00000000 C004000B 00000000 00000000

Note 1:   "?" indicates the board number.

Note 2:   This event occurs only when the value of word in 0x0010 is 0xF0200000 or 0xF0260000. The value is displayed in **Detail** tab.

[?]   Error logs are recorded while in maintenance operation:

→   While in maintenance operation, such as detaching a PCI module, the following events may be
recorded. These logs show that the PCI module was detached.
This does not affect the system operation.

Source: PlugPlayManager

Type: Error

Event ID: 12

Description: The device 'XXX' disappeared from the system without first being prepared for
removal.

[?]   Error logs are recorded while dumping memory:

→   If DUMP process starts with DUMP switch or system clash, there is a possibility that the
following log is registered on the system event log after reboot.

Source: srabid
Type: error
ID: 4096
Description: CpuBoard dump, to file [*file path*], has failed because the CpuBoard is not holding a
valid memory dump image (0xd)

If the following log is registered on the system event log after reboot, DUMP process saves the
DUMP file on the HDD. (Please ignore the above log.)

Source: Microsoft-Windows-WER-SystemErrorReporting
Type: error
ID: 1001
Description: The computer has rebooted from a bugcheck. The bugcheck was:
[XXX]([XXX],[XXX],[XXX],[XXX]).
A dump was saved in: [file path name].
(XXX depends on condition.)

[?]   ftSysMad is recorded in System Event Log:

→   If performance counter registry information is cracked by unexpected shutdown, the following
log may be recorded as an application log. Execute a command (lodctr /R) to recover the
registry information and then activate the services recorded in the event log. You need not
operate any hardware.

Source: ftSysMad
Type: error
ID: 11704
Description: Service xxx has stopped due to unexpected COM exception.
Microsoft performance counter database may be corrupt.
Please run lodctr /R to recover.（xxx is a name of service that is stopping.）

[?]   Disk, Sradisk-related logs are recorded in the system event log:

→   The following logs may be recorded in the system event log when setting RDR to internal disk or when starting to resynchronize by RDR Utility, but there is no problem on the operation.

Source: Disk
Type: warning
ID: 157
Description: [Disk number] has been surprise removed.

Source: Sradisk
Type: warning
ID: 520
Description: [LUN number] full resync required, reason: Not cleanly shutdown

Source: Sradisk
Type: warning
ID: 520
Description: [LUN number] full resync required, reason: Epoch mismatch

$9.$ **Windows System Recovery**

Recover the Windows system by following the instructions below if the files necessary to operate Windows are corrupt.

Important	• **When you boot from OS installation disc, it may affect on area in partition outside of duplexing disks by the RDR function (BCD area) and it may cause system fault at starting the system.**
	• **When it is necessary to boot from OS installation disc, pull out one side or both side of the disks from inserted disks which is duplexing by the RDR function before boot.**

Note	• After recovering the system, be sure to install each driver and Starter Pack according to *Chapter 1* (*Installing Starter Pack)* in "*Installation Guide (Windows)*".
	• If hard disk drives cannot be found, you cannot recover the Windows system.

9.1 **Recovery of Windows Server 2016**

If the Windows does not start normally, you can recover it using the feature of the Windows installation disc.

To run this feature, start the installation disc, and then choose **Repair your computer** in **Windows Setup** wizard.

We recommend that this option is performed by the system administrator.

9.2 **Recovery of Windows Server 2012 R2**

If the Windows does not start normally, you can recover it using the feature of the Windows installation disc.

To run this feature, start the installation disc, and then choose **Repair your computer** in **Windows Setup** wizard.

We recommend that this option is performed by the system administrator.

9.3 **Recovery of Windows Server 2008 R2**

If Windows does not start for some reason, you can recover Windows using the system recovery option.

Be sure to perform this operation under the supervision of a user or administrator who has a thorough knowledge of this option. For details, refer to Windows Help.

10. Resetting and Clearing the Server

See this section if the server does not work or if you want to set BIOS settings back to the factory settings.

10.1 Software Reset

If the server halts before starting the OS, press <Ctrl> + <Alt> + <Delete> keys. Resetting the server clears all the data in memory and restarts the server.

Note	Make sure that no processing is in progress when resetting the server.

10.2 Forced Shutdown

Use this feature when an OS command does not shut down the server, POWER Switch does not turn off the server, or software reset does not work.

Continue to hold POWER Switch of the server for at least four seconds. The power is forcibly turned off.

To turn on the power back again, wait at least 30 seconds after turning off the power.

Note	If the remote power-on feature is used, cycle the power once to load the OS after the power has been forcibly turned off, and then turn off the power again by shutting down the OS.

Press the POWER switch for at least four seconds.

The server is forcedly powered off.
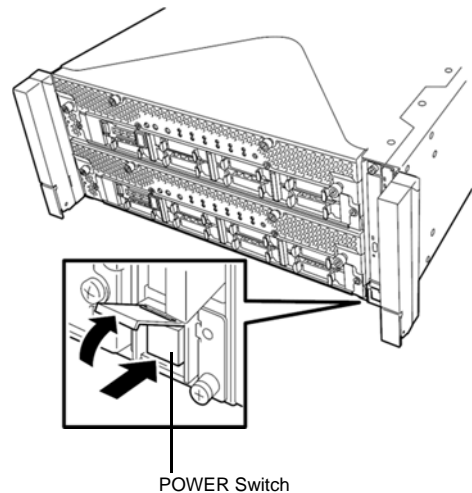
POWER Switch

10.3 **Clearing BIOS Settings (CMOS Memory)**

To set the BIOS settings back to the factory settings (clearing CMOS memory), use the jumper switch.

You can also clear the password of BIOS Setup Utility (SETUP) by using the jumper switch.

Tips	Usually, select **Load Setup Defaults** in BIOS Setup Utility (SETUP) to return the settings to the factory settings.

To clear the password or the CMOS memory, use the corresponding jumper switch illustrated in the figure below.

Important	**Do not change any other jumper switch. Any change will cause the server to fail or malfunction.**

PASSWORD Clear Jumper (PASSCLR)

Protect (factory setting)

Clear

CMOS Clear Jumper (CMOSCLR)

Protect (factory setting)
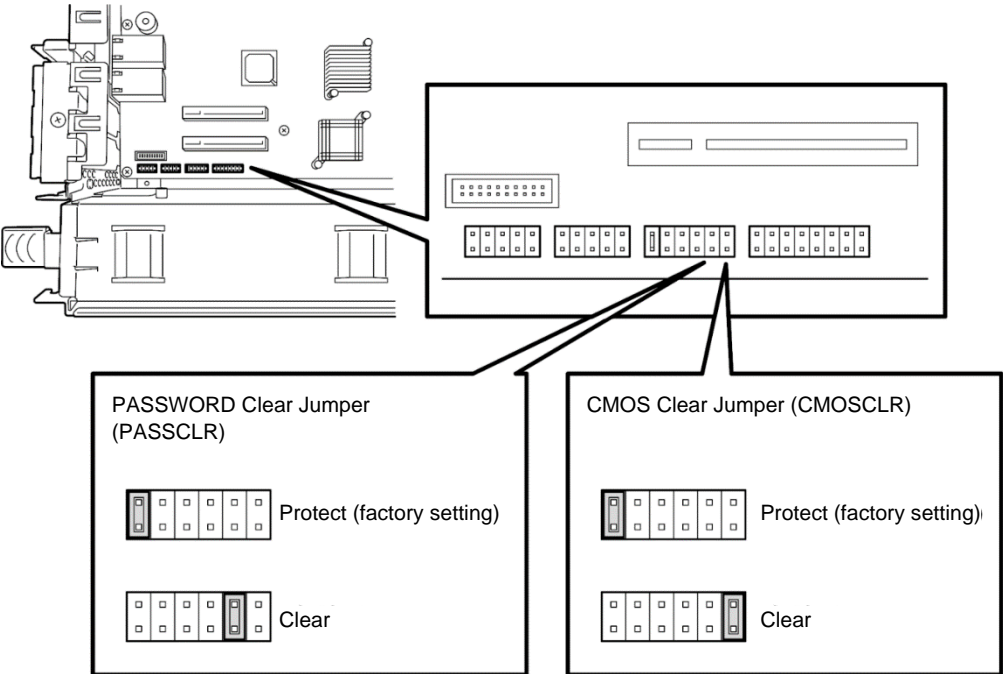
Clear

The following instructions show how to clear the CMOS memory and the password.

⚠ W A R N I N G

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

- **Do not disassemble, repair, or alter the server.**
- **Do not remove lithium batteries.**
- **Disconnect the power plug before installing or removing the server.**

⚠ CAUTION

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

- **Make sure to complete installation.**
- **Do not get your fingers caught.**
- **Avoid installing under extreme temperature conditions.**

Important	Take anti-static measures before operating the server. For detailed information on static electricity, see *Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices*.

Clearing CMOS memory

1. Disconnect AC power cords from CPU/IO modules 0 and 1.

2. Remove CPU/IO module 0, and remove its top cover.
    See *Chapter 2 (5.4 CPU/IO Module)*.

3. Confirm the position of Clear CMOS Jumper.

4. Change jumper switch to "CMOS CLR" position.

5. Assemble the CPU/IO module 0.

6. Connect AC power cords to CPU/IO modules 0 and 1 at the same time.

7. Confirm that PRIMARY LED of CPU/IO module 0 goes on after a while.
    If PRIMARY LED of CPU/IO module 1 is lit, disconnect AC power cords from both CPU/IO modules,
    wait for 30 seconds, and connect them at the same time.

8. When the POWER LEDs on CPU/IO modules 0 and 1 starts blinking, press the POWER switch to turn
    on the server.

9. If the following warning message appears, press the POWER switch to power off the server.
    (POST proceeds even when the warning message is displayed.)
    ```
    WARNING
    8006: System configuration data cleared by Jumper.
    ```

10. Disconnect AC power cords from CPU/IO modules 0 and 1.

11. Remove CPU/IO module 0, and remove its top cover.

12. Change jumper switch setting to its original position (Protect).

13. Assemble the CPU/IO module 0.

14. Connect AC power cords to CPU/IO modules 0 and 1 at the same time.

15. Confirm that PRIMARY LED of CPU/IO module 0 goes on after a while.
    If PRIMARY LED of CPU/IO module 1 is lit, disconnect AC power cords from both CPU/IO modules,
    wait for 30 seconds, and connect them at the same time.

16. When the POWER LEDs on CPU/IO modules 0 and 1 starts blinking, press the POWER switch to turn
    on the server.

17. When the following message appears, press <F2> key to start BIOS SETUP Utility.
    ```
    Press <F2> SETUP, <F4> ROM Utility, <F12> Network
    ```

18. On **Save & Exit** menu of SETUP, select **Load Setup Defaults**, and then **Save Changes and Exit**.

Clearing a password

1. Disconnect AC power cords from CPU/IO modules 0 and 1.

2. Remove CPU/IO module 0, and remove its top cover.
    See *Chapter 2 (5.4 CPU/IO Module).*

3. Confirm the position of Clear Password Jumper.

4. Change jumper switch to "PASS CLR" position.

5. Assemble the CPU/IO module 0.

6. Connect AC power cords to CPU/IO modules 0 and 1 at the same time.

7. Confirm that PRIMARY LED of CPU/IO module 0 goes on after a while.
    If PRIMARY LED of CPU/IO module 1 is lit, disconnect AC power cords from both CPU/IO modules,
    wait for 30 seconds, and connect them at the same time.

8. When the POWER LEDs on CPU/IO modules 0 and 1 starts blinking, press the POWER switch to turn
    on the server.

9. If the following warning message appears, press the POWER switch to power off the server.
    (POST proceeds even when the warning message is displayed.)

    ```
    WARNING
    8007:SETUP Menu Password cleared by Jumper.
    ```

10. Disconnect AC power cords from CPU/IO modules 0 and 1.

11. Remove CPU/IO module 0, and remove its top cover.

12. Change jumper switch setting to its original position (Protect).

13. Assemble the CPU/IO module 0.

14. Connect AC power cords to CPU/IO modules 0 and 1.

11. System Diagnostics

System Diagnostics runs several tests on the server.

From the **Tool menu** of EXPRESSBUILDER, select **Test and diagnostics** to diagnose the system.

11.1 Tests

The following items are tested in System Diagnostics.

- Memory
- CPU cache memory
- Hard disk drive

Important	**To avoid affecting a network and storage system, disconnect a LAN cable, Fibre Channel, NEC Storage, and other external storage before running System Diagnostics.**

Tips	No data is written on the disk when checking the hard disk drives.

11.2 Usage of System Diagnostics

After turning off the server or restarting the server, run System Diagnostics in the following procedure.

1. Run EXPRESSBUILDER and choose **Tool menu** from Boot Selection Menu.

    For more information, see *Chapter 3 (5. Details of EXPRESSBUILDER)*.

Note	Choose **English** if **Language selection menu** appears.

2. Choose **Test and diagnostics**.

3. Choose **End-User Mode (Basic)** to run System Diagnostics.
    This process takes about three minutes.
    When the diagnostics is completed, the screen display changes as shown below.

    See *eupro_ug_en.pdf* in the \isolinux\diag folder of EXPRESSBUILDER for the **End-User Mode (Professional)** feature.

    Supervisor-Mode is intended for maintenance personnel.

Diagnostics tool title

```
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
                              Test End
  Start 10:06:58   End 10:09:58   Pass 000:03:00   TestTime 000:03:00
  Test End:   NormalEnd      03   AbnormalEnd   00   ForceEnd   00

    <System>
    MEM     Memory                      16 count    NormalEnd
    CACHE   Cache                       49 count    NormalEnd
    <SCSI>
    HDD_02:000  DK32DJ-36W              89 count    NormalEnd




  [Enter] Detail Information    [ESC] Return to Enduser Menu
```

Test window title

Test results

Test summary window

Guideline

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 results
Shows the start, end, and elapsed time and completion status of the diagnostics.

Guideline
Shows the details of the keys to operate window.

Test summary window
Shows the results of each test. Move the cursor and press <Enter> key on the cursor line to display the details of the test.

If an error is detected by 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 <Enter > key. Take notes about the error message that has been output to the Detail Information screen and contact your sales representative.

4. Follow the guideline shown at the bottom of the screen, and press <Esc> key.
    Enduser Menu below is displayed.

```
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
                        Enduser Menu

                        <Test Result>
                        <Device List>
                        <Log Info>
                        <Option>
                        <Reboot>

  Please choose a function by the arrow key and push Enter key.
```
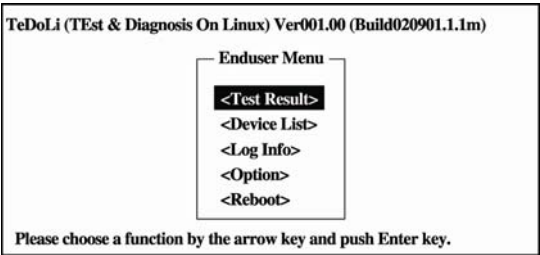
<Test Result>
Shows the diagnostics completion screen of the above diagnostics.

<Device List>
Shows a list of connected devices.

<Log Info>

Shows the log information of the diagnostics.

To save it, connect FAT formatted removable media, and then choose **Save(F)**.

<Option>

Optional features can be used from this menu.

<Reboot>

Restarts the server.

5. Choose **Reboot** in **Enduser Menu**.
   The server restarts. Remove EXPRESSBUILDER DVD from the drive.

System Diagnostics is now completed.

12. Offline Tools

Offline tools are used for maintenance, failure analysis, and the settings of the server.

12.1 Starting Offline Tools

Start up the offline tools at the following steps.

1. Turn on the peripheral devices and then the server.

2. Press <F4> key while the message below is displayed.

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

3. Keyboard Selection Menu appears after POST completion.
   The following menu is displayed, after choosing a keyboard type.

Off-line TOOL MENU
Maintenance Utility BMC Configuration Exit

4. Choose **Maintenance Utility** or **BMC Configuration** to start each tool.

   See the next section for more information.

12.2 **Features of Offline Tools**

Offline Tools has the following features.

Note	Disable RDX by setting RDX to hibernate mode before starting Offline Tools.

Off-line Maintenance Utility

Off-line Maintenance Utility is started when **Maintenance Utility** is chosen. Off-line Maintenance Utility is used for preventive maintenance and failure analysis for the server. If you are unable to start NEC ESMPRO due to a failure, Off-line Maintenance Utility can be used to check the cause of the failure.

Note	Off-line Maintenance Utility is intended for maintenance personnel. Consult with your sales representative if a trouble that requires Off-line Maintenance Utility occurs.

Off-line Maintenance Utility has the following features.

– IPMI Information Viewer
   Displays System Event Log (SEL), Sensor Data Record (SDR), and Field Replaceable Unit (FRU) in Intelligent Platform Management Interface(IPMI) and also back up such logs.
   Using this feature, system errors and events can be investigated to locate the component to be replaced. You can also clear the SEL area, and specify the operation when the SEL area becomes full.

Tips	DIMM information (DIMMx FRU#y) displayed when you select **Display Most Recent IPMI Data** → **Field Replaceable Unit (FRU) List** is the one for CPU/IO module on primary side.
	For the CPU/IO module on opposite side, the following message is displayed. Ignore the message because this is not a failure.
	``` WARNING! No Information. The Device is not detected or it is broken. ```

– System Information Viewer
   Displays and saves information on processor (CPU) or BIOS.

– System Information Management
   Specifies Product data and other System data.

BMC Configuration

– Uses this utility to specify the alert notification feature by Baseboard Management Controller (BMC) and use the remote management feature by "PC for Management".
   See *Chapter 3 (2. BMC Configuration)* for more information.

2

NEC Express5800 Series
Express5800/R310e-E4, R320e-E4, R320e-M4, R310f-E4, R320f-E4, R320f-M4

Configuring and Upgrading the System

This chapter describes procedure for change configuration and installing internal option devices.

1. **Hard Disk Drive Operations**
   Describes how to duplex hard disk drives and how to replace the failed hard disk drives.

2. **Change Drive Letter**
   Describes how to add, change, or remove drive letters.

3. **Duplex LAN Configuration**
   Describes how to configure duplex LAN.

4. **Express5800/ft Series Service Program Configuration**
   Describes service programs used for Express5800/ft series.

5. **Installing Optional Devices**
   Describes procedure for installing, replacing, or removing internal option devices.

1. Hard Disk Drive Operations

Express5800/ft series duplexes hard disk drives to secure data by using "Rapid Disk Resync (RDR) function". This section describes operations such as configuration of dual settings to hard disk drives and replacement of hard disk drives.

Tips	• CPU/IO module has a processor function part and IO function part. In this section, the processor function part is referred to as CPU module and IO function part PCI module. • Hard disk drive described in this chapter refers to both of the following. - Hard disk drive (HDD) - Solid state drive (SSD) But HDD and SSD are described by the different meaning in the explanation about SSD Endurance in "Upper right pane" of "1.1 Starting RDR Utility and Its Screen".

1.1   Starting RDR Utility and Its Screen

Starting RDR Utility

Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** − **All Programs** − **RDR** − **RDR Utility**) to start RDR Utility.

Screen
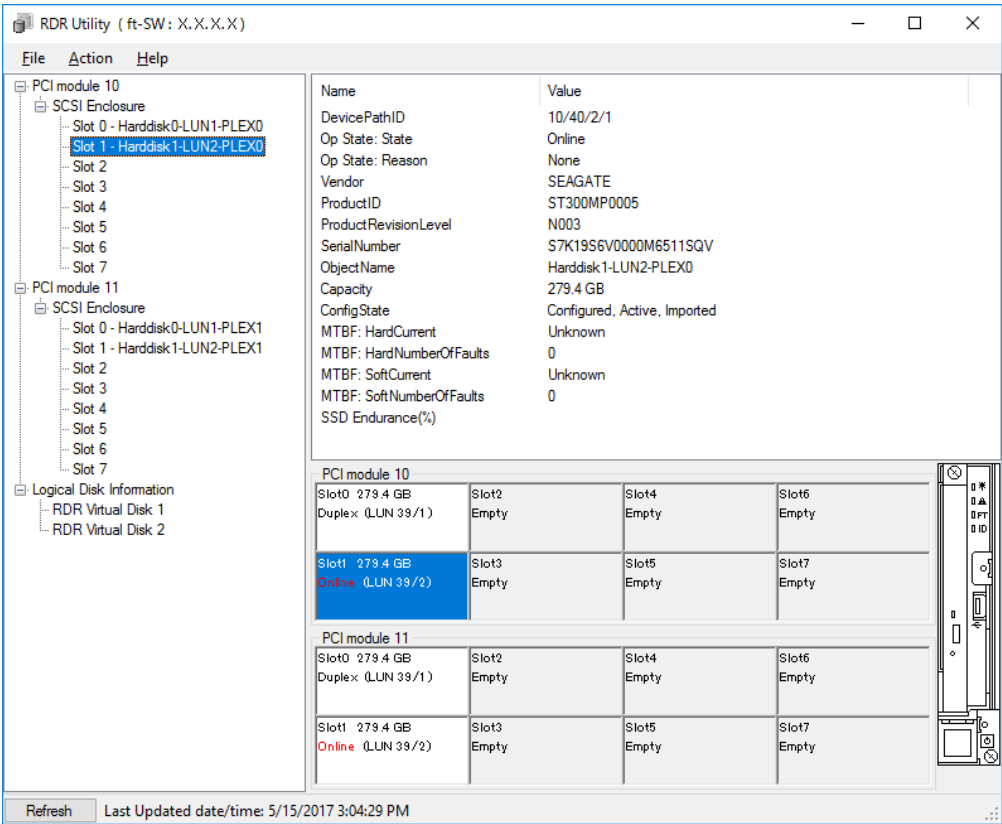
* In RDR Utility, PCI module names correspond as follows:

    PCI module (CPU/IO module 0) － PCI module 10

    PCI module (CPU/IO module 1) － PCI module 11

Left pane

The tree shows disks inserted into the built-in slots and virtual disks (RDR Virtual Disks) created by RDR. Right-click a disk on the tree to display the menu for setting RDR. By looking at the tree, you can know which disk corresponds to which disk of the Windows' **Disk Management** and whether RDR is set to the disk.

For example, in the case of the disk selected in the figure above:

Ex: Slot1 – Harddisk1–LUN2–PLEX0

                    (1)   (2)   (3)

(1) Corresponds to the number of Windows' **Disk Management**. In this example, this disk is the Disk1 on **Disk Management**.

(2) Corresponds to the number of a virtual disk created by RDR setting. In this example, this disk is a disk which makes up the RDR Virtual Disk 2 (only appears for disks with RDR setting).

(3) This section appears only for disks with RDR setting.

Tips	Specify disks to correspond on the RDR Utility screen. The correspondence of disk number displayed on **Disk Management** and the drive letters may change when the system is restarted.

Upper right pane

The properties of the disk selected in the left pane are shown.
In the figure above, the properties of the disk inserted to the Slot 1 of the PCI module 10.

Tips	The **RDR Utility** display is not updated automatically. Therefore, update it by clicking **Refresh** from **Action** on the menu or pressing **<F5>** after performing operations to disk such as inserting/removing a disk, specifying/removing the RDR setting.

"SSD Endurance(%)" is shown to the property in RDR Utility after version 4.3.0.0.
When the kind of disks is SSD, SSD Endurance is shown to Value (percent.).
When the kind of disks is HDD, SSD Endurance isn't shown to Value.

Tips	When SSD Endurance reached 0, you won't be able to write to the disk any more. If SSD Endurance becomes a few(less than 10%), plan to replace.

Lower right pane

The table below shows a display layout of major property and message of a disk built in a slot.

Slot number	Disk size
Status*	Corresponding virtual disk number
Message	

* When a disk is not installed, **Empty** appears. **Duplex** and **Empty** are in black, and the others are in red.

The table below shows conditions to display messages.

Message	Description
DO NOT REMOVE	Appears in case the disk cannot safely be removed while the server is running. (when the disk is simplex mode or the synchronization destination disk is Syncing)
Resync xx%	Appears on the synchronization destination disk while the disk is Resyncing. xx% indicates a progress rate. (when the disk is Syncing)

In the lower right pane, you can select a disk that corresponds to the disk selected in the left pane. If a virtual disk is selected in the left pane, the corresponding disks are all selectable.

Tips	Selectable disks indicated in this pane and the rightmost optical disk drive image are useful marks for maintenance work when replacing a built-in disk.

Status Bar

Date shows a date and time when the screen has been updated.

Clicking **Update** button updates the screen as well as clicking **Action (A)** – **Refresh (R)** from **Menu**.

1.2 Disk Operations Using the RDR (Rapid Disk Resync) Function

This section explains the disk operation by the RDR (Rapid Disk Resync) function.

1.2.1 RDR (Rapid Disk Resync)

RDR function of ft control software secures reliability by making disks duplexed per disk.

Duplexing disks by the RDR function enables the disks to be resynchronized in a short period of time when their mirror has been broken due to causes such as CPU/IO module replacement.

Setting RDR to disks duplexes the disks of paired slots as shown in the figure and the table below and Windows (ex. **Disk Management** and **Device Manager**) recognizes paired disks as a single virtual disk.

Corresponding slots
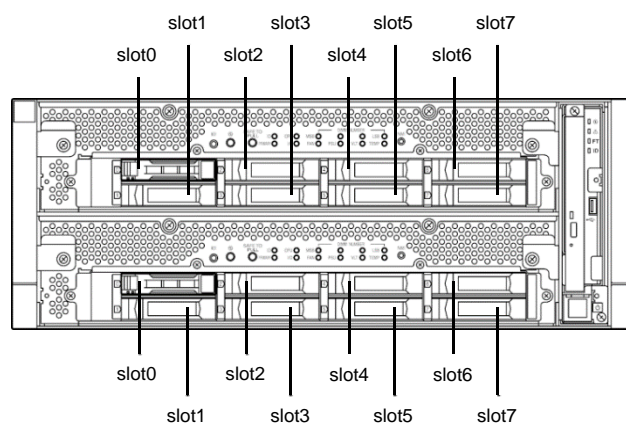
Slots corresponding to the mirroring process

Corresponding slots
PCI module 10 (CPU/IO module 0) slot 0 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 0
PCI module 10 (CPU/IO module 0) slot 1 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 1
PCI module 10 (CPU/IO module 0) slot 2 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 2
PCI module 10 (CPU/IO module 0) slot 3 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 3
PCI module 10 (CPU/IO module 0) slot 4 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 4
PCI module 10 (CPU/IO module 0) slot 5 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 5
PCI module 10 (CPU/IO module 0) slot 6 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 6
PCI module 10 (CPU/IO module 0) slot 7 $\longleftrightarrow$ PCI module 11 (CPU/IO module 1) slot 7

* In RDR Utility, PCI module names correspond as follows:

  PCI module (CPU/IO module 0) － PCI module 10

  PCI module (CPU/IO module 1) － PCI module 11

Important

[Cautions for using the RDR function]

- **Log on to a built-in administrator account.**

- **Be sure to specify RDR to all disks inserted into the built-in slots and make duplex settings.**

- **For a disk to set RDR, use a new or physically formatted disk which has the same capacity.**

- **For a disk to be inserted, use a new or physically formatted disk which has the same capacity as the synchronization source. If such a disk is not used, disks are not duplexed successfully.**

- **As for physical format, see *Chapter 3 (3.3 Physical Formatting of the Hard Disk Drive).***

- **Create a data disk partition after configuring the RDR. If you create a data disk partition before configuring the RDR, the partition's drive letters may be deleted when the RDR is configured. Change drive letters see *Chapter 2 (2. Change Drive Letter).***

- **Disk may become offline when RDR is set. In this case, use "Disk Management" to make it online.**

Tips

[Tips for using the RDR function]

- RDR can be set only to the disks inserted into the built-in slots of Express5800/ft series.

- RDR can be set only to the basic disk. If spanning or stripe volume is needed, first set RDR to basic disk, and select **Disk Management** to convert the disk to dynamic disk.

- If the system is shutdown (or restarted) while the mirror is broken, or a long time (30 minutes or longer) has passed after the mirror is broken, the mirror resynchronization target will be the entire area of the partition existing on the disk.
  For example, if the mirroring has been broken due to a CPU/IO module failure, when you shut down the system and replace the CPU/IO module in such a state, the entire area of the partition existing on the disk needs to be resynchronized.

1.2.2 Making disks duplex by RDR

Follow the procedure below to configure dual data disk for the slots 1 to 7.

Note

The following shows how to configure dual disk for the slot 1. If you want to configure the dual disk for slot 2 to slot 7, read "slot 1" as the slots you want to make dual configuration and perform the procedure.

1. Insert a disk for the dual configuration into the Slot 1 of PCI module 10.

   If a disk is already mounted, this procedure is not necessary.

Important

For a disk to be inserted, use a new or physically formatted disk. If such a disk is not used, disks are not duplexed successfully.

As for physical format, see *Chapter 3 (3.3 Physical Formatting of the Hard Disk Drive).*

When a disk is inserted, a popup window asking for rebooting the system may be displayed, but there is no need to reboot it. Select **Restart Later** and close the popup window.

2. From **Start Screen**, select **Administrative Tools** and start **Computer Management**. On the tree in the left pane, click **Disk Management**.

   If the inserted disk is indicated as Offline in the right pane, right-click the disk and make it online. After that, If the inserted disk is indicated as Not Initialized, right-click the disk again and initialize it.
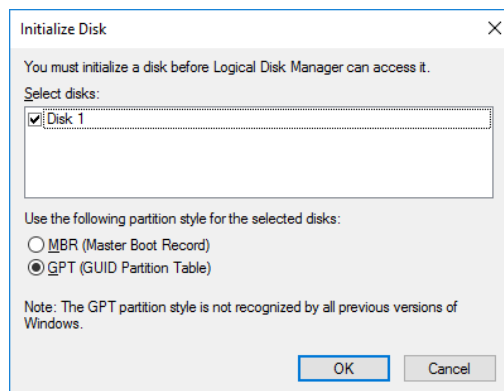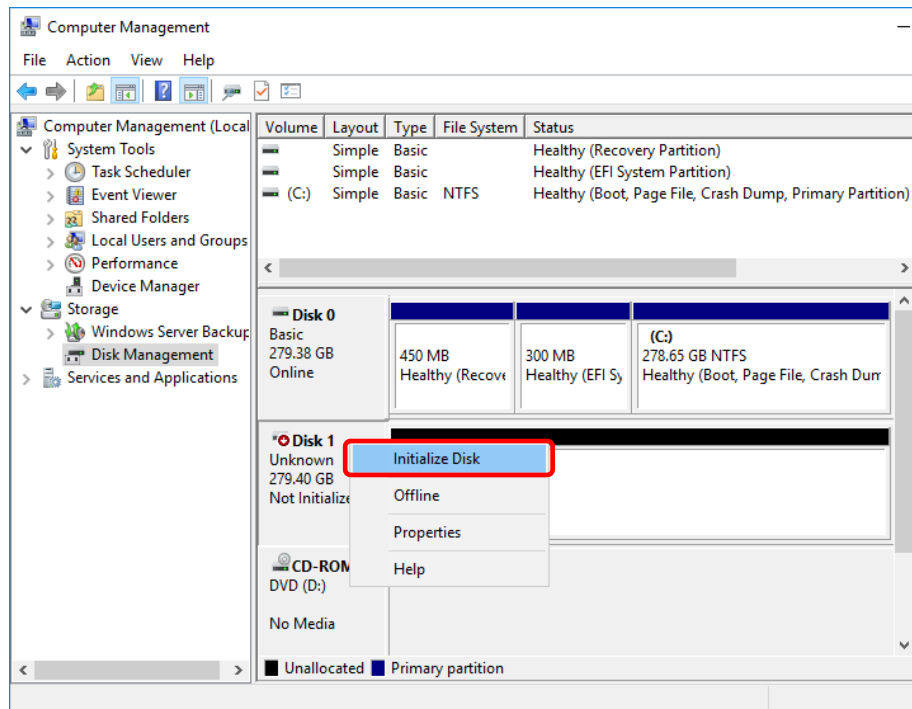
When a disk is initialized, a popup window asking for rebooting the system may be displayed, but there is no need to reboot it. Select **Restart Later** and close the popup window.

3. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

Tips	• If the inserted disk does not appear on the tree, from the menu of RDR Utility, select **Action** and click **Refresh** or press **<F5>** to update the display after a while.
	• The display of RDR Utility is not updated automatically. Therefore, update it every time after you perform disk operations described below.

4. On the left pane of the RDR Utility, right click on the **Slot 1** disk of **PCI module 10** and select **Create RDR Virtual Disk**.

Depending on the disk condition, RDR setting may take some time and RDR Utility may pause for a few minutes. There is no error, so wait until the process is completed.
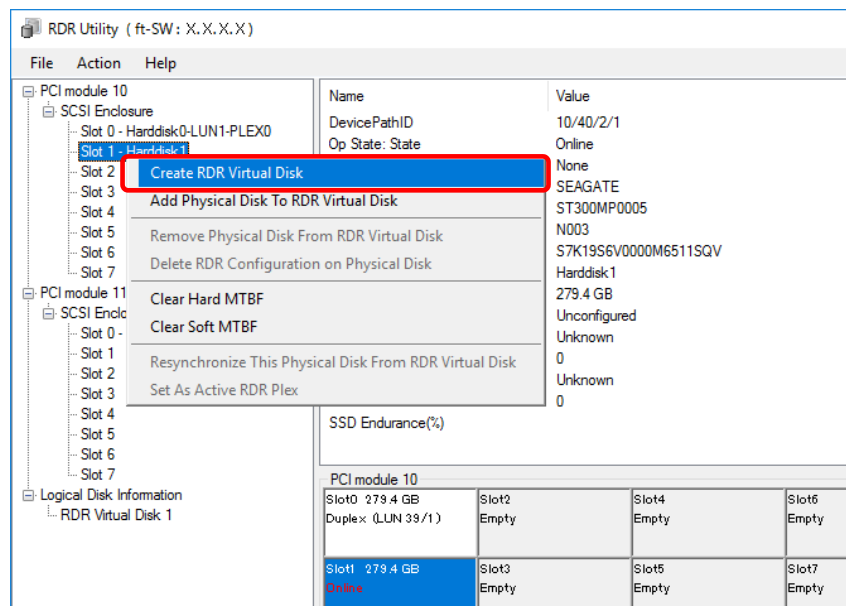
5. Click **Yes.**
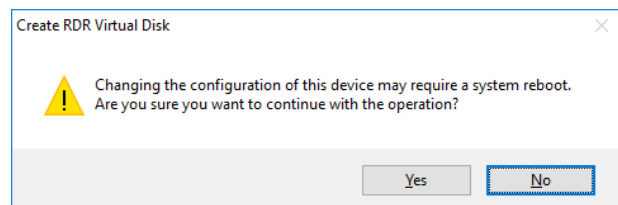
6. Click **OK**.
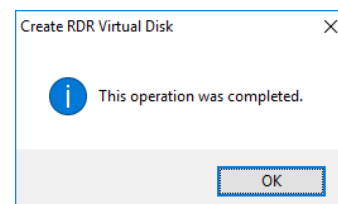
Important	•	If RDR is specified to a disk which contains the system partition or partition which cannot be unmounted such as setting the paging file, pop-up message of Step 6 does not appear.
		Because pop-up message that reboot of the system is needed appears, click Close or OK. The system will be automatically rebooted 2 minutes later. Go on to Step 7 after the system is rebooted.
		In addition, when the system does not reboot automatically but there is no change in setting of RDR, reboot the system manually.
	•	Disk may become offline when RDR is set. In this case, use "Disk Management" to make it online.

7. Insert the disk to set dual configuration into the Slot 1 of PCI module 11.
    If a hard disk drive is already mounted, this procedure is not necessary.

Important	**For a disk to be inserted, use a new or physically formatted disk which has the same capacity as the synchronization source. If such a disk is not used, disks are not duplicated successfully.**
	As for physical format, see *Chapter 3 (3.3 Physical Formatting of the Hard Disk Drive).*

When a disk is inserted, a popup window asking for rebooting the system may be displayed, but there is no need to reboot it. Select **Restart Later** and close the popup window.

8. Right-click the **Slot 1** of the **PCI module 11** from the left pane of RDR Utility, and then click **Add Physical Disk To RDR Virtual Disk**.
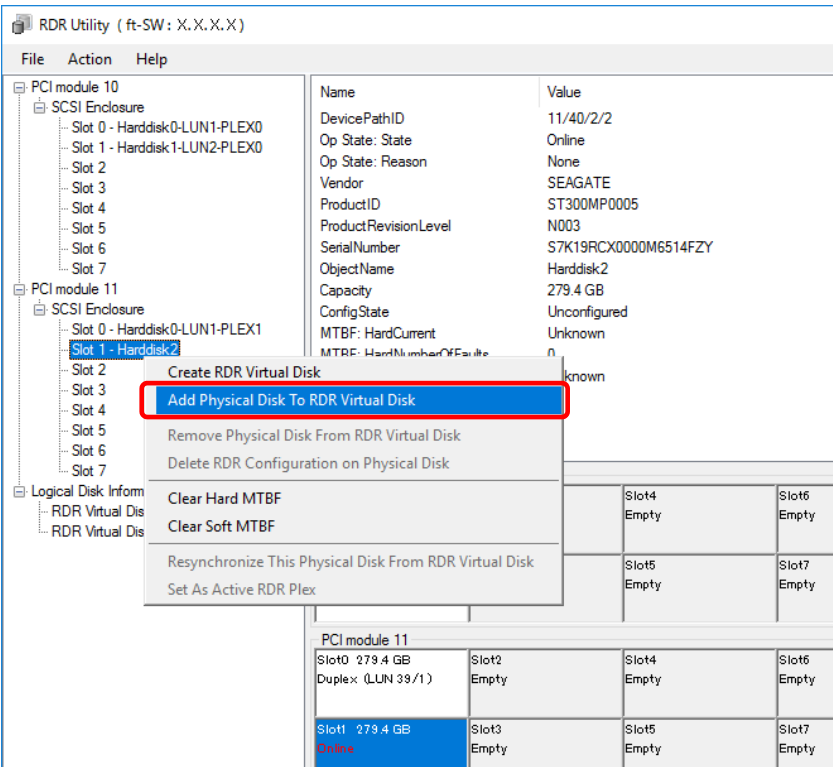
9. Click **OK**.
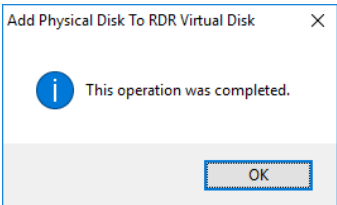
10. Verify that disk synchronization has started and the status of the DISK ACCESS LED and RDR Utility display changes as the following table.

Synchronizing

	DISK ACCESS LED	RDR Utility	
		Op State: State	Status
Source disk	Blinking amber and green	Simplex (partition exists)	–
	Green (Blinking)	Online (no partition exists)	
Destination disk	Blinking amber and green	Syncing	–
RDR Virtual Disk	–	Simplex	Resync x % (x=0,4,8,···96)

Tips	• DISK ACCESS LED momentarily lights green when disk is accessed. If the disk is accessed while the amber LED is blinking (during synchronizing), the LED seems to light green and amber alternately. • The time required for synchronization varies depending on the partition size on the disk. For a 279 GB partition, it takes about 160 minutes. When the partition does not exist on the disk, the synchronization is completed immediately after the RDR is set, and **Op State: State** changes to **Duplex**. However, when the dynamic disk is used, the time required for synchronization depends on the disk size regardless of whether or not the partition exists on the disk. For a 279 GB disk, it takes about 160 minutes.

Important	• **If the system is rebooted during synchronization, the process cannot be completed. Do not restart the system until the synchronization is completed.** • **When the system is halted without shutting down Windows properly due to forced shutdown or others, the entire area of the partition on the synchronized disks will be resynchronized after the system is restarted.**

Synchronization completed

	DISK ACCESS LED	RDR Utility	
		Op State: State	Status
Source disk	unlit (Lights green when accessing the disk drive)	Duplex or Online	–
Destination disk	unlit (Lights green when accessing the disk drive)	Duplex or Online	–
RDR Virtual Disk	–	Duplex	None

Tips	DISK ACCESS LED is lit green only when hard disk drive is accessed. If no access is made, the LED seems to be unlit.
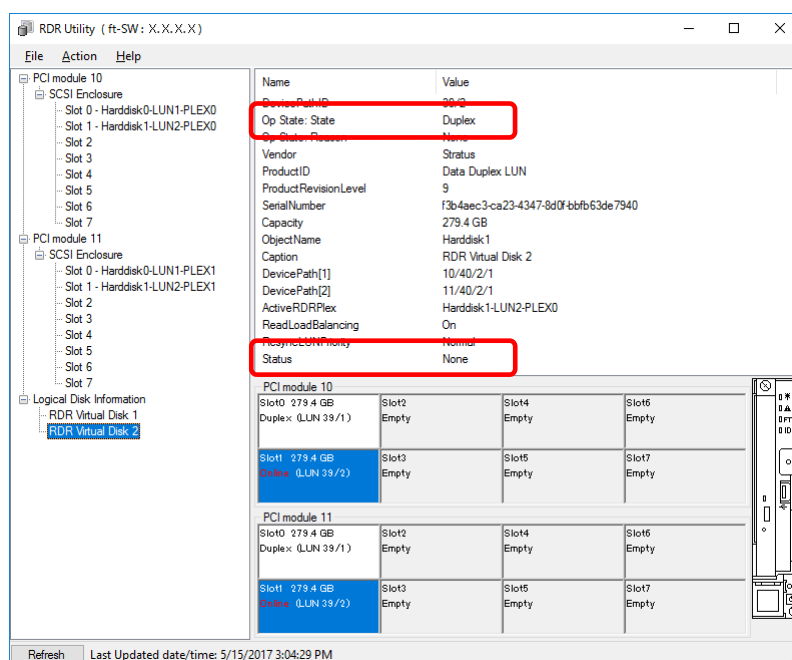
1.2.3 Removing duplex configuration of RDR disks

This section describes how to remove duplex configuration from the disk with RDR setting.

In the example below, the duplex setting of the disks in the Slot 1 of the PCI modules 10 and 11 is removed.

Important	Do not release the RDR setting of the system disk.

Tips	• After running the command, RDR settings will be cancelled but other data will remain. • You cannot release the duplex setting of the dynamic disk. • The display of RDR Utility is not updated automatically. Therefore, update it every time you check the status of disks by clicking **Refresh** from **Action** on the menu or pressing **<F5>**.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click a disk you want to cancel RDR from the tree in the left pane, and select **Delete RDR configuration on Physical Disk**.
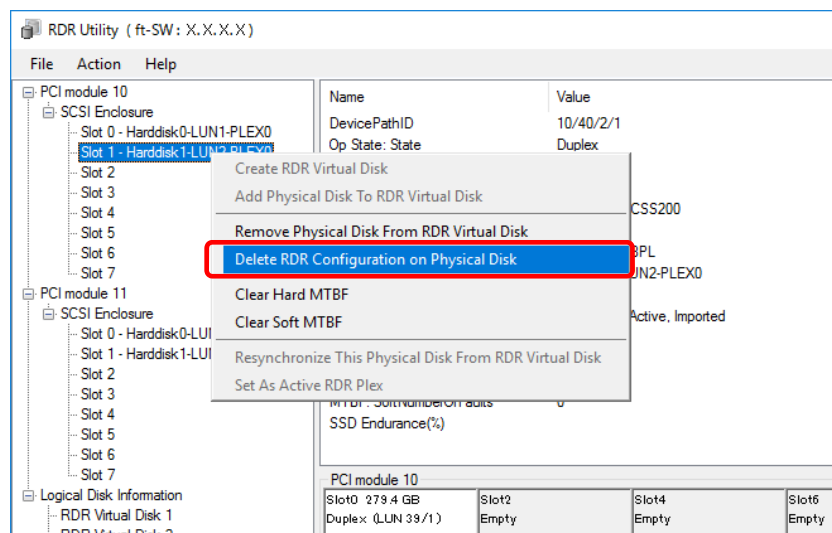
3. Click **Yes.**
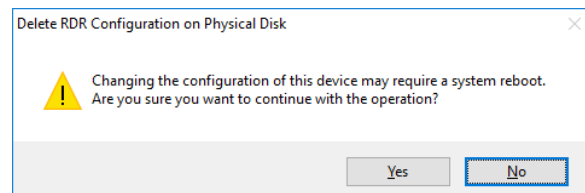
4. Click **OK**.
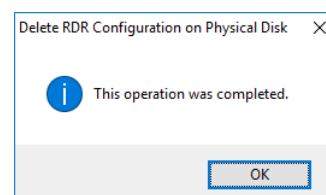
5. Confirm that RDR of the relevant disk is cancelled.
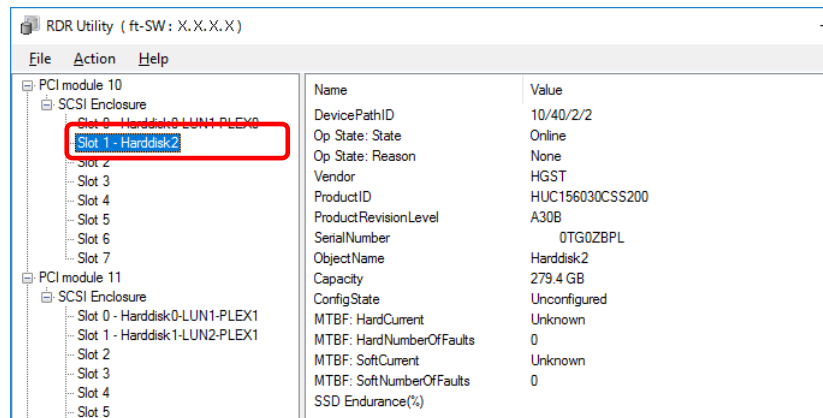
6. Cancel the RDR of disk of the corresponding slot in the same manner.
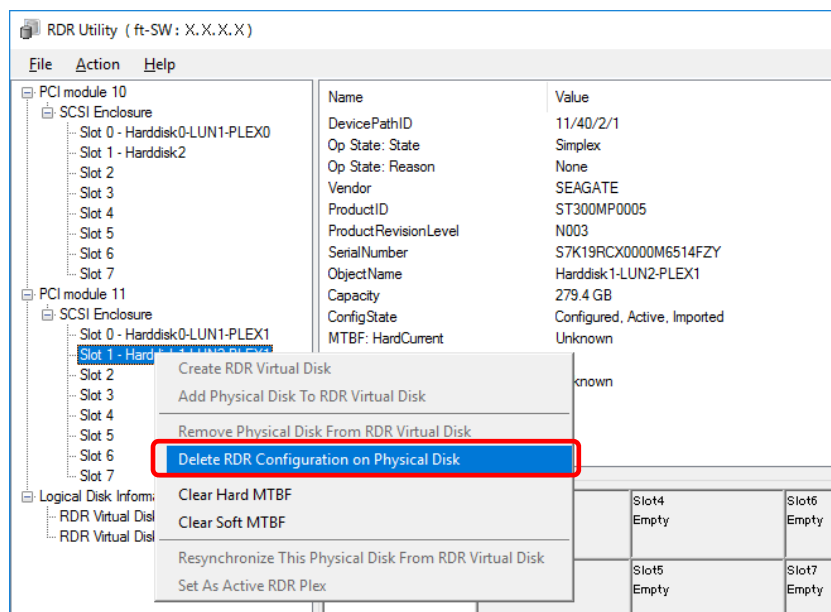
If the cancelled disk is not displayed properly on **Disk Management** after the RDR is cancelled, execute the following:

1. Exit **Disk Management**.

2. Open **Computer Management** – **Service** and execute "**Virtual Disk (vds)**".

3. Open **Disk Management**.

If the disk contains a partition which cannot be unmounted such as setting the paging file, the OS needs to be restarted when canceling RDR. In that case, the system restart pop-up message appears. If you click **Close** or **OK**, the OS is restarted automatically after two minutes:

Tips	A partition on the disk where the RDR setting is removed is assigned an arbitrary drive letter by the auto mount function of the OS. If you want to reassign the drive letter of the partition properly, use **Disk Management**. See *Chapter 2 (2. Change Drive Letter)*.

1.2.4 Other features of RDR Utility

(1) Commands for physical disks

(a) Remove Physical Disk From RDR Virtual Disk

All data including RDR settings on a physical disk can be deleted.

> **Tips** After running the command, the physical disk becomes an empty basic disk without RDR settings.
>
> This command can only be run on physical disks in Duplex/Syncing state.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click a target disk on the tree in the left pane, and click **Remove Physical Disk from RDR Virtual Disk**.

3. In the **Remove Physical Disk From RDR Virtual Disk** dialog box, click **Yes**.

4. In the **Remove Physical Disk From RDR Virtual Disk** dialog box, click **OK**.

(b) Clear Hard MTBF

When a hardware failure occurs to a disk, the mean time between failures (MTBF) is counted and the value is saved. In RDR Utility, the value is displayed at **MTBF:HardCurrent** and **MTBF: HardNumberOfFaults**. These MTBF values can be cleared by the **Clear Hard MTBF** command.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility..

2. Right-click a target disk on the tree in the left pane, and click **Clear Hard MTBF**.

3. In the **Clear Hard MTBF** dialog box, click **OK**.

(c) Clear Soft MTBF

When a software failure occurs to a disk, the mean time between failures (MTBF) is counted and the value is saved. In RDR Utility, the value is displayed at **MTBF: SoftCurrent** and **MTBF:SoftNumberOfFaults**. These MTBF values can be cleared by the **Clear Soft MTBF** command.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click a target disk on the tree in the left pane, and click **Clear Soft MTBF**.

3. In the **Clear Soft MTBF** dialog box, click **OK**.

(d) Resynchronize This Physical Disk From RDR Virtual Disk

Disks whose synchronization by RDR is cancelled can be resynchronized.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click a target disk in the left pane and click **Resynchronize This Physical Disk From RDR Virtual Disk**.

3. In the **Resynchronize This Physical Disk From RDR Virtual Disk** dialog box, click **OK**.

4. Confirm that the resynchronization starts and the status of disks changes as shown below:

Resynchronizing

	DISK ACCESS LED	RDR Utility	
		Op State: State	**Status**
Source disk	Blinking amber and green	Simplex	–
Destination disk	Blinking amber and green	Syncing	–
RDR Virtual Disk	–	Simplex	Resync x % (x=0,4,8,···96)

Tips	DISK ACCESS LED momentarily lights green when disk is accessed. If the disk is accessed while the amber LED is blinking (during synchronizing), the LED seems to light green and amber alternately.

Synchronization completed

	DISK ACCESS LED	RDR Utility	
		Op State: State	**Status**
Source disk	unlit (Lights green when accessing the disk drive)	Duplex	–
Destination disk	unlit (Lights green when accessing the disk drive)	Duplex	–
RDR Virtual Disk	–	Duplex	None

Tips	DISK ACCESS LED is lit green only when hard disk drive is accessed. If no access is made, the LED seems to be unlit.

(e) Set As Active RDR Plex

A physical disk can be set as "Active RDR Plex" by a command.

Active RDR Plex is the disk on which data reading process is performed when Load Balancing of RDR Virtual Disk is off.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click a target disk in the left pane and click **Set As Active RDR Disk**.

3. In the **Set As Active RDR Plex** dialog box, click **OK**.

   Active RDR Plex can be viewed from **Active RDR Plex** of RDR Virtual Disk. (In the image below, the disk in the slot 1 of PCI module 10 is set to Active RDR Plex among physical disks constructing RDR Virtual Disk 2.)
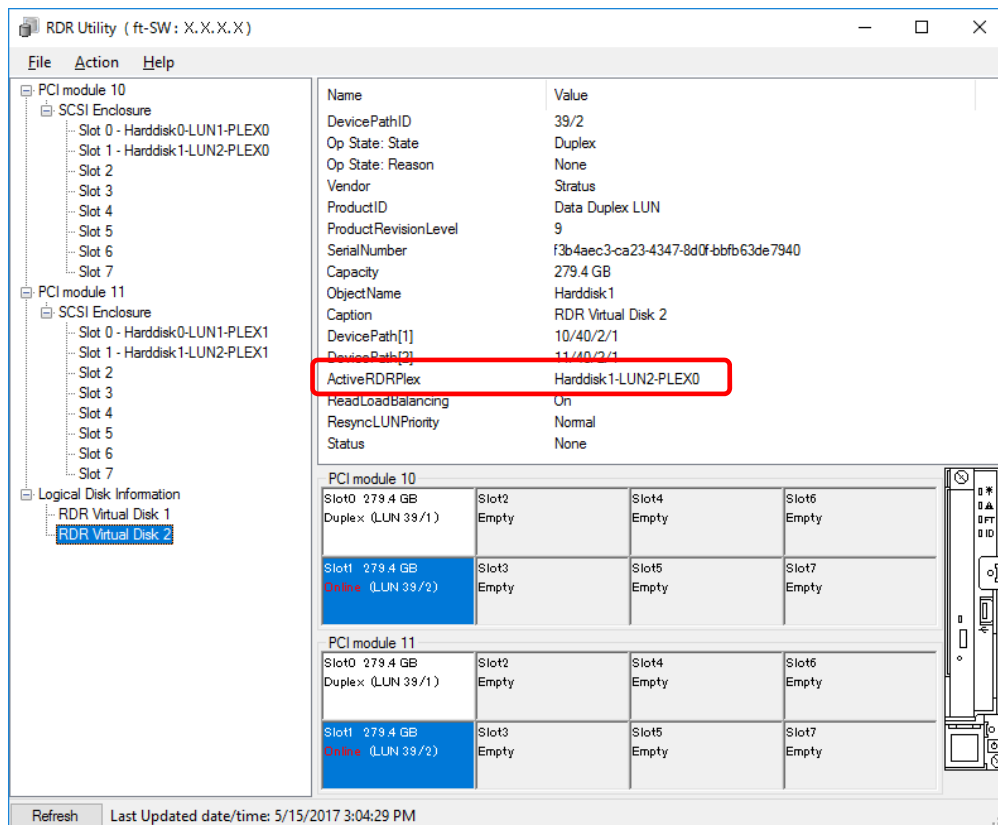
(2) Commands for RDR Virtual Disk

(a) Verify RDR Virtual Disk

Whether the synchronization by RDR is performed normally can be checked.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click **RDR Virtual Disk x** in the left pane and click **Verify RDR Virtual Disk**.

3. In the **Verify RDR Virtual Disk** dialog box, click **OK**.
   The progress of verification can be viewed using RDR Utility.

	Verifying	Verification completed
Status of RDR Virtual Disk x	Verify x % (x=0,4,8,・・・,96)	None

Note
- The verification process is automatically performed after 12 hours from reboot and every 1 month.
- The setting for automatic verification process is stored in **Task Scheduler** of Windows OS in the following format.
  Task name: RdrFirstVerify
  Task name: RdrVerifyLun X (X: Virtual disk number)
          Example: RdrVerifyLun 1 (when the virtual disk number is 1)
- The task execution date and time can freely be set by using **Task Scheduler**.
- The time required for verification depends on the disk size and load.
  For 300GB disk, it takes about 80 minutes.

(b) Stop Verify RDR Virtual Disk

Verification of RDR virtual disk in progress can be stopped.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click **RDR Virtual Disk x** in the left pane and click **Stop Verify RDR Virtual Disk**.

3. In the **Stop Verify RDR Virtual Disk** dialog box, click **OK**.

(c) Set Resync Priority

Priority of synchronization by RDR can be specified. By changing the priority, I/O load during synchronization can be reduced.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click **RDR Virtual Disk x** in the left pane and click **Set Resync Priority**.

3. When a dialog box appears, select **Low**, **Normal** or **High** (a default is **Normal**) and click **OK**.

4. In the **Set Resync Priority** dialog box, click **OK**.

(d) Set RDR LUN Load Balancing

On or off of load balancing can be specified.

When the load balancing is on (default), the read process is performed alternately from two physical disks forming the RDR Virtual Disk to improve performance. When it is off, the read process is performed from the physical disk specified as Active RDR Plex.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Right-click **RDR Virtual Disk x** in the left pane to change the priority and click **Set RDR LUN Load Balancing**.

3. When a dialog box appears, select **On** or **Off** (a default is **On**) and click **OK**.

4. In the **Set RDR LUN Load Balancing** dialog box, click **OK**.

1.3   Replacing Failed Hard Disk Drives

The following describes how to locate and replace the failed hard disk drive.

Important	• When a failure occurs to a disk that is NOT duplexed by the RDR function, contact a staff member from the maintenance service company.
	• The failed hard drive disk should be replaced with the server powered on.

1.3.1 How to Locate Failed Disks

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. From the tree on the left pane of **RDR Utility**, select each disk and check the property about MTBF in the right pane.

   Description of the property about MTBF

Property name	Description	Normal value*
MTBF: HardCurrent	Mean time between hardware failures.	Unknown
MTBF: HardNumberOfFaults	Mean number of hardware failures.	0
MTBF: SoftCurrent	Mean time between software failures.	Unknown
MTBF: SoftNumberOfFaults	Mean number of software failures.	0

* The normal value denotes the value of when no error has occurred.

If either of the values is different from the normal value, the disk has an error.

1.3.2 Procedures to Replace Failed Disks

This section describes a procedure for replacing a disk when a failure occurs to a disk that is duplexed by the RDR function.

Important	• Do not update RDR Utility frequently immediately after inserting a disk.
	• For a disk to be inserted, use a new or physically formatted disk which has the same capacity as the disk of the corresponding slot (in this example, the disk in slot 1 of the PCI module 10)

Tips	• The display of RDR Utility is not updated automatically. Therefore, update it every time you check the status of disks by clicking **Refresh** from **Action** on the menu or pressing <**F5**>.
	• When the disk is physically formatted and recycled, the inserted disk might be automatically set to RDR.

Here, an example that a failure of the disk in slot 1 of the PCI module 10 is explained.

1. Click **Start Screen** → ⏻ → **RDR Utility** (or **Start** – **All Programs** – **RDR** – **RDR Utility**) to start RDR Utility.

2. Remove the disk in the slot 1 of the PCI module 10.

3. Wait for at least 15 seconds, and insert a new disk to the slot 1 of the PCI module 10.
    If a popup window asking for rebooting the system is displayed, select **Restart Later** and close the popup window.

4. Right-click on the inserted disk after inserting the disk and execute **Add Physical Disk To RDR Virtual Disk**.
    When **Add Physical Disk To RDR Virtual Disk** completes, the synchronization process starts.

5. Confirm that the DISK ACCESS LEDs and the display of RDR Utility change as shown below:

Synchronizing

	DISK ACCESS LED	RDR Utility	
		Op State: State	Status
Source disk	Blinking amber and green	Simplex	–
Destination disk	Blinking amber and green	Syncing	–
RDR Virtual Disk	–	Simplex	Resync x % (x=0,4,8,・・・96)

Tips	• DISK ACCESS LED momentarily lights green when disk is accessed. If the disk is accessed while the amber LED is blinking (during synchronizing), the LED seems to light green and amber alternately.
	• The time required for synchronization varies depending on the partition size on the disk. For a 279 GB partition, it takes about 160 minutes. When no partition exists on the disk, synchronization is completed immediately after the RDR is set, and **Op State: State** changes to **Duplex**. However, when the dynamic disk is used, the time required for synchronization depends on the disk size regardless of whether or not a partition exists. For a 279 GB disk, it takes about 160 minutes.

Important	• If the system is rebooted during synchronization, the process cannot be completed. Do not restart the system until the synchronization is completed.

- **When the system is halted without shutting down Windows properly due to forced shutdown or others, the entire area of the partition on the synchronized disks will be resynchronized after the system is restarted.**

Synchronization completed

	DISK ACCESS LED	RDR Utility	
		Op State: State	Status
Source disk	unlit (Lights green when accessing the disk drive)	Duplex	–
Destination disk	unlit (Lights green when accessing the disk drive)	Duplex	–
RDR Virtual Disk	–	Duplex	None

Tips   DISK ACCESS LED is lit green only when hard disk drive is accessed.
If no access is made, the LED seems to be unlit.

$2.$ Change Drive Letter

To add, change or delete drive letters, follow the steps below. Before making any changes, thoroughly read the Express5800/ft series-specific precautions and general precautions for Windows.

Express5800/ft series-specific precautions

When connecting an optional Flash FDD, drive letters may change from A to B or from B to A by switching CPU/IO modules. This does not affect the operation of the server. Access the Flash FDD with the changed drive letter.

General precautions for Windows

- Drive letter of system volume or boot volume cannot be changed.

- Up to 26 drive letters can be used on a computer. "A" and "B" are drive letters for Flash FDD. Generally, hard disk drives are assigned "C" to "Z", but for network drives, drive letters are assigned in a reverse order ("Z" to "C").

- Because many of Windows programs refer to specific drive letters, cautions are required for assigning drive letters. For example, the Path environment variable specifies a program name and a specific drive letter.

- For performing the procedure above, you need to be a member of Backup Operators group or Administrators group, or you need to have appropriate authorization.

1. Select **Start Screen** - **Administrative Tools** (or **Start – Administrative Tools**) and open **Computer Management**.

2. In the console tree of **Computer Management**, click **Disk Management**.

3. Right-click a target partition, logical drive or volume and click **Change Drive Letter and Paths…**.

4. Perform one of the following:

   – To assign a drive letter, click **Add…**, a drive letter to use, and then **OK**.

   – To change a drive letter, click the drive letter to change, **Change…**, a drive letter to use, then **OK**.

   – To delete a drive letter, click the drive letter to delete then **Remove**.

𝟑. Duplex LAN Configuration

The Express5800/ft series builds a duplex LAN configuration by using "Stratus emb-I350 2-Port Gigabit Adapter" or "Stratus emb-X540 2-Port Copper 10 Gigabit Adapter(*)" mounted as standard on the CPU/IO module and the additional LAN card "Stratus I350 2-Port Gigabit Adapter" or "Stratus X540 1-Port Copper 10 Gigabit Adapter".

(*)Express5800/R310e-E4, R320e-E4, R310f-E4, R320f-E4 does not have this adapter.

𝟑.𝟏 Windows Server 2016

𝟑.𝟏.𝟏 Overview

Duplex LAN configuration is using Windows Server 2016 NIC teaming (LBFO).

Please refer to the technical site of Microsoft company about details of LBFO.

𝟑.𝟏.𝟐 Rules of Duplex Configuration on Express5800/ft series

Ensure to make the setting of duplex network configuration on the server.

When building duplex configuration, be sure to use both adapters of CPU/IO module 0 and of 1.

Example1) Configure the duplex network which enhances the availability by using all adapters.
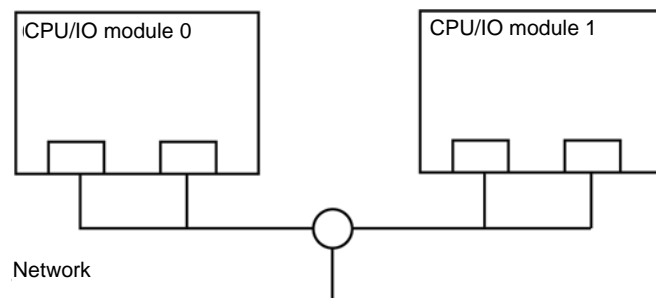
Example 2) Configure the duplex network which corresponds to multiple LAN connection.
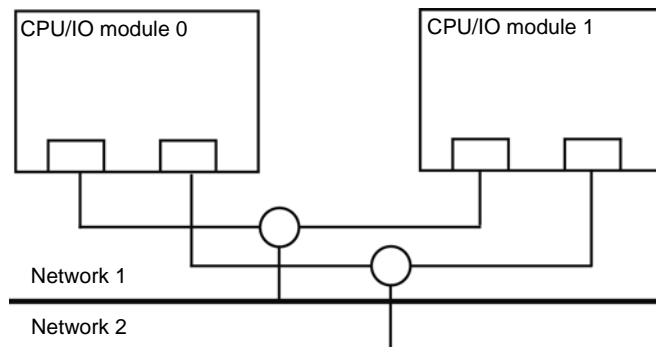
3.1.3 Configuring Duplex LAN

The following explains how to configure duplex/dual LAN.

Important	If configuring a duplex network, make sure that the CPU/IO module is set to duplex. If the CPU/IO module is in simplex status, the team properties of NIC teaming cannot be opened. Make sure to configure the duplex network according to the following procedure while the CPU/IO module is in duplex status.

Note	• Because the configuration from the remote site may fail, you need to log on as an Administrator or a member of Administrators group. • Before replacing the back panel of CPU I/O module, 1000BASE-T 2ch board set (N8804-012), or 10GBASE-T 1ch board set (N8804-011), be sure to remove duplex LAN, and create a team after the replacement. See *Chapter 2 (3.2.4 Removing Duplex LAN)* for how to remove duplex LAN. See *Chapter 2 (3.2.3 Configuring Duplex LAN)* for how to configure duplex LAN. • The screen images are subject to change because of the network driver version. Substitute as appropriate when content has been modified.

(1) Start Server Manager.

Select **Start** – **Server Manager**.

(2) Create team adapter.

1. Select **Local Server**.
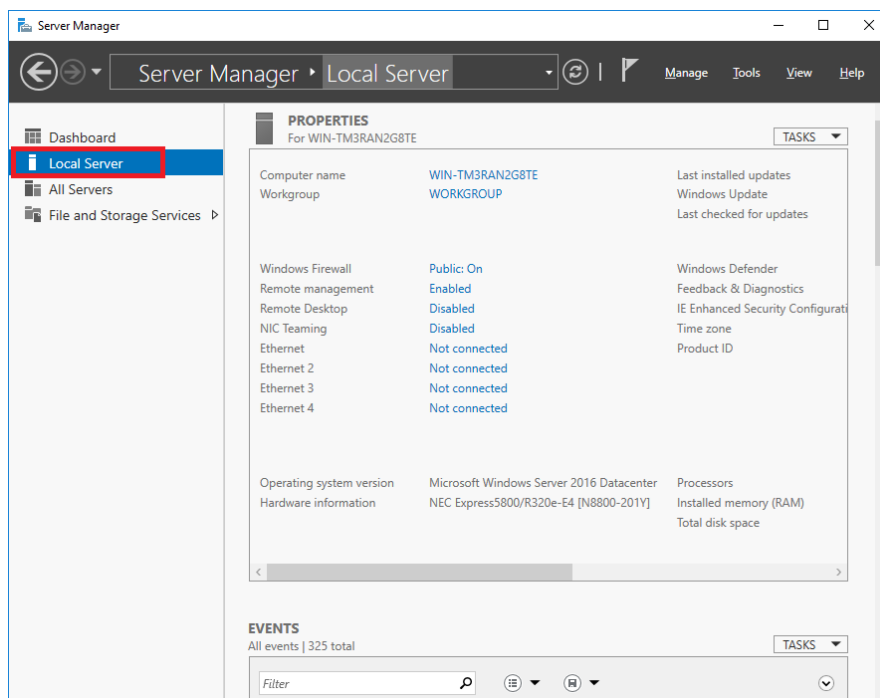
2. In the Properties window, click **Enable** or **Disable** for **NIC teaming**.
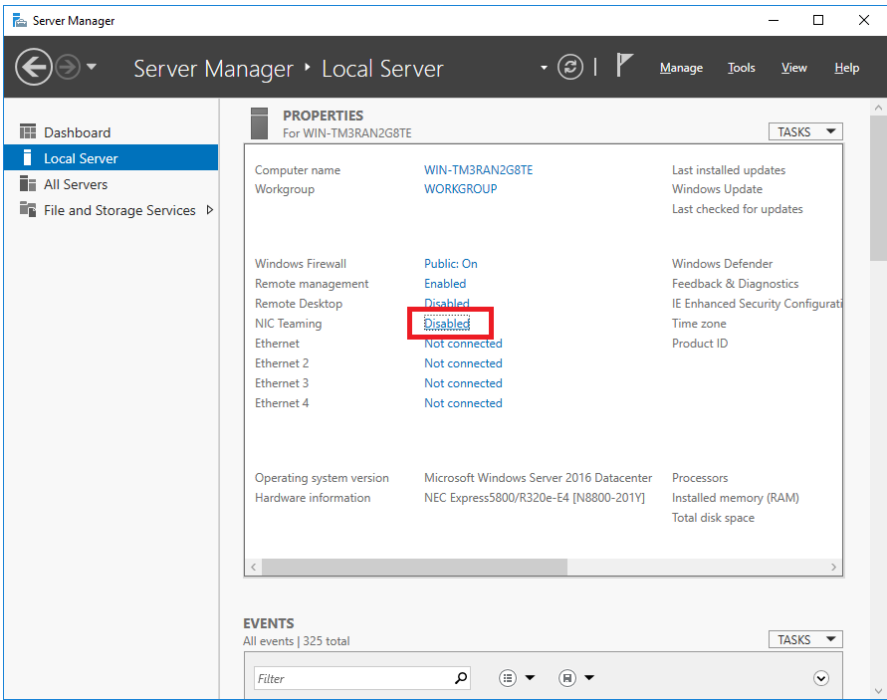
3. The NIC teaming setup tool will launch.
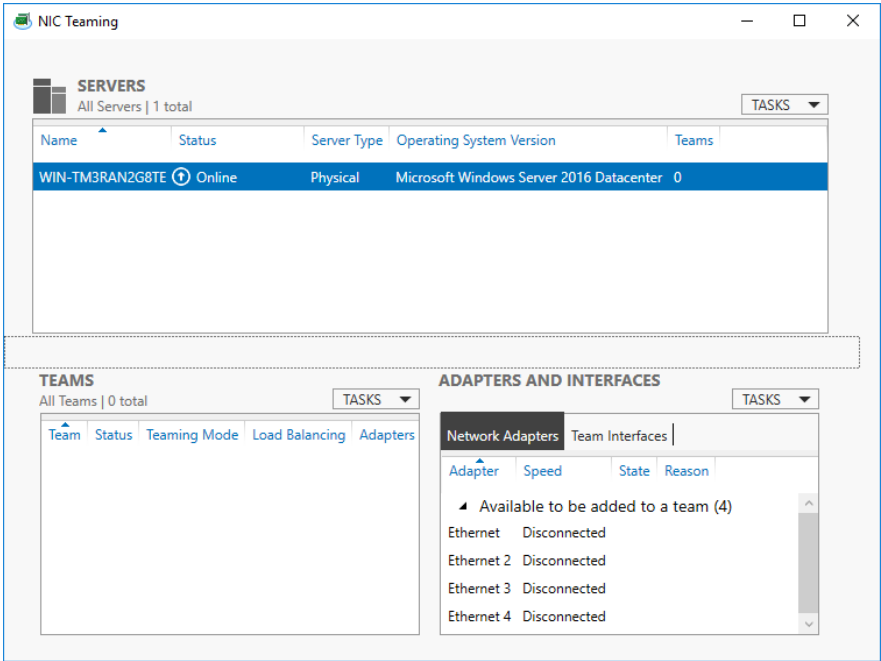
4. Select the adapters to include in the team..
    Right-click on it and select **Add to New Team**.

Note

Check "PCI bus" and "Function (*)" of adapters to be included in the team.
Use adapters of the same functionality. Create a team with an adapter having smaller PCI bus number and an adapter having larger PCI bus number.

(*) "Function" can be verified in **General** tab of **Properties** window.

PCI bus: Smaller value (PCI module #0 side)
                Larger value (PCI module #1 side)

Function: 0 (Port #0 side)
                1 (Port #1 side)

Example:

  Team 0
      PCI bus (smaller value), Function 0 (Port #0 side)
      PCI bus (larger value), Function 0 (Port #0 side)

  Team 1
      PCI bus (smaller value), Function 1 (Port #1 side)
      PCI bus (larger value), Function 1 (Port #1 side)

5. Type the name of the team to create, and then select the network adapter to include in the team from the **Member adapters** list.

6. Click **Additional properties**.
   Specify the required settings, and then click **OK**.

Teaming mode

`Static Teaming`	Configures static aggregation between the NIC and switches.
Switch Independent	Configures teaming on the NIC side without depending on the switch settings.
LACP	Configures dynamic aggregation between the NIC and switches.

Load balancing mode

Address Hash	Distributes the load based on IP addresses and port numbers.
Hyper-V Port	Distributes the load to each of the virtual switch ports used by the virtual machines.
Dynamic	• Distributes the load based on IP addresses and port numbers in sending. • Distributes the load same to "Hyper-V Port" in receiving.

Standby adapter

Select one adapter to be set to standby mode from the adapters in the team.
Setting all adapters to active mode is also possible.

Primary team interface

Any VLAN ID can be specified for the primary team interface.

(3) Setting team adapter

7. Start Command prompt and enter as follows to check the physical MAC address of team adapter.
   ```
   > ipconfig /all
   ```


8. Select the Team **Adapter** you have set from **Device Manager**. Right-click on it and select **Properties** from the menu displayed to show the **Properties** dialog box.

9. Specify the physical address (MAC address) of team adapter as follows:

   –   Select the **Advanced** tab on the properties dialog box. Select **MAC Address** from the Property list box.

   –   Enter the MAC address of a Team Adapter, which you have checked in Step 7, in the **Value** text box.
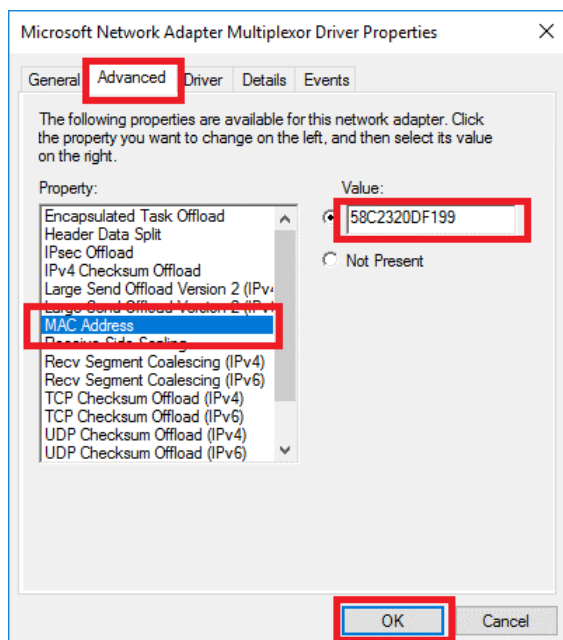
   –   Click **OK**.

3.1.4 Removing Duplex LAN

This section describes how to remove duplex/dual LAN.

Note	• Because the configuration from the remote site may fail, you need to log on as an Administrator or a member of Administrators group. • Do not remove duplex LAN in any other procedure than described below. Doing so may affect the files required for configuring/removing the team.

1. Select Local **Server** from **Server Manager**
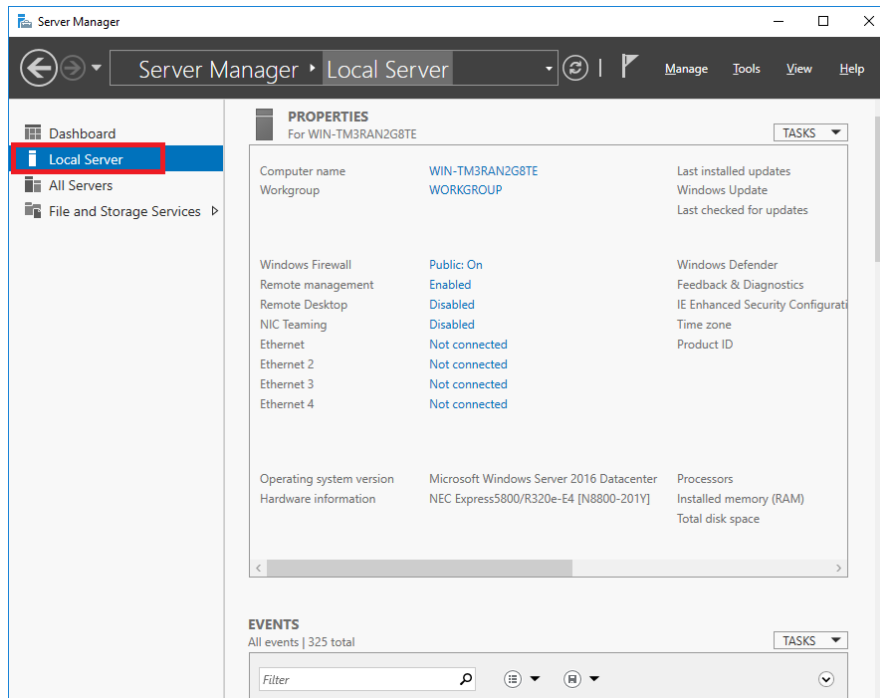
2. In the Properties **window**, click **Enable** or **Disable** for **NIC teaming**.
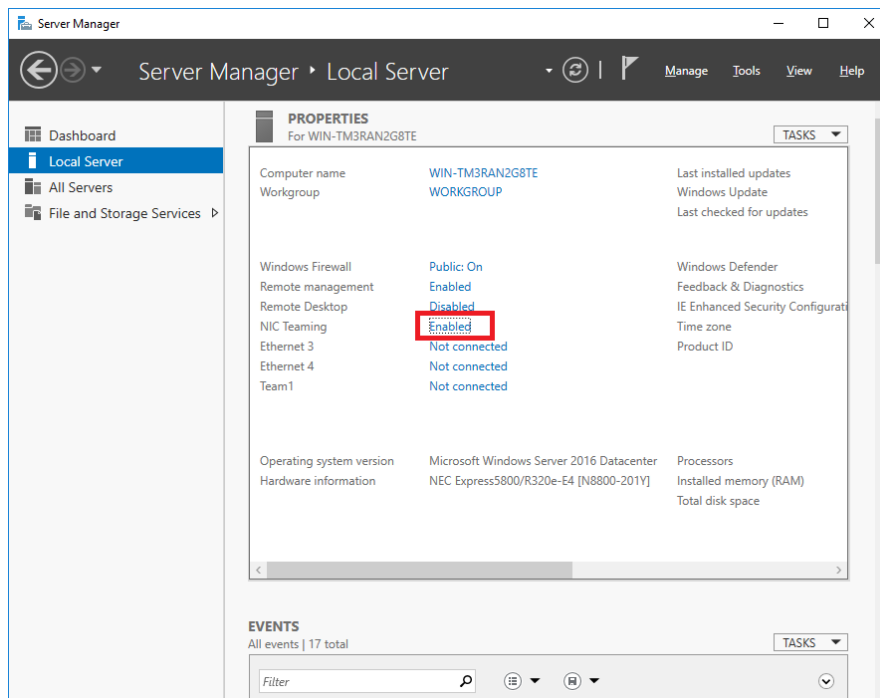
3. The NIC teaming setup tool will launch.
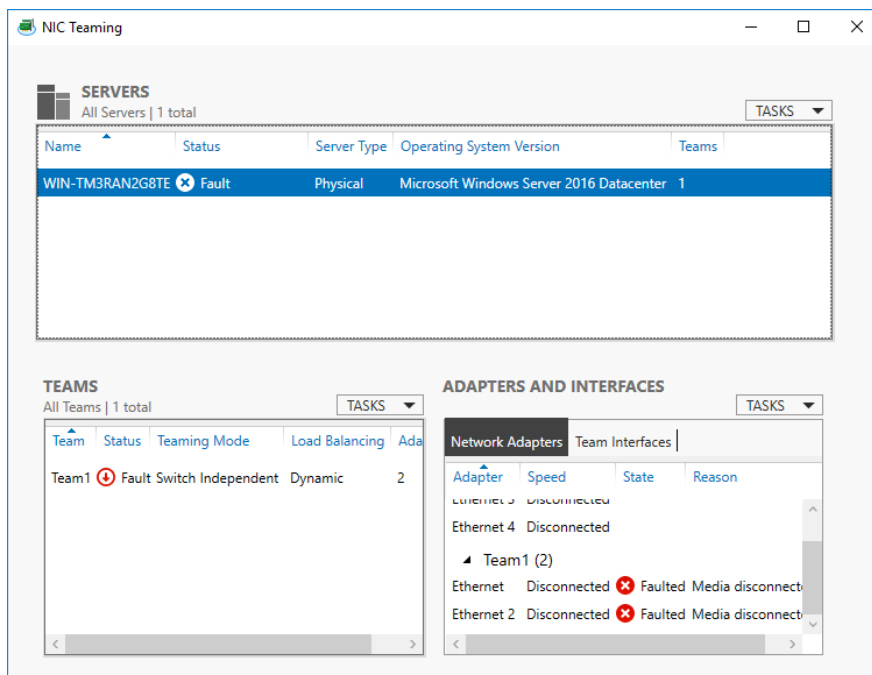
4. In the Teams section, select the team to remove.
   Right-click on it and select **Delete**.
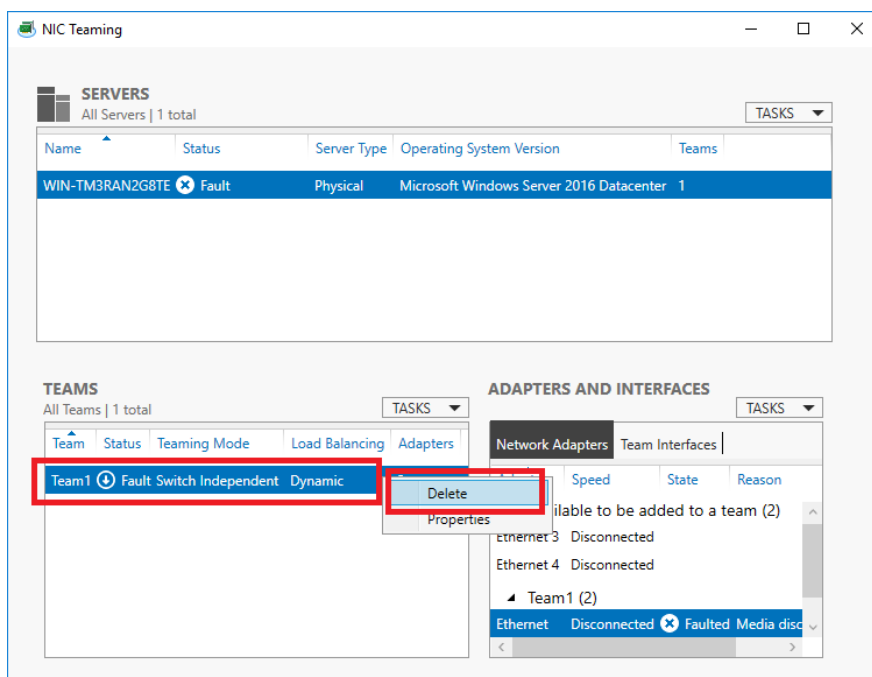
5. The confirmation dialog box appears. Click **Delete team** button.
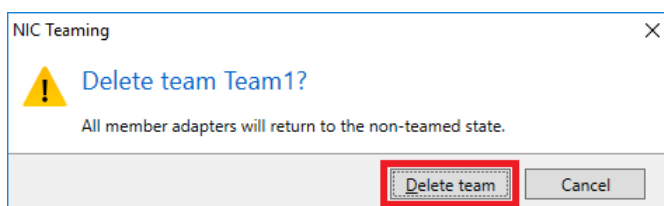
3.2 Windows Server 2012 R2, Windows Server 2008 R2

3.2.1 Overview

The duplex LAN configuration is of three types as described below:

Adapter Fault Tolerance (AFT)

AFT is a feature that places more than one LAN adapters on the same switch, and automatically switches the process of the active adapter to the standby adapter when any trouble occurred on the active adapter.

Usually the active adapter is used for communication. Spanning Tree Protocol (STP) of the switch must be disabled.

Adaptive Load Balancing (ALB)

ALB includes features of AFT, and enhances the throughput by distributing packet transmission by using LAN adapters simultaneously.

Receive Load Balancing (RLB) is enabled by default. Disable RLB and remove adapter priority when using ALB.

Switch Fault Tolerance (SFT)

SFT is a feature that provides redundant network, as two adapters are connected to corresponding two switches. One is allocated to the active adapter and the other is allocated to the standby adapter. Usually the active adapter is used for communication.

Spanning Tree Protocol (STP) function is required to construct the path redundancy on the switch devices.

When you construct the environment, you need to set the switch priority in order to maintain the path to the active adapter after the path information is updated if a switch on the path is broken. In addition, you need to set the priority to use the standby adapter's switch if the active adapter's switch is broken.

The other modes, "Static Link Aggregation", "IEEE 802.3ad Link Aggregation", and "Virtual Machine Load Balancing" do not contribute to enhancement of network redundancy. When a fault occurs, the communication performed on the controller with the fault is not taken over by the standby controller but lost.

3.2.2 **Rules of Duplex Configuration on Express5800/ft series**

Ensure to make the setting of duplex network configuration on the server.

When building duplex configuration, be sure to use both adapters of CPU/IO module 0 and of 1.

Example1) Configure the duplex network which enhances the availability by using all adapters.
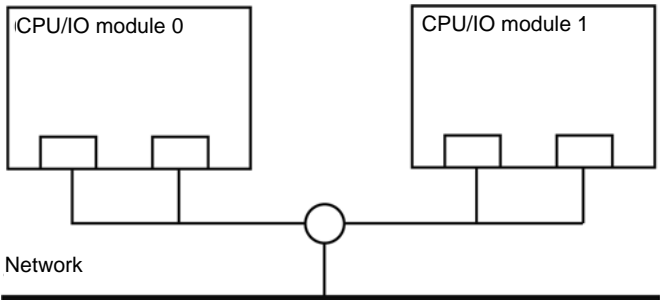
Example 2) Configure the duplex network which corresponds to multiple LAN connection.
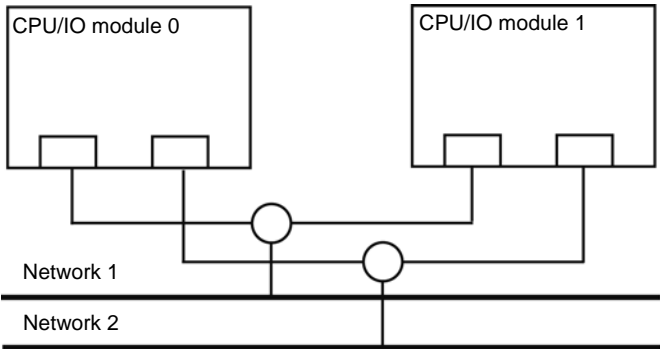
3.2.3 Configuring Duplex LAN

The following explains how to configure duplex/dual LAN.

The screen images used in this section are for Windows Server 2012 R2.

Important	ft server is not supporting Windows Server 2012 NIC teaming (LBFO). Please build duplex LAN configuration in the following procedure.

Note	• Because the configuration from the remote site may fail, you need to log on as an Administrator or a member of Administrators group. • Before replacing the back panel of CPU I/O module, 1000BASE-T 2ch board set (N8804-012), or 10GBASE-T 1ch board set (N8804-011), be sure to remove duplex LAN, and create a team after the replacement. See *Chapter 2 (3.2.4 Removing Duplex LAN)* for how to remove duplex LAN. See *Chapter 2 (3.2.3 Configuring Duplex LAN)* for how to configure duplex LAN. • The screen images are subject to change because of the network driver version. Substitute as appropriate when content has been modified.

(1) Start Device Manager.

Select **Start Screen** - **Administrative Tools** (or **Start** - **Administrative Tools**) - **Computer Management** - **Device Manager**.

Note	If network adapters are duplicated as shown below, remove all network adapters from **Device Manager**, and select **Action** – **Scan for hardware changes**. Stratus emb-I350 2-Port Gigabit Adapter Stratus emb-I350 2-Port Gigabit Adapter Stratus emb-I350 2-Port Gigabit Adapter #2 Stratus emb-I350 2-Port Gigabit Adapter #2 The display will be as follows when the actions are performed properly. Stratus emb-I350 2-Port Gigabit Adapter Stratus emb-I350 2-Port Gigabit Adapter #2 Stratus emb-I350 2-Port Gigabit Adapter #3 Stratus emb-I350 2-Port Gigabit Adapter #4 When using 10GBASE-T, the network adapter names are shown in "Stratus X540 1-Port Copper 10 Gigabit Adapter" and "Stratus emb-X540 2-Port Copper 10 Gigabit Adapter".

(2) Create team adapter.

1. Select a target Network Adapter. Right-click on it and select **Properties** from the menu displayed to show the **Properties** window.
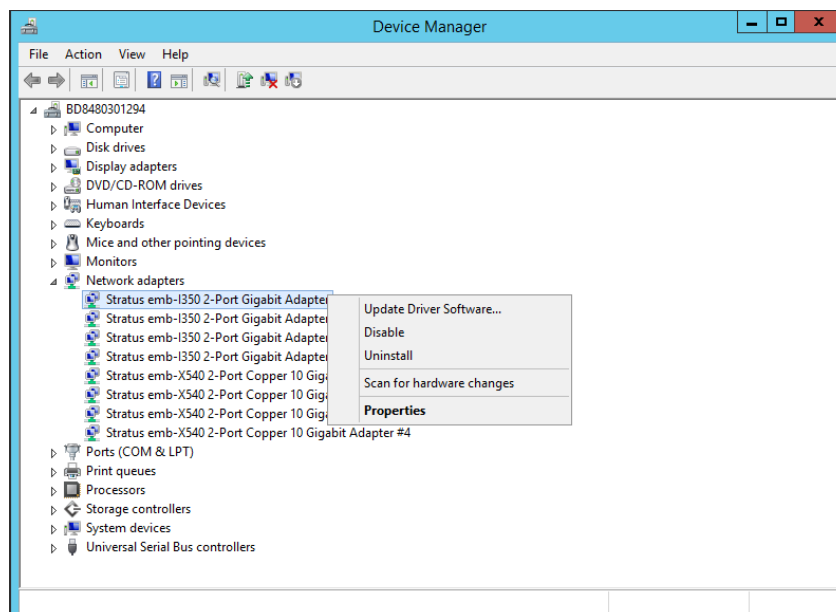
2. Select the **Teaming** tab on the properties dialog box. Select the **Team this adapter with other adapters**, and then click the **New Team…** button.

   Screen when using Stratus emb-I350 2-Port Gigabit Adapter and Stratus I350 2-Port Gigabit Adapter
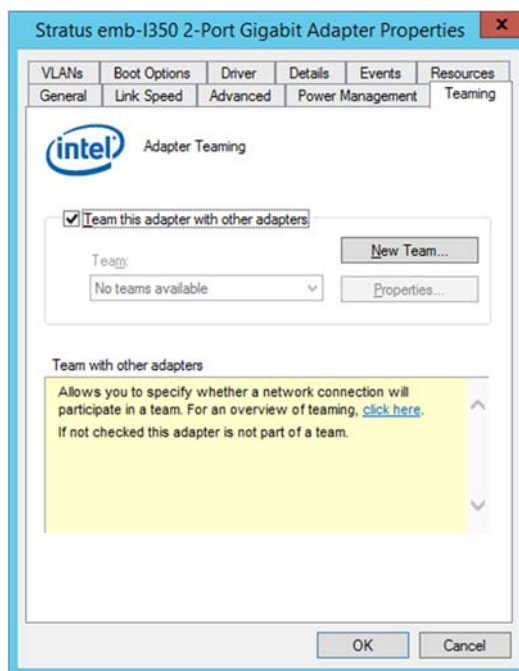
Screen when using Stratus emb-X540 2-Port Copper 10 Gigabit Adapter

and Stratus X540 1-Port Copper 10 Gigabit Adapter
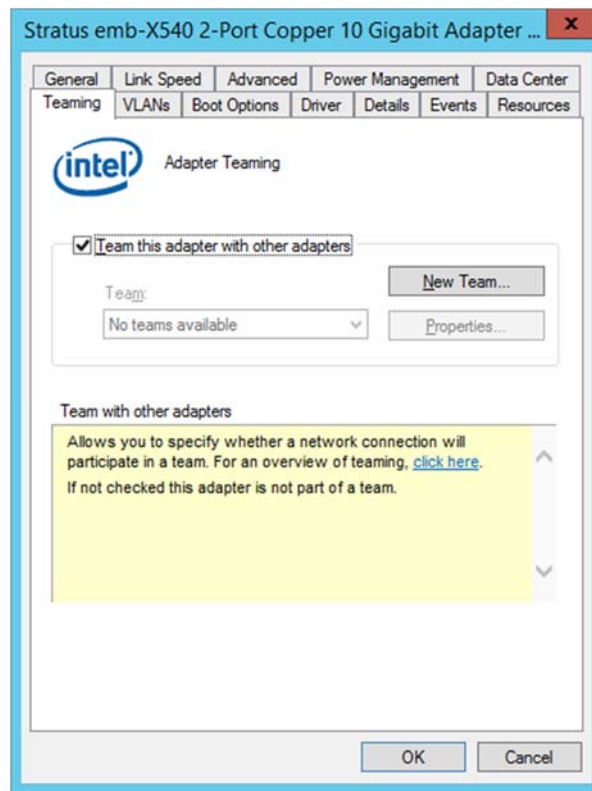
3. Enter the team name and click **Next**.

Note	Specify the team name with 3 or more characters.
	If the team name is specified with 3 or less characters, creating the secondary team will fail with the following pop-up message displayed: **"Failed to create a team."**

4. Select the adapters to include in the team and click **Next**.

Note	Check "PCI bus" and "Function (*)" of adapters to be included in the team. Use adapters of the same functionality. Create a team with an adapter having smaller PCI bus number and an adapter having larger PCI bus number. (*) "Function" can be verified in **General** tab of **Properties** window. PCI bus: Smaller value (PCI module #0 side) Larger value (PCI module #1 side) Function: 0 (Port #0 side) 1 (Port #1 side) Example: Team 0 PCI bus (smaller value), Function 0 (Port #0 side) PCI bus (larger value), Function 0 (Port #0 side) Team 1 PCI bus (smaller value), Function 1 (Port #1 side) PCI bus (larger value), Function 1 (Port #1 side)

5. Select **Adapter Fault Tolerance**, **Adaptive Load Balancing**, or **Switch Fault Tolerance** as a team type (Usually select **Adapter Fault Tolerance**). Click **Next**.

Note	**Virtual Machine Load Balancing** is displayed when Hyper-V feature is enabled.

6. Select **Standard Server** from the dropdown list on "**Select a profile to apply to the team**", and click **Next**.

Note   The dialog box "**Select a profile to apply to the team**" may not be displayed.
In such a case, go to Step 7.

7. Click **Finish**.
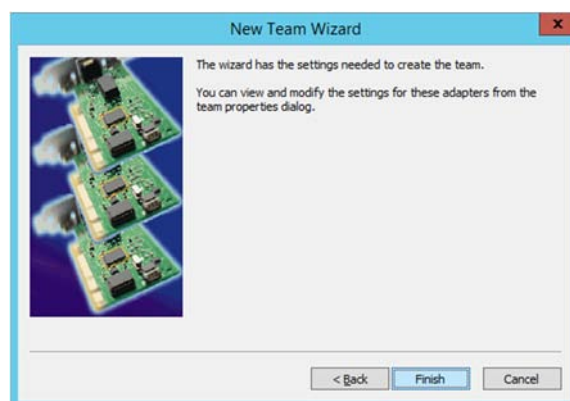
(3) Setting team adapter

1. Start Command prompt and enter as follows to check the physical MAC address of team adapter.
   > ipconfig /all

```
                            Administrator: Command Prompt              -  □  x

Ethernet adapter Ethernet 21:

    Media State . . . . . . . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . . . . . . . : TEAM : Team #0
    Physical Address. . . . . . . . . : 58-C2-32-8D-1D-D0
    DHCP Enabled. . . . . . . . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
```

2. Select the **Team Adapter** you have set from **Device Manager**. Right-click on it and select **Properties** from the menu displayed to show the **Properties** dialog box.

```
                            Device Manager                            -  □  x

File   Action   View   Help

⇐ ⇒ | 🖽 | 🔢 | 🔢 | 🔟 | 🖳 | 📝 🐾 📇

⊿ 🖳 BD8480301294
   ▷ 🖳 Computer
   ▷ 💾 Disk drives
   ▷ 🖳 Display adapters
   ▷ 📀 DVD/CD-ROM drives
   ▷ 🖳 Human Interface Devices
   ▷ ⌨ Keyboards
   ▷ 🖱 Mice and other pointing devices
   ▷ 🖳 Monitors
   ⊿ 🖳 Network adapters
          🖳 Stratus emb-I350 2-Port Gigabit Adapter
          🖳 Stratus emb-I350 2-Port Gigabit Adapter #2
          🖳 Stratus emb-X540 2-Port Copper 10 Gigabit Adapter
          🖳 Stratus emb-X540 2-Port Copper 10 Gigabit Adapter #2
          🖳 Stratus emb-X540 2-Port Copper 10 Gigabit Adapter #3
          🖳 Stratus emb-X540 2-Port Copper 10 Gigabit Adapter #4
          🖳 TEAM : Team #0 ┌──────────────────────────────────
          🖳 TEAM : Team #0 │ Update Driver Software...           3
          🖳 TEAM : Team #0 │ Disable                             4
   ▷ 🖳 Ports (COM & LPT) │ Uninstall
   ▷ 🖨 Print queues        │
   ▷ 🖳 Processors          │ Scan for hardware changes
   ▷ 🗇 Storage controllers │ Properties
   ▷ 🖳 System devices      └──────────────────────────────────
   ▷ 🖳 Universal Serial Bus controllers

Opens property sheet for the current selection.
```

3. Specify the physical address (MAC address) of team adapter as follows:

– Select the **Advanced** tab on the properties dialog box. Select **Locally Administered Address** from the **Settings** list box.

– Enter the MAC address of a Team Adapter, which you have checked in Step 1, in the **Value** text box.

– Click **OK**.
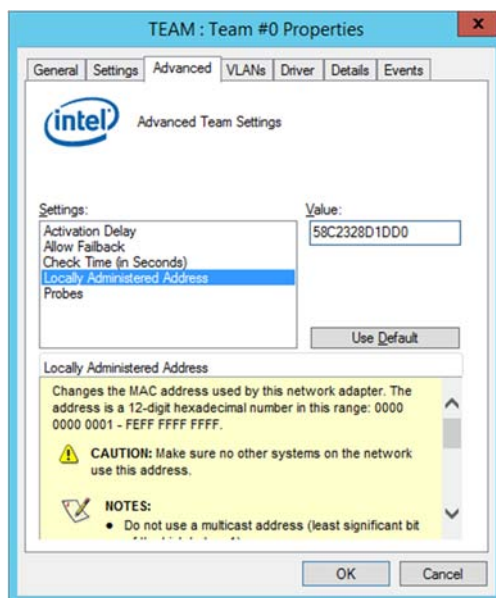
4. Disable probe function when the team configured with only two adapters.

– Select the **Advanced** tab in the Properties window. Select **Probes** from the **Settings** list box.
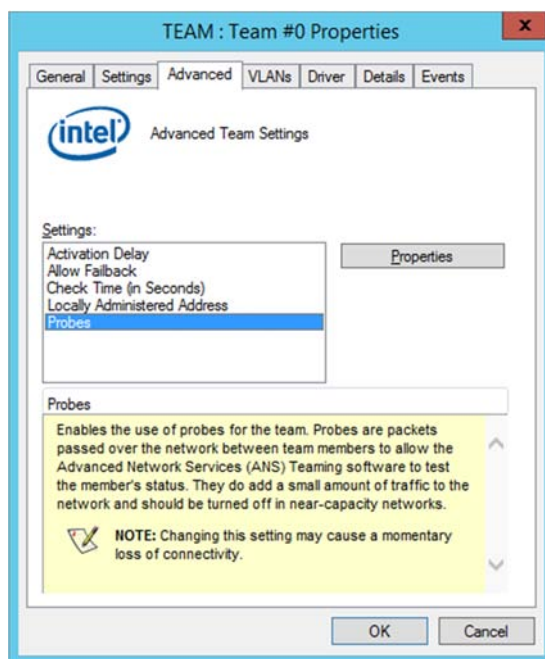
– Click **Properties** button. Probes dialog appears. Turn off the **Send Probes** in the dialog.
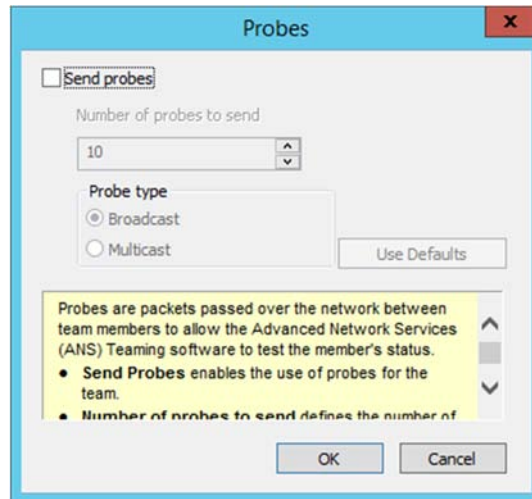
– Click **OK**.

The Probe setting is not displayed when **Switch Fault Tolerance (SFT)** feature is specified.
Go to Step 5.

> **Note**   When **Probe** is enabled in an environment where the team is configured with two adapters, if either of adapters fails, the other (healthy) adapter may be recognized as failed. If the team is configured with four adapters, you do not need to disable **Probe**.

5. When you select Adaptive Load Balancing as a team type, you need to disable Receive Load Balancing and delete the adapter priority.

– Select the **Advanced** tab on the properties dialog box. Select **Receive Load Balancing** from the **Settings:** list box, and then select **Disabled** from the **Value:** drop down list.
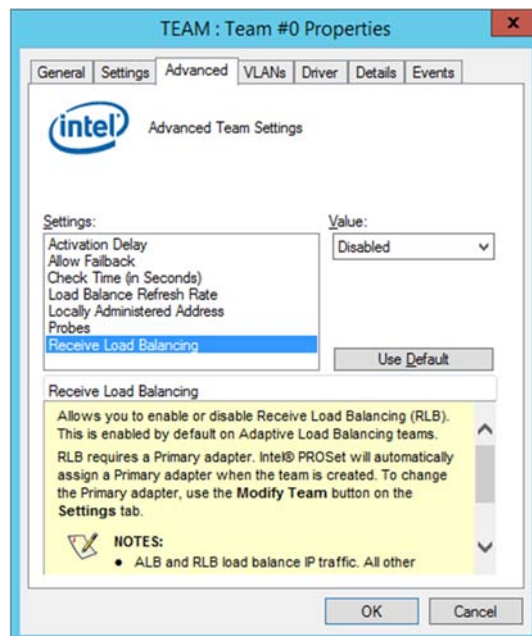
– Click **OK** to apply a change. The dialog will close.

– Show the properties dialog again.

– Select the **Settings** tab on the properties dialog box and click **Modify Team** button.

– Select the adapter that the priority is set, and then press the **Remove Priority** button to remove the priority.
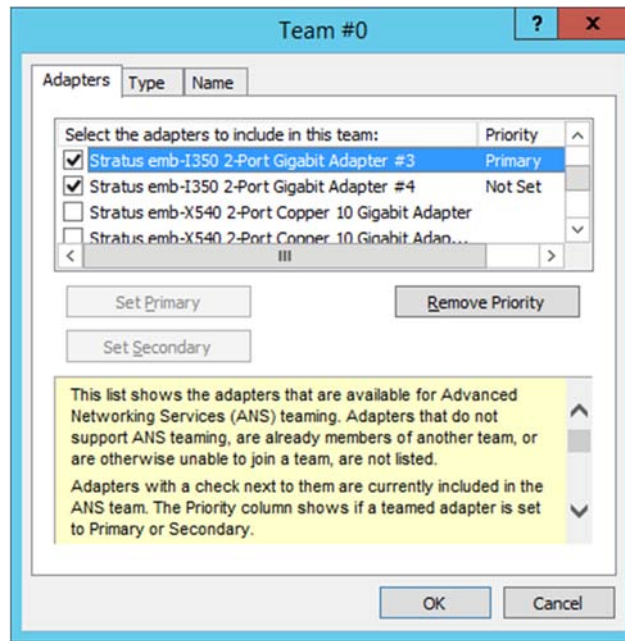
– Click **OK** to close dialog box.

3.2.4 Removing Duplex LAN

This section describes how to remove duplex/dual LAN.

Note	• Because the configuration from the remote site may fail, you need to log on as an Administrator or a member of Administrators group.
	• Do not remove duplex LAN in any other procedure than described below. Doing so may affect the files required for configuring/removing the team.

1. Select **Start Screen** - **Administrative Tools** (or **Start** - **Administrative Tools**)- **Computer Management** - **Device Manager**.

2. Select the **Team Adapter** of which you want to remove duplex/dual LAN. Right-click on it, and then select **Properties** from the menu displayed to show the properties dialog box.
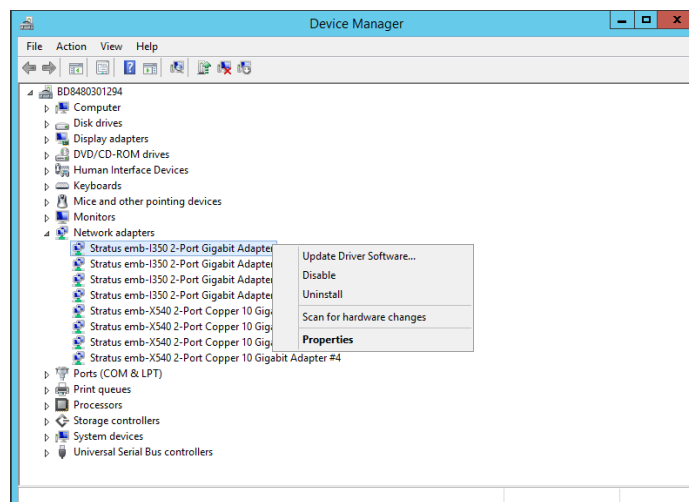
3. Select the **Settings** tab in the properties dialog box and click the **Remove Team** button.
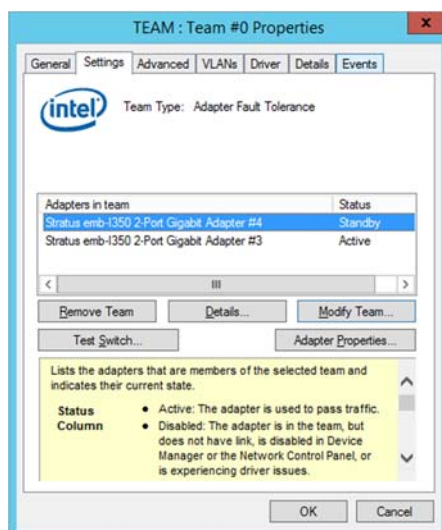
4. The confirmation dialog box appears. Click **Yes** button.
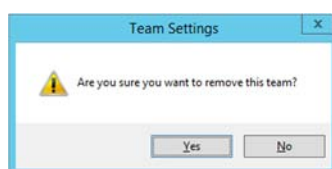
4. **Express5800/ft Series Service Program Configuration**

Express5800/ft series uses the following service programs, in addition to dedicated drivers.

Service program names shown in [Services]	Services that can be stopped	Services required to keep operating
ftSys eService		○
ftSys Maintenance and Diagnostics (MAD)		○
ftSys RPC Provider		○
ftSys SSN		○
ftSys RAS		○
Virtual Disk(vds)		○
Windows Management Instrumentation		○
SNMP Service	○	
Alert Manager Main Service	○	
Alert Manager Socket(S) Service	○	
ESMFSService	○	
ESMCommonService	○	
ESRAS Utility Service	○	
ESMPS	○	
ESMBmcConfigMonitoring	○	

Important

- **The programs listed in "Services required to keep operating" are necessary for the Express5800/ft series operation. Do not stop these services.**
  When minimizing the number of operating service programs temporarily is required, the programs listed in "Services that can be stopped" may be stopped: Make sure to restart the operations of stopped service programs immediately after the backup processes are completed.
  Although "Services that can be stopped" are stopped and ft server continues operation in duplexed mode, monitoring the duplex mode and notification based on the result of monitoring cannot be performed.

- **.NET Framework and Visual C++ library (Microsoft Visual C++ Redistributable) are installed together with ft Server Control Software when setting up this server. These components are required for operating service programs dedicated to ft server. Do not uninstall them.**

Tips

Service programs dedicated to ft server are as follows:

- ftSys eService
  This service outputs SEL (System Event Log).

- ftSys Maintenance and Diagnostics (MAD)
  This service provides ft control management and diagnostics functions.

- ftSys RPC Provider
  This service manages WMI configuration and status.

- ftSys SSN and ftSys RAS
  This service controls communications between modules.

- ESMPS
  This service monitors the duplexing state of ft server, and outputs the state to event log.

5. Installing Optional Devices

This section describes procedures to add/remove optional devices and replace failed components.

Important	• **NEC recommends that the procedures should be performed by maintenance personnel who are belong to a maintenance service company certified by NEC.** • **Use only the devices and cables specified by NEC. You will be charged to repair damages, malfunctions, and failures caused by the use of any devices or cables not specified for use with this server even within the warranty period.**

5.1　Precautions

5.1.1　Safety precautions

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING

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

- Do not disassemble, repair, or modify the server.
- Do not look into the optical disc drive.
- Do not remove the lithium battery

⚠ CAUTION

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

- Do not install CPU/IO module with its cover removed.
- Make sure to complete component installation.
- Do not pinch your finger(s).
- Pay attention to hot components.

5.1.2 **Before adding optional devices**

If you add on optional devices onto this server, some devices require specific the ft server software version.

Follow the steps below to check the version of the software.

1.   Confirm the required ft server control software's version, refer to the *User's Guide* provided with the device, check the NEC website, or contact your sales representative.

2.   Confirm the version of the ft control software on your system.

3.   After confirming that the version of ft control software is appropriate to the optional device, add the device onto the server.

For details, see *Chapter 1 (3.14 Confirming the ft Server Control Software Version (for Windows Server 2016) and 4.14 Confirming the ft Server Control Software Version (for Windows Server 2012) and 5.15 Confirming the ft Server Control Software Version (for Windows Server 2008))* in *Installation Guide*.

5.1.3 **Precautions for installing/replacing optional devices**

Note the following, when installing or replacing devices.

- Fault devices can be replaced during the continuous operation.
  Take care for electric shock and damage to the component due to short-circuit.

- Optional devices cannot be added or removed during continuous operation.
  After shutting down OS, check that the server is powered off, disconnect all power cords and interface cables from the server before installing or removing the optional devices.

- To remove the CPU/IO module during the continuous operation of this server, disable the intended CPU/IO module (place the module off-line) by using either of the following (see *Chapter 1 (4.1 Starting and Stopping the Components)*):

  – ft server utility of NEC ESMPRO Agent

  – NEC ESMPRO Manager from "PC for management " on the network

- After a new module is installed to the server, enable the CPU/IO module using the ft server utility or the NEC ESMPRO Manager. On the environment using StoragePathSavior (like FC, iSCSI), run the following command to update StoragePathSavior information:

  spsadmin /deletemissing

  spsadmin /rollback :::

Tips	The server is defaulted to automatically boot the module, once installed. For details, see *Chapter 1 (4.7 Setting the System Operation).*

- Make sure to provide the same hardware configuration on both CPU/IO modules (except SAS board and internal USB cable).

- Use the slots and sockets in the same position on both groups.

- Do not install those devices having different specifications, performance, or features.

- Before removing the screws from the CPU/IO modules, change the CPU/IO module to off-line state by using the ft server utility or the NEC ESMPRO Manager.

5.2 **Available Optional Devices**

Optional devices that can be added, removed, or replaced are as follows:

- 2.5-inch hard disk drive
  A maximum of 8 units can be installed per CPU/IO module.
  Install hard disk drives in 2.5-inch hard disk drive bay at front of the server.

- DIMM
  A maximum of 16 units can be installed per CPU/IO module.
  After removing the CPU/IO module from the server, install DIMMs in DIMM slots on motherboard of the server.

- Processor (CPU)
  In addition to the CPU of standard equipment, one more CPU can be installed per CPU/IO module.
  After removing the CPU/IO module from the server, install CPU in CPUs sockets of the server.

- PCI card
  Up to two cards can be installed on R310e-E4, R320e-E4, R310f-E4, and R320f-E4 model, or up to 4 cards on R320e-M4 and R320f-M4 model Per CPU/IO module
  After removing the CPU/IO module, install PCI card in PCI card slot of the server.

- Internal USB cable
  Up to two USB ports of USB3.0 can be installed per CPU/IO module by installing the built-in USB cable.
  After removing the CPU/IO module from the server, install or remove an internal USB cable.

5.3 2.5-inch Hard Disk Drive

Up to 8 hard disk drives mounted on the 2.5-inch width dedicated tray can be installed on the 2.5-inch hard disk drive bay located at the front of the unit.

Important	• **Do not use any hard disks that are not authorized by NEC. Installing a third-party hard disk may cause a failure of the server as well as the hard disk.**
	• **Purchase hard disks of the same model in pair. Contact your sales representative for hard disk drives optimum for your server.**

The operation is run on the created mirror volume with installed hard disk drive pairs such as slot 0 on CPU/IO module 0/1, slot 1 on CPU/IO module 0/1, slot 2 on CPU/IO module 0/1. The OS is installed on the mirror volumes that consist of the hard disks in the slot 0.
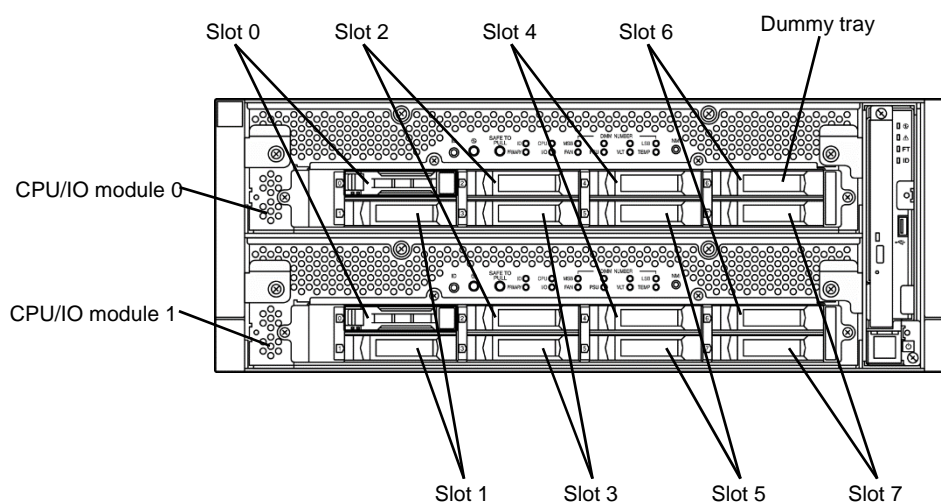
Slots related to the mirroring process

Empty slots in the 2.5-inch hard disk drive bay contain dummy trays. The dummy trays are inserted to improve the cooling effect in the server. Always insert the dummy trays in the slots with no hard disks drive installed.

5.3.1 Installing 2.5-inch Hard Disk Drive

Follow the steps below to install the hard disk drives. Install the hard disk drives from a smaller slot number to large number on CPU/IO module 0/1, from slot 0 to slot through slot 7.

Important	• **See *Chapter 2 (5.1.3 Precautions for installing/replacing optional* devices*) and Chapter 1(1.8 Anti-static Measures)* in *Safety Precautions and Regulatory Notices* before starting installing or removing options.** • **If you install hard disk drives when this server is turned off, mount 2 hard disk drives to constitute duplexing, then start the system. After the system is started, see *Chapter 3(1.2.2 Making disks duplex by RDR)* and be sure to configure the hard disk drive duplexing settings.**

Tips	You can install a hard disk drive without shutting down the OS. In this case, you can skip Step 1 and Step 7.

1. Shut down the OS.
   The server turns off automatically.

2. Remove the front bezel.

3. If a dummy tray is inserted in a slot you want to install the hard disk drive, remove the dummy tray.

Important	Keep and store the dummy tray for future use.
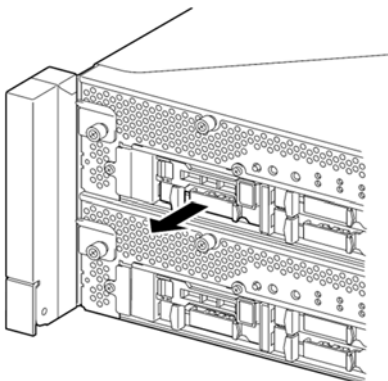
4. Unlock the hard disk drive.
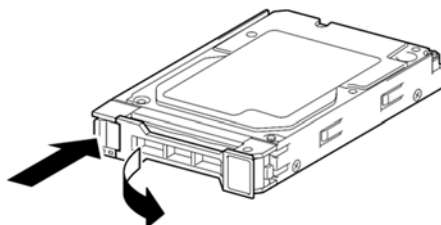
5. Firmly hold the handle of the hard disk drive to install and insert the drive into the slot.

Note	• Insert the hard disk drive until the lever hook touches the server frame. • Check the direction of the lever. Insert the hard disk drive with the lever unlocked.
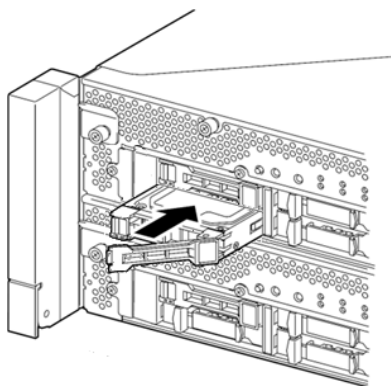
6. Slowly close the lever. When the lever is locked, you will hear a click sound.

Important	**Be careful not to pinch your finger(s) between the lever and tray.**

Note	Check the hook of the lever is engaged with the frame.
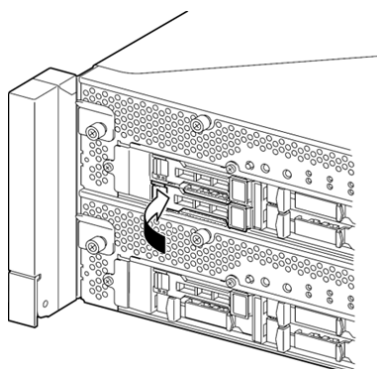
7. Press the POWER switch to power on.

8. Install the front bezel.

9. See *Chapter 2* (*1.2.2 Making disks duplex by RDR*) to duplex the disks.

5.3.2 **Removing 2.5-inch Hard Disk Drive**

Follow the steps below to remove the hard disk drive.

Important	See *Chapter 2 (5.1.3 Precautions for installing/replacing optional* **devices***)* **and** *Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices* **before starting installing or removing options.**

1. Shut down the OS.
    The server turns off automatically.

2. Remove the front bezel.

3. Push the lever of the hard disk to unlock the drive,
    and pull the handle toward you.
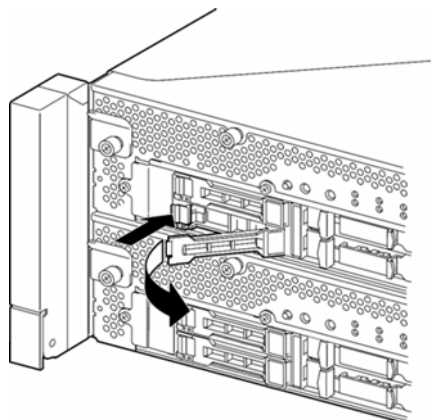
4. Hold the handle and hard disk drive to pull them off.
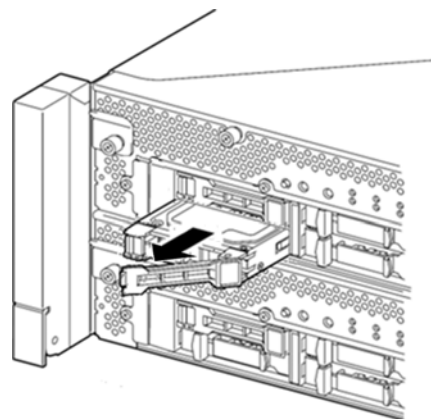
5. Install the dummy tray in an empty tray.

5.3.3 Replacing 2.5-inch Hard Disk Drive

Follow the steps below to remove the failed hard disk drive. The hard disk drive is replaced with a new disk with the server powered on.

Important	**See *Chapter 2 (5.1.3 Precautions for installing/replacing optional* devices*)* and *Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices* before starting installing or removing options.**

(1) Replacing the Hard Disk Drive

1. Locate the failed hard disk drive.
   When a hard disk drive fails, the DISK ACCESS LED on the hard disk drive's handle lights amber.

2. Remove the failed hard disk according to *Chapter 2 (1.3 Replacing Failed Hard Disk Drives and 5.3.2 Removing 2.5-inch Hard Disk Drive).*

3. Wait at least 15 seconds. Then, follow the steps in *Chapter 2 (5.3.1 Installing 2.5-inch Hard Disk Drive)* to install a new hard disk drive.

Note	● The hard disk drive to be installed for replaced must have the same specifications as its mirroring hard disk drive.
	● Use unsigned hard disk drive for replacement. To use the signed disk, recover the duplex configuration according to *Chapter 2 (1. Hard Disk Drive Operations)* after formatting the disk physically. For details about the physical format, see *Chapter 3 (3.3 Physical Formatting of the Hard Disk Drive*).

4. Restore the redundant configuration.

   See *Chapter 2 (1.3 Replacing Failed Hard Disk Drives).*

5.4 **CPU/IO Module**

To replace a processor (CPU), memory (DIMM), and PCI card, remove the CPU/IO module.

Important	• See *Chapter 2 (5.1.3 Precautions for installing/replacing optional devices)* and *Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices* before starting installing or removing options.
	• To install or remove CPU or DIMM, first power off the server before removing the CPU/IO module.
	• Removing the CPU/IO module being operating may cause unexpected trouble. Use the management software (e.g., ft server utility or NEC ESMPRO Manager) to isolate the CPU/IO module to be removed so that the CPU/IO module is removed when it is stopped, without fail. Then remove the relevant CPU/IO module after verifying the Status LED on the CPU/IO module. See *Chapter 1 (6.1 Error Indication by LED)* for details of the Status LED.
	• When replacing both CPU/IO modules, replace one CPU/IO module and wait until dual configuration is established to replace the other CPU/IO module. If you replace the both CPU/IO modules simultaneously, establishing dual CPU/IO module configuration can result in interruption of the whole system.

5.4.1 Removing CPU/IO Module

Follow the steps below to remove the CPU/IO module.

1. Stop the CPU/IO module you want to remove by using the ft server utility of NEC ESMPRO Agent or **Information of server state/constitution** of NEC ESMPRO Manager.

   For details, see *Chapter 1 (4. Maintenance of Express5800/ft series)*.

   NEC ESMPRO Manager

   Select **ft System** - **CPU Module** - **CPU Module (to be removed)** - **Maintenance** - **Bring Up/Bring Down** - **Bring Down**.
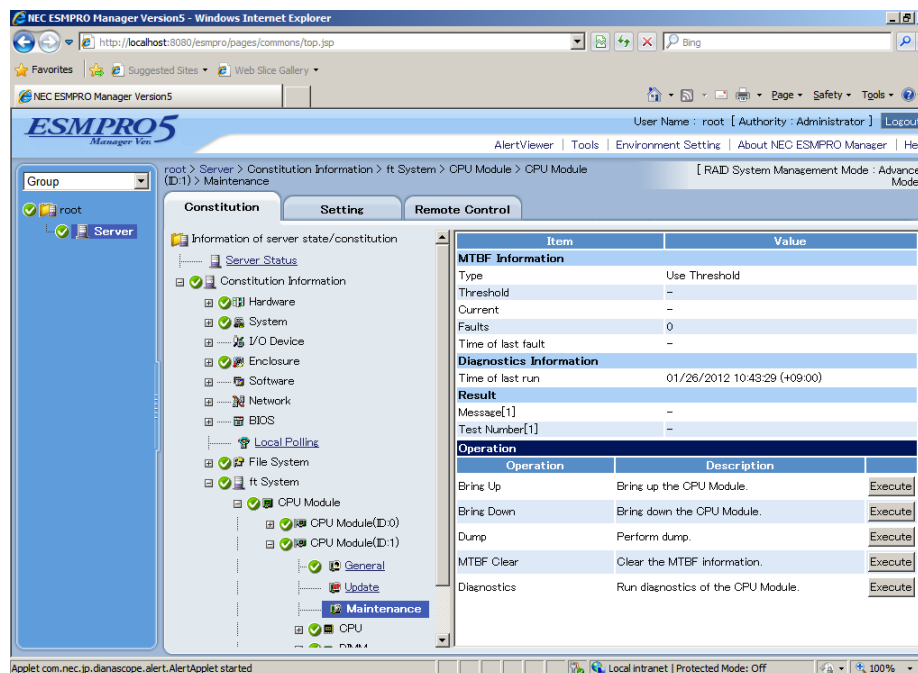
ft server utility

Select **ftServer** - **CPU Module** - **CPU Module (to be removed)** - **Bring Up/Bring Down** - **Down**.
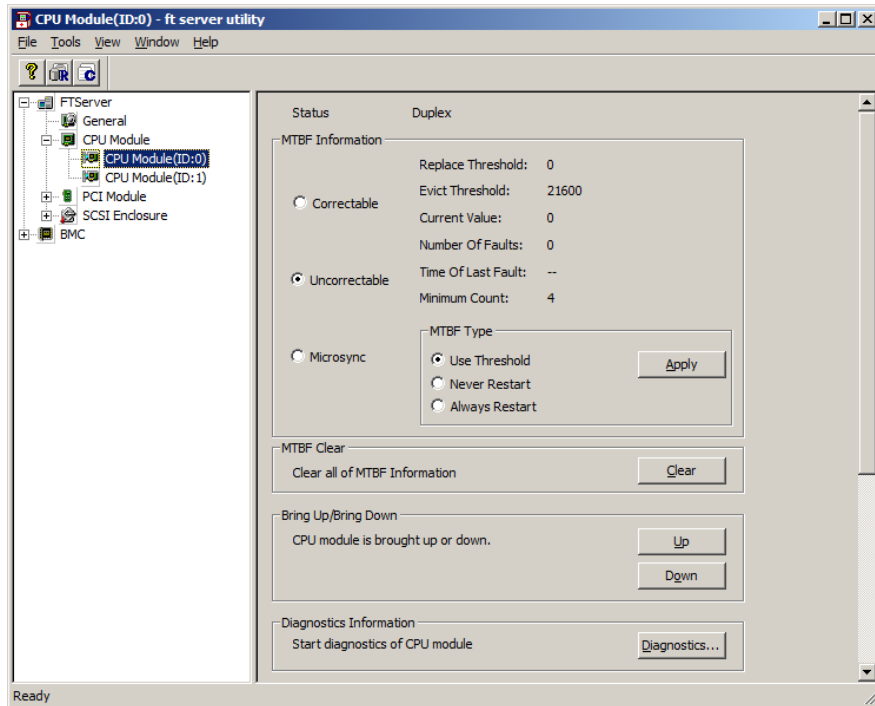
Repeat the steps above for the PCI module and confirm that the status of the CPU/IO module and the IO module (PCI module) are "Removed".

Tips	When removing CPU/IO module 0, select **Bring Down** for CPU module (ID:0) and PCI module (ID:10)

2. Remove the front bezel.

3. Disconnect the power cord of a module to be removed.
    The stopper will go down when you disconnect the cable.
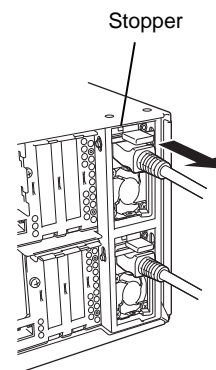
Stopper

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

4. Loosen the screws securing the black lever of CPU/IO module, and then unlock the lever.

Important	・ Before you pull out a CPU/IO module, check the rear of the server to make sure cables for connection with peripherals or network are disconnected.
	・ If any cables are connected, keep a record of where the cables are connected and disconnect all cables from the module.

Tips	If you cannot disconnect the LAN cable easily, disconnect while pressing the latch with a slotted screwdriver.
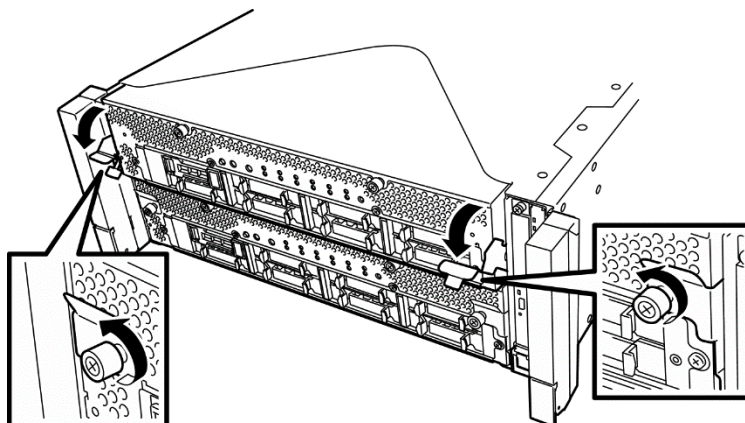
5. While holding the black levers of the CPU/IO module, pull out the module until the module is locked and stopped.

Important	• Do not hold parts other than the lever to pull the module.
	• Handle the CPU/IO module carefully.
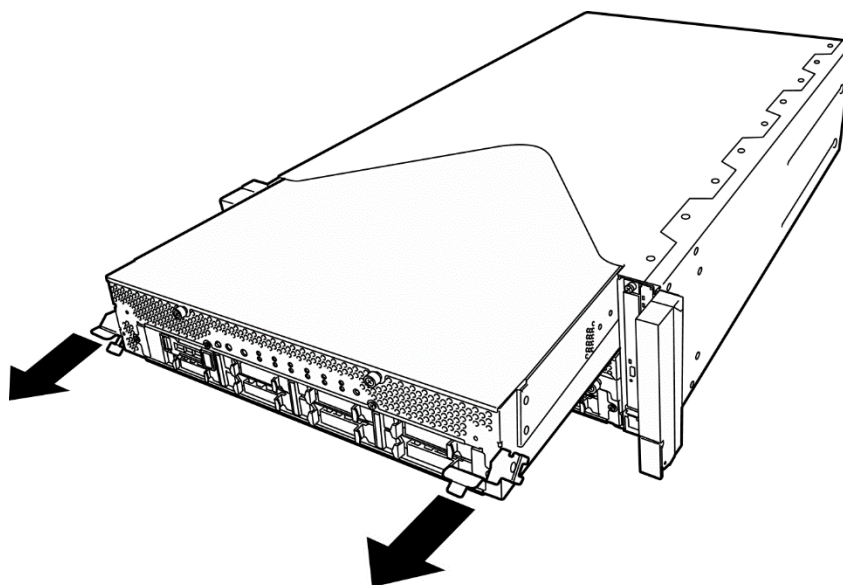
6. Lower the lock on the side of CPU/IO module to unlock it, and then pull out the module.
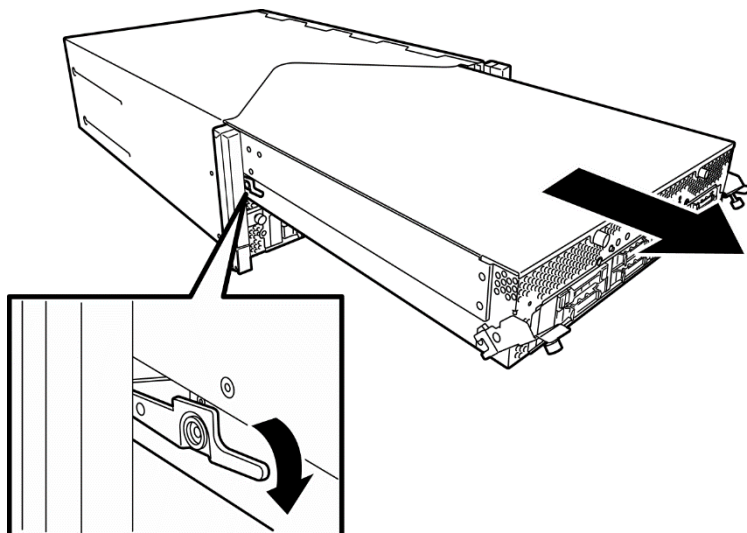
7. Pull out the CPU/IO module gently and carefully, and place it on a flat and sturdy table.
    Avoid the dusty or humid place.

The preparation of removing/replacing an optional device is now complete.

5.4.2 Installing CPU/IO Module

Follow the steps below to install the CPU/IO module:

Important	• See *Chapter 2 (5.1.3 Precautions for installing/replacing optional devices)* and *Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices* before starting installing or removing options.
	• Insert the black lever slowly and fasten the screws tightly. Be careful not to cause a shock to the device at this time.

1. Firmly hold the CPU/IO module with both hands and insert the module into the rack.
   Engage the guides of the module and chassis, and then insert the module slowly.
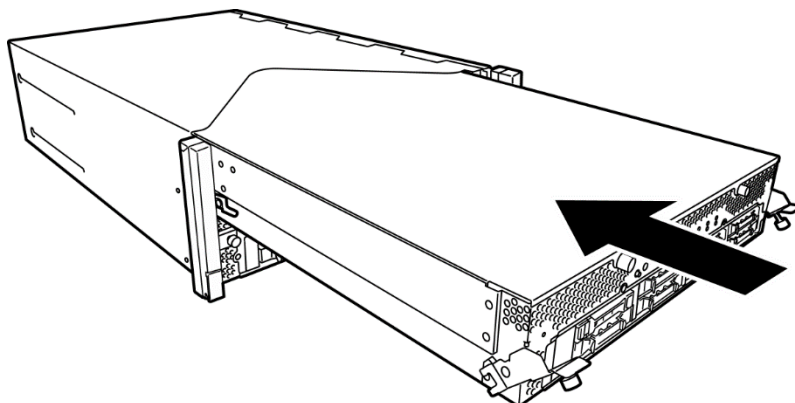
2. Push up the black levers on the CPU/IO module, and fasten them with screws.
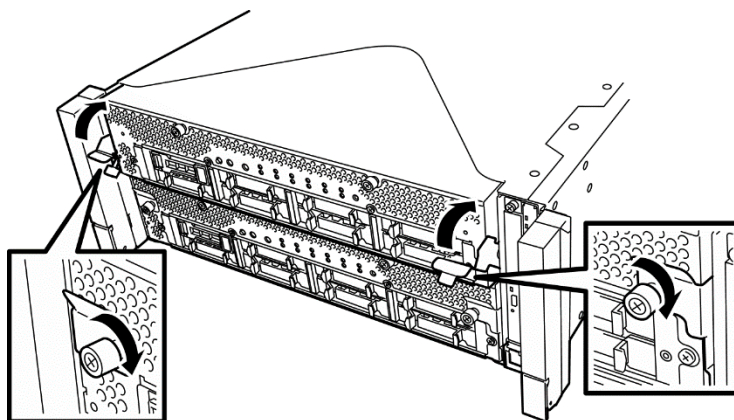
Important	• Secure the lever with the screws. If it is not secured by the screws, the operation of the CPU/IO module will be unstable.
	• In some system statuses or settings, auto start up or integration does not take place when the CPU/IO module is connected. In such a case, check the status by using the ft server utility or "Information of server state/constitution" of NEC ESMPRO Manager, and then start up the CPU/IO modules.

3. Connect the cables for peripherals and network.

4. While holding the stopper, insert the power codes of the installed CPU/IO module.

5. The installed CPU/IO module will be automatically started.

5.5 **DIMM**

Dual inline memory module (DIMM) is installed to the DIMM slot on CPU/IO board of the CPU/IO module.

The CPU/IO board of a CPU/IO module has 16 slots for DIMM.

Tips	• Maximum memory capacity depends on server model as follows: Up to 512GB (32GB x 16) R320e-E4, R320e-M4 model, R320f-E4, R320f-M4 model Up to 256GB (32GB x 8) R310e-E4 model, R310f-E4 model • In the error messages and logs in POST, NEC ESMPRO, or Off-line Maintenance Utility, the DIMM slot may be described as "group". The number next to "group" corresponds to the slot number shown in the figure on the next page.

Important	• **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.** • **Before adding or removing DIMMs, power off the server and detach the CPU/IO module.** • **See *Chapter 2 (5.1.3 Precautions for installing/replacing optional* devices*) and Chapter 1(1.8 Anti-static Measures)* in *Safety Precautions and Regulatory Notices* before starting installing or removing options.**
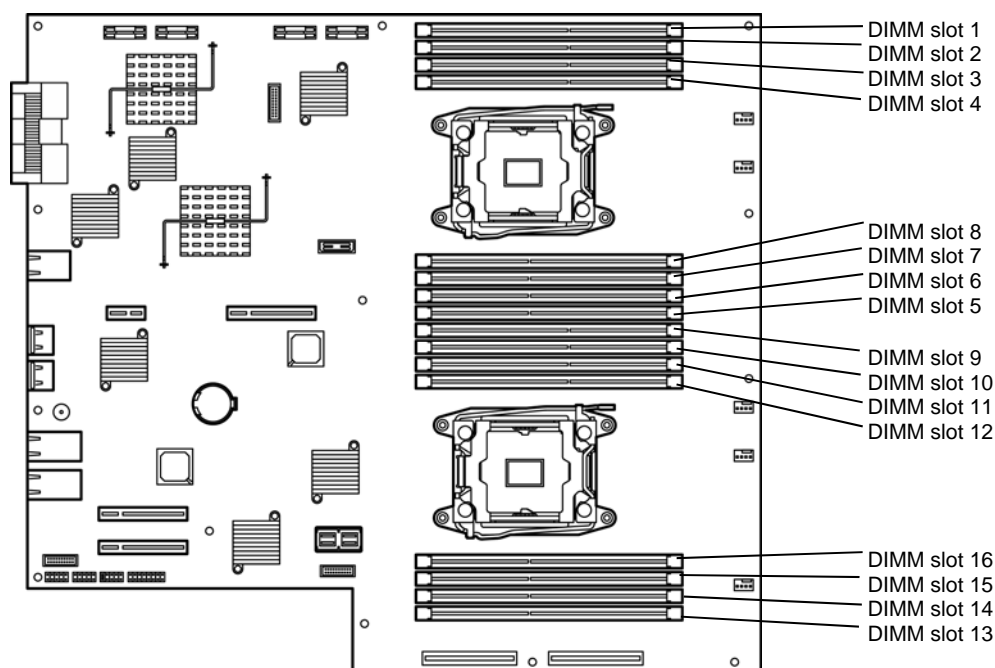
CPU/IO board in the CPU/IO module

Precautions

Note the following to install, remove, or replace DIMM.

- DIMM 9 through 16 are available only when the processor #2 is installed.
- To install DIMM, install the product of the same model number to the same slots of the CPU/IO modules 0 and 1.
- See the following table to install additional DIMM (8GB, 16GB, 32GB).

Available DIMM capacity		Slot for installing DIMM															
No. of CPUs	Capacity (GB)	1	2	3	4	8	7	6	5	9	10	11	12	16	15	14	13
1	8	8															
	16	8		8													
	24	8		8					8								
	32	8		8			8		8								
	48	8	8	8	8		8		8								
	64	8	8	8	8	8	8	8	8								
	64	16		16			16		16								
	96	16	8	16	8	8	16	8	16								
	128	16	16	16	16	16	16	16	16								
	128	32		32			32		32								
	256	32	32	32	32	32	32	32	32								
2	8	8															
	16	8								8							
	24	8		8						8							
	32	8		8						8		8					
	48	8		8					8	8		8					8
	64	8		8			8		8	8		8			8		8
	96	8	8	8	8		8		8	8	8	8	8		8		8
	128	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	128	16		16			16		16	16		16			16		16
	256	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	256	32		32			32		32	32		32			32		32
	512	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32

5.5.1 Installing DIMM

Follow the steps below to install the DIMM.

1. Shut down OS.
    The sever turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.

4. Remove three screws (two on the front and one on the rear), and remove the top cover of the CPU/IO module.

5. Remove the air duct.

Air duct

6. Insert a DIMM into the DIMM slot vertically.

    After the DIMM is completely inserted into the slot, the levers are automatically closed.
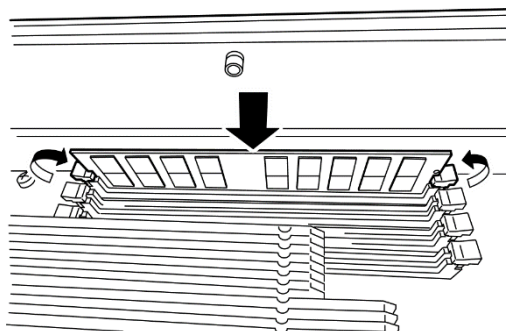
Note	Pay attention to the direction of the DIMM. The terminal of the DIMM has a notch to prevent incorrect insertion.

7. Install the air duct.

8. Place the top cover of the CPU/IO module and secure it with three screws.
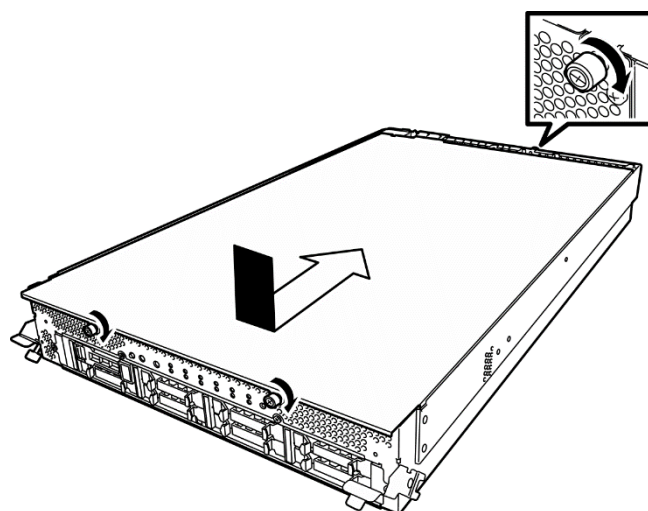
9. See Chapter 2 (5.4.2 Installing CPU/IO Module) and install the CPU/IO module.

10. Connect the power cords.

11. Press the POWER switch to power on the server.

12. Confirm that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in Chapter 1 (6.2 POST Error Message).

13. After starting the OS, set the paging file size to at least the recommended value (1.5 times the installed memory size). For details, see *Chapter 1 (3.1 Before Starting Setup)* in *Installation Guide* or *Chapter 1 (4.1 Before Starting Setup)* or *Chapter 1 (5.1 Before Starting Setup)* and *Chapter 1 (6.1 Memory Dump (Debug Information))*.

5.5.2 **Removing DIMM**

Follow the steps below to remove the DIMM.

Important	At least one DIMM is required to operate the server.

1. Shutdown OS.
   The server turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module).*

4. Remove three screws (two on the front and one on the rear), and remove the top cover of the CPU/IO module.
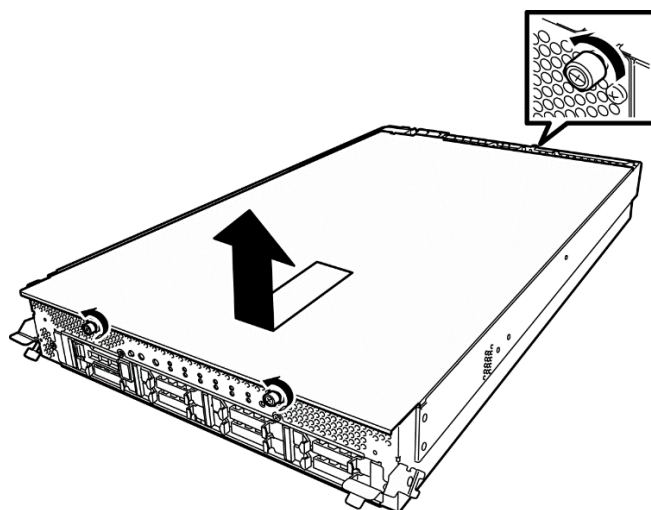
5. Remove the air duct.
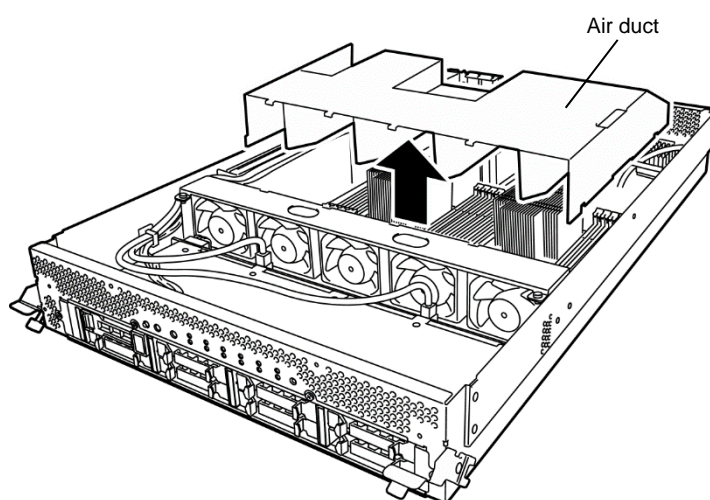
Air duct

6. Press the levers on both sides of the DIMM slot to release the lock, and remove the DIMM.
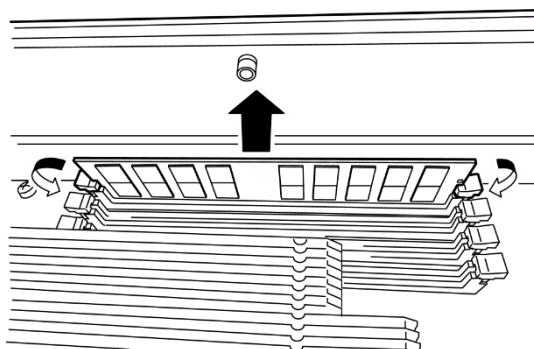
7. Install the air duct.

8. Place the top cover of the CPU/IO module and secure it with three screws.
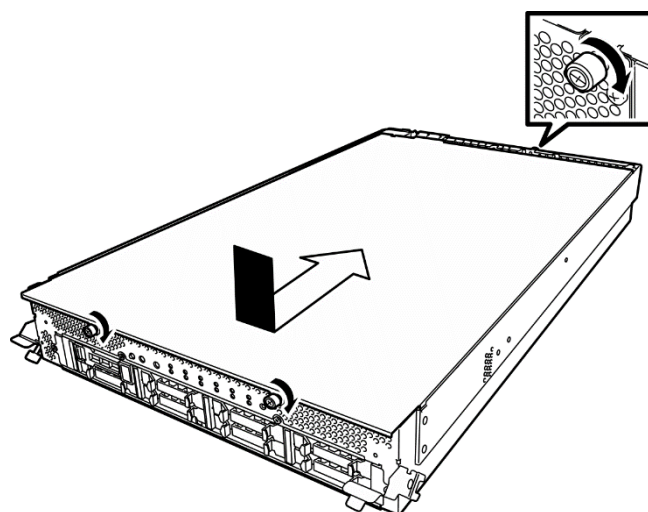
9. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.

10. Connect the power cords.

11. Press the POWER switch to power on the server.

12. Confirm that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in *Chapter 1 (6.2 POST Error Messages)*.

13. After starting the OS, set the paging file size to at least the recommended value (1.5 times the installed memory size). For details, see *Chapter 1 (3.1 Before Starting Setup)* in *Installation Guide (Windows)*, or *Chapter 1 (4.1 Before Starting Setup)* or *Chapter 1 (5.1 Before Starting Setup)* and *Chapter 1 (6.1 Memory Dump (Debug Information).*)

5.5.3 Replacing DIMM

Follow the steps below to replace a failed DIMM.

1. Refer to *Chapter 1 (6.1 Error Indication by LED)* to check the faulty DIMM when the memory slot error LED lights up.

2. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.

3. Replace the DIMM.

4. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.

5. Start up the CPU/IO module using NEC ESMPRO Manager or ft server utility.

5.6 Processor (CPU)

In addition to the Intel Xeon Processor one more CPU can be expanded to each of the CPUs/IO modules for operation.

Important	• Make sure to use the CPU specified by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the server. Repairing the server due to failures or damage resulting from these products will be charged even if it is under guarantee.
	• Before adding or removing a CPU, power off the server and then remove the CPU/IO module.
	• See *Chapter 2 (5.1.3 Precautions for installing/replacing optional devices) and Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices* before starting installing or removing options.

CPU1
(Standard CPU)

CPU2
(Additional CPU)
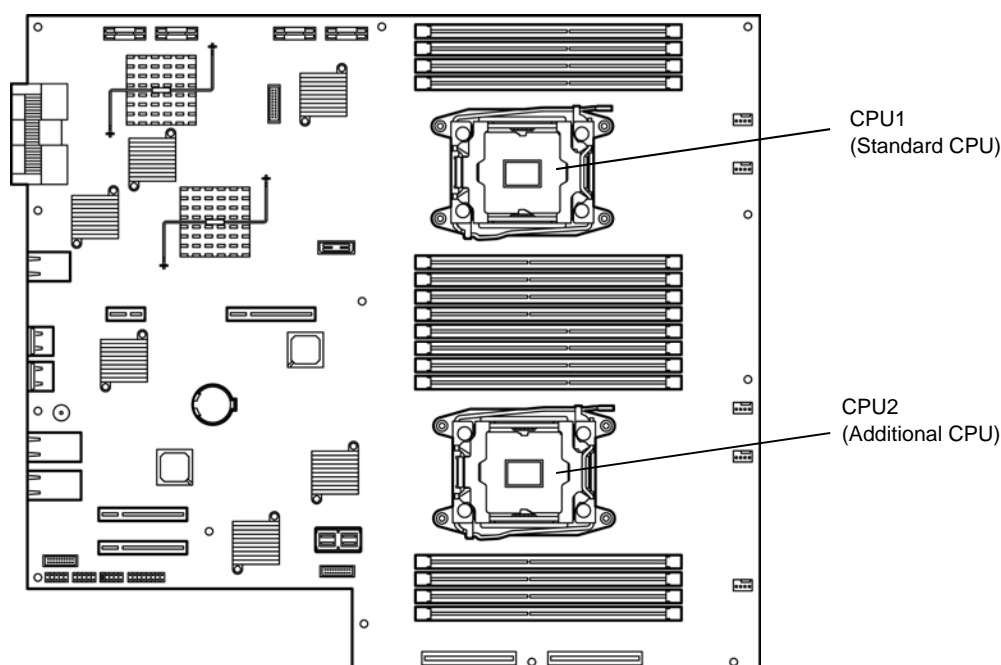
5.6.1 **Installing CPU**

Follow the steps below to install a CPU and heat sink.

1. Shut down the OS.
    The server turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module).*

4. Remove the air duct according to *Chapter 2 (5.5.1 Installing DIMM).*

5. Locate the CPU socket.

6. Remove the protective cover from the CPU socket.

Important	Keep and store the removed protective cover for future use.
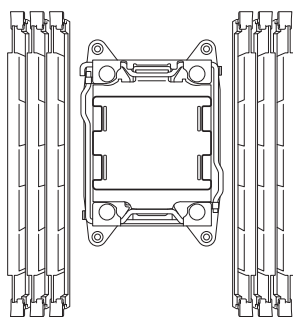
7. Push down the lever marked with " ⌐ ①→" to unlatch from the hook, and then open the lever until it stops.
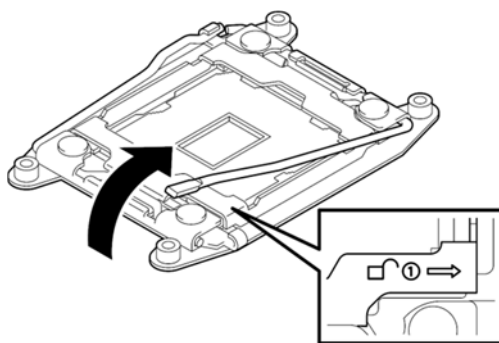
8. Push down the lever marked with "← ⌐ ①" to unlatch from the hook, and then open the lever until it stops.
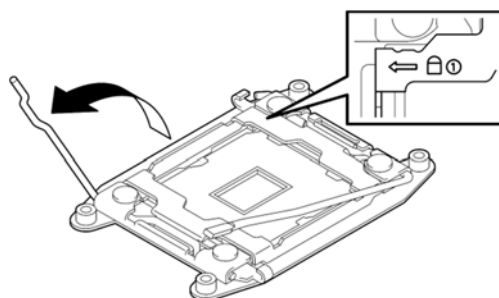
9. Lift the plate.
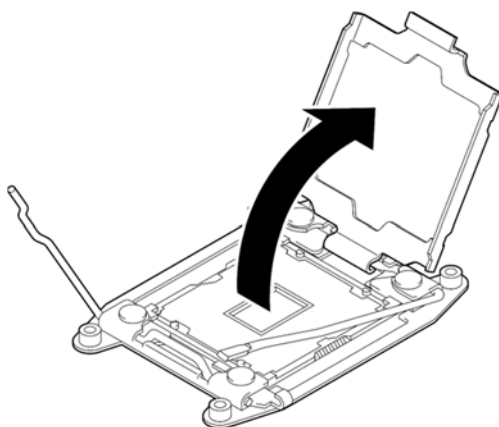
10. Put the CPU on the socket gently and carefully.
     For easy installation, hold edges of CPU with your thumb and index fingers so that the notch is aligned
     with the key on the CPU socket.

Important	• **Be sure to hold the CPU only at the edges.**
	• **Pay attention not to touch the bottom of the CPU (pin section).**

Note	• Insert the CPU while aligning the notch on the processor with the key on the CPU socket.
	• Bring down the CPU straight without tilting or sliding it in the socket.
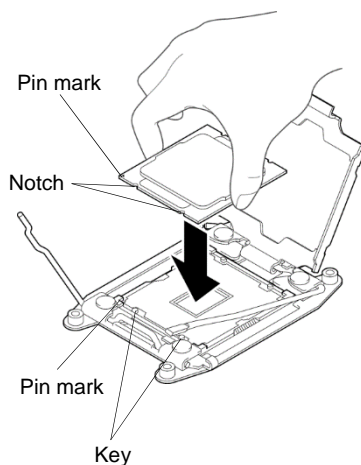
11. After pressing the CPU softly against the socket, and close the plate.
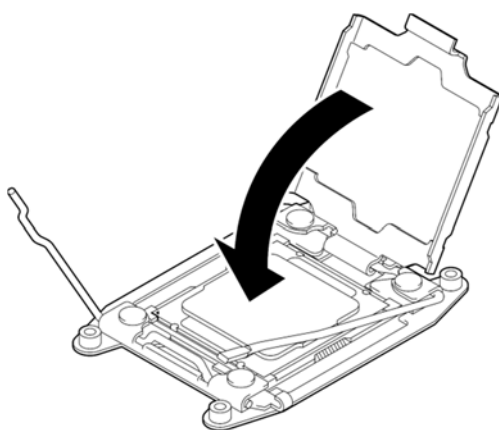
12. Fix the CPU by pushing down the lever marked with "←⌂ ①"
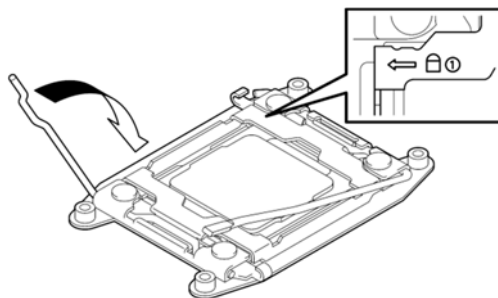
13. Fix the CPU by pushing down the lever marked with "⌂ ①→"
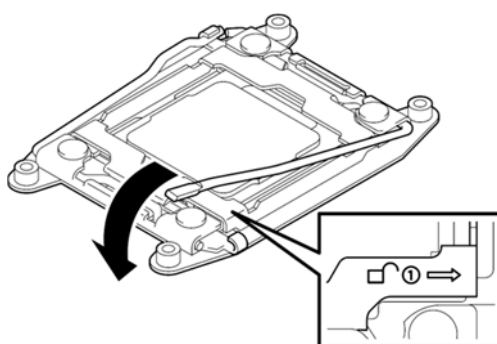
14. Put the heat sink on the CPU.

Important	Do not touch the cooling sheet attached on the back of the heat sink.
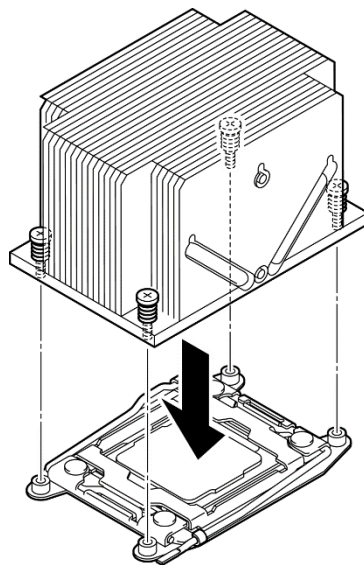
Important	Install the heat sink in correct fins direction (the same as the standard CPU) as shown in the figure below.
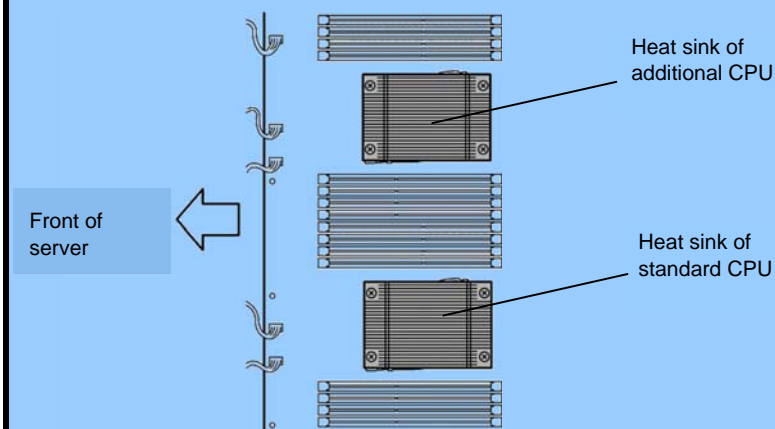
15. First, temporarily tighten the four screws diagonally opposite to each other as shown below. After making sure that the heat sink has been seated in parallel with the CPU socket, tighten them securely in the same manner of temporary tightening.
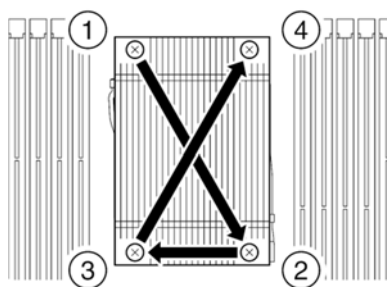
16. Install the air duct.

17. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.

18. Connect the power cords.

19. Press the POWER switch to power on the server.

20. Confirm that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in *Chapter 1 (6.2 POST Error Messages)*.

5.6.2 Removing CPU

Remove the heat sink and CPU in the reverse procedure of installation.

5.6.3 Replacing CPU

Follow the steps below to replace the failed CPU.

1. Identify the failed CPU by viewing Event Log.

2. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.

3. Install a new heat sink and CPU.

4. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.

5. Start the CPU/IO module from NEC ESMPRO Manager or ft server utility.

5.7 Installing/Removing/Replacing PCI Card

Either two or four PCI cards can be installed to the CPU/IO module.

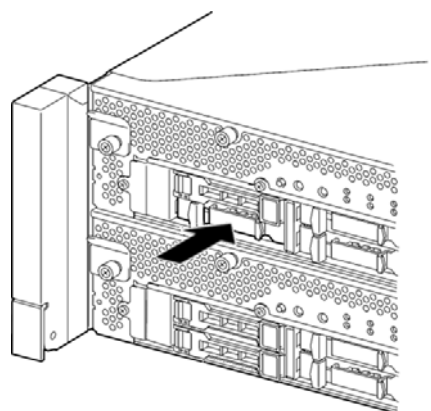|	
Important	See *Chapter 2 (5.1.3 Precautions for installing/replacing optional devices)* and *Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices* before starting installing or removing options.

5.7.1 Precautions

Note the following to install or replace PCI card.

- To make duplex PCI cards, install the same type of card (the same specifications and performance) to the same slot of each CPU/IO module.

- When a PCI card is installed to one CPU/IO module, another identical PCI card must be installed to the same slot in another CPU/IO module. This rule is applied to the case of removal.

R310e-E4, R320e-E4 R310f-E4, R320f-E4 model (without PCI riser card)

R320e-M4, R320f-M4 model (with PCI riser card)
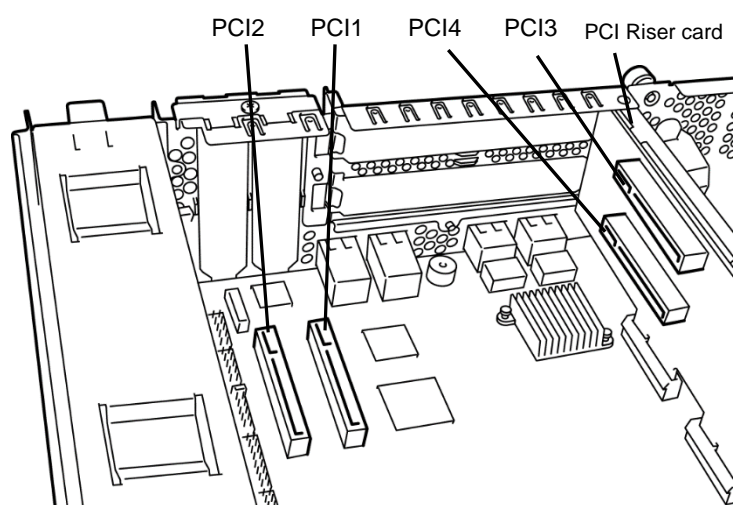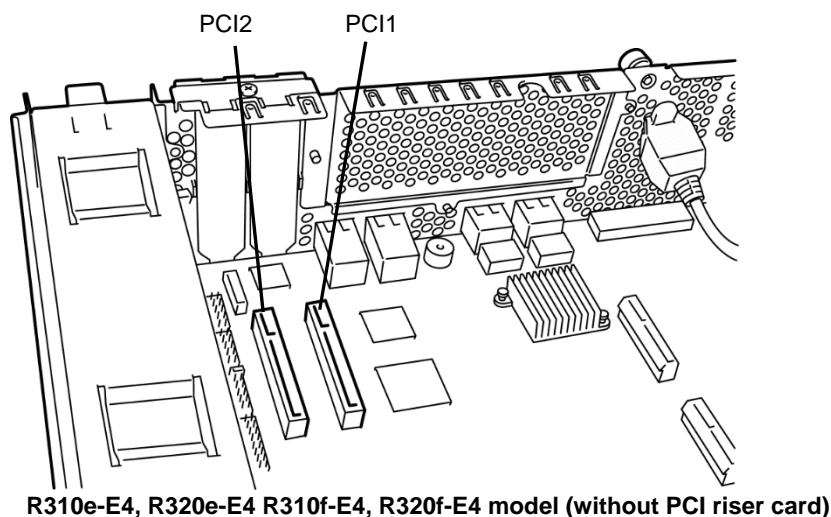
Optional PCI cards and installable slots (R310e-E4, R320e-E4 model)

Model number	Product name	PCI-1 PCI slot performance	PCI-2	Remarks
		PCIe 3.0 x4 lane		
		Low Profile		
		x8 socket		
N8804-012	1000BASE-T 2ch Adapter Kit	✓	✓	*1
N8804-011	10GBASE-T 1ch Adapter Kit	✓	✓	*1, *2
N8803-040/040F	Fibre Channel 1ch Adapter Kit	✓	✓	*1
N8803-041	SAS controller	✓	✓	*2

*1: The same card must be mounted into the same slot for each CPU/IO module 0, 1.
*2: Up to one card can be installed for each CPU/IO module.

Optional PCI cards and installable slots (R320e-M4 model)

Model number	Product name	PCI-1 PCI slot performance	PCI-2	PCI-3	PCI-4	Remarks
		PCIe 3.0 x4 lane		PCIe 3.0 x8 lane		
		Low Profile		Full Height		
		x8 socket				
N8804-012	1000BASE-T 2ch Adapter Kit	✓	✓	✓	✓	*1, *3
N8804-011	10GBASE-T 1ch Adapter Kit	–	–	✓	✓	*1,*2, *3
N8803-040/040F	Fibre Channel 1ch Adapter Kit	–	–	✓	✓	*1, *3
N8803-041	SAS controller	✓	✓	✓	✓	*2, *3

*1: The same card must be mounted into the same slot for each CPU/IO module 0, 1.
*2: Up to one card can be installed for each CPU/IO module.
*3: Priority of installation to PCI-3, PCI-4 is N8803-040(040F)>N8804-011>N8803-041>N8804-012.

Optional PCI cards and installable slots (R310f-E4, R320f-E4 model)

Model number	Product name	PCI-1 PCI slot performance	PCI-2	Remarks
		PCIe 3.0 x4 lane		
		Low Profile		
		x8 socket		
N8804-012	1000BASE-T 2ch Adapter Kit	✓	✓	*1
N8804-011	10GBASE-T 1ch Adapter Kit	✓	✓	*1, *2
N8803-040AF	Fibre Channel 1ch Adapter Kit	✓	✓	*1
N8803-041	SAS controller	✓	✓	*2

*1: The same card must be mounted into the same slot for each CPU/IO module 0, 1.
*2: Up to one card can be installed for each CPU/IO module.

Optional PCI cards and installable slots (R320f-M4 model)

Model number	Product name	PCI-1 PCI slot performance	PCI-2	PCI-3	PCI-4	Remarks
		PCIe 3.0 x4 lane		PCIe 3.0 x8 lane		
		Low Profile		Full Height		
		x8 socket				
N8804-012	1000BASE-T 2ch Adapter Kit	✓	✓	✓	✓	*1, *3
N8804-011	10GBASE-T 1ch Adapter Kit	–	–	✓	✓	*1,*2, *3
N8803-040AF	Fibre Channel 1ch Adapter Kit	–	–	✓	✓	*1, *3
N8803-041	SAS controller	✓	✓	✓	✓	*2, *3

*1: The same card must be mounted into the same slot for each CPU/IO module 0, 1.
*2: Up to one card can be installed for each CPU/IO module.
*3: Priority of installation to PCI-3, PCI-4 is N8803-040AF>N8804-011>N8803-041>N8804-012.

See System Configuration Guide for the latest information on support.

5.7.2 Installing PCI Card

Follow the steps below to install the PCI card.

Note	To install the PCI card, make sure the shape of the card connector matches with the shape of the PCI card slot connector.

(1) Installing a low profile PCI card

1. Shut down the OS.
    The server turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.

4. Remove one screw that secures the PCI retention latch, and then open the latch.

PCI retention latch
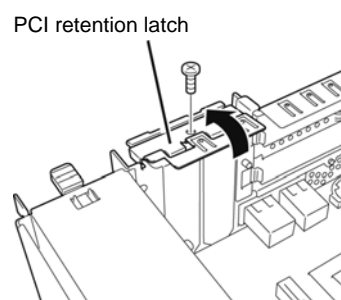
5. Remove the blank cover.

Important	Keep the removed blank cover for future use.
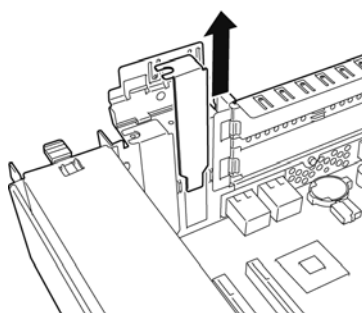
6. Install a PCI card in a PCI slot.

Important	When installing Fibre channel card on the server, the SFP+ module mounted on the Fibre channel card may interfere with the installation.
	In this case, remove the SFP+ module from the Fibre channel card in advance, install the Fibre channel card and then mount the SFP+ module.
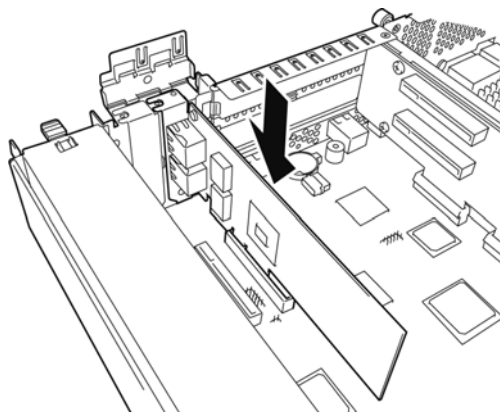
7. Close the latch, and then secure it with one screw.
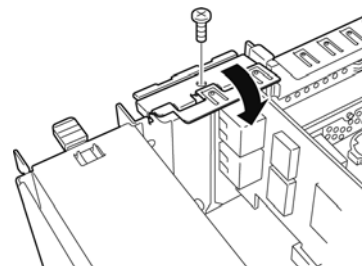
8. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.

9. Connect the power cords.

10. Press the POWER switch to power on the server.

11. Confirm that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in *Chapter 1 (6.2 (1) Error Messages)*.

12. After the OS has started, proceed to steps in *Chapter 2 (5.7.5 Setup of Optional PCI Card)*.

(2) Installing a full height PCI card

1. Shut down the OS.
    The server turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module).*

4. Remove one screw that secures the PCI retention latch, and then open the latch.

PCI retention latch
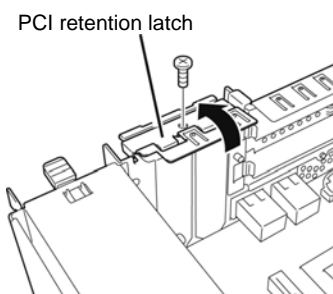
5. Remove three screws that secure the PCI riser card, and remove the PCI riser card from the motherboard.
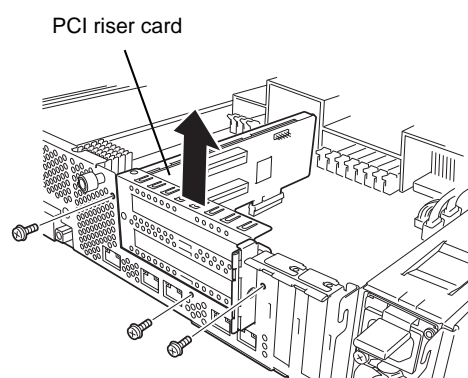
PCI riser card

6. Remove one screw that secures the PCI retention latch of PCI riser card, and then open the latch.

PCI retention latch
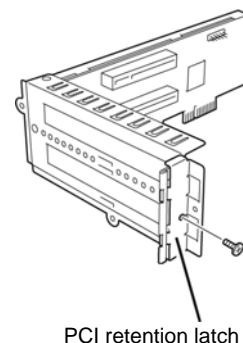
7. Remove the blank cover.

Important	Keep the removed blank cover for future use.
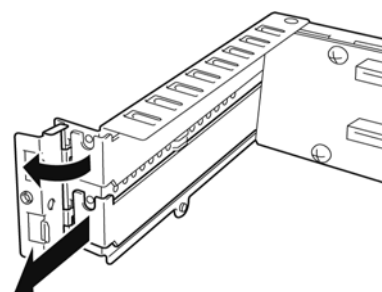
8. Install a PCI card in a PCI slot of PCI riser card.

Important	When installing Fibre channel card on the server, the SFP+ module mounted on the Fibre channel card may interfere with the installation.
	In this case, remove the SFP+ module from the Fibre channel card in advance, install the Fibre channel card and then mount the SFP+ module.
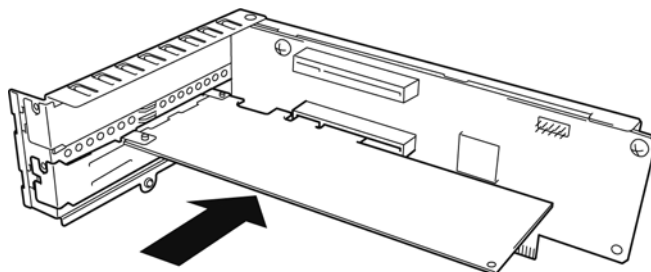
9. Close the latch and secure it with one screw.
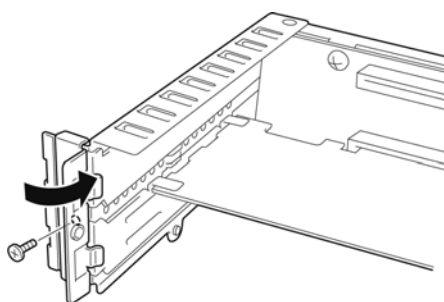
10. Install PCI riser card on the motherboard and secure it with three screws.
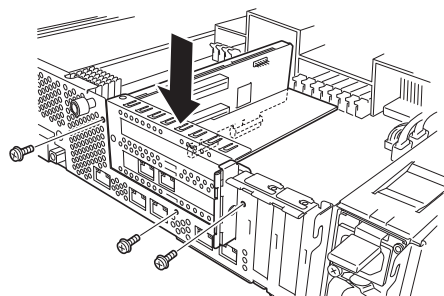
11. Close the latch and secure it with one screw.
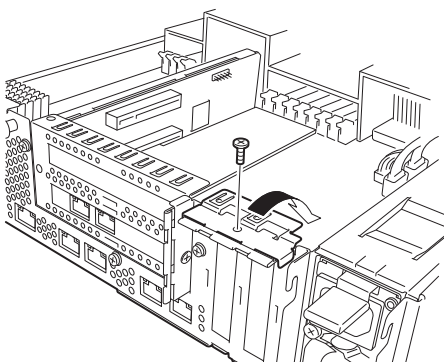
12. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.

13. Connect the power cords.

14. Press the POWER switch to power on the server.

15. Confirm that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in *Chapter 1 (6.2 (1) Error Message)*.

16. After the OS has started, proceed to steps in *Chapter 2 (5.7.5 Setup of Optional PCI Card)*.

5.7.3 Removing PCI Card

To remove PCI card, follow the reverse procedure of the installation, and then install the blank cover.

5.7.4 Replacing PCI Card

Follow the steps below to replace the failed PCI card.

(1) N8804-011 10GBASE-T 1ch Adapter Kit and N8804-012 1000BASE-T 2ch Adapter Kit

1. Identify the failed card by viewing Event Log.
2. Remove the duplex LAN according to *Chapter 2 (3.1.4 Removing Duplex LAN)* or *Chapter 2 (3.2.4 Removing Duplex LAN)*.
3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
4. Remove the PCI card.
5. Replace the card and secure it.
6. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
   The installed CPU/IO module will start automatically.
7. Confirm that the PCI card is correctly recognized by POST and OS.
8. Create the team again. For details, see *Chapter 2 (3.1.3 Configuring Duplex LAN)* or *Chapter 2 (3.2.3 Configuring Duplex LAN)*.
9. Connect the network cable.

(2) N8803-040/040F Fibre Channel 1ch Adapter Kit or N8803-040AF Fibre Channel 1ch Adapter Kit

1. Identify the failed card by viewing Event Log.
2. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
3. Configure WWPN of Fibre Channel card to be installed (setting/confirming access control) by using control software such as NEC Storage Manager.
4. Remove the PCI card.
5. Replace the card and secure it.
6. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
7. Connect the network cable and cables for optional devices.
   The installed CPU/IO module will start automatically.
8. Confirm that the PCI card is correctly recognized by POST and OS.

(3) N8803-041 SAS controller

1. Identify the failed card by viewing Event Log.
2. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
3. Remove the PCI card.
4. Replace the PCI card and secure it.
5. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
6. Connect the network cable and cables for option devices.
   The installed CPU/IO module starts automatically.
7. Confirm that the PCI card is correctly recognized by POST and OS.

5.7.5 Setup of Optional PCI Card

Important	To enable the fault-tolerant feature of the optional device, the identical PCI cards must be installed to the slots with the same number in CPU/IO module 0 and CPU/IO module 1. For the supported connecting devices, contact your sales agent.

(1) N8804-011 10GBASE-T 1ch Adapter Kit and N8804-012 1000BASE-T 2ch Adapter Kit

Important	For LAN cable's connector, use a RJ-45 connector which is compliant with IEC8877 standard. If any other connector is used, it may not be removed easily.

- Slots to install optional PCI cards

  See *"List of option PCI cards and installable slots"* in *Chapter 2 (5.7.1 Precautions)*.

- Driver installation procedure

  Install N8804-011 10GBASE-T 1ch Adapter Kit or N8804-012 1000BASE-T 2ch Adapter Kit, and restart the server. After starting the server, the driver will be installed automatically. At this time, the [New hardware is found] window may be displayed.

- Configure duplex LAN

  See *Chapter 2* (*3. Duplex LAN Configuration).*

- Configure network

  Follow steps below to specify transfer speed and duplex mode for the driver.

  (1)   Launch **Device Manager**.

  (2)   Expand network adapter tree and double-click **Added NIC**.
        The **Properties** dialog box of network adapter appears.
        The name of LAN card is as follows:
           Stratus I350 2-Port Gigabit Adapter
           Stratus X540 1-Port Copper 10 Gigabit Adapter

  (3)   Select the **Link speed** tab, and configure the settings of **Speed and Duplex** to match those of the hub.

  (4)   Click **OK** on the dialog box.

  (5)   Configure another network adapter in the same manner.

  Add/remove protocol or services if needed. On **Network Connections**, go to Local Area connection or Ethernet property's dialog box.

Note	It is recommended to add **Network monitor** as one of the services. **Network monitor** can monitor frames (or packets) sent or received by a computer where **Network monitor** is installed. This is a useful tool to analyze network failure.

(2) N8803-040/040F Fibre Channel 1ch Adapter Kit or N8803-040AF Fibre Channel 1ch Adapter Kit

- Slots to install optional PCI cards

  See *"List of option PCI cards and installable slots"* in *Chapter 2 (5.7.1 Precautions).*

- Driver installation procedure

  Install N8803-040/040F Fibre Channel 1ch controller or N8803-040AF Fibre Channel 1ch Adapter Kit and start the system.
  After starting the system, the driver will be installed automatically. When the system is started, **New Hardware Found** window may appear.

Important	• **StoragePathSavior is necessary to connect NEC iStorage using N8803-040/040F Fibre Channel 1ch controller or N8803-040AF Fibre Channel 1ch controller or.**
	• **Mount N8803-040/040F Fibre Channel 1ch controller or N8803-040AF Fibre Channel 1ch controller after completing the OS installation. They are used in a pair. Mount each controller on the slot of the same position of each PCI module.**

- Driver for Fibre Channel controller

  The following programs may be installed on the server at shipment. These programs are also installed when you re-install an OS by using EXPRESSBUILDER DVD.

  These programs are driver for Fibre Channel controller. Therefore do not uninstall these programs.

  – QLogic Super Installer

(3) N8803-041 SAS Controller

- Slots to install optional PCI cards

  See *"List of option PCI cards and installable slots"* in *Chapter 2 (5.7.1 Precautions).*

- Driver installation procedure

  Install N8803-041 SAS card and start the system.
  After starting the system, the driver will be installed automatically. When the system is started, **New Hardware Found** window may appear.

5.8 Adding/Removing/Replacing Internal USB cable

5.8.1 Addition

Add Internal USB cables as follows.

Important	**See Chapter 2 (5.1.3 Preparing your system for upgrade) and and Chapter 1(1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices before starting the job.**

1. Shut down the OS.

    → The server will automatically be turned off.

2. Remove the power cord from the outlet.

3. Remove the CPU/IO module (see *Chapter 2 (5.4.1 Removing CPU/IO module)*).

4. Fix a cable clamp.

Important	**Fit the cable clamp on the carved seal.**
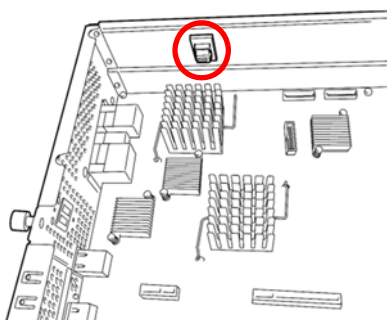
5. Hold tabs of the USB port cover inside the chassis to pull it out.

Important	**Keep the removed cover carefully.**
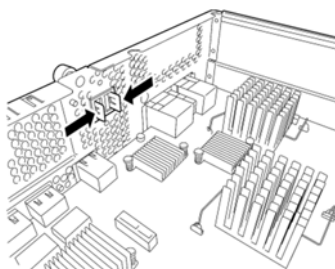
6. Fix the Internal USB cable connector on the CPU/IO board.

Important	**Align connectors of both notches.**
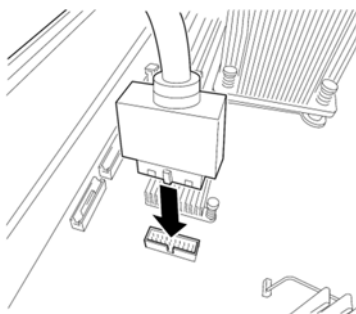
7. Fix the Internal USB cable connector on the chassis with screws.

Important	**Fit the Internal USB cable connector's lugs onto the holes on the chassis.**
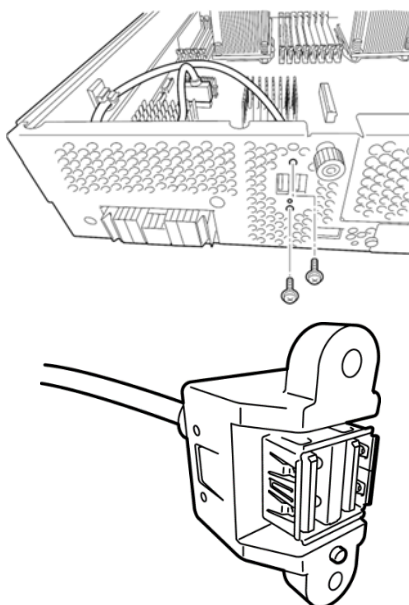
8. Fix the Internal USB cable with the cable clamp.
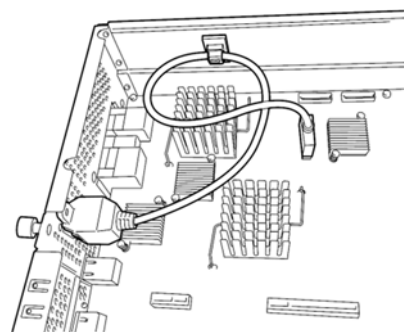
9. Install the CPU/IO module (see *Chapter 2 (5.4.2 .Installing CPU/IO module)*.

10. Connect a network cable and a cable to be connected with an optional device.

11. Connect the power cord.

12. Press the POWER switch to power on.

13. Confirm that no error message appears with POST.
     →If any error message is appearing, write it down and refer to *Chapter 1 (6.2 POST error message).*

5.8.2 Removal

To remove the Internal USB cable, execute the procedure for adding the cable in reverse order.

5.8.3 Replacement

Replace a faulty Internal USB cable as follows:

1. Remove the CPU/IO module (see *Chapter 2 (5.4.1 Removing CPU/IO module).*

2. Replace the Internal USB cable.
3. Install the CPU/IO module (see *Chapter 2 (5.4.2 .Installing CPU/IO module).*

4. Reboot the CPU/IO module from NEC ESMPRO Manager or ft server utility.

NEC Express5800 Series
Express5800/R310e-E4, R320e-E4, R320e-M4, R310f-E4, R320f-E4, R320f-M4

3

Useful Features

This chapter describes useful features for using the server.

1. System BIOS

Describes how to set the System BIOS settings and parameters.

2. BMC Configuration

Describes the BMC Configuration Utility in Off-line Tool of the server.

3. SAS Configuration Utility

Describes the SAS Configuration Utility of the server.

4. Flash FDD

Describes the Flash FDD.

5. Details of EXPRESSBUILDER

Describes the EXPRESSBUILDER attached to the server.

6. EXPRESSSCOPE Engine 3

Describes EXPRESSSCOPE Engine 3.

7. NEC ESMPRO

Describes NEC ESMPRO Agent and NEC ESMPRO Manager, applications to manage and monitor the server.

8. NEC Product Info Collection Utility

Describes the device information collection utility.

9. Express Report Service / Express Report Service (HTTPS)

Describes Express Report Service / Express Report Service (HTTPS), a service to notify of a fault information automatically.

1. **System BIOS**

You can check and change the parameters using the BIOS Setup utility (SETUP).

1.1 **Starting SETUP**

Turn on the server and proceed with POST.

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

`Press <F2> SETUP, ...`   (* this message depends on the hardware environment)

SETUP will start after POST when <F2> key is pressed.

1.2 **Parameter Descriptions**

The SETUP utility has the following six major menus.

- Main

- Advanced

- Security

- Server

- Boot

- Save & Exit

These menus have submenus for relevant items. Selecting submenus allows you to configure further detailed parameters.

1.2.1 Main

The **Main** menu is displayed first when starting SETUP.

```
              Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
   Main  Advanced  Security  Server  Boot  Save & Exit

 BIOS Information                                        Set the Date. Use Tab to
 BIOS Version                        8.0:38              switch between Date elements.
 Build Date                         03/30/2015 16:11:45
 Access Level                       Administrator
 UEFI Spec Version                  2.3.1

 Memory Information
 Total Memory                       16384 MB

 System Date                        [Wed 04/22/2015]
 System Time                        [09:51:23]




                                                        F1: General Help
                                                        F4: Save & Exit Setup
                                                        ESC: Exit




              Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below.

Option	Parameter	Descriptions
BIOS Information	–	–
BIOS Version	–	The BIOS version is displayed (display only).
Build Date	MM/DD/YYYY	The BIOS build date is displayed (display only).
Access Level	[Administrator] User	The current access level (Administrator or User) is displayed (display only). If no password is set, **Administrator** is displayed.
UEFI Spec Version	–	Shows the UEFI Spec version that BIOS supports.
Memory Information	–	–
Total Memory	–	The total capacity of installed memory is displayed (display only).
System Date	WWW MM/DD/YYYY	Set the system date.
System Time	HH:MM:SS	Set the system time

[　　　]: Factory settings

Tips	Be sure to confirm that the date and time in the BIOS parameters are correctly configured. Check the system clock monthly. Additionally, if you implement the server in a system that requires highly accurate time, use of a time server (an NTP server) is recommended. If the system time becomes considerably slow or fast over time even though you regularly adjust it, contact the dealer where you purchased the server or the maintenance service company for maintenance.

1.2.2 **Advanced**

If you move the cursor to **Advanced**, the **Advanced** menu appears.

For the menus that show a "▶" to their left, select a menu and press the **<Enter>** key to display its submenu.

When Boot Mode is UEFI

```
            Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
      Main  Advanced  Security  Server  Boot  Save & Exit

  ▶ Processor Configuration                          Processor Configuration
  ▶ Memory Configuration                             parameters.
  ▶ PCI Configuration
  ▶ Advanced Chipset Configuration
  ▶ USB Configuration
  ▶ Serial Port Configuration
  ▶ Network Stack Configuration
  ▶ UEFI Driver Configuration




                                                     F1: General Help
                                                     F4: Save & Exit Setup
                                                     ESC: Exit


            Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

When boot mode is Legacy

```
            Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
      Main  Advanced  Security  Server  Boot  Save & Exit

  ▶ Processor Configuration                          Processor Configuration
  ▶ Memory Configuration                             parameters.
  ▶ PCI Configuration
  ▶ Advanced Chipset Configuration
  ▶ USB Configuration
  ▶ Serial Port Configuration
  ▶ Network Stack Configuration
  ▶ UEFI Driver Configuration
    *********************************************
    Setup Notice :
     When "Boot Mode" is set to [Legacy],
    "Network Stack Configuration" and
    "UEFI Driver Configuration" cannot be
    configured.
    *********************************************



                                                     F1: General Help
                                                     F4: Save & Exit Setup
                                                     ESC: Exit


            Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

Note The Network Stack Configuration submenu and UEFI Driver Configuration submenu cannot be selected if Legacy is specified for Boot Mode. They can be selected only when UEFI is specified for Boot Mode.

(1) Processor Configuration submenu

From the **Advanced** menu, select **Processor Configuration** and then press the **<Enter>** key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the **<Enter>** key to show its submenus.

```
                    Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
               Advanced

       ▶ Processor Information
         Hardware Prefetcher                [Enabled]
         Adjacent Cache Line Prefetch       [Enabled]

         Execute Disable Bit                [Enabled]
         VT-x                               [Enabled]
         Active Processor Cores             8
         Hyper-Threading                    [Enabled]




                                                        F1: General Help
                                                        F4: Save & Exit Setup
                                                        ESC: Exit



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```

For details about the options, see the table below.

Option	Parameter	Descriptions
Processor Information	–	–
Hardware Prefetcher	Disabled [Enabled]	Enable or disable hardware prefetcher.
Adjacent Cache Line Prefetch	Disabled [Enabled]	Enable or disable optimized access from memory to cache.
Execute Disabled Bit	Disabled [Enabled]	Enable or disable Execute Disable Bit feature. This option is displayed only when the installed processor supports this feature.
VT-x	Disabled [Enabled]	Enable or disable Intel Virtualization Technology (feature to virtualize processor).
Active Processor Cores	1-[x]	Specify the number of cores to enable in each processor package. The number of cores that can be specified depends on the processor installed. X denotes the maximum number of cores. The setting can be changed only when 1 processor is mounted. Do not set up except for debugging.
Hyper-Threading	Disabled [Enabled]	Enable or disable the feature to execute two threads with only one core. This option is displayed only when the installed processor supports this feature.

[　　]: Factory settings

(a) Processor Information submenu

```
                    Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
          Advanced

     Processor 1 CPUID              306f2
     Processor Type                Intel(R) Xeon(R)
                                   processor E5-2630 v3
     Processor Speed               2400 MHz
     Active Cores                  8
     Max Cores                     8
     L2 Cache RAM                  8 x 256 kB
     L3 Cache RAM                  20480 kB
     Microcode Revision            ffff0001
     EMT64                         Supported
     Hyper-Threading               Supported

     Processor 2 CPUID             306f2
     Processor Type                Intel(R) Xeon(R)
                                   processor E5-2630 v3
     Processor Speed               2400 MHz
     Active Cores                  8
     Max Cores                     8
     L2 Cache RAM                  8 x 256 kB
     L3 Cache RAM                  20480 kB                    F1: General Help
     Microcode Revision            ffff0001                    F4: Save & Exit Setup
     EMT64                         Supported                    ESC: Exit
     Hyper-Threading               Supported




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```

For details about the options, see the table below (display only).

Option	Parameter	Descriptions
Processor 1 CPUID	Number	ID of Processor 1 is displayed by a numerical value.
Processor Type	–	Type of Processor 1 is displayed.
Processor Speed	–	Clock speed of Processor 1 is displayed.
Active Cores	–	The number of active cores in Processor 1 is displayed.
Max Cores	–	The maximum number of cores in Processor 1 is displayed.
L2 Cache RAM	–	The secondary cache size of Processor 1 is displayed.
L3 Cache RAM	–	The tertiary cache size of Processor 1 is displayed.
Microcode Revision	–	The revision of the microcode applied to Processor 1 is displayed.
EMT64	–	"Supported" is shown when the processor 1 supports Intel 64 architecture.
Hyper-Threading	–	"Supported" is shown when the processor 1 supports Hyper-Threading Technology.
Processor 2 CPUID	Number Not Installed	ID of Processor 2 is displayed by a numerical value. **Not Installed** indicates that no processor is installed in processor socket 2.
Processor Type	–	Type of Processor 2 is displayed.
Processor Speed	–	Clock speed of Processor 2 is displayed.
Active Cores	–	The number of active cores in Processor 2 is displayed.
Max Cores	–	The maximum number of cores in Processor 2 is displayed.
L2 Cache RAM	–	The secondary cache size of Processor 2 is displayed.
L3 Cache RAM	–	The tertiary cache size of Processor 2 is displayed.
Microcode Revision	–	The revision of the microcode applied to Processor 2 is displayed.
EMT64	–	"Supported" is shown when the processor 2 supports Intel 64 architecture.
Hyper-Threading	–	"Supported" is shown when the processor 2 supports Hyper-Threading Technology.

[   ]: Factory settings

(2) Memory Configuration submenu

From the **Advanced** menu, select **Memory Configuration** and then press the **<Enter>** key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the **<Enter>** key to show its submenus.

```
                   Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
          Advanced

   ▶ Memory Information









                                                                 F1: General Help
                                                                 F4: Save & Exit Setup
                                                                 ESC: Exit



                   Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
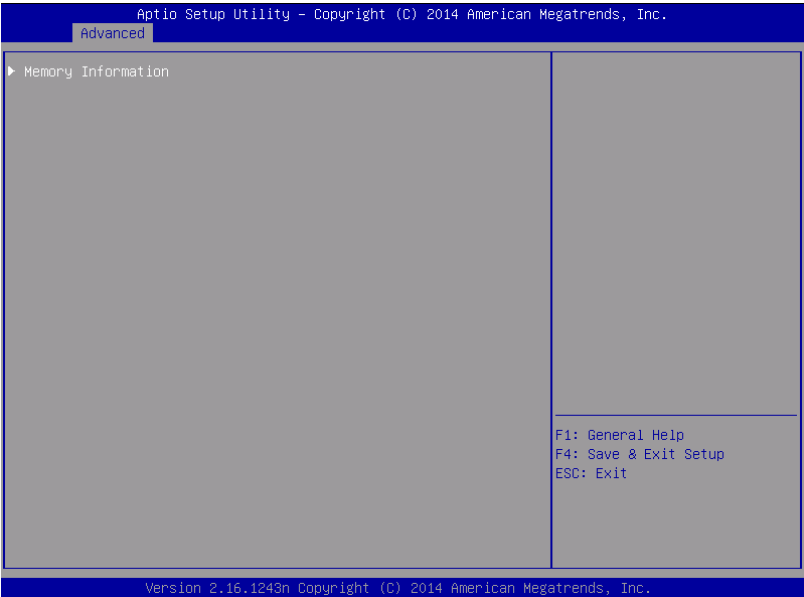
For details about the options, see the table below.

Option	Parameter	Descriptions
Memory Information	–	–

[   ]: Factory settings

(a) Memory Information submenu

```
                    Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
             Advanced

      Total Memory                      16384 MB

      Current Memory Speed              1866 MHz
      CPU1_DIMM1 Status                 16384 MB
      CPU1_DIMM2 Status                 Not Present
      CPU1_DIMM3 Status                 Not Present
      CPU1_DIMM4 Status                 Not Present
      CPU1_DIMM5 Status                 Not Present
      CPU1_DIMM6 Status                 Not Present
      CPU1_DIMM7 Status                 Not Present
      CPU1_DIMM8 Status                 Not Present

      CPU2_DIMM1 Status                 Not Present
      CPU2_DIMM2 Status                 Not Present
      CPU2_DIMM3 Status                 Not Present
      CPU2_DIMM4 Status                 Not Present
      CPU2_DIMM5 Status                 Not Present
      CPU2_DIMM6 Status                 Not Present
      CPU2_DIMM7 Status                 Not Present
      CPU2_DIMM8 Status                 Not Present          F1: General Help
                                                             F4: Save & Exit Setup
                                                             ESC: Exit




                    Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below (display only).

Option	Parameter	Descriptions
Total Memory	–	The physical capacity of installed memory is displayed.
Current Memory Speed	–	Current running memory clock
CPU1_DIMM1-8 Status CPU2_DIMM1-8 Status	Number Not Present	Capacity and state of each DIMM is displayed. **Number**: indicates memory capacity and DIMM is working normally. **Not Present**: Indicates no DIMM is installed.

[   ]: Factory settings

(3) PCI Configuration submenu

From the **Advanced** menu, select **PCI Configuration** and then press the **<Enter>** key to display the menu screen as shown below.

```
                 Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Advanced

  ▶ PCI Device Controller and Option ROM Settings




                                                          F1: General Help
                                                          F4: Save & Exit Setup
                                                          ESC: Exit



                 Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
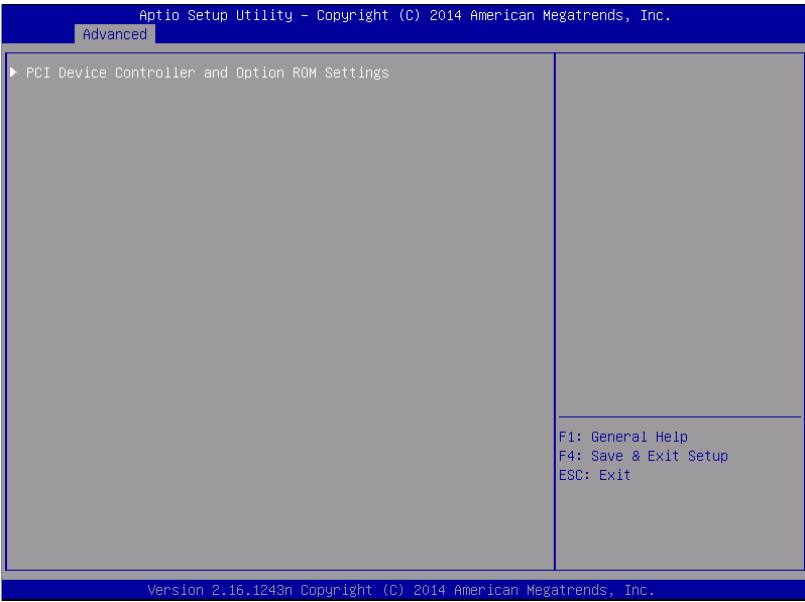
For details about the options, see the table below.

Option	Parameter	Descriptions
PCI Device Controller and Option ROM Settings	–	–

[　　]: Factory settings

(a) PCI Device Controller and Option ROM Settings submenu

```
                 Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Advanced

    SAS Option ROM Scan            [Enabled]          Selects the Boot Option for
    LAN1 Option ROM Scan           [Enabled]          SAS Devices.
    LAN2 Option ROM Scan           [Enabled]
    LAN3 Option ROM Scan           [Enabled]
    LAN4 Option ROM Scan           [Enabled]

    PCI1 Slot Option ROM           [Disabled]
    PCI2 Slot Option ROM           [Disabled]
    PCI3 Slot Option ROM           [Disabled]
    PCI4 Slot Option ROM           [Disabled]




                                                          F1: General Help
                                                          F4: Save & Exit Setup
                                                          ESC: Exit



                 Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below.

Option	Parameter	Descriptions
SAS Option ROM Scan	Disabled [Enabled]	Enable or disable the option ROM SCAN for onboard SAS.
LAN Boot Mode	[PXE] iSCSI	Choose an option ROM for onboard LAN. This appears only when **Boot Mode** is **Legacy**.
LANx Option ROM Scan	Disabled [Enabled]	Enable or disable the option ROM SCAN for onboard LAN. R320e-M4, R320f-M4 x:1/2/3/4 R320e-E4, R320f-E4 x:1/2 R310e-E4, R310f-E4 x:1/2
PCIx Slot Option ROM	[Disabled] Enabled	Enable or disable the option ROM on each PCI slot. R320e-M4, R320f-M4 x:1/2/3/4 R320e-E4, R320f-E4 x:1/2 R310e-E4, R310f-E4 x:1/2

[   ]: Factory settings

Note	For LAN card (network boot) or Fibre Channel controller, if no Hard Disk Drive on which an OS is installed is connected, set the option ROM for that slot to **Disabled**.

(4) Advanced Chipset Configuration submenu

From the **Advanced** menu, select **Advanced Chipset Configuration** and then press the **<Enter>** key to display the menu screen as shown below.

```
                Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
        Advanced

   Wake On LAN/PME                    [Enabled]           Determines the action of the
                                                          system when a LAN/PME wake
                                                          up event occurs.




















                                                          F1: General Help
                                                          F4: Save & Exit Setup
                                                          ESC: Exit


                Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
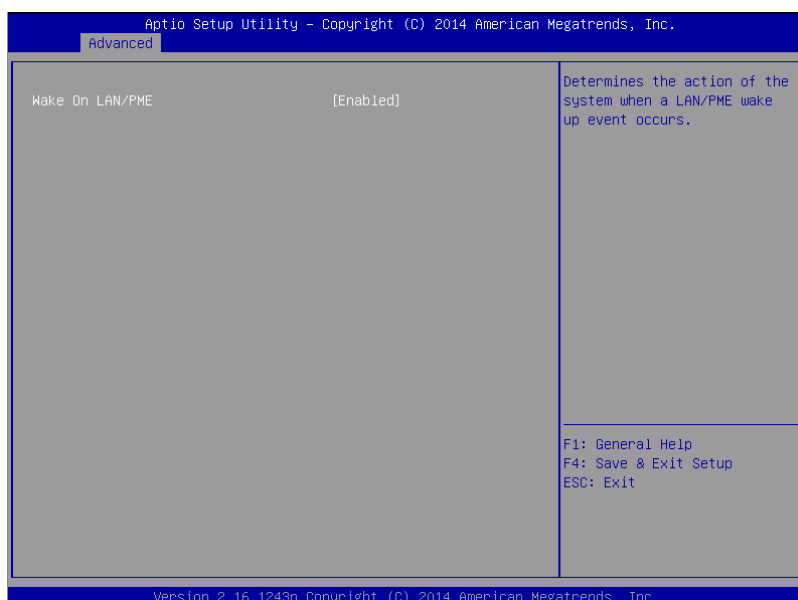
For details about the options, see the table below.

Option	Parameter	Descriptions
Wake On LAN/PME	Disabled [Enabled]	Enable or disable the feature that remotely powers on the server through a network.

[   ]: Factory settings

(5) USB Configuration submenu

From the **Advanced** menu, select **USB Configuration** and then press the **<Enter>** key to display the menu screen shown below.

```
                 Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
         Advanced

  Device Reset Timeout              [20 sec]              Selects USB mass storage
                                                          device Start Unit command
  XHCI Mode                         [Auto]                timeout.














                                                          F1: General Help
                                                          F4: Save & Exit Setup
                                                          ESC: Exit



             Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below.

Option	Parameter	Descriptions
Device Reset Timeout	10 sec [20 sec] 30 sec 40 sec	Specify the timeout period when **Start Unit** command is issued to USB Mass Storage Device.

XHCI Mode	Smart Auto
	[Auto]
	Enabled
	Disabled
		Specify the operation mode of the USB 3.0 controller.
		Smart Auto: Takes over the USB 3.0 settings at POST according to the supported OS.
		Auto: Enables USB 3.0 after the OS that supports USB 3.0 is started.
		Enabled: Enables USB3.0.
		Disabled: Disables USB3.0.
		
		Select "Auto" for the following OS:
		  - Windows Server 2016
		  - Windows Server 2012 R2
		Select "Disabled" for the following OS:
		  - Windows Server 2008 R2
		
		See *Chapter 1 Installing Operating System in Installation Guide*, and determine the Boot Mode according to description in "*Before Starting Setup*" appropriate to your OS.

[   ]: Factory settings

(6) Serial Port Configuration submenu

From the **Advanced** menu, select **Serial Port Configuration** and then press the **<Enter>** key to display the menu screen shown below.

```
                  Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
          Advanced

       Serial Port A Settings                              Configures serial port A
       Serial Port A                    [Enabled]          using options.
       Serial A Base I/O                [3F8h]              [Disabled]
       Serial A Interrupt               [IRQ 4]              No configuration
                                                           [Enabled]
       Serial Port B Settings                               User configuration
       Serial Port B                    [Enabled]
       Serial B Base I/O                [2F8h]
       Serial B Interrupt               [IRQ 3]

       Console Redirection Settings
       BIOS Redirection Port            [Disabled]




                                                           F1: General Help
                                                           F4: Save & Exit Setup
                                                           ESC: Exit



                  Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

From **BIOS Redirection Port**, select **Serial Port A** or **Serial Port B** and then press the **<Enter>** key to display the menu screen shown below.

```
                  Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
          Advanced

       Serial Port A Settings                              Selects the Serial port to
       Serial Port A                    [Enabled]          use for Console Redirection.
       Serial A Base I/O                [3F8h]              [Disabled] completely
       Serial A Interrupt               [IRQ 4]            disables Console Redirection.

       Serial Port B Settings
       Serial Port B                    [Enabled]
       Serial B Base I/O                [2F8h]
       Serial B Interrupt               [IRQ 3]

       Console Redirection Settings
       BIOS Redirection Port            [Serial Port A]
       Terminal Type                    [VT100+]
       Baud Rate                        [115200]
       Data Bits                        [8]
       Parity                           [None]
       Stop Bits                        [1]
       Flow Control                     [Hardware RTS/CTS]

       Continue C.R. after POST         [Enabled]          F1: General Help
                                                           F4: Save & Exit Setup
                                                           ESC: Exit



                  Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below.

Option	Parameter	Descriptions
Serial Port A Settings	–	–
Serial Port A	Disabled [Enabled]	Enable or disable serial Port A.
Serial A Base I/O	[3F8h] 2F8h 3E8h 2E8h	Specify the base I/O address for serial port A.
Serial A Interrupt	IRQ 3 [IRQ 4]	Specify the interrupt for serial port A.
Serial Port B Settings	–	–
Serial Port B	Disabled [Enabled]	Enable or disable serial Port B.
Serial B Base I/O	3F8h [2F8h] 3E8h 2E8h	Specify the base I/O address for serial port B.
Serial B Interrupt	[IRQ 3] IRQ 4	Specify the interrupt for serial port B.
Console Redirection Settings	–	–
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Enable or disable the console redirection feature for the specified serial port. Specifying **Serial Port A** or **Serial Port B** allows direct connection via terminal unit such as NEC ESMPRO Manager, and options for connection shown below are displayed.
Terminal Type	[VT100+] VT-UTF8 PC-ANSI	Select the terminal type.
Baud Rate	9600 19200 57600 [115200]	Specify baud rate.
Data Bits	7 [8]	Specify data bit width.
Parity	[None] Even Odd	Specify parity type.
Stop Bits	[1] 2	Specify stop bits.
Flow Control	None [Hardware RTS/CTS]	Specify the flow control method.
Continue C.R. after POST	Disabled [Enabled]	Select whether the console redirection is continued after completion of POST or not.

[   ]: Factory settings

(7) Network Stack Configuration submenu

From the **Advanced** menu, select **Network Stack Configuration** and then press the **<Enter>** key to display the menu screen shown below.

```
            Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
        Advanced

    Network Stack                      [Enabled]              Disable/Enable UEFI Network
                                                              Stack.
    PXE Configuration
    Network Mode                       [IPv4]
    Media Detect Count                 1
  ▶ iSCSI Configuration








                                                              F1: General Help
                                                              F4: Save & Exit Setup
                                                              ESC: Exit




            Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
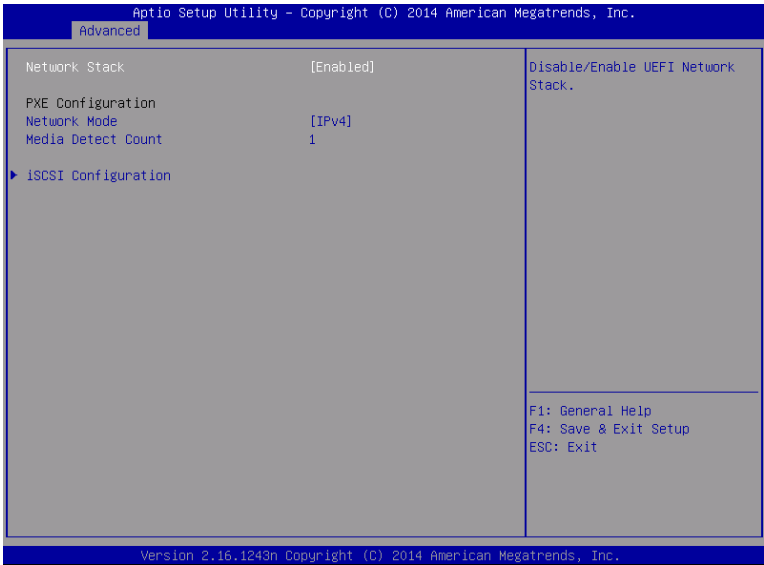
Option	Parameter	Descriptions
Network Stack	Disabled [Enabled]	Specify enabled/disabled of the UEFI network stack. When enabling this function, the subsequent menu option s appears.
PXE Configuration	—	—
Network Mode	Disabled [IPv4] IPv6	Specify the PXE network mode.
Media Detect Count	[1]-50	Specify the number of retries to detect media at the PXE connection.
iSCSI Configuration	—	—

[   ]: Factory settings

(a) iSCSI Configuration submenu

```
                   Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
            Advanced

   iSCSI Initiator Name                                    The worldwide unique name of
                                                           iSCSI Initiator. Only IQN
 ▶ Add an Attempt                                          format is accepted.Range is
                                                           from 4 to 223
 ▶ Delete Attempts

 ▶ Change Attempt Order




                                                           F1: General Help
                                                           F4: Save & Exit Setup
                                                           ESC: Exit



                   Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
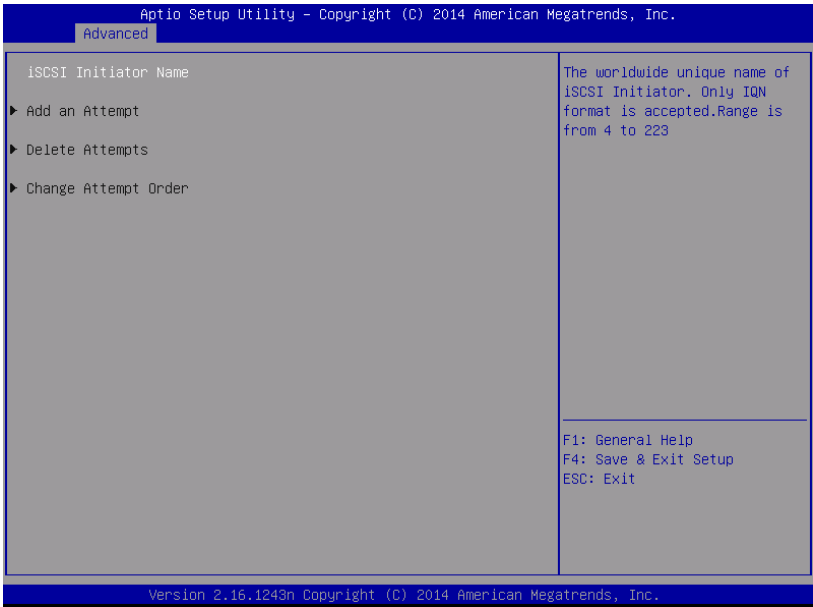
For details about the options, see the table below.

Option	Parameter	Descriptions
iSCSI Initiator Name	4 to 223 alphanumeric characters	Specify an initiator name of iSCSI. The initiator name must be iSCSI qualifier (IQN) format. When enabling this function, the subsequent menu options appear.
Add an Attempt	—	—
Attempt [XX]	—	—
Delete Attempts	—	—
Change Attempt Order	—	—

[   ]: Factory settings

i. Add an Attempt submenu

```
                  Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
              Advanced

▶ MAC 58:C2:32:0D:85:9C                          PFA: Bus 7 | Dev 0 | Func 0
▶ MAC 58:C2:32:0D:85:9D
▶ MAC 58:C2:32:0D:85:A4
▶ MAC 58:C2:32:0D:85:A5










                                                 F1: General Help
                                                 F4: Save & Exit Setup
                                                 ESC: Exit




                  Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
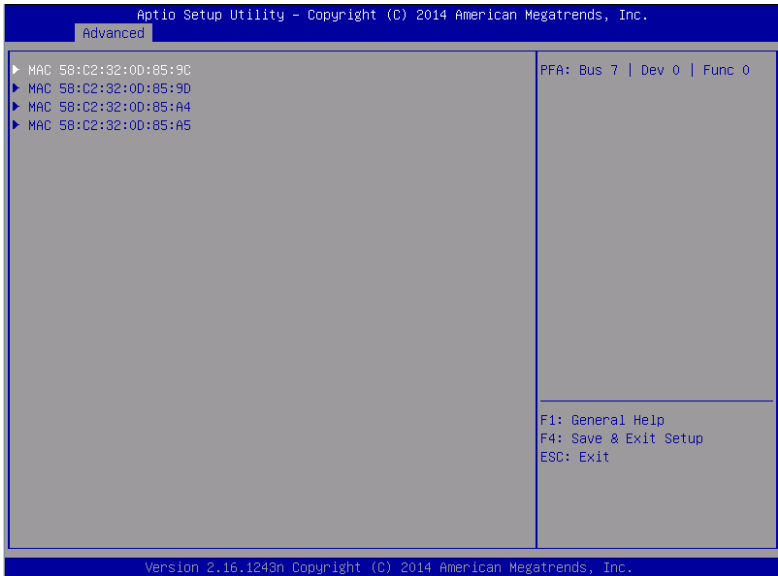
Note	When an on-board LAN controller or a UEFI driver of each PCI device is loaded, a MAC address is displayed.

Option	Parameter	Descriptions
MAC [XX:XX:XX:XX:XX:XX]	‒	‒

ii. MAC [XX:XX:XX:XX:XX:XX] submenu

```
              Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Advanced

    iSCSI Attempt Name              1                    ▲ The human name defined for
                                                           this attempt. Maximum length
    iSCSI Mode                      [Disabled]             is upto 96 characters

    Internet Protocol               [IP4]

    Connection Retry Count          5
    Connection Establishing Timeout 16000

    OUI-format ISID                 18C2320D859C
    Configure ISID                  0D859C

    Enable DHCP                     [Enabled]

    Get Target info via DHCP        [Disabled]
    Target Name
    Target IP Address               0.0.0.0
    Target Port                     3260
    Boot LUN                        0
                                                         ─────────────────────────
                                                         F1: General Help
    Authentication Type             [CHAP]                F4: Save & Exit Setup
    CHAP Type                       [Mutual]              ESC: Exit
    CHAP Name
    CHAP Secret
    CHAP Status                     [Not Installed]     ▼

              Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

Option	Parameter	Descriptions
iSCSI Attempt Name	Up to 96 alphanumeric characters	Specify of an iSCSI attempt name.
iSCSI Mode	[Disabled] Enabled Enabled for MPIO	Specify the iSCSI mode
Internet Protocol	[IP4] IP6	Specify the IP mode of iSCSI.
Connection Retry Count	0-[5]-16	Specify the number of iSCSI connection retries.
Connection Establishing Timeout	100-[16000]-20000	Specify a timeout value of iSCSI connection (msec.).
OUI-format ISID	For display only	Displays the OUI-format ISID.
Configure ISID	6 numerals	Specify the lower 3 bytes of OUI-format ISID. MAC address value is stored as a default value.
Enable DHCP	[Disabled] Enabled	Enable or disable DHCP.
Initiator IP Address	IP Address	Specify an IP address of the initiator. When **Enable DHCP** is enabled or **Internet Protocol** is **IP6**, this option does not appear.
Initiator Subnet Mask	IP Address	Specify a subnet mask of the initiator. When **Enable DHCP** is enabled, this option does not appear.
Gateway	IP Address	Specify the gateway. When **Enable DHCP** is enabled, this option does not appear.
Get target info via DHCP	[Disabled] Enabled	Enable or disable the function acquiring target information via DHCP. When **Enable DHCP** is disabled, this option does not appear.
Target Name	4 to 223 alphanumeric characters	Specify a target name in the iSCSI qualifier (IQN) format. When **Get Target info via DHCP** is enabled, this option does not appear.

Option	Parameter	Descriptions
Target IP Address	IP Address	Specify a target IP address. When **Get Target info via DHCP** is enabled, this option does not appear.
Target Port	0-65535	Specify a target port. When **Get Target info via DHCP** is enabled, this option does not appear.
Boot LUN	Up to 20 alpanumeric characters	Specify LUN. When **Get Target info via DHCP** is enabled, this option does not appear.
Authentication Type	CHAP [None]	Specify **Authentication Type**.
CHAP Type	One way [Mutual]	Specify a CHAP type. When **Authentication Type** is **CHAP**, this option appears.
CHAP Name	Up to 126 alpanumeric characters	Specify a CHAP name. When **Authentication Type** is **CHAP**, this option appears.
CHAP Secret	12 to 16 alphanumeric characters	Specify a CHAP secret. When **Authentication Type** is **CHAP**, this option appears.
CHAP Status	For display only	Specify the CHAP secret setting state. When **Authentication Type** is **CHAP**, this option appears.
Reverse CHAP Name	Up to 126 alpanumeric characters	Specify a reverse CHAP name. **Authentication Type** is **CHAP** and when **Cheap Type** is **Mutual**, this option appears.
Reverse CHAP Secret	12 to 16 alphanumeric characters	Specify the reverse CHAP secret. When **Authentication Type** is **CHAP** and when **Cheap Type** is **Mutual**, this option appears.
Reverse CHAP Status	For display only	Specify the reverse CHAP secret setting state. When **Authentication Type** is **CHAP** and when **Cheap Type** is **Mutual**, this option appears.
Save Changes	－	Save changes you made.
Back to Previous Page	－	Return to the iSCSI Configuration submenu.

[   ]: Factory settings

iii. Attempt[XX] submenu

Display or specify the same options as MAC [XX:XX:XX:XX:XX:XX] submenu.
See MAC [XX:XX:XX:XX:XX:XX] submenu.

iv. Delete Attempts submenu

```
             Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Advanced

   Attempt 1                          [Disabled]              MAC: 58:C2:32:0D:85:9C, PFA:
                                                              Bus 7 | Dev 0 | Func 0,
   Commit Changes and Exit                                    iSCSI mode: Enabled, IP
   Discard Changes and Exit                                   version: IP4




                                                              F1: General Help
                                                              F4: Save & Exit Setup
                                                              ESC: Exit


             Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```
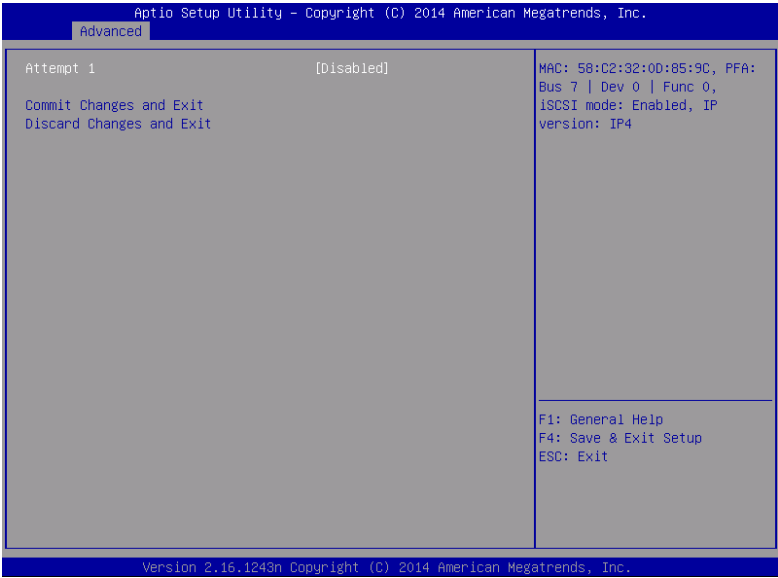
Option	Parameter	Descriptions
Attempt [XX]	[Disabled] Enabled	Specify **Enabled** to the iSCSI attempt you delete.
Commit Changes and Exit	－	Save changes and return to the iSCSI Configuration submenu.
Discard Changes and Exit	－	Return to the iSCSI Configuration submenu without saving changes.

[　　]: Factory settings

v. Change Attempt Order submenu

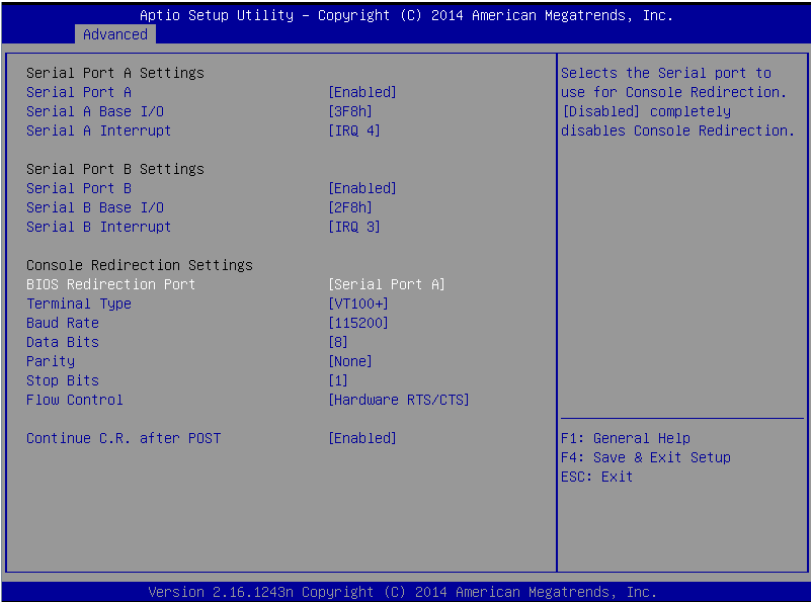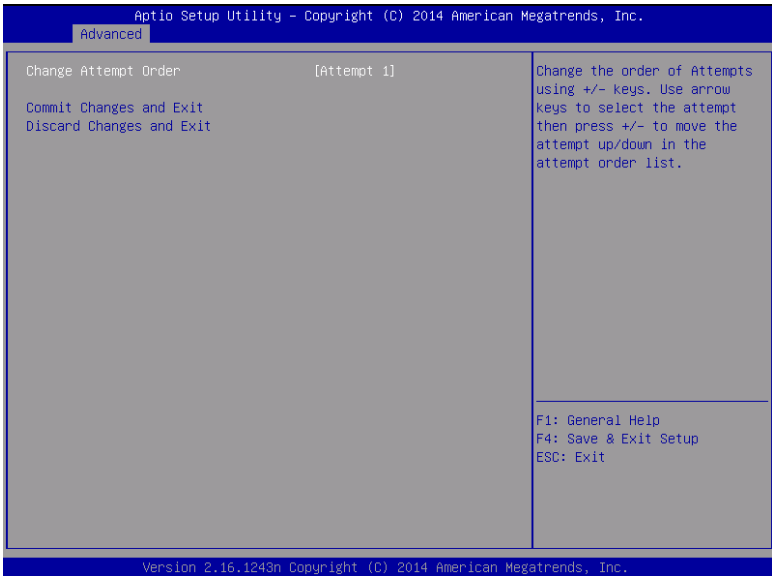| Option	Parameter	Descriptions
Change Attempt Order	Attempt [XX] Attempt [XX]	Specify priority of iSCSI attempts. Press <Enter> key to display a pop-up screen. Using <+>/<-> keys, change the priority.
Commit Changes and Exit	－	Save changes and return to the iSCSI Configuration submenu.
Discard Changes and Exit	－	Return to the iSCSI Configuration submenu without saving changes.

[   ]: Factory settings

(8) UEFI Driver Configuration submenu

From the **Advanced** menu, select **UEFI Driver Configuration** and then press the <Enter> key to display the menu screen shown below.

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
          Advanced

  ▶ Intel(R) I350 Gigabit Network Connection - 8C:DF:9D:91:A3:18   Configure Gigabit Ethernet
  ▶ VLAN Configuration (MAC:8CDF9D91A318)                          device parameters
  ▶ Intel(R) I350 Gigabit Network Connection - 8C:DF:9D:91:A3:19
  ▶ VLAN Configuration (MAC:8CDF9D91A319)
  ▶ LSI SAS3 MPT Controller SAS3008, (PCISubDeviceId: 0x804E,
    PCIBus: 0x1A, PCIDevice: 0x0, PCIFunc: 0x0, PCISlot: 0x9)
  ▶ Intel(R) Ethernet Controller 10 Gigabit X540-AT2 -
    8C:DF:9D:91:A3:20
  ▶ VLAN Configuration (MAC:8CDF9D91A320)
  ▶ Intel(R) Ethernet Controller 10 Gigabit X540-AT2 -
    8C:DF:9D:91:A3:21
  ▶ VLAN Configuration (MAC:8CDF9D91A321)

  ▶ Driver Health


                                                                  F1: General Help
                                                                  F4: Save & Exit Setup
                                                                  ESC: Exit



          Version 2.17.1249n Copyright (C) 2016 American Megatrends, Inc.
```

Option	Parameter	Descriptions
(UEFI Driver Name)	—	When a UEFI driver of an on-board LAN controller or each PCI device is loaded, a MAC address is displayed. This submenu differs depending on UEFI drivers.
VLAN Configuration (MAC:XXXXXXXXXXXX)	—	This option is indicated only by R310f-E4, R320f-M4 and R320f-E4.
Driver Health	—	—

[   ]: Factory settings

(a) VLAN Configuration (MAC:XXXXXXXXXXXX) submenu

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
        Advanced

 Create new VLAN                                         VLAN ID of new VLAN or
   VLAN ID                          0                    existing VLAN, valid value
   Priority                         0                    is 0~4094.
 Add VLAN

 Configured VLAN List
 Remove VLAN




                                                         F1: General Help
                                                         F4: Save & Exit Setup
                                                         ESC: Exit



                Version 2.17.1249n Copyright (C) 2016 American Megatrends, Inc.
```
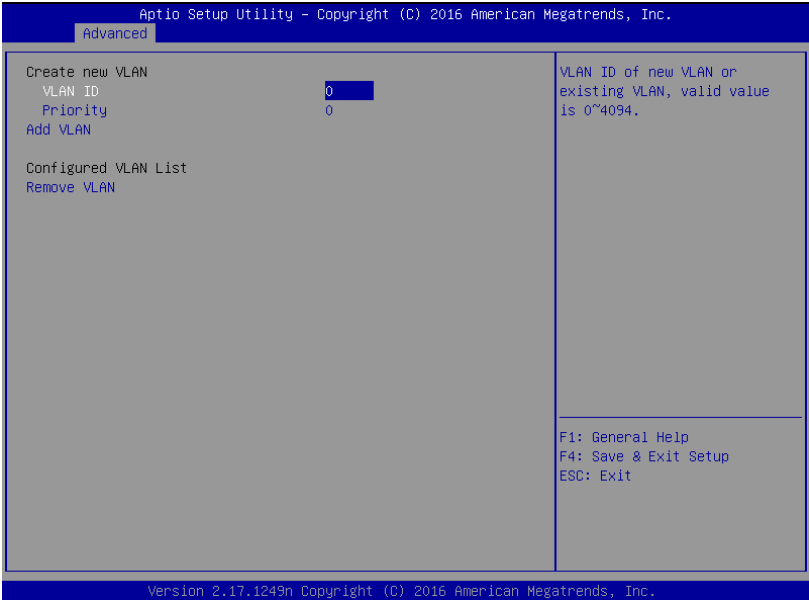
Option	Parameter	Descriptions
Create new VLAN	─	─
VLAN ID	[0]-4094	Specify VLAN ID.
Priority	[0]-7	Specify VLAN Priority.
Add VLAN	─	Add VLAN.
Configured VLAN List	─	─
VLAN ID: [x], Priority:[x]	[Disabled] Enabled	Set VLAN to be deleted to [Enabled].
Remove VLAN	─	Delete the specified VLAN.

[   ]:Factory settings

Important	This is set for the CPU/IO module of the primary side. When you configure the CPU/IO module of the secondary side, first power off the server, plug out and plug in the AC power cord of the primary side. Then start the server and set this.

(b) Driver Health submenu
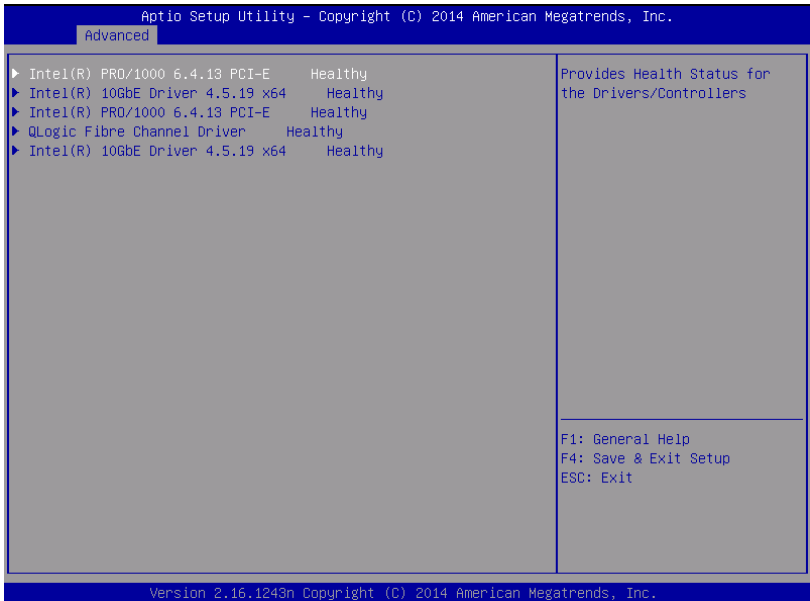
```
               Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Advanced

▶ Intel(R) PRO/1000 6.4.13 PCI-E      Healthy          Provides Health Status for
▶ Intel(R) 10GbE Driver 4.5.19 x64      Healthy        the Drivers/Controllers
▶ Intel(R) PRO/1000 6.4.13 PCI-E      Healthy
▶ QLogic Fibre Channel Driver      Healthy
▶ Intel(R) 10GbE Driver 4.5.19 x64      Healthy




                                                        F1: General Help
                                                        F4: Save & Exit Setup
                                                        ESC: Exit



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```

For details about the options, see the table below.

Option	Parameter	Descriptions
(UEFI Driver Name)	－	Displays the UEFI Driver Health state. This option appears when a UEFI driver of an on-board LAN controller or each PCI device is loaded and it supports Driver Health function..

[   ]: Factory settings

1.2.3 **Security**

If you move the cursor to **Security**, the **Security** menu appears. For the menu that has ▶ on the left, move the cursor to it and then press the **<Enter>** key to show its submenus. Then configure the settings.

```
             Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
     Main  Advanced  Security  Server  Boot  Save & Exit

    Password Configuration                             Set the Administrator
    Administrator Password                             Password for system setup.
    User Password

    Security Configuration
    Password On Boot                  [Disabled]
    Disable USB Ports                 [None]








                                                       F1: General Help
                                                       F4: Save & Exit Setup
                                                       ESC: Exit




             Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

Select **Administrator Password** or **User Password**, and then press the **<Enter>** key to display the screen where you can register/change the password.

Tips	• User Password cannot be set without setting Administrator Password
	• Do not set any password before installing OS.
	• If you have forgotten any password, contact the store where you purchased the product or your maintenance service company. If you clear the password set in the BIOS Setup utility (SETUP), see *Chapter 1 (10 Resetting and Clearing the Server)*.

For details about the options, see the table below.

Option	Parameter	Descriptions
Password Configuration	–	–
Administrator Password	Up to 20 alphanumeric characters	When the <**Enter**> key is pressed, the password entry screen to set administrative right is displayed. This password can be used to access all SETUP menus. Password can be set only when SETUP is started by administrative right. If no password is set, SETUP starts with administrative right.
User Password	Up to 20 alphanumeric characters	When the <**Enter**> key is pressed, the password entry screen to set user right is displayed. With this password, access to SETUP menus is limited. The user password can be set when SETUP is started by administrative right or user right.
Security Configuration	–	–
Password On Boot	[Disabled] Enabled	Enable or disable the feature that requires a password entry on boot. This option can be selected when **Administrator Password** is set.
Disable USB Ports	[None] Front Rear Front + Rear	Select a USB port to be disabled.

[   ]: Factory settings

1.2.4 **Server**

If you move the cursor to **Server**, the **Server** menu screen appears. For the menu that has ▶ on the left, move the cursor to it and then press the **<Enter>** key to show its submenus.

```
                    Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
        Main  Advanced  Security  Server  Boot  Save & Exit

    ▶ System Management
    ▶ Power Control Configuration
    ▶ Event Log Configuration

      FRB-2 Timer                        [Enabled]
      PCI Enumeration Monitoring         [Enabled]
      PCI Enumeration Monitoring Timeout 180
      Option ROM Scan Monitoring         [Enabled]
      Option ROM Scan Monitoring Timeout 300
      OS Boot Monitoring                 [Enabled]
      OS Boot Monitoring Timeout         600
      POST Pause Monitoring              [Enabled]
      POST Pause Monitoring Timeout      180
      Thermal Sensor                     [Enabled]
      POST Error Pause                   [Disabled]
      Display BMC IP address in POST     [Enabled]
      Legacy memory copy                 [Disabled]



                                                      F1: General Help
                                                      F4: Save & Exit Setup
                                                      ESC: Exit




                    Version 2.17.1249n Copyright (C) 2016 American Megatrends, Inc.
```

The **Server** menu screen shows the options you can configure and their features. For the menu **System Management**, move the cursor to it and then press the **<Enter>** key to show its submenus.

Option	Parameter	Descriptions
System Management	–	–
Power Control Configuration	–	–
Event Log Configuration	–	–
FRB-2 Timer	Disabled [Enabled]	Enable or disable FRB-2 timer.
PCI Enumeration Monitoring	Disabled [Enabled]	Enable or disable the feature to monitor PCI device scan.
PCI Enumeration Monitoring Timeout	60-[180]-1200	Specify the timeout period for PCI device scan (Unit: second).
Option ROM Scan Monitoring	Disabled [Enabled]	Enable or disable the feature to monitor option ROM scan.
Option ROM Scan Monitoring Timeout	60-[300]-1200	Specify the timeout period for option ROM scan (Unit: second).
OS Boot Monitoring	Disabled [Enabled]	Enable or disable the feature to monitor OS boot-up. If the NEC ESMPRO Agent is not installed on OS, disable this feature.
OS Boot Monitoring Timeout	60-[600]-1200	Specify the timeout period for OS boot-up (Unit: second).
POST Pause Monitoring	Disabled [Enabled]	Enable or disable the feature to monitor POST while the boot-up is suppressed.
POST Pause Monitoring Timeout	60-[180]-1200	Specify the timeout period for monitoring POST while the boot-up is suppressed (Unit: second).

Option	Parameter	Descriptions
Thermal Sensor	Disabled [Enabled]	Enable or disable the feature to monitor the thermal sensor.
POST Error Pause	[Disabled] Enabled	Enable or disable the feature to suppress OS booting when POST detects an error.
Display BMC IP address in POST	Disabled [Enabled]	Enable or disable the feature to display BMC IP address during POST. (This option is indicated only by R310f-E4, R320f-M4 and R320f-E4.)
Legacy memory copy	Disabled Enabled	Specify the memory copying method to other module. Don't change this option when there are no directions. (The factory setting differs depending on the environment you are using. Also, this option may not be displayed.)

[   ]: Factory settings

(1) System Management submenu

From the **Server** menu, move the cursor to **System Management** and then press the **<Enter>** key to show its submenus.

```
         Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
                              Server

   BIOS Version                      8.0:38
   UEFI Spec Version                 2.3.1

   Board Part Number                 243-634944
   Board Serial Number               000000000000
   System Part Number                N8800-209E
   System Serial Number              88888888
   Chassis Part Number               243-427840-501
   Chassis Serial Number             01
   BMC Device ID                     42
   BMC Device Revision               01
   BMC Firmware Revision             04.31
   SDR Revision                      04.05
   ASIC Revision                     0002800028
   SMM Revision                      20
   System MAC Address                58-C2-32-0D-85-9C




                                              F1: General Help
                                              F4: Save & Exit Setup
                                              ESC: Exit




         Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below (display only).

Option	Parameter	Descriptions
BIOS Version	−	The current BIOS version is displayed.
UEFI Spec Version	−	The UEFI specification version supported by BIOS is displayed.
Board Part Number	−	The part number of motherboard is displayed.
Board Serial Number	−	The serial number of motherboard is displayed.
System Part Number	−	The part number of the system is displayed.
System Serial Number	−	The serial number of the system is displayed.
Chassis Part Number	−	The part number of chassis is displayed.

Option	Parameter	Descriptions
Chassis Serial Number	–	The serial number of chassis is displayed.
BMC Device ID	–	The device ID of BMC is displayed.
BMC Device Revision	–	The revision of BMC is displayed.
BMC Firmware Revision	–	The firmware revision of BMC is displayed.
SDR Revision	–	The revision of Sensor Data Record is displayed.
ASIC Revision	–	The firmware revision of Fault-tolerant chipset is displayed.
SMM Revision	–	The firmware revision of System Management is displayed.
System MAC Address	–	The system MAC address is displayed.

(2) Power Control Configuration submenu

From the **Server** menu, move the cursor to **Power Control Configuration** and then press the <Enter> key to show its submenus.

For details about the options, see the table below.

Option	Parameter	Descriptions
AC-LINK	Stay Off [Last State] Power On	Specify the AC-LINK function that sets up the power supply state of this server when AC power is off and then supplied (see the table below). When setting up **Power On** and **Last State**, the server activates until CPU/IO modules are implemented in both systems in max. 180 seconds in addition to delay time of the **Power On Delay Time**.
Delay Time	[50]-600	When the AC-LINK setting is **Power On** or **Last State**, specify DC-ON delay time (sec.) When setting up **Power On**, set at 70 seconds or more.

[   ]: Factory settings

The AC-LINK settings and DC power operations when AC power was off and then is supplied are as follows.

State before AC power off	AC-LINK settings		
	Stay Off	Last State	Power On
Running (DC power On)	Off	On [*1]	On
Stopping (DC power Off)	Off	Off	On
Forcible power Off [*2]	Off	Off	On

*1 When the setting is Last State and State before AC power Off is "Running (DC power On)", there are following restrictions.

- When timing of AC power off can be controlled before an OS boot, do AC power off the CPU/IO module of the secondary side first.

At this time, there is the timing of DC power Off. During this timing, if another CPU/IO module do AC power off, last state of "State before AC power Off" becomes "Stopping (DC power Off)". This is specification for ft server.
When the power supply of both module is same and the timing of AC power off is the same time, these restrictions isn't relevant.

*2 Press POWER switch for 4 seconds or more to forcibly turn off the power supply.

Tips	Set up **Power On** in **AC-LINK** for automatic operation using an uninterruptible power supply (UPS).

(3) Event Log Configuration submenu

From the **Server** menu, move the cursor to **Event Log Configuration** and then press the <**Enter**> key to show its submenu.

For details about the options, see the table below.

Option	Parameter	Descriptions
Clear Online Event Logs	–	Press the <**Enter**> key then select **Yes** to clear event logs of active module.
Clear Offline Event Logs	–	Press the <**Enter**> key then select **Yes** to clear event logs of standby module.

$1.2.5$ Boot

If you move the cursor to **Boot**, the **Boot** menu where you can configure the boot order appears.

```
                Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Main  Advanced  Security  Server  Boot  Save & Exit

        Boot Configuration                                Disables/Enables the Quiet
        Quiet Boot                       [Enabled]        Boot option.
        Bootup NumLock State             [Off]
        Setup Prompt Timeout             0

        Boot Mode                        [UEFI]

        Boot Option Priorities
        Boot Option #1                   [CD/DVD:MATSHITADVD-RAM
                                         UJ8A0AS 1.61]
        Boot Option #2                   [Removable]
        Boot Option #3                   [HDD:Windows Boot
                                         Manager]
        Boot Option #4                   [Network:(58:c2:32:0d:85:
                                         9c) IP4 Intel(R) I350
                                         Gigabit Network
                                         Connection]

      ▶ CD/DVD Priorities
      ▶ HDD Priorities
      ▶ Network Priorities                                F1: General Help
                                                          F4: Save & Exit Setup
                                                          ESC: Exit



                Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

For details about the options, see the table below.

Option	Parameter	Descriptions
Boot Configuration	–	–
Quiet Boot	Disabled [Enabled]	Enable or disable the feature to display logo during POST. When this option is set to **Disabled**, the results of POST execution are displayed instead of the logo. If **BIOS Redirection Port** is enabled, this option is shown as **Unavailable** and inaccessible (run with **Disabled** state automatically)
Bootup NumLock State	On [Off]	Enable or disable NumLock feature of keyboard.
Setup Prompt Timeout	[0] to 65535	Specify the time 0 to 65535 seconds until the <**F2**> is pressed to launch SETUP.

Boot Mode	Legacy [UEFI]	Specify the boot mode.
		  Select "UEFI" for the following OS:
		    - Windows Server 2016
		    - Windows Server 2012 R2
		  Select "Legacy " for the following OS:
		    - Windows Server 2008 R2
		
		See *Chapter 1 Installing Operating System* in *Installation Guide*, and determine the Boot Mode according to description in *"Before Starting Setup"* appropriate to your OS.
		
		When the OS is Windows Server 2012 R2 or Windows Server 2016:
		Before physical formatting of hard disk drive, set this option to "Legacy."After the physical formatting is complete, return the mode from **Legacy** to **UEFI**.

Option	Parameter	Descriptions
Boot Option Priorities	–	–
Boot Option #1	–	These items display the priority of boot devices.
Boot Option #2	–	
Boot Option #3	–	
Boot Option #4	–	
CD/DVD Priorities	–	Specify the boot priority for each device type.
HDD Priorities	–	
Network Priorities	–	

[   ]: Factory settings

How to change the boot priority

1. When BIOS detects a bootable device, information on the device is displayed in the designated area.

2. The boot priority (from first to fourth) of the registered boot devices can be changed using the <↑>/<↓> and <+>/<−> keys.
   Move the cursor to a device using the <↑>/<↓> keys, and change the priority using the <+>/<−> keys.

Rules on boot priority

1. If a bootable device is newly connected, the device is registered as the device with the lowest priority in Priorities of that device type.

2. If a bootable device is disconnected from the server, the relevant device is removed from **Priorities** of that device type.

3. When **Load Setup Defaults** is executed on **Save & Exit** menu, the **Boot Optio**n and **Priorities** of that device type are changed as follows.

   a) Boot Option Priorities

   1. Boot Option #1: CD/DVD

   2. Boot Option #2: Removable

   3. Boot Option #3: HDD

   4. Boot Option #4: Network

   b) The priority of bootable devices in Priorities of that device type is determined as follows:

   Devices other than USB device (e.g., SATA device, RAID) is given higher priority, and USB device is

   given priority next to non-USB devices.

   c) Bootable device

   If a bootable device has been set to **Disabled**, cancel the Disabled status, and register the device in **Priorities** of that device type.

1.2.6 Save & Exit

If you move the cursor to **Save & Exit**, the **Save & Exit** menu appears.

```
                    Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
        Main  Advanced  Security  Server  Boot  Save & Exit

     Save & Exit Options                                      Exit system setup after
     Save Changes and Exit                                    saving the changes.
     Discard Changes and Exit
     Save Changes and Power Off
     Discard Changes and Power Off
     Load Setup Defaults




                                                              F1: General Help
                                                              F4: Save & Exit Setup
                                                              ESC: Exit




                    Version 2.16.1243n Copyright (C) 2014 American Megatrends, Inc.
```

The options of this menu are described below.

(a) Save Changes and Exit

The SETUP utility closes with all the changes saved in NVRAM (Non-volatile memory). After the SETUP utility closes, the system automatically reboots.

(b) Discard Changes and Exit

The SETUP utility closes without saving the changes in NVRAM. The settings at startup of SETUP utility are retained.
After the SETUP utility closes, the system automatically reboots.

(c) Save Changes and Power Off

Changes are saved in NVRAM and the SETUP utility closes. After finishing, this server automatically turns off the power supply.

(d) Discard Changes and Power Off

The SETUP utility closes without saving the changes in NVRAM. The settings at startup of SETUP utility are retained.

After finishing, this server automatically turns off the power supply.

(e) Load Setup Defaults

This option resets all values in the SETUP utility to the default settings.

Note	・The factory-set value may differ from the default value depending on your server model. Reconfigure each item according to your environment by referring to the list of settings in this section. ・Values of iSCSI Configuration submenu and UEFI Driver Configuration submenu do not return to default values.

2. BMC Configuration

BMC Configuration utility allows you to view or change system parameters.

2.1 Overview
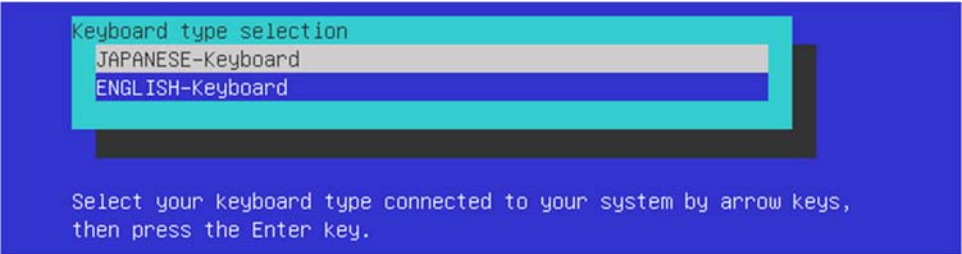
2.1.1 Offline Tools

The server has the following offline tools:

- Maintenance Utility
  Use this tool when maintaining the server.

- BMC Configuration
  Use this tool when setting system configuration information to BMC.

This section describes the features of BMC Configuration.

2.2 Activating BMC Configuration

1.   Press <F4> key at POST to display Keyboard type selection.

Keyboard type selection

Important	**If you select "JAPANESE - Keyboard" and use a Japanese keyboard, you can't input the following key.** **<¥>, <|>, <\\>, <_> and <~> key, <*> and <+> key of numeric keypad** **If you press <Shift> + <^> key, you can input underscore(_).**

2.   Select of the keyboard type connected with this server to display **Off-line TOOL MENU**.
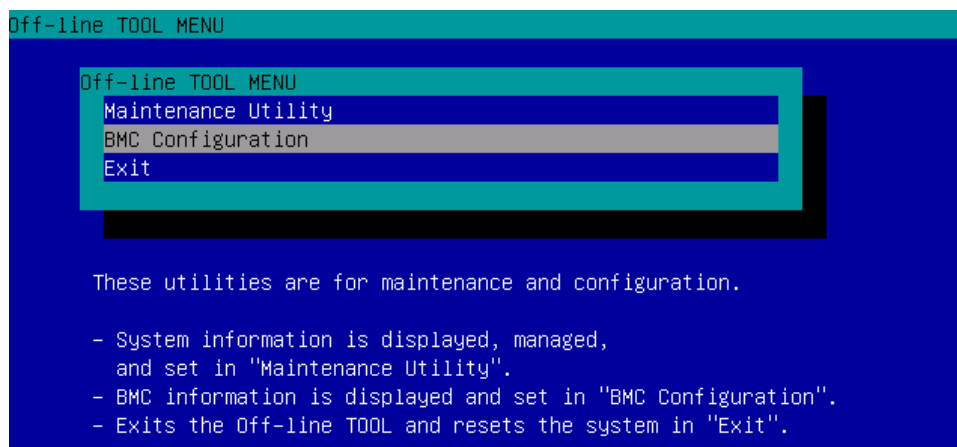
Off-line TOOL MENU

3.   Select **BMC Configuration** from the menu to activate the BMC Configuration.

$\boldsymbol{2.3}$ Main Manu of BMC Configuration

The Main Menu appears when you select **BMC Configuration** on **Offline Tool**s menu.

Main Menu

The features are described below.

(a) BMC Configuration

Sets configuration information to BMC.
If you select **OK** after you change the values, the set values are applied to BMC.
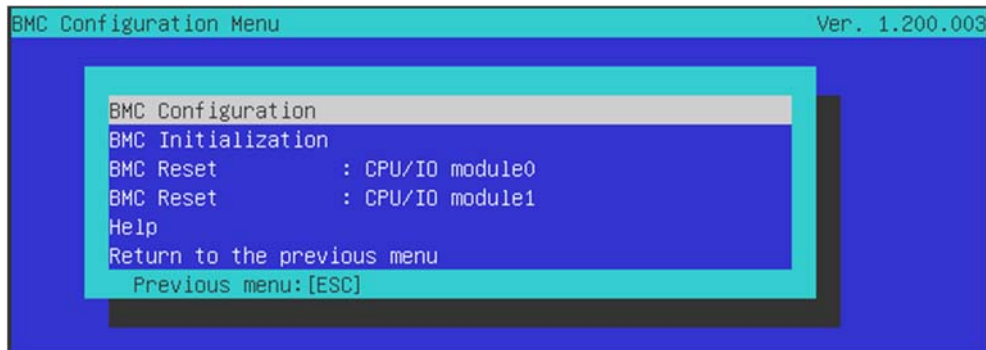For details, see *(2.4 Setting BMC Configuration)*.

(b) BMC Initialization

Restores the BMC Configuration information to the default value (except for some items).
Executing this item initializes both CPU/IO modules 0 and 1.
For details, see *(2.5 BMC Initialization)*.

(c) BMC Reset : CPU/IO module X

Resets BMC of CPU/IO module X (X = 0 or 1) without changing any settings.
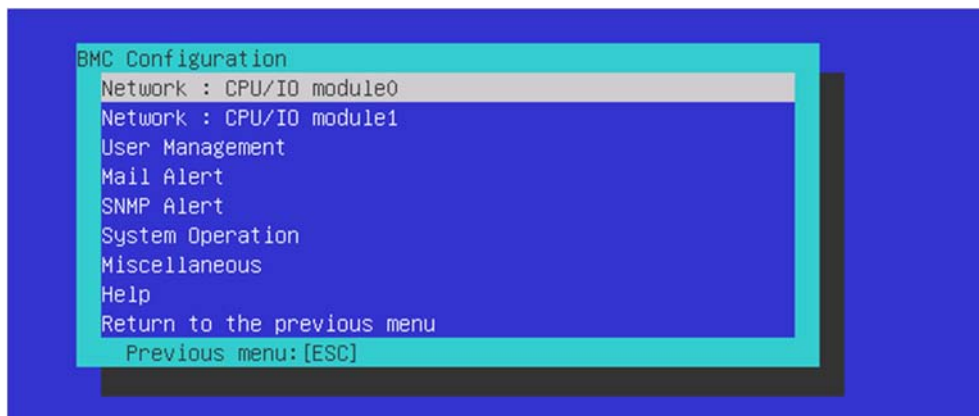For details, see *(2.6 BMC Reset)*.

(d) Help

Opens BMC Configuration help window.

(e) Return to the previous menu

Exits BMC Configuration, and return to **Offline Tools** menu.

2.4 Setting BMC Configuration

The Main Menu appears when you select **BMC Configuration** on **Offline Tools** menu.

BMC Configuration menu

The features are described below.

(a) Network: CPU/IO module X

Views network environment and services of BMC LAN of CPU/IO module X (X = 0 or 1) and change parameter setting. Only the module that is installed appears on this menu.
For details, see *(2.4.1 Network)*.

(b) User Management

Manages users who use BMC.
For details, see *(2.4.2 User Management)*.

(c) Mail Alert

Views E-mail alert issued from BMC and change parameter setting.
For details, see *(2.4.3 Mail Alert)*.

(d) SNMP Alert

Views SNMP alert issued from BMC and change parameter setting.
For details, see *(2.4.4 SNMP Alert)*.

(e) System Operation

Sets parameters for remote KVM console and remote media.
For details, see *(2.4.5 System Operation)*.

(f) Miscellaneous

Sets various features of BMC.
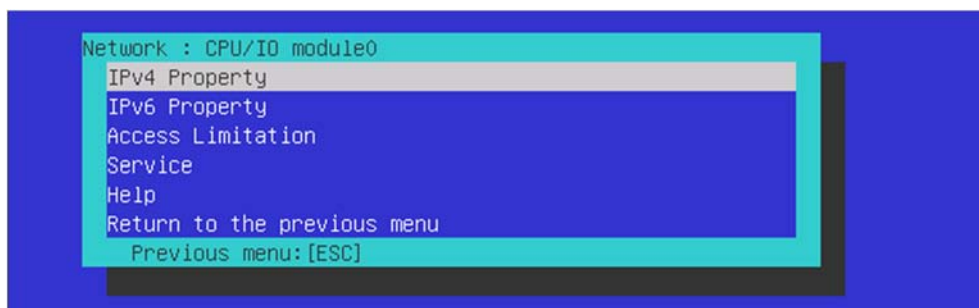For details, see *(2.4.6 Miscellaneous)*.

(g) Help

Opens BMC Configuration help window.

(h) Return to the previous menu

Exits BMC Configuration, and return to **Offline Tools** menu.

2.4.1 Network

The **Network** menu appears when you select **Network: CPU/IO moduleX** on **BMC Configuration** menu.

Network menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
IPv4 Property		
Management LAN	Specify and display LAN port to communicate with BMC. Management LAN : LAN port for BMC exclusive use. Shared BMC LAN : LAN port of System (OS) is shared and used. This item cannot be chosen for this server.	Management LAN

Connection Type	Specify and display the connection type of BMC LAN.[1]
	Auto Negotiation
	   : Connecting by suitable setting.
	100Mbps Full Duplex
	   : Connecting by Full Duplex at speed of 100 Mbps.
	100Mbps Half Duplex
	   : Connecting by Half Duplex at speed of 100 Mbps.
	10Mbps Full Duplex
	   : Connecting by Full Duplex at speed of 10 Mbps.
	10Mbps Half Duplex
	   : Connecting by Half Duplex at speed of 10 Mbps.
		Auto Negotiation

BMC MAC Address	MAC Address of BMC is displayed.	—
DHCP	Determine whether to dynamically obtain an IP address from a DHCP server. If the item is set to **Enable** and applied, BMC set the value **IP Address**, **Subnet Mask** and **Default Gateway** obtained from DHCP server. [2]	Disable
IP Address	Specify the BMC LAN IP address.[3]	192.168.1.1
Subnet Mask	Specify the Subnet Mask of BMC LAN. [1][2][3]	255.255.255.0
Default Gateway	Specify the Default Gateway IP address of the BMC LAN.[2][3] If you set this item, it is necessary for applying configuration information that the gateway is connected on network.	0.0.0.0
Dynamic DNS	Determine whether to enable/disable of Dynamic DNS. [4]	Disable
DNS Server	Specify the DNS Server.	0.0.0.0
Host Name	Specify the Host Name.[5]	Blank
Domain Name	Specify the Domain Name.[6]	Blank

Item	Description	Default Value
IPv6 Property		
IPv6	Enable or disable IPv6. [*2]	Disable
Address Assignment Mode	Specify the mode to assign IPv6 address (Static or Dynamic). [*2][*7]	Dynamic
Link Local Address	Display link local address. [*7][*8]	—
Global Address	Display IPv6 address when Dynamic is specified for assignment mode. [*7][*9]	::
Static Address	Specify IPv6 address when Static is specified for assignment mode. [*7][*10]	0::0
Prefix Length	Specify the prefix length when Static is specified for assignment mode. [*2][*7]	64
Gateway Address	Specify the gateway address when Static is specified for assignment mode. [*2][*7]	0:00
Access Limitation		

Limitation Type	Select the Access Limitation Type.
	Allow All
	   : Access to BMC is not limited.
	Allow Address
	   : Specify the IP Address that is allowed to access BMC.
	Deny Address
	   : Specify the IP Address that denies accessing BMC.
		Allow All

IP Address	Specify the IP Address to allow or deny to access with BMC. [*11][*12]	Blank
Service		
HTTP	Enable or disable HTTP service. [*13]	Enable
HTTP Port Number	Specify the HTTP port number. [*14]	80
HTTPS	Enable or disable HTTPS service. [*13]	Enable
HTTPS Port Number	Specify the HTTPS port number. [*14]	443
SSH	Enable or disable SSH service.	Enable
SSH Port Number	Specify the SSH port number. [*14]	22

*1:   If an illegal value is specified for subnet mask, an error message is displayed and setting is disabled.

*2:   It should be same settings for CPU/IO module 0 and CPU/IO module 1. When the settings is different, the settings of primary module is preferentially. In addition, this rule is applied to the BMC Configuration for Windows.

*3:   Can be changed only when DHCP is set to "Disable".

*4:   Can be changed only when DHCP is set to "Enable".

*5:   Host Name should be within 63 characters.
      Acceptable characters are: alphanumeric, hyphen (-), underscore (_), and period (.).

*6:   Host Name and Domain Name should be within total of 255 characters.
      Acceptable characters are: alphanumeric, hyphen (-), underscore (_), and period (.).

*7:   Can be specified only when IPv6 is set to "Enable".

*8:   When you need to know the Link Local Address, first set IPv6 to "Enable", redisplay this screen. Then Link Local Address configured automatically appear, be sure to use this address.

*9:   Displayed only when "Dynamic" is specified for Address Assignment Mode.

*10: Cannot set the Static Address whose start is "fe8".

*11: Can be specified when Access Limitation Type is "Allowed Address" or "Deny Address". The length must not exceed 255 characters.

12: The range of IP addresses to "Allow" or "Deny" access is delimited by ", (Comma)". With regard to the setting of "Deny" access, "(Asterisk)" can be described as a wild-card. (ex: 192.168.1.*,192.168.2.1,192.168.2.254)

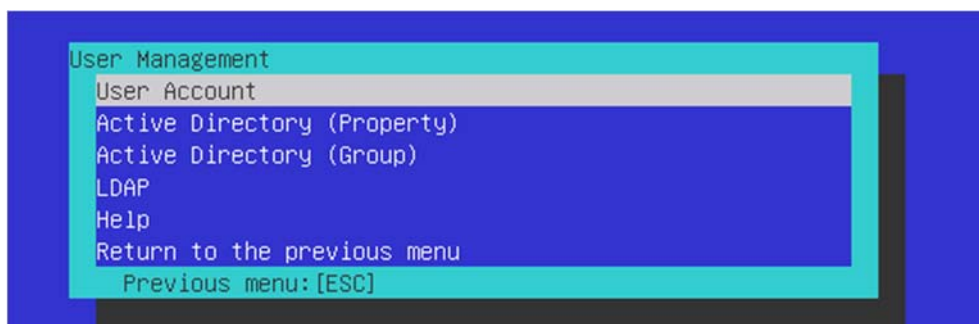*13: If HTTP is set to "Enable", HTTPS is changed to "Enable" automatically. You are not allowed to set "Enable" to HTTP only.

*14: Port number can be specified only when the relevant port is set to "Enable". The port number must be unique.

| **Tips** | If you use Japanese keyboard and select "JAPANESE - Keyboard" at the chapter "2.2 Activating BMC Configuration", you can input underscore(_) by pressing <Shift> + <^> key. |

2.4.2 User Management

The **User Management** menu appears when you select **User Management** on **BMC Configuration** menu.

```
User Management
User Account
Active Directory (Property)
Active Directory (Group)
LDAP
Help
Return to the previous menu
   Previous menu:[ESC]
```

User Management menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
User Account		
User	Enable or disable the user. [*1]	Enable
User Name	Specify user name. [*2]	Blank
Password	Specify password. [*3]	Blank
Confirm Password	Specify the same character string used for "Password". [*3]	Blank
Privilege	Specify the privilege of the user. [*4] Administrator Operator User	Administrator
Active Directory (Property)		
Active Directory Authentication	Enable or disable Active Directory authentication.	Disable
User Domain Name	Specify the user domain name. [*5] [*6]	Blank
Timeout	Specify timeout period for connection with Domain Controller. [*5]	120
Domain Controller Server1	Enable or disable Domain Controller 1. [*5] [*7]	Enable
Server Address1	Specify IP address of Domain Controller 1. [*5] [*8]	Blank
Domain Controller Server2	Enable or disable Domain Controller 2. [*5] [*7]	Disable
Server Address2	Specify IP address of Domain Controller 2. [*5] [*8]	Blank
Domain Controller Server1	Enable or disable Domain Controller 3. [*5] [*7]	Disable
Server Address3	Specify IP address of Domain Controller 3. [*5] [*8]	Blank
Active Directory (Group)		
Group Name	Specify group name. [*5] [*6]	Blank
Group Domain	Specify group domain. [*6]	Blank
Privilege	Specify privilege of group. [*4] Administrator Operator User	Administrator

Item	Description	Default Value
LDAP		
LDAP Authentication	Enable or disable LDAP authentication.	Enable
IP Address	Specify the IP address. [9]	0.0.0.0
Port Number	Specify the LDAP port number. [9]	636
Search Base	Specify the search base used in LDAP authentication. [9][10]	Blank
Bind Domain Name	Specify the bind domain used in LDAP authentication. [9][10]	Blank
Bind Password	Specify the bind password used in LDAP authentication. [9][11]	Blank

*1:   Can be specified if a user exists.

*2:   Up to 15 characters including alphanumeric, hyphen (-), and underscore (_) can be used. Note, however, User Name must start start with hyphen (-). In addition, "root", "null", "MWA", "AccessByEM-Poem", and names which are already assigned for other number are not allowed.

*3:   Up to 19 ASCII characters excluding " " (blank), " (quotation), & (ampersand), ? (question mark), = (equal sign), #, and \, can be used.

*4:   Privileges are defined as follows:

      Administrator: User who has administrator right. All operations are allowed.

      Operator: User who can operate the machine. Session management, license registration, remote KVM/media, configuration, and update are not allowed.

      User: General user. Viewing IPMI information only is allowed.

*5:   Can be specified only when Active Directory authentication is set to "Enable".

*6:   Up to 255 characters including alphanumeric, hyphen, underscore, and period can be used.

*7:   If Active Directory authentication is set to "Enable", at least one domain controller server must be enabled.

*8:   Can be specified only when domain controller server is set to "Enable".

*9:   Can be specified only when LDAP authentication is set to "Enable".

*10: Characters in the range between 4 and 62 including alphanumeric, hyphen, underscore, period, comma, and equal sign can be used.

*11: Alphanumeric characters in the range between 4 and 31 excluding ", #, and \ can be used.

Tips	If you use Japanese keyboard and select "JAPANESE - Keyboard" at the chapter "2.2 Activating BMC Configuration", you can input underscore(_) by pressing <Shift> + <^> key.

2.4.3 Mail Alert

The **Mail Alert** menu appears when you select **Mail Alert** on **BMC Configuration** menu.

```
Mail Alert
  Mail Alert
  SMTP Server
  Alert Level
  Alert Test
  Help
  Return to the previous menu
     Previous menu:[ESC]
```
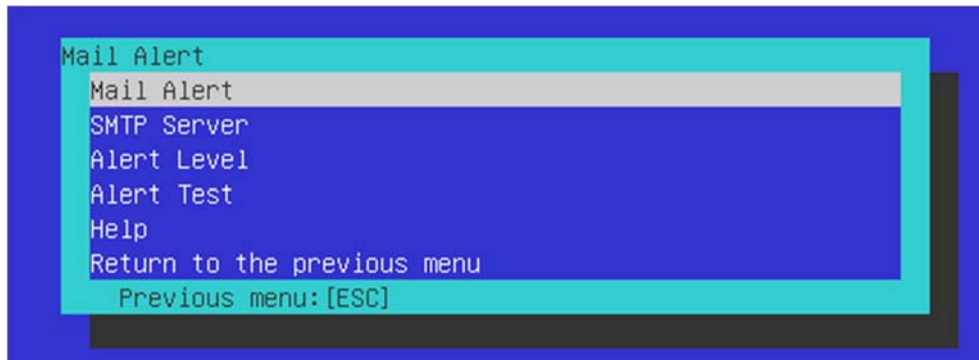
Mail Alert menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
Mail Alert		
SMTP Alert	Enable or disable Mail Alert.	Disable
Response of SMTP Server	Specify the timeout period until when the connection to SMTP server succeed by E-mail transmission.	30
To:1	Select Enable/Disable of To:1. [*1]	Enable
To:1 E-Mail Address	Specify the mail address of To:1. [*2] [*3]	Blank
To:2	Select Enable/Disable of To:2. [*1]	Disable
To:2 E-Mail Address	Specify the mail address of To:2. [*2] [*3]	Blank
To:3	Select Enable/Disable of To:3. [*1]	Disable
To:3 E-Mail Address	Specify the mail address of To:3. [*2] [*3]	Blank
From:	Specify the mail address of From. [*3]	Blank
Reply-To:	Specify the mail address of Reply-To. [*3]	Blank
Subject:	Specify the Subject. [*4]	Blank
SMTP Server		
SMTP Server	Specify the SMTP Server. [*5]	0.0.0.0
SMTP Port Number	Specify the SMTP port number.	25
SMTP Authentication	Select Enable/Disable of SMTP Authentication.	Disable
CRAM-MD5	Select Enable/Disable of CRAM-MD5. [*6] [*7]	Enable
LOGIN	Select Enable/Disable of LOGIN authentication. [*6] [*7]	Enable
PLAIN	Select Enable/Disable of PLAIN authentication. [*6] [*7]	Enable
User Name	Specify the SMTP User Name. [*6] [*8]	Blank
Password	Specify the SMTP User Password. [*6] [*9]	Blank
Alert Level		
Alert Level	Specify the kind of event to alert.[*10]	Error, Warning
	Error : When "Error" is detected in each sensor type, the alert is sent to the checked address.	
	Error, Warning : When "Error" or "Warning" is detected in each sensor type, the alert is sent to the checked address.	
	Error, Warning, Information : When "Error", "Warning" or "Information" is detected in each sensor type, the alert is sent to the checked address.	
	Separate Setting : You can arbitrarily select the event and the address (To:X) to alert in each sensor type.	
Alert Test	Execute test by sending an alert by setup content and mail. [*11]	－

*1:   When Mail Alert is enabled, at least one address should be enabled.

*2:   Can be specified only when To: X is set to "Enable".

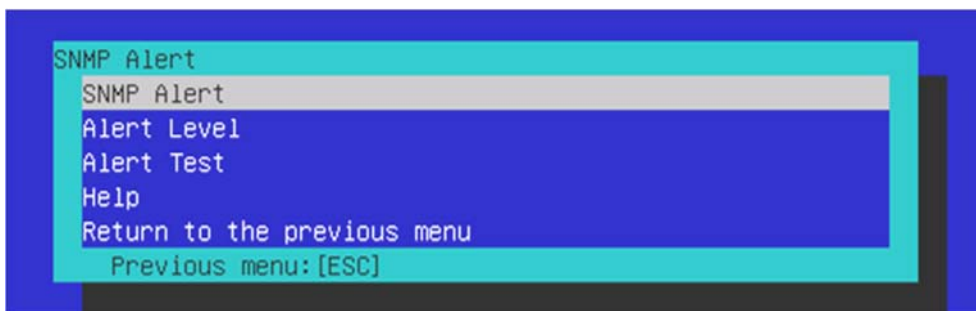*3:   Up to 255 characters including alphanumeric, hyphen, underscore, period, and @ (at mark) can be used.

*4:   Up to 63 alphanumeric characters excluding +, ", ?, =, <, >, #, and \ can be used.

*5:   Up to 255 alphanumeric characters, hyphen, underscore, and period can be used for full domain name or IP address.

*6:   Can be specified only when SMTP Authentication is set to "Enable".

*7:   When SMTP Authentication is set to "Enable", at least one of the authentic methods should be enabled.

*8:   Up to 64 alphanumeric characters excluding " " blank, ",?, =, <, >, #, and \, can be used.

*9:   Up to 20 alphanumeric characters excluding " " blank, ",?, =, <, >, #, and \, can be used.

*10   Can be specified only when SMTP Alert is set to "Enable".

*11:   Be sure to perform Alert Test after all the parameters are configured appropriately. Alert feature may fail depending on configuration made for network or alert receiver.

| Tips | If you use Japanese keyboard and select "JAPANESE - Keyboard" at the chapter "2.2 Activating BMC Configuration", you can input underscore(_) by pressing <Shift> + <^> key. |

2.4.4 SNMP Alert

The **SNMP Alert** menu appears when you select **SNMP Alert** on **BMC Configuration** menu.

```
SNMP Alert
  SNMP Alert
  Alert Level
  Alert Test
  Help
  Return to the previous menu
     Previous menu:[ESC]
```

SNMP Alert menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
SNMP Alert		
SNMP Alert	Enable or disable SNMP Alert. [*1]	Disable
Computer Name	Specify the Computer Name. [*2]	Blank
Community Name	Specify the Community Name. [*2]	Public
Alert Process	Select One Alert Receiver or All Alert Receiver for Alert Process.	One Alert Receiver
Alert Acknowledge	Enable or disable Alert Acknowledge.	Enable
Alert Retry Count	Specify the count of Alert retry. [*3]	3
Alert Timeout	Specify the timeout period (in seconds) for alert. [*3]	6
Alert Receiver1	Enable or disable primary receiver. [*4]	Enable
IP Address1	Specify the IP Address of primary receiver. [*5]	0.0.0.0
Alert Receiver2	Enable or disable secondary receiver. [*4]	Disable
IP Address2	Specify the IP Address of secondary receiver. [*5]	0.0.0.0
Alert Receiver3	Enable or disable tertiary receiver. [*4]	Disable
IP Address3	Specify the IP Address of tertiary receiver. [*5]	0.0.0.0
Alert Level		
Alert Level	Specify the kind of event to alert.	Error, Warning
	Error : When "Error" is detected in each sensor type, the alert is sent to the checked address. Error, Warning : When "Error" or "Warning" is detected in each sensor type, the alert is sent to the checked address. Error, Warning, Information : When "Error", "Warning" or "Information" is detected in each sensor type, the alert is sent to the checked address. Separate Setting : You can arbitrarily select the event to alert in each sensor type.	
Alert Test	Execute an SNMP alert test using current settings. [*6]	—

*1: When PEF (Platform Event Filter) is set to "Disable" in Miscellaneous menu, SNMP alert is disabled.

*2: Up to 16 alphanumeric characters are accepted.

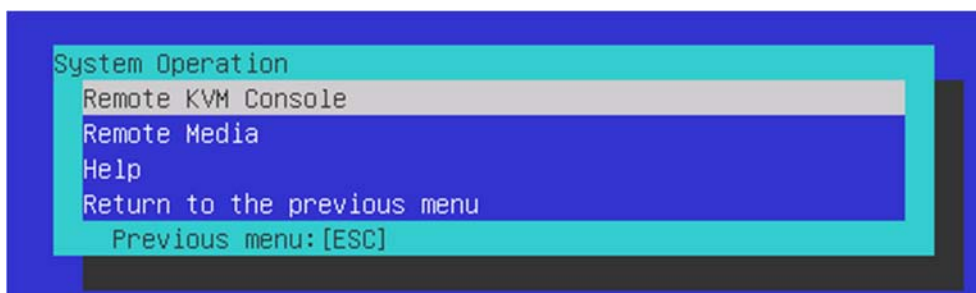*3: Can be specified only when Alert Acknowledge is set to "Enable".

*4: When SNMP Alert is enabled, at least one alert receiver should be enabled.

*5: Can be specified only when each Alert Receiver is set to "Enable".

*6: Be sure to perform Alert Test after all the parameters are configured appropriately. Alert feature may fail depending on configuration made for network or alert receiver.

2.4.5 System Operation

The **System Operation** menu appears when you select **System Operation** on **BMC Configuration** menu.

```
System Operation
  Remote KVM Console
  Remote Media
  Help
  Return to the previous menu
     Previous menu:[ESC]
```

System Operation menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
Remote KVM Console		
Encryption	Enable or disable encryption.	Enable
Port Number (No Encryption)	Specify the port number when encryption is disabled. [1]	7578
Port Number (Encryption)	Specify the port number when encryption is enabled [1]	7582
Mouse Cursor Mode	Specify display mode of mouse cursor. Single Dual	Dual
Mouse Coordinate Mode	Select a mode to indicate coordinate when moving mouse cursor. Relative Absolute	Relative
Keyboard Language	Select a keyboard language. Japanese (JP) English (US) French (FR) German (DE)	English(US)
Remote Media		
Encryption	Enable or disable encryption.	Enable
Remote CD/DVD (No Encryption)	Specify the port number of remote CD/DVD port when encryption is disabled. [1]	5120
Remote USB Memory (No Encryption)	Display the port number of remote USB memory when encryption is disabled. (Remote CD/DVD port number + 2)	─
Remote FD (No Encryption)	Display the port number of remote FD when encryption is disabled. (Remote CD/DVD port number + 3)	─
Remote CD/DVD (Encryption)	Specify the port number of remote CD/DVD port when encryption is enabled. [1]	5124
Remote USB Memory (Encryption)	Display the port number of remote USB memory when encryption is enabled. (Remote CD/DVD port number + 2)	─
Remote FD (Encryption)	Display the port number of remote FD when encryption is enabled. (Remote CD/DVD port number + 3)	─

*1: Port numbers must be the unique one.

2.4.6 Miscellaneous

The Miscellaneous menu appears when you select **Miscellaneous** on BMC Configuration menu.

Item	Description	Default Value
Miscellaneous		
Behavior when SEL repository is full	Specify the behavior when SEL repository is full. [*1] Stop logging SEL : SEL is not recorded any more. Clear all SEL : Delete all SEL and record SEL newly. Overwrite oldest SEL [*2] : Old SEL is overwritten with new SEL.	Stop logging SEL
Platform Event Filter	Enable or disable Platform Event Filter. [*3]	Enable
Management Software	Setting for remote management	—
ESMPRO Management	Enable or disable NEC ESMPRO Management. [*4]	Current set value
Authentication Key	Specify the Authentication Key. [*5] [*6]	Guest
Redirection	Enable or disable Redirection feature. [*5] [*7]	Enable

*1: When this item is changed to/from "Overwrite oldest SEL", all log records in the SEL Repository are cleared.

*2: However, even if you specify this setting, in the case that the Windows OS is started and ft control software detects SEL area is filled fully, all SEL are deleted and new SEL is recorded again.
In addition, the contents of SEL is recorded to event log of Windows OS by ft control software, so back up event log as needed according to your operation form.

*3: Disabling Platform Event Filter also disables SNMP alert.

*4: When BMC can be managed directly from NEC ESMPRO Manager (Ver.5.4 or later), this item must be set to "Enable". If it is set to "Enable", Authentication Key is required.

*5: Can be specified only when ESMPRO Management is set to "Enable".

*6: This Authentication key is used when NEC ESMPRO Manager (Ver.5.4 or later) manages the target server. Up to 16 alphanumeric characters are accepted.
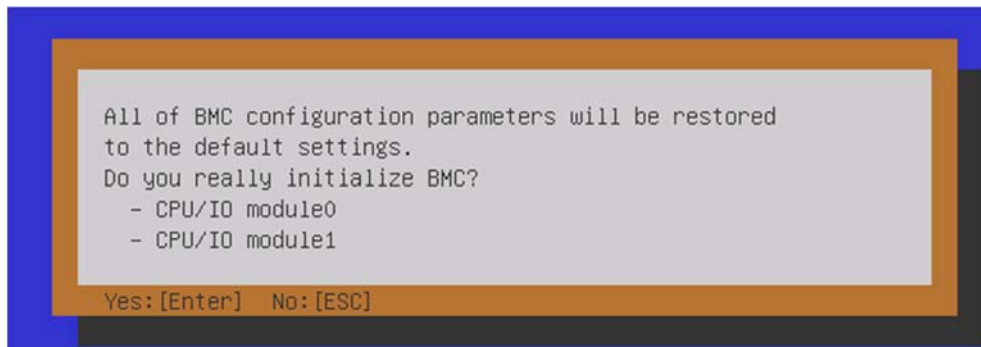
*7: If Redirection is set to "Enable", Console Redirection Configuration port in BIOS is set to "Serial Port B" at next boot.

Note	If you do not use remote management feature by NEC ESMPRO, set to "Disable" for ESMPRO Management in Management Software. In this case, settings for relevant items are hidden and unnecessary.

2.5 **BMC Initialization**

If you select **BMC Initialization** on **Main** menu, the confirmation message as show below appears.
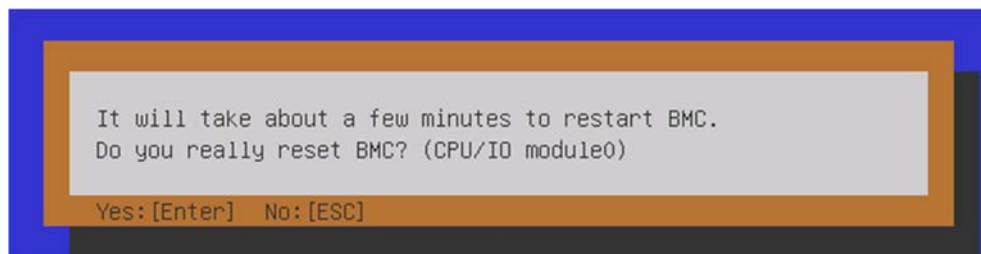Only the CPU/IO module installed in the server appears on this menu.

```
All of BMC configuration parameters will be restored
to the default settings.
Do you really initialize BMC?
   - CPU/IO module0
   - CPU/IO module1

Yes:[Enter]   No:[ESC]
```

Confirmation message (BMC Initialization)

<**ESC**> key: Stops processing and returns to **Main** menu.

<**Enter**> key: Initializes BMC configuration settings and restores the default value except for some items.
After initialization, it takes about one minute to restart BMC.

2.6 **BMC Reset**

If you select **BMC Reset : CPU/IO module X** on **Main** menu, the confirmation message as show below appears.
Only the CPU/IO module installed in the server appears on this menu.

```
It will take about a few minutes to restart BMC.
Do you really reset BMC? (CPU/IO module0)

Yes:[Enter]   No:[ESC]
```

Confirmation message (BMC Reset)

<**ESC**> key: Stops processing and returns to Main menu.

<**Enter**> key: Resets BMC of CPU/IO module X (X = 0 or 1). It takes about one minute to restart BMC.

3. SAS Configuration Utility

SAS Configuration utility makes settings of the built-in SAS controller. You can start it up by simple key operation during POST execution.

|	
Important	• **Because the server is installed with the latest version of the utility, your screen display may be different from the one described in this guide. For information on options different from those described in this guide, refer to the online help or ask your service agent.**
	• **This utility is set for the CPU/IO module of the primary side. When you configure the CPU/IO module of the secondary side, first power off the server, plug out and plug in the AC power cord of the primary side. Then start the server.**
	• **The SAS Configuration Utility is used for physical formatting. Do not change the settings on each utility menu, as doing so causes failure and malfunction of this server.**

3.1 Starting the SAS Configuration Utility

Take the following procedures to start the SAS Configuration utility.

1. Power on the server.

2. Run the BIOS setup menu (see *Chapter 3 (1.1 Starting SETUP)).*

3. Choose **Legacy** from **Boot mode** in **Boot** menu.

4. Choose **Save Changes and Exit** in **Save & Exit** menu and then reboot.

5. The following messages appear in the POST and then keep pressing the <**Ctrl**> key and press the <**C**> key.

```
LSI Corporation MPT SAS3 BIOS
MPT3BIOS-x.xx.xx.xx (xxxx.xx.xx)
Copyright 2000-20xx LSI Corporation.


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

6. The SAS Configuration utility starts up with the **Adapter List** menu displayed.
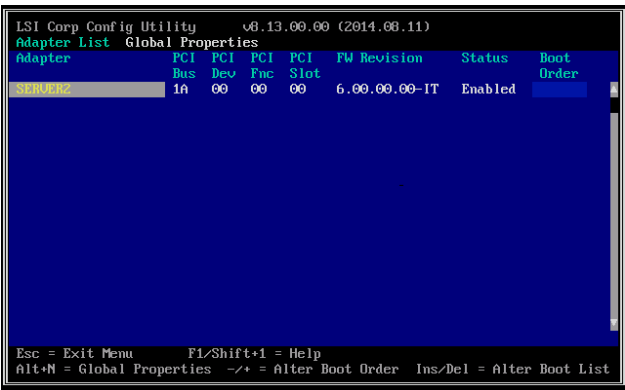
3.2 Quitting the SAS Configuration Utility

Take procedures below to quit the SAS Configuration utility.

1. Keep pressing the <**Esc**> key until the menu shown below appears.
2. Select **Discard changes and reboot** or **Exit the Configuration Utility and Reboot** from the menu, and press the <**Enter**> key.

```
Are you sure you want to exit ?
Cancel Exit
Save changes and reboot.
Discard changes and reboot.
Exit the Configuration Utility and Reboot
```

Tips	Do not change the settings on the SAS Configuration. If you changed the settings, select **Discard changes and reboot** to finish the utility.

3. When the OS is Windows Server 2016 or Windows Server 2012 R2, run the BIOS setup menu after the rebooted (see *Chapter 3 (1.1 Starting SETUP))*.

4. Select **UEFI** from **Boot mode** from **Boot** menu.

5. Select **Save Changes and Exit** from **Save & Exit** menu, save the settings and then reboot.

3.3 Physical Formatting of the Hard Disk Drive

Important	**This utility is set for the CPU/IO module of the primary side. When you configure the CPU/IO module of the secondary side, first power off the server, plug out and plug in the AC power cord of the primary side. Then start the server.**

The following describes how to execute physical formatting of hard disk drive.

1. Press the <**Enter**> key on the **Adapter List** menu.

    Adapter Properties menu appears. Select **SAS Topology** and press the <**Enter**> key.

2. Select **SAS Topology** and press the **<Enter>** key.

   SAS Topology menu appears. Select **Direct Attach Device** and press the **<Enter>** key.

```
LSI Corp Config Utility      v8.13.00.00 (2014.08.11)
SAS Topology -- SAS3008
                          Device Identifier            Device
SERVER2(1A:00)                                          Info
 └ Controller             Direct Attach Devices         Controller








Esc = Exit   F1/Shift+1 = Help
Alt+D = Device Properties   Alt+M = More Keys
```
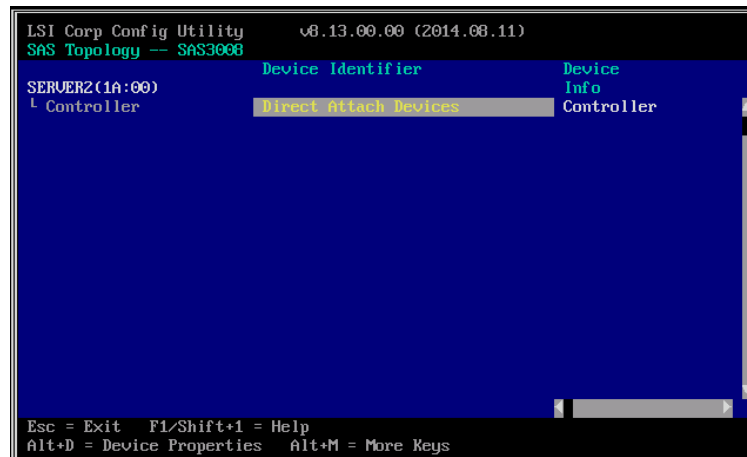
3. Hard disk drives that are installed on the primary CPU/IO module appear after a while. Select the hard disk drive to execute physical formatting, keep pressing the <**Alt**> key and press the <**Enter>** key.

```
LSI Corp Config Utility      v8.13.00.00 (2014.08.11)
SAS Topology -- SAS3008
                          Device Identifier            Device
SERVER2(1A:00)                                          Info
 └ Controller             Direct Attach Devices         Controller
   └ Slot  0              SEAGATE ST300MP0065    N402   SAS








Esc = Exit   F1/Shift+1 = Help
Alt+D = Device Properties   Alt+M = More Keys
```
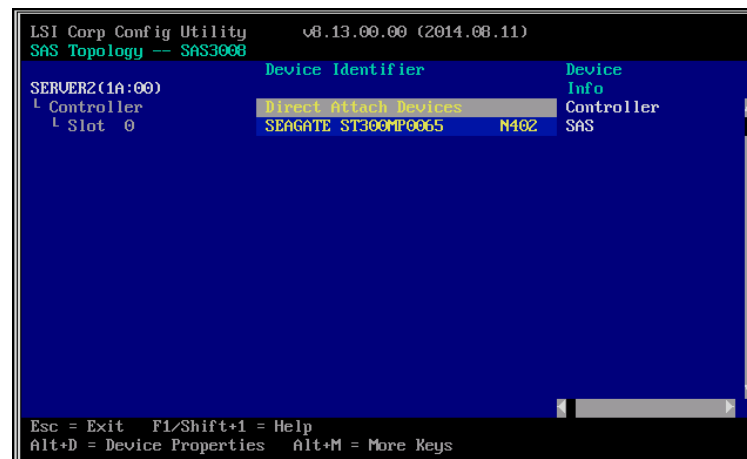
4. **Device Properties** menu appears after a while. Select the **Format** and press the <**Enter**> key.

```
LSI Corp Config Utility      v8.13.00.00 (2014.08.11)
Device Properties -- SAS3008

        Device Identifier    SEAGATE ST300MP0065    N402
        Scan Order           9
        Phy Number           3
        Slot Number          0
        RAID Member          No
        Device Information   SAS
        Neg Link Speed       12.0 Gbps
        Disk Capacity        279.3 GiB
        SAS Address          5000C500:76C51101
        Serial Number        S7K00HNJ0000S439LW6L

        Format

        Verify


Esc = Exit   F1/Shift+1 = Help
Alt+N = Next Device   Alt+P = Previous Device   Enter = Select Item
```

5. **Device Format** menu appears after a while. Press the **<F>** key to start formatting.

```
LSI Corp Config Utility      v8.13.00.00 (2014.08.11)
Device Format -- SAS3008

     Device Identifier    SEAGATE ST300MP0065      N402
     SAS Address          5000C500:76C51101
     Serial Number        S7K00HNJ0000S439LW6L

     WARNING!
     Format will permanently erase all data on this device!
     Format may take hours to complete and cannot be stopped.
     Press the 'F' key to begin format or any other key to exit.


     Elapsed Time:        00:00:00

     Percent
     Complete    0%                                    100%

     [                                                    ]
```

6. After the completion of formatting, the following message appears.

    Press any key to display the **Device Properties** menu.

```
LSI Corp Config Utility      v8.13.00.00 (2014.08.11)
Device Format -- SAS3008

     Device Identifier    SEAGATE ST9146853SS      N002
     SAS Address          5000C500:42AAF739
     Serial Number        6XM01HH70000S128NFFA

     Status:              Complete!

     Format completed successfully.
     Press any key
```

7. After the completion of formatting, finish this utility (see *Chapter 3 (3.2 Quitting the SAS Configuration Utility)).*

    Press any key to display the **Device Properties** menu.

4. **Flash FDD**

Flash FDD is a device that is compatible with a floppy disk drive.

Flash FDD is used when:

- Storing the parameter files of EXPRESSBUILDER
  See *Chapter 1 (7. Windows OS Parameter File)* in *Installation Guide*.

- Collecting the hardware logs
  See *Chapter 1 (12. Offline Tools)*.

Only one Flash FDD can be connected to a USB connector of this server. If another USB or floppy disk drive is connected to this server, be sure to remove it.

⚠ **CAUTION**

Be extremely careful not to lose Flash FDD or have it stolen.
If Flash FDD is lost, stolen, misappropriated, or fraudulently obtained, there is a risk of leaking confidential information to a third party. NEC assumes no responsibility for damages caused by leaking confidential information in this way.

If you want to change the write protection, remove Flash FDD from the server, change the write protection switch, and then connect it again.

4.1 **Notes on Using Flash FDD**

Do not use Flash FDD to back up data. Flash FDD can be used for a temporary data only.

4.1.1 **Compensation for recorded data**

NEC does not pay compensation for data recorded on Flash FDD even if the data is lost.

4.1.2 **Handling Flash FDD**

- Flash FDDs are consumables. If Flash FDD causes an error, replace with a new Flash FDD.

- Do not turn off the server while the access LED of Flash FDD is blinking.

- Flash FDD cannot be connected to a USB hub. Directly connect Flash FDD to the server.

- Before handling Flash FDD, discharge static electricity from your body by touching a doorknob or aluminum frame, and other metal objects.

- Remove Flash FDD from the server when not in use.

4.1.3 **Use with EXPRESSBUILDER**

- Connect Flash FDD after Home Menu of EXPRESSBUILDER appears.

- Remove Flash FDD from the server before closing EXPRESSBUILDER.

$5.$ Details of EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows and maintain the server. EXPRESSBUILDER also provides bundled software and instruction manuals.

5.1 Starting EXPRESSBUILDER

You can start EXPRESSBUILDER by using the EXPRESSBUILDER DVD as follows:

Important	• **When you boot from EXPRESSBUILDER, it may affect on area in partition outside of duplexing disks by the RDR function (BCD area) and it may cause system fault at starting the system.** • **When it is necessary to boot from EXPRESSBUILDER, pull out one side or both side of the disks from inserted disks which is duplexing by the RDR function before boot.**

(1) Insert the DVD into the server, and then restart.

Boot Selection Menu shown in *Chapter 3 (5.2 Menus of EXPRESSBUILDER) - (1) Boot Selection Menu* will appear.

(2) Insert the DVD into a computer running Windows.

Autorun Menu shown in *Chapter 3 (5.2 Menus of EXPRESSBUILDER) - (4) Autorun Menu* will appear.

If the menu does not appear, run the following file on DVD.
`\autorun\dispatcher_x64.exe`.

5.2 Menus of EXPRESSBUILDER

You can operate EXPRESSBUILDER by using onscreen menus.

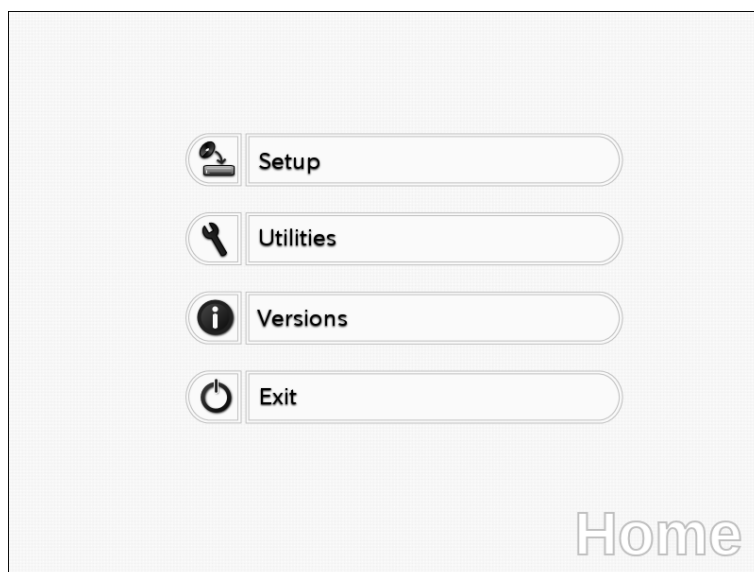### (1) Boot Selection Menu

When the server starts from EXPRESSBUILDER, the following menu appears.

Choose an item by using arrow keys and <Enter> key.

```
                    Boot  selection

   OS installation   *** default ***

   Tool menu
```

When **OS installation** is chosen or no key is pressed, Home Menu shown in *(2) Home Menu* will appear.

When **Tool menu** is chosen, Tool Menu shown in *(3) Tool Menu* will appear.

(2) Home Menu

Operate Home Menu using the mouse or keyboard (Tab and Enter keys).

Home Menu includes the following items:

a) Setup

Installs Windows easily. For details, see *Installation Guide (Windows).*

b) Utilities

Starts a utility in EXPRESSBUILDER.

For details, see *Chapter 3 (5.3 Utility in EXPRESSBUILDER).*

c) Versions

Shows the versions of software and drivers in EXPRESSBUILDER.

d) Exit

Closes EXPRESSBUILDER, and then shut down or restart the server.

(3) Tool Menu

```
                    Tool  menu

  Test and diagnostics

  Return to the previous menu
```

Choose **Test and diagnostics** to run System Diagnostics, which is used to analyze and diagnose the server and check the cable connection. For details, see *Chapter 1 (11. System Diagnostics).*

(4) Autorun Menu
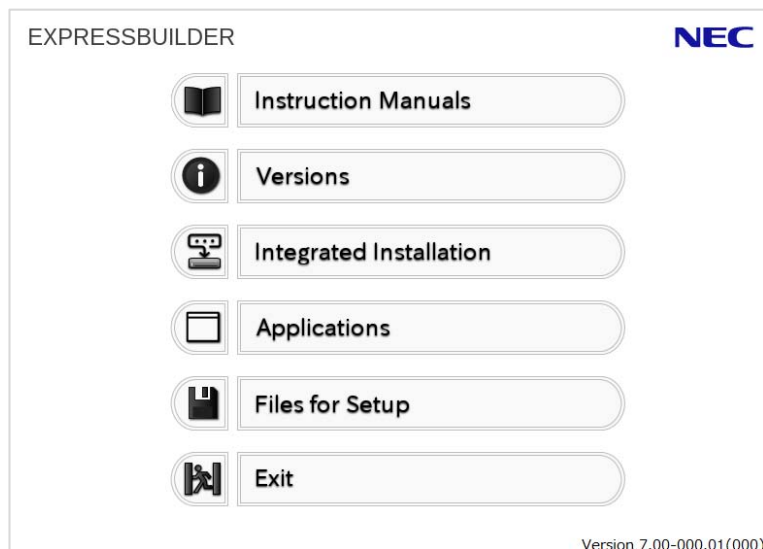
You can use the following features from the menu that starts by using the Windows autorun feature.

a) Instruction Manuals

Shows User's Guide, Installation Guide, and other instruction manuals.

Install Adobe Reader to your computer to read the manuals.

b) Versions

Shows the versions of the included software, drivers, and EXPRESSBUILDER.

c) Integrated Installation

Installs several applications or Starter Pack easily. If the menu is not run on the server or the logon user does not have the administrator privilege, this item is not available.

d) Applications

Installs or runs applications individually.

e) Files for Setup

Creates a file for Windows installation.

f) Exit

Closes this menu.

5.3 Utility in EXPRESSBUILDER

You can run the following utility when choosing **Utilities** from Home Menu.

File Execution

Directly runs an external utility on removable media. Use this feature for utilities provided by NEC.

Note	Do not run the file provided by a third party.

6. EXPRESSSCOPE Engine 3

EXPRESSSCOPE Engine 3 enables various features by using Baseboard Management Controller (BMC).

EXPRESSSCOPE Engine 3 monitors the status of power supplies, cooling fans, temperature, voltage, and other statuses inside the server. Connecting the management LAN connector (see *Chapter 1 (4.3 Rear View)* in *User's Guide*) to your network enables you to do the following from a remote site through a web browser and SSH client:

- Managing the server

- Operating keyboard, video, and mouse (KVM) from a remote console

- Accessing a CD-ROM, DVD ROM, floppy disk, ISO image, or USB flash drive in a remote console (*)

* To actualize these features, virtual USB mass storage (Remote FD, Remote CD/DVD, Remote USB Memory, or Virtual Flash) is always connected as USB mass storage.

Tips	To reset BMC, use the Off-line Tool of the server. For details, see *Chapter 3 (2. BMC Configuration)*.

Note	EXPRESSSCOPE Engine 3 is implemented on both CPU/IO modules (module 0 and 1) and configuration is required on both modules. Set different IP addresses for CPU/IO module 0 and CPU/IO module 1.

7. NEC ESMPRO

7.1 NEC ESMPRO Agent (for Windows)

For details of NEC ESMPRO Agent (for Windows), see "*NEC ESMPRO Agent Installation Guide (Windows)"* in EXPRESSBUILDER or its help.

7.2 NEC ESMPRO Manager

NEC ESMPRO Manager remotely controls and monitors the server hardware.

To use these features, install the bundled software such as NEC ESMPRO Agent on the server.

See "*NEC ESMPRO Manager Installation Guide*" or online help of NEC ESMPRO for details.

7.3 NEC ESMPRO Agent Extension

NEC ESMPRO Agent Extension can manage the server remotely with NEC ESMPRO Manager monitoring the BMC of the server.

For details, see "*NEC ESMPRO Agent Extension Installation Guide*" in EXPRESSBUILDER.

7.4 BMC Configuration

BMC Configuration can specify configurations to the BMC.

For details, see "*BMC Configuration User's Guide*" in EXPRESSBUILDER.

Note	• Configure BMC while the system is in duplex configuration.
	• To verify duplex configuration, see *Chapter 1* (*4. Names and Functions of Components*) in *User's Guide.*

7.5 NEC ExpressUpdate Agent

NEC ExpressUpdate Agent can manage and update the versions of the firmware and software installed in the server.

You can install the downloaded packages easily by using NEC ExpressUpdate.

For details, see "*NEC ExpressUpdate Agent Installation Guide*" in EXPRESSBUILDER.

Tips	Refer to the following website to install the package that does not support the feature of NEC ExpressUpdate.
	http://www.nec.com/global/prod/express/index.html

8. **NEC Product Info Collection Utility**

NEC Product Info Collection Utility can collect various logs related to the server all at once. You can collect the server information (Product Info) for maintenance by using this utility.

Run \stdclct\collect.exe contained in the installation folder of this utility.

This utility is usually installed to the **C:\ezclct** folder.

The log folder is created in stdclct folder and "Product Info" is stored in a compressed (zip) file.

Tips	• Log on to Windows with an account that has an administrator privilege. • The installation drive requires a free space of at least 2.5 GB.

Note	If NEC ESMPRO Agent is installed, run the following file on the server. For details, see *Chapter 1* (*7.1 Collecting Failure Information Occurred on Server*). %EsmDir%¥tool¥collect.exe

9. Express Report Service / Express Report Service (HTTPS)

For details about Express Report Service / Express Report Service (HTTPS), see "*Express Report Service / Express Report Service (HTTPS) Installation Guide (Windows)*" in EXPRESSBUILDER.

Tips	Express Report Service through the SNMP Alert of EXPRESSSCOPE Engine 3 is not available.
	See "*EXPRESSSCOPE Engine 3 User's Guide*" for more information.

Glossary

Term	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <F2> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
BMC Configuration	Software for setting BIOS and BMC. You can use as Windows application or run this software when pressing <F4> key during POST.
CPU module	A CPU subsystem logically configured in a CPU/IO module. It includes CPUs and memory.
CPU/IO module	A module that includes CPUs (processors), memory, PCI boards, a cooling fan, hard disk drives and power supply units.
DUMP Switch	A switch that is used for collecting the memory dump if an error occurs. You can specify the destination of the dump by using the OS function.
EXPRESSBUILDER	Standard software for setting up the server easily. This also includes several useful applications and instruction manuals.
EXPRESSSCOPE ENGINE 3	A name of BMC for NEC Express5800 series.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO Agent to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS.
ExpressUpdate	A feature for updating BIOS, firmware, driver, and software of the server. This feature is available when NEC ESMPRO Manager cooperates with EXPRESSSCOPE ENGINE 3 and ExpressUpdate Agent.
ExpressUpdate Agent	Software for performing ExpressUpdate. This is installed to the server.
Flash FDD	An optional USB device that can use as a floppy disk drive.
NEC ESMPRO	Standard software for the server management. This consists of several applications for managing or monitoring.
NEC ESMPRO Agent	Software for monitoring the server. This works with NEC ESMPRO Manager and resides as the OS service.
NEC ESMPRO Agent Extension	Software for performing the scheduled operations. This works with NEC ESMPRO Manager.
NEC ESMPRO Manager	Software for managing a number of servers on network.
OEM driver	A Windows driver for the mass storage device.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can read and change SEL, SDR, FRU and other IPMI data. You can start Offline tools when pressing <F4> key during POST.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
PCI module	An I/O subsystem logically configured in a CPU/IO module. It includes hard disk drives, PCI cards, BMC and 1G/10G LAN.
Product Info Collection Utility	Software for collecting several hardware/software statuses and event logs. You can easily collect the data for the server maintenance by using this software.
Starter Pack	Software package for the server. This software includes the customized drivers for Windows. This must be installed before using Windows on the server.
Windows OS parameter file	A file that saved settings for installing Windows. You can install with the saved settings in this file when installing Windows with EXPRESSBUILDER.

Revision Record

Document Number	Date Issued	Description
30.102.01-104.01	July 2015	Newly created
30.102.01-104.02	October 2015	Added the description about Windows Server 2008 R2
30.103.01-104.02	July 2017	Added the description about Express5800/R310f-E4, R320f-E4, R320f-M4, and Windows Server 2016

[MEMO]