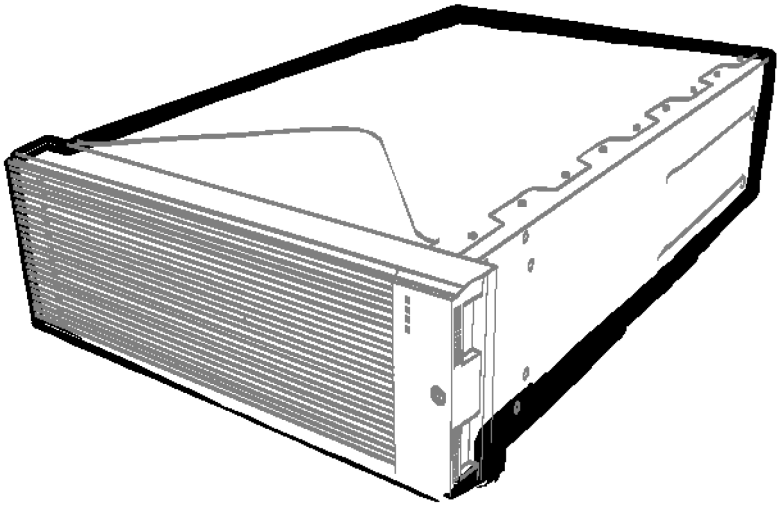
Express5800

NEC



NEC Express Server
Express5800 Series

Express5800/R320c-E4
Model Number: N8800-173F, EXP320P

Express5800/R320c-M4
Model Number: N8800-174F, EXP320Q

Express5800/R320d-E4
Model Number: N8800-184F, EXP320P

Express5800/R320d-M4
Model Number: N8800-185F, EXP320Q

Maintenance Guide (Windows)

Chapter 1 Maintenance

Chapter 2 Configuring and Upgrading the System

Chapter 3 Useful Features

30.104.01-104.03
March 2014, Third Edition

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Documents for This Product

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

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

💿 EXPRESSBUILDER

📄 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 (Windows)

Chapter 1: Installing OS	Installation of OS and drivers, and important information for installation
Chapter 2: Installing Bundled Software	Installation of bundled software, such as NEC ESMPRO

📄 Maintenance Guide

Chapter 1: Maintenance	Server maintenance and troubleshooting
Chapter 2 Configuring and Upgrading the System	Configure hardware and setup management tool associated with hardware
Chapter 3: Useful Features	Useful features and the detail of system BIOS settings, SAS Configuration Utility, and EXPRESSBUILDER

📄 Other documents

Provides the detail of NEC ESMPRO, BMC Configuration, and the other features.

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Notations Used in This Document

Notations used in the text

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

Important	Indicates critical items that must be followed when handling the 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 the hardware or operating software.
Tips	Indicates information that is helpful to keep in mind when using this server.

Optical disk drive

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

- DVD-ROM drive
- DVD Super MULTI drive

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)

Windows Operating Systems are referred to as follows.

Refer to *Chapter 1* (*1.2 Supported Windows OS)* in *Installation Guide (Windows)* for detailed information.

Notations in this document	Official names of Windows
Windows Server 2012	Windows Server 2012 Standard
	Windows Server 2012 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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India

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Latest editions

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

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

http://www.nec.com/

NEC Express5800 Series
Express5800/R320c-E4, R320c-M4, R320d-E4, R320d-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. **Transfer, Relocation, and Disposal**
   Describes how to transfer this server to a third party. Also describes how to dispose, 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 ft server, and how to update firmware.

5. **Checking the Duplicating Operation 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 when the server malfunctions. Refer to 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. Refer to this section when you suspect a failure.

9. **Windows System Recovery**
   Describes Windows recovery setup. Refer to this section when Windows is corrupt.

10. **Resetting and Clearing the Server**
    Describes how to reset or clear the server. Refer to this section when the server is not working or when 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. Transfer, Relocation, and Disposal

1.1 Transfer to a Third Party

Observe the following precautions when you transfer (or sell) the server or software provided with the server to a third party.

Server

When transferring (or selling) the server to a third party, be sure to provide the server's instruction manuals (including electronic manuals) to the third party.

Data on the hard disk drive

Be sure to erase the data stored in HDD to prevent the leakage of sensitive data (such as customer information or company management information) to any third parties. It is the user's responsibility to erase the data.

Important **NEC assumes no liability for data leakage should the product be transferred to a third party without erasing the data.**

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

Bundled software

Observe the following precautions when transferring (selling) the bundled software to a third party.

- Transfer them with the server.
- All provided media and documents must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software on client PC must be uninstalled before transferring.

1.2 Disposal of the Server and Consumables

- Dispose of the server, hard disk drives, option board, and battery according to laws and regulations of the central and/or local government. Also dispose of the power cord attached to this product together with the server to prevent diversion to other products.

Note

- For disposal (or replacement) of the battery on the mother board of the server, consult with your sales representative.
- It is the user's responsibility to completely erase all data stored on storage devices such as hard disk drives, backup data cartridges, or any other media (such as CD-R/CD-RW) so that the data cannot be restored by a third party.

- Some components including fans, batteries, and the optical disk drive work for a limited period of time and require replacement. For stable operation of the server, NEC recommends you regularly replace these components. Contact your sales representative for information on replacement or the lifetime of components.

1.3 Regarding the Transportation of This Server

This server and/or some of the associated optional devices uses lithium metal batteries or lithium ion batteries. Regulations for air/ocean transportation apply when transporting lithium batteries. Conform to the regulations if you want to transport this server or optional devices by air or ship.

1.4 Relocation and Storage

Follow the steps below when you move 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, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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 needs to be relocated/stored due to a change in the floor layout to a great extent, contact your service representative.
- 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 media 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 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 and cause malfunctions and failures when these are used in such state. 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.
- If the system clock time is significantly delayed or advanced over time in spite of adjustment, contact your sales representative.

2. Daily Maintenance

To use this server under top conditions at all times, periodically check and perform maintenance as follows. If abnormalities are found, ask your sales representative, avoiding impossible operation.

2.1 Checking and Applying Updates

Express5800 Series posts update information for BIOS, FW (firmware), 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 ExpressUpdate that supports the detection, download, and application of the updates that must be applied to BIOS and FW (firmware) of the server.

ExpressUpdate is contained in EXPRESSBUILDER provided with the server.

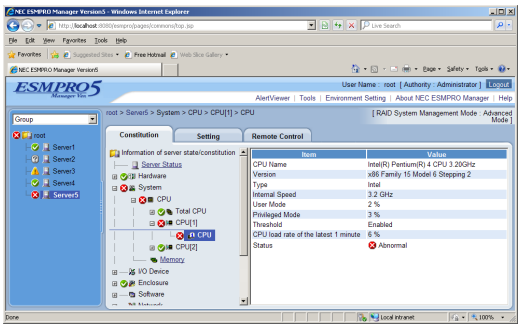
Tips

- Download and apply the latest update yourself.
- NEC recommends that you back up data for a rainy day before applying the latest update.

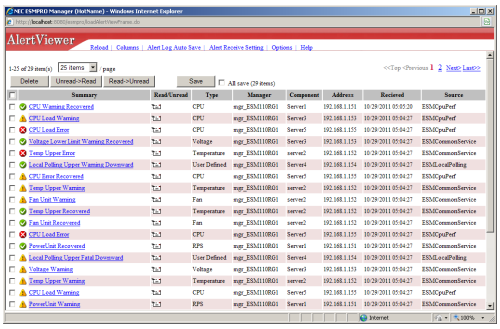
2.2 Checking Alerts

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

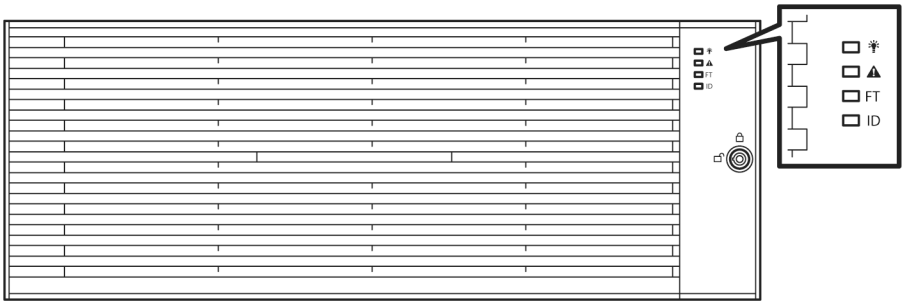
2.3 Checking STATUS LED

Check LED indication when:

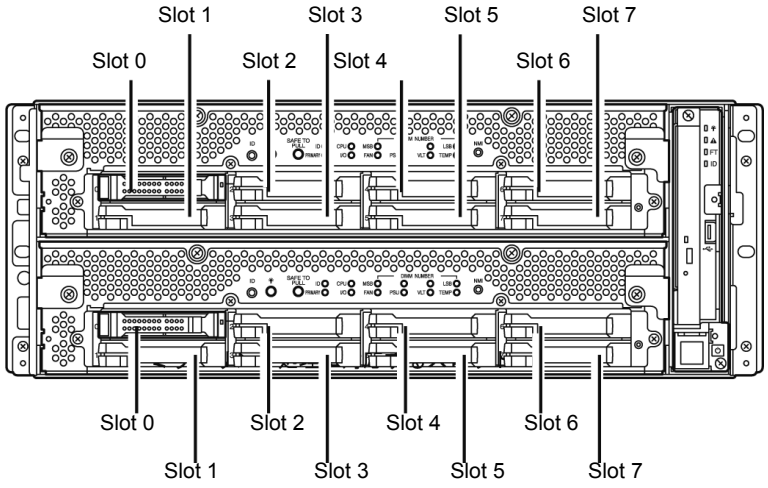
- Power on the server and while the server is running.
- Before shutting down the server.

LEDs to be checked:

- LEDs located at front of the server



- LEDs on hard disk drives installed in 2.5-inch hard disk drive bay



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 Messages by LED Indication*).

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. For backup storage devices suitable for the server and backup tools, consult with your sales agent.

When you have changed the hardware configuration or BIOS configuration, make a backup copy of the system information according to *Chapter 1 (7. 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, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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

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

1. Power off the server.
   1. Make sure that the server is powered off.
   2. 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.
   1. Soak a soft cloth in neutral detergent that is diluted with cold or warm water, and squeeze it firmly.
   2. Rub off stains on the server with the cloth prepared in Step 1.
   3. Soak a soft cloth in water, squeeze it firmly and wipe the server with it once again.
   4. 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 of the server 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

A keyboard and a mouse use USB interface. Therefore it is not necessary to power off the server when connecting or disconnecting them.

1. Disconnect the mouse from the USB port of the keyboard.
2. Wipe the surface of the keyboard and mouse with a dry cloth
3. Wipe the sensor with a dry cloth to remove any dirt or dust.

2.5.4 Cleaning Optical Disk

A dusty optical disk or dust-accumulated tray causes the device to fail to read data correctly.
Follow the procedure below to clean the tray and optical disk regularly:

1. Make sure that the server is powered on (POWER LED is lit).
2. Press the Eject button on the front of the optical disk drive.
   The tray comes out.
3. Hold the optical disk lightly and take it out from the tray.

Important **Do not touch the signal side of the optical disk with your hand.**

4. Wipe the tray with a dry soft cloth.

Important **Do not wipe the lens of the optical disk drive. Doing so may damage the lens and may cause a malfunction of the drive.**

5. Gently push the tray to close the tray.
6. Wipe the signal side of the optical disk with a dry soft cloth.

Important **Wipe optical disks from the center to the outside. Use only CD-ROM cleaner if necessary. Cleaning an optical disk with record spray/cleaner, benzene, or thinner causes damage to the optical disk contents. At worst, inserting the DVD/CD-ROM into the server may cause failure.**

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.

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.
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 can be maintained in two ways.

- To use NEC ESMPRO Manager for remote maintenance
- To use the ft server utility on the Express5800/ft series for local maintenance.

Tips

To start the ft server utility, select menus as follows:

Start → Programs → NEC ESMPRO Agent → ft server utility

The table below lists the availability of maintenance features common to all components.

Component / Maintenance features	General	CPU module	PCI module	SCSI enclosure	Firmware under BMC
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 from remote management PC by using NEC ESMPRO Manager
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 Start and Stop of Components

This section describes how to start or stop components.

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

If a component fails or needs to be replaced, Express/ft series allows you to forcibly stop the component. The stopped component can also be restarted.

4.1.1 Available status

The table below shows the potential cases in which the dump is acquired.

Component	State of component	
	Start	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

Perform the procedure below to start component.

1. Select **General** screen of the target component under the **ft System** tree in **Information of server state/constitution**.
2. Check that the current status of the target component is available. The status is shown on Status Information display of **General** screen.
3. Select **Maintenance** screen and click the **Execute** button of **Bring Up** operation.

Tips

- The target component starts after a while.
- The start result can be verified by "**State**" in the **General** screen of target component. The result of the start operation is reported by the Express5800/ft series as an alert.

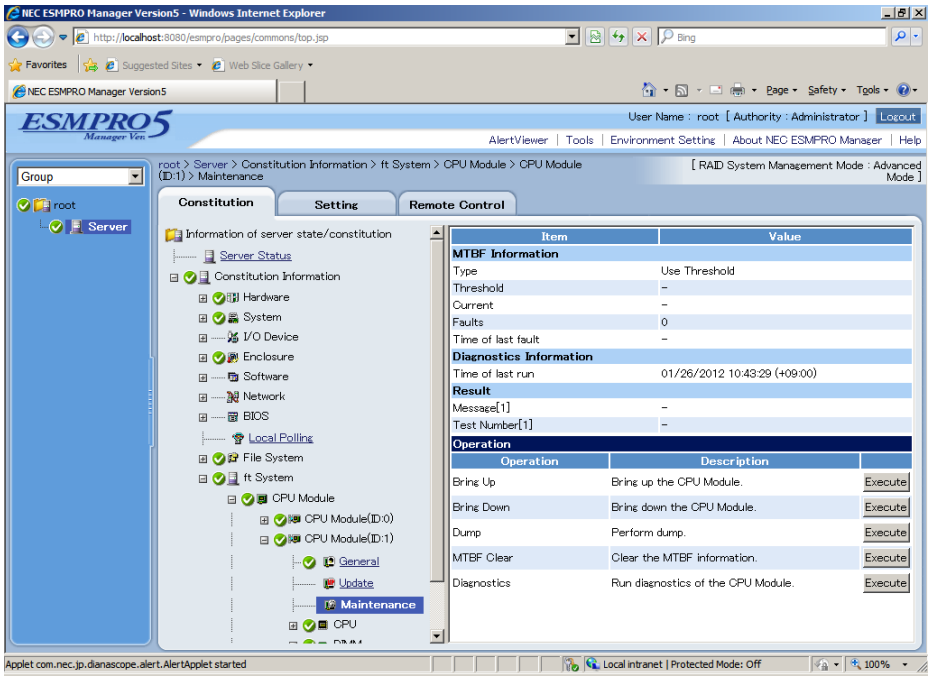
Perform the procedure below to stop the component.

1. Select **General** screen of the target component under the **ft System** tree in **Information of server state/constitution**.
2. Check that the current status of the target component is available. The status is shown on Status Information display of **General** screen.
3. Select **Maintenance** screen and click the **Execute** button of **Bring Down** operation.

Tips

- The target component stops after a while.
- The stop result can be verified by "**State**" in the **General** screen of target component. The result of the stop operation is reported by the Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager



Maintenance screen of CPU Module

4.1.3 Procedure in the ft server utility

Perform the procedure below to start component.

1. Select the target component by using the ft server utility.
2. Check the current state of the target component by selecting **View** menu → **Refresh** on ft server utility.
3. Click the **Up** button of the target component.

Tips

- The target component starts after a while.
- The start result can be verified by "**State**" of target component.
  Note that state display is not refreshed automatically, you need to select **View** menu → **Refresh** of ft server utility to check the current status.

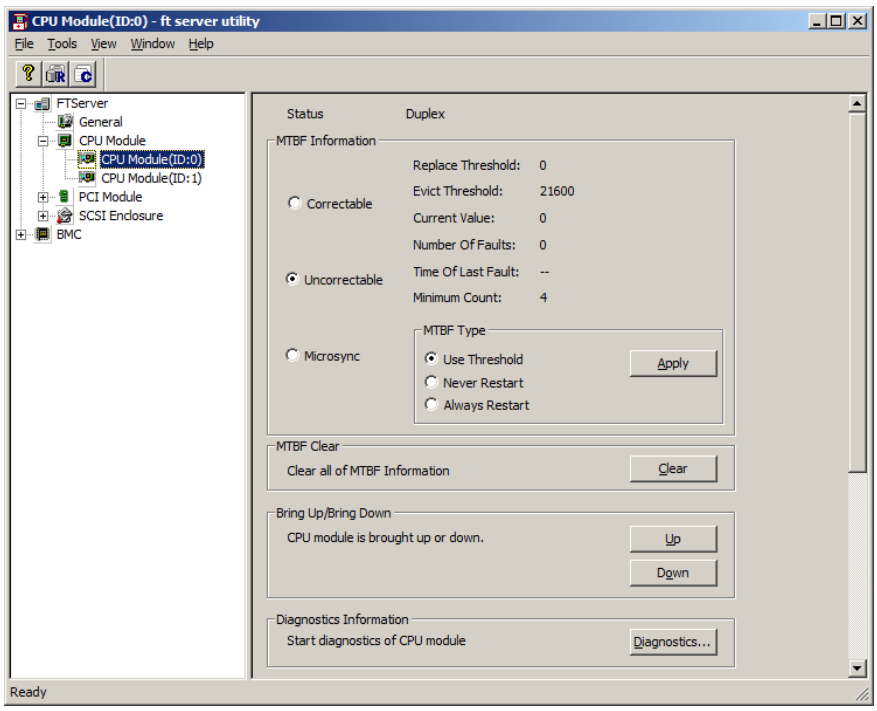
Perform the procedure below to stop the component.

1. Select the target component by using the ft server utility.
2. Check the current state of the target component by selecting **View** menu → **Refresh** on ft server utility.
3. Click the **Down** button of the target component.

Tips

- The target component stops after a while.
- The stop result can be verified by "**State**" of target component.
  Note that state display is not refreshed automatically, you need to select **View** menu → **Refresh** of ft server utility to check the current status.

Sample screen of ft server utility



4.2 Check and Clear of MTBF Information

The MTBF information of a component can be viewed or cleared (initialized).

Important **Stop the relevant CPU module and PCI module before replacing components.**

Express5800/ft series manages the MTBF (mean time between failure) of each component. If a fault occurs in a component, the Express5800/ft series calculates the MTBF of the component again. If the calculated value is lower than the pre-defined threshold, the Express5800/ft series 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

The table below shows the potential cases in which the MTBF information can be cleared.

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 verified on screen of NEC ESMPRO Manager or ft server utility.

4.2.2 Procedure in NEC ESMPRO Manager

Perform the procedure below to clear MTBF information of component.

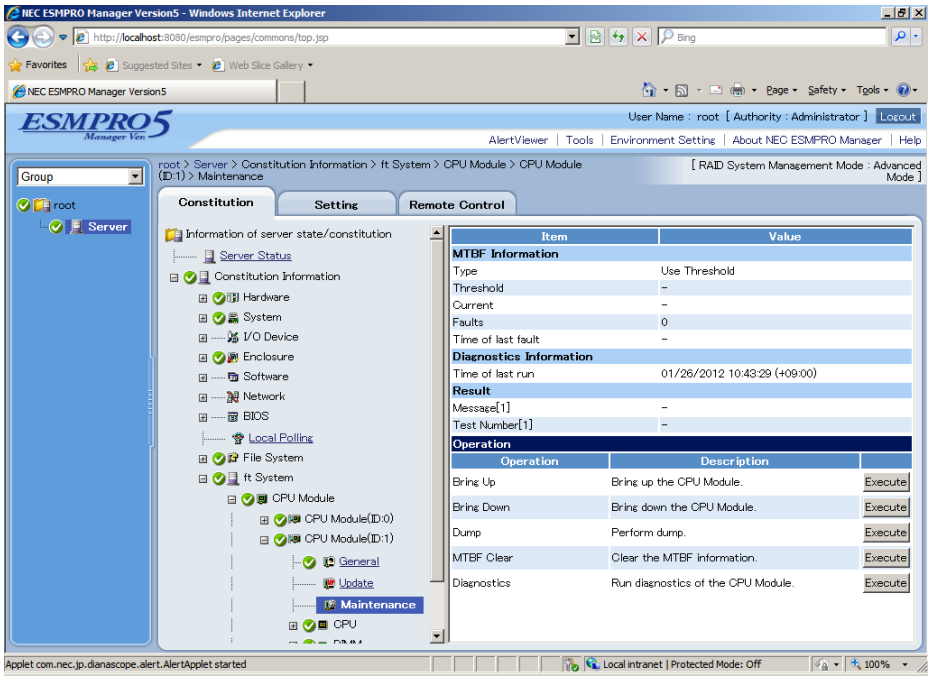
1. Select **General** screen of the target component under the **ft System** tree in **Information of server state/constitution**.
2. Check that the current status of the target component is available. The status is shown on Status Information display of **General** screen.
3. Select **Maintenance** screen and click the **Execute** button of **MTBF Clear** operation.

Tips

The MTBF clearing result can be verified by "**Status Information**" in **General** on the target component screen. The result of the MTBF clearing operation is reported by the Express5800/ft series as an alert.

4. Start the target component.

Sample screen of NEC ESMPRO Manager



Maintenance screen of CPU Module

4.2.3 Procedure in the ft server utility

Perform the procedure below to clear MTBF information of component.

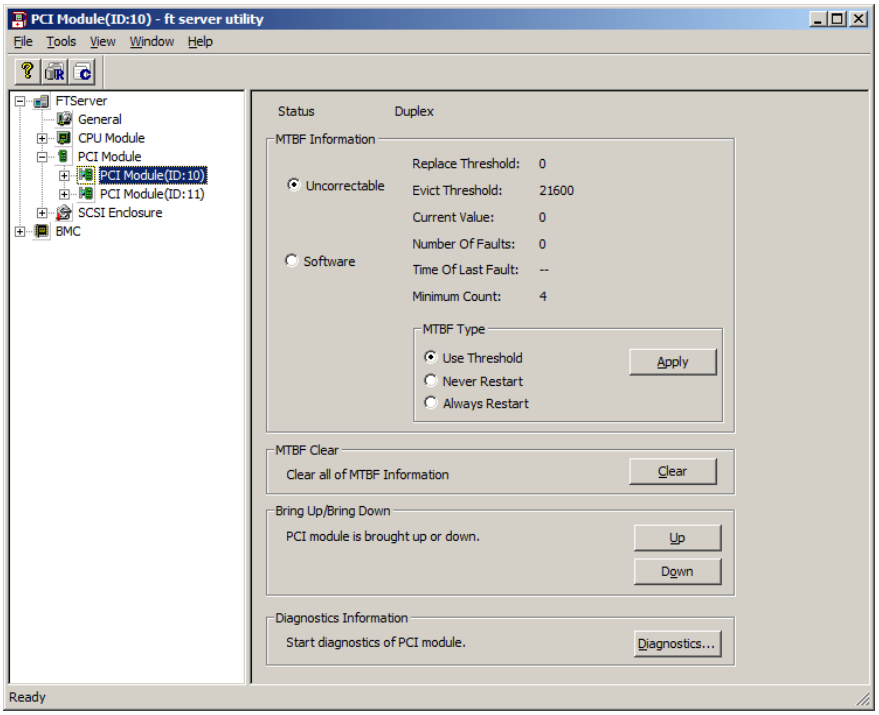
1. Select the target component by using the ft server utility.
2. Check the current state of the target component by selecting **View** menu → **Refresh** on ft server utility.
3. Click the **Clear** button in **MTBF Clear** of the target component.

Tips

The MTBF clearing result can be verified by "**Status** Information" of the target component. Note that state display is not refreshed automatically, you need to select **View** menu → **Refresh** of ft server utility to check the current status.

4. Start the component.

Sample screen of ft server utility



PCI Module

4.3 Diagnostics

You can diagnose the server components.

The Express5800/ft series provides the self-check diagnosis function for some components. If a fault occurs in a component, the Express5800/ft series can diagnose the component to detect the fault.

Note Stop the target component before starting diagnostics, it is is running.

4.3.1 Available status

The table below shows the potential cases in which a component is to be diagnosed.

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 verified on screen of NEC ESMPRO Manager or ft server utility.

4.3.2 Procedure in NEC ESMPRO Manager

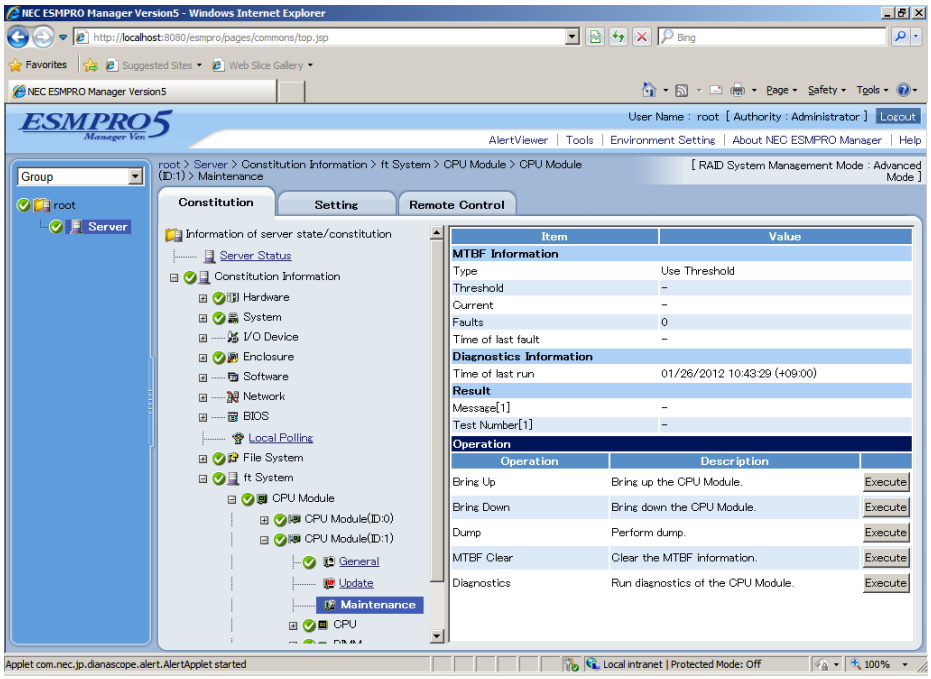
Take the procedures below to diagnose the component.

1. Select **General** screen of the target component under the **ft System** tree in **Information of server state/constitution**.
2. Check that the current status of the target component is available. The status is shown on Status Information display of **General** screen.
3. Select **Maintenance** screen and click the **Execute** button of **Diagnostics** operation.

Tips

- The diagnosis result can be verified by **Diagnostics Information** in **Maintenance** screen. If a fault is detected by the result of the diagnosis, the state of the **General** tree of the component is changed. In addition, the result of the diagnosis is reported by the Express5800/ft series as an alert.
- The result of diagnosis executed last is displayed in the **Diagnostics Information** in **Maintenance** screen.

Sample screen of NEC ESMPRO Manager



Maintenance screen of CPU Module

4.3.3 Procedure in the ft server utility

Take the procedures below to diagnose the component.

1. Select the target component by using the ft server utility.
2. Check the current state of the target component by selecting **View** menu → **Refresh** on ft server utility.
3. Click the **Diagnostics** button in the **Diagnosis Information** on the target component.

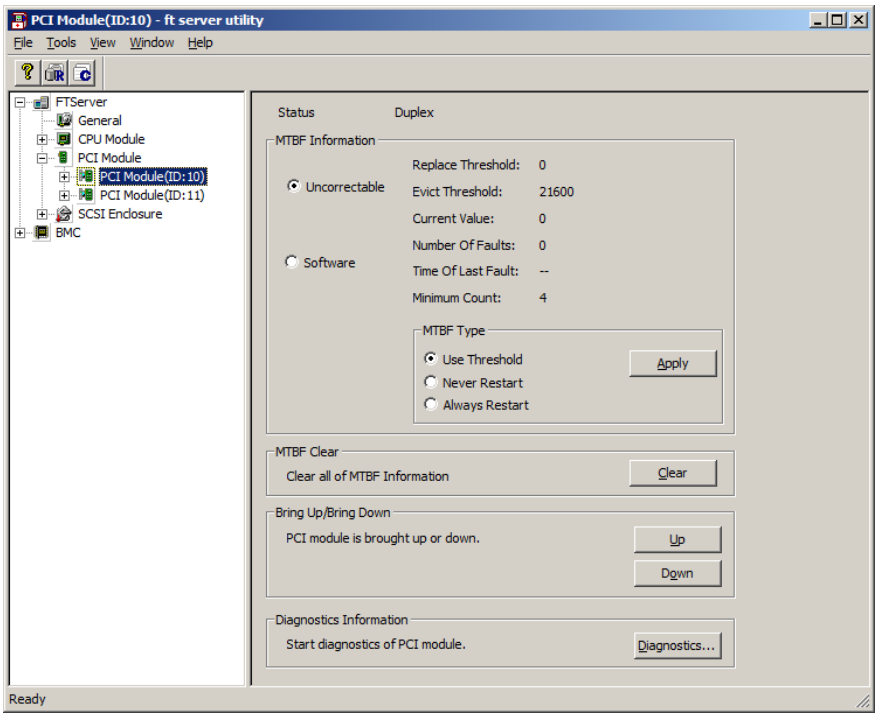
Tips

The diagnosis result can be verified in "**Result**" on the target component. The result of diagnosis executed last is displayed in the **Diagnosis Information**.

Note that state display is not refreshed automatically, you need to select **View** menu → **Refresh** of ft server utility to check the current status.

4. Start the component.

Sample screen of ft server utility



PCI Module

4.4 Dump Collection

Take the steps below to collect dump.

Important **Collect dump upon request from maintenance personnel.**

If a failure or malfunction occurs on Express5800/ft series, you can collect dump for the examination of a fault.

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.

Either of the CPU modules is entered into the offline state and the dump is collected during system operation. After the acquisition, the CPU module is returned to the state specified by setting for auto start. If auto start feature is disabled, the module does not go to online state automatically.

4.4.1 Available status

The table below shows the potential cases in which the dump is acquired.

Component	Status of component
CPU module	Duplex

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

4.4.2 Procedure in NEC ESMPRO Manager

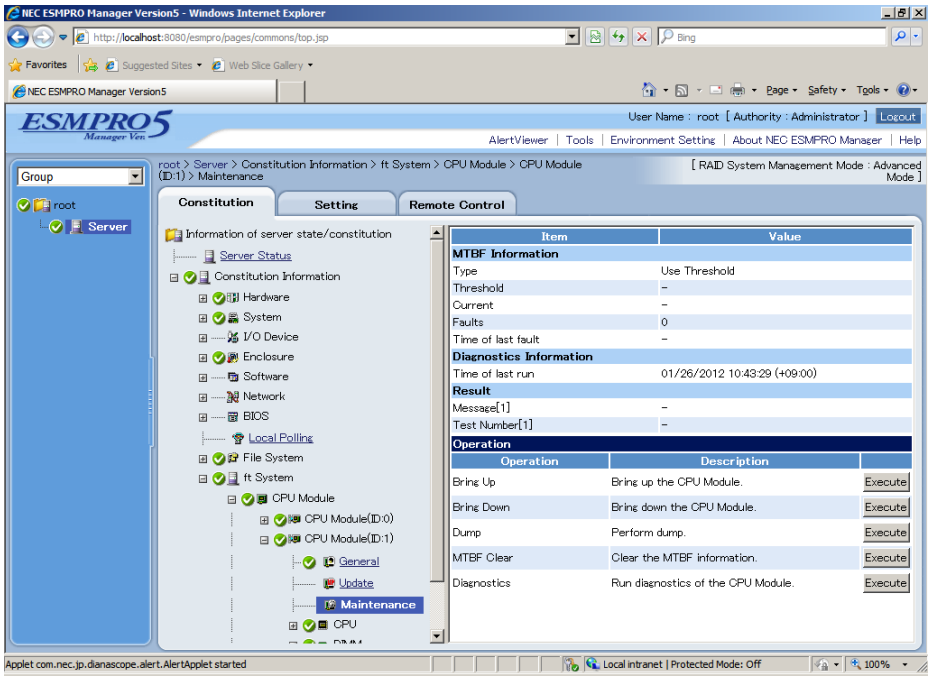
Take the steps below to collect dump.

1. Select **General** screen of the target CPU module under the **ft System** tree in **Information of server state/constitution**.
2. Check that the current status of the target component is available. The status is shown on Status Information display of **General** screen.
3. Select **Maintenance** screen and click the **Execute** button of **Dump** operation.

Tips

- A certain time is required for the dump saving. The dump is stored as `%SystemDrive%\NECDump\MEMORY.DMP` on the managed server.
- The result of the dump saving is reported by the Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager



Maintenance screen of CPU Module

4.4.3 Procedure in ft server utility

Take the steps below to collect dump.

1. Select the target CPU module by using the ft server utility.
2. Check the current state of the target component by selecting **View** menu → **Refresh** on ft server utility.
3. Select the dump acquisition method with **Dump** of the target CPU module and click the **Harvest** button.

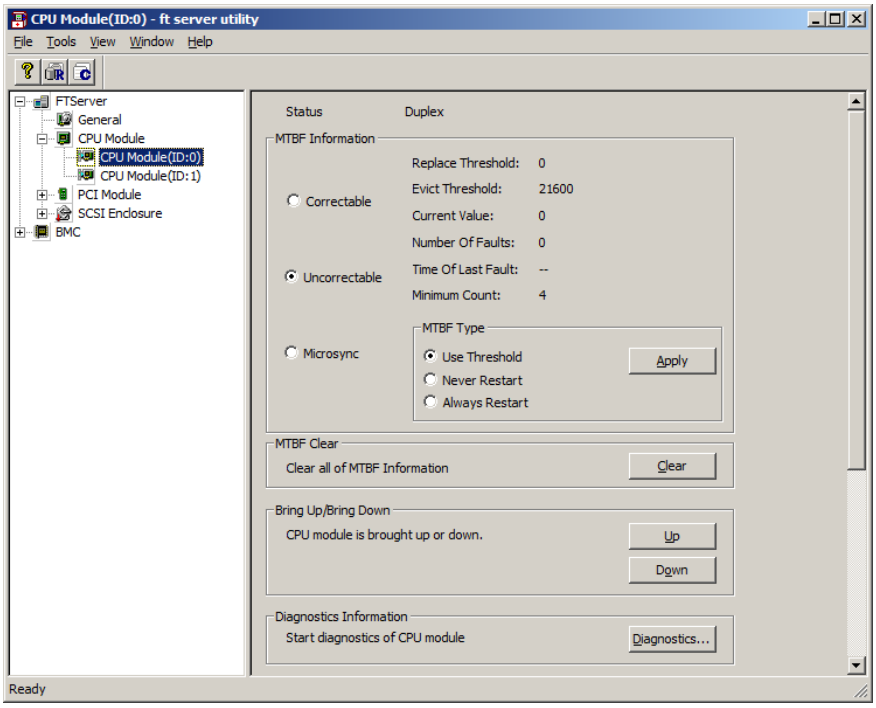
Tips

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 verified in the event log.

Sample screen of ft server utility



CPU Module

4.5 BIOS Update

The BIOS of CPU module can be updated.

4.5.1 Available status

The BIOS of CPU module can be updated with CPU module in online state (system is continuously running, but the target CPU module is in halt state).

The table below shows the potential cases in which the BIOS update can be performed.

Component	Status of component
CPU module	・Power supply stopped

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

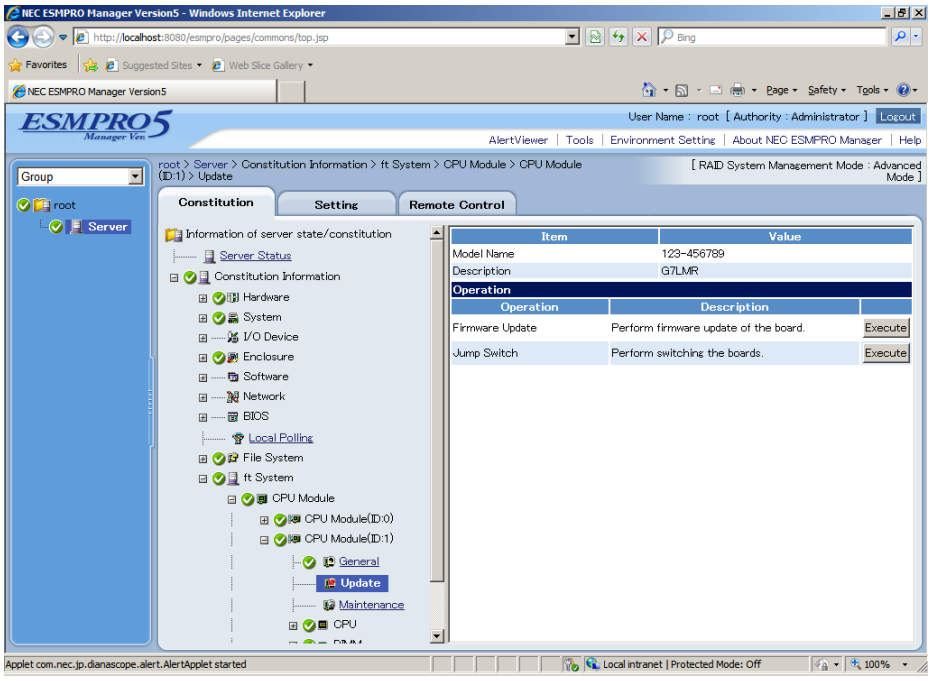
4.5.2 Procedure in NEC ESMPRO Manager

Take 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 Express5800/ft series.**

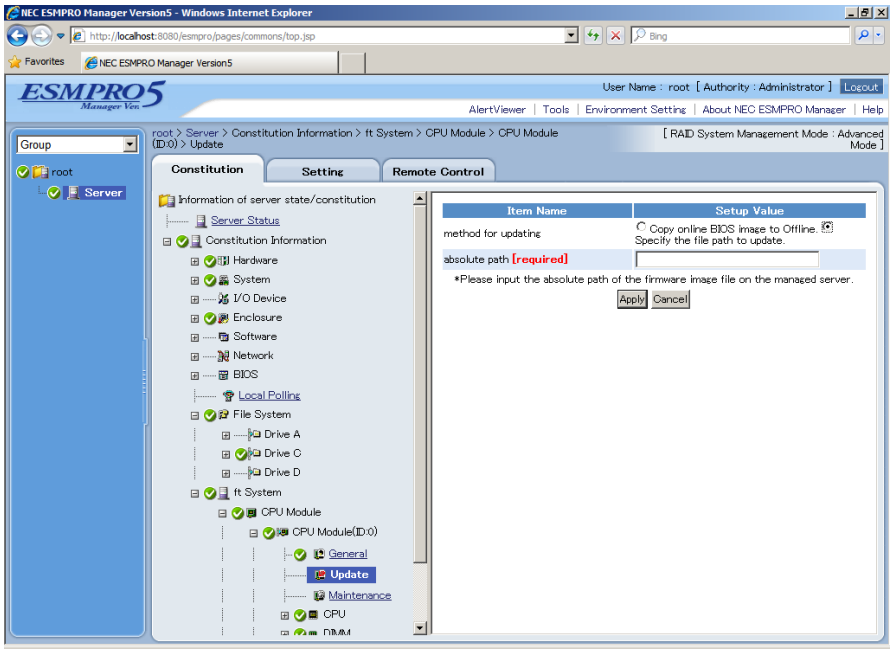
1. Save the BIOS image file for update in the desired folder in Express5800/ft series. Take a note of path to that folder.
2. Select **General** screen of the target CPU under the **ft System** tree in **Information of server state/constitution**.
3. Check that the current status of the target component is available. The status is shown on Status Information display of **General** screen.
4. Select **Update** screen and click the **Execute** button of **Firmware Update**.

Sample screen of NEC ESMPRO Manager



Update screen of CPU Module

5. Select **Specify the file path to update**, enter the path for BIOS image file you have recorded in Step 1 into **absolute path** box, and click **Apply**.

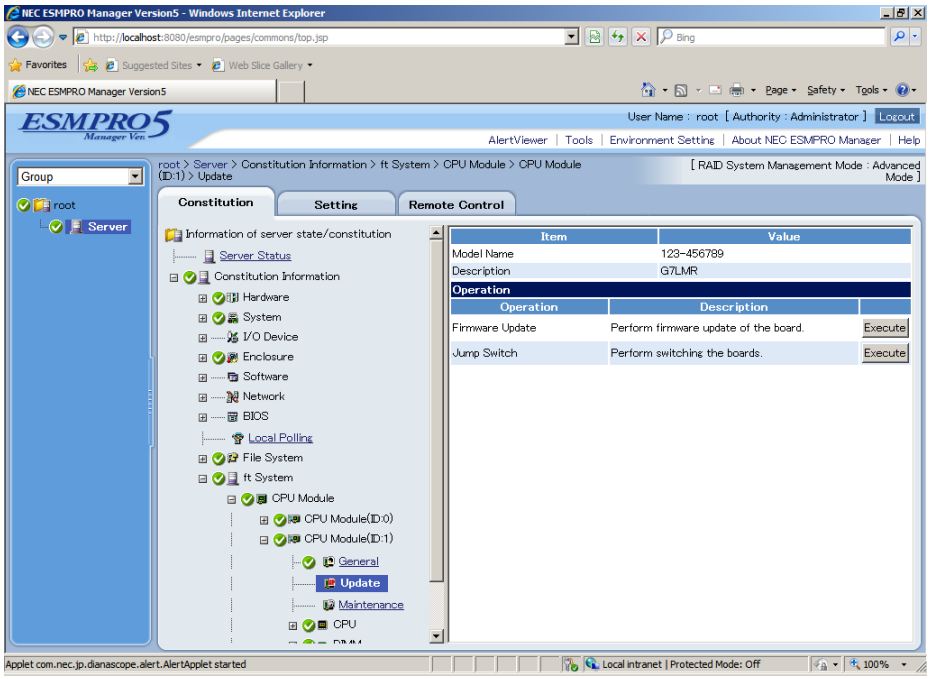


6. When you click **OK** on confirmation dialog box, firmware update starts.

Tips

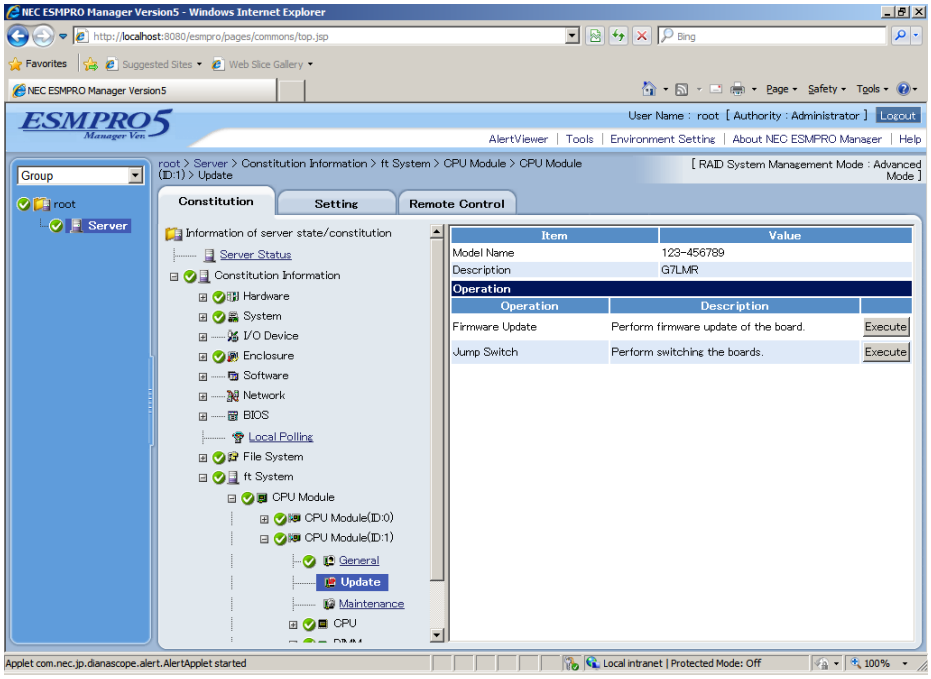
The update result can be verified by **Status Information** of **General** of target component ("Firmware update completed" is displayed). In addition, the result of the update is reported by the Express5800/ft series as an alert.

7. When BIOS update completes, open **Update** screen, and click **Execute** button on **Jump Switch**.

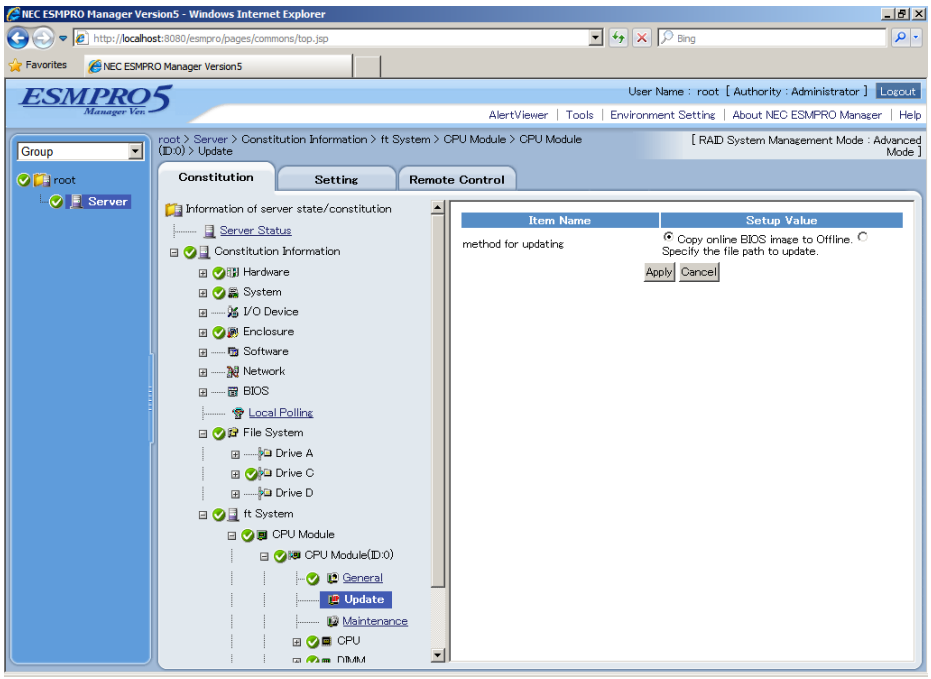


8. When you click **OK** on confirmation dialog box, the CPU module of which BIOS has been updated starts, and the other CPU module stops.

9. Click **Execute** button in **Firmware Update** on **Update** screen of the CPU module in halt status.



10. Select **Copy online BIOS image to Offline** and click **Apply**.



11. When you click **OK** on confirmation dialog box, the firmware is updated.
12. Start CPU module.

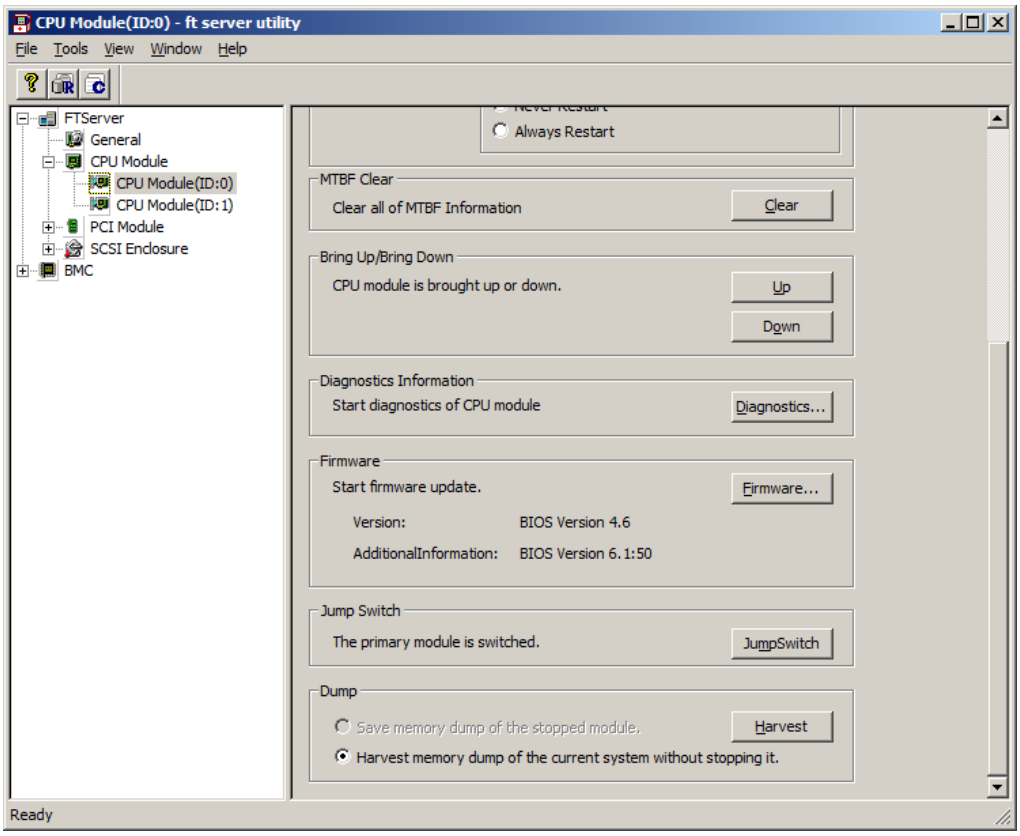
4.5.3 Procedure in the ft server utility

Take 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 Express5800/ft series.**

1. Save the BIOS image file for update in the desired folder in Express5800/ft series. Take a note of path to that folder.
2. Select either one CPU module from ft server utility.
3. Check the current state of the target CPU module by selecting **View** menu → **Refresh** on ft server utility. If the target CPU module is operating, stop it.
4. Click **Update** on **Firmware...** of CPU module screen.

Sample screen of ft server utility



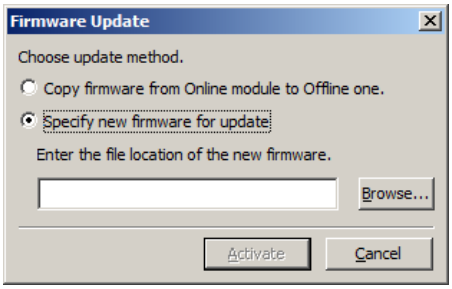
CPU module

5. Select **Specify new firmware for update**, enter the path for BIOS image file you have recorded in Step 1 into box, and click **Activate**.

   The firmware update starts.

Tips

The update result can be verified by "**State**" of target component.
Note that state display is not refreshed automatically, you need to select **View** menu → **Refresh** of ft server utility to check the current status.



6. Verify the firmware update status.

   It takes about 25 minutes until the firmware update completes from start of update.

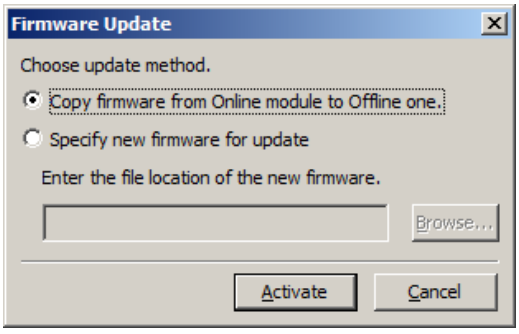
   When firmware update completes, verify the firmware revision shows the one you expected.

Tips

Pressing the <**F5**> key refreshes the display of ft server utility.
Display changes according to progress of update process.

"Updating firmware" → "Update firmware, Simplex" or "Simplex, update firmware ", then "Duplex" when firmware update completes.

7. When BIOS update completes, click **Switch**.
   The CPU module of which BIOS has been updated starts, and the other CPU module stops.
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**.
10. Start the CPU module.



4.6 BMC Firmware Update

The BMC firmware can be updated.

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

Tips Express5800/ft server has BMC on each of PCI modules 0 and 1. With the procedure described below, both BMCs are automatically updated.

4.6.1 Available status

The table below shows the potential cases in which the BMC firmware can be updated.

Component	Status of component
Firmware under BMC	・Duplex, Duplex

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

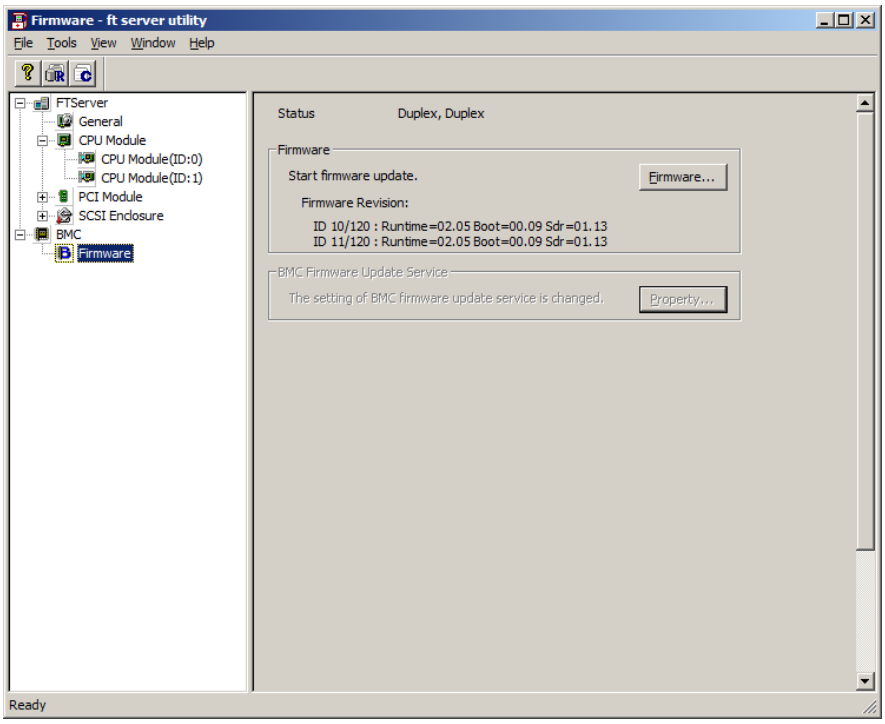
4.6.2 Procedure in the ft server utility

Take the steps below to update BMC firmware.

Important **To update BMC firmware, a firmware image file for updating needs to be stored on Express5800/ft series.**

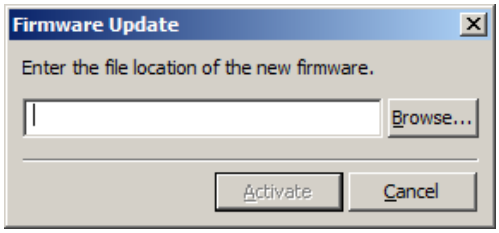
1. Click **Firmware...** on **Firmware**.

   The **Firmware Update** dialog box appears.



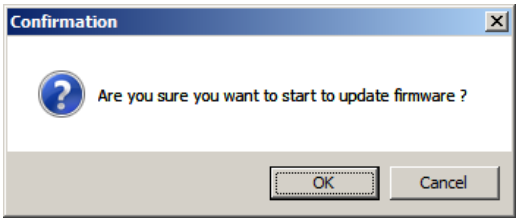
2. Specify the location to store the firmware, and click **Activate**.

   Confirmation dialog box appears.



3. Click **OK**.

   Firmware update starts.



4.7 Setup of System Operation

The following properties can be set as the operation setup of the whole system.

Quick dump

If this property is enabled (by checking "**Enable**" on the setup screen), the dump is acquired in parallel with the system startup if a fault occurs in the system. If this property is disabled, the dump is acquired by the dump function normally provided by OS.

The initial setup value is "**Disable**".

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 initial setup value is "**Enable**".

Auto module start

When this property is set to Enable (select it on the setting screen), the newly inserted CPU/PCI module is automatically started and becomes operable. If this property is set to **Disable**, auto-start is not performed. When the OS is started with this property set to Disable, the auto-start for CPU module is not performed, but the PCI module is started automatically.

The initial setup value is "**Enable**".

4.7.1 Procedure in the ft server utility

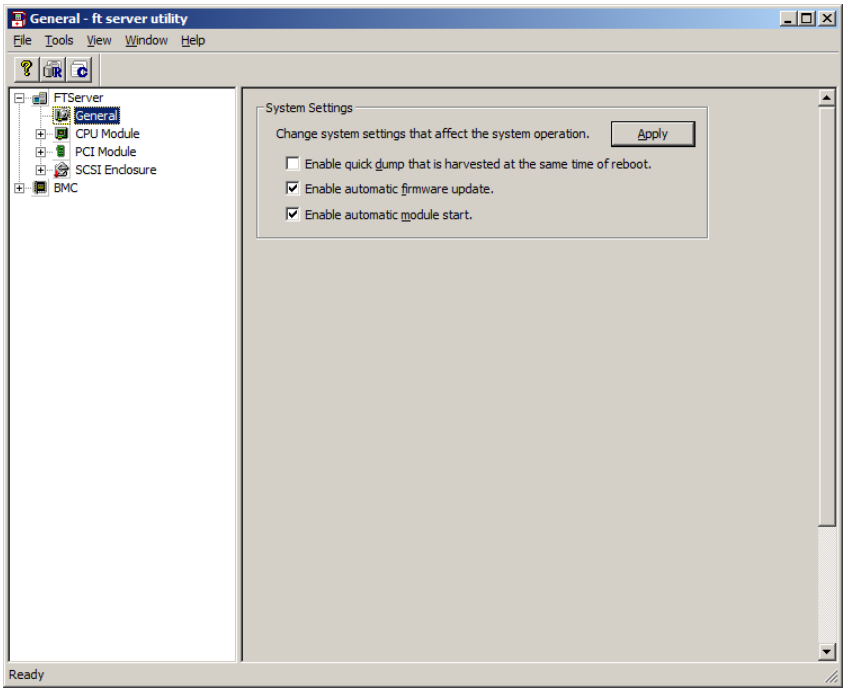
Take the steps below to setup system operation.

Important

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

1. Select **General** in the **ft server** tree.
2. Check the property of carrying out the modification with **System Settings** (or cancel the check).
3. Click the **Apply** button.

Sample screen of ft server utility



5. Checking the Duplicating Operation 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.

5.1 Evaluate Startup and Stop of PCI Modules

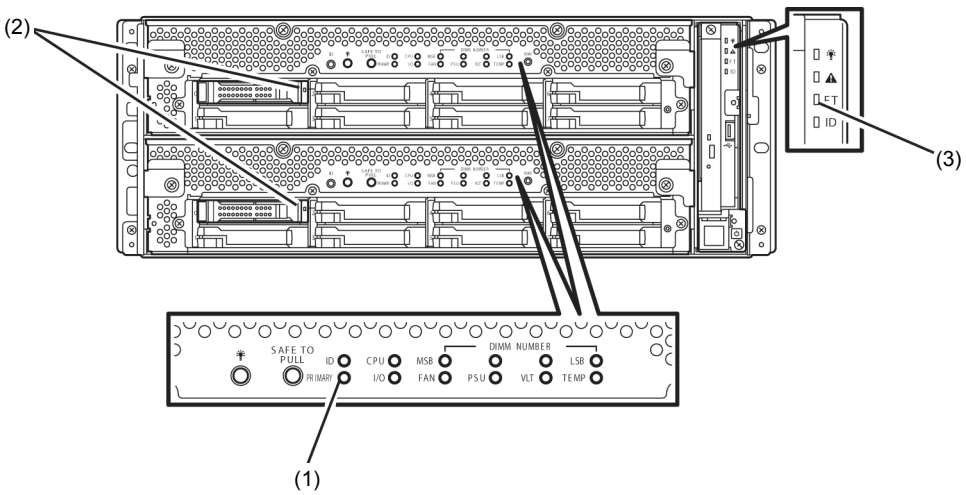
This section describes how to confirm the continuous system operation by failover after stopping the primary CPU/IO module.

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

Tips The PCI module with the PRIMARY LED illuminated is the primary module.

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

Tips To check if the CPU/IO modules are duplicated, see the System FT LED.



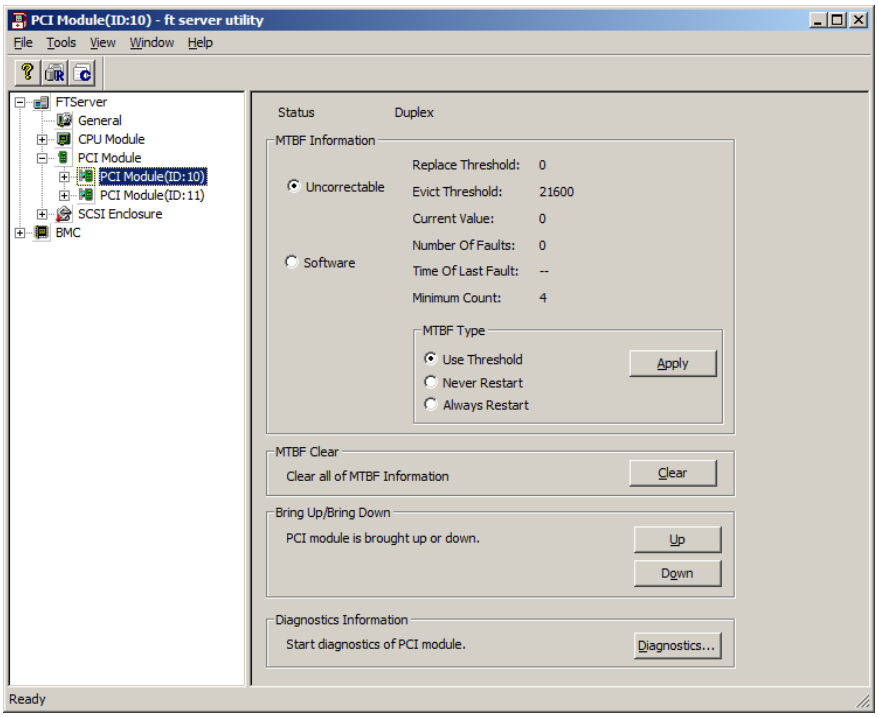
Indications of the status LEDs when CPU/IO modules are duplicated

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. Select **Start** - **All Programs** - **NEC ESMPRO Agent** - **ft server utility** to start the ft server utility.
4. Then, from the ft server utility, select **PCI Module** and then the primary PCI module (*) from the **ft server** tree on the left pane.
   - 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.

   From the ft server utility, 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.

Thus 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)
  C:\Program Files\Symantec\Backup Exec\bestop.bat
- Backup Exec (Start collectively)
  C:\Program Files\Symantec\Backup Exec\bestart.bat

The path name shown above is assigned when the software is installed with default setting.

The PCI modules' status LEDs 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)	

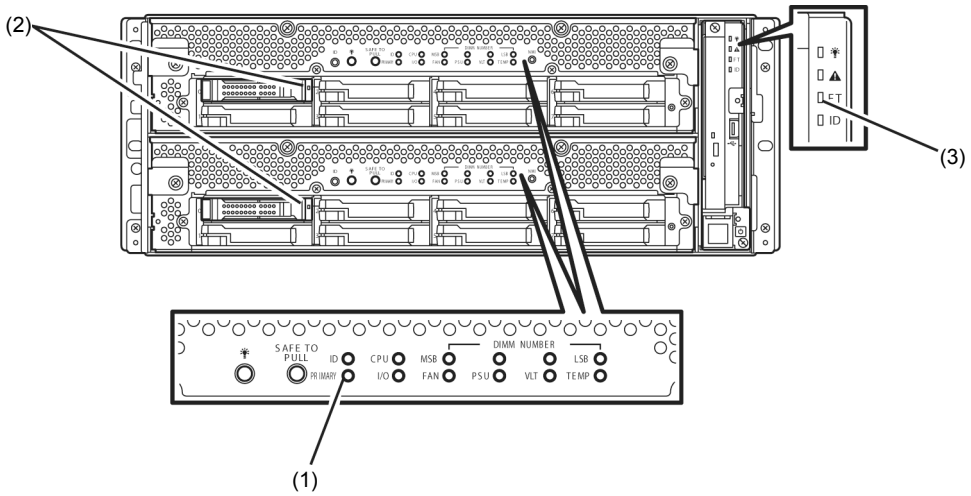
Important **After duplication is completed, the FT LED lights in green. Do not perform the evaluation of start and stop unless the above process is completed.**

5.2 Confirm Start 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 duplicated.

Tips To check if the CPU modules are duplicated, see the System FT LED.



Indications of status LEDs when CPU modules are duplicated

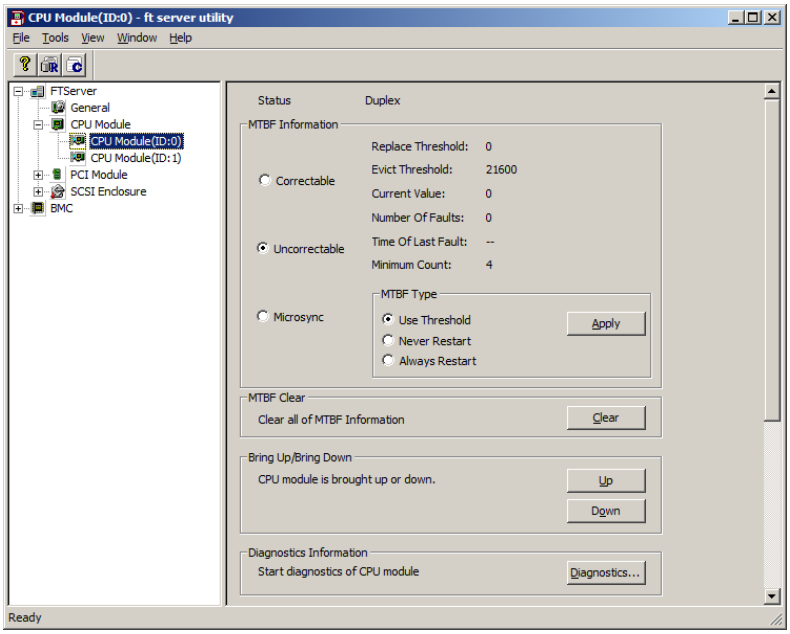
LED		CPU/IO module 0 (Operating)	CPU/IO module 1 (Operating)
1	PRIMARY LED	On (Green)	–
2	DISK ACCESS LED	Blinking (Green) (Lights green when accessing to HDD)	Blinking (Green) (Lights green when accessing to HDD)

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**, select **All Programs**, **NEC ESMPRO Agent** then **ft server utility** to start the ft server utility.
3. From the ft server utility, select **CPU Module** then the CPU module to stop (*) from the **ft server** tree on the left pane.
   - 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 the operation of 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 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	–	

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

5. Press the Start button of the CPU module stopped by ft server utility.
   In the 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.

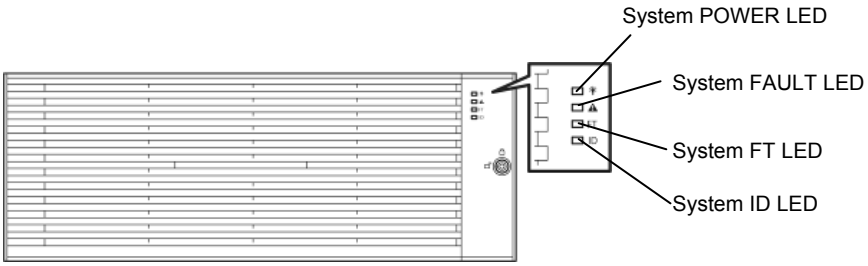
6. Error Messages

The following errors are notified if the server is faulty.

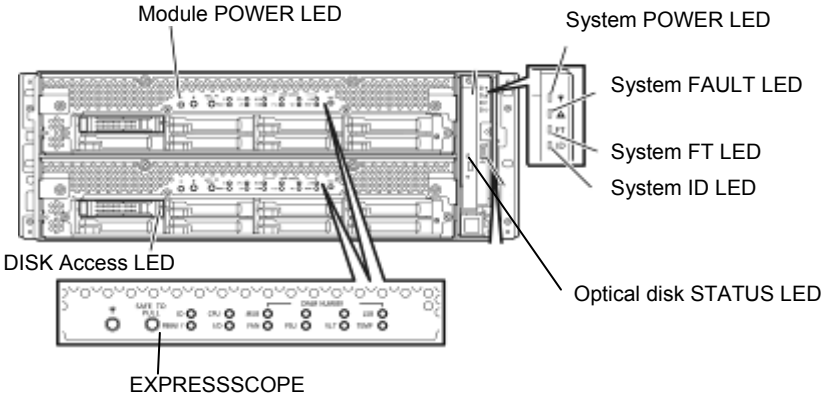
- LED indication is unusual.
  → See "6.1 Error Messages by LED Indication".
- An error message appeared.
  → See "6.2 POST".
- Warning or error message appeared on event log.
  → See "6.3 List of Windows Event Logs".
- Blue screen appeared.
  → See "6.4 Error Message on Windows Server".

6.1 Error Messages by LED Indication

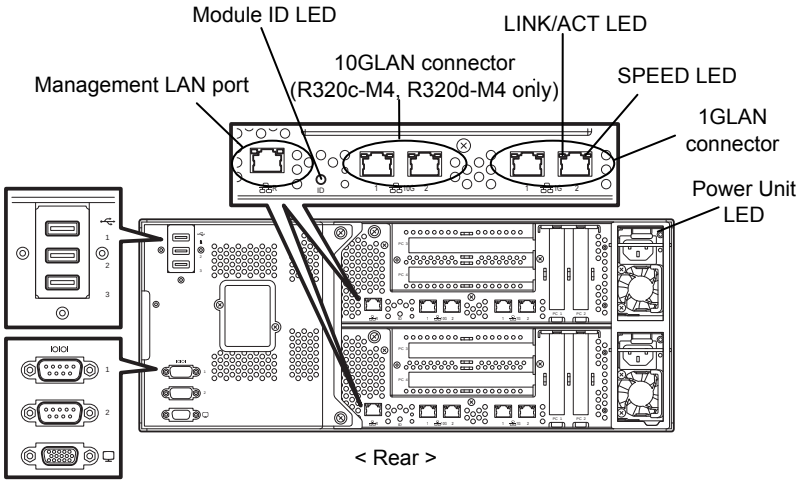
LEDs on the front and rear panels of the server and near the handles of hard disk drives notify the various server statuses. If trouble seems to have occurred, check the LED indication.



< Front (With Bezel) >



< Front (Without Bezel) >



< 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 status. 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.	–
Blinking (green)	Active Upgrade is in progress.	–

(4) System ID LED

LED indication	Description	Action
On (blue)	UID switch is pressed.	–
Blinking (blue)	The device identification request is issued from remote site.	–
Off	–	–

(5) Disk Access LED

LED indication	Description	Action
Off	Disk is in the idle state.	–
Green	Disk is being accessed.	–
Amber	Disk is faulty.	Contact your sales representative.
Blinking (amber)	The mirror of the disk is disconnected.	Perform mirroring.
Blinking in green and amber in turn	The hard disk drive configuration (rebuild) is in progress.	Wait for a while; the LED blinks in green after rebuild finishes. If the rebuild fails, the LED lights in amber.

(6) Access LED on optical disk drive

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

(7) LAN Connector LEDs on management port and LAN connectors

LINK/ACT LED

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

SPEED LED (Management port)

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

SPEED LED (1G LAN connector)

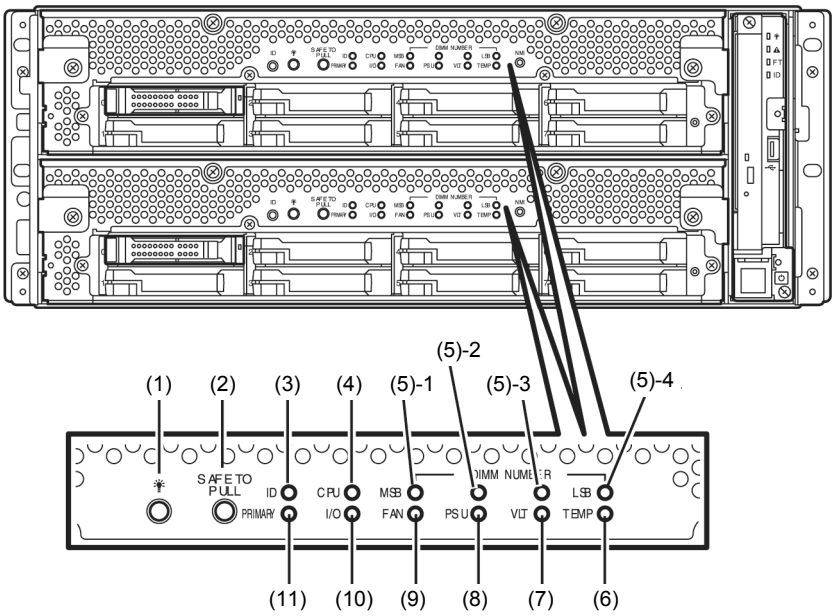
LED indication	Description	Action
On (amber)	Port is operating on 1000BASE-T.	–
On (green)	Port is operating on 100BASE-TX.	–
Off	Port is operating on 10BASE-T.	–

SPEED LED (10G LAN connector)

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

(8) EXPRESSSCOPE

Corresponding LED lights amber when modules have failures.



(1) Module POWER LED

LED indication	Description	Action
On (green)	The power of CPU/IO module is ON.	–
Off	The power is not supplied to CPU/IO module.	–
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 off line state.	–

(3) Module ID (ID LED)

Module ID LED is used for identifying the device that requires maintenance among devices mounted on the rack.

LED indication	Description	Action
On (green)	UID switch is pressed.	–
Blinking (green)	The device identification request is issued from remote site.	–
Off	–	–

(4) CPU (CPU FAULT LED)

The LED lights amber when the CPU part of CPU/IO modules fails. Contact your sales representative.

(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	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. Contact your sales representative.

(7) VLT (Power error LED)

Amber: Electric voltage failure occurs in CPU/IO module. Contact your sales representative.

(8) PSU(Power supply unit error LED)

Amber: Failure occurs on the power supply unit of CPU/IO module. Contact your sales representative.

(9) FAN (Fan error LED)

Amber: Failure occurs on the cooling fan for CPU and power supply unit of CPU/IO module. Contact your sales representative.

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

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

(11) PRIMARY (Primary LED)

Green: CPU/IO module is primary.

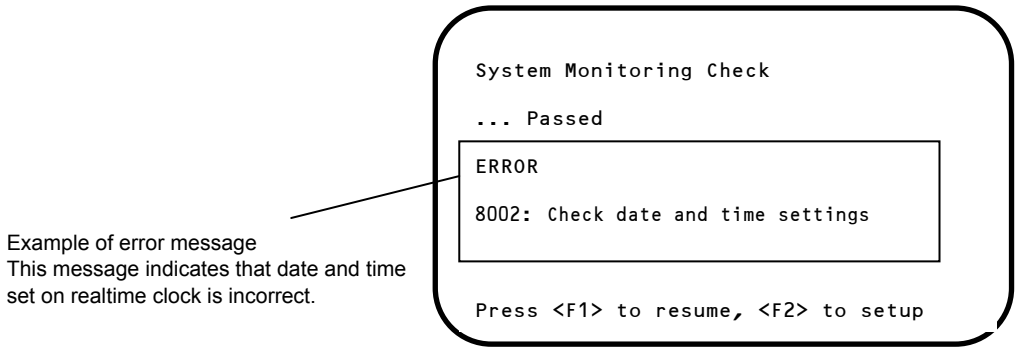
(9) Power Unit LED

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 any error, it displays an error message on the display unit.



Example of error message
This message indicates that date and time set on realtime clock is incorrect.

The following table lists error messages and the actions to take in response to them.

Tips

- Write down the displayed messages or beep patterns before contacting your sales representative. Alarm messages are useful information for maintenance.
- The list only contains messages for the server. For details about error messages of optional devices, and the actions to take, refer to the instructions that come with each product.

(1) Error messages

Error Message		Cause	Solution
8000	System variable is corrupted.	Illegal setup information of BIOS was detected.	Start BIOS Setup Utility (SETUP), and then execute **Load Setup Defaults** and specify the necessary settings. If the same error is detected repeatedly in spite of re-setting, contact your sales representative.
8001	Real time clock error	Real time clock error was detected.	Start SETUP, and then specify the correct date and time. If the same error is detected repeatedly in spite of re-setting, contact your sales representative.
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_AVAILABLE		
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** → **PCIxx Slot Option ROM** → **Disabled**. (xx: 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.
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 fan has failed or is clogged. Contact your sales representative.

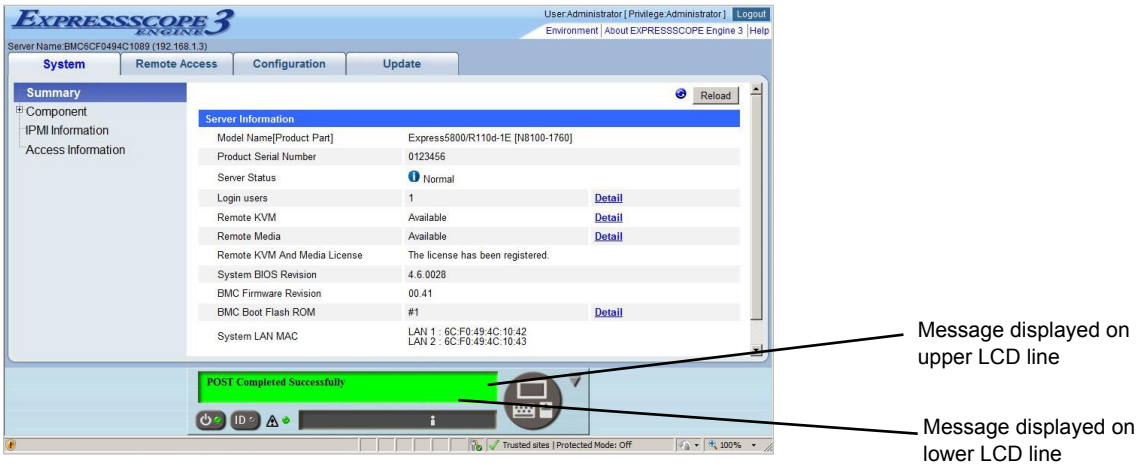
Error Message		Cause	Solution
C061	1st SMBus device Error detected.	An error was detected on 1st SM Bus.	Contact your sales representative.
C062	2nd SMBus device Error detected.	An error was detected on 2nd SM Bus.	
C063	3rd SMBus device Error detected.	An error was detected on 3rd SM Bus.	
C064	4th 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. If the same error is detected repeatedly, contact your sales representative.
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. If the same error is detected repeatedly, contact your sales representative.
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. If the same error is detected repeatedly, contact your sales representative.
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. If the same error is detected repeatedly, contact your sales representative.
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		Cause	Solution
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. If the same error is detected repeatedly, contact your sales representative.
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

In EXPRESSSCOPE Engine 3 web browser window, you can confirm virtual LCD error messages (for details on the virtual LCD, refer to "*EXPRESSSCOPE Engine 3 User's Guide*").

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



Messages displayed on an upper LCD line

Message on Upper LCD Line	Description	Solution
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.
Split mode	CPU/IO module is operating in split 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	Solution
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 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. If this does not resolve the problem, contact your sales representative.
Processor Missing	No CPU is installed.	Contact your sales representative and request CPU or motherboard replacement.
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.

Message on Lower LCD Line	Description	Solution
SMI timeout	A timeout occurred while servicing system management interrupts.	
IPMI Watchdog timer timeout (Power off)	A watchdog timer timeout occurred.	
System Front FAN1 Lower Non-Critical	A fan alarm was detected.	It is possible that a 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 (8.12 Event Logs)"*.

OS

■ Event log

ID	Source	Type	Message (Description)
	Timing		Action

System Event Log for all Windows OS

■ System Event Log

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 2012

■ 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.
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.
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. http://support.microsoft.com/kb/956479/
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**

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.
1530	Microsoft-Windows-User Profiles Service	Warning	Windows detected your registry file is still in use by other applications or services. The file will be unloaded now. The applications or services that hold your registry file may not function properly afterwards.
	When applying Starter Pack		This event does not affect system operation unless sign-in to Windows is disabled.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (SLUI.exe) failed with the following error code: hr=0x80070057
	Upon OS installation or at system startup		Unless the event is registered after license authentication, this event does not affect system operation. Go to the following URL for detailed information. http://support.microsoft.com/kb/921471/

■ **Application Event Log and Service Log**

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.
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** → **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 <Byte format> 0000: 0E 03 68 00 01 00 00 00 ..h..... 0008: 00 00 00 00 0B 00 04 C0 ....A 0010: 03 01 00 00 00 00 00 00 .... 0018: 00 00 00 00 00 08 2D 00 ......-. 0020: 00 00 00 00 00 00 00 00 .... 0028: B7 27 04 00 00 00 00 00 ·'...... 0030: FF FF FF FF 06 00 00 00 yyyy.... 0038: 40 00 00 00 00 00 00 00 @....... 0040: 00 00 06 12 08 00 00 10 .... 0048: 00 00 00 00 3C 00 00 00 ....<... 0050: 00 00 00 00 80 A2 BA 86 ....?¢o? 0058: 00 00 00 00 08 B0 BD 86 .....°?? 0060: 00 00 00 00 00 00 00 00 .... 0068: 00 00 00 00 00 00 00 00 .... 0070: 00 00 00 00 00 00 00 00 .... 0078: 00 00 00 00 00 00 00 00 .... 0080: 00 00 00 00 00 00 00 00 .... 0088: 00 00 00 00 00 00 00 00
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.

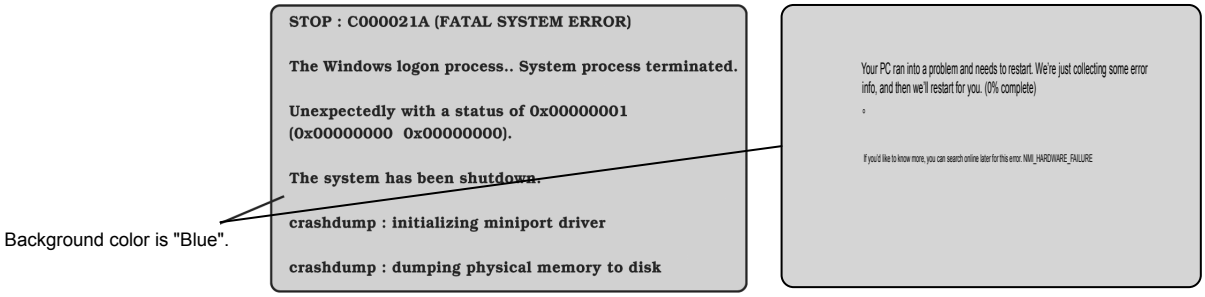
8193	VSS	Error	Volume Shadow Copy Service error: Unexpected error calling routine IOCTL_DISK_GET_DRIVE_LAYOUT_EX (\\?\mpio#disk&ven_nec&prod_istorage_2000&rev_2800#1&7f6ac24&0&303030303030303933313030303735373030323934#{ GUID }) - BuildLunInfoForDrive. hr = 0x80070013, This media is write-protected.
	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&30303030303030303130303030323830303046 36#{ GUID}#0000000000007e00#{ 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:		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2003968/en-us

■ **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 the server after startup of Windows Server, the screen of display unit change blue, and detailed error information is displayed.



Example on Windows Server 2008 R2 Example on Windows Server 2012

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

The server does not display details of error message immediately after Windows Server 2012 is installed. Take a note of on-screen message and contact your sales representative.

At the occurrence of error, the server executes memory dump automatically, and stores the memory dump data in arbitrary directory. (Refer to *Chapter 1 (5.1 Memory Dump (Debug Information))* in *Installation Guide (Windows)*. Copy the dump file onto a media such as LTO so that you can provide it to your sales representative when requested.

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

Note Before copying a dump file onto media, make sure that the memory dump is surely saved. Open **Event Viewer**, confirm that the event log of **Save Dump** is recorded and memory dump is saved.

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 * 1.5 or larger).

In addition, a warning message is displayed when an error occurs on internal device or peripheral devices (e.g., hard disk drive, network, or printer). Take a note of message displayed, 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 steps below to collect various failure information that occurred on the server.

1. On the machine where NEC ESMPRO Agent is installed, run the following program from Explorer.
   `%EsmDir%\tool\collect.exe`

   `%EsmDir%` denotes the folder where NEC ESMPRO Agent is installed. (Default: `C:\ESM`)
2. Event logs are output to `%EsmDir%\tool\log`.
   Collect all the logs in `%EsmDir%\tool\log`.

Tips Be sure to collect logs in log folder under `%EsmDir%\tool`, not the folder `%EsmDir%\log`.

Event logs can be collected by using Product Info Collection Utility. See *Chapter 3 (8. NEC Product Info Collection Utility)* for details.

7.2 Collecting Event Logs

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

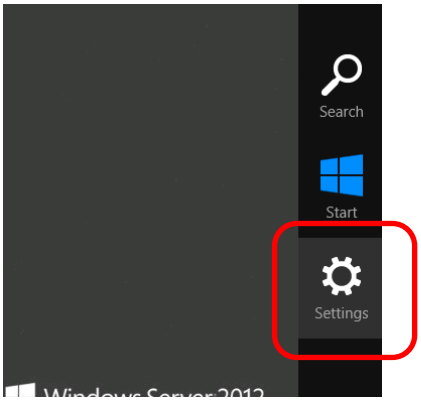
Tips If a STOP error, system error, or stall occurs, restart the system and then follow the steps below.

7.2.1 Windows Server 2012

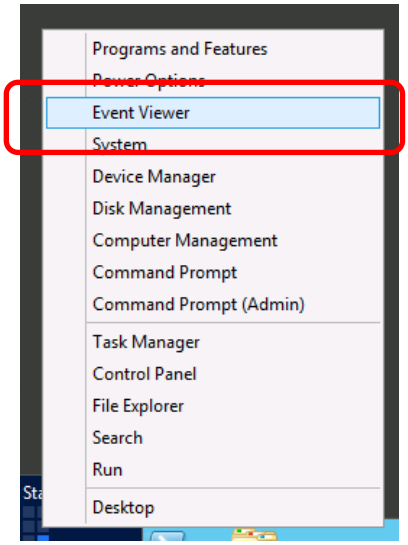
1. Click **Settings** from **Charms** bar.

   (Or, right-click the left bottom of screen, and click **Event Viewer** from the menu displayed. The screen shown in Step 5 appears.)

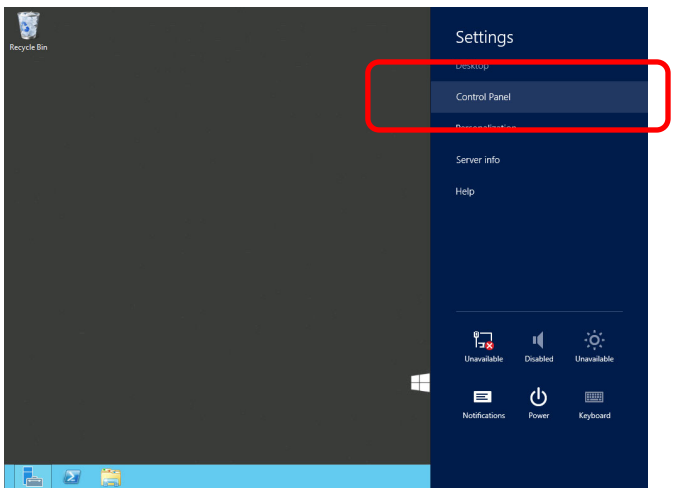
<Select **Settings**>



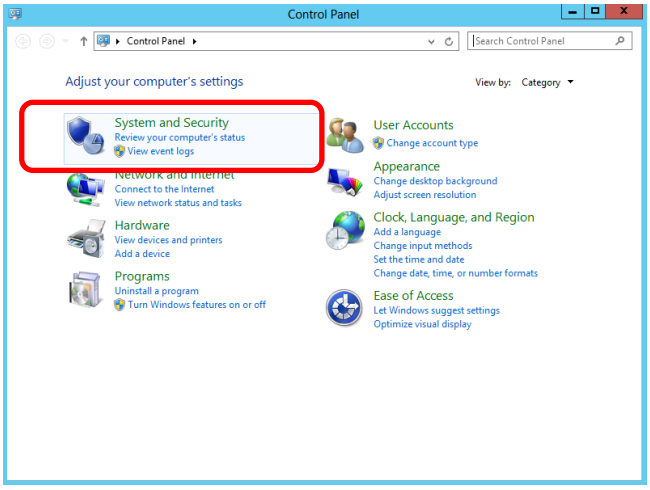
<Select **Event Viewer**>



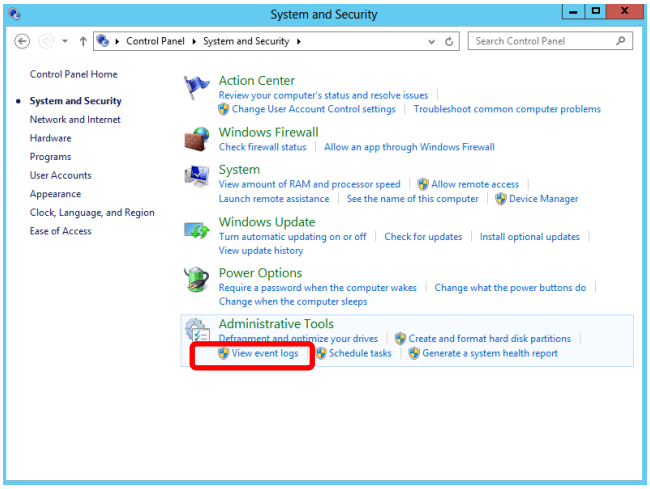
2. Click **Control Panel** in **Settings**.



3. Click **System and Security** in **Control Panel**.



4. Click **Administrative Tools** → **View event logs** from **System and Security**.

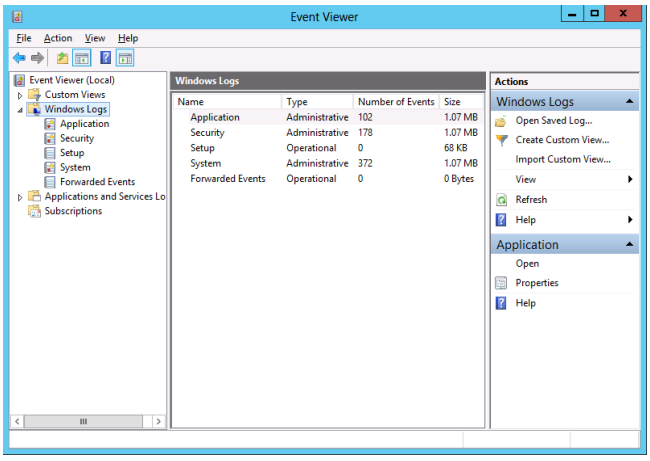


5. Select a type of log in Windows Logs.

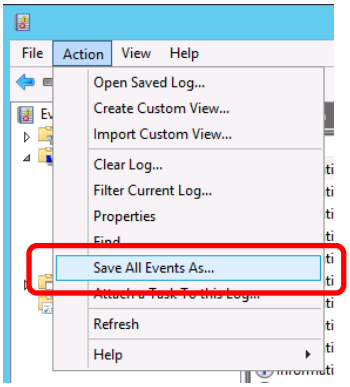
   Application records events related to applications.

   Security records events related to security.

   System records events that occurred in Windows system components.



6. Select **Save All Events As...** from **Action** menu.



7. Enter the file name of the archived log in **File name**.

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

7.2.2 Windows Server 2008 R2

1. Select **Administrative Tool** and then **Event Viewer** from **Control Panel**.
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. Select **Save All Event As...** from **Action** menu.
4. Enter 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**.

7.3 Collecting Configuration Information

This section describes how to collect information on hardware configuration and internal specifications.

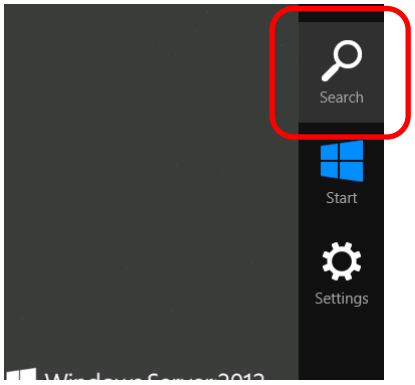
Tips If a STOP error, system error, or stall occurs, restart the system and then follow the procedure below.

7.3.1 Windows Server 2012

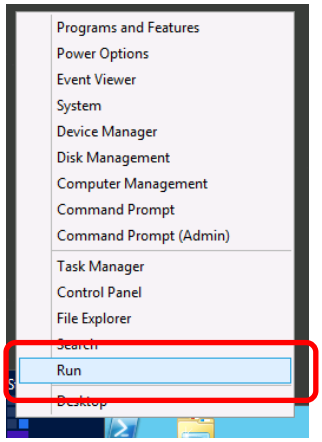
1. Click **Search** from Charms bar.

   (Or, right-click the left bottom of screen, and click **Run** from the menu displayed.)

<Select **Search**>

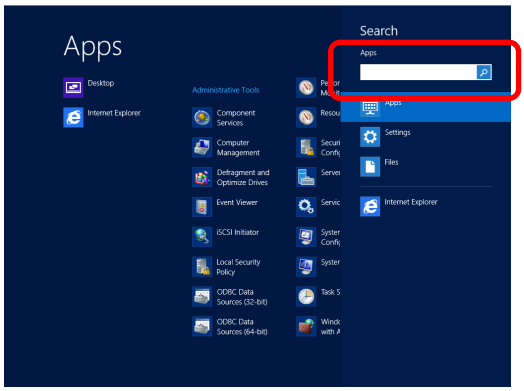


<Select **Run**>

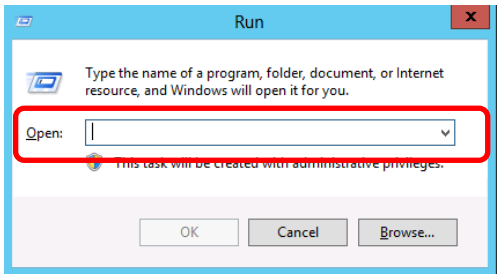


2. Enter `msinfo32.exe` in text box, and then press <Enter> key.

Search



Run



3. **System Information** starts.
4. From **File** menu, click **Export**.
5. Enter the file name to save in **File Name**, and then click **Save**.

7.3.2 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, refer to *Chapter 1 (5.2 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, refer to *Chapter 1 (5.1 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 shotage message and proceed when restarting.

Do not reset during dumping memory.

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.

Important

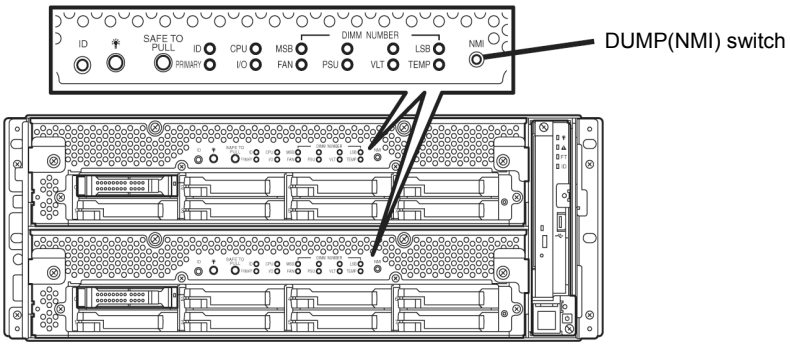
Pressing the DUMP switch excessively shorter or longer will fail to collect memory dump.

Press the DUMP switch by inserting the pointed tool such as ballpoint pen into the switch hole.

Important

Do not use anything that easily breaks such as pencil, toothpicks, or plastic.

The memory dump is stored in the specified location.
Memory dump is not collected depending on CPU status (e.g. CPU stall).



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

8. Troubleshooting

If this system does not work correctly, check it according to the contents of the following checklist before sending it for repair.

- 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 Starting EXPRESSBUILDER*".
  - → See "*8.8 Problem of Starting 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*".
  - → Refer to *NEC ESMPRO Agent Installation Guide* stored in EXPRESSBUILDER.
- Active Upgrade does not work normally.
  - → See "*8.11 Active Upgrade*".
- Event logs
  - → See "*8.12 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
  - → Refer to *NEC ESMPRO Manager Installation Guide* stored 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 service 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 power breaker for the connected power outlet is on.

  → If the power cord is plugged to a UPS, make sure the UPS is powered and it supplies power. Refer to the manual that comes with the UPS for details.
  Power supply to the server may be linked with the connected UPS using the BIOS SETUP utility of the server.
- ❑ Did you press the POWER switch?

  → When power cord is connected, the initialization of management controller starts. During initialization, the POWER LED is unlit. To power on the server, press the POWER switch after the POWER LED is lit green.
- ❑ 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 until the NEC logo appears.

[?] POST fails to complete:

- ❑ Are the DIMMs installed?

  → Check if DIMMs are installed correctly.
- ❑ Is the memory size large?

  → The memory check may take a time if the memory size is large. Wait for a while.
- ❑ Did you perform any keyboard or mouse operation immediately after you started the server?

  → If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.
- ❑ Does the server have appropriate memory boards or PCI card?

  → Operation of the server with unauthorized devices is not guaranteed.
- ❑ 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 Starting EXPRESSBUILDER

[?] Unable to start EXPRESSBUILDER:

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

  → Restart the server and retry.

- ❑ Are BIOS settings correct?

  → Configure the boot order so that the optical disk drive will be the first to start up.
  <Menu to check: **Boot**>

- ❑ Is a message displayed when starting EXPRESSBUILDER with text base?

  → Take an appropriate action according to the on-screen message.

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

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

- ❑ Is a message such as the following displayed?

  → Take an appropriate action according to the table below.

Message	Solution
`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 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.

[?] Unable to install Windows:

- ❑ Have you checked precautions for installation?

  → Refer to "*Installation Guide (Windows)*".

[?] A product key was not requested:

→ If you install using the backup DVD-ROM, entering the product key is not required.

[?] When Starter Pack is executed on Windows Server 2008 R2, the below message is sometimes 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 Microsoft website below:
http://support.microsoft.com/kb/975777/en-us

[?] The following features are installed when Windows Server 2008 R2/Windows Server 2008 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.

[?] The Telnet Service is not installed:

→ Adjust the computer name to 14 characters or less, and then install the Telnet Service according to the following procedure:

How to install the Telnet Service

1. Click **Run** on **Start** menu.
2. Enter `tlntsvr/service` in the **Open** box, and then click **OK**.
3. Click **Start** menu, point to **Control Panel**, click **Administrative Tools**, and then click **Services** to confirm whether the Telnet Service is registered.

* When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

[?] Fails to execute "Create a parameter file for Windows OS":

→ "**Create a parameter file for Windows OS**" must be run using Microsoft® HTML Application host. If it does not start, associate the file type with Microsoft® HTML Application host via the following process.

1. Select **Run** in Windows Start menu.
2. Enter `%windir%\system32\mshta.exe/register`.

[?] Cannot configure the details of network adapter:

→ You cannot configure the details of network adapter during setup of NEC Express5800/ft servers. You can configure this after the startup of Windows.

[?] Rebooted during the setup:

→ Refer to *Chapter 1* (*3.1.3 Disabling OS Boot Monitoring Feature*) in *Installation Guide*, and set the parameter of this machine's OS Boot Monitoring feature to correct value.

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

→ ft Server Control Software UPDATE disk is used to update ft Server Control Software; it may not be shipped with the equipment.

[?] Windows can be operated after a setup but each module or PCI board is not duplicated. (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?

→ Installation will be aborted if you finish the programs that are running such as by closing a window. Although the operation on Windows will be feasible, modules or PCI boards will not be duplicated properly if you abort the installation. In this case, you need to reinstall OS according to *Chapter 1* (*2. Setting Up the Operating System*) in *Installation Guide*.

[?] DISK Access LED is lit in amber:

❑ Did you properly setup the duplex of HDDs?

→ DISK Access LED will be lit in amber, if a setup for duplex is not performed. See *Chapter 1* (*6.1 Error Messages by LED Indication*) for details about the indication status of LED.
See *Chapter 2 (1. Disk Operations)*, and set up the duplex of HDDs.

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

→ During installing Operating System and ft Server Control Software, due to a temporary state of the system under installation, Error or Warning logs are recorded in System and Applications Event Log. When setup is completed as a procedure of Installation Guide, and the system is duplicated, the system operation is normal.

8.4 Problem of Starting OS

[?] Unable to start OS:

- ❑ Are Hard Disk Drives properly installed?

  → Install Hard Disk Drives properly.

- ❑ Is SAS cable connected to Hard Disk Drive correctly?

  → Connect the SAS cable properly.
  If the SAS cable is not recognized as connected although the above action has been taken, the Hard Disk Drive may be faulty. Contact your sales representative.

- ❑ Is the EXPRESSBUILDER DVD inserted?

  → Eject the EXPRESSBUILDER DVD and reboot.

[?] Machine repeats rebooting at startup:

- ❑ Is CHKDSK executed at machine startup?

  → Run the BIOS SETUP utility at rebooting and change parameters as follows:
  (Change BIOS settings)
  Change **Server** - **OS Boot Monitoring** to **Disabled**.

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

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

  CHKDSK is executed in the following conditions:

  – CHKDSK is scheduled to be executed at next system startup

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

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

- ❑ Is the value of **OS Boot Monitoring** in the BIOS setting appropriate?

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

[?] Wake On LAN does not function:

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

  → If the AC power supplied to only one of the CPU/IO module, Wake On LAN may become unavailable. Supply the AC power to both of CPU/IO modules.

- ❑ Is the network adapter configured on OS?

  → On the OS, go to **Start** - **Administrative Tool** - **Computer management** and select the **Device Manager**. Double click **Stratus emb-82576 2-Port Gigabit Adapter #n** under the network adapter, then select the following option from **Power Management** tab:
  Wake On Magic Packet from power off state.

Note Wake On Magic packet is unavailable even if it is checked.

❑ Is Hub/Client fixed as 1000M?

→ Check the following configurations:
– Set the Hub as "**Auto-Negotioation**".
– 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?

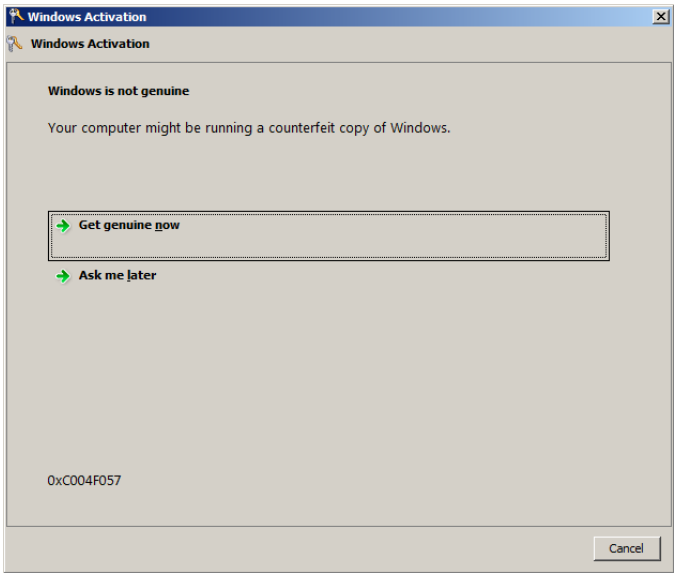
→ If you use Wake On LAN under duplexed LAN, you need to send Magic Packets to all of the duplexed LAN pair(s).

→ This server uses the **Locally Administered 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 **Locally Administered Address**.

❑ 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 in 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 license authentication.
The above message is an example of request for license authentication. The message displayed on screen may differ from this depending on the license.

[?] Fail to duplex CPUs:

→ Check if the memory configuration is correct.

→ Check if third-party CPUs or memory (DIMM) are used.

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

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

→ Change setting to **Enabled** and integrated module again. The BIOS of primary module is used for both modules to duplex the modules. It is recommended to reduce 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 BIOS **Boot Monitoring**; 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 disk containing system file and start it. Or, perform **Disk Boot** from another CPU/IO module.

[?] Cannot turn the power OFF at the blue screen (STOP error screen):

→ If you want to turn off the power at the blue screen, execute forced shutdown (continue to press the power switch for 4 seconds). If you press the switch briefly instead of holding it, the server will not power off.

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

→ The system may or may not restart automatically even if the "**Automatic Restart**" settings are made at occurrence of an error is set. If the system does not restart automatically, restart it in manual mode.

8.6 Problem of Internal Devices and Other Hardware

[?] Fail 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?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

- ❑ Is option board setting correct?

  → Usually, no PCI device settings need to be changed. However, depending on the board to be set, special setting may be required. 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 Express5800/ft series?

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

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

→ If the amount of memory is large, it takes time to copy the memory in dual mode and the system stops working temporarily during the copying, but it is not system trouble.

[?] 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 guaranteed.

- ❑ Is the Hard Disk Drive properly installed?

  → Check the Hard Disk Drive installation status and the cable connections.

[?] Unable to configure dual disks:

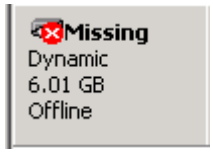
→ Unless you perform mirroring (including reconfiguration after failed disks are replaced) in correct order, the mirror may not be (re)configured. Check if the steps were correct.

[?] Disk access LEDs on the disks are off:

→ The LEDs may 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
	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.
	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 execute **Remove disk**.
	A message **Not Initialized** is displayed when there is no signature on the disk.	Right-click on the disk and execute **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?

  → If the network driver is installed after OS is installed, Windows operation may become unstable. Install the Starter Pack by according to *Chapter 1* (*Installing Starter Pack) in* "*Installation Guide (Windows)*".

[?] After the system is restored from the backup tool, Windows is misbehaving:

→ Update the system by using EXPRESSBUILDER (refer to *Chapter 2 Installing the Bundled Software* 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?

  → You can disable the internal network controller using the BIOS setup utility. Check the settings with BIOS setup utility.

- ❑ Have you completed protocol and services settings?

  → Verity that the network driver for the server network controller has been installed. Also verify that protocol such as TCP/IP or various services have been properly specified.

- ❑ Is the transfer speed correct?

  → You can change the transfer speed or configure the setting for onboard LAN controller from OS. Be sure to specify the same same transfer speed and duplex mode as those on connected hub. If you specify **Auto Detect**, make sure that **Auto Detect** is also specified for the connected hub. Fix the transfer speed by using **Device Manager**. Select and right-click the network adapter to change the transfer speed from the tree on **Device Manager**, and select **Properties** from the displayed menu. When the **Properties** window appears, select the **Link** tab, and select the item that matches to the connected HUB from the list box of **Speed and Duplex**. If you click **OK**, configuration selected in **Speed and Duplex** will be effective.

- ❑ Is the transfer spped of 10G LAN port '100Mbps'?

  → If you specify 100Mbps, make sure that Auto-Negotiation is specified for the connected hub. Other than Auto-Negotiation is not supported by 10G LAN port.

[?] Power-saving feature does not work:

→ The server does not support power-saving feature specified in **Power Option**.

[?] Message "New Hardware Found" appears:

→ Such a message may appear at the system 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:

→ When you integrate a PCI module when replacing, starting and diagnosing the PCI module, following events may be recorded on **System** in **Event Viewer**, and the duplex process may fail:

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

"XX" refers to the PCI module ID. If it is PCI module 0, it is shown as "10"; if it is PCI module 1, it is shown as "11". As to "xxxx", the value differs depending on circumstances when errors occur.
If the above events are recorded, follow the below prcedure to integrade the PCI module.

(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.

→ When a componet fails and is reintegrated, the following message may be recorded to the system event log and the process is stopped. Such event indicates that the component's MTBF is below the threshold and it is judged that repair is necessary. Thus the reintegration process cannot be completed. Generally replacement of the component will be required, so contact your sales representative. If reintegraating the component without repair is required for some reason, consult your sales agent. It is possible to perform reintegration forcefully.

Source: srabid

Event ID: 16395

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

[?] Screen under changing (distorted display) can be seen when screen resolution is changed:

→ If screen resolution is changed while the entire system is under high load, screen under changing (distorted display) may be seen.
This is because screen update is taking time to complete due to high load in the system. This is not because an error is occuring. The screen will return to normal if you wait awhile.

[?] Screen does not appear after changing screen size:

→ The screen may not appear if failover occurs on the system when screen size is changed.

[?] 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, this event is recorded as follows:

Immediately after startup:
CPU module or PCI module is still SIMPLEX state after 50 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.

8.8 Problem of Starting EXPRESSBUILDER on Windows

[?] Cannot read documents:

- ❑ Do you have Adobe Reader installed correctly in your system?

  → To read documents, Adobe Reader needs to be installed in your computer.

- ❑ Is your browser Internet Explorer?

  → Internet Explorer sometimes displays the Information bar to enforce security. Click the Information bar to display the documents.

[?] The menu does not appear:

→ The Autorun feature is disabled at this server.
When you start menu, run \autorun\dispatcher_x64.exe after setting EXPRESSBUILDER DVD.

[?] Some menu items are grayed out:

- ❑ Is your system environment correct?

  → Some software requires administrator privilege or needs to be operated on the server. Run on the appropriate environment.

  → Confirm the settings of [Regional and Language Options]. Set 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

→ Some Express5800/ft series reports use unique device IDs which correspond to the devices listed in the table below as the device identification information.

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 R320c-E4 and R320d-E4, PCI slot 3 and PCI slot 4 do not exist on the PCI module.

❑ LAN Monitoring Threshold

→ Because the Express5800/ft series detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults. Thus, the value set for "**Line fault occurrence rate**" of a **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 detail information of alert is displayed as "Unknown":

  → Detail information of some alert displayed on the AlertViewer may be displayed as "Unknown".

- The display of ft server utility is incorrect:

  → If you open the ft server utility immediately after the system starts up, the tree may not be displayed correctly due to high load of the system. Wait for a while, and start ft server utility again.

- Module status is shown "Fault":

  → PCI modules (IO modules) and modules under the SCSI enclosure have impact on 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.

- 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).
Simplex	Shut down the system.

  → Remove the disk in the following procedure.

  1. If the status is "Empty", the module is not mounted. Sensor monitoring is not conducted.
  2. If disks are mounted on PCI modules (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 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 may turn 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 you dynamically change the configuration of the CPU or PCI module (IO module), Information of server state/constitution tree may not be displayed correctly. In such a case, wait for about 5 minutes, open Information of server state/constitution again.

- Display immediately after system startup

  → If you open **Information of server state/constitution** immediately after the system starts up, the tree or the state may not be displayed correctly due to high load of the system. In about 20 minutes after the system startup, open **Information of server state/constitution** again.

- Floppy Disk Drive Name

  → After unplugging and plugging the PCI module of the primary side, the floppy disk drive 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 floppy disk drive name on Explorer.

- 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** may become unstable, and incorrect status may be displayed temporarily.

- Display of an Unmounted Sensor

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

  Ex: **Information of server state/constitution** - **Enclosure** - **Temperature**

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

- Pop-up "Constitution Information has changed." is displayed.

  → If you are seeing **Information of server state/constitution**, pop-up 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

  → When plugging or unplugging CPU/IO module, the keyboard information under the **I/O Device** in the **Information of server state/constitution** may be displayed incorrectly. Restart the system.

- Status of SCSI Slots and Mirrored Disks at High Load:

  → When the system load is high, the status of SCSI slots and mirror disks may not be obtained, and incorrect status may be displayed temporarily.

- Display of chipset type of CPU module:

  → If **Ivy Bridge** is installed, the chipset type is not correctly displayed.

8.10 Problem of Optical Disk Drive and Flash FDD

[?] Unable to access or play optical disks such as CD-ROMs:

- ❑ Is the CD-ROM 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.

[?] Unable to access or play DVD/CD-ROMs:

- ❑ Is the DVD/CD-ROM supported by the server?

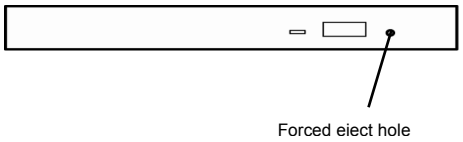
  → For a disk such as a CD with copy guard which does not conform to the CD standard, the playback of such a disk with the optical disk drive is not guaranteed.

  → The DVD/CD-ROM 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 (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 the forced eject hole at the front of the tray. Keep pressing slowly until the tray comes out.



Important

- **Do not use anything that easily breaks such as toothpicks or plastic.**
- **If you still cannot eject the disk, contact the maintenance service company.**

3. Pull the tray out with your hands.
4. Remove the disk.
5. Push the tray back to its original position.

[?] Fail 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. Refer to the manual that comes with the OS for formatting.

- ❑ Is another Flash FDD or a floppy disk drive connected to this server besides this Flash FDD?

  → One Flash FDD can only be connected to a USB connector of this server.
  If another Flash FDD or a floppy disk drive connected to this server, use it after removing this.

[?] The Flash FDD doesn't 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 Active Upgrade

If necessary, you can collect information about the Active Upgrade process and resolve problems by:

- Saving the activity log to a file.
- Viewing the status of your application services
- Viewing the status of your installed software
- Verifying if RDR disks are resynchronizing.
- Learning about general problems and solutions.

(1) Saving the Activity Log to a File

If necessary, you can save the contents of the activity log to a file for later viewing.

(a) To save the activity log to a file

1. Right-click on the activity log, and select **Save to File** in the shortcut menu.
2. On the **Save Upgrade Log** page, specify the folder name in which to save the file and the file name.

Tips

- If you have just completed an Active Upgrade session, you can also save the activity log by clicking **Save Log** on the **Finish** page.
- Related topics:
  Chapter 2 (1.5.4 (9) "Viewing Active Upgrade Process Status" in *Installation Guide.*

(2) Verifying the Status of Application Services

At various stages of the Active Upgrade process, you can optionally verify the status of services you specified for control on the **Application Services** page of the Active Upgrade Console.

(a) To verify the status of a service

1. Click **Start** - **Administrative Tools** - **Computer Management**.
2. Click **Services and Applications** - **Services**.
3. Search for an applicable service from the list of services and view its current **Status** and **Startup Type**.

For example, while the system is in split mode, any service you selected for control by the Active Upgrade Console should be stopped (blank Status field) and its Startup Type should be Disabled on the Upgrade Side of the system.

Tips

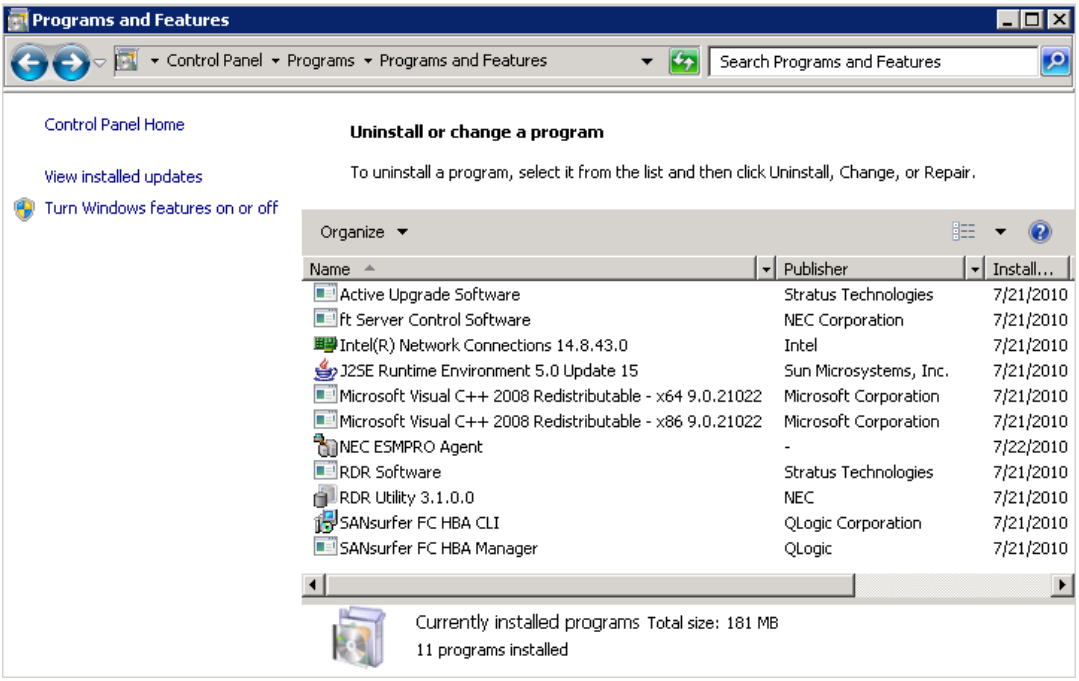
Related topics (Installation Guide):

- *Chapter 2 (1.5.2 (4) Managing Applications during the Upgrade Process)*
- *Chapter 2 (1.5.3 (5) Selecting Application Services to Control)*
- *Chapter 2 (1.5.4 (9) Viewing Active Upgrade Process Status)*

(3) Verifying the Status of Installed Software

While you are running in split or merge mode, or after you have finished the Active Upgrade process, you might want to verify the status of the software packages that you installed.

If necessary, you can view a list of most of the programs present on your system in the **Programs and Features** control panel shown below.



Programs and Features Control Panel

If you installed any Windows updates, select **View installed updates** to display the installed updates.

Important **If your system is in split mode, view Programs and Features of Control Panel on the Upgrade Side. The Running Side does not show the new software that was installed on the Upgrade Side.**

Tips Related topics (Installation Guide):

- *Chapter 2 (1.5.4 (2) (g) Running Software Installers)*
- *Chapter 2 (1.5.4 (9) Viewing Active Upgrade Process Status)*

(4) Verifying If RDR Disks Are Resynchronizing

When you complete or abort the Active Upgrade process, the system reestablishes the mirrors between the RDR partner disks in each CPU/IO modules. If you intend to initiate another upgrade process, you must wait for the resynchronization to complete before you do so.

You can tell if a disk is resynchronizing by viewing the LEDs on the front panel of the disk. For information about interpreting the LEDs, see *Chapter 1 (6.1 Error Messages by LED Indication)*.

(a) Disk status

You can also view the status of your disks using one of the following methods:

- Verify the disks on the **Disk Selection** page. Any volume that is in red is simplexed (and thus, probably still resynching). When a disk volume is only green, it is duplexed and you can start another upgrade.
  For more about the disk status on the **Disk Selection** page, refer to *Chapter 2 (1.5.3 (3) Selecting Disks to Upgrade)* in *Installation Guide*.
- Verify the status of RDR virtual disk in RDR Utility. Follow the steps below.

(b) To view the status of an RDR virtual disk in RDR Utility

Important **Before performing Active Upgrade process again, make sure that the value of Status property for all RDR virtual disk are "None".**

1. On RDR Utility, click **Logical Disk Information**.
2. Click one of the **RDR Virtual Disk** items (RDR Virtual Disk x).
3. Check the value of the **Status** property, which displays **Resync *nn*% (**where *nn* is the percentage completed) while the disk is resynchronizing. When the resync process is finished, the value is **None**.

Tips

Related topics (Installation Guide):

- *Chapter 2 (1.5.3 (3) Selecting Disks to Upgrade)*
- *Chapter 2 (1.5.4 (1) Performing a Readiness Check)*
- *Chapter 2 (1.5.4 (9) Viewing Active Upgrade Process Status)*

(5) General Problems and Solutions

Troubleshooting: Readiness Check

The table below describes some common problems that could prevent your system from passing the readiness check.

Error	Action
IO board nn is unsafe to pull	Verify that all critical system resources (including disks, Ethernet PCI adapters, and VTMs) are configured correctly and duplexed. Refer to *Chapter 2 (1.5.2 (2) Prerequisites)* in *Installation Guide* for more information.
RDR disk is not duplexed	If you recently ran an upgrade session, wait for the RDR resynchronization process to complete before running another upgrade session. Refer to *Chapter 1 (8.11 (4) Verifying If RDR Disks Are Resynchronizing)* for more information.
Embedded NIC not teamed	Use the PROset utility to configure your Ethernet PCI adapters into teams. All embedded Ethernet PCI adapters must be teamed. Refer to *Chapter 2 (1.5.2 (2) Prerequisites)* in *Installation Guide* for more information about configuring Ethernet PCI adapters.
No IP address on Upgrade ready team	Use the **Network Connections** in **Control Panel** to assign an IP address (preferably a static IP address) to the Ethernet team. Refer to *Chapter 2 (1.5.2 (2) Prerequisites)* and *(1.5.2 (3) Recommendations)* in *Installation Guide* for more information about configuring Ethernet PCI adapters.
Team does not have link on both sides	Ensure that an embedded Ethernet team has at least one adapter in each CPU- I/O enclosure with an active network link. Verify that the network cables are plugged in on both sides, and that the Ethernet team has a valid IP address. Refer to *Chapter 2 (1.5.2 (2) Prerequisites)* and *(1.5.2 (3) Recommendations)* in *Installation Guide* for more information about configuring Ethernet PCI adapters.
Active Upgrade may fail. Check DHCP server	The Active Upgrade Console cannot obtain IP addresses from your DHCP server. If possible, assign static IP addresses to your Ethernet teams and VTMs to avoid problems during the Active Upgrade process.

Important **Never perform hardware maintenance, such as removing and replacing system components, while the Active Upgrade process is running. If you experience a problem that prevents the Active Upgrade process from completing successfully, you should always be able to abort the upgrade session to restore your system to its original state.**

Troubleshooting: Custom Actions

The following tables describes some common problems with custom actions.

Error	Action
The executable filename does not exist.	Ensure that the executable file associated with your custom action is located in the directory you specified during the configuration process. Also, ensure that the custom action is located on a system disk, otherwise the Upgrade Side will lose access to the executable while the system is in split mode.
Custom action failed with exit value n	Check the output for the custom action for errors. Refer to *Chapter 2 (1.5.3 (8) (d) Viewing Standard Output and Error Stream)* in *Installation Guide* for more information. You must correct the problem and click **Retry** in the Active Upgrade Console to retry the current upgrade request (which also runs the custom action again). The Active Upgrade process will not continue until the executable for your custom action runs successfully. If possible, test and debug the executable outside of the Active Upgrade process. Ensure that it terminates with exit value 0 and that it completes in a timely manner.

Troubleshooting: Miscellaneous Problems

Problem	Action
Active Upgrade console fails to start	Wait a minute, and try to start Active Upgrade Console again. If the problem persists, it might mean that the Active Upgrade Console cannot communicate with related services on your local system. If your system is running a network firewall solution, check the firewall logs for blocked communications and explicitly add these items to your trusted zone. For information about configuring Windows Firewall, refer to *Chapter 2 (1.5.2 (9) Configuring Windows Firewall for the Active Upgrade Process)* in *Installation Guide*.
Failed to disable PCI device: QLogic Fibre Channel Adapter	If you have installed QLogic SANsurfer Fibre Channel HBA Software to upgrade the BIOS in your host bus adapter, you should uninstall this utility when you are done upgrading the BIOS. If the utility remains on your system, it may retain access to storage system resources and prevent certain storage operations. In this case, the Active Upgrade Console cannot split system resources because it cannot disable the HBA on the Upgrade Side. To resolve the problem, you must abort the upgrade, uninstall SANsurfer, restart the system (or stop the SANsurfer service), and restart the upgrade process.
The underlying connection was closed: Unable to connect to the remote server.	If your system is running a network firewall solution, check the firewall logs for blocked communications and explicitly add these items to your trusted zone. For information about configuring Windows Firewall, refer to *Chapter 2 (1.5.2 (9) Configuring Windows Firewall for the Active Upgrade Process)* in *Installation Guide*.
A connection attempt failed because the connected party did not properly respond...	
Unable to see the disc that should exist in **Disk Management** in **Computer Management**.	Go to **Disk Management** and execute **Disk Rescan**. When the disk status appears **Missing** or **Offline**, right click the disk and select **Disk Reactivation** to verify the disk status becomes **Online**.

Tips

Related topics (Installation Guide):

- *Chapter 2 (1.5.4 (9) Viewing Active Upgrade Process Status)*

8.12 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

[?] srae1qexpress, sraixgbt, iANSMiniport-related logs are recorded in the system event log:

→ The logs of the source "srae1qexpress", "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: srae1qexpress
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**.

[?] 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 doesn't 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.

[?] Fibre Channel (N8803-038) 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 this event is recorded consecutively.

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: When value is only 0xf0200000 or 0xf0260000 that is indicated in 0x0010 word. The value is displayed in **Detail** tab.

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

→ While in maintenance operation, such as detaching an 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.)

[?] srae1qexpress or sraixgbt logs are recorded in System Event Log:

→ The following log may recorded in System Event Log.

source: srae1qexpress 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.

9. Windows System Recovery

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

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 Drive cannot be recognized, you cannot recover the Windows system.

9.1 Recovery of Windows Server 2012

If the Windows does not start correctly, 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 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

Refer to 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**> + <**Delete**> + <**Alt**> keys. This clears all the data in progress in memory, and restarts the server.

Note To reset the server when it is not frozen, make sure that no processing is in progress

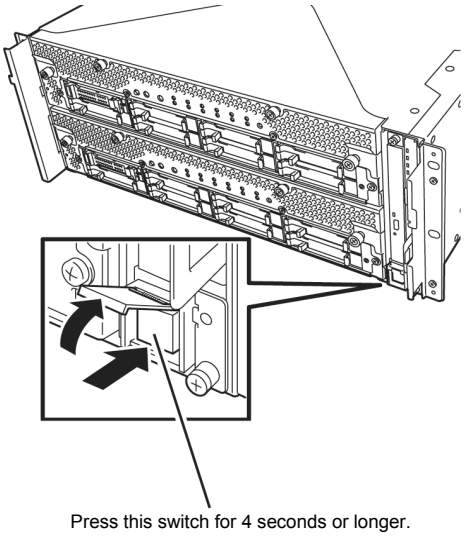
10.2 Forced Shutdown

Use this function 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 4 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 function 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 4 seconds or longer.
The server is forcedly powered off.



10.3 Clearing BIOS Settings (CMOS Memory)

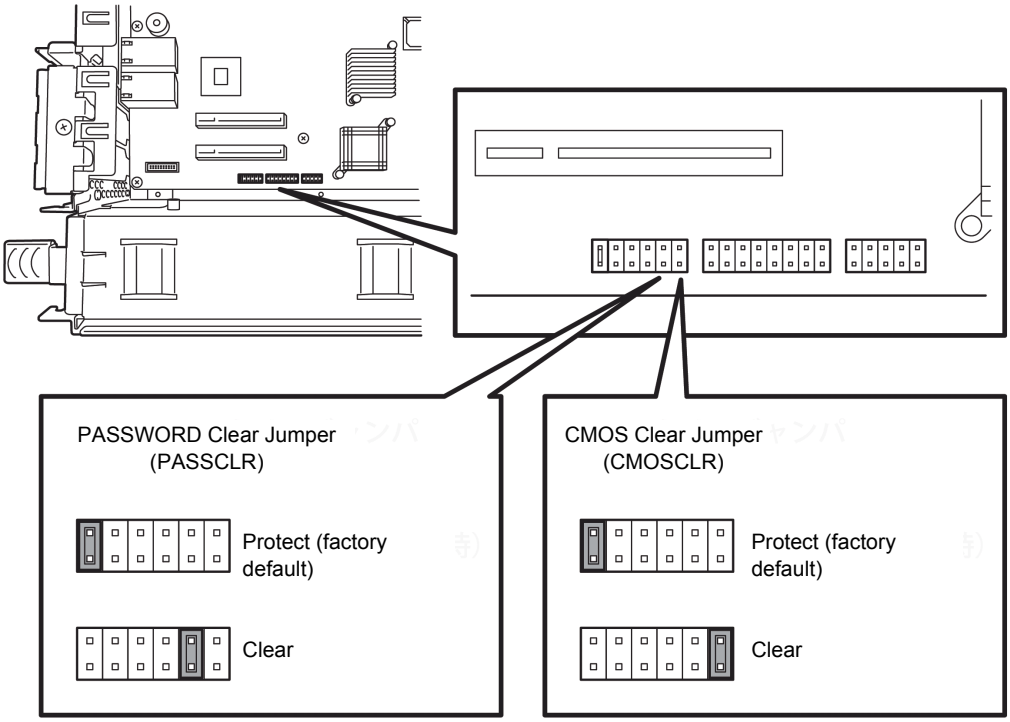
To set the BIOS settings back to the factory default settings (clearing CMOS memory), use the internal jumper switch.

You can also clear the password set in the BIOS Setup utility (SETUP) by using the same way.

Tips When the server works, use the BIOS setup utility (SETUP) to return the settings to the factory defaults.

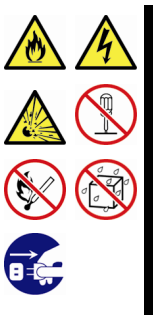
To clear the password or the CMOS memory, use the corresponding jumper switch illustrated in the figure below.

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



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

WARNING



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

- **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, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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 2 (6.1.2 Anti-static Measures)*.**

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 (6.4 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 the <**F2**> key to start BIOS SETUP utility.

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

18. On **Save & Exit** menu of BIOS 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 (6.4 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

The System Diagnostics runs several tests on the server.

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

11.1 Test Items

The following items are tested in System Diagnostics.

- Memory
- CPU cache memory
- Hard disk drive

Important **Before executing the system diagnostics, be sure to disconnect the LAN cable and external I/O devices (e.g., Fibre Channel and iStorage). Executing the system diagnostics with them connected may affect the network or the system that is running.**

Tips On checking hard disk drives, no data is written to the disk.

11.2 Startup and Exit of System Diagnostics

Start up System Diagnostics in the following procedure. (If the server is running, shutdown the system.)

1. Start up EXPRESSBUILDER and select **Tool menu** from Boot menu.

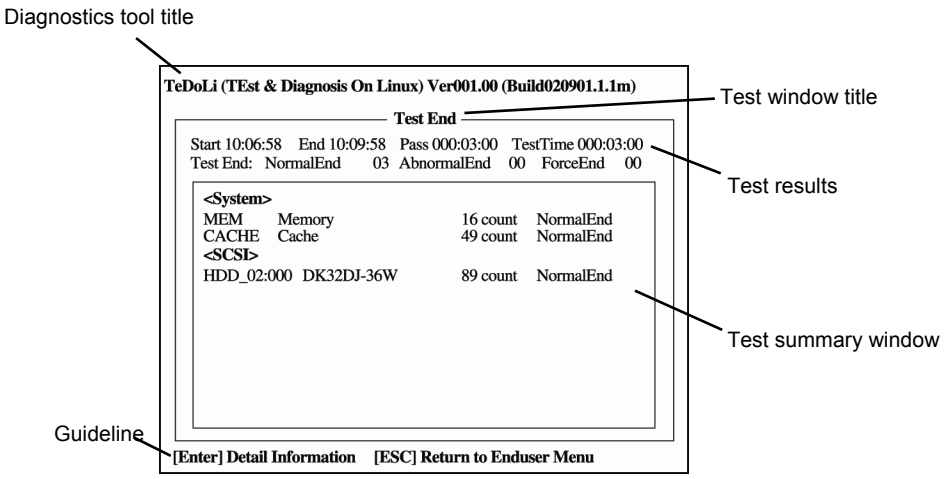
   For information on starting up EXPRESSBUILDER, see *Chapter 3 (5. Details of EXPRESSBUILDER)*.

   Note In case **Language selection menu** appears, select **English**.

2. Select **Test and diagnostics**.
3. Select **End-User Mode (Basic)** to start 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
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.

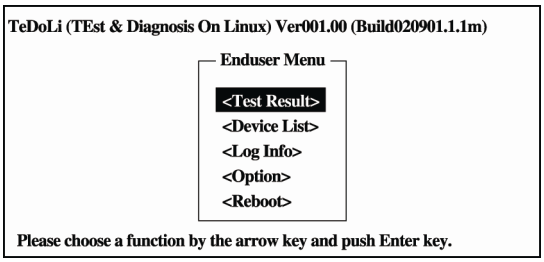
Test results
Shows the start, end, and elapsed time and completion status of the diagnostics.

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.

When an error is detected by the System Diagnostics, the relevant test result in the Test summary window is highlighted in red, and “**Abnormal End**” is displayed in the result on the right side.
Move the cursor to the test that detected the error, and press <**Enter** > key. Take notes about the error message that has been output to the Detail Information screen and contact the store where you purchased the product or your maintenance service company.

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



<Test Result>
Shows the diagnostics completion screen of the above diagnostics.

<Device List>
Shows a list of connected devices.

<Log Info>
Shows the log information of the diagnostics. Log information can be saved. To save it, connect a FAT formatted removable media, and then select **Save(F)**.

<Option>
Optional features can be used from this menu.

<Reboot>
Reboots the hardware.

5. Select **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 #12.2 Features of Offline Tools" for more information.

12.2 Features of Offline Tools

The offline Tools offer the following features.

Note Disable RDX by setting RDX to hibernate mode before starting the offline tools.

Off-line Maintenance Utility

The Off-line Maintenance Utility is started when Maintenance Utility is selected. The Off-line Maintenance Utility is used for preventive maintenance and failure analysis for this product. When you are unable to start NEC ESMPRO due to a failure, the Off-line Maintenance Utility can be used to check the cause of the failure.

Note The Off-line Maintenance Utility is intended for maintenance personnel. Consult with your service representative if any trouble that requires Off-line Maintenance Utility occurred.

After starting up the Off-line Maintenance Utility, the following features are available to run.

- 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 will be displayed, however, it is not a failure.

```
WARNING!
No Information.
The Device is not detected or it is broken.
```

- System Information Viewer
  Displays information on processor (CPU), BIOS.
  Also output the information to a text file.
- System Information Management
  Set the information specific to your server (Product information, Chassis information).

BMC Configuration

- It is used for setups of alert functions by Baseboard Management Controller (BMC) and remote control functions by PC for Management.
  See *Chapter 3 (2. BMC Configuration)* for more information.

NEC Express5800 Series
Express5800/R320c-E4, R320c-M4, R320d-E4, R320d-M4

2

Configuring and Upgrading the System

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

1. **Disk 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. Disk Operations

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

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.

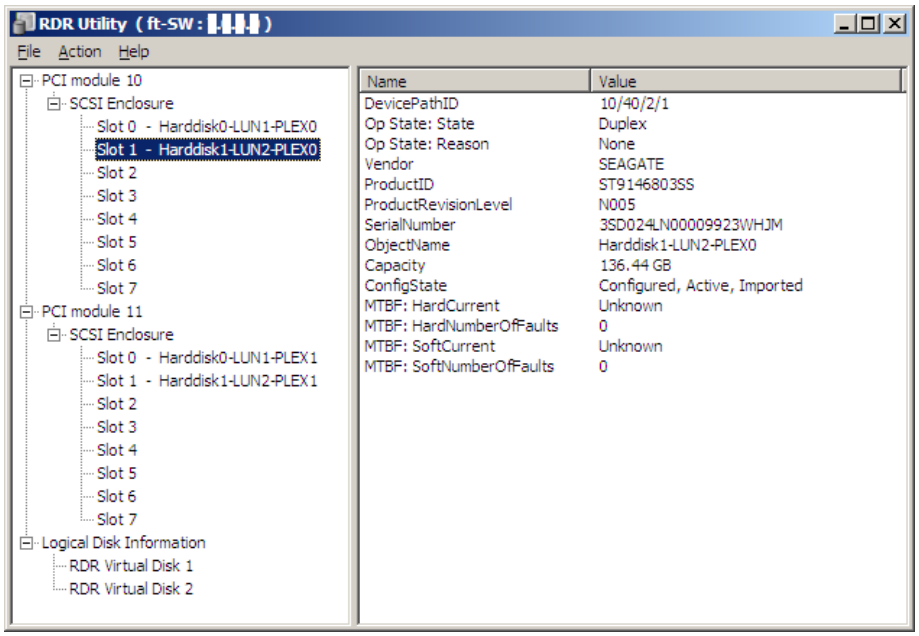
1.1 Starting RDR Utility and Its Screen

Starting RDR Utility

Click **Start** → **RDR Utility** to start RDR Utility.

(On Windows Server 2008 R2, select **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.

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.

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

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

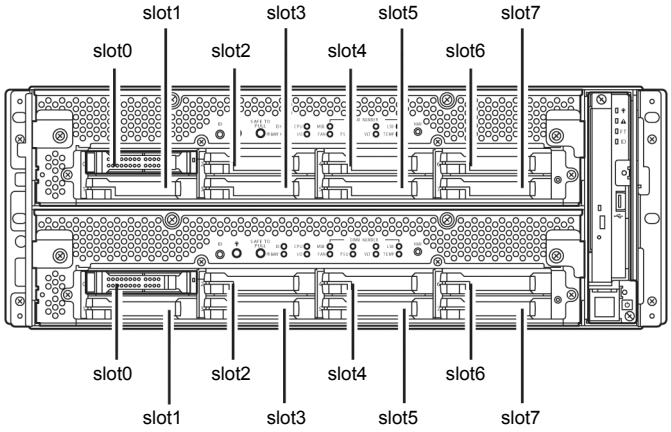
1.2.1 RDR (Rapid Disk Resync)

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 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 ←→ PCI module 11 (CPU/IO module 1) slot 0
PCI module 10 (CPU/IO module 0) slot 1 ←→ PCI module 11 (CPU/IO module 1) slot 1
PCI module 10 (CPU/IO module 0) slot 2 ←→ PCI module 11 (CPU/IO module 1) slot 2
PCI module 10 (CPU/IO module 0) slot 3 ←→ PCI module 11 (CPU/IO module 1) slot 3
PCI module 10 (CPU/IO module 0) slot 4 ←→ PCI module 11 (CPU/IO module 1) slot 4
PCI module 10 (CPU/IO module 0) slot 5 ←→ PCI module 11 (CPU/IO module 1) slot 5
PCI module 10 (CPU/IO module 0) slot 6 ←→ PCI module 11 (CPU/IO module 1) slot 6
PCI module 10 (CPU/IO module 0) slot 7 ←→ 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]

- **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 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

The following describes the procedure to set duplex configuration to disks by RDR.

In this example, the disks of the Slots 1 of the PCI modules 10 and 11 are duplexed.

1. Insert a new disk to a built-in slot.

   (In this example, a disk is inserted to the Slot 1 of the PCI module 10.)

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 duplexed successfully.**

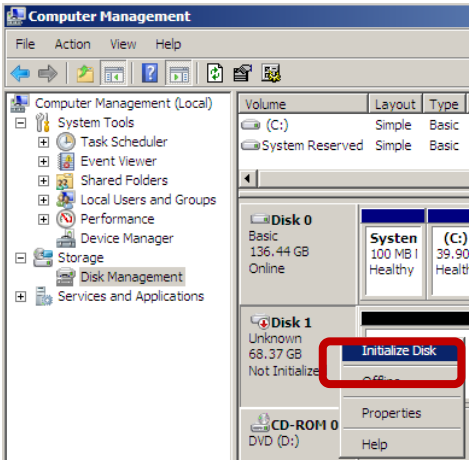
Tips As for physical format, see *Chapter 3 (3.3 Physical Formatting of Hard Disk Drive)*.

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**, select **Administrative Tools** and start **Computer Management**. On the tree in the left pane, click **Storage Area** - **Disk Management**.

3. If the inserted disk is indicated as **Not Initialized** in the right pane, right-click the disk 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.



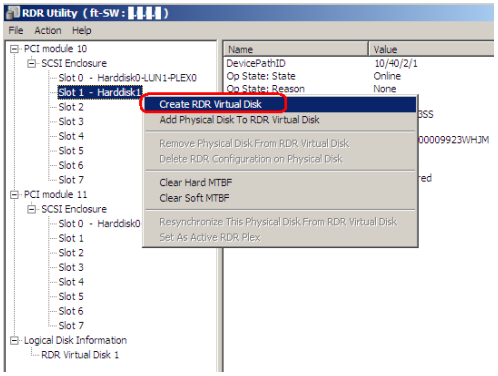
4. Click **Start** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **Start** → **All Programs** → **RDR** → **RDR Utility** to start RDR Utility.)

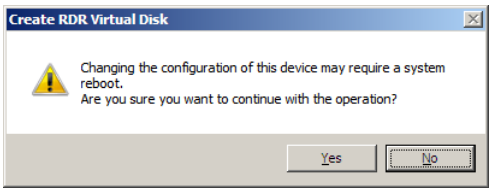
Tips

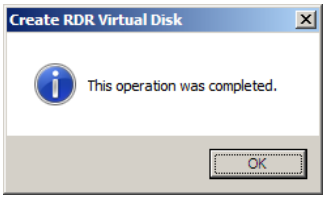
- If the inserted disk does not appear on the tree, from the menu of RDR Utility, select **Action** and click **Refresh** or press <**F5**> to update the display after awhile.
- The display of RDR Utility is not updated automatically. Therefore, update it every time after you perform disk operations described below.

5. On the left tree of RDR Utility, right-click a disk to set RDR and click **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.





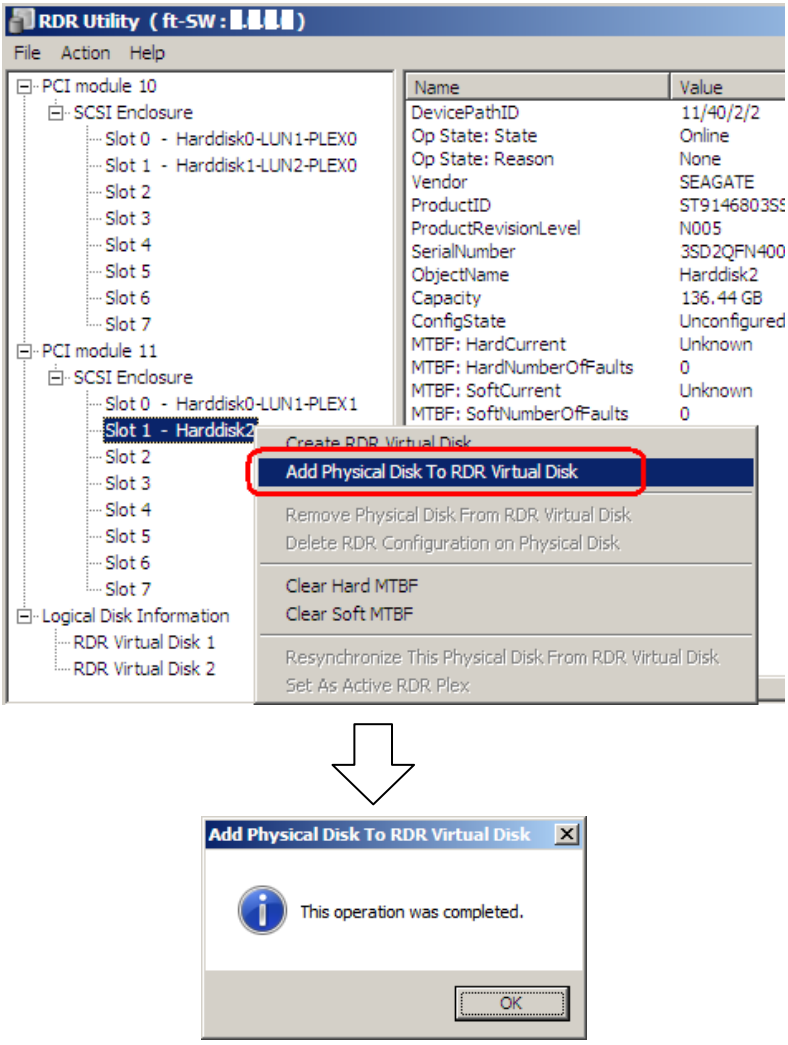


   If the system restart pop-up message appears. If you click **Yes**, the OS is restarted automatically after two minutes.
   Perform Step 6 and the subsequent steps.

6. Insert a disk to set duplex configuration into the corresponding slot.
   (In this example, a disk is inserted into the Slot 1 of the PCI module 11.)

   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.

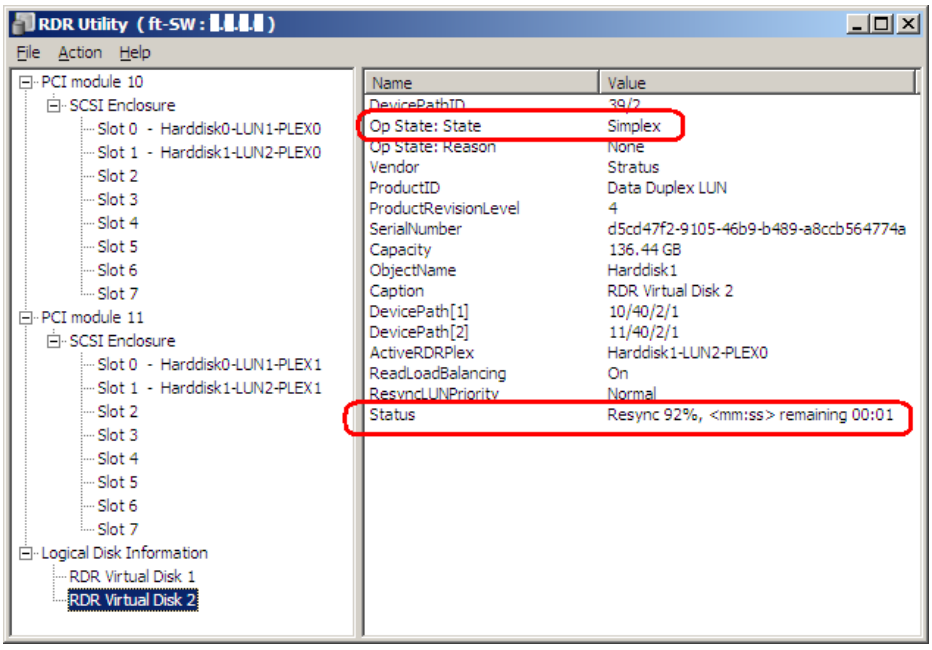
7. On the left tree of RDR Utility, right-click a disk to set RDR and click **Add physical Disk To RDR Virtual Disk**.



8. Confirm that synchronizing disks are started and 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	Amber (Blinking)	Simplex	–
Destination disk	Amber (Blinking)	Syncing	–
RDR Virtual Disk	–	Simplex	Resync x % (x=0,4,8,・・・96)



Important **Restarting the server interrupts synchronization process. Do not restart the server during synchronization.**

Tips

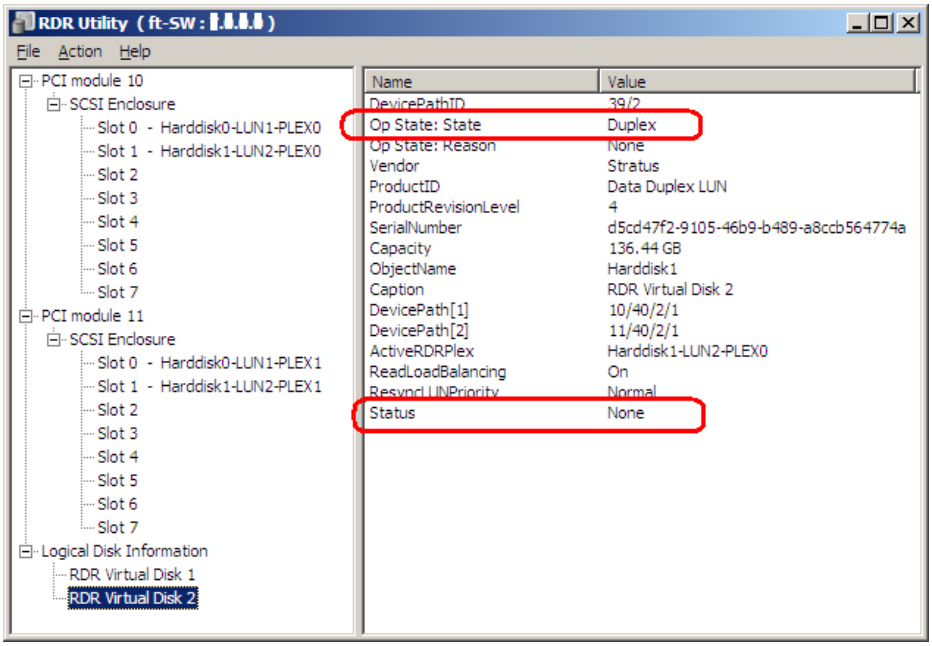
- The time required for synchronization varies depending on the partition size on the disk.
  For a 136 GB partition, it takes about 100 minutes. When the partition does not exist on the disk, the synchronization is completed immediately after the RDR is set. However, when the dynamic disk is used, the time required for synchronization depends on the disk size regardless of whether or not the partition exists on the disk. For a 136 GB disk, it takes about 100 minutes.
- When the partition does not exist on the disk, the DISK ACCESS LED is turned off on the source disk and the destination disk, and the status become Online.
- 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	Green (Blinking)	Duplex	–
Destination disk	Green (Blinking)	Duplex	–
RDR Virtual Disk	–	Duplex	None

Tips

When the partition does not exist on the disk, the DISK ACCESS LED is turned off on the source disk, and the status become Online.



Tips

When a new partition is created on the disk where RDR is configured, the created partition area is synchronized automatically.

When the system is halted without shutting down Windows properly, for example, by pressing the POWER switch, the entire area of the partition on the synchronized disks will be resynchronized after the system is restarted.

1.2.3 Removing duplex configuration of RDR disks

This section describes how to remove duplex configuration from the disk with RDR setting.

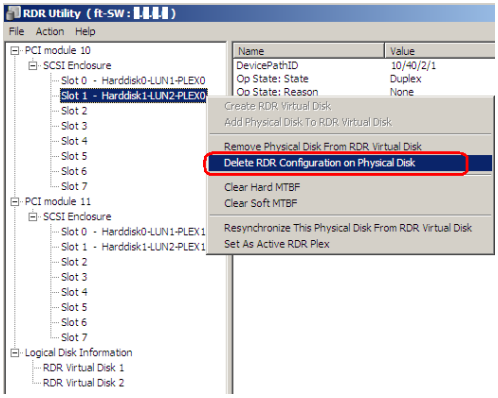
In the example below, the duplex setting of the disks in the Slot 1 of the PCI modules 10 and 11 is removed.

Important **Do not release the RDR setting of the system disk.**

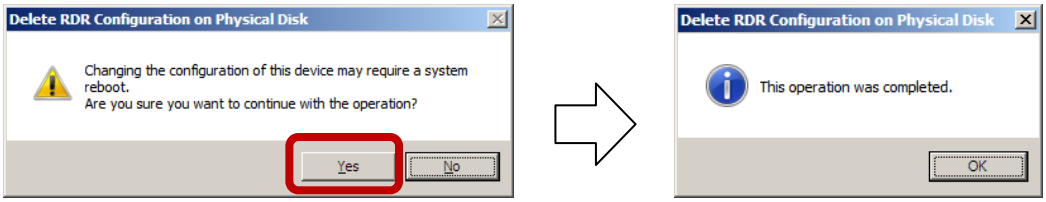
Tips

- 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**>.

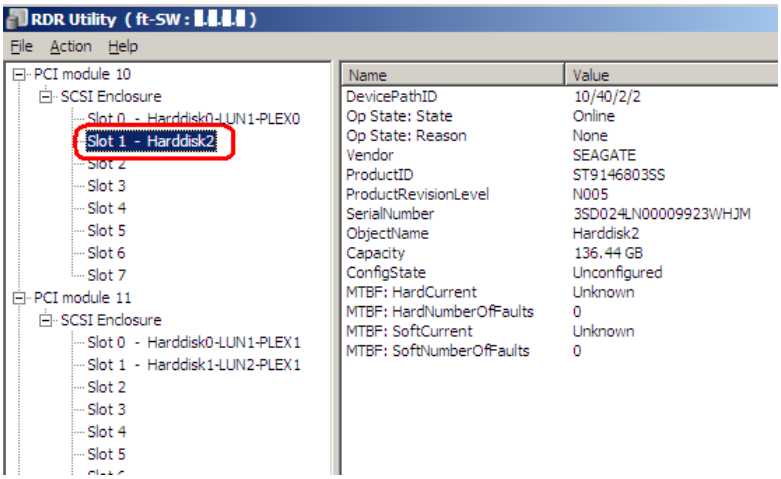
1. Click **Start** → **RDR Utility** to start RDR Utility. (On Windows Server 2008 R2, select **Start** → **All Programs** → **RDR** → **RDR Utility** to start RDR Utility.)
2. Right-click a disk you want to cancel RDR from the tree in the left pane, and select **Delete RDR configuration on Physical Disk**.



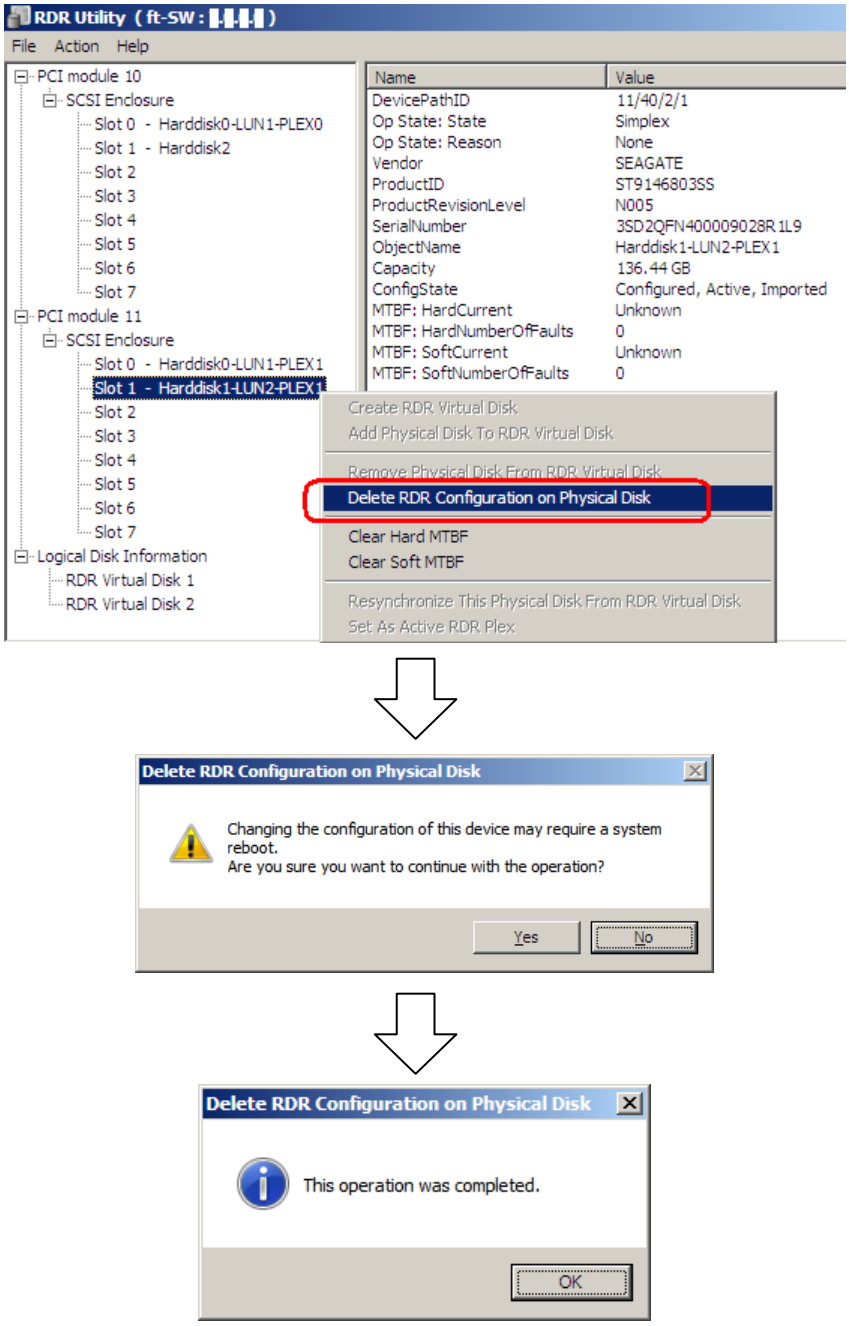
3. Click **Yes** on confirmation dialog box.



4. Confirm that RDR of the relevant disk is cancelled.



5. 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, the OS needs to be restarted when canceling RDR. In that case, the system restart pop-up message appears. If you click **Yes**, 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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **Start** → **All Programs** → **RDR** → **RDR Utility** to start RDR Utility.)
2. Rght-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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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	Amber (Blinking)	Simplex	–
Destination disk	Amber (Blinking)	Syncing	–
RDR Virtual Disk	–	Simplex	Resync x % (x: Progress percentage)

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	Green (Blinking)	Duplex	–
Destination disk	Green (Blinking)	Duplex	–
RDR Virtual Disk	–	Duplex	None

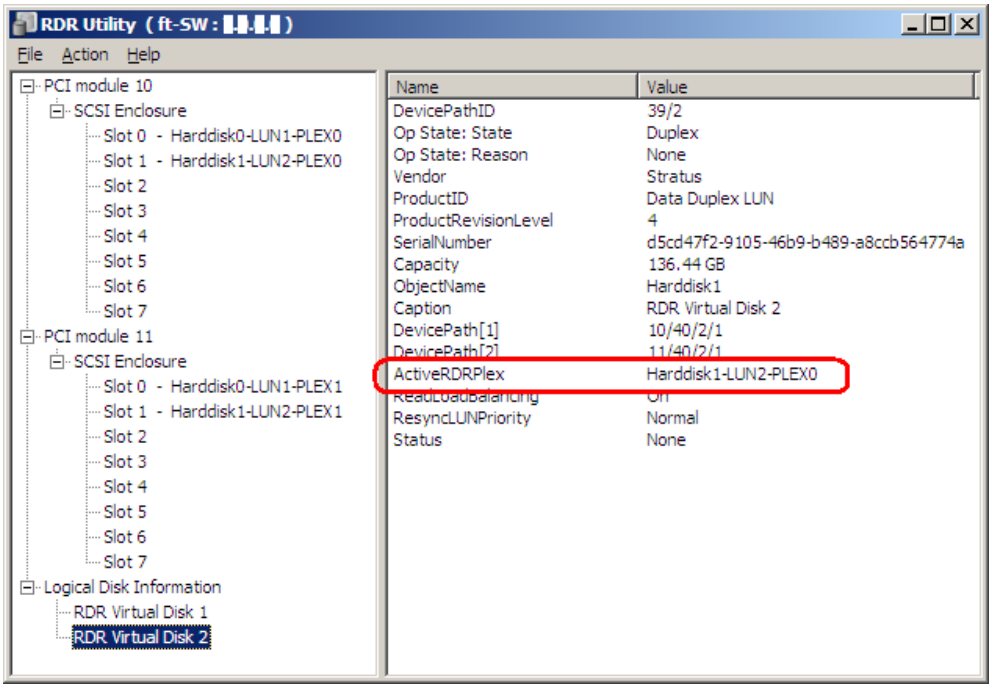
(e) Set As Active RDR Plex

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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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 every 1 month.
- The setting for automatic verification process is stored in **Task Scheduler** of Windows OS in the following format. You can change interval of automatic verification by using **Windows OS Task Scheduler**.
  Task name: RdrVerifyLun X (X: Virtual disk number)
  Example: RdrVerifyLun 1 (when the virtual disk number is 1)
- The time required for verification depends on the disk size and load.
  For 136GB disk, it takes about 40 minutes.

(b) Stop Verify RDR Virtual Disk

Verification of RDR virtual disk in progress can be stopped.

1. Click **Start** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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 **The failed hard drive disk should be replaced with the server powered on.**

1.3.1 How to Locate Failed Disks

1. Click **Start** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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 values of **MTBF: Current** and **MTBF:NumberOfFaults** in the right pane.

Description of each MTBF value

Property name	Description	Normal value*
MTBF: HardCurrent	Mean time between hardware failures.	Unknown
MTBF: SoftCurrent	Mean time between software failures.	Unknown

* 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.

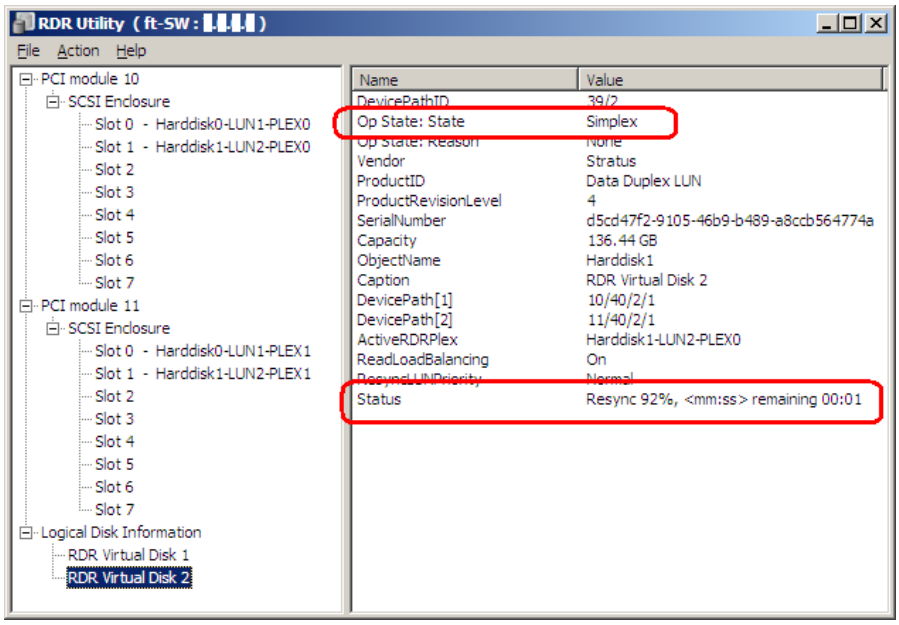
Here, an example that a failure of the disk in slot 1 of the PCI module 10 is explained.

1. Click **Start** → **RDR Utility** to start RDR Utility.
   (On Windows Server 2008 R2, select **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	Amber (Blinking)	Simplex	–
Destination disk	Amber (Blinking)	Syncing	–
RDR Virtual Disk	–	Simplex	Resync x % (x=0,4,8,···96)



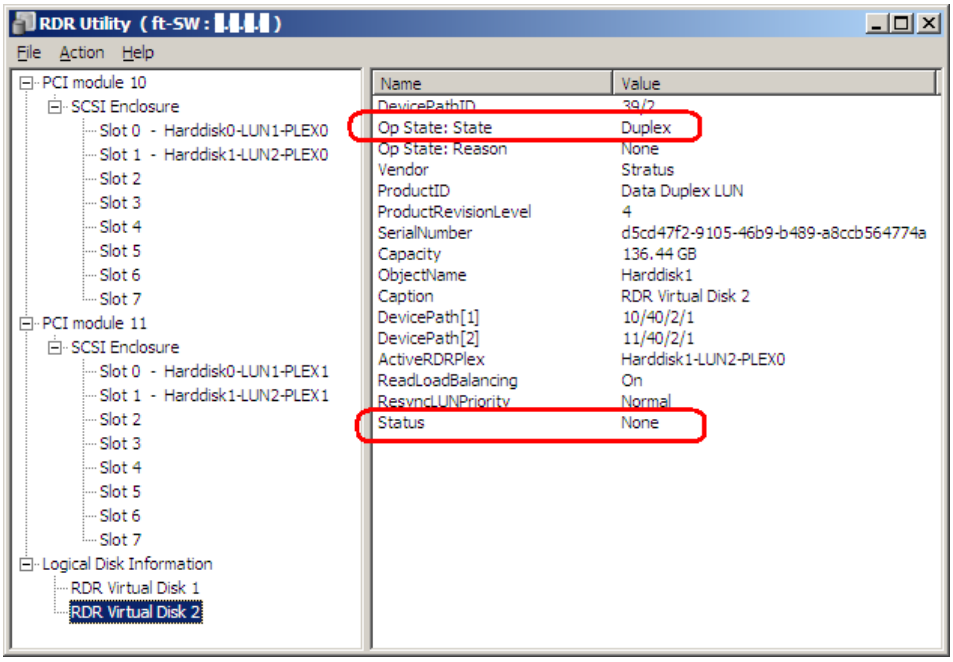
Important **If the system is rebooted during synchronization, the process cannot be completed. Do not restart the system until the synchronization is completed.**

Tips

- The time required for synchronization varies depending on the partition size on the disk.
  For a 136 GB partition, it takes about 100 minutes. When no partition exists on the disk, synchronization is completed immediately after the RDR is set.
  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 136 GB disk, it takes about 100 minutes.
- 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	Green (Blinking)	Duplex	–
Destination disk	Green (Blinking)	Duplex	–
RDR Virtual Disk	–	Duplex	None



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** - **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, 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-82576 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 82576 2-Port Copper Gigabit Adapter" or "Stratus X540 1-Port Copper 10 Gigabit Adapter".

(*) Express5800/R320c-E4 and R320d-E4 do not have this adapter.

3.1 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.

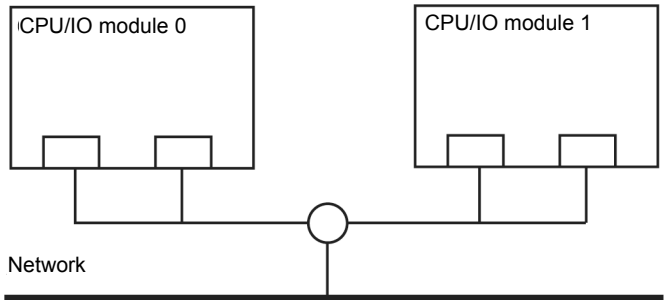
The other modes, "Static Link Aggregation", "IEEE 802.3ad Link Aggregation", and "Virtual Machine Load Balancing" do not contribute to enhancement of network redundancy. When a fault occurs, the communication performed on the controller with the fault is not taken over by the standby controller but lost.

3.2 Rules of Duplex Configuration on Express5800/ft series

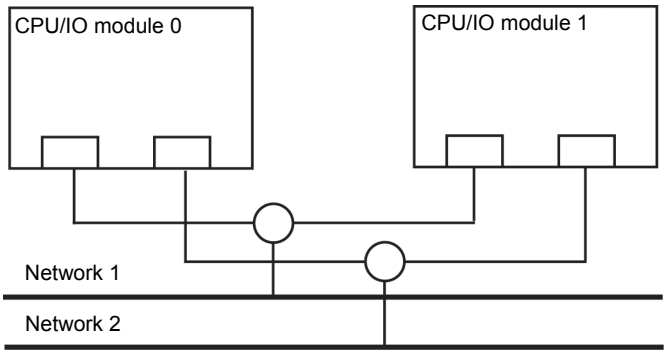
Ensure to make the setting of duplex network configuration on the server.

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.



3.3 Configuring Duplex LAN

The following explains how to configure duplex/dual LAN.

The screen images used in this section are for Windows Server 2008 R2.

Note

- Because the configuration from the remote site may fail, you need to log on as an Administrator or a member of Administrators group.
- A team assigned to the virtual network by Hyper-V Virtual Network Manager cannot be used in Active Upgrade.
  When you use Active Upgrade, at least one team not assigned to virtual network is required.
- Before replacing the back panel of CPU I/O module, 1000BASE-T 2ch board set (N8804-009), or 10GBASE-T 1ch board set (N8804-011), be sure to remove duplex LAN, and create a team after the replacement.
  See *Chapter 2 (3.4 Removing Duplex LAN)* for how to remove duplex LAN.
  See *Chapter 2 (3.3 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** - **Administrative Tool** - **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-82576 2-Port Gigabit Adapter
Stratus emb-82576 2-Port Gigabit Adapter
Stratus emb-82576 2-Port Gigabit Adapter #2
Stratus emb-82576 2-Port Gigabit Adapter #2

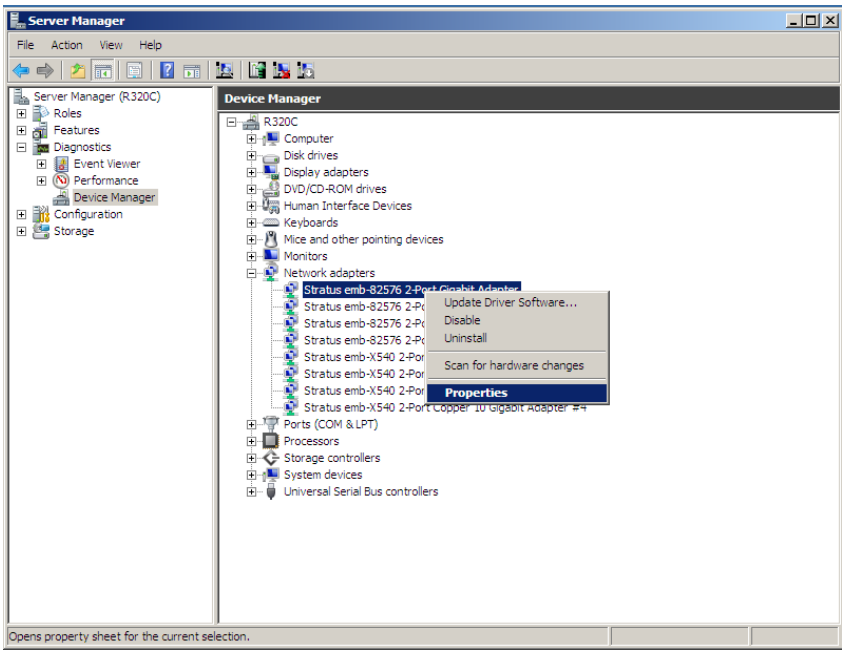
The display will be as follows when the actions are performed properly.

Stratus emb-82576 2-Port Gigabit Adapter
Stratus emb-82576 2-Port Gigabit Adapter #2
Stratus emb-82576 2-Port Gigabit Adapter #3
Stratus emb-82576 2-Port Gigabit Adapter #4

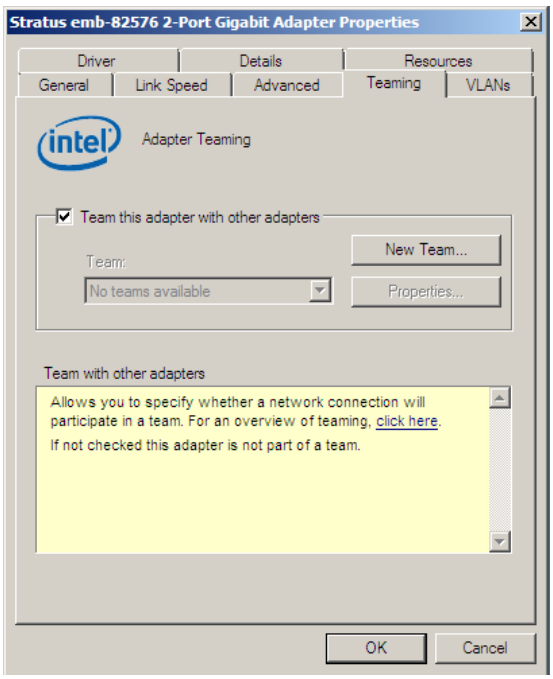
When using 10GBASE-T, the network adapter names are shown in "Stratus X540 1-Port Copper 10 Gigabit Adapter" and "Stratus emb-X540 2-Port Copper 10 Gigabit Adapter".

(2) Create team adapter.

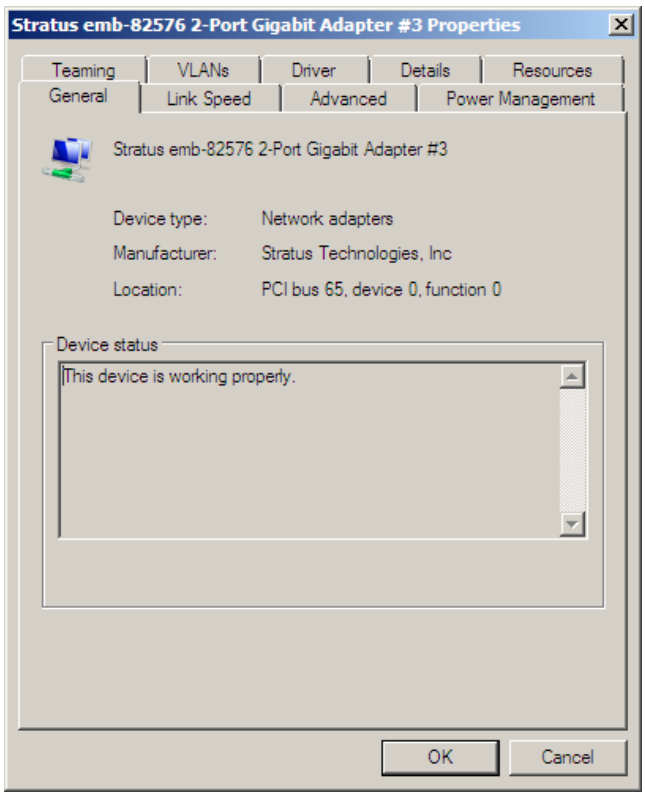
1. Select a target Network Adapter. Right-click on it and select **Properties** from the menu displayed to show the **Properties** window.



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.

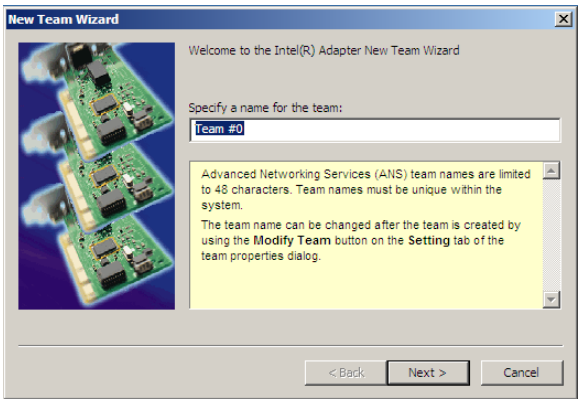


Screen when using Stratus emb-82576 2-Port Gigabit Adapter and Stratus 82576 2-Port Copper Gigabit Adapter



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**.

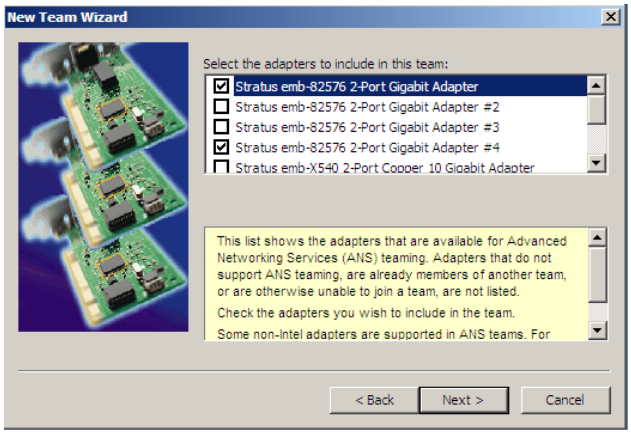


Note

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)

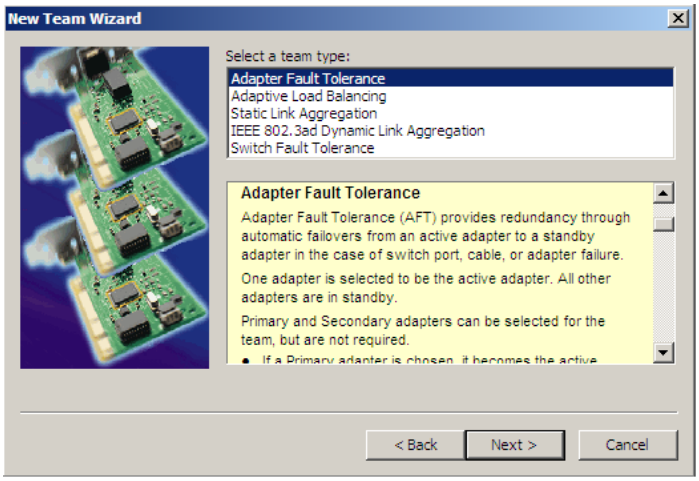
Function: 0 (Port #0 side)
1 (Port #1 side)

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)

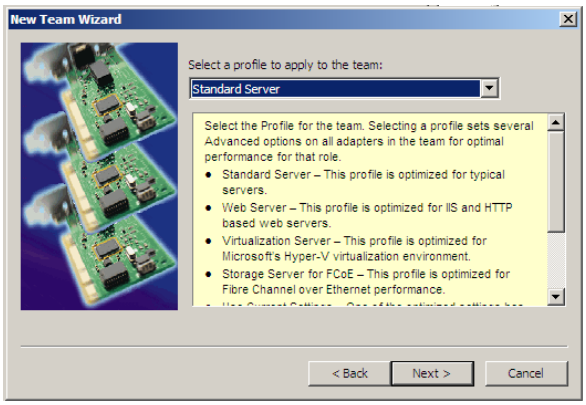
5. Select **Adapter Fault Tolerance**, **Adaptive Load Balancing**, or **Switch Fault Tolerance** as a team type (Usually select **Adapter Fault Tolerance**). Click **Next**.



Note

Virtual Machine Load Balancing is displayed when Hyper-V feature is enabled.

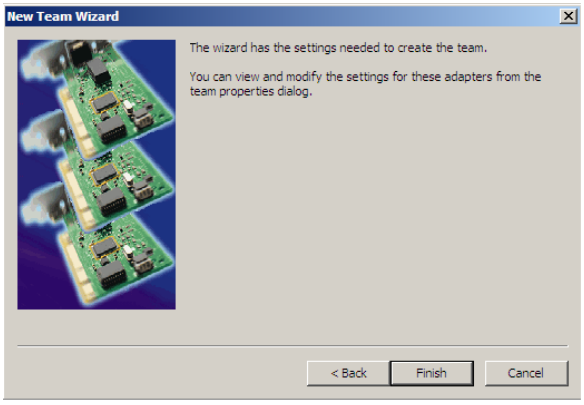
6. Select **Standard Server** from the dropdown list on "**Select a profile to apply to the team**", and click **Next**.



Note

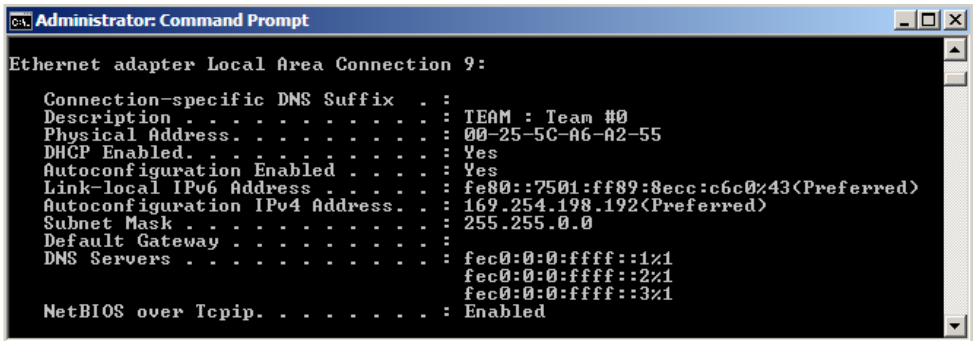
The dialog box "**Select a profile to apply to the team**" may not be displayed.
In such a case, go to Step 7.

7. Click **Finish**.

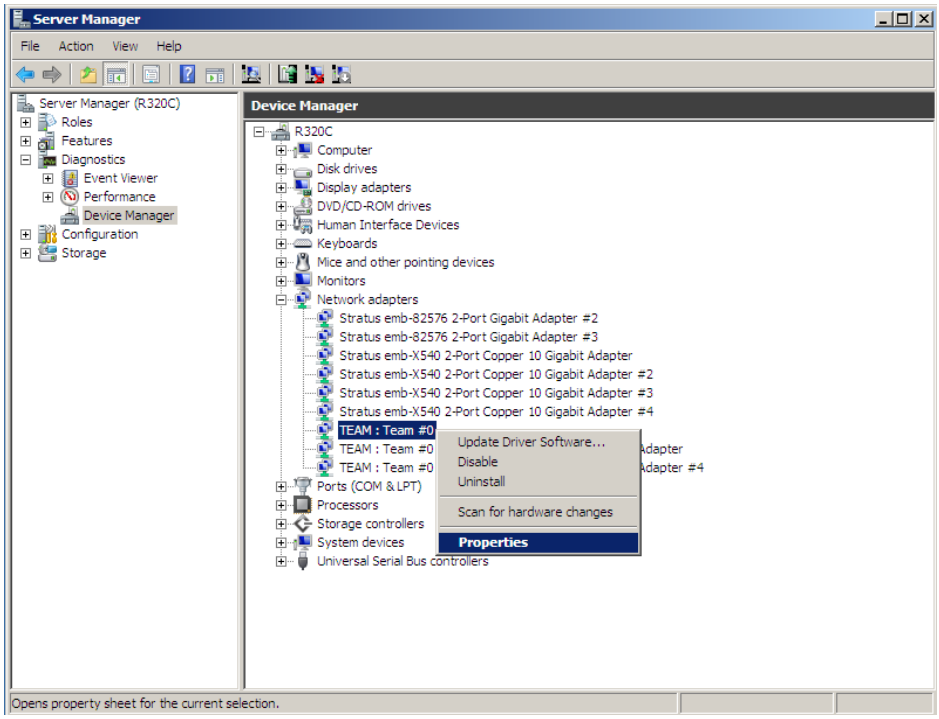


(3) Setting team adapter

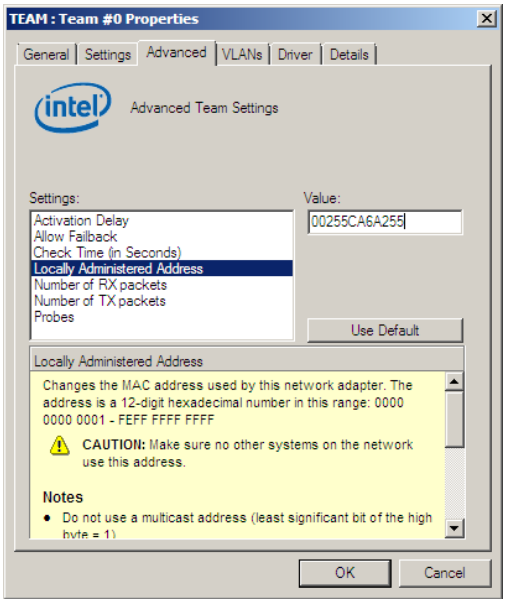
1. Start Command prompt and enter as follows to check the physical MAC address of team adapter.
   ```
   > ipconfig /all
   ```



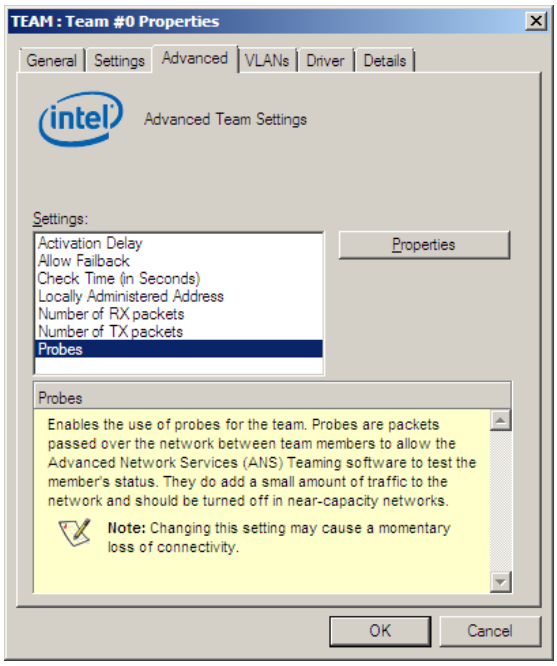
2. Select the **Team Adapter** you have set from **Device Manager**. Right-click on it and select **Properties** from the menu displayed to show the **Properties** dialog box.



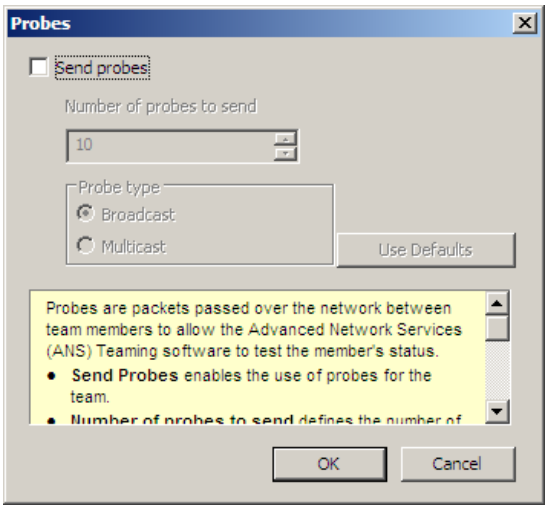
3. Specify the physical address (MAC address) of team adapter as follows:
   - Select the **Advanced** tab on the properties dialog box. Select **Locally Administered Address** from the **Settings** list box.
   - Enter the MAC address of a Team Adapter, which you have checked in Step 1, in the **Value** 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.



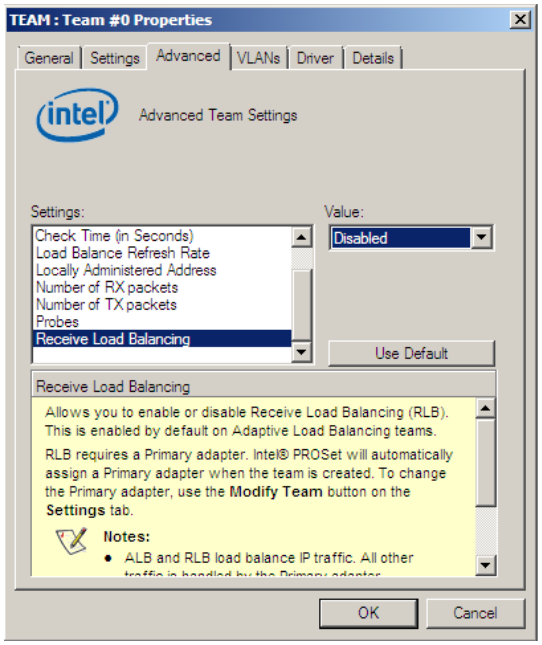
– Click **OK**.

The Probe setting is not displayed when **Switch Fault Torelance (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.

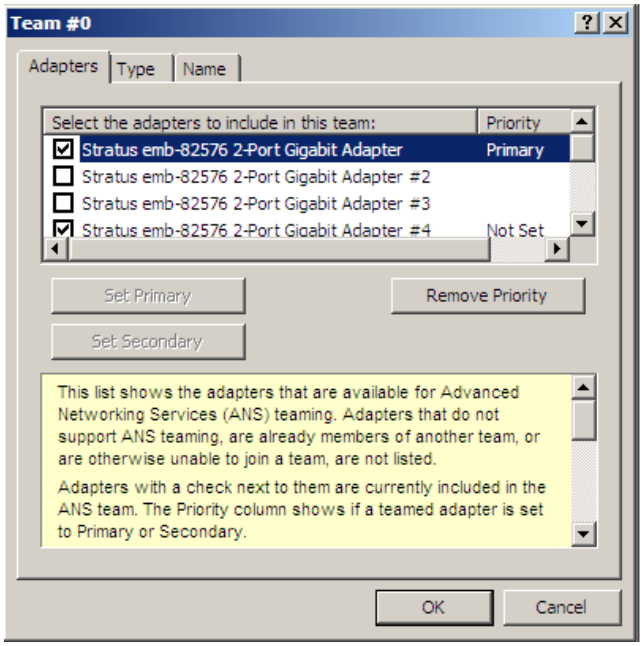


– Click **OK** to apply a change. The dialog will close.

– Show the properties dialog again.

– Select the **Settings** tab on the properties dialog box and click **Modify Team** button to display the dialog box.

– 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.

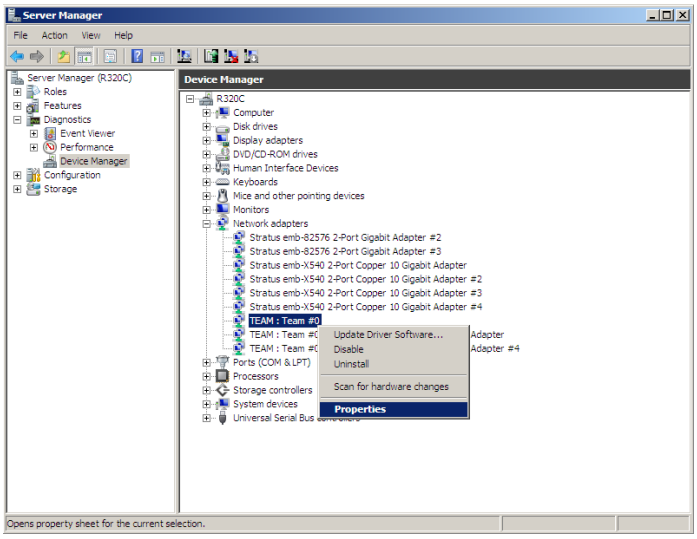
3.4 Removing Duplex LAN

This section describes how to remove duplex/dual LAN.

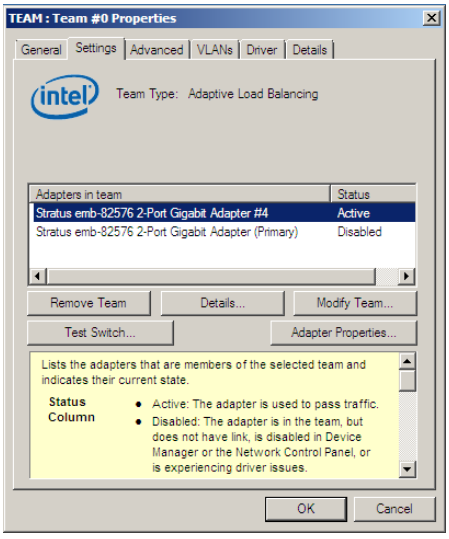
Note

- 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.

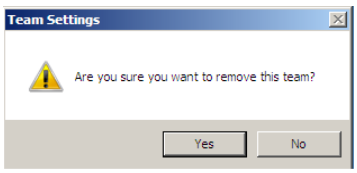
1. Select **Start** - **Administrative Tool** - **Computer Management** - **Device Manager**.
2. Select the **Team Adapter** of which you want to remove duplex/dual LAN. Right-click on it, and then select **Properties** from the menu displayed to show the properties dialog box.



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		○
Windows Management Instrumentation		○
SNMP Service	○	
Alert Manager Main Service	○	
Alert Manager Socket(S) Service	○	
ESMFSService	○	
ESMCommonService	○	
ESRAS Utility Service	○	
ESMPS	○	
ESMBmcConfigMonitoring	○	
Virtual Disk(vds)		○
DHCP Client		○

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.
- **.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 (when such as executing the Active Upgrade).

5. Installing Optional Devices

This section describes procedures to add/remove optional devices and replace failed components.

Important

- **Optional devices described in this chapter may be installed or removed by the user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user.**
- **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 Before Starting Work

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, refer to *Safety precautions* in *Precautions for Use*.

- Do not disassemble, repair, or modify the server.
- Do not look into the DVD-ROM drive.
- Do not remove the lithium battery, NiMH battery, or Li-ion 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, refer to *Safety precautions* in *Precautions for Use* in *User's Guide*.

- 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 Anti-static measures

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

Wear wrist straps (arm belts or anti-static gloves).

Wear wrist straps on your wrists. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

Touch the metal part regularly when working with components to discharge static electricity.

Select a suitable workspace.

Work with the server on the anti-static or concrete floor.

When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.

Use a worktable.

Place the server on an anti-static mat to work with it.

Clothes

Do not wear a wool or synthetic cloth to work with the server.

Wear anti-static shoes to work with the server.

Take off any metal accessories you wear (ring, bracelet, or wristwatch) before working with the server.

Handling of components

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

Hold a component by its edge to avoid touching any terminals or parts.

To store or carry any component, place it in an anti-static bag.

5.1.3 Pre-upgrade verification

If you add on optional devices onto this server, some devices require specific ft server software version (s).

If the optional device requires specific version number (s), take the following procedure before adding the devices.

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. Verify 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 more information on how to verify the working ft server control software version, refer to *Chapter 1 (3.14 Confirming the ft Server Control Software Version (for Windows Server 2012)) or (4.15 Confirming the ft Server Control Software Version (for Windows Server 2008 R2))* in *Installation Guide*.

5.1.4 Preparing your system for upgrade

Note the following, when installing or replacing devices, to improve the performance of Express5800/ft series.

- With the Express5800/ft series, devices can be replaced during the continuous operation.
  Take extreme care for electric shock and damage to the component due to short-circuit.
- Optional devices cannot be installed 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, disable the intended module (place the module off-line) by using either of the following methods:
  - ft server utility of the NEC ESMPRO Agent
  - NEC ESMPRO Manager from the management PC on the network

  After a new module is installed to the server, enable the module using the ft server utility or the NEC ESMPRO Manager.

Tips The system is defaulted to automatically boot the module, once installed. For more information, see *Chapter 1 (4.7 Setup of System Operation)*.

- Make sure to provide the same hardware configuration on both CPU/IO modules (except SAS board).
- Use the same slots and sockets on both groups.
- Do not install those devices having different specifications, performance, or features.
- Before removing the set screws from the CPU/IO modules, place the desired module off-line using the ft server utility or the NEC ESMPRO Manager.

5.2 Available Option Devices

Option devices that can be added, removed, or replaced are as follows:

- 2.5-inch hard disk drive
  The server can contain up to 16 hard disk drives.
  Install hard disk drives in 2.5-inch hard disk drive bay at front of the server.

- DIMM
  Up to 256 GB (16 16-GB DIMMs) can be installed.
  After removing the CPU/IO module, install DIMMs in DIMM sockets on motherboard of the server.

- Processor (CPU)
  Up to two CPUs can be installed.
  After removing the CPU/IO module, install CPU in CPUs sockets of the server.

- PCI card
  Up to two cards can be installed on R320c-E4 or R320d-E4 model, or up to 4 cards on R320c-M4 or R320d-M4 model.
  After removing the CPU/IO module, install PCI card in PCI card slot of the server.

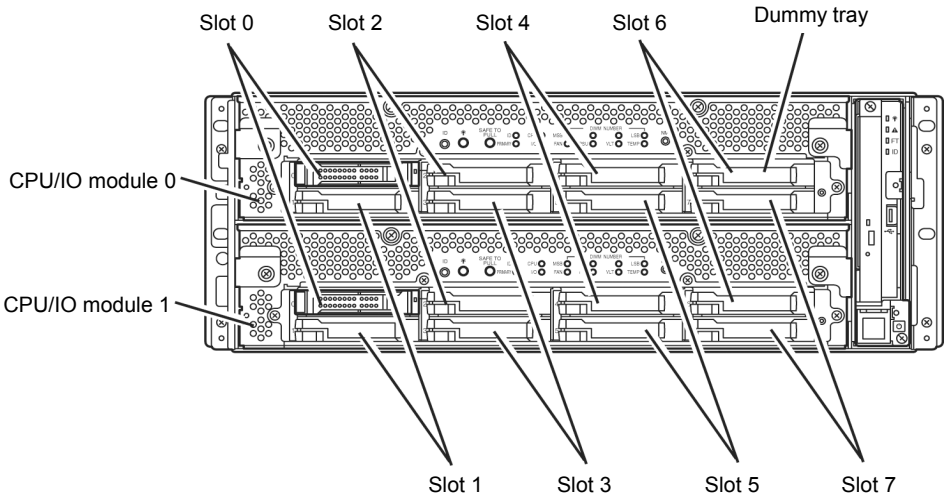
5.3 2.5-inch Hard Disk Drive

The 2.5-inch hard disk drive bays in front of the server can mount up to 16 hard disk drives with the 2.5 inch width exclusive trays.

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 agent for hard disk drives optimum for your server.**

The operation is executed 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 to execute 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 procedure 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 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* before starting installing or removing options.**
- **You must mount two HDDs that form dual disk configuration before starting the OS.**

Tips

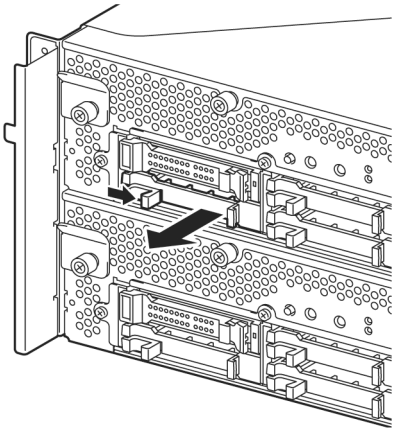
You can install a hard disk drive without shutting down the OS.

In this case, you can skip Step 1 "Shutdown the OS" and Step 8 "Press the POWER switch to power on".

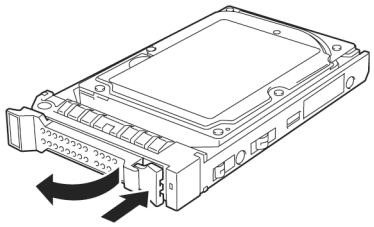
1. Shut down the OS.
   The system turns off automatically.
2. Remove the front bezel.
3. Identify the slot to which you want to install a hard disk drive.
4. If a dummy tray is inserted in a slot you want to install the hard disk drive, remove the dummy tray.

Important

Keep and store the dummy tray for future use.



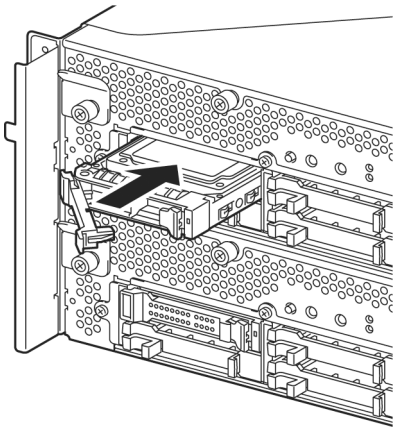
5. Unlock the hard disk drive.



6. Firmly hold the handle of the hard disk drive to install and insert the drive into the slot.

Note

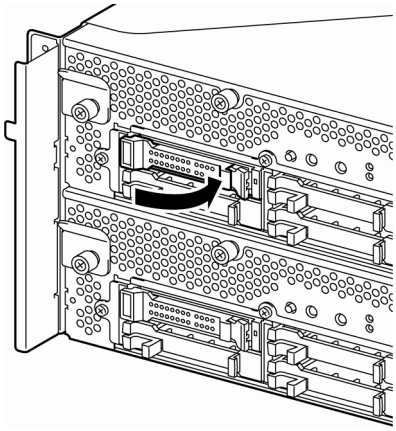
- Insert the hard disk drive until the lever hook touches the server frame.
- Check the direction of the lever. Insert the hard disk drive with the lever unlocked.



7. 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.



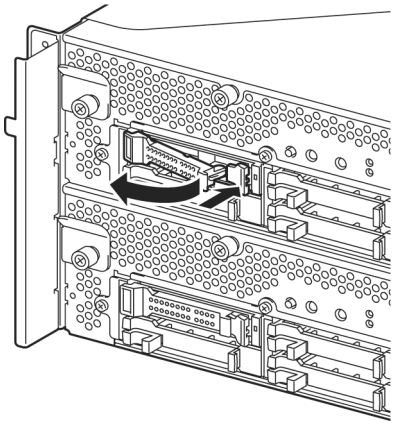
8. Press the POWER switch to power on.
9. Install the front bezel.
10. See *Chapter 2* (*1.2.2 Making disks duplex by RDR*) to set the dual disk configuration.

5.3.2 Removing 2.5-inch Hard Disk Drive

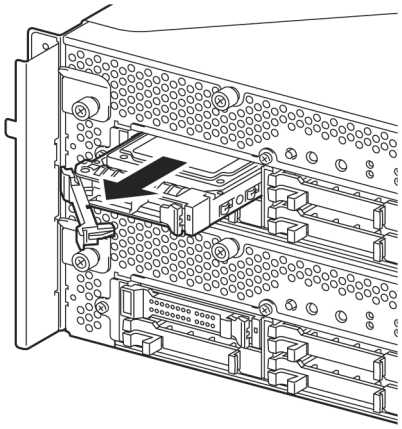
Follow the procedure below to remove the hard disk drive.

Important **See *Chapter 2 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* before starting installing or removing options.**

1. Shut down the OS.
   The system 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 according to procedures described in *Chapter 2 (5.3.1 Installing 2.5-inch Hard Disk Drive)*.
   Ensure to install the dummy slot in the empty slot to improve the cooling effect within the server.



5.3.3 Replacing 2.5-inch Hard Disk Drive

Follow the procedure below to remove the failed hard disk drive. The hard disk drive is replaced with new device with the server powered on.

Important

- **See *Chapter 2 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* before starting installing or removing options.**
- **You can replace a hard disk drive during continuous operation.**

(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 (5.3.2 Removing 2.5-inch Hard Disk Drive)*.
3. 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, it is necessary to recover the duplex configuration according to *Chapter 3* (*1. Disk Operations)* after formatting the disk physically.
  As to 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 CPU (processor, DIMM (memory), PCI card, you need to remove the CPU/IO module.

Important

- **See *Chapter 2 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* 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 module being operating may cause unexpected trouble. Use the management software (e.g., ft server utility or NEC ESMPRO Manager) to isolate the module to be removed so that the module is removed when it is stopped, without fail.**
  Then remove the relevant module after verifying the Status LED on the CPU/IO module. See *Chapter 1 (6.1 Error Messages by LED Indication)* for details of the Status LED.
- **When replacing both CPU/IO modules, replace one module and wait until dual configuration is established to replace the other module. If you replace the both 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 procedure below to remove the CPU/IO module.

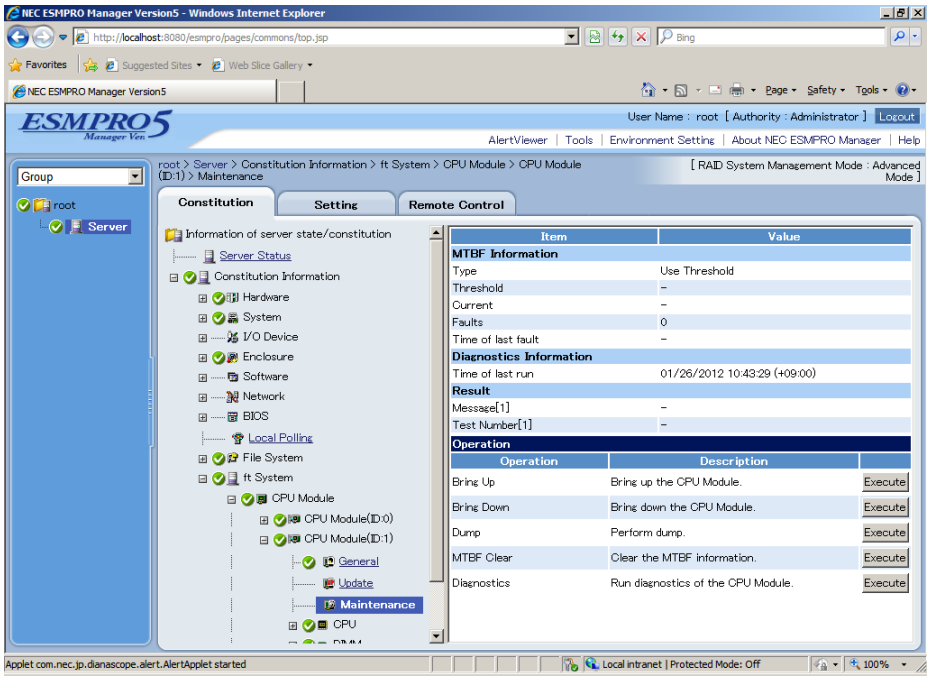
1. Stop the CPU/IO module you want to remove.

   To this end, use the ft server utility of the NEC ESMPRO Agent installed to your server or the **Information of server state/constitution** of the NEC ESMPRO Manager.

   For the detailed procedure, see *Chapter 1 (4. Maintenance of Express5800/ft series)*.

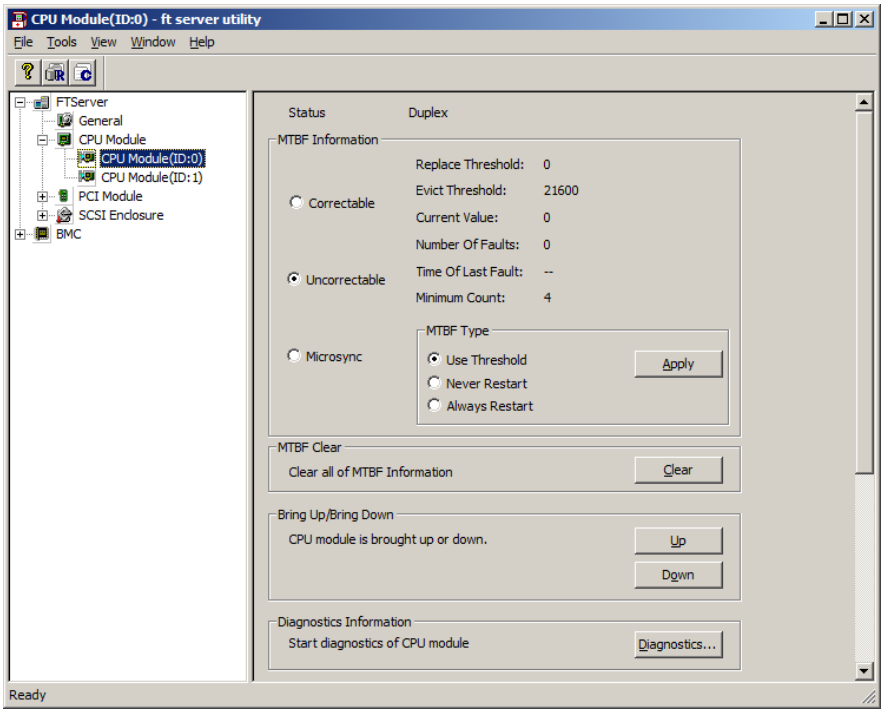
   NEC ESMPRO Manager

   Select **ft System** - **CPU Module** - **CPU Module (to be removed)** - **Maintenance** - **Bring Up/Bring Down** - **Bring Down**.



ft server utility

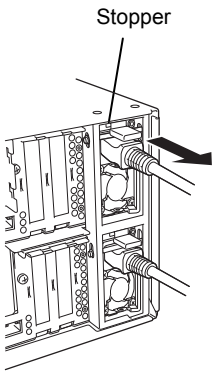
Select **ftServer** - **CPU Module** - **CPU Module (to be removed)** - **Bring Up/Bring Down** - **Down**.



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.



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 CPU/IO module handle to press down the handle.

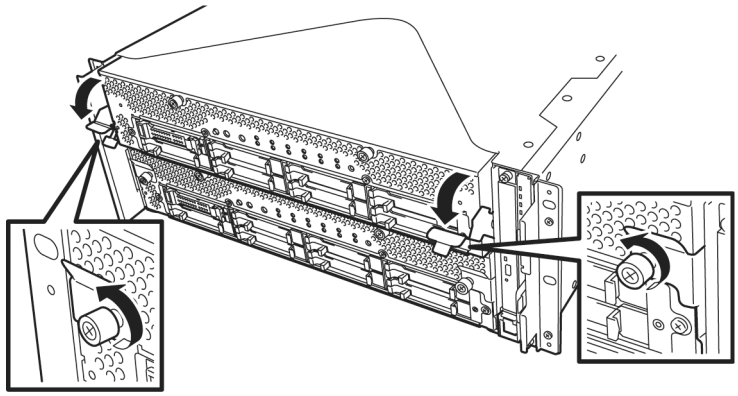
Important

Before you pull out a CPU/IO module, check the rear of the server to make sure cables for connection with peripheral equipment 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 you are going to remove.

Tips

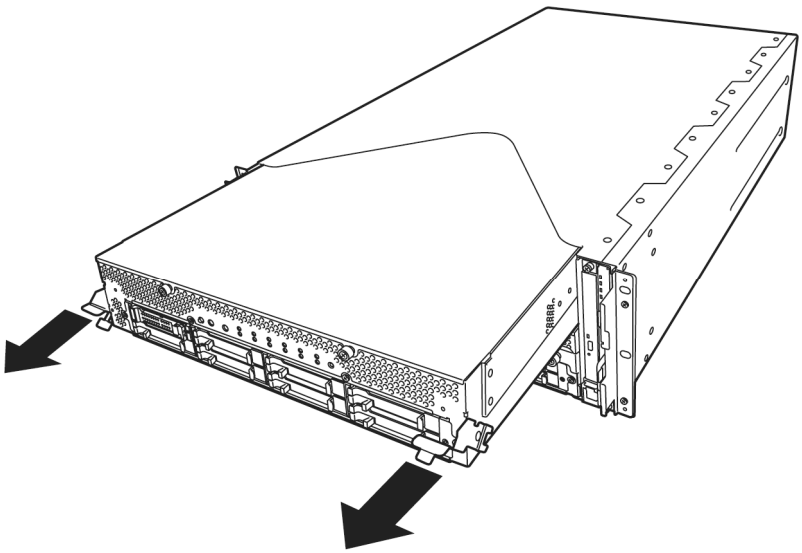
If you cannot disconnect the LAN cable easily, disconnect while pressing the latch with a slotted screwdriver.



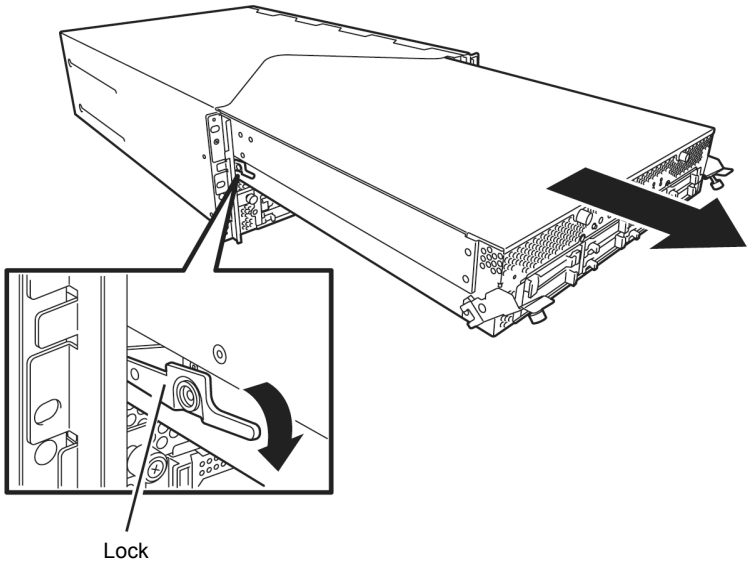
5. Hold the black levers of the CPU/IO module and pull it off.
   Pull it off until it is locked and stopped.

Important

- **Do not hold part other than the handle to pull the module.**
- **Handle the CPU/IO module carefully. Do not drop the module or bump it against parts in the device when you remove it.**



6. The CPU/IO module is locked on the way and cannot be pulled out. Lower the lock on the side of CPU/IO module to unlock it, and then pull it out.



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.

This allows you to access the devices in the CPU/IO module. For more information on how to handle these devices, see the associated sections.

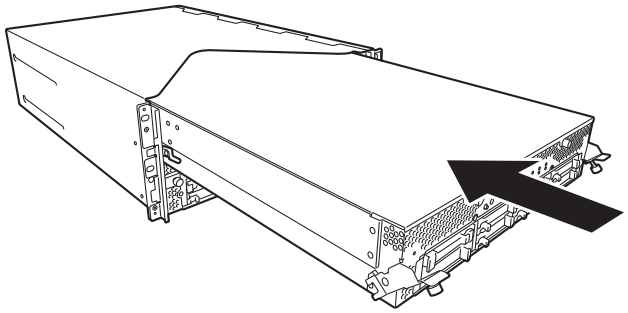
5.4.2 Installing CPU/IO Module

Follow the procedure below to install the CPU/IO module:

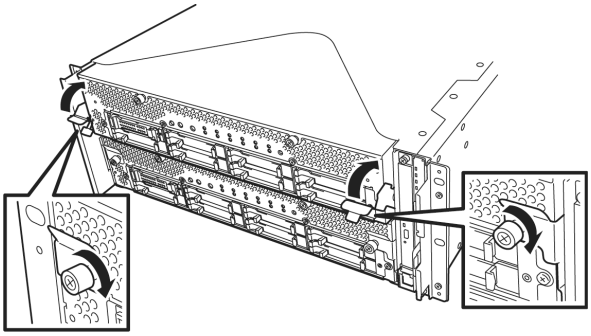
Important

- **See *Chapter 2 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* 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 it into the rack.
   Hold the CPU/IO module in such a way that its back panel connector faces the back of the rack and engage the guides of the module and chassis, and insert it slowly.



2. Push up the black levers placed on the left and right sides of the front of the CPU/IO module, and fasten them with screws.



Important

- **Secure the handle 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 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 connecting the peripheral devices and network.
4. Hold the stopper with your hand and insert the cable of the installed module.
5. The installed CPU/IO module will be automatically started.

5.5 DIMM

The DIMM (dual inline memory module) is installed to the DIMM socket on motherboard in the CPU/IO module of the Express5800/ft series.

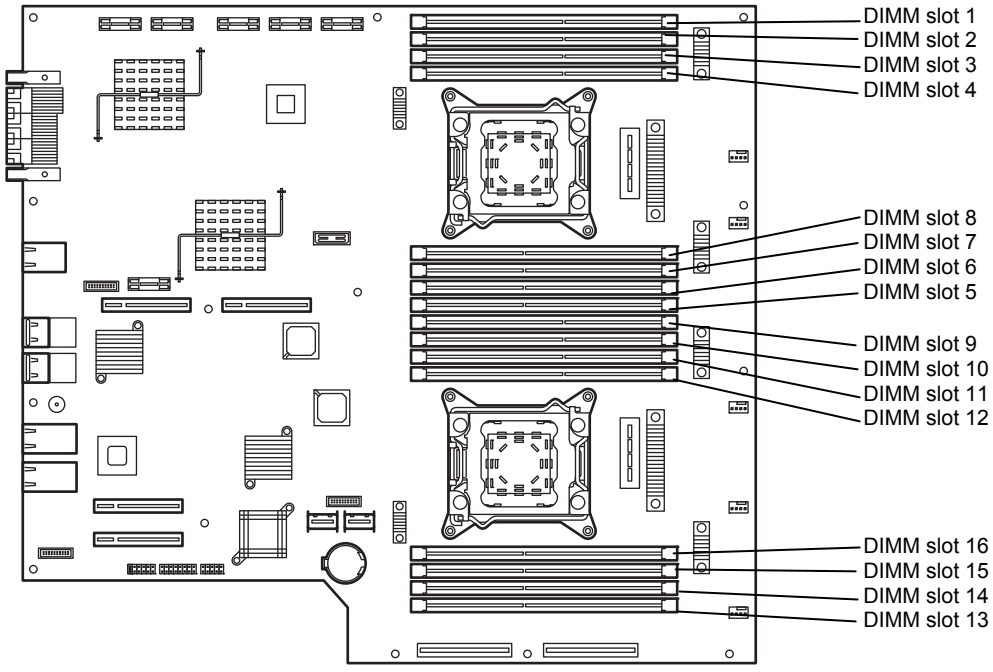
The motherboard of CPU/IO module has 16 sockets for DIMM.

Tips

- Maximum memory capacity depends on server model as follows:
  Up to 256GB (16GB x 16)
- In the error messages and logs in POST, NEC ESMPRO, or Off-line Maintenance Utility, the DIMM connector may be described as "group". The number next to "group" corresponds to the slot number shown in the figure on the next page.

Important

- **The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or onboard parts with a bare hand or place the DIMM directly on the desk.**
- **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 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* 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 with the same serial number to the same slots of the CPU/IO modules 0 and 1.
- See the following table to install additional DIMM.

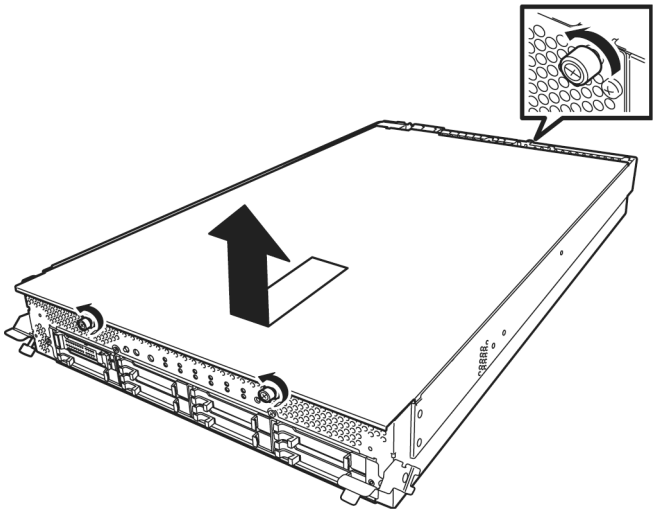
Allowable DIMM capacity		Slot number to install DIMM															
No. of CPUs	Capacity (GB)	1	2	3	4	8	7	6	5	9	10	11	12	16	15	14	13
1	4	4															
	8	4		4													
	12	4		4					4								
	16	4		4			4		4								
	20	4	4	4			4		4								
	24	4	4	4	4		4		4								
	28	4	4	4	4		4	4	4								
	32	4	4	4	4	4	4	4	4								
	32	8		8			8		8								
	48	8	4	8	4	4	8	4	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								
2	4	4															
	8	4								4							
	12	4		4						4							
	16	4		4						4		4					
	24	4		4					4	4		4					4
	32	4		4			4		4	4		4			4		4
	40	4	4	4			4		4	4	4	4			4		4
	48	4	4	4			4	4	4	4	4	4			4	4	4
	56	4	4	4	4		4	4	4	4	4	4	4		4	4	4
	64	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	64	8		8			8		8	8		8			8		8
	96	8	4	8	4	4	8	4	8	8	4	8	4	4	8	4	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
	192(*)	16	8	16	8	8	16	8	16	16	8	16	8	8	16	8	16
	256(*)	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

(*) R320c-M4 or R320d-M4 model only

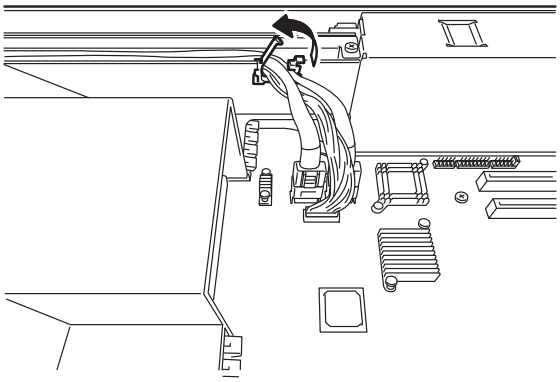
5.5.1 Installing DIMM

Follow the procedure below to install the DIMM.

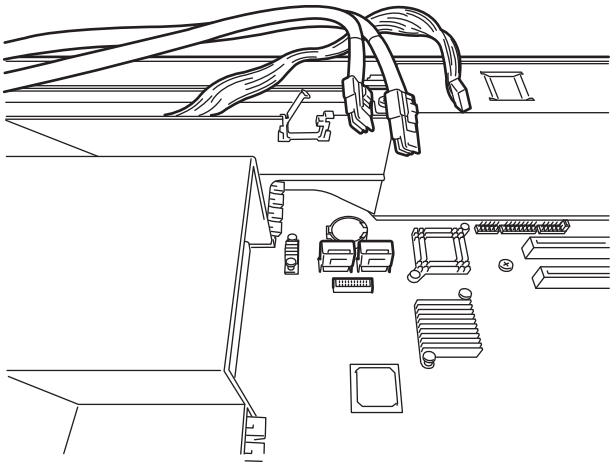
1. Shut down OS.
   The sever turns off automatically.
2. Disconnect the power cords from the outlets.
3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
4. Remove three screws (two on the front and one on the rear), and remove the top cover of the CPU/IO module.



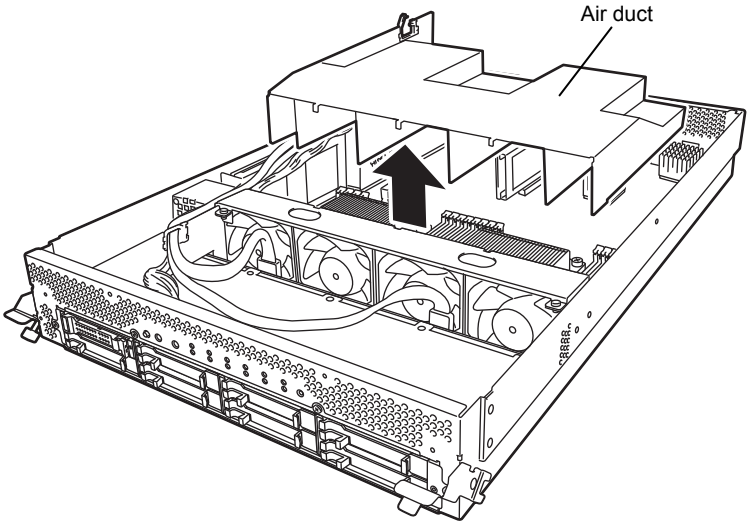
5. Open the cable clamp of air duct.



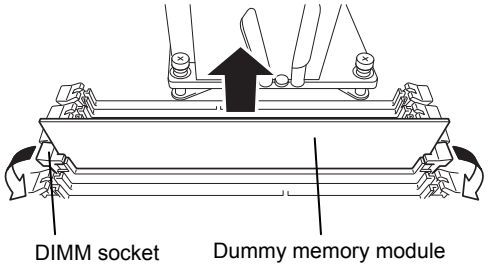
6. Disconnect cables.



7. Remove the air duct.



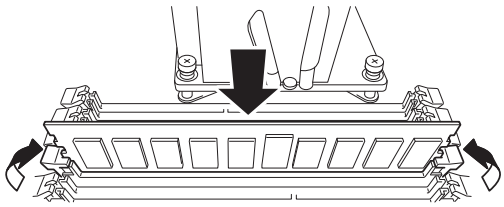
8. Locate the socket you are mounting the DIMM.
9. Remove the dummy memory module by opening the levers on both sides of the DIMM slot.



Important **Keep and store the removed dummy memory module with care.**

10. Insert a DIMM into the DIMM socket vertically.

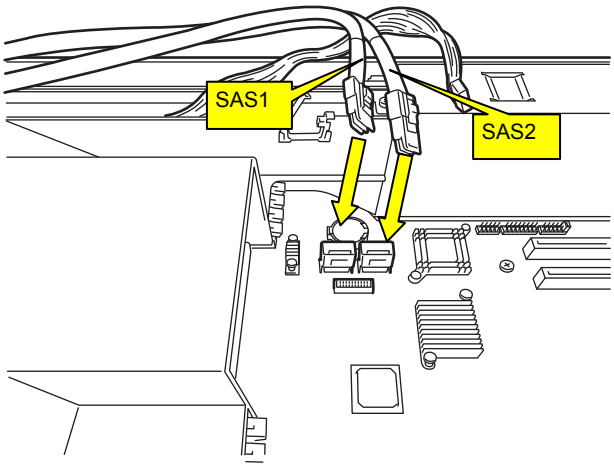
    After the DIMM is completely inserted into the socket, the levers are automatically closed.



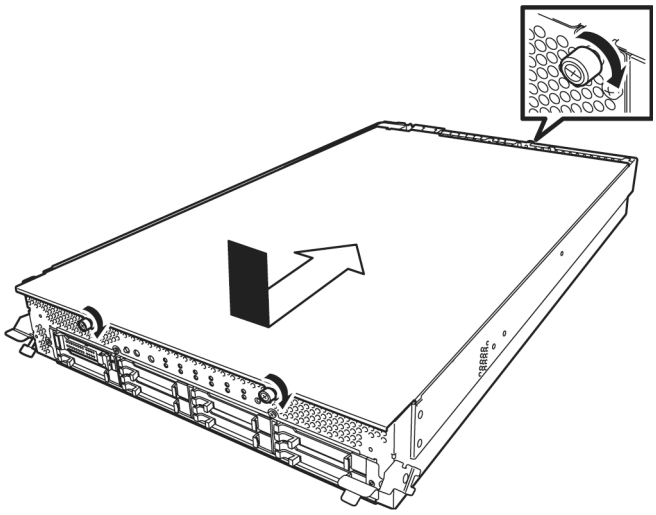
Note

Pay attention to the direction of the DIMM.
The terminal of the DIMM has a cutout to prevent incorrect insertion.

11. Attach the air duct, cable, and cable clamp.



12. Place the top cover of the CPU/IO module and secure it with three screws.



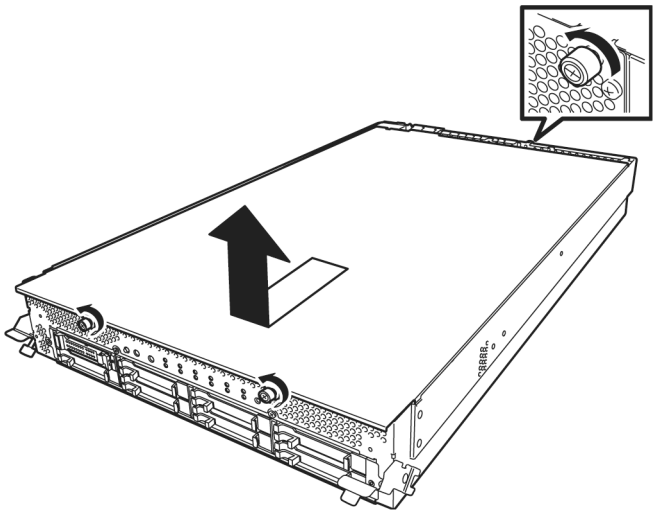
13. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
14. Connect the power cords.
15. Press the POWER switch to power on the server.
16. Verify that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in *Chapter 1 (6.2 POST Error Message)*.
17. After starting the OS, set the paging file size to at least the recommended value (1.5 times the installed memory size). (Refer to *Chapter 3 (3.1 Before Starting Setup)* in *Installation Guide*.

5.5.2 Removing DIMM

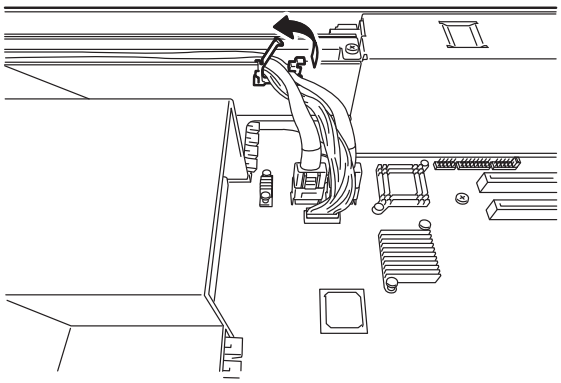
Follow the procedure below to remove the DIMM.

Important **At least one DIMM is required to operate the server.**

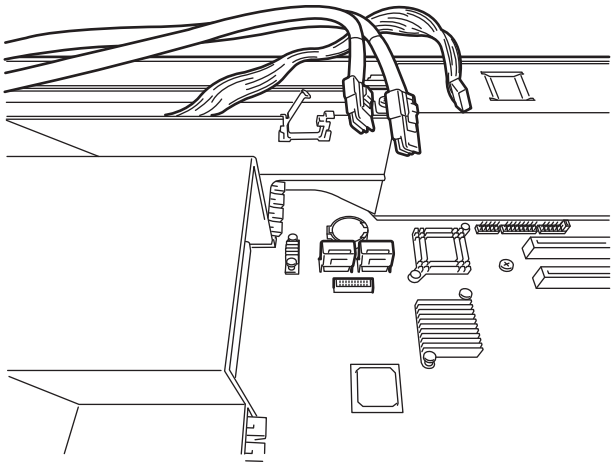
1. Shutdown OS.
   The system turns off automatically.
2. Disconnect the power cords from the outlets.
3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
4. Remove three screws (two on the front and one on the rear), and remove the top cover of the CPU/IO module.



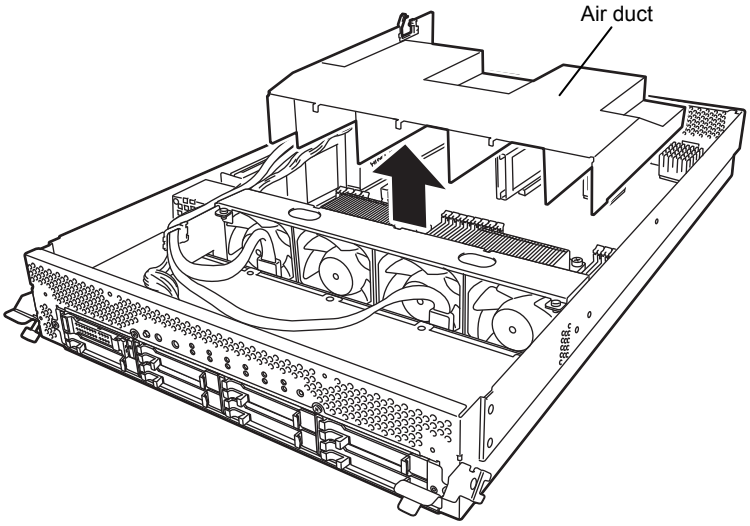
5. Open the cable clamp of air duct.



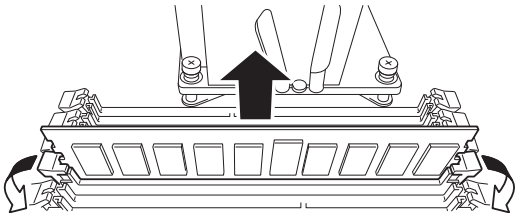
6. Disconnect cables.



7. Remove the air duct.

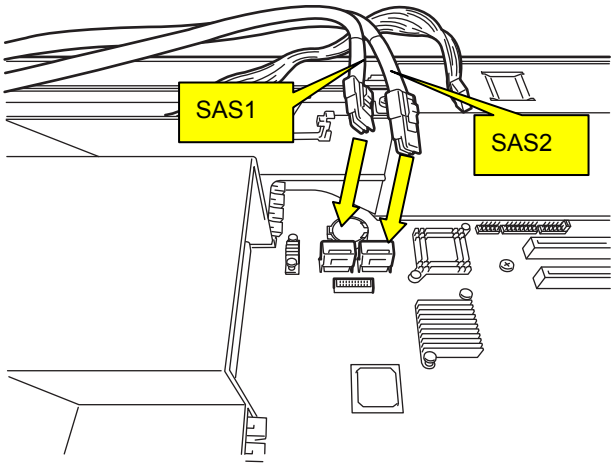


8. Open the levers attached on both sides of the socket of the DIMM to be removed.
   It will be unlocked and the DIMM can be removed.

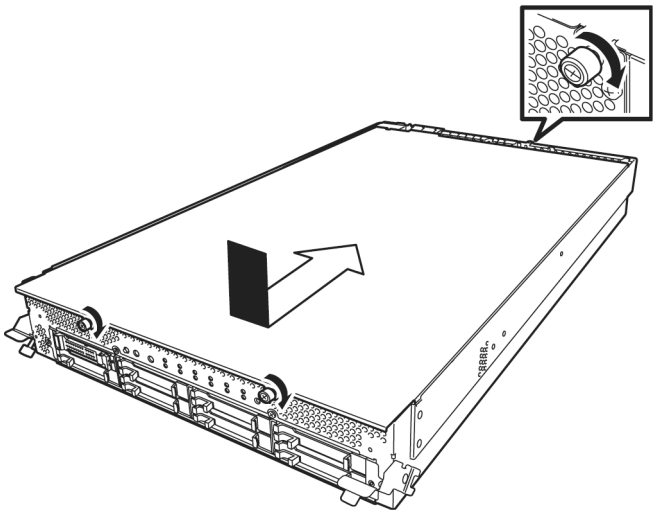


9. Attach the dummy memory module.

10. Attach the air duct, cable, and cable clamp.



11. Place the top cover of the CPU/IO module and secure it with three screws.



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. Verify 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)*.

5.5.3 Replacing DIMM

Follow the procedure below to replace a failed DIMM.

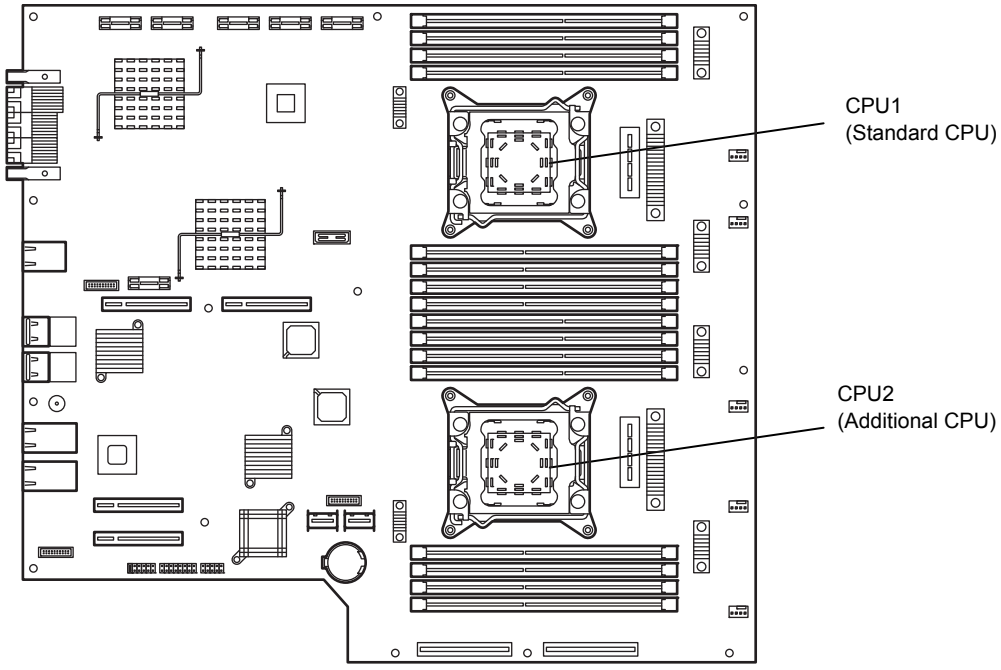
1. Identify the failed DIMM by viewing the memory slot error LED.
2. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
3. Replace the DIMM.
4. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
5. Start up the CPU/IO module using NEC ESMPRO Manager or ft server utility.

5.6 Processor (CPU)

In addition to the standard CPU (Intel® Xeon® Processor), you can operate the system by adding one CPU.

Important

- **The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU terminals or onboard parts with a bare hand or place the CPU directly on a desk.**
- **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 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* before starting installing or removing options.**

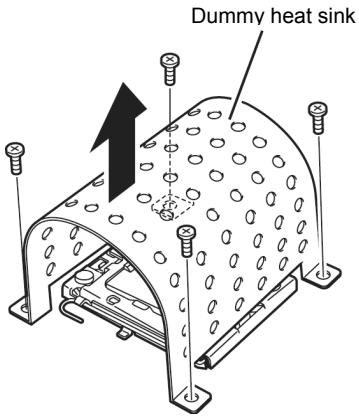


5.6.1 Installing CPU

Follow the steps below to install a CPU and heat sink.

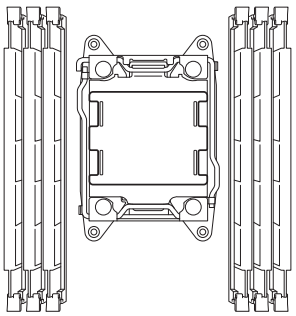
1. Shut down the OS.
   The server is automatically powered off.
2. Disconnect the power cords from the outlets.
3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
4. Remove the air duct according to *Chapter 2 (5.5.2* Removing DIMM*)*.
5. Verify the location of the CPU socket.
6. Remove four screws that secure the dummy heat sink. Remove the dummy heat sink.

Important **Keep and store the removed dummy heat sink and four screws with care.**

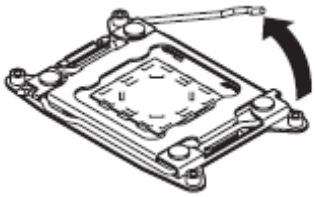


7. Remove the protective cover from processor (CPU) socket.

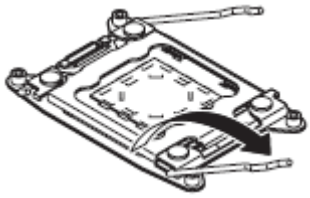
Important **Keep and store the removed protective cover with care.**



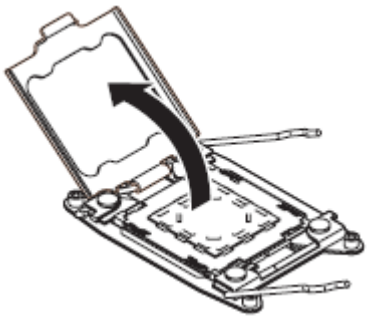
8. Push down the lever marked with "↶ ①→" to unlatch from the hook, and open the lever until it stops.



9. Push down the lever marked with "←🔒 ①" to unlatch from the hook, and open the lever until it stops.



10. Lift the plate.



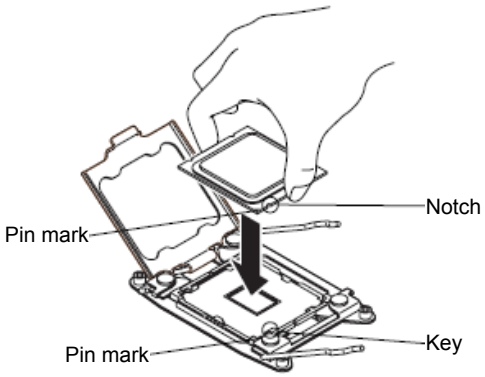
11. Place the CPU on the socket gently and carefully.
For easy installation, hold edges of CPU with your thumb and index fingers so that the notch is aligned with the key on the CPU socket.

Important

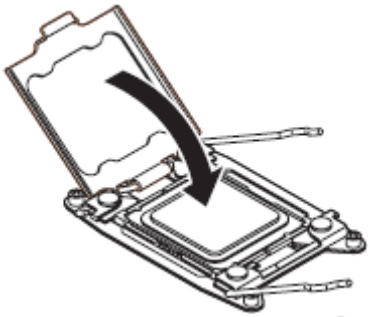
- **Be sure to hold the CPU only at the edges.**
- **Pay attention not to touch the bottom of the CPU (pin section).**

Note

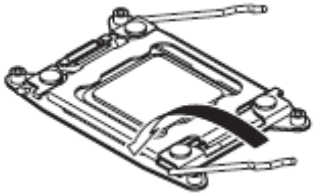
- Insert the CPU while aligning the notch on the processor with the key on the CPU socket.
- Bring down the CPU straight without tilting or sliding it in the socket.



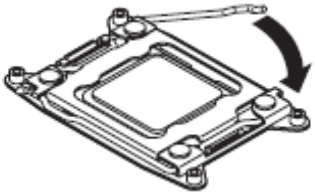
12. After pressing the CPU softly against the socket, and close the plate.



13. Fix the CPU by pushing down the lever marked with "← ①"

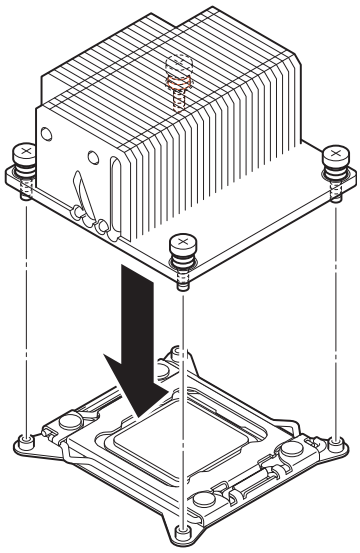


14. Fix the CPU by pushing down the lever marked with "↶ ①→"

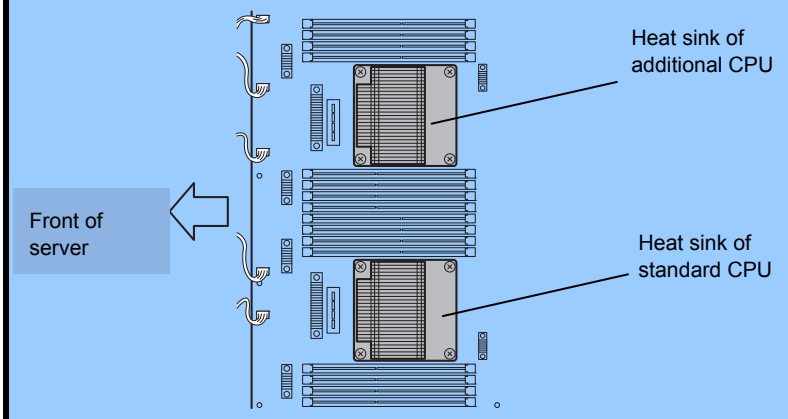


15. Place the heat sink on the CPU.

Important **Do not touch the cooling sheet that is attached on the back of the heat sink with your hand.**

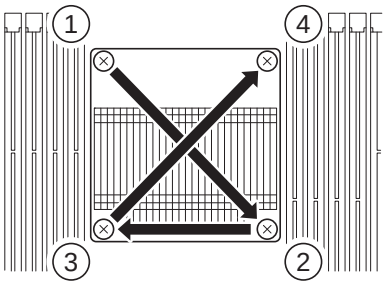


Important **If you install additional CPU, ensure that the fins of the additional CPU's heat sink are in the same direction as those of the standard CPU.**



16. Secure the heat sink with four screws.

Important **Tentatively secure the screws diagonally with the order as shown in the figure below, check that the heat sink is attached to the CPU socket in parallel, then tighten the screws diagonally.**



17. Install the air duct according to *Chapter 2 (5.5.1* Installing DIMM*)*.
18. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
19. Connect the power cords.
20. Press the POWER switch to power on the server.
21. Verify 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

Take 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 the 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 PCI Card

Either two or four PCI cards can be installed to the CPU/IO module.

Important

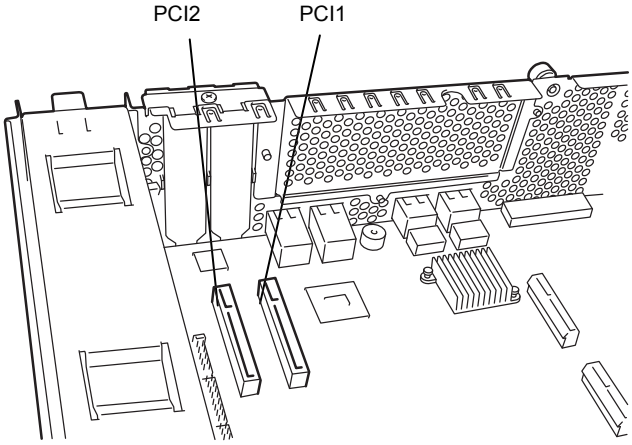
The PCI card is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI card. Do not touch the PCI card terminals or onboard parts by a bare hand or place the PCI card directly on the desk.

See *Chapter 2 (5.1.2 Anti-static measures)* and *Chapter 2 (5.1.4 Preparing your system for upgrade)* before starting installing or removing options.

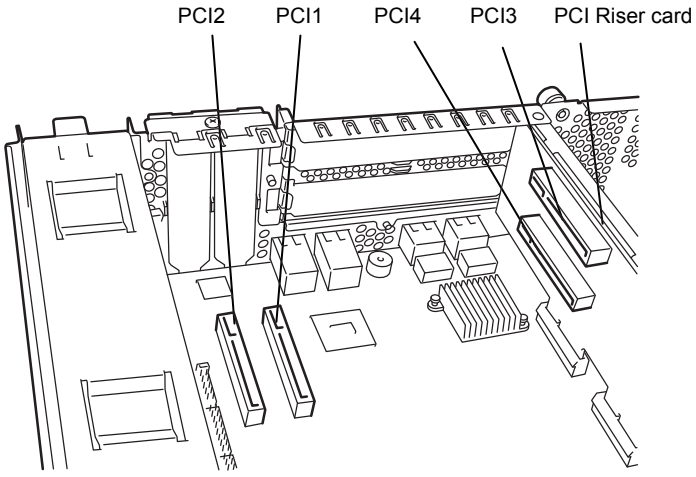
5.7.1 Precautions

Note the following to install or replace PCI card.

- To make a dual PCI card configuration, install the same type of board (i.e., having the same specifications and performance) to the same slot for each group.
  When a PCI card is installed to one group, another identical PCI card should be installed to the same slot in another group. This rule is applied to the case of removal.



R320c-E4, R320d-E4 model (without PCI riser card)



R320c-M4 model, R320d-M4 model (with PCI riser card)

List of option PCI cards and installable slots (R320c-E4, R320d-E4 model)

N code	Product name		PCI-1	PCI-2	Remarks
		PCI slot performance	PCIe 2.0 x4 lane		
		Slot size	Low Profile		
		PCI card type	x8 socket		
N8804-009	1000BASE-T 2ch board set		○	○	*1
N8804-011	10GBASE-T 1ch board set		○	○	*1 *2
N8803-038	Fibre Channel board set		○	○	*1
N8803-039	SAS board		○	○	*2

*1: Exact 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 and up to two boards can be installed for each device.

List of option PCI cards and installable slots (R320c-M4, R320d-M4 model)

N-code	Product name		PCI-1	PCI-2	PCI-3	PCI-4	Remarks
		PCI slot performance	PCIe 2.0 x4 lane		PCIe 2.0 x8 lane		
		Slot size	Low Profile		Full Height		
		PCI card type	x8 socket				
N8804-009	1000BASE-T 2ch board set		○	○	○	○	*1
N8804-011	10GBASE-T 1ch board set		–	–	○	○	*1 *2
N8803-038	Fibre Channel board set		–	–	○	○	*1
N8803-039	SAS board		○	○	○	○	*2

*1: Exact the same board must be mounted into the same slot for each CPU/IO module 0, 1.
*2: Up to one board can be installed for each CPU/IO module and up to two boards can be installed for each device.

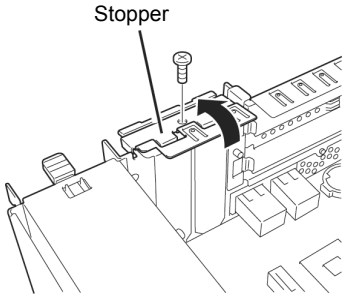
5.7.2 Installing PCI Card

Follow the procedure below to install the board to be connected to the PCI card slot.

Note To install the PCI card, make sure the shape of the board connector matches with the shape of the PCI card slot connector.

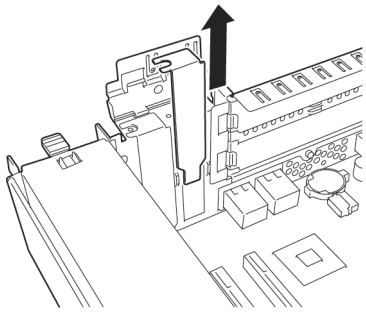
(1) Installing Low Profile PCI Card

1. Shut down the OS.
2. The server is automatically powered off.
3. Disconnect the power cords from the outlets.
4. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
5. Remove one screw that secures the stopper and remove the stopper.

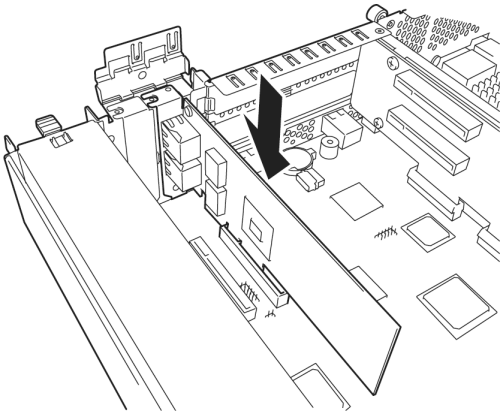


6. Verify the location of the CPU socket.
7. Remove the PCI bracket cover.

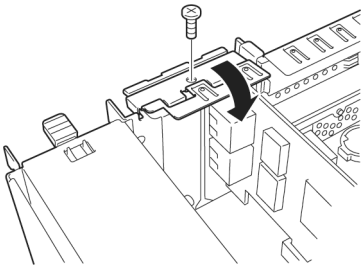
Important **Keep and store the removed PCI bracket cover with care.**



8. Install a PCI card in a PCI slot.



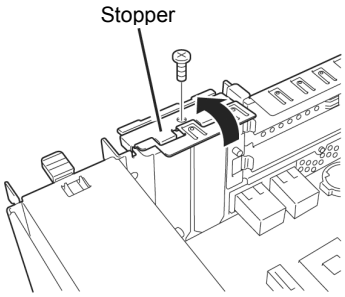
9. Install the stopper and secure it with one screw.



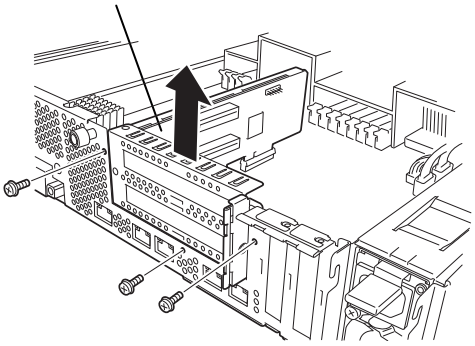
10. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
11. Connect the power cords.
12. Press the POWER switch to power on the server.
13. Verify that POST displays no error message.
    If POST displays an error message, write it down and see the POST error message list in *Chapter 1 (6.2 POST Error Messages)*.
14. After the OS has started, proceed to steps in *Chapter 2 (5.7.5 Setup of Optional PCI Card)*.

(2) Installing Full Height PCI Card

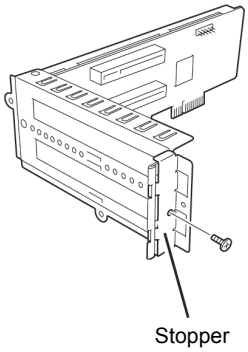
1. Shut down the OS.
   The server is automatically powered off.
2. Disconnect the power cords from the outlets.
3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
4. Remove one screw that secures the stopper and remove the stopper.



5. Remove three screws that secure the PCI riser card, and remove the PCI riser card from the motherboard.

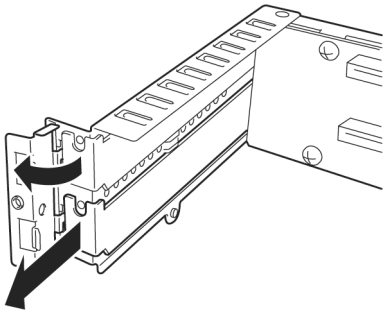


6. Remove one screw that secures the stopper and remove the stopper from the PCI riser Card.
7. Verify the location of the PCI slot.

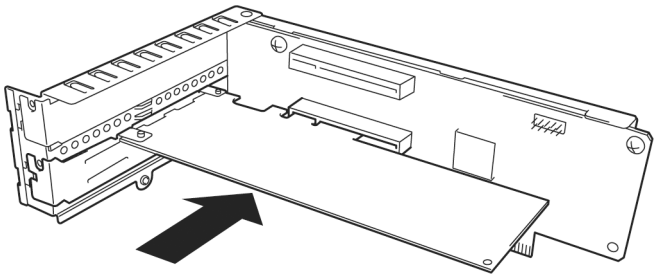


8. Remove the PCI bracket cover.

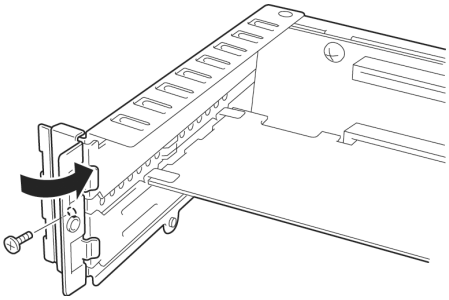
Important **Keep and store the removed PCI bracket cover with care.**



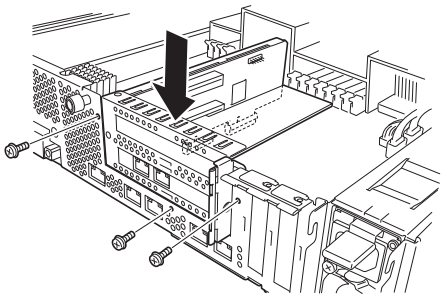
9. Install a PCI card in a PCI slot.



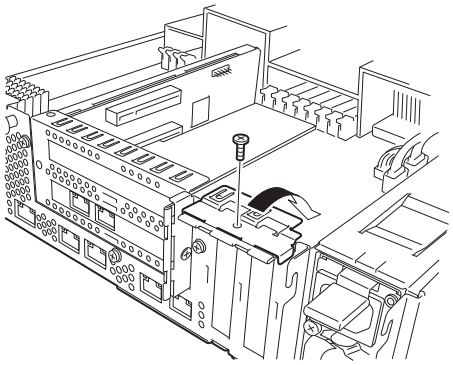
10. Install the stopper and secure it with one screw.



11. Install PCI riser card on the motherboard and secure it with three screws.



12. Install the stopper and secure it with one screw.



13. See *Chapter 2 (5.4.2 Installing CPU/IO Module)* and install the CPU/IO module.
14. Connect the power cords.
15. Press the POWER switch to power on the server.
16. Verify 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)*.
17. 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 card, follow the reverse procedure of the installation and install the slot cover.

5.7.4 Replacing PCI Card

Follow the procedure below to replace the failed PCI card.

(1) N8803-039 SAS board

1. Identify the failed board 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 bracket, then remove the PCI card.
4. Replace the board 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.
7. The installed CPU/IO module will start automatically.
8. Confirm that the PCI card is correctly recognized by POST and OS.

(2) N8803-038 Fibre Channel board set

1. Identify the failed board 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 board to be installed (setting/confirming access control) by using control software such as iStorageManager.
4. Remove the PCI bracket, then remove the PCI card.
5. Replace the board 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 option devices.
8. The installed CPU/IO module will start automatically.
9. Confirm that the PCI card is correctly recognized by POST and OS.

(3) 1000BASE-T board set (N8804-009), 10GBase-T 1ch board set (N8804-011)

1. Identify the failed board by viewing Event Log.
2. Remove the duplex LAN according to *Chapter 2* (*3.4 Removing Duplex LAN*).
3. Remove the CPU/IO module according to *Chapter 2 (5.4.1 Removing CPU/IO Module)*.
4. Remove the PCI bracket, then remove the PCI card.
5. Replace the PCI 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 starts automatically.
7. Confirm that the PCI card is correctly recognized by POST and OS.
8. Create a team according to *Chapter 2* (*3.3 Configuring Duplex LAN*).
9. Connect the network cable and cables for option devices.

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) N8804-009 1000BASE-T 2ch board set, N8804-011 10GBASE-T 1ch board set

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 N8804-009 1000BASE-T 2ch board set or N8804-011 10GBASE-T 1ch board set, and restart the system.

  After starting the system, the driver will be installed automatically. When the system is started, **New Hardware Found** window may appear.

- Configure duplex LAN

  See *Chapter 2* (*3. Duplex LAN Configuration).*

- Configure network

Tips To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

Follow steps below to specify transfer speed and duplex mode for the driver.

Note If the check box in **Internet Protocol (TCP/IP)** is unchecked, first check and then configure the IP address.

(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 82576 2-Port Copper Gigabit Adapter
Stratus X540 1-Port Copper 10 Gigabit Adapter

(3) Select the **Link speed** tab, and configure value of **Speed and Duplex** to match those of the hub.

(4) Click **OK** on **Properties** dialog box of network adapter.

(5) By the same procedure, configure another network adapter.

Add/remove protocol or services if needed. On **Network Connections**, go to Local Area connection 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.

Refer to *Chapter 1 (5.3 Installing Network Monitor)* in *Installation Guide* for the installation procedure.

(2) N8803-038 Fibre Channel Board Set

- 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 N8803-038 Fibre Channel board 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 N8803-038 Fiber Channel boards.**
- **Mount N8803-038 Fibre Channel boards 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, and displayed on **Programs and Features** page.

  These programs are driver for Fibre Channel controller. They are installed even if no Fibre Channel controller is connected with the server to enable the additionally installed controller can be detected automatically.

  – QInstaller
  – QLogic Adapter Drivers and Management Software Installer
  – SANsurfer FC HBA Manager

  QInstaller is installed only when the server has no Fibre Channel controller connected. If the server has Fibre Channel controller connected, QInstaller will not appear on **Programs and Features** page, however, it is not the problem.

(3) N8803-039 SAS Board

- 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 N8803-037 SAS board 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.

NEC Express5800 Series
Express5800/R320c-E4, R320c-M4, R320d-E4, R320d-M4

3

Useful Features

This chapter describes convenient features for using the server. Refer to this chapter according to your purpose and need.

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, ...
```
(* a different message may appear depending on the environment)

If you press <**F2**>, SETUP will start after POST, and the Main menu appears. (You can also start SETUP by pressing <**F2**> key while expanding option ROM.)

1.2 Parameter Descriptions

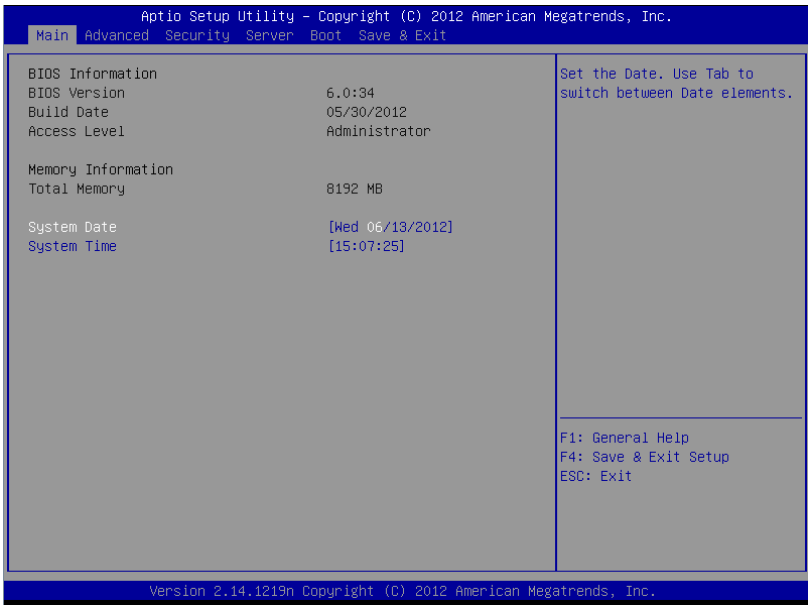
The SETUP utility has the following six major menus.

- 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

If you start up the SETUP utility, the **Main** menu is displayed first.



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.
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.

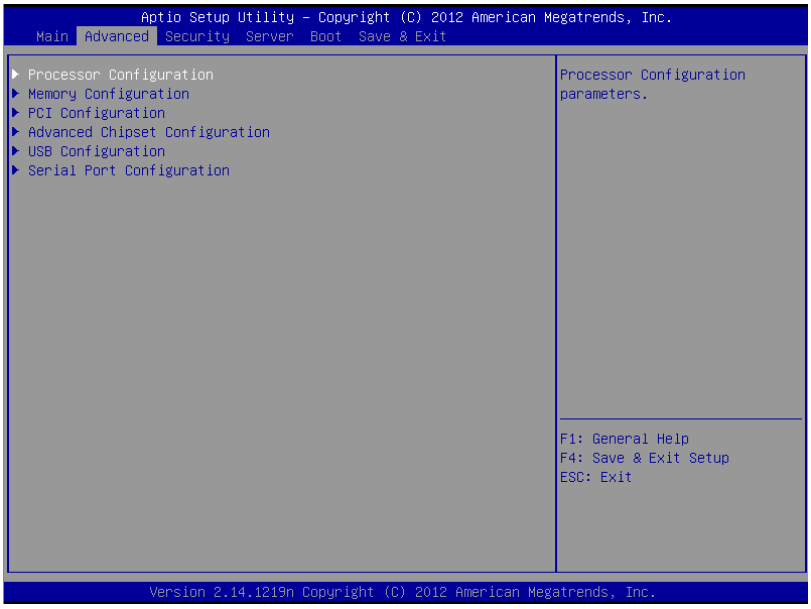
Check the system clock monthly. Additionally, if you implement the server in a system that requires highly accurate time, use of a time server (an NTP server) is recommended.

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

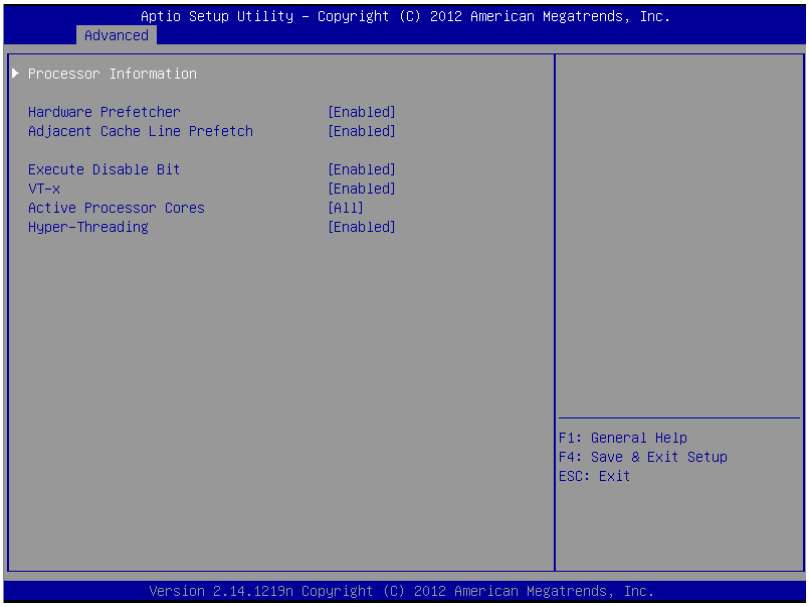
If you move the cursor to **Advanced**, the **Advanced** menu appears.

For the menus that show a "▶" to their left, select a menu and press the <**Enter**> key to display its submenu.



(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.

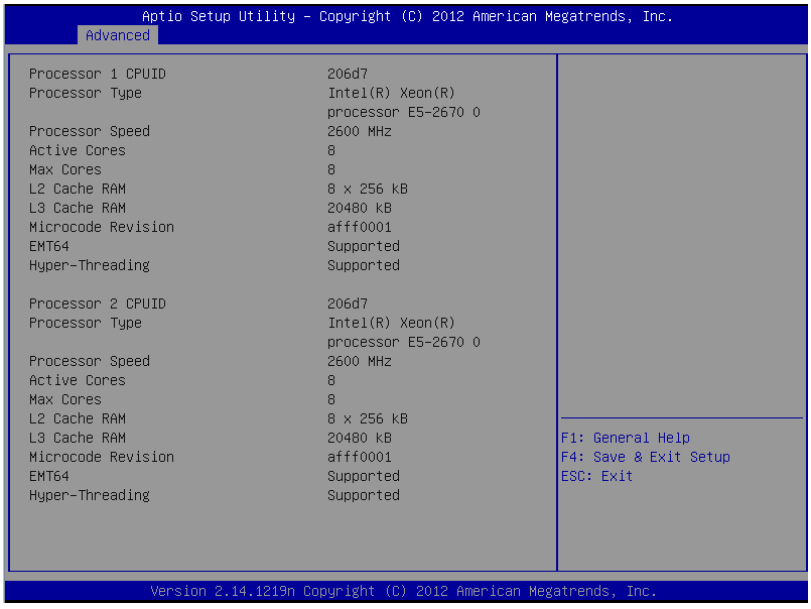


For details about the options, see the table below.

Option	Parameter	Descriptions
Processor Information	–	–
Hardware Prefetcher	Disabled [Enabled]	Enable or disable hardware prefetcher.
Adjacent Cache Line Prefech	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	[All] 1-8	Specify the number of cores to enable in each processor package. The number of cores that can be specified depends on the processor installed.
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



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 Not Supported	Whether the Intel 64 architecture is supported on Processor 1 or not is displayed.
Hyper-Threading	Supported Not Supported	Whether the Hyper-Threading Technology is supported or not on Processor 1 is displayed.
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	Whether the Intel 64 architecture is supported on Processor 2 or not is displayed.
Hyper-Threading	Supported	Whether the Hyper-Threading Technology is supported or not on Processor 2 is displayed.

[ ]: Factory settings

(2) Memory Configuration submenu

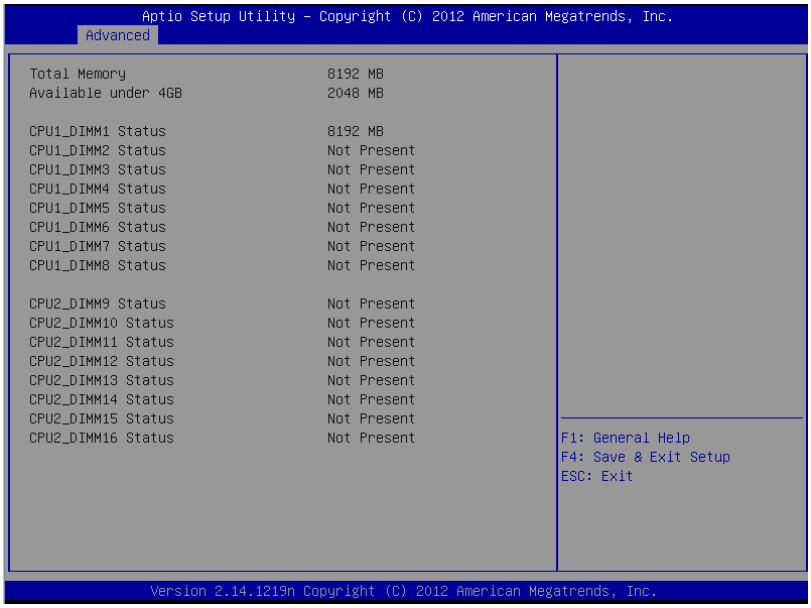
From the **Advanced** menu, select **Memory Configuration** and then press the <**Enter**> key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the <**Enter**> key to show its submenus.

For details about the options, see the table below.

Option	Parameter	Descriptions
Memory Information	–	–

[ ]: Factory settings

(a) Memory Information submenu



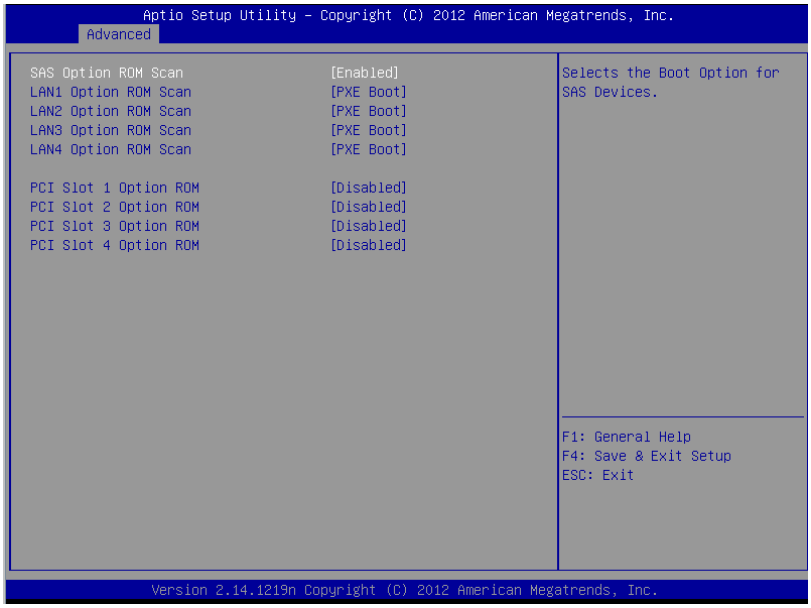
For details about the options, see the table below (display only).

Option	Parameter	Descriptions
Total Memory	–	The physical capacity of installed memory is displayed.
Available under 4GB	–	Memory capacity available in an area under 4 GB is displayed.
CPU1_DIMM1-8 Status CPU2_DIMM9-16 Status	Number Not Present	Capacity and status 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.



For details about the options, see the table below.

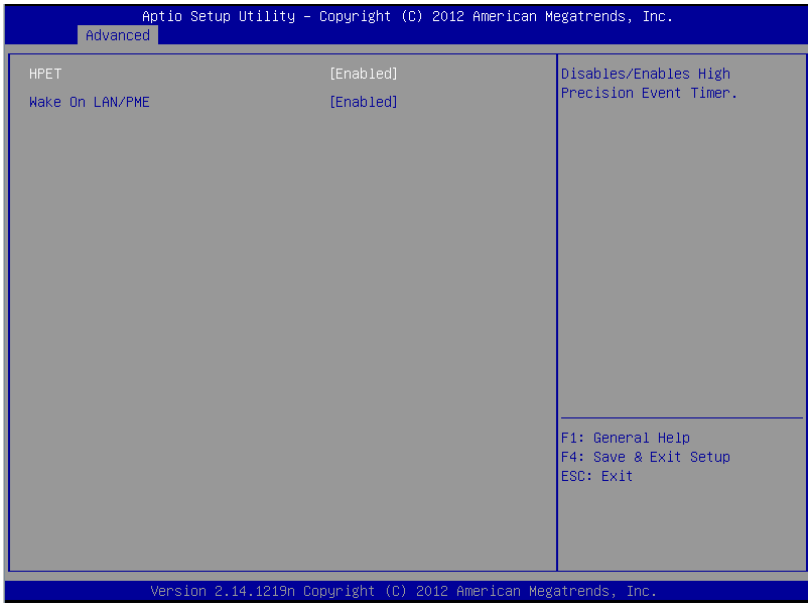
Option	Parameter	Descriptions
SAS Option ROM Scan	Disabled [Enabled]	Enable or disable the option ROM SCAN for onboard SAS.
LANX Option ROM Scan	Disabled [PXE Boot] iSCSI Boot	Enable or disable the option ROM SCAN for onboard LAN. R320c-M4, R320d-M4 X:1/2/3/4 R320c-E4, R320d-E4 X:1/2
PCI Slot X Option ROM	[Disabled] Enabled	Enable or disable the option ROM on each PCI slot. R320c-M4, R320d-M4 X:1/2/3/4 R320c-E4, R320d-E4 X:1/2

[ ]: Factory settings

Note For a RAID Controller, 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.



For details about the options, see the table below.

Option	Parameter	Descriptions
HPET	Disabled [Enabled]	Enable or disable the High-Precision Event Timer. This feature may not be supported depending on OS.
Wake On LAN/PME	Disabled [Enabled]	Enable or disable the feature that remotely powers on the server through a network.

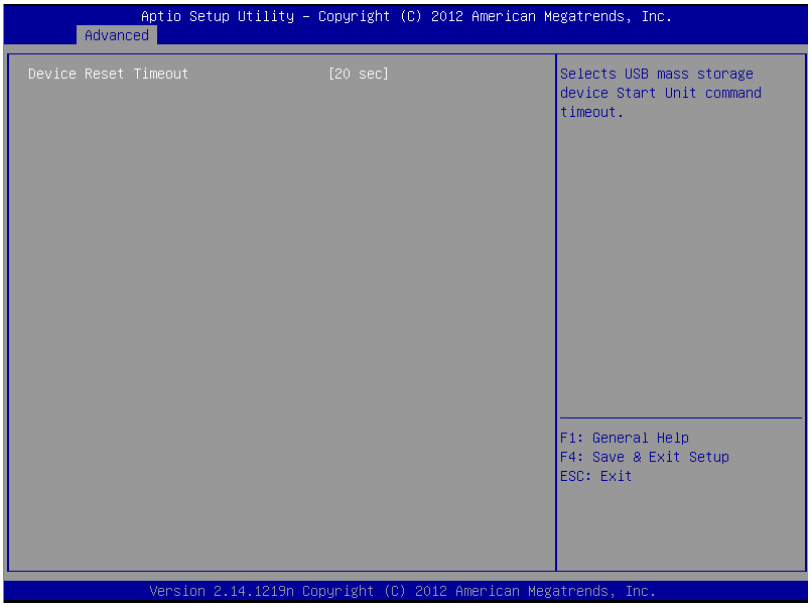
[ ]: Factory settings

Important **The menu for VT-d and I/OAT may be displayed depending on your server model. However, do not change settings.**

VT-d must be Disabled, and I/OAT must be Enabled.

(5) USB Configuration submenu

From the **Advanced** menu, select **USB Configuration** and then press the <**Enter**> key to display the menu screen shown below.



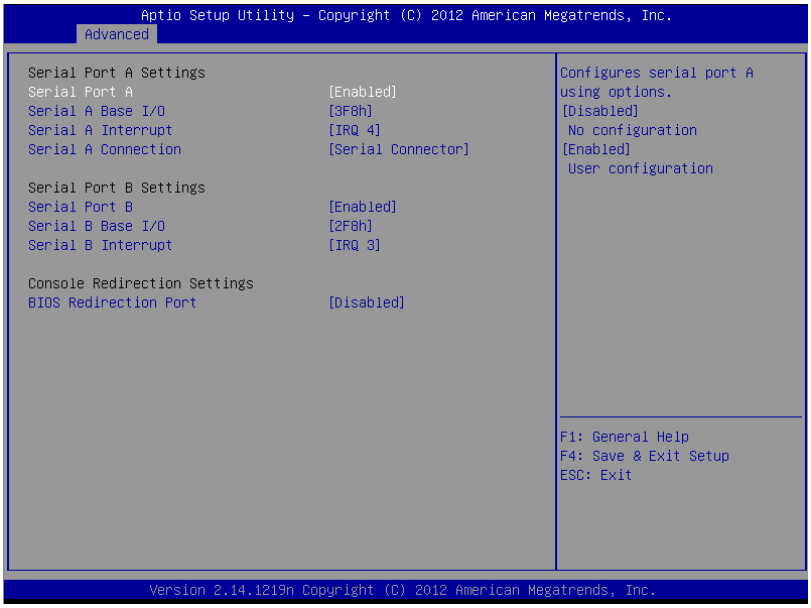
For details about the options, see the table below.

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.

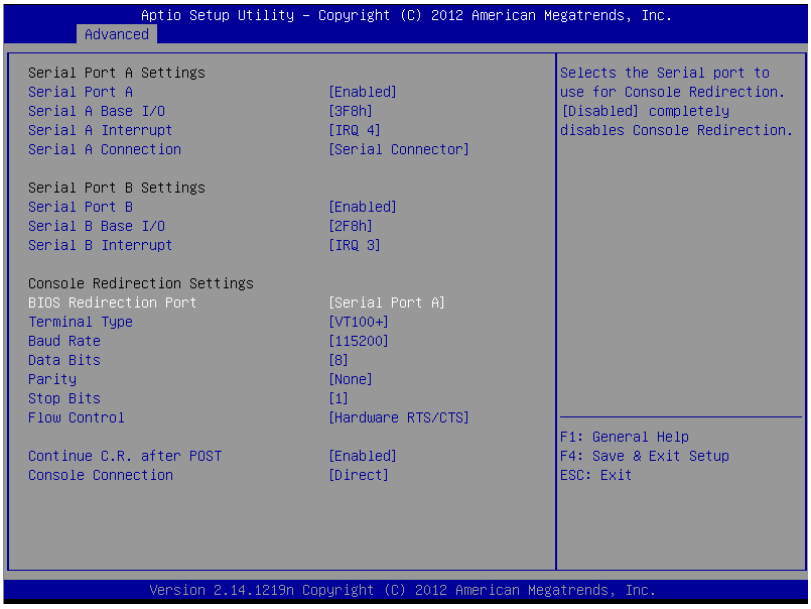
[ ]: Factory settings

(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.



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.



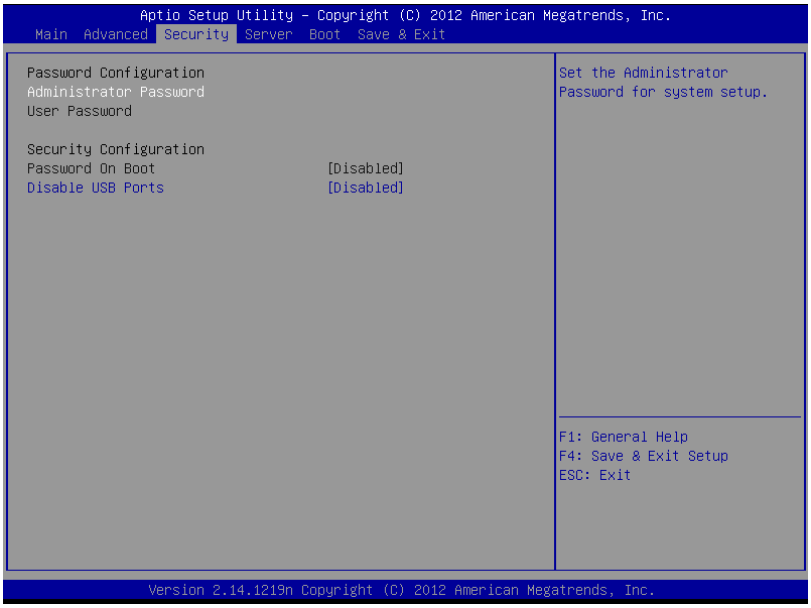
For details about the options, see the table below.

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 4] IRQ 3	Specify the interrupt for serial port A.
Serial A Connection	[Serial Connector] Internal Modem	Specify the connection destination for serial port A, Serial connector or Internal modem.
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 4 [IRQ 3]	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.
Console Connection	[Direct] Via modem	Specify the connector to be used for console.

[ ]: 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.



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)*.

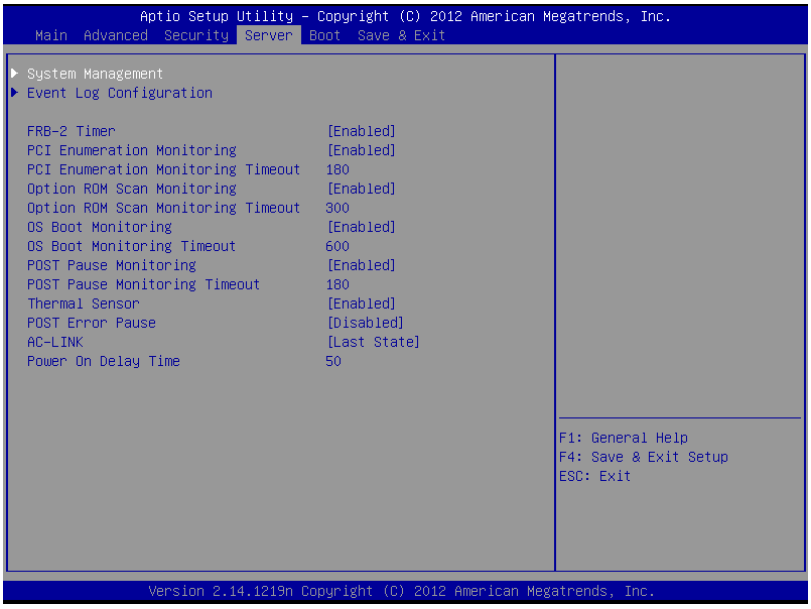
For details about the options, see the table below.

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	[Disabled] 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.



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	–	–
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).
Thermal Sensor	Disabled [Enabled]	Enable or disable the feature to monitor the thermal sensor.

Option	Parameter	Descriptions
POST Error Pause	[Disabled] Enabled	Enable or disable the feature to suppress OS booting when POST detects an error.
AC-LINK	Stay Off [Last State] Power On	Specify AC link feature. Specify how the DC power state should be when the AC power is supplied again after loss of power. (See the table below) If **Power On** or **Last State** is selected, the system starts after the time specified for **Power On Delay Time** has elapsed and CPU/IO modules of both systems are installed (180 seconds at longest).
Power On Delay Time	[50]-600	Specify the DC power-on delay time when **Power On** or **Last State** is selected for AC-LINK (Unit: second).

[ ]: Factory settings

The table below shows the operation of DC power when the AC power is turned off once and then back on, in accordance with the **AC LINK** setting.

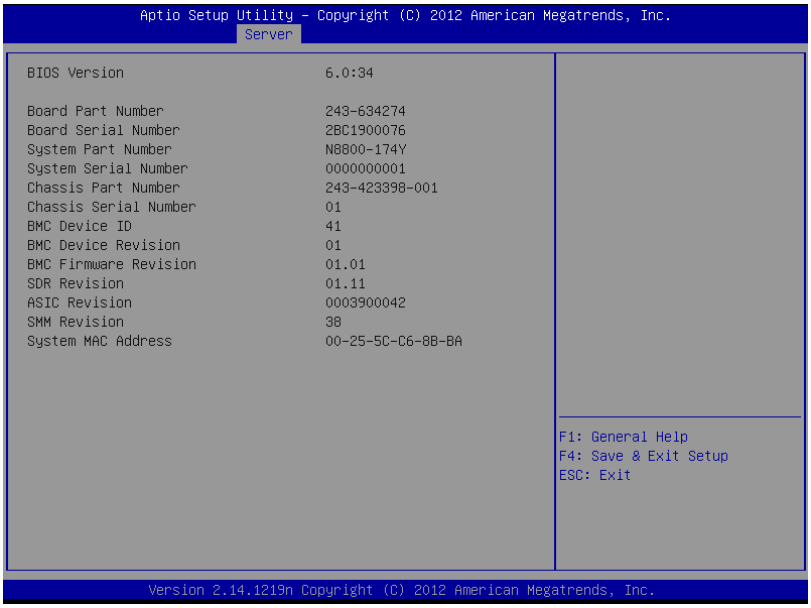
System status before AC power was turned off	AC LINK setting		
	Stay Off	Last State	Power On
Operating (DC power is ON)	Off	On	On
Abort (DC power is also OFF)	Off	Off	On
Forced shutdown*	Off	Off	On

* Continue pressing the POWER switch for at least 4 seconds to forcibly turn off the power.

Tips If an uninterruptible power supply (UPS) is used for automatic operation, set the **AC-LINK** to **Power On**.

(1) System Management submenu

From the **Server** menu, move the cursor to **System Management** and then press the <**Enter**> key to show its submenus.

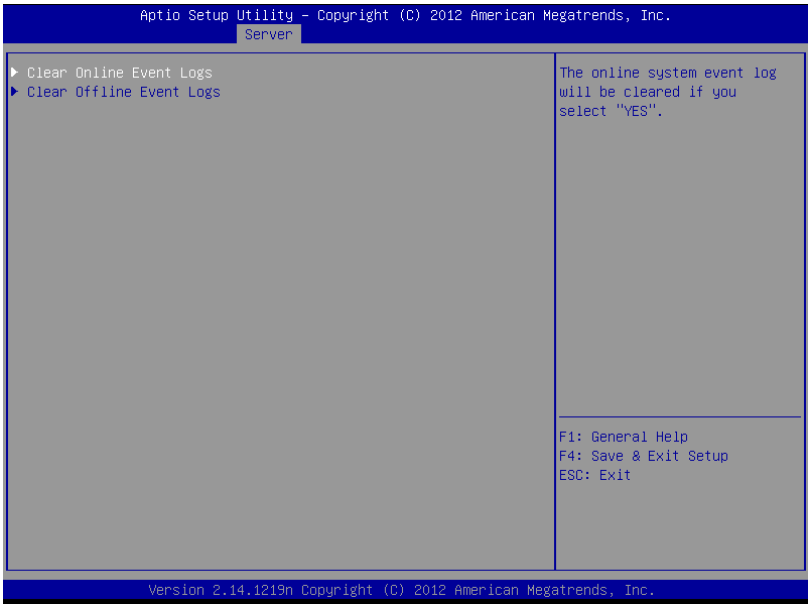


For details about the options, see the table below (display only).

Option	Parameter	Descriptions
BIOS Version	–	The current BIOS version 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.
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) 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.

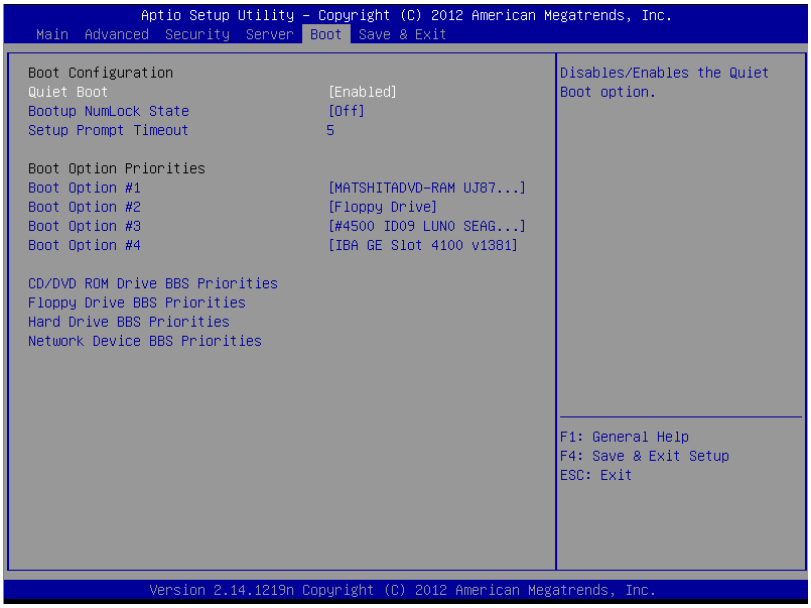


For details about the options, see the table below.

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.



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	Number	Specify the time until the <**F2**> is pressed to launch SETUP.
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 ROM Drive BBS Priorities	–	Specify the boot priority for each BBS (BIOS Boot Specification).
Floppy Drive BBS Priorities	–	
Hard Drive BBS Priorities	–	
Network Drive BBS Priorities	–	

[ ]: Factory settings

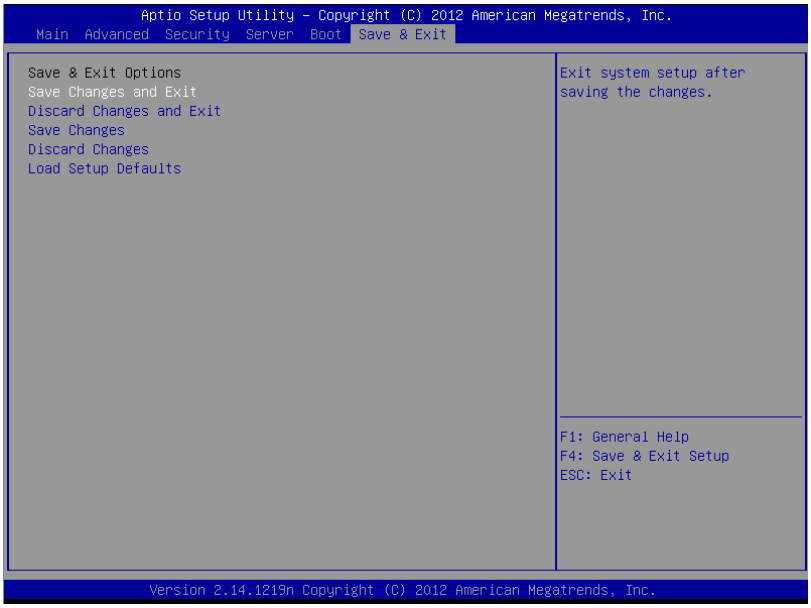
1. When BIOS detects a bootable device, information on the device is displayed in the designated area.
2. The boot priority (from first to fourth) of the registered boot devices can be changed using the <↑>/<↓> and <+>/<–> keys.
   Move the cursor to a device using the <↑>/<↓> keys, and change the priority using the <+>/<–> keys.

Tips

- If a bootable device is newly connected, the priority lowest in its BBS Priorities is assigned to that device.
- If a bootable device is disconnected from the server, the relevant device is removed from BBS Priorities.
- When **Load Setup Defaults** is executed on **Save & Exit** menu, the **Boot Option** and **BBS Priorities** are changed as follows.
  - Boot Option Priorities
    - Boot Option #1: CD/DVD ROM Drive
    - Boot Option #2: Floppy Drive
    - Boot Option #3: Hard Drive
    - Boot Option #4: Network Device

1.2.6 Save & Exit

If you move the cursor to **Save & Exit**, the **Save & Exit** menu appears.



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 setting at startup of SETUP utility is retained.
After the SETUP utility closes, the system automatically reboots.

(c) Save Changes

Changes are saved in NVRAM.

(d) Discard Changes

The changes are discarded and the settings are reset to the one at startup of SETUP utility.

(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.

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:

- Off-line 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.

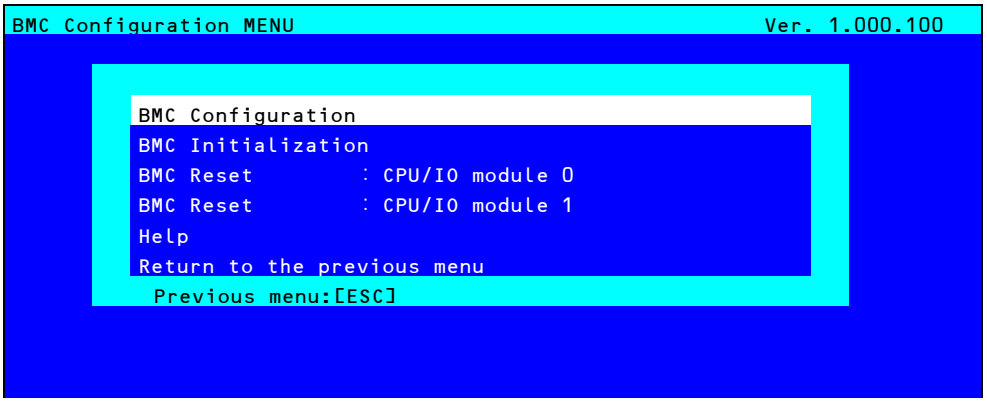
2.1.2 Starting BMC Configuration

When the server starts, press <**F4**> key to display Offline Tools menu, and select **BMC Configuration** on the menu. The BMC Configuration starts.

2.2 Features of BMC Configuration

2.2.1 Main Menu

The Main Menu appears when you select **BMC Configuration** on **Offline Tool**s menu.



Main Menu

(a) BMC Configuration

You can set configuration information to BMC.
If you select **OK** after you change the values, the set values are applied to BMC.
See *(2.2.2 Setting BMC Configuration)* for details.

(b) BMC Initialization

You can restore the BMC Configuration information to the default value (except for some items).
Executing this item initializes both CPU/IO modules 0 and 1.
See *(2.2.3 Initializing BMC)* for details.

(c) BMC Reset : CPU/IO module X

You can reset BMC of CPU/IO module X (X = 0 or 1) without changing any settings.
See *(2.2.4 Resetting BMC)* for details.

(d) Help

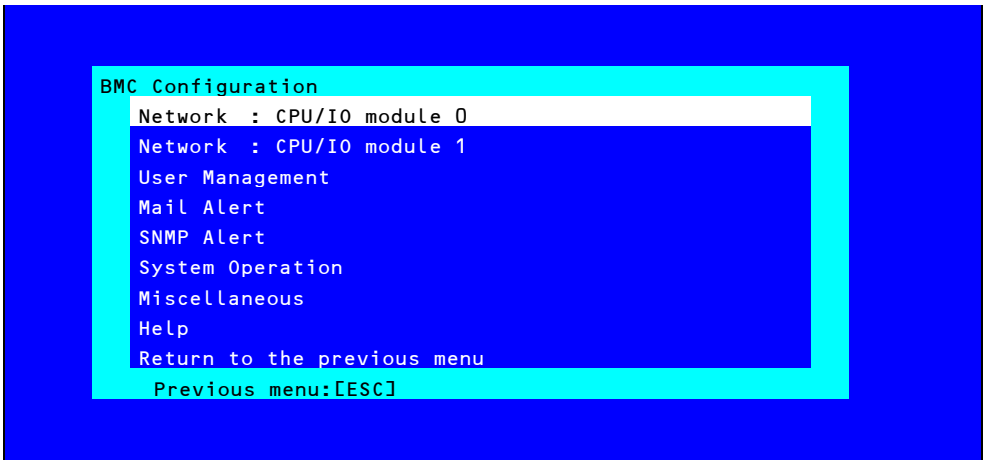
You can open BMC Configuration help window.

(e) Return to the previous menu

You can exit BMC Configuration, and return to **Offline Tools** menu.

2.2.2 Setting BMC Configuration

The Main Menu appears when you select **BMC Configuration** on **Offline Tools** menu.



BMC Configuration menu

(a) Network : CPU/IO module X

You can view 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.
See *(2.2.2 (a) Network)* for details.

(b) User Management

You can manage users who use BMC.
See *((b) User Management)* for details.

(c) Mail Alert

You can view E-mail alert issued from BMC and change parameter setting.
See *((c) Mail Alert)* for details.

(d) SNMP Alert

You can view SNMP alert issued from BMC and change parameter setting.
See *((d) SNMP Alert)* for details.

(e) System Operation

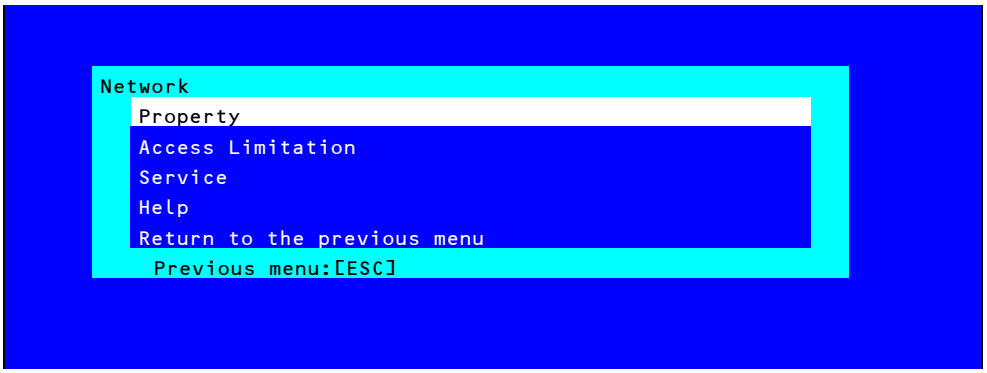
You can set parameters for remote KVM console and remote media.
See *((e) System Operation)* for details.

(f) Miscellaneous

You can set various features of BMC.
See *((f) Miscellaneous)* for details.

(a) Network

The **Network** menu appears when you select **Network** on **BMC Configuration** menu.



Network menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
Property		
Management LAN	Specify and display LAN port to communicate with BMC. *1 *2 Management LAN : LAN port for BMC exclusive use. Shared BMC LAN : LAN port of System (OS) is shared and used.	Management LAN
Connection Type	Specify and display the connection type of BMC LAN.*1 Auto Negotiation : Connecting by suitable setting. 100Mbps Full : Connecting by Full Duplex at speed of 100 Mbps. 100Mbps Half : Connecting by Half Duplex at speed of 100 Mbps. 10Mbps Full : Connecting by Full Duplex at speed of 10 Mbps. 10Mbps Half : 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.	Disable
IP Address	Specify the BMC LAN IP address. *4	192.168.1.1
Subnet Mask	Specify the Subnet Mask of BMC LAN. *3 *4	255.255.255.0
Default Gateway	Specify the Default Gateway IP address of the BMC LAN. *4 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. *5	Disable
DNS Server	Specify the DNS Server.	0.0.0.0
Host Name	Specify the Host Name. *6	Blank
Domain Name	Specify the Domain Name. *7	Blank

Item	Description	Default Value
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 deny to access BMC.	Allow All
IP Address	Specify the IP Address to allow or deny to access with BMC. *8 *9	Blank
Service		
HTTP	Enable or disable HTTP service. *10	Enable
HTTP Port Number	Specify the HTTP port number. *11	80
HTTPS	Enable or disable HTTPS service. *10	Enable
HTTPS Port Number	Specify the HTTPS port number. *11	443
SSH	Enable or disable SSH service.	Enable
SSH Port Number	Specify the SSH port number. *11	22

*1: You can change this parameter only if you allows it.

*2: After you change parameter value, resetting of BMC may be required depending on the server. When set to "Shared BMC LAN", the management LAN port is disabled. When set to "Shared BMC LAN", the system (OS) LAN port also transmits or receives data. Thus, the network performance may be reduced due to load of system LAN (or BMC LAN).

*3: If an illegal value is specified for subnet mask, an error message is displayed and setting is disabled.

*4: Can be changed only when DHCP is set to "Disable".

*5: Can be changed only when DHCP is set to "Enable".

*6: Host Name should be within 63 characters.
Acceptable characters are: alphanumeric, hyphen (-), underscore (_), and period (.).

*7: Host Name and Domain Name should be within total of 255 characters.
Acceptable characters are: alphanumeric, hyphen (-), underscore (_), and period (.).

8: The range of IP address 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)

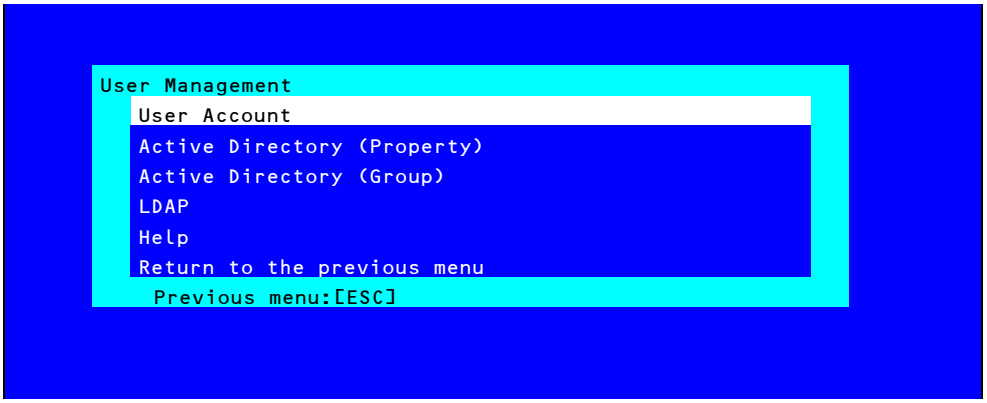
*9: Can be specified when Access Limitation Type is "Allowed Address" or "Deny Address". The length must not exceed 255 characters.

*10: If HTTP is set to "Enable", HTTPS is changed to "Enable" automatically. You are not allowed to set "Enable" to HTTP only.

*11: Port number can be specified only when the relevant port is set to "Enable". The port number must be unique.

(b) User Management

The **User Management** menu appears when you select **User Management** on **BMC Configuration** menu.



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. *8	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.	Disable
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".

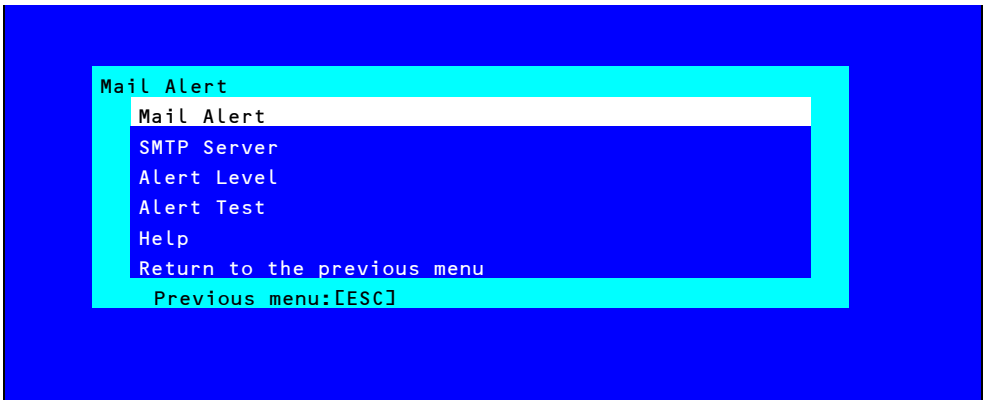
*9: Can be specified only when LDAP authentication is set to "Enable".

*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.

(c) Mail Alert

The **Mail Alert** menu appears when you select **Mail Alert** on **BMC Configuration** menu.



Mail Alert menu

The table below shows details of parameters and their default value.

Item	Description	Default Value
Mail Alert		
Mail 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

Item	Description	Default Value
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 and the address (To:X) to alert in each sensor type.	
Alert Test	Execute test by sending an alert by mail. *10	—

*1: When Mail Alert is enabled, at least one addresses 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, 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 method should be enabled.

*8: Up to 64 alphanumeric characters excluding " " blank, ",?, =, <, >, #, and ¥, can be used.

*9: Up to 19 alphanumeric characters excluding " " blank, ",?, =, <, >, #, and ¥, can be used.

*10: 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.

(d) SNMP Alert

The **SNMP Alert** menu appears when you select **SNMP Alert** on **BMC Configuration** menu.

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 : 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.	Error, Warning
Alert Test	Execute a test by SNMP alert. *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".

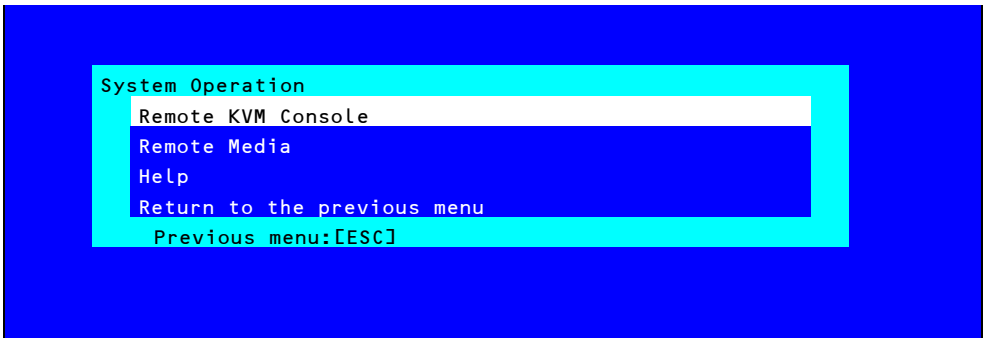
*4: When SNMP Alert is enabled, at least one alert receiver should be enabled.

*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.

(e) System Operation

The **System Operation** menu appears when you select **System Operation** on **BMC Configuration** menu.



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.

(f) 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 : Old SEL is overwritten with new SEL.	Stop logging SEL
Platform Event Filter	Enable or disable Platform Event Filter. *2	Enable
Management Software	Setting for remote management	—
ESMPRO Management	Enable or disable NEC ESMPRO Management. *3	Current set value
Authentication Key	Specify the Authentication Key. *4 *5	Guest
Redirection	Enable or disable Redirection feature. *4 *6	Enable

*1: When this item is changed to/from "Overwrite oldest SEL", all log records in the SEL Repository are cleared.

*2: Disabling Platform Event Filter also disables SNMP alert.

*3: 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.

*4: Can be specified only when ESMPRO Management is set to "Enable".

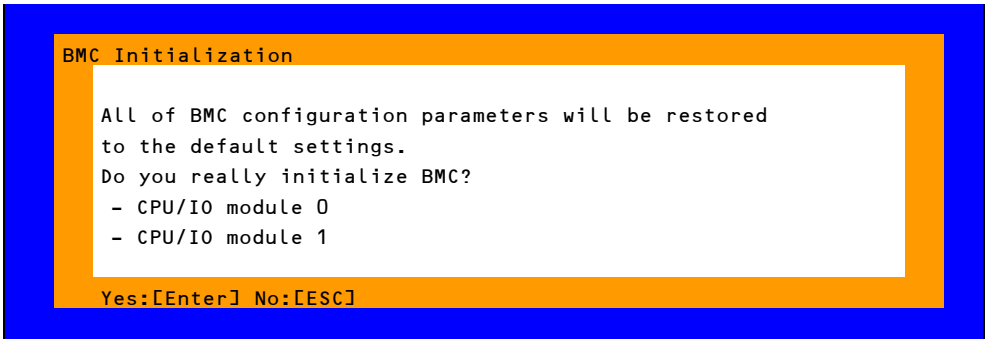
*5: This Authentication key is used when NEC ESMPRO Manager (Ver.5.4 or later) manages the target server. Up to 16 alphanumeric characters are accepted.

*6: 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, setting for relevant items are hidden and unnecessary.

2.2.3 Initializing BMC

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.



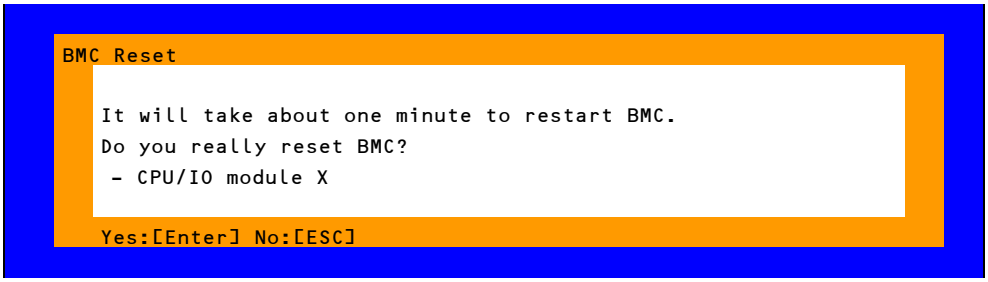
Confirmation message (Initialization)

<**ESC**> key: Aborts 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.

2.2.4 Resetting BMC

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.



Confirmation message (BMC Reset)

<**ESC**> key: Aborts 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.

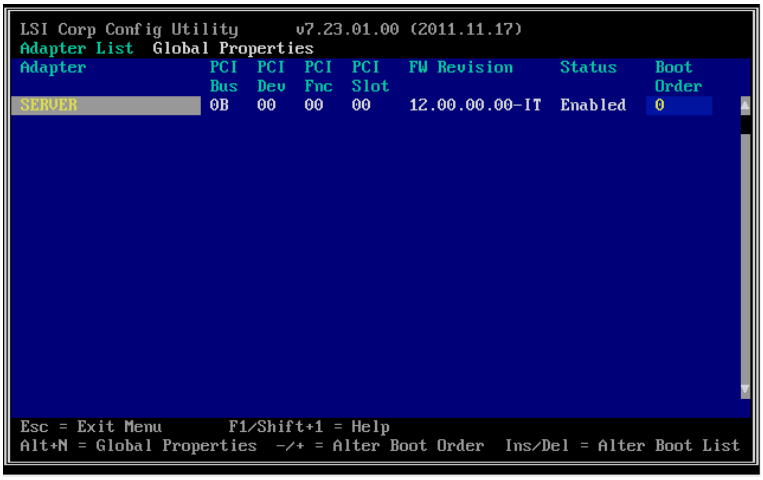
   The following message appears on the screen during POST execution.

```
LSI Corporation MPT SAS2 BIOS
MPT2BIOS-x.xx.xx.xx (xxxx.xx.xx)
Copyright 2000-20xx LSI Corporation.

Press Ctrl-C to start LSI Corp Configuration Utility...
```

2. Press and hold down the **Ctrl** key and press the **C** key.

   The SAS Configuration utility starts up with the **Adapter List** menu displayed.



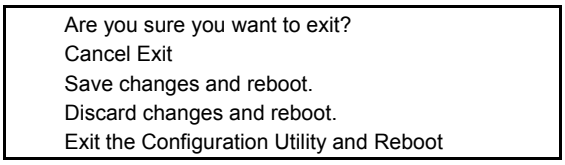
3.2 Quitting the SAS Configuration Utility

Take procedures below to quit the SAS/ Configuration utility.

1. Keep pressing the <**Esc**> key until the **Adapter List** menu appears.

   A message appears to prompt whether you want to quit the utility.

   Select **Discard changes and reboot** from the menu, and press the <**Enter**> key.



Tips You need not to select any other menu because no change is made on SAS Configuration utility.

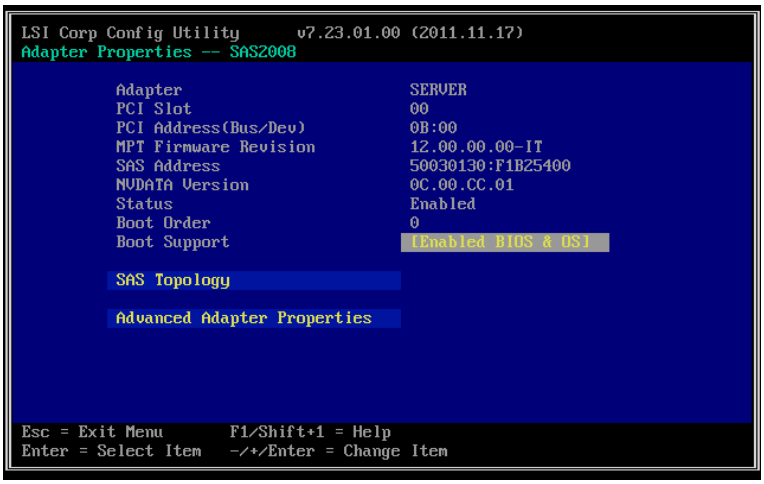
3.3 Physical Formatting of the Hard Disk Drive

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.

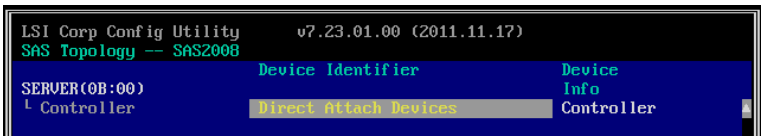
1. Press the <**Enter**> key on the **Adapter List** menu.

   Adapter Properties menu appears after a short while.



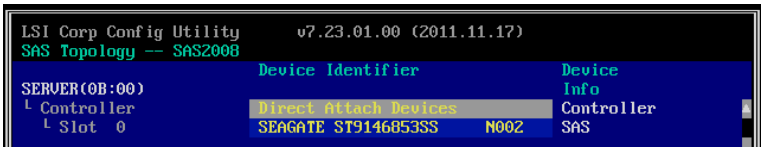
2. Select **SAS Topology** and press the <**Enter>** key.

   SAS Topology menu appears after a while.



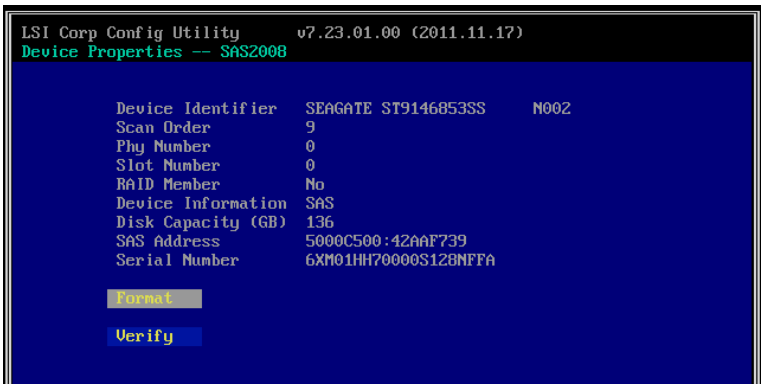
3. Select **Direct Attach Device** and press the <**Enter>** key.

   Hard disk drives that are installed on the primary CPU/IO module appear after a while.



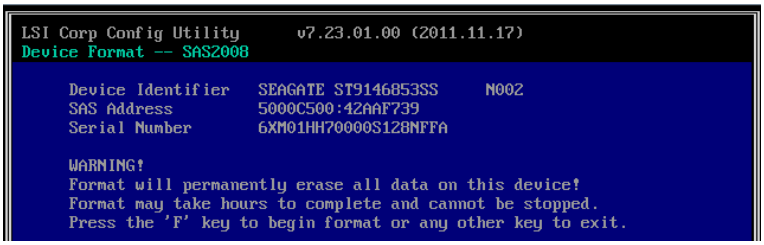
4. Select the hard disk drive to execute physical formatting and press the <**D**> key while pressing the <**Alt**> key.

   Device Properties menu appears after a while.



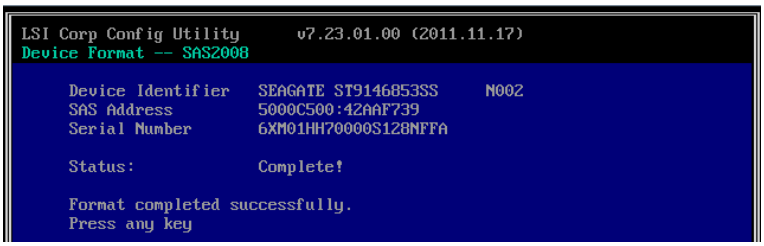
5. Select **Format** and press the <**Enter**> key.

   Device Format menu appears after a while.



6. Press the <**F**> key to start formatting.

   After the completion of formatting, the following message appears.



   Press any key to display **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 Windows OS
  See *Chapter 1 (6. 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 disconnect 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.

Note Pay attention not to move the write-protect switch when installing or removing Flash FDD.

4.1 Notes on Using Flash FDD

Do not use Flash FDD to back up data. Flash FDD can be used to save temporary data.

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.
  Doing so may cause failure of the device and damage to the data.
- 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 nearby metal object such as a doorknob or aluminum frame.
- Do not disassemble Flash FDD.
- Do not apply a strong force to Flash FDD.
- Do not place Flash FDD in an area directly exposed to sunlight or near a heater.
- Do not handle Flash FDD while eating, drinking, or smoking. Also, avoid contact with thinner, alcohol, or other corrosive substances.
- Do not relocate the server with Flash FDD connected to USB connector.
- 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.
- Before closing EXPRESSBUILDER, remove Flash FDD from the server.

5. Details of EXPRESSBUILDER

EXPRESSBUILDER helps you to install operating system and maintain the server. EXPRESSBUILDER also provides bundled software and documents.

5.1 Starting EXPRESSBUILDER

Use the DVD labeled "EXPRESSBUILDER", as shown below:

Tips Remove other removable media before starting EXPRESSBUILDER.

(1) Insert the DVD into the server, and then restart the system. (Cycle the power of server, or press <**Ctrl**> + <**Alt**> + <**Delete**> keys.)

Boot Selection Menu shown in *Chapter 2 (5.2 Menus of EXPRESSBUILDER - (1) Boot Selection Menu)* appears.

(2) Insert the DVD into a computer running Windows.

Autorun Menu shown in *Chapter 2 (5.2 Menu of EXPRESSBUILDER - (4) Autorun Menu)* appears.

The autorun menu is disabled by factory default. Launch the menu by running `\autorun\dispatcher_x64.exe`.

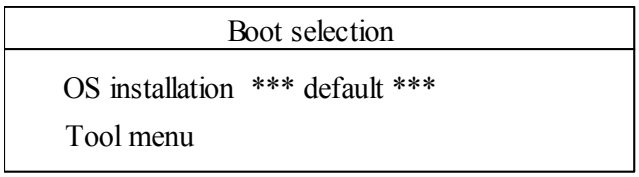
5.2 Menus of EXPRESSBUILDER

EXPRESSBUILDER is operated by using onscreen menus.

(1) Boot Selection Menu

When EXPRESSBUILDER starts from DVD, the following menu appears.

Use the upper and lower arrow keys to move the cursor, and then press <**Enter**> key to choose it.
OS installation is chosen if no key is pressed.



Home Menu shown in *(2) Home Menu* appears when choosing **OS installation**.

Tool Menu shown in *(3) Tool Menu* appears when choosing **Tool menu**.

(2) Home Menu

Operate Home Menu using the mouse or keyboard.

The following menus are included.

a) Setup
Installs Windows easily. For details about how to install Windows, see *"Installation Guide (Windows)"*.

b) Utilities
Starts a utility provided by EXPRESSBUILDER.
See *Chapter 3 (5.3 Utilities Provided by EXPRESSBUILDER)* for details.

c) Versions
Displays software and driver versions in EXPRESSBUILDER.

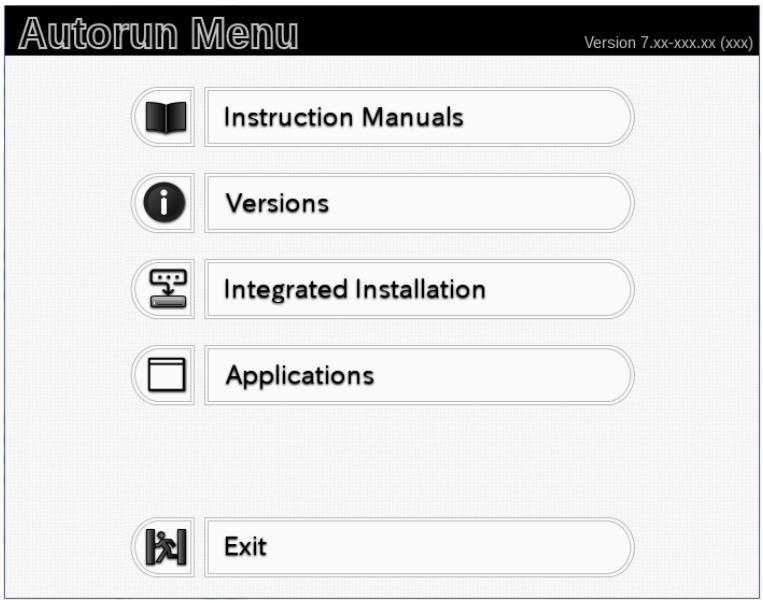
d) Exit
Closes EXPRESSBUILDER and then shut down or restart the server.

(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 about system diagnostics, see *Chapter 1 (11. System Diagnostics)*.

(4) Autorun Menu



Use Autorun menu to read documents or install bundled software. Adobe Reader is needed to view or print manuals of PDF format.

Integrated Installation

You can easily install Starter Pack or NEC ESMPRO using this feature. Log on the Windows with the built-in Administrator to use this feature.

5.3 Utilities Provided by EXPRESSBUILDER

The following utilities can be started when choosing **Utilities** from Home Menu.

File execution

Directly runs an external utility on removable media. **Use this feature only for utilities provided by NEC.**

Note The operation of external utilities provided by companies other than NEC is not guaranteed.

6. EXPRESSSCOPE Engine 3

EXPRESSSCOPE Engine 3 enables various features by using Baseboard Management Controller (BMC).

EXPRESSSCOPE Engine 3 monitors statuses inside the server such as that of power supplies, cooling fans, temperature, and voltage. Connecting the management LAN port 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.

See *Chapter 3 (2. BMC Configuration)* for details.

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 allows you to manage the server remotely by this server's BMC connecting with NEC ESMPRO Manager.

For details, see "*NEC ESMPRO Agent Extension Installation Guide*" in EXPRESSBUILDER.

7.4 BMC Configuration

BMC Configuration allows you to specify configuration information, backup or restore the system configuration information to this server's 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 enables you to manage and update the versions of the firmware and software installed in the server to be managed.

By using NEC ExpressUpdate, you can easily apply the update packages that is downloaded by NEC ESMPRO Manager.

For details, see "*NEC ExpressUpdate Agent Installation Guide*" in EXPRESSBUILDER.

Tips

Updates are available for some firmware and software that do not support NEC ExpressUpdate. See the following website to install these packages:

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.

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"* in EXPRESSBUILDER.

Tips

Express Report Service through the SNMP Alert of EXPRESSSCOPE Engine 3 is not available.

Refer to *"EXPRESSSCOPE Engine 3 User's Guide"* for more information.