

Areas Covered

Before Reading This Manual	This section explains the notes for your safety and conventions used in this manual.
Chapter 1 Overview	This chapter explains component names and basic operations of this server, as well as an overview of the software provided with this server. In addition, the workflow, from placing the server to starting the operation, is also described.
Chapter 2 Checking before OS Installation	This chapter explains the preparation on the server and cautions necessary before OS installation. Please read this chapter before starting installation.
Chapter 3 OS Installation Using ServerStart	This chapter explains how to install the OS in the server using ServerStart.
Chapter 4 Manual OS Installation	This chapter explains how to install the OS without using ServerStart.
Chapter 5 Operations after OS Installation	This chapter explains the operations to perform after OS installation. Be sure to perform those operations before operating the server.
Chapter 6 High Reliability Tools	For stable PRIMERGY server operations, we recommend that high reliability tools be installed. This chapter explains the installation and necessary settings of high reliability tools.
Chapter 7 Installing Internal Options	This chapter explains how to install and remove the various internal options.
Chapter 8 Configuring Hardware and Utilities	This chapter explains how to make the environment settings necessary to operate the server and how to use each utility.
Chapter 9 Operation and Maintenance	This chapter explains the operations necessary after starting to use this server as well as daily care and maintenance.
Appendix	This appendix explains the specifications for the server and for its internal options.

Before Reading This Manual

For Your Safety...

This manual contains important information, required to operate the server safely. Thoroughly review the information in this manual before using the server. Especially note the points under "Safety Precautions", and only operate the server with a complete understanding of the material provided. This manual and "Safety Precautions" should be kept in an easy-to-access location for quick reference when using this server.

Data Backup

To protect data stored in this device (including basic software and application software), perform backup and other necessary operations. Note that data protection is not guaranteed when repairs are performed. It is the customer's responsibility to maintain backup copies in advance. In case of data loss, Fujitsu assumes no liability for data maintenance or restoration and damages that occur as a result of the data loss for any reason, except for items covered under warranty.

High Safety

The Products are designed, developed and manufactured as contemplated or general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but are not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage, or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. You shall not use this Product without securing the sufficient safety required for the High Safety Required Use. If you wish to use this Product for High Safety Required Use, please consult with our sales representatives in charge before such use.

Problems may occur with this device in the event of an instantaneous voltage drop of the power supply due to lightning, etc. To prevent an instantaneous voltage drop of the power supply, we recommend that you use an uninterruptible power supply system.

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Remarks

■ Warning Descriptions

Various symbols are used throughout this manual. These are used to emphasize important points for your safety and that of others. The following are the symbols and their meanings.



 WARNING	Ignoring this symbol could be potentially lethal.
 CAUTION	Ignoring this symbol may lead to physical injury and/or damage the server or internal options.

The following symbols are used to indicate the type of warning or caution being described.

	The triangle mark emphasizes the urgency of the WARNING and CAUTION. Details are described after the triangle.
	A barred circle (⊘) warns against certain actions (Do Not). Details are described after the circle.
	A black circle indicates actions that must be taken. Details are described after the black circle.

■ Symbols

Symbols used in this manual have the following meanings.

 IMPORTANT	These sections explain prohibited actions and points to note when using this device. Make sure to read these sections.
 POINT	These sections explain information needed to operate the hardware and software properly. Make sure to read these sections.
→	This mark indicates reference pages or manuals.

■ Key Descriptions / Operations

Keys are represented throughout this manual in the following manner.

E.g.: [Ctrl] key, [Enter] key, [→] key, etc.

The following indicate pressing several keys at once:

E.g.: [Ctrl] + [F3] key, [Shift] + [↑] key, etc.

■ CD-ROM Drive and DVD-RAM Drive Descriptions

In this manual, both CD-ROM and DVD-RAM drives are described as CD-ROM drives. Unless otherwise noted, a CD-ROM drive can also mean a DVD-RAM drive.

■ Entering Commands (Keys)

Command entries are displayed in the following way.

```
diskcopy a: a:
          ↑ ↑
```

- In the areas of the "↑" mark, press the [Space] key once.
- When using Windows or DOS OS, commands are not case sensitive.
- CD-ROM drive names are shown as [CD-ROM drive]. Enter your drive name according to your environment.

```
[CD-ROM drive]:\setup.exe
```

■ Screen Shots and Figures

Screen shots and figures are used as visual aids throughout this manual. Windows, screens, and file names may vary depending on the OS, software, or configuration of the server used. Figures in this manual may not show cables that are actually connected for convenience of explanation.

■ Consecutive Operations

Consecutive operations are described by connecting them with arrows (→).

Example: Procedure of clicking the [Start] button, pointing to [Programs], and clicking [Accessories]

↓

Click [Start] → [Programs] → [Accessories].

■ Server Type

Server type is described as follows:

table: Server Type

Type	Expressions and abbreviations
Servers without an internal hard disk	Diskless Type

■ Product Names

The following expressions and abbreviations are used throughout this manual.

table: Abbreviations of Product Names

Product name	Expressions and abbreviations		
PRIMERGY RX600 S3	This server or the server		
Microsoft® Windows Server™ 2003 R2, Standard Edition	Windows Server 2003 R2	Windows Server 2003	Windows
Microsoft® Windows Server™ 2003 R2, Enterprise Edition			
Microsoft® Windows Server™ 2003, Enterprise Edition			
Microsoft® Windows Server™ 2003, Standard Edition	Windows Server 2003, Standard Edition		
Microsoft® Windows Server™ 2003, Standard x64 Edition	Windows Server 2003 x64*1		
Microsoft® Windows Server™ 2003 R2, Standard x64 Edition	Windows Server 2003 R2 x64		
Microsoft® Windows® 2000 Server	Windows 2000 Server		
Microsoft® Windows® 2000 Advanced Server			
Microsoft® Windows® Preinstallation Environment	Windows PE		
Microsoft® Windows® XP Professional	Windows XP Professional		
Microsoft® Windows® 2000 Professional	Windows 2000 Professional		
Microsoft® Windows Server™ 2003 Service Pack	Service Pack		
Microsoft® Windows® 2000 Service Pack			
Red Hat Enterprise Linux AS (v.3 for x86)	Linux		
Red Hat Enterprise Linux AS (v.4 for x86)			
Red Hat Enterprise Linux AS (v.4 for EM64T)			
SUSE™ Linux® Enterprise Server 9 for x86			

*1: Unless otherwise noted, Windows Server 2003 can also mean Windows 2003 x64.

Reference Information

■ Software Manuals

Software Manual contains other reference information and cautions for ServerStart not described in this manual. Please read it before using ServerStart.

Software Manual is contained as a "README.TXT" file in the root directory on the ServerStart CD-ROM. Use a text editor to read it.

■ Latest Information about Software Provided with This Server

For the latest information regarding ServerStart and other software provided with this server, refer to the Fujitsu PRIMERGY website (<http://primergy.fujitsu.com>).

Warning and Caution Labels

Warning and caution labels are found on the server.
Do not remove or stain these labels.

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Chapter 1

Overview

This chapter explains component names and basic operations of this server, as well as an overview of the software provided with this server. In addition, the workflow, from placing the server to starting the operation, is also described.

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1.1 RX600 S3

This server has the following features.

■ High Reliability

● Advanced Memory Protection Functions

The server supports the SDDC (Single Device Data Correction) function using PC2-3200-compliant memory (DDR2 400MHz SDRAM). Further, the server supports the spare memory function, the memory mirroring function, and the memory RAID function, one of which can be selectively configured for the whole memory. These functions enable data recovery in the event of a memory error.

● Storage System Configuration

The server supports onboard SCSI array controller, so that the array system (RAID 0/1/5/10) can be configured.

● Redundant Function

The memory, internal hard disk unit, power supply units, and system fans support the redundant function. If power supply unit or system fan fails, it can be replaced without stopping the system. For the memory, this hot-plug function is supported only in the mirror configuration and memory RAID configuration.

For the disk array configuration, a failed hard disk unit in a storage system can be replaced or repaired without turning off the server and peripheral devices (a hot-plug is supported).

● Hardware and Software Designed for Data Security

Locks on the drive covers and the password setting in the BIOS Setup Utility protect hardware and data assets in the server against theft, ensuring data security.

● Proactive Fan Function

When a fan fails or the ambient temperature rises, the system fan speed is increased automatically to avoid increase in temperature in the server, ensuring stable server operation.

● Hot-swappable PCI Slots

The PCI slots 1 through 5 are hot-swappable PCI slots. If an expansion card has a failure, you can replace the failed expansion card without turning off this server and its peripheral devices. (Only when using Windows Server 2003)

● High Reliability Tools

High reliability tools offer stable system operation. For information about high reliability tools, refer to "1.2.2 High Reliability Tools" (→pg.20).

■ High-speed Processing

● Dual Core Intel® Xeon® Processors

The server can have up to four dual core Intel® Xeon® processors for high-speed data processing (two processors in standard servers).

● PCI-Express, PCI-X

The server is equipped with PCI-Express buses with a maximum data transfer speed of 2.5Gbps (bidirectional) per lane and PCI-X buses with a maximum data transfer speed of 1066MBps, both ensuring high-speed data transfer.

● Ultra320 SCSI

The Ultra320 SCSI interface, which provides a maximum data transfer speed of 320MB/sec, is supported, ensuring high-speed data transfer during disk access.

■ Excellent Scalability

● Maximum Memory Size of 32GB

In addition to the preinstalled 2GB memory, the system has four memory boards. One memory board can have four memory cards to support up to 32GB memory.

● Maximum Hard Disk Size of 1500GB

Up to five internal hard disk units can be installed in the 3.5-inch storage bays. The hard disk size can be increased up to 1500GB.

● Seven PCI Slots

The server has seven PCI slots, including four PCI-Express slots and three PCI-X slots. Functions can be added by using expansion cards.

● 5-inch Internal Option Bay

The server has a 5-inch storage bay to accommodate one 5-inch internal option for an increasing amount of data.

1.2 Supplied Software

ServerStart for supporting setup and high reliability tools for avoiding problems during server operation are supplied with this server.

1.2.1 Setup Support Tool - ServerStart

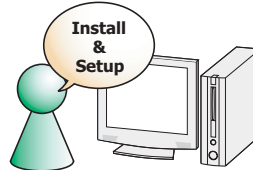
ServerStart is a setup support tool that helps to install PRIMERGY. It offers easy server installation and proper installation of recommended drivers.

■ Installing ServerStart

Not using ServerStart

- User definition, access privileges, network settings
- It is necessary to input successively for installation, resulting in more mistakes and longer time

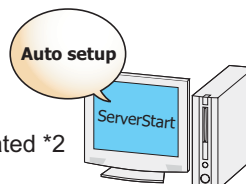
Example:
Operations such as setting IP address, creating users, and registering computer name are required



Using ServerStart

- Auto installation of recommended drivers (SCSI, LAN, etc.) enables high reliable installation
- High reliability tools can be installed automatically *1

Example:
Operations during OS installation is automated *2



*1 High reliability tools are software with comprehensive strength for stable system operation of the server management

*2 Some input (License window, etc.) and media repositioning are excluded

● Supported OS

The following OSs can be installed using ServerStart V6.606.

- Microsoft® Windows Server™ 2003, Standard Edition
- Microsoft® Windows Server™ 2003, Enterprise Edition
- Microsoft® Windows Server™ 2003, Standard x64 Edition
- Microsoft® Windows Server™ 2003, Enterprise x64 Edition
- Microsoft® Windows Server™ 2003 R2, Standard Edition
- Microsoft® Windows Server™ 2003 R2, Enterprise Edition
- Microsoft® Windows Server™ 2003 R2, Standard x64 Edition
- Microsoft® Windows Server™ 2003 R2, Enterprise x64 Edition
- Microsoft® Windows® 2000 Server
- Microsoft® Windows® 2000 Advanced Server

POINT

- ▶ ServerStart does not support to install Linux.
- ▶ For Windows 2000, only SP 4 applied CD-ROM is supported.

● Configuration File (SerStartBatch.ini)

A configuration file stores the server setup information configured in ServerStart. To create a configuration file, use the ServerStart floppy disk supplied with this server. Store only one file on each floppy disk. Do not set the ServerStart floppy disk to the write-protected state.

You can use any name for the configuration file. However, the file must be installed in the server as "SerStartBatch.ini". When installing the configuration file, make sure to save it as "SerStartBatch.ini" on the ServerStart floppy disk.

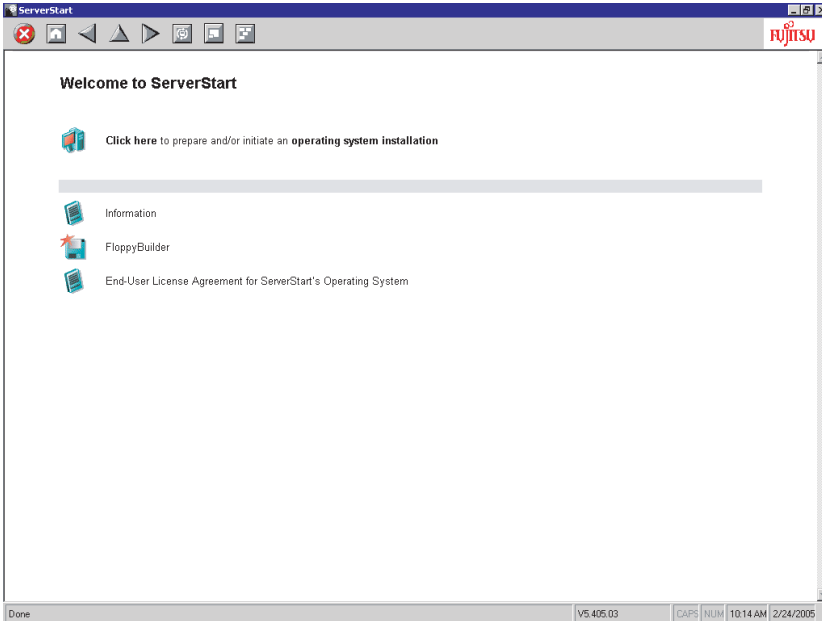
Start up ServerStart, insert the ServerStart floppy disk containing "SerStartBatch.ini", and click [Start] to install the server.

■ Intuitive User Interface

The intuitive user interface allows you to easily set the necessary information.

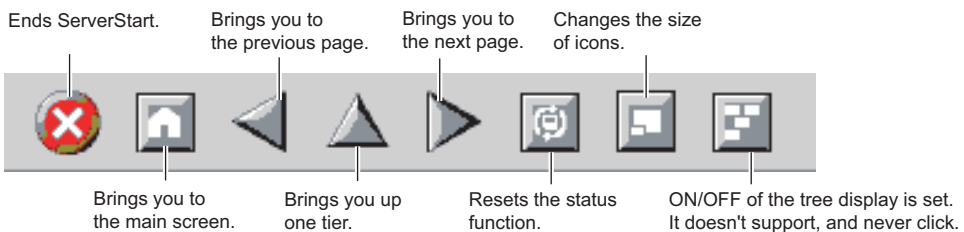
● Main Window

When ServerStart is started, the following window appears. The window and tool bar differ depending on the mode.




● Tool Bar

In Guide/Expert Mode



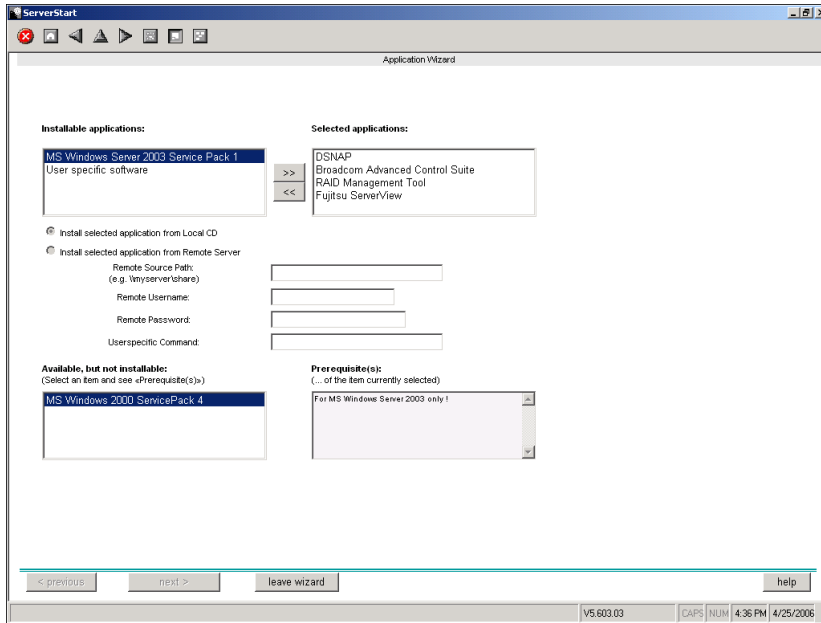
IMPORTANT

- ▶ While the wizard is running, do not click the  icon to move to the previous or next window or to a different tree level. To move to a different window, click the [Previous], [Up], or [Next] button at the bottom of the wizard window.

● Wizard Window

Clicking a wizard displays a wizard window.

Set items in the wizard window. To move to a step in the next wizard window, click the operation button at the bottom of the window. Clicking the [help] button displays a tip for setting the item.



■ Network Configuration

ServerStart can configure a network at server installation.

For details on available network patterns, refer to "Using ServerStart to Configure the Network".

■ Automatic Driver Installation

Recommended drivers for automatically recognized expansion cards are installed with the server. This prevents possible mistakes in driver installation, such as installation of an older version or drivers which were not supplied with this server.

■ Automatic RAID Configuration

When an array controller card is used, specify the RAID type and the number of hard disk units before starting installation. A storage system can be configured without starting the RAID utility.

■ Remote Installation

ServerStart can store resources necessary for installation, such as the OS and Service Pack, in a different server on the network and install the OS via the network. This method is used when the server does not have a CD-ROM or floppy disk drive.

SystemcastWizard Professional (optional) is a useful tool for extracting a lot of files in a short time.

1.2.2 High Reliability Tools

High reliability tools are a comprehensively useful set of software for stable system operations of the server. The following tools have respective roles to manage normal operations or recovery from errors:

- Server monitoring tools
- System diagnosis support tool
- LAN driver detailed setting tools

■ Server Monitoring Tools

The server monitoring tools monitor the hardware status on behalf of the administrator and notify him/her in the event of an error.

● Detecting a Server Failure Early [ServerView]

ServerView is software that monitors whether the server hardware is in a normal state to protect important server resources. When using ServerView, the server hardware is monitored all the time. If an error that could cause trouble is detected, the administrator is notified in real-time. This allows the server administrator to remove a system error early and avoid trouble.

● Array Configuration / Disk Management [RAID Management Tool]

RAID Management Tool is software that performs array configurations, disk initialization and storage system monitoring. When an event occurs, it leaves an event log in the event viewer's application logs. At the same time, a pop-up window indicates a hard disk failure, rebuild status, etc.

■ System Diagnosis Support Tool

The system diagnosis support tools are for supporting system diagnosis during normal operation or in the event of trouble.

● Solving Problems Early [DSNAP]

DSNAP is a command line utility that collects all the failure investigation information. System file configuration information, major registry settings, and event logs can be collected easily from the command line.

DSNAP is used to allow maintenance personnel to understand your system software configuration and settings correctly and ensure smooth investigations when a problem occurs in your Windows Server 2003/Windows 2000 Server system. Pass the information along with memory dumps to your maintenance personnel.

■ LAN Driver Detailed Setting Tools

These tools set details on the LAN, including the use of the Teaming (load balance) function and VLAN configuration.

● Broadcom Advanced Control Suite (BACS)

BACS is a tool for setting details on the onboard LAN when it is used to use the Teaming (load balance) function between the onboard LAN, or to setup a VLAN using the onboard LAN.

● Intel® PROSet

Intel® PROSet is a tool for setting details on the LAN card when it is used with another LAN card or the onboard LAN for using the Teaming function or when it is used for configuring a VLAN.

1.2.3 Installing High Reliability Tools

You can install all high reliability tools provided with PRIMERGY by specifying them in "Application Wizard" when the OS is installed is initiated with ServerStart.

The following high reliability tools are installed.

table: High reliability tool installation

High reliability tool	ServerStart installation	
	Guided mode	Expert mode
RAID Management Tool	A	N
ServerView	A	N
DSNAP	S	S
Broadcom Advanced Control Suite (BACS)	S	N
Intel® PROSet	A	A

A: Installed in any case

N: Installed if selected (Not selected by default)

S: Installed if selected (Selected by default)

POINT

- ▶ Intel® PROSet will be installed when an optional LAN card is installed. However, if the OS is installed on other than drive C, Intel® PROSet will not be installed.

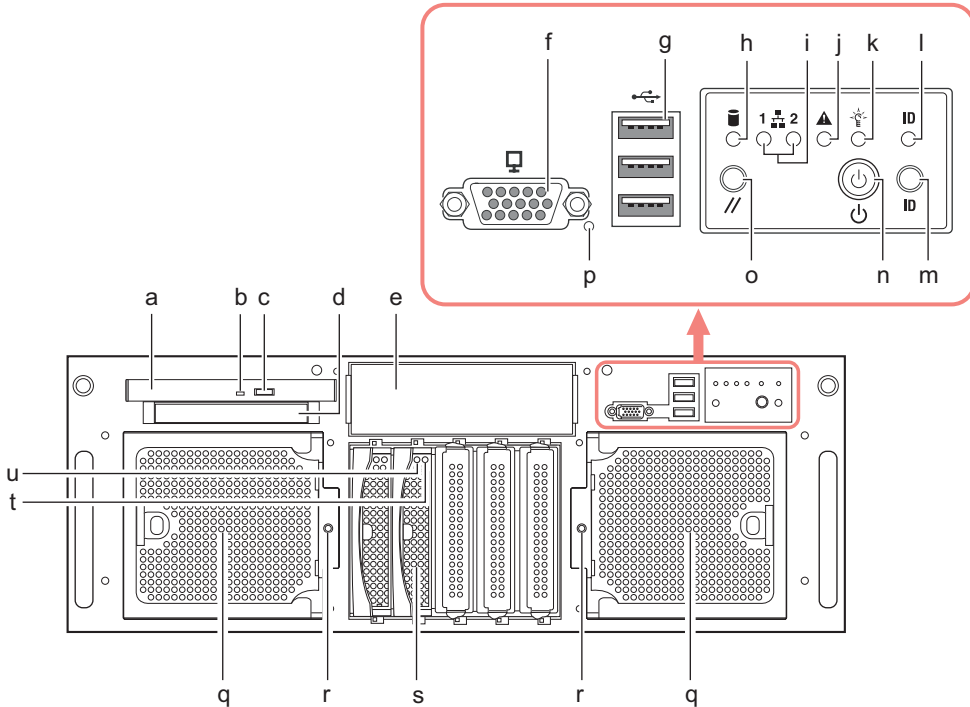
IMPORTANT

- ▶ Linux does not support batch installation with ServerStart.
- ▶ ServerView must be configured after installation even when the high reliability tools have been installed at once with ServerStart. Refer to "Chapter 6 High Reliability Tools" (→pg.175).


1.3 Component Names and Functions

This section explains the component names and functions of the server and baseboard.

1.3.1 Server (Front View)




- a** CD-ROM drive bay
Reads data or programs from a CD-ROM.
- b** CD-ROM access LED
This LED blinks when data is being read from a CD-ROM.
- c** CD-ROM eject button
Press this button to eject a CD-ROM.
Do not press this when the CD-ROM access LED is on.
- d** LCD panel
Indicates system activity and hardware error. System activity is usually displayed, and when the error occurs, the system error is displayed automatically.
- e** 5-inch storage bay
Contains a 5-inch internal device.

f Video connector ()


Connects display cable.



- ▶ The display may not be functioning properly, depending the OS in use. Use the video connector in the rear side.

g USB connectors ()

Connects peripheral equipment conforming to the USB standard.

h Hard disk access LED ()

This LED is lit when data is being written to or read from the hard disk. When the hard disk is not accessed, this is not lit.

i LAN1, LAN2 Status LEDs (1  2)

Indicates LAN activity status.

table: Meaning of the LAN Status LED

LED	Description
Off	No Access
On (Green)	Connecting to the LAN
Blinking (Green)	Accessing the LAN

j System Status/Fault LED ()

Indicates system status.

table: Meaning of the System Status/Fault LED

LED	Description
Off	AC Power Off, Normal operation
On (Green)	System booted and ready
On (Yellow)	Right after AC Power On
On (Amber)	Failure of parts in the server
Blinking (Amber)	

k System Power LED ()

This LED is lit green when the server is turned on.

This is not lit when the server is not turned on.

l System ID LED ()

This LED is used for maintenance. When pressing the System ID button, the front and rear LEDs are lit blue so that the locations of devices being maintained can be determined.

Also, the [System Identification LED Display] button of ServerView can be used to light them.

m System ID button ()


When pressing this button, the front and rear System ID LEDs are lit blue so that the locations of devices being maintained can be determined.

n System Power button ()

Press to turn the system power on or off.



- ▶ Do not turn the server off when the Hard disk access LED is blinking. Data in the hard disk may be damaged.

o System Reset button ()

Press to reset and restart the system.



- ▶ Do not restart the system when the Hard disk access LED is blinking. Data in the hard disk may be damaged.

p Maintenance button

This button is used for maintenance by your support personnel. Do not operate this button by yourself.

q Fan modules


This server has four system fans by default, and a redundant function is effective.

r Fan module failure LED


Indicates fan modules status. This LED glimmers amber when the server is turned on, and is lit intense amber at the time of fan modules failure.

s 3.5-inch storage bay

Contains an internal hard disk.

t Hard disk access LED ()

This LED is lit when data is being written to or read from the hard disk. When the hard disk is not accessed, this is not lit.

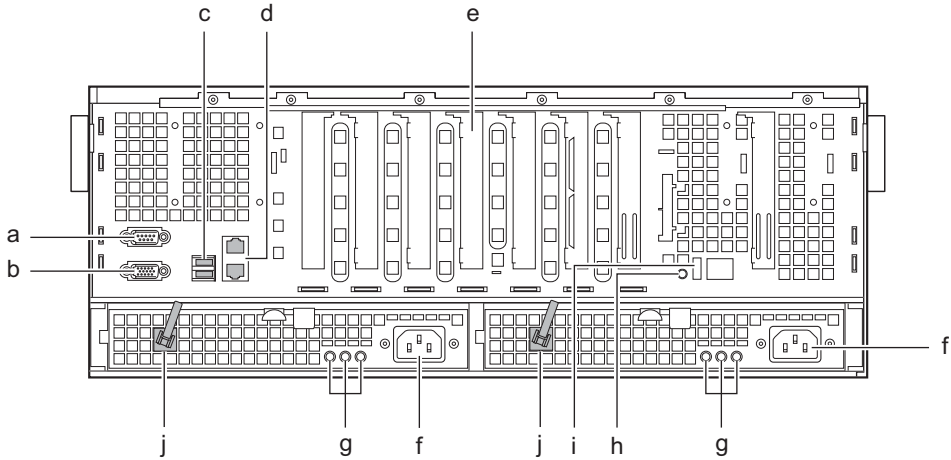
u Hard disk failure LED ()




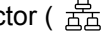
During an array system configuration, this LED is lit amber when an error is detected in the internal hard disk unit. It is lit or blinks depending on the hard disk status as follows.

table: Meaning of the Hard Disk Failure LED

LED	Description
Off	In normal mode or hot spare mode
On (Amber)	Error detected in the hard disk (in an array configuration)
Blinking (Amber)	Rebuilding or faulty hard disk replacement in progress

1.3.2 Server (Rear View)



- a** Serial port connector ()
Connects cables of peripheral equipment conforming to the RS-232C standard such as modems.
- b** Video connector ()
Connects display cable.
- c** USB connector ()
Connects peripheral equipment conforming to the USB standard.
- d** LAN (10/100/1000BASE-T) connector ()
Connects an Unshielded Twisted Pair (UTP) cable.
For 1000Mbps connection, a category 5 enhanced cable is required.
For 10Mbps/100Mbps connection, a category 5 or higher cable is required.
The meaning of the LED is shown in the table below.

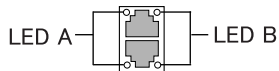


table: Meaning of the LAN Connector LED

LED location	LED	Description
LED A	On (Green)	Link is being established
	Blinking (Green)	Data is being transferred
LED B	On (Amber)	Connection established at 1000Mbps
	On (Green)	Connection established at 100Mbps
	Off	Connection established at 10Mbps

- e** PCI Slots
Contains extension cards that enhance the server functions.
- f** Inlet
Connects power cables.

g Power supply unit status LED

Indicates Power supply unit activity status.

table: Meaning of the Power Supply Unit Status LED

LED		State
Right LED,	On (Green)	Idle
Center LED	Blinking (Amber)	Failure
Left LED	On (Green)	Normal operation
Off		No power is supplied

h System ID LED button

When pressing this button, the front and rear LEDs are lit blue so that the locations of devices being maintained can be determined.

i System ID LED

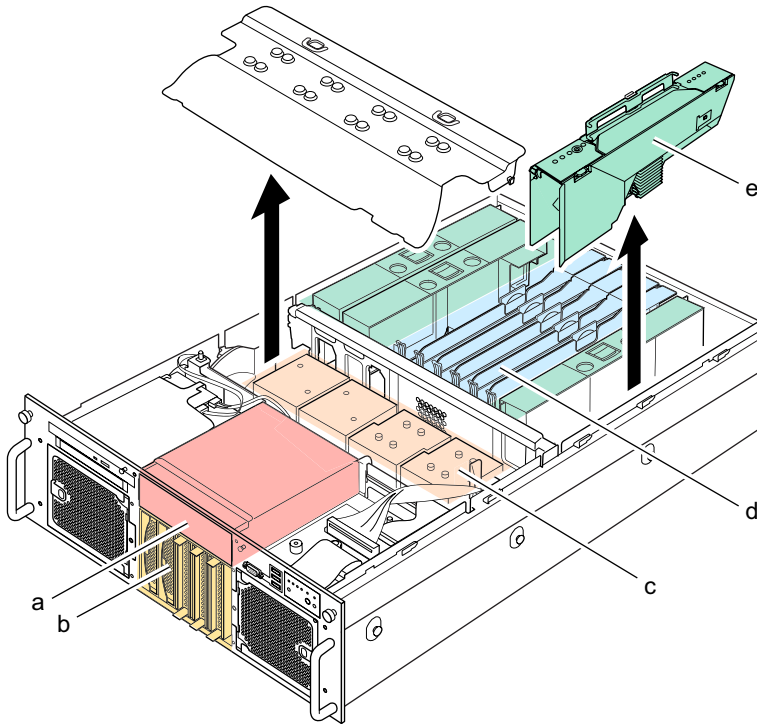
When pressing the System ID LED button, this LED is lit blue so that the locations of devices being maintained can be determined.

Also, the [System Identification LED Display] button of ServerView can be used to light them.

j Release tie

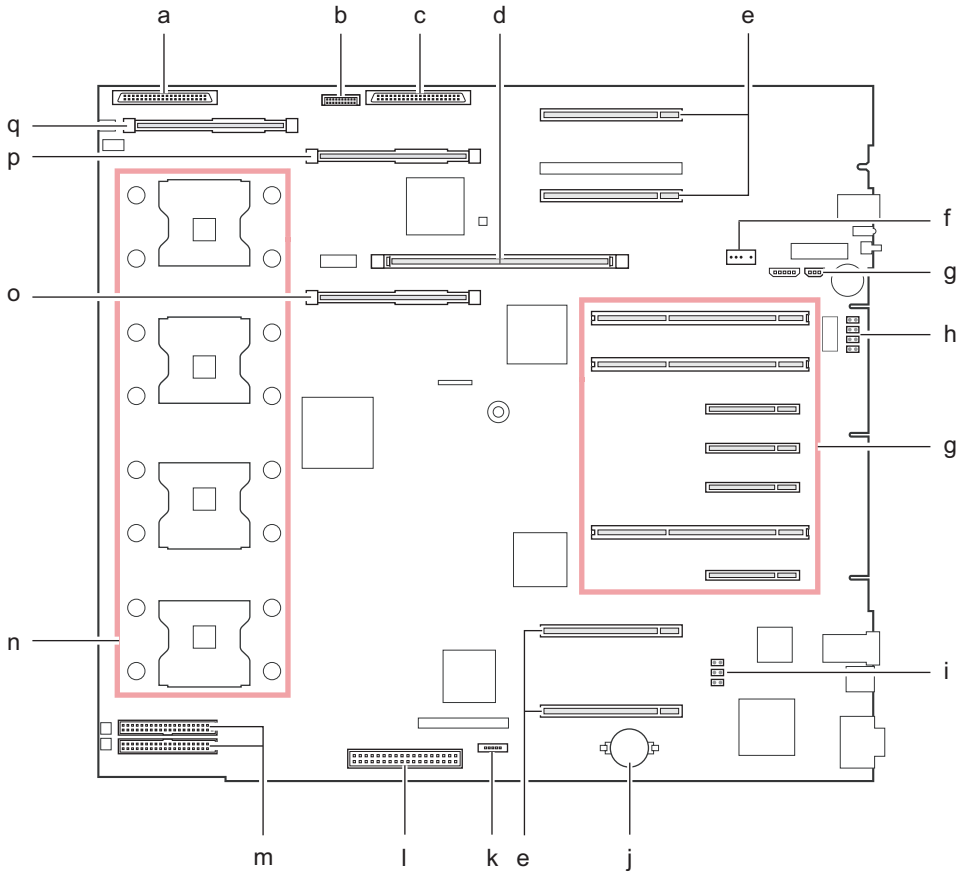
When connecting the power cable, pass the cable through a release tie. This prevents for the power cable from being pulled out when the server is drawn out.

1.3.3 Server (Internal)



- a** 5-inch storage bay
Contains a 5-inch internal optional device.
- b** 3.5-inch storage bay
Contains a 3.5-inch internal optional device.
- c** CPU Socket
Installs the CPU. Two sockets are installed by default.
- d** PCI Slot
Contains extension cards that enhance the server functions.
PCI cards with the PCI bus interface can be installed in the PCI slots.
- e** Memory Board
Up to four memory modules can be supported. This server has one memory board by default, and up to four memory boards can be supported.

1.3.4 Baseboard



- a** SCSI Connector channel A
An internal hard disk unit is plugged in.
- b** Onboard RAID Battery Backup Unit Connector
An onboard RAID battery backup unit is plugged in. This is preinstalled.
- c** SCSI Connector channel B
An internal hard disk unit is plugged in.
- d** Onboard RAID Cache Memory connector
An onboard RAID cache memory is plugged in. This is preinstalled.
- e** Memory Board Slot
Attach the memory board. A memory board has two memory banks and can hold a total of four memory modules. In this server, one memory bank consists of Slots A and B. Always install memory modules in pairs.
- f** USB connector
An USB cable is plugged in when an internal DAT unit (PG-DT5041) is installed.
- g** Server Control connector
A server control cable is plugged in when a remote service board is installed.

h Switch Block

For details about switch settings, refer to "8.1 Jumper Settings" (→pg.236).

i PCI Slots

Contains an expansion card. PCI slots (1 to 7) are numbered from bottom to top in the above figure.

j Real-time clock battery**k** SATA connector**l** Front Panel connector**m** DC Power connectors**n** Processor socket

Installs the CPU. Two sockets are installed by default. Up to four sockets can be installed.

o VRM connector (for CPU4)

If you have installed a CPU in CPU Slot 4, install the CPU VRM.

p VRM connector (for CPU3)

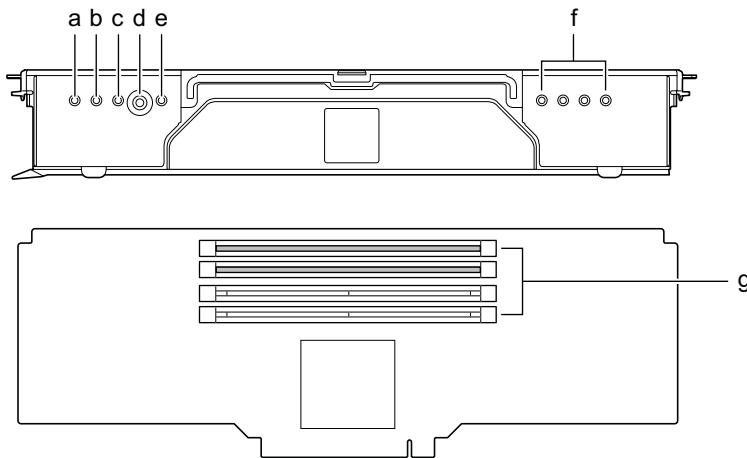

If you have installed a CPU in CPU Slot 3, install the CPU VRM.

q VRM connector (for CPU3&4 L3 cache)

The VRM slot for the L3-cache of CPU. For the CPU L3-cache, it is installed beforehand.

1.3.5 Memory Board

"From upper view"

**a** Mirror Configuration LED ()


Green light turns on when the server is in Memory Mirror configuration.

b RAID Configuration LED ()


Green light turns on when the server is in RAID Memory configuration.

c Hot plug Attention LED ()

Amber light turns on when the Memory Board is in a hot-plug event.

d Power button ()

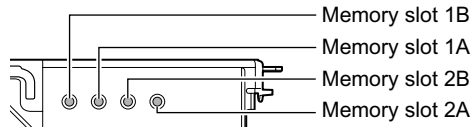
Press this button to perform a hot-insertion or hot-removal of a Memory Board.
After replacing the memory, press this button to turn on.

e Power LED ()

Green light turns on when the Memory Board is powered on.
The light turns off when the power is not detected on all boards.

f DIMM Status LED

The position of the LEDs corresponds to that of the memory slot. This LED is turned off when the DIMM is functioning properly or the memory is not installed. Being lit amber indicates error for the corresponding DIMM.



g Memory Slots

Install the memory modules. The slots are arranged in the order of Memory Slot 1B, Memory Slot 1A, Memory Slot 2B, and Memory Slot 2A from the top.

1.4 Standard Operations

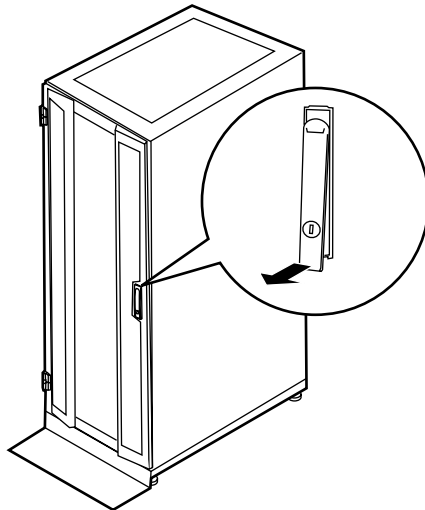
This section explains such standard operations as turning the server on/off and inserting/ejecting CD-ROMs.

1.4.1 Opening the Rack Door

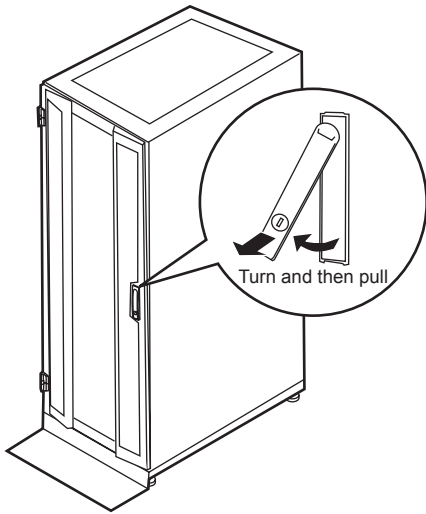
This section explains how to open the front and rear doors of the 40U standard rack. Refer to the manual included with the rack for procedures on opening other rack doors.

■ Opening the Front Door

- 1 Turn the rack key and pull the rack handle up.

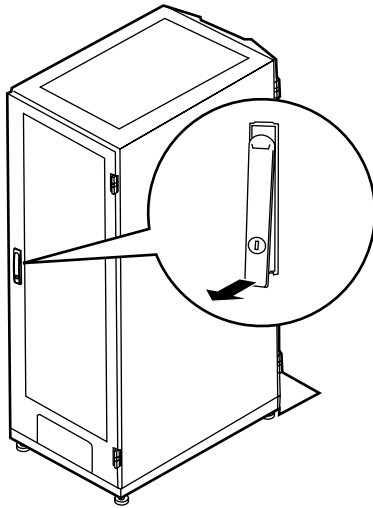


- 2** Turn the handle in the direction of the arrow and pull it forward.

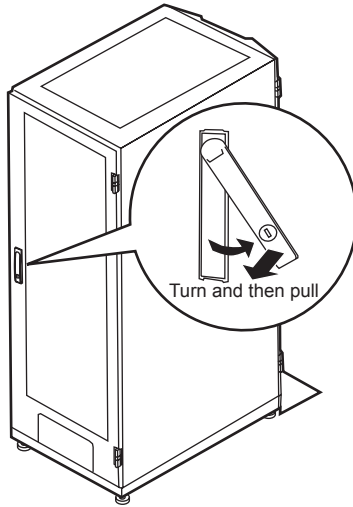


■ Opening the Rear Door

- 1** Turn the rack key and pull the rack handle up.



- 2 Turn the handle in the direction of the arrow and pull it forward.



POINT

- ▶ Unless you are inserting/removing media or turning the power on/off, keep the door closed. Doing so blocks electric waves from cell phones, etc.
- ▶ Do not lose the keys. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer if you lose them.

1.4.2 Turning on the Server



Do not



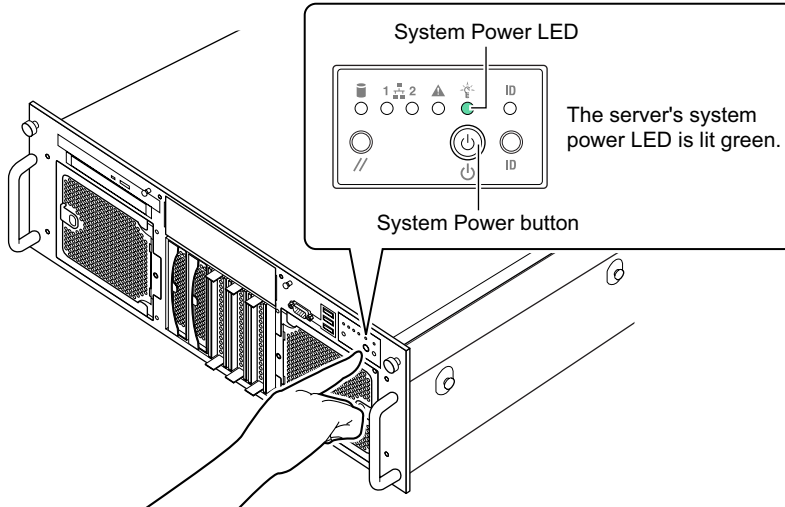
- Do not move, strike, or shake the server when it is turned on. This can damage the hard disk in the server and cause data loss.
- Turn the server on when the temperature is in its operating environment range (10-35°C). For details about the operating environment, refer to "Start Guide" and "Safety Precautions".
When operating the device outside of this operating environment, the server may operate improperly, damage data etc.
Furthermore, Fujitsu cannot be held responsible for any related damage, malfunction, or loss of data, etc.
- The fans rotate at high speed immediately after the server is turned on, but this is not defective. When the temperature is in the server's operating environment range (10-35°C), they start to rotate at normal speed later.
- Be sure to wait for 10 seconds or more after shutdown before turning the server on.

- 1 Make sure that the CD-ROM drives are empty.
- 2 Turn on the display and peripheral devices.

3 Press the power switch on the front of the server.

The server's power LED is lit green.

When the power is turned on, the server performs Power On Self Tests (POST). If any abnormalities are detected by POST, error messages are displayed ("9.2.2 Error Messages" (→pg.265)).



POINT

- ▶ It may take a few seconds until the server is turned on. Also, when the power cable is connected, the server is turned on and off, but this is not defective.
- ▶ The time to turn on the server can be set with the ASR setting (on the [Power On/Off] tab) using ServerView supplied with this server. For details, refer to "3.2 Settings for Server Monitoring" in "ServerView User's Guide".

1.4.3 Turning off the Server



- Follow the procedures below to turn off the server. Data can be lost if these procedures are not followed correctly.
- In the event of smoke or sparks, immediately unplug the electric cord. Failure to do so could lead to a fire or electrocution.

1 Make sure that the CD-ROM drives are empty.

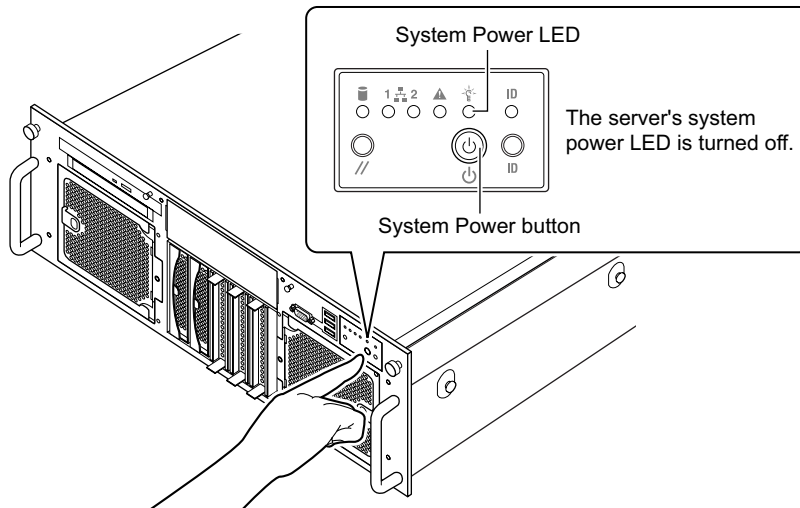
2 Shut down the OS.

When the OS is Windows or ServerView is installed, the server is turned off after the OS is shut down (Step 3 is not necessary).

Make sure that the hard disk access LEDs are off when the OS is shut down.

3 Keep pressing the power switch on the front of the server for about three seconds.

The server's power LED is turned off.



4 Turn off the display and peripheral devices.



- Be sure to wait for 10 seconds or more after shutdown before turning the server on.

POINT

- ▶ The time to turn the server off can be set with the ASR setting (on the [Power On/Off] tab) using ServerView. For details, refer to "3.2 Settings for Server Monitoring" in "ServerView User's Guide."

■ Cautions when Turning the Power Off



- ▶ If you press the power switch for four seconds or more, the server turns off forcedly. If you press the power switch for four seconds or more while the OS is running, the server turns off without performing the shutdown process, which may lead to the destruction of hard disk data. Do not press the power switch for four seconds or more while the OS is running.

● When the OS is Windows Server 2003 or Windows 2000 Server

- For Windows Server 2003
"Do Nothing", "Prompt Input", "Standby", "Hibernation", or "Shutdown" can be specified as the operating mode of the power switch in the OS settings (normally, "Shutdown" is specified).
- For Windows 2000 Server
"Standby", "Hibernation", or "Power Off" can be specified as the operating mode of the power switch in the OS settings (normally, "Power Off" is specified).

On this server, functions corresponding to "Standby" and "Hibernation" are supported as BIOS and hardware functions. However, some drivers and software installed in the server do not support these functions. For this reason, functions corresponding to "Standby status" and "Hibernation status" are unavailable on this server.

When the operating mode is set to "Standby" or "Hibernation", the system may operate improperly or hard disk data may be corrupted. For details about operating mode settings, refer to the OS manual.

1.4.4 Inserting and Ejecting a CD-ROM

This section explains how to insert and eject a CD-ROM. Unless otherwise noted, a CD-ROM can also mean a DVD-RAM. When using a CD-ROM, note the followings to avoid a failure:

■ Cautions for Handling CD-ROM Drive

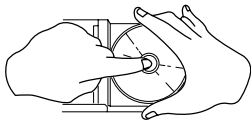
- Use the drive in a dry place with low airborne dust levels. Entry of water, a paper clip, or other liquids or metal objects can cause electric shock or failures.
- Do not use the drive in a place exposed to shocks or vibration.
- Do not insert any object other than the specified CD-ROMs.
- Do not pull or push the CD-ROM tray forcibly.
- Do not disassemble the CD-ROM drive.
- Clean the CD-ROM tray before use. Use a dry, soft cloth for cleaning.
- When the CD-ROM drive is not used for a prolonged period, eject the CD-ROM to prevent accidents. To avoid dust or particles, keep the CD-ROM tray closed (in a loaded position).
- This server supports CD-ROMs with the following logo. Do not use CD-ROMs without the logo. Doing so may cause failures.



For a DVD-RAM drive, refer to the manual supplied with an internal DVD-RAM drive unit.

■ Cautions for Handling CD-ROMs

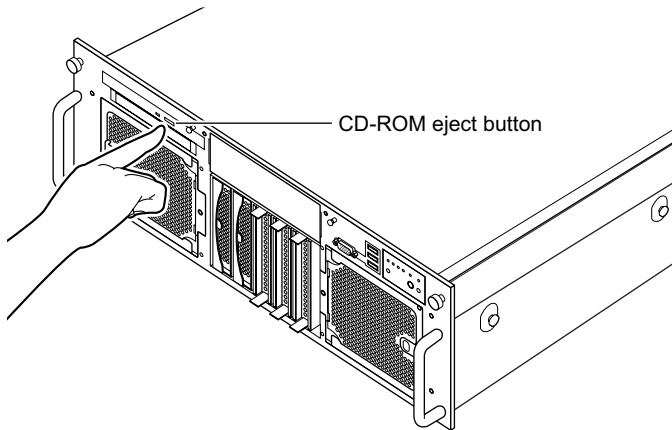
- When removing the disk from the case, pull the disk up while pressing the center holder of the case as shown in the figure below.



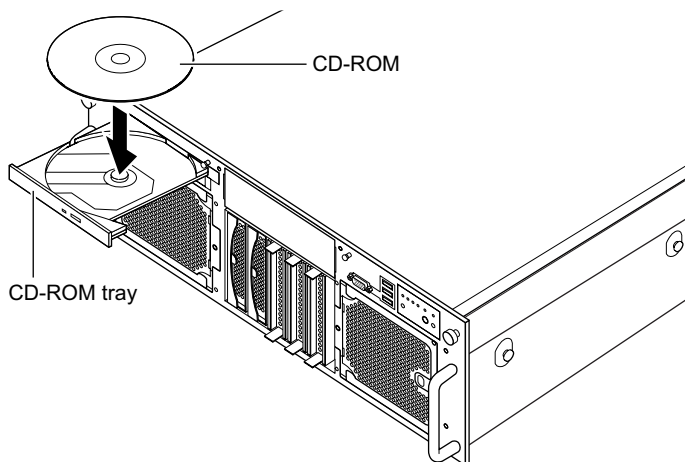
- Hold the CD-ROM on its edge to avoid contact with the disk surface.
- Do not contaminate the CD-ROM surface with fingerprints, oil, or dust. If the disk is dirty, wipe it from the center to the edge with a dry, soft cloth. Do not use benzine, thinner, water, record sprays, antistatics, or silicone clothes.
- Be careful not to scratch the CD-ROM surface.
- Avoid heat.
- Do not bend the floppy disk or place heavy objects on it.
- Do not use a ball-point pen or pencil on the label (printed) side.
- Do not apply stickers to the label side. Abnormal vibration can occur due to eccentricity.
- When the CD-ROM is moved from a cold place into a warm place, dew condensation may occur, resulting in data read errors. If this is the case, wipe droplets away with a dry, soft cloth and let the unit dry naturally. Do not use a hair dryer.
- To avoid dust, scratches, or deformation, store CD-ROMs in the case whenever not in use.
- Do not store CD-ROMs in areas of high temperature exposed to direct sunlight for many hours or near heating appliances.

■ Inserting the CD-ROM

- 1** Make sure the server is turned on and press the CD-ROM eject button.
The CD-ROM tray comes out a little.



- 2** Pull the CD-ROM tray out.
- 3** Place the CD-ROM (label side up) onto the tray.
While supporting the CD-ROM tray, push the CD-ROM until it clicks into position.



IMPORTANT

- ▶ If the CD-ROM is placed improperly when the tray is pushed into the unit, the CD-ROM or the drive may be damaged.
- ▶ Be careful not to touch the lens of the CD-ROM drive.

- 4** Move the tray back.
Push the tray gently until it clicks into position.

■ Ejecting the CD-ROM

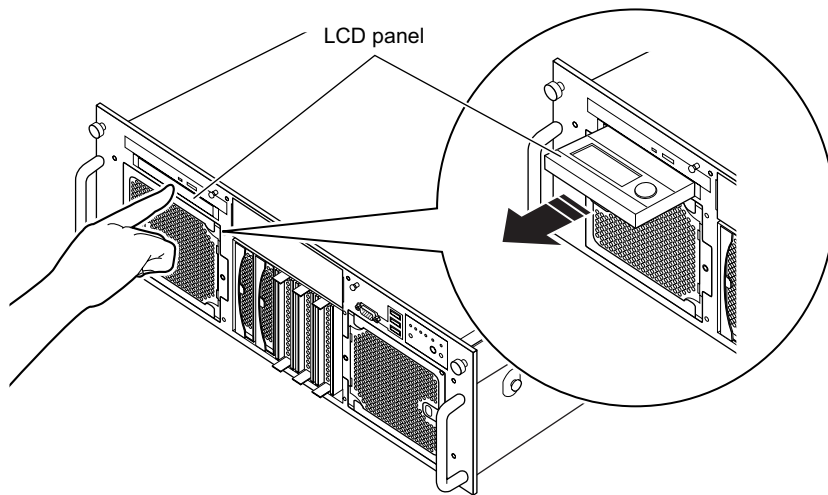
To eject the CD-ROM, check that the CD-ROM access LED is off and then press the CD-ROM eject button.

1.4.5 How to Use the LCD Panel

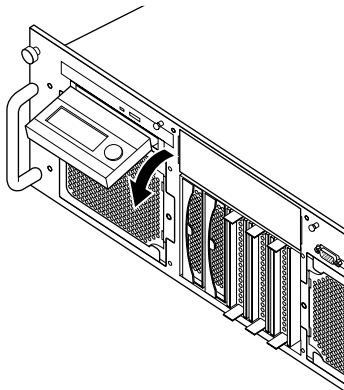
This server is equipped with an LCD that displays the server status. This lets you check the server status on the LCD, both when the system is operating normally and when an error occurs, and promptly take the necessary action.

■ Pulling out the LCD Panel

- 1** Press the LCD panel gently on the front of the server.
After the LCD panel has moved forward slightly, pull it out towards you.



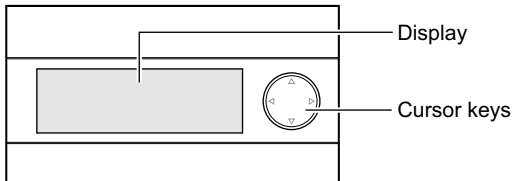
- 2** Adjust the angle of the LCD panel for a better view.



POINT

- ▶ To retract the LCD panel, simply reverse the pulling-out procedure. At this time, make sure the panel is facing straight upwards before retracting it.

● Operation of the LCD Panel



Usually, the initial screen is displayed on the LCD. Use the cursor keys at the side of the display to see various information messages.

Use ◀ and ▶ to switch between information types.

The information messages can be scrolled using ▲ or ▼. After scrolling to the last message, the display goes back to the first one.

■ Types of Information Displayed on the LCD Panel

The following types of information are displayed on the screen.

● System Information

The current system states such as the server name, and the IP address, the operating system in use are displayed.

● Error Log

Information on the errors that have occurred is displayed. An error is displayed in two lines. The first line shows a description of the error and the second line shows the date and time when the error occurred.

POINT

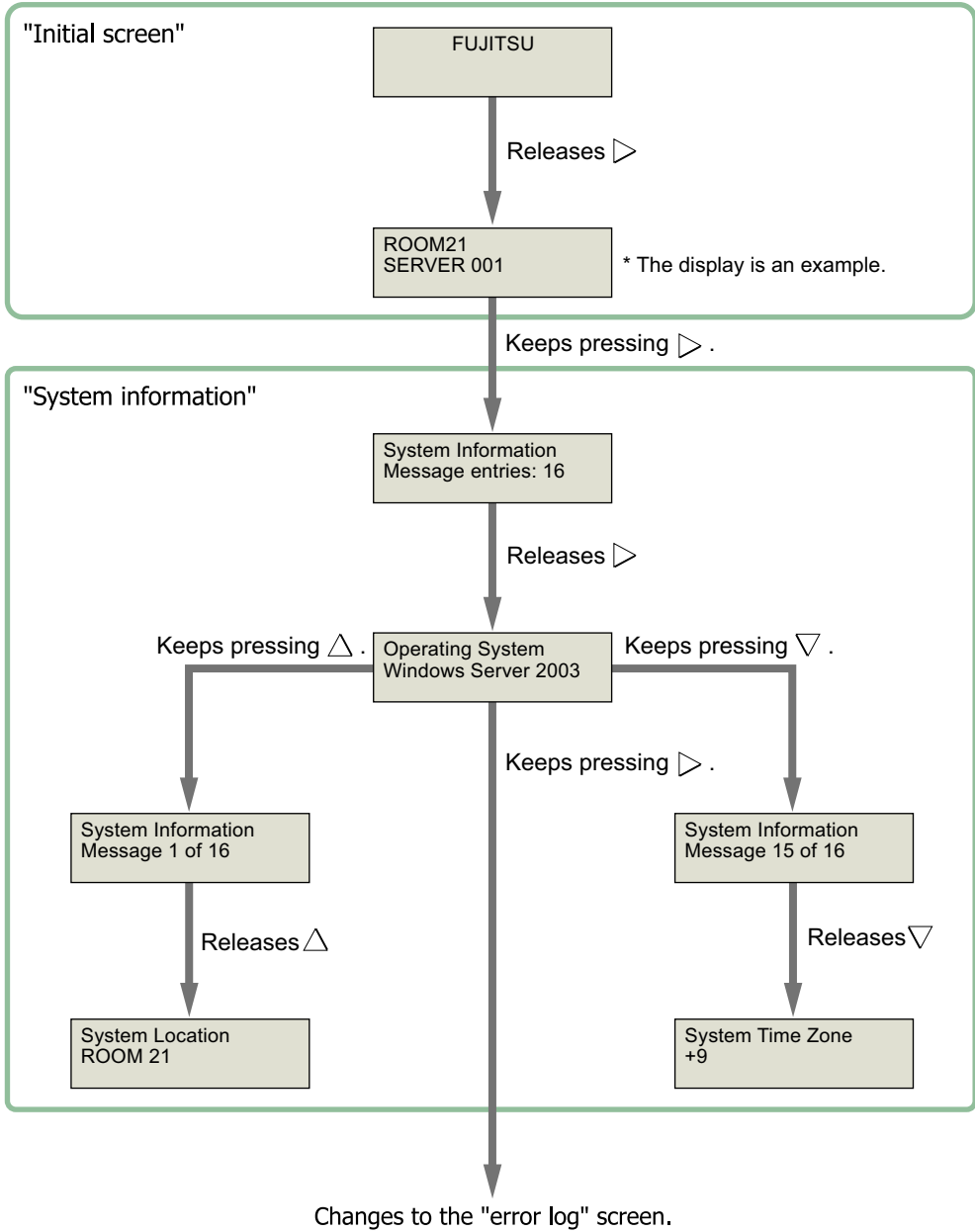
- ▶ Up to 52 error logs can be displayed. If required, check them following "9.3.2 Viewing the System Event Log" (→pg.279)

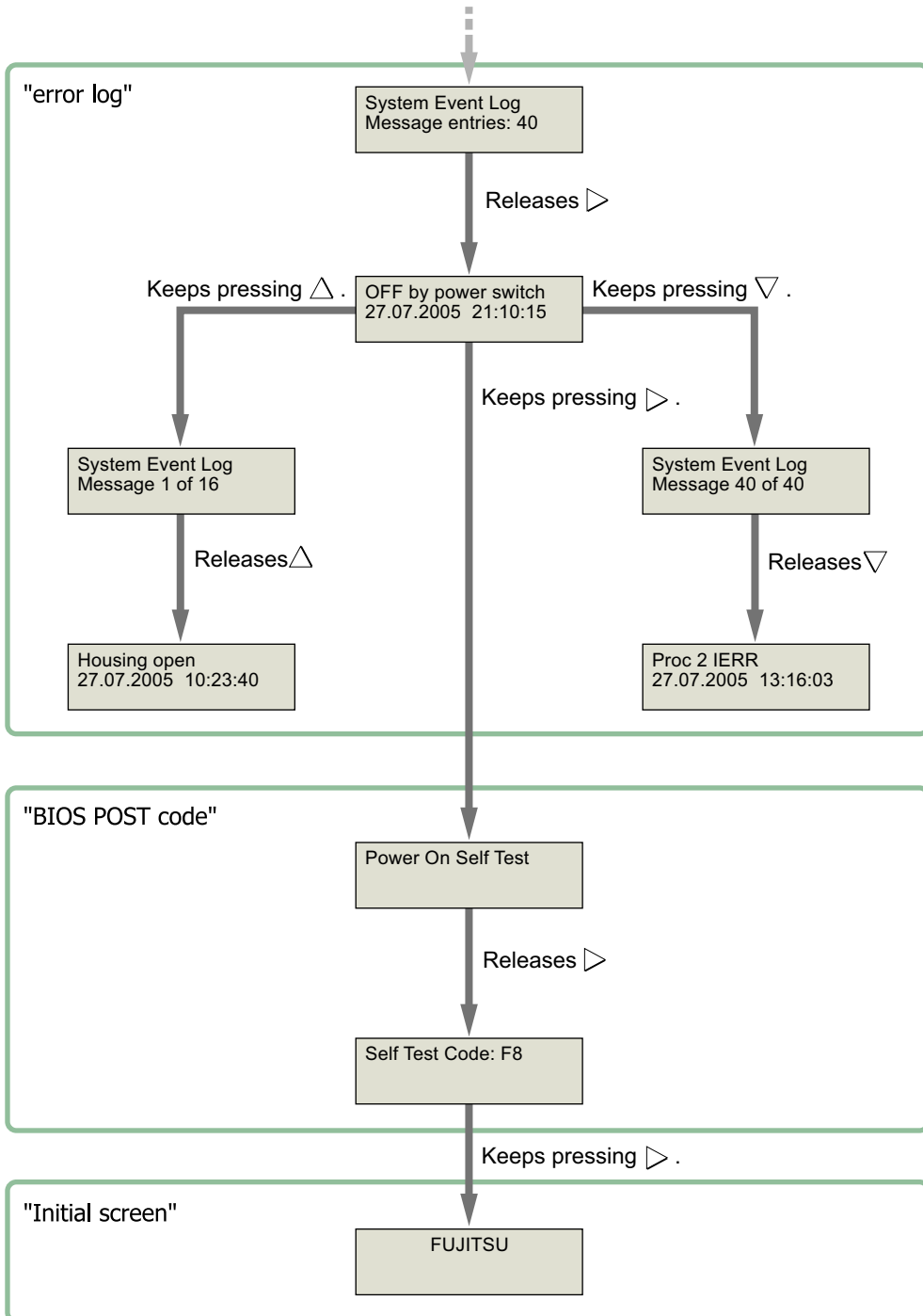
● BIOS POST Code

The POST code which the BIOS outputs at the I/O port 80h in the boot process is displayed.

■ Information Display Order on the LCD Panel

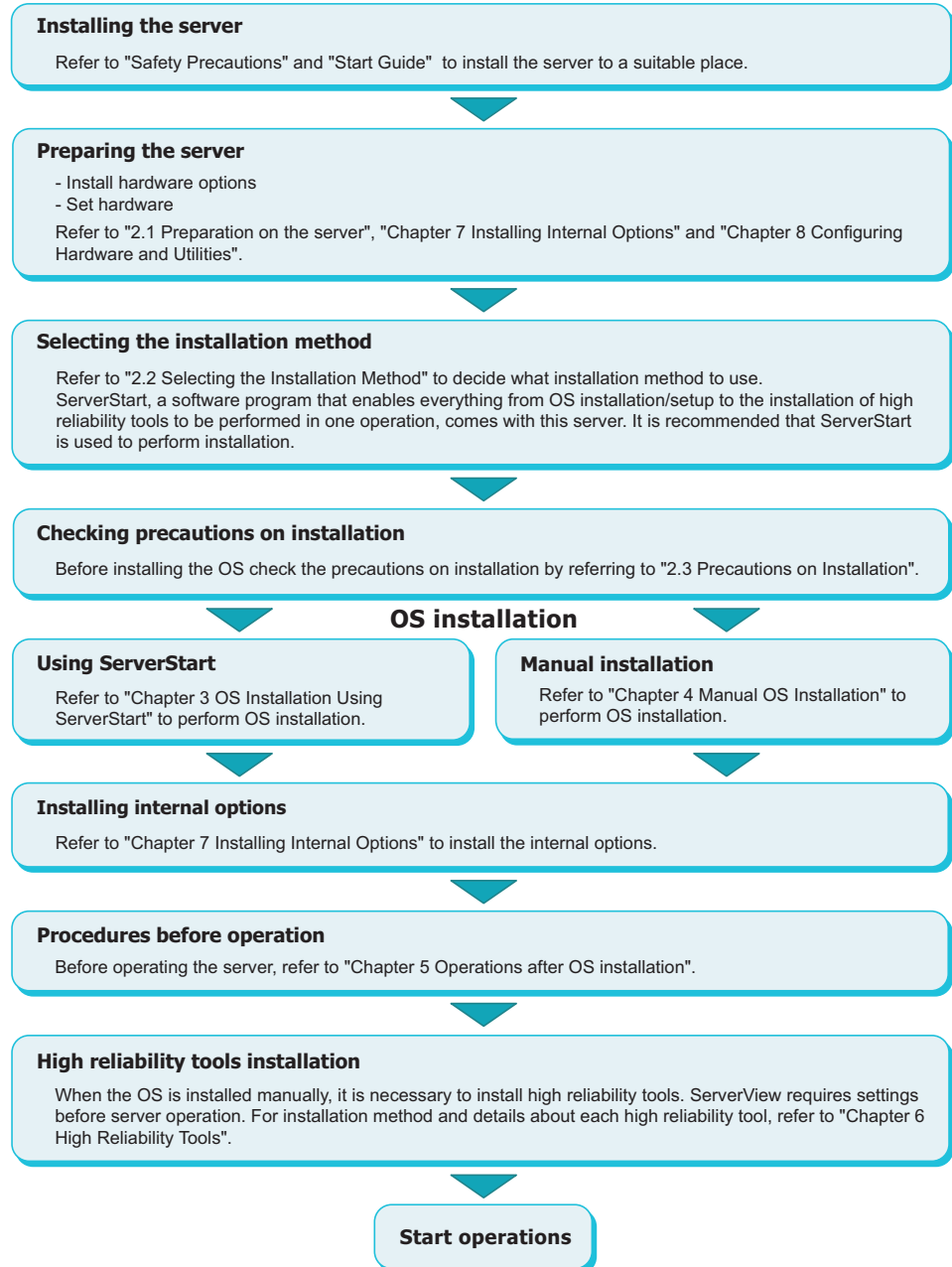
When the system is in operation, the information displayed on the LCD panel changes in the following order by pressing \triangleright button. "initial screen" \rightarrow "system information" \rightarrow "user-defined information" \rightarrow "error log" \rightarrow "BIOS POST code".





1.5 Workflow

To start the server operation, perform the following procedures.



Chapter 2

Checking before OS Installation

2

This chapter explains the preparation on the server and cautions necessary before OS installation. Please read this chapter before starting installation.

2.1	Preparation on the Server	46
2.2	Selecting the Installation Method	50
2.3	Precautions on Installation	51
2.4	Preparation for Using ServerStart on a Client Computer	55

2.1 Preparation on the Server

Before starting installation, install internal options to the server and perform necessary hardware settings.

2.1.1 Installing Internal and External Options

Internal options are classified into those that must be installed before the OS installation and those that must be installed after the OS installation.

For installation procedures, refer to "Chapter 7 Installing Internal Options" (→pg.181).

● Options That Must be Installed before the OS installation

- Memory modules
- Expansion cards
- USB floppy disk drive



- ▶ ServerStart floppy disk or driver disk is used to install the OS. Connect the USB floppy disk drive in advance.

● Options That Must be Installed after the OS installation

- Optional SCSI devices
- Internal hard disk units where the OS is not installed



- ▶ If an internal option device that must be installed after the OS installation has been already installed, remove the device, install the OS, then reinstall the device.

■ Installing Optional External Devices

When installing external hard disk drives and/or USB devices, turn off their power or unplug their connection cables from the server during the OS installation. Connect them after the OS installation.

■ Cautions for Installing an Expansion Card

When using an expansion card, read the notes on the expansion card.

■ Cautions for Installing a Memory Module

This server supports up to 32 GB of memory. However, the maximum installable size varies depending on the OS. Furthermore, since the server uses part of the memory as PCI resources, the maximum available size is limited. The following shows the maximum installable size and the maximum available size.

table: Maximum Installable Size and Maximum Available Size

OS	Installed memory size	Available memory size
Windows 2000 Server	2 GB	Same as the installed memory size
	4 GB	3 GB *1
Windows 2000 Advanced Server *2	6 GB or smaller	Same as the installed memory size
	8 GB	7 GB *1
Windows Server 2003, Standard Edition *3 Windows Server 2003, Enterprise Edition Windows Server 2003 x64	32 GB or smaller	Same as the installed memory size

*1: 1 GB of memory is used as PCI resources.

*2: Windows 2000 Advanced Server supports up to 8 GB of memory.

*3: Windows Server 2003, Standard Edition supports up to 4 GB of memory.

● Cautions Applicable When the OS is Windows 2000 Advanced Server / Windows Server 2003, Standard Edition / Windows Server 2003, Enterprise Edition

When installing 4GB or more of memory in a server operating with Windows 2000 Advanced Server or Windows Server 2003, Enterprise Edition, the /PAE option in the "Boot.ini" file must be described. For the procedure for editing the "Boot.ini" file, refer to the manual supplied with the OS.



- ▶ The "Boot.ini" file is an important file for the system. If the file is edited improperly, the system may not start up. Edit it carefully.

"Boot.ini" file description example

```
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Microsoft
Windows 2000 Advanced Server" /PAE /fastdetect
```

■ LAN Cable

Be sure to connect the LAN cable when the server is not connected to the Internet. If the OS is installed or applications are automatically installed without connecting the LAN cable to the LAN card, an error may be recorded in the event viewer after setup completes.



- ▶ Connecting to the Internet during setup can cause security problems. Do not connect to the Internet until the setup completes.

2.1.2 Hardware Settings

Before starting installation, set necessary hardware, such as the BIOS Setup Utility.

■ Boot Maintenance Manager

● Changing the Boot Drive

To change the boot drive, use the Boot Maintenance Manager. For the changing procedures, refer to "8.2.3 Boot Maintenance Manager" (→pg.240).

■ BIOS Setup Utility

The BIOS Setup Utility must be used for the configuration in the following cases. For details on how to use the BIOS Setup Utility, refer to "8.3 BIOS Setup Utility" (→pg.243).

● Performing Remote Installation

Before performing remote installation of ServerStart, enable the network startup (PXE). Also, check the MAC address.

- 1** Start the BIOS Setup Utility.
- 2** Select [LAN] in the [Devices] menu and press the [Enter] key.
The [LAN] submenu window appears.
- 3** Change [Enabled On-board NIC ROM] to [Enabled].
- 4** Check the MAC address shown in the field [NIC 1 MAC Address].
The MAC address is required for remote installation. Write it down.
- 5** Press the [F10] key to save the current settings and exit the BIOS Setup Utility.
- 6** Start the Boot Maintenance Manager.
- 7** Change the boot sequence.
Refer to "8.2.3 Boot Maintenance Manager" (→pg.240) and change the boot sequence so that "MBA v7.7.8 Slot 0C10" has the highest priority.

POINT

- ▶ You can turn the power on from a client (via a LAN) by utilizing the Wakeup On LAN (WOL) function. Refer to "5.5.5 Turning the Power on via a LAN" (→pg.159).
- ▶ Be sure to install ServerView to control the power supply via a LAN.

■ Web BIOS

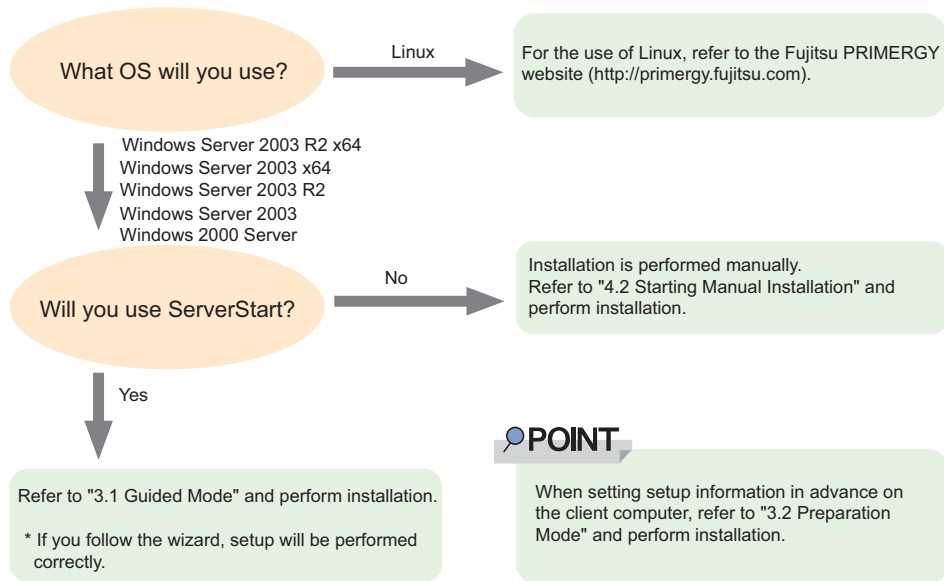
This server supports onboard SCSI array controller and the array system is configured by default. Use the Web BIOS to check or change the array configuration. Check or change the configuration as necessary before the OS installation, referring to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

2.2 Selecting the Installation Method

When installing the OS for the first time, there are multiple installation methods. Refer to the following to decide on the method.

POINT

- ▶ To set up multiple servers with the same model and configuration, refer to "3.5 Installation on Multiple (the Second and Subsequent) Servers" (→pg.109).



POINT

When setting setup information in advance on the client computer, refer to "3.2 Preparation Mode" and perform installation.

■ Installation Using ServerStart

When an OS is installed using ServerStart, the driver for the expansion card that is automatically recognized will be installed automatically. In addition, high reliability tools and array controller administrative tools are installed automatically. Installation using ServerStart is recommended because it helps install the OS without mistakes.

For features of ServerStart, refer to "1.2.1 Setup Support Tool - ServerStart" (→pg.16).

■ Installation While Maintaining the Established RAID Environment

In guided mode or preparation mode, select [Logical Drive View] at [Raid and Disk Configuration Wizard] (in the [Configuration for Disks and RAID Controllers] window) and install the OS.

■ Installation Using ServerStart While Maintaining the Existing Partitions

In expert mode of ServerStart, start up Disk Manager, format the installation partition, and install the OS.

2.3 Precautions on Installation

Read the following notes before starting OS installation.

2.3.1 Installation Partition Size

For installation using ServerStart, the installation partition size can be set as follows, depending on the OS to be installed and format.

table: Installation Partition Size

Available size	Windows Server 2003 Windows Server 2003 x64	Windows 2000 Server
Minimum	2200 MB	2048 MB
Maximum	2 TB	2 TB

● Notes

- When you want to set the OS and BOOT partitions in different partitions, specify the partition size directly.
(The BOOT partition is the partition for startup. Minimum information required for startup, such as "ntldr", is stored.
The OS partition is the partition for installing the OS.)
- In either of the following cases, specify a partition size less than 2TB.
 - When the same partition is specified as the OS and BOOT partitions
 - When different partitions are specified as the OS and BOOT partitions
- The OS cannot be installed in a partition larger than 2TB.

2.3.2 Notes on Configuring RAID

Take the following notes when you configure a RAID system.

■ Hardware Configuration

- Only internal hard disk units can be used.
- Be sure to use hard disk units of the same model and with the same capacity.
- Up to five hard disk units can be installed in the standard server. Do not set the number of units more than the maximum.
- The number of units that can be set at each RAID level is as follows:
 - RAID level 0: 1 to 5 units
 - RAID level 1: 2 units
 - RAID level 5 (recommended): 3 to 5 units
 - RAID level 10: 4 units

■ Array Configuration

For details on the array configuration, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

■ Checking before OS Installation

● When a RAID-configured disk is used

Before using a RAID-configured disk, delete a physical pack. For details on deleting a physical pack, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

● Number of disk units

If the number of actually installed units is smaller than the setting for the number of units (+1 when a hot spare is specified), installation using ServerStart is aborted because of an error.

When the number of installed disk units is greater than the setting, the disk units are set up according to the setting. Extra units will be configured as standby disk units. You can add a physical pack later. For more details, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

2.3.3 Notes on a Multiple LAN Adapter Configuration

Using the OS installation wizard of ServerStart, you can configure multiple LAN adapters (network adapters) on the system. However, there are the following limitations.

● Adapter Numbers

To configure multiple LAN cards, select the adapter numbers in the order of Adapter 1 and Adapter 2, and enter settings for each adapter. Note that the order of adapter numbers is not necessarily the same as the order of slots for the installed LAN adapters. This means that the setting for Adapter 1 is not always applied to the onboard LAN. After installing the OS, check the LAN adapters to make sure that they are configured as intended.

2.3.4 Cautions for Using ServerStart

■ Operating ServerStart

Most ServerStart operations are performed with the mouse. Items may not be moved with the [Tab] key or cursor keys. Be sure to use the mouse when operating ServerStart.

■ Ejecting the CD-ROM

Do not eject the ServerStart CD-ROM while ServerStart is running. If the ServerStart CD-ROM is ejected and inserted again, ServerStart starts up in multiple windows, and settings you have made can be lost.

■ ServerStart CD-ROM

ServerStart supplied with the server is two-CD set (Disc 1 and Disc 2).

Disc 1 is used to create the configuration file and install the OS.

Disc 2 is used when you are requested to insert it during installation.

■ Switching the Mode

When opening the configuration file and inputting information in the installation fields in the wizard, do not switch any other mode by manipulating the tree or by any other means (e.g. do not start up the Windows 2000 Server guided mode during Windows Server 2003 guided mode operation).

Before switching the mode while inputting information, you must save the configuration file. If you do not save the configuration file, clicking [Cancel] will delete any changes that have been made.

■ Installing Windows 2000 Server

To install Windows 2000 Server, you have to use Service Pack 4 integrated OS media.

■ Exiting ServerStart

After operation in guided or expert mode, exiting ServerStart restarts the system. Remove disks from the floppy disk and CD-ROM drives and click [OK]. When the display on the screen disappears, turn off the system.

■ License for Use of System for ServerStart

"License for Use of System for ServerStart" linked from the ServerStart startup window is a license for use of Windows PE contained in the ServerStart CD-ROM. Windows PE for starting up ServerStart can be only used for installing Windows Server 2003 or Windows 2000 Server provided under a separate legal license.

■ Setting Up the Printer

ServerStart does not support setup of printers. Perform installation after setup is completed.

2.3.5 Expansion Cards Supported by ServerStart

ServerStart supports automatic driver installation for the following expansion cards.

table: Automatic Expansion Card Driver Installation

Name	Model	Bus
Onboard SCSI array controller	-	PCI
Onboard LAN	-	PCI
Onboard VGA	-	PCI
LAN Card	PG-2861	PCI-Express
	PG-1862	PCI
	PG-1882	PCI
	PG-1892	PCI
RAID Ctrl 2-Channel 128MB w/ BBU	PG-142E3	PCI
SCSI Ctrl U160	PG-1281	PCI
Fibre Channel Controller	PG-FC202	PCI-Express

2.3.6 Cautions for Manual Installation

■ Notes on Using an onboard SCSI array controller

The onboard SCSI array controller must be configured before the OS is installed. To check the onboard SCSI array controller settings, start up WebBIOS. For more details, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

■ Free Space Required for Installation

The partition where the OS is installed must have enough free space for obtaining memory dump. For more details, refer to "5.1 Memory Dump/Paging File Setting" (→pg.138).

■ Cautions on Restarting

In the course of installation, a message appears to indicate that the setup program restarts. Wait until it restarts automatically.

For background operations, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

2.4 Preparation for Using ServerStart on a Client Computer

When using the preparation mode for setting installation information in advance or when creating a driver disk using the FloppyBuilder function, install ServerStart on the client computer.

POINT

Using ServerStart on the server

- ▶ ServerStart can be installed to the server where Windows 2000 Server or Windows Server 2003 is installed. Perform the procedure in "2.4.1 Installing ServerStart" (→pg.55) to install ServerStart. Note that ServerStart cannot be installed to the server where Windows Server 2003 x64 is installed.

● System Requirements for Client Computers

Client computers must satisfy the following requirements.

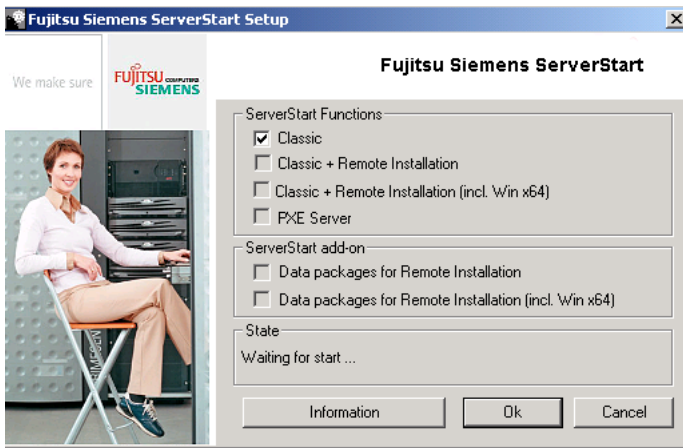
Hardware	Personal computers operated with Windows XP Professional, or Windows 2000 Professional (A CD-ROM drive and 10MB or more of free space are required.)
Software	Microsoft® Internet Explorer 5.5 or later

2.4.1 Installing ServerStart

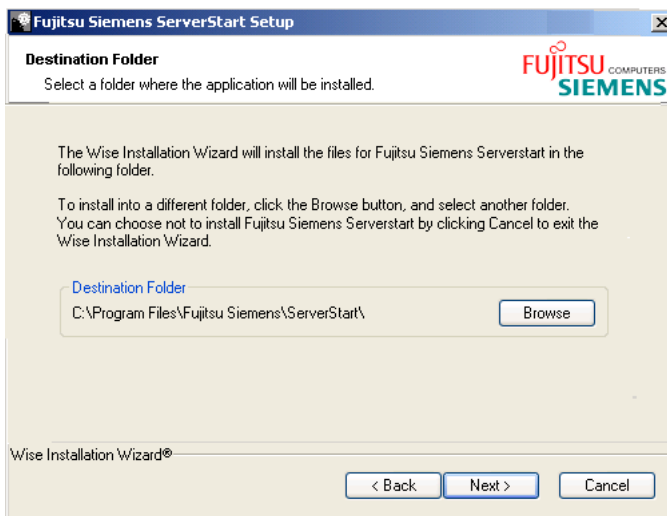
IMPORTANT

- ▶ If a different version of ServerStart has been installed, uninstall it. The FloppyBuilder function or installation wizard may not operate properly on a different version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

- 1** Insert the ServerStart CD-ROM Disc 1 into the client computer.
The [Fujitsu Siemens ServerStart Setup] window appears. When the [Fujitsu Siemens ServerStart Setup] window does not appear, execute "SeStSetup.exe" in the CD-ROM.



- 2** Check a only [Classic] and click [OK].
The Setup window appears.
- 3** Click [Next].
The [License Agreement] window appears.
- 4** Select [I accept the license agreement] and click [Next].
The [User Information] window appears.
- 5** Enter the user information of the software and click [Next].
The [Destination Folder] window appears.



- 6 Specify the installation folder and click [Next]. To change the installation folder, click [Browse] and select the folder.

The [Ready to Install the Application] window appears.

- 7 Click [Next].

Installation is executed.

POINT

- ▶ If a message prompts you to restart the system before or after installation, eject the CD-ROM and restart the system according to the message. When the system restarts, insert the ServerStart CD-ROM and start installation again.
If the "This program does not respond." message appears during restart operation, click [Exit] to continue the restart operation.

When the installation is completed, the completion window appears.

- 8 Click [Exit].

ServerStart has been installed to the client computer.

2.4.2 Uninstalling ServerStart

Perform the following procedures to uninstall ServerStart from the client computer.

- 1 Click [Start] → [Programs] → [Fujitsu Siemens ServerStart] → [Uninstall ServerStart].

- 2 Click [OK].

When the uninstallation is executed successfully, Fujitsu ServerStart is deleted.

Chapter 3

OS Installation Using ServerStart

3

This chapter explains how to install the OS in the server using ServerStart.

3.1	Guided Mode	60
3.2	Preparation Mode	77
3.3	Expert Mode	83
3.4	Remote Installation	90
3.5	Installation on Multiple (the Second and Subsequent) Servers	109

3.1 Guided Mode

In guided mode, follow the wizard to specify hardware configuration and the OS to be installed, save the information necessary for installation in a configuration file, and install the OS.

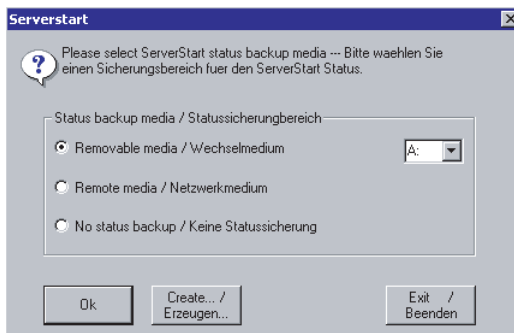
3.1.1 Starting Up the Guided Mode

Start up the guided mode.

POINT

- ▶ Confirm that the floppy disk drive for USB connection has been connected before turning on the server.

- 1 Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately. ServerStart starts up and a message prompts you to insert the ServerStart floppy disk.

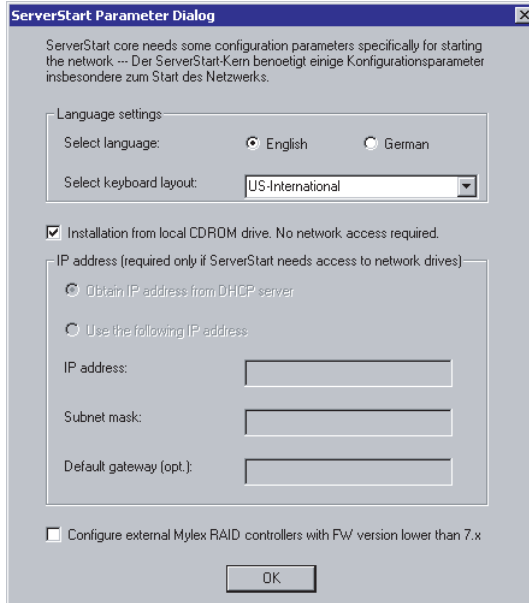


- 2 Insert the ServerStart floppy disk supplied with the server. Make sure that "Removable media" and "A:" are selected and click [Create].

POINT

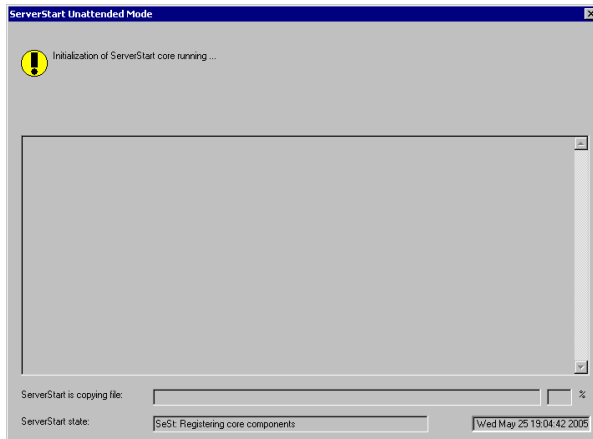
- ▶ Set the ServerStart floppy disk in the write-enabled state.
- ▶ Select [No status backup / Keine Statussicherung] to install the OS other than Windows Server 2003 x64 on the server without the floppy disk drive. If the OS is installed without the floppy disk, the RAID cannot be configured with ServerStart. Configure the RAID manually before starting ServerStart.

The network setting window for remote installation appears.

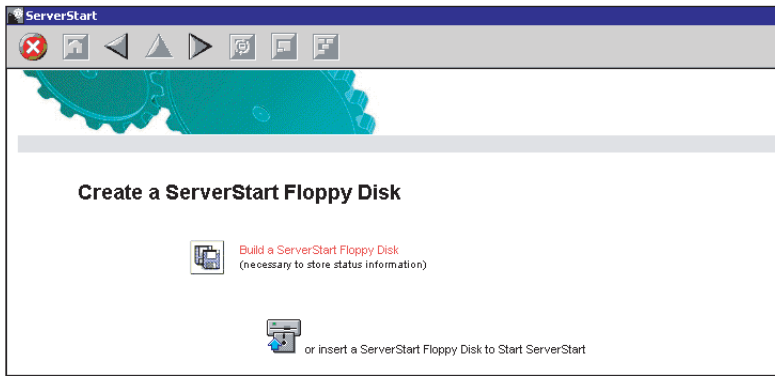


3 Click [OK].

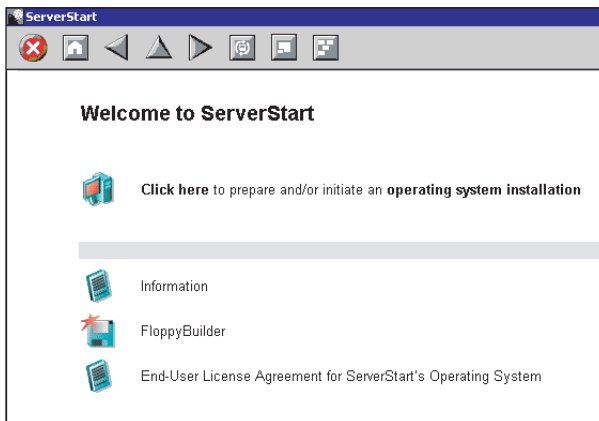
The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes.



When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

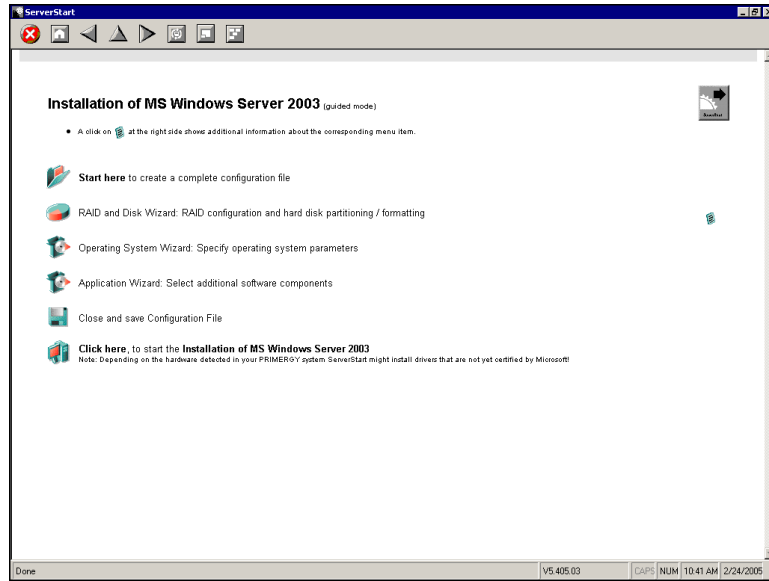


- 4** Click [Build a ServerStart Floppy Disk].
Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created" message appears.
- 5** Click [OK].
"Please Select your keyboard" Window appears.
- 6** Select your keyboard language from the drop-down list and click [OK].
The subsequent start procedure may take several minutes. The [Welcome to ServerStart] window appears.

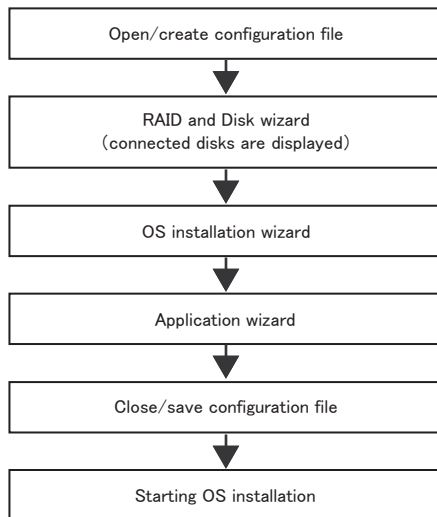


- 7** Click [Click here to prepare and/or initiate an operating system installation].
The [Select the operating system to be installed] window appears.
Click [Special Hints on Operating System Installation] and read the contents. Important information such as limitations on disk configuration is described.
- 8** Click [MS Windows Operating Systems].
The [Microsoft Windows Operating System Installation] window appears.
- 9** Click the OS to install.

- 10** Click [Prepare & initiate an unattended installation of (OS)].
The guided mode for the selected OS starts up.



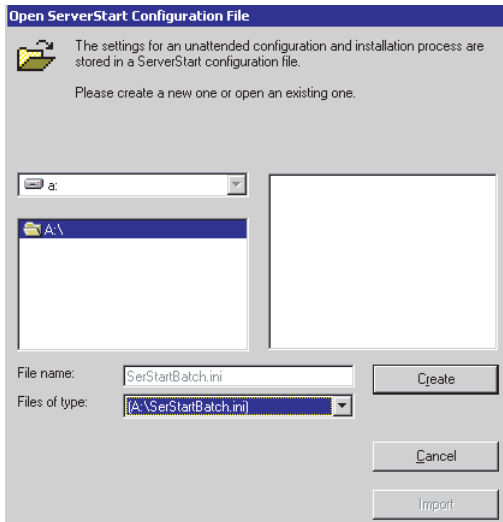
Start up the wizards to set items in the following procedures.
Exiting the wizard returns the display to the guided mode window.



3.1.2 Open/create a Configuration File

Open a configuration file. Or create a new one.

- 1 Click [Start here to create a complete configuration file].
The [Open ServerStart Configuration File] window appears.



- ▶ Once a configuration file is opened, another file cannot be opened until you click [Close and save Configuration File].

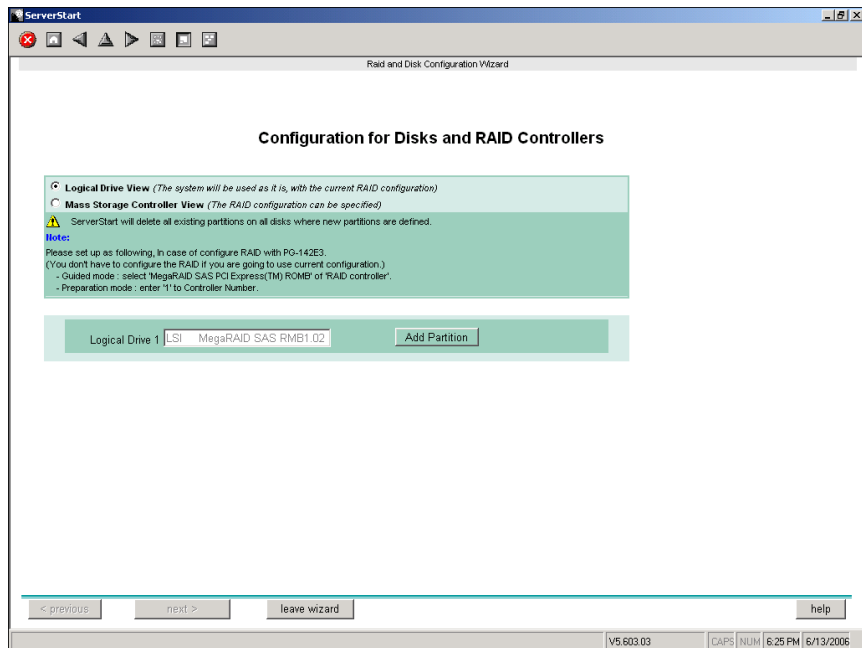
- 2 Select the configuration file and click [Create].
The [RAID and Disk Wizard] starts up automatically (→"3.1.3 RAID and Disk Wizard" (pg.65)).

3.1.3 RAID and Disk Wizard

Configure RAID, and create and format hard disk partitions.

- 1 Click [RAID and Disk Wizard: RAID configuration and hard disk partitioning / formatting].

The [Configuration for Disks and RAID Controllers] window appears.



Only array controllers already installed are displayed.

- 2 Select the method of RAID configuration.

To install the OS while maintaining the established RAID environment

Select [Logical Drive View], and add partitions as necessary. For more details, refer to "■ Installation While Maintaining the Established RAID Environment" (→pg.66).

To configure RAID

Select [Mass Storage Controller View], and add controllers as necessary. For more details, refer to "■ Configuring RAID" (→pg.67).

- 3 Set items and click [leave wizard].

The RAID and Disk wizard closes.

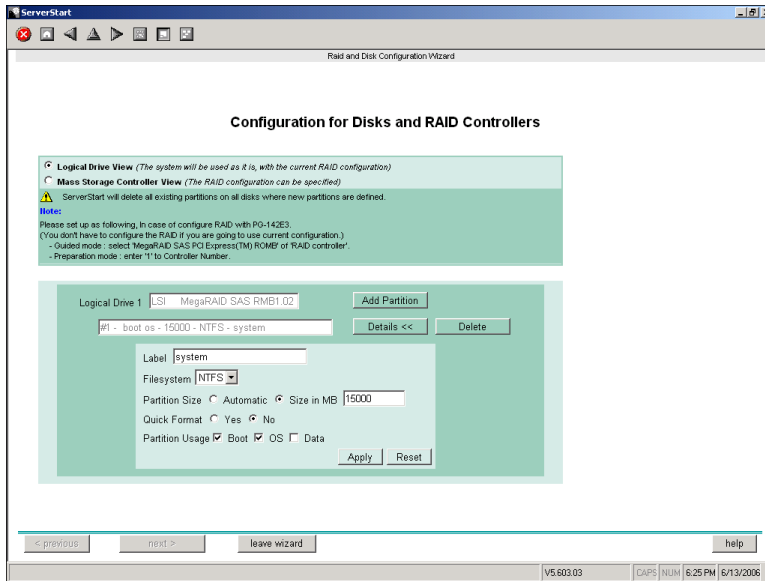
■ Installation While Maintaining the Established RAID Environment

- 1 Select [Logical Drive View] on the [Configuration for Disks and RAID Controllers] window.

Add a partition

1. Click [Add Partition].
A partition is added.
Add required partitions.
2. Click [Details] and modify the settings as necessary.

The partition configuration is displayed. As the default values are configured, confirm the settings and modify them as necessary.



IMPORTANT

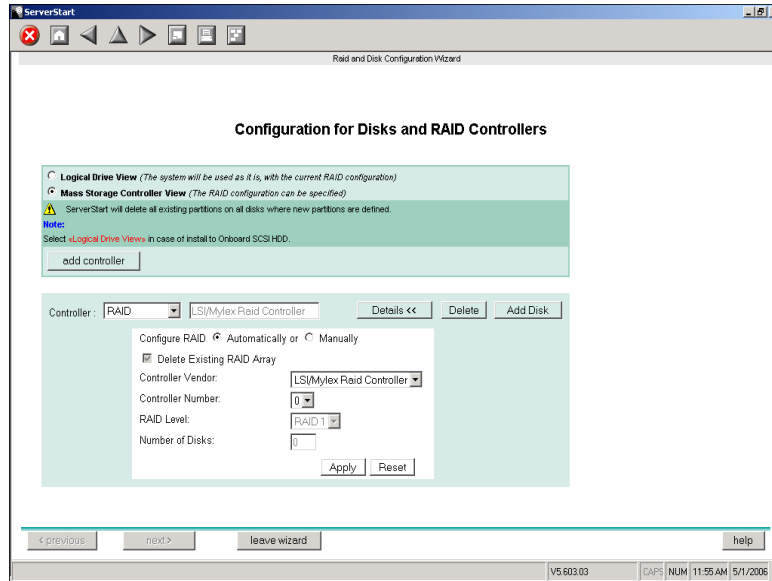
- ▶ Partition size of the FAT file system
When "FAT" is selected in [File system] and a value equal to or more than 4090MB or "Automatic setting" is specified in [Partition size], the size of created partitions will be 4090MB.
- ▶ The following limits apply to the volume label length. A volume label longer than the limit may be used. However, it can cause installation failure. Enter a volume label within the limit.
 - FAT: Up to 11 characters
 - NTFS: Up to 32 characters

■ Configuring RAID

- 1 Select [Mass Storage Controller View] on the [Configuration for Disks and RAID Controllers] window.

Click [Details]. As the default values are configured, confirm the settings and modify them as necessary.

Add partitions as necessary.



IMPORTANT

- ▶ Configure the setting as follows to configure RAID with the PG-142E3 card.
 - For guided mode
 - Select the second [LSI/Mylex Raid Controller - MegaRAID SCSI32] from the list of [RAID Controller].
 - For preparation mode
 - Select [1] for [Controller number] in details settings.

POINT

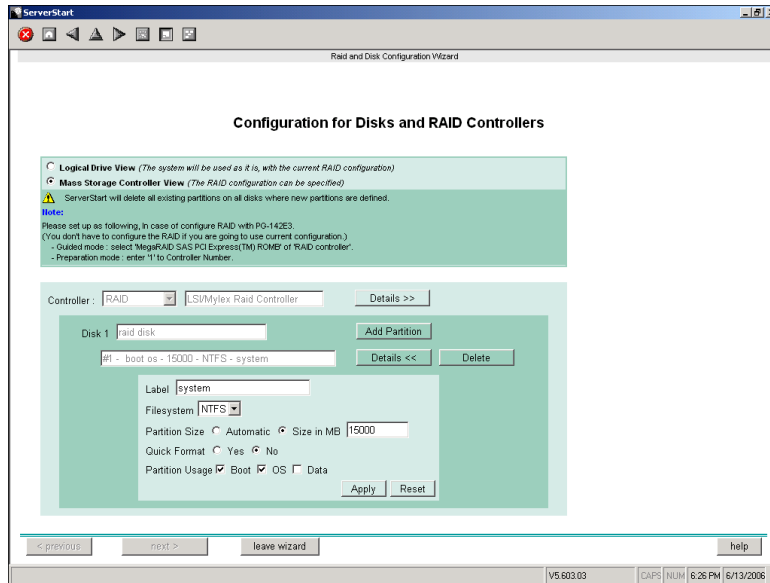
- ▶ One hot spare (standby disk) can be configured. When the hot spare disk is set to "Yes", set the number of disk units to the number of installed disk units minus 1.
E.g.: When four hard disk units are installed, set the RAID level to "RAID5", and when the hot spare disk is set to "Yes", set the number of disk units to "3".

Add a partition

1. Click [Add Partition].
A partition is added.
Add required partitions.

2. Click [Details] and modify the settings as necessary.

The partition configuration is displayed. As the default values are configured, confirm the settings and modify them as necessary.



3.1.4 OS Installation Wizard

Set computer information, user information, and the network protocol.

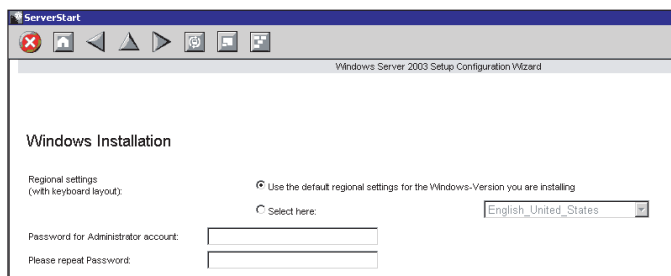
ServerStart can configure multiple network patterns. When configuring a domain controller, refer to "Using ServerStart to Configure the Network".

POINT

- ▶ The setup window differs depending on the OS to be installed. The following describes operations on Windows Server 2003 R2.
To install another OS, interpret Windows Server 2003 R2 as your OS.

- 1 Click [Operating System Wizard: Operating system parameters].

The [Windows Installation] window appears.

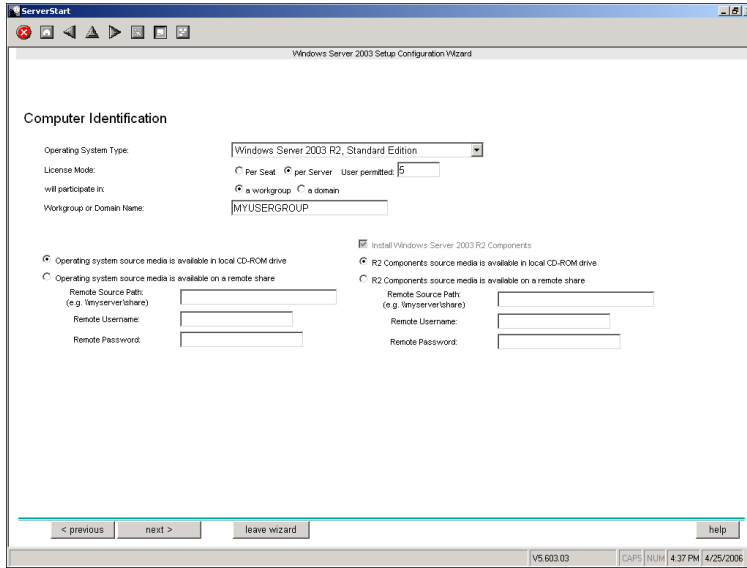


- 2 Enter the password in [Password for Administrator account] and [Please repeat Password] and click [Next].

POINT

- ▶ If the password differs between [Password for Administrator account] and [Please repeat Password], an error dialog window appears. Enter the password correctly.

The [Computer Identification] window appears.

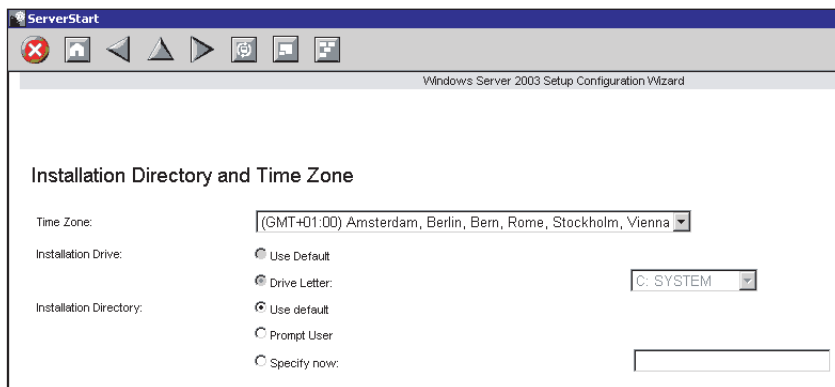


3 Set items and click [Next].

POINT

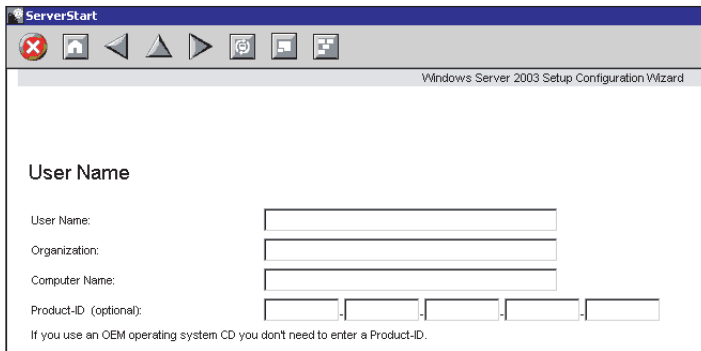
- ▶ When using the CD-ROM applied Service Pack 1 on Windows Server 2003, select the [(OS including SP1)] menu from the [Operating System Type] list.

The [Installation Directory and Time Zone] window appears.



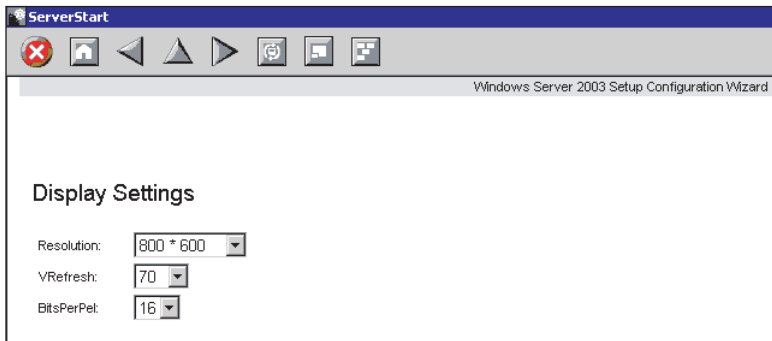
4 Set items and click [Next].

The [User Name] window appears.



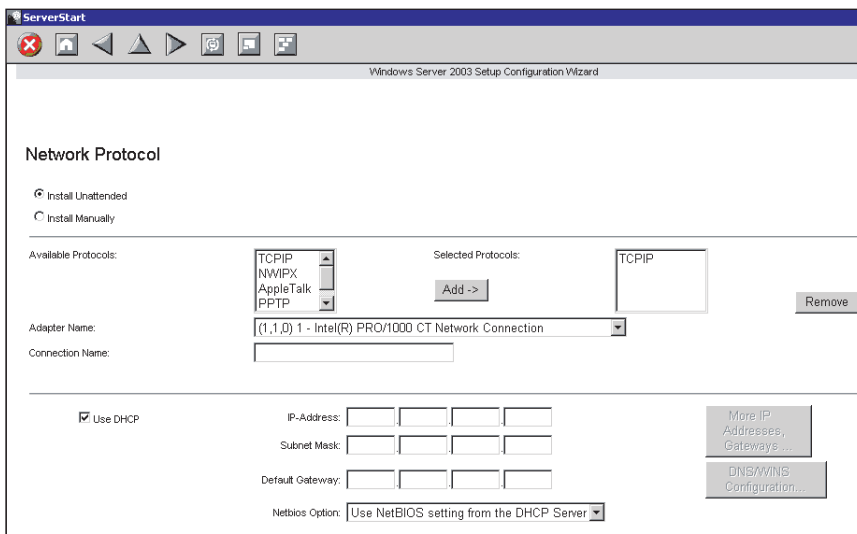
5 Set items and click [Next].

The [Display Settings] window appears.

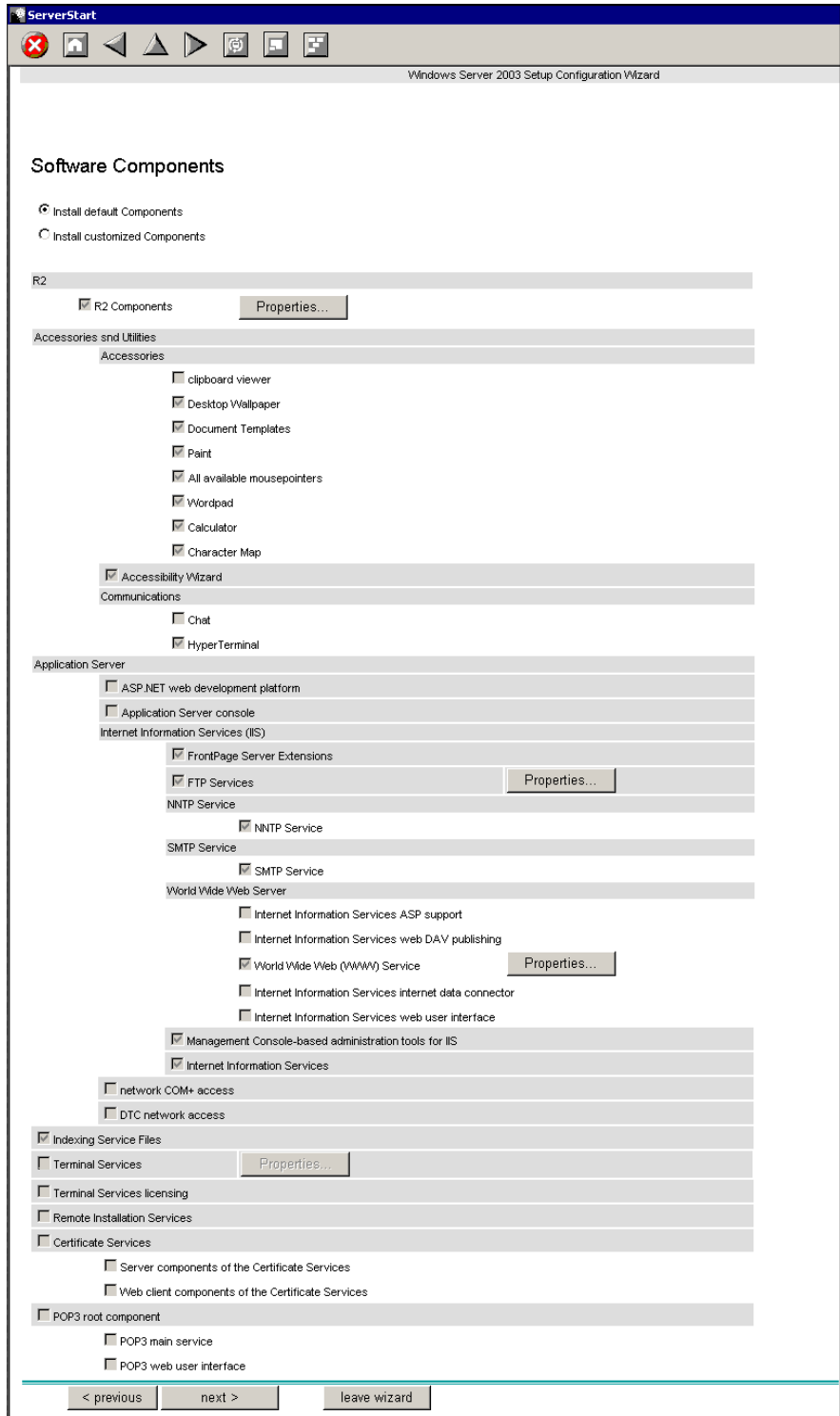


6 Set items and click [Next].

The [Network Protocol] window appears.



- 7 Set items and click [Next].
The [Software Components] window appears.

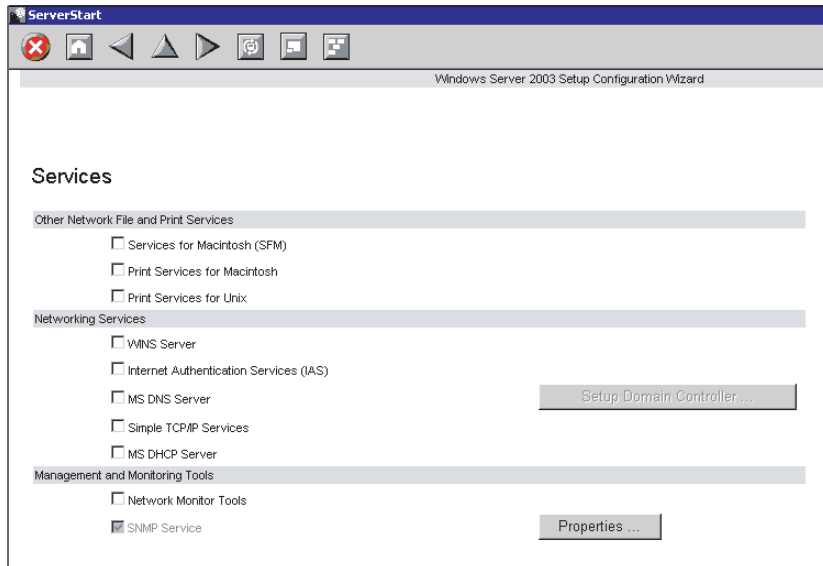


IMPORTANT

- ▶ If Windows Server 2003 R2 is selected at the Computer Identification, R2 components are always copied to the hard disk. To install the components, click [Properties] and check the components to be installed.

8 Set items and click [Next].

The [Services] window appears.



POINT

- ▶ SNMP Service is always installed. Click [Properties] to change the settings, if needed.

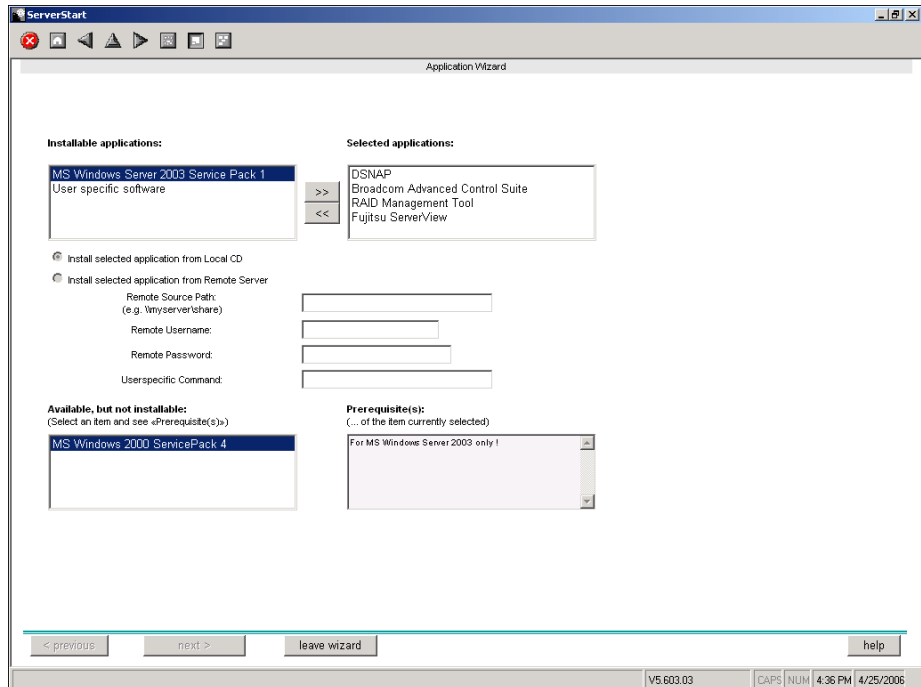
9 Set items and click [leave wizard].

The OS installation wizard closes.

3.1.5 Application Wizard

Specify installation of supplied applications such as high reliability tools.

- 1 Click [Application Wizard: Select additional software components].
The application wizard appears.



- 2 From the [Installable applications] list, select applications to be installed and click [>>].
Set all applications to be installed on the [Selected applications] list.

POINT

- Fujitsu ServerView, Broadcom Advanced Control Suite (BACS), and RAID Management Tool are always installed in guided mode. In expert mode, the selection can be released.

- 3 Click [leave wizard].
The application wizard closes.

3.1.6 Close/save the Configuration File

When settings in all wizards are completed, save the configuration file.

- 1** Click [Close and save Configuration File].
The [Save ServerStart Configuration File] window appears.
- 2** Click [Save As].
The configuration file is saved.



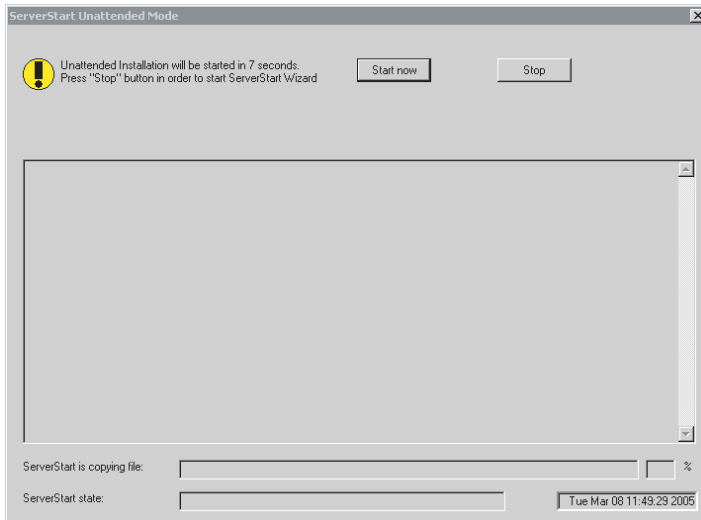
- ▶ You can specify any name for the configuration file. However, OS installation is possible only when it is saved as "SerStartBatch.ini". When installing the OS, make sure to save it as "SerStartBatch.ini" on the ServerStart floppy disk.

3.1.7 Starting OS Installation

Install the OS to the server.

During installation, do not use the mouse or keyboard unless it is necessary for installation operations. Otherwise, installation may fail.

- 1** Click [Click here, to Start the Installation of (OS)].
The [ServerStart Unattended Mode] window appears.



2 Click [Start now].**POINT**

- ▶ Clicking [Start now] deletes all disk contents and starts installation. Click [Stop] when you do not perform installation.

After 10 seconds, installation starts automatically.

1. When RAID has been configured, the system restarts.
2. If a message prompts you to insert the SCSI Array Controller Document & Tool CD, insert the CD-ROM and click [OK].
3. If a message prompts you to insert the ServerView CD-ROM, insert the PRIMERGY Document & Tool CD and click [OK].
4. If a message prompts you to insert the Service Pack CD-ROM, insert the CD-ROM and click [OK].
This message does not appear when Service Pack is not selected.
5. For Windows Server 2003 x64, a message prompts you to insert the ServerStart Disc 2 and restart the system. Insert the ServerStart Disc 2 and restart the system.

3 When a message prompts you to insert the OS CD-ROM, insert the CD-ROM and click [OK].For Windows 2000 Server / Windows Server 2003 / Windows Server 2003 x64

1. Insert the OS CD-ROM (Installation CD-ROM).
The License Agreement window appears.
2. Click [I agree].
After files are copied, a message prompts you to eject the CD-ROM and floppy disk.

For Windows Server 2003 R2 / Windows Server 2003 R2 x64

1. Insert the OS CD-ROM (Installation CD-ROM) Disc 1.
The License Agreement window appears.
2. Click [I agree].
Files are copied.
3. If a message prompts you to insert the Disc 2, eject the Disc 1 and insert the OS CD-ROM (Installation CD-ROM) Disc 2.
After files are copied, a message prompts you to eject the CD-ROM and floppy disk.

4 Eject the CD-ROM and floppy disk and click [OK].

Then the system is restarted.

The system continues the installation operation after restart.

OS GUI setup, LAN utility installation, Service Pack installation, and Active Directory installation are performed automatically.

5 When a confirmation message to restart appears, click [Restart].

The system restarts and installs high reliability tools.

6 When a message on installation completion appears, press any key.

7 Restart the system.

Click [Start] → [Shutdown]. Select [Restart] and click [OK].

The system restarts.

8 When the system restarts, log on to the server using the Administrator account for the local computer.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform necessary procedures before starting server operations.

3.2 Preparation Mode

In preparation mode, set and save the information necessary for installation in a configuration file on a client computer (with a CD-ROM drive and 10MB or more of free space). Set the saved configuration file on the server for installation.

POINT

- ▶ If ServerStart is not installed in the client computer where the preparation mode is executed, refer to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.55) to install ServerStart. If a different version of ServerStart has been installed, uninstall it and install the proper version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

3.2.1 Starting Up the Preparation Mode

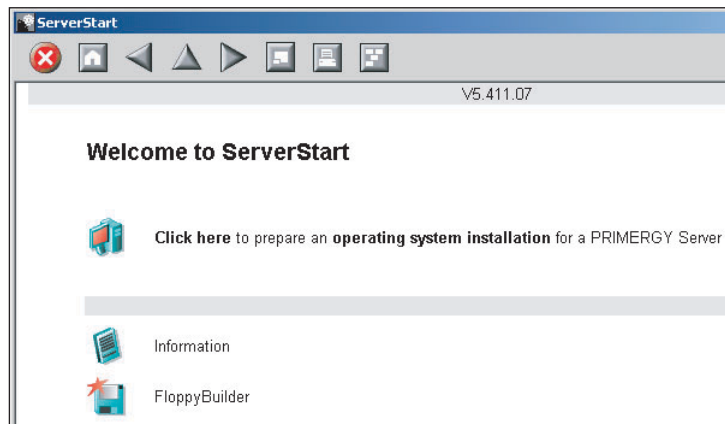
Start up the preparation mode.

1 Start up ServerStart.

If ServerStart has already been started, it is not necessary to start it up again. If it has not, start it up according to the following procedures:

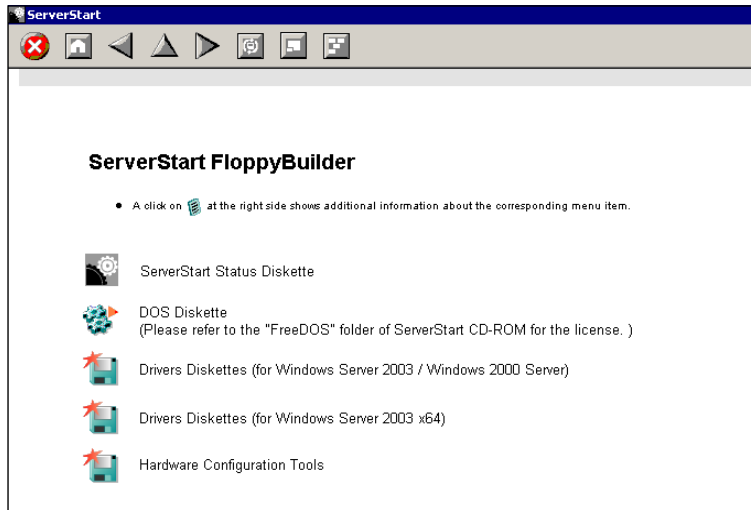
1. Insert the ServerStart Disc 1 CD-ROM into the client computer's CD-ROM drive.
2. Click [Start] → [Programs] → [Fujitsu Siemens ServerStart] → [ServerStart(Start from CD)].

ServerStart starts up and the [Welcome to ServerStart] window appears.



2 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.



3 Click [ServerStart Status Diskette].

A message prompts you to insert the floppy disk.

4 Insert the ServerStart floppy disk supplied with the server and click [OK].

POINT

- ▶ Set the ServerStart floppy disk in the write-enabled state.

Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

5 Click [OK].

6 Click [ (HOME)] on the tool bar.

The display returns to the [Welcome to ServerStart] window.

7 Click [Click here to prepare an operating system installation for a PRIMERGY Server].

The [Select an Operating System] window appears.

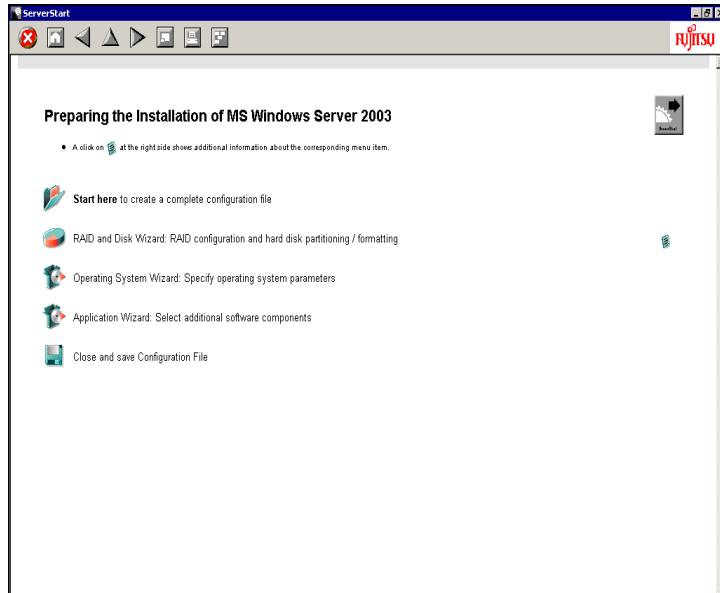
IMPORTANT

- ▶ Before starting installation, click [Special Hints on Operating system Installation] and read the contents. Important information such as limitations on disk configuration is described.

8 Click [Creation of a ServerStart Configuration file for the installation of an Microsoft Windows Operating System].

The [Microsoft Windows Operating System Installation] window appears.

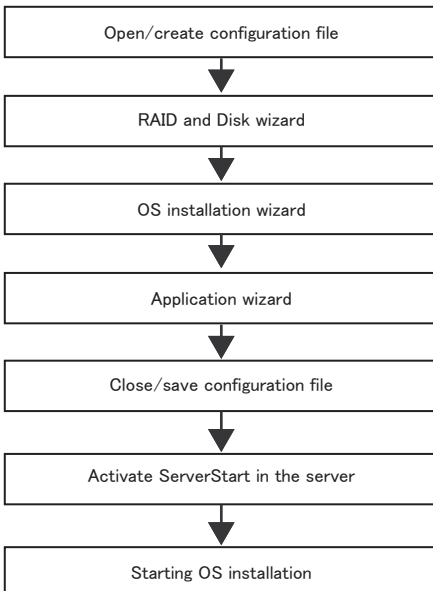
- 9 Select the OS to be installed.
The [Preparing the Installation] window appears.



3.2.2 Configure Settings in Wizards

Click the wizards to set items in the following procedures. For setting procedures, refer to description on guided mode wizards ("3.1.2 Open/create a Configuration File" (→pg.64) to "3.1.5 Application Wizard" (→pg.73)).

Exiting a wizard returns the display to the preparation mode window.



3.2.3 Close/save the Configuration File

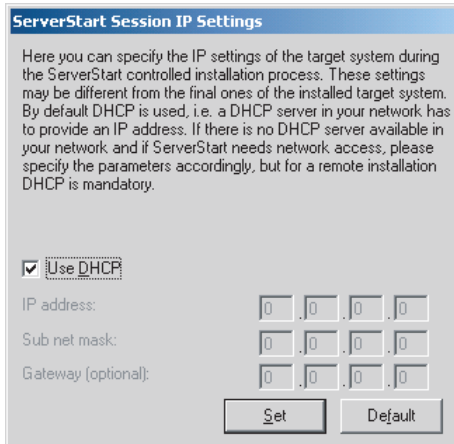
When settings in all wizards are completed, save the configuration file.

- 1 Click [Close and save Configuration File].

The [Save ServerStart Configuration File] window appears.

- 2 Click [Save As].

The [ServerStart Session IP Settings] window appears.



- 3 Set items when performing remote installation.

- 4 Click [Set].

The configuration file is saved.



- ▶ You can specify any name for the configuration file. However, OS installation is possible only when it is saved as "SerStartBatch.ini". When installing the OS, make sure to save it as "SerStartBatch.ini" on the ServerStart floppy disk.

3.2.4 Starting OS Installation

Install the OS to the server using the created configuration file.

During installation, do not use the mouse or keyboard unless it is necessary for installation operations. Otherwise, installation may fail.

POINT

- ▶ Confirm that the floppy disk drive for USB connection has been connected before turning on the server.

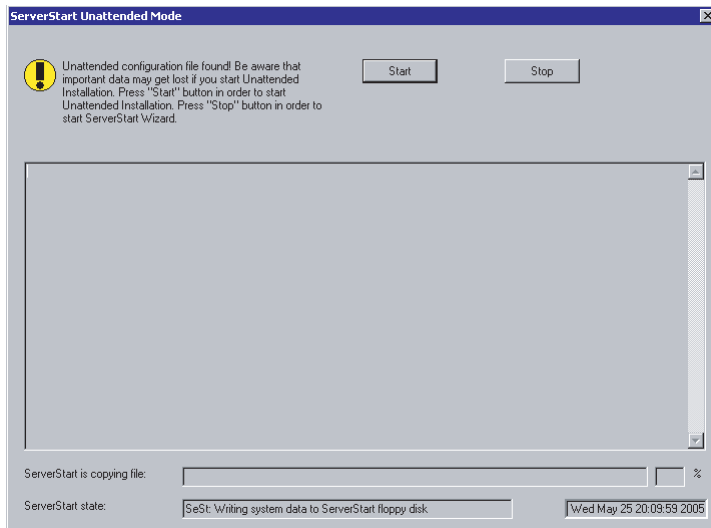
1 Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately.
A message prompts you to insert the ServerStart floppy disk.

2 Insert the ServerStart floppy disk containing the created configuration file and click [OK].

IMPORTANT

- ▶ Set the ServerStart floppy disk in the write-enabled state. If it is write protected, installation will fail.

The [Initializing ServerStart] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When initialization is completed, the [ServerStart Unattended Mode] window appears.



3 Click [Start].
A message appears.

4 Click [OK].
Installation starts.

1. When RAID has been configured, the system restarts.

2. If a message prompts you to insert the SCSI Array Controller Document & Tool CD, insert the CD-ROM and click [OK].
3. If a message prompts you to insert the ServerView CD-ROM, insert the PRIMERGY Document & Tool CD and click [OK].
This message does not appear when the PRIMERGY Document & Tool CD has been inserted already.
4. If a message prompts you to insert the Service Pack CD-ROM, insert the CD-ROM and click [OK].
This message does not appear when Service Pack is not selected.
5. For Windows Server 2003 x64, a message prompts you to insert the ServerStart Disc 2 and restart the system. Insert the ServerStart Disc 2 and restart the system.

5 When a message prompts you to insert the OS CD-ROM, insert the CD-ROM and click [OK].

For Windows 2000 Server / Windows Server 2003 / Windows Server 2003 x64

1. Insert the OS CD-ROM (Installation CD-ROM).
The License Agreement window appears.
2. Click [I agree].
After files are copied, a message prompts you to eject the CD-ROM and floppy disk.

For Windows Server 2003 R2 / Windows Server 2003 R2 x64

1. Insert the OS CD-ROM (Installation CD-ROM) Disc 1.
The License Agreement window appears.
2. Click [I agree].
After files are copied, a message prompts you to insert the Disc 2.
3. Eject the Disc 1 and insert the OS CD-ROM (Installation CD-ROM) Disc 2.
After files are copied, a message prompts you to eject the CD-ROM and floppy disk.

6 Eject the CD-ROM and floppy disk and click [OK].

The system restarts. The system continues the installation operation after restart. OS GUI setup, LAN utility installation, Service Pack installation, and Active Directory installation are performed automatically.

7 When a confirmation message appears on restart, click [Restart].

The system restarts and installs high reliability tools.

8 When a message on installation completion appears, press any key.

9 Restart the system.

Click [Start] → [Shutdown]. Select [Restart] and click [OK]. The system restarts.

10 When the system restarts, log on to the server using the Administrator account for the local computer.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform necessary procedures before starting server operations.

3.3 Expert Mode

In expert mode, start up Disk Manager, format the installation partition, and install the OS.

Use the expert mode only when you want to perform installation while maintaining the existing partitions. Use the guided mode for normal installation.

3.3.1 Starting Up the Expert Mode

Start up the expert mode.

POINT

- ▶ Confirm that the floppy disk drive for USB connection has been connected before turning on the server.

1 Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately. ServerStart starts up and a message prompts you to insert the ServerStart floppy disk.

2 Insert the ServerStart floppy disk supplied with the server. Make sure that "Removable media" and "A:" are selected and click [Create]. The network setting window for remote installation appears.

POINT

- ▶ Set the ServerStart floppy disk in the write-enabled state.

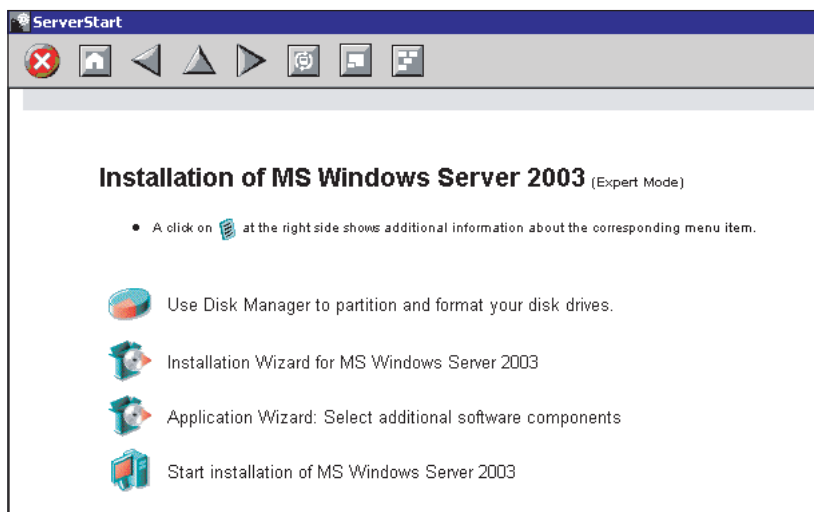
3 Click [OK].
The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [Build a ServerStart Floppy Disk].
Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

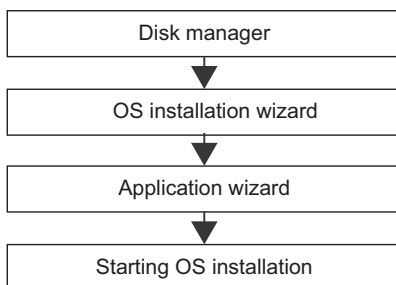
5 Click [OK].
"Please Select your keyboard" window appears.

6 Select your keyboard language from the drop-down list and click [OK].
The subsequent start procedure may take several minutes. The [Welcome to ServerStart] window appears.

- 7** Click [Click here to prepare and/or initiate an operating system installation].
The [Select the operating system to be installed] window appears.
Click [Special Hints on Operating System Installation] and read the contents. Important information such as limitations on disk configuration is described.
- 8** Click [MS Windows Operating Systems].
The [Microsoft Windows Operating System Installation] window appears.
- 9** Select the OS to install.
- 10** Click [Install MS Windows Server 2003 interactively (expertise required)].
The expert mode starts.



Start up the configuration tools to set items in the following procedures. Exiting a tool returns to the display to the expert mode window.

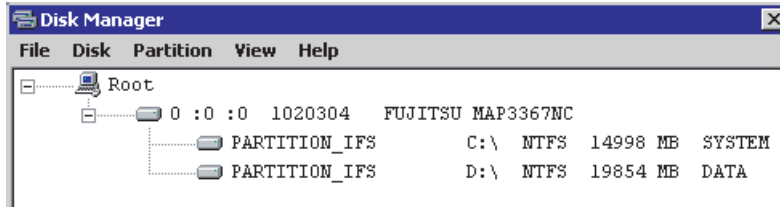


3.3.2 Disk Manager

Start up Disk Manager and format the installation partition.

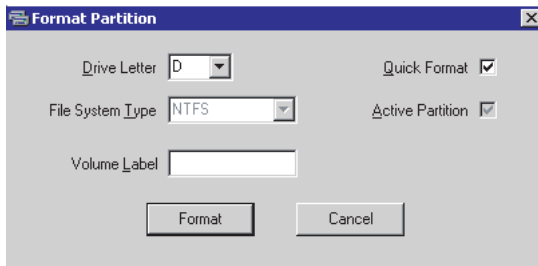
- 1 Click [Use Disk Manager to partition and format your disk drives].

Disk Manager starts up.



- 2 Format the OS installation partition. Select the OS installation partition and click the [Partition] menu → [Format].

The [Format Partition] window appears.



IMPORTANT

- ▶ Be sure to specify the active partition on drive C.
- ▶ Partitions equal to or larger than 4096MB cannot be FAT formatted.

- 3 Set items and click [Format].

The partition is formatted.

- 4 When the formatting is completed, click the [File] menu → [Exit].

Disk Manager closes and the display returns to the expert mode window.

3.3.3 OS Installation Wizard

Set computer information, user information, and the network protocol.

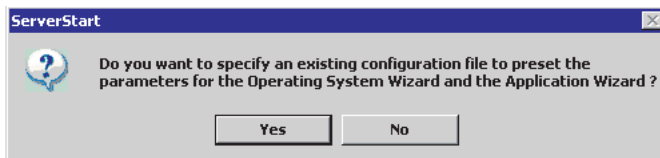
ServerStart can configure multiple network patterns. When configuring a domain controller, refer to "Using ServerStart to Configure the Network".

POINT

- ▶ The setting window differs depending on the OS to be installed. The following describes operations on Windows Server 2003 R2.
To install another OS, interpret Windows Server 2003 R2 as your OS.

1 Click [Installation Wizard for MS Windows Server 2003].

A message prompts you to specify the configuration file.



2 Click [No].

The [Windows Server 2003 Installation] window appears.

3 Enter the password in [Password for Administrator account] and [Please repeat Password] and click [Next].

POINT

- ▶ If the password differs between [Password for Administrator account] and [Please repeat Password], an error dialog window appears. Enter the password correctly.

The [Computer Identification] window appears.

4 Set items and click [Next].

The [Installation Directory and Time Zone] window appears.

POINT

- ▶ When using the CD-ROM applied Service Pack 1 on Windows Server 2003, select the [(OS) including SP1] menu from the [Operating System Type] list.

5 Set items and click [Next].

The [User Name] window appears.

6 Set items and click [Next].

The [Display Settings] window appears.

7 Set items and click [Next].

The [Network Protocol] window appears.

8 Set items and click [Next].

The [Software Components] window appears.



- ▶ If Windows Server 2003 R2 is selected at the Computer Identification, R2 components are always copied to the hard disk. To install the components, click [Properties] and check the components to be installed.

9 Set items and click [Next].

The [Services] window appears.



- ▶ Simple Network Management Protocol is always installed. Click [Properties] to change the settings.

10 Set items and click [leave wizard].

The display returns to the expert mode window.

3.3.4 Application Wizard

Specify installation of supplied applications such as high reliability tools.

For details on the application wizard, refer to "3.1.5 Application Wizard" (→pg.73).

3.3.5 Starting OS Installation

Install the OS to the server.



Notes on the Installation

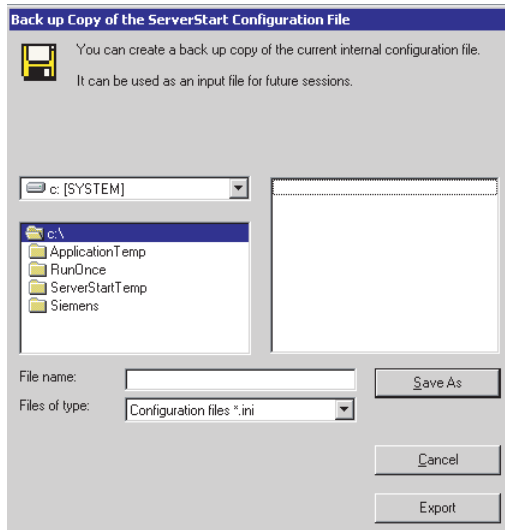
- ▶ When the installation partition is not empty, a confirmation message appears. If it does not matter, click [OK] to continue the installation procedure.
- ▶ If an incorrect setting (such as the CD key) is found during installation, an error window will appear. Enter the correct value in the window to continue the installation procedure. However, corrections made here are not reflected to the configuration file.

1 Click [Click here, to Start the Installation of (OS)].

A confirmation window asking whether you want to save the current settings appears.

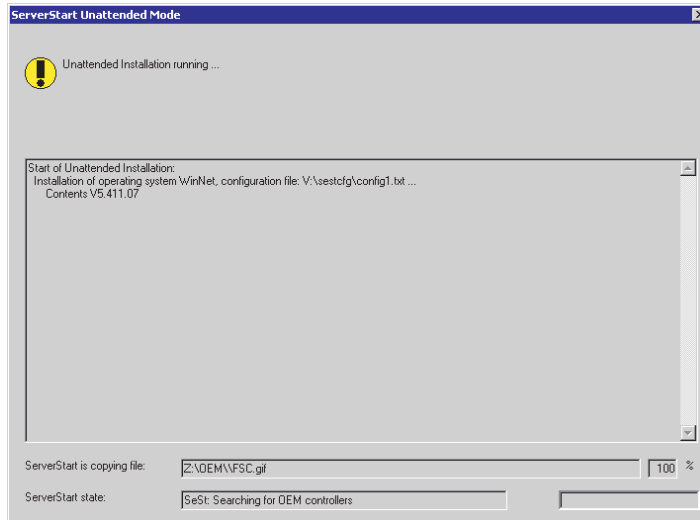
2 Click [Yes].

The following window appears.



3 Enter the file name and click [Save As].

Installation starts automatically.



1. If a message prompts you to insert the SCSI Array Controller Document & Tool CD, insert the CD-ROM and click [OK].
2. If a message prompts you to insert the ServerView CD-ROM, insert the PRIMERGY Document & Tool CD and click [OK].
3. If a message prompts you to insert the Service Pack CD-ROM, insert the CD-ROM and click [OK].
4. For Windows Server 2003 x64, a message prompts you to insert the ServerStart Disc 2 and restart the system. Insert the ServerStart Disc 2 and restart the system.

- 4** When a message prompts you to insert the OS CD-ROM, insert the CD-ROM and click [OK].

For Windows 2000 Server / Windows Server 2003 / Windows Server 2003 x64

1. Insert the OS CD-ROM (Installation CD-ROM).
The License Agreement window appears.
2. Click [I agree].
After files are copied, a message prompts you to eject the CD-ROM and floppy disk.

For Windows Server 2003 R2 / Windows Server 2003 R2 x64

1. Insert the OS CD-ROM (Installation CD-ROM) Disc 1.
The License Agreement window appears.
2. Click [I agree].
After files are copied, a message prompts you to insert the Disc 2.
3. Eject the Disc 1 and insert the OS CD-ROM (Installation CD-ROM) Disc 2.
After files are copied, a message prompts you to eject the CD-ROM and floppy disk.

- 5** Eject the CD-ROM and floppy disk and click [OK].

Then the system is restarted.

The system continues the installation operation after restart.

OS GUI setup, LAN utility installation, Service Pack installation, and Active Directory installation are performed automatically.

- 6** When a confirmation message to restart appears, click [Restart].

The system restarts and installs high reliability tools.

- 7** When a message on installation completion appears, press any key.

- 8** Restart the system.

Click [Start] → [Shutdown]. Select [Restart] and click [OK].

The system restarts.

- 9** When the system restarts, log on to the server using the Administrator account for the local computer.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform necessary procedures before starting server operations.

3.4 Remote Installation

ServerStart supports remote installation.



- ▶ Before performing remote installation, be sure to read "Cautions for Remote Installation" in the online help.

3.4.1 Overview of Remote Installation

Remote installation is a method to save resources necessary for installation, such as the OS and Service Pack, in a different server on the network and install them via the network.

If a remote resource server is configured, you can install the same resources to multiple servers. This method is useful in configuring multiple servers.

● Target Server and Remote Resource Server/PXE Server

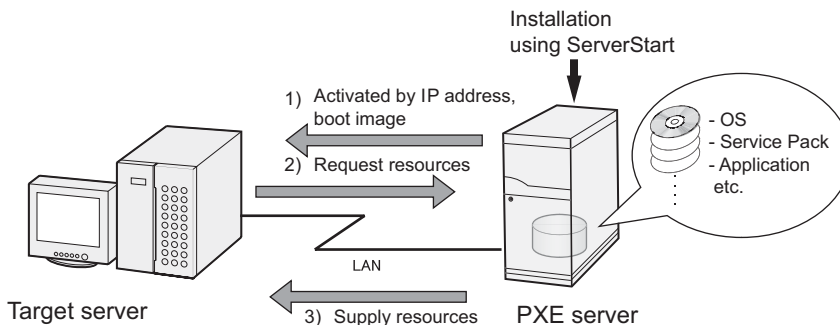
A server to which resources are installed is called a "target server". A server that stores resources necessary for remote installation is called a "remote resource server". A server that can start up a target server through network startup (PXE) is called a "PXE server".

■ Installation Method

Remote installation uses a PXE or a remote resource server.

● Remote Installation Using a PXE Server

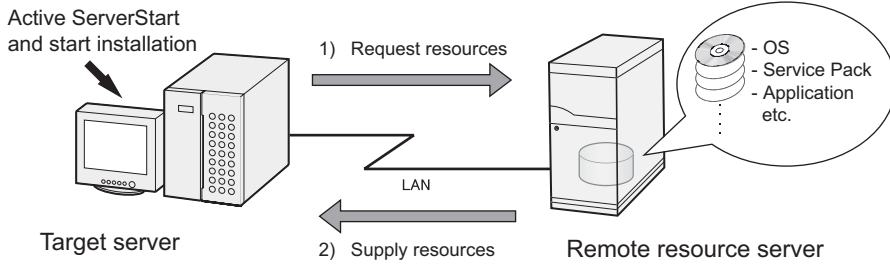
In remote installation using a PXE server, the network startup (PXE) function of the PXE server starts up the target server and performs installation in preparation mode. This method is used when the target server does not have a CD-ROM or floppy disk drive.



In addition to the PXE server, a "remote resource server" that stores remote resources and a "DHCP server" that performs the DHCP service are required for remote installation using a PXE server. When you have only one server, store remote resources on the PXE server to install the DHCP service. When you have multiple servers, select one for performing the DHCP service and another for storing remote resources.

● **Remote Installation Using a Remote Resource Server**

In remote installation using a remote resource server, ServerStart starts up on the target server. Procedures for starting installation are the same as those in normal installation (preparation, guided, and expert modes). Once installation started, resources necessary for installation are provided from the remote resource server. Thus, procedures such as inserting a CR-ROM are not necessary.



3.4.2 System Requirements for Remote Resource/PXE Servers

Because remote installation is performed via a network, the environment must have at least one Windows server and a local area network.

In addition, the following environment is required.

■ **Remote Resource/PXE Server Requirements**

table: System Requirements for Remote Resource/PXE Servers

	PXE server	Remote resource server
OS	Windows 2000 Server SP2 to 4 Windows Server 2003	Windows Server 2003 Windows 2000 Server
Memory	256MB or more	256MB or more
Operating environment	<ul style="list-style-type: none"> • DHCP server function (required on the same network) • File sharing function (required) 	<ul style="list-style-type: none"> • File sharing function (required)



Notes on the PXE server

- ▶ Check that no other PXE server exists on the same LAN.
- ▶ Servers installed with software with the PXE function such as SystemcastWizard/SystemcastWizard Professional, Quick Recovery Manager, or the Microsoft RIS function cannot be used as a PXE server.

■ **Checking Server Free Space**

Decide a server to use as a remote resource server / PXE server and check it for enough free space for storing resources.

● Checking the Number of Servers

- When you have only one server, use it as the remote resource server, PXE server, and DHCP service server. Check it for the required amount of free space.
- When you have multiple servers
 - Check if a server performing the DHCP service exists. If not, decide a server for the DHCP service.
 - When there are multiple resources, they can be divided and stored in multiple remote resource servers.

● Checking Server Free Space

The following table shows the amount of free space required for each installation resource.

table: Free Space Required for Resources

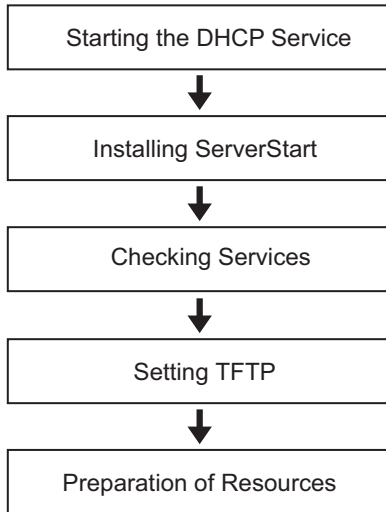
Resource	Required free space
ServerStart Disc 1	approx. 650 MB
ServerStart Disc 2	approx. 450 MB
Windows 2000 Server (SP 4 is applied)	462 MB
Windows 2000 Advanced Server (SP 4 is applied)	455 MB
Windows Server 2003, Standard Edition	640 MB
Windows Server 2003, Enterprise Edition	603 MB
Windows Server 2003, Standard x64 Edition	648 MB
Windows Server 2003 Service Pack 1	389 MB
Windows Server 2003 R2, Standard Edition Disc 1	609 MB
Windows Server 2003 R2, Standard Edition Disc 2	125 MB
Windows Server 2003 R2, Enterprise Edition Disc 1	610 MB
Windows Server 2003 R2, Enterprise Edition Disc 2	125 MB
Windows Server 2003 R2, Standard x64 Edition Disc 1	629 MB
Windows Server 2003 R2, Standard x64 Edition Disc 2	172 MB
Windows Server 2003 R2, Enterprise x64 Edition Disc 1	631 MB
Windows Server 2003 R2, Enterprise x64 Edition Disc 2	172 MB

Calculate the total resource size. Check that the remote resource server / PXE server has enough free space (free space greater than the space required for the resources). When the amount of free space is insufficient, you must use more remote resource servers.

3.4.3 Preparation of the PXE Server (When the PXE Server is Used)

When performing remote installation using a PXE server, preparatory procedures, such as installing ServerStart, are required.

Perform the following procedures to prepare the PXE server.



■ Starting the DHCP Service

Check that the DHCP service is running on the same network.

If the DHCP service function is not installed, perform the following procedures to install the DHCP service. The following procedures are examples for Windows Server 2003.

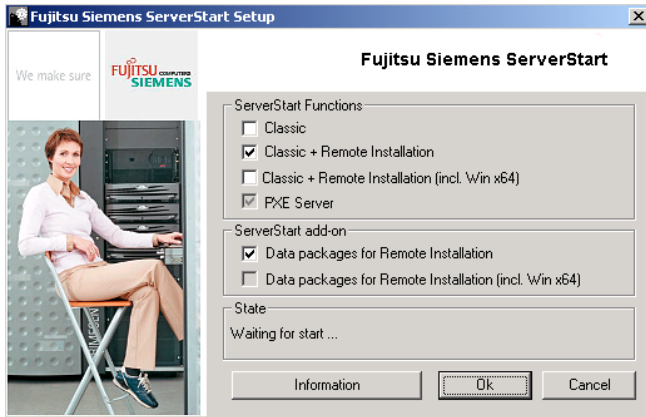
- 1** Click [Start] → [Control Panel] → [Add or Remove Applications].
- 2** Click [Add or Remove Windows Components]. Click the [Dynamic Host Configuration Protocol (DHCP)] service from [Network Services].
The DHCP service is installed.
- 3** Create and configure a DHCP scope so that the IP address can be distributed.

■ Installing ServerStart

- 1 Insert the ServerStart Disc 1 CD-ROM into the PXE server.

The [ServerStart Launcher] window appears.

When the [ServerStart Launcher] window does not appear, execute "SeStSetup.exe" in the CD-ROM.



- 2 Check [Classic+Remote Installation (OS)], [PXE Server] and [Data packages for Remote Installation (OS)], and click [OK].

For [Classic + Remote Installation (OS)] and [Data packages for Remote Installation (OS)], check the items of the corresponding OS.

The setup window appears.

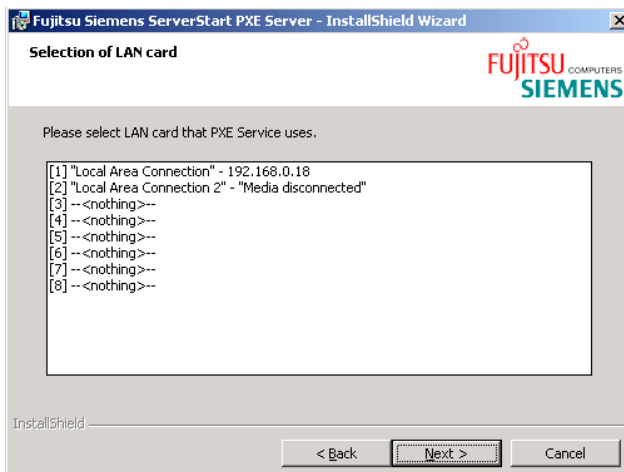
- 3 Click [Next].

The [Destination Folder] window appears.

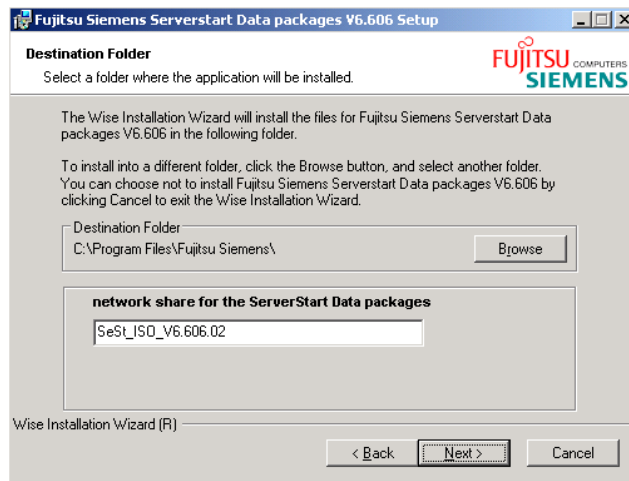
- 4 Select the installation folder and click [Next].

To change the installation folder, click [Browse] and select the folder.

The [Selection of LAN card] window appears.



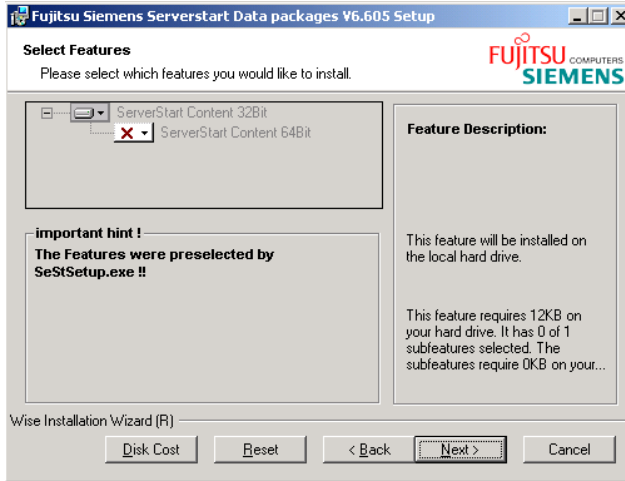
- 5** Select the LAN controller to use and click [Next].
The [proxy DHCP Configuration] window appears.
- 6** Select [Yes] to run the DHCP service on the PXE server or select [No] to run the DHCP service on the other server on the network, and click [OK].
The [Ready to Install the Application] window appears.
- 7** Click [Install].
Installation starts. When the installation is completed, the [InstallShield Wizard Completed] window appears.
- 8** Click [finish].
The setup window appears.
- 9** Click [Next].
The [License Agreement] window appears.
- 10** Select [I accept the license agreement] and click [Next].
The [User Information] window appears.
- 11** Enter the user information of the software and click [Next].
The [Destination Folder] window appears.



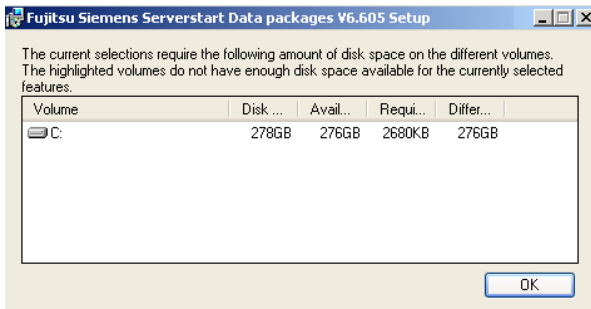
12 Select the installation folder, configure ServerStart image that is required for network booting (PXE), and click [Next].

To change the installation folder, click [Browse] and select the folder.

The [Select Features] window appears.

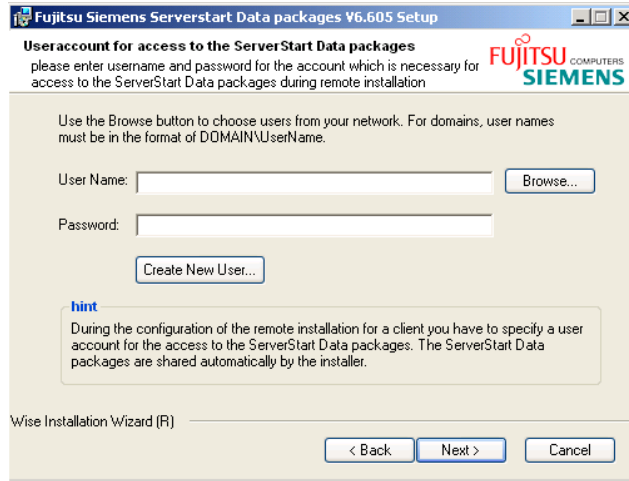


Clicking [Disk Cost] displays the following window where you can check the amount of free space.

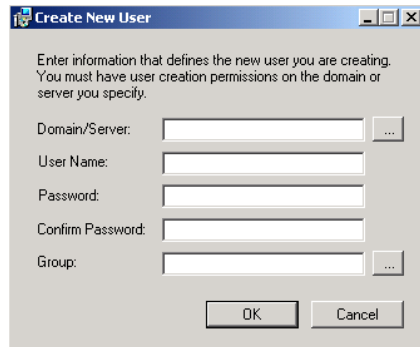


13 Click [Next].

The [Useraccount for access to the ServerStart Data packages] window appears.



Clicking [Create New User] displays the [Create New User] window. Configure each item to create a new user.

**14** Enter a user name and a password, and click [Next].

The [Ready to Install the Application] window appears.

15 Click [Install].

Installation starts. When the installation is completed, the [InstallShield Wizard Completed] window appears.

16 Click [finish].

The setup window appears.

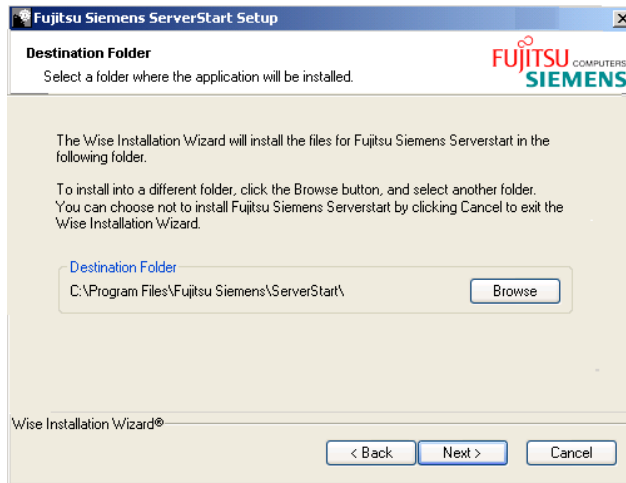
17 Click [Next].

The [License Agreement] window appears.

18 Select [I accept the license agreement] and click [Next].

The [User Information] window appears.

- 19** Enter the user information of the software and click [Next].
The [Destination Folder] window appears.



- 20** Specify the installation folder and click [Next]. To change the installation folder, click [Browse] and select the folder.

The [Select Features] window appears. Clicking [Disk Cost] displays the following window where you can check the amount of free space.

- 21** Click [Next].

The [Ready to Install the Application] window appears.

- 22** Click [Next].

Installation is executed.

POINT

- ▶ If a message prompting you to restart the system appears before or after installation, eject the CD-ROM and restart the system according to the message. When the system restarts, insert the ServerStart CD-ROM and start installation again. If the "This program does not respond." message appears during restart operation, click [Exit] to continue the restart operation.

When the installation is completed, the completion window appears.

- 23** Click [Exit].

In case of Windows Server 2003 x64 installation, the [Browse for Folder] window appears. Insert the ServerStart Disc 2 CD-ROM and continue installation.

ServerStart has been installed to the client computer.

- 24** Click [Start] → [Shutdown]. Select [Restart] and click [OK].

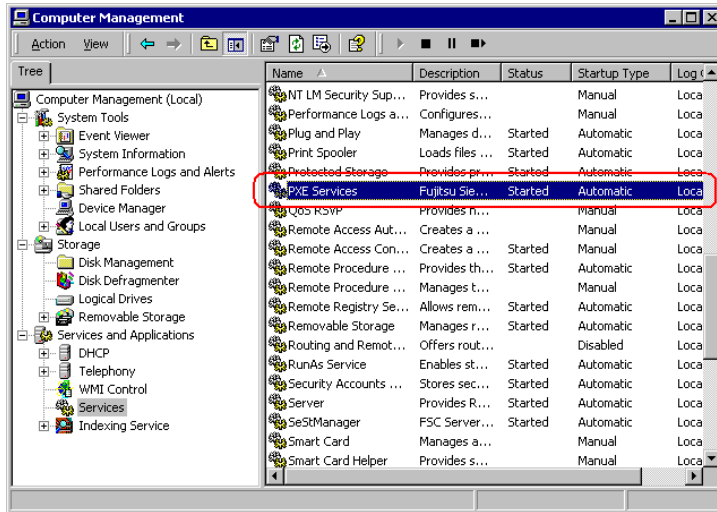
The system restarts.

■ Checking Services

● Checking [PXE Services] and [TFTP Service]

- 1 Right-click the [My Computer] icon and click [Manage].
- 2 Select [Services] from [Services and Applications].

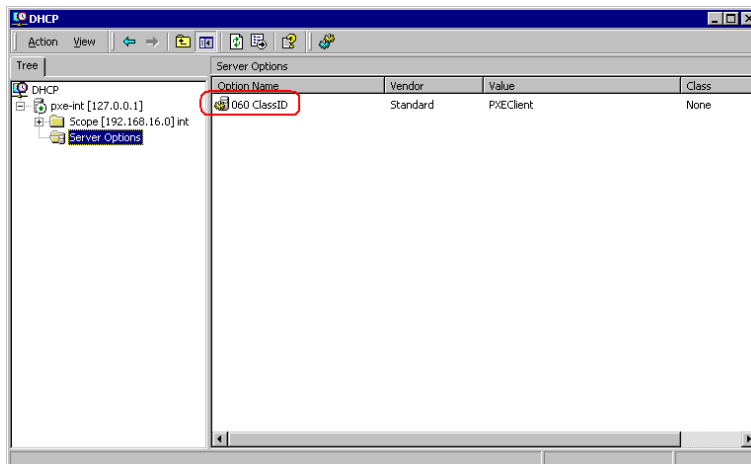
On the Services list, check that PXE Services and TFTP Service have been installed and started.



● Checking the DHCP Service

Perform the following check only when the PXE server performs the DHCP service.

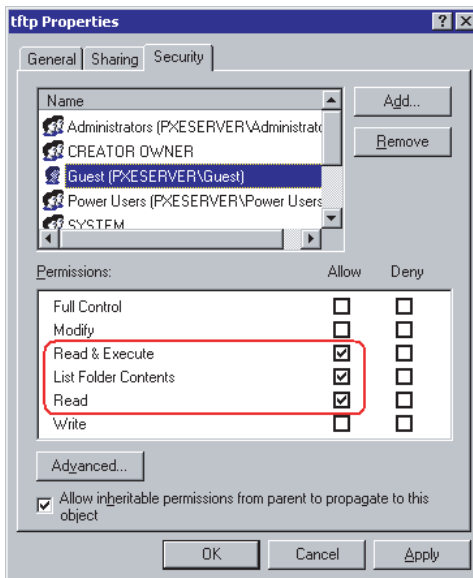
- 1 On the PXE server, click [Start] → [Programs] → [Administrative Tools] → [DHCP] to start up the DHCP administrative tool.
- 2 Click [Server Options] and check that the "060 ClassID" server option is added.



■ Setting TFTP

TFTP is an FTP service function that requires no authentication. In remote installation, the TFTP service is used to distribute the boot image required for startup. For the TFTP path, set the appropriate access rights for the Guest account to obtain the image via network startup (PXE).

- 1** Click [Start] → [Programs] → [Accessories] → [Windows Explorer] and move to the TFTP path (the default is C:\Program Files\Fujitsu Siemens \DeploymentService\tftp).
- 2** Right-click the TFTP folder and click [Properties].
- 3** Click the [Security] tab, add the Guest account, and set the "Read and execute", "View folder contents list", and "Read" access permissions.



The preparation of the PXE server has been completed.
Then, perform "3.4.4 Preparation of Remote Resources" (→pg.101).

3.4.4 Preparation of Remote Resources

Store resources to be installed on the remote resource server (PXE server) before starting installation.

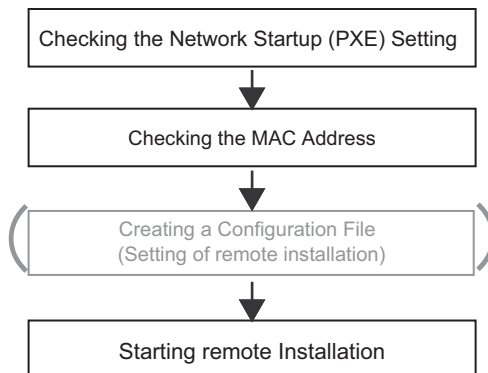


- ▶ For sharing resources, log on to the remote resource/PXE server with the Administrator account.

- 1** Prepare resources required for installation.
 - CD-ROM for the OS to be installed
 - Service Pack CD-ROM for the OS to be installed
 - ServerStart floppy disk
 - PRIMERGY Document & Tool CD (for installing ServerView)
 - SCSI Array Controller Document & Tool CD (for RAID configuration)
 - Others
- 2** Create a shared folder for storing resources.
Create a shared folder for each CD prepared in Step 1.
E.g. (for Windows Server 2003): E:\W2K3Sv
- 3** Extract the resources.
Using Windows Explorer, copy the CD-ROM for the resource to the shared folder.

3.4.5 Starting Remote Installation Using a PXE Server

Perform remote installation using a PXE server in the following procedures.



■ Checking the Network Startup (PXE) Setting

Remote installation using a PXE server is performed via the onboard LAN. Enable the network startup (PXE) of the target server.

For more details on network startup, refer to "2.1.2 Hardware Settings" (→pg.48).

■ Checking the MAC Address of the Onboard LAN

In remote installation, target servers are identified according to the MAC address. MAC addresses are unique information to LAN cards. Check the MAC address on each target server. Write down the MAC address of the onboard LAN. For details on how to check the MAC address of an onboard LAN, refer to "2.1.2 Hardware Settings" (→pg.48).

■ Creating a Configuration File

You can create a configuration file on a client computer before starting installation. For the procedure, refer to "3.2.1 Starting Up the Preparation Mode" (→pg.77) and "3.2.2 Configure Settings in Wizards" (→pg.79).

When creating a configuration file on the PXE server, start installation.

POINT

- ▶ Specify the shared name prepared instead of the local CD-ROM as installation information.

■ Starting Installation

1 On the PXE server, start up ServerStart.

If ServerStart has already been started, you do not have to restart it. If it is not started, click [Start] → [Programs] → [Fujitsu Siemens ServerStart] → [ServerStart(start from HD)].
The [Welcome to ServerStart] window appears.

2 Click [Click here to prepare an operating system installation for a PRIMERGY Server].

The [Select an Operating System] window appears.

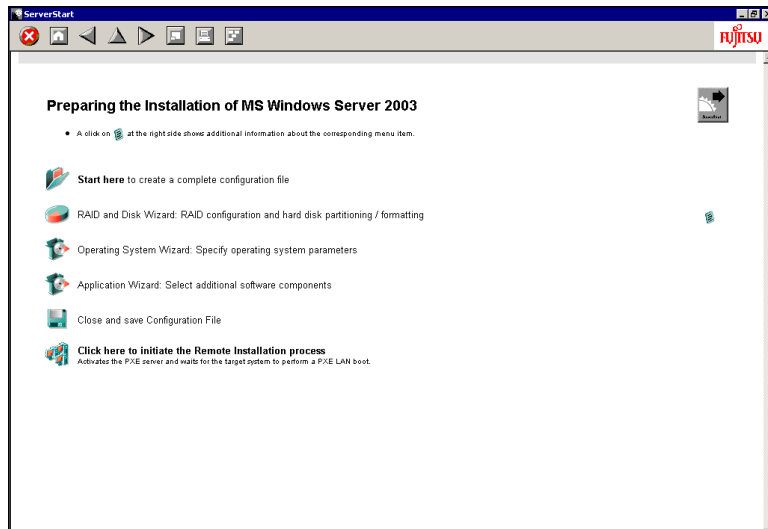
3 Click [Microsoft Windows Server Operating System -Preparing and/or initiating a Remote Installation].

The [Microsoft Windows Operating System Installation] window appears.

4 Click the OS to install.

The [Preparing the Installation] window appears.

If a configuration file has already been created, go to Step 6.

**5** Set items in wizards to create a configuration file.

Refer to "3.2.2 Configure Settings in Wizards" (→pg.79). Set items in wizards and save the configuration file.

Exiting a wizard returns to the preparation mode window.

6 Click [Click here to initiate the Remote Installation Process].

The [Remote Installation Target Server] window appears.

7 Configure remote installation.

Remote Installation Target System

To be able to initiate a remote installation process ServerStart needs some data:

Target system

MAC address of target system: 11-11-11-11-11-11

(The MAC address can be obtained via FSC ServerView, or by reading the console output during the boot process of the target system with PXE option switched on)

PRIMERGY model type: PRIMERGY TX200 S2

Configuration File: c:\serverstartbatch.ini

Access to ServerStart data:

ServerStart contents tree (UNC): \\WPXESESERVER\SeSt_ISO\iso

User name for remote access: pxeserver\Administrator

Password: *

Remote Installation Linux:

Boot image directory: [Empty]

Bootstrap Loader: [Empty]

Remote installation incl. SCU settings and/or RAID configuration

Start Installation Cancel

1. Enter the "MAC address of target system".
2. Select the "PRIMERGY model type".
3. Specify the "Configuration File" containing the installation settings.

8 Click [Start Installation].

Installation starts. All disk contents on the target server are deleted.

The [ServerStart Boot Manager] window appears.

Check that the status is "Waiting for client".

ServerStart Boot Manager

Boot Images: <ALL IMAGES> Active clients: 11-11-11-11-11-11 Terminated clients: [Empty]

Status of client 11-11-11-11-11-11:

State: BootManager: Waiting for client

Error message: <NONE>

Progress of installation: <NONE>

Buttons: Overview, System data, Repeat, Show (Progress, Logfile, System data)

9 Turn on the target server.

It is started up via the network (PXE) and installation starts.

When the resources have been copied, the "Preparation for automatic OS installation has completed." message appears.

Subsequent installation is performed automatically.

When the installation is completed, an installation completion message appears on the target server.

For the RAID configuration, the system is restarted. When the message "Rebooting the System" appears and the system is restarted, set the Boot priority to give the highest priority to onboard LAN. For details about how to change the Boot priority, refer to "8.2.3 Boot Maintenance Manager" (→pg.240).

10 Press any key on the target server.**11** Restart the system on the target server.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform necessary procedures before starting server operations.

3.4.6 Starting Remote Installation Using a Remote Resource Server

In remote installation using a remote resource server, installation is performed using shared resources on the remote resource server.

Perform "3.4.4 Preparation of Remote Resources" (→pg.101) before starting installation.

■ Configuring a Remote Floppy

A remote floppy is a shared folder for storing and using a configuration file on the network, instead of loading it from the ServerStart floppy disk. When the server does not have a floppy disk drive and installation is performed in guided mode/expert mode, use a remote floppy.



- ▶ A remote floppy cannot be used when installing Windows Server 2003 x64.

1 Create a new folder in the shared folder on the remote resource server.

E.g.: C:\export\ServerStart\Floppy

2 Create a "ServerStart Floppy Disk" tag file for the ServerStart floppy disk. Start up Command Prompt and enter the following command.

```
C:\>copy nul C:\export\ServerStart\Floppy\ "ServerStart Floppy Disk"
```

■ Checking Remote Resources

Check that the remote resource server is shared properly.

- 1 Start up "Command Prompt" on the remote resource server. Enter the following and press the [Enter] key.

prompt:>net share

Check that the created shared folder is displayed properly.

For the net command, refer to Windows Help.

■ Starting Installation

Start installation from the target server.

POINT

- ▶ When using the ServerStart floppy disk, confirm that the floppy disk drive for USB connection has been connected before turning on the server.

● In Guided Mode/Expert Mode

- 1 Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately. ServerStart starts up and a message prompts you to insert the ServerStart floppy disk.

- 2 Create a ServerStart floppy disk.

When the ServerStart floppy disk supplied with the server is used

1. Insert the ServerStart floppy disk supplied with the server. Make sure that "Removable media" and "A:" are selected and click [Create].
The network startup setting window for remote installation appears.
2. Click [OK].
The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.
3. Click [Build a ServerStart Floppy Disk].
Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

When the remote floppy is used

1. Select "Remote (media)" and click [OK].
The [Network Startup Setting] window for remote installation appears.

POINT

- ▶ If the SCSI option device is installed and a message prompts you to insert the ServerStart floppy disk, "Removable media" is selected. Be sure to select "Remote (media)".
2. Click [OK].
The [Specify Drive] window appears.
 3. Enter [Remote path], [User name], and [Password] and click [OK].
The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Welcome to ServerStart] window appears.

3 Click [Click here to prepare and/or initiate an operating system installation].

The [Select the operating system to be installed] window appears.

Click [Special Hints on Operating System Installation] and read the contents. Important information such as limitations on disk configuration is described.

4 Click [MS Windows Operating Systems].

The [Install Microsoft Windows Operating System Installation] window appears.

5 Select the OS to install and the mode.**6** Set items in wizards and save the configuration file.

For settings in wizards, refer to "3.1 Guided Mode" (→pg.60) or "3.3 Expert Mode" (→pg.83).

Set items in wizards and save the configuration file. When using the remote floppy, specify the path to the shared folder for the remote floppy as the configuration file saving location.

POINT

- ▶ Specify the shared name of the prepared shared folder instead of the local CD-ROM as installation source information.

7 Click [Click here, to Start the Installation of (OS)].

Installation starts. At steps where the CD-ROM for resources such as the OS to be installed is necessary, the resource is automatically acquired from the resource server via the network.

8 Eject the CD-ROM and floppy disk and click [OK].

The system restarts. When the installation is completed, an installation completion message appears on the target server.

9 Press any key on the target server.**10** Restart the system on the target server.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform necessary procedures before starting server operations.

● In Preparation Mode**1** Create a configuration file.

For the creation procedure, refer to "3.2 Preparation Mode" (→pg.77).

POINT

- ▶ Specify the shared name of the prepared shared folder instead of the local CD-ROM as installation source information.

2 Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately.

ServerStart starts up and a message prompts you to insert the ServerStart floppy disk.

3 Set the created configuration file and click [OK].

The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [ServerStart Unattended Mode] window appears.

4 Click [Start].

Installation starts. At steps where the CD-ROM for resources such as the OS to be installed is necessary, the resource is automatically acquired from the resource server via the network.

5 Eject the CD-ROM and floppy disk and click [OK].

The system restarts. When the installation is completed, an installation completion message appears on the target server.

6 Press any key on the target server.

7 Restart the system on the target server.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform necessary procedures before starting server operations.

3.5 Installation on Multiple (the Second and Subsequent) Servers

This chapter explains how to perform installation on multiple servers using ServerStart.

By editing the configuration file created for installation on the first server, you can use it for installation on other servers of the same model and configuration. This reduces the setup time. However, installation on the first server must be performed using ServerStart in guided or preparation mode.



- ▶ Check that ServerStart supplied with the first server is of the same version as that supplied with the other servers. If the version is different, this installation method will not work.

3.5.1 Preparation for Installation

■ Required Software

The following software is required for installation on the second and subsequent servers. Be sure to have these items close at hand.

- CD-ROM for the OS to be installed
- ServerStart CD-ROM
- ServerStart floppy disk

A: ServerStart floppy disk containing the configuration file used for installation on the first server

B: ServerStart floppy disks supplied with the ServerStart CD-ROMs for the second and subsequent servers

If ServerStart floppy disks are not supplied, prepare as many floppy disks as there are servers.

- PRIMERGY Document & Tool CD (for installing ServerView)
- SCSI Array Controller Document & Tool CD (for RAID configuration)
- Service Pack CD-ROM for the installed OS

■ Preparatory Procedure

Perform the following procedure before installation.

Using Explorer or Command Prompt, copy the ServerStart floppy disk (A) to the ServerStart floppy disk (B).

3.5.2 Installation in Guided Mode

Edit the configuration file and perform installation in guided mode.

POINT

- ▶ Confirm that the floppy disk drive for USB connection has been connected before turning on the server.

1 Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately after that.

ServerStart starts up and a message prompts you to insert the ServerStart floppy disk.

2 Insert the ServerStart floppy disk copied in the preparatory procedure into the floppy disk drive and click [Create].

The network setting window for remote installation appears.

3 Click [OK].

The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [or insert a Server Start Floppy Disk to Start Server Start].

The [Welcome to ServerStart] window appears.

5 Click [Click here to prepare and/or initiate an operation system installation].

The [Select the operating system to be installed] window appears.

6 Click [MS Windows Operating Systems].

The [Microsoft Windows Operating System Installation] window appears.

7 Click the OS to install.

8 Click [Prepare & initiate an unattended installation of (OS)].

The guided mode starts.

9 Click [Start here to create a complete configuration file].

The [Open ServerStart Configuration File] window appears.

10 Specify "SerStartBatch.ini" on drive A and click [Create].

The display returns to the guided mode window.

For procedures from setting wizards to completion of installation, refer to "3.1 Guided Mode" (→pg.60).

When performing remote installation, refer to "3.4 Remote Installation" (→pg.90).

**Settings values in wizards**

- ▶ Setting items in wizards are set to the values set on the first server. For installation on subsequent servers, you must change the following items in the "OS installation wizard". For other items, change the settings as necessary. You do not need to start up wizards where no settings will be changed.

table: Settings to be Changed for Installation on Subsequent Servers

Window name	Setting item name	Remarks
User Information	Computer name	The setting must be changed when the second and subsequent servers are on the same network as the first server.
	Product ID/CD key	The setting must be changed.
Network Protocol	IP address	The setting must be changed when the second and subsequent servers are on the same network as the first server.

- ▶ If the settings for the first server are not reflected to wizards, perform the procedure over again from copying the floppy disk.

3.5.3 Installation in Preparation Mode

Edit the configuration file and perform installation in preparation mode.

If ServerStart is not installed in the client computer where the preparation mode is executed, refer to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.55) to install ServerStart. If a different version of ServerStart has been installed, uninstall it and install the proper version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).



- ▶ ServerStart starts up when it is installed. However, be sure to follow these installation procedures. Performing the procedure in "3.2.1 Starting Up the Preparation Mode" (→pg.77) deletes the contents of the ServerStart floppy disk, making the disk unavailable for installation on multiple servers.

1 Start up ServerStart.

If ServerStart has already been started, you do not have to restart it. If it is not started, perform the following startup procedures.

1. Insert the ServerStart Disc 1 CD-ROM into the client computer.
2. Click [Start] → [Programs] → [Fujitsu Siemens ServerStart] → [ServerStart(Start from CD)].

ServerStart starts up and the [Welcome to ServerStart] window appears.

2 Select the OS to be installed.

The preparation mode starts up.

3 Insert the ServerStart floppy disk copied in the preparatory procedure into the floppy disk drive and click [Start here to configuration file].

The [Open ServerStart Configuration File] window appears.

4 Specify "SerStartBatch.ini" on drive A and click [Create].

The display returns to the preparation mode window.

For procedures from setting wizards to completion of installation, refer to "3.2 Preparation Mode" (→pg.77).

When performing remote installation, refer to "3.4 Remote Installation" (→pg.90).



Settings values in wizards

- ▶ Setting items in wizards are set to the values set on the first server. For installation on subsequent servers, you must change the following items in the "OS installation wizard". For other items, change the settings as necessary. You do not need to start up wizards where no settings will be changed.

table: Settings to be Changed for Installation on Subsequent Servers

Window name	Setting item name	Remarks
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	Product ID/CD key	The setting must be changed.
Network Protocol	IP address	The setting must be changed when the second and subsequent servers are on the same network as the first server.

- ▶ If the settings for the first server are not reflected to wizards, perform the procedures from copying the floppy disk over again.

Chapter 4

Manual OS Installation

4

This chapter explains how to install the OS without using ServerStart.

4.1	Creating Driver Disks	114
4.2	Starting Manual Installation	119
4.3	Installing the LAN Driver	129

4.1 Creating Driver Disks

When installing the OS manually, it is necessary to create driver installation disks beforehand. Also, driver disks must be created when you add an expansion card during server operation.

4.1.1 Required Driver Disks

Prepare for the floppy disks in advance to create the driver disks. A floppy disk is necessary for each driver.

The driver disks to be created differ depending on the OS to be installed.

POINT

- ▶ The standard driver provided with the OS is installed automatically at the OS installation.
- ▶ To install the driver provided with the ServerStart CD-ROM, use the ServerStart Disc 1 CD-ROM. Prepare it beforehand.

■ For Windows Server 2003 x64

table: Drivers Required for Installing Windows Server 2003 x64

Expansion card / onboard controller	Driver
Chipset	Driver provided with the ServerStart CD-ROM
Graphic controller	Driver provided with the ServerStart CD-ROM
Onboard SCSI array controller	PG-142E3/PRIMERGY RX600S3 Onboard RAID Windows 2003 x64 Drivers Disk V4.0L20
SCSI array controller card (PG-142E3)	
SCSI card (PG-1281)	Standard driver provided with the OS
Onboard LAN	PRIMERGY RX600S3 Onboard LAN Windows 2003 x64 Drivers Disk Ver.9.25
LAN card (PG-1862 / PG-1882 / PG-1892)	PG-185x/186x/188x/189x LAN Driver Windows 2003 for x64 Edition Drivers Disk Ver.10.3
LAN card (PG-2861)	PG-286x LAN Driver Windows 2003 for x64 Edition Drivers Disk Ver.10.3
Fibre Channel Controller (PG-FC202)	PG-FC202 Windows 2003 for x64 Edition Drivers Disk V1.10a4
SAF-TE Driver	SAF-TE Driver V1.0.0.0
Other expansion cards	Driver supplied with the expansion card

■ For Windows Server 2003

table: Drivers Required for Installing Windows Server 2003

Expansion card / onboard controller	Driver
Chipset	Driver provided with the ServerStart CD-ROM
Graphic controller	Driver provided with the ServerStart CD-ROM
Onboard SCSI array controller	PG-142E3/PRIMERGY RX600S3 Onboard RAID Windows 2003 Drivers Disk V3.0L20
SCSI array controller card (PG-142E3)	
Onboard LAN	PRIMERGY RX600S3 Onboard LAN Windows 2003 Drivers Disk Ver.7.107.0.0
LAN card (PG-1862 / PG-1882 / PG-1892)	PG-185x/186x/188x/189x LAN Driver Windows 2000/2003 Ver.10.3
LAN card (PG-2861)	PG-286x LAN Driver Windows 2000/2003 Ver.10.3
SCSI card (PG-1281)	Standard driver provided with the OS
Fibre Channel Controller (PG-FC202)	PG-FC202 Windows 2000/2003 Drivers Disk V5.30a2
SAF-TE Driver	SAF-TE Driver V1.0.0.0
Other expansion cards	Driver supplied with the expansion card

■ For Windows 2000 Server

table: Drivers Required for Installing Windows 2000 Server

Expansion card / onboard controller	Driver
Chipset	Driver provided with the ServerStart CD-ROM
Graphic controller	Driver provided with the ServerStart CD-ROM
Onboard SCSI array controller	PG-142E3/PRIMERGY RX600S3 Onboard RAID Windows 2000 Drivers Disk V3.0L20
SCSI array controller card (PG-142E3)	
Onboard LAN	PRIMERGY RX600S3 Onboard LAN Windows 2000 Drivers Disk Ver.7.107.0.0
LAN card (PG-1862 / PG-1882 / PG-1892)	PG-185x/186x/188x/189x LAN Driver Windows 2000/2003 Drivers Disk Ver.10.3
LAN card (PG-2861)	PG-286x LAN Driver Windows 2000/2003 Drivers Disk Ver.10.3
SCSI card (PG-1281)	Standard driver provided with the OS
Fibre Channel Controller (PG-FC202)	PG-FC202 Windows 2000/2003 Drivers Disk V5.30a2
SAF-TE Driver	SAF-TE Driver V1.0.0.0
Other expansion cards	Driver supplied with the expansion card

POINT

- ▶ For the latest drivers, refer to the Fujitsu PRIMERGY website (<http://primergy.fujitsu.com>).

4.1.2 How to Create Driver Disks [FloppyBuilder function]

Driver disks are created from the ServerStart CD-ROM using the ServerStart FloppyBuilder function.

The FloppyBuilder function is available in the following environments.

- Starting up the ServerStart system on a client computer (Recommended)
- Starting up the system from the ServerStart CD-ROM on the server

POINT

- ▶ When creating driver disks on a client computer, it is necessary to install ServerStart on the client computer beforehand. Install it according to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.55).
If a different version of ServerStart has been installed, uninstall it and install the proper version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

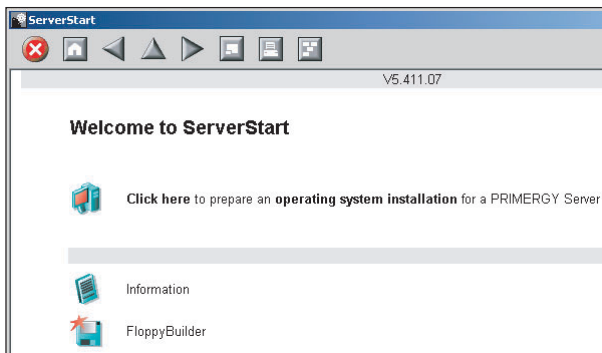
■ Starting ServerStart

If ServerStart has already been started, you do not have to restart it. If it is not started, perform the following startup procedures.

● For Creation on a Client Computer

- 1** Insert the ServerStart Disc 1 CD-ROM into the client computer.
- 2** Click [Start] → [Programs] → [Fujitsu Siemens ServerStart] → [ServerStart(Start from CD)].

ServerStart starts up and the [Welcome to ServerStart] window appears.



● For Creation on the Server

POINT

- ▶ Confirm that the floppy disk drive for USB connection has been connected before turning on the server.
- 1** Turn on the server and insert the ServerStart Disc 1 CD-ROM immediately.
ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

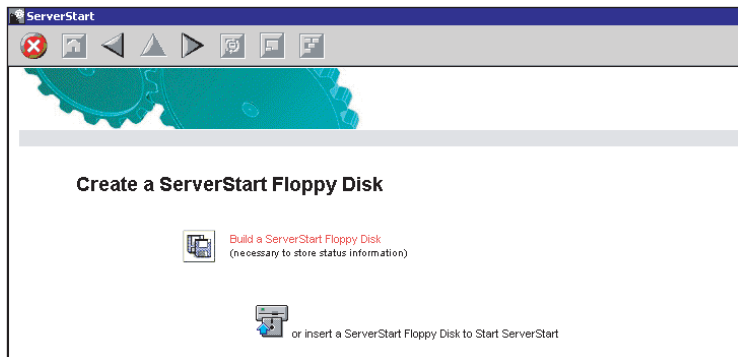
- 2 Insert the attached [ServerStart floppy disk] into the server's floppy disk drive. Then make sure "Removable media" and "A:" are selected and click [Create]. A network setup window for remote installation appears.

POINT

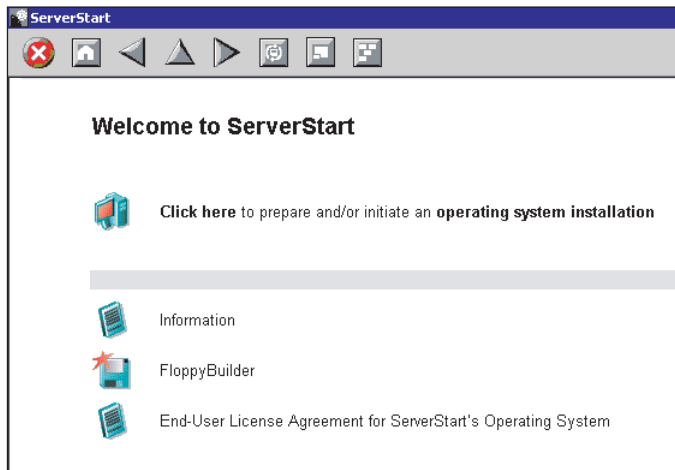
- ▶ If a configuration file already exists in the ServerStart floppy disk and [OK] is clicked without clicking [Create], the [ServerStart Unattended Mode] window appears. Make sure to click [Exit]. The [Welcome to ServerStart] window appears.
If [Start] is clicked in the [ServerStart Unattended Mode] window, the installation of the server will start and all disk contents will be deleted.

- 3 Click [OK].

The [Initializing ServerStart] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.



- 4 Click [or Insert a ServerStart Floppy Disk to Start ServerStart]. The [Welcome to ServerStart] window appears.



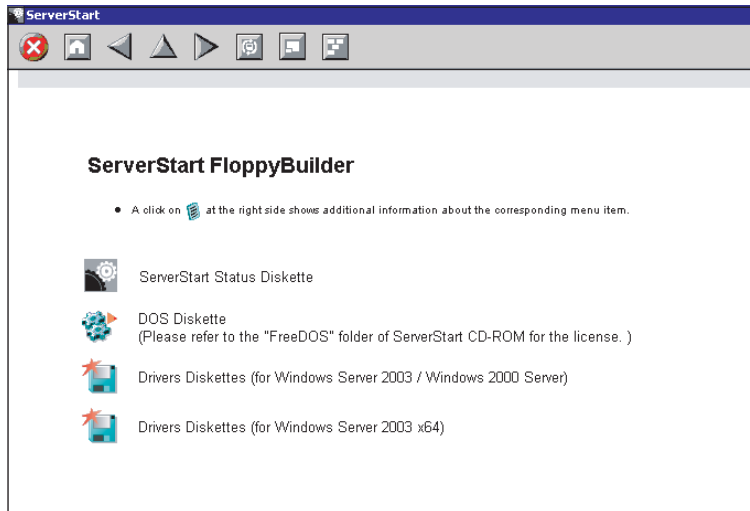
- 5 Eject the ServerStart floppy disk.

■ Creating Driver Disks

Start up ServerStart and confirm that the [Welcome to ServerStart] window is displayed.

1 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.



2 Select the Drivers Diskettes for Windows Server 2003/Windows 2000 Server or Windows Server 2003 x64.

The [FloppyBuilder Driver Disk] window appears.

3 Click the type of the driver you want to create.

4 Click the driver disk you want to create.

Follow the message and insert a floppy disk.

5 Perform the procedures following the messages on the window.

The floppy disk will be formatted automatically and file copying will start.

The driver disk is automatically created. When a message appears indicating that creating the disk is completed, click [OK] and eject the floppy disk.

4.2 Starting Manual Installation

This section explains the procedures for installing the OS manually.

IMPORTANT

- ▶ Confirm that the floppy disk drive for USB connection has been connected before turning on the server.

■ USB Floppy Disk Drive

It is strongly recommended that only products listed on the following website are connected to the server.

PRIMERGY website (<http://primergy.fujitsu.com>)

POINT

- ▶ The Microsoft package products shipped after July 2003 are already applied to Service Pack 4 as well as the volume-licensed Windows 2000 Server CD-ROM. However, the volume license also provides Windows 2000 Server CD-ROM not applied to Service Pack 4. You can confirm whether Service Pack 4 or later is applied using the label of your Windows 2000 Server CD-ROM.

4.2.1 Installing Windows Server 2003 x64

POINT

- ▶ For details on the OS settings, refer to the following URL.
<http://www.microsoft.com/technet/prodtechnol/exchange/2003/Library/default.msp>

1 Create driver disks.

Prepare necessary drivers before installing Windows Server 2003 x64.

For how to create driver disks, refer to "4.1 Creating Driver Disks" (→pg.114).

2 Turned on the server and configure RAID. If you do not configure RAID, proceed to step 3.

Turn on the server to display the following message and press the [Ctrl] + [H] key to start up WebBIOS.

```
Press <Ctrl><H> for WebBIOS
```

The array system is configured by using WebBIOS. For more details, refer to "Onboard SCSI RAID User's Guide".

Turn off the server after configuring the array system.

3 Insert the Windows Server 2003 x64 CD-ROM.

Turn on the server and insert the Windows Server 2003 x64 CD-ROM immediately into the CD-ROM drive. When the active area is specified on the hard disk, the following message appears.

```
Press any key to boot from CD...
```

Pressing any key while this message is displayed boots the system from the CD-ROM.

4 The [Windows Server 2003 x64 Setup] window appears.

Immediately, the following message appears at the bottom of the window. Press the [F6] key.

```
Press F6 if you need to install a third party
SCSI or RAID driver ...
```



- ▶ This message will be displayed for a short time after the setup window (blue screen) appears. Press the [F6] key immediately after the window turns blue.

5 Install the Drivers manually.

1. When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drives,
or special disk controllers for use with Windows,
including those for which you have a device
support disk from a mass storage device
manufacturer, press S.
```

2. When the "Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A:" message appears, insert the driver disk created from the ServerStart CD-ROM and press the [Enter] key.

The following message appears.

```
You have chosen to configure a SCSI Adapter for use with
Windows, using a device support disk provided by an
adapter manufacturer.
Select the SCSI Adapter you want from the following list,
or press ESC to return to the
previous screen.
```

3. Select following item and press the [Enter] key.

```
Mega RAID SCSI 320-2E RAID Controller Drive
```

4. When the following message appears, press the [S] key.

```
The driver you provided seems to be newer than the Win-
dows default driver.
Setup will load support for the following mass Storage
device(s):
Mega RAID SCSI 320-2E RAID Controller Driver
```

6 Follow the instructions from the setup program to continue the installation procedure.

If a message indicating that the driver has not passed Windows Logo testing to verify its compatibility with Windows appears, select [Yes] to continue the installation procedure.

7 Install the ChipSet driver.

1. Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Execute the following command on the ServerStart CD-ROM.
[CD-ROM drive] :\DRIVERS\ChipSet\Intel\E8501\infinst_autol.exe
The installation wizard starts up.
3. Click [Next]. Follow instructions in the window to perform installation.
4. When the "Intel(R) Chipset Software Installation Utility is complete." message appears, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

8 Install the Graphic driver.

1. Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Execute the following command on the CD-ROM.
[CD-ROM drive] :\DRIVERS\VIDEO\Radeon\Setup.exe
The installation wizard starts up.
3. Click [Next]. Follow the instructions in the window to perform installation.
4. When the installation is completed, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

9 Install the LAN driver.

Install the LAN driver using the driver disk created from the ServerStart CD-ROM. For more details, refer to "4.3 Installing the LAN Driver" (→pg.129).

10 Install the SAF-TE driver.

1. Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Click [Start] → [Administrative Tools] → [Computer Management].
3. Click [Device Manager].
4. Double-click [TOSHIBA SAF-TE SCSI Processor Device] under [System devices].
The properties window appears.
5. Click the [Driver] tab and click [Update Driver].
The "Device Driver Upgrade Wizard" window appears.
6. Check [No, not this time] and click [Next].
7. Click [Next].
8. Select [Install from a list or specific location (Advanced)] and click [Next].
9. Click [Don't search. I will choose the driver to install] and click [Next].
10. Select [FSC SCSI Termination Module] and click [Next].
Installation starts. When it is completed, a completion message appears.
11. Click [Finish].
12. Click [Close] to close the properties window.

11 Installing high reliability tools.

To ensure stable server operation, refer to "Chapter 6 High Reliability Tools" (→pg.175) and install high reliability tools.

The installation of Windows Server 2003 x64 has completed.

● Before Starting Operation

After OS installation, refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform the necessary procedures.

4.2.2 Installing Windows Server 2003

POINT

- ▶ For details on the OS settings, refer to the following URL.
<http://www.microsoft.com/technet/prodtechnol/exchange/2003/Library/default.msp>

1 Create driver disks.

Prepare necessary drivers before installing Windows Server 2003.

Some drivers are created from the ServerStart CD-ROM. For how to create driver disks, refer to "4.1 Creating Driver Disks" (→pg.114).

2 Turned on the server and configure RAID. If you do not configure RAID, proceed to step 3.

Turn on the server to display the following message and press the [Ctrl] + [H] key to start up WebBIOS.

```
Press <Ctrl><H> for WebBIOS
```

The array system is configured by using WebBIOS. For more details, refer to "Onboard SCSI RAID User's Guide".

Turn off the server after configuring the array system.

3 Insert the Windows Server 2003 CD-ROM.

Turn on the server and insert the Windows Server 2003 CD-ROM immediately into the CD-ROM drive. Check there are no floppy disks in the floppy disk drive. When the active area is specified on the hard disk, the following message appears.

```
Press any key to boot from CD....
```

Pressing any key while this message is displayed boots the system from the CD-ROM.

4 The [Windows Server 2003 Setup] window appears.

Immediately, the following message appears at the bottom of the window. Press the [F6] key.

```
Press F6 if you need to install a third party
SCSI or RAID driver ...
```

IMPORTANT

- ▶ This message will be displayed for a short time after the setup window (blue screen) appears. Press the [F6] key immediately after the window turns blue.

5 Install the Drivers manually.

1. When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drives,
or special disk controllers for use with Windows,
including those for which you have a device
support disk from a mass storage device
manufacturer, press S.
```

2. When the "Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A:" message appears, insert the driver disk created from the ServerStart CD-ROM and press the [Enter] key.

The following message appears.

```
You have chosen to configure a SCSI Adapter for use with
Windows, using a device support disk provided by an
adapter manufacturer.
Select the SCSI Adapter you want from the following list,
or press ESC to return to the
previous screen.
```

3. Select following item and press the [Enter] key.

```
LSI MEGARAID Products for Windows 2003 (x86)
```

4. When the following message appears, press the [S] key.

```
The driver you provided seems to be newer than the Win-
dows default driver.
```

6 Follow the instructions from the setup program to continue the installation procedure.

If a message indicating that the driver has not passed Windows Logo testing to verify its compatibility with Windows appears, select [Yes] to continue the installation procedure.

7 Apply Windows Server 2003 Service Pack.

For details, refer to the description in the window.

8 Install the Chipset driver.

1. Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Execute the following command on the ServerStart CD-ROM.
[CD-ROM drive] : \DRIVERS\ChipSet\Intel\E8501\infinst_autol.exe
The installation wizard starts up.
3. Click [Next]. Follow instructions in the window to perform installation.
4. When the "Intel(R) Chipset Software Installation Utility is complete." message appears, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

9 Install the Graphic driver.

1. Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Execute the following command on the CD-ROM.
[CD-ROM drive] \DRIVERS\VIDEO\Radeon\Setup.exe
The installation wizard starts up.
3. Click [Next]. Follow the instructions in the window to perform installation.
4. When the installation is completed, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

10 Install the LAN driver.

Install the LAN driver using the driver disk created from the ServerStart CD-ROM. For more details, refer to "4.3 Installing the LAN Driver" (→pg.129).

11 Install the SAF-TE driver.

1. Insert the ServerStart Disc1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Click [Start] → [Administrative Tools] → [Computer Management].
3. Click [Device Manager].
4. Double-click [TOSHIBA SAF-TE SCSI Processor Device] under [System devices].
The properties window appears.
5. Click the [Driver] tab and click [Update Driver].
The "Hardware Update Wizard" window appears.
6. Click [Next].
7. Select [Install from a list or Specific location (Advance)] and click [Next].
8. Select [Don't search. I will choose the driver to install] and click [Next].
9. Select [FSC SCSI Termination Module] and click [Next].
Installation starts. When it is completed, a completion message appears.
10. Click [Finish].
11. Click [Close] to close the properties window.

12 Installing high reliability tools.

To ensure stable server operation, refer to "Chapter 6 High Reliability Tools" (→pg.175) and install high reliability tools.

The installation of Windows Server 2003 has completed.

● **Before Starting Operation**

After OS installation, refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform the necessary procedures.

4.2.3 Installing Windows 2000 Server

1 Create driver disks.

Prepare necessary drivers before installing Windows 2000 Server.

Some drivers used with Windows 2000 Server are created from the ServerStart CD-ROM. For how to create driver disks, refer to "4.1 Creating Driver Disks" (→pg.114).

2 Turned on the server and configure RAID. If you do not configure RAID, proceed to step 3.

Turn on the server to display the following message and press the [Ctrl] + [H] key to start up WebBIOS.

```
Press <Ctrl><H> for WebBIOS
```

The array system is configured by using WebBIOS. For more details, refer to "Onboard SCSI RAID User's Guide".

Turn off the server after configuring the array system.

3 Insert the Windows 2000 Server CD-ROM.

Turn on the server and insert the Windows 2000 Server CD-ROM immediately into the CD-ROM drive. Check there are no floppy disks in the floppy disk drive. When the active area is specified on the hard disk, the following message appears.

```
Press any key to boot from CD...
```

Pressing any key while this message is displayed boots the system from the CD-ROM.

4 The [Windows 2000 Server Setup] window appears.

Immediately, the following message appears at the bottom of the window. Press the [F6] key.

```
Press F6 if you need to install a third party SCSI or RAID driver ...
```



- ▶ This message will be displayed for a short time after the setup window (blue screen) appears. Press the [F6] key immediately after the window turns blue.

5 Install the Drivers manually.

1. When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows 2000, including those for which you have a device support disk from a mass storage device manufacturer, press S.
```

- When the "Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A:" message appears, insert the driver disk created from the ServerStart CD-ROM and press the [Enter] key.

The following message appears.

```
You have chosen to configure a SCSI Adapter for use
with Windows 2000, using a device support disk
provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following
list, or press ESC to return to the previous screen.
```

- Select following item and press the [Enter] key.

```
LSI MEGARAID Products for Windows 2000
```

- Follow instructions in the window to perform installation.
When a message prompting you to insert a floppy disk appears, insert the proper driver disk and press the [Enter] key.

POINT

- ▶ Repeat these procedures to install a driver for another card.

- Follow the instructions from the setup program to continue the installation procedures.

IMPORTANT

Cautions on Restarting

- ▶ In the course of installation, a message appears to indicate that the setup program restarts. Wait until it restarts automatically.

- Install the ChipSet driver.

- Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
- Execute the following command on the ServerStart CD-ROM.
[CD-ROM drive] \DRIVERS\ChipSet\Intel\E8501\infinst_autol.exe
The installation wizard starts up.
- Click [Next]. Follow instructions in the window to perform installation.
- When the "Intel(R) Chipset Software Installation Utility is complete." message appears, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

- Install the LAN driver.

Install the LAN driver using the driver disk created from the ServerStart CD-ROM. For more details, refer to "4.3 Installing the LAN Driver" (→pg.129).

- Install the SAF-TE driver.

- Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
- Right-click the [My Computer] icon on the desktop and click [Manage] from the displayed menu.
- Click [Device Manager] from the displayed list.

4. Double-click [TOSHIBA SAF-TE SCSI Processor Device] under [System devices].
The properties window appears.
5. Click the [Driver] tab and click [Update Driver].
The "Upgrade Device Driver Wizard" window appears.
6. Click [Next].
7. Select [Display a list of known drivers for this device so that I can choose a specific] and click [Next].
8. Select [FSC SCSI Termination Module] and click [Next].
9. Click [Finish].
10. Click [Close] to close the properties window.

10 Install the Display driver.

1. Insert the ServerStart Disc 1 CD-ROM into the drive of the server.
When the ServerStart window appears, exit ServerStart.
2. Right-click the [My Computer] icon on the desktop and click [Manage] from the displayed menu.
3. Click [Device Manager] from the displayed list.
4. Double-click [Video Controller (VGA compatible)] under [Other Device].
The properties window appears.
5. Click the [Driver] tab and click [Update Driver].
The [Start Device Driver Upgrade] window appears.
6. Click [Next].
The [Install Hardware Device Driver] window appears.
7. Select [Search for a suitable driver for my device (Recommended)] and click [Next].
The [Identify Driver File] window appears.
8. Select [CD-ROM drive] in [Search location options] and click [Next].
9. When a message indicating that the driver has been found appears in the [Find Driver File] window, click [Next].
When the installation is completed, a completion message appears.
10. Click [Finish].
11. Click [Close] to close the properties window.
12. Eject the ServerStart CD-ROM from the CD-ROM drive and restart the system to make the settings effective.

11 Installing high reliability tools.

To ensure stable server operation, refer to "Chapter 6 High Reliability Tools" (→pg.175) and install high reliability tools.

The installation of Windows 2000 Server has completed.

● **Before Starting Operation**

After OS installation, refer to "Chapter 5 Operations after OS Installation" (→pg.137) and perform the necessary procedures.

4.2.4 Installing Linux

For the use of Linux, refer to the Fujitsu PRIMERGY website (<http://primergy.fujitsu.com>).

4.3 Installing the LAN Driver

This section explains the procedure for installing the driver.

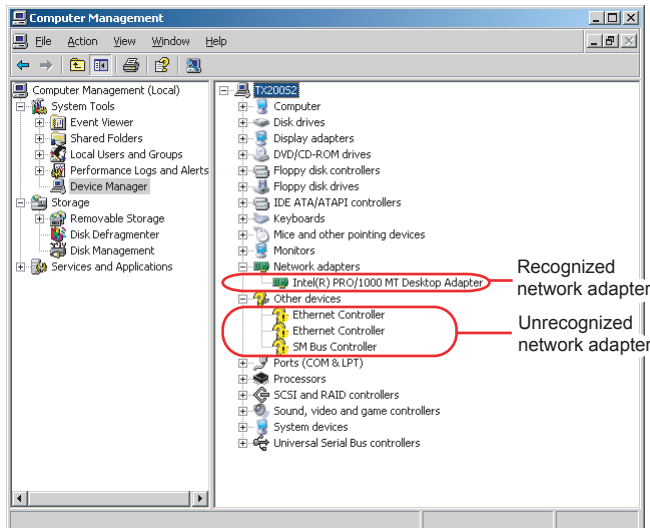
In addition to the case where the OS is installed manually, the driver must be installed when a LAN card is added.

■ Checking the LAN device after OS installation

For Windows Server 2003 x64 and Windows Server 2003, the LAN driver installation procedure differs depending on whether the network adapter was recognized during the OS installation. Check whether or not a recognized network adapter is present by the following procedures in advance.

- 1 Click [Start] → [Administrative Tools] → [Computer Management].
- 2 Click [Device Manager].

On the Device Manager, check if a recognized network adapter is present.
(Window example)



When a recognized network adapter is present, [Network adapters] appears.

● When a recognized network adapter is present

Perform Updating LAN Driver on the LAN device name under [Network adapters], then Installing the LAN Driver on [Ethernet controller] under [Other devices].

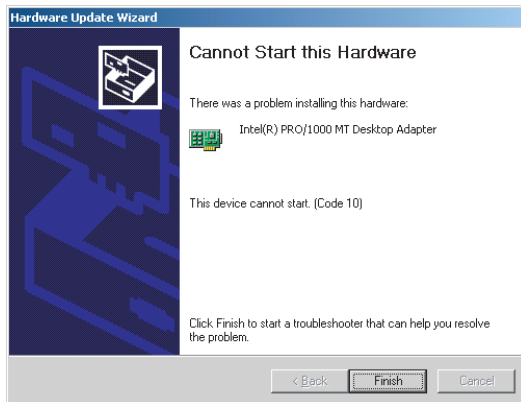
- **When a recognized network adapter is not present**

Perform Installing the LAN Driver on [Ethernet controller] under [Other devices].

POINT

When the LAN driver is installed to [Other devices] before updating the driver for the network adapter recognized immediately after the OS installation

- ▶ When driver installation starts, the following window appears.



Clicking [Finish] displays the [Help and Support Center] window. Click [X] to close the window. After installation, the "!" mark is displayed at the LAN device name in Device Manager. Device names are displayed properly when all LAN drivers are installed and the system is restarted.

4.3.1 Installing the LAN Driver (Windows Server 2003 x64)

LAN cards except PG-2861 are recognized as the network adapters when the OS is installed.

Perform "■ Updating the LAN Driver" (→pg.130) on all LAN device names under [Network adapters], and then perform "■ Installing the LAN Driver" (→pg.131) on the ethernet controllers under [Other devices].

POINT

- ▶ For the following LAN cards, the network adapters are recognized when the cards are mounted during OS installation.
 - PG-1862
 - PG-1882
 - PG-1892

■ Updating the LAN Driver

Perform the following procedures on all LAN device names under [Network adapters] in [Device Manager].

- 1** Click [Start] → [Administrative Tools] → [Computer Manager].
- 2** Click [Device Manager].

- 3 Double-click a LAN device name under [Network adapters].

POINT

- ▶ Names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
Onboard LAN (1000BASE-T)	Broadcom NetXtreme Gigabit Ethernet
PG-1862	Intel(R) PRO/1000 MT Dual Port Network Connection
PG-1882	Intel(R) PRO/1000 MF Server Adapter
PG-1892	Intel(R) PRO/1000 MT Server Adapter

- 4 Insert the driver disk created from the ServerStart CD-ROM into the server.
- 5 Click [Update Driver] in the [Driver] tab window.
The "Welcome to the Hardware Update Wizard" window appears.
- 6 Check [No, not this time] and click [Next].
- 7 Select [Install the software automatically (Recommended)] and click [Next].
The driver will be installed.
- 8 Click [Finish].
- 9 Click [Close] to close the properties window.

■ Installing the LAN Driver

Perform the following procedures on each [Ethernet controller] under [Other devices] in [Device Manager].

- 1 Insert the driver disk created from the ServerStart CD-ROM into the server.
- 2 Double-click [Ethernet controller] under [Other devices].
The properties window for the Ethernet controller appears.
- 3 Click [Reinstall Driver] in the [General] tab window.
The [Welcome to the Hardware Update Wizard] window appears.
- 4 Check [No, not this time] and click [Next].
- 5 Select [Install the software automatically (Recommended)] and click [Next].
The driver will be installed.
- 6 Click [Finish].
- 7 Click [Close] to close the properties window.

8 Remove the driver disk and restart the system.

POINT

- ▶ After LAN driver installation, names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
Onboard LAN (1000BASE-T)	Broadcom NetXtreme Gigabit Ethernet
PG-2861	Intel(R) PRO1000 PT Dual Port Server Adapter
PG-1862	Intel(R) PRO/1000 MT Dual Port Server Adapter
PG-1882	Intel(R) PRO/1000 MF Server Adapter
PG-1892	Intel(R) PRO/1000 MT Server Adapter

4.3.2 Installing the LAN Driver (Windows Server 2003)

The LAN card PG-1862 is recognized as the network adapters when the OS is installed.

Perform "■ Updating LAN Drivers" (→pg.132) on all LAN device names under [Network adapters], and then perform "■ Installing the LAN Driver" (→pg.133) on the ethernet controllers under [Other devices].

POINT

- ▶ The network adapter is recognized when the LAN card PG-1862 is mounted during OS installation.

■ Updating LAN Drivers

Perform the following procedures on all LAN device names under [Network adapters] in [Device Manager].

- 1 Double-click a LAN device name under [Network adapters].

POINT

- ▶ Names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
PG-1862	Intel(R) PRO/1000 MT Dual Port Network Connection

- 2 Insert the driver disk created from the ServerStart CD-ROM into the server.
- 3 Click [Update Driver] in the [Driver] tab window.
The [Welcome to the Hardware Update Wizard] window appears.
- 4 Select [Install the software automatically (Recommended)] and click [Next].
The driver will be installed.
- 5 Click [Finish].

- 6** Click [Close] to close the properties window.

■ Installing the LAN Driver

Perform the following procedures on each [Ethernet controller] under [Other devices] in [Device Manager].

- 1** Insert the driver disk created from the ServerStart CD-ROM into the server.
- 2** Double-click [Ethernet controller] under [Other devices].
The properties window for the Ethernet controller appears.
- 3** Click [Reinstall Driver] in the [General] tab window.
The [Device Driver Upgrade Wizard] window appears.
- 4** Select [Install the software automatically (Recommended)] and click [Next].
The driver will be installed.
- 5** Click [Finish].
- 6** Click [Close] to close the properties window.
- 7** Remove the driver disk and restart the system.

POINT

- ▶ After LAN driver installation, names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
Onboard LAN (1000BASE-T)	Broadcom NetXtreme Gigabit Ethernet
PG-2861	Intel(R) PRO/1000 PT Dual Port Server Adapter
PG-1862	Intel(R) PRO/1000 MT Dual Port Server Adapter
PG-1882	Intel(R) PRO/1000 MF Server Adapter
PG-1892	Intel(R) PRO/1000 MT Server Adapter

4.3.3 Installing the LAN Driver (Windows 2000 Server)

- 1** Insert the driver disk created from the ServerStart CD-ROM into the server.
- 2** Right-click the [My Computer] icon on the desktop and select [Manage] from the displayed menu.
- 3** Click [Device Manager].
As many [Ethernet controller] items as the installed LAN ports are displayed under [Other devices].
Double-click each [Ethernet controller] item and perform the following Steps 4 to 11 on all LAN ports.
- 4** Double-click [Ethernet controller] under [Other devices].
The properties window for the Ethernet controller appears.
- 5** Click [Reinstall Driver] in the [General] tab window.
The [Device Driver Upgrade Wizard] window appears.
- 6** Click [Next].
- 7** Select [Search for a suitable driver for my device (Recommended)] and click [Next].
The [Identify Driver File] window appears.
- 8** Select [Floppy disk drive] in [Search location options] and click [Next].
Detected drivers are displayed.
- 9** Click [Next].
Driver installation starts. When it is completed, a completion window appears.
- 10** Click [Finish].
- 11** Click [Close] to close the properties window.

 **POINT**

- ▶ When [Ethernet controller] items are displayed under [Other devices], perform the above Steps 4 to 11 on all [Ethernet controller] items.

12 Remove the driver disk and restart the system.

IMPORTANT

- ▶ When a LAN card is added, the following window may appear at system startup after addition of a LAN card. Perform the appropriate procedure according to the displayed window.
 - When the "New Hardware Detection Wizard" window appears
Insert the driver disk created from the ServerStart CD-ROM and perform Step 6 and subsequent steps in "Updating LAN Drivers".
 - When the [Insert Disk] window prompts you to insert the "Intel PRO Adapter CD-ROM or floppy disk" or "Intel® PRO/1000 Disk Driver".
Insert the driver disk created from the ServerStart CD-ROM and install the driver.
- ▶ The "Digital signature was not found" message may appear. If it appears, click [Yes] to continue the operations.
- ▶ When the [Overwriting the Files] window appears, normally do not overwrite the files (select [Do not overwrite all files]).

POINT

- ▶ After LAN driver installation, names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
Onboard LAN (1000BASE-T)	Broadcom NetXtreme Gigabit Ethernet
PG-2861	Intel(R) PRO/1000 PT Dual Port Server Adapter
PG-1862	Intel(R) PRO/1000 MT Dual Port Server Adapter
PG-1882	Intel(R) PRO/1000 MF Server Adapter
PG-1892	Intel(R) PRO/1000 MT Server Adapter

4.3.4 Latest Drivers

For the latest drivers, refer to the Fujitsu PRIMERGY website (<http://primergy.fujitsu.com>).

Chapter 5

Operations after OS Installation

5

This chapter explains the operations to be performed after OS installation. Be sure to perform these operations before operating the server.

5.1	Memory Dump/Paging File Setting	138
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5.1 Memory Dump/Paging File Setting

Before starting operating this server, configure the setting for obtaining memory dump.

● Memory Dump

If memory dump is set, debugging information will be automatically saved when a STOP error (fatal system error) occurs in the system. Using the saved memory dump, error cause can be analyzed.

If the amount of installed memory is large, pay special attention when setting the memory dump file. The settings for obtaining memory dump should be configured after installing the files to be used for operations (OS, applications, etc.).

5.1.1 How to Obtain Memory Dump for Windows Server 2003

Check the following settings before starting configuration to obtain memory dump.

■ Checking Hard Disk Free Space

To obtain memory dump, sufficient hard disk capacity is required for creating paging files and memory dump files.

The obtainable dump types and required hard disk capacity are as follows:

● Complete Memory (Full) Dump

When the system unexpectedly stops, contents of the whole system memory are recorded. The file is stored in the directory displayed in the [Dump file] box.

- Paging file: Installed physical memory + 11MB (Recommended: Installed physical memory x 1.5)
- Memory dump file: Same amount as installed physical memory



- ▶ Complete memory dump cannot be used on the computer in which the 2GB or more RAM is installed.

● Kernel Memory Dump

Information of only kernel memory space is recorded. The file is stored in the directory displayed in the [Dump file] box. Capacity required for kernel memory dump is as follows:

- Paging file: Depending on installed physical memory amount
 - For memory of 256 to 1,373MB - Installed physical memory x 1.5
 - For memory of 1,374MB or more - 32-bit system: 2GB + 16MB, 64-bit system: Installed physical memory + 128MB
- Memory dump file: Depending on the used amount of kernel-mode address space during STOP

● Small Memory Dump

Minimum amount of useful information for problem identification is recorded. If this option is specified, a new file is created each time the system unexpectedly stops.

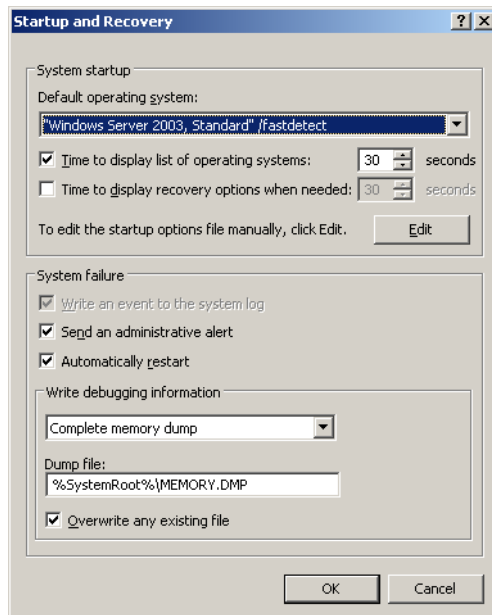
History of such files is stored in the directory displayed in [Small dump directory].

- Paging file: 2MB or more
- Memory dump file: 64KB or 128KB

■ Memory Dump File Setting

Set up the memory dump file according to the following procedures:

- 1** Log on to the server with administrator privileges.
- 2** Check free space of the drive where the memory dump file is to be stored.
Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.138).
If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.273).
- 3** Click [Start] → [Control Panel] → [System].
The [System Properties] window appears.
- 4** Click the [Advanced] tab and click [Settings] in [Startup and Recovery].
The [Startup and Recovery] window appears.



5 Set as follows:

1. In the [Write debugging information] section, select the memory dump file type.
 - Small memory dump (64KB)
Minimum information is recorded to the memory dump file.
Each time a fatal error occurs, a new file is created in the directory specified in [Small dump directory].
 - Kernel memory dump
Only kernel memory is recorded to the memory dump file.
 - Complete memory dump (Recommended)
The whole system memory information is recorded to the memory dump file.
2. In [Dump file] or [Small dump directory], specify the directory to save the memory dump file, with its full path.
In case of kernel memory dump or complete memory dump, if [Overwrite any existing file] is checked, debugging information is overwritten to the specified file every time.

6 Click [OK] to close the [Startup and Recovery] window.

7 Click [OK] to close the [System Properties] window.

8 Restart the system.

The setting is enabled after the system is restarted.

■ Paging File Setting

Set up the paging file according to the following procedures:

1 Log on to the server with administrator privileges.

2 Check free space of the drive where the system is installed.

Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.138).

If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.273).

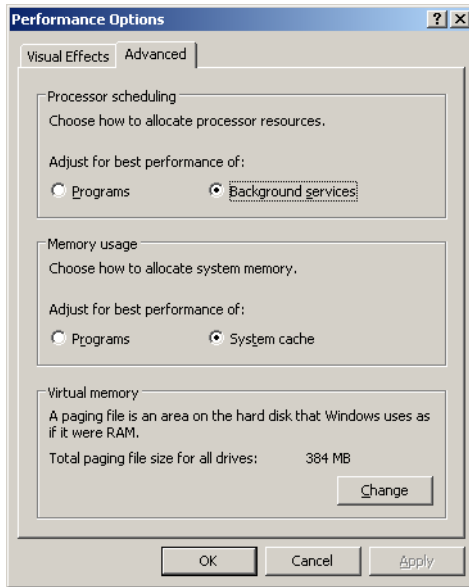
3 Click [Start] → [Control Panel] → [System].

The [System Properties] window appears.

4 Click the [Advanced] tab and click [Settings] in [Performance].

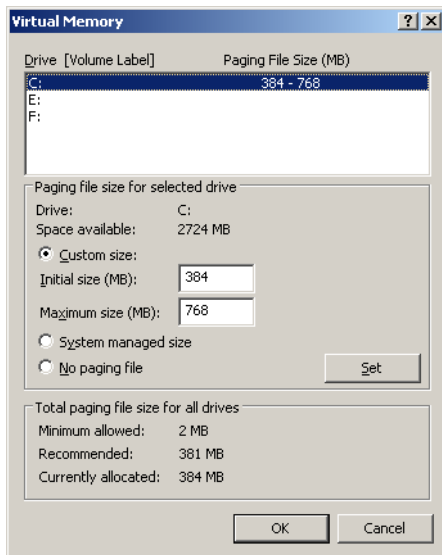
The [Performance Options] window appears.

- 5** Click the [Advanced] tab.



- 6** Click [Change] in the [Virtual memory] section.

The [Virtual Memory] window appears.



- 7** Specify the drive where the paging file is to be created.

In [Drive], select the drive where the system is installed.

The selected drive is displayed in [Drive] in [Paging file size for selected drive].

8 Select [Custom size] and enter a value in [Initial size].

The value depends on the type of the set dump file.

Specify a value larger than the value shown in [Recommended] in [Total paging file size for all drives].



- ▶ When a smaller value is specified for the paging file size, performance may be affected. For maximum system efficiency, be sure to set [Initial size] with a value larger than the [Recommended] size described in [Total paging file size for all drives]. The recommended size is total memory installed in the system x 1.5. However, if a program consuming a large amount of memory is regularly used, set a larger size as required.

9 Enter a value in [Maximum size].

Specify a value larger than the [Initial size].

10 Save the settings.

Click [Set] in the [Paging file size for selected drive] section.

The settings are saved, and the value specified is displayed in [Paging File Size] of [Drive].

11 Click [OK] to close the [Virtual Memory] window.

12 Click [OK] to close the [Performance Options] window.

13 Click [OK] to close the [System Properties] window.

14 Restart the system.

The setting is enabled after the system is restarted.

5.1.2 How to Obtain Memory Dump for Windows 2000 Server

Check the following settings before starting configuration to obtain memory dump.

■ Checking Hard Disk Free Space

Once memory dump is obtained, a file containing contents of the whole physical memory installed in the system is created. Before storing the dump file, confirm that there is sufficient free space in the hard disk.

The obtainable dump types and required hard disk capacity are as follows:

● Complete Memory (Full) Dump

When the system unexpectedly stops, contents of the whole system memory are recorded. If this option is selected, space to retain the paging file as large as the whole physical memory × 1.3 is required in the boot volume.

- Included information
Common header, all virtual address pages that are not paged out during STOP
- Required size
Installed physical memory × 1.3



- ▶ Complete memory dump cannot be used on the computer in which the 2GB or more RAM is installed.

● Kernel Memory Dump

Information of only kernel memory space is recorded. When the system unexpectedly stops, the process that records information to the log file is speeded up. According to the amount of memory installed in the server, available area of 50 to 800MB is required for the paging file in the boot volume.

- Included information
Common header, summary dump header (complete memory dump) - (user process space page) - (cache region page) - (unused pool region page)
- Required size
Depending on the used amount of kernel-mode address space during STOP

● Small Memory Dump

Minimum amount of useful information for problem identification is recorded. In this option, a paging file of at least 2MB is required in the boot volume. Also, a new file is created each time the system unexpectedly stops.

History of such files is stored in the directory displayed in [Small dump directory] (usually, C:\winnt\minidump).

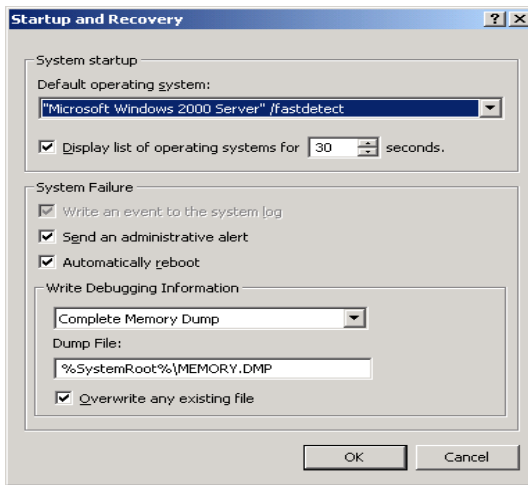
- Included information
Common header, minidump header, kernel module, memory information, processor information, process information, thread information, stuck page, unloaded module information
- Required size
2MB or more

■ Memory Dump File Setting

Set up the memory dump file according to the following procedures:

- 1** Log on to the server with administrator privileges.
- 2** Check free space of the drive where the memory dump file is to be stored.
Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.142).
If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.273).
- 3** Click [Start] → [Settings] → [Control Panel].
- 4** Double-click the [System] icon.
The [System Properties] window appears.

- 5** Click the [Advanced] tab and click [Startup and Recovery].
The [Startup and Recovery] window appears.



- 6** Set as follows:
1. In the [Write debugging information] section, select the memory dump file type.
 - Small memory dump (2MB or more)
Minimum information is recorded to the memory dump file.
Each time a fatal error occurs, a new file is created in the directory specified in [Small dump directory].
 - Kernel memory dump
Only kernel memory is recorded to the memory dump file.
 - Complete memory dump (Recommended)
The whole system memory information is recorded to the memory dump file.
 2. In [Dump File] or [Small dump directory], specify the directory to save the memory dump file, with its full path.
In case of kernel memory dump or complete memory dump, if [Overwrite any existing file] is checked, debugging information is overwritten to the specified file every time.

- 7** Click [OK] to close the [Startup and Recovery] window.

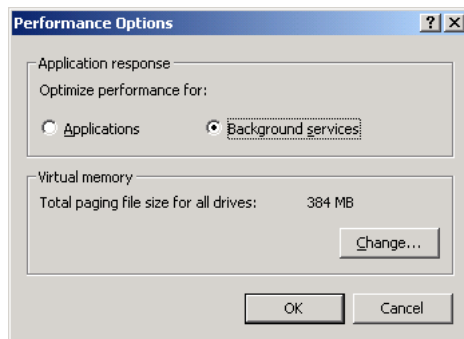
- 8** Click [OK] to close the [System Properties] window.

- 9** Restart the system.
The setting is enabled after the system is restarted.

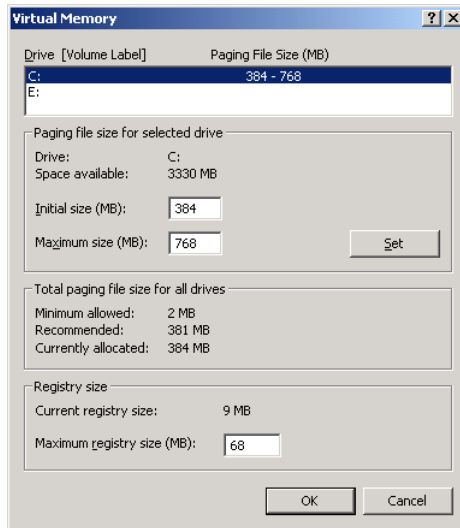
■ Paging File Setting


Set up the paging file according to the following procedures:

- 1** Log on to the server with administrator privileges.
- 2** Check free space of the drive where the system is installed.
Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.142). If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.273).
- 3** Click [Start] → [Settings] → [Control Panel].
- 4** Double-click the [System] icon.
The [System Properties] window appears.
- 5** Click the [Advanced] tab and click [Performance Options].
The [Performance Options] window appears.



- 6** Click [Change] in the [Virtual memory] section.
The [Virtual Memory] window appears.



- 7** Specify the drive where the paging file is to be created.
In [Drive], select the drive where the system is installed.
The selected drive is displayed in [Drive] in [Paging file size for selected drive].
- 8** Specify the [Initial size].
The value depends on the type of the set dump file.
Specify a value larger than the value shown in [Recommended] in [Total paging file size for all drives].
-  **IMPORTANT**
- ▶ When a smaller value is specified for the paging file size, performance may be affected. We recommend to specify the paging file size larger than the recommended value.
- 9** Specify the [Maximum size].
Specify a value larger than the [Initial size].
- 10** Save the settings.
Click [Set] in the [Paging file size for selected drive] section.
The settings are saved, and the value specified is displayed in [Paging File Size] of [Drive].
- 11** Click [OK] to close the [Virtual Memory] window.
- 12** Click [OK] to close the [Performance Options] window.
- 13** Click [OK] to close the [System Properties] window.
- 14** Restart the system.
The setting is enabled after the system is restarted.

5.2 Creating a Disk for System Recovery

If the installation of the OS was performed manually, create a system recovery disk.

POINT

- ▶ If the system file, system configuration or environment setting change at startup, etc., are damaged, such data can be reconstructed using the recovery information stored in the created system recovery disk.
- ▶ To create a recovery disk, you need an unused formatted floppy disk. Prepare it in advance.

5.2.1 Creating the Automated System Recovery (ASR) Set for Windows Server 2003

After setting up Windows Server 2003, create a system recovery set. To do this, you need an unused formatted floppy disk and a medium to store back up files.

- 1** Click [Start] → [All Programs] → [Accessories] → [System Tool] → [Backup].
The [Backup or Recovery Wizard] window appears.
- 2** Click [Next].
The [Backup or Recovery] window appears.
- 3** Select [Create a backup of files and settings], and then click [Next].
The [Items to Create Backups] window appears
- 4** Select [All the information in this computer], and then click [Next].
The [Backup Type, Destination and Name of the Backup File] window appears.
- 5** Specify name and destination of the backup file, and then click [Next].
The [Backup or Recovery Wizard Complete] window appears.
- 6** Click [Finish].
Backup process starts.
- 7** If a message prompting you to insert a floppy disk appears, insert the floppy disk and click [OK].
Automated system recovery disk is created.

- 8** When the process is completed, a message appears. Eject the floppy disk according to the message and put a label on it.
Label Example: "Windows Automated System Recovery Disk: Backup.bkf, Created at 12:00 04/01/2003"
- 9** Click [OK] to exit [Backup Utility].
- 10** Click [Close] to close the [Backup Progress] window.
An automated system recovery set has been created.
Store the automated system recovery set just created in a secure location.

5.2.2 Creating a System Recovery Disk for Windows 2000 Server

After setting up Windows 2000 Server, create a system recovery disk. To do this, you need an unused formatted floppy disk.

- 1** Put a label showing "Windows 2000 system recovery disk" onto a floppy disk and insert it into the floppy disk drive.
- 2** Click [Start] → [Programs] → [Accessories] → [System Tools] → [Backup].
The backup window appears.
- 3** Click the [Wizard] tab and click [System Recovery Disk].
Create a system recovery disk by following the window instructions.

5.3 Storing the System Configuration Information

Before starting operations, store the configuration information of the BIOS Setup Utility. By storing this information, the system can be recovered with the stored information in case of a system failure (such as when the information is deleted due to the drain of the built-in battery). Use Server Management Tools for storing and recovering the system configuration information.



- ▶ Since the system configuration information is significant in maintaining the server, be sure to store the BIOS information after the following operations:
 - When the information is changed with the BIOS Setup Utility
 - When the hardware configuration of this server is changed (e.g. CPU, memory, baseboard or expansion card is added/removed or changed)
- ▶ As the stored system configuration information will be used during maintenance, etc., send it to your maintenance engineer.

■ Preparation for Using Server Management Tools

Before using Server Management Tools, prepare the "Server Management Tools" CD-ROM and "Server Management Tools work FD" disk supplied with the server at hand.

■ Cautions

- Server Management Tools are for this server only. Do not use those tools on other systems. Otherwise, the system may be corrupted.
- Only the information that is configured with the BIOS Setup Utility can be stored/recovered with Server Management Tools. The BIOS information in internal SCSI devices or expansion cards cannot be stored/recovered.
- Make sure to start up the server with the "Server Management Tools" CD-ROM before running Server Management Tools. Do not run Server Management Tools on the server started from the hard disk or by the other CD-ROM. Otherwise, the system may be corrupted.
- Do not eject a disk while the CD-ROM access LED or floppy disk access LED is on. Such an action may lead not only to corruption of the disk data but also an unstable state of the system.
- If an error message appears while running Server Management Tools, respond to the message according to "■ Server Management Tools Error Messages" (→pg.269).

5.3.1 How to Store the BIOS Information

Store the BIOS information according to the following procedures.

IMPORTANT

- ▶ Before starting the operation, if the "OS Boot Monitoring" function of ServerView is enabled, disable it (it is disabled by default).

If you start up the system while the "OS Boot Monitoring" function remains effective, the operation of the server may become unpredictable at such times as an abrupt power interruption or restart.

If it is necessary to operate the server with the "OS Boot Monitoring" function enabled, enable the function after storing the BIOS information. For details of ServerView, refer to "ServerView User's Guide".

- 1** Turn on the server, and insert the "Server Management Tools" CD-ROM into the CD-ROM drive and the "Server Management Tools work FD" disk into the floppy disk drive.
- 2** When the DOS prompt window appears, enter the following command and press the [Enter] key.

```
C:\cd smtool
```

```
C:\SMTOOL\>biossave.bat
```

IMPORTANT

- ▶ If storing has already been performed with Server Management Tools, the stored file must exist in the floppy disk. In this case, overwriting the file may lead to incompleteness of BIOS information recovery. Move the file to another floppy disk, rename the file or delete it by executing the following command.

```
A:\SMTOOL\>deldat.bat [Enter]
```

- 3** If the BIOS information is stored correctly, the following message appears.

```
Success!
```

5.3.2 How to Recover the BIOS Information

If the information configured with the BIOS Setup Utility was deleted due to a drain of the built-in server battery, etc., restore the BIOS information according to the following procedures.



- ▶ Do not turn off the server during a program run.
- ▶ Before starting up the system by inserting the "Server Management Tools" CD-ROM, check that the "OS Boot Monitoring" function of ServerView is disabled (it is disabled by default).
If you start up the system while the "OS Boot Monitoring" function remains effective, the operation of the server may become unpredictable at such times as an abrupt power interruption or restart. If the server is operated with the "OS Boot Monitoring" function enabled, enable the function again before resuming operation. For details of ServerView, refer to "ServerView User's Guide".

1 Turn on the server, and insert the "Server Management Tools" CD-ROM into the CD-ROM drive and the "Server Management Tools work FD" disk into the floppy disk drive.

2 When the DOS prompt window appears, enter the following command and press the [Enter] key.

```
C:\cd smtool
C:\ SMTTOOL\>biosrest.bat
```

3 If the BIOS information is restored correctly, the following message appears.

Success!

4 The BIOS information will be enabled after the next system restart. Restart the server.

Perform Step 1 to display the DOS prompt window. The restoration procedure has been completed. The server can now be turned off safely.

5.4 Creating Maintenance Tools

This section explains how to create tools for maintaining the server. Maintenance tools are created with the FloppyBuilder function of ServerStart.

With the FloppyBuilder function of ServerStart, you can create the following tool:

- DOS floppy disks

The FloppyBuilder can be used under environments such as:

- the ServerStart system started on a client computer (recommended)
- the system started on the server using the ServerStart CD-ROM

POINT

- ▶ When creating the tools on a client computer, it is necessary to install ServerStart on the client computer beforehand. Install it according to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.55).
If ServerStart of a different version is installed in the computer, make sure to uninstall the ServerStart. Then perform installation again. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

5.4.1 Creating a DOS Floppy Disk

For DOS data stored into the floppy disk, refer to the file in the following folder of the ServerStart CD-ROM.

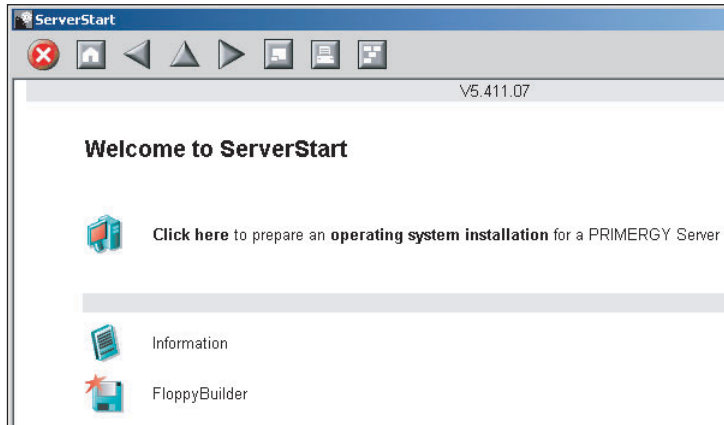
[CD-ROM drive] \FreeDOS

To create a DOS floppy disk, you need an unused floppy disk. Prepare it in advance.

■ Starting ServerStart

● For Creation on a Client Computer

- 1** Insert the ServerStart Disc 1 CD-ROM into the client computer.
- 2** Click [Start] → [Programs] → [Fujitsu Siemens ServerStart] → [ServerStart(Start from CD)].
ServerStart starts up and the [Welcome to ServerStart] window appears.



● For Creation on the Server

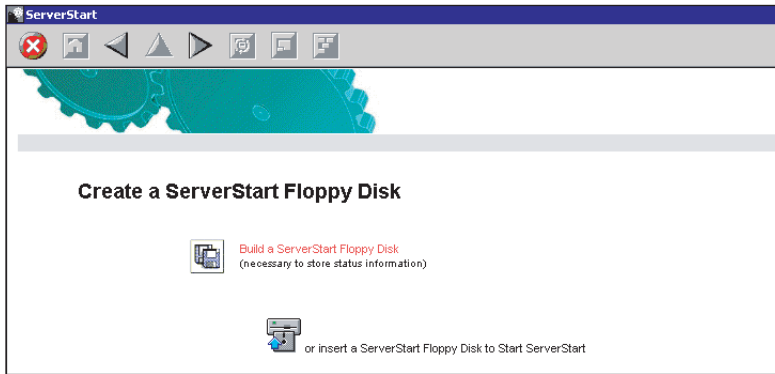
- 1** Turn on the server and insert the ServerStart Disc1 CD-ROM immediately after that.
ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.
- 2** Insert the attached "ServerStart floppy disk" into the server's floppy disk drive.
Then make sure "Removable media" and "A:" are selected and click [Create].
A network setup window for remote installation appears.

POINT

- ▶ If a configuration file already exists in the ServerStart floppy disk and [OK] is clicked without clicking [Create], the [ServerStart Unattended Mode] window appears. Make sure to click [Exit]. The [Welcome to ServerStart] window appears.
If [Start] is clicked in the [ServerStart Unattended Mode] window, the installation of the server will start and all disk contents will be deleted.

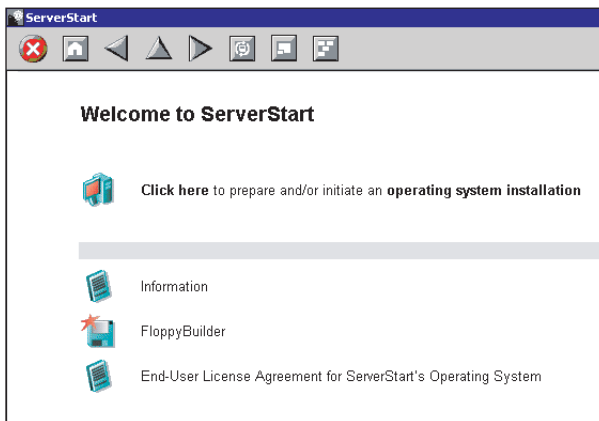
3 Click [OK].

The [Initializing ServerStart] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.



4 Click [or Insert a ServerStart Floppy Disk to Start ServerStart].

The [Welcome to ServerStart] window appears.



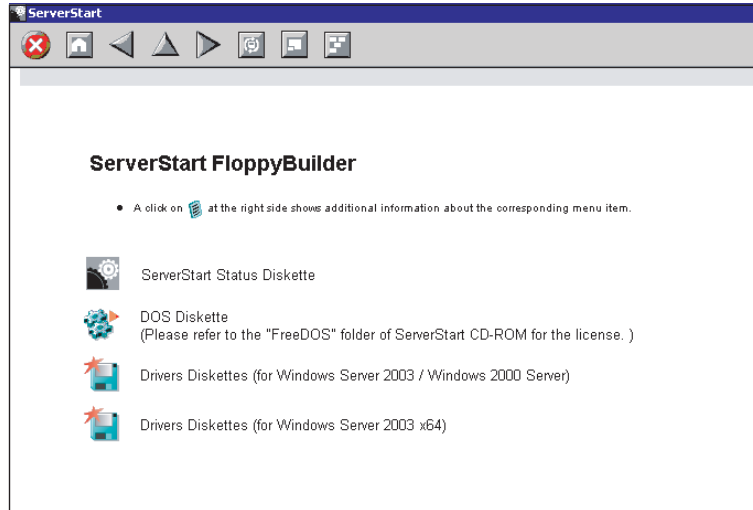
5 Eject the ServerStart floppy disk.

■ Creating a DOS Floppy Disk

Start up ServerStart and confirm that the [Welcome to ServerStart] window is displayed.

1 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.



2 Click [DOS Diskette].

Insert the prepared floppy disk by following the message.

3 Perform the subsequent operations according to the messages on the window.

The floppy disk will be formatted automatically and file copying will start.

The DOS floppy disk will be created automatically.

When a message appears indicating that the disk is created, click [OK] and eject the disk.

5.5 Notes Before Operating the Server

This section explains the settings required before starting to operate the server.

POINT

- ▶ For details on the settings, refer to the following URL.
<http://www.microsoft.com/technet/prodtechnol/exchange/2003/Library/default.mspx>
- If a LAN card was added, install a driver according to "4.3 Installing the LAN Driver" (→pg.129).
- When connecting a SCSI optional device (such as a hard disk cabinet or DAT), connect it according to "Chapter 7 Installing Internal Options" (→pg.181).
- For the settings for the installed applications supplied with the product, refer to the manuals of each application.

5.5.1 Applying the Hotfix

A hotfix needs to be applied in order to operate the server. For the hotfix, use the "ServerStart Disc 1 CD-ROM" supplied with the server.

■ Installing Windows 2000 Server

To install Windows 2000 Server directly, you have to use Service pack 4 integrated OS media or install Service Pack 4 or newer Service Pack.

And please install hotfix module named KB904374 after OS installation.

Please find out hotfix module of your language version from the following folder on ServerStart CD.

[CD-ROM drive]: \HOTFIX\W2K\

5.5.2 Auto-run Function from CD-ROM Drives

Perform the following procedures to change the settings of the auto-run function from the CD-ROM drives after server installation:

- 1** Make the registry editable, and change the value of AutoRun of the following registry key:
 HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\CDRom
 Set the value of Autorun to "1" to enable auto-run, and set the value to "0" to disable auto-run.
- 2** Restart the system.
 The setting is enabled after the system is restarted.

5.5.3 Drive Letter Assignment in Expert Mode

In expert mode, you cannot specify a drive letter to a particular partition arbitrarily. Drive letters specified with Disk Manager in expert mode will be sequentially assigned from the first partition with "C, D, E..." when installation is completed, and an unused drive letter will be assigned to the CD-ROM drive.

To change the drive letter, perform the following procedures after installation.



- ▶ You cannot change the drive letters for the system and boot drive.

■ For Windows Server 2003

- 1** Click [Start] → [Administrative Tools] → [Computer Management].
- 2** Click [Disk Management].
- 3** Right-click the partition to change the letter and click [Change Drive Letter and Path].
 The [Change Drive Letter and Path] window appears.
- 4** Click [Edit].
 The [Change Drive Letter or Path] window appears.
- 5** Change the drive letter.

■ For Windows 2000 Server

- 1** Right-click [My Computer] icon on the desktop and select [Manage].
- 2** Click [Disk Management].
- 3** Right-click the partition to change the letter and select [Change Drive Letter and Path].
The [Change Drive Letter and Path] window appears.
- 4** Click [Edit].
The [Change Drive Letter or Path] window appears.
- 5** Change the drive letter.

5.5.4 Notes on Advanced Uninterruptible Power Supply (UPS)

Note the following points when using an advanced uninterruptible power supply (referred to as UPS afterward).

■ UPS Shutdown Time Setting

Specify enough time for the UPS power-off time (time from the shutdown direction to the actual power-off). If this time is set insufficiently, the power will be cut off before system shutdown, which may result in destruction of data. For more details, refer to the manuals for UPS and UPS management software.

■ Power Supply Control by UPS

Settings are required to turn on the server automatically at power recovery or during scheduled operation using the UPS management software (PowerChute Network Shutdown, PowerChute Business Edition). Use ServerView or Server Management Tools to configure the setting.

● Configuration Using ServerView

For details about ServerView, refer to the "ServerView User's Guide". This setting can be found in "3.2.4 Serious Error Handling (ASR)".

- 1** Click [Start] → [Programs] → [Fujitsu ServerView] → [ServerView] to start ServerView.
- 2** Click [ServerView] → [Action].
The [ASR properties] window appears.

3 Click the [Restart Settings] tab.

Configure the settings as follows, depending on the OS.

For Windows Server 2003/Linux

Set [Actions after Power Failure] to [Restore the server].

For Windows 2000 Server

Set [Actions after Power Failure] to [Restore the state before power failure].

● Configuration Using Server Management Tools**1** Turn on the server and insert the "Server Management Tools" CD-ROM into the CD-ROM drive.**2** When the DOS prompt window appears, enter the following command and press the [Enter] key.

```
C:\>cd smtool
C:\>ipmiview.exe
```

The Server Management Tools main menu appears.

3 Use the [↑] and [↓] keys to select [FSC/System Specific Function], and press the [Enter] key.

The [FSC/System Specific Function] menu appears.

4 Use the [↑] and [↓] keys to select [System Management Control Settings], and press the [Enter] key.

The [Server Management Control Settings] menu appears.

5 Configure the settings as follows, depending on the OS.For Windows Server 2003/Linux

Set the [RestartOnAC/PowerFail] value to [2 (Always On)].

For Windows 2000 Server

Set the [RestartOnAC/PowerFail] value to [0 (as before)].

5.5.5 Turning the Power on via a LAN

You can turn the power on the server from a client (via a LAN) by utilizing the Wakeup on LAN (WOL) function.

IMPORTANT

- ▶ Be sure to install ServerView to control the power supply via a LAN.

POINT

- ▶ When the power cable is disconnected from the server or the server is powered off due to power interruption, restart the server. Unless the server is restarted, the WOL function will be disabled.
- ▶ Only onboard LAN supports WOL function on this server. To control the power supply via a LAN, be sure to connect to the onboard LAN and set the onboard LAN adapter bind to "1".

■ BIOS Setup Utility Setting

When power management is performed via a LAN, configure the settings as follows using the BIOS Setup Utility. This is set to "Enabled" by default.

- 1** Start the BIOS Setup Utility.
→"8.3.1 Starting and Exiting the BIOS Setup Utility" (pg.243)
- 2** Set [WOL Resume from S5] of the [Server] menu to [Enabled].
- 3** Press the [F10] key.
The confirmation message whether to save the changes is displayed.
- 4** Select [Yes] and press the [Enter] key.

POINT

- ▶ To start up the server via a LAN, refer to "● Performing Remote Installation" (→pg.48).

5.5.6 Other Notes on Operation

■ Unnecessary Files

After OS installation is completed, folders named Runonce and Runonce 2 may be left in the drive where the OS is installed. Delete these folders since you do not need them for the system operation.

■ Notes on 24-hour Operation

● Automated System Operation

To provide an extra margin of safety against unintentional damage, introduce disaster-prevention measures in the office and keep disaster prevention personnel (such as a security guard or janitor) in the building.

● Unintentional Power-off Prevention

We recommend the installation of a special power supply device (such as a distribution board) to prevent unplanned power shut-offs.

5.6 LAN Driver Advanced Setup [BACS]

BACS is an integrated GUI application consisting of programs such as BASP (Broadcom Advanced Server Program) that provides the load balancing feature, etc., by teaming up multiple adapters. BACS is used in the following situations:

- Use the teaming (load balance) function between onboard LANs.
- Setup a VLAN using the onboard LAN
- Perform the other advanced setups of the onboard LAN

POINT

Use of Intel® PROSet

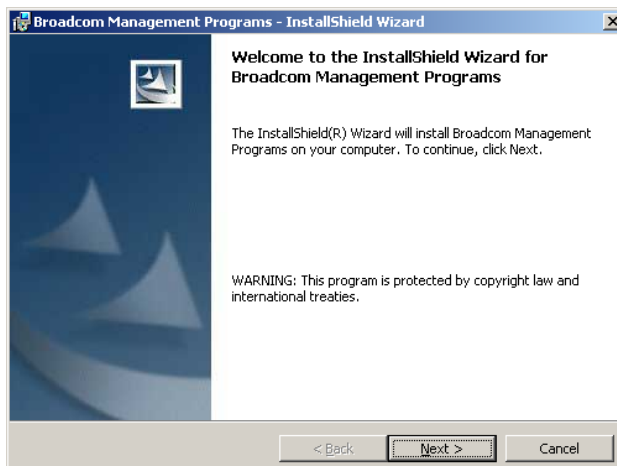
- ▶ Use Intel® PROSet (→pg.171) to perform the following advanced setups of a LAN card:
 - Use the Teaming function between LAN cards or between a LAN card and the onboard LAN
 - Setup a VLAN using a LAN card
 - Perform the other advanced setups of a LAN card

5.6.1 BACS Installation

If [Broadcom Management Programs] is not displayed in the [Control Panel], install BACS according to the following installation procedures:

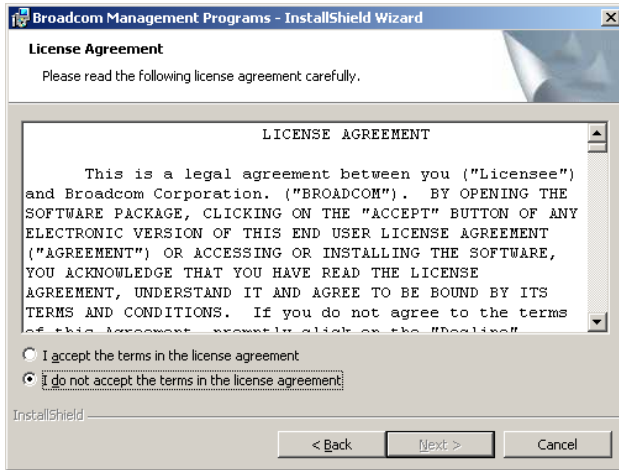
■ For Windows Server 2003 x64

- 1 Execute the following file contained in the ServerStart Disc 1 CD-ROM.
[CD-ROM drive]: \PROGRAMS\GENERAL\Broadcom\MgmtApps_x64\setup.exe
The installer starts up.



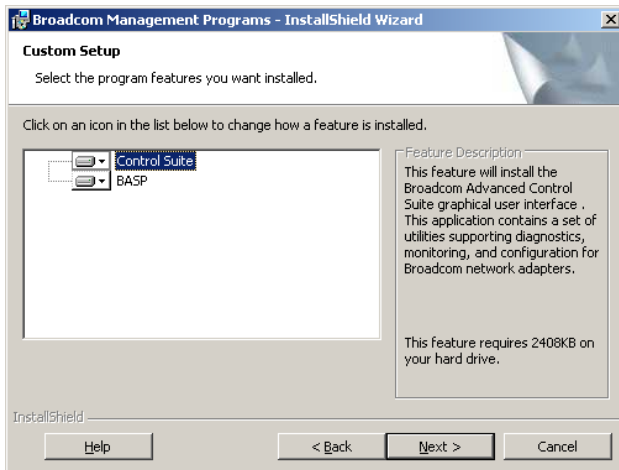
2 Click [Next].

License agreement window appears.



3 Click [I accept the terms in the license agreement] and click [Next].

Custom Set up window appears.



4 Click [Next].

Proceed the installation by following the window instruction.

■ For Windows Server 2003, Windows 2000 Server

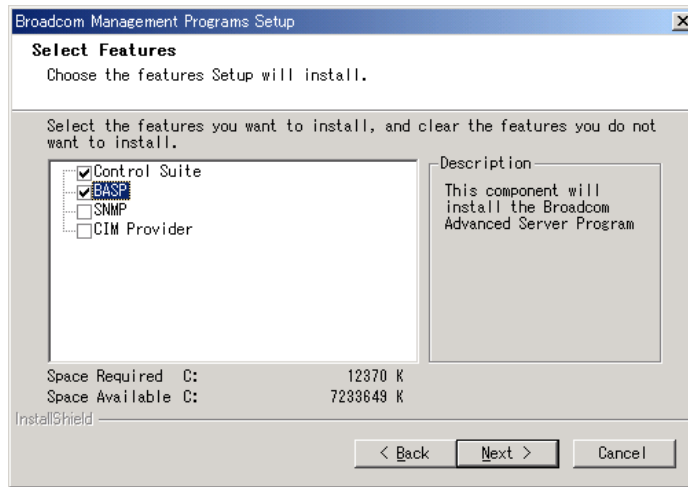
POINT

- ▶ If the OS was installed using ServerStart, "BACS" is already installed with the driver. If the OS was installed manually, BACS is not installed.

1 Execute the following file contained in the ServerStart Disc 1 CD-ROM.
[CD-ROM drive]: \PROGRAMS\GENERAL\Broadcom\MgmtApps\setup.exe
The installer starts up.

2 Proceed the installation by following the window instructions.

When the window below appears during the installation procedure, check [BASP] and click [Next].



5.6.2 Load Balance

Once a Windows Server 2003 or Windows 2000 Server Team is created, virtual adapters (BASP Virtual Adapter) will be created in the [Device Manager] and/or [Network and Dial-up Connections] of the system. Do not disable or delete a virtual adapter from the [Device Manager] or [Network and Dial-up Connections]. When deleting a virtual adapter, make sure to use BACS.

■ Load Balance Setup Procedure

1 Start up BACS. The procedure differs depending on the OS being used.

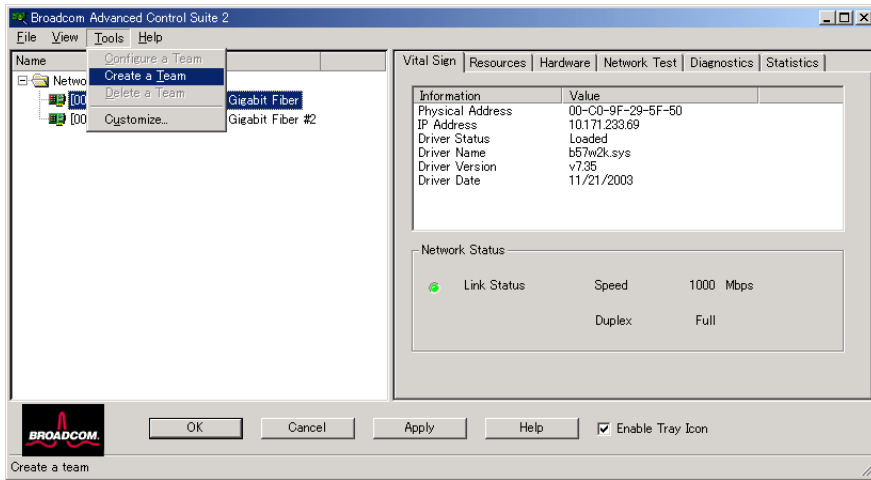
For Windows Server 2003

1. Click [Start] → [Control Panel] → [Broadcom Control Suite 2].

For Windows 2000 Server

1. Click [Start] → [Settings] → [Control Panel].
The [Control Panel] window appears.
2. Start up "Broadcom Control Suite 2".

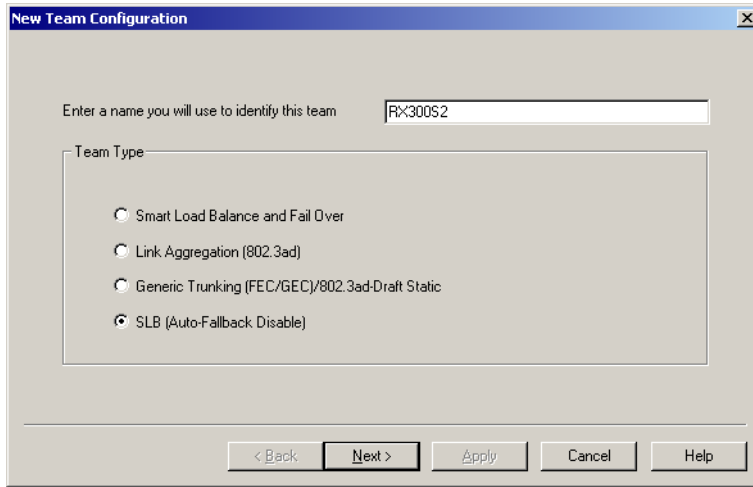
2 Click [Create a Team] from the [Tools] menu.



3 Click [Expert Mode] on the [Welcome to the Broadcom Teaming Wizard] window.

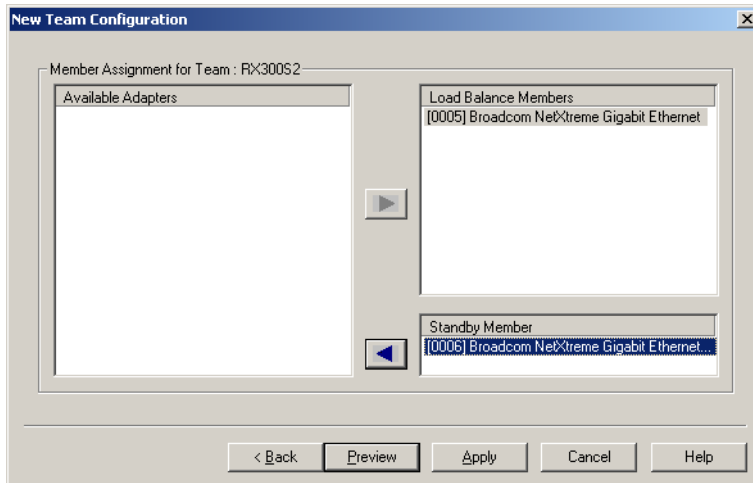


- 4** Specify [Name] and [Team Type] for the team in the [New Team Configuration] window.



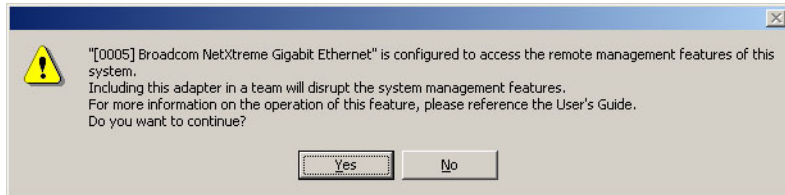
- ▶ Do not select [Link Aggregation (802.3ad)] for [Team Type].

- 5** Select an adapter to add to the created team from [Available adapters], click the [◀] and [▶] buttons, and move the adapter to [Load Balance Members] or [Standby Member].



POINT

- ▶ When adding adapter "[0005] Broadcom NetXtreme Gigabit Ethernet", the following message appears but click [Yes] and go to the next step. "[0005] Broadcom NetXtreme Gigabit Ethernet" (port LAN A) is connected to BMC (micro controller for server management) and can control power supply and other functions via a LAN. When a team is created, communication function with BMC is not inherited to other adapters.



6 Click [Apply] to apply the settings.

After the network is temporarily disconnected, a window is displayed. Click [Yes (Y)].
When continuing to VLAN settings, go to "5.6.3 VLAN Setup Procedure" (→pg.167).

5.6.3 VLAN Setup Procedure

- 1 Start up BACS. The procedure differs depending on the OS being used.

For Windows Server 2003

1. Click [Start] → [Control Panel] → [Broadcom Control Suite 2].

For Windows 2000 Server



1. Click [Start] → [Settings] → [Control Panel].

The [Control Panel] window appears.

2. Start up "Broadcom Control Suite 2".

- 2 Right-click a LAN adapter or the Team name of a Teamed Up adapter and click [Add VLAN] from the displayed menu.

POINT

- ▶ A LAN adapter is displayed with a  mark.
- ▶ The Team name of a Teamed Up adapter is displayed with a  mark.

- 3 Click [Expert Mode] on the [Welcome to the Broadcom Teaming Wizard] window.

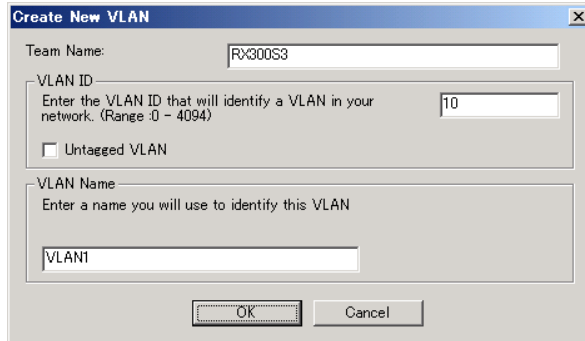


4 Specify [Team Name], [VLAN ID] and [VLAN Name] in the [Create New VLAN] window.

The [Team Name] is not displayed when the [Add VLAN] window is displayed.

The [VLAN ID] should be identical with the switch setting.

The [VLAN Name] does not need to be identical with the switch setting.



POINT

- ▶ You cannot use a "VLAN ID" or "VLAN Name" that has already been used. Enter another set value.

5 When the setting for the team is completed, click [OK].

6 Click [Apply] to apply the settings.

After the network is temporarily disconnected, a window is displayed. Click [Yes (Y)].

5.6.4 Cautions on Using the Teaming (SLB (Auto-Fallback Disable)) Function

When a primary adapter is recovered from a failure during standby operation, auto-fallback is not performed for the primary adapter. Communication is continued with the standby adapter. To return to the communication using the primary adapter, perform the following operation.

- 1 Start up BACS. The procedure differs depending on the OS being used.

For Windows Server 2003

1. Click [Start] → [Control Panel] → [Broadcom Control Suite 2].

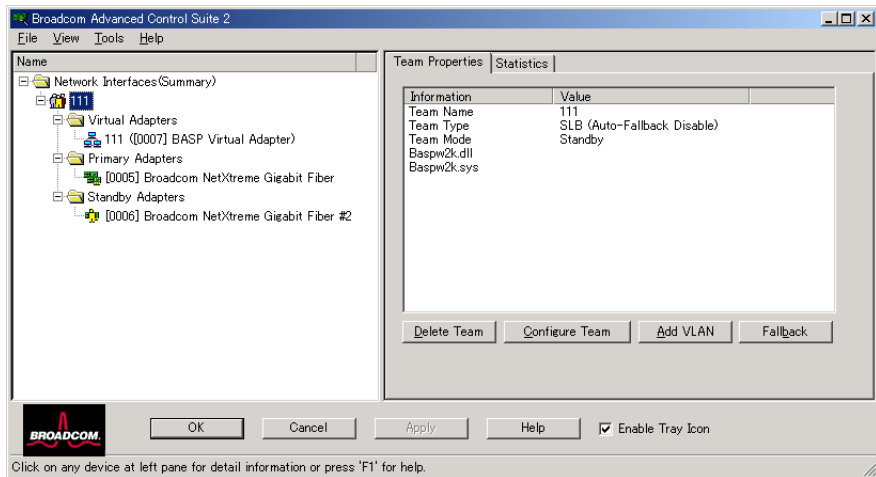
For Windows 2000 Server

1. Click [Start] → [Settings] → [Control Panel].

The [Control Panel] window appears.


2. Start up "Broadcom Control Suite 2".


- 2 Confirm that communication is performed with the [Standby Adapters] on the Teamed Up adapter tree.



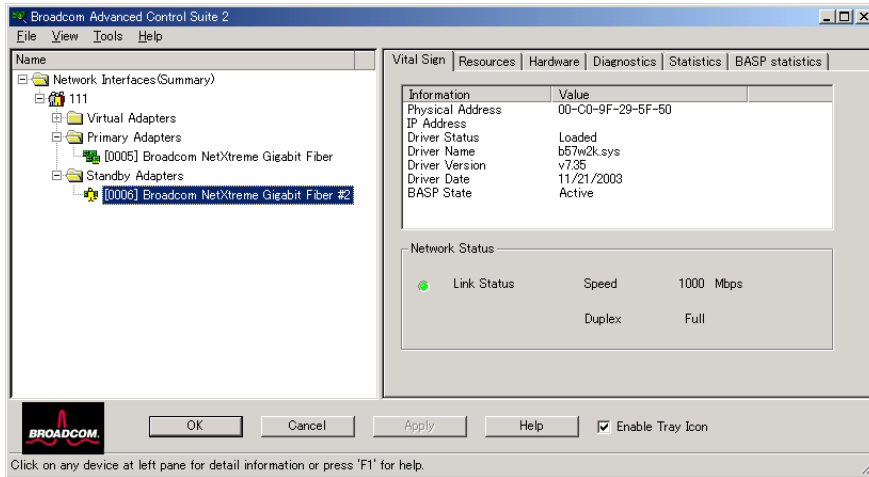
The currently communicated adapter is displayed with a  mark.


- 3 Confirm that the primary adapter is running properly on the Teamed Up adapter tree.

The primary adapter that is running properly is displayed with a  mark.

If the primary adapter is not running properly, a  mark is displayed.

- 4 Select the Team name of the Teamed Up adapter, and click [Fallback] from the [Team Properties] tab in the right pane of the window.



Confirm that the  mark moved from the standby adapter to the primary adapter and communication is maintained.

5.7 LAN Driver Advanced Setup [Intel® PROSet]

"Intel® PROSet" is a tool for configuring details on the LAN driver. This is used in the following cases.

- Use the Teaming function between LAN cards or between a LAN card and the onboard LAN
- Setup a VLAN using a LAN card
- Perform the other advanced setups of a LAN card

POINT

Use of BACS

- ▶ Use BACS (→pg.161) to perform the following advanced setups of the onboard LAN:
 - Use the teaming (load balance) function between onboard LANs.
 - Setup a VLAN using the onboard LAN
 - Perform the other advanced setups of the onboard LAN

5.7.1 Intel® PROSet Installation

If [Intel® PROSet] is not displayed in the [Control Panel], install Intel® PROSet according to the following installation procedures:

- 1** Execute the following file contained in the ServerStart Disc 1 CD-ROM.

For Windows Server 2003 x64

[CD-ROM drive]:\Tools\GENERAL\Intel\ProSet\Ws03_32e\InstPROSet.EXE

For Windows Server 2003 / Windows 2000 Server

[CD-ROM drive]:\Tools\GENERAL\Intel\ProSet\Ws03xp2k\InstPROSet.EXE

- 2** Click [Next].
- 3** Click [Accept].
- 4** Select [All] for Setup Type and click [Next].
- 5** Click [Install].
- 6** Click [Close].

5.7.2 Cautions for PG-185x/186x/188x/189x/286x LAN Driver V10.3

■ Event Log

Once a Team is setup, multiple identical logs from the same source that starts with the following log may be stored in the system log file of the event viewer at system start-up.

Source	iANSMiniport
ID	11
Type	Warning
Description	The following adapter link is not connected: (adapter name) * (adapter name) varies depending on the OS or hardware configuration.

Since such event logs will be stored nonetheless even if the Teaming function is operated normally, ignore them.

5.7.3 Teaming Function

■ Notes

When using the Teaming function, note the following points.

- You require Service Pack 2 or later for Windows 2000 Server.
- For AFT/ALB/Static link type, you can incorporate up to four LAN ports into one team and two ports for a SFT type team.
- Once a Team is created, virtual adapters (Intel® Advanced Network Service Virtual Adapter) will be created in the [Device Manager] and/or [Network and Dial-up Connections] of the system. Do not disable or delete this virtual adapter from the [Device Manager] or [Network and Dial-up Connections]. When deleting a virtual adapter, make sure to use "Intel® PROSet".
- When the Teaming function is being used, you can only use the following protocols:
 - For AFT/SFT/Static link type: IP, NetBEUI, IPX (NCP), IPX (NetBIOS)
 - For ALB type: IP, IPX (NCP)
- When the Teaming function is being used, you cannot use the hardware assist function of IPSEC. Do not use this function even if the function is installed in all cards in the team.
- When the Teaming function is being used, you cannot use Windows Load Balancing Service (WLBS) and Network Load Balancing (NLB).
- If Static link type is selected, you can only use the switch for link aggregation.
- When adding/deleting a Static link type member, perform such operation under a linked down state.
- When using the onboard LAN to control remotely with RemoteControlService, it cannot be a member of the Team. For details on RemoteControlService, refer to "ServerView User's Guide".
- If the onboard LAN is set to RemoteControlService and Team is configured on the onboard LAN, remote control function with RemoteControlService does not work properly.
- The team with the Intel® PROSet Broadcom onboard LAN and the Intel LAN card can be configured, but note the following points.

- The team cannot be configured with only Broadcom onboard LANs. It is necessary to incorporate in Intel LAN card more than one port.
- Make sure to set any port of the Intel LAN card as [Set Primary]. To configure it, click the [Settings] tab and [Modify Team...], select the LAN card, and click [Set Primary].

IMPORTANT

- ▶ Only a link down error between a LAN card (onboard LAN) and the switch it connects with, and the equivalent errors lead to switching of the route. Therefore, if only the switch or LAN card (onboard LAN) is partially damaged and the route being used is sound at the link level, the route will not be switched in the team, but the communication with the Team may become an error.

■ Teaming Configuration Procedure

- 1** Start up Intel® PROSet. The procedure differs depending on the OS being used.

For Windows Server 2003

Click [Start] → [Administrative Tools] → [Computer Management].

For Windows 2000 Server

Click [Start] → [Programs] → [Administrative Tools] → [Computer Management].

- 2** Click [Device Manager] and double-click a LAN adapter to incorporate in a Team.
- 3** Click the [Teaming] tab and select [Team with other adapters] and click [New Team].
- 4** Enter a team name and click [Next].
- 5** Check the LAN adapter to incorporate in the Team and click [Next].

IMPORTANT

- ▶ Do not check an onboard LAN (do not incorporate it in a Team) if the onboard LAN is controlled remotely by RemoteControlService.

- 6** Select a Teaming type with which you want to create a Team.

Select the following depending on the Teaming type selected accordingly:

- AFT type: "Adapter fault tolerance"
- ALB type: "Adaptive load balancing"
- SFT type: "Switch fault tolerance"
- Static link type: "Static link aggregation"

- 7** Click [Finish].
- 8** Click [OK] to close the property window for created Teaming adapter.

9 Click [OK] to close the property window for the LAN adapter.

When the Teaming setting is completed, the following virtual adapter will be created.

- "Team:(Team Name)"

Upper protocols will be bound with the main virtual adapter.

You cannot bind them with the LAN card consisting of a Team.

The IP address can be set in the main virtual adapter.

5.7.4 VLAN

■ Notes

When using a VLAN, note the following points.

- You can only have "NetBIOS over TCP/IP" enabled for up to four VLANs in the whole system.
- On a VLAN, do not use protocols other than TCP/IP.
- You can only set ten or less VLANs to a LAN port.
- When adding or deleting a VLAN, always use "Intel(R) PROSet". Do not disable or delete a VLAN from the [Device Manager] or [Network and Dial-up Connections].

■ VLAN Configuration Procedure

1 Start up Intel® PROSet. The procedure differs depending on the OS being used.

For Windows Server 2003

Click [Start] → [Administrative Tools] → [Computer Management].

For Windows 2000 Server

Click [Start] → [Programs] → [Administrative Tools] → [Computer Management].

2 Click [Device Manager] and double-click a LAN adapter to setup a VLAN.

3 Click the [VLANs] tab, and click [New...].

4 Specify [VLAN ID] and [VLAN Name]. Then click [OK].

The [VLAN ID] should be identical with the switch setting. 1 to 4094 can be specified.

Any name can be specified as the [VLAN Name].

5 Click [OK] to close the property window for the LAN adapter.

When setup of the VLAN is completed, the following virtual adapter will be created.

- "(LAN Adapter Name)-VLAN:(VLAN Name)"

Upper protocols will be bound with the main virtual adapter. You cannot bind them with the LAN card consisting of a VLAN. The IP address should be specified in the main virtual adapter.

Chapter 6

High Reliability Tools

6

For stable PRIMERGY server operations, we recommend that high reliability tools be installed. This chapter explains the installation and necessary settings of high reliability tools.

6.1	RAID Management Tool [Global Array Manager]	176
6.2	Server Monitoring Tool [ServerView]	177
6.3	Solving Problems Early [DSNAP]	179

6.1 RAID Management Tool [Global Array Manager]

RAID Management Tool is software that performs array configuration, disk initialization and disk array monitoring. For more details, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

POINT

OS installation using ServerStart

- ▶ If the OS is installed using ServerStart, RAID Management Tool is installed with the OS and other high reliability tools.

6.1.1 Installing RAID Management Tool (Global Array Manager)

To Install RAID Management Tool individually using the standard installer, follow the procedures below.

IMPORTANT

- ▶ Before installing Global Array Manager, check that TCP/IP is installed and works properly.

- 1** Log on to the server with administrator privileges.

IMPORTANT

- ▶ Exit all programs before starting installation.
Installation will fail if "Event Viewer" or "Computer Management" is run.

- 2** Insert the SCSI Array Controller Document & Tool CD. Click [Start] → [Run...].

- 3** Enter a name in the [Open:] field as follows and click [OK].

[CD-ROM drive]:\RAIDTOOL\GAM\Windows\install.bat

Installation starts and the wizard window appears.

For subsequent procedures, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide" in the SCSI Array Controller Document & Tool CD.

- **When an error screen appears after installation (Windows Server 2003 only)**

If Windows Server 2003 Service Pack 1 is applied, the following message may appear on restarting after installing/uninstalling RAID Management Tool (Global Array Manager).

```
In order to protect the computer, this program is terminated by
Windows.
Name: SNMP Service
```

There is no problem with operations. Click [Close Message] to close the message.

6.2 Server Monitoring Tool [ServerView]

ServerView constantly monitors the status of the servers' hardware in the network and provides a console with which the administrator can check the status of all the servers at a glance. When using ServerView, the server hardware is monitored all the time. If an error that could cause trouble is detected, the administrator is notified in real-time. This allows the server administrator to remove a system error early and avoid trouble.

■ Importance of Monitoring the Server with ServerView

For safe operation of PRIMERGY, always monitor the server using ServerView. Even if the server is operated in the redundancy configuration, overlooking or neglecting errors could result in a system stop or data loss. As soon as one constituent part of the redundancy configuration fails, the corresponding countermeasures must be taken. For that reason, monitoring the server with ServerView is necessary. If ServerView is not applied, the following very serious problems may occur.

● RAID Error Monitoring

ServerView notifies of the RAID errors. In an environment where ServerView is not applied, the administrator is not notified of the RAID errors. Leaving the RAID error unattended may lead to a system stop with multiple dead drives.

● Memory Monitoring

ServerView monitors the memory. In an environment where ServerView is not applied, a memory single-bit error cannot be detected during operation. In order to detect the error, the server must reboot to run the BIOS Setup Utility or the Server Management Tools. Leaving this error unattended may lead to multiple-bit errors and a system stop.

● Fan Monitoring

ServerView monitors the fan. In an environment where ServerView is not applied, fan irregularities (failure/stop) cannot be detected during operation. In order to detect the problem, the server must reboot to run the BIOS Setup Utility or the Server Management Tools. Leaving the fan problem unattended may lead to overheating inside the server and a system stop.

● Temperature Monitoring

ServerView monitors the temperature. In an environment where ServerView is not applied, the increased temperature inside the server, due to the fan problem described above, cannot be detected and the system stop cannot be prevented. In order to detect the problem, the server must reboot to run the BIOS Setup Utility or the Server Management Tools.

● Voltage Monitoring

ServerView monitors the voltage. In an environment where ServerView is not applied, voltage irregularities cannot be detected during operation. In order to detect the problem, the server must reboot to run the BIOS Setup Utility or the Server Management Tools. As leaving the voltage surges, the server may malfunction or data loss may occur.

- **Power Supply Monitoring**

ServerView monitors the power supply. In an environment where ServerView is not applied, power supply irregularities cannot be detected during operation. In order to detect the problem, the server must reboot to run the BIOS Setup Utility or the Server Management Tools. System stops due to power supply failures cannot be prevented.

6.2.1 Installing ServerView

- **When Installed Using ServerStart**

If the OS is installed using ServerStart, ServerView will be installed at once with the OS and other high reliability tools.

- **When Installed Manually (Linux)**

ServerView cannot be installed using ServerStart. To install ServerView manually into a Linux system, refer to "Installing" in "ServerView User's Guide".



- ▶ Be sure to install SNMP service before installing ServerView.

- **When an error screen appears after ServerView installation (Windows Server 2003 only)**

If Windows Server 2003 Service Pack 1 is applied, the following message may appear on restarting after installing/uninstalling ServerView.

```
In order to protect the computer, this program is terminated by
Windows.
Name: SNMP Service
```

There is no problem with operations. Click [Close Message] to close the message.

6.2.2 Setting Required after Installation

Perform necessary operations after ServerView installation referring to "2.4 Checking after Installation" in "ServerView User's Guide".

- **Boot Monitoring Setting**

We recommend enabling the "Boot Monitoring" function after ServerView is installed. For setting procedures and explanation on the function, refer to "[Restart Settings] Tab" of "3.4 Serious Error Handling (ASR)" in "ServerView User's Guide".

6.3 Solving Problems Early [DSNAP]

DSNAP is a tool for collectively acquiring failure investigation information such as server environment information.

POINT

OS installation using ServerStart

- ▶ If the OS is installed using ServerStart, DSNAP is installed with the OS and other high reliability tools.

6.3.1 Installing DSNAP

- **For Windows Server 2003 x64**

Copy the following file stored in the ServerStart Disc 1 CD-ROM into the server's hard disk.
[CD-ROM drive]: \PROGRAMS\Japanese\DSNAPx64\DSNAPx64.EXE

- **For Windows Server 2003, Windows 2000 Server**

When installing DSNAP separately, copy the following file stored in the ServerStart Disc 1 CD-ROM into the server's hard disk.

[CD-ROM drive]: \PROGRAMS\Japanese\DSNAP\DSNAP.EXE

6.3.2 How to Use

- **For Windows Server 2003 x64**

Refer to the following file stored in the ServerStart Disc 1 CD-ROM. Use a text editor to open it.
[CD-ROM drive]: \PROGRAMS\Japanese\DSNAPx64\README.TXT

- **For Windows Server 2003, Windows 2000 Server**

Refer to the following file stored in the ServerStart Disc 1 CD-ROM. Use a text editor to open it.
[CD-ROM drive]: \PROGRAMS\Japanese\DSNAP\README.TXT

Chapter 7

Installing Internal Options

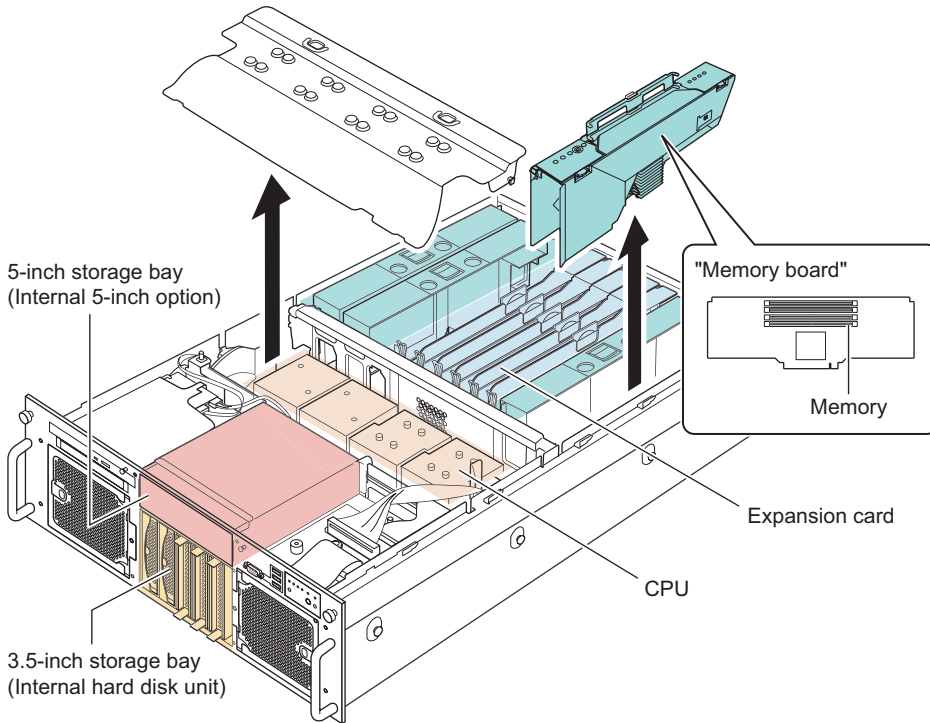
7

This chapter explains how to install and remove the various internal options.

7.1	Before Installing Internal Options	182
7.2	Removing and Attaching the Top Cover	184
7.3	Installing CPUs	186
7.4	Installing Memory Modules	194
7.5	Installing Expansion Cards	207
7.6	Installing Internal Hard Disk Units	218
7.7	Installing 5-inch Internal Device	223
7.8	Installing the Internal DVD-RAM Unit	231
7.9	Connecting External SCSI Devices	233

7.1 Before Installing Internal Options

The following types of internal options can be installed in this server.



POINT

- ▶ If the optional devices listed below are purchased, refer to the following to check the packaged items before installing.
 - CPU modules → "B.1 CPU" (pg.296)
 - Memory → "B.2 Memory" (pg.296)
 - Internal Hard Disk Units → "B.4 Internal Hard Disk Units" (pg.297)
- ▶ When installing and removing options, make sure to use the removed screws on the same devices that were last installed or removed. Failure to do so can damage the device.
- ▶ The types of optional devices listed in this manual are liable to be updated without any notice. Please be forewarned.

**WARNING**

Electric Shock

- Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock ("1.4.3 Turning off the Server" (→pg.35)).
- Do not disassemble the PSU. Doing so can cause electric shock.



Do not

- Use our genuine internal options only. Failure to do so may cause a device failure, fire, or electric shock.
- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.

**CAUTION**

- Devices inside the server remain hot after shutdown. Wait for approximately 10 minutes after shutdown before installing or removing internal options.
- The circuit boards and soldered parts of internal options are exposed. They can be damaged by static electricity. Before handling them, first touch a metal part of the server to discharge static electricity.
- Do not touch the circuitry on boards and soldered parts. Hold the metallic areas or the edge of the circuit boards.
- When installing a 5-inch internal device, make sure to avoid pinching cables.
- If devices are installed or disassembled by other methods than those outlined in this chapter, the warranty will be invalidated.

7.2 Removing and Attaching the Top Cover

Before you install internal options other than an internal hard disk unit, remove the top covers.



- Before removing or attaching covers, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock ("1.4.3 Turning off the Server" (→pg.35)).

7.2.1 Removing the Top Cover

- 1** Open the rack door.

→"1.4.1 Opening the Rack Door" (pg.31)

- 2** Remove all cables connected to the server.

Replacing hot-swappable expansion cards or memory modules can be done without turning off the server.

- 3** Remove the retaining screws used to fasten the server to the rack.

- 4** Slide the server.

Hold the handles from inside and pull the server out toward you until it clicks, so that it locks.

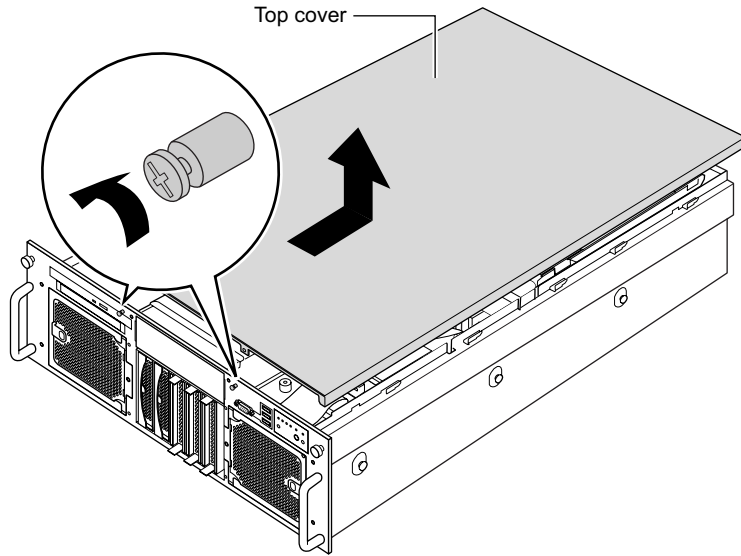


- ▶ For details on how to slide the server out of the rack, refer to "Start Guide".



- When working with the server powered on, make sure that the cables on the backside, such as the power cable, are not unplugged or become entangled, when sliding the server out of the rack.

- 5** Loosen the (two) screws on the front side. Slide the top cover to the direction of the arrow, and then remove it from the server.



■ Attaching the Top Cover

To attach the top cover, simply reverse the removal procedures.









- Before turning on the server, make sure that all covers are in place.



- Check to make sure no tools or unnecessary components are left inside the server before reattaching the top cover.

7.3 Installing CPUs

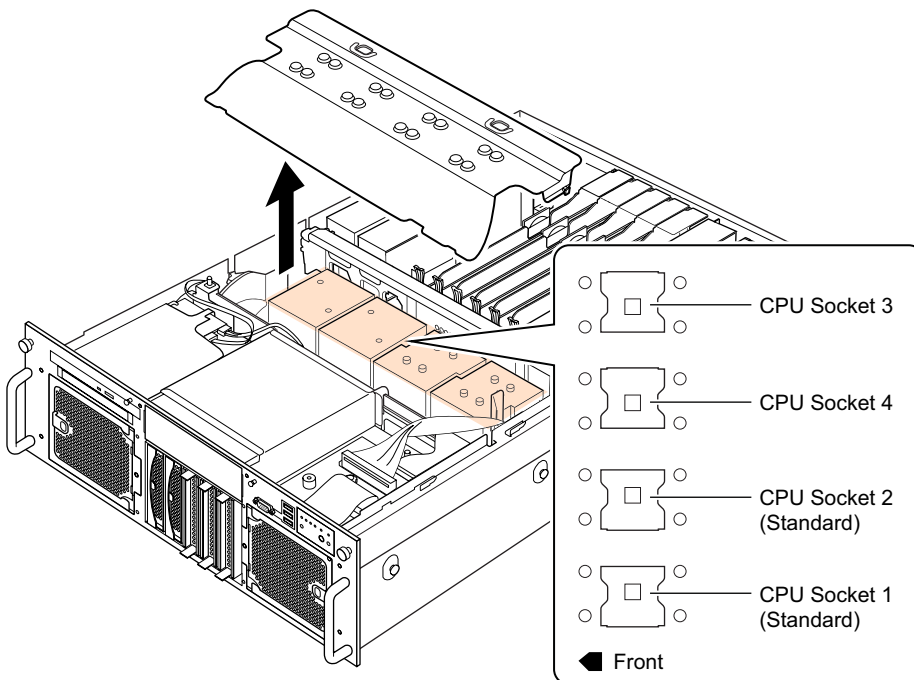
The server can have up to four CPUs by adding optional CPUs.

- WARNING**  **Electric Shock**  • Before installing or removing a CPU, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock.
- CAUTION**   • Use our genuine CPUs. Failure to do so may damage the server.
-  • Do not use CPUs that differ in frequency/cache size. The system may become unable to start up.
-  • The circuit boards and soldered parts of internal options are exposed. They can be damaged by static electricity. Before handling them, first touch a metal part of the server to discharge static electricity.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edge of the circuit boards.

7.3.1 Where to Install CPUs

Install the CPU sockets in order of socket 1, 2, 3, and 4.

CPUs are installed in CPU socket 1 and 2 by default. When you add CPUs, also install VRM.



7.3.2 Installable CPUs and Notes

■ Installable CPUs

The following CPUs can be installed in this server.

table: Installable CPUs

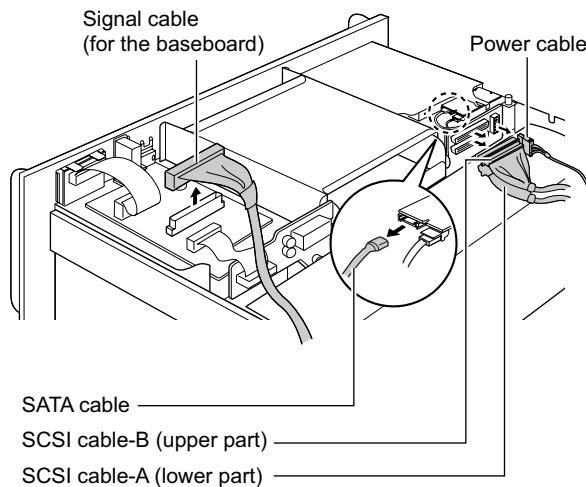
Product name	Model
Processor Xeon MP 3.66GHz / 1MB	PG-FG218
Processor Xeon 7041 3GHz / 2 x 2MB	PG-FG30J

■ Notes on Installation

When adding CPUs, all CPUs must be of the same model (frequency/cache size).

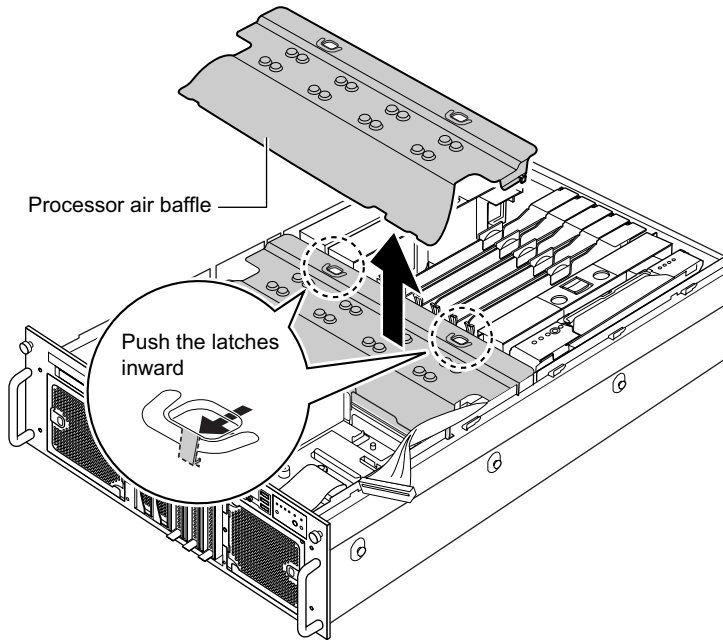
7.3.3 How to Install CPUs

- 1** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 2** Remove the top cover.
→"7.2 Removing and Attaching the Top Cover" (pg.184)
- 3** Touch a metal part of the server to discharge static electricity.
- 4** Remove the cable.
Remove the power cable, the SCSI cables (A and B), the signal cable for the baseboard, and the SATA cable.



5 Remove the upper processor air baffle.

Insert your fingers in the hole in the top of the baffle, and then lift the baffle up to remove it by pushing the latches inward.

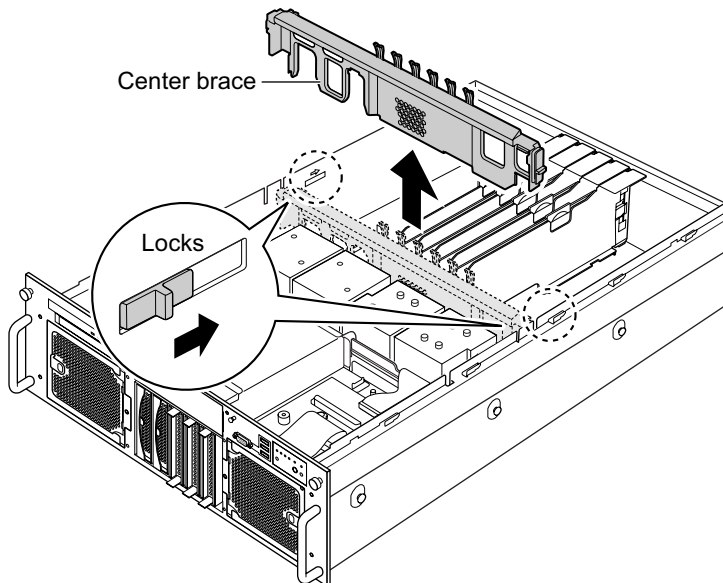


6 Remove the memory board and dummy cover of the memory boards.

For details on how to remove them, refer to "7.4.4 How to Install Memory Modules" (→pg.201)

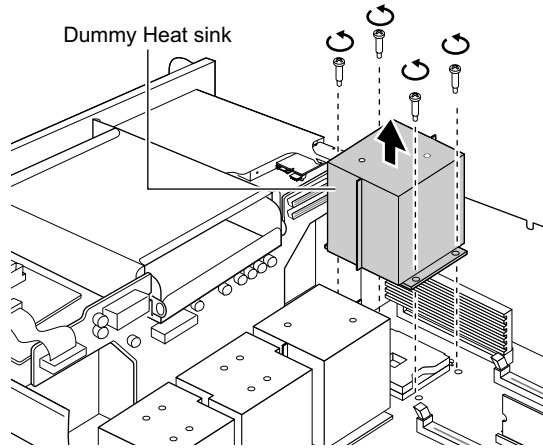
7 Remove the center brace.

Release the locks inside the sides of the server by pressing in the direction of the arrow, and then lift it to remove.

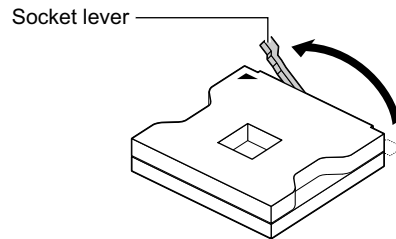


8 Remove the dummy heat sink.

Turn the four fastened screws in the direction of the arrow and remove them.

**9** Release the lever on the CPU socket.

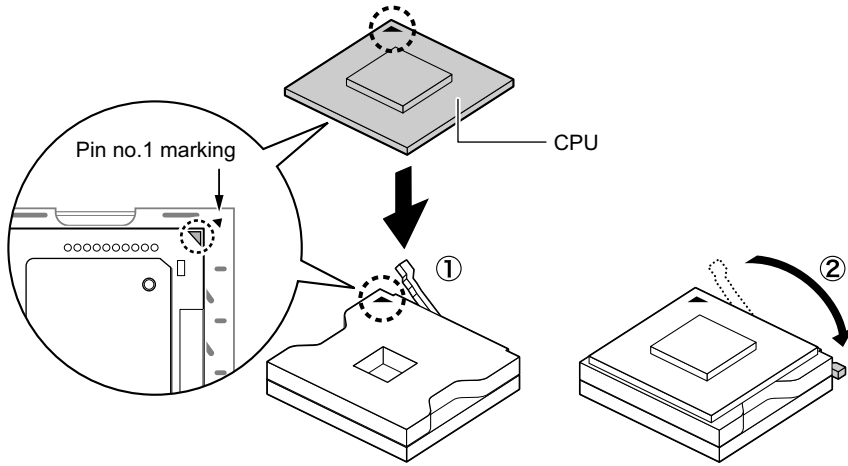
Pull up to open the socket lever fully. A CPU cannot be installed unless the socket lever is fully open.



- The socket lever opens by about 135 degrees. Be sure to open the socket lever fully to release it. If the socket lever is not fully open during CPU installation, the CPU may be damaged.

10 Install the CPU.

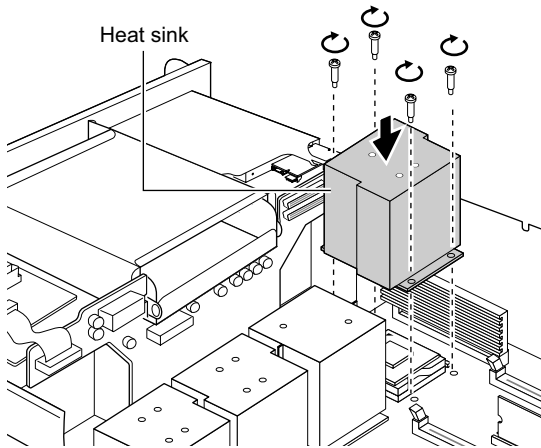
Align the triangle on the CPU socket (pin no. 1 marking) with the triangle on the CPU. Insert the pins into the socket, and then return the socket lever to the original position.



- When installing the CPU in the socket, be careful not to bend the CPU pins.

11 Install the heat sink.

Attach the heat sink to the installed CPU and fasten it with the four screws. Carefully tighten the screws in diagonal order.



- When installing the heat sink, keep the heat sink from the condenser on the base board.

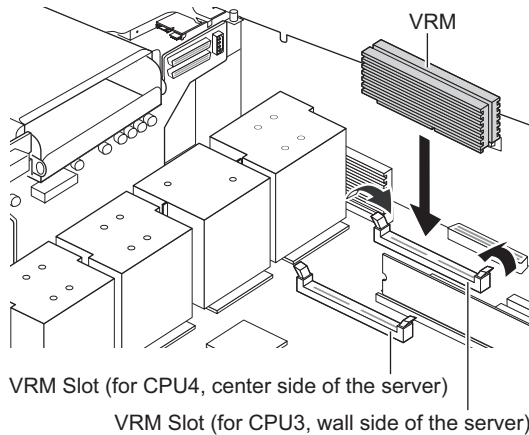
12 Install the VRM.

The installing location differs depending on where the CPU was added. Install the VRM in the VRM slot at the wall side of the server when you added CPU3, install the VRM in the VRM slot at center side of the server when you added CPU4.

Align a notch of the VRM with the slot and insert the VRM vertically in the slot.

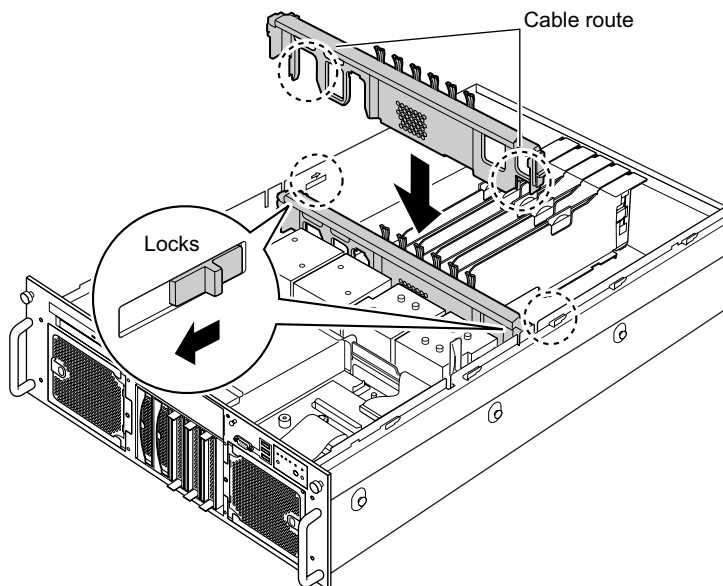
When the module is correctly inserted, the retention clips on both sides will close. Then, check that the VRM is securely fastened.

If the retention clips are not securely closed, press them closed with your fingers.

**13** Install the center brace.

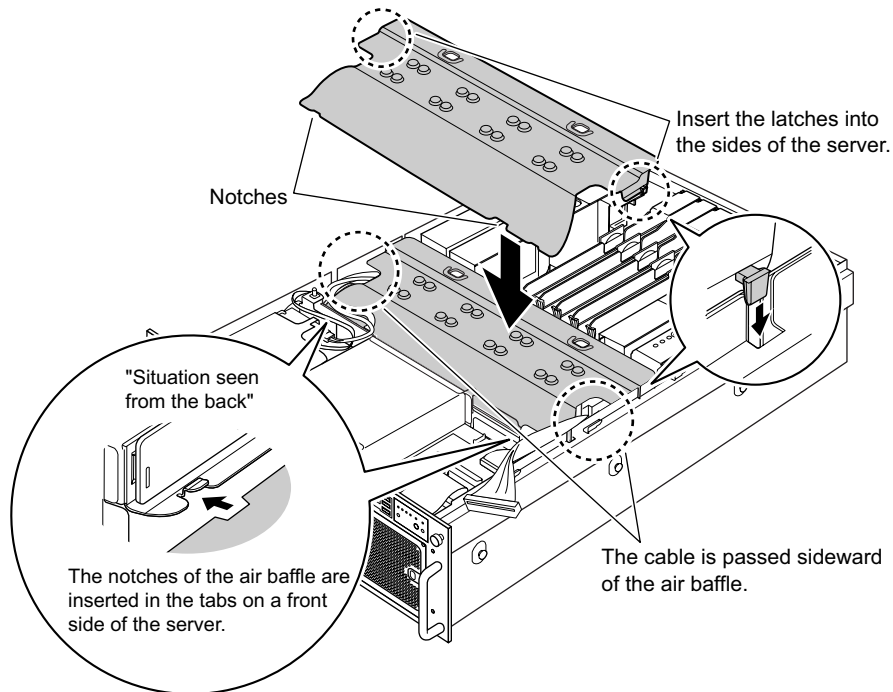
Install the cable through the cable route. At this time, make sure that the cable is not pinched.

After you install it, press the locks on the sides of the server in the direction of the arrow to fasten it.

**14** Install the memory board and its cover.

15 Install the upper processor air baffle.

Insert the latches on the sides of the baffle into the sides of the server, and then insert the notches on the front side of the baffle into the front of the server to install the cover. Install the cable through the sides of the baffle. At this time, make sure that the cable is not pinched.



16 Connect the removed cables to the original positions.

17 Install the top cover.

7.3.4 Defective CPU Disconnection Function

This server is equipped with a defective CPU disconnection function.

This function disconnects a CPU judged to be defective (abnormal) during Power On Self Test (POST) to start the server. For example, on two-CPU servers, if one CPU is defective, the other CPU starts up the server.

The failed CPU can be checked with the information displayed during POST or from Processor menu of the BIOS Setup Utility.

Replace the defective CPU, if discovered, and then restart the server.

■ Replacing the Defective CPU

Replace the defective CPU with a new one according to "7.3.3 How to Install CPUs" (→pg.187).

POINT

- ▶ After replacing the CPU, start the BIOS Setup Utility and change the [Processor Retest] setting on the [Processor] menu from [Disabled] to [Enabled]. To use the new CPU, set the item to [Enabled] for releasing the failed CPU status setting at the next startup.
The value of [Processor Retest] is automatically reset to [Disabled] at the server startup. For details on the BIOS Setup Utility, refer to "8.3 BIOS Setup Utility" (→pg.243).

7.4 Installing Memory Modules

Additional memory will help increase the amount of data that can be read at a time and improve the server processing capability.



- When installing or removing a memory module, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock.



- Use our genuine memory modules only. Failure to do so may cause a device failure, fire, or electric shock.



- Wait for a sufficient period of time after server shutdown before installing or removing memory. Failure to do so can cause burns.



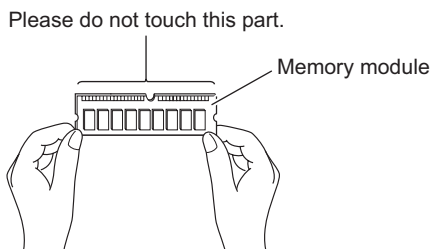
- When installing or removing memory, make sure to remove the screws at the specified locations only. There is a risk of injury if screws other than those at the specified locations are removed. This could also damage the server.



- Touch only the specified part of the printed circuit board. Failure to do so could cause injury or damage the server.



- Memory modules are made of delicate components that are extremely sensitive to static electricity, and they can be destroyed by static electricity from your clothes or body. Before handling them, first touch some metallic object to discharge static electricity.
- Do not insert and remove memory modules repeatedly. This could damage the server.
- Hold the edges of the memory module, as shown in the figure below. Do not touch the gold contacts.

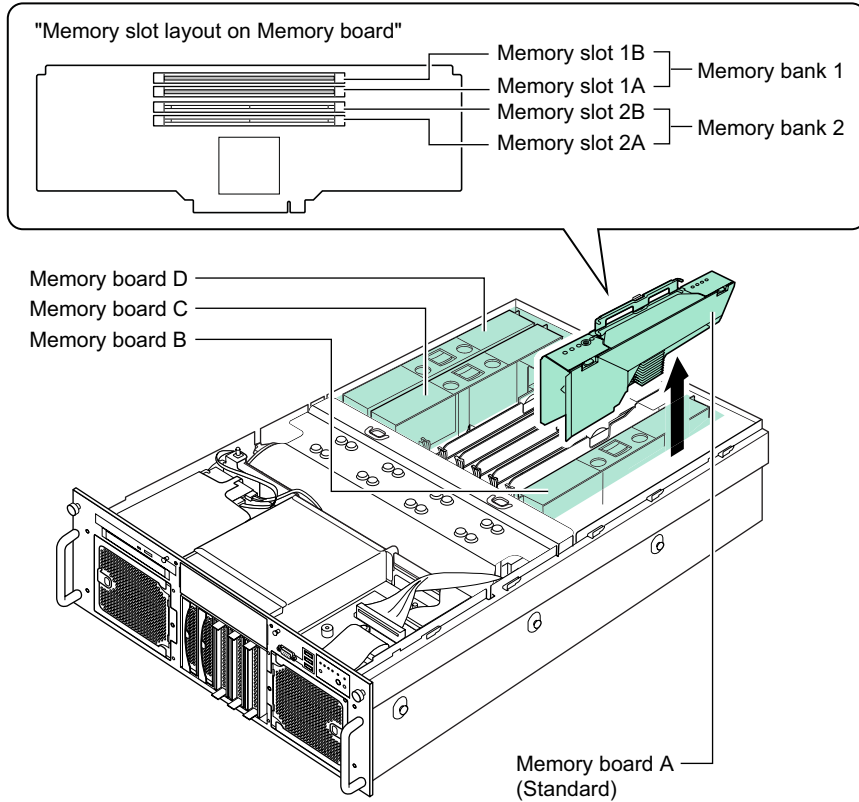


7.4.1 Where to Install the Memory Modules

Install memory modules in the memory slots on the memory board.

One memory board is installed by default, and up to four memory boards can be installed in this server.

One memory bank consists of Slots A and B on the memory board.



7.4.2 Installable Memory Modules and Notes

■ Installable Memory Modules

The following memory module types can be used in this server.

table: List of Usable Memory Modules

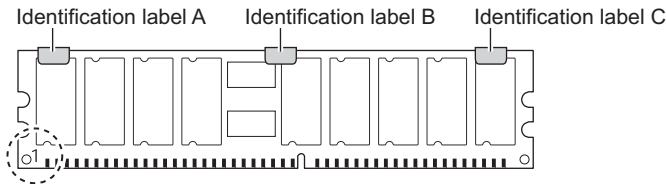
Product Name (Model Name)	Remarks
Memory Expansion Board (PG-RB106)	
Memory Module-2GB (PG-RM2BD)	2GB (Two 1GB-DIMMs)
Memory Module-4GB (PG-RM4BD)	4GB (Two 2GB-DIMMs)

■ Notes When Installing Memory

● Identifying Memory Modules

Check that the number beginning with "CA" (e.g., CA05946-E101) printed on the label is the same on the two DIMMs. Be sure to use a pair of modules with the same number. If the DIMMs have identification labels, be sure to install a pair of DIMMs with the same capacity with the label placed in the same location.

- Identification label location



- Identification label patterns

When a memory module is viewed with the corner circled in the above figure to the lower left, identification labels are applied in any of the following patterns.

table: Identification Label Patterns

Pattern	Label A	Label B	Label C
1	Not applied	Not applied	Not applied
2	Applied	Not applied	Not applied
3	Not Applied	Applied	Not applied
4	Not applied	Not applied	Applied
5	Applied	Applied	Not applied
6	Applied	Not applied	Applied
7	Not applied	Applied	Applied
8	Applied	Applied	Applied

● Memory Board and Memory Module Installation Sequence

- Install the memory boards in the order of Memory Board A (the standard board), Memory Board B, Memory Board C, and Memory Board D.
- To add more memory, install a pair of memory modules, both having the same capacity, in the corresponding slots in the order of Bank 1 and Bank 2. To add memory modules with different capacity, install the memory module with the smaller capacity in Bank 1.

7.4.3 Memory Redundant Functions

The memory redundant Functions (memory mirroring function, memory RAID function, spare memory function) can be set for this server. This section describes the installation conditions and the BIOS settings. Any of the functions is available for all the memory modules installed. Mixed settings are not possible.

■ Memory Mirroring Function

Memory mirroring uses two or four memory boards. The available capacity (logical capacity) of the memory is the half of that of the physical memory. One memory board is set as primary and the other as secondary. Data is written to both memories. If a memory error occurs, that memory board is automatically detached while the other memory board continues to operate. The function is automatically restored after replacing the failed memory or memory board.

● Installation Conditions

Install the memory according to the following conditions.

table: Conditions for Memory Mirroring

Mirror Set #1								Mirror Set #2							
Memory Board A				Memory Board B				Memory Board C				Memory Board D			
Bank 1		Bank 2		Bank 1		Bank 2		Bank 1		Bank 2		Bank 1		Bank 2	
1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B
○	○	-	-	○	○	-	-	-	-	-	-	-	-	-	-
○	○	-	-	○	○	-	-	○	○	-	-	○	○	-	-
○	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○: Memory installed

-: Memory not installed

- A mirror set consists of two memory boards. The capacity of each memory board can be different. Two mirror sets can be configured by the combinations of Memory Board A and B, and Memory Board C and D.
- Install memory modules with the same capacity in each memory board in the mirror set (Memory Board A and B, Memory Board C and D).
- The capacity of the memory modules of Bank 1 and Bank 2 on the memory board can be different. In this case, install the module with smaller capacity in Memory Bank 1.

● BIOS Settings

Perform the following settings after installing memory modules.

- 1** Install memory modules according to the installation conditions.
- 2** Start the BIOS Setup Utility.
- 3** Select the [Memory] menu, [Configure System RAS and Performance], and then press the [Enter] key.
- 4** Select [Desired Memory Configuration], and press the [Enter] key. Select [Mirror], and press the [Enter] key.

5 Select [View Configuration Detail] and press the [Enter] key.

The View Configuration Detail submenu window appears.

6 Check that [Configuration Possible] and [Hot Replace] are set to [Yes].

If [No] is displayed, the memory modules were not installed correctly. Install them correctly according to the installation conditions.

POINT

- ▶ If the [Hot Replace] field is set to [No], you cannot replace memory modules while the server is running.

7 Press the [F10] key.

A confirmation message appears, asking whether you want to save the changed BIOS settings.

8 Select [Yes] and press the [Enter] key.

Memory mirroring is enabled after the system is restarted.

■ Memory RAID Function

Configure memory RAID by installing memory modules with the same capacity to the four memory boards. Three memory boards are used for data, and one for parity. The available memory capacity (logical capacity) is three-quarters of the physical memory.

● Installation Conditions

Install the memory according to the following conditions.

table: Conditions for the Memory RAID Function

RAID Set															
Memory Board A				Memory Board B				Memory Board C				Memory Board D			
Bank 1		Bank 2		Bank 1		Bank 2		Bank 1		Bank 2		Bank 1		Bank 2	
1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B
○	○	-	-	○	○	-	-	○	○	-	-	○	○	-	-
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○: Memory installed
 -: Memory not installed

- Configure one RAID set using all of the memory boards.
- The capacity of the memory module on the each memory boards must be the same.
- The capacity of the memory modules of Bank 1 and Bank 2 on the memory board can be different. In this case, install the module with smaller capacity in Memory Bank 1.

● BIOS Settings

Perform the following settings after installing memory modules.

- 1** Install memory modules according to the installation conditions.
- 2** Start the BIOS Setup Utility.
- 3** Select the [Memory] menu, [Configure System RAS and Performance], and then press the [Enter] key.
- 4** Select [Desired Memory Configuration], and press the [Enter] key. Select [RAID], and press the [Enter] key.
- 5** Select [View Configuration Detail] and press the [Enter] key.
The View Configuration Detail submenu window appears.
- 6** Check that [Configuration Possible] and [Hot Replace] are set to [Yes].
If [No] is displayed, the memory modules were not installed correctly. Install them correctly according to the installation conditions.

POINT

- ▶ If [Hot Replace] is set to [No], the memory modules cannot be replaced while the server is running.

- 7** Press the [F10] key.
A confirmation message appears, asking whether you want to save the changed BIOS settings.
- 8** Select [Yes] and press the [Enter] key.
The memory RAID function is enabled after the system is restarted.

■ Spare Memory Function

Assign spare memory modules by memory board. The available capacity (logical capacity) of the memory is the half of that of the physical memory.

● Installation Conditions

Install the memory according to the following conditions.

table: Conditions for the Spare Memory Function

Memory Board A				Memory Board B				Memory Board C				Memory Board D			
Bank 1		Bank 2		Bank 1		Bank 2		Bank 1		Bank 2		Bank 1		Bank 2	
1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B
○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-
○	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-
○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○: Memory installed
-: Memory not installed

- Install memory modules with the same capacity in Bank 1 and 2 on the memory board. There are no restrictions among memory boards.
- Install the memory boards in the order of Memory Board A (the standard board), Memory Board B, Memory Board C, and Memory Board D.

● BIOS Settings

By default, the spare memory function is enabled in the BIOS settings. When you set the spare memory function again after changing to other memory settings, follow the procedure below.

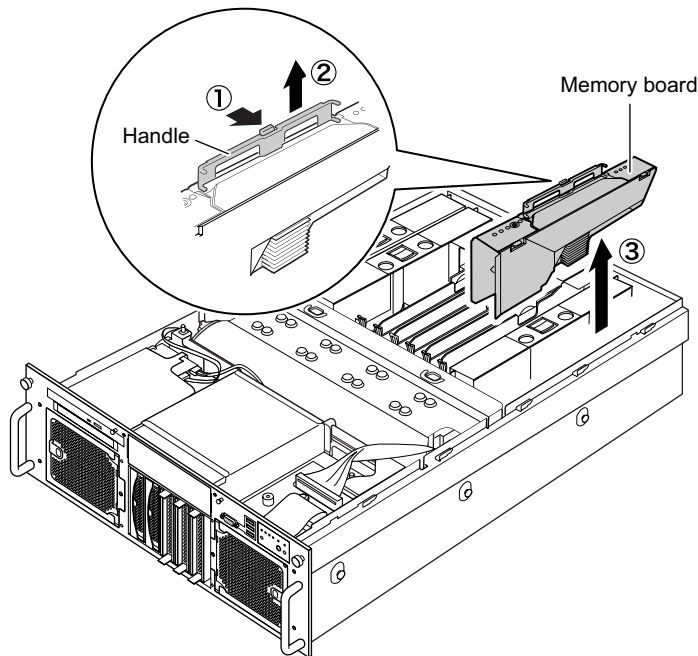
- 1** Install memory modules according to the installation conditions.
- 2** Start the BIOS Setup Utility.
- 3** Select the [Memory] menu, [Configure System RAS and Performance], and then press the [Enter] key.
- 4** Select [Desired Memory Configuration], and press the [Enter] key. Select [Max Performance] and press the [Enter] key.
- 5** Select [View Configuration Detail] and press the [Enter] key.
The View Configuration Detail submenu window appears.
- 6** Check that [Configuration Possible] and [Sparing] are set to [Yes].
If [No] is displayed for [Configuration Possible], the memory modules were not installed correctly. Install them correctly according to the installation conditions.
- 7** Press the [ESC] key to return to the [Configure System RAS and Performance] submenu.
- 8** Press the [ESC] key to return to the [Memory] menu.
- 9** Select [View and Configure Memory Board n] (n is the number of the memory board) and press the [Enter] key.
- 10** Select [Reserve Rank for Spare] and press the [Enter] key. Then, select [Enabled] and press the [Enter] key.
- 11** Press the [F10] key.
A confirmation message appears, asking whether you want to save the changed BIOS settings.
- 12** Select [Yes] and press the [Enter] key.
The spare memory configuration is enabled after the system is restarted.

7.4.4 How to Install Memory Modules

- 1** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 2** Remove the top cover.
→"7.2 Removing and Attaching the Top Cover" (pg.184)
- 3** Touch a metal part of the server to discharge static electricity.
- 4** Remove the memory board or the dummy cover of the memory board.

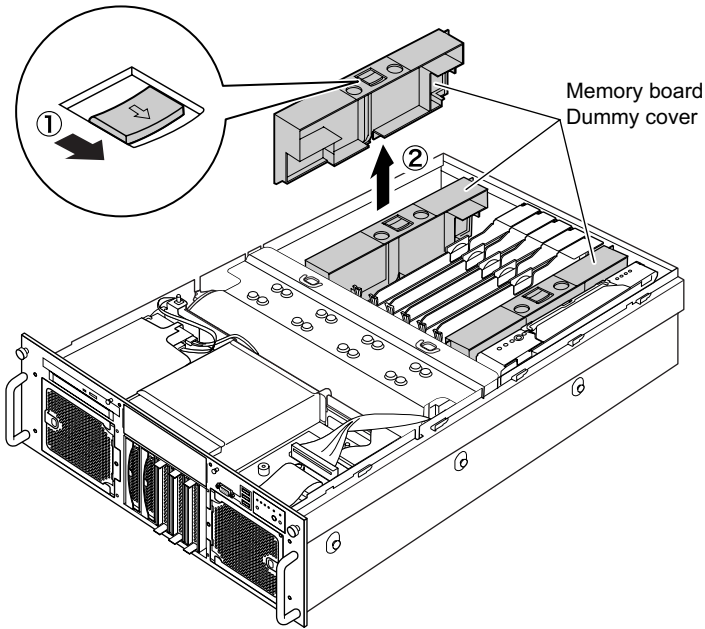
To remove the memory board

Press the handle switch (1 in the figure). The handle (2 in the figure) pops out. Hold the handle and lift it to remove (3 in the figure).



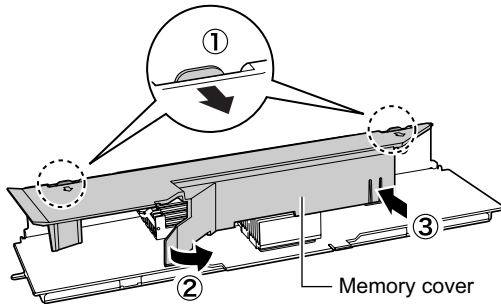
To remove the dummy cover of the memory board

Press the lock at the center of the dummy cover and lift the dummy cover up to remove.

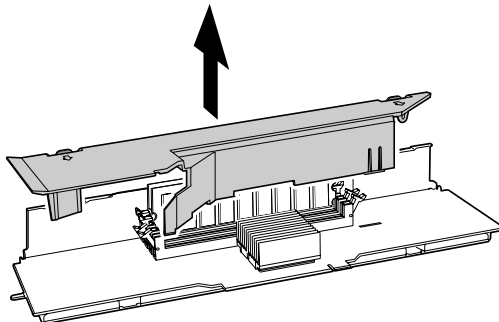


5 Remove the memory cover from the memory board.

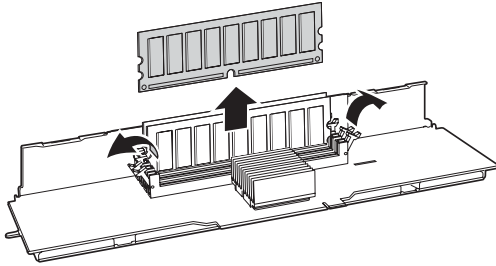
1. The memory cover is fastened to the memory board with four latches. Release each of the latches by pressing in the direction of the arrow.



2. Lift the memory cover and remove it.



- 6** To replace the memory module, open outward the retention clips on both sides of the slot.



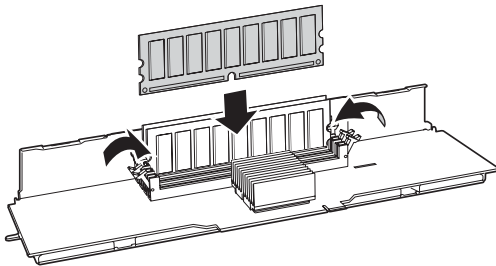
- Make sure not to open the clips outward too quickly because the memory module may pop up, which could cause damage.

- 7** Open the retention clips on both sides of the slot and insert the memory module.

Align the notch on the memory module with the memory slot and insert the module vertically in the slot.

When the module is correctly inserted, the retention clips on both sides will close. Then, check that the memory module is securely fastened.

If the retention clips are not securely closed, press them closed with your fingers.



- An improperly engaged memory module could cause a fire. Do not insert the memory module on the wrong side.

- 8** Attach the memory cover to the memory board.
To attach it, simply reverse the removal procedure.
- 9** Install the memory board in the server.
To attach it, simply reverse the removal procedure.
- 10** Install the top cover.

7.4.5 Defective Memory Disconnection Function

This server is equipped with a defective memory disconnection function.

This function disconnects the memory judged to be defective (abnormal) during Power On Self Test (POST) to start the server. When POST is executed, if the memory capacity is discovered to be smaller than the capacity of the memory installed, there is a possibility of memory defect.

You can check the slot whose memory is defective from the system event log.

■ Replacing the Defective Memory

Replace the defective memory module with a new one, referring to "7.4.4 How to Install Memory Modules" (→pg.201).

POINT

- ▶ After replacing the memory module, start the BIOS Setup Utility, select the [Configure System RAS and Performance] submenu from the [Memory] menu, and change the [Retest All System Memory] setting from [Disabled] to [Enabled]. Setting the item to [Enabled] releases the failed memory status at the next startup and enables the use of the new memory module.

To confirm whether the status is released, start the BIOS Setup Utility, select the [Memory] menu → [View and Configure Memory Board n] ("n" represents A, B, C, or D), and press the [Enter] key. Check that [Board Status] is [Healthy].

For details on the BIOS Setup Utility, refer to "8.3 BIOS Setup Utility" (→pg.243).

7.4.6 How to Replace Memory Modules under Hot-plug Support

The memory boards of this server are hot-pluggable, when using the memory mirroring function or memory RAID function. The memory modules can be replaced without turning off the server. Follow the following procedure.

IMPORTANT

- ▶ If memory modules need to be replaced while the server is running, contact an office listed in the "Contact Information" of "Start Guide".

1 Check the location of the memory board and slot of the defective memory.

2 Remove the top cover without turning off the server.

→"7.2 Removing and Attaching the Top Cover" (pg.184)



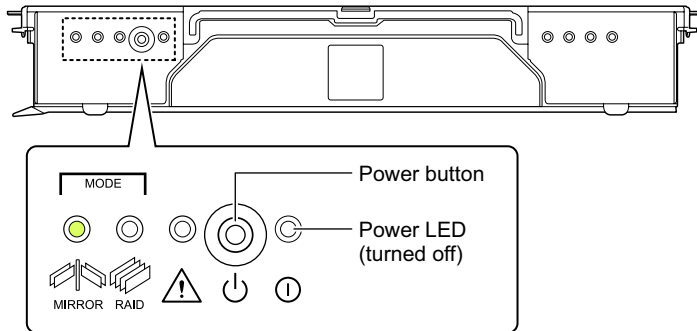
CAUTION



- When sliding the server out of the rack, make sure that the cables on the backside, such as the power cable, are not unplugged or become entangled.
- Do not touch other devices inside the server.

3 Touch a metal part of the server to discharge static electricity.

- 4** Check the status of the memory board power LED. If it is lit, press the power button of the memory board that contains the defective memory. Check that the power LED of the memory board is turned off.

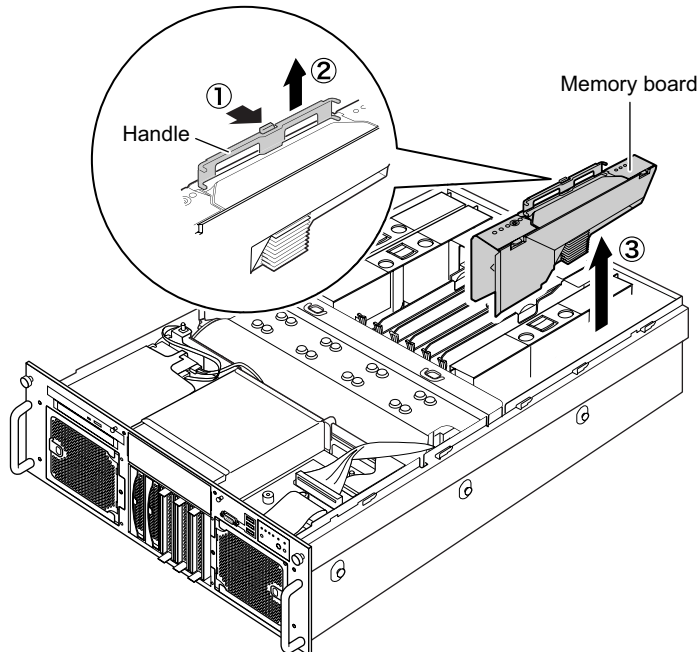


IMPORTANT

- ▶ Check the Mirror Configuration LED or RAID Configuration LED is turned on that indicates the memory modules can be replaced without turning off the server. For details about LEDs on the memory board, refer to "1.3.5 Memory Board" (→pg.29).

- 5** Remove the memory board.

Press the handle switch (1). The handle (2) pops out. Hold the handle and lift it to remove (3).



- 6** Replace the memory module.

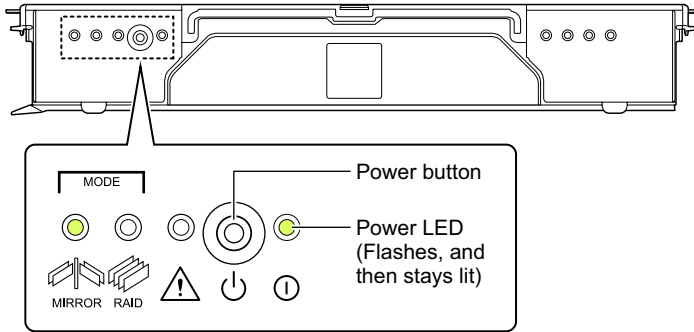
For instructions on replacing the memory module, refer to "7.4.4 How to Install Memory Modules" (→pg.201) and follow steps 5 to 8.

7 Install the memory board in the server.

Press the board firmly until the handle locks to mount it. The memory board cannot be powered on if the handle doesn't lock.

8 Press the power button of the memory board.

The power LED flashes and then stays lit.



9 Install the top cover.

7.5 Installing Expansion Cards

This section explains the types of expansion card, notes and installation procedures.



WARNING



Electric Shock

- When installing or removing an expansion card, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
Failure to do so can cause electric shock.
- Install our genuine expansion cards only.
Failure to do so may cause a device failure, fire, or electric shock.



- Wait for a sufficient period of time after server shutdown before installing or removing expansion cards.
Failure to do so can cause burns.



CAUTION

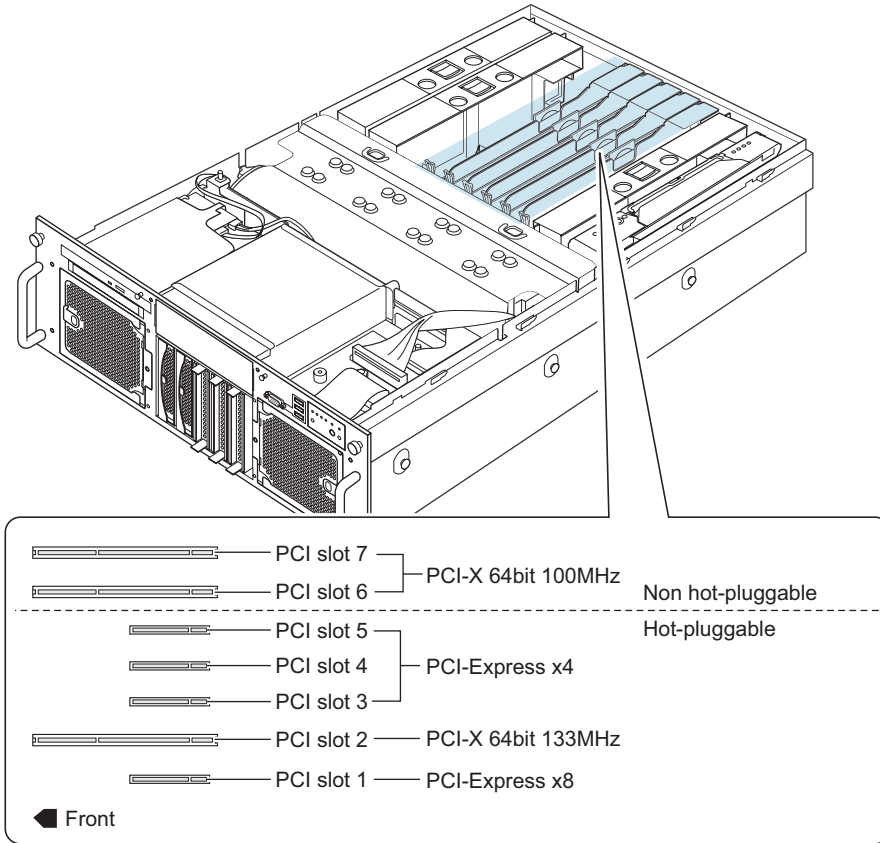


injury

- When installing or removing expansion cards, make sure to remove the screws at the specified locations only.
There is a risk of injury if screws other than those at the specified locations are removed. This could also damage the server.
- Touch only the specified part of the printed circuit board.
Failure to do so could cause injury and also damage the server.
- Do not touch metal fixings of the main board on the rear side of the server. This could cause injury. This could also damage the server.
- Expansion cards are made of delicate components that are extremely sensitive to static electricity, and they can be destroyed by static electricity from your clothes or body. Before handling them, first touch some metallic object to discharge static electricity.

7.5.1 Where to Install an Expansion Card

This server has seven PCI slots to accommodate up to seven expansion cards.



POINT

- ▶ The clock frequency depends on the number and specifications of the expansion cards installed.
- ▶ Expansion cards can be hot-swapped in PCI slots 1 through 5. They are to be mounted on the PCI card holder.

■ Hot Swappable PCI Slots

The PCI slots 1 through 5 of this server are hot-swappable PCI slots. If an expansion card has a failure, you can replace the failed expansion card without turning off this server and its peripheral devices.

● Note

- Always contact your maintenance engineer to replace expansion cards by PHP function. This operation must be performed by the maintenance engineer.
- This operation is only available when the OS is Windows Server 2003. Note that, if it is performed under another OS, the system may go down.
- Depending on applications, the hot-plug operation may not be supported. Please check in advance.
- When running Windows 2000 Server, the cards mounted in the PCI slots 1 through 5 are listed in the [Unplug or Eject Hardware] window, but you cannot unplug them. Never remove the cards.
- The following expansion cards can be replaced by PHP function. Other than those below are not supported.
 - Eth. Ctrl dual 1000-BASE-T (PG-2861)
 - Eth. Ctrl 1000-BASE-T Cu (PG-1892)
 - Eth. Ctrl 1000-BASE-SX Fibre LC (PG-1882)



- ▶ In the case of that the low clock frequency device is installed, PCI Bus Clock works on the clock of lower device.

7.5.2 Installable Expansion Cards and Notes on Installation

■ Installable Expansion Cards

Up to seven expansion cards listed in the following table can be installed in the server.

table: List of Installable Expansion Cards

Installable card (Model name)	Number of cards			PCI bus	Remarks
Fibre Channel Controller (PG-FC202)	4	4	4	PCI-Express x4	
Eth. Ctrl dual 1000-BASE-T(PG-2861)	2	2		PCI-Express x4	1000BASE-T
Remote service board (PG-RSB105)	1	1	3	-	
SCSI Ctrl U160 (PG-1281)	2	2		PCI-X 64bit/66MHz	For internal/external SCSI devices (Ultra 160 SCSI)
RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3)	2				For external array system (Ultra 320 2ch SCSI)
Eth. Ctrl 1000-BASE-T Cu (PG-1892)	3	3		PCI-X 64bit/133MHz	1000BASE-T
Eth. Ctrl 1000-BASE-SX Fibre LC (PG-1882)	3				1000BASE-SX
Eth. Ctrl 2x1000-BASE-T Cu (PG-1862)	2				1000BASE-T

■ Expansion Card Installation Order

Install expansion cards into the slots according to the priority indicated in the following table.

table: Expansion Card Installation Order and Slots

Installable expansion card (Model name)	PCI slot							Installation order
	1	2	3	4	5	6	7	
Fibre Channel Controller (GP-FC202)	1	-	2	3	4	-	-	1
Eth. Ctrl dual 1000-BASE-T(PG-2861)	1	-	2	3	4	-	-	2
Remote service board (PG-RSB105)	-	-	-	-	-	-	1	3
SCSI Ctrl U160 (PG-1281)	-	3	-	-	-	1	2	4
RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3)	-	1	-	-	-	2	3	5
Eth. Ctrl 1000-BASE-T Cu (PG-1892)	-	1	-	-	-	2	3	6
Eth. Ctrl 1000-BASE-SX Fibre LC (PG-1882)	-	1	-	-	-	2	3	7
Eth. Ctrl 2x1000-BASE-T Cu (PG-1862)	-	-	-	-	-	1	2	8



- ▶ Follow the "Installation order" shown in the table when installing the cards and drivers. If you turn on the power after installing multiple expansion cards simultaneously or in a wrong order, they will not function properly.

■ Notes on Installing Expansion Cards

Install installable expansion cards only. Also, check the following notes in advance.

● Card-specific cautions

Before installing an expansion card, refer to the notes in the user's guide supplied with the card and notes supplied with the server.

● Drivers

Install the drivers after installing expansion cards. The drivers for the expansion cards that were mounted before the OS installation, are installed together with the OS during the OS installation using ServerStart. For details, refer to "2.3.5 Expansion Cards Supported by ServerStart" (→pg.54).

● Cautions when installing SCSI RAID card (PG-142E3)

- Connection of a SCSI device

Connect a SCSI device supported by this server. Operations are not guaranteed when an unsupported SCSI device is connected.

● BIOS settings

In this server, extended ROMs on expansion cards are disabled. When you configure the settings of the expansion card (PG-FC201/PG-1281) to be installed, you need to change the extended ROM temporarily to [Enabled] in the BIOS Setup Utility. Configure the settings using the following procedure.

- 1** Set the expansion ROM of the slot in which the target expansion card is installed to [Enabled].

Start the BIOS Setup Utility, select the [PCI] submenu from the [Devices] menu, and set [Enable Slot n ROM] (n indicates the number of the slot in which the expansion card is installed) to [Enabled].

→"8.3.1 Starting and Exiting the BIOS Setup Utility" (pg.243)

→"8.3.7 Devices Menu" (pg.251)

- 2** Press the [F10] key.

The message for confirming whether saving the changes of BIOS settings.

- 3** Select [Yes] and press the [Enter] key.

- 4** Restart the system.

- 5** Set the expansion card after restarting the system.

- 6** Restart the system.

7 Reset the expansion ROM, which is set in the step 1, to [Disabled].

Start the BIOS Setup Utility, select the [PCI] submenu from the [Devices] menu, and set [Enable Slot n ROM] (n indicates the number of the slot whose setting is changed in step1) to [Disabled].

■ Installing the Remote Service Board

● Notes Before Installing

When installing the remote service board, note the following points:



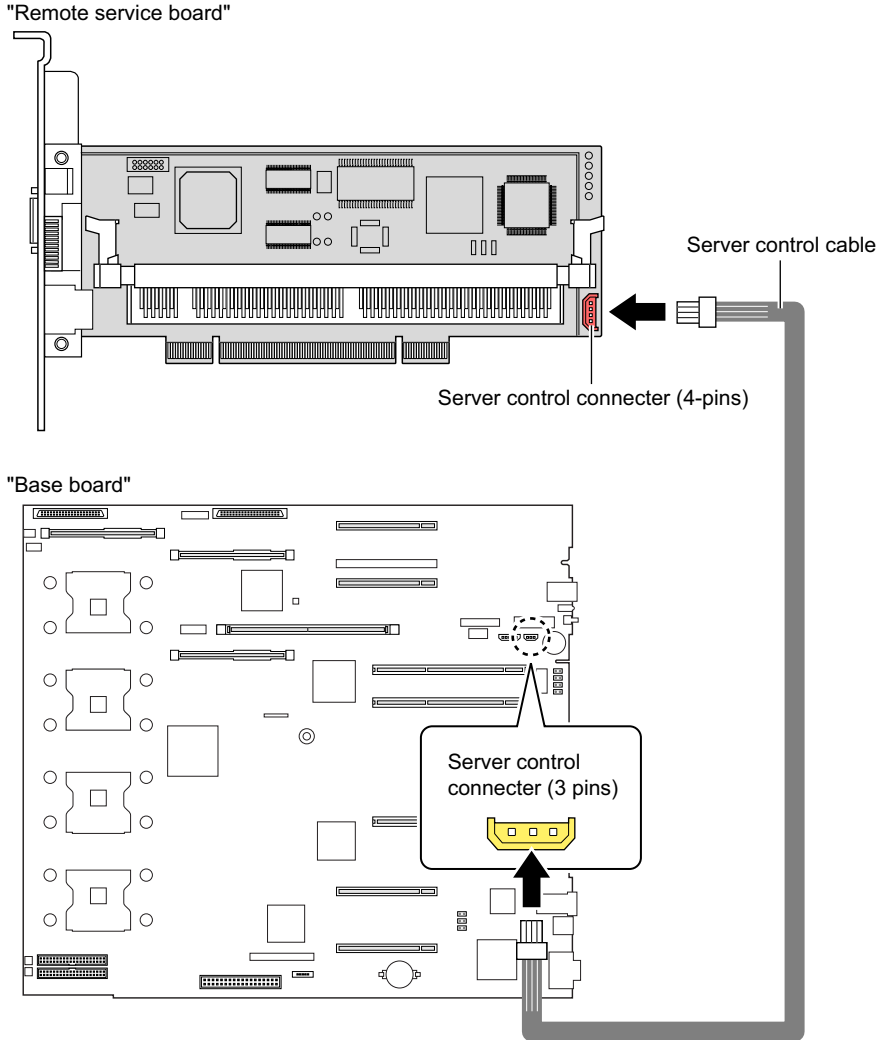
- Do not connect the remote service board AC adapter until you finish installing the remote service board and attaching all the server covers. Doing so may cause a device failure, fire, or electric shock.
- When replacing remote service boards or adding other optional devices, unplug the power cable of the remote service board AC adapter from the outlet before operation. Failure to do so may cause a device failure, fire, or electric shock.

● Connecting the Server Control Cable

When installing the remote service board, the server control cable needs to be connected.

Connect the server control cable that came with the remote service board as shown in the figure below.

Connect one end to the connector on the remote service board and the other end to the connector on the baseboard. Then install the remote service board in PCI Slot 7.



After attaching the top cover of the server, connect the following cables. For how to connect cables, refer to the manual provided with the remote service board.

- USB cable
- VGA branch cable
- LAN cable
- AC adapter

POINT

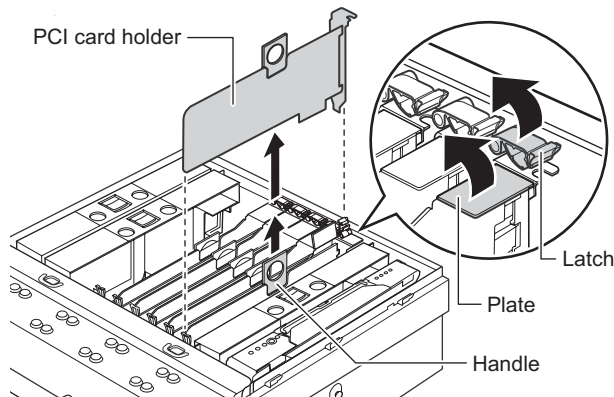
- ▶ To make it easier to connect the server control cable into the server control port, apply pressure from the cable side to the port side.

IMPORTANT

- ▶ To use the remote service board, ServerView is required. Be sure to install it. For how to install ServerView, refer to "6.2 Server Monitoring Tool [ServerView]" (→pg.177). For the remote service board functions, refer to "ServerView User's Guide."
- ▶ When the remote service board is connected, the monitor brightness may become lower. In this case, adjust the monitor for higher brightness.
- ▶ The recommended screen refresh rate for the monitor is 70Hz. In case of poor resolution of the monitor display, set the screen refresh rate to 70Hz.

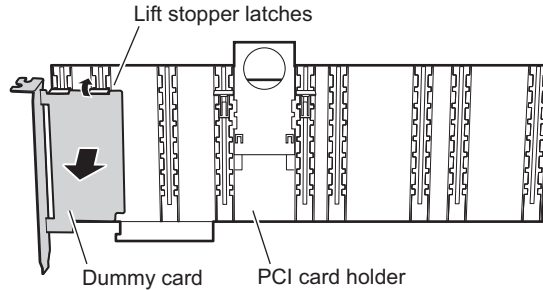
7.5.3 How to Install Expansion Cards

- 1** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 2** Remove the top cover.
→"7.2 Removing and Attaching the Top Cover" (pg.184)
- 3** Touch a metal part of the server to discharge static electricity.
- 4** Rotate the retention latch to the up position and remove the slot cover.
When installing a card in Slot 1 through 5, rotate the PCI card holder retention plate and latch into the up position and pull up the PCI card holder at its handle to remove it.

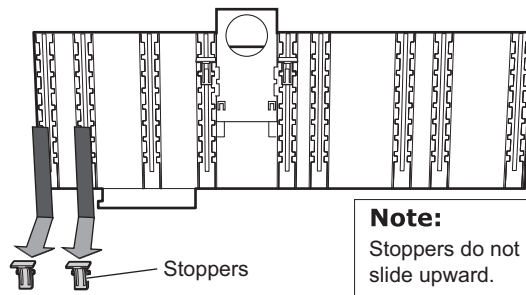
**POINT**

- ▶ Be sure to keep the removed slot cover or dummy cards for later use.
If operating the server with no expansion card, attach the slot cover to keep out dust.
- ▶ If a LAN card (PGB1892) is installed to the slot 2 at the time of purchase, the PCI card holder is not installed.

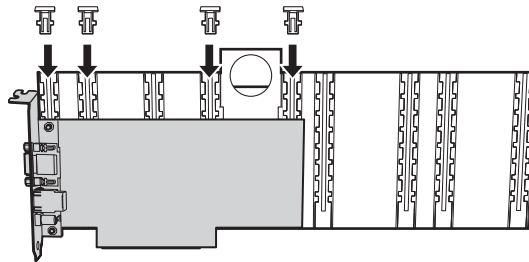
- 5** When installing a card in Slot 1 through 5, remove the dummy card from the PCI card holder and install the expansion card on the PCI card holder.
1. Lift the stopper latches or slightly bend the PCI card holder outward to remove the dummy card.



2. Slide to remove the stoppers.



3. Install the expansion card on the PCI card holder and fasten it with stoppers.

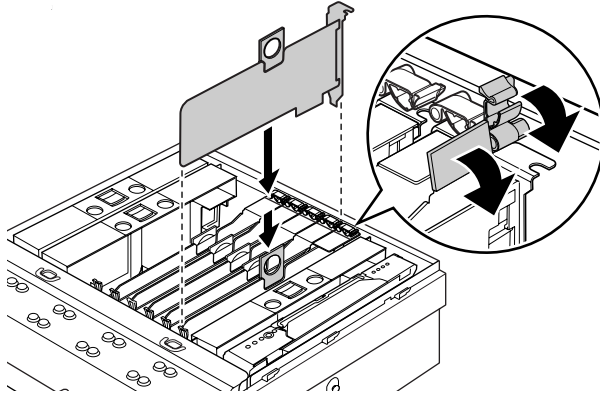


POINT

- ▶ Use stoppers in three locations depending on the card.
- ▶ When LAN card (PG-1892) is installed in slot 2, the PCI card holder is not used.

- 6** Firmly press the expansion card or the PCI card holder into the connector of the PCI slot and rotate the retention latch to the down position to lock.

When installing a card in Slot 1 through 5, install the PCI card holder. Rotate the PCI card holder cover and the retention latch to the down position and slide down the PCI card holder handle.



- 7** Install the top cover.

7.5.4 How to Replace Expansion Cards in the Hot-Swappable PCI Slots

This section describes how to replace expansion cards by PHP function.

IMPORTANT

- ▶ Always contact your maintenance engineer to replace expansion cards by PHP function. This operation must be performed by the maintenance engineer.
- ▶ This operation is only available when the OS is Windows Server 2003. Note that, if it is performed under another OS, the system may go down.

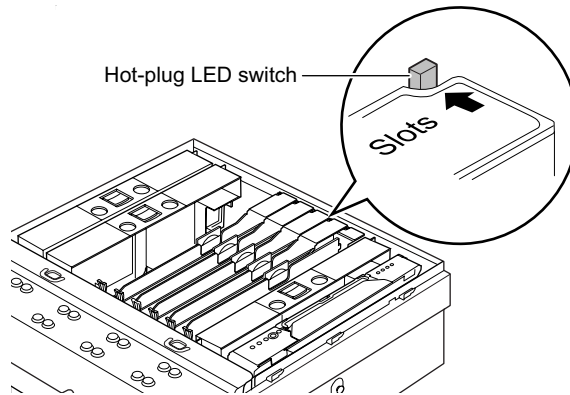
- 1** Disconnect the failed expansion card on OS.
 1. Double-click the “Unplug/Eject” icon in the taskbar at the right-bottom corner of the desktop.
The “Unplug or Eject Hardware” wizard appears.
 2. Click [Stop].
 3. Select the expansion card to be removed and click [OK].
A message appears saying that the expansion card has been disconnected, and the card can be removed.

2 Remove the top cover without turning off the server.

→"7.2 Removing and Attaching the Top Cover" (pg.184)



- When sliding the server out of the rack, make sure that the cables on the backside, such as the power cable, are not unplugged or become entangled.
- Do not touch other devices inside the server.

3 Touch a metal part of the server to discharge static electricity.**4** Check the status of the hot-plug LED switch on the PCI slot for the expansion card to be replaced. Confirm that its switch is off.**5** Remove the failed expansion card and install a new one.

For detailed procedures, refer to step 4 through 6 in "7.5.3 How to Install Expansion Cards" (→pg.214).

6 Press the hot-plug LED switch.

Confirm the LED status is turned blinking to lighting.

7 Install the top cover.**8** After replacing the expansion card, confirm that the expansion card is recognized on the OS.

Click [Start] → [Management Tools] → [Computer Management] in this order, and click [Device Manager]. Confirm the card in the Device Manager list.

7.6 Installing Internal Hard Disk Units

This section explains how to install internal hard disk units.



WARNING



Electric Shock

- Install our genuine internal hard disk units only. Failure to do so may cause a device failure, fire, or electric shock.



CAUTION



injury

- When installing or removing internal options, make sure to remove the screws at the specified locations only. There is a risk of injury if screws other than those at the specified locations are removed. This could also damage the server.



- Touch only the specified part of the printed circuit board. Failure to do so could cause injury or damage the server.



IMPORTANT

- ▶ Before adding an internal hard disk unit, install the OS and turn off the server once.

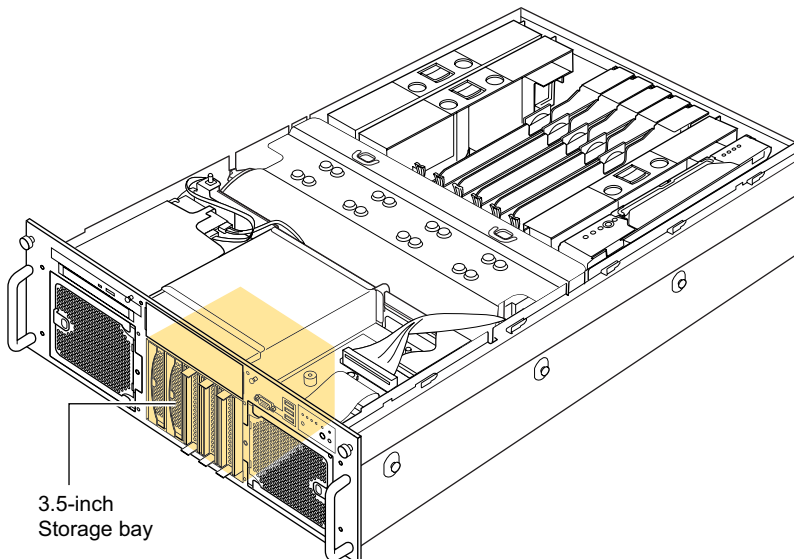


POINT

- ▶ You can replace internal hard disk unit without turning off the server in the array system configuration (RAID 1/5/10).

7.6.1 Where to Install Internal Hard Disk Units

Install internal hard disk units in the 3.5-inch storage bays. This server has five bays.



7.6.2 Installable Internal Hard Disk Units and Notes

Before installing an internal hard disk unit, check the following points.

■ Installable Internal Hard Disk Units

The following types of SCSI hard disks can be installed in this server.

table: Installable Internal Hard Disk Units

Disk capacity	Model number	Overview
73.4GB	PG-HDH71W	Ultra320 SCSI, 10,000rpm
73.4GB	PG-HDH75W	Ultra320 SCSI, 15,000rpm
146.8GB	PG-HDH41W	Ultra320 SCSI, 10,000rpm
146.8GB	PG-HDH45W	Ultra320 SCSI, 15,000rpm
300GB	PG-HDH31W	Ultra320 SCSI, 10,000rpm

■ Notes

Note the following points to avoid failures:

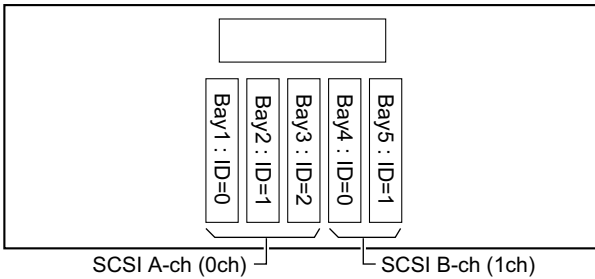
- Inside the hard disk unit, the disk for storing data is rotating at high speed to read and write data. Because the hard disk is a very delicate device, do not move, strike, or shake the server when it is turned on.
- Do not bang the hard disk or put metal objects on it.
- Do not use or store the device in a location affected by extreme temperature changes.
- Keep the device away from direct sunlight and from radiators and other heat sources.
- Use or store the device on a shock-and-vibration free surface.
- Do not use or store the device in a humid or dusty place.
- Do not use or store the device near magnets or devices that generate strong magnetic fields.
- Do not disassemble or take the device apart.
- Keep the disk away from condensation or water droplets.



- ▶ Mishandling the hard disk could result in destruction of the data stored on the disk. Make sure to keep a backup of important data. Even with hard disks of the same type, there could be a slight difference in storage capacity. We recommend backing up data on the basis of files or sectors rather than hard disks.

■ SCSI ID and Order of Installation

The numbers and SCSI IDs of the 3.5-inch storage bays are as follows. The SCSI IDs for internal hard disk units are set automatically.



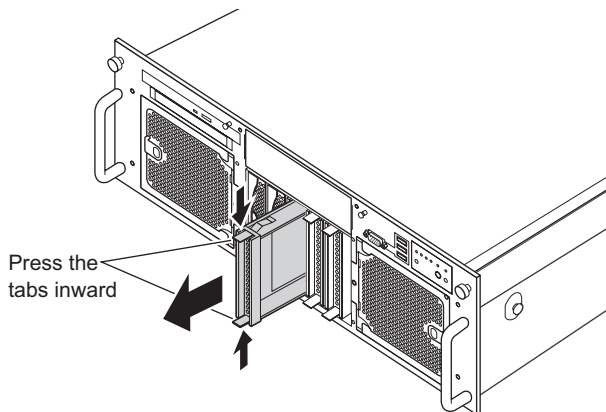
Install internal hard disk units in the following order.

[table: Order of Internal Hard Disk Unit Installation](#)

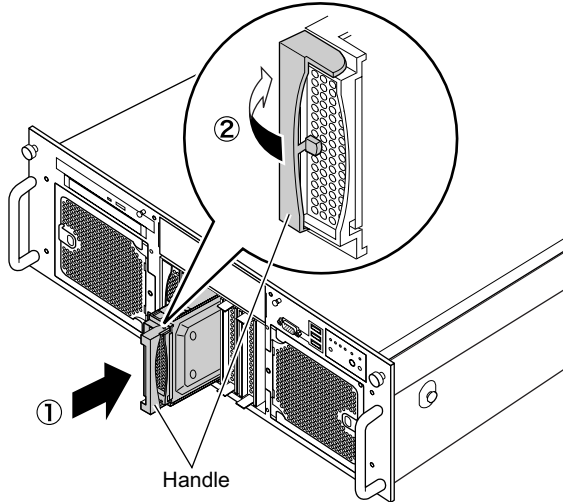
Order of installation
Bay 1 → Bay 4 → Bay 2 → Bay 5 → Bay 3

7.6.3 How to Install Internal Hard Disk Units

- 1** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 2** Touch a metal part of the server to discharge static electricity.
- 3** Remove the dummy unit from the bay to accommodate an internal hard disk unit.
 Pull the dummy unit out towards you with its tabs being pressed inward.
 Be sure to keep the removed dummy units for later use.



- 4** Install the internal hard disk unit into the server unit.
 1. Push the unit into the 3.5-inch storage bay with the handle of the internal hard disk unit open.
 2. Close the handle to secure.

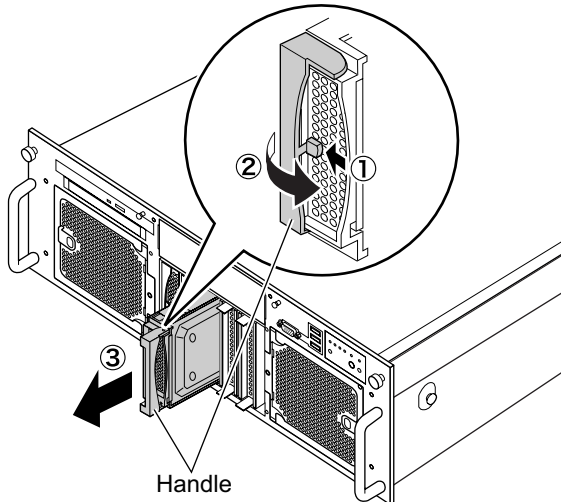


7.6.4 How to Remove Internal Hard Disk Units

- 1** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 2** Touch a metal part of the server to discharge static electricity.

3 Remove the internal hard disk unit.

While pressing the front tab of the internal hard disk unit to be removed (1), open the handle (2) and pull the hard disk unit towards you (3). Pull out the internal hard disk with both hands to remove it.

**4** Install a dummy unit or a new hard disk unit.

7.6.5 Replacing the Failed Internal Hard Disk Unit

When an array system (RAID1/5/10) is configured with the SCSI RAID of this server, a failed hard disk unit can be replaced and the system restored without turning off the server and peripheral devices (hot swappable/hot pluggable). For array systems, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID Users Guide".

Perform the replacement as follows:

- 1** Locate the failed hard disk unit by checking the hard disk failure LED of each bay.
- 2** Pull out the failed hard disk unit a little (1-3cm).
- 3** Wait for approximately 60 seconds (until motor rotating of the hard disk stops rotating) and pull out the failed hard disk unit.
- 4** Insert a new hard disk unit.
- 5** Execute "Rebuild" of the new hard disk.

"Rebuild" or "Make Standby" may be executed automatically after replacing the hard disk unit. This can be checked from the status of the hard disk failure LED.

7.7 Installing 5-inch Internal Device

This section explains how to install a 5-inch internal device unlike external devices, an internal device does not need to be connected to the outlet because its power is supplied from the server. In addition, it offers the advantage of saving space.



WARNING



Electric Shock

- When installing or removing internal devices, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.

Failure to do so can cause electric shock.

- Install our genuine internal devices only.

Failure to do so may cause a device failure, fire, or electric shock.



CAUTION



injury

- When installing or removing internal options, make sure to remove the screws at the specified locations only.

There is a risk of injury if screws other than those at the specified locations are removed. This could also damage the server.



- Touch only the specified part of the printed circuit board.

Failure to do so could cause injury or damage the server.

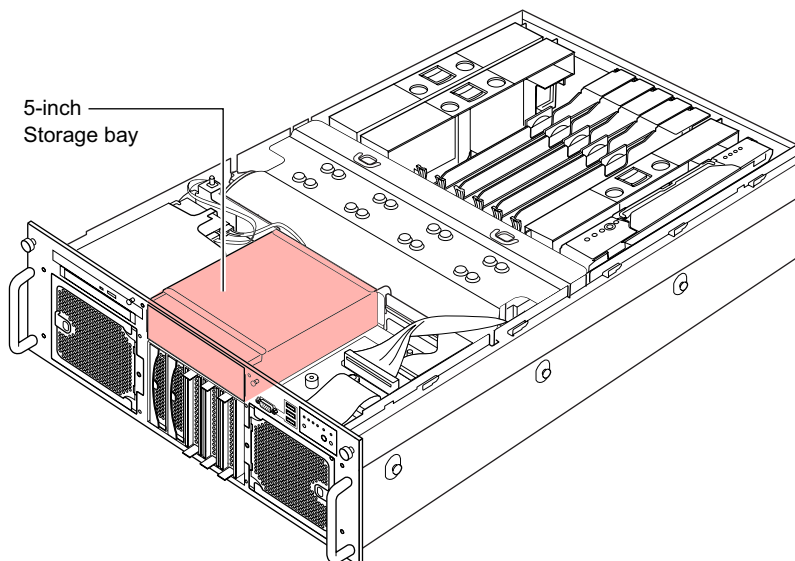


IMPORTANT

- ▶ Before adding a 5-inch internal device, install the OS and turn off the server.

7.7.1 Where to Install 5-inch Internal Devices

Install 5-inch internal devices in the 5-inch storage bay.



7.7.2 Installable 5-inch Internal Devices and Notes

This section describes the installable 5-inch internal devices and notes. Check this section before installing.

■ Installable 5-inch Internal Devices

The following types of 5-inch internal devices can be installed in this server.

table: Installable 5-inch Internal Devices

Product name	Model
Tape Drv DAT72 36GB internal	PG-DT5041
Tape Drv VXA-2 80GB	PG-VX201
Tape Drv LTO2 Ultrim2 200GB	PG-LT201

■ Connection

To install the internal VXA2 unit or the internal LTO2 unit, SCSI card (PG-1281) and SCSI cable (PG-CBLS026) are necessary.

■ SCSI ID

The SCSI ID is "4" or "5". Refer to the manual of the 5-inch internal device to confirm if it is set to "4" or "5".

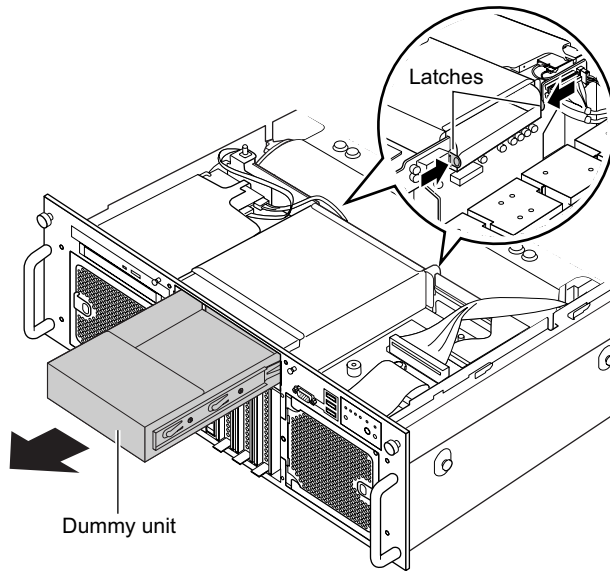
7.7.3 How to Install the 5-inch Internal Devices

Perform the following procedures to install a 5-inch internal device. For installing a 5-inch internal device, SCSI Ctrl U160 (PG-1281) must be installed in advance.

- 1** Set the SCSI IDs of the 5-inch internal devices.
For SCSI IDs of devices, refer to "n Installable 5-inch Internal Devices" (→pg.224).
- 2** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 3** Remove the top cover.
→"7.2 Removing and Attaching the Top Cover" (pg.184)
- 4** Touch a metal part of the server to discharge static electricity.

5 Remove the dummy unit.

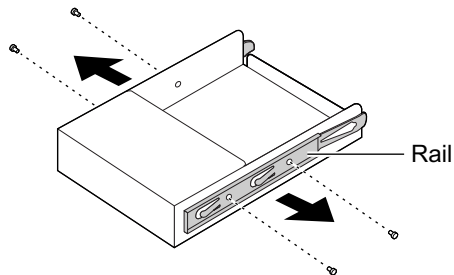
Push out the dummy unit slowly, keeping the latches on the 5-inch storage bay rails on both sides of the dummy unit pressed inward, and then pull it out towards you.

**POINT**

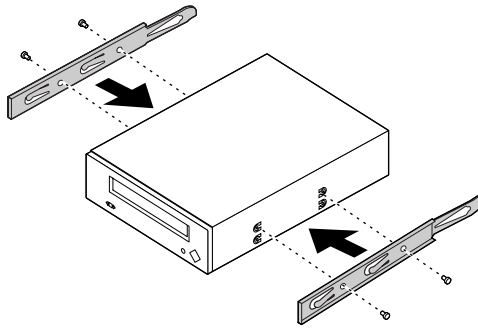
- ▶ Be sure to keep the removed dummy units for later use.

6 Detach the 5-inch storage bay rails from the removed dummy unit.

Remove four screws that fix the 5-inch storage bay rails to detach the rails.

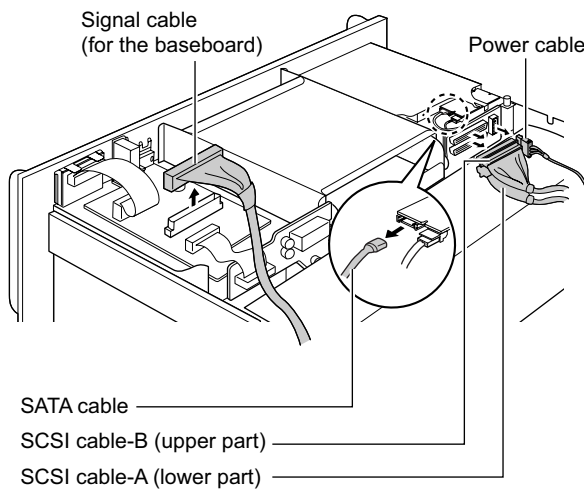


- 7** Attach the removed 5-inch storage bay rails to the 5-inch internal device to be added.



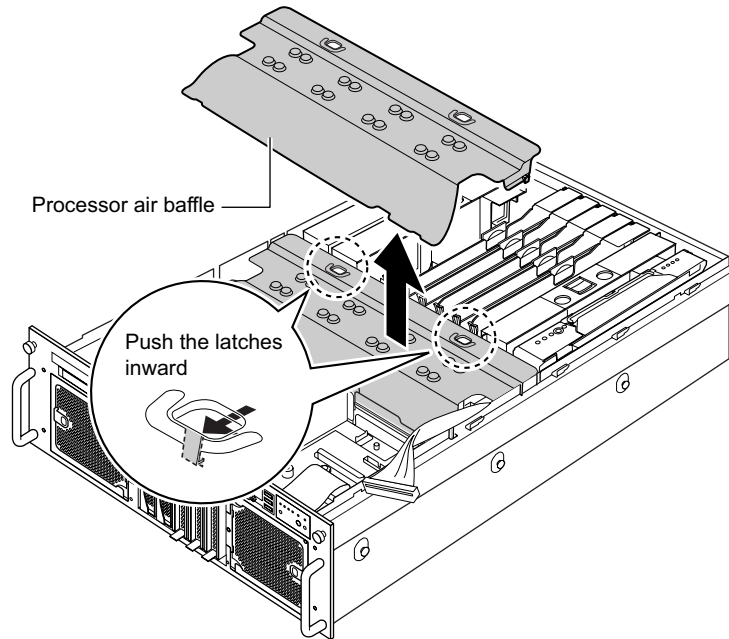
- 8** Remove the cable.

Remove the power cable, the SCSI cables (A and B), the signal cable for the baseboard, and the SATA cable.



9 Remove the upper processor air baffle from the server.

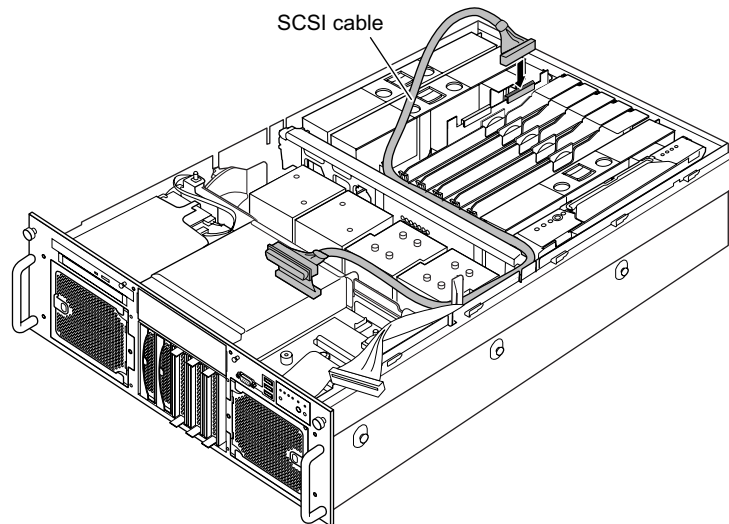
Insert your fingers in the hole in the top of the baffle, and then lift the baffle up to remove it by pushing the latches inward.

**10** Connect the internal option cable.

The cables to be connected differ depending on the installed internal options.

For Tape Drv VXA-2 80GB and Tape Drv LTO2 Ultrim2 200GB

Connect the SCSI cable to the SCSI Ctrl U160 (PG-1281). Pass the SCSI cable under the cable route of the center brace.



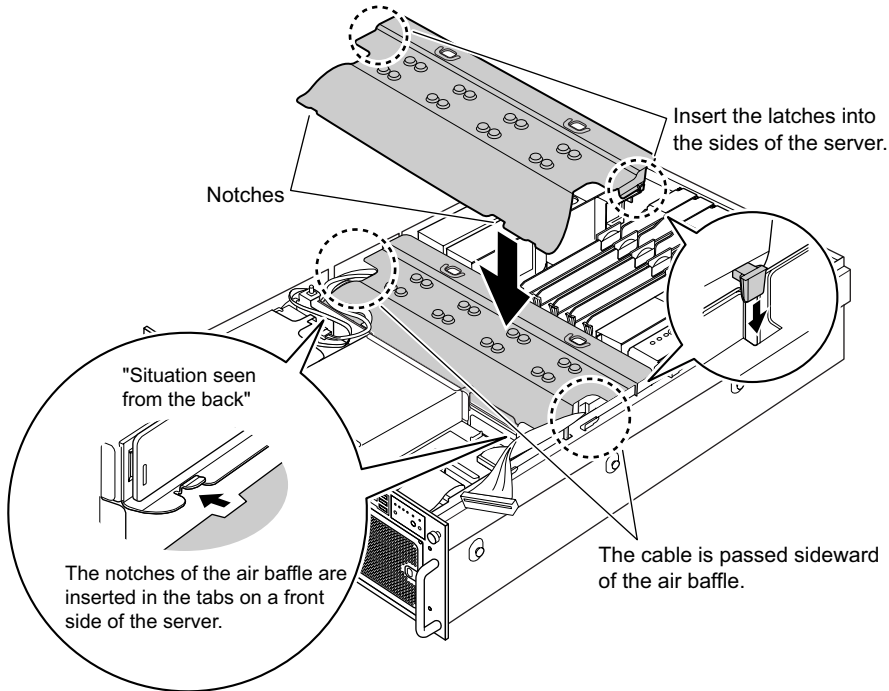
For Tape Drv DAT72 36GB internal

Connect the USB cable to the USB connector on the baseboard. For the location of the USB connector, refer to "1.3.4 Baseboard" (→pg.28).

11 Install the upper processor air baffle.

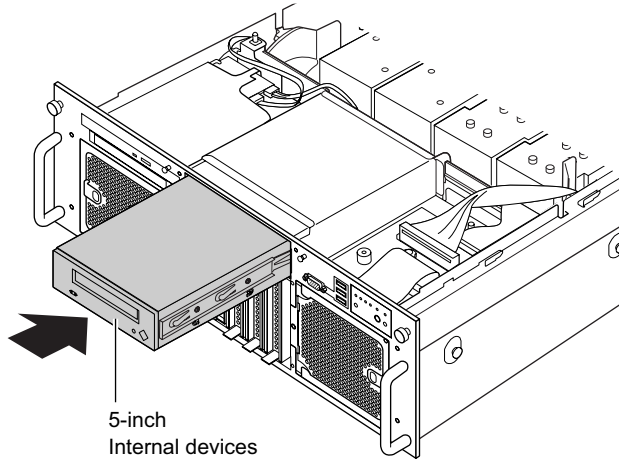
Insert the latches on the sides of the baffle into the sides of the server, and then insert the notches on the front side of the baffle into the front of the server to install the cover.

Install the cable through the sides of the baffle. At this time, make sure that the cable is not pinched.



12 Connect the cables which are removed in step 8 to the original positions.

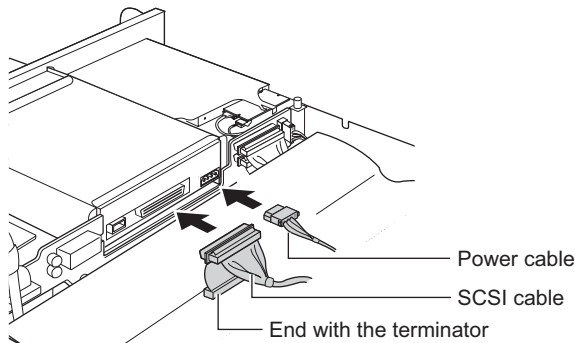
- 13** Install the 5-inch internal device in the 5-inch storage bay.
 To make it easier to connect the cables, do not slide the device all the way in.



- 14** Connect a power cable and a SCSI cable or USB cable to the 5-inch internal device.

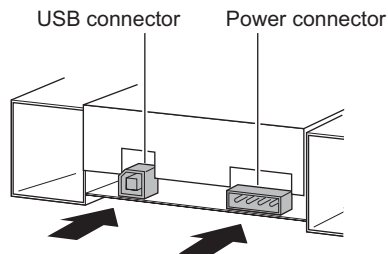
For Tape Drv VXA-2 80GB and Tape Drv LTO2 Ultrim2 200GB

Connect the end with the terminator of the SCSI cable to the 5-inch internal device.



For Tape Drv DAT72 36GB internal

[Tape Drv DAT72 36GB internal Rear]



- 15** Push in the 5-inch internal device all the way to install it completely.
Push the device until it locks with a clicking sound.
- 16** Install the top cover.

7.8 Installing the Internal DVD-RAM Unit

A preinstalled CD-RAM drive unit can be changed to the internal DVD-RAM unit.



WARNING



Electric Shock

- Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock.
- Use our genuine internal options only. Failure to do so may cause a device failure, fire, or electric shock.



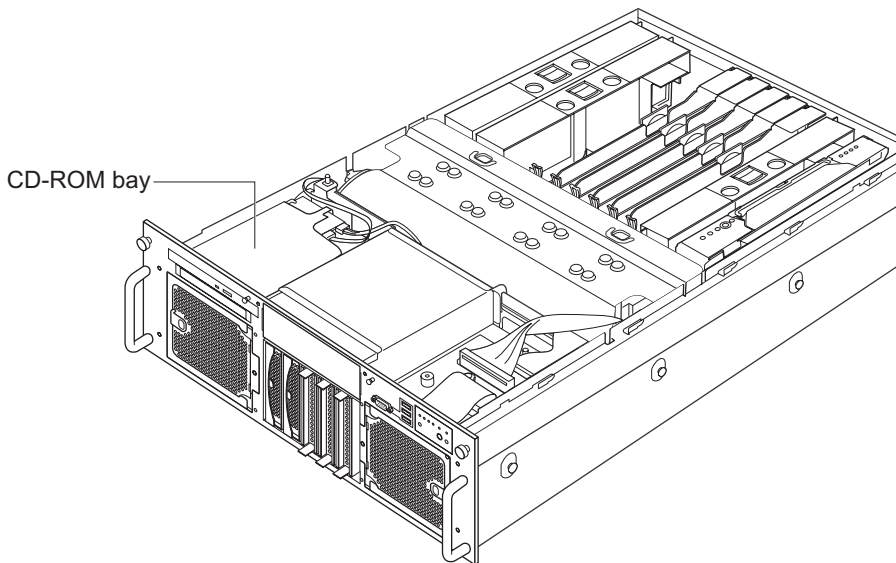
CAUTION



- Do not touch the circuitry on boards and soldered parts. Hold the metallic areas or the edge of the circuit boards.

7.8.1 Installation Location

The internal DVD-ROM unit is installed to the following CD-ROM bay.



■ Installable DVD-RAM Unit

The following DVD-RAM unit can be installed on this server.

table: Installable DVD-RAM Unit

Product	Model
Internal DVD-RAM unit	PG-DVA103

7.8.2 How to Install DVD-RAM Unit

- 1** Turn off the server and connected devices, and unplug all power cables from the outlet.
- 2** Remove the top cover.
→"7.2 Removing and Attaching the Top Cover" (pg.184)
- 3** Touch a metal part of the server to discharge static electricity.
- 4** Remove all SATA and power cables connected to the CD-ROM unit.
- 5** Push the lock button to unlock it and pull the CD-ROM unit towards you to remove it.
- 6** Remove the CD-ROM drive from the frame.
- 7** Remove the SATA adapter from the CD-ROM drive and install the DVD-RAM unit.
- 8** Install the DVD-RAM unit in the frame.
Insert the left tab of the frame in the hole on the left side of the DVD-ROM and press the right side of the DVD-ROM until the lock is clicked.
- 9** Install the DVD-RAM unit to the CD-ROM bay of the server.
- 10** Connect the SATA and power cables disconnected in Step 4.
- 11** Attach the top cover.

7.9 Connecting External SCSI Devices

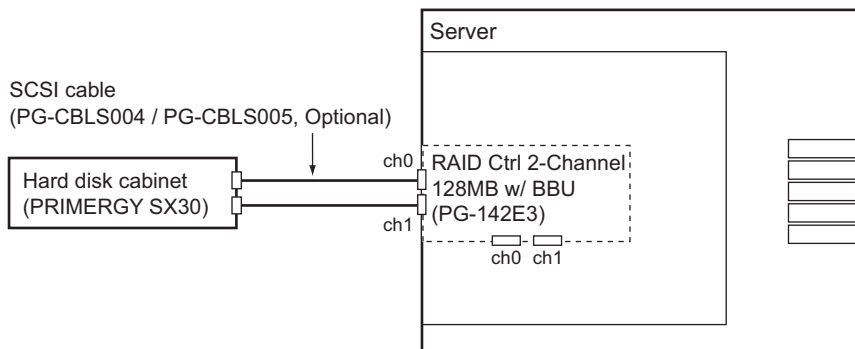
This section explains connection of external SCSI devices.

7.9.1 Connecting a Hard Disk Cabinet

When a RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3) is used, a hard disk cabinet (PRIMERGY SX30) can be connected to configure a large-capacity array system.

The following shows an example of system configuration and connection.

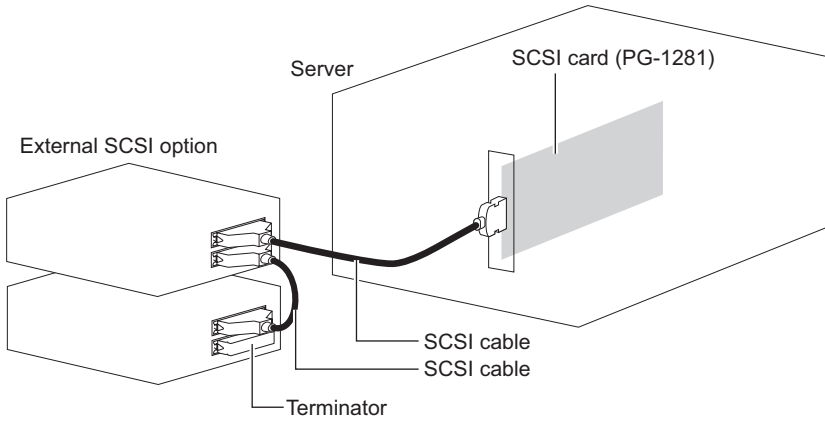
Example of a system configuration when connecting the hard disk cabinet



7.9.2 Connecting External SCSI Devices

External SCSI devices with different SCSI IDs are connected in a daisy chain as shown in the following figure.

Up to two external SCSI devices can be connected.



■ Notes on Connecting External SCSI Devices

● Terminal resistor

Install a terminal resistor to the external SCSI device at the end of the daisy chain. Alternatively, use the auto termination function of the external SCSI device.

Be sure to use the terminal resistor supplied with a SCSI device only on that device.

table: Types of Terminal Resistor

Connector on optional SCSI devices	Terminal resistor
Half-pitched 68-pin connector	Supplied with optional SCSI devices

● Daisy Chain Connection

Daisy chain connection is impossible between devices with different SCSI interfaces. Use a SCSI Ctrl U160 separately for connection.

LTO2 library devices cannot be connected in a daisy chain.

Chapter 8

Configuring Hardware and Utilities

8

This chapter explains how to make the environment settings necessary to operate the server and how to use each utility.

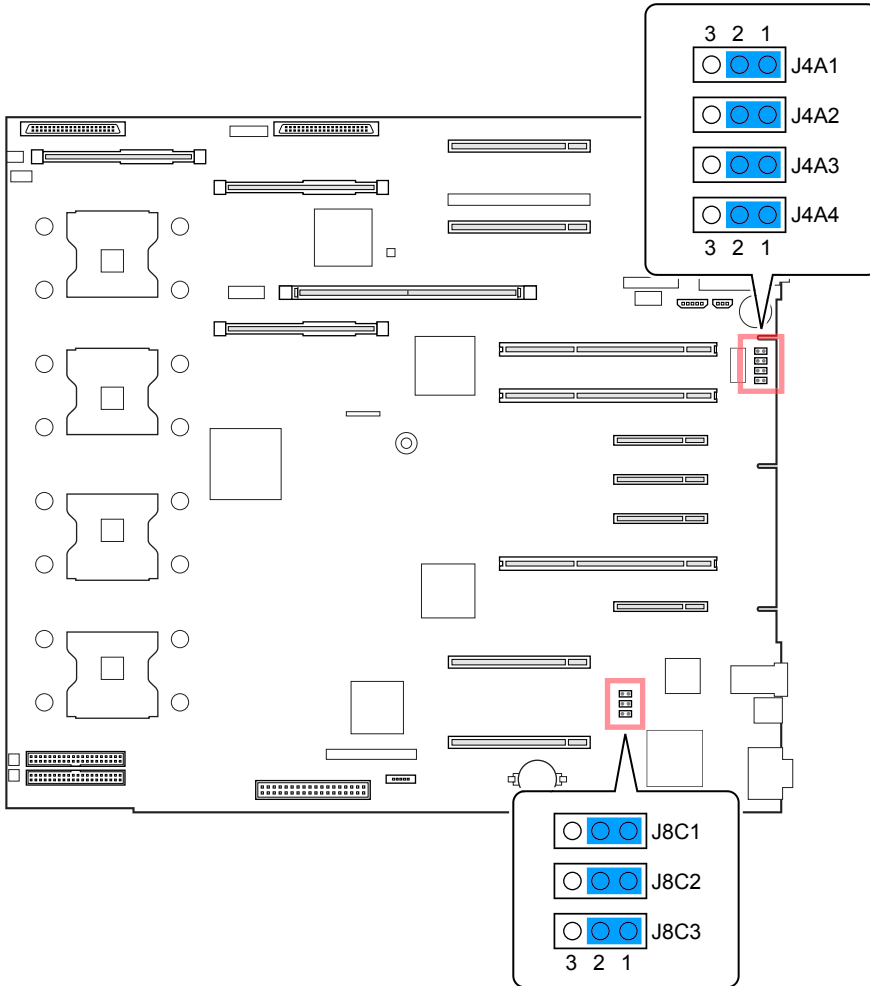
8.1 Jumper Settings	236
8.2 Configuring Boot Settings	238
8.3 BIOS Setup Utility	243

8.1 Jumper Settings

The BIOS can be set through the jumper settings.

8.1.1 Jumper Location

The jumper of the server is located on the baseboard as shown below.



8.1.2 Jumper Settings

The meaning and setting value of jumper are as follows:

table: Jumper Settings

Jumper	meaning	setting value	Description
J4A1	BIOS password	1-2 (default) 2-3	To delete or disable the password, set "2-3".
J4A2	BIOS writing	1-2 (default) 2-3	Nonmodifiable jumper. Do not change the setting.
J4A3	BIOS recovery	1-2 (default) 2-3	To recovery the BIOS, set "2-3".
J4A4	NVRAM clear	1-2 (default) 2-3	To clear the NVRAM forcibly, set "2-3".
J8C1	FRB3 timer	1-2 (default) 2-3	Nonmodifiable jumper. Do not change the setting.
J8C2	BMC	1-2 (default) 2-3	Nonmodifiable jumper. Do not change the setting.
J8C3	Rolling BIOS	1-2 (default) 2-3 No setting	Nonmodifiable jumper. Do not change the setting.

POINT

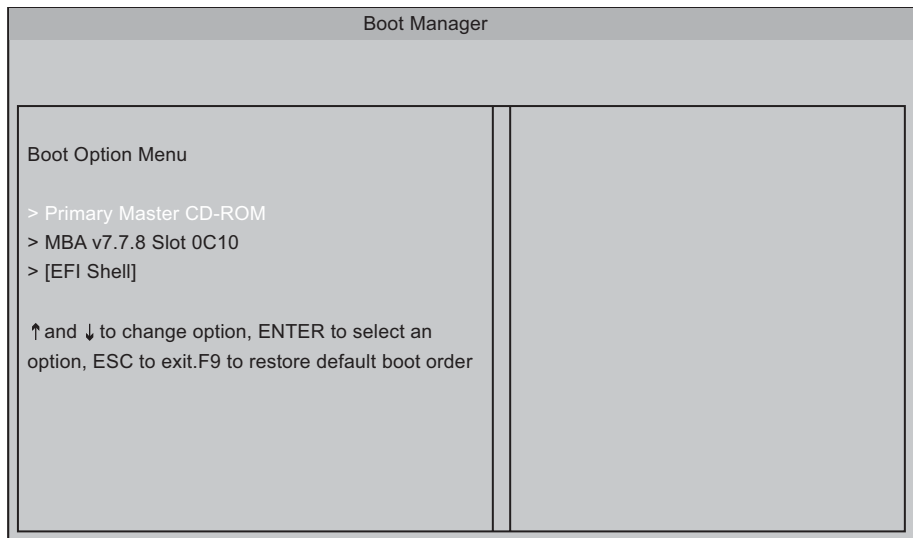
Rolling BIOS function

- ▶ This server supports the Rolling BIOS function. With the Rolling BIOS feature, two copies of the BIOS are stored. These are designated as the primary and secondary BIOS image. If the BIOS fails to boot to the primary image, the secondary BIOS image is used instead of the primary image. In this case, a POST error message will be logged to system event. BIOS updates are diverted to the secondary image.

8.2.2 Boot Manager

In the Boot Manager, select the boot device.

- 1** Turn on the server and start up the System Options menu.
→"8.2.1 System Options Menu" (pg.238)
- 2** Press the [↓] key to select [Boot Manager] and press the [Enter] key in the System Options menu.
- 3** The Boot Manager starts up and the following screen appears. The displayed items vary depending on the connected devices.



- 4** Use the [↓] and [↑] keys to select the boot device, and press the [Enter] key. The system starts up from the selected device.

8.2.3 Boot Maintenance Manager

In the Boot Maintenance Manager, the boot settings, such as the boot device order and the timeout period for automatic OS startup, can be configured.

- 1** Turn on the server and start up the System Options menu.
→"8.2.1 System Options Menu" (pg.238)
- 2** Press the [↓] key to select [Boot Maintenance Manager] and press the [Enter] key in the System Options menu.
- 3** The Boot Maintenance Manager starts up and the following screen appears.

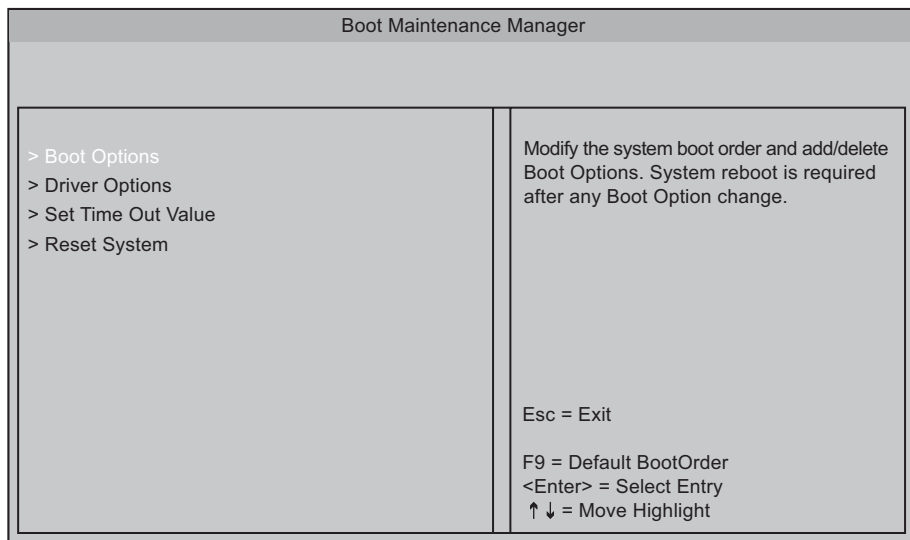


table: Submenus of Boot Maintenance Manager

Item	Description
Boot Options	Sets the boot device order and the boot device for each device type. For setting procedures, refer to "■ Boot Options" (→pg.241).
Driver Options	This option cannot be used for this server. Do not select this.
Set Time Out Value	Sets the timeout period for automatic startup. For setting procedures, refer to "■ Set Time Out Value" (→pg.242).
Reset System	Restarts the system. If you select [Reset System] and press the [Enter] key, the system restarts.

- 4** Use the [↓] key to select the desired setting, and press the [Enter] key.

■ Boot Options

Sets the boot device order and priority.

- 1 Select [Boot Options] and press the [Enter] key.

The [Boot Options] menu appears.

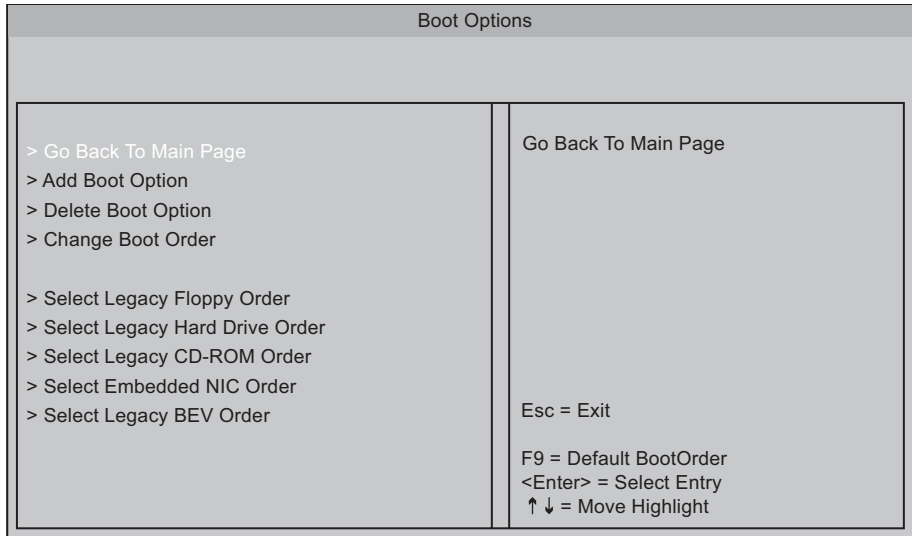


table: Submenus of the Boot Options Menu

Item	Description
Add Boot Option	Adds a boot device. This function cannot be used.
Delete Boot Option	Deletes a boot device. This function cannot be used.
Change Boot Order	Changes the order of the boot devices.
Select Legacy Floppy Order	Selects the floppy disk drive with the highest priority when multiple floppy disk drives are connected.
Select Legacy Hard Drive Order	Selects the hard disk drive with the highest priority when multiple hard disk drives are connected.
Select Legacy CD-ROM Order	Selects the CD-ROM drive with the highest priority when multiple CD-ROM drives are connected.
Select Embedded NIC Order	Selects the NIC with the highest priority when multiple NICs are connected.
Select Legacy BEV Order	Selects the BEV with the highest priority when multiple BEVs are connected.

● Changing the Order of the Boot Devices

- 1** Select [Change Boot Order] and press the [Enter] key.
The Change Boot Order screen appears. The devices are listed in the boot order from the top.
- 2** Select [Change <1st/2nd/3rd/4th> Boot option order] and press the [Enter] key.
Then select the boot device and press the [Enter] key.
- 3** When the whole boot order is complete, select [Apply Changes] and press the [Enter] key.
- 4** Select [Go Back To Main Page] and press the [Enter] key.
The boot order is modified and the screen returns to the Boot Maintenance Manager menu.

● Setting the Boot Device for Each Device Type

Selects the boot device when multiple devices of the same type are connected.

- 1** Select the device type to modify, and press the [Enter] key.
The [Select <device name> Order] screen appears.
- 2** Select the boot device to give the priority, and press the [Enter] key.
- 3** Select [Apply Changes] and press the [Enter] key.
- 4** Select [Go Back To Main Page] and press the [Enter] key.
The boot device is chosen and the screen returns to the Boot Maintenance Manager menu.

■ Set Time Out Value

Sets the timeout period for automatic startup.

- 1** Select [Set Time Out Value] and press the [Enter] key.
The [Set Time Out Value] screen appears.
- 2** In the input area of the [Auto Boot Time-Out] item, enter the timeout period for automatic startup in seconds.
Initially, the value is set to [10].
- 3** Press the [Enter] key.
- 4** Select [Apply Changes] and press the [Enter] key.
- 5** Select [Go Back To Main Page] and press the [Enter] key.
The screen returns to the Boot Maintenance Manager menu.

8.3 BIOS Setup Utility

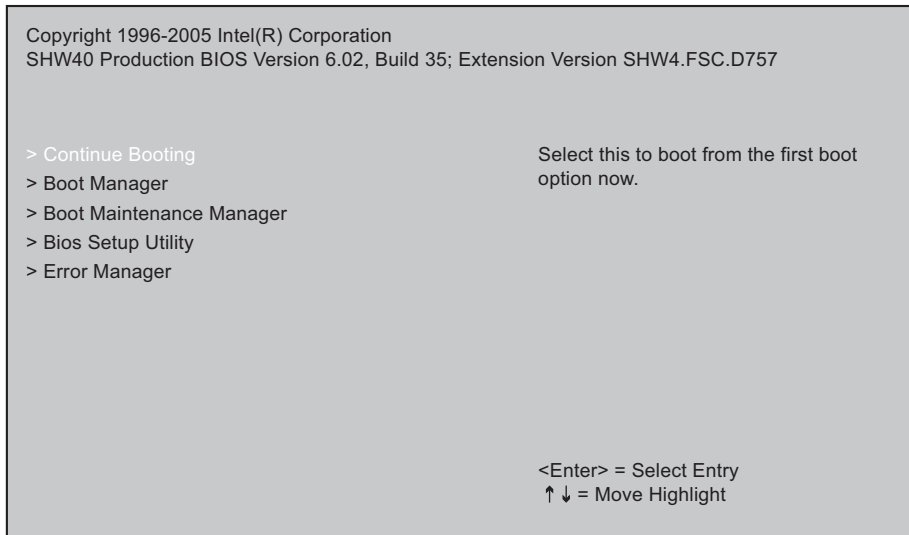
This section explains settings for the BIOS Setup Utility.

8.3.1 Starting and Exiting the BIOS Setup Utility

The following explains how to start and exit the BIOS Setup Utility.

■ How to Start the BIOS Setup Utility

- 1** Turn on the server and start up the System Options menu.
→"8.2.1 System Options Menu" (pg.238)
- 2** Press the [↓] key to select [BIOS Setup Utility] and press the [Enter] key in the System Options menu.



- 3** The BIOS Setup Utility is started up and the BIOS Setup Utility screen appears.

● Key Operations in the BIOS Setup Utility

The roles of the keys used for setting the BIOS Setup Utility are as follows:

table: List of Key Operations on the BIOS Setup Utility Window

Key	Description
[Esc]	Ends this utility. In the case of a submenu, it returns to the previous menu.
[↑][↓]	Scrolls through the menu option list.
[←][→]	Switches between menus.
[-][+]	Changes the value of an item.
[Enter]	Activates the selected item or displays the sub menu of items with the mark. In items in which ► is displayed the sub menu appears.
[F9]	Sets each item to its initial (default) value.
[F10]	Saves the setting values and ends the operation.

■ How to Exit the BIOS Setup Utility

- 1 Use the [←] [→] keys to display the [Save, Restore & Exit] menu window, and select the exit mode. Or press the [F10] key instead.

To save configuration changes before exiting:

Move the cursor to [Save Changes and Exit] and press the [Enter] key.

The message "Save configuration changes and exit now?" is displayed.

To exit without saving configuration changes:

Move the cursor to [Discard Changes and Exit] and press the [Enter] key.

When the setting are changed, the "Configuration has not been saved! Save before exiting?" message is displayed.

- 2 Use the [←] [→] keys to move the cursor to [Yes] or [No], and press the [Enter] key.

If you selected [Save Changes and Exit] from the [Exit] menu:

- Select [Yes] to exit.
After saving changes to settings, the BIOS Setup Utility closes and the server restarts.
- Select [No] not to exit.
The display returns to the BIOS Setup Utility window.

If you selected [Discard Changes and Exit] from the [Exit] menu:

- Select [Yes] to save changes before exit.
The BIOS Setup Utility closes and the server restarts.
- Select [No] when not saving the settings.
The BIOS Setup Utility closes and the OS starts.

8.3.2 Main Menu

The [Main] menu is displayed when you start the BIOS Setup Utility.

Settings for time and date and for the drives are configured on the [Main] menu.

BIOS SETUP UTILITY	
Main	Processor Memory Devices Server Security Save, Restore & Exit
Main	
Set General System Parameters	Current BIOS Version
Bios Version	SHW40.86B.P.06.02.0012
System Data	[MM/DD/YYYY]
System Time	[HH/MM/SS]
Hide Diagnostic Messages During Boot	<Disabled>
POST Error Pause	<Enabled>
Esc = Exit ↑ ↓ = Move Highlight	

table: Items on the Main Menu

Item	Setting	Description
System Date	Present date	Set the system date in [month:day:year] format. For example, August 20, 2005 is set as "08", "20", "2005".
System Time	Present time	Set the system time in [hours:minutes:seconds] format. The hours should be based on 24-hour clock. For example, 6:30:00 P.M. is set as "18", "30", "00". If a highly precise system time is necessary, install a network synchronized time system (NTP, etc.).
Hide Diagnostic Messages During Boot	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	Set the initial screen. The LOGO screen is displayed at booting when you select "Enabled", and the POST information is displayed when you select "Disabled".
POST Error Pause	<ul style="list-style-type: none"> Enabled (initial value) Disabled 	Set whether or not to stop system booting in case of POST error.

8.3.3 Processor Menu

The CPU information is displayed on the [Processor] menu, and you can change the settings here.

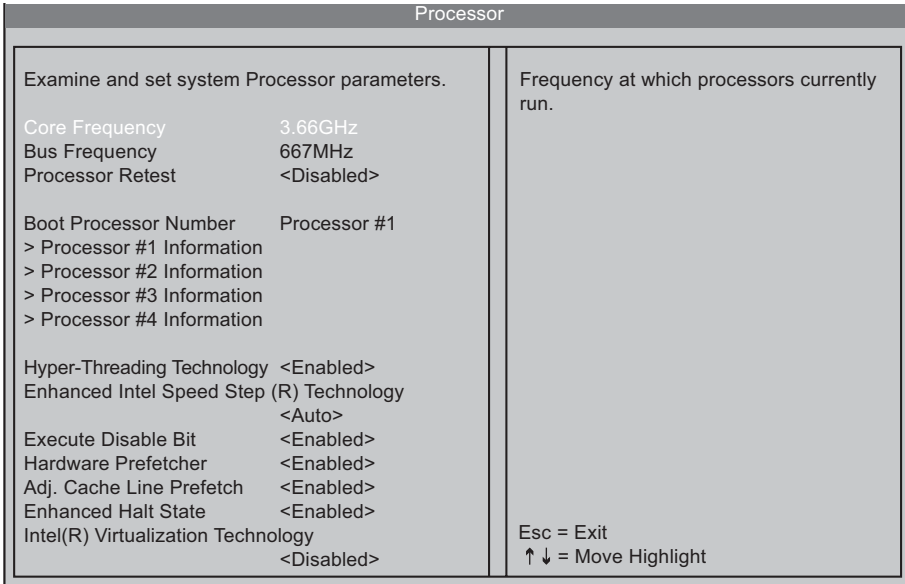


table: Items on the Processor Menu

Item	Settings	Description
Core Frequency		The frequency of installed CPU is displayed.
Bus Frequency		The FSB of installed CPU is displayed.
Processor Retest	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	
Boot Processor Number		The boot processor number is displayed.
Processor #1 Information		The CPU information is displayed. Select the number of the processor you want to check, and press the [Enter] key to display "■ Processor #1 to 4 Information Screen" (→pg.247) where the detailed information on installed CPU is displayed.
Processor #2 Information		
Processor #3 Information		
Processor #4 Information		
Hyper-Threading Technology	<ul style="list-style-type: none"> Enabled Disabled 	Set whether or not to enable the hyper-threading function. Note: Do not set this item to Enabled when you use Red Hat Enterprise Linux AS (v.3 for x86) with the system configuration where the Xeon processor 7041 (dual core) is installed.
Enhanced Intel Speed Step (R) Technology	<ul style="list-style-type: none"> Auto (initial value) Disabled 	These are CPU internal settings.
Execute Disable Bit	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	
Hardware Prefetcher	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	These are CPU internal settings. The performance may improve if this item is set to Enabled.

table: Items on the Processor Menu

Item	Settings	Description
Adj. Cache Line Prefetch	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	These are CPU internal settings. The performance may improve if this item is set to Enabled.
Enhanced Halt State	<ul style="list-style-type: none"> Enabled (initial value) Disabled 	These are CPU internal settings.
Intel(R) Virtualization Technology	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	Set whether or not to make the system virtual and make the function to execute two or more OS effective. This item is displayed only for the model with Xeon processor 7041.
Wait For Local Snoop	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	These are CPU internal settings.
Chipset Priority Mode	<ul style="list-style-type: none"> Other (initial value) Processor/Memory I/O Throughput 	These are Chipset internal settings.

■ Processor #1 to 4 Information Screen

The information on selected Processor number is displayed.

table: Items on the Processor #1 to 4 Information Submenu

Processor Family	The information on the processor family is displayed.
Maximum Frequency	The maximum frequency of installed CPU is displayed.
Cache Size	The cache size of installed CPU is displayed.
CPUID Register	The CPUID information of installed CPU is displayed.
Thread 1 Status	The thread status is displayed.
Thread 1 Health	
Thread 2 Status	
Thread 2 Health	

8.3.4 Memory Menu

Settings for memory are configured on the [Memory] menu.

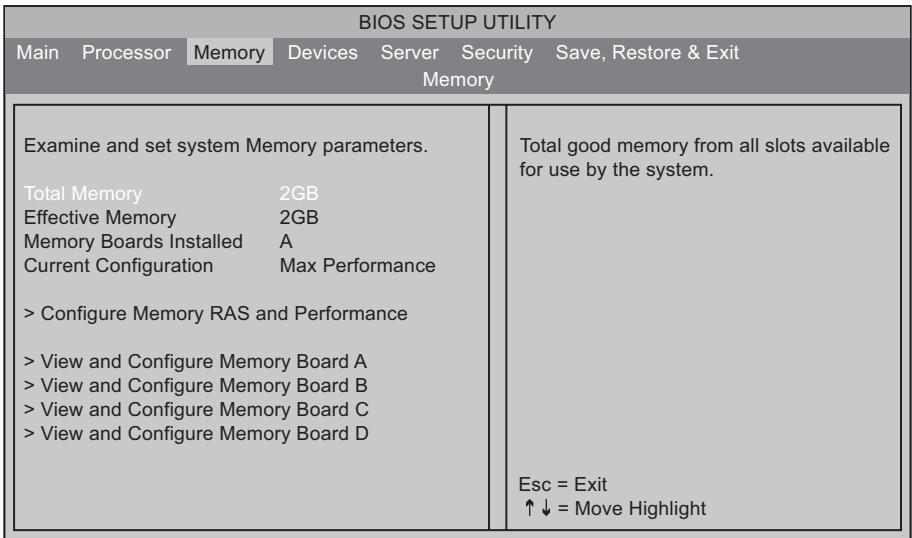


table: Items on the Memory Menu

Item	Settings	Description
Total Memory		The total amount of memory installed is displayed.
Effective Memory		The total amount of memory used on the OS is displayed.
Memory Boards Installed		The memory boards installed are displayed.
Current Configuration		The current memory configuration is displayed.
Configure System RAS and Performance		Configure the settings for memory configuration. Press the [Enter] key to display "8.3.5 Configure System RAS and Performance Submenu" (→pg.249).
View and Configure Memory Board A		Configure the settings for memory boards. Press the [Enter] key to display "8.3.6 View and Configure Memory Board Submenu" (→pg.250).
View and Configure Memory Board B		
View and Configure Memory Board C		
View and Configure Memory Board D		

8.3.5 Configure System RAS and Performance Submenu

Settings for memory configuration are configured on the [Configure System RAS and Performance] submenu.

table: Items on the Configure System RAS and Performance Submenu

Item	Settings	Description
Hardware Memory Test	<ul style="list-style-type: none"> Enabled (initial value) Disabled 	Set whether or not to enable the POST memory test.
Patrol Scrub	Enabled (unchangeable)	Set to enable the memory scrubbing function.
Retest All System Memory	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	Set whether or not to retest all system memory after the event such as replacing the memory. "Enabled" returns to "Disabled" automatically after testing.
Sparing Threshold	15 (unchangeable)	This value cannot be changed.
RAID Upgrade Gap	Disabled (unchangeable)	Set the size of memory which can be added when hot-replacing the memory boards in the memory RAID configuration.
Desired Memory Configuration	<ul style="list-style-type: none"> Max Performance (initial value) Max Compatibility Mirror RAID 	Set the memory configuration. "Max Compatibility" is not supported.
View Configuration Details	The detailed information on memory configuration is displayed. Press the [Enter] key to display "■ View Configuration Details Screen" (→pg.249).	
Set Memory Hotplug in SRAT table	Yes (unchangeable)	Set to enable the control area for the memory Hot Add. "Hot Add" is not supported.

■ View Configuration Details Screen

table: Items on the View Configuration Details

Item	Description
Configuration	The current memory configuration is displayed.
Max Effective Size	The maximum effective size of memory is displayed in MB.
Min Effective Size	The size in case of that the maximum size of memory is set to the spare is displayed in MB.
Capabilities	
Configuration Possible	Availability of selected memory configuration is displayed.
Sparing	Availability of spare memory with the current memory configuration is displayed.
Hot Replace	Availability of Hot Replace with the current memory configuration is displayed.
Hot Add	Availability of Hot Add with the current memory configuration is displayed. "Hot Add" is not supported.
Board Interleave	The information on memory board interleave is displayed.

8.3.6 View and Configure Memory Board Submenu

Settings for memory boards are configured on the [View and Configure Memory Board] submenu.

table: Items on the View and Configure Memory Board Submenu

Item	Settings	Description
Board Status	<ul style="list-style-type: none"> • Not Installed • Healthy • Using Spare • Disabled 	The memory board status is displayed.
Retest Board Memory	<ul style="list-style-type: none"> • Enabled • Disabled (initial value) 	Set whether or not to retest memory of selected memory board. "Enabled" returns to "Disabled" automatically after testing.
Reserve Rank for Spare	<ul style="list-style-type: none"> • Enabled • Disabled (initial value) 	Set whether or not to enable the spare memory. When "Enabled" is set, the bank which has the largest memory is set as the spare memory.
LABEL	DIMM_<1A/1B/2A/2B>	The number of DIMM is displayed.
RANK	<0-4>	The RANK number of DIMM is displayed. When DIMM is not installed, "0" is displayed.
SIZE	The size of DIMM is displayed in MB or GB.	
STATUS	<ul style="list-style-type: none"> • Installed • Not-Installed • Partial • Failed • Unsupported 	The status of DIMM is displayed.

8.3.7 Devices Menu

Settings for devices are configured on the [Devices] menu.

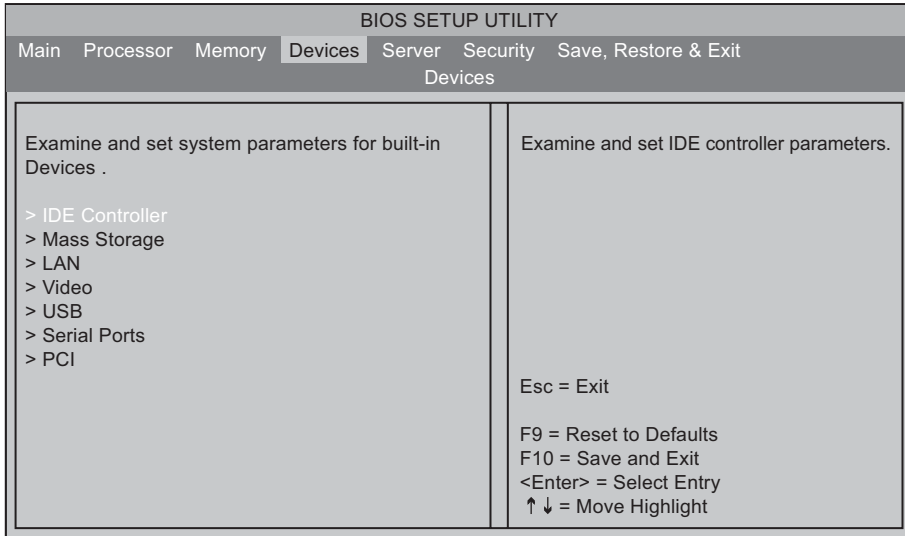


table: Items on the Devices Menu

Item	Settings	Description
IDE Controller	Configuration for IDE Controller	
Enable Serial ATA	Enabled (unchangeable)	Set to enable the Serial ATA controller.
Primary Master	ICH Serial ATA Controller	The device name of controller is displayed.
Mass Storage	Configuration for onboard SCSI array controller	
Enable On-board SCSI	Enabled (unchangeable)	Set to enable the onboard SCSI array controller.
RAID Activation Key	Installed	The information whether the onboard RAID Activation Key is installed or not is displayed.
LAN	Configuration for onboard LAN controller	
Enable On-board NIC	<ul style="list-style-type: none"> • Enabled (initial value) • Disabled 	Set whether or not to enable the onboard LAN.
Enable On-board NIC ROM	<ul style="list-style-type: none"> • Enabled (initial value) • Disabled 	Set whether or not to enable the expansion ROM with the onboard LAN.
NIC 1 MAC Address	The MAC address of the onboard LAN 1 is displayed.	
NIC 2 MAC Address	The MAC address of the onboard LAN 2 is displayed.	
Video	Configuration for video controller	
Enable On-board Video	Enabled (unchangeable)	Set to enable the onboard video controller.

table: Items on the Devices Menu

Item	Settings	Description
USB	Configuration for USB controller	
USB Controller Enable	Enabled (unchangeable)	Set to enable the USB controller.
USB 2.0 Controller	Disabled (unchangeable)	Set whether or not to enable the USB 2.0 controller.
Serial Ports	Configuration for serial ports	
COM1 Enable	<ul style="list-style-type: none"> • Enabled (initial value) • Disabled 	Set whether or not to enable the serial ports (COM1).
Address	<ul style="list-style-type: none"> • 3F8 (initial value) • 2F8 • 3E8 • 2E8 	Set the base I/Q address of serial port (COM1).
IRQ	<ul style="list-style-type: none"> • 3 • 4 (initial value) 	Set the IRQ of serial port (COM1).
PCI	Configuration for PCI slots	
Enable Slot 1 ROM	<ul style="list-style-type: none"> • Enabled • Disabled (initial value) 	Set whether or not to enable the expansion ROM with each PCI slot.
Enable Slot 2 ROM		
Enable Slot 3 ROM		
Enable Slot 4 ROM		
Enable Slot 5 ROM		
Enable Slot 6 ROM		
Enable Slot 7 ROM		
Enable FC Card ROM		
Boot to ROMB Hard Drive	<ul style="list-style-type: none"> • Auto (initial value) • First • Last 	Set the order of option ROM scanning.
PCI memory mapped IO space	<ul style="list-style-type: none"> • 1GB (initial value) • 2GB • 3GB 	Set the memory capacity that BIOS secures for the PCI slot.

8.3.8 Server Menu

Settings for server are configured on the [Server] menu.

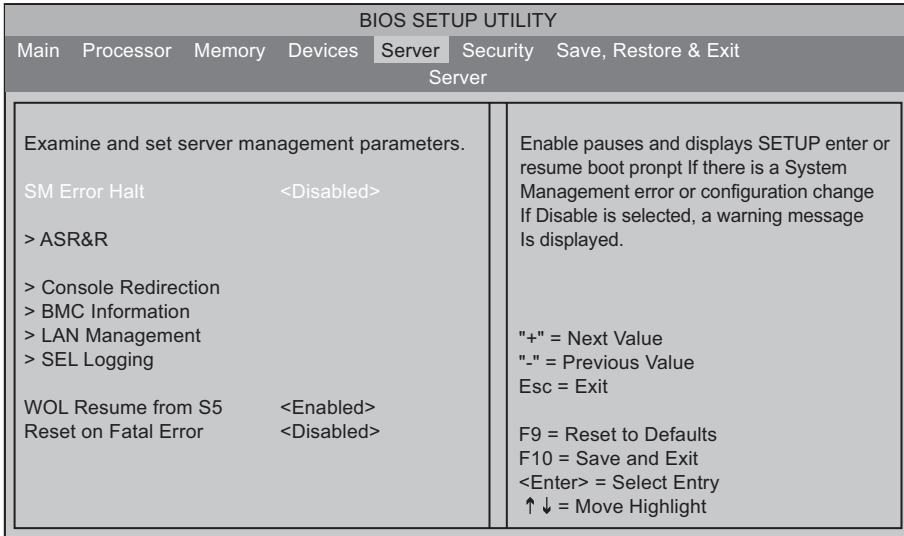


table: Items on the Server Menu

Item	Settings	Description
SM Error Halt	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	Set whether or not to stop booting in case of System management Error or Configuration Error.
ASR&R	Set for booting control. Press the [Enter] key to display "8.3.9 ASR&R Submenu" (→pg.254).	
Console Redirection	Set for console redirection. Press the [Enter] key to display "8.3.10 Console Redirection Submenu" (→pg.255).	
BMC Information	BMC information is displayed. Press the [Enter] key to display "8.3.11 BMC Information Submenu" (→pg.255).	
LAN Management	Set for onboard LAN. Press the [Enter] key to display "8.3.12 LAN Management Submenu" (→pg.256).	
SEL Logging	Set for system event log. Press the [Enter] key to display "8.3.13 SEL Logging Submenu" (→pg.256).	
WOL Resume from S5	<ul style="list-style-type: none"> Enabled (initial value) Disabled 	Set whether or not to turn on via a network.
Reset on Fatal Error	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	Set whether or not to restart the server when a fatal error occurs.

8.3.9 ASR&R Submenu

Settings for booting control are configured on the [ASR&R] submenu.

table: Items on the ASR&R Submenu

Item	Settings	Description
O/S Boot Timeout	<ul style="list-style-type: none"> • Enabled • Disabled (initial value) 	<p>Set whether or not to enable the "OS Boot Monitoring" function. The system restarts automatically in case of stopping booting the OS. This can be set on the ServerView.</p> <p>Note:</p> <ul style="list-style-type: none"> ▶ Be sure to set "Disabled" when the ServerView is not installed to the OS. If you set "Enabled" in above case, unintended power-off or restarting may occur. ▶ Even with the ServerView, when the system is booted with the ServerStart CD-ROM or DOS floppy disk, be sure to set "Disabled". If you set "Enabled" in above case, unintended power-off or restarting may occur. ▶ To set this function, refer to "ServerView User's Guide" to understand the specifications and operational procedures.
O/S Boot WD Time (min)	<ul style="list-style-type: none"> • 100 (initial value) • 0 ~ 100 	Set the time out value by the minute.
O/S Boot WD Behavior	<ul style="list-style-type: none"> • Continue (initial value) • Reset • Power Cycle 	Set the behavior in time out.
ASR&R Boot Delay (min)	<ul style="list-style-type: none"> • 2 (initial value) • 0 ~ 30 	Set the standby time between shutdown and restarting by the minute. When the standby time passes, the system is restarted.
Power Cycle Delay	<ul style="list-style-type: none"> • 5 (initial value) • 0 ~ 15 	Set the time between power off and on.
Boot Retry Counter	<ul style="list-style-type: none"> • 3 (initial value) • 0 ~ 7 	Set a maximum number of retrying OS booting.
Diagnostic System	Disabled (unchangeable)	This value cannot be changed.
Next Boot Uses	Boot Option (unchangeable)	This value cannot be changed.
Diagnostic Lan Device	Use Boot Order (unchangeable)	This value cannot be changed.
Temperature Monitoring	Disabled (unchangeable)	Set whether being possible to turn on the server outside the range of temperature conditions (10 to 35 degrees C).

8.3.10 Console Redirection Submenu

Settings for console redirection are configured on the [Console Redirection] submenu.

table: Items on the Console Redirection Submenu

Item	Settings	Description
COM1 Console Redirection		
Console Redirection	<ul style="list-style-type: none"> Enabled Disabled (initial value) 	Set whether or not to enable the console redirection.
Flow Control	<ul style="list-style-type: none"> None (initial value) RTS/CTS XON/XOFF RTS/CTS + CD 	Set the flow control of console redirection.
Bit Rate	<ul style="list-style-type: none"> 9.6k 19.2k (initial value) 38.4k 57.6k 115.2k 	Set the bit rate.
Terminal Type	<ul style="list-style-type: none"> PC-ANSI VT100 VT100+ (initial value) VT-UTFB 	Set the terminal type when using console redirection.
Console Redirection Mode	<ul style="list-style-type: none"> Standard (initial value) Enhanced 	Set the execution mode for the console redirection.

8.3.11 BMC Information Submenu

The information on BMC (Baseboard Management Controller) is displayed.

table: Items on the BMC Information Menu

Item	Description
Board Part Number	The revision of board is displayed.
Board Serial Number	The serial number of board is displayed.
System Part Number	The parts number of the server is displayed.
System Serial Number	The serial number of the server is displayed.
Chassis Part Number	Nonuse
Chassis Serial Number	Nonuse
BMC Firmware Revision	The firmware revision of BMC is displayed.
SDR Revision	The revision of SDR is displayed.

8.3.12 LAN Management Submenu

Settings for onboard LAN are configured on the [LAN Management] submenu.

table: Items on the LAN Management Submenu

Item	Settings	Description
Static IP Enable	<ul style="list-style-type: none"> • Enabled • Disabled (initial value) 	Set whether or not to enable the static IP address assignment. When "Enabled" is set, the following items should be set.
Host IP Address	When setting "Static IP Enable" to "Enabled", set the host IP address.	
Router IP Address	When setting "Static IP Enable" to "Enabled", set the router IP address.	
NIC 1 MAC Address	The MAC address of the onboard LAN is displayed.	

8.3.13 SEL Logging Submenu

Settings for system event log are configured on the [SEL Logging] submenu.

table: Items on the SEL Logging Submenu

Item	Settings	Description
Clear Log	<ul style="list-style-type: none"> • Enabled • Disabled (initial value) 	Set whether or not to clear the event log.
Event Log Full Mode	<ul style="list-style-type: none"> • Maintain • Overwrite (initial value) 	Set whether or not to overwrite the event log if the area for the log is full. Note: ▶ When this setting is changed, existing event log is cleared. Before changing, refer to "9.3 System Event Log" (→pg.277) and save the log.

8.3.14 Security Menu

Settings for security are configured on the [Security] menu.

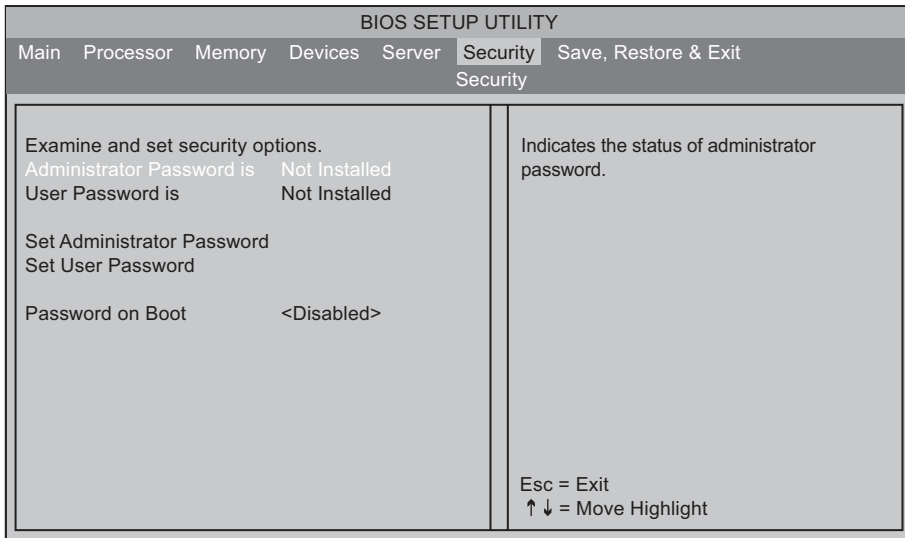


table: Items on the Security Menu

Item	Settings	Description
Administrator Password is	The status of administrator password is displayed. <ul style="list-style-type: none"> • Not Installed: The password is not set. • Installed: The password is set. 	
User Password is	The status of user password is displayed. <ul style="list-style-type: none"> • Not Installed: The password is not set. • Installed: The password is set. 	
Set Administrator Password	Set the administrator password. Press the [Enter] key to display the password entry screen and enter the password.	
Set User Password	Set the user password. Press the [Enter] key to display the password entry screen and enter the password.	
Password on Boot	<ul style="list-style-type: none"> • Disabled (initial value) • Enabled 	Set whether or not to require the password on booting.

8.3.15 Save, Restore & Exit Menu

Exit the BIOS Setup Utility from the [Save, Restore & Exit] menu.

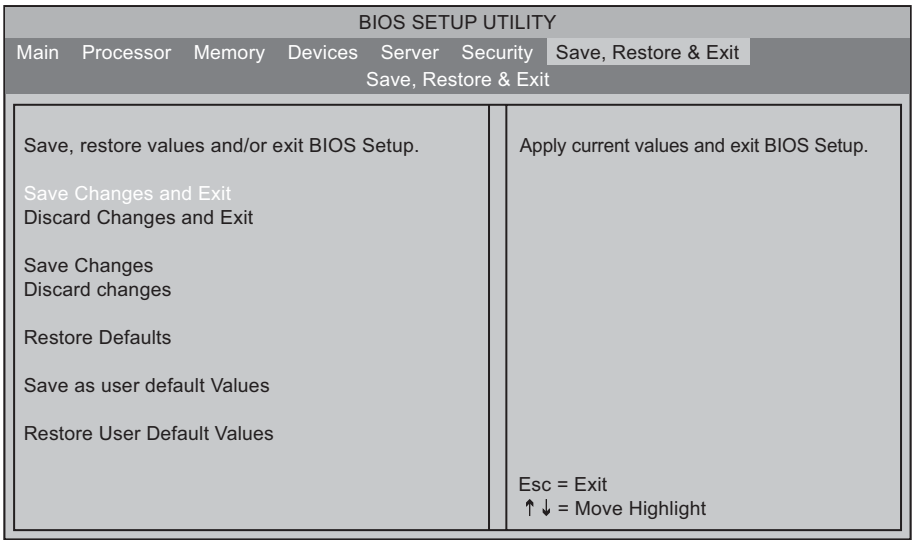


table: Items on the Save, Restore & Exit Menu

Item	Description
Save Changes and Exit	Select this to save changes and exit the BIOS Setup Utility.
Discard Changes and Exit	Select this to exit the BIOS Setup Utility without saving changes.
Save Changes	Select this to save changes.
Discard Changes	Select this to discard changes.
Restore Default	Select this to restore all settings to default values.
Save as user default Values	Select this to save changes as user default values.
Restore User Default Values	Select this to read in user default values and set.

Chapter 9

Operation and Maintenance

9

This chapter explains the necessary operations after starting to use this server as well as daily care and maintenance.

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9.1 Daily Maintenance

This section explains how to check the status of the operating server, as well as how to perform daily maintenance.

● Information for PRIMERGY

For the latest information on PRIMERGY, update modules, drivers and the software, refer to the Fujitsu PRIMERGY website.

<http://primergy.fujitsu.com>

9.1.1 Checking the Server Condition

■ Checking Each LED

This server is equipped with LEDs that display various hardware conditions.

Check the server status via each LED after starting the server. For positions and functions of each status LED, refer to "1.3 Component Names and Functions" (→Pg.22).

■ Server Monitoring Tool (ServerView)

ServerView is software to monitor that the server hardware is in a normal state to protect important server resources. When using ServerView, the server hardware is monitored all the time. If an error that could cause trouble is detected, the administrator is notified in real-time for early detection. This allows the server administrator to remove a system error early and avoid trouble.

For an overview and installation of ServerView and other high reliability tools, refer to "1.2.2 High Reliability Tools" (→Pg.20) and "Chapter 6 High Reliability Tools" (→Pg.175).

9.1.2 Cleaning

Clean the server and optional devices periodically to prevent failures.



Electric Shock • Before cleaning, turn off the server and unplug the power cables from the outlets. Also power off peripherals and disconnect them from the server. Failure to do so can cause electric shock (→"1.4.3 Turning off the Server" (Pg.35)).

■ Cleaning the Server

Wipe with a soft, dry cloth. For stains that do not come off with a dry cloth, wipe with a cloth lightly dampened with a mild detergent. Once the stain has been removed, wipe off any remaining detergent with a cloth dampened with water. When wiping the server, be sure that no moisture enters the server machine.

Do not use solvents. Use a mild detergent only. Otherwise, the server may be damaged.

Use a vacuum cleaner periodically to prevent dust buildup in ventilation holes.

POINT

- ▶ In dusty environments, dust piles up on the front and rear panels of the server over short periods. Install the server in a different location to avoid failures.

■ Cleaning the Server Interior

In dusty environments, dust deposits in the server. Dust deposits may cause a server failure, fire, or electric shock. To keep the PRIMERGY server in good condition, use a vacuum cleaner periodically to remove dust deposits.

POINT**Cleaning components**

- ▶ CPUs: Dust deposits must be removed because it will impair the cooling performance.
- ▶ Fans: Remove dust from and around the fans.
- ▶ Memory/expansion cards: Remove dust between memory modules and between expansion cards. Remove dust from the connector before adding a memory module or an expansion card.
- ▶ Internal hard disk units/5-inch internal devices: Remove dust deposits from units and devices. Tape devices are particularly susceptible to dust and may cause failures. Install them in a clean environment.

**WARNING**

Electric Shock • Do not disassemble the PSU when cleaning the server interior. Doing so can cause failures or electric shock.

IMPORTANT

- ▶ Be careful when removing components such as CPUs, memory modules, or hard disk units. Be sure to install parts and cables in the original position.
- ▶ Leaving dust brushed off or blown with air in the server can cause failure. Be sure to take it out of the server.

■ Optional Devices

For cleaning optional devices, refer to the manual supplied with options.

9.2 Troubleshooting

This section explains the resolutions when the server is not running properly or when error messages are displayed.

For each situation, refer to the following. If the problem is not resolved after performing the following troubleshooting, contact an office listed in the "Contact Information" of "Start Guide".

When contacting your maintenance engineer, refer to "9.8.2 Contacting Maintenance Support" (→Pg.291) and collect the required information.

- Hardware problems: "9.2.1 Hardware Troubleshooting"
- Error messages: "9.2.2 Error Messages"
- Software problems: "9.2.3 Software Troubleshooting"

● Information for PRIMERGY

For the latest information on PRIMERGY, update modules, drivers and the software, refer to the Fujitsu PRIMERGY website (<http://primergy.fujitsu.com>).

9.2.1 Hardware Troubleshooting

This section explains hardware related troubleshooting. If it does not operate properly or if a failure is suspected, check the following.

For optional devices, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

■ Server

● The server does not power on, or the power LED on the front of the server does not light up.

Check to see whether the power cable is properly connected to the outlet. For instructions on connecting the power cable, refer to "Start Guide".

● The access LED does not light up.

There may be a failure in the server. Contact an office listed in the "Contact Information" of "Start Guide".

When contacting your maintenance engineer, refer to "9.8.2 Contacting Maintenance Support" (→Pg.291) and collect the required information.

● When an expansion card is added, other expansion cards or onboard devices are not recognized.

Reinstall the drivers for the expansion cards or onboard devices that are not recognized.

- **A temperature warning is output to the hardware event log and OS event log, or ServerView issues a notification of a temperature warning such as by a popup message.**

The above log is output or the above notification is issued by ServerView when the ambient temperature is within 30 to 35 °C, which is near the upper limit of the temperature boundaries (10 to 35 °C). This is to notify the administrator before the ambient temperature actually exceeds the range of the temperature boundaries.

Although continued use within the temperature boundaries poses no problems within itself, reconsider the surrounding environment conditions if this log is output or if ServerView issues this notification.

- **A warning of the onboard LAN is output to the Windows event log**

The following warning message may be entered in the event log during system start-up in the Windows environment. This log can be ignored because the operation is not affected.

```
"Broadcom NetXterme Gigabit Ethernet: The network link is down. Check
to make sure the Network cable is properly connected."
(The following log that shows it has been recovered is output after the
above log.)
"Broadcom NetXterme Gigabit Ethernet: Network controller configured
for 1Gb full-duplex link."
```

- **An error message is output to the OS event log when the fibre channel controller is installed.**

The following warning message may be entered in the event log infrequently. This log can be ignored because the operation is not affected.

```
SWITCH-TIMEOUT-extension module EM_EMC did not start with in 180seconds
```

■ Display

- **The display does not power on.**

Check to see whether the power cable of the display is properly connected to the outlet. For details, refer to the manual of the display.

- **Nothing is displayed on the screen.**

- Check to see whether the display cable is connected properly. If it is not connected, turn the server off and then connect the cable. Video connectors are in the front and rear side. When the display is connected with both, the connection of the front side is effective. For the connection location, refer to "1.3 Component Names and Functions" (→Pg.22).
- The brightness volume or contrast volume of the display may not be adjusted correctly. If they need to be adjusted, perform the necessary adjustments.
For details, refer to the manual of the display.
- There may be an error in the system area of the memory. Contact an office listed in the "Contact Information" of "Start Guide".

- **Typing the keyboard does not display any characters, or the mouse cursor does not move.**

Check to see whether the keyboard and mouse are connected properly. If they are not connected, turn the server off and then connect the cables to the server. For the connection location, refer to "Start Guide".

- **The screen shakes.**

If a device that produces a strong magnetic field such as a television or speaker is near the display, place them further away from the display.

The display may also shake if a nearby cell-phone receives a call. Do not use a cell-phone near the display.

- **The screen display is distorted.**

The screen display may be distorted during 3D program execution or the 3D program may terminate abnormally. If this occurs, set Color quality in screen properties to anything other than True Color (32 bits).

■ **CD-ROM Drive Unit / DVD-RAM Drive Unit**

- **Cannot read data.**

- Check to see whether the CD-ROM is inserted properly. If it is not inserted, correctly insert the CD-ROM so that the label is facing up.
- The CD-ROM may be dirty. If it is dirty, wipe it with a soft, dry cloth.
- The CD-ROM may be scratched or bent. If scratched or damaged, replace the CD-ROM.

- **The unit does not operate properly.**

Check to see whether the internal cable is connected properly. If it is not connected, correctly connect the internal cable.

■ **SCSI Device (Internal/External)**

- **The unit does not operate properly.**

- Check to see whether the internal cable is connected properly. If it is not connected, correctly connect the internal cable. For the connection location, refer to "7.7.2 Installable 5-inch Internal Devices and Notes" (→Pg.224).
- For SCSI devices, check to see whether the SCSI ID and terminator are set correctly. If they are not set, correctly set the SCSI ID and terminator.

9.2.2 Error Messages

■ POST Error Messages

This section explains error messages of Power On Self Test (POST: a device check performed during the server startup).

If an error occurs during POST, the following messages are displayed.

POINT

- ▶ When checking/changing the settings of the BIOS Setup Utility, refer to "8.3 BIOS Setup Utility" (→Pg.243).
- ▶ For instructions on checking peripheral connections, refer to "Start Guide".
- ▶ For details on installing internal options, refer to "Chapter 7 Installing Internal Options" (→Pg.181).

table: List of POST Errors

Error Code	Message	Description
0012	CMOS Date/Time not set	Time is not set. Start the BIOS Setup Utility and set the date/time in [System Date]/[System Time] on the [Main] menu. If the message still appears, the battery or baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
004C	Keyboard/Interface Error	Keyboard error. Check to see whether the keyboard is connected properly. If the message still appears, the keyboard or the PS2/USB conversion cable must be replaced. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
5220	Configuration cleared by Jumper	The jumper switch settings have cleared the contents of the CMOS. Confirm the current configuration using the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
5221	Password cleared by Jumper	The jumper switch settings have cleared the password. Confirm the password using the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
5223	Configuration cleared by BMC	The BMC settings have cleared the contents of the CMOS. The baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
0141	PCI Resource Conflict	PCI error. Check that the PCI card is mounted properly. If the message still appears, the PCI card or the PCI slot must be replaced. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".

table: List of POST Errors

Error Code	Message	Description
0146	Insufficient Memory to Shadow PCI ROM	PCI ROM error. Check that the PCI card is mounted properly. If the message still appears, the PCI card or the PCI slot must be replaced. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8110-8113	Processor n Internal error (IERR)	CPU error ("n" in the message represents the CPU socket number). Set [Processor Retest] on the [Processor] menu to [Enabled] in the BIOS Setup Utility, reboot the system, and confirm the CPU connection. If the message still appears, the CPU must be replaced. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8120-8123	Processor n Thermal Trip Error	CPU error ("n" in the message represents the CPU socket number). After confirming that the heat sink, the fan, and the airflow work normally, set [Processor Retest] on the [Processor] menu to [Enabled] in the BIOS Setup Utility, and reboot the system. If the message still appears, the CPU must be replaced.
8130-8133	Processor n Disabled	CPU error ("n" in the message represents the CPU socket number). After confirming whether there are any errors reported in the system event log, set [Processor Retest] on the [Processor] menu to [Enabled] in the BIOS Setup Utility, and reboot the system. If the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8140-8143	Processor n Failed FRB-3 timer	CPU error ("n" in the message represents the CPU socket number). Start the BIOS Setup Utility, set [Processor Retest] on the [Processor] menu to [Enabled], and reboot the system. If the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8160-8163	Processor n unable to apply microcode update	CPU error ("n" in the message represents the CPU socket number). Start the BIOS Setup Utility, set [Processor Retest] on the [Processor] menu to [Enabled], and reboot the system. If the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8170-8173	Processor n failed BIST	
8180-8183	BIOS does not support the current stepping for processor n	
8190	Watchdog Timer Failed on Last Boot	Boot Watchdog Timer has timed out. View the system event log and confirm whether any errors have been recorded.
8198	Operating system boot watchdog timer failure	

table: List of POST Errors

Error Code	Message	Description
0192	L3 cache size mismatch	Processors with different L3-cache sizes are installed. Confirm that all the CPUs mounted are of the same model. After the confirmation, start the BIOS Setup Utility, set [Processor Retest] on the [Processor] menu to [Enabled], and reboot the system. After the reboot, confirm that all the CPUs mounted are of the same model. If the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
0193	CPUID, Processor stepping are different	CPU error. Start the BIOS Setup Utility, set [Processor Retest] on the [Processor] menu to [Enabled], and reboot the system. After the reboot, confirm that all the CPUs mounted are of the same model. If the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
0194	CPUID, Processor family are different	
0195	Front side bus mismatch	
0196	CPUID, Processor Model are different	CPUs of different models are installed. Set [Processor Retest] on the [Processor] menu to [Enabled] in the BIOS Setup Utility, reboot the system, and confirm that all the mounted CPUs are of the same model. If CPUs of the same model are mounted but the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
0197	Processor speeds mismatched	CPUs with different frequencies are installed. Set [Processor Retest] on the [Processor] menu to [Enabled] in the BIOS Setup Utility, reboot the system, and confirm that all the mounted CPUs are of the same model. If CPUs of the same model are mounted but the message still appears, replace the CPU. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8300	Baseboard Management Controller failed Self Test	BMC error. Check the jumper setting (→"8.1.2 Jumper Settings" (Pg.237)). If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8306	Front Panel Controller Locked	Front panel error. Replace the front panel. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8305	Hotswap Controller Failed	SCSI backpanel board error. Replace the SCSI backpanel board. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".

table: List of POST Errors

Error Code	Message	Description
8420	Intelligent System Monitoring Chassis Opened	Baseboard error. The baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
84F2	Baseboard Management Controller failed to respond	
84F3	Baseboard Management Controller in Update Mode	
84F4	Sensor Data Record Empty	
84FF	System Event Log Full	The writing area for the system event log is full. Remove older system event logs. If the message still appears after clearing the system event logs, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
8500-85DB	Board: n, DIMM: n Memory bad or missing	Memory error ("n" in the message represents the memory board/slot number). Check that the memory is mounted properly. If the message appears although the installation is correct, replace the memory. If the message still appears, replace the memory board. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
	Board: n, DIMM: n Memory not configured	
	Board: n, DIMM: n Memory disabled	
	Board: n, DIMM: n Memory mismatch	
	Board: n, DIMM: n Memory correctable ECC error	
	Board: n, DIMM: n Memory uncorrectable ECC error	
	Board: n, DIMM: n Memory invalid speed	
85E0 85E8 85F0 85F8	Board: n Memory bad or missing	Memory error ("n" in the message represents the memory board/slot number). Check that the memory is mounted properly. If the message appears although the installation is correct, replace the memory. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
85E1 85E9 85F1 85F9	Board: n Memory not configured	The installation configuration of the memory is wrong ("n" in the message represents the memory board/slot number). Confirm the memory configuration and the information on the installed memories using the BIOS Setup Utility. If the message appears although the installation is correct, replace the memory. If the message still appears, replace the memory board. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
85FC	System Memory bad or missing	System memory error. Check that the memory is mounted properly. If the message appears although the installation is correct, replace the memory board. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".

table: List of POST Errors

Error Code	Message	Description
85FD	System Memory not configured	The memory configuration set in BIOS does not match the installed memory configuration. Confirm the memory information of each memory board using the BIOS Setup Utility. If the message appears although the installation is correct, replace the memory. If the message still appears, replace the memory board. If the message still appears after the replacement, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".

■ Server Management Tools Error Messages

The following error messages may appear while executing Server Management Tools. In such cases, perform the corresponding resolutions. If messages other than the following are displayed, contact an office listed in the "Contact Information" of "Start Guide".

table: List of Server Management Tools Error Messages

Message	Description
Write protect error writing drive A. Abort, Retry, Fail?	The inserted floppy disk is write-protected. Disable the write-protect, and then press the [R] key.
Not ready writing drive A. Abort, Retry, Fail?	The floppy disk is not inserted into the floppy disk drive. Insert the proper floppy disk ("Server Management Tools" disk), and then press the [R] key.
Unable to open file 'xx' or file not found Unable to open 'xx'	The followings are possible causes. Check the floppy disk status again. <ul style="list-style-type: none"> The floppy disk is write-protected. Disable the write-protect and retry. The floppy disk is not inserted into the floppy disk drive. Insert the proper floppy disk, and then retry. The floppy disk contains abnormal contents. If this occurred while recovering BIOS information, configure the information using the BIOS Setup Utility. Then store the BIOS information. The file for recovering the BIOS information does not exist on this floppy disk. Insert the floppy disk on which the BIOS information was stored, and then retry.
The file 'a:\fw.scf' is not intended for this system. The Firmware versions in the file and in the system mismatch.	A different model or an unsupported version of BIOS/ Firmware information. Insert the proper floppy disk, and then retry.
The file 'a:\bios.scf' is not intended for this system. The BIOS versions in the file and in the system mismatch.	
Other messages	Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

9.2.3 Software Troubleshooting

This section explains software related troubleshooting. For troubles during OS installation or system operation, refer to the following contents.

■ Trouble at a ServerStart Startup

- **After a boot from the ServerStart CD-ROM, nothing is displayed on the screen.**

This problem may occur if the hard disk drive still contains previous information. In that case, this problem will still occur when the Windows Server 2003 Installation CD-ROM is inserted.

To eliminate this problem, physically format the hard disk drive to delete the previous information and start up ServerStart. For physical formatting, refer to "PRIMERGY RX600 S3 Onboard SCSI RAID User's Guide".

■ Trouble during OS Installation

- **Automatic logon is not performed during Windows 2000 setup.**

During OS installation, ServerStart installs applications and hardware utilities supplied with the OS. Installation and subsequent restart and logon are performed automatically as necessary. In rare cases, however, automatic logon is not performed and the logon window appears. In this window, logon with the user name and password you have set before starting installation. After logon, the setup procedures are continued.

- **Installation of Windows 2000 Server is not completed.**

Installation of Windows 2000 Server may be stopped during the operation. In this case, press the power button for three seconds to turn off the server and restart the server. After restarting the server, the installation is continued.

- **Automatic installation stopped at an entry screen during Active Directory configuration.**

If automatic installation has stopped during Active Directory configuration, check the error message first. Automatic installation can stop when the password is required, such as when registration in DNS fails. Check the environment and continue the installation manually. If the problem is not solved, click [Cancel] and after the OS installation, manually configure Active Directory.

If you have continued the Active Directory installation wizard manually, the following message appears when the installation wizard closes.

It is necessary to restart Windows before making any changes made in the "Active Directory installation wizard valid."

When this message appears, click [Restart] to continue the installation.

■ Error Messages during Installation

The following error messages may appear during installation using ServerStart. Check the corrective action against the relevant error.

● "Operating System not found" appears when the system restarts after file copy from the CD-ROM

The following problems should be considered. Check the settings.

- The array controller card comes later than the onboard SCSI in order of device startup.
- The Active flag is specified.

● "Missing Operating System" appears during installation

The installation partition size may be too large. Specify the installation partition size correctly.

For details on the installation partition size, refer to "2.3.1 Installation Partition Size" (→Pg.51).

● "Error 1920. Service (PXE Services) failed to start" appears during preconfigured installation

The system installed with the preconfigured settings (PXE server) may not be connected to the network. Check the LAN cable connection and click [Rerun].

The system installed with the preconfigured settings (PXE client) may not be connected to the network. Check the LAN cable connection and click [Rerun].

■ An application where the tftp client function (tftp.exe) is used does not operate properly

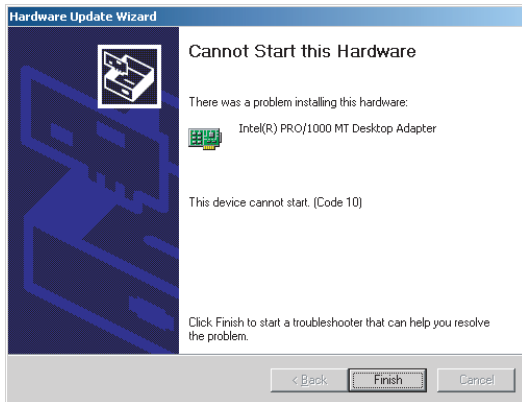
In the system in which Windows Server 2003 is installed, the tftp client function (tftp.exe) is not installed by default, and the application where the tftp client function (tftp.exe) is used does not operate properly.

To use the tftp client function (tftp.exe), install "tftp.exe" from the OS CD-ROM according to the following procedures.

- 1** Insert the OS CD-ROM into the CD-ROM drive.
The OS CD-ROM must be either Windows Server 2003 CD that has applied SP1, Windows Server 2003 x64 CD or Windows Server 2003 R2 Disc 1 CD.
- 2** Move to the i386 folder of CD-ROM drive.
- 3** Start the command prompt and execute the following commands to extract "tftp.exe" in the "%Systemroot%\system32" folder.
[CD-ROM drive]:\i386>expand -r:tftp.exe TFTP.EX_%Systemroot%\system32
- 4** Confirm that "tftp.exe" exists in the "%Systemroot%\System32" folder.

■ Error Window Appears after LAN Driver Installation (on Windows Server 2003)

The following window may appear when the installation of the LAN driver to the [Ethernet controller] under [Other devices] starts.



This is because the LAN driver for the network adapter recognized immediately after the OS installation is not updated.

Clicking [Finish] in this window displays the [Help and Support Center] window. Click [X] to close this window.

The "!" mark is displayed at the LAN device name in Device Manager. Device names are displayed properly when all LAN drivers are installed and the system is restarted.

For details on LAN driver installation, refer to "4.3.2 Installing the LAN Driver (Windows Server 2003)" (→Pg.132).

■ Error Message Appears during LAN Driver Installation and LAN does not Operate Properly

A conflict may have occurred between system resources including the LAN and other expansion cards. Delete all LAN drivers and check that conflicts between system resources do not exist. Then, restart the system and reinstall the LAN drivers. For the LAN driver installation procedure, refer to "4.3 Installing the LAN Driver" (→Pg.129).

■ Some files exists in the root of C drive after installation of RAID Management Tool (Global Array Manager)

After installation of RAID Management Tool (Global Array Manager), you can find "DEBUG.TXT" and "SNMP1030.LOG" in the root of C drive. These files are to be created when installing RAID Management Tool (Global Array Manager). The installation is successfully completed, so these files can be ignored.

■ Event Log Errors after Installation

After installation, the following events may be displayed in Event Viewer. Check and perform the corrective action against the relevant event.

table: List of Event Log Errors That Can Occur after Installation

ID	Description	Cause and corrective action
62	This computer is a domain PDC at the root of forest. Use the net command "net time / setsntp:<server name>" to configure it for synchronization from an external time source.	Cause: An NTP was selected as a component. Corrective action: ServerStart cannot configure the NTP server due to the absence of items for specifying it. After OS installation, perform the following procedure to specify the time server. 1. Start SNTP server operation on another machine. Assume that the SNTP server address is <172.22.78.246>. 2. Enter the following at a command prompt. net time /setsntp:172.22.78.246 w32tm -s 172.22.78.246
1000	The user or computer name cannot be identified. The return value is "1722".	Cause: The primary DNS server address may be invalid or the server cannot be connected. Corrective action: Perform the following procedure to correct the DNS address in Internet protocol (TCP/IP) properties. 1. Right-click [My Network] and click [Properties]. 2. Right-click [Local Area Connection] and click [Properties]. 3. Click [Internet Protocol (TCP/IP)] and click [Properties]. 4. Enter the correct DNS address in the [Primary DNS server] box.

■ Cannot Collect the Memory Dump

If the memory dump file cannot be created, perform the following procedures.

● Correcting the settings

If the memory dump cannot be collected, check the settings of the paging file and memory dump file. For setting procedures, refer to "5.1 Memory Dump/Paging File Setting" (→Pg.138).

● Collecting memory dump to other than the system drive

If the memory dump was set to be collected to the system drive (C:\), change the settings so that the memory dump can be saved to a drive other than the system drive.

For setting procedures, refer to "5.1 Memory Dump/Paging File Setting" (→Pg.138).

If only the system drive exists, or if there is no free space in any of the drives, perform one of the following:

- Adding a hard disk
- Replacing with a larger hard disk

● **Reducing the installed memory to collect the memory dump**

There must be enough free disk space that matches the size of the installed memory; therefore, reduce the installed memory to a collectable size.

Check the memory dump settings when changing the installed memory size.

For setting procedures, refer to "5.1 Memory Dump/Paging File Setting" (→Pg.138).

● **Changing the write type of the debugging information**

If the memory dump cannot be collected, select a write type of debugging information within the range of free space of the volume size.

If the above does not provide a solution, try increasing the size of the hard disk or adding an additional hard disk.

■ **Restoring the System**

In the event where the system file, system configuration, or environment changes during startup are corrupted, use the repair information stored on the repair disk created at the installation to restore the system.

For restoration procedures, refer to the following:

- "9.6.1 For Windows Server 2003" (→Pg.287)
- "9.6.2 For a Windows 2000 Server" (→Pg.288)

■ **Failed in Remote Installation**

If remote installation fails, check the following.

● **Checking Services**

Check that the DHCP, PXE Service, and TFTP Service are running.

For checking procedures, refer to "3.4 Remote Installation" (→Pg.90).

● **Setting TFTP**

To access TFTP Service, add a Guest account to the TFTP folder and set appropriate access rights.

For setting procedures, refer to "3.4 Remote Installation" (→Pg.90).

● **Checking Network Function Settings**

The server must support network startup (PXE). Network startup must be enabled in advance.

For setting procedures, refer to "2.1.2 Hardware Settings" (→Pg.48).

● **Checking the MAC Address**

Check that the current MAC address is the correct MAC address of the server.

For the MAC address checking procedure, refer to "2.1.2 Hardware Settings" (→Pg.48).

● **Checking LAN Cable Connection**

Check that the LAN cable is connected to the LAN card corresponding to the specified MAC address and that the LAN card is connected to the network.

■ SNMP Service does not Startup

Regardless of whether the Simple Network Management Protocol (SNMP) is installed, if the SNMP service is not started, perform the following procedure to start the SNMP service:

● For Windows Server 2003

- 1** Click [Start] → [Management tools] → [Computer Management] in this order.
- 2** Select [Services] from the [Services and Applications] menu.
- 3** From the details, select [SNMP Service].
- 4** Select [Start] from the [Action] menu.

● For Windows 2000 Server

- 1** Right-click [My Computer] on the desktop and click [Management] from the displayed menu.
- 2** Select [Services] from the [Services and Applications] menu.
- 3** From the details, select [SNMP Service].
- 4** Select [Start] from the [Action] menu.

POINT

- ▶ To have the service automatically start each time the OS starts, double-click [SNMP Service] from the details, and select [Automatic] for the [Startup type] setting in the displayed window.

■ Time Display in Linux OS Environment

● Difference in Time between the OS and the Hardware Clock

During OS operation in a Linux environment, the software clock on the OS, rather than the hardware clock in the server, is used to display the time.

This may cause a difference in time between the OS and the hardware clock.

When you want to see the accurate time on the OS, it is recommended to use the NTP service to periodically correct the time displayed on the OS.

● Changing the Time Settings for the OS and Hardware Clock

In a Linux environment, the time displayed on the OS (the software clock value on the OS) is written to the hardware clock in the server when the OS is shut down.

- Procedure for prohibiting the time on the OS from being written to the hardware clock
When you do not want the time on the OS to be written to the hardware clock at an OS shutdown, comment the following line out in `/etc/rc0.d/S01halt`.

```
runcmd $"Syncing hardware clock to system time" /sbin/hwclock $CLOCKFLAGS
```

↓

```
#runcmd $"Syncing hardware clock to system time" /sbin/hwclock $CLOCKFLAGS
```

- Procedure for reflecting the hardware clock value to the time on the OS
To reflect the hardware clock value to the software clock value on the OS, run the following command.

```
>hwclock --hctosys
```


9.3 System Event Log

To operate system event log, use Server Management Tools.

POINT

- ▶ When the area for writing to the system event log is full, the server is set to automatically overwrite older event logs. For details on this setting, refer to "8.3.13 SEL Logging Submenu" (→Pg.256) of the Server menu in BIOS Setup Utility.

9.3.1 How to Use Server Management Tools

This section explains how to use Server Management Tools.

Server Management Tools performs the following to the system event log of the Baseboard Management Controller (BMC: a micro-controller used for managing the baseboard environment, such as its temperature and voltage sensors).

- Viewing the system event log
- Saving the system event log
- Deleting the system event log

When a system event log occurs, save the log using Server Management Tools and contact an office listed in the "Contact Information" of "Start Guide".

IMPORTANT

- ▶ The "Server Management Tools" CD-ROM supplied with this server is exclusively for this server. Do not use it on other systems. If used it may cause damage to the system.
- ▶ Server Management Tools must be used when the server is started using the startup method discussed below. If started up from other CD-ROMs or hardware disks do not use these tools. Otherwise, the system may be corrupted.
- ▶ Do not eject the CD-ROM when the CD-ROM access LED is on. Doing so may destroy the data on the CD-ROM.

■ Starting Server Management Tools

IMPORTANT

- ▶ Before rebooting the system from the "Server Management Tools" CD-ROM, first check that the ServerView "OS Boot Monitoring" function has been disabled (default setting is "Disabled"). If the system is started with this function enabled, the server may automatically turn off or restart improperly.
If the "OS Boot Monitoring" function is needed, it should be reset to enabled before resuming normal server operation. For details about ServerView, refer to the "ServerView User's Guide".

- 1** Insert the "Server Management Tools" CD-ROM supplied with this server right after turning the power on.
The system will boot from the CD-ROM and the DOS prompt is displayed.

2 Enter the following command and press the [Enter] key.

```
C:\cd smtool
```

```
C:\SMTOOL\>IPMIVIEW.EXE
```

The menu window of Server Management Tools appears.

```

FUJITSU
SIEMENS          IPMI-Tool - Vn.nn
COMPUTERS

General Information
Temperature Information
Fan Information
Voltage Information
Powersupply Information
System Event Log (SEL)
FRU Information (ID Proms)
User Management
LAN Configuration
PSC/System Specific Functions

<↑ ↓> Select   <ENTER> Start   <ESC> Exit

```

 **IMPORTANT**

- ▶ Only the following functions are supported by Server Management Tools:
 - System Event Log (SEL)
 - User Management
 - LAN Configuration

■ Exiting Server Management Tools

1 Press the [Esc] key in the menu window of Server Management Tools.

The power can be turned off when the DOS prompt is displayed.

9.3.2 Viewing the System Event Log

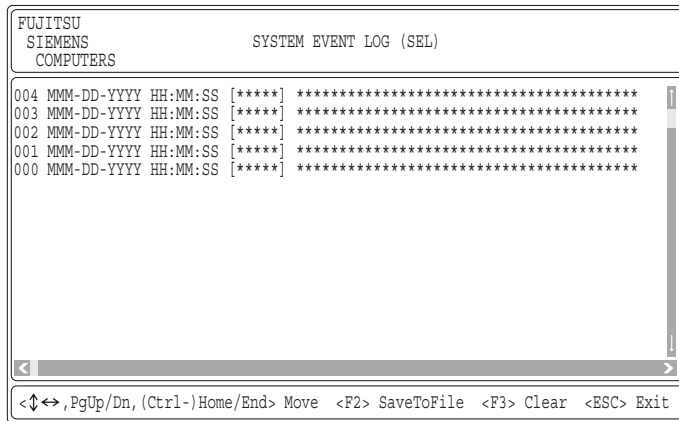
Viewing the system event log is performed from System Event Log (SEL) of Server Management Tools.

1 Start Server Management Tools.

The menu window of Server Management Tools appears.

2 Use the [↑] and [↓] keys to select [System Event Log (SEL)], and press the [Enter] key.

When the [SYSTEM EVENT LOG (SEL)] window appears, check the event log list.



3 Use the following key operations to scroll the window and check the contents.

[↓], [↑], [←], [→], [Page Up], [Page Down], [Ctrl] + [Home], [Ctrl] + [End]

4 To exit the system event log, press the [Esc] key.

9.3.3 Saving/Deleting the System Event Log

When the system event log is full, the oldest log is overwritten with the newest log. Periodically check the system event log and save/delete as necessary.

■ Saving the System Event Log

1 Start Server Management Tools.

The menu window of Server Management Tools appears.

2 Use the [↑] and [↓] keys to select [System Event Log (SEL)], and press the [Enter] key.

The [SYSTEM EVENT LOG (SEL)] window appears.

3 Press the [F2] key.

- 4** Insert [Server Management Tools work FD] in the floppy disk drive.
- 5** Enter the name of the file to save the system event log to, and press the [Enter] key.
A:\SEL.LOG
The system event log is saved to the floppy disk under the specified file name.

■ Deleting the System Event Log

- 1** Start Server Management Tools.
The menu window of Server Management Tools appears.
- 2** Use the [↑] and [↓] keys to select [System Event Log (SEL)], and press the [Enter] key.
The [SYSTEM EVENT LOG (SEL)] window appears.
- 3** Press the [F3] key.
A confirm delete window appears.
- 4** Press the [Enter] key.
This deletes the system event log.

POINT

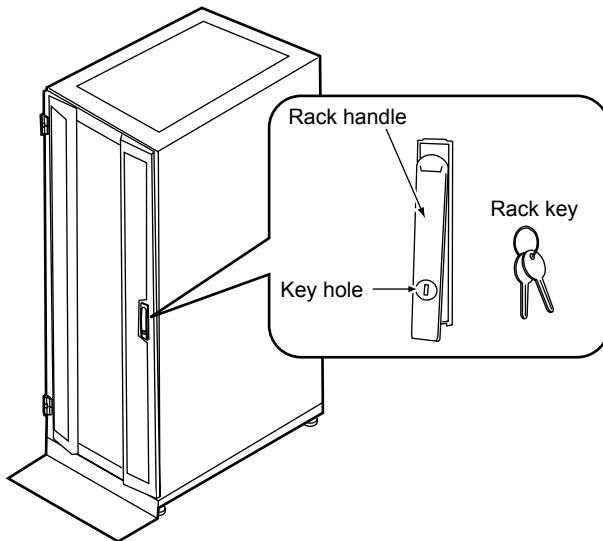
- ▶ Selecting [System Event Log (SEL)] right after deleting the system event log will result in an error. Allow approximately 10 seconds to select it normally.

9.4 Security

Security features are provided in order to protect the server hardware and software from theft. Additional security functions, which prevent unauthorized use, provided by the BIOS Setup Utility are also available to help maintain a highly reliable data security system.

9.4.1 Hardware Security

Lock the rack door to protect the hardware in the rack from theft or tampering. To close the rack door, shut the door and return the rack handle, and turn the rack key.



POINT

- ▶ Do not lose the rack key. If the key is lost, contact your maintenance engineer.
- ▶ For instructions on opening the rack door, refer to "1.4.1 Opening the Rack Door" (→Pg.31).
- ▶ The above explanation is based on the 40U standard rack. For details on other rack systems, refer to their respective manuals.

9.4.2 Security against Unauthorized Use

A password can be set to prevent unauthorized use of the server. Setting a password makes it necessary to enter the password in order to access the server. Without the password, the server cannot be used.

■ Password Types

There are two types of passwords that define the privileges of server operations.

● Administrator Password

This is the password that only allows the administrator to set up this server. Unless the set password is entered, the BIOS Setup Utility cannot be used.

● User Password

The password required to use the server. Unless the set password is entered, the OS cannot be booted.

POINT

- ▶ To restrict OS booting, set [Password on boot] to [Enabled] in the [Security] menu of the BIOS Setup Utility.

■ Setting a Password

The password is set in the BIOS Setup Utility. For details on the BIOS Setup Utility, refer to "8.3 BIOS Setup Utility" (→Pg.243).

- 1** Start the BIOS Setup Utility.
→"8.3.1 Starting and Exiting the BIOS Setup Utility" (Pg.243)
- 2** Select the [Security] menu and select the type of password to set.
 - For the administrator password, select [Set Administrator Password] and press the [Enter] key.
 - For the user password, move the cursor to [Set User Password] and press the [Enter] key. You need to set [Set Administrator Password] in advance.
- 3** When the password input window is displayed, enter the password to set.
To delete the password, delete the displayed password.
- 4** Enter the password again to confirm it and press the [Enter] key.
- 5** Press the [Enter] key.
This sets the password.

■ Changing/Deleting Passwords

If a password is already set, perform the above password setting operations to display the password changing or deleting window.

- 1** Enter the current password in the password input window.
- 2** Enter the new password and press the [Enter] key.
To delete the password, press the [Enter] key without entering anything.
- 3** Enter the password again to confirm it and press the [Enter] key.
To delete the password, press the [Enter] key without entering anything.

POINT

- ▶ The system shuts down after three invalid password entries. If this happens, turn off the server, turn it back on, and then enter the correct password.
- ▶ If you forgot your password and cannot start the server, change the jumper setting on the baseboard to reset the passwords. For jumper settings, refer to "8.1 Jumper Settings" (→Pg.236).

9.4.3 Security When Disposing the Server

■ Notes regarding the Deletion of Data from the Hard Disk When Disposing or Transferring the Server

When disposing or transferring a server that has been used, the data in the hard disk may be read and used unscrupulously. To prevent confidential or important data from leaking out, the data on the hard disk must be wiped before disposing or transferring the server.

However, wiping the hard disk is not an easy task. Simply initializing (formatting) the hard disk or deleting the files may give the pretense that the data no longer exists, but in reality the data is simply no longer accessible to the OS, and it is still accessible to malicious individuals that can restore the data. Therefore, if confidential or important data is saved to the hard disk, in addition to the operations mentioned above, it is recommended to use third-party tools or services to wipe the data completely from the disk to prevent its restoration.

When disposing or transferring the server, it is the customer's responsibility to wipe data contained in the hard disk in order to prevent such important data from leaking.

Also, if software license agreements prohibit unauthorized distribution of software (OS or application software), transferring the server without removing the software may violate the license agreements. These issues must be taken into consideration.

9.5 Backup

This server utilizes high-reliability components and hard disks, however, as a precautionary measure, it is recommended that periodic backups be taken of the data.

9.5.1 Importance of Backups

A backup of data stored on the server is required for data restoration in the event of server trouble resulting in a system failure or accidental data loss due to operational errors. If the data on the server is backed up, it can be restored from the backup in the event of hardware failures or data corruption in hard disks due to operational errors. If backups are not made, restoration is impossible and data will be permanently lost. To prepare for unexpected problems, be sure to perform periodic backups of the system.

9.5.2 Backup Devices, Software and Their Operations

Backup operations differ depending on network operating systems, applications, and system operations. Contact an office listed in the "Contact Information" of "Start Guide" and make backups using the following items.

- Backup device (e.g., DAT72 unit)
- Backup software
(Standard backup software supplied with the OS, e.g., ARCserve, Changer Option)
- Backup operations (schedules)

Use our genuine backup devices and software. Observe the backup medium (tape) storage conditions.

POINT

- ▶ Mirroring/disk array systems
To improve system reliability, a mirroring or disk array system using a SCSI RAID card, in addition to periodic backup creation, is recommended.

■ Notes on Operating Backups

Notes on operating backups are as follows.

For details, refer to the device manuals.

● Head Cleaning

Airborne dust and dust from the magnetic media can collect on the head of the magnetic tape device. To remove this dust, head cleaning must be implemented. Implement head cleaning when the device displays a cleaning request. Particularly DDS devices require periodic head cleaning, otherwise dust can cling to the magnetic head, creating a situation that cannot be cleaned with standard head cleaning methods, and eventually render the device useless.

Also note that the cleaning media has a limit on how many times it can be used. Using cleaning media that exceeded its lifespan will have no cleaning effect. Note these points especially when performing automatic backups with library devices.

● Managing Media Lifespans

Media is a consumable product that must be replaced regularly.

Continued use of media exceeding its lifespan can have negative effects on the device (e.g. increase the speed of dust accumulation). The lifespan of media varies depending on the environment and operation condition of the device, the type of backup software used, and other operation conditions, however, it is recommended that they be replaced sooner than later.

To manage the lifespan, write the use start date on the media.

● Rotating Media

When using a single media cartridge over and over, backup data can be temporarily lost in the event the backup fails. Also if the hard disk fails during backup, the backup data cannot be recovered.

Perform backup operations using multiple mediums on a rotating basis.

● Avoid Leaving Media in Devices

Because the magnetic recording surface of the device is exposed, media can easily be affected by airborne dust when left inserted for a long period of time. Insert the media before using it, and remove the media after use, and restore it in its case.

Also note that some tape devices write management information to the tape when ejecting the media. If the power were to go out when the media is still in the device, this writing process will not be performed and the media may become corrupted.

To avoid this, remove the media from the device when turning off the server/device.

● Verifying Data after a Backup

Some backup software products provide data verification functions after a backup is completed. Such functions will read and verify the data written to the media after a backup is completed. This will increase the usage of the media, thus reducing the number of times it can be used for backups.

Depending on the hardware being used, some devices perform "read after write" operations on data; note the points of this section as necessary.

- **Ejecting Media after a Backup**

Some backup software products provide functions for ejecting media after a backup is completed. Such functions will rewind the tape after a backup is completed and then eject the media from the drive. Be sure to execute this function for autoloader/library devices. Depending on the structure of some servers, this function may cause the media to eject from an internal device of the server and hit the chassis door. If this is the case, open the door when ejecting, or do not eject the media.

- **Media Label Types and Positions**

When writing information such as the name on media, use the label that came with the media. The area in which a label can be posted on the media of each device varies. Failing to post labels in the designated area can damage the device.

- **Data Storage**

When storing data for long periods of time, store the media in a location least affected by humidity and magnetic fields.

9.6 Restoring the System

In the unfortunate event where the system file, system configuration, or environment changes during startup are corrupted, use the repair information stored on the recovery disk created at the installation to restore the system.

POINT

- ▶ Create a recovery disk when you have installed an OS or changed the system configuration. Refer to "5.2 Creating a Disk for System Recovery" (→Pg.147).

9.6.1 For Windows Server 2003

● Items Required

- Windows Server 2003 CD-ROM
 - Automated System Recovery (ASR) floppy disk (created beforehand)
 - Backup media (created beforehand)
 - Driver disk (for SCSI RAID card)
- For details about how to create a drive disk, refer to "4.1 Creating Driver Disks" (→Pg.114).

1 Turn on the server and insert the Windows Server 2003 CD-ROM immediately. Check there are no floppy disks in the floppy disk drive.

2 When the active area is specified on the hard disk, the following message appears. Press any key while this message is displayed.

```
Press any key to boot from CD...
```

Setup window for Windows Server 2003 x64 appears.

3 The following message appears at the bottom of the window. Press the [F6] key.

```
Press F6 if you need to install a third party
SCSI or RAID driver ...
```

IMPORTANT

- ▶ This message will be displayed for a short time after the setup window (blue screen) appears. Press the [F6] key immediately after the window turns blue.

4 When a message prompting you to press the [F2] key appears, press the [F2] key.

A message prompting you to insert the ASR floppy disk appears.

5 Insert the ASR floppy disk and follow the window instructions.

6 Install the driver.

For details on how to install the driver, refer to step 4 of "4.2.1 Installing Windows Server 2003 x64" (→Pg.119) or "4.2.2 Installing Windows Server 2003" (→Pg.122).

7 Follow the window instructions to restore the system.

- When prompted to change the floppy disk, follow the instructions and change it.
- If a message appears indicating that the driver has not passed Windows Logo testing to verify its compatibility with Windows, select [Yes] to continue the installation procedure.
- When prompted to insert media, set the backup media created beforehand and follow the messages to continue.

POINT

Notes on Automated System Recovery

- ▶ Automated System Recovery does not restore data files.

9.6.2 For a Windows 2000 Server

● Items Required

- Windows 2000 Server CD-ROM
- Windows 2000 Server system recovery disk (created beforehand)

1 Turn on the server and insert the Windows 2000 Server CD-ROM immediately.

2 From the [Welcome to Setup] window of the Windows 2000 Server Setup program, press the [R] key to select restoration.

3 Follow the message on the setup window to restore the system.

POINT

Notes on system restoration

- ▶ The system may return to the initial installation conditions depending on the restoration information used. In this case, the system must be configured after system restoration.
- ▶ Windows 2000 Server may have to be reinstalled if system files or system information are severely damaged. If this is the case, reinstall it. Refer to "9.7 Reinstalling the OS" (→Pg.289).
- ▶ The message "The file *****.*** is not the original file copied when Windows 2000 was installed." appears during file restoration. Press the [Enter] or [A] key to restore the file.

9.7 Reinstalling the OS

This section explains the procedure for reinstalling the OS.

9.7.1 Checking before OS Reinstallation

■ Removing the Optional Devices

Remove the following optional devices before reinstalling the OS. Install or connect them after OS installation.

- Optional SCSI devices (e.g., hard disk cabinet or DAT unit)
- Internal hard disk units that do not contain the OS installation folder
- 5-inch internal devices
- USB devices (except for USB floppy disk drive)

■ Deletion of Data from the Disc

Reinstalling a disk will delete all the contents of that disk. Please be careful. Save the necessary data and system configuration in a different location.

Some drivers and software are not installed together with the OS. Install them after OS installation.

■ Other Notes

Other notes are the same as those that apply for first time installation. Please check in advance.

9.7.2 Reinstallation Using ServerStart

When the previous installation was performed in guide or preparation mode, the ServerStart floppy disk used in that installation can be used again. When the reinstallation is performed with the same configuration as that for the previous installation, you do not have to edit the configuration file on the ServerStart floppy disk. You do not have to configure setting on wizards. After ServerStart starts up, click [Start (OS) Installation] to perform installation.

9.8 Maintenance Service

This section explains the details of the maintenance service.

If the cause of the failure is uncertain or if the original condition cannot be restored, contact an office listed in the "Contact Information" of "Start Guide".

Before contact them, refer to "10 Support & Service" of "Start Guide".

9.8.1 Maintenance Service

■ Maintenance Support Period

The maintenance support period is for five years after the purchase of the server.

■ Non-durable Components

Depending on the environment and period of usage there will be non-durable components that require replacement within the warranty period.

Customers who have signed up to hardware maintenance contract will be provided with replacement parts free of charge and will have higher priority for replacement. Customers not signed up to hardware maintenance contract will be charged for operation cost (including the maintenance parts) separately.

POINT

Replacing non-durable components

- ▶ To ensure stable operation of the server system, it is recommended that a maintenance service agreement be purchased.
- ▶ Replacement Period for Non-durable Parts
The lifetime of such components is calculated based on appropriate usage environments. Although the guaranteed range for operation is set between 10 and 35 °C, the lifetime is assumed at a constant average temperature of 25 degrees. It should be placed in an air-conditioned room.
- ▶ Types of non-durable components

table: Non-durable Component List

Component	Description
Battery for the array controller card	Regardless of the time the power was turned on and off, the lifetime is 2 years.

9.8.2 Contacting Maintenance Support

Before contacting maintenance support, check the followings. For the maintenance support, refer to "Contact Information" in "Start Guide".

- Model name and product ID of the server
They are described on the label on the server. For the label location, refer to "Start Guide".
- Hardware configuration (Types and locations of internal options)
- Configuration information (BIOS Setup Utility, SCSI Setup Utility settings)
- OS
- LAN/WAN system configuration
- Phenomena (what happened when doing what, what was displayed, etc.) and date/time of occurrence
- Environmental settings of the server
- LED statuses

POINT

- ▶ Print and fill in the Configuration Sheet and the Accident Sheet of the "Configuration Sheets".

Appendix

This appendix explains the specifications for the server and for its internal options.

A	Server Specifications	294
B	Specifications for Internal Options	296
C	Recycling	300

A Server Specifications

This section explains the specifications for the server.

A.1 Diskless Type

table: Server Specifications - Diskless Type

Item	Functions and Specifications	
Product ID	PGUR6034A	PGUR6032A
CPU modules	Standard	Intel® Xeon® Processor 7041 (3 GHz/2 x 2 MB) × 2
	Level 2 cache	2 MB × 2
	Level 3 cache	1 MB
	FSB	800 MHz
	Number of multiplication	667 MHz
Memory	Standard	2 GB (1 GB PC2-3200 Registered DIMM × 2)
	Adding size	2 GB / 4 GB
	Maximum	32 GB (2 GB × 16 / when adding a memory board × 3)
Video RAM's capacity	16 MB	
Graphics	VGA chip: ATI Radeon 7000M 640 × 480, 800 × 600, 1024 × 768, 1280 × 1024 Displayed colors: Differ depending on resolution and OS	
CD-ROM drive	24x ATAPI CD-ROM drive (standard) ^{*1}	
5-inch storage bay	1 bay (Types: DAT72, VXA2, LTO2)	
3.5-inch storage bay	5 bays (Adding hotplug for all bays)	
	Standard	Optional ^{*2}
	Adding size	73 GB / 146.8 GB / 300 GB (10,000rpm Ultra320 SCSI) 73 GB / 146.8 GB (15,000rpm Ultra320 SCSI)
	Maximum	1,500 GB (300 GB × 5)
Disk array	Standard (Onboard SCSI array controller)	
Expansion slots	PCI slots × 7 (PCI Express (× 8) × 1 / PCI Express (× 4) × 3 / PCI-X 64bit/133MHz × 1 / PCI-X 64bit/100MHz × 2)	
Floppy disk drive	USB Floppy disk drive (optional) ^{*3}	
Interface	LAN (1000BASE-T / 100BASE-TX / 10BASE-T) × 2 (Standard), Serial × 1, Monitor × 2, USB × 5	
Keyboard and Mouse	optional: (By way of KVM switch) ^{*4}	
Dimensions (Width × Depth × Height (mm))	482.6 (including protrusion) × 737.0 (including protrusion) × 176.0 (4U)	
Weight	Max. 50 kg	
Internal clock precision	± 2 to 3 minutes/month	
Power consumption	Max. 1,100W / 3,960 KJ/h	
Power	200-240VAC (50/60Hz) / bipolar ground type	
Power supply unit	2 (Standard, Adding hotplug and redundant)	
Fan	4 (Standard, Adding hotplug and redundant)	
OS	See "● Supported OS" (→pg.295)	

*1: Standard CD-ROM drive can be converted to the DVD-RAM drive by using the DVD-RAM conversion kit (PGBDVAU103).

*2: All internal hard disk units need to configure the array system.

*3: At least one USB floppy disk drive is necessary for multiple systems.

*4: Connect by way of the KVM switch (PG-SB201/PG-SB202) by using the KVM cable (PG-CBLDP09/PG-CBLDP10/PG-CBLDP11).

The specifications for this server are liable to be updated without any notice. Please be forewarned.

● Supported OS

The following OSs are supported.

- Windows 2000 Server (SP 4)
- Windows 2000 Advanced Server (SP 4)
- Windows Server 2003, Standard Edition (SP 1 or later)
- Windows Server 2003, Enterprise Edition (SP 1 or later)
- Windows Server 2003, Standard x64 Edition
- Windows Server 2003, Enterprise x64 Edition
- Windows Server 2003 R2, Standard Edition
- Windows Server 2003 R2, Enterprise Edition
- Windows Server 2003 R2, Standard x64 Edition
- Windows Server 2003 R2, Enterprise x64 Edition
- Red Hat Enterprise Linux AS (v.3 for x86)
- Red Hat Enterprise Linux AS (v.4 for x86)
- Red Hat Enterprise Linux AS (v.4 for EM64T)

B Specifications for Internal Options

This section explains the specifications for internal options for the server. When you have bought an internal option as a standard option, check that the package contains the following items before use. Should it happen that items are missing, contact an office listed in the "Contact Information" of "Start Guide".

B.1 CPU

- **Package**

- CPU (1)
- Heat sink (1)
- VRM (1)

- **Specifications**

table: CPU Specifications

Item	Function and Specifications	
Product Name	Xeon Processor 7041 3 GHz / 2 × 2 MB	Xeon Processor MP 3.66 GHz / 1 MB
Models	PG-FG30J	PG-FG218
Clock frequency	3 GHz	3.66 GHz
Internal secondary cache size	2 × 2 MB	1 MB

B.2 Memory

- **Package**

- Memory modules (2)

- **Specifications**

table: Memory Specifications

Item	Function and Specifications	
Product Name	Memory Module-2 GB	Memory Module-4 GB
Models	PG-RM2BD	PG-RM4BD
Composition	1 GB PC2-3200 Registered DIMM × 2	2 GB PC2-3200 Registered DIMM × 2
Capacity	2 GB	4 GB
Clock frequency	400 MHz (Dual edge)	
PIN count	240 PIN	

B.3 Memory Board

● Package

- Memory board (1)

● Specifications

table: Memory Board Specifications

Item	Function and Specifications
Product Name	Memory Expansion Board
Models	PG-RB106
DIMM slots	PC2-3200 Registered DIMM × 4

B.4 Internal Hard Disk Units

● Package

- Hard disk unit (1)

● Specifications

table: Internal Hard Disk Unit Specifications

Item	Function and Specification				
Models	PG-HDH71W	PG-HDH41W	PG-HDH31W	PG-HDH75W	PG-HDH45W
Interface	Ultra320 SCSI				
Storage media	3.5-inch hard disk				
Memory capacity *1	73.4 GB	146.8 GB	300 GB	73.4 GB	146.8 GB
Maximum data transfer speed	320 MB/s (Ultra320 Wide)				
Average latency speed	3.00 ms			2.00 ms	
Rpm	10,000 rpm			15,000 rpm	
Dimensions *2	101.6 × 146.0 × 25.4 (mm)				
Weight *2	0.75 kg			0.8 kg	

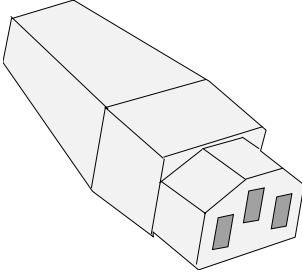
*1: The value indicates memory capacity of the formatted hard disk (1 GB = 1000³ bytes).

*2: A Hot plug carrier is not included.

B.5 Power Cord Selection

The power cord for this unit has been packed separately and has been selected according to the country of destination. It must be used to prevent electric shock. Use the following guidelines if it is necessary to replace the original cord set.

The female receptacle of the cord set must meet CEE-22 requirements (see Figure).



■ For the United States and Canada

Use a UL listed and CSA labeled cord set consisting of a three conductor cord with a maximum length of 15 feet.

For units which stand on a desk or table, type SVT or SJT cord sets should be used.

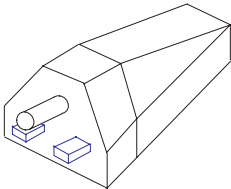
For units which stand on the floor, only SJT type cord sets should be used.

The cord set must be selected according to the current rating for your unit.

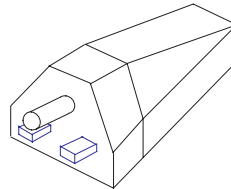
Please consult the table below for the selection criteria for power cords used in the United States and Canada.

table: Selection Criteria for Power Cords Used in the United States and Canada

Cord Type	Size of Conductors in Cord	Maximum Current Rating of Unit
SJT	18 AWG	10 Amps
	16 AWG	12 Amps
	14 AWG	12 Amps
SVT	18 AWG	10 Amps
	17 AWG	12 Amps



- Parallel
For units set at 115 V:
Use a parallel blade, grounding type attachment plug rated 15 A, 125 V.



- Tandem
For units set at 230 V:
Use a tandem blade, grounding type attachment plug rated 15 A, 250 V.

- **For units set at 230 V (outside of the United States and Canada):**

Use a cord set consisting of a minimum AWG according to the table above and a grounding type attachment plug rated 15 A, 250 V. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed and should be marked HAR.

- **For the United Kingdom**

Should the plug on the flexible cord not be of the type for your socket outlets, do not use an adapter but remove the plug from the cord and discard. Carefully prepare the end of the supply cord and fit a suitable plug.



- This appliance must be earthed.

POINT

- ▶ The wires in this mains lead are colored in accordance with the following code:
 - Green and Yellow: Earth
 - Blue: Neutral
 - Brown: Live

As the colors of the wires in the mains lead of this appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

- The wire which is colored Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or colored Green or Green and Yellow.
- The wire which is colored Blue must be connected to the terminal which is marked with the letter N or colored Black.
- The wire which is colored Brown must be connected to the terminal which is marked with the letter L or colored Red.

C Recycling

This section explains how to recycle this server.

■ Disposing of the Server

When scrapping this server, contact an office listed in the "Contact Information" of "Start Guide". This server must be disposed of as industrial waste.

Furthermore, if the server is disposed of as it is, someone else may gain access to the information contained on the hard disks. It is therefore recommended that all drives be formatted before disposal. However, just formatting or deleting files may not avoid the risk that the data is restored and used for wrongful purposes. If confidential or private information is saved, in order to make it impossible to be restored, it is recommended to use third-party data wiping tools.

■ Disposing of Used-up Batteries

Used-up batteries must be disposed of as industrial waste and therefore require special processing. Let a licensed industrial waste disposal company take care of disposing them.

■ Disposing of Liquid Crystal Displays

Liquid crystal displays must be disposed of as industrial waste and therefore require special processing. Let a licensed industrial waste disposal company take care of disposing them.

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