Bull NovaScale R620

User's Guide

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Keep this User's Guide handy for quick reference when necessary.

SAFETY INDICATIONS

To use NovaScale series safely, follow the instructions in this User's Guide.

This guide explains components that pose a danger, types of dangers, and actions taken to prevent them; such components are labelled warning.

This guide and warning labels use "WARNING" and "CAUTION" to indicate a danger depending on the degree. These terms are defined as follows:

⚠ WARNING	Indicates a danger that could lead to a death or serious injury.
⚠ CAUTION	Indicates a danger that could lead to a burn, other injuries or damage to physical assets.

This guide uses the following three types of symbols to give indications and precautions against a danger. They are defined as follows:

⚠	Indicates that there is a risk of danger. Each image symbolizes a particular type of danger. (Attention)
🚫	Indicates what you must not do. Each image symbolizes a particular type of prohibition. (Prohibited actions)
⚫	Indicates what you must do. Each image symbolizes a particular type of action necessary to avoid a danger. (Mandatory actions)

(Example)

Symbol to draw attention

Term indicating a degree of danger

⚠ CAUTION	
⚠	High temperature. Immediately after the power-off, system components such as hard disk are very hot. Wait the server to cool down completely before adding/removing some component.

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

Description of a danger

SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attention

	Indicates a risk of an electric shock.
	Indicates a risk of a personal injury due to heat.
	Indicates a risk of catching your fingers.
	Indicates a risk of a fire or smoke.
	Indicates a general precaution or warning that is not defined herein.
	Indicates a risk of losing eyesight due to laser beam.
	Indicates a risk of an explosion.
	Indicates a risk of a personal injury.

Prohibited actions

	Indicates a general prohibition that is not defined herein.
	Do no touch the indicated area. There is a risk of an electric shock or fire.
	Do not touch with wet hands. There is a risk of an electric shock.
	Keep from flame. There is a risk of a fire.
	Avoid using water or liquid nearby. If it spills on the equipment, there is a risk of an electric shock or fire.
	Do not disassemble, repair, or modify the equipment. There is a risk of an electric shock or fire.

Mandatory actions

	Unplug the server. There is a risk of an electric shock or fire.
	Indicates a general action to take that is not defined herein. Make sure to follow the instructions.

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

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，

在這種情況下，使用者會被要求採取某些適當的對策.

이 기기는 업무용으로 전자파적합등록을
한 기기이오니 판매자 또는 사용자는
이 점을 주의하시기 바라며 만약 잘못
판매 또는 구입하였을 때에는 가정용으
로 교환하시기 바랍니다.

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Statement

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

```
CLASS 1
LASER PRODUCT
```
This system is classified as a CLASS 1 LASER PRODUCT. This label id located on the internal CD-ROM installed in your system.

NOTE: This product provides resistance against hardware faults with its redundant hardware modules. However, this does not mean complete fault-tolerance is assured. For example, there is a risk of system down when:
  – A fatal fault occurs in software.
  – Both modules within a redundant hardware pair break down.
  – A fatal fault occurs in a non-redundant component, such as the clock generator circuitry or the interconnect backplane.
  – The entire system is cut off from AC power.

PREFACE

Welcome to the NovaScale/Fault Tolerant Server series.

NovaScale/Fault Tolerant Server series is a "fault-tolerant (ft)" server focusing on "high reliability" in terms of fault-tolerance, in addition to "high performance," "scalability," and "general versatility" provided by NovaScale series. In the event of trouble, its dual configuration will allow the system to instantaneously isolate the failed parts to assure non-stop running; operation will be moved smoothly from one module to the other, minimizing damage to it. You can use this NovaScale/Fault Tolerant Server series in a mission-critical system where high availability is required. By the use of Windows Server 2003 operating system, it also provides outstanding openness for general-purpose applications, etc.

To make the best use of these features, read this User's Guide thoroughly to understand how to operate NovaScale/Fault Tolerant Server series.

ABOUT THIS USER'S GUIDE

This User's Guide helps a user to properly setup and use the product.

Consult this guide to ensure safety as well as to cope with trouble during a system setup and daily operation.

Keep this manual handy.

This User's Guide is intended for users who have a good knowledge on the basic use of Windows2000/NT operating systems and general I/O devices such as a keyboard and mouse.

How to Use This User's Guide

This guide consists of eight chapters and appendices. To help you find a solution quickly, the guide contains the following information:

For descriptions on setting up this product, see the separate volume "User's Guide (Setup)".
Read "Precautions for Use" first.
Before going on to main chapters, be sure to read "Precautions for Use." These precautions are very important for using the product safely.

Chapter 1   Precautions for Use
> This chapter describes precautions necessary to use the product safely and properly. Be sure to read this chapter before using the product. It also provides information on user support. It will be helpful when you need maintenance service, support, etc.

Chapter 2   General Description
> This chapter describes what you should know about the product: its component names, functions, operating procedures as well as handling of devices and other parts.

Chapter 3   Windows Setup and Operation
> This chapter describes setup and operation specific to the product when it is on Windows.

Chapter 4   System Configuration
> This chapter describes how to make settings of built-in basic input/output system. It also describes factory-shipped parameters.

Chapter 5   Installing and Using Utilities
> This chapter describes features and operating procedures of a standard utility "EXPRESSBUILDER." It also describes procedures to install and operate various software programs contained in its CD-ROM.

Chapter 6   Maintenance
> This chapter describes maintenance procedures and use of maintenance tools. If you need to move the product for maintenance purposes, follow the steps provided in this chapter.

Chapter 7   Troubleshooting
> If the product does not work properly, see this chapter before deciding that it is a breakdown.

Chapter 8   System Upgrade
> This chapter describes procedures to add options and precautions. See also this chapter when you replace failed components.

Appendix A   Specifications
> This appendix lists specifications of the product.

Appendix B   I/O Port Addresses
> This appendix lists factory-assigned I/O port addresses.

Additional symbols

The following symbols are used throughout this User's Guide in addition to the caution symbols describe at the beginning.

IMPORTANT: Important points or instructions to keep in mind when using the server or software

CHECK: Something you need to make sure when using the server of software

TIPS: Helpful information, something useful to know

Accessories

This product is shipped with various accessories. See the attached list to make sure everything is included and check the individual items. If some component is missing or damaged, contact your sales agent.

- Keep the accessories in a safe place. You will need them when you perform setup, addition of options, or replacement of failed components.

- To check EXPRESSBUILDER components, see the attached list.

- Be sure to fill out and mail the software registration card that is attached to your operating system.

- Make backup copies of included floppy disks, if any. Keep the original disks as the master disks; use these copies in operation.

- Improper use of an included floppy disk or CD-ROM may alter your system environment. If you find something unclear, stop using them and contact your sales agent.

CONTENTS

Chapter 1

Precautions for Use

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

WARNING LABELS

Warning labels are placed in certain parts of the system so that the user stays alert to possible risks (Do not remove or damage these labels).

If some label is missing, about to peel off, or illegible, contact your sales agent.

Server Chassis
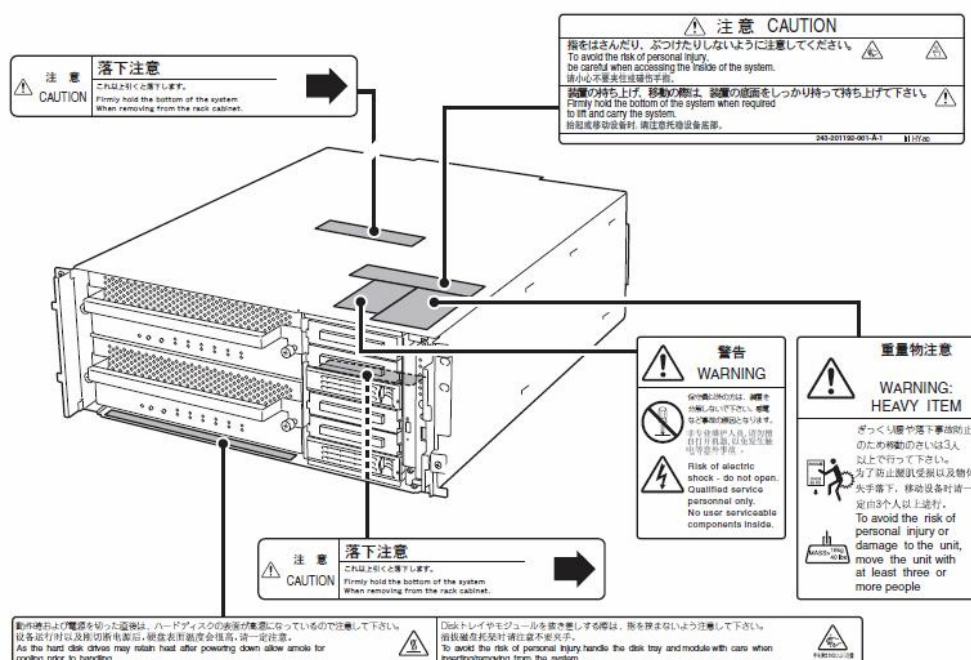
Front Side
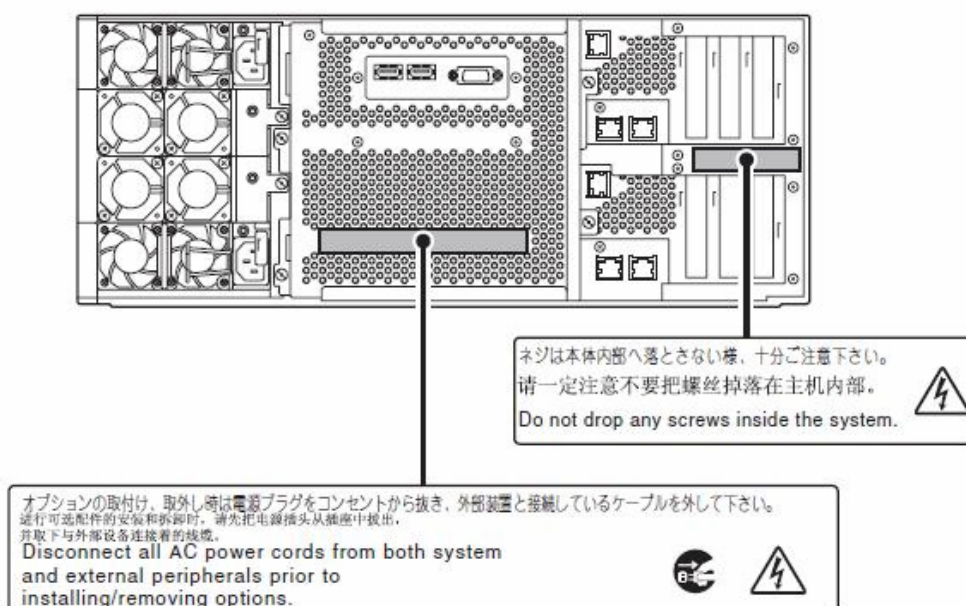
CPU/IO modules

The following shows the place on CPU/IO modules where the label is attached.

Standard Model

Water-cooling kit

PRECAUTIONS FOR SAFETY
This section provides precautions for using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbol meanings, see "SAFETY INDICATIONS" described in the previous section.

General

⚠ WARNING

Do not use the equipment in an operation where human lives are involved or high reliability is required.

This equipment is not intended for use in controlling or use with facilities or systems where human lives are involved or high reliability is required, including medical devices or nuclear, aerospace, transportation, and traffic control facilities. We assume no liability for any accidents or damage to physical assets resulting from the use of this equipment in such systems or facilities.

Do not continue to use the equipment if you detect smoke, odour, or noise.

If the equipment emits smoke, odour, or noise, immediately flip off the POWER switch, unplug the cord, and contact your sales agent. There is a risk of a fire.

Do not insert a wire or metal object

Do not insert a wire or metal objects into a vent or disk drive slot. There is a risk of an electric shock.

Do not use the equipment in an unsuitable place.

Do not install a server rack in an unsuitable environment.
Other systems also may be affected, and the rack may fall over to cause a fire or injuries. For details about installation environment and quake-resistant engineering, see the attached manual or contact your sales agent.

⚠ CAUTION

Prevent water or foreign objects from getting into the equipment.

Do not let water or foreign objects (e.g., pins or paper clips) enter the equipment. There is a risk of a fire, electric shock, and breakdown. When such things accidentally enter the equipment, immediately turn off the power and unplug the cord. Contact your sales agent instead of trying to disassemble it yourself.

Use of Power Supply and Power Cord

⚠ WARNING

Do not handle a power plug with a wet hand.

Do not plug/unplug a power cord with a wet hand. There is a risk of an electric shock.

Do not connect the ground wire to a gas pipe.

Never connect the ground wire to a gas pipe. There is a risk of a gas explosion.

⚠ CAUTION

Do not plug the attached cord in a nonconforming outlet.

Use a wall outlet with specified voltage and power type. There is a risk of a fire or current leakage. Avoid installing the equipment where you may need an extension cord. If the cord that does not meet the power specifications, there is a risk of overheating that could lead to a fire.

Do not plug too many cords in a single outlet.

If the rated current is exceeded, there is a risk of overheating that could lead to a fire.

Do not plug the cord insecurely.

Insert the plug firmly into an outlet. There is a risk of heat or fire due to poor contact. If dust settles on the slots and it absorbs moisture, there is also a risk of heat or fire.

Do not use nonconforming power cords.

AC cord is to spend the thing of the next specifications.
Maximum 4.5m (14.76 ft) long. Rated minimum 125V, 10A, Type SJT flexible cord.
You also have to observe the following prohibitions about handling and connecting interface cables.
- Do not pull on the cord.
- Do not pinch the cord.
- Do not bend the cord.
- Keep chemicals away from the cord.
- Do not twist the cord.
- Do not tread on the cord.
- Do not place any object on the cord.
- Do not use cords as bundled.
- Do not alter, modify, or repair the cord.
- Do not staple the cord.
- Do not use any damaged cord. (Replace it with a new one of the same specifications. For replacement procedures, contact your sales agent.)

Installation, Relocation, Storage and Connection

> **⚠ WARNING**
>
> Disconnect the power cord(s) before installing or removing the equipment.
>
> Be sure to power off the equipment and unplug its power cords from the wall outlet before installation/relocation. All voltage is removed only when the power cords are unplugged.

> **⚠ CAUTION**
>
> Do not install or store the equipment in an unsuitable place.
>
> Install or store the equipment in such a place as specified in this User's Guide. Avoid the following, or there is a risk of a fire.
> - a dusty place
> - a humid place located near a boiler, etc
> - a place exposed to direct sunlight
> - an unstable place
>
> Be careful not to hurt your fingers.
>
> Exercise great care not to hurt your fingers on the rail when you mount/dismount the equipment into/from the rack.
>
> Do not use or store this product in corrosive environment.
>
> Avoid the usage or storage of this product in an environment which may be exposed to corrosive gases, such as those including but not limited to :
> sulphur dioxide, hydrogen sulphide, nitrogen dioxide, chlorine, ammonia and/or ozone.
> Avoid installing this product in a dusty environment or one that may be exposed to corrosive materials such as sodium chloride and/or sulphur.
> Avoid installing this product in an environment which may have excessive metal flakes or conductive particles in the air.
> Such environments may cause corrosion or short circuits within this product, resulting in not only damage to this product, but may even lead to be a fire hazard.
> If there are any concerns regarding the environment at the planned site of installation or storage, please contact your sales agent.

⚠ CAUTION

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

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

Do not use any non-designated interface cable.

Use only interface cables designated by Bull; identify which component or connector to attach beforehand. If you use a wrong cable or make a wrong connection, there is a risk of short-circuit that could lead to a fire.
You also have to observe the following prohibitions about handling and connecting interface cables:
- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the equipment with loose cable connections.
- Do not use any damaged cable.

Cleaning and Handling of Internal Devices

⚠ WARNING

Do not disassemble, repair, or alter the server.

Unless described herein, never attempt to disassemble, repair, or alter the equipment. There is a risk of an electric shock or fire as well as malfunction.

Do not look into the CD-ROM drive.

The CD-ROM drive uses a laser beam. Do not look or insert a mirror inside while the system is on. A laser beam is invisible; if your eyes get exposed to it, there is a risk of losing eyesight.

Do not detach a lithium battery yourself.

This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode.

When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.

Disconnect the power plug before cleaning the server.

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

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

⚠ CAUTION

High temperature

Immediately after powering off the system, system components such as hard disk may be very hot. Wait for the server to cool down completely before adding/removing components.

Make sure to complete installation.

Firmly install all power cords, interface cables and/or boards. An incompletely installed component may cause a contact failure, resulting in fire and/or smoke.

⚠ CAUTION

Protect the unused connectors with the protective cap.

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

During Operation

	⚠ CAUTION
🚫	Do not pull out a device during operation. Do not pull out or remove a device while it works. There is a risk of malfunction and injuries.
(unplug symbol)	Do not touch the equipment when it thunders. Unplug the equipment when it threatens to thunder. If it starts to thunder before you unplug the equipment, do not touch the equipment and cables. There is a risk of a fire or electric shock.
⚠	Keep animals away. Animal's waste or hair may get inside the equipment to cause a fire or electric shock.
⚠	Do not place any object on top of the server. The object may fall off to cause injuries, damage to hardware and/or a fire.
⚠	Do not leave the CD tray ejected. Dust may get in the equipment to cause malfunction. The ejected tray may also become a cause of injuries.
🚫	Do not use a cellular phone or pager around the equipment. Turn off your cellular phone or pager when you use the equipment. Their radio waves may cause the equipment to malfunction.

Rack-mount Model

⚠ CAUTION

🚫 Do not install the equipment on a nonconforming rack.

Install the equipment on a 19-inch rack conforming to the EIA standard. Do not use the equipment without a rack or install it on a nonconforming rack. The equipment may not function properly, and there is a risk of damage to physical assets or injuries. For suitable racks, contact your sales agent.

🚫 Do not attempt to install the server yourself.

To avoid a risk of injuries, users should not attempt to install the equipment into a rack. Installation should be performed by trained maintenance personnel.

🚫 **< For Maintenance Personnel Only >**
Do not install the equipment in such a manner that its weight is imposed on a single place.

To distribute the weight, attach stabilizers or install two or more racks. It may fall down to cause injuries.

🚫 Do not assemble parts alone.

It takes at least two people to mount doors and trays to a rack. You may drop some parts to cause a breakage or injuries.

🚫 Do not pull a device out of the rack if it is unstable.

Before pulling out a device, make sure that the rack is fixed (by stabilizers or quake-resistant engineering).

🚫 Do not leave two or more devices pulled out from the rack.

If you pull out two or more devices the rack may fall down. You can only pull out one device at a time.

⚠ Do not install excessive wiring.

To prevent burns, fires, and damage to the equipment, make sure that the rated load of the power branch circuit is not exceeded. For more information on installation and wiring of power-related facilities, contact your electrician or local power company.

For Proper Operation

Observe the following instructions for successful operation of the server. Failure to observe them could lead to malfunction or breakdown.

- Perform installation in a place where the system can operate correctly. For details, see the separate volume "User's Guide (Setup)".

- Before turning off the power or ejecting a disk, make sure that the access LED is off.

- When you have just turned off the power, wait at least 30 seconds before turning it on again.

- Once you have turned on the server, do not turn it off until our logo appears on the screen.

- Plug the attached cord in the outlet whose AC input voltage is 220V.

- After plugging in the power cord, do not turn on the power of the equipment for 30 seconds.

- Before you move the equipment, turn off the power and unplug the cord.

- This server shall not assure reproduction of copy-protect CDs using reproduction equipment if such disks do not comply with CD standards.

- Clean the equipment regularly. (For procedures, see Chapter 6.) Regular cleaning is effective in preventing various types of trouble.

- Lightning may cause voltage sag. As a preventive measure, it is recommended to use UPS (uninterruptible power supply).

  This equipment does not support the connection through an UPS serial port (RS-232C) or the control using PowerChutePlus.

- Check and adjust the system clock before operation in the following conditions:

  - After transporting the equipment
  - After storing the equipment
  - After the equipment halt under the conditions which is out of the guranteed environment conditions (Temperature: 10 to 35°C, Humidity: 20 to 80%).

  Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level of time accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

- When you store the equipment, keep it under storage environment conditions (Temperature: -10 to 55°C, Humidity: 20 to 80%, non-condensing).

- If NovaScale/ft Server series, the built-in optional devices, and the media set for the backup devices (tape cartridges) are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. In order to protect important stored data and assets, make sure to wait for a sufficient period of time to use the server or components in the operating environment.

  Reference: Length of the time effective at avoiding condensation in winter (more than 10°C differences between room temperature and atmospheric temperature)
  Disk devices: Approximately 2-3 hours
  Tape media: Approximately 1 day

- Make sure that the optional devices are attachable and connectable to the equipment. There is a risk of malfunctions that could lead to a breakdown of the equipment even if you could attach and connect.

- Make sure that your options are compatible with the system. If you attach any incompatible option, there is a risk of malfunction that could lead to a breakdown.

- It is recommended to use Bull's genuine option products. Some competitors' products are compatible with this server. However, servicing for trouble or damage resulting from such a product will be charged even within the warranty period.

DISPOSAL OF EQUIPMENT AND CONSUMABLES

■ When you dispose of the main unit, hard disk drives, floppy disks, CD-ROMs, optional boards, etc., you need to observe your local disposal rules. Dispose the attached power cable along with the equipment to avoid being used with other equipment.

   For details, ask your municipal office.

> **IMPORTANT:**
> For disposal (or replacement) of batteries on the motherboard, consult with your sales agent.
> If data remains on the hard disk, backup data cartridges, floppy disks, or other writable media (such as CD-R and CD-RW), it could be restored and reused by outsiders. The customer is responsible for wiping out such data before disposal. You need to exercise sufficient care to protect privacy and confidential information.

■ Some of the system components have limited lifetime (e.g., cooling fans, built-in batteries, built-in CD-ROM drive, floppy disk drive and mouse). For stable operation, it is recommended to replace them regularly. For lifetime of individual components and replacing procedures, ask your sales agent.
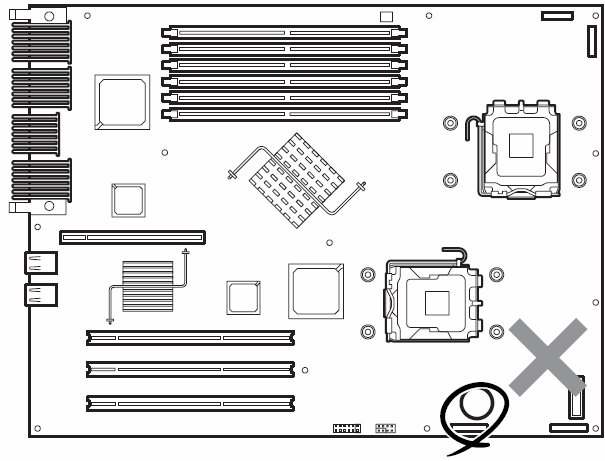
⚠ WARNING
Do not detach a lithium battery yourself. This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode. RISK OF EXPLOSION IF BATTERY IS REPLACED WITH INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS. When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.

IF SYSTEM TROUBLE IS SUSPECTED

Before sending the equipment for repair, try the following:

1. Check if its power cord and connection cables are attached correctly.

2. See "Error Messages" in Chapter 7 to check if there is a relevant symptom. If yes, take measures as instructed.

3. Certain software programs are required for operation of NovaScale/ft Server series. Check if these programs are properly installed.

4. Use a commercially available anti-virus program to check the server.

If the problem isn't solved by the above actions, stop using the server and consult with your sales agent. In this case, check LED indications of the server and alarm indications on the display, which will serve as helpful information at the time of repair.

ABOUT REPAIR PARTS

The minimum duration of holding repair parts of this equipment may be different for each country, so contact your sales representatives.
If the period is not specified, the repair parts are kept for 5 years after discontinuance of the product.

Advice for Your Health

Prolonged use of a computer may affect your health. Keep in mind the following to reduce stresses on your body:

Sit in a good posture
Sit on your chair with your back straight. If the desk height is appropriate, you will slightly look down at the screen and your forearms will be parallel to the floor. This "good" work posture can minimize muscle tension caused by sedentary work.
If you sit in a "bad" posture—for example, sit round-shouldered or with you face too close to the display—you may easily suffer fatigue or have your eyesight affected.

Adjust the installation angle of Display
Most types of displays allow you to adjust the angle vertically and horizontally. This adjustment is very important to prevent the reflection of light as well as to make the screen more comfortable to see. Without this adjustment, it is difficult to maintain a "good" work posture and may get tired soon. Be sure to adjust the angle before using the display.
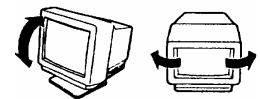
Adjust Brightness and Contrast
Displays allow you to adjust brightness and contrast. Optimum brightness and contrast vary depending on the individual, age, brightness of the room, etc; you need to make an adjustment accordingly. If the screen is too bright or too dark, it is bad for your eyes.
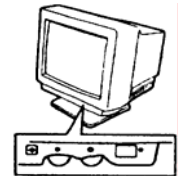
Adjust the installation angle of Keyboard
Some types of keyboards allow you to adjust the angle. If you adjust the angle to make the keyboard more comfortable to use, you can greatly reduce stresses on your shoulders, arms, and fingers.
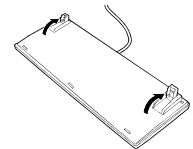
Clean the Equipment
Cleanliness of the equipment is very important not only for reasons of appearance but also from the viewpoints of function and safety. Especially, you need to regularly clean the display, which gets unclear due to the accumulation of dirt.

Take a break when you get tired
If you feel tired, you are recommended to refresh yourself by taking a short break or doing a light exercise.

Chapter 2

General Description

This chapter describes what you need to know to use the NovaScale/ft Server series. Refer to this chapter when you want to know about certain components and how to operate them.

STANDARD FEATURES

High performance

- Intel® Xeon® Processor
  (R620-LR: 1.6 GHz
  R620-MR: 2.4 GHz)
- High-speed Ethernet interface (1000 Mbps/100 Mbps/10 Mbps supported)
- High-speed disk access (Ultra320 SCSI)

Expandability

- Two slots (low profile) of PCI bus (100 MHz) (R620-LR)
- Three slots (low profile) of PCI bus (100 MHz) (R620-MR)
- Large memory of up to 12GB (R620-LR)
- Large memory of up to 12 GB (R620-MR)
- Remote power-on feature
- USB interface

High-reliability

- Memory monitoring feature (1-bit error correction/ 2-bit error detection)
- Bus parity error detection
- Temperature monitoring
- Error notification
- Built-in fan monitoring feature
- Internal voltage monitoring feature
- BIOS password feature
- Security feature (security lock for front bezel)

Management Utilities

- ESMPRO
- DianaScope

Ready-to-use

- Quick cableless connection: hard disk, CPU/IO module, POWER

Fault-tolerant Feature

- Redundant modules achieved within a system
- Higher hardware availability by isolation of failed module

Various Features

- Graphic accelerator " ES1000" supported
- El Torito Bootable CD-ROM (no emulation mode) format supported
- POWER switch mask
- Remote power-on feature
- AC-LINK feature

Self-diagnosis

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

Maintainability

- Off-line Maintenance Utility

Easy and Fine Setup

- EXPRESSBUILDER (system setup utility)
- SETUP (BIOS setup utility)
- SCSI*Select* (SCSI device utility)

The NovaScale/ft Server series achieves fault-tolerant high-availability in a space-saving form factor by incorporating redundant hardware module pairs in a single chassis. These modules work in synchronous tight lockstep while constantly making comparisons with each other and detecting anomalous diversions in operation.

NovaScale/ft Server series is a highly fault-tolerant Windows server that achieves continuous computing operations, data storage mirror, and continuous network connection. It allows you to run Windows Server 2003-based applications.

NovaScale/ft Server series achieves continuous computing operations for the Windows server and server-based applications with its redundant CPU processing and redundant memory. It assures data redundancy through duplication of server data on an independent storage system. These features eliminate server downtime that is usually caused by network disconnection or trouble with the I/O controller, Ethernet adapter or disk drive, and support operation of the network and server applications continuously. While being transparent to application software, NovaScale/ft Server series achieves high fault-tolerance.

NovaScale/ft Server series detects status changes, errors and other events and notifies the Windows Event Log of these events. If you use an alarm notification tool, you can configure NovaScale/ft Server series to notify you when certain events occur.

ESMPRO is installed on the system as a server management solution. ESMPRO, a GUI-based management tool, allows you to monitor, view, and configure NovaScale/ft Server series. This tool also supports both local and remote management of NovaScale/ft Server series.

NovaScale/ft Server series mainly provides the following advantages:

■   Highly fault-tolerant processing and I/O subsystems

NovaScale/ft Server series use redundant hardware and software to assure server operation even if one module suffers trouble with its processor, memory, I/O (including trouble related to the I/O controller), disk drive, or Ethernet adapter.

■   Continuous network connection

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

■   Support of multiple network connections

Since NovaScale/ft Server series can support multiple Ethernet connections, you can add network redundant control or network traffic control.

■   Industry standard hardware platform

NovaScale/ft Server series uses IA (Intel Architecture)-based system hardware.

■   No need to modify applications

You can run Windows Server 2003-compliant applications on NovaScale/ft Server series. Thus, unlike other highly fault-tolerant products, special API or scripts are not necessary.

■   Automatic mirroring

NovaScale/ft Server series automatically maintains data as the current data.

■   Automatic detection and notification of faults

NovaScale/ft Server series detects and sorts out all events such as general status changes and faults, and notifies Windows Event Log of these events.

■   Transparent migration

NovaScale/ft Server series constantly monitors events. If trouble occurs on NovaScale/ft Server series' server module, it will transparently use a redundant module of the failed module. This feature maintains data and user access without losing application service.

■   Automatic reconfiguration

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

■   Local and remote management

NovaScale/ft Server series uses ESMPRO as a server management tool. This tool uses a GUI that enables monitoring and setting of NovaScale/ft Server series. ESMPRO can be used both locally and remotely on work station PCs or server PCs.

■   Event notification function

When trouble or other events are detected on NovaScale/ft Server series, they will be notified to Windows Event Log and saved. Therefore, you can view the log items locally or remotely by a usual Windows procedure. Since an NovaScale/ft Server series events use unique IDs, they are easy to distinguish.

■   In-service repairing

You can repair or replace a failed module even if NovaScale/ft Server series is operating.

■   Partition structure

On this product, the first logical drive will be in the following state when the setup by EXPRESSBUILDER is complete:

Free area (*)

Partition for operating system (*)
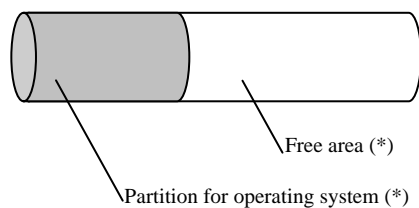
* The size varies depending on the specification at setup.

CHECK:

The partition for operating system is not mirrored at the time of EXPRESSBUILDER setup completion. Mirror the partition separately.

- **Windows OS and media**

  The Windows OS media used on NovaScale/ft Server series are not specifically processed for it. The standard operating methods of Windows are same as general.

HOW THE OPERATING SYSTEM SEES THE CPU MODULES

On NovaScale/ft Server series, the CPU modules are redundantly configured and all processors installed on this server are shown.

How CPU modules appear on Device Manager

The Device Manager shows the logical CPUs. On a multi-processor system, the number of displayed CPUs is the number of physical processors on one CPU/IO module, multiplied by the number of cores per processor.
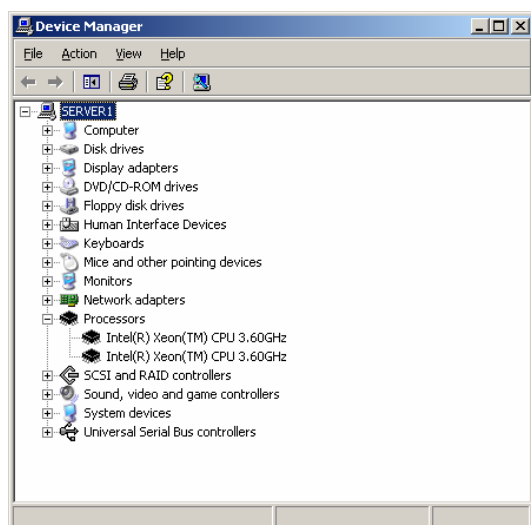
System with one CPU (Dual-Core)
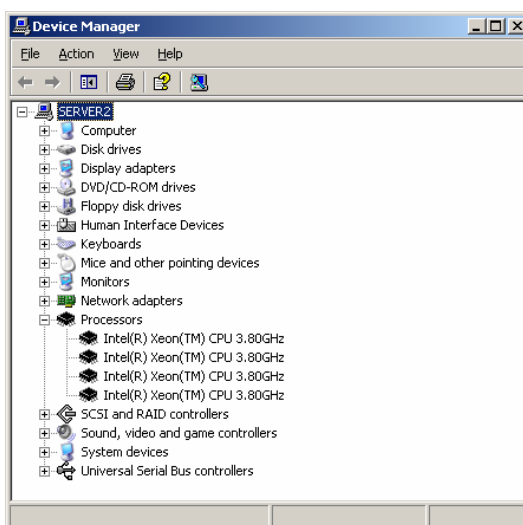
System with two CPUs (Dual-Core)

How CPU modules appear on Task Manager

As with the Device Manager, all the logical CPUs are shown:
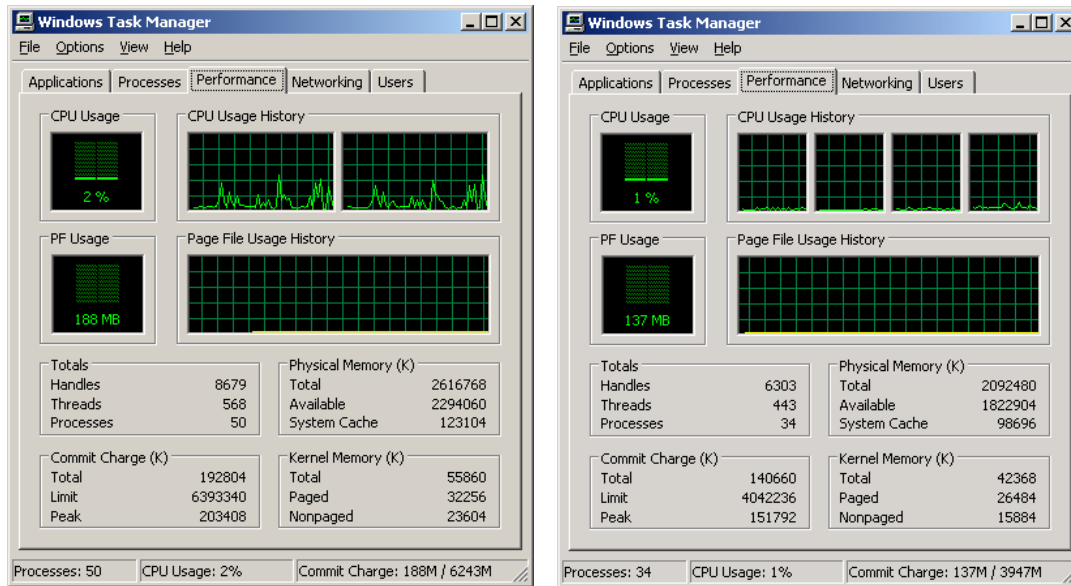
NAMES AND FUNCTIONS OF COMPONENTS

Names and functions of components are shown below:
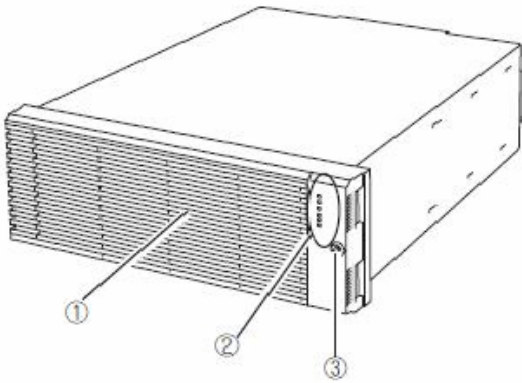
(1) Front bezel
The cover to protect devices in the front: this cover can be locked by the security key shipped together.

(2) LEDs
For more information, see the description on the front view (page 2-9).

(3) Key slot
The slot you insert the security key to unlock the front bezel.

Rack-mount model

Front View (inside)
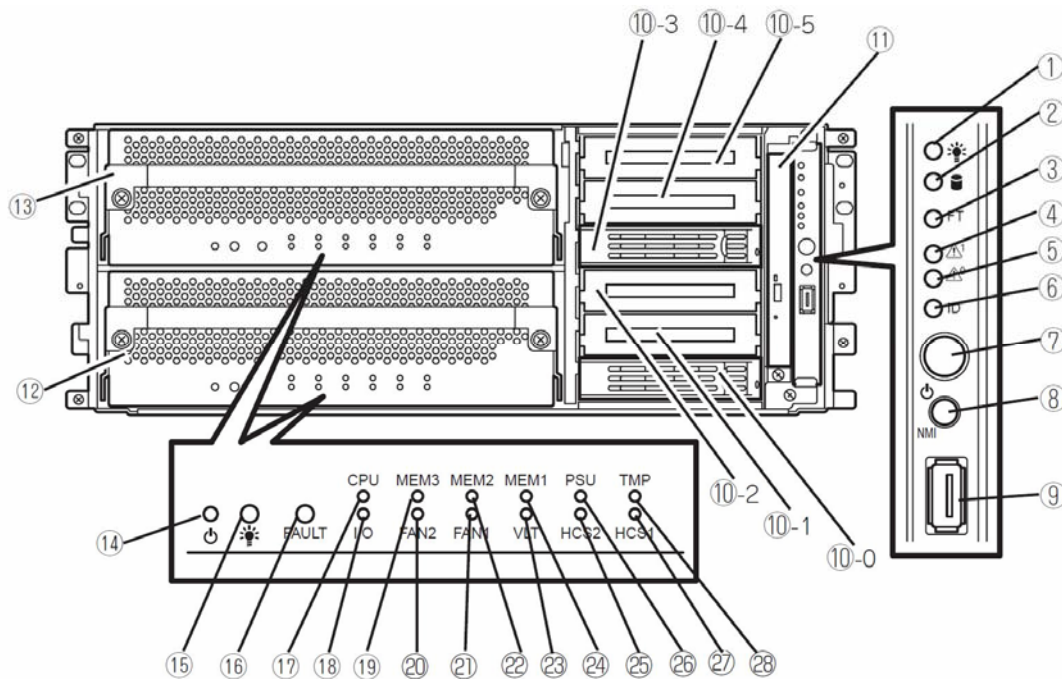
Rack model
(with the front door open)

(1) POWER LED (green)

This LED lights when the power supply is switched on (see page 2-18).

(2) DISK ACCESS LED (green/amber)

This LED lights green when the internal hard disk drives are accessed. If any internal hard disk drive is failing, the LED lights amber (see page 2-18).

(3) FT status LED (green/amber)

This LED indicates the status of the server (see page 2-18).

In the Duplex mode, the LED lights green.

In the Simplex mode, the LED is off.

If either of the CPU/IO modules fails, the LED lights amber. While memory dump is being performed, this LED blinks amber.

(4) CPU/IO module #1 status LED

This LED indicates the status of the CPU/IO module #1 (see page 2-18). When the module is running successfully, the LED lights green. If the module has a problem, the LED blinks green, lights amber, or blinks amber.

(5) CPU/IO module #0 status LED

This LED indicates the status of the CPU/IO module #0 (see page 2-18). When the module is running successfully, the LED lights green. If the module has a problem, the LED blinks green, lights amber, or blinks amber.

(6) UID LED (blue)

This LED blinks by a command from software.

(7) POWER switch

This switch is used to power on/off the server. The POWER LED lights and the server is powered on when this

switch is pressed once (see page 2-23). The power supply is turned off when the switch is pressed once again (see page 2-25). Pressing this button for 4 or more seconds shuts down the server forcefully (see page 4-37).

TIP:

Use your finger to press the POWER switch.

(8) DUMP (NMI) switch

This switch is used to perform memory dump.

(9) USB1 connector

This connector is used for connecting devices supporting the USB1.1 interface.

(10) Hard disk drive bays

These bays are used to install hard disk drives (see page 8-6).

The numbers following "-" represent SCSI IDs.

(11) CD-ROM drive

This device is used to read data from CD-ROMs.

(12) CPU/IO module #0

This is a module with a set of CPU (processor), memory (DIMM), PCI board, and cooling fan unit (see page 2-18).

(13) CPU/IO module #1

This is a module with a set of CPU (processor), memory (DIMM), PCI board and cooling fan (see page 2-18).

(14) Module POWER switch

This switch is used to control power supply to a module. The switch is pressed when removing a failed module.

(15) Module POWER LED

See page 2-20.

(16) Module FAULT LED

See page 2-20.

(17) Processor error LED

See page 2-20.

(18) I/O error LED

See page 2-20.

(19) Memory group 3 error LED

See page 2-20.

(20) Fan 2 error LED

See page 2-20.

(21) Fan 1 error LED

See page 2-20.

(22) Memory group 2 error LED

See page 2-20.

(23) Voltage error LED

See page 2-20.

(24) Memory group 1 error LED

See page 2-20.

(25) HCS2 error LED

See page 2-21.

(26) Power supply unit error LED

See page 2-20.

(27) HCS1 error LED

See page 2-21.

(28) Heat warning LED

See page 2-21.

CD- ROM Drive
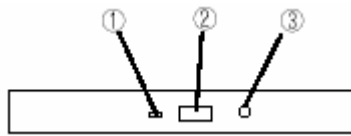
(1)   Status LED

An LED that stays on while the loaded CD-ROM is accessed.

(2)   CD tray eject button

A button for ejecting the CD tray.

(3)   Manual release hole

When the eject button does not work, insert a metal pin into this hole to forcefully eject the CD tray.

Rear View
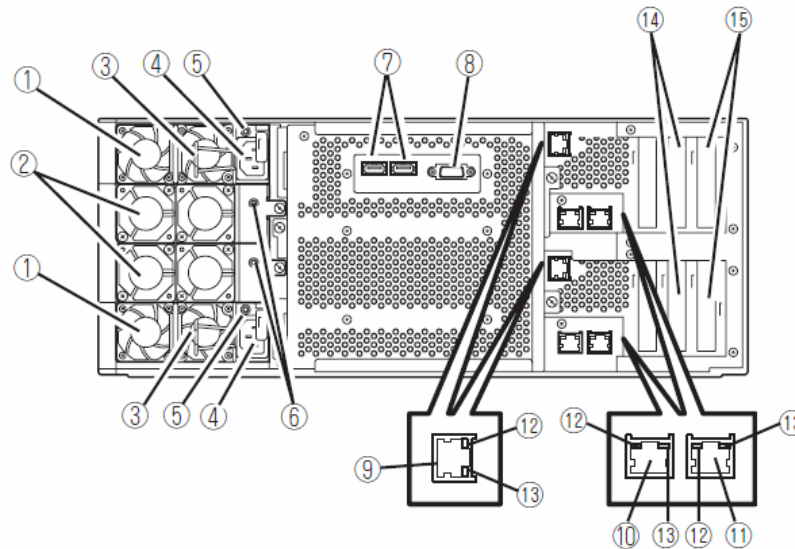
Rack model

(1)   Power supply units

Power supply units supply DC power to the server.

(2)   Cooling fan unit 2

(3)   Lock springs

A lock spring prevents a power supply cord from disconnected from this device.

(4)   AC inlets

A power cord is connected to this socket.

(5)   Power supply unit LEDs

A power supply unit LED blinks green when AC power is supplied via a power cord. When the server is powered on, the LED lights green (see page 2-21).

(6)   Cooling fan LEDs

A cooling fan LED lights green while a cooling fan unit is working normally. If the fan unit has a problem, the LED lights amber (see page 2-21).

(7)   USB connectors

From left to right, USB2 and USB3. The connectors are used for connecting devices supporting the USB1.1 interface.

(8)   Monitor connector

This connector is used to connect a display device

(9)   Management LAN port

This is a LAN port dedicated to management and can be used when a ft remote management card is installed. The port is used when the remote management function or DianaScope is used.

IMPORTANT:

The speed and duplex settings of the management LAN port are fixed to the auto negotiation mode, and the settings cannot be changed manually.

Similarly, set the link partner side (switch and hub) to the auto negotiation mode.

(10)   LAN connector 1

This connector is used to connect to a network.

(11)   LAN connector 2

This connector is used to connect to a network.

(12)   LINK/ACT LEDs

A LINK/ACT LED indicates the LAN access status (see page 2-21).

(13)   Speed LEDs

A speed LED indicates the transfer speed of the LAN (see page 2-21).

(14)   PCI-X slot #1

64 bit 100 MHz 3.3V PCI-X. A PCI board of low-profile type is attached to this slot.

(15)   PCI-X slot #2

64 bit 100 MHz 3.3V PCI-X. A PCI board of low-profile type is attached to this slot.

(16)   PCI-X slot #3

64 bit 100 MHz 3.3V PCI-X. A PCI board of low-profile type is attached to this slot.

CPU/IO Module

1) Module handle

2) Cooling fan unit 1

3) Heat sink (CPU#1)

4) PCI slot

5) DIMM

For more information on slot numbers, see the figure on next page.
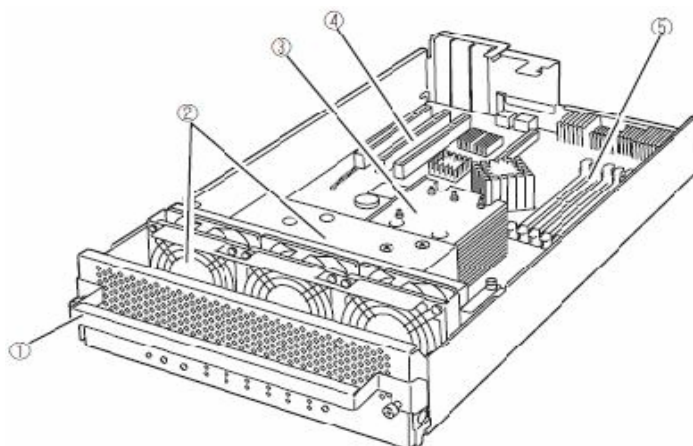
CPU/IO module (without a water-cooling kit)
(R620-LR model)

1) Module handle

2) Cooling fan unit 1

3) Water cooling kit

4) PCI slot

5) DIMM

For more information on slot numbers, see the figure on next page.

6) Memory Duct

7) Ft Remote Management Card
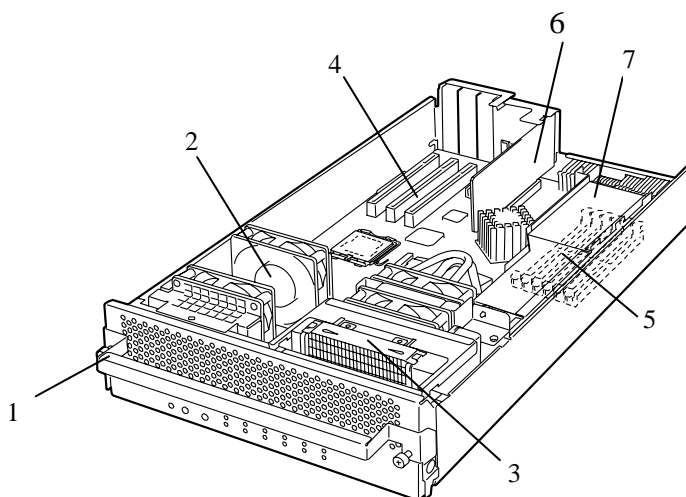
CPU/IO module (with a water-cooling kit)
(R620-MR model)
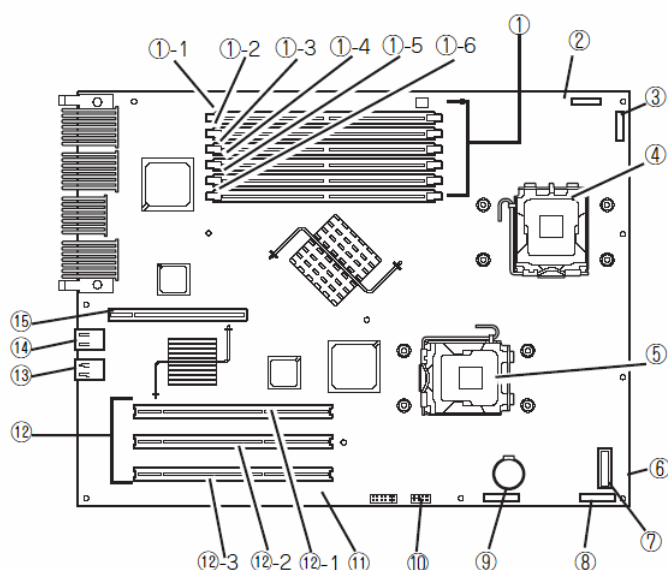
CPU/IO module board

(1) DIMM slots

    (1)-1   DIMM slotA1

    (1)-2   DIMM slot B1

    (1)-3   DIMM slot A2

    (1)-4   DIMM slot B2

    (1)-5   DIMM slot A3

    (1)-6   DIMM slot B3

(2) HCS-A connector

A water cooling kit installed for the CPU#1 is attached to this connector.

(3) Fan connector

(4) Processor #1 socket (CPU#1)

(5) Processor #2 socket (CPU#2)

(6) Fan connector

(7) LED board connector

(8) HCS-B connector

A water cooling kit installed for the CPU#2 is attached to this connector.

(9) Lithium battery

(10) Jumper switch for BMC configuration

(11) Jumper switch for CMOS/password clearing

(12) PCI board slot

    (12)-1   PCI board slot 1

    (12)-2   PCI board slot 2

    (12)-3   PCI board slot 3

(13) LAN2 connector

(14) LAN1 connector

(15) ft remote management card connector

ft Remote Management Card
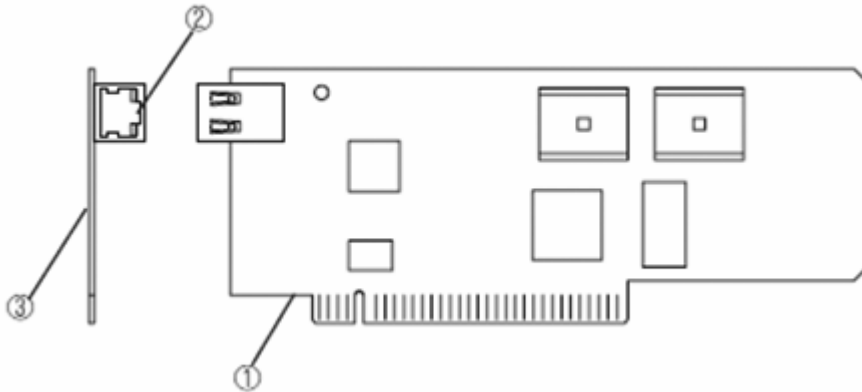
(1)   Edge connecting to a server
This edge of the card connects to the connector for this card in this device

> **IMPORTANT:**
>
> Attaching this card to a slot or device other than those specified may cause problems. Do not attach this card to any non-specified slot or device.

(2)   Management LAN port
This port supporting 100 Mbps/10 Mbps is used to connect to a network. You cannot use this port to connect to a telephone line directly. This port is also used for management by DianaScope, the management software shipped with the server.

■   **LINK/ACT LED**
This LED indicates the network port status. When power is supplied to this card and a connected device such as a hub and they are connected properly, the LED lights green (LINK). When the network port is sending/receiving data successfully the LED blinks green (ACT).

■   **Speed LED**
This LED indicates the network interface on which network port's communication mode is running. When the LED lights amber, it indicates the network interface is working on 100 Mbps. If the LED is off, it indicates the network interface is working on 10 Mbps.

> **IMPORTANT:**
>
> The speed and duplex settings of the management LAN port are fixed to the auto negotiation mode, and the settings cannot be changed manually.
>
> Similarly, set the link partner side (switch and hub) to the auto negotiation mode.

(3)   MAC address
The label containing MAC address information is attached on the other side of this card. You can also check the MAC address on the BIOS setup screen on the server.

LEDs

This section describes indications and meanings of the LEDs on NovaScale/ft Server series.

See "NAMES AND FUNCTIONS OF COMPONENTS" earlier in this chapter for the locations of each LED.

POWER LED

This LED lights green while the server is powered on. When power is off, this LED is off. The LED also lights green when one of CPU/IO modules is powered on.

DISK ACCESS LED

This LED indicates the status of hard disk drives loaded on 3.5-inch disk bays. Whenever the hard disk drives are accessed, the LED blinks green.
When this LED lights amber, it indicates a hard disk drive has a problem. You can see the status of the failed hard disk drive by checking the LED of each hard disk drive.
If this LED is blinking amber, it indicates volumes in hard disk drives are not mirrored. See "DISK OPERATIONS" (in chapter 3) to configure mirror volumes.

FT Status LED

The LED stays green while the server is running normally in DUPLEX mode. If this LED is off or lights/blinks amber, there is something wrong with the server.

The table below shows indications of the FT Status LED and their meanings.

FT status LED indications	Description	Action
Green	The device is running successfully in the Duplex mode.	–
Not on	Power is off	–
	Performing POST.	Wait for a while; it will light green and the mode will become Duplex shortly after POST.
	The device is running in the Sipmlex mode	The LED indicates only one of modules is running. If this status is observed right after the system startup or activation of a module that has been stopped, wait for a while. The status will change to the Duplex mode with the LED lit in green. If the LED does not light green after a few minutes, a device (FC-connected storage, internal disk) that should be redundant may not be attached properly. Check to see devices to make sure they achieve redundancy.
Amber	One of the CPU/IO modules has a problem.	Check the CPU/IO module status LEDs to find the failing module, and then report your sales agent which LED of the failing module is blinking.
Blinking amber	Memory dump is being performed.	Wait for memory dump to be completed.

CPU/IO Module # 0 Status LED

CPU/IO Module # 1 Status LED

These LEDs lights green when this device is running successfully. If a LED is off, blinks green, or lights/blinks amber, the device has a problem.
The table below shows indications of CPU/IO module status LEDs, their meanings, and actions to be taken.

CPU/IO status LED indications	Description	Action
Green	The CPU/IO module is running successfully.	–
Blinking green	A number of errors that can be fixed by memory are occurring.	Although you can continue using the server, it is recommended to contact your service agent.
	The CPU/IO module handle is not firmly fixed.	Check to see the CPU/IO module is firmly loaded and then fasten the screws of the handle to fix the handle.
Not on	Power supply is off.	-
	POST is running.	Wait for a while; the LED will illuminate in green and the mode will become Duplex shortly after POST.
	A fatal hardware error has occurred.	Contact your sales agent.
Amber	One of the CPU/IO modules has a problem.	Check the CPU/IO module status LEDs to find the failing module, and then report your sales agent which LED of the failing module is blinking.
	Detected a fatal temperature error.	Check if dust is accumulated on internal fans and confirm that the fan cables are connected firmly. If the LED indication does not change, contact your sales agent.
	Detected a fatal voltage error.	Contact your sales agent.
	Power supply has a problem.	Contact your sales agent.
Amber (blinking)	Detected a temperature error to be warned.	Check if dust is accumulated on internal fans and confirm that the fan cables are connected firmly. If the LED indication does not change, contact your sales agent.
	Detected a voltage error to be warned.	Contact your sales agent.
	Detected a fan alarm.	Check if dust is accumulated on internal fans, and confirm that the fan cables are connected firmly. If the LED indication does not change, contact your sales agent.

UID LED

This LED blinks blue by ESMPRO Manager, DianaScope or remote management of WEB server functions to identify the targeted device for maintenance. Use this LED when you have two or more of this device model on a single rack. When you are finished with maintenance, switch off the UID LED.

Module POWER LED

This LED lights green while the CPU/IO module is powered on. When the CPU/IO module is not powered on, this LED is off.
When the LED is on, you cannot remove the module.

Module FAULT LED

This LED lights amber when the CPU/IO module has a problem.

Processor Error LED

This LED lights amber when the processor of the CPU/IO module has a problem.

I/O Unit Error LED

This LED lights amber when the I/O of the CPU/IO module has a problem.

Memory Group 1 Error LED

This LED lights amber when the memory group 1 (A1 and B1 DIMM slots) of the CPU/IO module has a problem.

Memory Group 2 Error LED

This LED lights amber when the memory group 2 (A2 and B2 DIMM slots) of the CPU/IO module has a problem.

Memory Group 3 Error LED

This LED lights amber when the memory group 3 (A3 and B3 DIMM slots) of the CPU/IO module has a problem.

Fan 1 Error LED

This LED lights amber when the cooling fan unit in the CPU/IO module has a problem.

Fan 2 Error LED

This LED lights amber when the cooling fan unit located at the rear of this server has a problem.

Power Supply Unit Error LED

This LED lights amber when the corresponding power supply unit located at the rear of the server has a problem.

Voltage Error LED

This LED lights amber when the voltage of the CPU/IO module is not within an appropriate range.

Heat Warning LED

This LED lights amber when the temperature in the CPU/IO module is not within an appropriate range.

HCS 1 Error LED

This LED lights amber when the water cooling kit 1 in the CPU/IO module has a problem.

HCS 2 Error LED

This LED lights amber when the water cooling kit 2 in the CPU/IO module has a problem.

Access LED on the CD-ROM Drive

This LED is on when the installed CD-ROM is being accessed.

Hard Disk Drive LED

Each indication of the DISK LED on a hard disk drive bay has a different meaning.

Blinks green: the hard disk drive is being accessed.
Lights amber: the hard disk drive has failed.
Lights green and amber in turn: the hard disk drive reconfiguration (rebuild) is ongoing. This does not indicate the hard disk drive has a problem.
When the rebuilding is completed the LED goes off. If the rebuilding fails, the LED lights amber.

Blinks amber: the hard disk drive has a mirror volume for which redundancy is not achieved (i.e. mirrored configuration is in the degenerated mode).

LAN Connector LED

- LINK/ACT LED

  The LINK/ACT LED shows the status of a standard network port. It is green if power is supplied to the main unit and hub, and they are connected correctly ("LINK"). It blinks green while the network port sends or receives data (ACT).

  When the LED does not illuminate during "LINK," check the condition and connection of network cables. If there is nothing wrong with the cables, a defect is suspected in the network (LAN) controller. In this case, contact your sales agent.

- Speed LED

  This LED indicates the network interface of the communication mode used by a network port.

  1000BASE-T and 100BASE-TX are the supported LAN port types. When this LED lights amber, the port is operating on 1000BASE-T. When the LED lights green, the port is operating on 100BASE-TX.

Power Supply Unit LED

Power supply units located at the rear have power supply unit LEDs. When power is supplied to a power supply unit by connecting a power cord to the AC inlet of the power supply unit, its LED blinks green. When the server is powered on, the LED lights green. If the LED does not illuminate in green or lights /blinks amber, the power supply unit may be failing. Contact your service agent and ask for replacement of the power supply unit.

Cooling Fan LED

Cooling fan units located at the rear have cooling fan LEDs. While a cooling fan unit is working normally, its LED

lights green. When the LED lights amber, the fan unit may have a problem. Contact you service agent and ask for the replacement of the cooling fan unit.

BASIC OPERATION

This section describes basic operation procedures of NovaScale/ft Server series.

Installing/removing the front bezel

When you power on/off the server, operate the CD-ROM drive, or remove/install a hard disk drive or CPU/IO module, remove the front bezel.

IMPORTANT:

Front bezel cannot be opened without inserting the attached security key into the slot to release the lock.

1. Insert the security key into the slot and turn it left with a little pressure to release the lock.

2. Hold the right side of the front bezel lightly and pull it toward you.
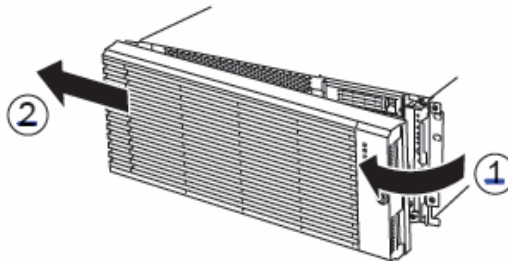
3. Detach the front bezel from the main unit by sliding it to the left a little to disengage the tabs from the frame.
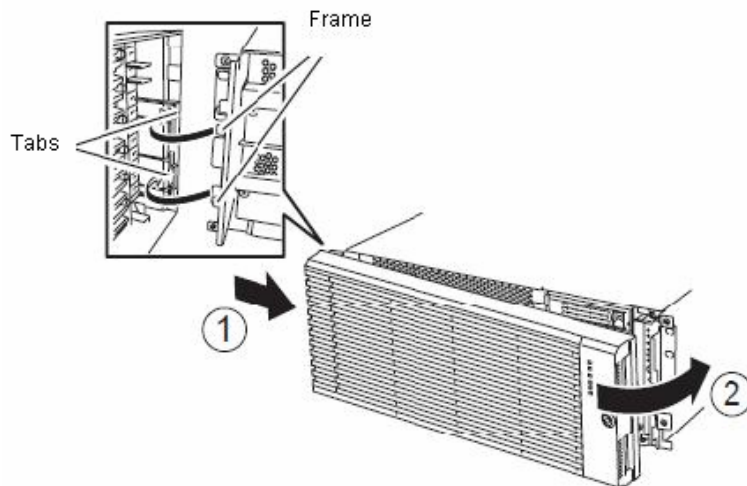
To attach the front bezel, engage the tabs on the frame on the left side of the main unit. After attaching and closing the front bezel, lock it with the key for security.

Power ON

To power on NovaScale/ft Server series, press the POWER switch located on the right of the front panel.

Follow the steps below to turn on the power.

1. Power on the display unit and other peripheral devices connected to the server.

CHECK:

If the power cord is connected to a power controller like a UPS, make sure that it is powered on.

---

2. Press the power switch located on the right of the front panel.

The POWER LED lights green. After a while,
our logo will appear on the screen.

IMPORTANT:

■　When you connect a power cord to an AC inlet, wait ten or more seconds to press the POWER switch.

■　Do not turn off the power before you see our logo and a character below the logo. It may take one to five minutes for the logo to appear depending on you server configuration.
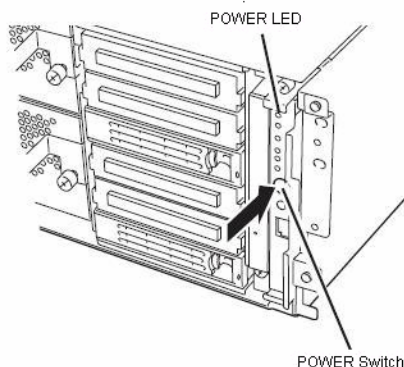
While our logo is displayed on the screen, NovaScale/ft Server series is performing a power-on self test (POST) to check itself. For details, see "POST Check" described later in this chapter. Upon the completion of POST, Windows Server 2003 will start.

CHECK:
If the server finds errors during POST, it will interrupt POST and display the error message. See Chapter 7.

Power OFF

Follow the steps below to turn off the power. If NovaScale/ft Server series is plugged to a UPS, see manuals included with the UPS or the application that controls the UPS.

1. Perform a normal shutdown from Windows Server 2003.

The system will be powered off automatically. (Note: the POWER LED on the primary side will remain illuminating when AC power is supplied.)

2. Power off all peripheral devices.

POST Check

POST (power-on self test) is a self-test function stored on the motherboard of NovaScale/ft Server series.

When you power on the server, POST will start automatically to check the motherboard, ECC memory modules, CPU modules, keyboard, mouse, etc. It also shows startup messages for various BIOS setup utilities.

According to the factory default settings, our logo appears on the display while POST is being performed. (To view POST's details, press **Esc**.)

TIPS:

■ You can view POST details from the beginning without the need to press **Esc** when the   BIOS menu is displayed: select [System Configuration] - [Advanced], and set [Boot-time Diagnostic Screen] to "Enabled" (see Chapter 4).

■ You can view the test items and details from a management PC where ESMPRO Manager or DianaScope is installed.

You do not always need to check POST details. You will need to check messages when:

■ You install a new NovaScale/ft Server series.

■ A failure is suspected.

■ You hear several beeps between the time of the power-on and OS start-up.

■ The display unit shows an error message.

Flow of POST

This section walks you through how POST is performed.

1. When you power on the system, one selected CPU/PCI module will start up.

POST will be performed on this selected CPU/PCI module.

2. Memory check starts.

A message appears at the upper left of the screen to show that the basic and expanded memories are being counted. The memory check may take a few minutes to complete depending on the server's memory size. Likewise, it may take about one minute for the screen to appear when the server is rebooted.

Note that if you have replaced the PCI module, the server will perform a reset of the MAC address, then reboot itself before the memory check.

3. The server starts processor check, IO check, and initialization.

Several messages appear: they show the ID of the selected CPU/PCI modules, information on the processor, detection of the keyboard and mouse, etc.

4. A message appears at the lower left of the screen, prompting for startup of the BIOS setup utility "SETUP."

```
Press <F2> to enter SETUP
```

You will need to start it when you want to modify the configuration for using the server. Unless this message appears together with an error message, you do not need to start the utility to modify the configuration. (If you wait for a few seconds, POST will go on automatically.)

To start the SETUP utility, press **F2** while the above message is displayed. For setting and parameter functions, see the section of BIOS setup.

When SETUP is completed, the server will reboot itself automatically and perform POST.

5. A message appears prompting for startup of SCSI BIOS setup utility.

When a built-in SCSI controller is detected, a message will appear prompting for startup of SCSI BIOS setup utility. (If you wait for a few seconds, POST will go on automatically.)

If you press **Ctrl** + **N**, the SCSI BIOS setup utility will start. For setting and parameter functions, see "SCSI BIOS (SCSI*Select)*" in chapter 4.

You will need to use this utility, for example, when you have changed the server's internal SCSI device connections. However, you usually do not need to use it.

When SETUP is complete, the server will reboot automatically and perform POST again.

If multiple SCSI controller boards are mounted on the PCI bus, the SCSI BIOS startup message will appear for these boards in numerical order (PCI #1, PCI #2, PCI #3…).

6. The screen shows SCSI ID numbers used by the connected SCSI devices.

7. Upon completion of POST, the password entry screen appears prior to OS startup.

The password entry screen will appear after the normal termination of POST only if you have set a password in the BIOS setup utility "SETUP."

You can enter a password up to three times. If you enter an incorrect password three times, the startup will be unsuccessful. In this case, turn off the power and then turn it on again after waiting 30 seconds to boot the server.

IMPORTANT:

Do not set a password before installing the OS.

8. Upon completion of POST, the OS will start up.

Behaviour at Occurrence of Error

If POST or OS startup does not finish normally, the server will reboot itself automatically.

At the time of reboot, it will select the other CPU/IO module and run POST or OS startup.

In this manner, the server retries POST or OS startup with different combinations of CPU/IO modules. If POST does not finish normally with any combinations, the server will stop with the state of DC OFF or Post end with an error message displayed.

While performing retries, the server displays or registers the error types.

For details of error messages, see Chapter 7 "Troubleshooting."

POST Error Messages

When the server detects an error during POST, it will notify you of the occurrence in the following manners:

- Displays an error message on the display unit.
- Makes a beeping sound.

These notification methods are described in "POST Error Messages" in chapter 7.

IMPORTANT:

Before you contact your sales agent, write down the error messages and patterns of the beeping sound. They will serve as helpful information at the time of maintenance.

CPU/IO Module Status

The CPU/IO module (#0 or #1) started first is managed as primary, and the module started later is managed as secondary. If one CPU/IO module is disconnected because of the failure and others, the other module becomes primary.

The CPU/IO module to be started first is selected depending on the primary/secondary status of modules when the server was shut down the last time.

The following devices are connected to the primary CPU/IO module by the hardware switch, although those can be connected to both CPU/IO modules #0 and #1. When one CPU/IO module is disconnected because of a failure, those are switched to the other module automatically and continue operating.

- VGA
- CD-ROM drive
- USB device (keyboard, mouse, floppy disk drive)

IMPORTANT:

- If the optional floppy disk drive is connected, the drive letter may change from A to B by switching CPU/IO modules.
- The drive letter of the CD-ROM drive is allocated again automatically when CPU/IO modules are switched. The letter which is not used is allocated to the drive in the order of D to Z. If you want to set the fixed drive letter to the CD-ROM, specify the drive letter which is not allocated in the order of D to Z after setting the hard disk drive letter.

Floppy Disk Drive (Option)

If you want to use a floppy disk drive with this server, connect USB FDD UNIT, which is available optionally to a USB connector.
This server supports 3.5-inch 2HD (1.44 MB) and 2DD (720 KB) floppy disks.

Insert/Remove Floppy Disk

Before inserting a floppy disk into the drive, make sure that NovaScale/ft Server series is on (the POWER LED illuminates).

Insert a floppy disk into the drive firmly until it snaps in place. The eject button of the drive is then raised slightly.

CHECK:

■ You cannot use 1.2 MB-formatted disks.

■ If you insert an unformatted disk, you will see a message that the disk cannot be read or that needs formatting. To format a floppy disk, see your OS manual.

■ If you power on or restart NovaScale/ft Server series with a floppy disk left in the drive, the server will access the floppy disk to start the system. Unless a system exits on the FD, the server will be unable to start.

To remove a floppy disk from the drive, press the eject button.

CHECK:

Before removing a floppy disk, make sure that the floppy disk access LED is off. If you eject a floppy disk while the LED is on, the stored data could be damaged.

Use of Floppy Disk

You may need to store important data on floppy disks. Since the floppy disk is a very delicate medium, you must handle it with extra care:

■ Push the floppy disk gently into place.

■ Attach the label on a proper position.

■ Do not use a pencil or ballpoint pen to write on the floppy disk.

■ Do not open the protective shutter.

■ Do not use the floppy disk in a dusty place.

■ Do not place anything on the floppy disk.

■ Do not leave the floppy disk in a place that is subject to direct sunlight or high temperatures (e.g., near a heater).

■ Keep away from cigarette smoke.

■ Do not leave the floppy disk near water or chemicals.

■ Keep away from magnetic objects.

■ Do not clip disks. Be careful not to drop.

■ Store floppy disks in a protective case where they are kept away from magnetic waves or dust.

■ To prevent data from being erased accidentally, the floppy disk has a write-protect notch. When the disk is write-protected, you can read data, but you cannot write the data or format the disk. It is recommendable to write-protect floppy disks that contain important data except when you write data to the floppy disk. To write-protect a 3.5-inch floppy disk, slide the write-protect notch located on its back.

■ The floppy disk is a very delicate storage medium. Dust or changes in temperature could cause data to be lost. Data loss could also be caused by faulty operation and computer trouble. To avoid such possible data loss, it is recommendable to back up important data regularly. (Be sure to make back-up copies of the floppy disks that are included with NovaScale/ft Server series.)
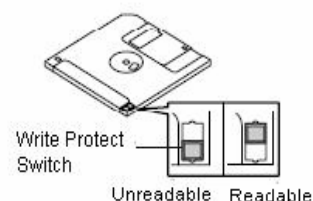
CD-ROM Drive

NovaScale/ft Server series has a CD-ROM drive on the front panel. It is a device used to read data from a CD-ROM (compact disc read-only memory). Compared to a floppy disk, a CD-ROM allows for larger volume and fast data readout.

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of a burn, injury, or damage to physical assets. For details, see "PRECAUTIONS FOR SAFETY" in Chapter 1.

■ Do not leave the CD tray ejected.

Insert/Remove CD-ROM

Follow the steps below to set a CD-ROM.

1. Before you insert a CD-ROM, make sure that the server is powered on. When the server is powered on, the LED illuminates in green.

2. Press the CD-tray-eject button located in the front of the CD-ROM drive.
The tray is then ejected.

3. Hold the CD-ROM with its signalling side facing the tray.

4. As shown in the figure on the right, place the CD-ROM on the tray and press lightly on the center to lock.

5. Push the front side of the tray gently to the drive-closed position.
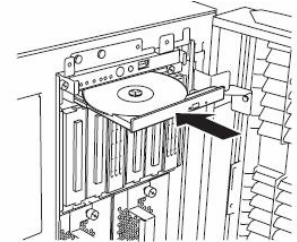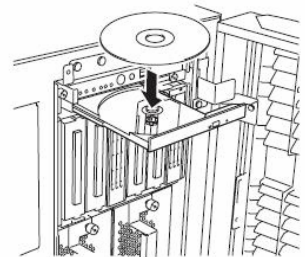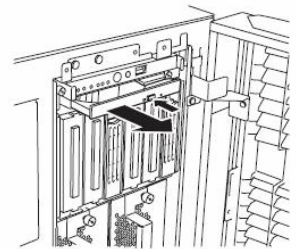
> **IMPORTANT:**
>
> If you hear noise while running the CD-ROM drive, reset the CD-ROM.

To remove the CD-ROM, press the CD-tray-eject button as you did in setting the CD-ROM.

When the access LED lights orange, it indicates the CD-ROM is being accessed. Make sure the access LED is not illuminating in orange before you press the CD-tray-eject button.
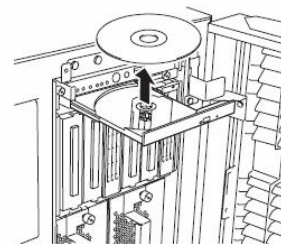
Press the locking part in the centre of the tray and pick the CD-ROM gently. When you have removed the CD-ROM, push the tray to the drive-closed position.

IMPORTANT:

When you click the "Safely Remove Hardware" icon on the task-tray, device names such as "USB Mass Storage Device" are displayed. Never attempt to remove devices other than "USB Floppy drive". If the removal operation is done, system performance is not guaranteed.

If you did removal operation of these devices by mistake, click "Safely Remove Hardware" icon again and select "Safely remove AMD PCI to USB Open Host Controller". The removed device will be then recognized again.

When you cannot eject a CD-ROM

When you cannot eject the CD-ROM from the server even by pressing the eject button, follow the steps below to eject it:

1. Press the POWER switch to power off this server (i.e. the POWER/SLEEP LED is off).

2. Use a metal pin of about 1.2 mm in diameter and 100 mm long (alternatively, you can use a fairly large paper clip after straightening). Insert it gently into the manual release hole located at the low front side of the server until the tray is ejected.
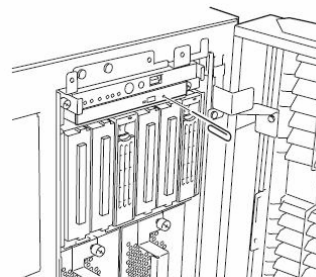
> **IMPORTANT:**
> - Do not use a toothpick, plastic pin, or other breakable objects.
> - If you cannot eject the CD-ROM by following the steps above, contact your sales agent.

3. Hold the tray and pull it out.

4. Take out the CD-ROM.

5. Push the tray back.

Handling CD-ROMs

Observe the following when you use a CD-ROM on NovaScale/ft Server series:

- As for a disk such as a noncompliant "copy-protected CD," we shall not guarantee that you can use a CD player to play it with this server.

- Be careful not to drop the CD-ROM.

- Do not bend or place anything on the CD-ROM.

- Do not attach labels on the CD-ROM.

- Do not touch the signal side (blank side).

- Place the CD-ROM gently on the tray with the printed side up.

- Do not scratch, or use a pencil or ballpoint pen to write on the CD-ROM.

- Keep away from cigarette smoke.

- Do not leave the CD-ROM in a place that is subject to direct sunlight or high temperatures (e.g., due to a heater).

- If the CD-ROM gets dirty with dust or fingerprints, wipe it gently from its center to edge with a dry soft cloth.

- When you clean the CD-ROM, use a CD cleaner. Do not use a record cleaner (spray), benzine, or thinner.

- Store the CD-ROM in a protective case when not in use.

Chapter 3

Windows Setup and Operation

This chapter describes setup procedures to make NovaScale/ft Server series ready for use.

DISK OPERATIONS

NovaScale/ft Server series duplicates disks to secure data by using "Disk Management." This section describes operations such as configuration of dual settings to disks and replacement of disks.

Disks Operations Using Disk Management

This section describes the disk operations using the disk management.

Disk Management

NovaScale/ft Server series ensures reliability by executing software mirroring to hard disk volumes using Windows. Use Windows' "Disk Management" to manipulate volumes.

Refer to the online help for the operating procedures of "Disk Management."

Steps to refer to the help of operating procedures:

1. Click [Start] - [Help and Support].

2. Select [Disks and Data] from the topics on the help.

3. Select [Managing Disks and Volumes] - [Disk Management] - [How To…], then check the operating procedures.

Hard Disk Configurations that can be Built on the NovaScale/ft Server series

In the Bull NovaScale/ft series, you need to create mirrors on all volumes, and to make the volumes dynamic mirror volumes.

IMPORTANT:

■ Dynamic simple volumes can construct dynamic mirror volumes by adding a mirror. However, dynamic mirror volumes cannot be constructed from dynamic span volumes, dynamic stripe volumes, or dynamic RAID5 volumes.

■ Volumes that are already used for constructing dynamic mirror volumes cannot be used to add a mirror.

When creating mirror volume, slot 0 and 3, slot 1 and 4, and slot 2 and 5 should be the mirrored pairs.

IMPORTANT:

When the number of hard disk device built in this server is less than 6, the number of slots to which each disk is attached and the number of disks displayed at the Windows disk management may be different. If the disk device is added or changed, or if the external storage device is connected, the disk numbers and slot numbers may be different. Also, rebooting system may reallocate the disk numbers. On the other hand, the slot number to attach a disk is the same with the target ID of SCSI. When creating or repairing mirror volume, be sure to check the target ID by following the procedures below.
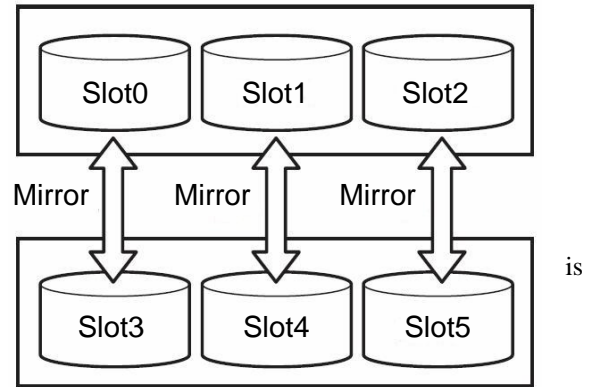
The pairs of mirror disks as shown above can be created by selecting hard disks whose target IDs are identical in the disk properties and by making pairs of disks whose target IDs are 0 and 3, 1 and 4, and 2 and 5, which are displayed through [Disk View]. The following explains how to confirm the target ID:

1. Click [Start] → [Administrative Tools] → [Computer Management]. The [Computer Management] window appears.

2. Click [Disk Management] under [Storage] in the console tree.

3. Right-click the disk and point to Properties to confirm the target ID. The target ID in the example shown here is "1."
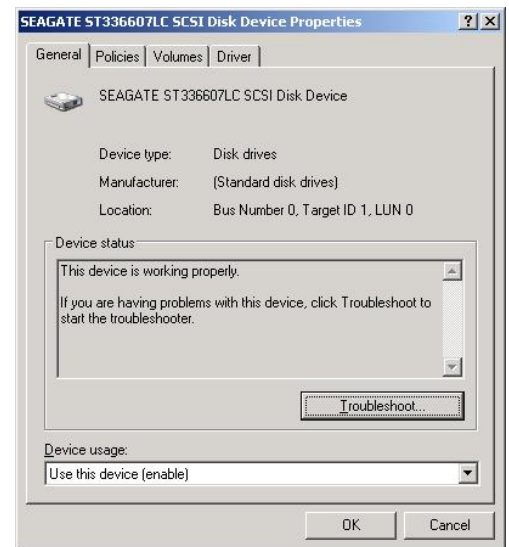
4. Similarly, confirm the target IDs of the other disks.

Disk No	Target ID
Disk 0	0
Disk 1	1
Disk 2	2
Disk 3	3
Disk 4	4
Disk 5	5

When disk numbers and target IDs are matched as shown above, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs, and add mirror volumes.

Configuring and Breaking Mirror

This section describes the procedures to configure and break the mirror of hard disk volumes using Disk Management.

Configuring Mirror

Follow the procedures below to configure a volume mirror.

IMPORTANT:

Set mirror to the disks who's Target IDs are the pair of 0 and 3, 1 and 4, and 2 and 5. For details, see "Hard Disk Configurations that can be Built on the NovaScale/ft Server series" on page 3-2.

---

1. Click [Start] - [Administrative Tools] then [Computer Management]. The [Computer Management] dialog box will appear.

2. Click [Disk Management] under [Storage] in the console tree.
   The [Disk Management] window will appear on the right panel.

3. Insert a new disk. The disk will appear on the [Disk Management] window.
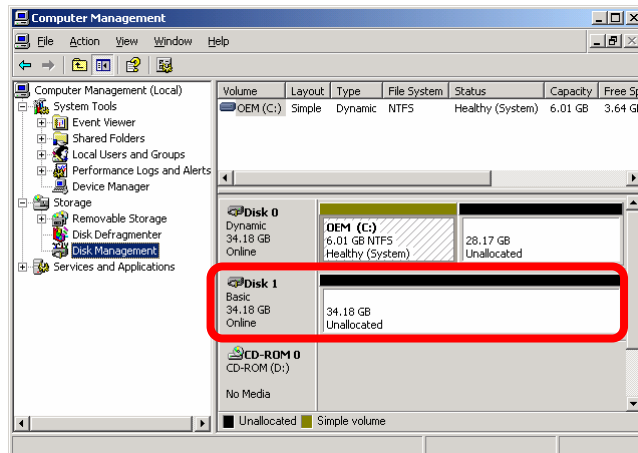
IMPORTANT:

- ■ If the status of the disk is "Not Initialized", right-click the disk and initialize it.

- ■ If [Foreign] appears, the disk may have been used on a different server. Right-click the disk and execute [Import Foreign Disks]. Check the contents of the disk, and save the field whose contents are necessary .Then right-click the disk and execute [Convert to Basic Disk…].

---

4. Select and right-click a disk, and then execute [Convert to Dynamic Disk…].
On the [Convert to Dynamic Disk] dialog box, select the disk and click [OK].
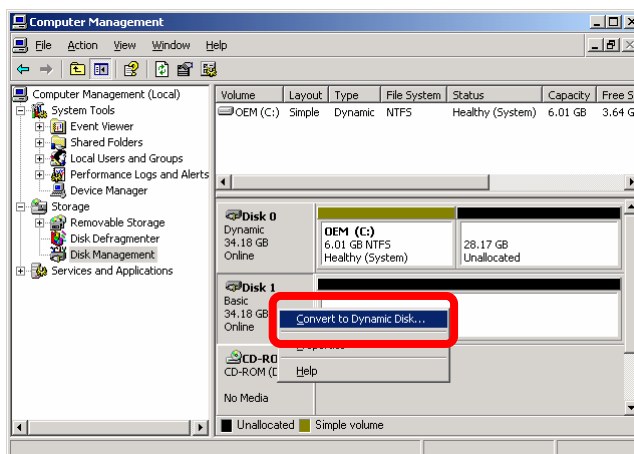
5. Right-click the volume of the dynamic disk to mirror and click [Add Mirror…].
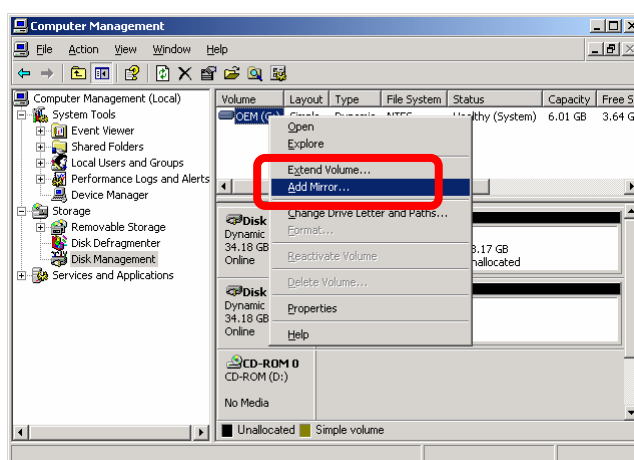
6. On the [Add Mirror] dialog box, select the disk to mirror and click [Add Mirror].

> **IMPORTANT:**
>
> ■ Clicking [Add Mirror] displays the [Logical Disk Manager] dialog box, but there is no problem. Click [OK].
>
> ■ If the server is rebooted during mirror generation, mirroring will not be completed. Do not reboot the server until the mirroring process is completed.
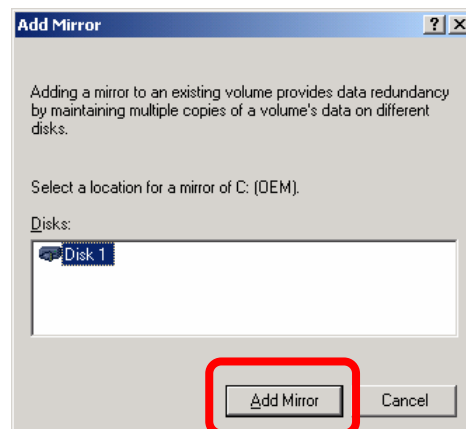
The volume status changes to "Resynching."
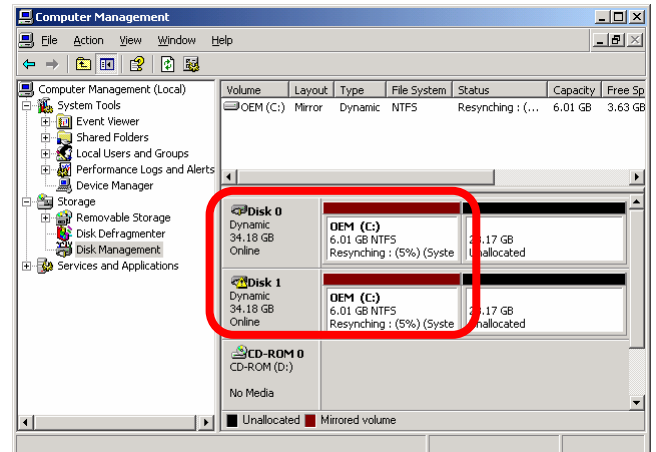
7. The mirror configuration is completed if the volume status changes from "Resyching" to "Healthy."
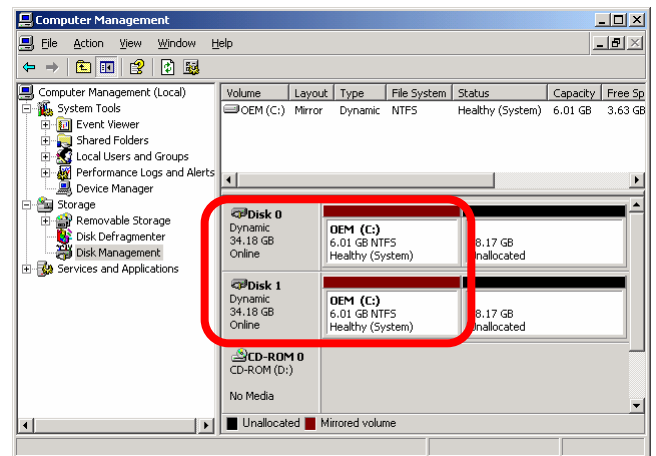
Confirming if Paired Disks are Mirrored Properly

Check the following to confirm that the mirror is configured properly:

- Is disk mirroring completed successfully?
  Disk mirroring is completed properly if the volume layout is [Mirror], and the status is [Healthy] on the [Disk Management] window.
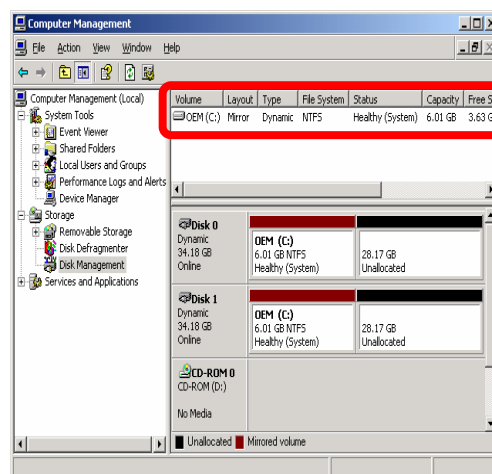
- Is the mirror configured on the disks of the proper position?
  On the [Disk Management] window, right-click the mirrored disks and select [Properties].
  Click the [General] tab and check if the pair of Target IDs are correct. (In the case below, the Target ID is "0"and "3.")
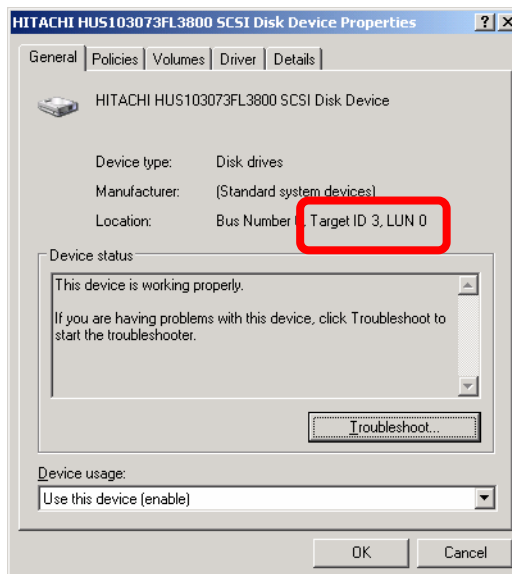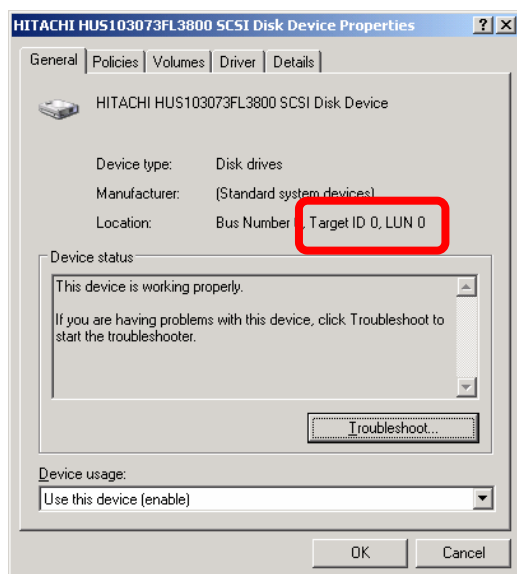
Breaking mirror

You may have to break a mirror when changing a failed disk.

Follow the procedures below to break the mirror of volumes.

The procedures to break a mirror on C drive are discribed here.

1. Click [Start] - [Administrative Tools] - [Computer Management]. The [Computer Management] window will appear.

2. Right-click the volume of the dynamic disk whose mirror is to be broken and click [Break Mirrored Volume…].
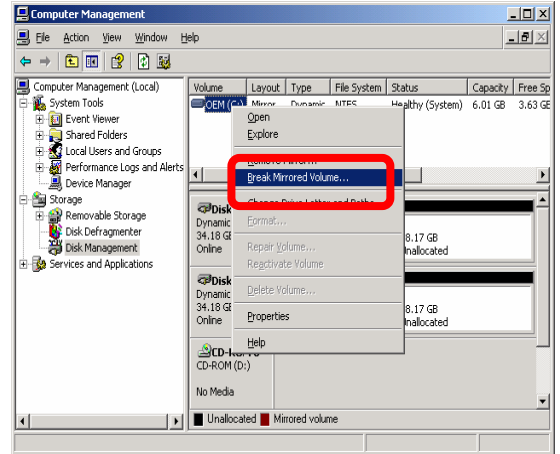
3. Click [Yes] on the [Break Mirrored Volume] dialog box.
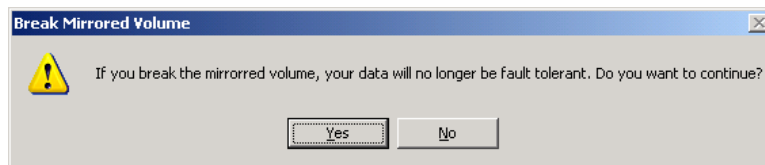
4. Click [OK] on the [Logical Disk Manager] dialog box. (This dialog box is not displayed for data volume.)
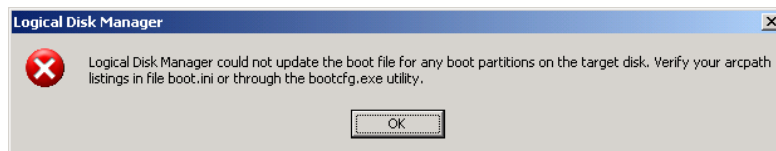
5. The mirror is broken and the volumes will be
converted to simple volumes.
In the figure on the right, the status of the volumes are
as follows:

[System Volume]
    Volume: OEM(C:), Status: Healthy (System)

[Broken Volume]
    Volume: OEM, Status: Healthy
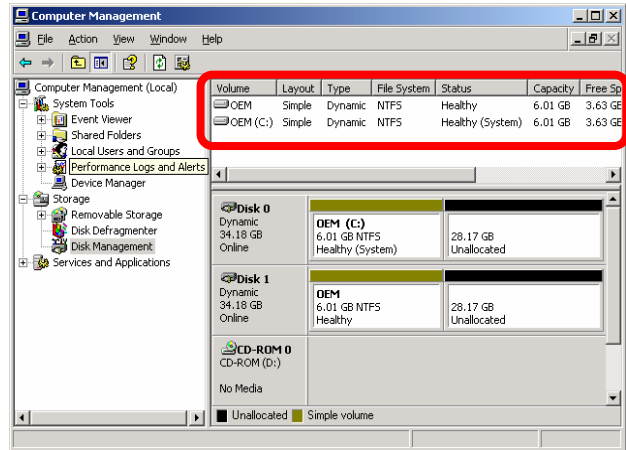
Importing Data Disks

This section describes a procedure to import a data disk using Disk Management.

IMPORTANT:

If you import the disk used as a boot disk on another system, it becomes impossible to boot from the disk.

1. Insert the disk to import.

2. Foreign Dynamic Disk is displayed on [Disk Management].
In the figure on the right, Disk 2 and Disk 3 are the inserted disks.
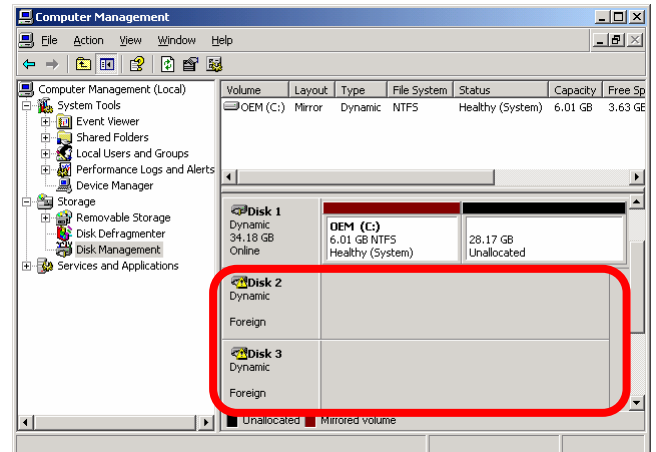
3. Right-click the disk to import and select [Import Foreign Disks…].
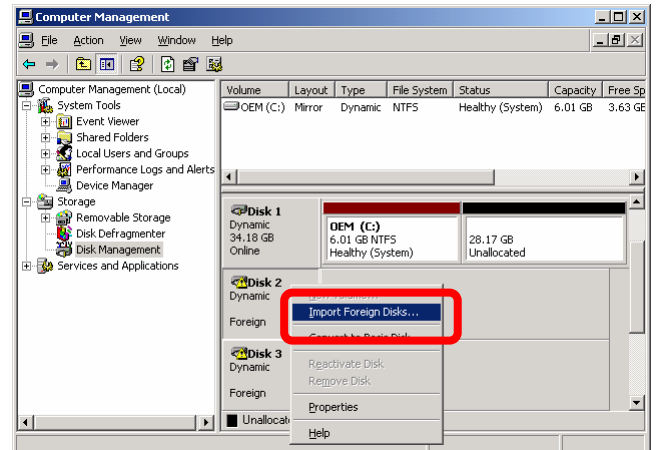
4. In the [Import Foregn Disks] dialog box, select the disk group to import and click [OK].
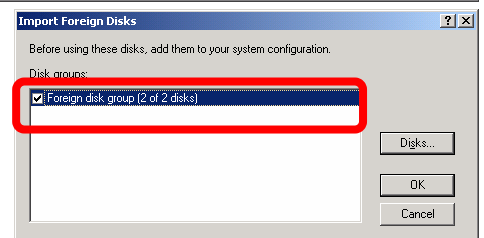
5. In the [Foreign Disk Volumes] dialog box, check the volumes to import, and click [OK].
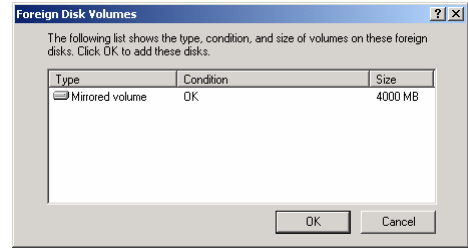
6. The disk import is completed if the disk status changes from "Foreign" to "Online."
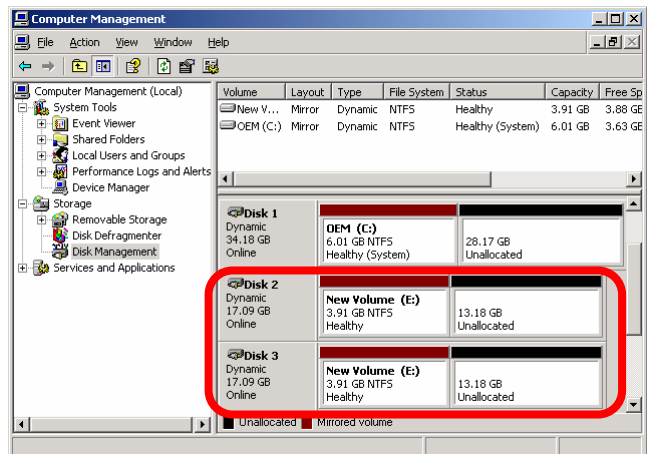
Extending Data Volume Size

This section describes a procedure to extend a volume size using Disk Management.

IMPORTANT:

- It is not possible to extend boot volume.

- As it is not possible to extend mirror volume, a mirror volume is extended in the following order: [Remove Mirror] - [Extend Volume] - [Add Mirror].

---

1. Remove the mirror of the volume you want to extend, and make it a simple volume.
(In the case below, the mirror of the volume (E:) is removed to extend the volume (E:).)
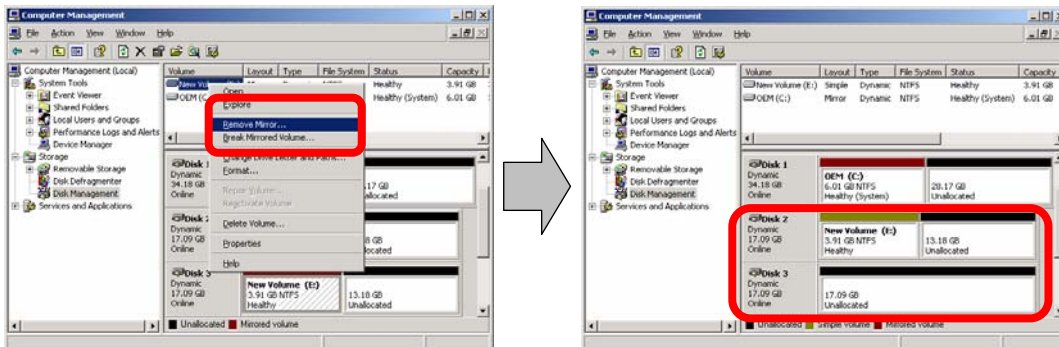
2. Right-click the volume to be extended and click [Extend Volume…].
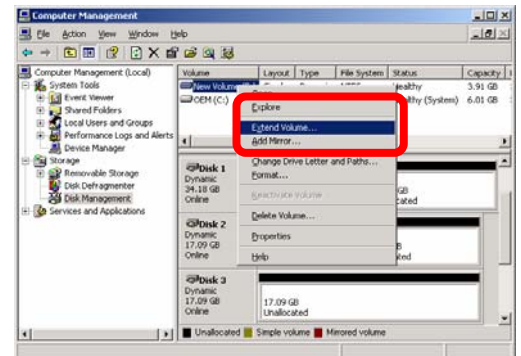
3. When the [Welcome to the Extend Volume Wizard] dialog box of the Extend Volume Wizard appears, click [Next].
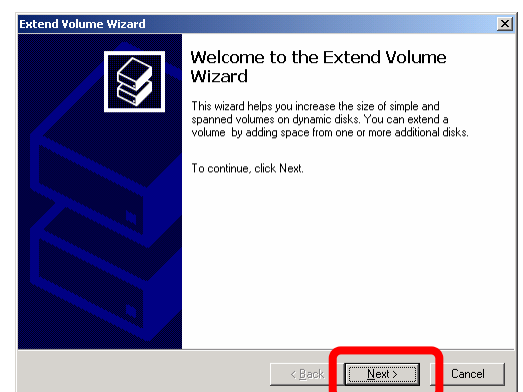
4. On the [Select Disks] dialog box, enter the amount of space to extend and click [Next].
(In this case, 1500 MB is added.)
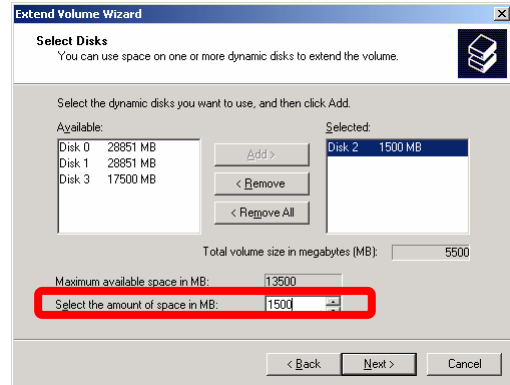
5. Check the settings on the [Completing the Extend Volume Wizard] dialog box and click [Finish].
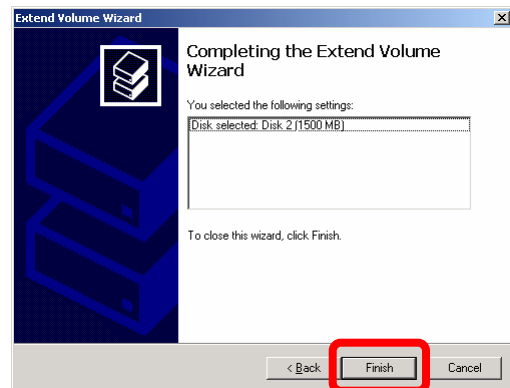
6. The size of the volume is extended.
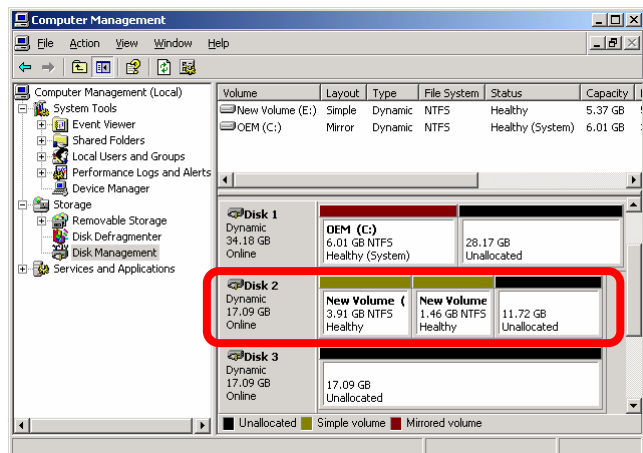
7. Configure the mirror of the extended volume.
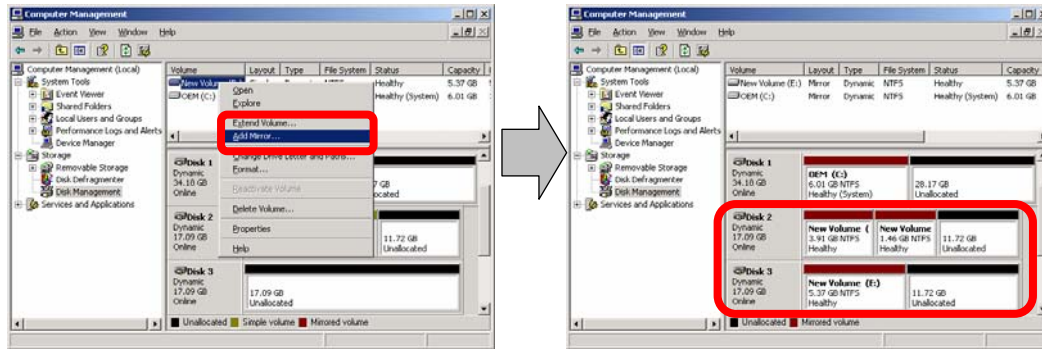
Replacing Hard Disk Drives

1. Replacing normal hard disk drives in Slot 0 or Slot 3 for preventive maintenance
Execute [Remove Mirror] by following the "Replacing Failed Hard Disk Drives" procedure on page 3-17.

2. Replacing normal hard disk drives in slots other than Slot 0 or Slot 3 for preventive maintenance
Before you follow the "Replacing Failed Hard Disk Drives" procedure on page 3-17, delete the disk drives that you replace from the Windows by following the steps below:

a. Go to [Computer Management] –> [Disk Management].
Execute [Remove Mirror] for all data volumes stored in the disks that you replace by following the procedure on page 3-17.

b. Go to [Computer Management] –> [Device Manger] and Open [Disk drives].
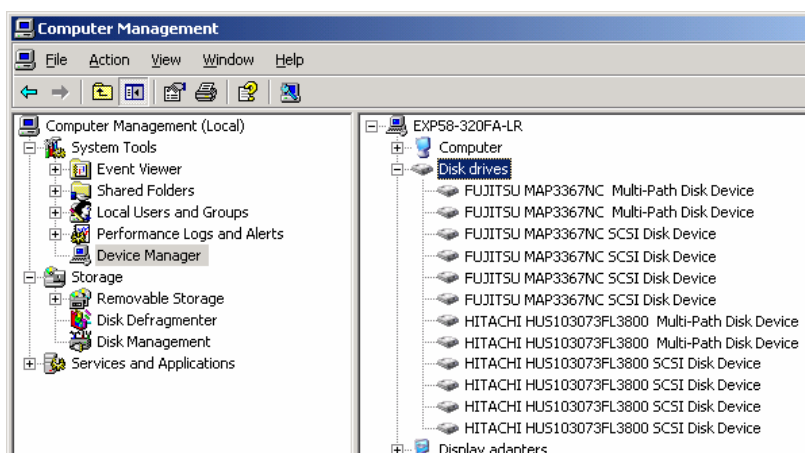
c. Confirm the property of each disk device shown under [Disk drives] and specify the disk drives that you replace. Find two disk devices with the identical target ID and slot number. Device Manger shows two identical disk devices for each disk drive because each disk drive is connected to both CPU/IO modules. To remove one disk drive, delete the two identical disk devices.

d. To delete one disk devices, right-click the disk device that you want to remove and select [Remove Disk].
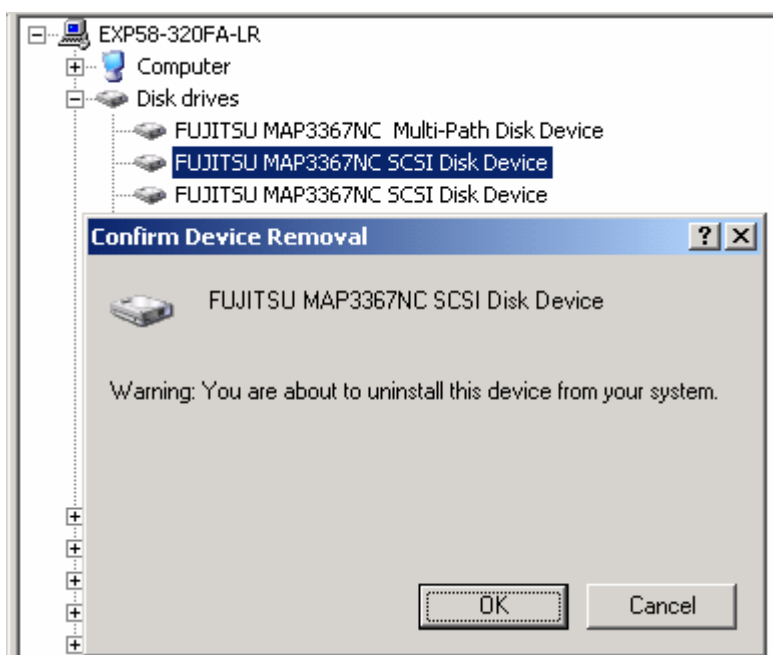
The "Confirm Device Removal" dialog box will appear. Check the name of the disk device that you delete and click [OK]. Then, delete the other identical disk device by the same procedure.

You do not need to delete "….Multi-Path Disk Device."

TIPS:

The FT status LED on the chassis stays green during redundant operation. When you have deleted one of the disk devices, it may turn off because your system detects the deletion as the removal of disk redundancy. The FT status LED turns green again when the other disk device with the identical target ID is deleted. If you execute [Remove Disk] simultaneously when disk access is performed, the disk status LED on the disk drive may turn amber because your system detects the command as a disk failure. However, you may replace the disks.

If disk access is performed after you have completed the above procedure, the disk device that you have deleted is shown as "Missing." If the deleted disk device contains a volume, your system recognizes the volume as "Failed" or "Failed Redundancy."

(A) If a simple volume is recognized as "Missing," delete the simple volume on the disk device that you have deleted by selecting [Delete Volume].

(B) If a mirror volume is recognized as "Failed Redundancy," delete the mirror volume on the disk device that you have deleted by selecting [Remove Mirror] before selecting the disk device to delete and executing [Remove Disk] again.

3. To remove the disk drive, follow the "Replacing Failed Hard Disk Drives" procedure below.

4. To reconfigure the disk drive, go to [Disk Management] and select [Rescan Disk].

Replacing Failed Hard Disk Drives

Follow the procedure below to replace a failed hard disk. The failed hard disk should be replaced with new device with the server powered-on.

IMPORTANT:

To replace a disk that does not have any error detected by the preventive maintenance, see "Removing Hard Disk Drives Which Do Not Have Error" on page 3-23 and replace the disk.

Procedures to Replace Failed Disks

When a failure occurs on a disk mirrored by volume using [Disk Management], follow the steps below to replace the disk.

IMPORTANT:

- To reconfigure a mirror, be sure to confirm the Target ID in the disk's [Properties] and .make a pair of Target ID 0 and 3, 1 and 4, and 2 and 5. Do not mirror disks using the disk number shown in [Disk Management].

- When the disk to be inserted into a slot for dual configuration of disk has been used as a disk which contains the boot volume (disk storing the OS), the disk cannot be used for dual configuration. Initialize the disk to use the disk.

This section describes an example of when the disk 1 and disk 5 failed.
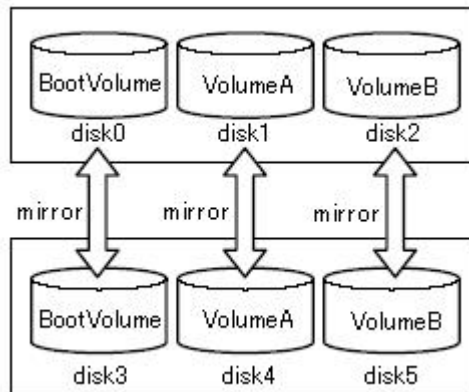
1. Click [Start] → [Administrative Tools] → [Computer Management]. The [Computer Management] window appears.

2. Click [Disk Management] under [Storage] in the console tree. An example in this figure shows that one of the mirrored disks in which Drives E and F are included is broken. Some disks are indicated as "Unknown disk." However, they may be indicated differently depending on the error type. Even in such cases, failed disks can be recovered by following the steps below:

3. Remove the hard disks of disk 1 and disk 5.
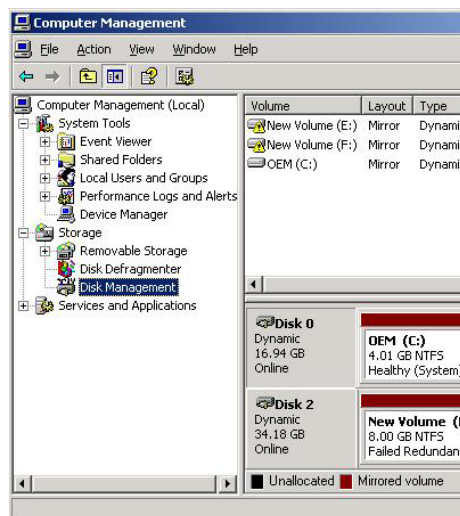
4. Right-click a volume that has "!", and remove mirror.
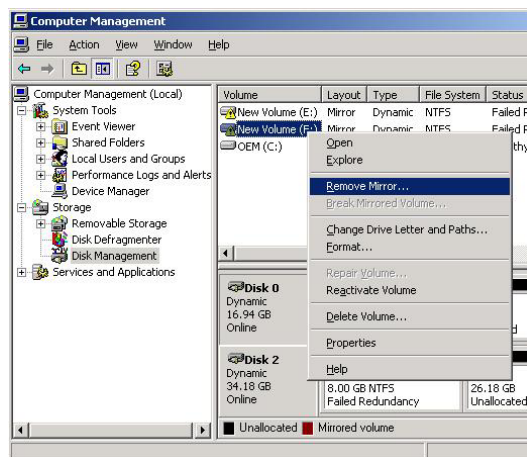
5. After checking to see the "Missing" disk is selected, click [Remove mirror]. At Drive (F), [Mirror] and [Failed Redundant] will change to [Simple] and [Healthy].

6. Right-click a disk with "x", and select [Remove Disk].
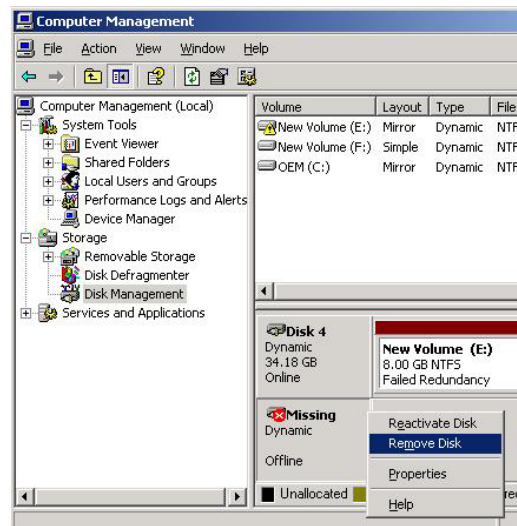
7. Similarly, delete the other [Missing] disk.
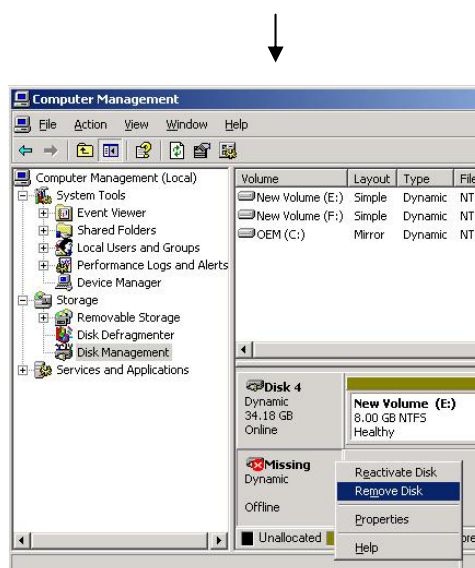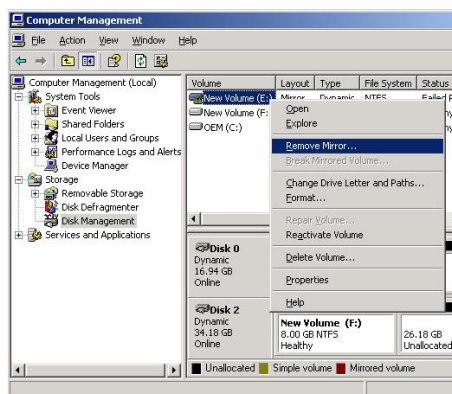
8. Insert new disks. Right-click [Disk Management] and run [Rescan Disks]. The new disks will appear on [Disk Management]. If any uninitialized disk is inserted, right-click the disk and initialize it.
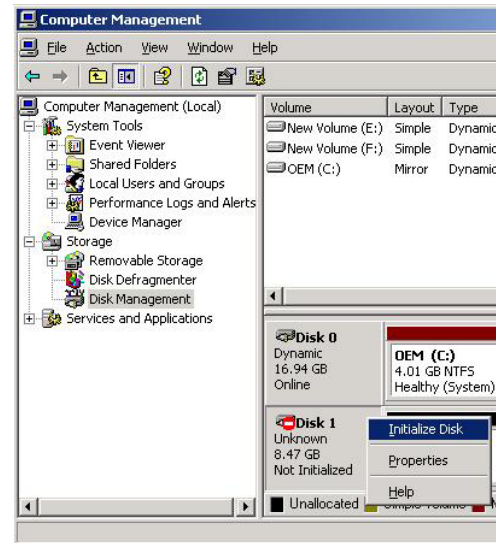
9. Select and right-click a disk, and then select [Convert to Dynamic Disk].

IMPORTANT:

If [Foreign] appears, execute [Convert to Dynamic Disk] after [Convert to Basic Disk] is executed.

10. Open the disk's properties to check the target IDs. In the following figures, disks are configured as:

Disk 1: Target ID 1

Disk 2: Target ID 2

Disk 3: Target ID 4

Disk 4: Target ID 5

Disks with the pair of target ID 1 and 4, 2 and 5 are mirrored.
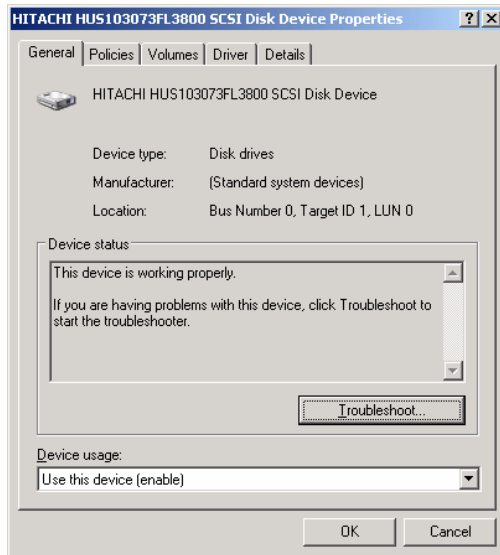
Disk 1   Disk 2
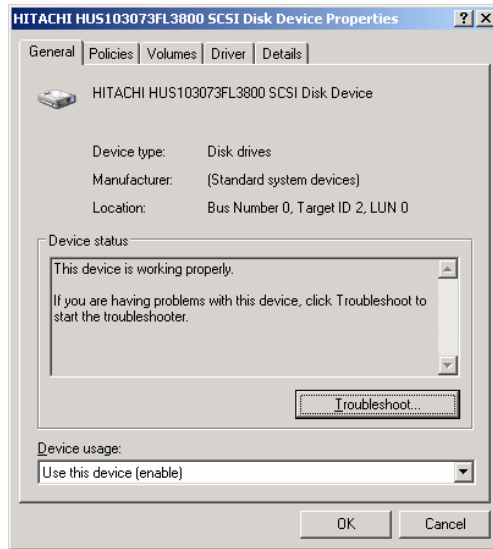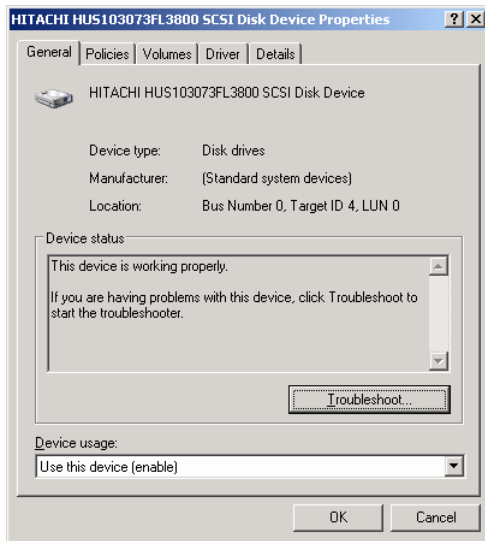
Disk 4   Disk 5
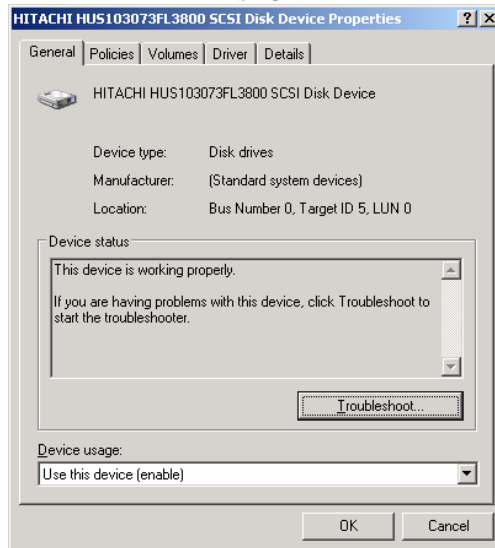
IMPORTANT:

Hard disks are numbered from "0" at the OS start-up according to the position they are inserted. When you increase a hard disk while the system is running, it will be given a number that is not used for any disks. However when you restart the system, the old disk numbers will not be retained and disks are re-numbered according to the hard disk position. Therefore, you need to determine which disks are mirrored based on target IDs, which are always fixed, but not on disk numbers because disk numbers may change.

11. Make a mirror setting of Disks 1 and 4. Right-click volume (E) on the Disk 4 and select [Add Mirror].
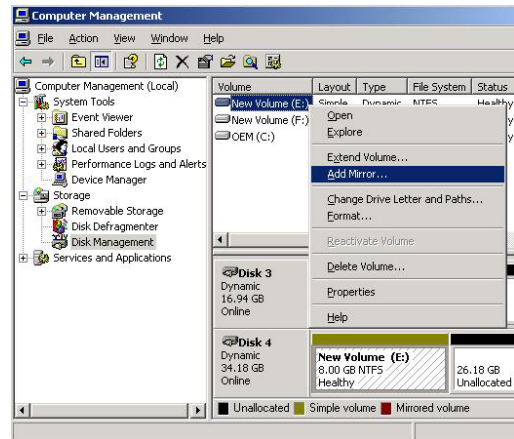
12. When the [Add mirror] dialog box appears, select Disk 1, and then click [Add Mirror].
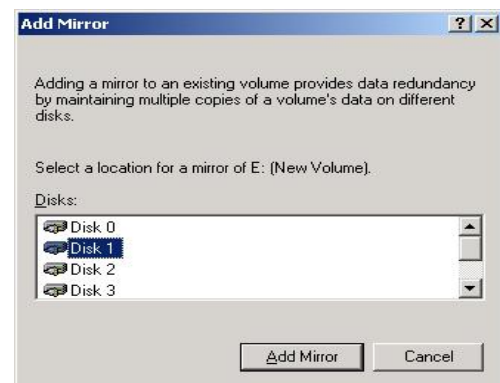
13. Similarly, make settings of Disk 2 and Disk 5.
Upon completion of synchronous processing, recovery is completed.

14. To reconfigure the disk drive, go to [Disk Management] and select [Rescan Disk].
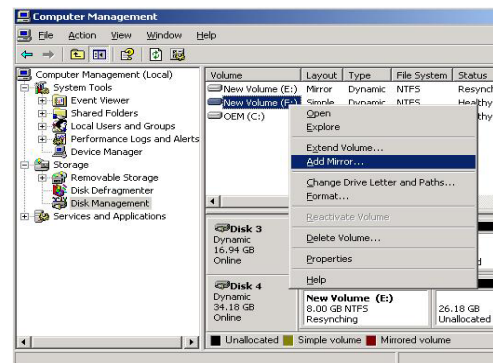
Removing Hard Disk Drives Which Do Not Have Error

1. To replace the disk that does not have any error in Slot 0 or Slot 3 for preventive maintenance:
Follow the instructions on the previous pages.

> **IMPORTANT:**
> Do not run "Remove Mirror" before removing the hard disk drive.

2. To replace a disk that is in a slot other than Slot 0 and Slot 3 and does not have any error for preventive maintenance:
Follow the steps below and remove the disk drive that you are to replace from the management target of Windows, and then perform the operations described on the previous pages.

1. Run "Remove Mirror" to make the disk to be replaced in the "Unallocated" status.

2. From [Computer Management], display [Device Manager] and display items under "Disk drives."
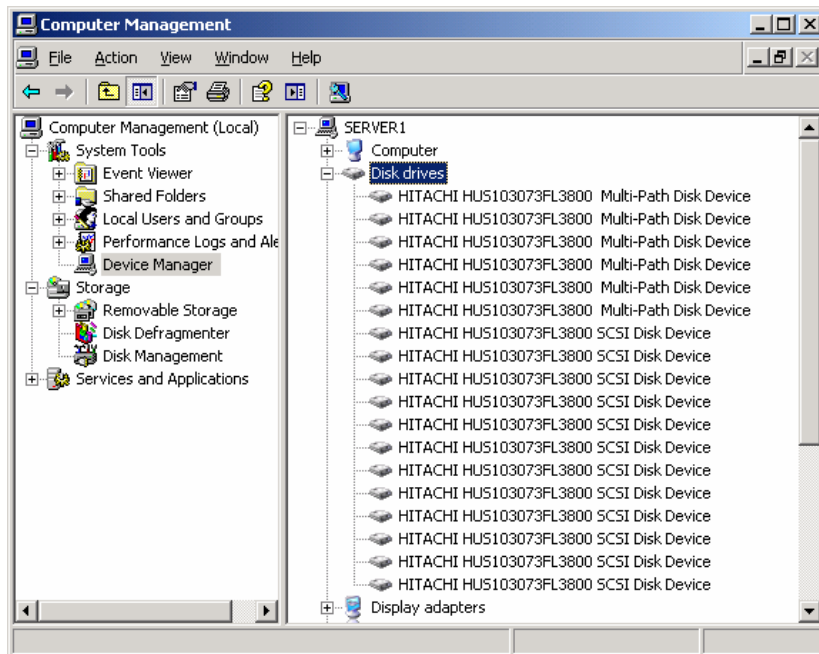
3. Find the hard disk to be removed from the disks displayed under "Disk drives" by checking the slot number in the properties (find the one whose slot number matches the target ID).
In this server, since each disk drive is accessed from both active and standby modules, [Device Manager] shows each disk as two disks logically. Therefore, remove the two corresponding disks of the disk to be removed.

4. Remove the disk.
   Right-click the hard disk to be removed and select "Remove Disk."
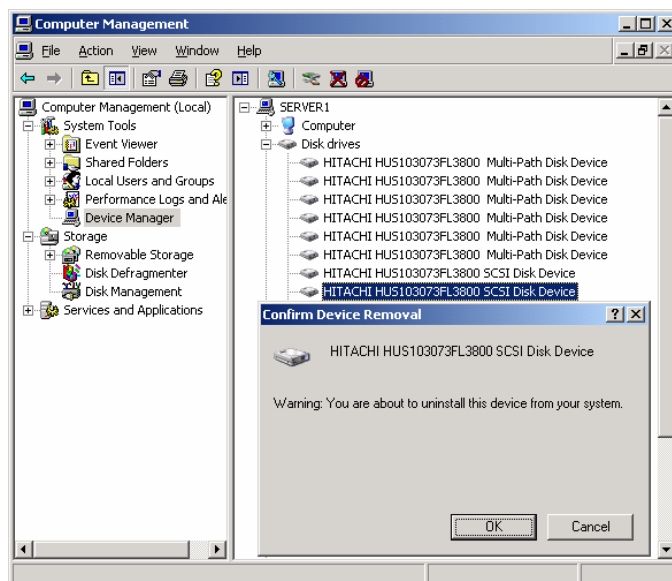
When the "Confirm Device Removal" message is displayed, confirm the device name (the hard disk name) and click [OK]. (You do not need to remove the item of "Multi-Path Disk Device.")

TIPS:

While the system is in the dual configuration, the FT status LED on the chassis is lit green. However, when the removal of the disk to be removed is instructed, the server judges the dual configuration of the disk is no longer available after removal of one of the logical disks, and the FT status LED may go off. In such a case, removing the other disk with the same target ID makes the LED light green again.
If the "Remove Disk" is performed at the same time than a disk access, the disk is recognized as an error and the LED of the disk may light amber. Replace the target disk.

After performing the operations above, the status of the disk to be removed, whose removal is instructed, becomes "Missing" on the [Disk Management] if the disk is accessed. If the disk still contains a volume, it is recognized as "Failed" or "Failed Redundancy." Perform "Delete Volume" to the simple volume in the disk of the "Missing" status. If the mirror volume is in the "Failed Redundancy" status, remove the mirror volume on the disk to be removed by performing "Remove Mirror," then select the disk to be replaced and run "Remove Disk."

TIPS:
To mount the replaced disk, perform "Rescan Disk" on the [Disk Management] window.

CHANGE DRIVE LETTER

To add, change or delete drive letters, follow the steps below. Before making any changes, thoroughly read the NovaScale/ft Server series-specific precautions and general precautions for Windows.

1. Select [Start] - [Control Panel] - [Administrative Tools] and open [Computer Management].

2. In the console tree of [Computer Management], click [Disk Management].

3. Right-click a target partition, logical drive or volume and click [Change Drive Letter and Paths…].

4. Perform one of the following:

- To assign a drive letter, click [Add…], a drive letter to use, then [OK].

- To change a drive letter, click the drive letter to change, [Change…], a drive letter to use, then [OK].

- To delete a drive letter, click the drive letter to delete then [Remove].

IMPORTANT:

<NovaScale/ft Server series-specific precautions>

■ When connecting a CD-ROM drive or an optional floppy disk drive, drive letters may change from A to B by switching CPU/IO modules.

■ When switching CPU/IO modules, an unallocated drive letter is automatically reallocated to the CD-ROM drive in the order from D to Z. If you want to fix the drive letter of CD-ROM, specify the unallocated drive letter in the order from D to Z after setting the driver letter of hard disk.

<General precautions for Windows>

■ Drive letter of system volume or boot volume cannot be changed.

■ Up to 26 drive letters can be used on a computer. "A" and "B" are drive letters for floppy disk drives. Generally, hard disk drives are assigned "C" to "Z", but for network drives, drive letters are assigned in a reverse order ("Z" to "C").

■ Because many of Windows programs refer to specific drive letters, cautions are required for assigning drive letters. For example, the Path environment variable specifies a program name and a specific drive letter.

■ For performing the procedure above, you need to be a member of Backup Operators group or Administrators group, or you need to have appropriate authorization.

DUAL LAN CONFIGURATION

The NovaScale/ft Server series builds a dual LAN configuration by using "Intel (R) PRO/1000 MT Dual Port Network Connection" and extended PCI slot "Intel(R) PRO/1000 MT Server Adapter", "Intel(R) PRO/1000 MF Server Adapter" mounted as standard on the CPU/IO module.

Overview

The dual LAN configuration is of two types as described below:

- **Adapter Fault Tolerance (AFT)**

  Adapter Fault Tolerance (AFT) is a feature that places more than one LAN controller on the same LAN (same segment), and automatically switches the process of the primary controller to the backup controller when any trouble occurred on the primary.

- **Adaptive Load Balancing (ALB)**

  Adaptive Load Balancing (ALB) is a feature that connects more than one LAN controller to the same hub and enhances the throughput by operating packet transmission from the server.

  Receive Load Balancing (RLB) is enabled by default. When RLB is enabled, the receiving throughput is enhanced.

Rules of Dual Configuration on NovaScale/ft Server series

Be sure to make the setting of dual network configuration on the server.

When building dual configuration, be sure to use at least one adapter of CPU/IO module #0 and of #1 individually.

Example) Configure the dual network which enhances the service life by using all adapters.
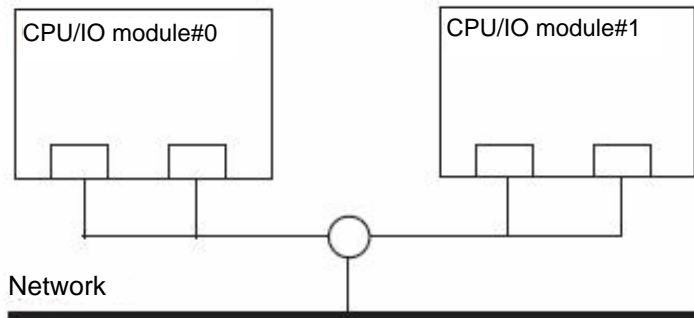
Example 2) Configure the dual network which corresponds to multiple LAN connection.
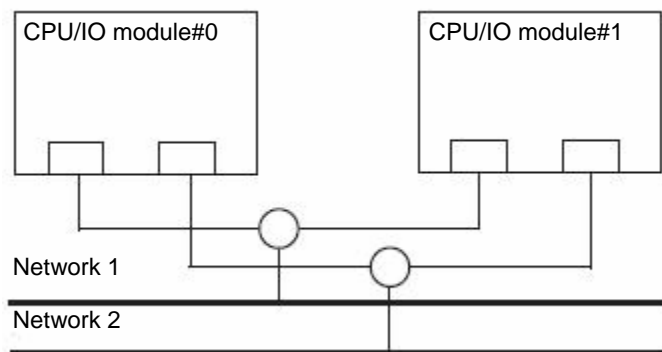
Configuring Dual LAN

This section describes how to configure dual LAN.

The following explains how to configure dual LAN regarding to the example shown in "Rules of Dual Configuration on NovaScale/ft Server series."

IMPORTANT:
Log on as "Administrator" or a member of the group "Administrators".

1. Start [Device Manager].

2. Select a target Network Adapter. Right-click on it and select [Properties] from the menu displayed to show the properties dialog box.
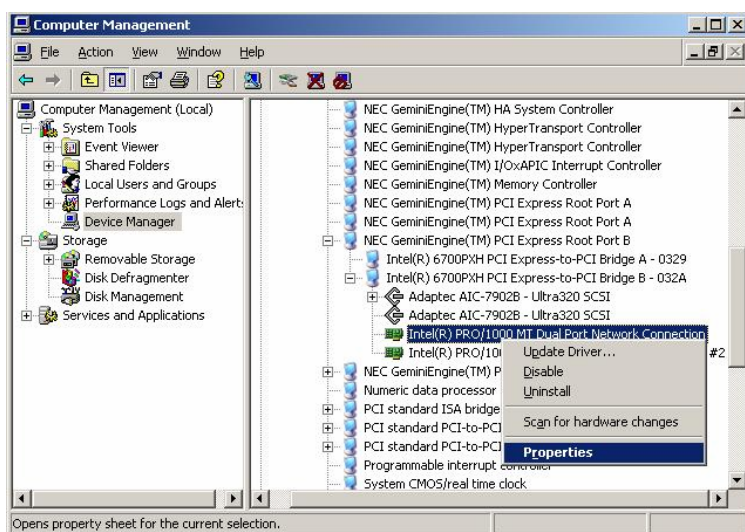
3. Select the [Teaming] tab on the properties dialog box. Select the [Team with other adapters], and then click the [New Team] button.
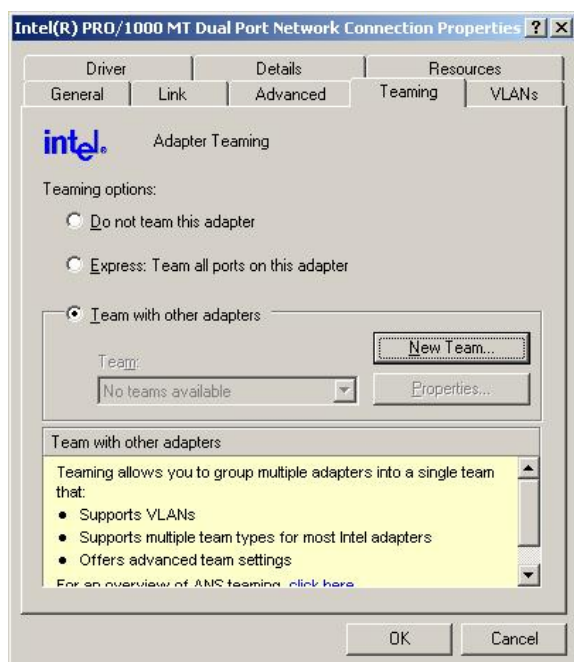
4. Enter the team name and click [Next].
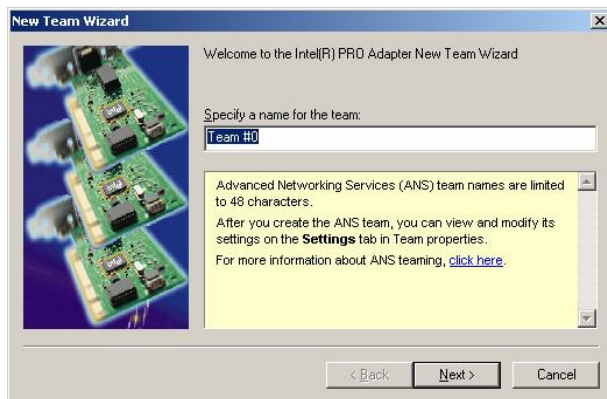
5. Select the adapters to include in the team and click [Next].
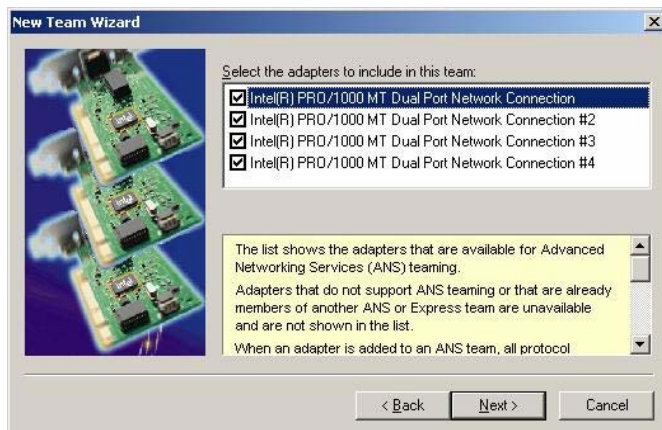
6. Select [Adapter Fault Tolerance] or [Adaptive Load Balancing] as a team mode (Usually select [Adapter Fault Tolerance]).

Click [Next].
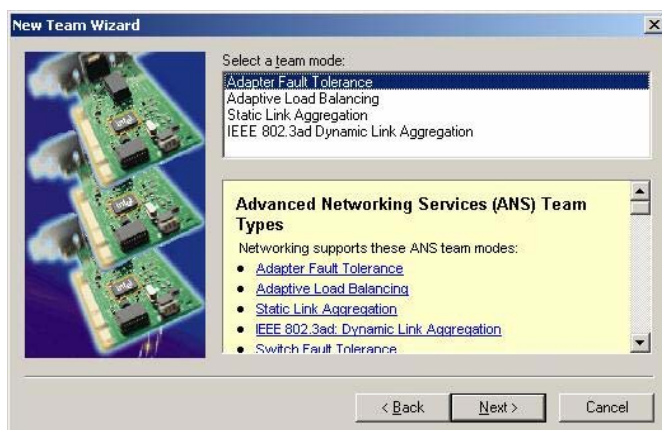
7. Click [Finish].
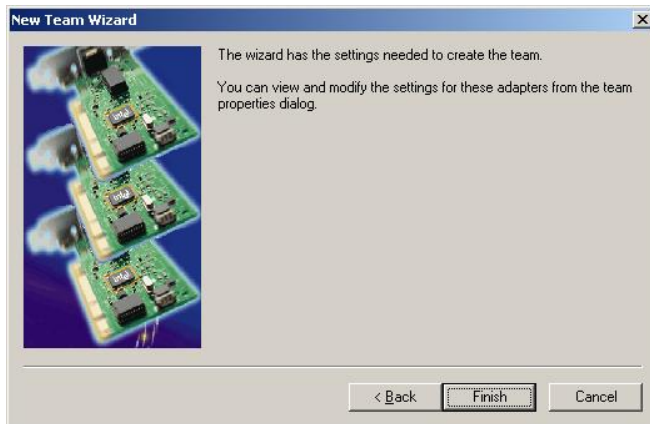
8. Start Command prompt to check the physical MAC address set on ipconfig/all.

9. Select the Team Adapter you have set. Right-click on it and select [Properties] from the menu displayed to show the properties dialog box.
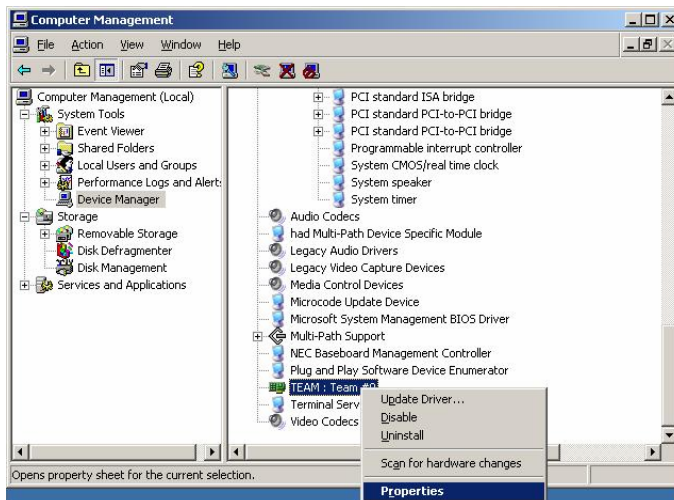
10. Select the [Advanced] tab on the properties dialog box. Select [Locally Administered Address] from the [Settings] list box, and then enter the MAC address of a Team Adapter, which you have checked, in the.[Value] text box. Click [OK].
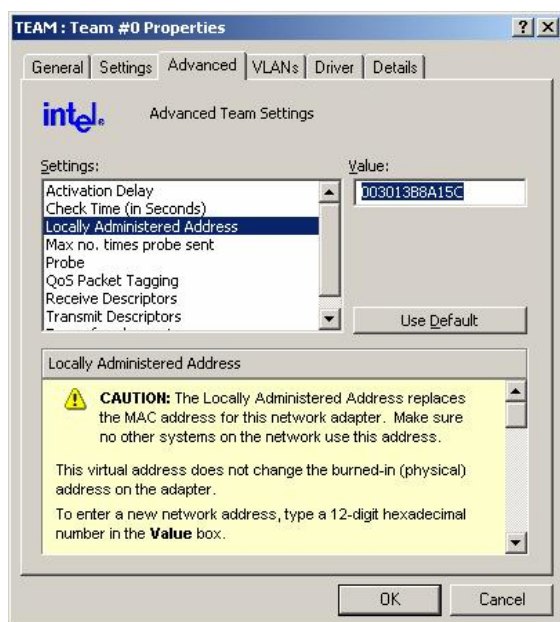
Removing Dual LAN

IMPORTANT:

Log on as "Administrator" or a member of the group "Administrators."

1. Start [Device Manager].

2. Select the Team Adapter of which you want to remove dual LAN. Right-click on it, and then select [Properties] from the menu displayed to show the properties dialog box.
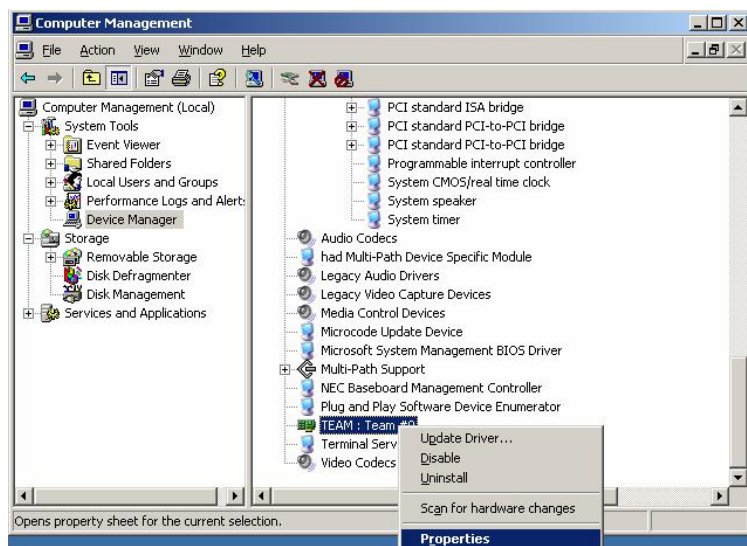
3. Select the [Settings] tab in the properties dialog box and click the [Remove Team] button.
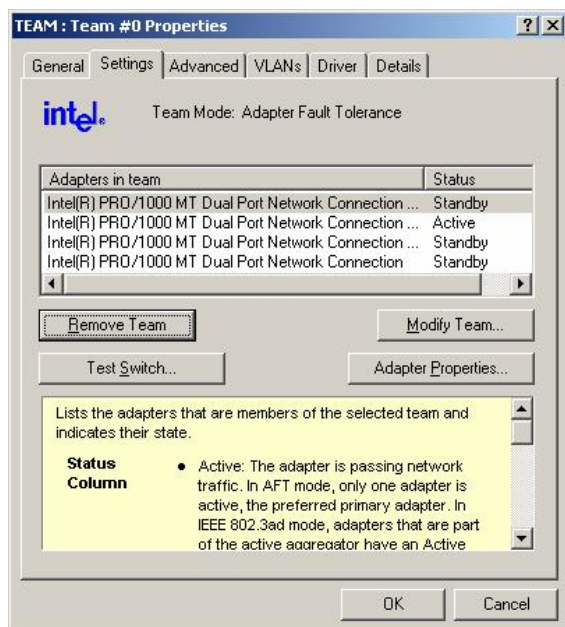
4. The confirmation dialog box appears. Click [Yes] button.
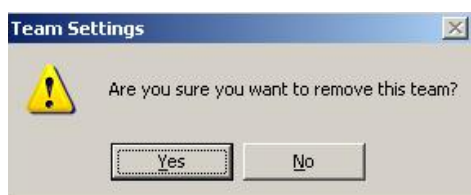
CHECK THE DUPLICATING OPERATION OF MODULES

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

Evaluate Start-up and Stop of CPU/IO Modules

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

1. Check whether the CPU/IO modules are duplicated.
When the CPU/IO modules are duplicated, the FT status LED is illuminating in green.
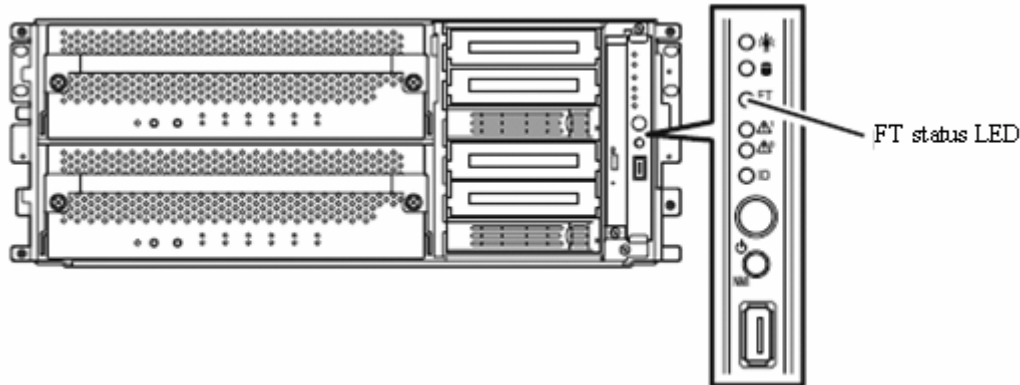
IMPORTANT:

When stopping the CPU/IO module of the server, stop the CPU module first, followed by the IO module. When starting the CPU/IO module, start the IO module first, followed by the CPU module.

2. Stop the operation of a CPU module to be removed using the Server Maintenance Utility. Select [Start] - [All Programs] - [NEC ESMPRO Agent] - [Server Maintenance Utility] to start the Server Maintenance Utility.

Then, from the [Server maintenance utility], select [CPU Module] and then the CPU module you want to stop from the tree on the left pane. Click [Down] on [Bring Up/Bring Down].
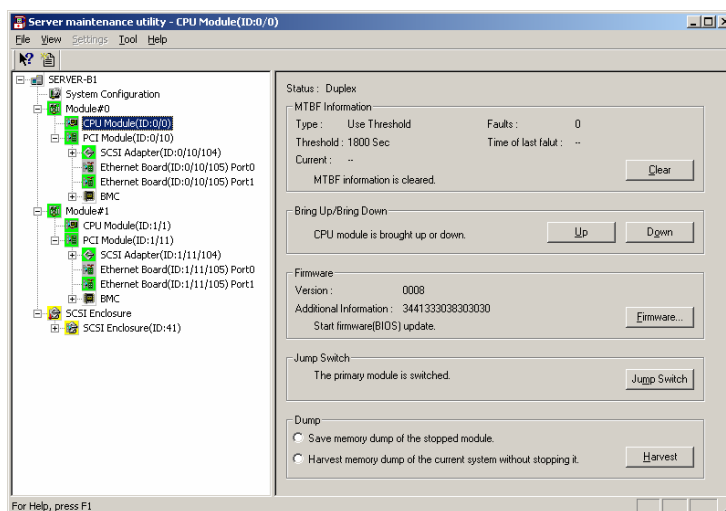
When stopping the CPU module, FT status LED is turned off. This means that the CPU module operates in simplex mode and the redundancy of the device has been lowered.

3. Stop the operation of the IO module by using Server Maintenance Utility. Then select the IO module (described as PCI module on Server Maintenance Utility) under the same module with the CPU module stopped in the previous step, ,and click [Down] on [Bring Up/Bring Down]

When stopping the IO module, the module fails over.
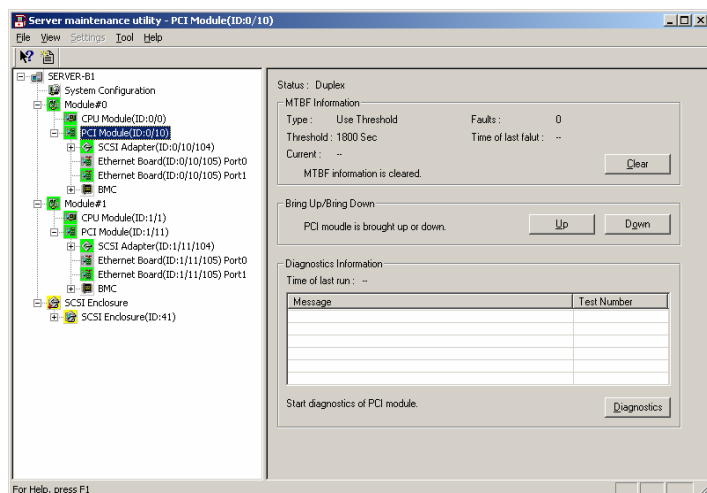
CHECK:

Before stopping the IO module, check that the status of the Ethernet board is "Duplex" on the Server Maintenance Utility. If only the IO module to be stopped has LAN connection, do not stop it.

The following events or changes occur when IO module fails over due to the system status.

● The screen temporarily blacks out and then displayed again.

● The following message will appear from the taskbar:

New hardware has been detected.

When stopping the IO module, the USB-connected keyboard and mouse are logically switched to the other module. At this time, you cannot operate keyboard and mouse temporarily. However, the operation of application program continues.

● You can check from Server Maintenance Utility that the system is stopped by seeing the CPU/IO module becomes the status of "Removed".

4. Start the stopped IO module.

From the Server Maintenance Utility, click [Up] of [Bring Up/Bring Down] to the IO module which was stopped in the step 3 and the IO module will be started. Once the IO module is started, the IO module diagnosis and the IO module duplication are performed.

IMPORTANT:

When the IO module stops, the CPU module of the same system needs to stop as well to restart. This is for performing diagnosis of the module with the IO module.

5. Press the [Up] button of the CPU module stopped on the Server Maintenance Utility.

On the Server Maintenance Utility, select the stopped CPU module and click [Up] of [Bring Up/Bring Down].

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

IMPORTANT:

After dual configuration completes, the FT status LED illuminates in green. Until then, do not perform next [Bring Up/Bring Down] evaluations. The status of dual configuration is recorded in the event log with the source name HasCtrl.

NovaScale/ft Server series SERVICE PROGRAM CONFIGURATION

NovaScale/ft Server series achieves the duplex system using the following service programs, in addition to dedicated drivers.

Service program names shown in [Services]:

- BMC FW Update Service
- Windows Management Instrumentation
- SNMP Service
- Alert Manager Main Service
- ESM System Management Service
- ESM FS Service
- ESM Storage Service
- ESM Common Service
- ESRAS Utility Service
- HAS Fault Tolerance
- HAS Volume Monitoring Service
- ESM HAS Storage Service

The above programs are necessary for the NovaScale/ft Server series operation. Do not stop these services.

When minimizing the number of operating service programs temporarily is required (for system disk backup using backup software, etc), the following service programs may be stopped:

Services that can be stopped:

- ESM FS Service
- ESM Storage Service
- ESRAS Utility Service
- ESM HAS Storage Service

Services required to keep operating

- BMC FW Update Service
- Windows Management Instrumentation
- SNMP Service
- Alert Manager Main Service
- ESM System Management Service
- ESM Common Service
- Virtual Disk Service (when using Windows' Disk Management)
- HAS Fault Tolerance
- HAS Volume Monitoring Service

Make sure to restart the operations of stopped service programs immediately after the backup processes are completed.

FILE CHECK FEATURE OF GeminiEngine Control Software

To make sure that the files that construct the software controlling duplex operation (GeminiEngine Control Software) are kept properly, the NEC Express5800/ft series has a file check feature. This feature runs at a system startup and when logging on as the administrator user that set up the system.

This feature is automatically installed by Express Setup.

Checking files

The file check feature of GeminiEngine Control Software is performed at the following two occasions:

- **When starting OS**

    Checks files as a task that is automatically run at an OS startup. FLVERCHK.EXE is registered as a hidden task in the task scheduler, and it is set to run at a system startup.

    The check result is recorded in event log.

- **When logging on as the user that performed setup of the server (Administrator of the build-in account)**

    Checks files when logging on as a user that set up the server. A shortcut to FlVerChk.exe is registered in the startup folder of the user, and files are checked when logging on.

    When an invalid update is detected, the check result is displayed on the [GeminiEngine Control Software File Checker] dialog.

    When you log on as a user other than the one that set up the system, the file check feature of GeminiEngine Control Software does not run. If you want to run the file check feature when logging on, copy the shortcut to FlVerChk.exe in the startup folder of the user that set up the system (usually, it is located at C:\Documents and Settings\Administrator\Start Menu\Programs\Startup) to the startup folder of the user to run the file check. Administrator authority is required for running the file check.

    FlVerChk.exe is stored at C:\Program Files\NEC\HAS_SW\VERCHK\BIN\Support. If you cannot access the startup folder of the user that set up the server, create a shortcut to FlVerChk.exe, and store it in the startup folder of the user to run the file check.

In those cases, the file check feature is run temporarily and does not reside in the system. Use these settings as they are in order to detect invalid update of GeminiEngine Control Software at an early stage.

Outputting to Event Log

The following messages are registered to the system event log when performing the file check feature of GeminiEngine Control Software at OS startup:

Source: HASSETUP
Type: Information
Event ID: 100
Description: GeminiEngine Control Software files have been checked and no problem.
              (HASSETUP Version: n.nn.nn)

Source: HASSETUP
Type: Warning
Event ID: 101
Description: Some GeminiEngine Control Software files have been illegally updated in the system.
              (HASSETUP Version: n.nn.nn)
              ILLEGAL FILE COUNT: n
              aaaaaaaa.aaa: YYYY/MM/DD HH:DD:MM VER(bbbbbbbb) cccccccc

              (Description of values)
              n: Number of files in which errors are detected
                       (Up to 10 pieces of detail information of the file in which errors are detected are displayed)
              aaaaaaaa.aaa: Name of file in which errors are detected
              YYYY/MM/DD HH:DD:MM: Date and time of the last update of the file in which errors are detected
              bbbbbbbb: Version of the file in which errors are detected
              cccccccc: Size of the file in which errors are detected

Dialog

If an error update is detected when logging on as a user that set up NEC Express5800/ft series (Administrator of build-in account), a check result is displayed on the [GeminiEngine Control Software File Checker] dialog. When the file check result is normal, this dialog box is not displayed.

(Example of dialog)
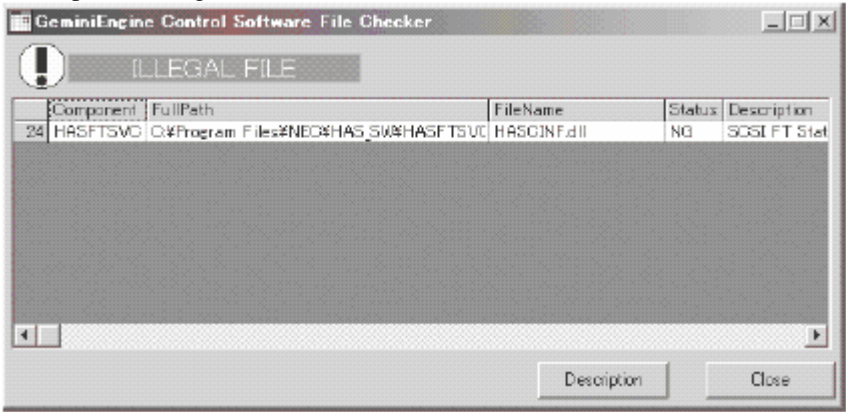
On the dialog box, select a file and click the [Description] button to display detail information. If the updated file can be recognized, the [Info] screen is displayed as below. Information on the file that is supposed to be installed is displayed in [STANDARD]. Information on the updated invalid file is displayed in [CURRENT].

(Detailed information screen)
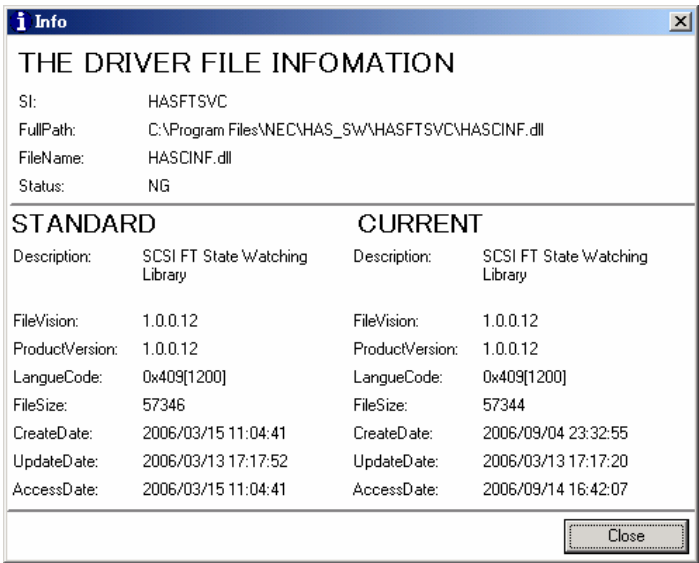
VGA DRIVER

Changing the Color Quality of Display to 32 Bit

The default color quality of the graphics driver is set to 16 bits for the NEC Express5800/ft series.

The server may (rarely) display the following message when accessing a floppy disk, and be unable to access the floppy disk. To prevent that from happening, set the default color quality to 16 bit.

The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is not corrupted.

Even if this message is displayed and the server becomes unable to access the floppy disk, the processing can be completed by accessing the floppy disk again.

If you need to change the color quality to 32 bit knowing this limitation, apply a special graphic driver as described below:

(1)   Log on to Windows 2003 as a user with administrator authority.

(2)   Set the "EXPRESSBUILDER" CD into the CD-ROM drive.

(3)   From the Start menu, select [Run...]. The [Run] dialog box appears.

(4)   Enter "D:\HAS\W2K3\GA32SET.BAT" in the "Open" box (replace "D" with the drive letter of the CD-ROM drive), and click [OK].

Restart the server.

To change the color quality to the standard (16 bit), perform the above steps but run "GA16SET.BAT" in (4) instead of "GA32SET.BAT."

NOTES

(1)   This section describes cautions regarding "Safely Remove Hardware" displayed on the task tray.

Clicking the "Safely Remove Hardware" icon on the task tray shows several device names like "USB Mass Storage Device." You must not remove devices other than "USB Floppy Drive." When removing the devices other than "USB Floppy Drive", proper system operation is not guaranteed.

Should you remove these devices by operation mistakes, click the "Safely Remove Hardware" icon again and select "Safely remove AMD PCI to USB Open Host Controller." By doing this, the removed device is recognized again.

(2)   About compressing a system drive

Do not compress the root directory and the Windows directory when compressing the System Drive. (The Windows Server 2003 directory is labeled as "Windows.") If you compress the root directory, operational stability cannot be ensured because the Windows File Protection (WFP) may replace an unsigned driver with a signed driver. Since the GeminiEngine Control Software contains drivers enhanced for the NEC Express5800/ft series, such as a SCSI driver, the operation is not guaranteed if the drivers are replaced by WFP.

Chapter 4

System Configuration

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

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

SYSTEM BIOS ~ SETUP ~

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

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

IMPORTANT:

- The SETUP utility is intended for system Administrator use only.

- The SETUP utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.

- Do not set any password before installing the OS.

- The server contains the latest version of the SETUP utility. Dialog boxes appearing on your SETUP utility, thus, may differ from descriptions in this User's Guide. If you find anything unclear, see the online help or ask your sales agent.

Starting SETUP Utility

Powering on the server starts POST (Power On Self-Test) and displays its check results. When our logo is displayed, press **Esc**.

After a few seconds, either of the following messages appears at bottom left on the screen depending on your system configuration.

> Press <F2> to enter SETUP

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

You may see either of the following messages at bottom left on the screen when POST terminates.

> Press <F1> to resume, <F2> to SETUP

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

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

> Enter password:[   ]

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

TIPS:

The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system configurations. With the User password, the system configurations you can view or change are limited.

Description of On-Screen Items and Key Usage

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

Shows the current menu.

Options to be configured

Denotes there are submenus

Explanation of keys

Online help window

Parameters (selected parameters are highlighted)
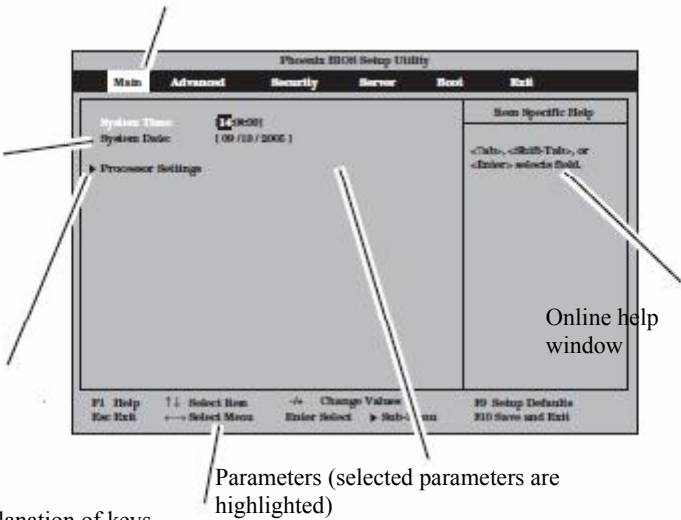
Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, System Hardware, Boot, or Exit menu.
–	Changes the value (parameter) of the selected item to the previous value.
	Changes the value (parameter) of the selected item to next value.
+	
Enter	Displays a submenu or chooses the selected parameter.
Esc	Displays the previous screen.
F1:	Press **F1** when you need help on SETUP operations. The help screen for SETUP operations appears. Press **Esc** to return to the previous screen.
F9:	Shows the following:

Setup Confirmation
Load default configuration now?
[Yes]   [No]
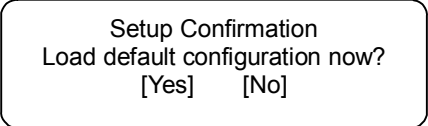
If you select "Yes" and then press the **Enter** key, all items in the setup are set to default values. If you select "No" and then press either the **Enter** or **Esc** key, the status before pressing the **F9** key is restored.

Shows the following:

Setup Confirmation
Save Configuration changes and exit now?
[Yes]   [No]
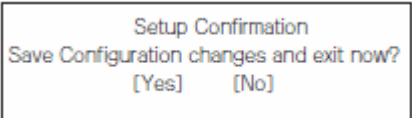
F10:

If you select "Yes" and then press the **Enter** key, the setup will complete with all changes you have made saved. If you select "No" and then press either the **Enter** or **Esc** key, the status before pressing the **F10** key is restored.

Configuration Examples

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

Link with Management Software

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

<Using the LAN connector on the motherboard>

Select [Advanced]→ [Advanced Chipset Control]→ [Wake On LAN]→ [Enabled]

<Using the PCI LAN card>

Select [Advanced]→ [Advanced Chipset Control]→ [Wake On PME]→ [Enabled]

UPS

To link power supply with the UPS

- To power on the server when power is supplied from the UPS

    Select [Server] - [AC-LINK] - [Power On].

- To keep the server off-powered even when power is supplied from the UPS if the POWER switch was used to power off

    Select [Server] - [AC-LINK] - [Last State].

- To keep the server off-powered even when power is supplied from the UPS

    Select [Server] - [AC-LINK] - [StayOff].

Keyboard

To set Num Lock and key repeat

    Select [Advanced] - [NumLock].

Security

To set passwords on the BIOS level

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

    Set Supervisor password first, then User password.

To enable/disable the POWER switch

    Select [Security] - [Switch Inhibit] - [Disabled]. (POWER switch enabled)

    Select [Security] - [Switch Inhibit] - [Enabled]. (POWER switch disabled)

> **IMPORTANT:**
>
> Masking the POWER switch disables forced shutdown as well as power on/off using the POWER switch.

Optional PCI–related devices

To enable Option ROM of the PCI card (option) installed on the server

Select [Advanced] - [PCI Configuration] - [PCI Slot n] - [Option rom] - [Enabled].

n: Slot number to install the board

Boot

To change the boot order of devices connected to the server

Select [Boot] and specify the boot order.

To display POST check results

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

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

To control from the HW console

- Remote operation via LAN

Select [Server] - [Console Redirection], and make necessary settings.

Memory

To check the installed memory (DIMM) status:

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

Saving the Configuration Data

To save the BIOS configuration data

Select [Exit] - [Exit Saving Changes]

To discard changes to the BIOS configuration data

Select [Exit] - [Exit Discarding Changes]

To restore the default BIOS configuration data (the data may differ from the factory-setting)

Select [Exit] - [Load Setup Defaults].

Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

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

To configure detailed settings of functions, select a submenu from the above menus. Below describes configurable functions and parameters and the factory settings displayed in the screen for each menu.

Main

Start the SETUP utility to display the Main menu.

When you select a menu with the "►" mark and press the **Enter** key, its submenu appears.

  <Example>
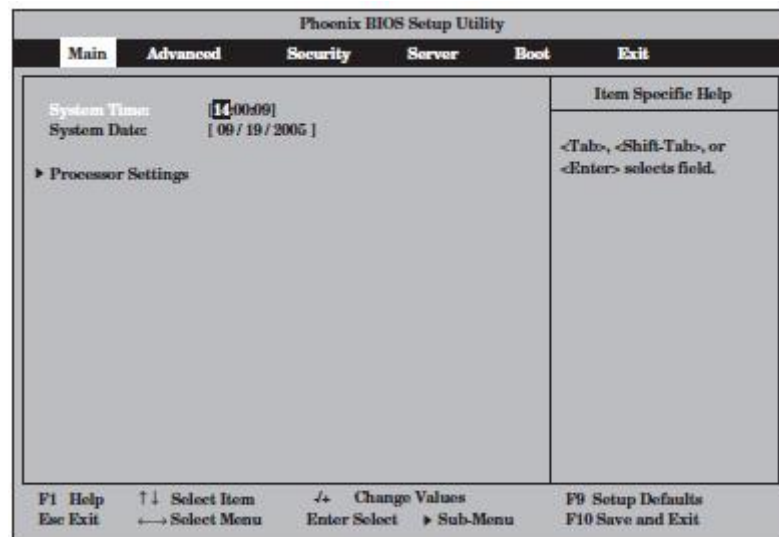
Available options in the Main menu and descriptions are listed below.

Option	Parameter	Description
System Time	HH:MM:SS	Specify the system time.
System Date	MM/DD/YYYY	Specify the system date.

[   ] factory - set

IMPORTANT:

Check and adjust the system clock before operation in the following conditions.

- After transporting the equipment
- After storing the equipment
- After the equipment halt under the conditions which is out of the guranteed environment conditions (Temperature: 10 to 35°C, Humidity: 20 to 80%).

Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level of time accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

Processor Settings

When you select "Processor Settings" in the Main menu, the following screen appears.

```
                    Phoenix BIOS Setup Utility
 ┌──────┐
 │ Main │
 └──────┘
 ┌─────────────────────────────────────────┬──────────────────────────┐
 │         Processor Settings              │     Item Specific Help   │
 ├─────────────────────────────────────────┼──────────────────────────┤
 │                                         │                          │
 │  Processor Speed Setting:   2.80 GHz    │  Disables/enables Hyper- │
 │                                         │  Threading Technology.   │
 │  Processor 1 CPUID:         0F43        │                          │
 │  Processor 1 L2 Cache:      2048 KB     │                          │
 │                                         │                          │
 │  Processor 2 CPUID:         Not Installed│                         │
 │                                         │                          │
 │  Hyper Threading Technology [Enabled]   │                          │
 │                                         │                          │
 │  Execute Disable Bit:       [Disabled]  │                          │
 │                                         │                          │
 │                                         │                          │
 │                                         │                          │
 │                                         │                          │
 │                                         │                          │
 ├─────────────────────────────────────────┴──────────────────────────┤
 │  F1  Help     ↑↓ Select Item    -/+  Change Values  F9  Setup Defaults│
 │  Esc Exit     ←→ Select Menu    Enter Select  ▶ Sub-Menu  F10 Save and Exit│
 └─────────────────────────────────────────────────────────────────────┘
```
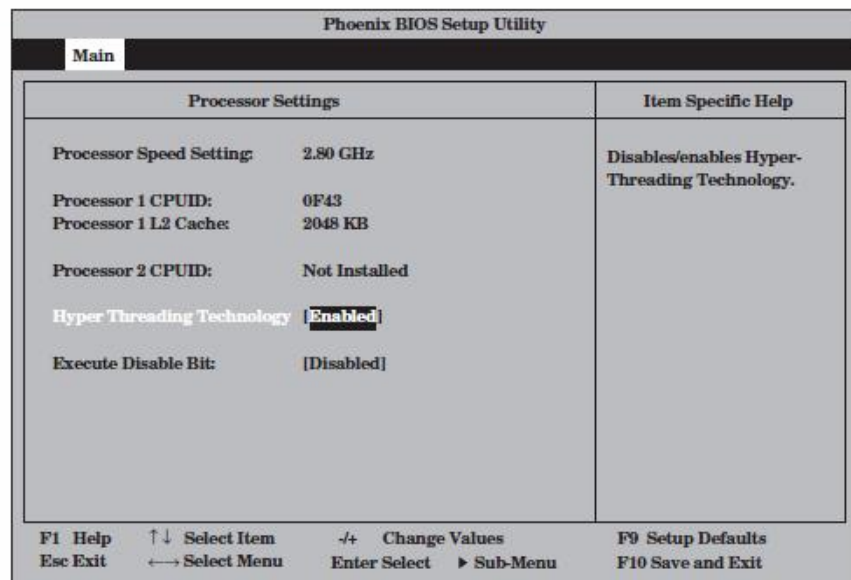
Refer to the table below for information on options.

Option	Parameter	Description
Processor Speed Setting	—	Displays the speed of the processor.
Processor 1 CPUID	CPUID	When the processor 1 in installed, its CPU ID is displayed. If the system supports "Hyper-Threading Technology", the ID of a physical processor but not logical processor appears here.
Processor 1 L2 Cache	—	Displays the cache size of the L2 of the processor 1.
Processor 2 CPUID	CPUID [Not Installed]	When the processor 2 is installed, its CPU ID is displayed. If it the processor is not installed, "Not Installed" appears.
Processor 2 L2 Cache	—	Displays the caches size of the L2 of the processor 2.
Hyper-Threading Technology	Disabled [Enabled]	Specify whether or not to enable Hyper-Threading Technology.
Execute Disable Bit	[Disabled] Enabled	Specify whether or not to enable Execute Disable Bit feature.

[   ]: Factory-set

Advanced

Move the cursor onto "Advanced" to display the Advanced menu.

There is no configurable item on the Advanced menu screen below. Display each sub menu and make settings on the sub menu screen. Select an option with the "►" mark and press **Enter** to display its submenu.

```
                    Phoenix BIOS Setup Utility

   Main    Advanced    Security    Server    Boot    Exit

                                              Item Specific Help
 ▶ Memory Configuration
 ▶ PCI Configuration
 ▶ Advanced Chipset Control                   Additional setup menus
                                              to configure Memory
   Boot-time Diagnostic Screen:    [Disabled]  devices.

   Reset Configuration Data:       [No]

   NumLock:                        [Off]




 F1  Help     ↑↓  Select Item    -/+   Change Values      F9  Setup Defaults
 Esc Exit     ←→  Select Menu    Enter Select   ▶ Sub-Menu   F10 Save and Exit
```
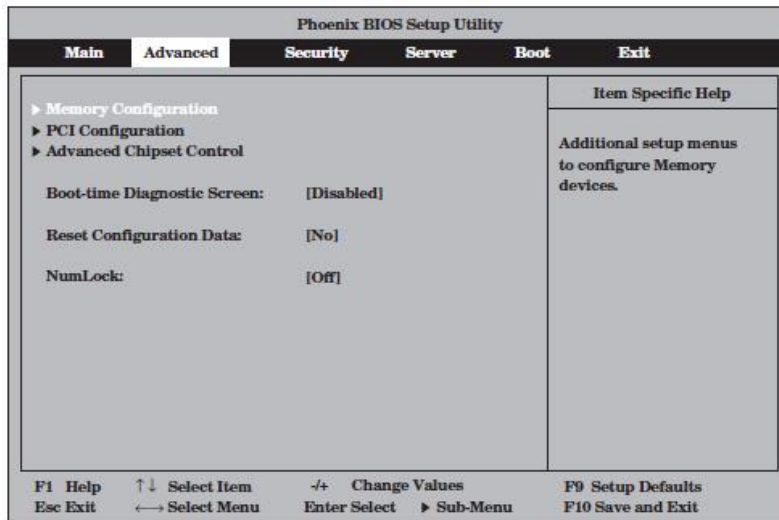
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether to display the Power On Self-Test (POST) screen at start-up. If "Disabled" is selected, our logo appears while POST is in progress. (To display POST check results, press **Esc** and **F2**.) If "Console Redirection" is set to "Enabled", this option is unconditionally set to "Enabled".	
Reset Configuration Date	[No] Yes	If you select [Yes], the system configuration data will be cleared at next boot with this option set automatically to [No].	
NumLock	On [Off]	Specify whether or not to enable NumLock at system start-up.	

[   ]: Factory-set

Memory Configuration

When you select "Memory Configuration" in the Advanced menu, the following screen appears.

```
                        Phoenix BIOS Setup Utility
      Advanced

            Memory Configuration                    Item Specific Help

    Memory Size:            3072MB           Tests extended memory
    DIMM Group #1 Status    Normal            - Once per KB, or
    DIMM Group #2 Status    Normal            - Once per MB, or
    DIMM Group #3 Status    Not Installed     - Every location or
                                              - No Memory Test
    Extended RAM Step       Disabled




    F1  Help      ↑↓  Select Item     -/+   Change Values     F9  Setup Defaults
    Esc Exit      ←→  Select Menu     Enter Select   ▶ Sub-Menu   F10 Save and Exit
```
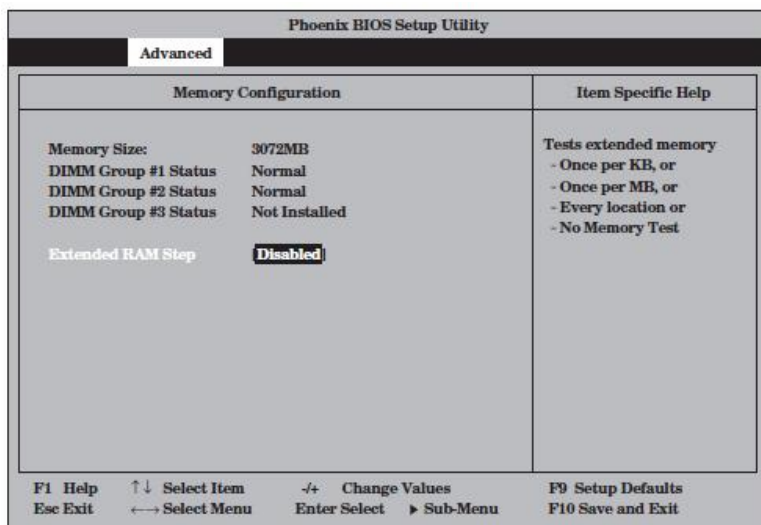
Refer to the table below for information on options.

Option	Parameter	Description
Memory Size	=	Displays the memory size.
DIMM Group #1 Status	Normal [Not Installed]	Displays the memory status.
DIMM Group #2 Status	Normal [Not Installed]	Displays the memory status.
DIMM Group #3 Status	Normal [Not Installed]	Displays the memory status.
Extended RAM Step	1MB 1KB Every location [Disabled]	Set the time interval between memory tests.

[   ]: Factory-set

PCI Configuration

When you select "PCI Configuration" in the Advanced menu, the following screen appears. If you select a menu with the "►" mark and press **Enter**, its submenu appears.

```
                    Phoenix BIOS Setup Utility
        Advanced

          PCI Configuration                       Item Specific Help

  ► SCSI Controller                            Additional setup
  ► LAN Controller                             menus to configure
                                               embedded SCSI
    PCI Slot 1 Option ROM:    [Disabled]       controller.
    PCI Slot 2 Option ROM:    [Disabled]
    PCI Slot 4 Option ROM:    [Disabled]
    PCI Slot 5 Option ROM:    [Disabled]




  F1  Help      ↑↓  Select Item      -/+   Change Values      F9  Setup Defaults
  Esc Exit      ←→  Select Menu      Enter Select  ► Sub-Menu F10 Save and Exit
```
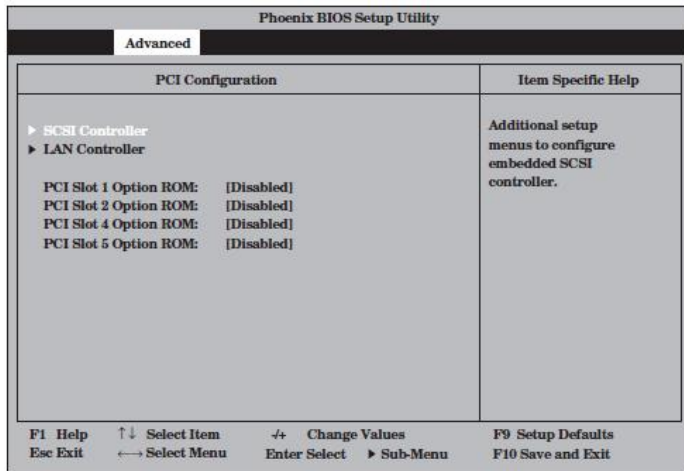
Refer to the table below for information on options.

Option	Parameter	Description
PCI Slot 1 Option ROM	Enabled [Disabled]	If [Enabled] is selected, the extended ROM of the slot device will be initialized.
PCI Slot 2 Option ROM	Enabled [Disabled]	
PCI Slot 3 Option ROM*	Enabled [Disabled]	

[   ]: Factory-set

*   Not provided for the R620-LR model.

SCSI Controller

When you select "SCSI Controller" in the Advanced menu, the following screen appears.

```
                    Phoenix BIOS Setup Utility
        Advanced

              SCSI Controller                    Item Specific Help

  SCSI Controller:    [Enabled]            Disables/enables the
  Option ROM Scan:   [Enabled]            on-board SCSI
                                          controller.




  F1  Help      ↑↓  Select Item    -/+  Change Values      F9  Setup Defaults
  Esc Exit      ←→  Select Menu    Enter Select  ▶ Sub-Menu   F10 Save and Exit
```
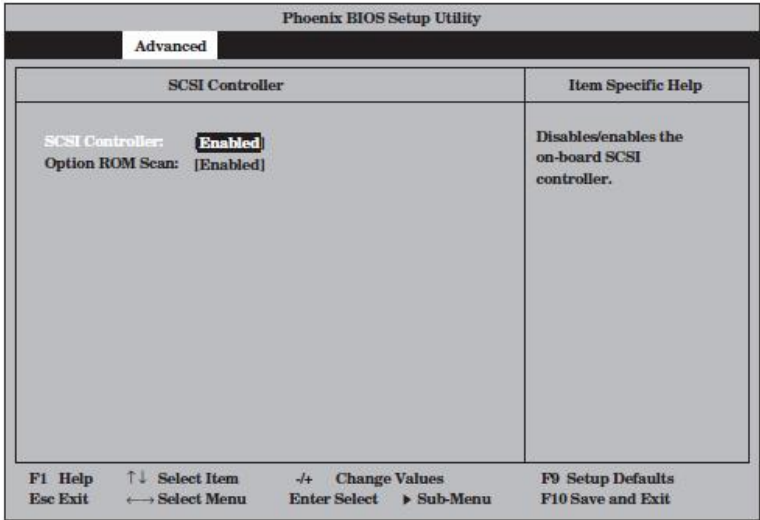
Refer to the table below for information on options.

Option	Parameter	Description
SCSI Controller	[Enabled] Disabled	If "Disabled" is selected, chip stays in the reset status. In this status, the SCSI Controller is totally disabled and not recognized by the PnP OS.
Option ROM Scan	[Enabled] Disabled	If "Enabled" is selected, the extended ROM of the device will be initialized.

[   ]: Factory-set

LAN Controller

When you select "LAN Controller" in the Advanced menu, the following screen appears.

```
                    Phoenix BIOS Setup Utility
      Advanced

            LAN Controller                    Item Specific Help

 LAN Controller:    Enabled              Disables/enables the
 Option ROM Scan:   [Enabled]           on-board LAN
                                         controller.




 F1  Help      ↑↓ Select Item     -/+  Change Values      F9  Setup Defaults
 Esc Exit      ←→ Select Menu     Enter Select  ▶ Sub-Menu   F10 Save and Exit
```
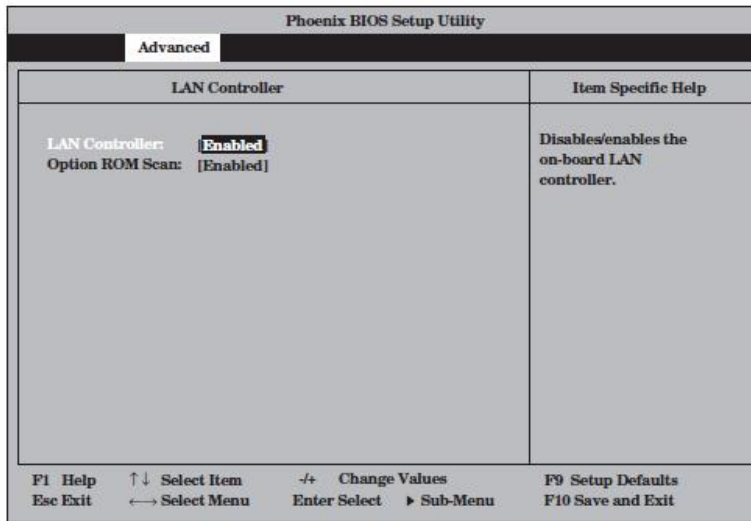
Refer to the table below for information on options.

Option	Parameter	Description
LAN Controller	[Enabled] Disabled	If "Disabled" is selected, chip stays in the reset status. In this status, the LAN Controller is totally disabled and not recognized by the PnP OS.
Option ROM Scan	[Enabled] Disabled	If "Enabled" is selected, the extended ROM of the device will be initialized.

[   ]: Factory-set

Advanced Chipset Control

When you select "Advanced Chipset Control" in the Advanced menu, the following screen appears.

```
                        Phoenix BIOS Setup Utility
         Advanced

              Advanced Chipset Control              Item Specific Help

        Wake On LAN:     [Disabled]             Determines the action of
        Wake On PME:     [Disabled]             the system when a LAN
        OS Debug:        [Disabled]             wake up event occurs.




        F1  Help      ↑↓ Select Item      -/+  Change Values      F9  Setup Defaults
        Esc Exit      ←→ Select Menu      Enter Select  ▶ Sub-Menu   F10 Save and Exit
```
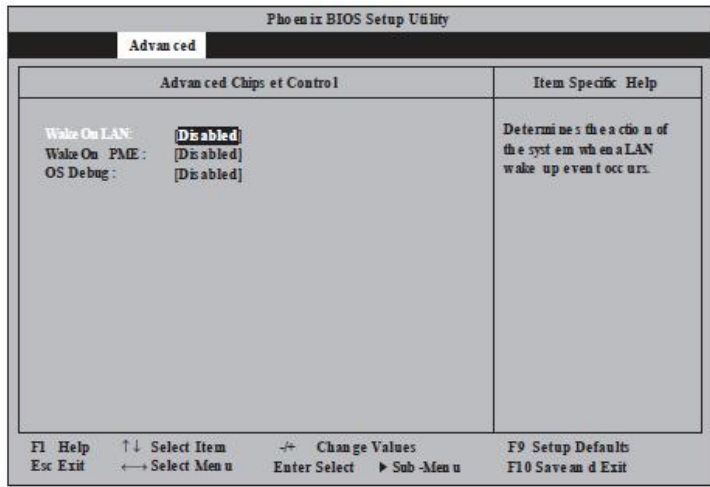
Refer to the table below for information on options.

Option	Parameter	Description
Wake on LAN	[Disabled] Enabled	Select whether or not to enable the remote power-on function via the LAN connector on motherboard.
Wake On PME	[Disabled] Enabled	Select whether or not to enable the remote power-on function via the PCI LAN card.
OS Debug	[Disabled] Enabled	Select whether or not to enable the OS Debug mode. Typically, select Disable.

[   ]: Factory-set

Security

Move the cursor onto "Security" to display the Security menu.
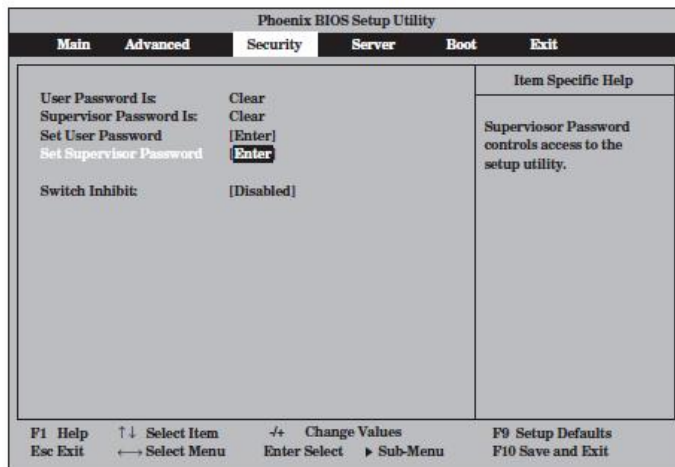
Select "Set Supervisor Password" or "Set User Password" and press **Enter** to display the following pop-up screen. The screen below shows when "Set Supervisor Password" is selected.

Set a password on this pop-up screen. Enter a password of up to seven alphanumeric characters and symbols from the keyboard.
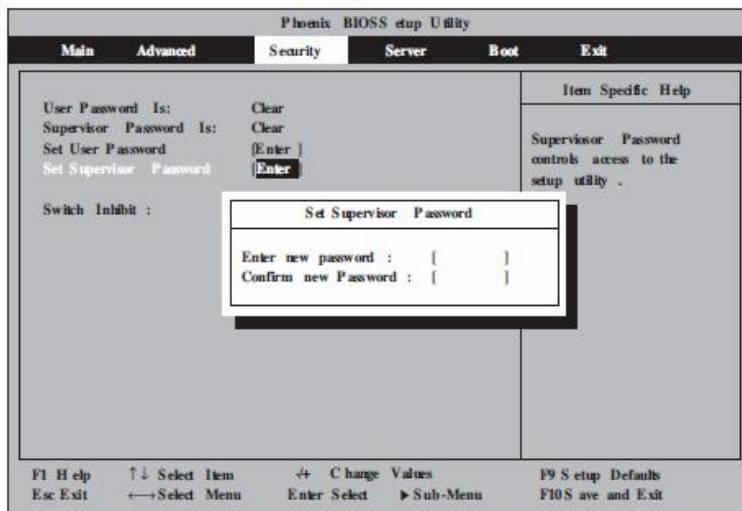
IMPORTANT:

■ User password setup is not available before Supervisor password setup.

■ Do not set any password before installing the OS.

■ If you forget your password, contact you sales agent.

See the table below for setup options on the screen.

Option	Parameter	Description
User Password is	[Clear] Set	Indicates User password setup status (display only).
Supervisor Password is	[Clear] Set	Indicates User password setup status (display only).
Set User Password	[Enter]	Press **Enter** to display the user password entry screen. With a user password, accessing the

		SETUP menus is restricted. This option is available only if the Supervisor Password is specified.
Set Supervisor Password	[Enter]	Press **Enter** to display the supervisor password entry screen. This option is available only when you log into the SETUP utility with the supervisor password.
Password on boot	[Disabled] Enabled	Specify whether to request a password entry at boot-up. User password setup is required beforehand.
Switch Inhibit	[Disabled] Enabled	Enable or disable the POWER switch on the server. If you select to enable, the switch will be disabled.

[   ]: Factory-set

IMPORTANT:

If you have logged in SETUP by using the Supervisor Password, you can check and change all settings. If you have logged in SETUP by using User Password, you see the settings but cannot make changes on the settings except System Time, System Date and User Password of Main.

Server

Move the cursor onto [Server] to display the Server menu.

The following describes options you can configure in the Server menu and their functions.
Select an option with the "►" mark and press **Enter** to display its submenu.

Refer to the table below for information on options.

```
                        Phoenix  BIOS Setup Utility
   Main      Advanced      Security      Server      Boot      Exit

                                              Item Specific Help
 ► System  Management
 ► Console  Redirection
 ► Event  Log Configuration                  Additional  setup
 ► Monitoring  Configuration                 menu  to view
                                             server  management
   Thermal  Sensor :        [Disabled ]      features .

   BMC IRQ :                [IRQ 11]

   Post Error Pause :       [Enabled ]

   AC-LINK:                 [Last State ]
   Power ON Delay Time :    [ 0]




 F1 Help      ↑↓ Select Item     -/+  Change  Values    F9 Setup  Defaults
 Esc Exit     ←→ Select  Menu    Enter Select    ► Sub-Menu    F10 Save  and Exit
```

Option	Parameter	Description
Thermal Sensor	[Disabled] Enabled	Enable or disable the thermal sensor functions.
BMC IRQ	Disabled [IRQ 11]	Set the IRQ of BMC interruption.
Post Error Pause	[Disabled] Enabled	Set whether or not to pause POST at the end of POST if an error has occurred during POST execution.
AC LINK	Stay Off [Last State] Power On	Specify the AC LINK feature by selecting the status of the power supply unit of the server when the AC power supply restarts. (See the table on the next page for details.)
Power ON Delay Time	[0]-255	Configure the DC ON delay time if AC LINK is set to "Power On" or "Last State" (unit: second).

[   ]: Factory-set

* "Console Redirection" is shown only when the ft Remote Management Card is installed. (Installed in standard for R620-MR model)

The table below lists how selections for "AC LINK" determine the power status of the server when the power supply to the server restarts.

State before powered off	Parameter		
	Stay Off	Last State	Power On
In service	Off	On	On
Out of service (DC power: Off)	Off	Off	On
Forced shutdown *	Off	Off	On

* Pressing the POWER switch for over four seconds shuts down the power to the server.

System Management

Select "System Management" on the Server menu and press **Enter** to display the following screen.

```
                        Phoenix BIOS Setup Utility
                              ┌──────────┐
                              │  Server  │
                              └──────────┘
┌──────────────────────────────────────────┬────────────────────────────┐
│          System Management                │      Item Specific Help     │
│                                           │                             │
│  BIOS Revision:      GPJ1.HA.000 5.B.0509162344 │ All items on this menu │
│                                           │ cannot be modified in       │
│  Board Part #:       856-123456           │ user mode. If any           │
│  Board Serial #:     123456789 012        │ items require changes,       │
│  System Part #:      [N81 00-667]         │ please consult your         │
│  System Serial #:    123456789 0          │ system Supervisor.          │
│  Chassis Part #:     FT system            │                             │
│  Chassis Serial #:   01                   │                             │
│  BMC Device ID:      24                   │                             │
│  BMC Device Rev:     01                   │                             │
│  BMC Firmware Rev:   00.02                │                             │
│  SDR Rev:            SDR Version 00 .F4   │                             │
│  PIA Rev:            01.F3                │                             │
│  Module#0 BMC                             │                             │
│  MAC Address:        00-30-13-B8-87-19  ▼ │                             │
├──────────────────────────────────────────┴────────────────────────────┤
│  F1  Help    ↑↓ Select Item    -/+  Change Values   F9  Setup Defaults  │
│  Esc Exit    ←→ Select Menu    Enter Select   ▶ Sub-Menu  F10 Save and Exit │
└────────────────────────────────────────────────────────────────────────┘
```

See the table below for setup options on the screen.

Option	Parameter	Description
BIOS Revision	—	Displays the BIOS revision.
Board Part Number	—	Displays the board information.
Board Serial Number	—	Displays the board information.
System Part Number	—	Displays the system information.
System Serial Number	—	Displays the system information.
Chassis Part Number	—	Displays the chassis information.
Chassis Serial Number	—	Displays the chassis information.
BMC Device ID	—	Displays the BMC information.
BMC Device Revision	—	Displays the BMC information.
BMC Firmware Revision	—	Displays the BMC information.
SDR Revision	—	Displays the revision of SDR (sensor device information).
PIA Revision	—	Displays the PIA (plat form information) revision.
Module#0 BMC MAC Address*	—	Displays the BMC MAC address of CPU/IO module#0.
Module#1 BMC MAC Address*	—	Displays the BMC MAC address of CPU/IO module#1.

[   ]: Factory-set

* MAC address information is shown only when the ft Remote Management Card is installed. (Installed in standard for R620-MR model)

Console Redirection

Select "Console Redirection" on the System Hardware menu and press **Enter** to display the following screen.
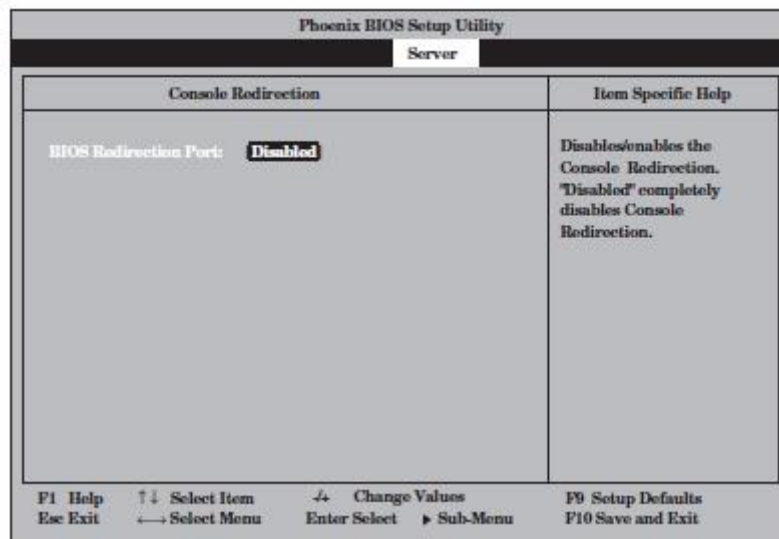
See the table below for setup options on the screen.

Option	Parameter	Description
BIOS Redirection Port	[Disabled] Enabled	Enable or disable Console Redirection. By enabling this option, you can remotely control behaviour during POST.
Baud Rate*	9600 [19.2K] 38.4K 57.6K 115.2K	Select a port rate used for the interface with a hardware console to be connected.
Flow Control*	[None] XON/XOFF [CTS/RTS] CTS/RTS+ CD	Select a flow control method.
Console Type*	PC-ANSI [VT100+] VT-UTF8	Select a console type.

[   ]: Factory-set

*   Displayed only when the BIOS Redirection Port menu is enabled.

Event Log Configuration

Select "Event log Configuration" on the System Hardware menu and press **Enter** to display the following screen.


```
                    Phoenix BIOS Setup Utility
                              Server
──────────────────────────────────────────────────────────────
        Event Log Configuration              Item Specific Help

  Clear Online Event Logs  [Press Enter]     The system event log
                                             will be cleared if
  Clear Offline Event Logs  [Press Enter]    selecting "YES".




 F1  Help      ↑↓  Select Item    -/+  Change Values    F9  Setup Defaults
 Esc Exit      ←→  Select Menu    Enter Select  ▶ Sub-Menu  F10 Save and Exit
```
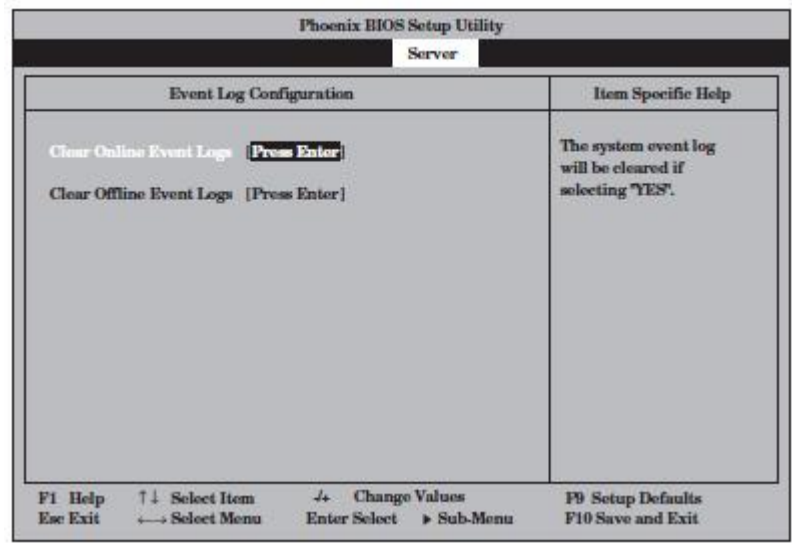
See the table below for setup options on the screen.

Option	Parameter	Description
Clear Online Event Logs	[Press Enter]	To clear event logs of the working module, press the **Enter** key and select "Yes."
Clear Offline Event Logs	[Press Enter]	To clear event logs of the stand-by module, press the **Enter** key and select "Yes."

Monitoring Configuration

Select "monitoring Configuration" on the Server menu and press **Enter** to display the following screen.

```
                    Phoenix BIOS Setup Utility
                              Server
┌─────────────────────────────────────────┬──────────────────┐
│        Monitoring Configuration          │ Item Specific Help│
│                                          │                  │
│  FRB-2 Timer:              [Enabled]     │                  │
│                                          │                  │
│  Boot Monitoring:          [Disabled]    │                  │
│                                          │                  │
│  Option ROM Scan Monitoring: [Enabled]   │                  │
│  Option ROM Monitoring Time-out:  [ 5]   │                  │
│                                          │                  │
│  POST Pause Monitoring:     [Enabled]    │                  │
│  POST Pause Monitoring Time-out:  [ 3]   │                  │
│                                          │                  │
├──────────────────────────────────────────┴─────────────────┤
│ F1  Help    ↑↓ Select Item    ↲ Change Values   P9 Setup Defaults │
│ Esc Exit    ←→ Select Menu    Enter Select ▶ Sub-Menu  F10 Save and Exit │
└─────────────────────────────────────────────────────────────┘
```

Option	Parameter	Description
FRB-2 timer	Disabled [Enabled]	Select whether or not to enable the FRB-2 timer.
Boot Monitoring	Disabled 5 minutes [10 minutes] 15 minutes 20 minutes 25 minutes 30 minutes 35 minutes 40 minutes 45 minutes 50 minutes 55 minutes 60 minutes	Select whether or not to enable the timer for boot monitoring at start-up. If you are starting up from an OS with no ESMPRO Agent installed, disable this option. If you use Disaster Recovery Option for ARCServe, select [Disabled].
Option ROM Scan Monitoring	Disabled [Enabled]	Select whether or not to enable the function to monitor the option ROM scan.
Option ROM Monitoring Time-out	1-[5]-20	Set the timeout of the option ROM scan. This option is displayed when the Option ROM Scan menu is set to [Enabled] (unit: minute).
POST Pause Monitoring	Disabled [Enabled]	Set whether or not to enable the POST monitoring function during boot pause.
POST Pause Monitoring Time-out	1-[3]-20	Set the time for POST monitoring during boot pause. This option is displayed when the POST Pause Monitoring menu is set to [Enabled] (unit: minute).

[   ]: Factory-set

Boot

Move the cursor onto "Boot" to display the Boot menu.

The server searches for the boot device according to the order specified in this menu and use the software to boot the system if found.

```
                          Phoenix BIOS Setup Utility

     Main    Advanced      Security      Server      Boot      Exit

                                                   Item Specific Help
     CD-ROM Drive
     Removable Devices
   + Hard Drive                                Keys used to view or
     IBA GE Slot 0818 v1226                    configure devices:
     IBA GE Slot 0819 v1226                    <Enter> expands or
                                               collapses devices with
                                               a + or –
                                               <+> and <-> moves the
                                               device up or down.




     F1  Help     ↑↓ Select Item    -/+   Change Values      F9  Setup Defaults
     Esc Exit     ←→ Select Menu    Enter Select   ▶ Sub-Menu   F10 Save and Exit
```

You can change the boot device order using ↑ or ↓ and + or –. Move the cursor to select the device by ↑ or↓, and then change the priority using + or –.

IMPORTANT:

Specify the device boot order as shown above to start the EXPRESSBUILDER.

Exit

Move the cursor onto "Exit" to display the Exit menu.
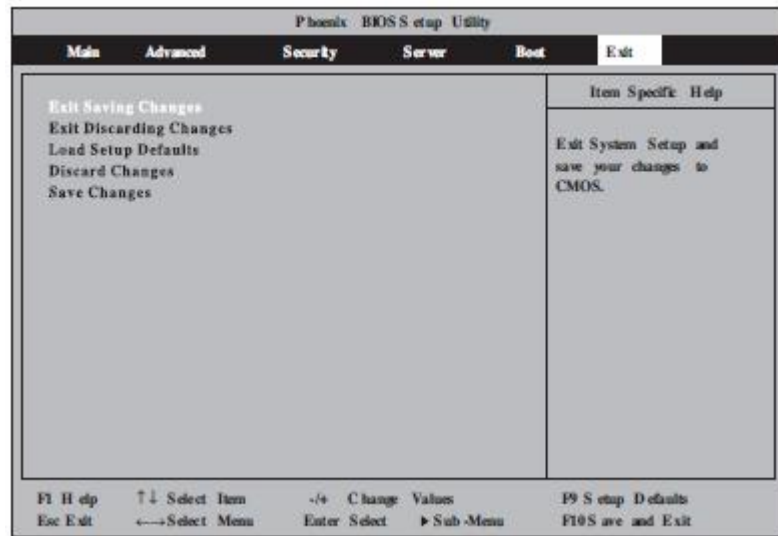
The following describes each option on the Exit menu:

Exit Saving Changes

Select this option to save the current configuration data into the CMOS (non-volatile memory) and exit the SETUP utility.

Select "Exit Saving Changes" to display the right screen. Select "Yes" to save the current configuration data into the CMOS (non-volatile memory) and exit the SETUP utility. The server will automatically restart the system.
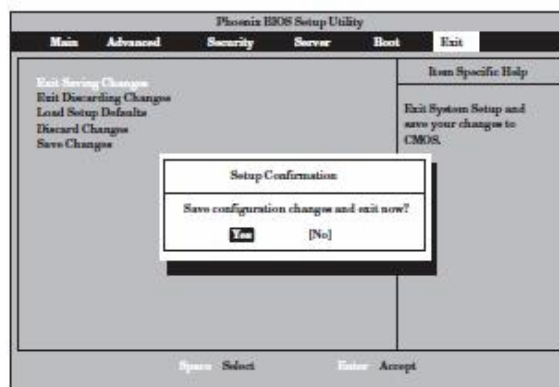
Exit Discarding Changes

Select this option to exit the SETUP utility without saving the current configuration data into the CMOS (non-volatile memory).
If you select "Yes" here, the "SETUP Warning" dialogue box appears.
If you select "No" in the "SETUP Warning" dialogue box, you can exit
SETUP without saving the changes you have made.
If you select "Yes" in the dialogue box, you can exit SETUP with the changes you have made saved in CMOS. The server reboots automatically.
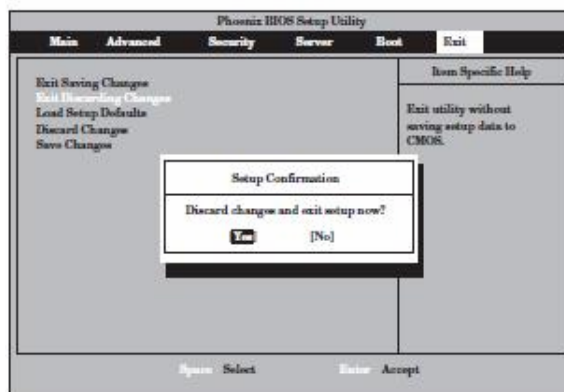
Load Setup Defaults

Select this option if you want to reset all values in SETUP to default (factory-set values). When you select Load Setup Defaults, the dialogue box as shown on the right appears.
If you select "Yes" in the dialogue box, default values are restored. If you select "No", you will see the Exit menu screen.

IMPORTANT:

The default value slightly differs from the factory-set value.
Check all setting values before restoring the default value.
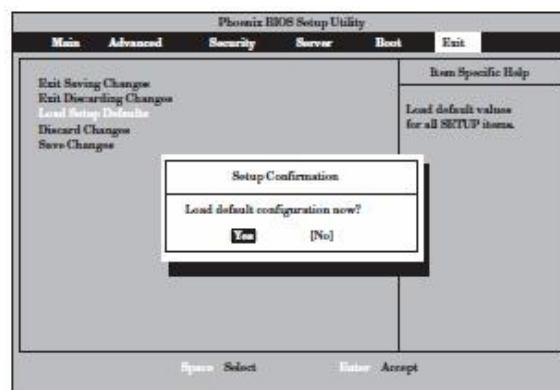
Discard Changes

Select this option if you want to restore previous values before saving values in CMOS. When you select "Discard Changes", you will see the dialogue box as shown on the right.
If you select "Yes" in the dialogue box, changes you have made are discarded and previous settings are restored.
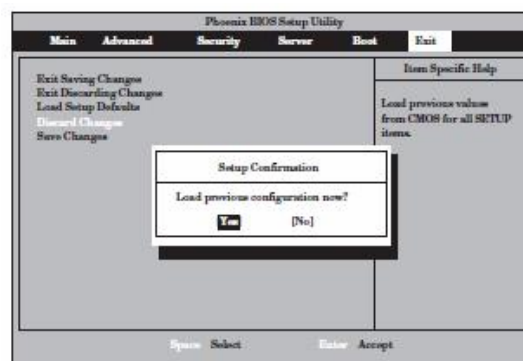
Save Changes

Select this option if you want to save changes you have made in
CMOS (non-volatile memory) without exiting SETUP. When you
select the Save Changes, you will see the dialogue box as shown
on the right.
If you select "Yes" in the dialogue box, changes you have made
are saved in CMOS (non-volatile memory).
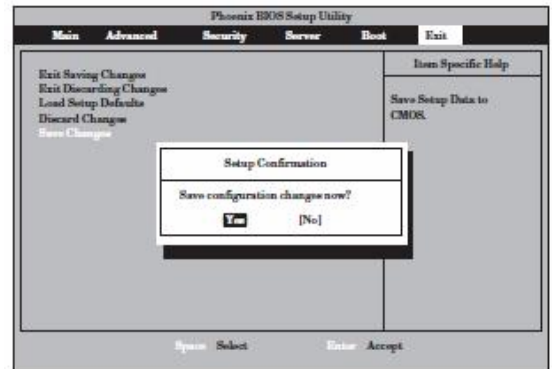
SCSI BIOS (SCSI*Select*)

The "SCSI*Select*" utility makes settings of the SCSI controller on a motherboard. You can start it up by simple key operation during POST execution without using any special start-up disk.

IMPORTANT:

Because the server is installed with the latest version of the SCSI*Select* utility, your screen display may be different from the one described in this guide. For information on options different from those described in this guide, refer to the online help or ask your service agent.

Usage of the SCSI*Select* utility

The SCSI*Select* utility is activated when you configure the transfer speed of SCSI devices connected to the server (except hard disk drive), and allows you to make settings.

IMPORTANT:

SCSI configuration must be set by starting up the utility on a SCSI controller basis. The server is equipped with one SCSI controller. If you have added SCSI controller boards, you need to make SCSI controller settings as many as the number of added SCSI controller boards in addition to the configuration for the built-in SCSI controller. The utility used for changing settings may be different.

Starting and Quitting the SCSI*Select* utility

The following section describes the procedures from starting the SCSI*Select* utility to quitting the utility. For information on how you start up and/or operate the utility stored on the option board, see the manual shipped with the option board.

1. Power on the server.

   The following message appears on the screen during POST execution.

   ### IMPORTANT:

   The message is repeated as many times as the number of SCSI controllers installed.

   ```
   Adaptec SCSI BIOS vX.XX
   Copyright 2004 Adaptec, Inc. All Rights Reserved.

   ◄ ◄ ◄  Press <Ctrl> <N> for SCSISelect(TM) Utility!  ► ► ►
   ```

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

   The SCSI*Select* utility starts up with the "Main" menu displayed.

3. Use the cursor to select a channel in the "Bus:Device" box, and then press the **Enter** key.

   ```
   AIC-7902 A at Slot ?? 08:01:00
   AIC-7902 B at Slot ?? 08:01:01
   ```

   The SCSI controller of the motherboard has two channels.
   The channel A (08:01:00) shows the hard disk drive of ID0, ID1 and ID2 while the channel B (08:01:01) shows the hard disk drive of ID3, ID4 and ID5.
   When selection is made, the "Options" menu appears.

4. Select the Options menu and press the **Enter** key.

If you want to make settings of the adapter (selected channel) or the SCSI device connected to the channel, choose "Configure/View SCSI Controller Settings."
If you want to know or verity the format of hard disk drive or find the SCSI ID of the device connected to the channel, select "CSI Disk Utilities."
For more information, see the following description.

To quit SCSI*Select*, press the **Esc** until you see the closing message. (If any changes have been made, the massage asking you whether or not to save the changes is displayed. Select Yes (save the changes) or No (discard the changes)).

Configure/View SCSI Controller Settings

When you select "Configure/View Host Adapter Settings" in the "Options" menu, the following screen appears.
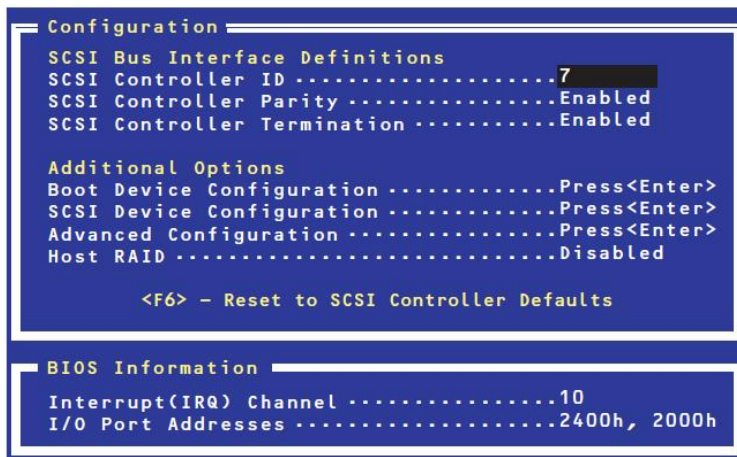
The following describes menus and parameters. Read the descriptions to optimize your system.

SCSI Bus Interface Definitions

Use arrow keys to select SCSI BUS Interface Definitions. The following table provides information on options and their functions.

Option	Parameter	Function/settings
SCSI Controller ID	0 to [7] to 5	Set "7."
SCSI Controller Parity	[Enabled] Disabled	Set "Enabled."
SCSI Controller Termination	[Enabled] Disabled	This option allows you to select whether or not to enable the terminator. Set "Enabled."

[   ]: Factory-set

Additional Options

Use arrow keys to select Additional Options.

Boot Device Configurations

When you select "Boot Device Configurations" and press the **Enter** key, the display changes as shown below:

```
════════ Boot Device Configuration ════════
Single Image
Master SCSI Controller ......▕AIC-7902 A at slot 00 02:03:00▏

Select SCSI peripheral from which to boot.
Boot SCSI Controller .........AIC-7902 A at slot 00 02:03:00
```

SCSI Device Configuration

When you select "SCSI Device Configuration" and press the **Enter** key, the display changes as shown below:

```
════════ SCSI Device Configuration ════════
SCSI Device ID                    #0   #1   #2   #3   #4   #5   #6   #7
Sync Transfer Rate (MB/Sec).....320  320  320  320  320  320  320  320
Packetized......................Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
QAS.............................Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Initiate Wide Negotiation.......Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Enable Disconnection............Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Send Start Unit Command.........Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
BIOS Multiple LUN Support....... No   No   No   No   No   No   No   No
Include in BIOS Scan............Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes


SCSI Device ID                    #8   #9  #10  #11  #12  #13  #14  #15
Sync Transfer Rate (MB/Sec).....320  320  320  320  320  320  320  320
Packetized......................Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
QAS.............................Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Initiate Wide Negotiation.......Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Enable Disconnection............Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Send Start Unit Command.........Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
BIOS Multiple LUN Support....... No   No   No   No   No   No   No   No
Include in BIOS Scan............Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes
```

IMPORTANT:

You can make settings on a SCSI ID basis. Before you make settings, confirm the SCSI ID of your target device.

TIPS:

If you do not know the SCSI ID of the added option, choose "SCSI Disk Utilities" in the "Options" menu. After a while, the screen showing SCSI IDs and matching devices appears. For more information, see "SCSI Disk Utilities" described later.

The following table provides information on options and their functions on the menu.

Option	Parameter	Description
Sync Transfer Rate (MB/Sec)	[320] 33.3 160 20.0 80.0 10.0 66.6 ASYN 40.0	Typically, set "320." This value may need to be changed depending on the option connected. For more information, see the manual attached to the option.
Packetized	[Yes] No	Select whether or not to optimize the bus usage ratio by using the function to transfer packetized data (DT or dual transition).
QAS	[Yes] No	Select whether or not to use the Quick Arbitration and Selection(QAS) function, which improves the SCSI bus usage ratio

Initiate Wide Negotiation	[Yes] No	If the connected SCSI device supports Wide SCSI, select "Yes." If not, select "No."
Enable Disconnection	[Yes] No	Set "Yes."
Send Start Unit Command	[Yes] No	Set "Yes" for a hard disk drive. Otherwise set "No."
BIOS Multiple LUN Support	Yes [No]	Set "No."
Include in BIOS Scan	[Yes] No	Set "Yes."

[   ]: Factory-set

Advanced Configuration

When you select "Advanced Configuration" and press the **Enter** key, the display changes as shown below:

The following table provides information on options and their functions.

Option	Parameter	Description
Reset SCSI Bus at IC Initialization	[Enabled] Disabled	Set "Enabled."
Display <Ctrl><Alt> Message During BIOS Initialization	[Enabled] Disabled	Set "Enabled."
Extended Int 13 Transfer for DOS Drivers > 1 Gbyte	[Enabled] Disabled	Set "Enabled."
Post Display Mode	[Verbose] Silent Diagnostic	Do not change the settings unless it is necessary.
SCSI Controller Int 13 Support	[Enabled] Disabled: NOT Scan Disabled: scan bus	Select whether or not to enable SCSI BIOS. Select "Enabled" except ● when starting up the OS from a hard disk drive other than those connected to the SCSI controller (it is OK if no hard disk drive is connected to controller other than SCSI controller). ● when reserving a space in the extended ROM space. In this case, you can disable the BIOS of a SCSI controller to which no hard disk drive is connected.
Domain Validation	[Enabled] Disabled	Set "Enabled."
Support Removable Disks under Int 13 as Fixed Disks	Boot Only All Disks [Disabled]	Options controlled by removable media are supported by AIC-79xx BIOS.
BIOS Support for Bootable CD-ROM	[Enabled] Disabled	Set "Enabled."

[   ]: Factory-set

SCSI Disk Utilities

SCSI Disk Utilities scans a device connected to the selected channel and displays information on the device. If the device is a hard disk drive, you can perform low-level formatting or verification.
When you choose "SCSI Disk Utilities" in the "Options" menu, which is shown after selecting a channel to be configured, the screen for scanning SCSI IDs is displayed.

```
═══ AIC-7902 A at slot ??, 02:03:00 ═══
      Scanning SCSI ID: 4: LUN Number :0
```

After the scanning the screen showing SCSI IDs and corresponding devices appears.

```
─ Select SCSI Disk and press <Enter> ─
  SCSI ID #0    :  No device
  SCSI ID #1    :  No device
  SCSI ID #2    :  No device
  SCSI ID #3    :  No device
  SCSI ID #4    :  No device
  SCSI ID #5    :  No device
  SCSI ID #6    :  No device
  SCSI ID #7    :  Adaptec AIC - 7902
  SCSI ID #8    :  No device
  SCSI ID #9    :  No device
  SCSI ID #10   :  No device
  SCSI ID #11   :  No device
  SCSI ID #12   :  No device
  SCSI ID #13   :  No device
  SCSI ID #14   :  No device
  SCSI ID #15   :  No device
```
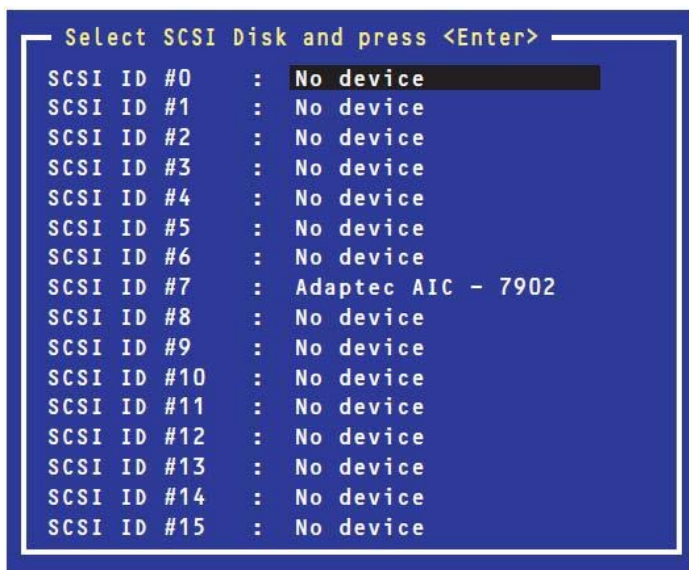
When you select a device on this screen and press the **Enter** key, details of the device is shown.
If the selected device is a hard disk drive, you can execute the following submenus.
- Format Disk: performs low-level formatting for the selected device
- Verify Disk Media: compares (verifies) all sectors of the selected device and if there is any bad sector, re-assignment will be performed.

FORCED SHUTDOWN AND CLEAR

Read this section if your server does not operate as expected, or if you want to return all setup values to those made at shipment.

Forced Shutdown

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for over four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 30 seconds after turning off the power (forced shutdown).

> **IMPORTANT:**
>
> If the remote power-on feature is used, power on the server and start the OS, and turn off the power in the normal way.
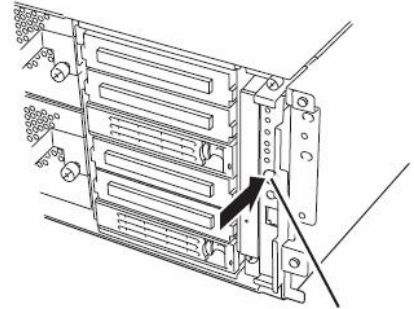
Press it for over 4 seconds.

CLEAR CMOS/PASSWORD

With the pre-installed SETUP utility, you can set desired passwords to protect data stored on the server from unauthorized user access. If you forget the password, you can clear them by following the procedure described in this section.

You can also use the same procedure to clear the CMOS data in the server.

IMPORTANT:

- Clearing the CMOS data restores the factory settings.
- To clear the password or CMOS data, power off the server.

To clear the password or the CMOS data, use configuration jumper pins (jumper switches) located inside of the server. The jumper switches are found on the motherboard in a CPU/IO module. See the figure below.

IMPORTANT:

Do not change any other jumper switch settings. Any improper change may cause the server to fail or malfunction.
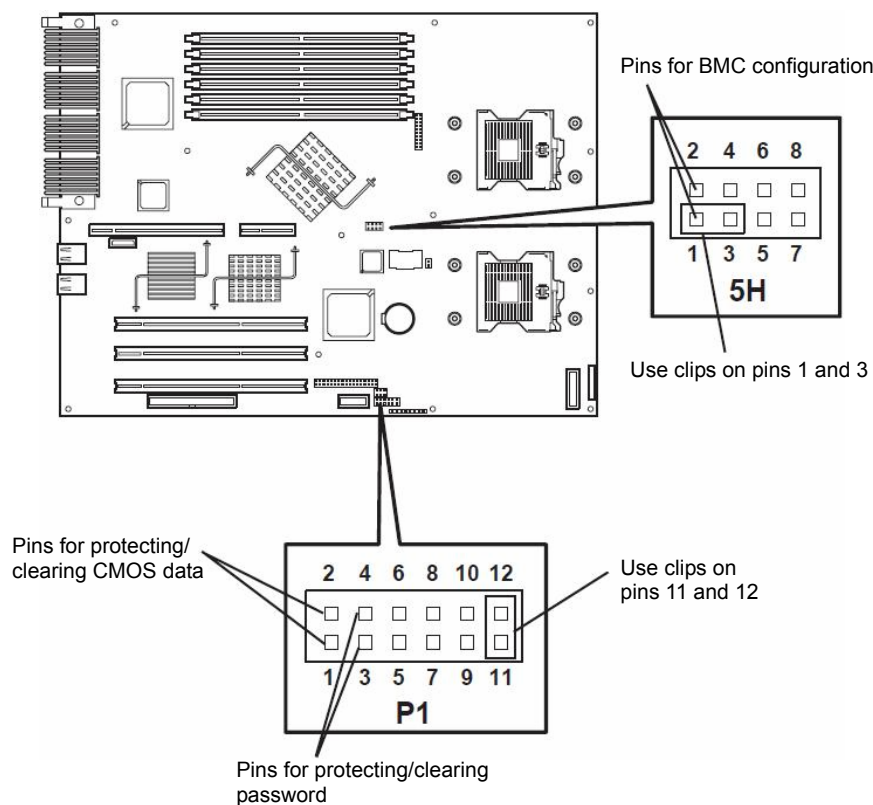
■ Pins for protecting/clearing the password

    Short-circuiting the two pins: Clears the password

    Opening the two pins: Protects the password (factory-set)

■ Pins for protecting/clearing the CMOS data

    Short-circuiting the two pins: Clears the CMS data

    Opening two pins: Protects the CMOS data (factory-set)

The following describe the clearing procedure.

⚠ WARNING
Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See "PRECAUTIONS FOR SAFETY" in Chapter 1. ■ Do not disassemble, repair, or alter the server.

How to Clear CMOS

1. Power off the NovaScale/ft Server series and unplug both power cords.

2. Remove the both CPU/IO modules (#1 and #2) from the NovaScale/ft Server series (see "Removing CPU/IO Module" in chapter 8).

3. Make setting of jumper switch for clearing CMOS of CPU/IO # 0.
Remove the clips from the jumper pins 11-12 and place them on the jumper pins 1-2 on the CPU/IO Module #1.

**4.** Mount only the CPU/IO Module # 0 to the NovaScale/ft Server series (see "Installing CPU/IO Module" in chapter 8).

5. Connect the power cord of the CPU/IO module #0 and press the POWER switch to power on.

6. When you see "8150: NVRAM Cleared By Jumper" and "Press <F1> to resume, <F2> to Setup" during POST after the start-up, press the POWER switch to power off, and then disconnect the power cord from the outlet.

Example

```
-----------------------------------------------------------------------------------------------
Phoenix ServerBIOS 3 Release 6.0
Copyright 1985-2003 Phoenix Technologies Ltd.
All Rights Reserved
GPJ1. HA. XXXX. X. XXXXXXXXXX
IGPJ BIOS Release X. X
Build Time: XX/XX/XX XX : XX : XX
2x Intel (R) Xeon (R) CPU 3.60GHz
3072M System RAM Passed
2048K Cache SRAM Passed
System BIOS shadowed
Video BIOS shadowed
IPMI Base Board Management Controller was detected.
Device ID : XX Device Revision : XX
IPMI Version : X. X Firmware Revision : XX. XX
Self Test Result : XXXXH
SMBIOS Initialize. . . . . . . . . Passed
System Monitoring Check. Passed
ERROR
```

8150: NVRAM Cleared By Jumper
Press <F1> to resume, <F2> to Setup
----

7. By referring to "Removing CPU/IO Module" in chapter 8, remove the CPU/IO module #0 from the server.

8. Restore the previous CMOS clear jumper switch settings. Remove the jumper pins 1-2 of the CPU/IO module #0 and install them on the jumper pins 7-8.

9. By referring to "Installing CPU/IO Module" in chapter 8, install the CPU/IO module #0 on the server.

10. Reconnect the power cord of the CPU/IO module #0 and press the POWER switch to power on.

11. After the start-up, press the **F2** key during POST to start BIOS SETUP.

12. Make settings in SETUP as you desire and then the settings by selecting "Exit"→ "Exit Saving Changes." Switch the power off and disconnect the power cord from the outlet.

13. Clear CMOS for the CPU/IO module #1 by following the steps 3 to 12.

14. By referring to "Installing CPU/IO Module" in chapter 8, install both CPU/IO modules on the server.

15. Connect both power cords.

HOW TO CLEAR PASSWORDS

1. Power off the NovaScale/ft Server series and unplug the both power cords.

2. Remove both CPU/IO modules (#1 and #2) from the NovaScale/ft Server series (see "Removing CPU/IO Module" in chapter 8).

3. Make setting of jumper switch for clearing the password of CPU/IO module # 0...

Remove the clips from the jumper pins 11-12 on CPU/IO module # 0 and place them on the jumper pins 3-4 on the CPU/IO Module #1.

4. Install the CPU/IO Module # 0 to the NovaScale/ft Server series (see "Installing CPU/IO Module" in chapter 8).

5. Connect the power cord of CPU/IO module #0 only, and then press the POWER switch to power on.

6. When you see "8151: Password Cleared By Jumper" and "Press <F1> to resume, <F2> to Setup" during POST after the start-up, press the POWER switch to power off, and then disconnect the power cord from the outlet.

Example

```
-------------------------------------------------------------------------------------------
Phoenix ServerBIOS 3 Release 6.0
Copyright 1985-2003 Phoenix Technologies Ltd.
All Rights Reserved
GPJ1. HA. XXXX. X. XXXXXXXXXX
IGPJ BIOS Release X. X
Build Time : XX/XX/XX XX : XX : XX
2x Intel (R) Xeon (R) CPU 3.60GHz
3072M System RAM Passed
2048K Cache SRAM Passed
System BIOS shadowed
Video BIOS shadowed
IPMI Base Board Management Controller was detected.
Device ID : XX Device Revision : XX
IPMI Version : X. X Firmware Revision : XX. XX
Self Test Result : XXXXH
SMBIOS Initialize. . . . . . . . . Passed
System Monitoring Check. Passed
ERROR
8151: NVRAM Cleared By Jumper
Press <F1> to resume, <F2> to Setup
-------------------------------------------------------------------------------------------
```

7. By referring to "Removing CPU/IO Module" in chapter 8, remove the CPU/IO module #0 from the server.

8. Reset the jumper switch setting.

Remove the clips from the jumper pins 3-4 and place them on the jumper pins 11-12 on the CPU/IO Module # 0.

9. Clear password for the CPU/IO module #1 by following the steps 3 to 8.

10. By referring to "Installing CPU/IO Module" in chapter 8, install both CPU/IO modules on the server.

11. Connect both power cords.

BMC Configuration Jumper Settings

You can restore the initial values of the BMC configuration information (login name/password etc.), which are set when you use a remote management function. The values are registered on a CPU/IO module basis. Because of this, you need restore the values for your target CPU/IO module.

How to restore initial values:

1. Power off the server and then disconnect the power cords of both CPU/IO modules from the outlet

2. Remove your target CPU/IO module from the server by referring to "Removing CPU/IO Module" in chapter 8.

3. Make clear settings of the jumper for the BMC configuration of the CPU/IO module. Remove the CPU/IO module jumper pins (5H) 1-3 and set them to the jumper pins (5H) 1-2 (see page 4-32).

4. Install the CPU/IO module on the server by referring to ""Installing CPU/IO Module" in chapter 8.

5. Connect the power cords of CPU/IO modules and wait for 30 seconds. Then disconnect the power cords of both CPU/IO modules from outlet again.

6. Remove your target CPU/IO module from the server by referring to "Removing CPU/IO Module" in chapter 8.

7. Restore the original statue of the jumper for the BMC configuration of the CPU/IO module. Remove the CPU/IO module jumper pins (5H) 1-2 and set them to the jumper pins (5H) 1-3.

8. Install the CPU/IO module on the server by referring to "Installing CPU/IO Module" in chapter 8.

IMPORTANT:

By this operation, BMC settings required in DianaScope or remote management functions for connection with the server will be cleared as well. If you are using DianaScope, store the settings required to connect to DianaScope in media such as a floppy disk before this operation, and configure the settings after the operation again. Use DianaScope Agent or EXPRESSBUILDER system management function to configure and save the BMC settings.

REMOTE MANAGEMENT FUNCTION

R620-LR models are equipped with the optional ft Remote Management Card on the server. By connecting to a network via their management LAN port, BMC (Baseboard Management Controller), an LSI for system management, installed on the server allows remote monitoring and controlling of the server such as keyboard, video and mouse (KVM) control over management network.

When the R620-MR model is connected to a network via their management LAN port, BMC (Baseboard Management Controller), an LSI for system management, installed on the server allows remote monitoring and controlling of the server such as keyboard, video and mouse (KVM) control over the management network.

Network Default Values

The following are default values to connect the server to a network.

IP Address	: 192.168.1.1
User Name	: administrator
Password	: (None)
Host Name	: ARMCXXXXXXXXXXXX

■ The host name above is the host name used for auto registering with a DNS server using DHCP functions. XXXXXXXXXXXX is the MAC address assigned to each management card. The MAC address can be found on the label attached to the rear or the card or Server-System Management Sub-menu Selections- Primary BMC MAC Address/Secondary BMC MAC Address on the BIOS Set UP screen.

IMPORTANT:

■ To ensure security, change values for host name, password and IP address according to your network environment.

■ The speed and duplex settings of the management LAN port are set to the auto negotiation mode, and the settings cannot be changed manually. Set the link partner side (switch and hub) to the auto negotiation mode as well.

Settings on the Server

The following describes the settings that should be made on the server to use the server.

CHECK:

The resolution and refresh rate of the screen that can be displayed on a remote KVM console are 1024x768 and 75 Hz or smaller respectively. If values larger than these are set, the remote screen does not display any data. If a great value is set for the number of colours on the screen for the server, the remote may not show colours accurately. Connecting this card to a network where broadcast occurs frequently may affect remote control performance.

Initial Settings on the Server

1. To monitor each device in detail, device-specific sensor information should be written into this card.

If information specific to the server has not been written in, activation of the server pauses while our logo is displayed or with the following message telling you that the server-specific information is not written.

> H/W Configuration of BMC is corrupted.
> !! Update BMC H/W Configuration by configuration tool !!
> !! Refer to BMC configuration manual !!

The message above may appear in a different screen during POST with our logo shown and paused. In that case, press the **Esc** key to display the diagnosis screen to check whether or not the above message is shown. If a different error message is shown, refer to Chapter 7 "Troubleshooting."

2. How to make initial settings

Either wait for a while after the above message is shown or press the **F1** key to precede POST. Start up the "EXPRESSBUILDER"CD-ROM and select "initialize Remote Management Card" from the Tool menu. By doing so, information specific to each server will be written in.

When writing the information is completed, the following message appears. Press any key to reboot the server for use.

> Strike a key when ready…

TIPS:

Running the initialize Remote Management Card resets the AC LINK setting (Server-AC LINK) of the BIOS setup to the initial value "Last State." If you have changed the value, you will need to set it again.

3. BMC FW Update Service

BMC FT Update Service is required for updating the BMC firmware.

(1) Start Windows on the PC and set the "EXPRESSBUILDER" CD-ROM into the CD-ROM drive.

(2) The master control menu of EXPRESSBUILDER is displayed by the auto start-up function. Click "Setup" and then "BMC Online Update."

TIPS:

Start the BMC FW Update Service from Server Maintenance Utility.

Changing Mouse Properties

If the OS of the server is Windows Server 2003, clear the "Enhance pointer precision" check box in the "Motion" box of the "Pointer Option" tab, which is in the "Mouse Properties" as shown below.
If you cannot move the mouse cursor to the right bottom of the window, move the "Select a pointer speed" slider to the faster side.
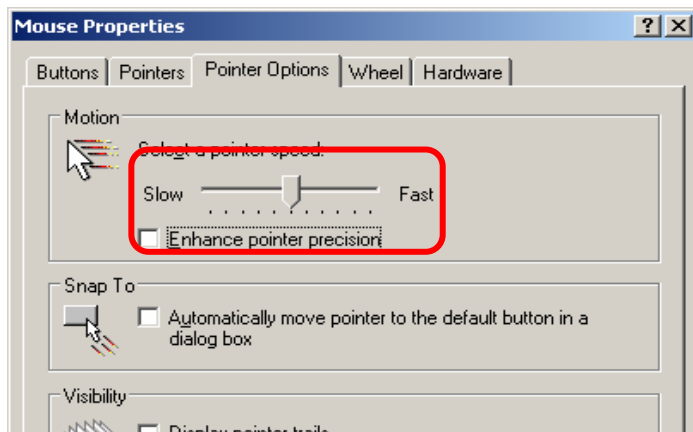
Setting a Management PC

The following provides management PC considerations to connect the server and a management PC.

Setting Your Browser

Configure the following.
- Enable SSL.

Supported browsers

The following browsers are supported.
-   Microsoft Internet Explorer 6.0
- Netscape 7.0
- Mozilla 1.6

Java2 Runtime Environment

Java2 Runtime Environment, Standard Edition 1.4.2_04 or later is required.
Follow the steps below if you use EXPRESSBUILDER for installation:

(1) Activate Windows on the PC on which you want to install Java2 Runtime Environment and set the
     "EXPRESSBUILDER" CD-ROM.
(2) By the auto start-up function, the master control menu of EXPRESSBUILDER appears.
     Click "Software Setup" and then "DianaScope", and then run the installer of JRE, which you find in the
     DianaScope install menu.

● When the OS of the management PC is Linux:

The installer of JRE (Linux) is stored at the following directory of "NEC EXPRESSBUILDER"CD-ROM.

/dianascope/jre_x

To install JRE, log in as a root user, or obtain the root authority by using the "su" command.

(1) Copy the JRE installer to any directory.

The following is an example of copying the installer from NEC EXPRESSBUILDER to "/user/local/bin."

cp /mnt/cdrom/dianascope/jre_x/j2re-1_4_2_09-linux-i586.rpm.bin/usr/local/bin.

(2) Move to the directory to which you copied the JRE installer in the previous step.

The following is an example of copying the installer to "/user/local/bin."

cd /user/local/bin

(3) Extract the JRE installer.

./j2re-1_4_2_09-linux-i586.rpm.bin

(4) Install JRE. JRE is installed to the directories of each version in "/usr/java."

rpm –ivh ./j2re-1_4_2_09-linux-i586.rpm

(5) Add the environment variable, "JAVA_HOME." Enter the name of the directory to which JRE has been
     installed.

In case of "bash":

export JAVA_HOME=/usr/java/j2re1.4.2_09

In case of "tcsh":

setenv JAVA_HOME=/usr/java/j2re1.4.2_09

(6) Specify the JRE path.

In case of "bash":

export PATH=$JAVA_HOME/bin:$PATH

In case of "tcsh":

setenv PATH $JAVA_HOME/bin:$PATH

IMPORTANT:

When using the Mozilla browser, create a symbolic link to Java Plug-in at the plugins directory of Mozilla.

* If you want to install the latest Java Runtime, download it from the following site. If you use DianaScope on the same management PC, use Java2 Runtime Environment, which you can find in the "EXPRESSBUILDER"CD-ROM.

http://java.sun.com/j2se/

If you access the login page without installing Java2 Runtime Environment, the following message may appear. Check the message and perform installation.
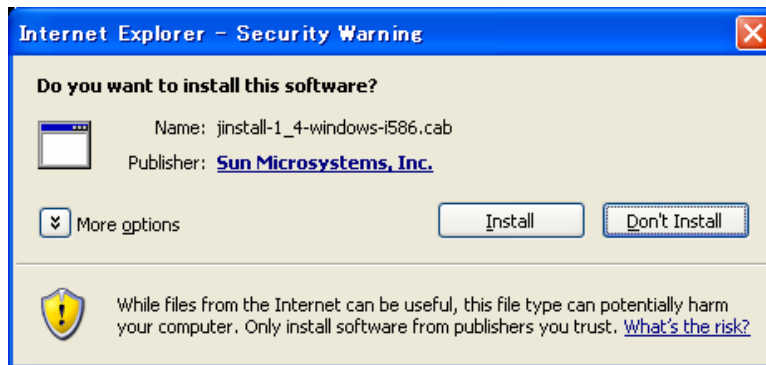
Using Remote Management

Overview

You can control power of this server and use the remote KVM console from a web browser by using web server functions of BMC.

This function is achieved by Java Applet.

How to get connected

From a Web browser on the management PC, access the following URL.
URL: http://BMC_HostPort/index.htm

TIPS:

■ "BMC_HostPort" is a BMC IP address or host name followed by a colon and http port number. If the http port number is 80 (the default value), you can omit the port number.

When connecting to network which supports DHCP protocol:

The default host name of BMC is ARMC characters followed by the MAC address if you use DHCP functions and automatically register it with your DNS server.

```
IP Address    : 192.168.1.1
User Name     : administrator                    Default host
Password      : (None)
Host Name     : ARMCXXXXXXXXXXXX
```

When connecting to network which does not support DHCP protocol:

(1) The default IP address of the LAN of the managed server is "192.168.1.1" for both CPU/IP module #0 and #1. If you want to access the network that does not support DHCP protocol, access the network that the default IP address can use, and then set the IP address according to your network environment from the managing PC (see "BMC Settings").

(2) If you cannot use the default IP "192.168.1.1", start up the "EXPRESSBUILDER" CD-ROM on the server and select [Tools] → [System Management] → [Set System Management Parameters]→ [Configuration]. Select [New] to register new settings, or [Change] to change the settings. Then, set IP addresses of the managed LAN ports on the [BMC Configuration] menu.
LAN1: CPU/IO Module#0 management LAN port
LAN2: CPU/IO Module#1 management LAN port
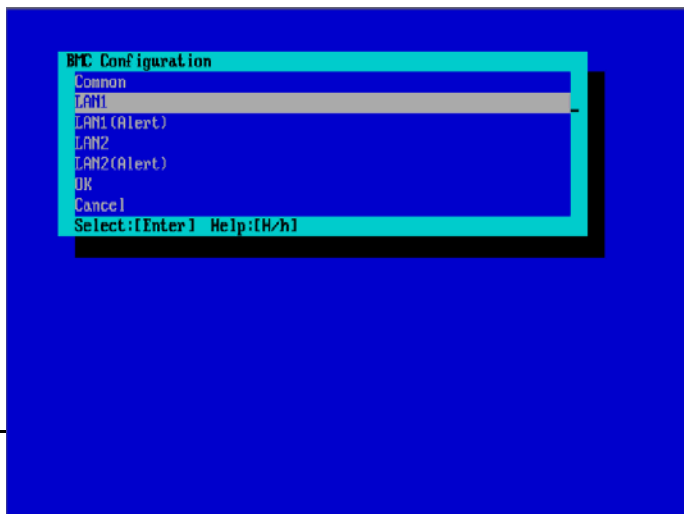
The following is a configuration screen for LAN1 (CPU/IO module #0). Specify an IP address to use. Make settings for LAN2 (CPU/IO module #1) in the same manner.

For the settings to take effect, you need to execute [OK] on the previous menu, "BMC Configuration" window.

```
LAN1
                           :
*Server
  IP Address               [0.0.0.0]
  Subnet Mask              [255.255.255.0]
  Default Gateway          [0.0.0.0]
  MAC Address             [00.00.00.00.00.00]
Return to previous menu









Please input IP Address. ( exp. 255.255.255.0 )
     >>
```
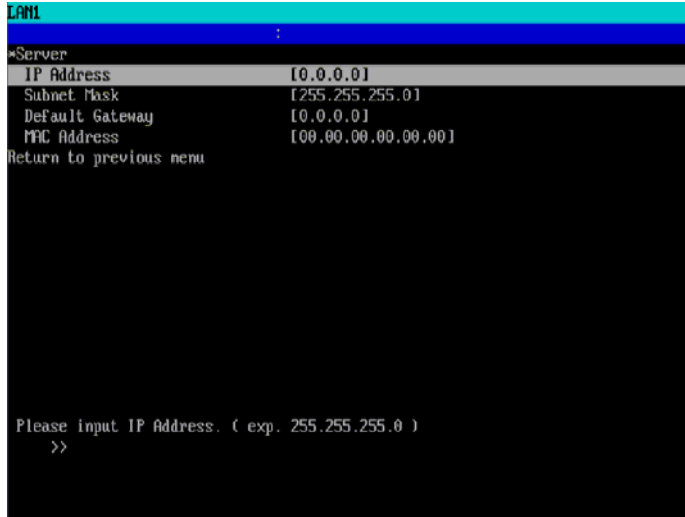
TIPS:

To disable the remote management console function, make the following settings from the EXPRESSBUILDER CD-ROM. Load the EXPRESSBUILDER CD-ROM on the server, and from the main menu, select [Tools] → [System Management] → [Set FT Remote Management Card (LAN1/LAN2)]. Select [Disable] on [Remote Management Console] and register the setting. The host name, the domain name, and the IP address cannot be modified on this screen.

The image below shows the setting screen for LAN1 (CPU/IO module #0).

```
Set FT Remote Management Card(LAN1)
                           :
HostName      [ARMC00XXXXXXXXXX]
DomainName    []
IP Address    [192.168.1.1]
Remote Management Console        [Enable]                    _

OK
Cancel










Select:[Enter]  Help:[H/h]
```
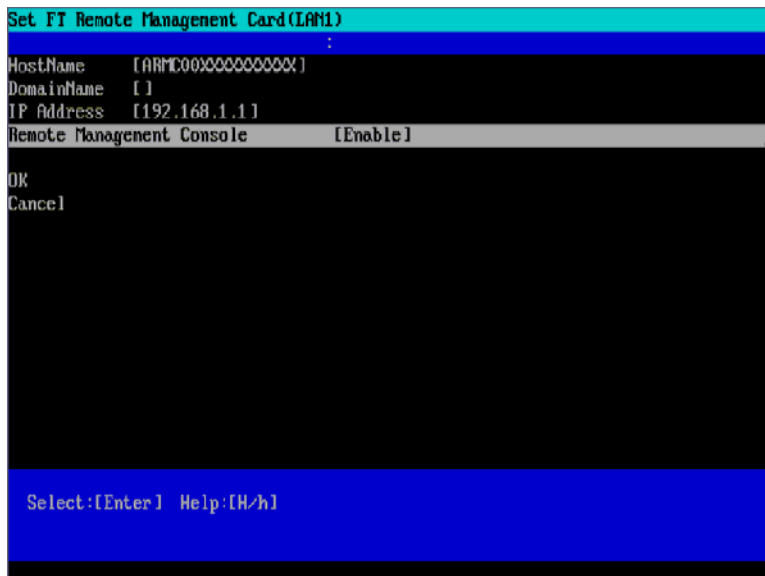
If you use remote management for the first time, the "Waning - Security" dialogue box as shown below may be displayed. Check the message, and then click [Yes] [No], or [Always]. Then you will see the login page. If you are not sure, click [No].
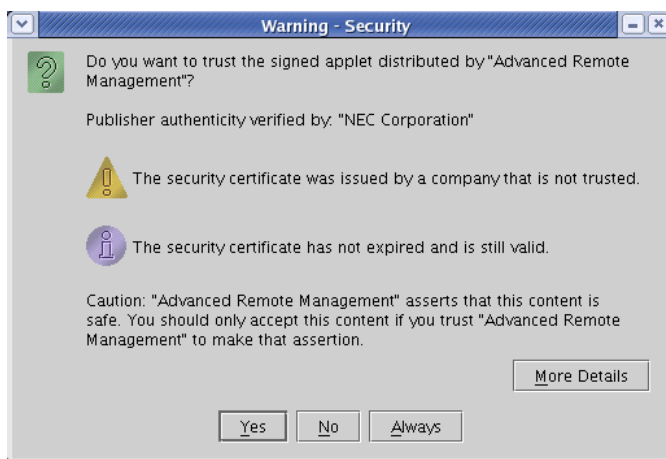
TIPS:

If you use SSL for access, the "Warning - Security" dialogue box(es) for server certification may be displayed for SSL in addition to the dialogue box shown above.

Login and logout

Login

When the login page appears, enter the user name and password, and then click [login].

When you login for the first time, use the following default user name and password.

Default user name: administrator
Default password: None (enter no data)

IMPORTANT:

By default, no password is set. Set your password immediately after login.

For security, it is recommended to change the default user name as well.

For information on settings and modification, see "BMC Settings" described later.

When the password is authenticated, the following end user license agreement is displayed.
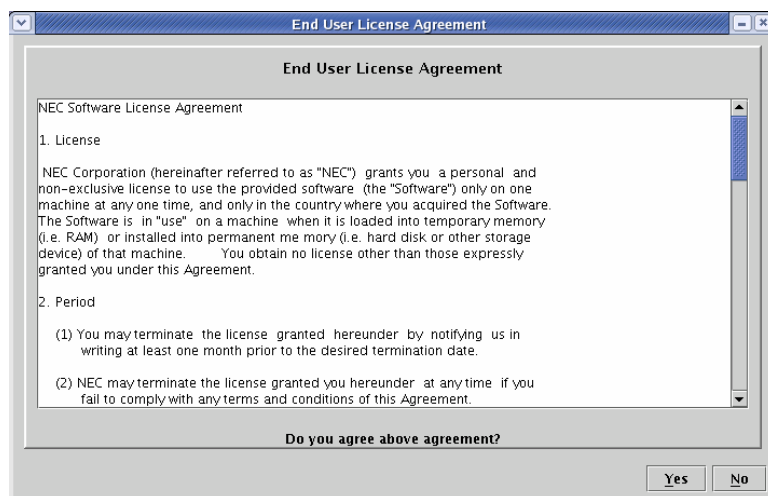
Read the agreement carefully.
If you can agree, click [Yes], and you can start using remote management functions.
If you cannot agree, click [No]. You cannot use remote management functions.

TIPS:

If you click [Yes], you do not see this message again because the data will be stored on the management PC.

Logout

Click the File menu and select Exit to logout. When you log out, the main window closes and you will return to the login page on the browser.

Main Window
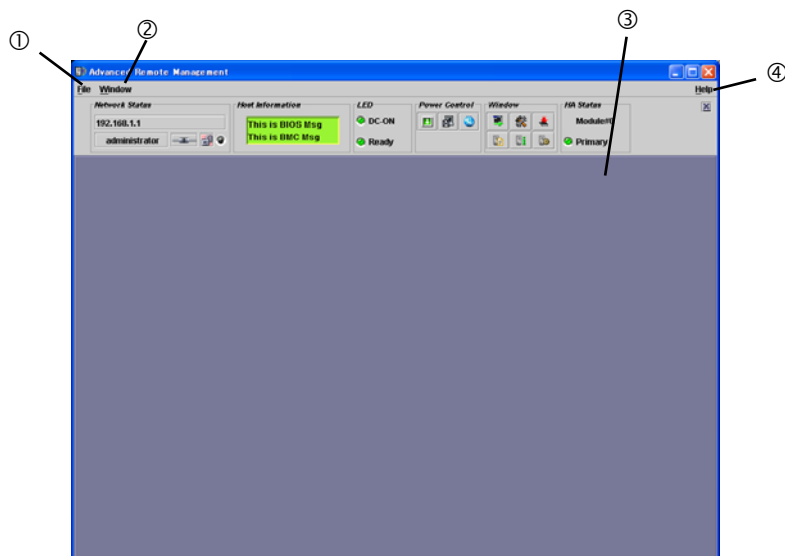
(1)   Click this to show the File menu.

Click "Exit" to quit this applet.

(2)   Click this to show the Window menu.

From the Window menu, you can open windows including the KVM console window.

(3)   Main frame

A window is shown here.

(4)   Click this to show the Help menu.

Click "Help" to see the version information of this applet.

Control panel

The control panel allows you to see the server status and to control power.

The control panel also allows you to activate windows.

Control panel functions
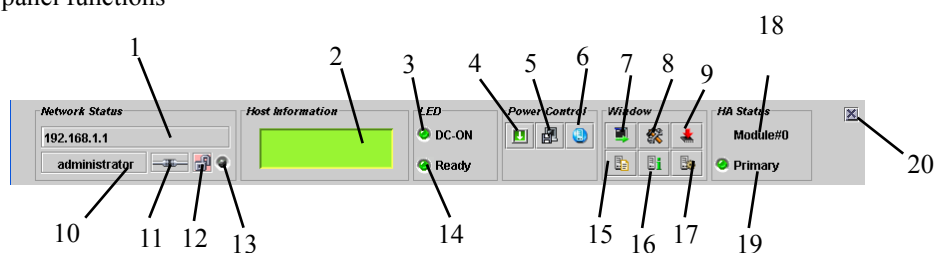
(1) Displays the BMC host name or IP address

(2) Displays the LCD of the server.

(3) The power lamp of the server telling you of the power status

(4) The POWER switch of the server (the same as pressing the POWER switch of the server)

(5) Performs memory dump on the server (the same as pressing the DUMP switch of the server).

(6) Makes the Unit ID lamp of the server blink

(7) Starts up the remote KVM console.

(8) Starts up the BMC configuration.

(9) Stats up the firmware update.

(10) A user name is displayed here.

(11) Displays the connectivity with BMC.

(12) Displays communication security status

(13) Displays network access status

(14) The status lamp of the server telling you of the server status.

(15) Opens the window showing system event logs (SEL).

(16) Opens the window showing the sensor device information (SDR).

(17) Opens the window showing the information on parts to be replaced for maintenance (FRU).

(18) Displays the slot position information (module #0 or module #1)

(19) Displays the slot status (primary or secondary).

(20) Hides the control panel

Remote KVM Console

Remote KVM console functions of the BMC allow you to transfer a local console to the browser on the management PC over a network.

You can make full access to the server from the management PC using video, keyboard and mouse.

CHECK:

■　The remote KVM console supports the following five resolutions:

1024 x 768

800 x 600

640 x 480

720 x 400

720 x 350

■　Set the resolution of the device to one of these values. If any value other than these values, nothing will be shown on the remote KVM console.

■　The mouse cannot be used on the remote KVM console on the operation window of EXPRESSBUILDER.

TIPS:

KVM is an acronym for keyboard, video and mouse.

The remote KVM control is different from those using a serial console remotely in that it allows you using graphics directly and remotely.

CHECK:

You cannot use the remote KVM remote control for connection via proxy.

When you use the remote KVM console login with the settings where no proxy is used.

Starting up the remote KVM console window

Click the start-up icon [ ] on the remote KVM console on the control panel to display the KVM console window.

IMPORTANT:

NEVER open the remote KVM console when you login the BMC from a local console.

If you do so, data entry from the keyboard or mouse becomes disabled.

CHECK:

You cannot use the KVM console on the secondary side. Use it on the primary side.

Items on the remote KVM console window
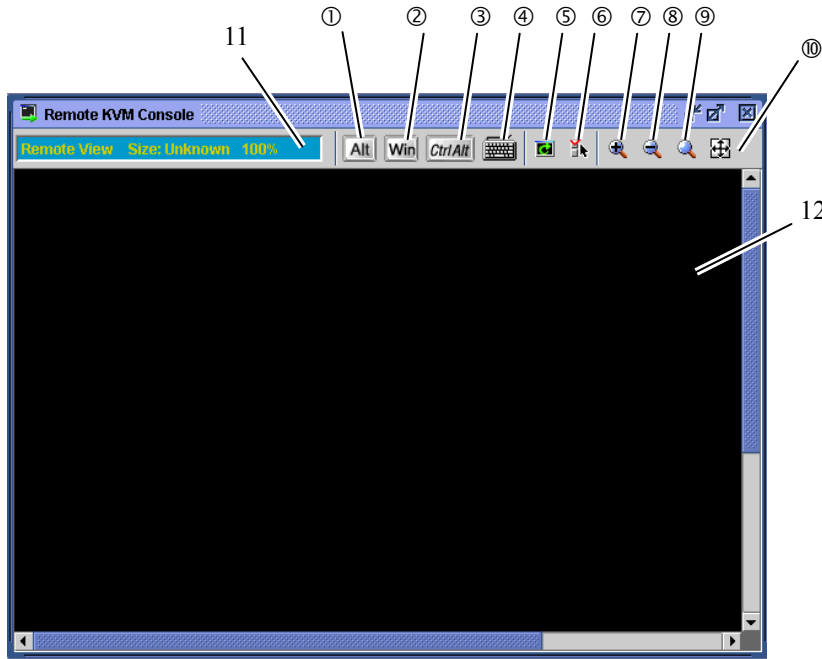
(1), **(2)** and **(3)** are special icons. Use them when you want to operate special keys.

(4) Virtual keyboard icon: use this icon when you want to enter a special key other than those mentioned above.

(5) Screen refresh icon: use this icon to refresh the window.

(6) KVM properties icon.

(7) Enlarge icon: use this icon to enlarge the view.

(8) Shrink icon: use this icon to reduce the view.

(9) Equal size icon: use this icon to display images in the same magnification.

(10) Window size icon: use this icon to adjust the window size to the screen size.

(11) KVM indicator showing information including resolution.

(12) Remote KVM console screen, on which the server screen is shown.

**IMPORTANT:**

When you operate **Shift** + **Caps Lock** or **Num Lock** on the remote KVM console window, such action may not be reflected in the **Shift** + **Caps Lock** or **Num Lock** status of the management PC LED. Likewise, on the server, the Caps Lock or Num Lock status may become different from LED status after the remote KVM console is used. If this happens, press the key(s) on the device in issue so that LED status and actual operation match.

Operating special keys

Operation of special keys from the keyboard of the management PC is not reflected in the server. Click the following special key icons for operation on the host server.

[Alt] (raised) [Alt] (pressed): the status change every time you click the icon.

[Ctrl Alt] (raised) [Ctrl Alt] (pressed): the status change every time you click the icon.

IMPORTANT:

For example, if you want to enter "**Ctrl** + **Alt** + **Del**", click the [Ctrl] and [Alt] icons and then press the **Del** key on the keyboard. By doing so "**Ctrl** + **Alt** + **Del**" is sent to the server. After the operation, click the [Ctrl] and [Alt] icons to cancel the special key operation.

Win (Windows key icon)

Virtual keyboard

When you click the virtual keyboard icon [ ], the virtual keyboard appears.

You can select either 104 or 109 keyboard from the tab.
By clicking buttons corresponding to each key, you can make entry to the host server.

Zoom-in and zoom-out of the view

Click the [ ] icon to zoom in the view.

Click the [ ] icon to zoom out the view.

Click the [ ] icon to display the screen in the same size as the device.

Click the window resize icon [ ] to adjust the remote KVM console window size to the remote screen size.

Refreshing the screen

Click the screen refresh icon [ ] to refresh the remote KVM console screen. If the screen is distorted, refresh the screen.

Modifying properties

When you click the KVM properties icon [ ], the KVM properties window appears, in which you can specify an interval between screen refreshes.

IMPORTANT:

A shorter interval will reduce garbage remaining on the screen. However, note that a shorter interval can slow down the terminal response speed or impact network traffic.

IPMI information

System event logs (SEL), sensor data record (SDR), or field replacement unit (FRU) can be displayed. Such information is referred to as the IPMI information. The information can be used to examine errors and events on the server and identify which part should be replaced.

System Event Log (SEL)

When you click the icon to start up system event logs [ ] on the control panel, SEL information is collected from the BMC and shown on the system event log (SEL) window as shown below.
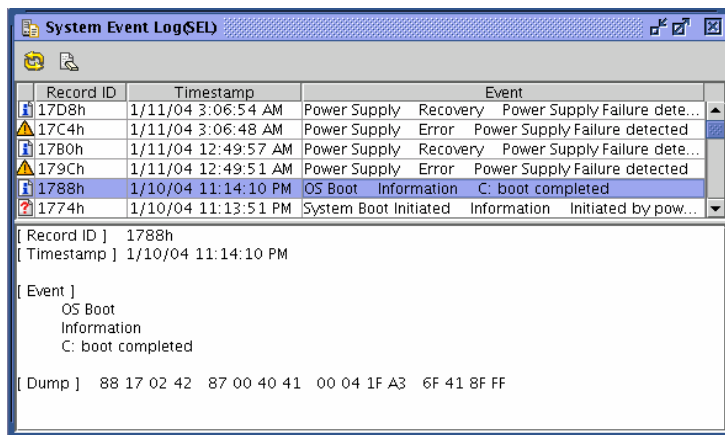
The upper pane shows a list of system event logs while the lower pane shows details of the entry selected in the list.

By clicking the reloading icon [ ], you can reload the SEL information from the BMC and display the latest information.

Clearing the SEL information

By clicking the SEL clear icon [ ], you can clear the SEL information on the BMC. As a message for confirmation appears, click [Yes] if it is OK to clear the information. If you click [No], the SEL information will not be cleared.

Sensor Data Record (SDR)

When you click the icon to start up sensor device information (SDR) [ ]on the control panel, the SDR information is collected from the BMC and shown on the sensor device information (SDR) window as shown below.
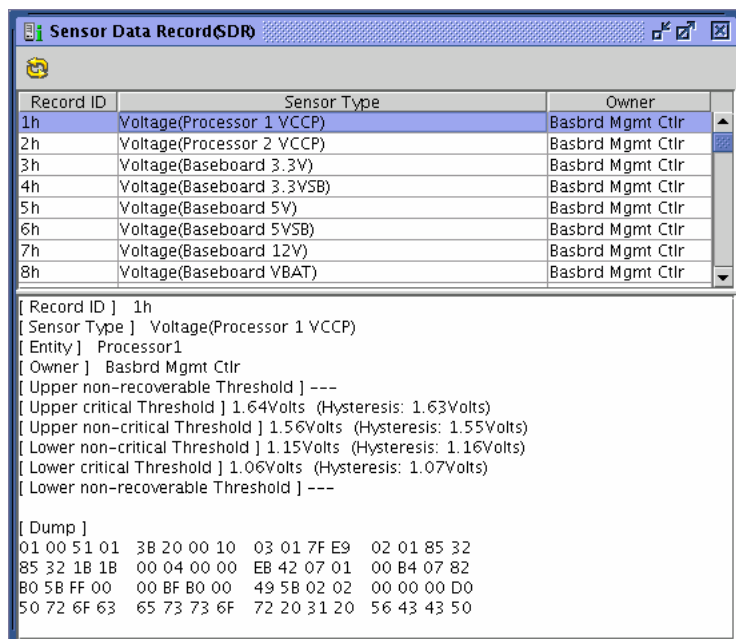
The upper pane shows a list while the lower pane shows details of the entry selected in the list.

TIPS:

SDR information is definition data on device sensors.

The BMC monitors sensors according to this information.

Field Replaceable Unit (FRU)

When you click the icon to start up information on parts to be replaced for maintenance (FRU) [] on the control panel, FRU information is collected from the BMC and shown on the window for parts to be replaced for maintenance (FRU) as shown below.
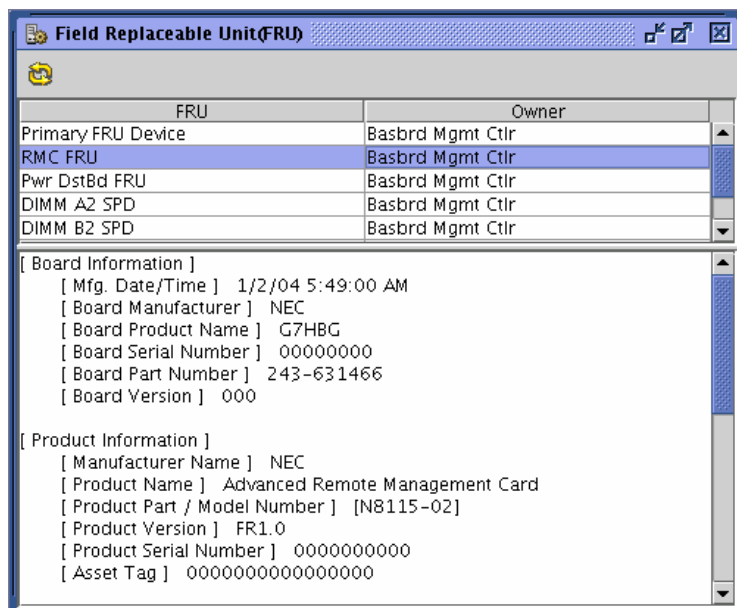
The upper pane shows a list while the lower pane shows details of the entry selected in the list.

BMC Configuration

You can configure the BMC settings.

Starting up the BMC Configuration window
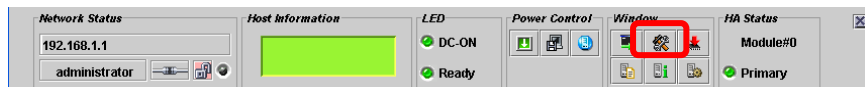
When you click the icon to start up the BMC configuration [ ] on Control Panel, the BMC configuration window appears as shown below.
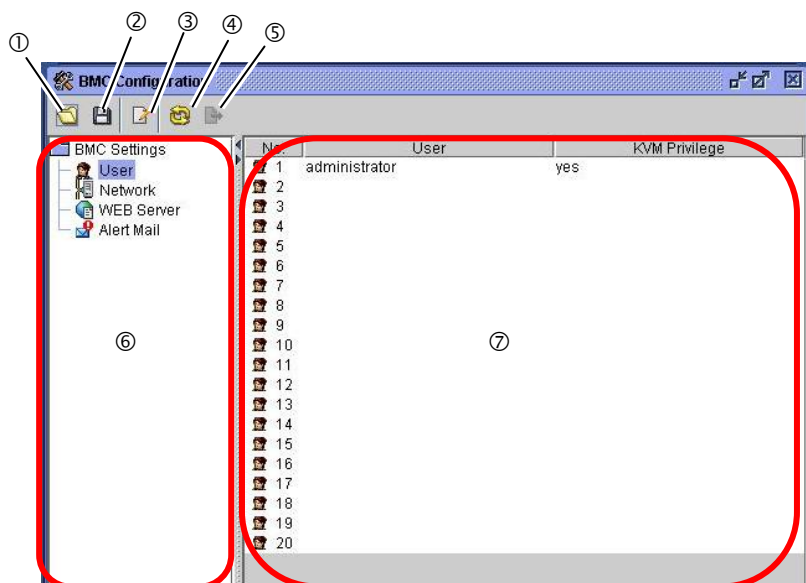
(1) Reads the BMC configuration file
(2) Saves the BMC configuration file
(3) Edits the BMC configuration
(4) Reloads the BMC configuration
(5) Sets the data loaded from the file to the BMC in a batch
(6) Lets you select what to be configured
(7) Shows the overall information on the current values

TIPS:
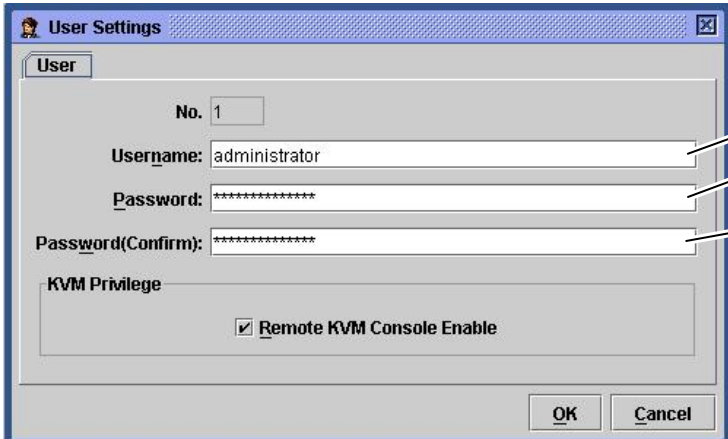
When you load configuration from the file, choose to make settings of the BMC in a batch.

User Settings

Here you can make user account settings.

When you click [User] on the left pane of the BMC configuration window, a total of 20 accounts appears in the right pane.

When you select the account you want to modify or add and click the icon for editing [📝], the following window for editing a user account appears.

(1) Enter the user name.
(2) Enter the password.
(3) You can specify whether or not to enable the remote KVM console. Select the check box if you want to enable it.

When you click [OK], all the information you have edited will be written into the BMC.
When you click [Cancel], the window closes without saving what you have edited.

Network Settings

Here you can make network settings of BMC such as IP address configuration.

IMPORTANT:

■ The following ports are used for the remote management functions. If your network environment has any firewall, you also need to have configuration for the firewall.

Module name	Port number	Protocol	Direction	Module name	Port number
Remote KVW client	Not determined	UDP	← →	BMC	623
Mail server	25(*1)	TCP	← →	BMC	Not determined
WEB client	Not determined	TCP	← →	BMC	80(*2)
WEB client （SSL）	Not determined	TCP	← →	BMC	443(*3)

*1: Can be modified by selecting [BMC Settings] - [Alert Mail] - [E-Mail Alert Settings] - [SMTP] - [SMTP Port Number].

*2: Can be modified by selecting [BMC Settings] - [WEB Server] - [WEB Server Settings] - [HTTP Port Number].

*3: Can be modified by selecting [BMC Settings] - [WEB Server] - [WEB Server Settings] - [SSL Port Number].

When you click [Network] on the left pane of the BMC configuration window, the right pane shows the overall information of the network settings as shown below.
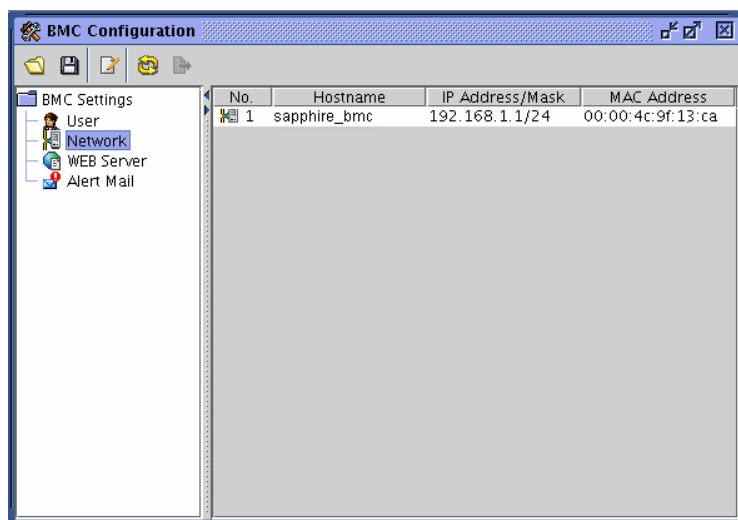
When you click the icon for editing [ ], the following window for editing appears.
The window for network settings has three tabs.

- LAN
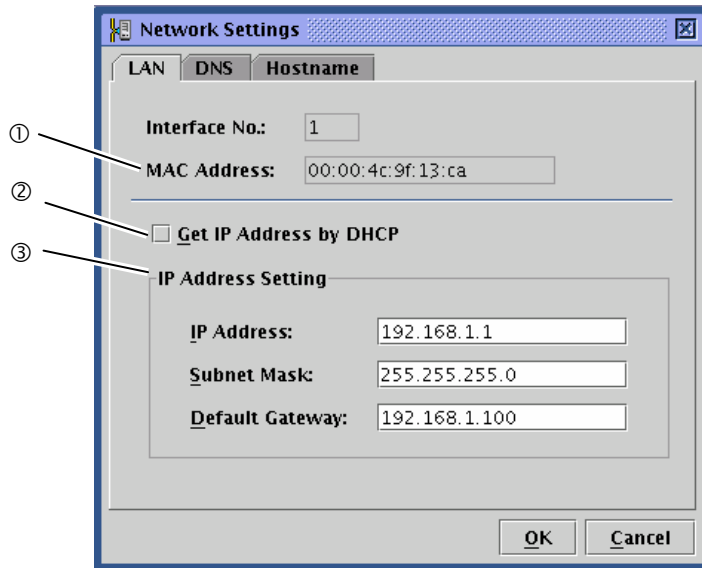
(1) The MAC address of the BMC

(2) Lets you choose whether or not to acquire an IP address automatically by DHCP.

(3) Lets you make the IP address settings if the address is not acquired automatically by DHCP. If the address is acquired automatically by DHCP, the data acquired is shown here.

IMPORTANT:

■ If you change the IP address, the current connection will be disconnected when the BMC settings are completed by clicking OK. Close the window once, and then login again by entering the newly set IP address (or host name) in the browser.

■ The login page remaining on the browser is the page you accessed by using the old address. You cannot use it to login.

■ When you configure "default gateway", the gateway, the server, the management PC should be in a state where communication over network is available.

■ If you make the settings in a state where communication is not available, you need to switch on/off the AC of the server in a state where the gateway, the server and the management PC can be communicated over the network.

- DNS
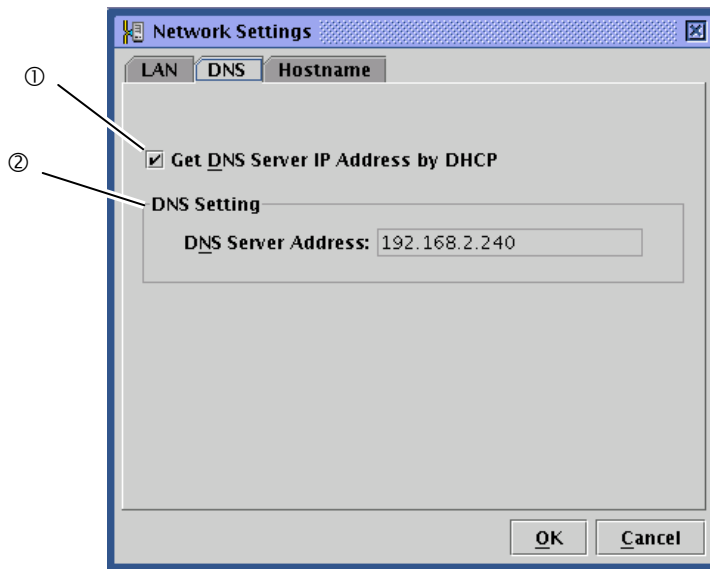
(1) Lets you select whether or not to automatically acquire the IP address of the DNS server by DHCP.

(2) If you have selected not to automatically acquire the IP address by DCHP, make settings here. If the address is acquired automatically by DHCP, the acquired address appears here.

- Host name
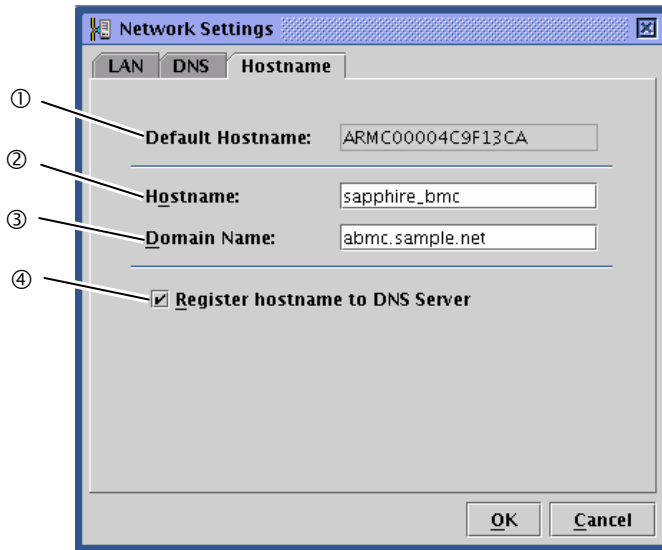
(1) The default host name to be used when no host name is set when DHCP is used

(2) Set the BMC host name. If this option is not configured, the default host name mentioned in 1) will be used.

(3) Set the domain name of the network to which the BMC belongs.

(4) Choose whether or not to register the host name with the DNS server.

TIPS:

It is recommended to set the BMC host name to be easily guessed from the server's host name on the OS (i.e. in Windows, the computer name).

For example, you may set the BMC host name as "sapphire_bmc" if the server's host name on the OS is "sapphire."

IMPORTANT:

Because the BMC use a LAN controller independent of the OS, you cannot use the same host and domain name used by the server's OS for the BMC. You can use the same host name if they belong to different network domains.

When you click [OK], all of what you have set in the three tabs will be written into the BMC.
When you click [Cancel], the editing window closes without saving what you have edited.

WEB server settings

Here you can make web server settings such as HTTP port settings for the BMC.

When you click [Web Server] on the left pane of the BMC configuration window, the right pane shows the overall information of the web server settings.
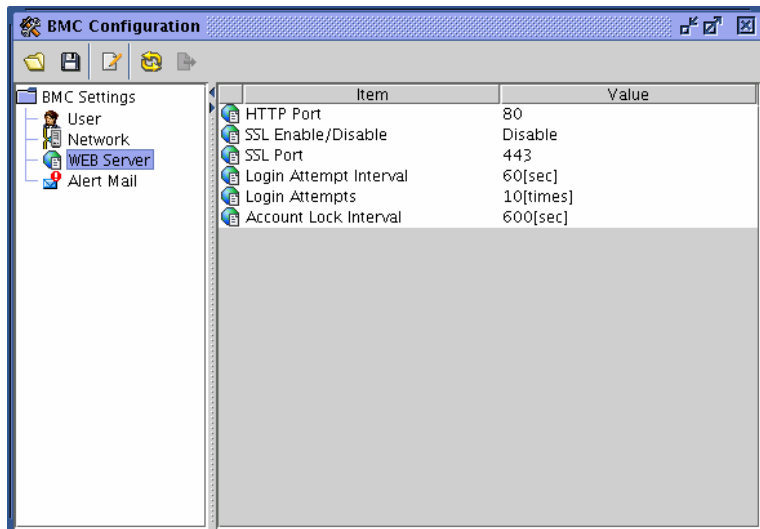
IMPORTANT:

■ When you change the HTTP port number, settings of SSL (enable/disable), or SSL port number, the current connection will be temporarily disconnected. Close the window and exit, and then login again by entering the newly set port number in the browser.

■ The login page remaining on the browser is the page you accessed by using old web server settings. You cannot use it to login.

When you click the icon for editing [ ], the window for editing appears as shown below.
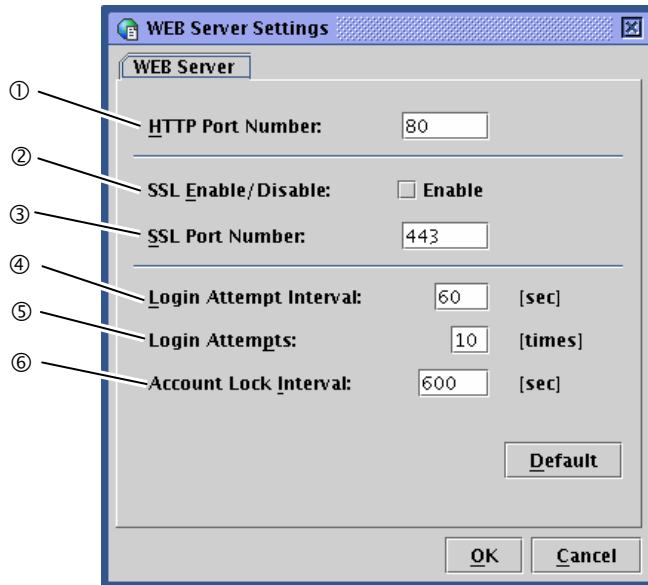
(1) Specify the HTTP port number.

(2) Specify whether or not to enable SSL communication. If you select the check box for enabling, connection by HTTPS (SSL enabled) is enabled. Clear the check box if you want to disable SSL.

> **TIPS:**
>
> It is recommended to use connection by the encrypted HTTPS protocol unless you have any specific reason such as SSL cannot be used. By default, this option is disabled.

(3) Specify the SSL port number.

(4) Specify the login trial period during which you can try login again if you have failed to login.

(5) Specify the number of login retries. If the number of retries exceeds the number specified here during the period specified in (4), login retries will be rejected for the time period specified in (6).

(6) Specify the time period during which login is rejected.

> **TIPS:**
>
> Though the three steps mentioned above are effective in blocking automatic unauthorized logins, they do not completely block such logins.

If you click [Default], the default values for HTTP port number, SSL port number, login trial period, number of login retries and the account lock period are displayed. The SSL check box configuration remains the same.
When you click [OK], all of what you have set will be written into the BMC.
When you click [Cancel], the editing window closes without saving what you have edited.

Alert Mail Configuration

Here you can make alert mail settings for BMC.

When you click [Alert Mail] on the left pane of the BMC configuration window, the right pane shows the summary of the alert mail settings.
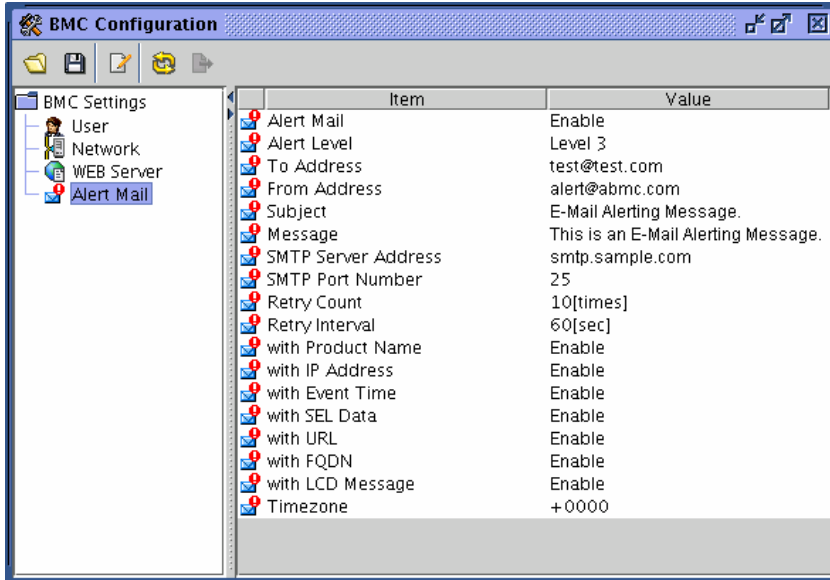
When you click the icon for editing [ ], the window for editing appears as shown in the next page. The window for editing has four tabs.

- Basic
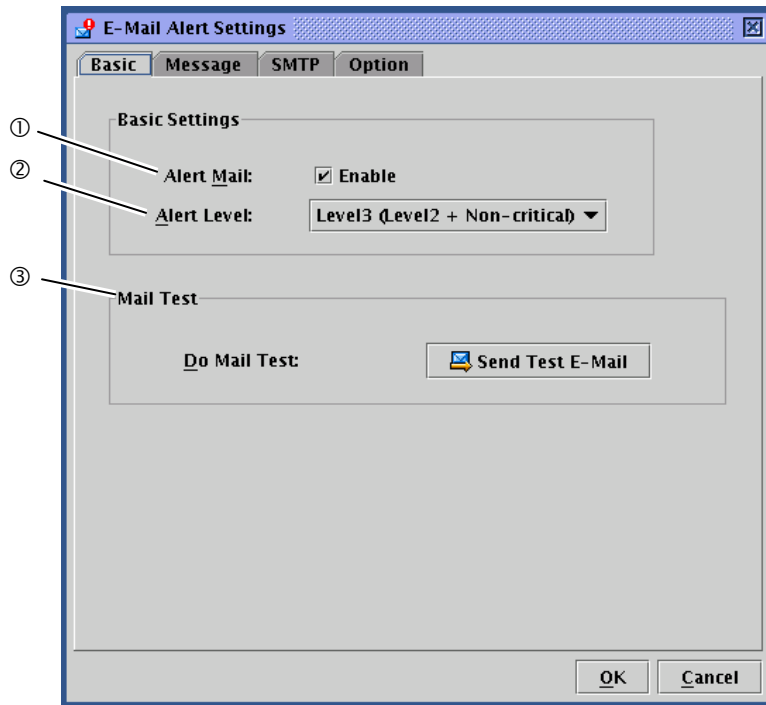
(1) Specify whether or not to enable the alert mail functions by the check box. When you select the check box, you can make mail-related settings.

(2) Select a notice level from six levels. Levels are categorized according to severity of factor events.

(3) Allows you to send a test mail.

IMPORTANT:

Perform the mail test after you have completely configured "E-Mail Alert Settings" described in the following pages.

Making entries in the editing window does not complete settings. You need to click [OK] after entering all the required information to complete the BMC settings.

TIPS:

The X-Priority: field in the mail header changes according to the severity of factoring event.

Non-recoverable/Critical   X-Priority: 1

Non-critical   X-Priority: 3

OK/Information/Monitoring   X-Priority: 5

- Message

(1) Specify mail address of receivers to whom alert mail is sent. You can specify up to four addresses.

(2) Specify the sender's address used in alert mail.

(3) Enter the subject to be given to alert mail.

(4) Select whether or not to enable the body messages for all alert mail, which is configured in the next step.

(5) Enter the body message to be used in all alert mail. If you do not need such a body message, clear the check box of (4). If you click [Get Default Message], the recommended message appears.

TIPS:

The subject and message you configure here will be used in all alert mails.

- SMTP
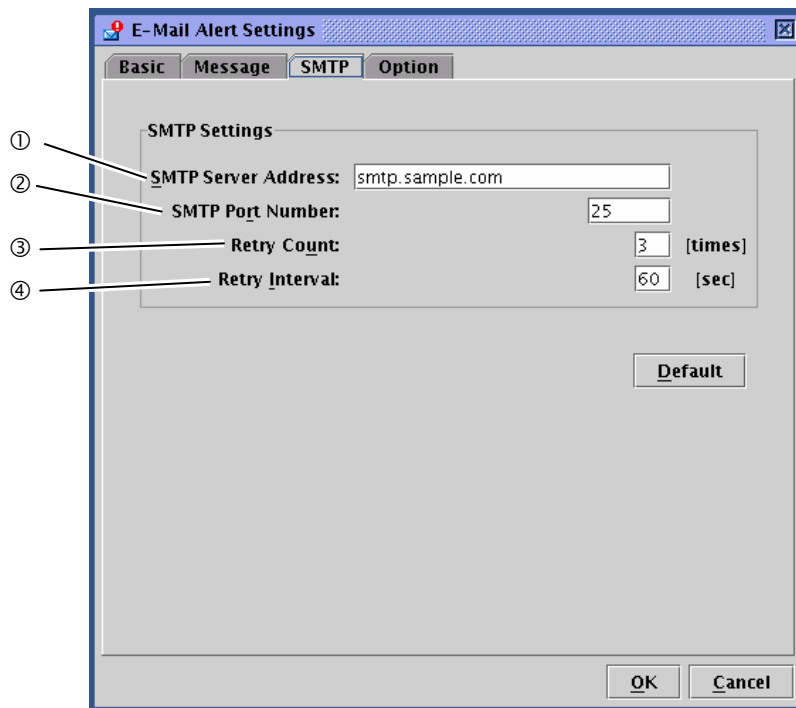
(1) Specify the address of the SMTP server. You can enter the IP address or host name.

(2) Specify the port number of the SMTP server.

(3) Specify the number to be made if sending a mail has failed.

(4) Specify the time period in seconds to wait for next retry.

If you click [Default], the default values for SMTP port number, number of retries, and retry interval appears. It is recommended to use the default values unless you have specific reasons.

IMPORTANT:

This card does not support SMTP authentication (SMTP-AUTH).

- Option
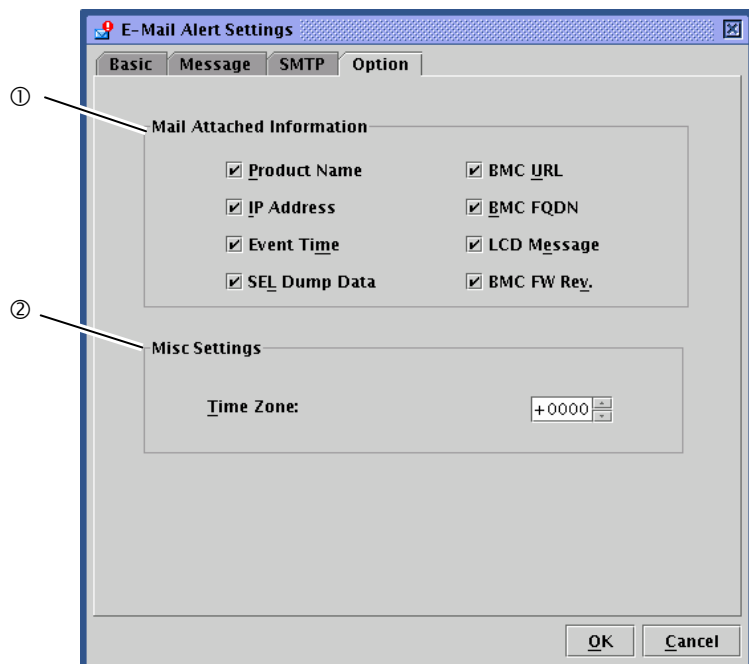
(1) Specify information to be attached to the body of alert mail.

The information you specify here will be contained in the body of alert mail with the message you specified in the message box in the message tab.

Product Information	Product name, code, number of the server
IP Address	IP address of the BMC
Event Time	Time that the event occurred
SEL Dump Data	Data representing system event logs (SEL) in the hexadecimal format
BMC URL	URL of the RMC login page
BMC FQDN	Full domain name of the BMC
LCD Message	LDC message on the server at the time of event occurrence
BMC FW Rev.	Revision information of the BMC firmware/SDR/PIA

(2) Used in the date filed of the mail header of alert mail.

Firmware Update

You can update applets, KVM firmware, BMC firmware, sensor device information (SDR), and platform information (PIA).

Starting up the firmware update window

When you click the icon to start up firmware update [ ] on the control panel, each pieces of revision information is loaded from the BMC to display the following firmware update window.
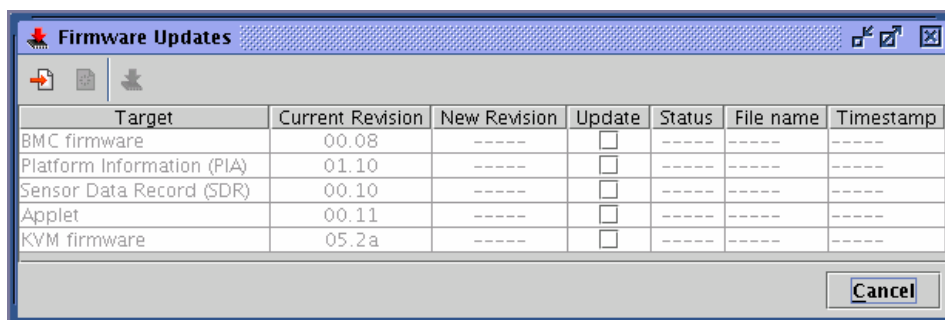
If you click [Cancel], the firmware update window closes without making any changes.

The following pages provide step-by-step instructions for update.

Loading update data files

When you click the icon for adding update files [🔼], the window to select a file appears.
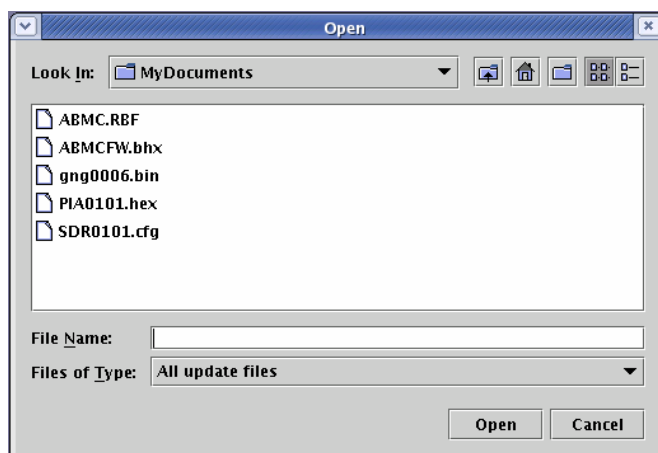
Specify an update data file.

When you click [Open] after specifying the file, loading of the file begins.

Wait for file loading to complete.

TIPS:

You can update in a batch.

If there are more than one update targets, all the information of the update targets must be loaded. You can select more than one file to be loaded at the same time.

Confirming revision

When loading data files completes, information on current revisions, loaded revisions and file data (file names and time stamps) appears on the window.

Check the information carefully.
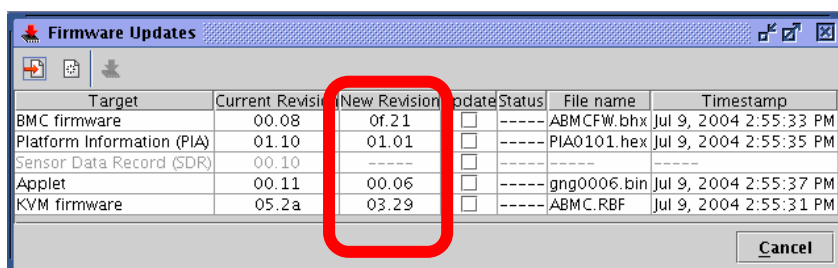
CHECK:

Check each revision carefully because downgrading is possible as well.

If you click the icon for clearing update data [🖻], all loaded data will be discarded. When you click [Cancel], the update window will be closed without saving any loaded data.

Selecting what to be upgraded

Select check boxes of update targets.
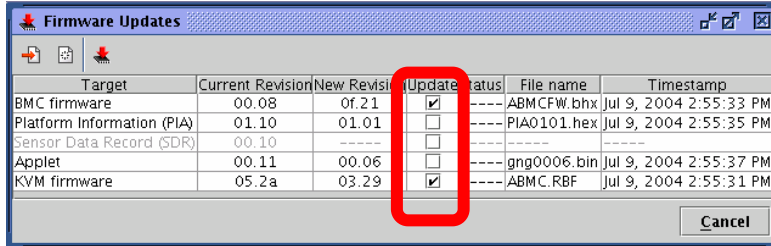
CHECK:

Only those selected here will be written in.

Items with no check box selected will not be written in even if files have been loaded.

IMPORTANT:

If you update both SDR and PIA, make sure to write in simultaneously. If writing is done twice, the first writing will not take effect.

Writing update data into the BMC

When you click the icon for writing update [🔻], the writing the update data into the BMC begins.
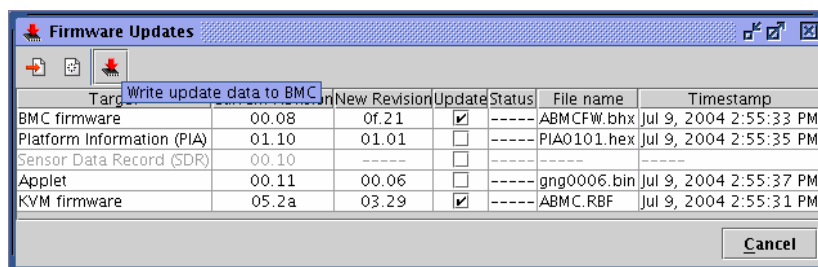
As shown below, the window showing writing process appears for each update target.
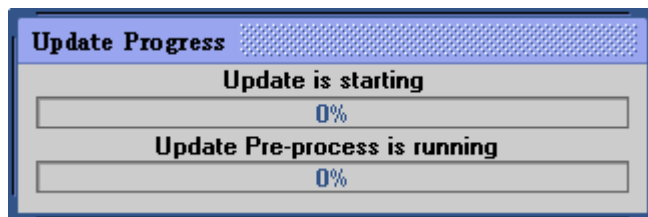
If any error is detected during the writing process, an error message is displayed and the process terminates.

End of writing

When writing is completed, the "Status" column displays the result for each target.
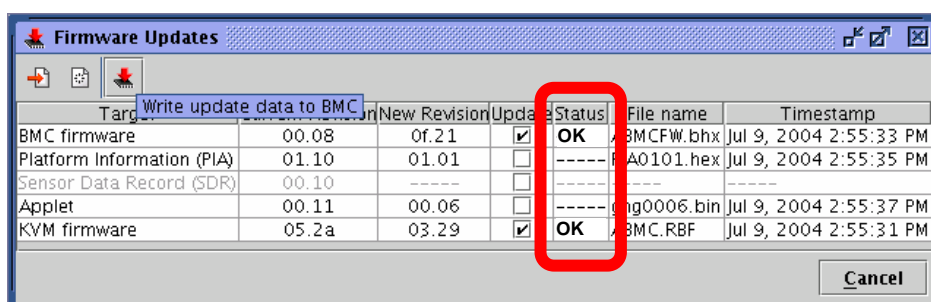
CHECK:

■ To apply updates for targets other than applet, reboot the server or power off and then on the server.

■ When you rebooted or power on the server to apply an update for BMC software, SDR, or PIA, the connection with BMC will be disconnected. Because of this, you need to log in again.

■ To apply updates for applets, log out once, close all browsers, and then login again. You do not need to reboot the server.

Troubleshooting

Error Messages

When using the remote management, an error dialog box may appear on the management PC if some problem occurs. Messages and actions for the errors are described below.

Fatal errors

No.	Error message	Action
1	Fatal error.　JavaVM quits.	Try logging in again. If the same message continues to appear, contact your service representative.
2	A fatal software error has occurred.	Try logging in again. If the same message continues to appear, contact your service representative.

Login error

No.	Error message	Action
1	Authentication error	Check the user name and password, and then enter them again.

Access privilege error

No.	Error message	Action
1	Unauthorized operation.　You have no privilege to perform the operation.	Try performing the operation with administrator's privileges. Consult your administrator.

Network errors

No.	Error message	Action
1	The HTTP communication failed.	Check the network environment and try again. Contact your service representative if the error persists. .
2	Could not resolve the IP address.	Check the network environment. You cannot use Remote KVM Console for connections via proxy.
3	Unable to reach the target host.	Check the network environment. You cannot use Remote KVM Console for connections via proxy.
4	Failed to download applet.	Check the network environment and try again. Contact your service representative if the error persists.
5	The RMCP+ session is closed.	Check the network environment. If there is no network problem, contact your service representative.
6	Failed to establish the RMCP+ session.	Check the network environment. If there is no network problem, contact your service representative.
7	The RMCP+ transmission failed.	Check the network environment. If there is no network problem, contact your service representative.
8	The specified RMCP+ protocol cannot be used.	Check the network environment. If there is no network problem, contact your service representative.
9	BMC resources to establish a new RMCP+ session are insufficient.	Try again after a connection from other client is finished.
10	The RMCP+ session time-out occurred.	Check the network environment and server. If you do not find any problem, contact your service representative.
11	The HTTP communication failed.	Check the network environment and try again. Contact your service representative if the error persists. .

BMC-related error

No.	Error message	Action
1	The IPMI request was aborted.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
2	Received bad response from BMC.	Check the server. A failure may have occurred in BMC. If you do not find any problem, contact your service representative.
3	BMC does not support IPMI 2.0 functions.	Contact your service representative.
4	Failed to run the IPMI command.	Check the server. A failure may have occurred in BMC. If you do not find any problem, contact your service representative.
5	Failed to send the IPMI message.	Check the network environment. If the network has no problem, contact your service representative.
6	Illegal IPMI message was requested.	Contact your service representative.
7	Specified target is not present.	Check the server. A failure may have occurred in BMC. If you do not find any problem, contact your service representative.

Errors on the Remote KVM Console

No.	Error message	Action
1	Failed to disable Remote KVM Console.	Check the network environment and try again. Contact your service representative if the error persists.
2	Failed to enable Remote KVM Console.	Check the network environment and try again. Contact your service representative if the error persists.
3	KVM packet transmission failed.	Check the network environment and server. If you do not find any problem, contact your service representative.
4	The KVM request was aborted.	This is not a problem. Click [OK] and close the message box.
5	UDP packet transmission failed.	Check the network environment and server. If you do not find any problem, contact your service representative.
6	Remote KVM console can not activate because it is disabled	Refer to page 4-55 and enable remote KVM console.
7	Remote KVM Console is used by other client.	Try again after the client using Remote KVM Console finishes using.
8	Failed to shut down Remote KVM Console.	Use Remote KVM Console after waiting 3 or more minutes.
9	Failed to make settings.	Check the network environment and try again. Contact your service representative if the error persists. .
10	The UDP connection is closed.	Check the network environment and server. If you do not find any problem, contact your service representative.

System event log (SEL) display errors

No.	Error message	Action
1	Failed to clear session event logs of BMC.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
2	Failed to acquire system event logs.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.

Sensor data records (SDR) display error

No.	Error message	Action
1	Failed to acquire sensor data records.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.

Field replaceable (FRU) information display error

No.	Error message	Action
1	Failed to acquire field replaceable units information.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.

BMC configuration errors

No.	Error message	Action
1	Failed to make settings:	Check the network environment and try again. Contact your service representative if the error persists.
2	Failed to acquire BMC Configuration:	Check the network environment and try again. Contact your service representative if the error persists.
3	Used by other software program. Try again after a while.	Try again after a while.
4	Invalid BMC configuration file.	The BMC configuration file may be corrupted. Check the file.
5	The required XML tag is not found.	The BMC configuration file may be corrupted. Check the file.
6	Failed to write the file.	The BMC configuration file is not saved successfully. Change the location to save the file and try again.
7	Invalid user name	You can use only alphanumeric characters, minus sign (–), and underscore (_) for a user name. A user name should be 31 characters or less.
8	The user name is too long	A user name should be 31 characters or less.
9	The password is too long.	Use 16 or less characters.
10	Passwords are not matched.	Enter passwords again.
11	Invalid HTTP port number	You can only use numeric values.
12	Invalid SSL port number	You can only use numeric values.
13	HTTP/SSL should not be the same.	The same port number cannot be specified for HTTP and SSL. Specify different value.
14	Invalid login attempt period	You can only use numeric values.
15	Invalid failed login attempts	You can only use numeric values.
16	Invalid account lock period	You can only use numeric values.
17	Invalid IP address	Use numbers and periods to specify an IP address.
18	Invalid subnet mask	Use numbers and periods to specify a subnet mask.
19	Invalid default gateway	Use numbers and periods to specify a default gateway.
20	Invalid DNS server IP address	Use numbers and periods to specify the IP address of DNS server.
21	Invalid host name	You can use only alphanumeric characters, minus sign (–), and underscore (_) for a host name. A host name should be 64 characters or less.
22	Invalid domain name	You can use only alphanumeric characters, minus sign (–), and underscore (_) for a domain name. A domain name should be up to 128 characters.
23	The SMTP server address is too long.	Specify the value within 128 characters.
24	Invalid SMTP port number.	You can only use numeric values.
25	Invalid retry count	You can only use numeric values.

No.	Error message	Action
26	Invalid retry interval	You can only use numeric values.
27	"To" is too long.	Specify the value within 128 characters.
28	"From" is too long.	Specify the value within 128 characters.
29	"Subject" is too long.	Specify the value within 256 characters.
30	The message is too long.	The message should be up to 1024 characters.
31	Failed to open the file:	The specified file may not exist. Check the file name.
32	Failed to close the file:	The specified file may be corrupted.
33	Can't open the file:	The specified file may not exist. Check the file name.
34	Timeout has occurred.	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.

Firmware update errors

No.	Error message	Action
1	There are uncompleted update images on BMC as follows:	Reboot the server to complete the update.
2	Failed to acquire status of the update area.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
3	Update data is too large:	Some update files may be corrupted. Obtain update files again.
4	Failed to prepare update	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
5	Invalid file size:	The update file may be corrupted. Obtain the update file again.
6	Could not find the revision information:	Some update files may be corrupted. Obtain update files again.
7	Failed to create rollback image.	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
8	Failed to erase.	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
9	Unsupported format version:	Some update files may be corrupted. Obtain update files again.
10	Failed to load the update image file.	Some update files may be corrupted. Obtain update files again.
11	Update has failed.	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
12	Could not switch to the update mode.	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
13	Could not find the update targets:	Some update files may be corrupted. Obtain update files again.
14	Invalid address:	Some update files may be corrupted. Obtain update files again.
15	Writing has failed.	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
16	Unsupported token is detected:	Some update files may be corrupted. Obtain update files again.
17	Invalid segment information:	Some update files may be corrupted. Obtain update files again.
18	Invalid data length:	Some update files may be corrupted. Obtain update files again.
19	Failed to open the file:	The specified file may not exist. Check the file name.
20	Failed to close the file:	The specified file may be corrupted.
21	Invalid file checksum:	Some update files may be corrupted. Obtain update files again.
22	Failed to parse files.	Some update files may be corrupted. Obtain update files again.
23	Failed to parse files:	Some update files may be corrupted. Obtain update files again.
24	Failed to load files:	Some update files may be corrupted. Obtain update files again.
25	Could not find files:	Some update files may be corrupted. Obtain update files again.
26	Failed to verify	Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
27	Update will be stopped because	Check clients. A software program other than you are using may have

No.	Error message	Action
	interruption has occurred.	interrupted.
28	Online update is now being used.	Try again as necessary after online update performed by other tool is completed.
29	Failed to acquire the current revision.	The network may be busy. Try again. If the error persists, contact your service representative because a failure may have occurred in BMC.
30	Failed to acquire lines:	Some update files may be corrupted. Obtain update files again.
31	Invalid line length:	Some update files may be corrupted. Obtain update files again.
32	Unexpected EOF is detected:	Some update files may be corrupted. Obtain update files again.
33	Unexpected token is detected:	Some update files may be corrupted. Obtain update files again.
34	PIA does not suit this server	It is not Platform Information (PIA) of this server. Obtain update files again.

Chapter 5

Installing and Using Utilities

This section describes how to use the EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the EXPRESSBUILDER.

EXPRESSBUILDER

The EXPRESSBUILDER, integrated setup software, can automatically detect the hardware connected to an NovaScale/ft Server series machine to advance the processing. The hardware subject to setup with the EXPRESSBUILDER should have the same configuration as that for operation.

Start Menu

The EXPRESSBUILDER provides three procedures to start the server as described below. The menus and items appearing on the screen vary depending on the procedures.

■ Booting (starting) the server from EXPRESSBUILDER CD-ROM

For the procedure, insert the EXPRESSBUILDER CD-ROM into the CD-ROM drive of the NovaScale/ft Server series and start the NovaScale/ft Server series from the system in the EXPRESSBUILDER. When the NovaScale/ft Server series is started by using this procedure, the EXPRESSBUILDER top menu shown on the right appears.

Setup the NovaScale/ft Server series from this menu.

IMPORTANT:

■ Do not use this CD-ROM on computers other than this server with which it is packaged (including other NovaScale models). Otherwise, a breakdown may result.

■ The execution of "Setup" of the menu causes the OS installed previously to be erased. OS must also be reinstalled.

See "EXPRESSBUILDER Top Menu" for details.

■ Inserting EXPRESSBUILDER CD-ROM after Windows start-up

The "Master Control Menu" (see figure on the right) starts automatically after you place the "EXPRESSBUILDER" in the CD-ROM drive. A dialog box called "Master Control Menu" will appear.

For this dialog, see "Master Control Menu" described later.
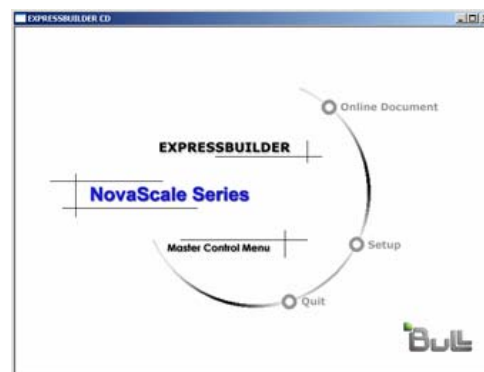
EXPRESSBUILDER Top Menu

The EXPRESSBUILDER top menu is used for the setup of hardware and the setup and installation of OS.

Start

Start the EXPRESSBUILDER top menu following the procedure below:

1. Turn on the powers of peripherals and the power of the server in this order.

2. Insert the EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

3. After the CD-ROM is inserted, reset the system (by pressing **Ctrl** + **Alt** + **Delete**) or turn off the power and then on again to restart the server.

   The system is activated from the CD-ROM to start the EXPRESSBUILDER.

After the EXPRESSBUILDER is started, the EXPRESSBUILDER top menu shown below appears.
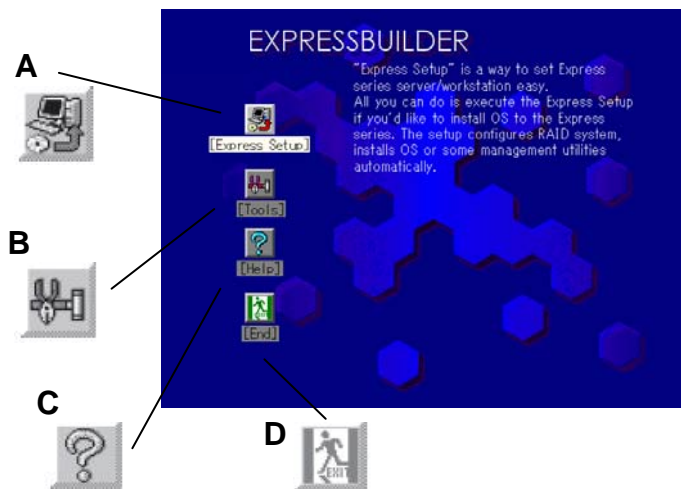
A Express Setup
Performs various automatic setup operations including settings of internal parameters and states of hardware and installations of Windows Server 2003 Enterprise Edition and various utilities. Select this setup procedure if hard disks are used in a partition different from that defined at the purchase, or if OS is reinstalled.

B Tools
Starts each of the utilities stored in the EXPRESSBUILDER individually to allow the operator to provide setup. Enables the setup without influence of installed OS.

C Help
Describes the EXPRESSBUILDER. We recommend you to read through the help before the setup.

D Exit
The EXPRESSBUILDER termination screen appears.

Setup

This NovaScale/ft Server series setup method is used to perform automatic setup operations within the range from the settings of internal parameters and states of hardware to the installation of Windows Server 2003 Enterprise Edition and various utilities.

Use the setup program if hard disks are used with a partition different from that at purchase, or if OS is reinstalled. This feature carries out the complicated setup.

IMPORTANT:

- To install Windows Server 2003 R2 Enterprise Edition in your server, use "Express Setup" (excluding the case of performing the setup for the first time after the purchase). Any other methods cannot properly install Windows Server 2003 R2 Enterprise Edition in the server.

- The Express Setup is assumed to be used when the server has not been set up, and its execution erases the data in the hard disk.

Tools Menu

The Tools Menu is used to start each of the several utilities stored in the EXPRESSBUILDER CD-ROM individually for manual setup by operator. Use the Tools Menu to provide settings that the setup program cannot do automatically or detailed settings. Also use the Tools Menu when system diagnostics is performed or a support disk is created. The items in the Tools Menu are described below.

```
Tools                                      RAID Board : None
                                           Maint Part : None
Off-line Maintenance Utility
System Diagonostics
Create Support Disk
BIOS/FW/etc. Update
Initialize Remote Management Card
System Management
Help
Return to the Top Menu
```
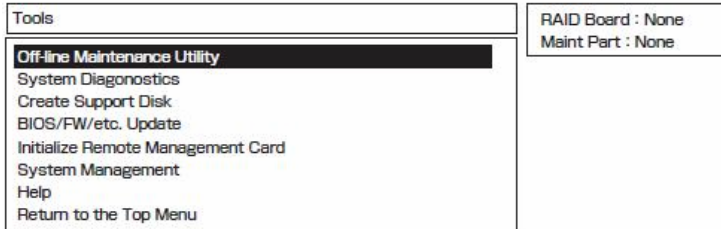
■ Off-line Maintenance Utility

   Off-line Maintenance Utility is a utility for performing preventive maintenance and error analysis for your server. See Chapter 6 or the online help for details.

■ System Diagnostics

   Executes several tests on the main system to examine the features of the system and the connections between the system and extension boards. If the system diagnostics is executed, the system check program is started depending on the system status. See the description in Chapter 6 to manipulate the system check program

■ Create Support Disk

   In the support disk creation procedure, the start-up support disk for starting a utility within the EXPRESSBUILDER from a floppy disk and the support disk required in the installation of the operating system can be created. If you write down the titles displayed on the screen onto the floppy disk labels, they can be easily managed later.

   The customer should prepare the floppy disks for creating the support disks.

   – Windows Server 2003 OEM-DISK for EXPRESSBUILDER
      Creates a support disk required for recovering the system.

   – ROM- DOS Startup FD
      The support disk for starting the ROM -DOS system is created.

   – Off-line Maintenance Utility FD
      Creates a support disk for activating the Off-line Maintenance Utility.

   – System Diagnostics Utility FD
      The support disk for starting the system check program is created.

   – System Management Function FD
      The support disk for system management functions is created.

■ BIOS/FW/etc. Update

   The program which is necessary for the update work is transferred to the floppy disk which the various update modules of BIOS and firmware were stored in. After the reboot, an update program is started automatically from the floppy disk, and various BIOS and firmware are updated.

   ### IMPORTANT:

   During the execution of the update program, do not turn off the power of the system. If the update is interrupted halfway, the system will not be able to be started.

■ Initialize Remote Management Card

   Allows you to configure ft Remote Management Cards with correct parameters of the system where they are installed.

   ### IMPORTANT:

   This menu appears when optional ft Remote Management Cards are installed.

■   System Management

Allow you to make settings of ft Remote Management Card parameters for remote control and alert.

> **IMPORTANT:**
>
> This menu appears when optional ft Remote Management Cards are installed.

■   Help

Displays descriptions on features of the EXPRESSBUILDER.

■   Return to the Top Menu

Displays the EXPRESSBUILDER top menu.

Master Control Menu

The Master Control Menu automatically appears when the "EXPRESSBUILDER" CD-ROM is loaded on a computer running Windows (Windows 95 or later or Windows NT 4.0 or later).

TIPS:

Depending on the condition of the system, the menu may not be automatically started. In such a case, execute the file below on the CD-ROM from Windows Explorer or by other means:

\MC\1ST.exe
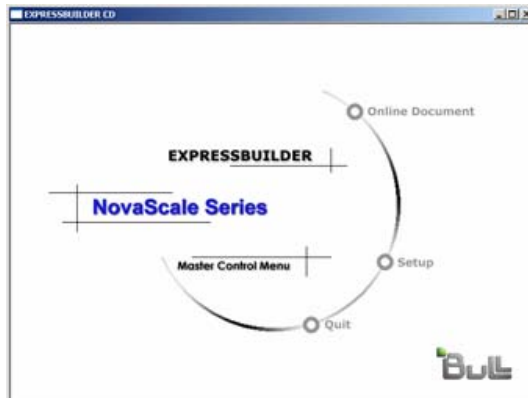
From the Master Control Menu, you can install various software which runs on Windows or view online documents.

TIPS:

Some online documents are provided in the PDF format. Acrobat Reader of Adobe Systems Incorporated is required for viewing such files. If it is not installed, click [Setup] - [Acrobat Reader] and install Acrobat Reader.

To use the Master Control Menu, click items displayed on the window or use the shortcut menu which is displayed by right-clicking.

IMPORTANT:

Before ejecting the CD-ROM, close all online documents and terminate tools started from the Master Control Menu and Menu.

Configuration Diskette Creator

"Configuration Diskette Creator" is a tool to create [Configuration Diskette] that is used for configuring the server with the Express Setup.

If you use the Configuration Diskette created by the Express Setup and Configuration Diskette Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Configuration Diskette] to setup the servers from EXPRESSBUILDER.

> **NOTE:**
>
> You can install Windows Server 2003 without [Configuration Diskette]. Also, you can modify/newly create [Configuration Diskette] during the setup with EXPRESSBUILDER.

Creating Configuration Diskette

This section describes about specifying setup information that is necessary for OS installation and creating [Configuration Diskette]. Follow the procedure below.

> **NOTE:**
>
> In the procedure below, the folder name that is specified when installing Trekking command is assumed as [Configuration Diskette Creator].

1. Start the OS.

2. Insert the EXPRESSBUILDER CD-ROM into the CD-ROM drive.

    Master Control Menu will appear.

3. Right-click on the screen or click [Setup]. The menu will appear.
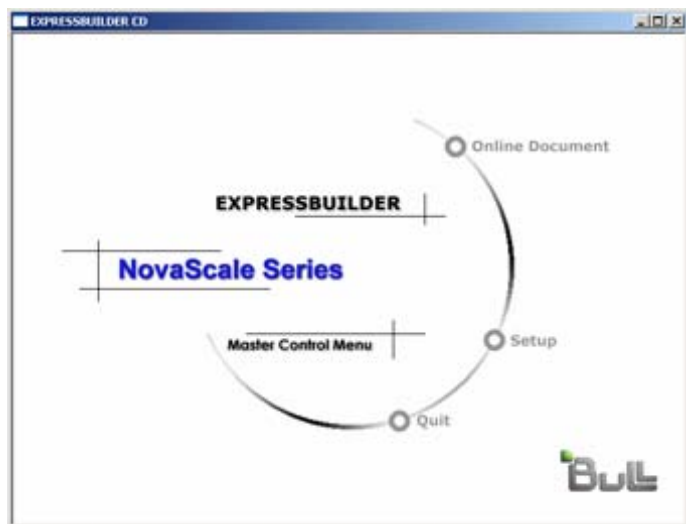
4. Click [Configuration Diskette Creator].

    Configuration Diskette Creator window is displayed.

5. Click [Create New Information files] from the [File] menu.

The [Disk Environment] dialog box will be displayed.
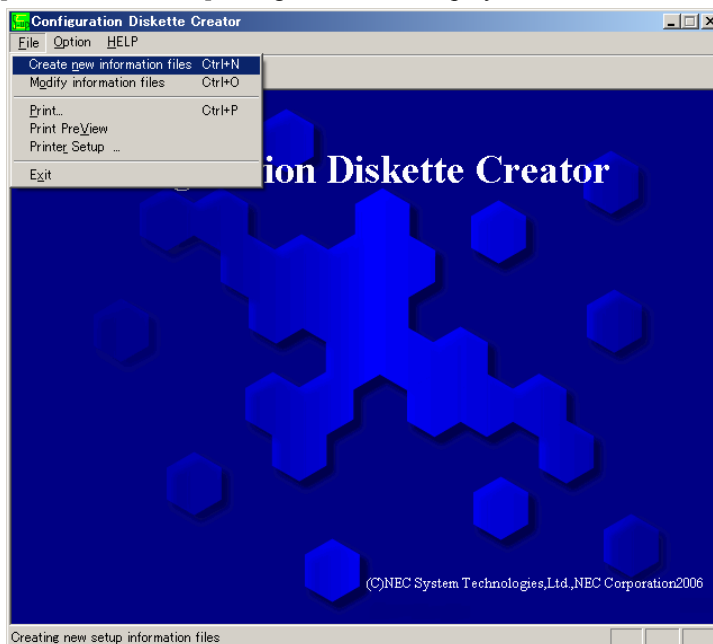
6. Specify each item and click [OK].

The dialog boxes to specify setup information will be displayed in order, such as [Basic Information] dialog box.
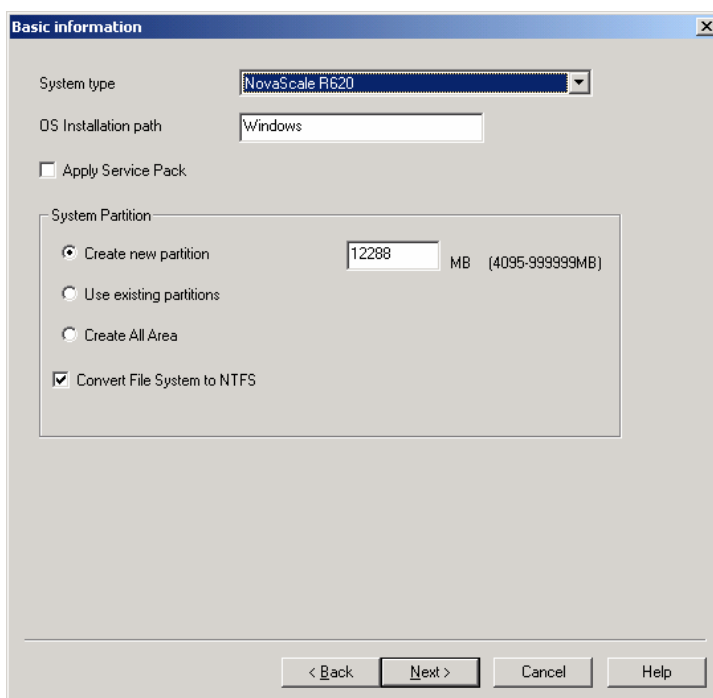
7. Follow the message to specify each item on the dialog box and click [Next].

NOTE:

■ If you click on [Cancel], all the input value will be deleted.

■ Only add the adapter on the screen for setting network. Detailed settings of the network adapter

---

cannot be configured using Express Setup. Make detailed settings from Control Panel after starting Windows.

■ Only add the adapter on the [Setup Network Adapter Cards] screen. Detailed setting of the network adapter is not supported by Express Setup. Set it from Control Panel after starting Windows.

When completing the specification of setup information, the [Save Setup Information] dialog box will appear.

8. Verify that the [Configuration Diskette] check box is checked and input file name for the Setup File in [File Name].
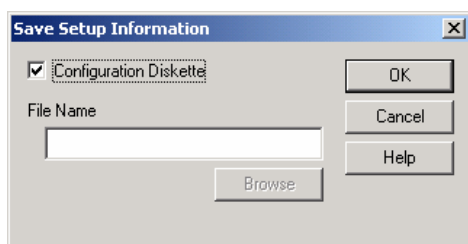
9. Insert the floppy disk formatted by 1.44 MB into the floppy disk drive and click [OK].

Now [Configuration Diskette] has been created. [Configuration Diskette] is used when you install Windows Server 2003. Put a label and keep it where it will not be lost.

NOTE:

For information on the contents of each specific item, refer to the Help.

If you want to modify the information file that already exists, click [Modify information files] on Configuration Diskette Creator window. Refer to the Help to modify the info file.

ESMPRO Agent and ESMPRO Manager

NovaScale/ft Server series system management applications "ESMPRO Manager" and "ESMPRO Agent" are bundled to accessory CD-ROM "EXPRESSBUILDER."

This manual describes the functions and features provided by ESMPRO Manager and ESMPRO Agent and the notes on their operations.

These applications are necessary for continuous operation of NovaScale/ft Server series.

Overview

ESMPRO Manager and ESMPRO Agent are the server management software provided for the stable operation of a server system and effective system operations. They can manage the configuration information and operating status of server resources to prevent server faults from occurring. If a server fault occurs, they detect the fault to notify the system Administrator of the occurrence. This enables the system Administrator to take appropriate action against faults.

■ Importance of server management

"Constantly stable operation" and "less management workload" are keywords in server management.

 – Stable operation of server

Shutdown of a server immediately leads the customer to lose business opportunities and profits. This requires servers to always operate in their perfect state. If a fault occurs in a server, it is necessary to detect the occurrence as soon as possible, make clear the cause, and take appropriate action. The shorter the time taken from the occurrence of a fault to the recovery from the fault is, the smaller the loss of profits (and/or costs) is.

 – Load reduction of server management

The server management requires many jobs. In particular, if the system becomes large or remote servers are used, required jobs increase further. The reduction of the load of the server management brings the decrease in costs (and thus customer's benefit).

■ What are ESMPRO Manager and ESMPRO Agent?

ESMPRO Manager and ESMPRO Agent are server management software used to manage and monitor NovaScale series systems on the network. The installation of ESMPRO Manager and ESMPRO Agent enables the server configuration, performance, and fault information to be acquired, managed, and monitored real-time and also the occurrence of a fault to be detected immediately by the alert report function.

■ Effects of using ESMPRO Manager and Agent

ESMPRO Manager and ESMPRO Agent have sufficient effects on a variety of needs in versatile and complicated system environments.

 – Detection of server fault

ESMPRO Agent collects a variety of fault information on NovaScale series systems to identify the states of the systems. If a server detects a fault, the server provides ESMPRO Manager with the proper alert report.

 – Prevention of server fault

ESMPRO Agent includes the preventive maintenance function predicting the occurrence of a fault in advance as countermeasures for preventing faults from occurring. It can in advance detect the increase in the chassis temperature and the empty capacity in a file system.

 – Management of server operation status

ESMPRO Agent can acquire the detailed hardware configuration and performance information on NovaScale series systems. The acquired information can be viewed at any point through ESMPRO Manager.

 – Collective management of distributed servers

ESMPRO Manager provides the GUI interface that allows servers distributed on the network to be managed efficiently.

Detection of Server Fault

ESMPRO Manager and ESMPRO Agent detect errors causing faults to occur at an early stage and notify Administrators of fault information real-time.

■ Early detection of error

If a fault occurs, ESMPRO Agent detects the fault and reports the occurrence of the fault to ESMPRO Manager (alert report). ESMPRO Manager displays the received alert in the alert viewer and also changes the status colours of the server and server component in which the fault occurs. This allows you to identify the fault at a glance. Further, checking the content of the fault and the countermeasures, you can take appropriate action for the fault as soon as possible.

■ Types of reported faults

The table below lists the typical faults reported by ESMPRO Agent.

Component	Reported information
CPU	• CPU load is over the threshold • CPU degrading
Memory	ECC 1-bit error detection, etc.
Power supply	• Voltage lowering • Power failure
Temperature	Temperature increase in chassis
Fan	Fan failure (decrease in the number of revolutions)
Storage	File system usage rate
LAN	• Line fault threshold over • Send retry or send abort threshold over

Prevention of Server Fault

ESMPRO Agent includes the preventive maintenance function forecasting the occurrence of a fault as countermeasures for preventing faults from occurring.

ESMPRO Manager and ESMPRO Agent can set the threshold for each source in the server. If the value of a source exceeds the threshold, ESMPRO Agent reports the alert to ESMPRO Manager.

The preventive maintenance function can be set for a variety of monitoring items including chassis temperature, and CPU usage rate.

Management of Server Operation Status

ESMPRO Agent manages and monitors a variety of components installed in the server. You can view the information managed and monitored by ESMPRO Agent on the data viewer of ESMPRO Manager.

ESMPRO Agent also manages and monitors all the components and conditions required to keep the server reliability at a high level such as hard disks, CPU, memory, fans, power supply, and temperature.

The following table indicates the functions available on each items of the data viewer.

Functional Availability on each item of Data Viewer

Function	Availability	Description
Hardware	O	Displays the physical information of hardware.
Memory Bank	O	Displays the physical information of memory.
Field Replaceable Unit	O	Displays the information of field replaceable unit.
CPU	O	Displays the physical information of CPU.
System	O	Refers to the logical information of CPU and monitors the load ratio. Refers to the logical information of memory and monitors the status.
I/O Device	O	Refers to the information of I/O devices (floppy disk drive, serial port, parallel port, key board, mouse, and video).
Enclosure (Note1)	Δ	Monitors a temperature, fan, voltage, power supply, and door.
Temperature	O	Monitors the temperature inside of a chassis.
Fan	O	Monitors fans.
Voltage	O	Monitors the voltage inside of chassis.
Power Supply	O	Monitors the power unit.
Door	x	Monitors Chassis Intrusion (chassis cover/open and close of a door).
Software	O	Refers to the information of a service, driver and OS.
Network	O	Refers to the information on the network (LAN) and monitors packets.
Expansion Bus Device	O	Refers to the information of the expansion bus device.
BIOS	O	Refers to the information of BIOS.
Local Polling	O	Monitors the values of MIB items that an agent obtains.
Storage	O	Monitors storage devices such as a hard disk drive and controllers.
File System	O	Refers to the configuration of the file system and monitors activity ratio.
Disk Array	x	Monitors the disk array controllers of LSI logic Corporation or Promise Technology, Inc.
Others	O	Supports OS stall monitoring by the Watch Dog Timer.

O: Supported   Δ: Partly supported   x: Not supported

(Note1): #0 or #1 is added to the end of item names. #0 indicates CPU/IO module #0, and #1 indicates CPU/IO module #1.

Monitoring of NovaScale/ft Server series

NovaScale/ft Server series is a fault tolerant system. It can continue the operation even if a major component fails. NovaScale/ft Server series improves the system availability with the hardware, ESMPRO, and system software functions.

If a major component fails, the ESMPRO fault report function can notify the system Administrator of the occurrence of the fault. In addition, the data viewer of ESMPRO Manager can monitor the system status and also identify the failed component.

ESMPRO provides several maintenance functions such as the update of firmware and BIOS in the NovaScale/ft Server series in the online state (in which the system continues the operation but the components used to update firmware or BIOS is suspended) and the suspension of a specific component.

The table below lists the NovaScale/ft Server series management tasks using ESMPRO and system functions.

NovaScale/ft Server series management task	ESMPRO function or tool (on managed server)*	ESMPRO function or tool (on management manager)
Monitoring of major component states	–	ESMPRO Manager data viewer
Diagnostics and start/stop of major components and firmware update	ESMPRO Agent Server Maintenance Utility	ESMPRO Manager data viewer
BMC firmware update	ESMPRO Agent BMC F/W update utility	ESMPRO Manager BMC F/W update utility
Confirmation of alert or confirmation of fault occurrence event information	Event Viewer	ESMPRO Manager Alert Viewer
Confirmation of hardware error log	ESMPRO Agent	ESMPRO Manager

* When the administration manager is also the managed NovaScale/ft Server series (or ESMPRO Manager is installed on the managed NovaScale/ft Server series), all functions of the administration manager can be used on the managed NovaScale/ft Server series.

The report of a fault occurrence in the NovaScale/ft Server series (alert) is immediately sent to the ESMPRO Manager. When the ESMPRO Manager receives the alert, a popup message appears.

The alert contains the detailed information of the fault and the proper countermeasures. You can take the appropriate action for the alert.
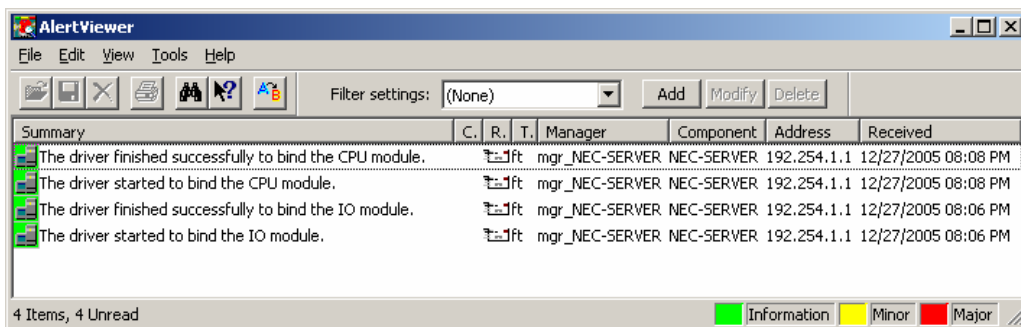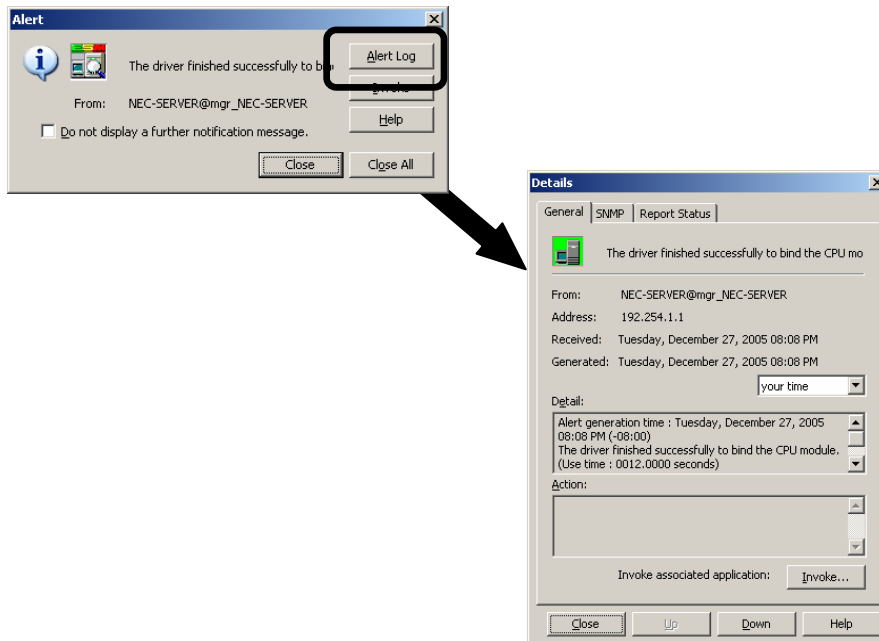
Collective Management of Distributed Servers

The excellent GUI provided by ESMPRO Manager allows servers on a network to be managed collectively. The management screen is designed in the Explorer format to indicate the components in a server hierarchically for effective server management.

ESMPRO Manager manages servers by using the following three types of GUIs.

■ Operation Window

The operation window is used to create the map of servers connected to network to manage them. The map can be multi-layered depending on the installation areas, organizations, and objects.
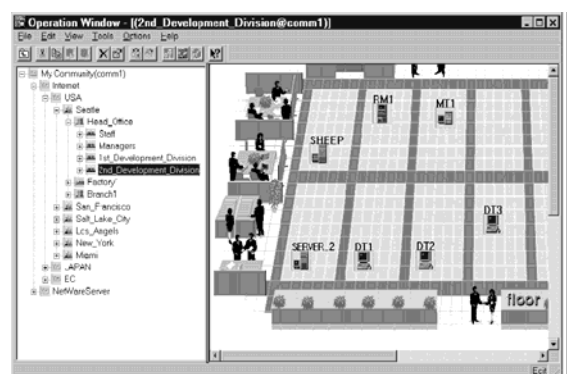
■ Data Viewer

The data viewer indicates the server source configuration information in the Explorer format. In addition, it changes the status colour of the failed server component. This enables you to identify the failed portion.
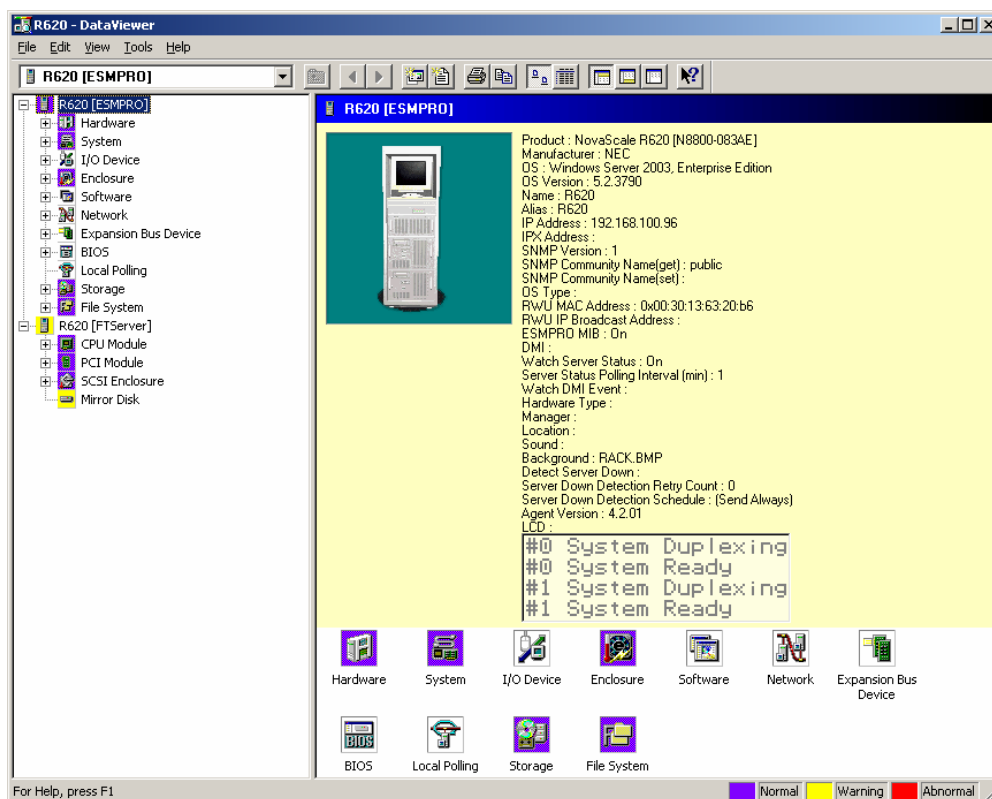
■ Alert Viewer

The Alert Viewer manages fault reports sent from servers together. A fault occurred in a server is immediately reported to the Alert Viewer.

The Administrator can recognize all faults on the network instantly.
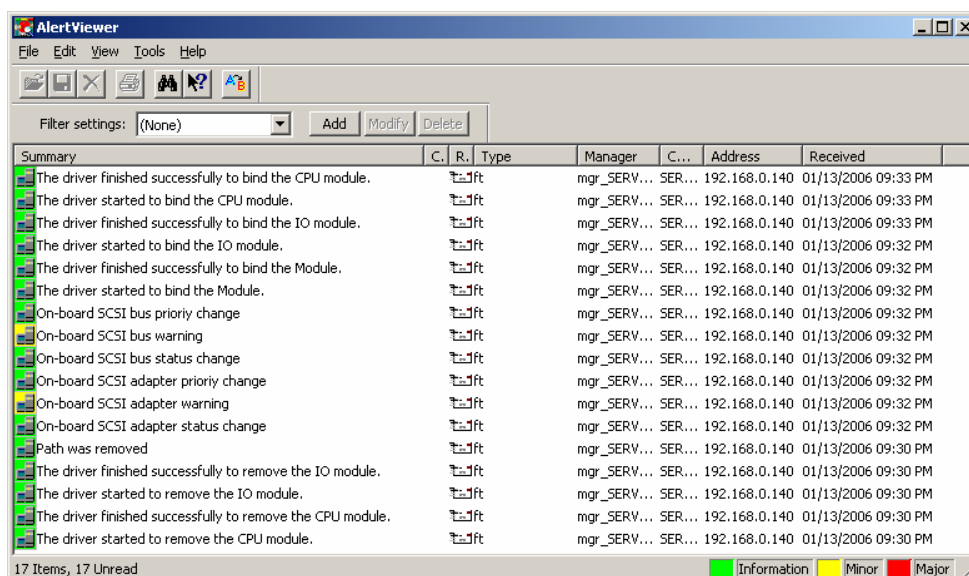
ESMPRO Agent

ESMPRO Agent is a utility which acts as an agent (proxy) between server series and ESMPRO Manager.

For details on the operating environment, the settings required before the setup, and the installation procedure, see the separate volume, User's Guide (Setup).

Device ID in Alert Report

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

R620-LR model

Device name	Device ID
CPU module 0	0
DIMM slot A1 on CPU module #0	0/0/0
DIMM slot B1 on CPU module #0	0/0/1
DIMM slot A2 on CPU module #0	0/0/2
DIMM slot B2 on CPU module #0	0/0/3
DIMM slot A3 on CPU module #0	0/0/4
DIMM slot B3 on CPU module #0	0/0/5
CPU #1 on CPU module #0	0/0/20
CPU #2 on CPU module #0	0/0/21
PCI module #0	0/10
PCI slot 1 on PCI module #0	0/10/1
PCI slot 2 on PCI module #0	0/10/2
Slot 1 of riser card on PCI module #0	0/10/3
Slot 2 of riser card on PCI module #0	0/10/4
PCI controller 1 on PCI module #0	0/10/100
PCI controller 2 on PCI module #0	0/10/101
I/O hub on PCI module #0	0/10/102
Display controller on PCI module #0	0/10/103
SCSI adapter 1 on PCI module #0	0/10/104
SCSI bus 1 of SCSI adapter 1 on PCI module #0	0/10/104/0
SCSI bus 2 of SCSI adapter 1 on PCI module #0	0/10/104/1
Ethernet adapter on PCI module #0	0/10/105
CPU module #1	1/1
DIMM slot A1 on CPU module #1	1/1/0
DIMM slot B1 on CPU module #1	1/1/1
DIMM slot A2 on CPU module #1	1/1/2
DIMM slot B2 on CPU module #1	1/1/3
DIMM slot A3 on CPU module #1	1/1/4
DIMM slot B3 on CPU module #1	1/1/5
CPU #1 on CPU module #1	1/1/20
CPU #2 on CPU module #1	1/1/21
PCI module #1	1/11
PCI slot 1 on PCI module #1	1/11/1
PCI slot 2 on PCI module #1	1/11/2
Slot 1 of riser card on PCI module #1	1/11/3
Slot 2 of riser card on PCI module #1	1/11/4
PCI controller 1 on PCI module #1	1/11/100
PCI controller 2 on PCI module #1	1/11/101
I/O hub on PCI module #1	1/11/102
Display controller on PCI module #1	1/11/103
SCSI adapter 1 on PCI module #1	1/11/104
SCSI bus 1 of SCSI adapter 1 on PCI module #1	1/11/104/0
SCSI bus 2 of SCSI adapter 1 on PCI module #1	1/11/104/1
Ethernet adapter on PCI module #1	1/11/105
SCSI enclosure	41
SCSI slot 0 on SCSI enclosure	41/0
SCSI slot 1 on SCSI enclosure	41/1
SCSI slot 2 on SCSI enclosure	41/2
SCSI slot 3 on SCSI enclosure	41/3
SCSI slot 4 on SCSI enclosure	41/4
SCSI slot 5 on SCSI enclosure	41/5

R620-MR model

Device name	Device ID
CPU module 0	0
DIMM slot A1 on CPU module #0	0/0/0
DIMM slot B1 on CPU module #0	0/0/1
DIMM slot A2 on CPU module #0	0/0/2
DIMM slot B2 on CPU module #0	0/0/3
DIMM slot A3 on CPU module #0	0/0/4
DIMM slot B3 on CPU module #0	0/0/5
CPU #1 on CPU module #0	0/0/20
CPU #2 on CPU module #0	0/0/21
PCI module #0	0/10
PCI lost 1 on PCI module #0	0/10/0
PCI slot 2 on PCI module #0	0/10/1
PCI slot 3 on PCI module #0	0/10/2
Slot 1 of riser card on PCI module #0	0/10/3
Slot 2 of riser card on PCI module #0	0/10/4
PCI controller 1 on PCI module #0	0/10/100
PCI controller 2 on PCI module #0	0/10/101
I/O hub on PCI module #0	0/10/102
Display controller on PCI module #0	0/10/103
SCSI adapter 1 on PCI module #0	0/10/104
SCSI bus 1 of SCSI adapter 1 on PCI module #0	0/10/104/0
SCSI bus 2 of SCSI adapter 1 on PCI module #0	0/10/104/1
Ethernet adapter on PCI module #0	0/10/105
CPU module #1	1/1
DIMM slot A1 on CPU module #1	1/1/0
DIMM slot B1 on CPU module #1	1/1/1
DIMM slot A2 on CPU module #1	1/1/2
DIMM slot B2 on CPU module #1	1/1/3
DIMM slot A3 on CPU module #1	1/1/4
DIMM slot B3 on CPU module #1	1/1/5
CPU #1 on CPU module #1	1/1/20
CPU #2 on CPU module #1	1/1/21
PCI module #1	1/11
PCI slot 1 on PCI module #1	1/11/0
PCI slot 2 on PCI module #1	1/11/1
PCI slot 3 on PCI module #1	1/11/2
Slot 1 of riser card on PCI module #1	1/11/3
Slot 2 of riser card on PCI module #1	1/11/4
PCI controller 1 on PCI module #1	1/11/100
PCI controller 2 on PCI module #1	1/11/101
I/O hub on PCI module #1	1/11/102
Display controller on PCI module #1	1/11/103
SCSI adapter 1 on PCI module #1	1/11/104
SCSI bus 1 of SCSI adapter 1 on PCI module #1	1/11/104/0
SCSI bus 2 of SCSI adapter 1 on PCI module #1	1/11/104/1
Ethernet adapter on PCI module #1	1/11/105
SCSI enclosure	41
SCSI slot 0 on SCSI enclosure	41/0
SCSI slot 1 on SCSI enclosure	41/1
SCSI slot 2 on SCSI enclosure	41/2
SCSI slot 3 on SCSI enclosure	41/3
SCSI slot 4 on SCSI enclosure	41/4
SCSI slot 5 on SCSI enclosure	41/5

The figure below shows the actual locations of the device names displayed on the ESMPRO screen.

CPU/IO module #1

CPU/IO module #0

SCSI enclosure
SCSI slots 0 through 5 from bottom to top

Front view of the rack-mount model
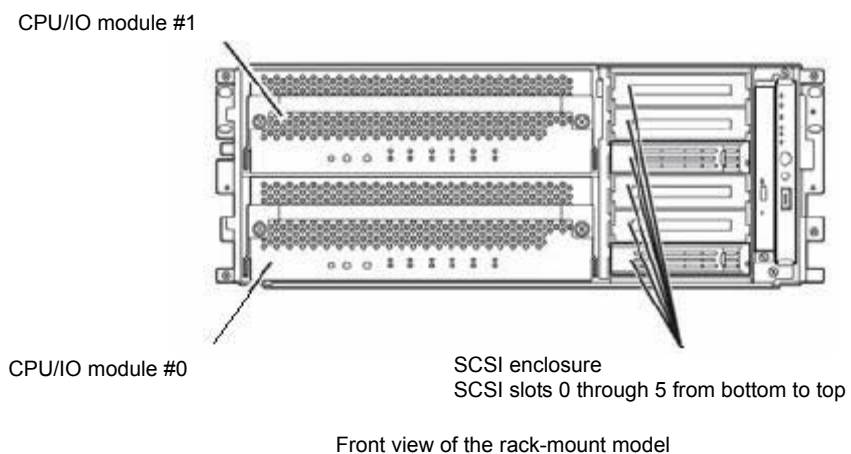
Supplement

Note the following when using ESMPRO Agent.

Dual registration of event logs

At some types of errors, two event logs may be registered for a single occurrence. (However, in the case of ESMPRO Manager, one log is reported for one occurrence.) Such errors are as follows:

- Temperature error

- Voltage error

- Thermal trip

Maintenance-related Functions

When you want to use maintenance-related functions, contact your maintenance personnel.

CPU Information

If you select [CPU Module]–[CPU] in the FT tree of the data viewer, unknown or incorrect information appears in some information items.

The CPU information can be viewed by selecting [System]–[CPU] in the [ESMPRO] tree.

Module Diagnostics

When you diagnose a PCI module (IO module), the CPU module of the same side will also be diagnosed. Therefore, the CPU module also needs to be stopped.

Status during Module Diagnostics

While diagnosing a stopped module, the module is no longer in the duplex mode and the CPU and the memory cannot be used. However, the status of [CPU] and [DIMM] displayed under [CPU module] in the FT tree on a Data Viewer becomes "Online" and the status colour becomes green.

Change of Installation States of CPU and PCI (IO) Modules

If you dynamically change the configuration of the CPU or PCI module (IO module) in the relevant system during review of the server information by using the data viewer, the message prompting you to reconstruct the tree of the data viewer will appear. If you click the [Yes] button, the tree is reconstructed in the data viewer to reflect the change of the system configuration on the data viewer. Clicking the [No] button does not cause the tree to be reconstructed in the data viewer. If so, the information in the data viewer may be different from the current system information because the change of the system configuration is not reflected on the data viewer.

Status of Logical PCI Slots

Because the I/O hub and display controller on a PCI module (IO module) are logical PCI slot information, PCI module (IO module) are not influenced by them. Therefore, the "Status" of [PCI slot (ID:0/10/102)] and [PCI slot (ID:0/10/103)] under [PCI module (ID:0/10)] and the "Status" of [PCI slot (ID:1/11/102)] and [PCI slot(ID:1/11/103)] under [PCI module (ID:1/11)] in the FT tree on a Data Viewer becomes "Online" and the status colour becomes green.

Impact of Module Status Changes

PCI modules (IO modules), SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For example, when the "Status" item of a module changes to "fault," it may be caused by another module's error.

Therefore, you need to check the status of the other modules based on alert information.

Status Colour after Mounting a Hard Disk

When creating a new mirror, the status of the hard disk and its upper component, SCSI enclosure, will continue to change after you mount a hard disk until the mirror is completed. The OS may take several minutes to recognize changes of disk status or the disk may need to be rescanned. During this process, the status colour may turn to abnormal, but when the mirror is created successfully, it will return normal.

LAN Monitoring Report

The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is reported immediately, temporal high line impedance may have occurred thus there is not any problem.

LAN Monitoring Threshold

Because hardware faults on the network are found in the driver level, ESMPRO Agent does not monitor line faults. Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [ESMPRO Agent properties] in the control panel is not used.

Community Authority

Depending on your OS type or its version, settings for community, SNMP service's security function, are not made, or default settings of authority are different

To enable the remote shutdown and threshold change functions via ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

Monitoring with ESMPRO Manager Ver.4.22 or Earlier

ESMPRO Manager Ver.4.23 or later is required for monitoring the server.

If you are using an older version, you must install ESMPRO Manager using the CD-ROM shipped with the server.

ESRAS Utility

ESRAS Utility runs on NovaScale series with ESMPRO Agent installed, and is used to display, print, and initialize logs and export them to a file.

If you use the ESRAS Utility of ESMPRO Manager, logs may not be displayed on some servers. Make sure to use ESRAS Utility of ESMPRO Agent. ESRAS Utility of ESMPRO Agent is included in the CD-ROM attached to the server. Install it using the utility related to ESMPRO setup.

Coexistence with the Oracle products

The installation of the Oracle products may change Start-up Type of SNMP Service into "Manual". If so, change the setting back to "Automatic" and set up correctly according to the description of the Oracle product.

Change of SNMP Community

If the security setting of the SNMP Service of a system, where the ESMPRO Agent is installed, is changed from the default "public" to a community name, change the community settings of the ESMPRO Agent, too.

1. Double-click the [ESMPRO Agent] icon in [Control Panel].

2. Select a desired community name from the [SNMP Community] list box in [SNMP Setting] of the [General]

sheet.

The community names to receive SNMP packets from are listed in the [SNMP Community] list box.

3. Click the [OK] button to terminate the operation.

Disk Maintenance While ESMPRO Agent is Running

The following works to disks (hard disk drive or magneto optical) are not allowed while ESMPRO Agent is running;

■ To format or delete a partition by Disk Administrator or by other means.

■ To request programmatically to remove media from removable disks such as MO, Zip and PD.

1. Connect the machine using Web UI.

2. Click the [Maintenance].

3. Click the [Terminal Service]

4. Log on as an administrator

5. Select the [Start] – [Settings] – [Control Panel]

6. Open the [Service]

7. Select a service named "ESM Common Service", and click the [Stop].

8. Confirm that "ESM Common Service" stopped, and close the [Service].

9. Do the disk-related works.

10. Open the [Service] again, select "ESM Common Service" and click the [Start].

11. Confirm that "ESM Common Service" is active and close the [Service] and [Control Panel].

About the warning event of CPU load Monitoring

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

Source: ESMCpuPerf

Event ID: 9005

Description: Cannot get system performance information now (YYYY Code=xxxx).

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

Connection with Hard Disk Drive

The preventive hard disk drive maintenance function may not work properly when a hard disk drive which was used in a system where ESMPRO Agent is installed is connected to other systems. Make sure not to connect such hard disk drives.

Change Settings of File System Monitoring Function

New settings in thresholds of monitoring interval and free space monitoring are not reflected immediately after they are changed. They are reflected at the next monitoring interval of monitoring service.

CPU Load Ratio of SNMP Service (snmp.exe)

While monitoring the server from ESMPRO Manager, the CPU load ratio of SNMP Service on the ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

ESMPRO Manager and ESMPRO Agent exchange information through SNMP Service. If the server status monitoring by ESMPRO Manager is on (default: ON), ESMPRO Manager regularly issues a request to ESMPRO Agent to get the current status of the server. In response, ESMPRO Agent checks the status of the server. As a result, the CPU load ratio of SNMP Service increases temporarily.

If you have trouble of terminating a movie player application, turn off the server status monitoring by ESMPRO Manager or extend the monitoring interval.

Current Status of Temperature, Voltage and Fan Sensors

Some modes are equipped with temperature/voltage/fan sensors that do not have information on status, current values, rpm, threshold etc. Therefore, if you view such a sensor on ESMPRO Manager, it may be displayed as follows:

- The status becomes "Unknown" (greyed out) on the data viewer.

- The current value or rpm becomes "Unknown" on data viewer.

- The status is greyed out on the Web component data viewer.

- The current value or rpm becomes blank on the Web component data viewer.

Even if the sensor is displayed like stated above, it is monitoring the server.

Actions to Take When Temperature/Voltage Error Occurs on CPU/PCI Modules

At the time when a temperature or voltage error occurs on CPU/PCI module (CPU/IO module), necessary actions will differ depending on its status as shown below. You can check the status of each module from the data viewer of ESMPRO Manager or Server Maintenance Utility.

Status	Actions
Duplex	Stop the failed CPU/PCI module (CPU/IO module).
Simplex	Shut down the system.

TIPS:

- If the status is "Empty Absent," the module is not mounted. Sensor monitoring is not conducted.

- If disks are mounted on PCI modules (IO modules), the status of both modules is "Simplex" while the disks are mirrored. Temperature or voltage error occurring during disk mirroring will result in the system to shut down.

CPU Information

In [CPU Information] of Data Viewer's system tree, the external clock is listed as "Unknown."

When [ft] Tree Appears on Date Viewer in an Incorrect Manner

If you open a Data Viewer immediately after the system starts up, the tree or the state of a Data Viewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system start-up, when a pop-up message (below) which prompts you to reconstruct a Data Viewer appears, click [OK]. The Data Viewer will be reconstructed and the tree and the status will be displayed correctly. If the [ft] tree is not displayed, register the server again (delete the icon and then register it) on the integrated viewer.

Floppy Disk Drive Name

After switching on and off the power of the CPU/PCI module (CPU/IO module), the floppy disk drive name of [I/O Device] on Data Viewer may be different from the name that is recognized by the OS.

(Example: drive name on Data Viewer: "A"

drive name recognized by the OS: "B")

Check the floppy disk drive name on Explorer.

Floppy Disk Drive Information

If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the data viewer will be updated at the next system start-up.

When the Displayed BIOS Information is Incorrect

Additional information of BIOS which is displayed by clicking [ft] - [CPU Module] - a CPU module - [General] - [BIOS Information] on a Data Viewer or by clicking a CPU module and clicking [BIOS Information] on Server Maintenance Utility may not be displayed correctly. In such a case, display the BIOS information on a Data Viewer by clicking [ESMMIB] - [BIOS].

Ethernet Adapters You Do Not Use

If an Ethernet adapter is not used (not connected to cable), set it to "Disable" in [Network Connections] from Control Panel. If an Ethernet adapter you are about to disable has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

Monitoring in Sleep State

ESMPRO Manager cannot monitor the ESMPRO Agent machine in the sleep state (system standby or system halt state).

While ESMPRO Manager monitors server shutdown, the relevant ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status colour of the server icon becomes gray. This cannot indicate whether the ESMPRO Agent machine is shut down or entered into the sleep state. Keep these in mind when operating the system where systems to be monitored may enter the sleep state.

Printer Information's Available Time:

When you add a new printer, install its driver and make its settings, if you do not make settings for the available time from the properties window of the printer, the printer's available time (From and To) in [Printers and Faxes] are [00:00], on the other hand, ESMPRO Manager's time are [9:00]. To display them properly, make the settings of printer from its properties window. The procedures are as follows:

1. From [Control Panel], click [Printers and Faxes], and open the properties window of a printer for making settings.

2. Select the [Advanced] tab.

3. Enter values in the available time ("Available from" and "To"), and click [OK] on the properties window to exit.

Now, you can see the correct information from ESMPRO Manager, too.

Hang of SNMP Service

SNMP Service has a module called "SNMP Extended Agent." This module may be registered when you install some software that uses SNMP Service.

If you start SNMP Service, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, SNMP Service will hang.

It may take time to complete the initialization due to temporary high load on the system. In this case, wait for the system load become low enough before restarting SNMP Service.

SCSI Status on a Data Viewer

"Unknown" is always displayed for the following items:

- "Serial Number", "Firmware Revision" and "ROMBIOS Revision" in "General" of "SCSI Adapter"
- "Reassign Block Count" and "Reassign Block threshold" in "General" of "SCSI Slot"

SCSI Status while IO Module is Starting or being Stopped

While an IO module is starting or being stopped, the status of SCSI adapters, SCSI bus, SCSI enclosure, SCSI slots, and mirror disks temporarily indicates an undefined status. Once the module is started or stopped, the status will return to normal.

Status of SCSI Slots and Mirrored Disks at High Load

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

Event of "ESM HAS Storage Service" when Starting the Server for the First Time

After installing the server and when it is started for the first time or when it is started for the first time after the system is reset up, an event that SCSI-related status has changed is registered. However, the previous status in the message shows an undefined value.

Event 401 and 402 of "ESM HAS Storage Service"

An event "Status of SCSI Slot (ID:41/n) has changed from Empty to Empty" may be registered to the event log because, internally, there are two types of the status "Empty" which indicates that a disk is not mounted. For example, when no disk is mounted in both Slot 1 and Slot 4, "Empty" is simply informational. Slot 1 also indicates "Empty" when a disk that no volume is created is in Slot 4. However, if a simple volume is created on the disk in Slot 4, the status "Empty" of Slot 1 is handled as a warning in order to maintain redundancy. In such a case, check the status of volume creation and configure mirror volumes.

SCSI Slot Indication when a Disk Fails

When a disk which has failed before is mounted, the SCSI slot status becomes "Broken." The status changes from "Broken" when a mirror volume is created on the disk or any mirror volume is resynchronized.

ESMhstrg.dat

While the server is running, the "\data\ESMhstrg.dat" file in the installation directory of NEC ESMPRO Agent (C:\ESM by default) cannot be accessed. Therefore, it cannot be backed up when using backup software. However, there is no problem even if it is not backed up because the file is recreated at a server startup.

PCI Module Status is "Empty"

If devices such as LANs and FCs in the PCI module are not duplicated, the PCI module status becomes "Empty." If the PCI module status is "Empty," make sure that the LAN and FC cables are connected to and LANs are teamed.

Indication of the mirror status

If the pair of the disks that make up a mirror is different from the one described in "Disk Operations" in Chapter 3, "Warning" is displayed even for a normal mirror volume.

ESMPRO Manager

To monitor and manage a computer, on which ESMPRO Agent is installed, with a management PC online, use ESMPRO Manager that is bundled with the product.

For detailed procedures of installation and setting, see online documents or ESMPRO Online Help.

TIPS:

Online documents provide cautions and information for using ESMPRO Manager. See *ESMPRO Manager User's Guide* in the EXPRESSBUILDER CD-ROM.

Monitoring by Use of Data Viewer

To monitor the state of the NovaScale/ft Server series on a management computer with installation of ESMPRO Manager, the data viewer is used. If you click each of the modules and items to be checked sequentially on the tree view in the Windows Explorer format, the data viewer indicates their states on the right side of the screen.

You can manage the status on a Web browser using Web component functions of ESMPRO Manager. For details, see Help on Web Component.

This section describes the tree structure and displayed screens in the data viewer.

To make the data viewer indicate the state of each module and those of the components on it, select the server to be monitored from ESMPRO Manager to start the data viewer (in the following description, the start procedure of the data viewer is omitted).

The server is physically configured with two modules, but each module has a CPU module and IO module. Therefore, ESMPRO Manager Data Viewer displays module #0 and module #1 in a tree and under each of them, a CPU module and PCI module are displayed (on a Data Viewer of ESMPRO Manager and Server Maintenance Utility of ESMPRO Agent, the IO module is indicated as "PCI module").

Monitoring CPU Module

To monitor the CPU modules and the components on the CPU module, see the [CPU Module] tree. To see the information on the [CPU Module] tree, select the target CPU module from [CPU Module] in the [ft] tree.

You can see the following information on the modules and the components on the CPU modules in the [CPU Module] tree.

■ General

Allows the configuration and other information on the CPU modules to be viewed.
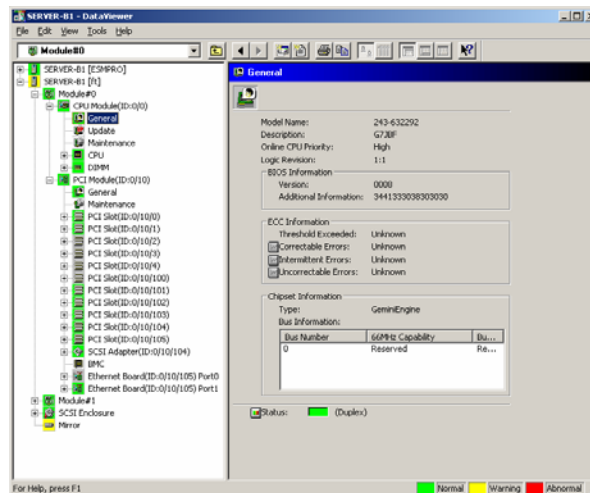
■ Maintenance

Allows the start/stop, MTBF information clear and dump acquisition of the CPU modules to be provided. See "Maintenance of the Server " described later for the start/stop and MTBF information clear of the CPU modules.
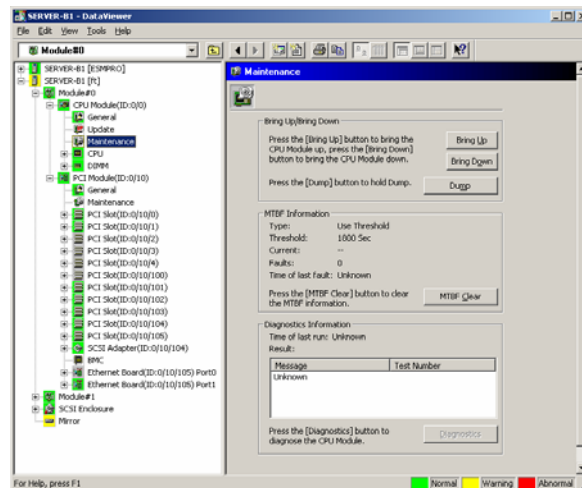
■ Update

Allows the device identification information of the CPU modules to be viewed and BIOS of the CPU modules to be updated. See "Maintenance of the Server" described later for the update of BIOS of the CPU modules. The detailed device identification information can be checked by selecting [ESMPROMIB] tree→[Hardware] tree→[Field Replaceable Unit] tree.
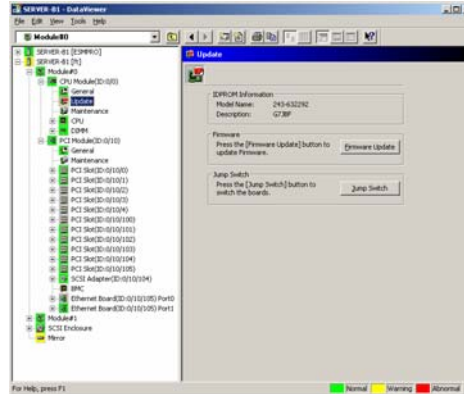
■ CPU

Allows the information of the CPU on the CPU modules to be viewed.
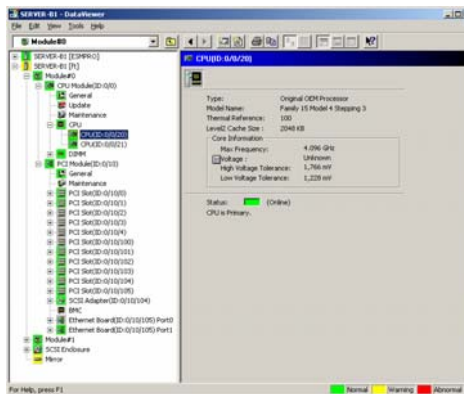
■ DIMM

Allows the information of DIMM on the CPU modules to be viewed.
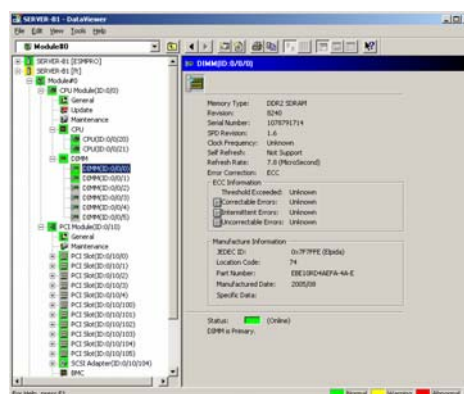
Monitoring IO Module

To monitor the IO modules and the components on the IO modules, refer to the [PCI Module] tree. To see the information on the [PCI Module] tree, select the target IO module from [PCI Module] in the [ft] tree.
You can see the following information on the IO modules and the components on the IO modules of the [PCI Module] tree.
(This section describes the general information screens of the IO modules. The components on the IO modules are described later.)

■ General

   Allows the configuration and other information of the IO modules to be viewed.
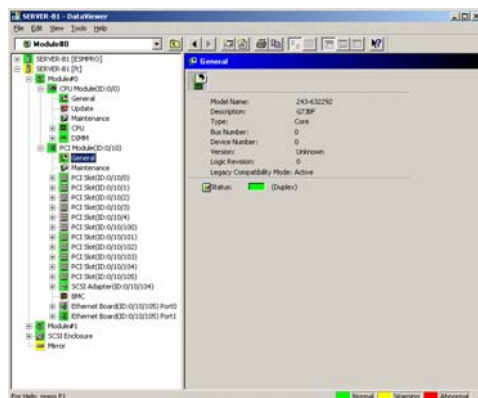
■ Maintenance

   Allows the start/stop, MTBF information clear, and diagnostics of the IO modules to be provided. See "Maintenance of the Server" described later for the start/stop and MTBF information clear of the IO modules.
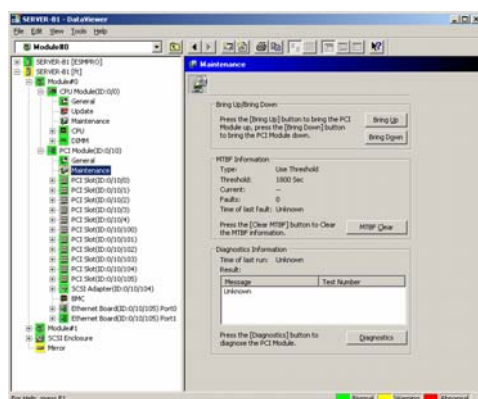
Monitoring PCI Slots and Devices on IO Module

To monitor the PCI slots and devices on the IO modules, see the [PCI slot] tree. To see the information on the [PCI slot] tree, select [PCI Module]→[PCI module (containing PCI slot to be seen)]→[PCI slot] of the [ft] tree.
You can see the following information on the PCI slot and the devices on the PCI slot in the [PCI slot] tree.

■ General

Allows the PCI slot configuration information to be viewed.

CHECK:

The status of the following PCI slots is always "Online".
ID: 0/10/102, 0/10/103, 1/11/102, 1/11/103
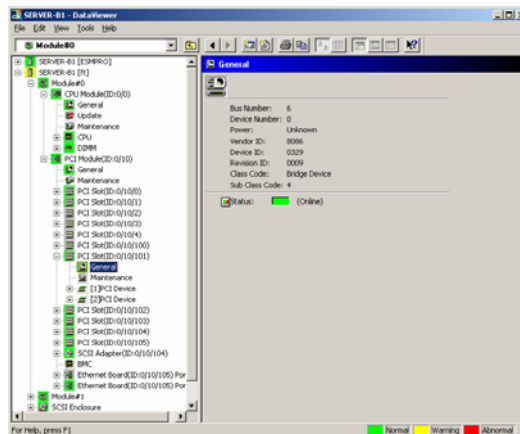
■ Maintenance

Allows a device on the PCI slot to be started. This function is not supported in the current version.
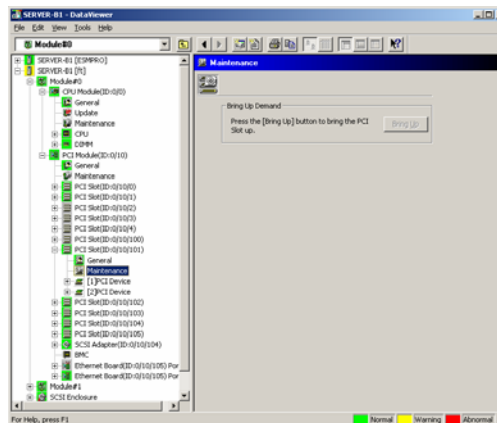
- PCI Device – General

  Allows the information of devices on the PCI slot to be viewed.
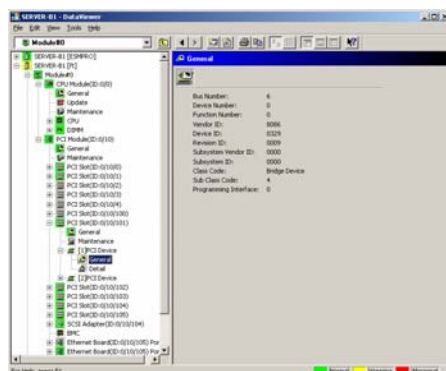
- PCI Device – Detailed information

  Allows the detailed information of a device on the PCI slot to be viewed.
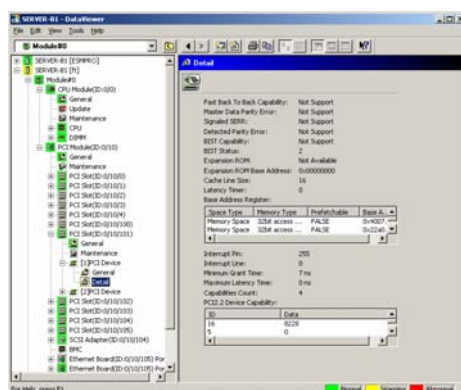
Monitoring BMC on IO Module

To monitor the base management controller (BMC), controller for system management, on the IO modules, see the [BMC] tree. To see the information on the [BMC] tree, select [PCI Module] - [PCI module (containing BMC to be seen)] - [BMC] of the [ft] tree.
You can see the BMC's firmware version and other information in the [BMC] tree.
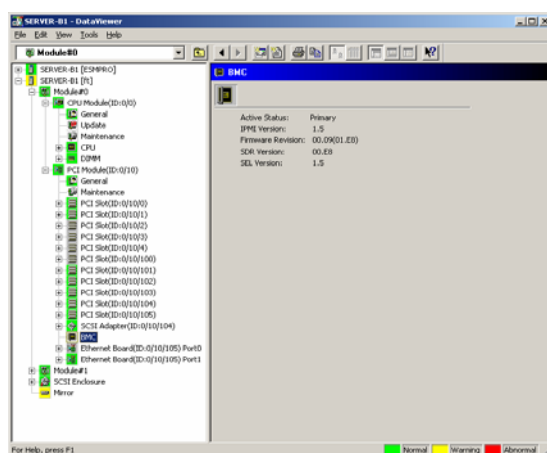
Monitoring SCSI Enclosure

To monitor the SCSI enclosure, see the [SCSI enclosure] tree. To see the information on the [SCSI enclosure] tree, select [SCSI enclosure] of the [ft] tree.

You can see the following information of the SCSI enclosure from the [SCSI enclosure] tree.

■ General

Allows the configuration and other information of the SCSI enclosure to be viewed.

> **IMPORTANT:**
>
> You need to be aware that PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For details, see "Impact of Module Status Changes" described above.
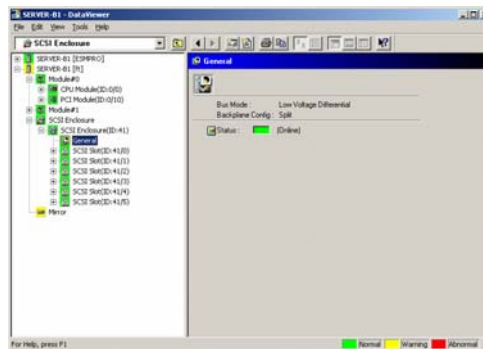
■ SCSI Slot – General

Allows the configuration and other information of the SCSI slot to be viewed.
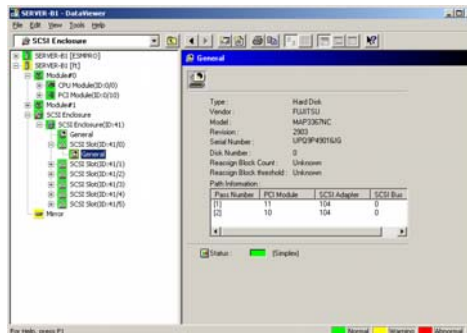
> **IMPORTANT:**
>
> You need to be aware of the status of hard disk during the mirror creation. For details, see "Status Colour after Mounting a Hard Disk" in "Supplement".

Monitoring Mirror Disk

To monitor the mirror disk components, see the [Mirror] tree. To view information on [Mirror] tree, select [Mirror] under [ft] tree.
You can see the redundancy status of the mirrors and the device IDs of the SCSI slots into which these hard disk components are connected.
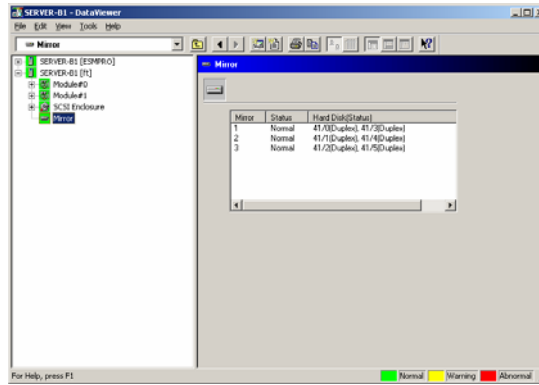
[Mirror]

Monitoring Hard Disk

To monitor the hard disks and detect disk failures at an early stage, use the ESMPRO Manager and Agent. You can see configurations and information of hard disk in the Data Viewer.

Monitoring Operations

This section describes how to maintain hard disks.

1. Confirmation of hard disk failure

If ESMPRO Agent detects some problem with a hard disk, it will report an alert of the problem to ESMPRO Manager. Check the alert viewer in the manager regularly.

Ex. If a hard disk in SCSI Slot (41/1) is broken, agent reports the following alert.

Status of the SCSI Slot (ID:41/1) has changed from Duplex to Broken.

And manager displays the problem information of the hard disk in the [ft] → [SCSI enclosure] → [SCSI Slot] → [General] of the data viewer.
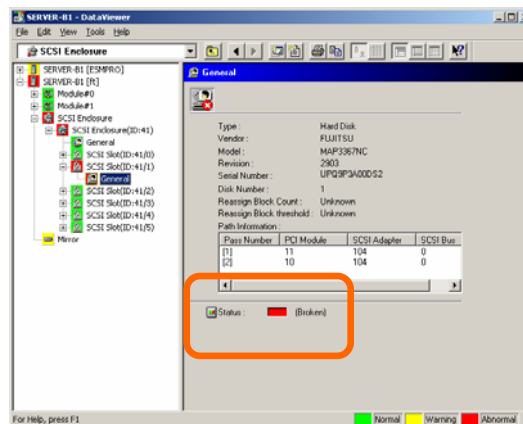
[General] of SCSI slot

2. Confirmation of mirror status

To check the redundancy status of the failed mirror disk, open [Mirror] screen under [ft]. On this screen, you can check the redundancy status of the mirror and the status of the mirrored hard disks.
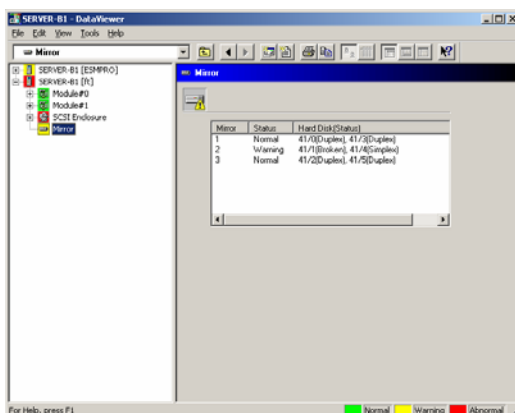
[Mirror]

IMPORTANT:

The mirroring redundancy status will change depending on the status of the two hard disks that make up a mirror as follows:

Status of hard disk 1	Status of hard disk 2	Status of mirror volume
Duplex	Duplex	Normal
	Simplex	Warning
	Others	Warning
Simplex	Duplex	Warning
	Simplex	Warning
	Others	Warning
Others	Duplex	Warning
	Simplex	Warning
	Others	-

"-": No status is shown.

TIPS:

Unless the hard disks make up a mirror, the Mirror Disk screen does not show any information.

IMPORTANT:

The Mirror Disk screen shows a pair of two hard disks as a mirror. Disk pairs are shown in the same manner even if a few volumes are created within a single disk or one volume spans a few disks (span volume).

■ A few volumes are created within a single disk:
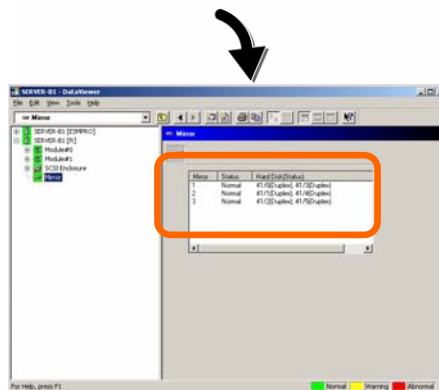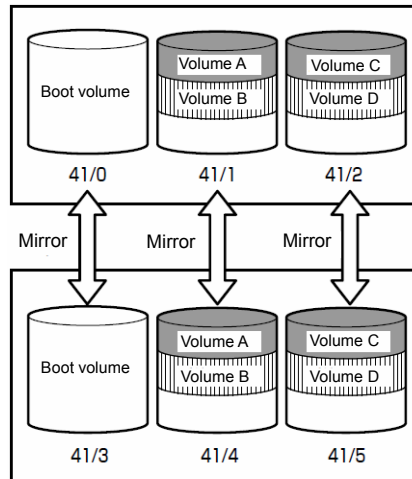
The screen shows information on a pair of hard disks that make up a mirror. It does not show information based on volumes (ex. Volume A, Volume B).

3. Recovery from a hard disk failure

If a hard disk breaks, the broken disk must be replaced immediately. This section describes alert reports and status shown by the Data Viewer while disks are replaced to restore mirroring.

(1) Detecting problem of a hard disk

See [1. Confirm of hard disk failure] above.

(2) Removing the hard disk

Disconnect the hard disk with the problem. At this time, ESMPRO Agent reports the following alert to manager. And icons related to the hard disk with problem change the state of warning in the data viewer.

Since the hard disk has been removed, the status of the SCSI slot will be "EMPTY."
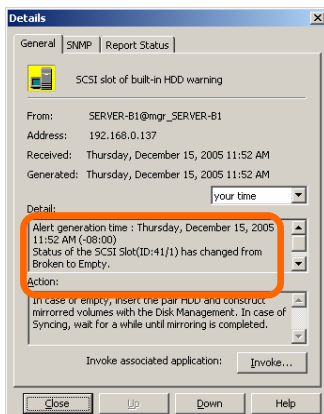
TIPS:

You can identify the new hard disk by DevicePathID (ex. 41/1).

When one hard disk with problem was disconnected, SCSI slot changes the status to "Warning".
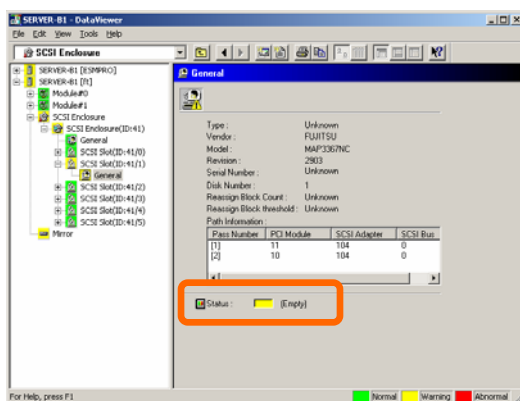
[SCSI Slot] → [General]

IMPORTANT:

The status colour of the SCSI slot differs depending on the connection of mirrored hard disks:

- If one of the mirrored disks was removed: Warning
- If both of the mirrored disks were removed: Gray

Also, at this time, the redundant status of mirrored disks is changed to "Warning".
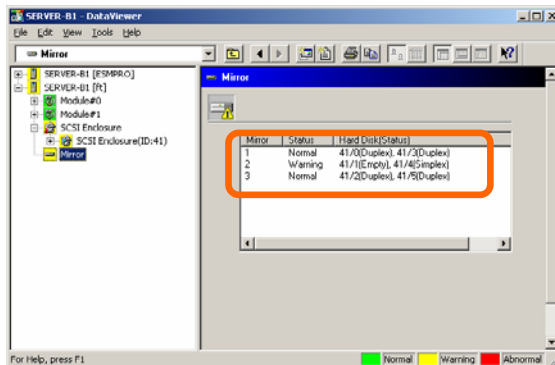
[Mirror]

(3) Mounting a hard disk drive.

Mount a hard disk drive. When a hard disk drive is inserted, an alert report is sent and the information on a Data Viewer changed.

A hard disk drive is mounted and the SCSI slot status becomes "Online".
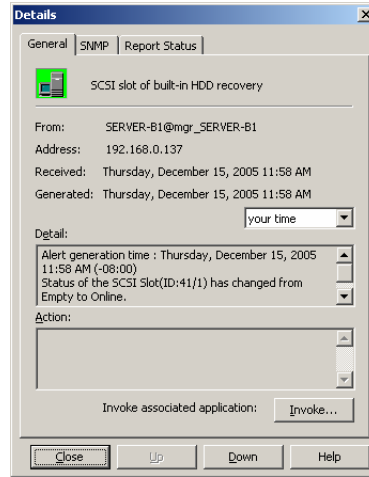
[Details] of alert report

TIPS:

The device ID (for example, "41/1") on the "Details" window of alert indicates the location of the removed hard disk drive.

The state colour becomes " Green" because a hard disk drive constructing a mirror is mounted.
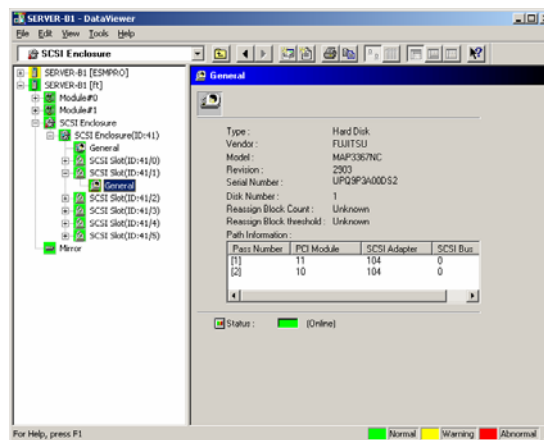
[General] of SCSI Slot

The redundancy status becomes " Normal" because the hard disk drive constructing a mirror is mounted.
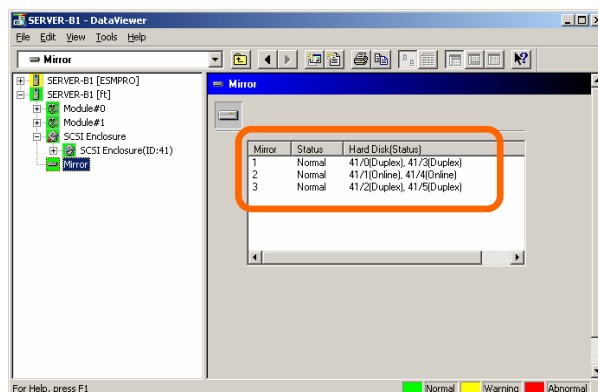
[Mirror]

Server Maintenance Utility Online Help

Server Maintenance Utility is a tool for managing server operation. It is used to configure operation patterns, to check status at replacement of parts, and to instruct operations.
To use Server Maintenance Utility, you need to log on as a user with administrator authority.
Select [Start] - [All Programs] - [ESMPRO Agent] - [Server Maintenance Utility] to start Server Maintenance Utility.
Only one Server Maintenance Utility can be run at a time.

Screen Layout

Top

Title bar	Name of an item that Server Maintenance Utility is currently using.
Menu bar	Menu items.
Tool bar	Provides easy access to functions available for Server Maintenance Utility by clicking each button.

Centre

Tree view	Information display view
Items indicating the information and configuration of the entire system, and the components of the device of each module. Components of physical modules are displayed under respective modules.	Information of the item selected in the tree on the left pane.

Note: The tree view will not be updated even when the status of devices changes. Use the menu or the tool bar to update the tree view.

Bottom

Status bar	Short description of a selected menu command is displayed on the left side of the status bar. Pressing down a tool bar button also displays short descriptions. If you decide not to execute the tool bar command after reading the description, continue to press the mouse button and move the mouse pointer away from the button, and then release the mouse button. The right side of the status bar shows whether the following keys are pressed: CAP: Caps Lock, NUM: Num Lock, SCRL: Scroll Lock

System Information

Chassis Information contains the following information:

Item	Description
Type	Chassis type of the server
Part Number	Part number of the server chassis
Serial Number	Serial number of the server chassis

System Information contains the following information:

Item	Description
OS	Name of the OS installed on the server
OS Version	Version of the OS installed on the server
Name	Host name of the server

Product Information contains the following information:

Item	Description
Manufacturer	Manufacturer of the server
Product	Product name of the server
Part Number	Part number of the server
Serial Number	Serial number of the server
Version	Version number of the server

LCD contains the following information:

Item	Description
Module #0	Virtual LCD information of the module #0
Module #1	Virtual LCD information of the module #1

System Configuration

System Configuration contains the following information:

Quick dump that is harvested at the same time of system reboot.
Select the [Enable] radio button to obtain quick dump at a system crash.
This function is enabled when "Complete memory dump" is set on Windows setting. When a quick dump cannot be produced, a dump is produced by the standard dump function.

Automatic firmware update.
Select the [Enable] radio button to enable automatic firmware update. When this item is enabled and when one module is started, the firmware (System BIOS) of the other module started later will be automatically updated to the one that is already running if it is old.

Automatic module start.
Select the [Enable] radio button to enable the automatic module start. When this item is enabled and when the server is running in the simplex mode with one module, if the other module is inserted to the chassis, it will be automatically started and modules will become duplex.
The module POWER switch of the server is always enabled regardless of this setting. (The module stopped by the module POWER switch can be started even when this setting is disabled.)

The following buttons are displayed for System Configuration:

Item	Description
Apply	Applies the system configuration to the server
Restore Defaults	Resets the system configuration of the server to the default.

These operations cannot be performed while collecting dump or updating firmware. Wait until such processing is finished to perform the operations in the table.

Module#n

Module contains the following information:

Item	Description
Device	CPU module name and PCI module name
Status	Status of the CPU module and the PCI module

CPU Module (ID:n/m)

CPU Module contains the following information:

Item	Description
Status	Status of the CPU module

MTBF Information contains the following information:

Item	Description
Type	Monitoring status of MTBF. Use Threshold: MTBF is calculated at a fault occurrence. The device is stopped when the calculated value is lower than the threshold. Never Restart: Always stops the device at a fault occurrence. Always Restart: Always restarts the device at a fault occurrence.
Threshold	Threshold of MTBF. When the threshold is not specified, " -- " is displayed.
Current	Current MTBF value. When there is no or few errors, " -- " is displayed because MTBF cannot be calculated.
Faults	Number of faults
Time of last fault	Time of the last fault. When there is none, "--" is displayed.

Firmware contains the following information:

Item	Description
Version	Version of the firmware (System BIOS)
Additional Information	Additional information of the firmware (System BIOS)

The following buttons are displayed for CPU Module:

Item	Description
Clear	Clears the MTBF information of the CPU module
Up	Starts the CPU module. When you also start the PCI module of the same module, start the PCI module before the CPU module.
Down	Stops the CPU module
Firmware	Updates the firmware (System BIOS)
Jump Switch	Switches the board. Start the IO module and the CPU module of the sopped module respectively and make modules duplex. Then, stop the other module's CPU module and IO module respectively. * Use this function when updating the firmware (BIOS). This function is available for a module which CPU and PCI (IO) modules are stopped.
Harvest	Collects dump. Before clicking this button, select one of the methods of to collect dump: • Save memory dump of the stopped module. • Harvest memory dump of the current system without stopping it. *Check the result of dumping by an event log. This function cannot be used if "Complete memory dump" is not set on Windows setting. In such a case, a dump is not produced even if it is requested. Do not start or stop the module while producing a dump.

* (1) The execution of each button may take a few minutes. Wait for a while to update the display and check the module status.
(2) This system performs diagnostics to both CPU module and PCI module on the same board. Execute diagnostics from a PCI module.
(3) These operations cannot be performed while collecting dump or updating firmware. Wait until such processing is finished to perform the operations in the table.

PCI Module (ID:n/m)

PCI Module contains the following information:

Item	Description
Status	Status of the PCI module

MTBF Information contains the following information:

Item	Description
Type	Monitoring state of MTBF. Use Threshold: MTBF is calculated at a fault occurrence. The device is stopped when the calculated value is lower than the threshold. Never Restart: Always stops the device at a fault occurrence. Always Restart: Always restarts the device at a fault occurrence.
Threshold	Threshold of MTBF. When the threshold is not specified, " --" is displayed.
Current	Current MTBF value. When there is no or few errors, " --" is displayed because MTBF cannot be calculated.
Faults	Number of faults
Time of last fault	Time of the last fault. When there is none, "--" is displayed.

Diagnostics Information contains the following information:

Item	Description
Time of last run	Time and date of the last diagnostics execution
Message	Message from the diagnostics result
Test Number	Test number from the diagnostics result

The following buttons are displayed for PCI Module:

Item	Description
Clear	Clears the MTBF information of the PCI module
Up	Starts the PCI module. The CPU module of the same module must be stopped when starting the PCI module. When the CPU module of the same module is running, stop the CPU module and then start it after starting the PCI module.
Down	Stops the PCI module. Depending on a module state, a screen will go off temporarily. Also, USB devices such as a keyboard and a mouse may not be available for a few minutes. However, a system continues operating. You cannot stop the module when the FT status LED is not illuminating green (when the server is not duplicated).
Diagnostics	Executes diagnostics of the CPU module on the same module as the PCI module. To perform diagnostics, both CPU and PCI modules on the module needs to be stopped.

* (1) The execution of each button may take a few minutes. Wait for a while to update the display and check the module status.
  (2) These operations cannot be performed while collecting dump or updating firmware. Wait until such processing is finished to perform the operations in the table.

SCSI Adapter (ID:n/m/o)

SCSI Adapter contains the following information:

Item	Description
Status	Status of the SCSI adapter

SCSI Bus (ID:n/m/o/p)

The following information is displayed for SCSI Bus:

Item	Description
Status	Status of the SCSI bus

The following information is displayed for the primary setting:

Item	Description
Setting	Current setting (Primary or Secondary) of the SCSI bus

The following information is displayed for SCSI Bus:

Item	Description
Primary	Makes the current bus the primary SCSI bus (For your maintenance personnel).

* The execution of each button may take a few minutes. Wait for a while to update the display and check the module status.

Ethernet Board (ID:/n/m/o) Port p

The following information is displayed for Ethernet Board:

Item	Description
Status	Status of the Ethernet board

BMC

The following information is displayed for Firmware:

Item	Description
Active	Current status of the firmware
IPMI Version	IPMI version
Firmware Revision	Firmware revision
SDR Version	SDR version
SEL Version	SEL version

SCSI Enclosure

The following information is displayed for SCSI Enclosure:

Item	Description
Device	SCSI enclosure name
Status	Status of the SCSI enclosure

SCSI Enclosure (ID:n)

The following information is displayed for SCSI Enclosure:

Item	Description
Status	Status of the SCSI enclosure

The following information is displayed for SCSI Slot:

Item	Description
Slot	SCSI slot name
Status	Status of the SCSI slot The mirror status of the volume in the disk mounted to the slot is reflected to the status of the SCSI slot, but the duplex status of the SCSI bus to the slot is not reflected.

* The last digit of SCSI slots corresponds to the slot number of built-in SCSI disk.
 For the rack-mount model: 0 through 5 from bottom to top.

SCSI Slot (ID:n.m)

The following information is displayed for SCSI Slot:

Item	Description
State	State of the SCSI slot (individual built-in SCSI disk) The mirror status of the volume in the disk mounted to the slot is reflected to the status of the SCSI slot, but the duplex status of the SCSI bus to the slot is not reflected.

The following information is displayed for SCSI Bus:

Item	Description
Path State	State of the two SCSI buses connected to individual internal SCSI disks.
PCI Module	PCI module number
CSI Adapter	SCSI adapter number
SCSI Bus	SCSI bus number

Firmware Update

The following information is displayed for Firmware Update:

Copy online BIOS image to offline.
Select this radio button to copy online BIOS image to offline.

Specify the file path to update.
Select this radio button to specify the file path to update.

Type the location of the firmware.
Type the full path (location and the file name) of the firmware to update in the edit box.

The following buttons are displayed for Firmware Update:

Item	Description
Browse	Opens a dialog box for selecting a file
Execute	Updates the firmware *Do not perform the following operations during the update of firmware. - Start/stop of a module - OS shutdown - Module removal - Module power-off *Firmware can be updated from an old version to a new version only. It cannot be updated if its version number is equal to or smaller than the one of both modules of the system whose firmware you want to update.
Cancel	Cancels firmware update
Help	Displays the contents of Help.

Menu bar

File menu

There are the following commands for [Menu] - [File]:

Item	Description
[Export]	Exports the information that Server Maintenance Utility has into a file
[Exit]]	Terminates Server Maintenance Utility

View menu

There is the following command for [Menu] - [View]:

Item	Description
[Refresh]	Displays the latest information of Server Maintenance Utility

Settings menu

[Menu] - [Settings] is not supported for this release.

Tool menu

There are the following commands for [Menu] - [Tool]:

Item	Description
[BMC FW] - [Update]	Updates BMC firmware
[BMC FW] - [Properties]	Specifies the update medium of the BMC firmware

Help menu

There are the following commands for [Menu] - [Help]:

Item	Description
[Help topics]	Displays the contents of Help
[About Server Maintenance Utility]	Displays the version of this application

Tool bar

There are the following buttons:

Item	Description
Help	The mouse cursor is displayed with "?." Clicking something on the screen with that cursor displays corresponding help information.
Refresh	Displays the latest information of Server Maintenance Utility. Same as selecting [View] - [Refresh].

Scroll bar

The scroll bars are shown at the right and bottom sides of each window. The scroll box in the scroll bar indicates the location of the currently displayed information.
Use the mouse to scroll the screen.

Key Operations

Arrow keys

The selection of the tree item can be moved up or down using the up or down arrow key (↑ or ↓) when the focus is on the tree view. For items with " + " or " - " , the tree can be expanded or closed using the left or right arrow key (← or →).
When the focus is on the information display view, the screen can be scrolled using the up, down, right and left arrow keys (↑, ↓, ←, →).

Tab key

Moves to the next selection item when the focus is on the information display view. Pressing the **Shift** and **Tab** keys together moves the focus to the previous selection item.
When the focus is moved, the screen is scrolled to display the selected item.

F1 key

Displays help information of the item in the information display view.
When the mouse cursor is on a menu item, the help information of that menu item is displayed.

F6 key

Switches the focus between the tree view and the information display view.

Tree view

Colors of icons in the tree view and their meaning:

Green: Normal
Yellow: Warning
Red: Error
Gray: Unknown

When the color of an item in the tree view is yellow (warning) or red (error), the color of its upper-level icons changes to yellow or red accordingly. If the color is gray (unknown), it does not change the color of the upper-level icons.

Maintenance of the Server

The server maintenance can be done in two ways; one is to use ESMPRO Manager for remote maintenance and the other is to use the ESMPRO Agent Server Maintenance Utility on the server for local maintenance.

TIPS: To start the ESMPRO Agent Server Maintenance Utility installed in server, select the items as follows:

Start Menu→[All Programs]→[ESMPRO Agent]→[Server Maintenance Utility]

The maintenance functions that can be executed from ESMPRO include three types, those common to all components, those specific to particular components, and general system settings.

The maintenance functions common to all components are operated in the same way basically (the operation procedure and typical examples of screen images are described below).

The table below lists the maintenance functions common to all components.

Component	Start		Stop		MTBF clear		Diag-nosis		F/W update	
	R	L	R	L	R	L	R	L	R	L
CPU module	√	√	√	√	√	√	–	–	√	√
IO module	√	√	√	√	√	√	√	√	–	–
PCI slot	–	–	–	–	–	–	–	–	–	–
Ethernet board	–	–	–	–	–	–	–	–	–	–
SCSI adapter	–	–	–	–	–	–	–	–	–	–
SCSI enclosure	–	–	–	–	–	–	–	–	–	–
SCSI electronics	–	–	–	–	–	–	–	–	–	–
SCSI slot	–	–	–	–	–	–	–	–	–	–

R: Remote. Executable from remote management PC by using ESMPRO Manager
L: Local. Executable on local server by using Server Maintenance Utility
√: Supported
–: Not supported

The maintenance operations in the table cannot be performed while collecting dump or updating firmware. Wait until such processing is finished to perform the operations in the table.

The table below shows the component-specific maintenance functions executable from ESMPRO.

Component	Dump acquisition		Dump acquisition during system operation		Board switch	
	R	L	R	L	R	L
CPU module	–	√	√	√	√	√

R: Remote. Executable from remote management PC by using ESMPRO Manager
L: Local. Executable on local server by using Server Maintenance Utility
√: Supported
–: Not supported

Component	Change of primary SCSI bus	
	R	L
SCSI bus	–	√

R: Remote. Executable from remote management PC by using ESMPRO Manager
L: Local. Executable on local server by using Server Maintenance Utility
√: Supported
–: Not supported

Component	BMC firmware update	
	R	L
BMC	√	√

R: Remote. Executable from remote management PC by using ESMPRO Manager
L: Local. Executable on local server by using Server Maintenance Utility
√:   Supported
–:   Not supported

The table below shows the support of the whole system setup functions.

Component	Quick dump		Auto firmware update		Auto module start	
	R	L	R	L	R	L
Whole system	–	√	–	√	–	√

R: Remote. Executable from remote management PC by using ESMPRO Manager
L: Local. Executable on local server by using Server Maintenance Utility
√:   Supported
–:   Not supported

Start and Stop of Components

To start or stop a component with ESMPRO Manager, use the [Maintenance] tree of the component in the [ft] tree of the data viewer. Open the tree of the component to be started or stopped and select the [Maintenance] tree.

To start or stop a component with the Server Maintenance Utility, use the utility screen of the component.

The table below shows the potential cases in which a component is to be started or stopped.

Compo-nent	Start		Stop	
	Remote	**Local**	**Remote**	**Local**
CPU Module	When the cause of down is reviewed and the system is restarted in module down state. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When the cause of down is reviewed and the system is restarted in module down state. Executable in the following module state: (this can be viewed on Server Maintenance Utility screen) • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When system is stopped forcibly due to replacement or malfunction of module. Executable in the following module state (this can be viewed on manager screen): • Duplex	When system is stopped forcibly due to replacement or malfunction of module. Executable in the following module state: (this can be viewed on Server Maintenance Utility screen) • Duplex
IO Module	Same as above	Same as above	Same as above	Same as above

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility

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IMPORTANT:

IO modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. You need to be aware of this, for example, when you replace a CPU/IO module. For details, see "Impact of Module Status Changes" described earlier in this chapter.

When starting modules, ensure to start IO modules first and then CPU modules. To start IO modules when CPU modules are running and IO modules are stopped, the CPU modules must be stopped before starting IO modules.

CHECK:

Even if a CPU module or IO module stop request is sent, the module will not be stopped if the system would be unable to continue running.The same happens when the FT STATUS LED is off.
For example, the module is not stopped when the CPU/IO modules are successfully duplicated, but the link cable of a teamed LAN is connected to only one side of the modulesn, or when a storage device connected by FC is connected to only one side of the modules.
If the module is not stopped when you attempt to do so, see the event log to check the status.

Procedure in ESMPRO Manager

■ **Start**

1. Select the target component in the [ft] tree.

2. Check the current state with the "State" display on the target component screen.

3. Click the [Bring Up] button in the [Maintenance] screen for the target component.

   A certain time is required for the start.

   The start result can be confirmed by "State" on the target component screen. The result of the start operation is reported by the server as an alert.

   CHECK:

   When starting a stopped IO module, diagnostics of the CPU/IO modules are automatically performed. The IO module is started after the diagnostics.

■ **Stop**

Perform the procedure below before replacing a component.

1. Select the target component in the [ft] tree.

2. Check the current state with the "State" display on the target component screen.

3. Click the [Bring Down] button in the [Maintenance] screen for the target component.

   A certain time is required for the stop.

   The stop result can be confirmed by "State" on the target component screen. The result of the stop operation is reported by the server as an alert.

   CHECK:

   When stopping IO module, check that the status of Ethernet is "Duplex" on ESMPRO Manager. Do not stop the IO module especially when LAN is connected only to the IO module on that side.

Sample screen of ESMPRO Manager 1

[Maintenance] screen of CPU module
[CPU Module] – [CPU Module] – [Maintenance]

Sample screen of ESMPRO Manager 2

[Maintenance] screen of IO module
[PCI Module] – [Maintenance]

Procedure in the Server Maintenance Utility

■ **Start**

1. Select the target component by using the Server Maintenance Utility.

2. Check the current state of the target component with the LEDs.

3. Click the [Up] button of the target component.

   A certain time is required for the start.

   The start result can be confirmed by the LEDs on the target component. The result of the start operation is registered in the event log.

   CHECK:

   When starting a stopped IO module, diagnostics of the CPU/IO modules are automatically performed. The IO module is started after the diagnostics.

■ **Stop**

Stop before replacing components.

1. Select the target component by using the Server Maintenance Utility.

2. Check the current state of the target component with the LEDs.

3. Click the [Down] button of the target component.

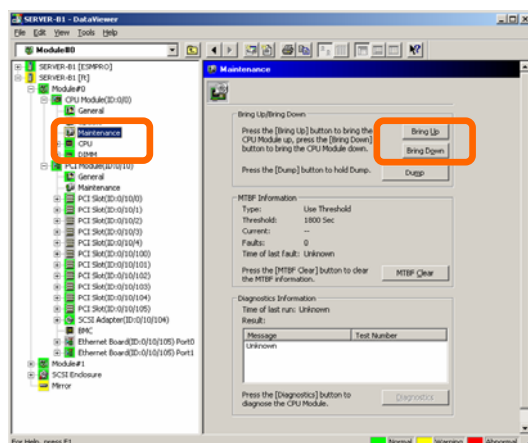   A certain time is required for the start.

   The start result can be confirmed by the LEDs on the target component. The result of the start operation is registered in the event log.
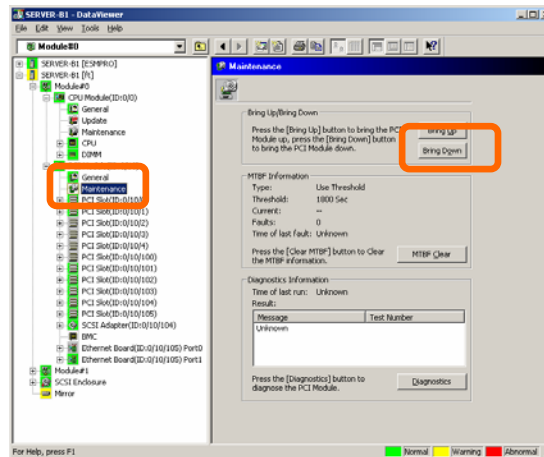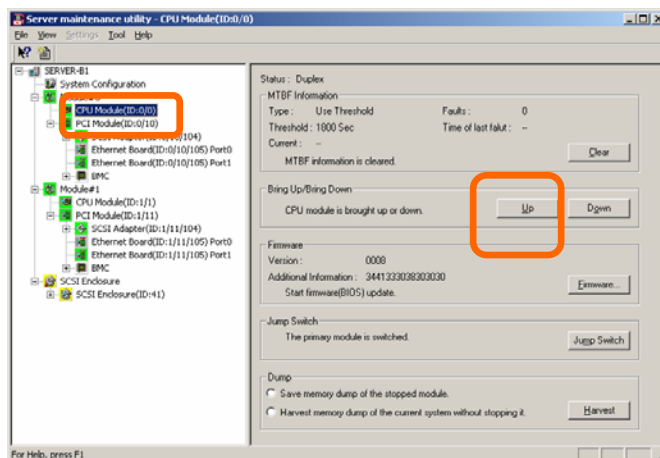
   CHECK:

   When stopping IO module, check that the status of Ethernet is "Duplex" on Server Maintenance Utility. Do not stop the IO module especially when LAN is connected only to the IO module on that side.

Sample screen of Server Maintenance Utility

Check and Clear of MTBF Information

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

The server manages the MTBF (Mean Time Between Failures) of each component. If a fault occurs in a component, the server series calculates the MTBF of the component again. If the calculated value is lower than the pre-defined threshold, the server disables the component to be used.
Contact your maintenance personnel if such a symptom as above occurs.

IMPORTANT:

A disabled component with the MTBF lower than the threshold can be forcibly enabled by clearing the MTBF. However, contact your maintenance personnel for the forced use of such a component.

To clear the MTBF information of a component with ESMPRO Manager, use the [Maintenance] tree of the component of the [ft] tree of the data viewer. Open the tree of the component whose MTBF information is to be cleared and select the [Maintenance] tree.

To clear the MTBF information of a component with the Server Maintenance Utility, use the utility screen of the component. The table below shows the potential cases in which the MTBF information of a component is to be cleared. Contact your maintenance personnel for clearing MTBF information.

Component	MTBF clear	
	Remote	**Local**
CPU Module	To start the module forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module.	To start the module forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module.
IO Module	Same as above	Same as above

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility

Procedure in ESMPRO Manager

Perform the procedure below before replacement of a component.

1. Select the target component in the [ft] tree.

2. Check the current state with the "State" display on the target component screen.

3. Click the [Clear] button in the [MTBF Clear] of the target component.

The MTBF clearing result can be confirmed by the MTBF information on the target component screen. The result of the MTBF clearing operation is reported by the server as an alert.

CHECK:

■ At this point, the "State" display on the target component screen is not changed.

■ If the MTBF clear is executed in the following conditions, diagnostics of the CPU/IO modules are automatically performed after MTBF clear:

- The target CPU/IO module is turned on
- Both of the target CPU module and IO module are stopped

4. Start the component.

CHECK:

At this point, the "State" display on the target component screen is changed.

Sample screen of ESMPRO Manager
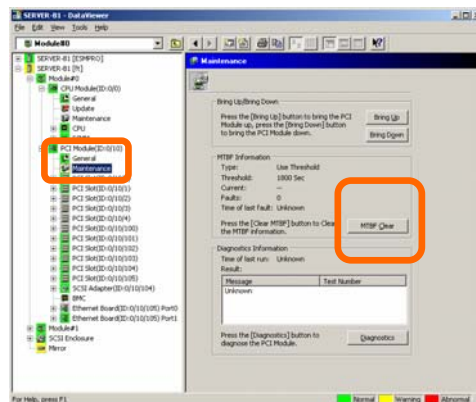
[Maintenance] screen of IO module
[PCI module] – [Maintenance]

Procedure in the Server Maintenance Utility

Perform the procedure below before replacement of a component.

1. Select the target component by using the Server Maintenance Utility.

2. Check the current state of the target component with the LEDs and event log.

3. Click the [Clear] button in [MTBF Information] of the target component.

The MTBF clearing result can be confirmed by the LEDs on the target component. The result of the MTBF clearing operation is registered in the event log.

CHECK:

- At this point, the "State" display on the target component screen is not changed.

- If the MTBF clear is executed in the following conditions, diagnostics of the CPU/IO modules are automatically performed after MTBF clear:

  - The target CPU/IO module is turned on
  - Both of the target CPU module and IO module are stopped

4. Start the component.

CHECK:

At this point, the "State" display on the target component screen is changed.

Sample screen of Server Maintenance Utility
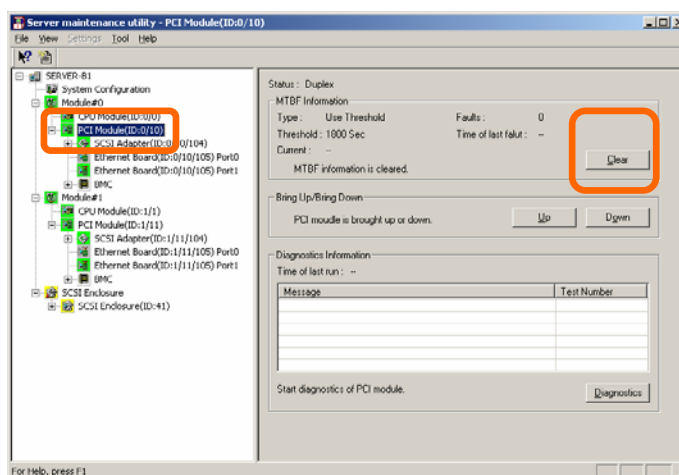
[PCI Module]

Diagnostics

The server provides the self-check diagnostics function for some components. If a fault occurs in a component, the server can diagnose the component to detect the fault.

For this server, CPU modules and IO modules can be diagnosed all together.
To diagnose a component with the ESMPRO Manager, use the [Maintenance] tree of the component in the data viewer. Open the tree of the component to be diagnosed and select the [Maintenance] tree.
To diagnose of a component with the Server Maintenance Utility, use the utility screen of the component.

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

Component	Diagnostics	
	Remote	**Local**
CPU Module	When a phenomenon causing the module to be down occurs or a phenomenon supposed to be a malfunction occurs. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Firmware Update Complete To diagnose the module under operation, bring down the module before the diagnostics.	When a phenomenon causing the module to be down occurs or a phenomenon supposed to be a malfunction occurs. Executable in any of the following module states: (This can be viewed on Server Maintenance Utility screen.) • Removed • Broken • Shot • Firmware Update Complete (Diagnostics Passed) To diagnose the module under operation, bring down the module before the diagnostics.

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility

IMPORTANT:

Diagnostics operations are performed to IO modules. When IO modules are diagnosed, CPU modules will be diagnosed as well. CPU modules cannot be diagnosed individually.

The system diagnostics cannot be performed while collecting dump or updating firmware. Wait until the process is completed to perform the diagnostics.

Procedure in ESMPRO Manager

1. Select the target module in the [ft] tree.

2. Check the current state with the "State" display on the target module screen. If CPU and IO modules of the target module are running, stop them.

3. Click the [Diagnostics] button in the [Maintenance] screen for the IO module of the target module.

When the diagnostics is started, the CPU and IO modules are diagnosed together.

The diagnostics result can be confirmed by "Result" of the diagnostics on the target component screen. The result of the diagnostics is reported by the server as an alert.
The result of diagnostics executed last is displayed in the [Diagnostics Information] column. In addition, if a fault is detected by the result of the diagnostics, the state of the [General Information] tree of the component is changed.

CHECK:

When stopping IO module, check that the status of Ethernet is "Duplex" on ESMPRO Manager. Do not stop the IO module especially when LAN is connected only to the IO module on that side.

Sample screen of ESMPRO Manager
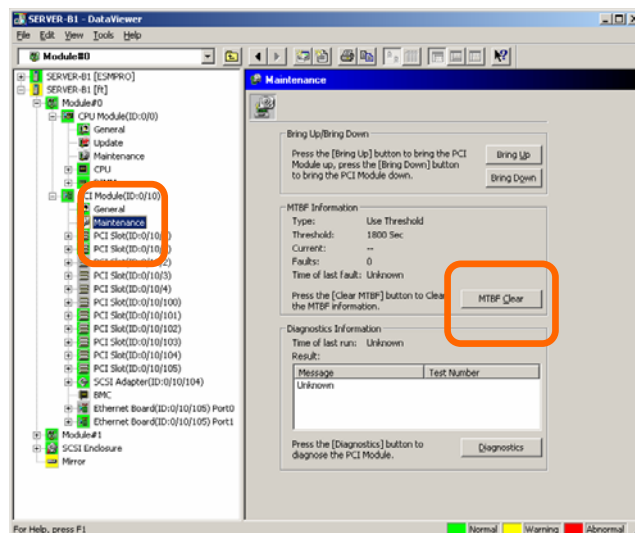
[Maintenance] screen of IO module
[PCI Module] – [Maintenance]

Procedure in the Server Maintenance Utility

1. Select the target module by using the Server Maintenance Utility.

2. Check the current state of the target module with the LEDs. If the component is operating, stop the component.

3. Click the [Diagnostics] button in the [Diagnostics Information] on the target module.

The diagnostics result can be confirmed by re-obtaining the status of the target module. The result of the diagnostics is registered in the event log.

CHECK:

When stopping IO module, check that the status of Ethernet is "Duplex" on Server Maintenance Utility. Do not stop the IO module especially when LAN is connected only to the IO module on that side.

Sample screen of Server Maintenance Utility
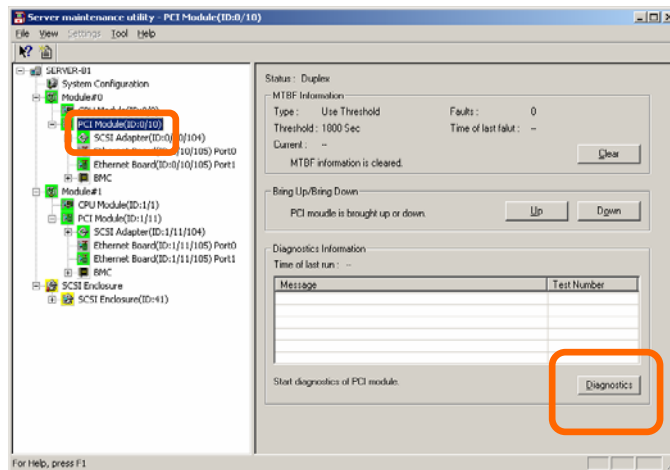
[PCI Module]

Firmware Update

The server can update firmware (including BIOS) if some hardware components operate in the online state (in which the system continues the operation but the component trying to update firmware or BIOS is stopped).

To update firmware with ESMPRO Manager, use the [Update] tree of the component in the data viewer. Open the tree of the component for which firmware is updated and select the [Update] tree.

To update the firmware of a component with the Server Maintenance Utility, use the utility screen of the component.

To update the firmware of a component, the firmware image file of the firmware for update must previously be stored in the managed server. On the firmware update screen, specify the path to the firmware image file for update.

The table below shows the potential cases in which the firmware of a component is to be updated.

| Component | Firmware update | |
	Remote	Local
CPU Module	When BIOS must be updated to new one. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Diagnostics Passed To update the module under operation, bring down the module before the update.	When BIOS must be updated to new one. Executable in the following module state (this can be viewed on Server Maintenance Utility screen): • Removed • Broken • Shot • Diagnostics Passed (Firmware Update Complete) To update the module under operation, bring down the module before the update.

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility

Procedure in ESMPRO Manager

1. Save the image data of the update firmware in an arbitrary directory of the server.

Write down the path to the directory in which the image data is saved.

2. Select the target component in the [ft] tree.

3. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component. Stop the CPU module and then stop the PCI module.

4. Click the [Firmware Update] button in the [Update] screen for the target component.

Sample screen of ESMPRO Manager
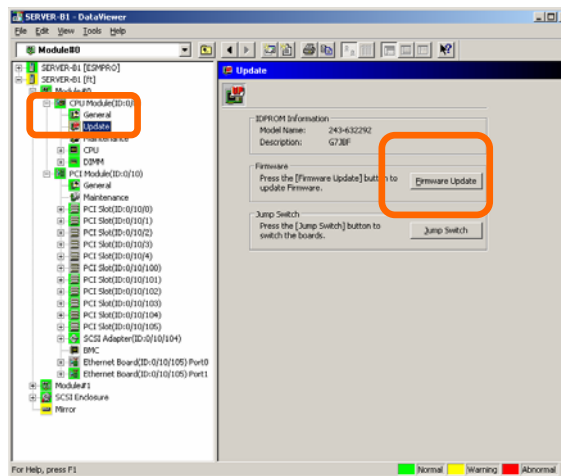
[Update] screen of CPU module
[CPU Module] – [Update]

5. Select [Specify the file path to update], enter the directory where the firmware to update is stored (the directory you wrote down in step 1) and the file name of the image data into the input box, and click the [Execute] button.

The server will update the firmware.

The update result can be confirmed by the state on the target component screen (indication of "Firmware update completed"). The result of the update processing is reported by the server as an alert.
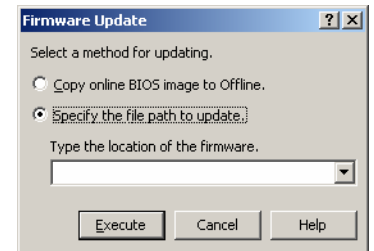
6. After the BIOS for a single CPU module is completed, click the [Jump Switch] button. The module completely updated is started and the active module is stopped.

The result of switching boards is reported as an alert. Switching boards should be performed only by "Firmware Update." The keyboard and mouse may not function for a few minutes while switching boards.
If the module is not switched successfully, by setting "Operation at the time of newer version BIOS detection" of GeminiEngine Monitor Tool, BIOS may be updated for the rest of the modules automatically. In this case, it is not required to take the following steps.

7. Click [Diagnostics] on the [Maintenance] screen of the other PCI module stopped.

8. Start the other stopped module.

Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is disabled, the module does not start. In such a case, perform the following operations before starting the module:

(1) Click the [Firmware Update] button in the [Update] screen for the target component.

(2) In the [Firmware Update] dialog box, select [Copy online BIOS image to Offline] as a method for updating, and click [Execute].
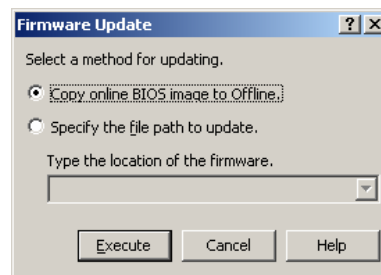
IMPORTANT:

A message prompting you to reconstruct the tree of Data Viewer you are updating may appear. In such a case, click [Yes].

CHECK:

When stopping IO module, check that the status of Ethernet is "Duplex" on ESMPRO Manager. Do not stop the IO module especially when LAN is connected only to the IO module on that side.

Procedure in Server Maintenance Utility

1. Save the image data of the update firmware in a desired directory of the server.

Write down the path to the directory in which the image data is saved.

2. Select the target component with the Server Maintenance Utility.

3. Check the current state of the target component with the LEDs. If the component is operating, stop the component. Stop the CPU module and then stop the PCI module.

4. Click the [Firmware…] button for the target component.

Sample screen of Server Maintenance Utility
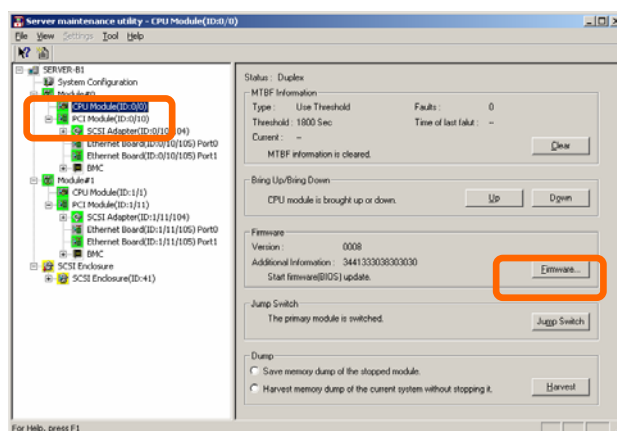
[CPU Module]

5. Select [Specify new firmware for update], enter the directory where the firmware to update is stored (the directory you wrote down in step 1) and the file name of the image data into the input box, and click the [Execute] button.

The server will update the firmware.

6. Check the update result with the event log.

When using the Server Maintenance Utility screen to check the update result, the tree view status is not updated automatically. Select "Refresh" from the display menu or use the tool button, to update the tree view status.

7. After the BIOS update for a single CPU module is completed, click [Jump Switch] in [Jump Switch].

The module completely updated is started and the module under operation is stopped. Switching boards should be performed only by "Update Firmware." The keyboard and mouse may not function for a few minutes while switching boards.

If the module is not switched successfully, by setting "Operation at the time of newer version BIOS detection" of GeminiEngine Monitor Tool, BIOS may be updated for the rest of the modules automatically. In that case, the BIOS update status dialog is displayed, so check its information. If the automatic update completes, it is not required to take the following steps. If the automatic update of BIOS is not set by GeminiEngine Monitor Tool, click the [Down] button of the module you want to stop and continue to the following operation.

8. Click [Diagnostics] in [Diagnostics Information] of the other stopped PCI module.

9. Start the other inactive module.

Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is disabled, the module is started but the firmware will not be updated. In such a case, perform the following operations before starting the module:

(1) Click the [Firmware…] button in the Server Maintenance Utility screen for the target component.

(2) On the [Firmware Update] dialog box, select [Copy online BIOS image to offline.] as a method for updating and click [Execute].

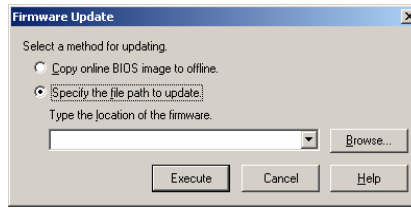(3) Check the result of the update in the event log.
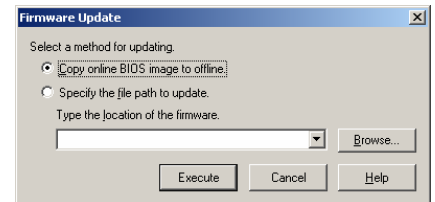
CHECK:

When stopping IO module, check that the status of Ethernet is "Duplex" on Server Maintenance Utility. Do not stop the IO module especially when LAN is connected only to the IO module on that side.

Dump Collection

To collect the dump file with ESMPRO Manager, use [CPU Module] →[Maintenance] tree in the data viewer.

To collect the dump with the Server Maintenance Utility, use the utility screen of the component.

IMPORTANT:

■ Acquire the dump only for the examination of a fault. For the memory dump setting of OS, select "Complete memory dump" when it is available. The quick dump function of this server is enabled only when the dump setting is set to "Complete memory dump."

■ Perform the steps below to change your memory dump setting, if a total memory capacity exceeds 2GB after additional memory has been installed in the system with complete memory dump enabled. If the setting is not changed incorrect dump files may be collected.

   1) Go to [Control Panel], click [System], and click [Advanced] to display the [Startup and Recovery] dialog box. Choose "Small memory dump" and click [OK].

   2) Return the setting to "Kernel memory dump" and click [OK].

The dump can be collected in two ways. In each way, the dump file is collected with the same path and file name "%SystemDrive%MEMORY.DMP" as the dump file of the OS standard.

■ Collecting dump of inactive module

   The dump is acquired from the inactive CPU module (Broken or Shot).

   The dump can be collected only when the power is supplied with the module POWER LED illuminating and both CPU module and IO module are stopped.

■ Collecting dump under system operation

   Either of the CPU modules is entered into the offline state and the dump is collected during system operation. After the acquisition, the CPU module is returned to the online state again. This can be done only in the duplex system.

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

Component	Saving dump of stopped module		Saving dump of component under system operation	
	Remote	Local	Remote	Local
CPU Module	–	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel. Executable in the following module state: (this can be viewed on Server Maintenance Utility screen) • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel. Executable in the following module state (this can be viewed on manager screen): • Duplex	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel Executable in the following module state: (this can be viewed on Server Maintenance Utility screen) • Duplex

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility
–:   Not supported

Procedure in ESMPRO Manager

The [Dump] button of ESMPRO Manager performs the function of "saving dump during system operation."

1. Select [CPU Module] in the [ft] tree.

2. Check the current state with the "State" display on the target component screen.

3. Click the [Dump] button in the [Maintenance] screen for the target component.

A certain time is required for the dump saving.

The dump is stored as %SystemDrive%MEMORY.DMP on the managed server.

The result of the dump saving is reported by the server as an alert.

Sample screen of ESMPRO Manager
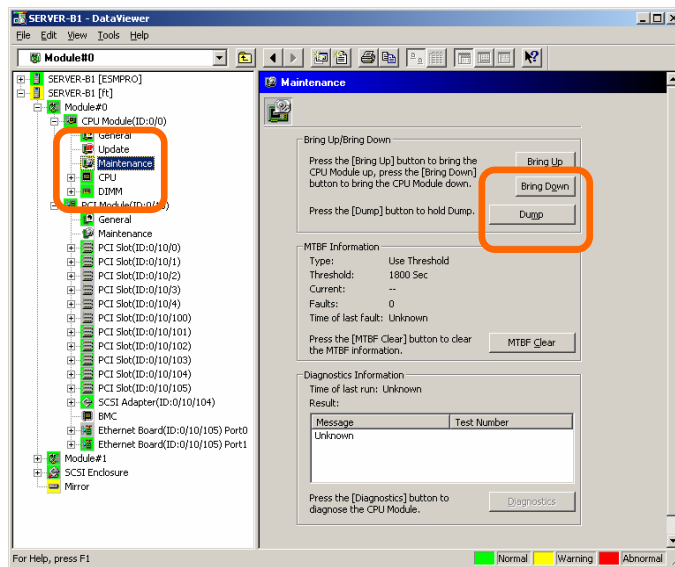
[Maintenance] screen of CPU module
[CPU Module] – [Maintenance]

Procedure in Server Maintenance Utility

1. Select the target CPU module by using the Server Maintenance Utility.

2. Check the current state of the target CPU module with the LEDs.

3. Select the dump acquisition method with [Dump] of the target CPU module and click the [Harvest] button.

A certain time is required for the dump acquisition.

The dump is stored as %SystemDrive%MEMORY.DMP on the server.

The result of the dump acquisition can be confirmed in the event log.

Sample screen of Server Maintenance Utility
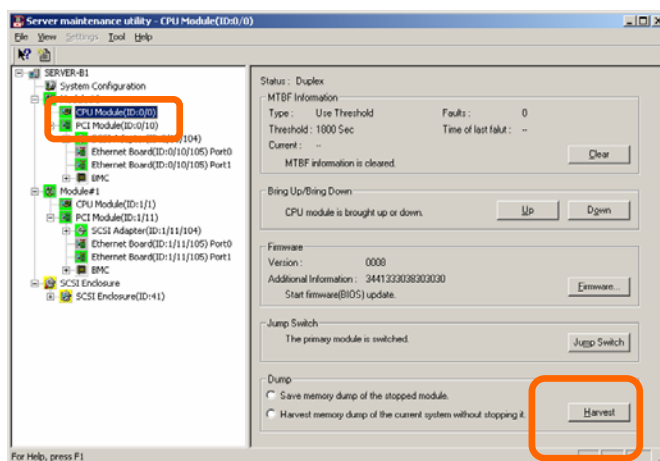
[CPU Module]

System Operation Setup

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

■ Quick dump that is harvested at the same time of reboot

If "Enable" is selected for this item, dump is collected as the system reboots when an error occurs in the system. When "Disable" is selected, dump is collected by the OS standard dump function.

The default value is "Enable."

IMPORTANT:

To use the quick dump function, refer to "Make Settings for Failure Management" in the User's Guide (Setup) to set "Complete memory dump" for the memory dump setting and reboot the system. When the setting is not set to "Complete memory dump", the standard memory dump function is performed even if the quick dump setting is set to "Enable" In addition, the standard memory dump function is used when "Complete memory dump" cannot be specified because mounted memory exceeds 2 GB.

■ Auto firmware update

If "Enable" is selected for this item, the BIOS of the new CPU module is updated to the BIOS of the existing CPU module to match with each other. If "Disable" is selected, the BIOS of the new CPU module is not updated automatically.

The default value is "Enable."

■ Auto module start

If "Enable" is selected for this item, modules will be put into the duplex mode automatically when mounting both modules and restarting the system. If "Disable" is selected, the modules will not be in the duplex mode.

The default value is "Enable."

Settings can be made in the [System Configuration] window of Server Maintenance Utility.

The table below shows the potential cases in which the system operation setup is changed. Contact your maintenance personnel for the change of the system operation setup. Setting change will take effect after system reboot. However, the utility does not indicate that reboot is required.

Component	Quick dump		Auto firmware update		Auto module start	
	Remote	Local	Remote	Local	Remote	Local
Whole system	–	Executable if the system is operating. When dump is acquired by using the dump function normally installed in OS at occurrence of system fault.	–	Executable if the system is operating. When firmware is updated manually at insertion of new module	–	Executable if the system is operating. When firmware is started manually at insertion of new module

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility
–:   Not supported

Configure the system settings using the Server Maintenance Utility in the following procedure. The system cannot be configured using the ESMPRO Manager.

1. Select [System Configuration].

2. Select radio buttons to change the settings in [System Configuration].

3. Click the [Apply] button.

Sample screen of Server Maintenance Utility
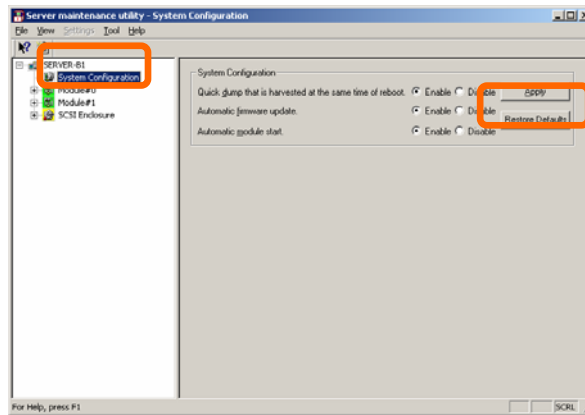
BMC Firmware Update

The firmware of the BMC on the PCI module can be updated.

The base management controller (BMC) is the processor exclusively used for monitoring the system's operating environment faults and controlling of the system.

The BMC firmware can be updated by using the BMC firmware update utility.

Both ESMPRO Manager and the Server Maintenance Utility can start the BMC firmware update utility.

To update the BMC firmware, the firmware image file must be updated on the managed server in advance. On the BMC firmware update screen, specify the path of the image file of the firmware to be updated.

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

IMPORTANT:

Contact your maintenance personnel for the update of the BMC firmware.

Component	BMC firmware update	
	Remote	**Local**
BMC	When an update to new firmware is required. Executable in the following module state (this can be viewed on manager screen): ● Duplex	When an update to new firmware is required. Executable in the following module state (this can be viewed on Server Maintenance Utility screen) ● Duplex

Remote: Executable from remote management PC by using ESMPRO Manager
Local: Executable on local server by using Server Maintenance Utility
–:   Not supported

Updating from ESMPRO Manager Menu

Update firmware as follows:

1. Select [Tools]→[BMC FW Update Utility] from the Operation Window's menu.

The [BMC FW Update] dialog box appears.
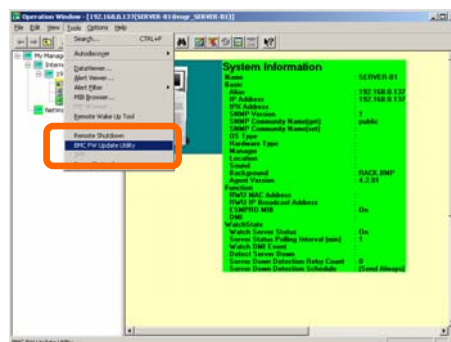
2. Enter the device name and click [OK].

The [Execution Check] dialog box appears.
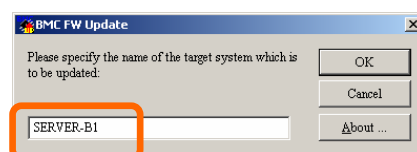
3. Store the firmware in the directory specified by [Location].

The storage area may be modified. See "Change of Update Data Storage Destination " described later.
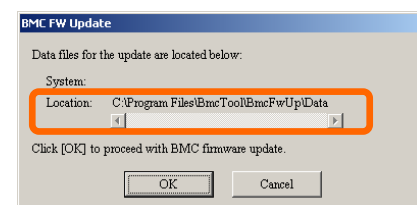
4. Click [OK].

Run firmware update.

The advance of the update appears during update.

At the termination of update, the update result is displayed.
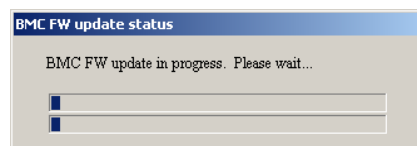
5. Click [OK].
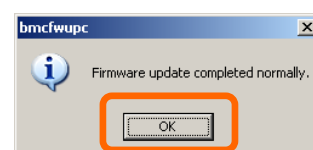
Updating from Server Maintenance Utility

Update the firmware as follows:

1. From the menu bar, click [Tool], point to [BMC FW], and select [Update].

The [BMC FW Update] dialog box appears.
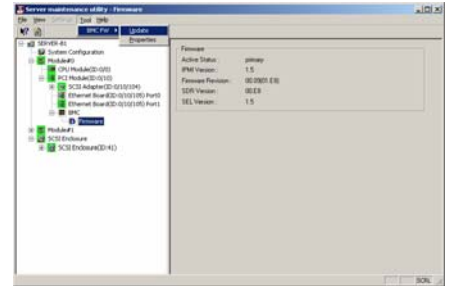
2. Enter the device name and click [OK].

The [Execution Check] dialog box appears.
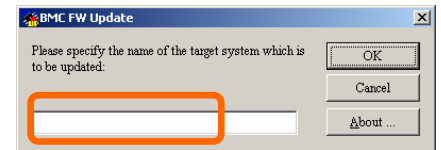
3. Store the firmware in the directory shown in [Location].

The storage area may be changed.
See "Change of Update Data Storage Destination" described later.
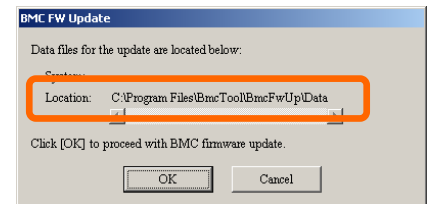
4. Click [OK].

Execute the firmware update.

The progress of the update appears during the update.

The update result appears after the update is terminated.
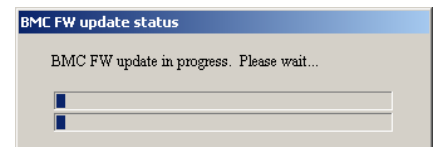
5. Click [OK].
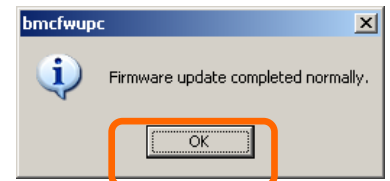
Change of Update Data Storage Destination

Perform the firmware update by using the Server Maintenance Utility as described below:

1. From the menu bar, click [Tool], point to [BMC FW], and select [Properties].

    The [BMC FW Update Service Properties] dialog box appears.
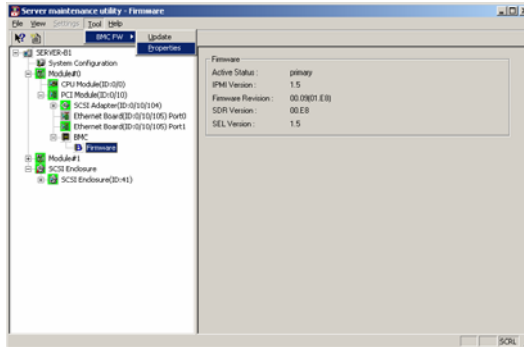
2. Enter the storage destination in [Storage directory for update data:] and click [Register].
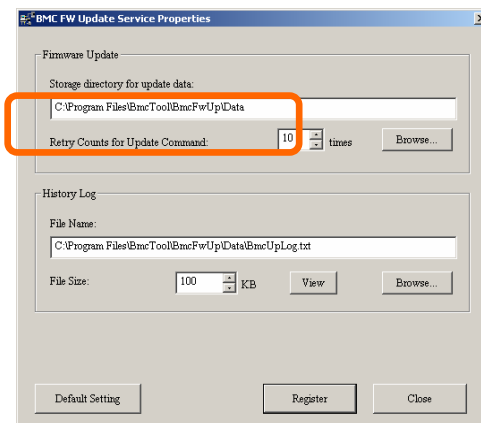
Refreshing View based on State Change Alert Setting

A new function is supported so that ESMPRO Manager window will be updated on a system state change basis (in other words, whenever necessary). This function is OFF by default. See the [Setting] below about how to turn it ON.

ESMPRO Manager window is updated by one minute-interval polling by default. Therefore, there is some time-lag for ESMPRO Manager to recognize changes in Agent. By using this function, the time-lag can be reduced. However, it may consume a little bit more network band width since each state change will be notified to ESMPRO Manager as some kind of alert.

[Setting]

1. Select [All Programs] → [Esmpro] from the start menu and click [Manager Settings].
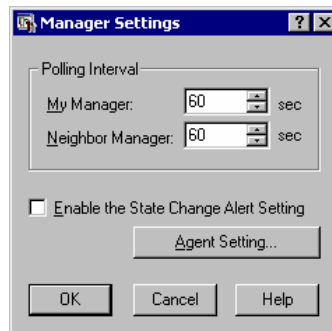
[Manager Settings] dialog box

2. Check [Enable the State Change Alert Setting].

3. Click the [Agent Setting...] button.
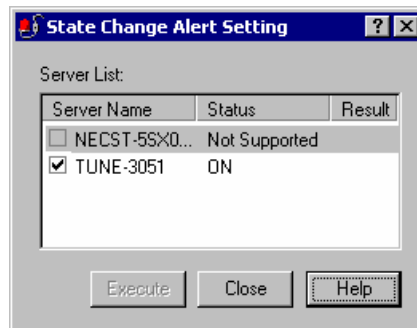
[State Change Alert Setting] dialog box

4. Check the name of servers sending the state change alert to the Manager when the Agent recognizes changes in the state.

    Click the [Execute] button for the setting change to take effect.

5. Refer to "To change the settings of the SNMP Service:" in "Preparation before Setup" in Chapter 5 of the User's Guide (Setup) to configure destinations to send state change alerts. (This server sends state change alerts by SNMP).

DianaScope

DianaScope is software for remote management of NovaScale/ft Server series.

For features and installation of DianaScope, see "DianaScope Online Document" in "EXPRESSBUILDER".
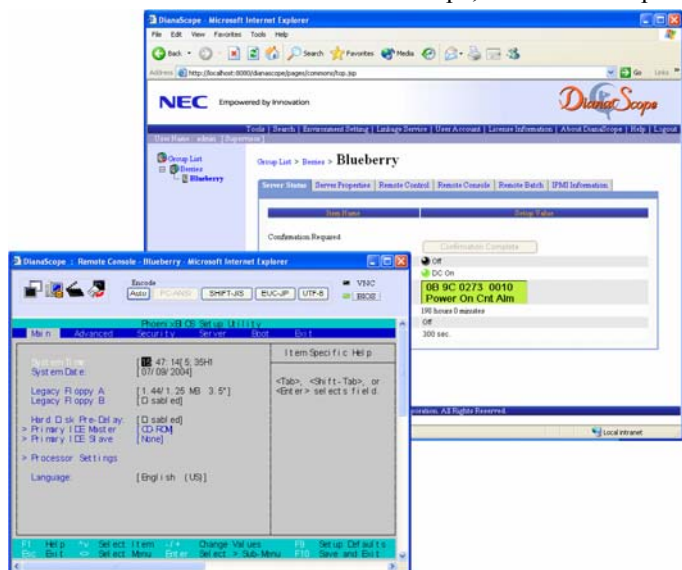
TIPS:

To use DianaScope with NovaScale/ft Server series, appropriate server license is required.

- UL1198- 001E DianaScope Additional Server License (1)

    License for managing one server.

- UL1198- 011E DianaScope Additional Server License (10)
    License for managing ten servers.

ft Remote Management Card comes with one license of DianaScope.

Notes

The online document provides general description of overall severs to be remotely managed by DianaScope, but this section contains notes that require special attention for remotely managing this server using DianaScope.

- NovaScale/ft Server series can be managed remotely only when ft Remote Management Card is installed.
- When remotely managing this server from DianaScope, only LAN connection is available. Direct connection and connection via modem are not supported.
- DianaScope cannot power off, power cycle or reset the server. NovaScale/ft Server series does not support such functions.

GeminiEngine Monitor Tool

This section gives a brief explanation for "GeminiEngine Monitor Tool."

Overview

"GeminiEngine Monitor Tool" is a tool that monitors if the server status is duplex. If the status changes from duplex to simplex, and the FT STATUS LED of the server turns off or illuminates amber, the tool sounds beeps for a certain interval and displays a dialog box reporting the status change.

Also, if versions of the firmware (System BIOS) stored on CPU/IO modules differ between module #0 and module #1, the older version is automatically updated to the newer one.

When the Server Status Becomes Non-redundant

GeminiEngine Monitor Tool displays the following dialog box when the system status becomes non-redundant:
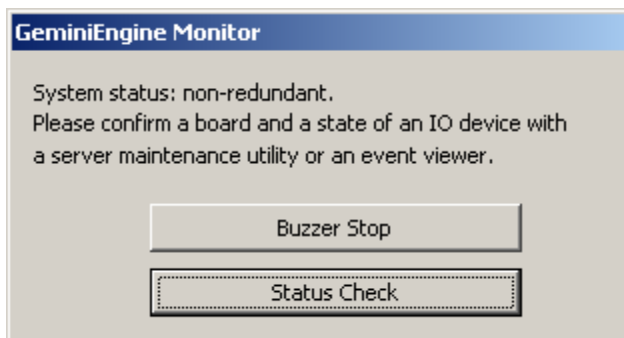
Buttons:

    [Buzzer Stop]:   Stops the buzzer (beeps) for a certain interval and closes this dialog box.

    [Status Check]:   Starts the Server Maintenance Utility.

                         Check the event viewer log and other logs for non-redundancy status.

Automatic firmware update

There are two ways to automatically update firmware:

●   If the version of the firmware (System BIOS) stored in the CPU/IO module is newer than the one stored in the module to be installed later, the firmware is automatically updated when installing the CPU/IO module, and then the system is duplexed. At this time, you can set whether to enable the automatic update of the firmware by the system setup function of Server Maintenance Utility.

● On the other hand, if the BIOS version of the running CPU/IO module is older than the one of the module to be installed later, after installing the module and making the system duplexed, the firmware is updated by temporarily stopping the running module and starting it again. While using this function, the module is switched automatically, and the [GeminiEngine Monitor Tool] window is displayed. Wait until the window closes automatically without performing operations such as starting, stopping or diagnosing modules. Set whether to enable this function on the setup window described later. Also, if the firmware update before its completion, check the system status with the Server Maintenance Utility or event log, and start the module that has been stopped.
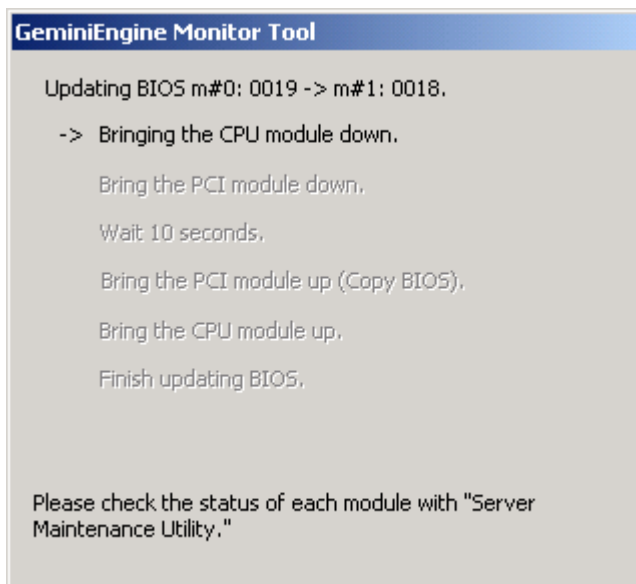
Setup Window

GeminiEngine Monitor Tool can be set on the following setup window:

From the Start menu, select [All Programs], [GeminiEngine Monitor Tool] and then [Configuration].

If you start the configuration function, the following [GeminiEngine Monitor Tool Configuration] window is displayed. Find below explanations on the settings and corresponding actions:

Action for detecting failed redundant: You can set actions for when the status changes from duplex to simplex

● Beep: If the server status changes from duplex to simplex, the tool sounds beeps at a fixed interval.
● Warning message: If the server status changes from duplex to simplex, a warning message is displayed.

The settings above are disabled by default. Set them according to the operational mode of the server.

Operation at the time of newer version BIOS detection: You can set the actions for when a module that contains a newer version BIOS than the one currently running is detected.

● Update the BIOS on the working module: Updates the BIOS on the module currently running to the one on the new module.
● Display the updation status: Displays a window that shows the progress of the BIOS update.

● Sound a beep when the update failed: If the BIOS update fails, the tool sounds beeps.

GeminiEngine Monitor Tool Configuration

Action for detecting failed redundant.
□ Beep
□ Warning message

OK

Cancel

Operation at the time of newer version BIOS detection.
☑ Update the BIOS on the working module.
☑ Display the progress of updation status.
□ Sound the beep when update failed.
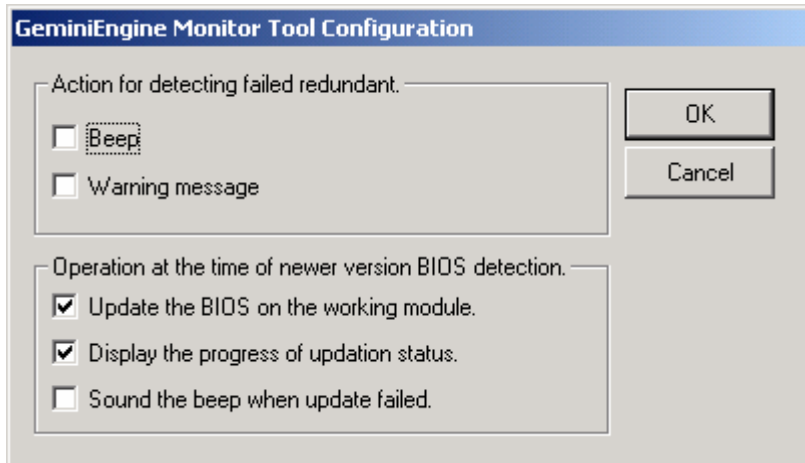
Notes:

- The dialog box on page 5-75 may also be displayed when the system is temporarily degraded. In such a case, it is automatically closed when the system status returns to the duplex state and the FT STATUS LED lights green.

- If you have mistakenly closed the dialog box on page 5-75, run the following program:
  C:\ Program Files\NEC\HAS_SW\HASFTSTS\HASFTSTU.EXE

- When the dialog box on page 5-75 is still displayed after the FT STATUS LED lights green, press the **Alt** + **F4** keys together to close it.

- The firmware update status dialog is temporarily closed by the changes on the user logon status. If the automatic update of the firmware is started without a user logging on and the progress window is displayed, the window closes when you try to log on during the operation. After that when the firmware update process finishes, the progress window is displayed again. Also, if a user logs off while updating the firmware, the progress screen closes temporarily in the same way and is displayed again when the firmware update is completed.

Chapter 6

Maintenance

This chapter describes the daily maintenance of NovaScale/ft Server series and precautions when relocating or storing the server.

DAILY MAINTENANCE

To use your NovaScale/ft Server series in best condition, check and maintain regularly as described below. If an error is found on your NovaScale/ft Server series, consult your sales agent.

Checking Alert

Monitor the failure occurrence by ESMPRO during the system operation.

Always check whether any alert is reported to ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of ESMPRO Manager.

Viewers of ESMPRO
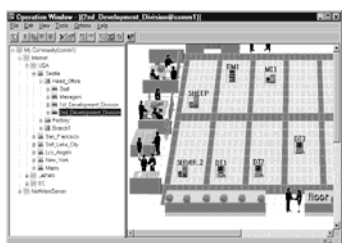
Operation Window
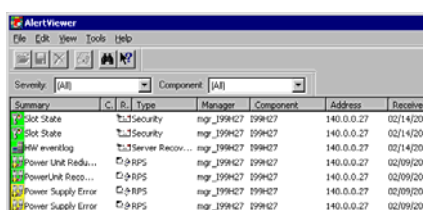
Alert Viewer

Data Viewer

Checking STATUS LEDs

Check the LED indication on the front of the NovaScale/ft Server series, on hard disks installed in 3.5-inch hard disk drive bay, or on LCD display when the server is powered on or powered off by the shut down operation. The functions and indications of LEDs are described in Chapter 2. If there is any indication that shows an error, contact your sales agent.

Making Backup Copies

We recommend you make backup copies of your valuable data stored in hard disks of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your sales agent.

When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Cleaning

Clean the server on a regular basis to keep the server in a good shape.

⚠ WARNING
Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See "PRECAUTIONS FOR SAFETY" in Chapter 1. • Do not disassemble, repair, or alter the server. • Do not look into the CD-ROM drive. • Disconnect the power plug before cleaning the server.

Cleaning the NovaScale/ft Server series

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

■ To avoid altering the material and colour of the server, do not use volatile solvents such as thinner or benzene to clean the server.

■ The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is powered off.

2. Unplug the power cord of the server from a power outlet.

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

4. Soak a soft cloth in neutral detergent that is diluted with cold or warm water, and squeeze it firmly.

5. Rub off stains on the server with the cloth prepared in Step 4.

6. Soak a soft cloth in water, squeeze it firmly and wipe the server with it once again.

7. Wipe the server with a dry cloth.

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

Cleaning the Keyboard and Mouse

IMPORTANT:

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

Disconnect the keyboard from the server while the devices in the system (the server and the peripheral devices) remain turned on. Wipe the keyboard surface with a dry cloth. Then connect the keyboard to the server.

The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Disconnect the mouse from the USB hub of the keyboard while the server remains powered on.

2. Turn the mouse upside down, and rotate the mouse ball cover counter clockwise to remove it. Take out the ball from the mouse.

3. Wipe the mouse ball with a dry soft cloth.

   If stains remain, use a soft cloth to wipe them off. Soak the soft cloth in neutral detergent that is diluted with water or warm water, and squeeze it firmly,

4. Wipe three small rollers inside the mouse with cotton swab.

   Use the cotton swab soaked with alcohol if stains remain.

5. Put the mouse ball back into the mouse.

   If the mouse or rollers are wet in steps 3 and 4, put it back after fully dried.

6. Place the mouse ball cover, and rotate it clockwise until it is locked.

7. Connect the mouse to the server (the USB hub of the keyboard).
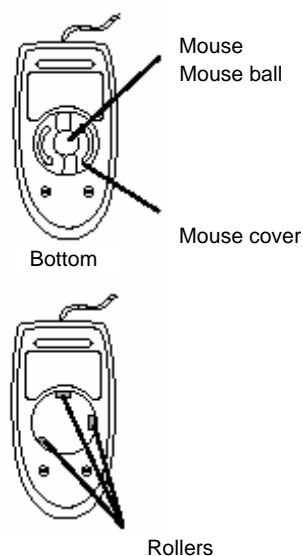
Cleaning the Floppy Disk Drive

A read/write error may occur due to stains on the read/write head of the floppy disk drive.

Use the cleaner dedicated for floppy disk drive to clean the read/write head. It is recommended to clean the head on regular basis.

Cleaning CD-ROM

A dusty CD-ROM or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and CD-ROM regularly:

1. Make sure that the server is powered on.

2. Press the Eject button on the front of the CD-ROM drive.
   The tray comes out.

3. Hold the CD-ROM lightly and take it out from the tray.

   IMPORTANT: Do not touch the signal side of the CD-ROM with your hand.

4. Wipe the tray with a dry soft cloth.

   IMPORTANT: Do not wipe the lens of the CD-ROM drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Gently push on the tray front to close the tray.

6. Wipe the signal side of the CD-ROM with a dry soft cloth.

   IMPORTANT: Wipe CD-ROMs from the centre to the outside. Use only CD-ROM cleaner if necessary. Cleaning a CD-ROM with record spray/cleaner, benzene, or thinner causes damage to the CD-ROM contents. At worst, inserting the CD-ROM into the server may cause failure.
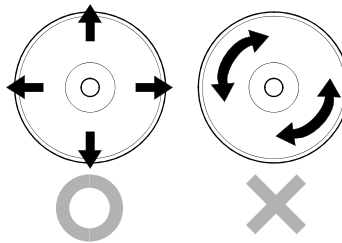
Cleaning Tape Drive

Dirt on the tape head may be a cause of unsuccessful backup and damage to tape cartridge. Clean the tape head regularly using a cleaning tape. For procedure and interval of cleaning as well as lifetime of a tape cartridge to use, see instructions included with the tape drive.

SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tools] - [System Diagnostics] in the EXPRESSBUILDER to diagnose the system.

Tested Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the system diagnostics, make sure to remove the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

TIPS: On checking the hard disk drive, no data is written into the disk.

Starting up and Exiting System Diagnostics

Follow the steps below to start the system diagnostics. (If the server is running, shut it down, and execute Step 1 through Step 12.)

1. Shutdown the OS, and power off the server. Then, unplug the power cord.

2. Disconnect all the LAN cables from the server.

3. Plug the power cord and power on the server.

4. Use the EXPRESSBUILDER CD-ROM to start the system.

   Refer to "EXPRESSBUILDER" of Chapter 5 "Installing and Using Utilities", to start the system properly. "EXPRESSBUILDER Top Menu" is displayed on the screen, when starting the system from the EXPRESSBUILDER.

   EXPRESSBUILDER Top Menu

5. Select [Tools].

6. Select [System Diagnostics].

   The system diagnostics starts and will be completed in approximately three minutes.

   When the diagnostics is completed, the display changes as shown below:

Diagnostics tool title

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

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




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

Test window title

Test result

Test summary window

Guideline

Diagnostics tool title

Shows the name and version of the diagnostic tool.

Test window title

Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

Test result

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

Guideline

Shows the details of the keys to operate window.

Test summary window

Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the test summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your sales agent.

7. Follow the guideline shown at the bottom of the screen, and press the **Esc** key.

The [Enduser Menu] below is displayed.

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

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

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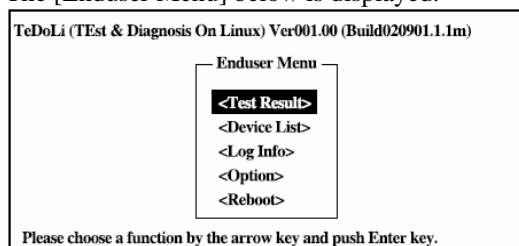
<Test Result>
Shows the diagnostics completion screen of the above diagnostics.

<Device List>

Shows a list of connected devices.

<Log Info>
Shows the log information of the diagnostics. It can be saved on a floppy disk. To save it on a floppy disk, insert a formatted floppy disk into the floppy disk drive, and select <Save>.

<Option>
Changes the output destination of a log.

<Reboot>
Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

    The server restarts and the system is started from the EXPRESSBUILDER.

9. Exit the EXPRESSBUILDER, and remove the CD-ROM from the CD-ROM drive.

10. Power off the server and unplug the power cord from the receptacle.

11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.

12. Plug the power cord.

This completes the system diagnostics.

OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

> **IMPORTANT:**
>
> - The Off-line Maintenance Utility is intended for use of your sales agent. The EXPRESSBUILDER CD-ROM and the Off-line Maintenance Utility Bootable FD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your sales agent and follow instructions.
>
> - Starting the Off-line Maintenance Utility disables any access from a client to the server.

Starting the Off-line Maintenance Utility

The Off-line Maintenance Utility may be started in the following ways.

NovaScale/ft Server series does not support the feature to start the Off-line Maintenance Utility from the maintenance partition.

- From the CD-ROM

    Insert the EXPRESSBUILDER CD-ROM in the CD-ROM drive and reboot the system. After the menu is displayed on the screen, select [Tools] - [Off-line Maintenance Utility]. The Off-line Maintenance Utility program starts from the CD-ROM.

- From the floppy disk

    Insert the Off-line Maintenance Utility Bootable FD in the floppy disk drive and reboot the system. The Off-line Maintenance Utility program starts from the boot disk. The Off-line Maintenance Utility Bootable FD is created by selecting [Tools] - [Create Support FD] on the EXPRESSBUILDER.

Features of Off-line Maintenance Utility

The Off-line Maintenance Utility provides the following features.

- IPMI Information Viewer

    Provides the functions to view the System Event Log (SEL), Sensor Data Record (SDR), and Field Replaceable Unit (FRU) and to make a backup copy of them.

    Using this feature, you can find system errors and events to determine a maintenance part.

- BIOS Setup Viewer

    Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

- System Information Viewer

    Provides the functions to view information on the processor (CPU) and the BIOS and export it to a text file.

- System Information Management

    Provides the function to make a back-up copy of your data. Without the backup data, the system-specific information and/or configuration may not be restored.

    > **TIPS:** For information on making backup copy of system information, see the separate volume "User's Guide (Setup)". Only the authorized personnel are allowed to restore the backup data.

- Chassis Identification

    Provides the function to distinguish the server using the LEDs or beeps of the server. This function is convenient to distinguish the server from others when multiple servers are on the rack.

RELOCATING/STORING THE NovaScale/ft Server series

Follow the procedure below to relocate or store the server. (Users should not attempt to remove the rack-mountable server from the rack assembly.)

⚠ **CAUTION**

Observe the following instructions to use the server safely. There are risks of fire, personal injury, or property damage. See "PRECAUTIONS FOR SAFETY" in Chapter 1 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the sales agent.
- Make sure to make a backup copy of your valuable data in the hard disk, if any.
- When moving the server with hard disks, make sure not to give a shock to the hard disks.
- When storing the server, keep it under storing environment conditions (temperature: -10 to 55°C, humidity: 20 to 80%, non-condensing).

1. Take floppy disk and CD-ROM out of the server, if any.

2. Power off the server.

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

4. Remove all the cables from the server.

5. Remove all the mounted modules.

6. Remove the backplane and the rails from the rack cabinet.

7. Carry backplane, rails, and modules separately.

8. Protect the server with the shock-absorbing materials, and pack it securely.

IMPORTANT:
Check and adjust the system clock before operating the server again after relocating or storing it.
If the server and the built-in optional devices are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. When you start operating these equipments again after the transportation or the storage, make sure to wait for a sufficient period of time to use them in the operating environment.
If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

Chapter 7

Troubleshooting

If the product does not work properly, see this chapter before deciding that it is a breakdown.

TO LOCATE THE ERRORS

Use ESMPRO to monitor the occurrence of fault during the system operation.

Especially take note on whether any alert is reported to ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of ESMPRO Manager.

[Example]

ESMPRO Manager
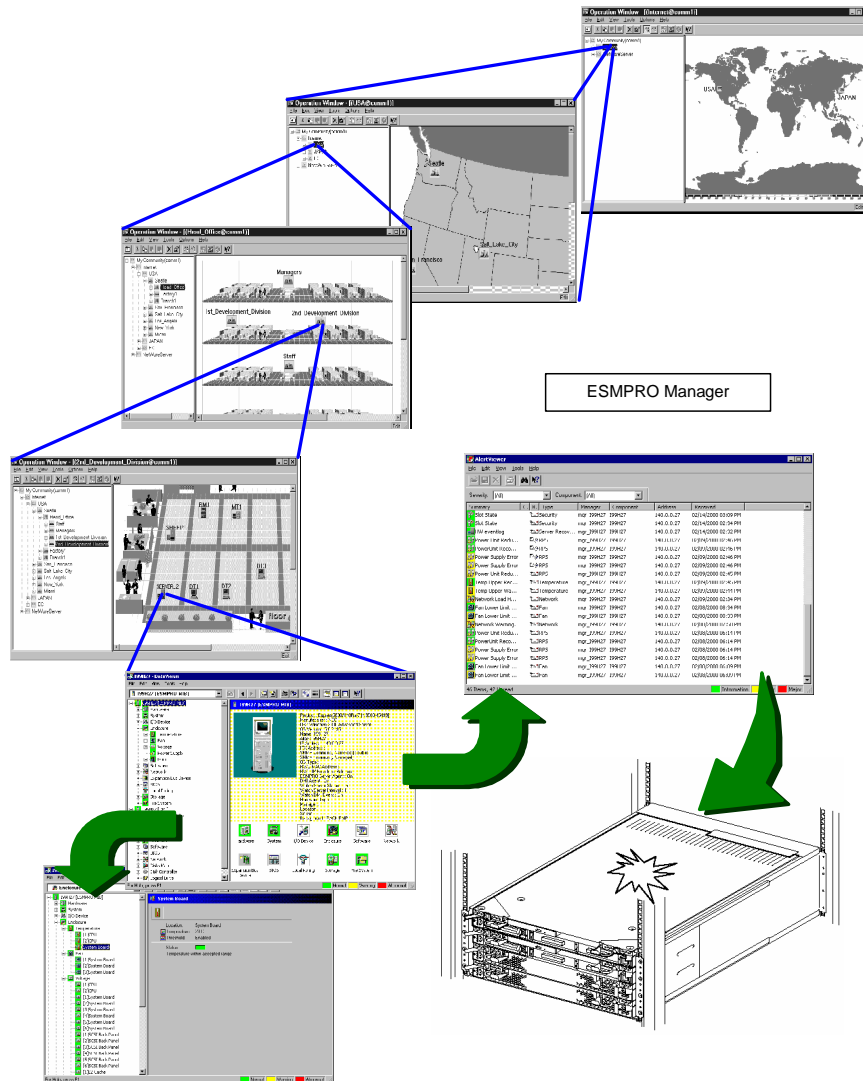
Determine type and location of
server/workstation trouble.

ERROR MESSAGES

If the NovaScale/ft Server series enters the abnormal state, the error is posted by various means. This section explains the types of error messages.

Error Messages by LED Indication

The LEDs on the front and rear panels of the NovaScale/ft Server series and near the handles of hard disks inform the user of the various server statuses by the colours and the patterns of going on, going off, and flashing. If trouble seems to have occurred, check the LED indication. For the LED indication and meanings, see "LEDs" in chapter 2.

This User's Guide describes actions to be taken for watch error message. However, if replacement of modules is necessary, contact your sales agent.

POST Error Messages

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When POST detects any error, it displays an error message and its measure on the display unit. Follow the table below to troubleshoot such errors.

```
Phoenix BIOS 4.0 Release 6.0.XXXX
                :
CPU=Pentium III XXX MHz
0640K System RAM Passed
0127M Extended RAM Passed
WARNING:
02B0: Diskette drive A error.
                :
press <F1> to resume, <F2> to SETUP
```

Message indicating a floppy disk drive error
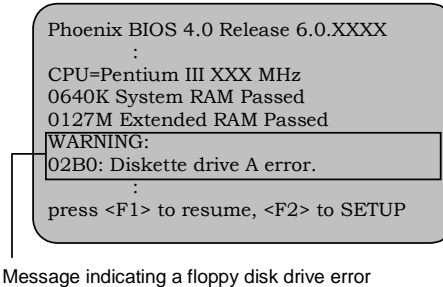
TIPS:

For error messages on optional PCI boards, refer to the manual provided with those options.

On-screen error message	Cause	Action
0200 Failure Fixed Disk	• Hard disk is faulty • CPU/IO module is faulty.	• Replace the hard disk. • Replace the CPU/IO module.
0210 Stuck Key	Keyboard connection error	• Disconnect the keyboard and connect it back again. • Replace the keyboard.
0211 Keyboard error	Keyboard is faulty.	• Disconnect the keyboard and connect it back again. • Replace the keyboard. • If restarting does not help, replace the CPU/IO module.
0212 Keyboard Controller Failed	Keyboard controller is faulty.	If restarting the server does not help, replace the CPU/IO module.
0213 Keyboard locked - Unlock key switch	Keyboard is locked.	Unlock the key switch.
0230 System RAM Failed at offset	DIMM is faulty.	• Replace DIMM. • Replace the CPU/IO module.
0231 Shadow RAM Failed at offset	Shadow RAM is faulty.	• Replace DIMM. • Replace the CPU/IO module.
0232 Extended RAM Failed at address line	Extended RAM is faulty.	• Replace DIMM. • Replace CPU/IO module.
0233 Memory type mixing detected	Memories of different types are installed.	Memories of different types are installed. Replace DIMM with appropriate one.
0250 System battery is dead -Replace and run SETUP	System battery is dead.	• Replace system battery. • Replace CPU/IO module.
0251 System CMOS checksum bad-Default configuration used	System CMOS configuration is changed.	• Reconfigure the system CMOS by using BIOS setup. • Clear system CMOS using hardware jumper.
0252 Password checksum bad -Password cleared	Password is cleared.	• Reconfigure by using BIOS setup. • Clear system CMOS using hardware jumper.
0260 System Timer error	System Timer is faulty.	Reconfigure by using BIOS setup.
0270 Real time clock error	RTC is faulty.	
0271 Check date and time setting	Date and time are incorrectly set.	
02D0 System cache error - Cache disabled	CPU cache is faulty.	If replacing the CPU does not help, replace the CPU/IO module.
02D1 System Memory exceeds the CPU's caching limit	CPU cache is faulty.	

On-screen error message	Cause	Action
0613 COM A configuration change	COM A configuration is faulty.	If restarting does not help after resetting the setting to default by using BIOS setup, replace the CPU/IO module.
0614 COM A config, error - device disable	Device constructing COM A is faulty.	
0B28 Unsupported Processor detected on Processor 1	Unsupported CPU is mounted.	Check the supported CPU and replace it. If this does not help, replace the CPU/IO module.
0B29 Unsupported Processor detected on Processor 2	Unsupported CPU is mounted.	
0B60 DIMM group #1 has been disabled	DIMM is faulty.	Replace DIMM Group#1.
0B61 DIMM group #2 has been disabled		Replace DIMM Group#2.
0B62 DIMM group #3 has been disabled		Replace DIMM Group#3.
0B70 The error occurred during temperature sensor reading	I2C pass is faulty. Sensor is faulty.	Replace the part that relevant sensor is mounted.
0B71 System Temperature out of the range	Temperature is abnormal. Fan is abnormal.	Check if fan is faulty or clogging has occurred. If there is no problem, replace CPU/IO module.
0B74 The error occurred during voltage sensor reading	I2C pass is faulty. Sensor is faulty.	Replace the part that relevant sensor is mounted.
0B75 System voltage out of the range	Voltage is abnormal.	If turning AC power off and on does not help, replace the CPU/IO module.
0B80 BMC Memory Test Failed	RMC device is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0B81 BMC Firmware Code Area CRC check failed		
0B82 BMC core Hardware failure		
0B83 BMC IBF or OBF check failed	RMC device is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0B8A BMC SEL area full	There is no space to write system event logs.	Clear system event logs after saving them.
0B8B BMC progress check timeout	BMC check is suspended.	Replace the CPU/IO module or ft Remote Management Card (option).
0B8C BMC command access failed	BMC command access failed.	Replace the CPU/IO module or ft Remote Management Card (option).
0B8D Could not redirect the console - BMC Busy	Console cannot be redirected (BMC is busy).	There is a possibility that the BMC was busy and could not respond. Restart the server again.
0B8E Could not redirect the console - BMC Error	BMC is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0B8F Could not redirect the console – BMC parameter Error -	Configuration is faulty.	Configure the console redirection by using BIOS setup.
0B90 BMC Platform Information Area corrupted	BMC device is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0B91 BMC update firmware corrupted		
0B92 Internal Use Area of BMC FRU corrupted	Data within SROM is faulty.	
0B93 BMC SDR Repository empty	SDR data is faulty.	If updating SDR does not help, replace the CPU/IO module or ft Remote Management Card (option).
0B94 IPMB signal lines do not respond	SMC is faulty.	Replace the CPU/IO module or a centre plane after determining where IPMB error has occurred based on OS information.
0B95 BMC FRU device failure	NVRAM within BMC is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).

On-screen error message	Cause	Action
0B96 BMC SDR Repository failure	SDR repository within BMC is faulty.	
0B97 BMC SEL device failure	SEL repository within BMC is faulty.	
0B98 BMC RAM test error	BMC RAM is faulty.	
0B99 BMC Fatal hardware error	BMC FPGA is faulty.	If updating FPGA does not help, replace the CPU/IO module or ft Remote Management Card (option).
0B9A BMC not responding	BMC device is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0B9B Private I2C bus not responding	I2C bus is faulty.	Replace the part related to failed I2C bus.
0B9C BMC internal exception	BMC device is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0B9D BMC A/D timeout error		
0B9E SDR repository corrupt	SDR data is faulty.	If updating SDR does not help, replace the CPU/IO module or ft Remote Management Card (option).
0B9F SEL corrupt	SEL repository within BMC is faulty.	Replace the CPU/IO module or ft Remote Management Card (option).
0BA0 SDR/PIA mismatched. SDR, PIA must be updated.	SDR and PIA data do not match.	If updating SDR/PIA does not help, replace CPU/IO module or ft Remote Management Card (option).
0BB0 SMBIOS - SROM data read error	• I2C bus is faulty. • SROM is faulty. • BMC is faulty.	If turning AC power off and on does not help, replace the CPU/IO module.
0BB1 SMBIOS - SROM data checksum bad	Data within SROM is faulty.	
0BC0 POST detected start-up failure of 1st Processor	CPU is faulty.	Replace the CPU.
0BC1 POST detected start-up failure of 2nd Processor		
8120 Unsupported DIMM detected in DIMM group #1	Unsupported DIMM is mounted.	Check supported DIMMs and replace the DIMM. If replacing the DIMM does not help, replace the CPU/IO module.
8121 Unsupported DIMM detected in DIMM group #		
8122 Unsupported DIMM detected in DIMM group #3		
8130 Mismatch DIMM detected in DIMM group#1	DIMM group do not match.	
8131 Mismatch DIMM detected in DIMM group#2		
8132 Mismatch DIMM detected in DIMM group#3		
8150 NVRAM Cleared By Jumper	CMOS clear jumper is mounted.	Turn off the DC power and change back the jumper setting.
8151 Password Cleared By Jumper	Password clear jumper is mounted.	
8160 Mismatch Processor Speed detected on Processor 1	CPU frequency does not match.	Check supported CPUs and replace the CPU. If replacing the CPU does not help, replace CPU/IO module.
8161 Mismatch Processor Speed detected on Processor 2		
8170 Processor 1 not operating at intended frequency.	CPU frequency is incorrect.	
8171 Processor 2 not operating at intended frequency	CPU frequency is incorrect.	Check supported CPUs and replace the CPU. If replacing the CPU does not help, replace CPU/IO module.

On-screen error message	Cause	Action
9064 Mixed CPU Steppings detected	Different CPU steppings are found.	Check supported CPUs and replace the CPU. If replacing the CPU does not help, replace CPU/IO module.
9038 Check date and time settings (Chipset)	Data and time settings are incorrect.	If reconfiguring by using BIOS setup does not help, replace the CPU/IO module.
9001 Missing date and time synchronization	Information delivery among units failed	
9002 Memory not installed.	DIMM is not implemented. DIMM is faulty.	Mount or replace the DIMM.
9003 Memory implementation error detected	Error is detected on memory implementation.	Check supported DIMMs and replace the DIMM. If replacing the DIMM does not help, replace the CPU/IO module.
9004 Real time clock error (Chipset)	RTC is faulty.	Reconfigure RTC by using BIOS setup.
9005 Remote BMC access failed	BMC of remote unit is faulty.	Check again if the CPU/IO module is mounted properly. If this does not help, replace the CPU/IO module.
9006 HW Memory Test failed.	Memory is faulty.	Replace the DIMM. If replacing it does not help, replace the CPU/IO module.
9009 Chipset NMI occurred!	BIOS NMI handler is executed and POST is stopped.	Obtain detailed information, and replace the CPU/IO module.
900A PEXA Link Width Warning	PCI-EX Link is faulty.	Since performance becomes slightly lower, replace the CPU/IO module in case of an emergency.
900B PEXB Link Width Warning		
900D PEXD Link Width Warning		
900E PEXE Link Width Warning		
9021 Trace memory test failed	Trace memory is faulty.	Replace the CPU/IO module.
902C BMCFW major revision mismatched.	BMCFW revision does not match.	Update SDR/PIA. If updating it does not help, replace the CPU/IO module or ft Remote Management Card (option).
902D IPMB#1 SROM failure detected	IPMB#1 SROM is faulty.	If restarting does not help, replace the CPU/IO module, ft Remote Management Card (option) or centre plane.
902E IPMB#2 SROM failure detected.	IPMB#2 SROM is faulty.	
902F PCI Device Test failed.	PCI Device is faulty.	Replace the CPU/IO module.
9060 Module#0 is not present.	CPU/IO module#0 is not mounted.	Mount the primary unit. If restarting does not help, replace the CPU/IO module.
9061 Module#1 is not present.	CPU/IO module#1 is not mounted.	Mount the primary unit. If restarting does not help, replace the CPU/IO module.
9039 Not keep last boot order	Unintended operations such as incorrect DC off are performed.	Reconfigure the boot option by using the BIOS setup. If reconfiguring the boot option does not help, replace the CPU/IO module.
9070 The error occurred during water-cooling unit sensor reading	The sensor of water-cooling kit is faulty.	Replace the water-cooling kit. If turning on/off AC does not help, replace CPU/IO module or ft Remote Management Card.
NOTICE System is force boot with POST error	Abnormality of one or both sides of modules is detected.	View other error information and the error information of standby CPU/IO module.
9000	A serious error occurred during a POST.	There are some error messages in addition to this error code. Check the other error message.
9007 9008	Forced power off occurred by another CPU/IO module has a problem.	Pull out another CPU/IO module and install it. If this does not help, replace the CPU/IO module.
9010 – 9015	Cannot boot from target Disk.	Check the target disk. In addition, replace it if required. If this does not help, replace the CPU/IO module.

On-screen error message	Cause	Action
9020	CPU is faulty.	Replace the CPU. If this does not help, replace the CPU/IO module.
9022 – 9023	Initialization of the cross-link between the CPU/IO modules and access are faulty.	When the system is running in the duplex mode, it is no problem. If the system cannot be running in the duplex mode due to continuous this error, replace the CPU/IO module. If this does not help, replace another CPU/IO module or center plane.
9024	Disconnect the cross-link between the CPU/IO modules.	
9027	Mounted CPU is mismatching.	CPU configuration may be different between the CPU/IO modules. Replace the CPU. If this does not help, replace the CPU/IO module.
9028	Memories of different types are installed.	Memories of different types are installed. Replace DIMM with appropriate one. If this does not help, replace the CPU/IO module.
9029	DIMM is faulty.	Replace DIMM. If this does not help, replace the CPU/IO module.
902A	Initialization of the cross-link between the CPU/IO modules and access are faulty.	When the system is running in the duplex mode, it is no problem. If the system cannot be running in the duplex mode due to continuous this error, replace the CPU/IO module. If this does not help, replace another CPU/IO module or center plane.
902B	BIOS revision does not match.	This BIOS revision cannot support the duplex mode. Update the BIOS revision.
9031	Configuration of PCI riser is mismatch.	Check the PCI configuration. If this does not help, replace the CPU/IO module.
9032	The microcode to CPU is not found and it cannot update normally.	Unsupportted CPU may be mounted. Replace the CPU. If this does not help, replace the CPU/IO module.
9033	The microcode to CPU cannot update normally.	Replace the CPU. If this does not help, replace the CPU/IO module.
9034 903A	DIMM is faulty.	Replace the DIMM. If this does not help, replace the CPU/IO module.
9040 – 9047	CPU is faulty.(ID=0-7)	Replace the CPU.
9050 – 9055	DIMM is faulty.(ID=0-5)	Replace the DIMM. If this does not help, replace the CPU/IO module.
9058 - 905F	This CPU/IO module detected mismatch of CPUID between the CPU/IO modules.	CPU configuration may be different between the CPU/IO modules. Replace the CPU. If this does not help, replace the CPU/IO module.
9062 – 9063	CPU/IO module or ft Remote Management Card (option) is faulty.	If turning AC power off and on does not help, replace the CPU/IO module or ft Remote Management Card (option).
9065	One or both the CPU/IO modules have a problem.	There are some error messages in addition to this error code. Check the other error message.
9071 – 9072	Water-cooling kit has leaked out.	Replace the water-cooling kit. If this does not help, replace the CPU/IO module.

On-screen error message	Cause	Action
9080 - 908F	This CPU/IO module failed to get the information from another CPU/IO module.	When the system is running in the duplex mode, it is no problem. If the system cannot be running in the duplex mode due to continuous this error, replace the CPU/IO module. If this does not help, replace another CPU/IO module or center plane.

Error Notification by BEEP

An error message may not be displayed on the display unit even though the POST detected an error. In such a case, the beep sounds notifies you an error. The error contents are indicated by the combination of beep sound patterns. For example, beep sounds once, consecutively three times, once, and then once (beep code: 1-3-1-1) indicates DRAM refresh test error.
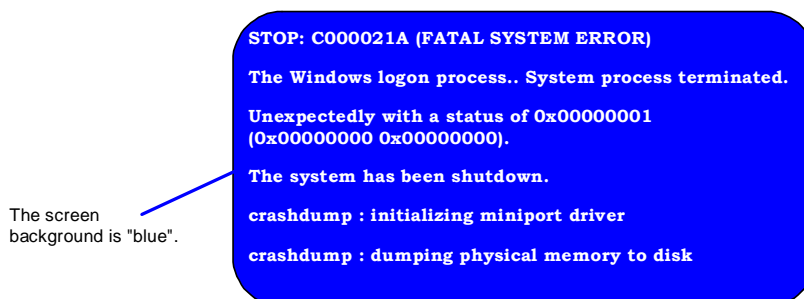
The following table lists the meaning of beep codes and measures against them.

Beep code	Meaning	Action
1-2-2-3	ROM checksum error	Contact your sales agent to replace the CPU/IO module motherboard.
1-1-2-4	ROMEXEC code error	Check the installation of DIMM board.
1-3-1-1	DRAM refresh test error	If the error persists, contact your sales agent to replace the DIMM or CPU/IO module motherboard.
1-3-1-3	Keyboard controller error	Disconnect the keyboard and connect it back on. If the error persists, request your sales agent to replace the CPU/IO module motherboard.
1-3-3-1	Failed to detect memory. Or, DIMM board type is incorrect.	Check the installation of DIMM board. If the error persists, contact your sales agent to replace the DIMM or CPU/IO module motherboard.
1-3-3-2	Initial setting error of the POST memory manager	
1-3-4-1	RAM address error	
1-3-4-3	RAM low byte data error	
1-4-1-1	RAM high byte data error	
2-2-3-1	Illegal interrupt test error	Contact your sales agent.
2-1-2-3	Copyright check error	
1-2	Failed to initialize the video BIOS	Check the motherboard installation if nothing is displayed on the display unit. If the error persists, contact your sales agent to replace the CPU/IO module motherboard. Check the PCI board installation if the Option ROM of the added PCI board is not displayed. If the error persists, contact your sales agent to replace the CPU/IO module motherboard, PCI module board or added PCI board with new one.
	Failed to initialize the option ROM	
	Failed to expand the option ROM	
1-5-1-1	FRB3 monitoring timeout	Check the installation of CPU. If the error persists, contact your sales agent.
1-5-2-2	CPU not implemented error	Check the installation of CPU. If the error persists, contact your sales agent.
1-5-2-3	CPU configuration error	Check the installation of CPU. If the error persists, contact your sales agent.
1-5-4-2	Power error	Check the installation of power. If the error persists, contact your sales agent.
1-5-4-4		

Windows Server 2003 Enterprise Edition Error Messages

If a fatal error (e.g., a STOP or system error) occurs after Windows Server 2003 Enterprise Edition starts, the screen of the display unit turns blue and displays detailed error messages.

> **STOP: C000021A (FATAL SYSTEM ERROR)**
>
> **The Windows logon process.. System process terminated.**
>
> **Unexpectedly with a status of 0x00000001 (0x00000000 0x00000000).**
>
> **The system has been shutdown.**
>
> **crashdump : initializing miniport driver**
>
> **crashdump : dumping physical memory to disk**

The screen background is "blue".

Take notes of the messages displayed on the screen, and call your sales agent.

If a fatal error occurs, the server automatically executes memory dump processing and saves the memory dump data in an arbitrary directory. (See the end of this chapter) The maintenance personnel of your sales agent may ask you to provide this data. Thus, copy the file into a medium (e.g., DAT) to be ready to pass it to the maintenance personnel.

IMPORTANT: A message may appear indicating that virtual memory is insufficient when you restart the system after a STOP or system error has occurred. Ignore the message and start the system.
If an error such as a stop error of the OS occurs, the normal dump function may run instead of the quick dump function depending on the system status. However, the memory dump file can be used for failure analysis equivalent to that of the quick dump function.

TIPS: Before copying the file into a medium, start the Event Viewer to confirm that the Save Dump event log is included in the system event logs and the memory dump has been saved.

The following message may be displayed during usage.

"Your system is low on virtual memory. To ensure that Windows runs properly, increase the size of your virtual memory paging file. For more information, see Help."

When this message is displayed, extend a physical memory following the procedure below.

1. Add a physical memory

2. Change the configuration of the paging file (Change more than < physical memory capacity × 1.5 >)

The system also displays a warning message if an internal device or peripheral equipment (e.g., disk, network, or printer) encounters an error. Take notes of the message, and call your sales agent.

Server Management Application Error Message

If the server management tool such as ESMPRO Agent or ESMPRO Manager has been installed in the NovaScale/ft Server series or management PC, you can obtain the error information from the display unit of the server or management PC.

See Chapter 5 or online documentation for details of such application programs.
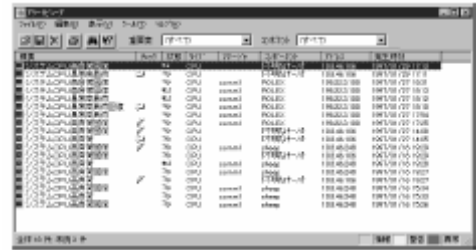
SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the given instruction before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your sales agent.

Problems with NovaScale/ft Server series

Fail to power on the server:

☐ Is the server properly supplied with power?

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

→ Check if the two pieces of the provided power cord are connected to the main unit properly.

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

→ Make sure the power breaker for the connected power outlet is on.

→ If the power cord is plugged to a UPS, make sure the UPS is powered and it supplies power. See the manual that comes with the UPS for details.

Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

<Menu to check: [Server] - [AC-LINK] - [Power On]>

→ Make sure the POWER switch on the power unit is on.

☐ Did you press the POWER switch?

→ Press the POWER switch on the front of the NovaScale/ft Server series to turn on the power (the POWER LED lights).

☐ Did you install the CPU/IO module properly?

→ Check if the CPU/IO module is properly installed in the server. Secure the CPU/IO module with screw located on the module removable handle. The server cannot be powered on unless it is screwed completely.

The screen turns blue during OS boot:

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

Fail to power off the server:

☐ Is the POWER switch enabled?

→ Restart the server and start the BIOS setup utility.

<Menu to check: [Security] → [Switch Inhibit] → [Enabled]>

POST fails to complete:

☐ Is the DIMM installed?

→ At least one DIMM is required for operation.

☐ Is the memory size large?

→ The memory check may take a time if the memory size is large. Wait for a while.

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

→ If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

☐ Does the server have appropriate memory boards or PCI card?

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

Server reboots while running the SCSI*Select* utility:

☐ Have you modified the Setup settings?

→ From [Server] - [Monitoring Configuration] - [Option ROM Scan Monitoring] of Setup, select "Disabled." If [Option ROM Scan Monitoring] is enabled, the system may reboot while using the SCSI*Select* utility. Change back the setting after you finish using the utility.

Fail to access to internal or external devices:

☐ Are cables properly connected?

→ Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

☐ Is that device compliant with NovaScale/ft Server series?

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

☐ Is the power-on order correct?

→ When the server has any external devices connected, power on the external devices first, then the server.

☐ Did you install drivers for connected optional devices?

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

☐ Is SCSI controller (including options) configuration correct?

→ If the sever has an optional SCSI controller board and SCSI devices are hooked up to the server, make correct settings by the SCSI controller board's SCSI BIOS utility. For details, see manuals included with the SCSI controller board.

☐ Is SCSI device configuration correct?

→ If external SCSI devices are connected to the server, you need to make settings of SCSI ID and terminal resistance. For details, see manuals included with the SCSI device.

CPUs not in Duplex mode:

→ Check if the memory configuration is correct.

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

Disks not in Duplex mode:

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

The keyboard or mouse fails to operate:

☐ Is the cable properly connected?

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

☐ Are the keyboard and mouse are compliant with NovaScale/ft Server series?

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

☐ Does the server have drivers installed?

→ Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

Screen freezes, keyboard and mouse don't work:

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

Message "New Hardware Found" appears:

→ Such a message may appear at the system start-up or when a CPU/IO module is replaced and incorporated into the system. This is due to the server's operating specifications and does not pose any problem.

Fail to access (read or write) to the floppy disk:

☐ Does the floppy disk drive contain a floppy disk?

→ Insert a floppy disk into the floppy disk drive until it clicks.

☐ Is the floppy disk write-protected?

→ Place the write-protect switch on the floppy disk to the "Write-enabled" position.

☐ Is the floppy disk formatted?

→ Use a formatted floppy disk or format the floppy disk in the floppy disk drive. Refer to the manual that comes with the OS for formatting a floppy disk.

Fail to access to the CD-ROM:

☐ Is the CD-ROM properly set in the CD-ROM drive tray?

→ The tray is provided with a holder to secure the CD-ROM. Make sure that the CD-ROM is placed properly in the holder.

☐ Is the CD-ROM applicable to the server?

→ The CD-ROM for Macintosh is not available for use.

Fail to access the hard disk:

☐ Is the hard disk applicable to the server?

→ Operation of any device that is not authorized by Bull is not guaranteed.

☐ Is the hard disk properly installed?

→ Make sure to lock the hard disk with the lever on its handle. The hard disk is not connected to the internal connector when it is not completely installed (see Chapter 8). When the hard disk is properly installed, the drive power LED for the hard disk is lit while the server is powered.

Fail to start the OS:

☐ Is there a diskette in the floppy disk drive?

→ Take out the diskette and restart the server.

☐ Is the EXPRESSBUILDER CD-ROM (or another bootable CD-ROM) in the CD-ROM drive?

→ Take out the CD-ROM and restart the server.

☐ Is the OS damaged?

→ Use the recovery process of the OS to attempt to recover the damaged OS.

OS behaviour is unstable:

☐ Have you updated your system?

→ For update procedure, see the separate volume "User's Guide (Setup)".

The system does not operate according to the configured settings of "Automatic Restart" at the occurrence of error.

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

The power cannot be turned off while the blue screen of Windows Server 2003 Enterprise Edition is displayed.

→ The forced power-off (forced shutdown) procedure is necessary to turn off the power with the blue screen displayed. Keep pressing the POWER switch for about 4 seconds. Pressing the POWER switch quickly does not turn off the power in this case.

The server is not found on the network:

☐ Is the LAN cable connected?

→ Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure to use the LAN cable that conforms to the network interface standard.

☐ Have the protocol and service already been configured?

→ Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

☐ Is the transfer speed correct?

→ The built-in LAN controller mounted as standard on this server can be used in network with the transfer speed of 1000 Mbps, 100 Mbps or 10 Mbps. You can change the transfer speed or configure the setting from OS. However, do not use the "Auto Detect" function. Fix the setting of the transfer rate to the same as that of the connected hub. Also, check if the duplex mode is the same as that of the connected hub.

Fix the transfer speed by using Device Manager. Select and right-click the network adapter to change the transfer speed from the tree on Device Manager, and select [Properties] from the displayed menu. When the properties window appears, select the [Link] tab, and select the item that matches to the connected HUB from the list box of [Speed and Duplex]. If you click [OK], configuration selected in [Speed and Duplex] will be effective.

Icon of drive A is changed to that of removal disk:

→ Does not cause any problem.

Machine repeats rebooting at startup:

☐ Is CHKDSK executed at machine start-up?

→ Open the utility of the BIOS setup at rebooting and change the following settings:

(Change BIOS settings)
Change [Server] - [Monitoring Configuration] - [Boot Monitoring] to [Disable].

(For details, see chapter 4 "Monitoring Configuration".)

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

CHKDSK is executed in the following conditions:
(1) CHKDSK is scheduled to be executed at next system startup
(2) Corruption of file system is detected since the previous startup until shutdown
(3) Inconsistency (corruption) of file system is detected while mouting at system startup

☐ Is the value of [Boot Monitoring] in the BIOS setting appropriate?

→ Change the value of [Boot Monitoring] to suit your environment.
(For details, see chapter 4 "Monitoring Configuration".)

Disk access LEDs on the disks are off:

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

CPU/IO module is disconnected:

→ When an error occurred in a CPU/IO module, the following message will be recorded to the system event log and the CPU/IO module may become disconnected. In this case, contact your sales agent because device replacement will be required.

Source: HasCtrl
Type: Error
Event ID: 3400
Description: FT nonfatal error occurred on the Module [Module Number]. [Module number] "#0" or "#1".

Source: HasCtrl
Type: Warning
Event ID: 4323
Description: The system abnormality of the Module [Module Number] was detected.
               [Module Number] "#0" or "#1".

CPU module is disconnected:

→ When an error occurred in the CPU module, the following message will be recorded to the system event log and the CPU module may be disconnected. CPU module will be set to duplex mode again, so there will be no effect on the system by this warning. If reintegration fails, see "CPU module is not integrated" of this chapter.

Source: HasCtrl
Type: Warning
Event ID: 1202
Description: The driver failed the fast re-sync function of the CPU module.   [Module[Module Number]]
               [Module Number] "#0" or "#1"

Source: HasCtrl
Type: Warning
Event ID: 3500
Description: The error occurred on the CPU module of Module [Module Number]
               [Module Number] "#0" or "#1"

Source: HasCtrl
Type: Warning

Event ID: 4000
Description: The error occurred on the CPU module of Module [Module Number]
            [Module Number] "#0" or "#1"

Source: HasCtrl
Type   Warning
Event ID: 4310
Description: Synchronization of the CPU module stopped.

IO module is disconnected:

→   When an error occurred in the component, the following message will be recorded to the system event
    log and the IO module may be disconnected. In this case, contact your sales agent, since device
    replacement will be required.

Source: HasCtrl
Type: Error
Event ID: 3600
Description: The error occurred on the South Bridge of Module [Module Number]
            [Module Number] "0#" or "#1"

Source: HasCtrl
Type: Error
Event ID: 3700
Description: The error occurred on the PCI Express [PCI Express Type] of Module [Module
            Number]
            [Module Number] "#0" or "#1"
            [PCI Express Type] "0" or "1"

Source: HasCtrl
Type: Error
Event ID: 3800
Description: The error occurred on the PCI Express [PCI Express Type] of Module [Module Number]
            [Module Number] "#0" or "#1"
            [PCI Express Type] "0" or "1"

CPU/IO module is not integrated:

→   When you attempt to integrate the CPU/IO module that caused an error in the past, the following
    message will be recorded to the system event log and the CPU/IO module will not be integrated. In this
    case, contact your sales agent, since device replacement will be required.

Source: HasCtrl
Type: Warning
Event ID: 1703
Description: The driver was not able to bind the Module. It has broken down in the past. [Module
            [Module Number]]
            [Module Number] "#0" or "#1"

CPU module is not integrated:

→   When you attempt to integrate the CPU module, the following message will be recorded to the system
    event log and the CPU module may not be integrated. In this case, it is considered that the repair is
    necessary since CPU module's MTBF is below threshold value. Contact your sales agent, since device
    replacement will be required.

Source: HasCtrl
Type: Error
Event ID: 4306
Description: MTBF of the [Module Name] module in the Module [Module Number] is below the

threshold.
[Module Name] "CPU" or "IO"
[Module Number] "#0" or "#1"

→ When you attempt to integrate the CPU module, the following message will be recorded to the system event log and the CPU module may not be integrated. It indicates that some kind of error has occurred when integrate the module. Contact your sales agent, since device replacement will be required.

Source:	HasCtrl
Type:	Error
Event ID:	1003
Description:	The driver failed to bind the CPU module. [Module[Module Number]]
	[Module Number] "#0" or "#1"

IO module is not integrated:

→ When you attempt to integrate the IO module that caused an error in the past, the following message will be recorded to the system event log and the IO module will not be integrated. In this case, contact your sales agent, since device replacement will be required.

Source:	HasCtrl
Type:	Warning
Event ID:	1407
Description:	The driver was not able to bind South Bridge. It has broken down in the past. [Module[Module Number]]
	[Module Number] "#0" or "#1"

Source:	HasCtrl
Type:	Warning
Event ID:	1405
Description:	The driver was not able to bind PCI Express 0. It has broken down in the past. [Module[Module Number]]
	[Module Number] "#0" or "#1"

Source:	HasCtrl
Type:	Warning
Event ID:	1406
Description:	The driver was not able to bind PCI Express 1. It has broken down in the past. [Module[Module Number]]
	[Module Number] "#0" or "#1"

→ When you attempt to integrate the IO module while PCI device is not completed to separate, the following message will be recorded to the system event log and the IO module will not be integrated. In this case, wait for a while and try to integrate IO module again referring to Chapter 5 "Start and Stop of Components".

Source:	HasCtrl
Type:	Information
Event ID:	1408
Description:	Since removal of each device was not completed, the driver was not able to bind the CPU/IO module. [Module[Module Number]]
	[Module Number] "#0" or "#1"

IO module is not disconnected:

→ When you attempt to disconnect IO module while network adapter and/or SCSI adapter and/or FC adapter is not in dual mode, the following message will be recorded to the system event log and the IO

CPU load ratio of SNMP Service (snmp.exe) increases:

→ While monitoring the server from ESMPRO Manager, the CPU load ratio of SNMP Service on the ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

→ ESMPRO Manager and ESMPRO Agent exchange information through SNMP Service. If the server status monitoring by ESMPRO Manager is on (default: ON), ESMPRO Manager regularly issues a request to ESMPRO Agent to get the current status of the server. In response, ESMPRO Agent checks the status of the server. As a result, the CPU load ratio of SNMP Service increases temporarily.

→ If you have trouble of terminating a movie player application, turn off the server status monitoring by ESMPRO Manager or extend the monitoring interval.

SNMP Service caused hang:

→ SNMP Service has a module called "SNMP Extended Agent." This module may be registered when you install some software that uses SNMP Service. If you start SNMP Service, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, SNMP Service will hang. It may take time to complete the initialization due to temporary high load on the system. In this case, wait for the system load become low enough before restarting SNMP Service.

Pop-up message of esmcmn.exe is displayed when starting the system:

→The following pop-up message may be displayed when you restart the system which ESMPRO Agent is installed to and removal drives such as MO and DVD-RAM are mounted on, without closing Windows Explorer, after displaying the contents of media and removing the media by the software eject (by right-clicking the DVD drive on Windows Explorer and selecting [Eject]) The message (the drive name) displayed varies depeneding on the systems.
If the pop-up messages below are displayed, click [Cancel] or [Continue] to close the dialog box. If you do not close the dialog box, you cannot start the Workstation service and related services, causing unstable operation of the system. Also, if you restart the system, execute it after terminating the program such as Windows Explorer which displays a media.

<Example >

Memory dump (debug information) cannot be collected when a failure occurs:

☐ Is there any available storage space on a storage location?

→ Specify the drive in which there is an available storage space of more than a memory size on the server plus 12 MB (more than 2048 plus 12 MB if a memory size is more than 2 GB).
For details, see "Set Memory Dump (Debug Information)" of "Step 12: Set up Failure Management" in Chapter 4 "Windows Setup" in the separate User's Guide for setup.

☐ Is [Initial size] of the paging file of the OS partition smaller than [Recommended]?

→ If a value smaller than the [Recommended] value is set for [Initial Size] of the paging file, accurate memory dump (debug information) may not be collected. Be sure to create the file in the above size in the OS partition.
For details, see "Set Memory Dump (Debug Information)" of "Step 12: Set up Failure Management" in Chapter 4 "Windows Setup" in the separate User's Guide for setup.

**After starting up, FT Status LED do not illunimiate or illunimate amber:**

Follow the instructions below:

FT Status LED	Description	Action
Green	CPU module, IO module, SCSI adapter, FC adapter, and network adapter are in complete dual mode.	No action is necessary.
Amber	1. An error occurred in CPU/IO module or IO module. 2. CPU module's MTBF went below the threshold value.	Contact your sales agent, since device replacement is usually required.
Blink in amber	Collecting the dump.	No action is necessary.
Not illuminate	Preparing for dual mode.	Wait for a while.
	CPU module and/or IO module and/or SCSI adapter and/or FC adapter and/or network adapter are not in dual mode.	1. CPU module: See "CPU module is separated" and "CPU module is not integrated" in this chapter. 2. IO module: See "IO module is separated" and "IO module is not integrated" in this chapter. 3. SCSI adapter: Check if IO module is separated or SCSI adapter on IO module is broken. 4. FC adapter: Check if IO module is separated and if storage device is connected from both IO modules with FC cable. Also check if access to one IO module is restricted in AccessControl of iStorageManager. 5. Network adapter: Check the dual mode setting. Also, check if there is any problem in general network settings or in the connection.
	HAS Fault Service Tolerance service is not started.	Start the HAS Fault Tolerance service by selecting [Administrative Tools] – [Services].

Command prompt cannot be display full screen:

In NovaScale/ft Server series**,** you cannot switch command prompt to full screen mode. Also, you cannot execute applications that use command prompt full screen mode. When you attempt to switch to full screen mode, the message below may appear. Click [OK] and close the window.

<Example message>
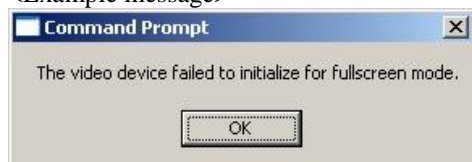
Screen display size and actual drawing range do not match:

This may occur when you use application that can change resolution. Close the application. If the screen condition does not change even after closing the application, go to [Display Properties] - [Settings] tab - [Screen resolution] and reset the resolution. You must reboot the system for new settings to take effect.

Exclamation mark "!" appears to "VGA Display Controller" under the "non-Plug and Play device" when changed the setting to show hidden devices in menu in the Device Manager:

This has to do with the server specification and there is no effect to the operation. Exclamation mark "!" appears to "VGA Display Controller" since OS Standard VGA driver is not activated in the server.

Exclamation mark "!" appears to "Serial" under the "non-Plug and Play device" when changed the setting to display a non-display device in the menu by using Device Manager:

There is no serial port that is a legacy device in NovaScale/ft Server series. When you install Windows to a legacy-free server like NovaScale/ft Server series, exclamation mark "!" may appears to "Serial". This has to do with the OS specification and there is no effect to the operation of the server.

Warning message appears in POST after implementing ft Remote Management Card (R620-LR model only):

☐ Did you set "Initialize Remote Management Card"?

H/W Configuration of BMC is corrupted.
!! Update BMC H/W Configuration by configuration tool!!
!! Refer to BMC Configuration manual !!

If the message above appears, press **F1** key or wait for a while. Then POST proceeds. Insert EXPRESSBUILDER CD-ROM attached to the server into the CD-ROM drive to start EXPRESSBUILDER. Select [Tools] - [Initialize Remote Management Card] from its main menu to write the sensor information specific to the server to the card.

NovaScale/ft Server series cannot be recognized from management PC:

☐ Did you add the Remote Management Card (option)?

Start EXPRESSBUILDER attached to the device, and select [Tools] – [Initialize Remote Management Card] from the main menu, and write the information specific to each server to the card.

☐ Is Java2 Runtime Environment, Standard Edition 1.4.2_04 or later applied to management PC?

Java2 Runtime Environment, Standard Edition 1.4.2_04 or later is necessary. It can be installed from the following location.
Start Windows and insert EXPRESSBUILDER CD-ROM attached to the device into CR-ROM on management PC where you want to install. Master control menu is displayed by Autorun function. Execute JRE installer in DianaScope install menu from [Software Setup] – [DianaScope].

*Download the latest Java Runtime from http://java.sun.com/j2se/

☐ Is the LAN cable properly connected?

→ Make sure that LAN cable is properly connected. The device sensor cannot be referred unless the cable is properly connected. Check if the cable is connected to the LAN connector or serial port connector by mistake.

☐ Is the IP address shared?

→ IP address of the management LAN port is set to 192.168.1.1 at the time of shipping. Change the IP address since it will not be recognized properly if there is same IP address on the same network.

☐ Is the connection restricted by firewall or gateway?

The connection may be restricted by the setting such as firewall. If directly connecting the LAN to client PC with cross cable can solve the problem, see "Network Settings" of "REMOTE MANAGEMENT FUNCTION" in Chapter 4 and check firewall or gateway again.

The device console screen does not appear in web remote KVM console screen:

☐ Is the resolution setting of the device correct?

R620-LR model

When the device screen is displayed in ft Remote Management Card, change the screen settings to fit within resolution 1024x768 and refresh rate 75 Hz.

R620-MR model

When the device screen is displayed in remote management function of remote KVM, change the screen settings to fit within resolution 1024x768 and refresh rate 75 Hz.

Forgot login name/password to use remote management function from Web browser:

See "BMC Configuration Jumper Setting" in Chapter 4 and change the implement position of the jumper to change the each setting (including BMC password) back to the time of shipping.

IMPORTANT:

This operation also clear the BMC setting that is necessary to connect DianaScope and NovaScale/ft Server series. When you use DianaScope, save the setting to connect to DianaScope to a floppy disk before performing the operation. BMC setting can be configured/saved by system management function of DianaScope Agent or EXPRESSBUILDER.

Device is accidentally removed by mistake:

When you click the [Safely Remove Hardware] icon in task tray, device names such as "USB Mass Storage Device" will be displayed. Among these devices except "USB Floppy Drive", if you accidentally removed the device by mistake, click the [Safely Remove Hardware] icon again and select "Safely remove AMD PCI to USB Open Host Controller". Removed devices will be recognized again by doing this.

Event Log

"The NMS Service terminated unexpectedly." is recorded in the system event log:

→ Although the following log may be recorded in the system event log when starting the system, or after exchanging PCI modules, there is no real problem on operation. Change of a setup with PROSet II will become invalid if NMS service stops, but you can change a setup normally because NMS service will be automatically started when PROSet II is started.

"Source: Service Control Manager
Event ID: 7031
Description: The NMS service terminated unexpectedly. This has occurred 1 time(s). The following corrective action will be taken in 0 milliseconds: No action."

iANSMiniport-related logs are recorded in the system event log:

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

Source: iANSMiniport
Type: Warning
Event ID: 35
Description: Initializing "Virtual Team Adaptor" that lack adapter "Number of missed adaptors". Check if all adapters exist and function properly.

Source: iANSMiniport
Type: Warning
Event ID: 13
Description: "Physical Adaptor" is invalid in the team.

Source: iANSMiniport
Type: Warning
Event ID: 11
Description: The following adapter link is not connected: "Physical Adaptor".

Source: iANSMiniport
Type: Error
Event ID: 16
Description: "Virtual Team Adaptor": the last adapter lost the link.

                The team network lost the connection.

Source: iANSMiniport
Type: Warning
Event ID: 22
Description: The primary adapter did not detect the following probe: "Physical Adaptor". Reason: The team may be divided.

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

EvntAgnt log is recorded in the application event log:

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

Source: EvntAgnt
Event ID: 1003
Description: TraceFileName parameter not located in registry; Default trace file used is .

Source: EvntAgnt
ID: 1015

Description: TraceLevel parameter not located in registry; Default trace level used is 32.

SCSI control error appears in the system event log:

→ This symptom occurs, for example, when a SCSI chip receives a reset request from a different SCSI chip. The process will be continued properly by the retry function.
It is likely to occur when the server shifts from the simplex mode to the duplex mode at OS start-up or during maintenance operations. If the number of the following errors recorded in the system event log is few, ignore the errors.
This error is logged about 5 to 50 times in two or three minutes when the server shifts from the simplex mode to the duplex mode during maintenance operations. Ignore these errors as well.

Source: adpu320
Type: Error
Event ID: 11
Description: The driver detected a controller error on \Device\Scsi\adpu320xx.

If this error is recorded many times, the hard disk drive may be faulty. Contact your service representative.

SCSI device timeout appears in the system event log:

→ This symptom occurs when the processing speed of HDDs is slower than the request from the operating system. The process will be continued properly by the retry function.
It is likely to occur when the server shifts from the simplex mode to the duplex mode at OS start-up or during maintenance operations. If the number of the following errors recorded in the system event log is few, ignore the errors.
This error is logged about 5 times when the server shifts from the simplex mode to the duplex mode during maintenance operations. Ignore these errors as well.

Source: adpu320
Type: Error
EventID: 9
Description: The device, \Device\Scsi\adpu320xx, did not respond within the timeout period.

Source: adpu320
Type: Error
EventID: 117
Description: The driver for device \Device\Scsi\adpu320xx detected a port timeout due to prolonged inactivity. All associated busses were reset in an effort to clear the condition.

If this error is recorded many times, the hard disk drive may be faulty. Contact your service representative.

Event log which warn CPU load monitoring is registered:

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

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

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

HAS Fault Tolerance-related logs are recorded in the system event log:

→ The following event logs may be recorded when the server is managed using ESMPRO Manager, but there is no problem in continue operating the system. However, there might be a problem in OS or software environment if logs are recorded repeatedly. Contact your maintenance service company.

Source: HAS Fault Tolerance
Type: Warning
Event ID: 204 - 208

Intermittent failure of software which is attributed to the server load may be the reason for these logs to be recoded.

→   The following event logs may be recorded when operating or replacement/maintenance of each device of network adapter/SCSI disk/fibre channel, but there is no problem in continue operating the system. However, there might be a problem in OS or software environment if logs are recorded regardless of following the maintenance procedure or they are recorded repeatedly. Contact your maintenance service company.

Source: HAS Fault Tolerance
Type: Warning
Event ID: 209 - 213
Started maintenance operation without suspending (or stopping) HAS Fault Tolerance service may be the reason for these logs to be recoded.

If the event ID is 212 or 213, and if "The error occurred in the duplex state watchdog of SCSI devices. Error code: -1" or "The error occurred in the duplex state watchdog of FC devices. Error code: -1" is registered for the details, applications such as backup software may access the internal log file of HAS Fault Tolerance service. This event does not affect the duplication operation.

→   The following event logs may be recorded during the system operation, but there is no problem in continue operating the system. However, there might be a problem in OS or software environment if logs are recorded repeatedly. Contact your maintenance service company.

Source: HAS Fault Tolerance
Type: Error
Event ID: 300

These logs report captured information when the program exception occur within HAS Fault Tolerance service. The program exception occurs for various reasons, but HAS Fault Tolerance service has allowance function that can handle the problem. It is also set to self-recover even when exceeding the allowance range.

HasCtrl-related logs are recorded in the system event log:

→   The following event logs may be recorded during the system operation. This log shows that CPU module is not in a dual mode. There is no problem to the system by this warning, since CPU module will be set to a dual mode again.

Source: HasCtrl
Type: Warning
Event ID: 1202
Description: The driver failed the fast re-sync function of the CPU module
                [Module[Module Number]]
                [Module Number] "#0" or "#1"

Source: HasCtrl
Type: Warning
Event ID: 3500
Description: The error occurred on the CPU module of Module [Module Number].
                [Module Number] "#0" or "#1"

Source: HasCtrl
Type: Warning
Event ID: 4000
Description: The error occurred on the CPU module of Module [Module Number].
                [Module Number] "#0" or "#1"

Source: HasCtrl
Type   Warning
Event ID: 4310
Description: Synchronization of the CPU module stopped.

HASIPMI-related logs are recorded in the system event log:

→ The following event logs may be recorded during the system operation. These logs are recorded when the software that access to BMC could not receive response from BMC within a given period of time. There is no problem to the system by this warning.

Source: HASIPMI
Type: Information
Event ID: 22
Description: IPMI driver detected the response timeout of BMC.
               Process = (Although Primary BMC is ready)

Source: HASIPMI
Type: Information
Event ID: 22
Description: IPMI driver detected the response timeout of BMC.
               Process = (Secondary BMC is still running)

ESM HAS Storage Service-related logs are recorded in the system event log:

→ Even though the mirror volume is actually built, when the system is highly loaded, the following event logs may be recorded repeatedly. Since the system is highly loaded, the status of SCSI slot and mirror disk cannot be retrieved, an incorrect status is retrieved temporally, and these logs are recorded. If you can verify that the mirror volume is established, there is no problem, so ignore them.

Source: ESM HAS Storage Service
Type: Warning
Event ID: 601

Source: ESM HAS Storage Service
Type: Information
Event ID: 602

Source: ESM HAS Storage Service
Type: Information
Event ID: 402

The following event logs may be recorded during the system operation. This is caused because there are internally two types of "Empty" status that shows that disks are not loaded. For example, if disks do not exist in Slot 1 and Slot 4, "Empty" simply indicates information. Also, if the disk where a volume is not created exists in Slot 4, "Empty" of Slot 1 is just at the information level. If a simple volume is created on the disk of Slot 4, "Empty" of Slot 1 is treated as the warning level to secure the redundancy. In this case, check the volume creation status, and configure the mirror volume.

Source: ESM HAS Storage Service
Type: Warning
Event ID: 401
Description: Status of the SCSI Slot (ID:41/[Slot Number]) has changed from Empty to Empty.
               [Slot Number]: a number between 0 and 5

Source: ESM HAS Storage Service
Type: Information
Event ID: 402
Description: Status of the SCSI Slot (ID:41/[Slot Number]) has changed from Empty to Empty.
               [Slot Number]: a number between 0 and 5

→ The following event log may be recorded while the server is starting. To start the server, start one module and then another one, and make them duplex. For this reason, if only one module has been started but the other one is starting, the status of the SCSI adapter and the bus temporarily becomes Simplex and Offline respectively. There is no problem if each status changes to Duplex after the duplex operation completes. Because of this, right after the server is started and if the status changes to Duplex when the duplex operation completes, there is no problem.

Source: ESM HAS Storage Service
Type: Warning
Event ID: 101
Description: Status of the SCSI Adapter (ID:[Device Path ID of SCSI Adapter]) has changed from
              Duplex to Offline.
              [Device Path ID of SCSI Adapter]: 0/10/104 or 1/11/104

Source: ESM HAS Storage Service
Type: Information
Event ID: 102
Description: Status of the SCSI Adapter (ID:[Device Path ID of SCSI Adapter]) has changed from
              Duplex to Simplex.
              [Device Path ID of SCSI Adapter]: 0/10/104 or 1/11/104

Source: ESM HAS Storage Service
Type: Warning
Event ID: 201
Description: Status of the SCSI Bus (ID:[Device Path ID of SCSI Bus]) has changed from Duplex to
              Offline.
              [Device Path ID of SCSI Bus]: 0/10/104/0, 0/10/104/1, 1/11/104/0 or 1/11/104/1

Source: ESM HAS Storage Service
Type: Information
Event ID: 202
Description: Status of the SCSI Bus (ID:[Device Path ID of SCSI Bus]) has changed from Duplex to
              Simplex.
              [Device Path ID of SCSI Bus]: 0/10/104/0, 0/10/104/1, 1/11/104/0 or 1/11/104/1

Problems with EXPRESSBUILDER

When the server is not booted from the EXPRESSBUILDER CD-ROM, check the following:

☐ Did you insert the EXPRESSBUILDER CD-ROM during POST and restart the server?

→ If you do not insert the EXPRESSBUILDER CD-ROM during POST and restart the server, an error message will appear or the OS will boot.

☐ Is BIOS configuration correct?

→ The boot device order may be specified with the BIOS setup utility of the server. Use the BIOS setup utility to change the boot device order to boot the system from the CD-ROM drive first.
<Menu to check: [Boot]>

When an error occurs while the EXPRESSBUILDER is in progress, the following message appears. After this message appears, check the error and take the appropriate corrective action according to the error codes listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This EXPRESSBUILDER version is not designed for this server. Execute the EXPRESSBUILDER on the compliant server.
NvRAM access error	An access to the non-volatile memory (NvRAM) is not acceptable.
Hard disk access error	The hard disk is not connected or it is failed. Check whether the hard disk is correctly connected.
There is no device specific information on motherboard. Restore the backup information or write the information using [System Information Management] in offline maintenance utility. Only maintenance personnel can operate this. Are you going to run offline maintenance utility?	This message is displayed when EXPRESSBUILDER cannot find device specific information, such as when replacing a motherboard. Maintenance personnel write information using offline maintenance utility.

Problems with Master Control Menu

Failed to read online documentation:

☐   Is Adobe Acrobat Reader installed properly?

→   A part of online documentation is supplied in PDF file format. Install the Adobe Acrobat Reader (Version 4.05 or later) in your operating system. You can also install the Adobe Acrobat Reader using the EXPRESSBUILDER CD-ROM. Launch the Master Control Menu and select [Setup] - [Adobe Acrobat Reader]. (After installation, launch Adobe Acrobat Reader and agree on license agreement before you use it).

Image of online documentation is not clear:

☐   Is your display unit set to display 256 colours or more?

→   Set the display unit to display 256 colours or more.

The master control menu fails to appear:

☐   Is your system Windows NT 4.0 or later, or Windows 95 or later?

→   The CD-ROM Autorun feature is supported by Windows NT 4.0 and Windows 95. The older versions do not automatically start from the CD-ROM.

☐   Is **Shift** pressed?

→   Setting the CD-ROM with **Shift** pressed down cancels the Autorun feature.

☐   Is the system in the proper state?

→   The menu may not appear depending on the system registry setting or the timing to set the CD-ROM. In such a case, start the Internet Explorer and run \MC\1ST.EXE in the CD-ROM.

Menu items are greyed out:

☐   Is your computer environment proper?

→   Some software requires the administrative authority for operation or needs to operate on the server. Use that software in the appropriate computer environment.

Problems with Configuration Diskette Creator

☐ The bit map of the Configuration Diskette Creator window is not displayed correctly during settings of setup information. (When the Trekking command is used)

→ If the specified number of colours is fewer than 256 in the display setting, the bit map is not displayed correctly, but the setup information can be displayed

☐ The Point to Point tunnelling protocol cannot be set.

→ The protocol is not supported at present. After installation, set the protocol through Control Panel. In this case, rebooting is not necessary.

☐ The details of a network adapter cannot be set.

→ Configuration Diskette Creator is unable to set the details of network adapters. Start Windows 2003, and set the details through Control Panel.

Problems with Windows Server 2003

☐ The Telnet Service is not installed.

→ Adjust the computer name to 14 characters or less, and then install the Telnet Service as follows:
      1. Click [Run] on Start menu.
      2. Type "tlntsvr /service" in the [Open] box, and click [OK].
      3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.
    * When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

Problems with ESMPRO

ESMPRO Manager

→ See Chapter 5. See also online document in EXPRESSBUILDER CD-ROM for troubleshooting and other supplementary information.

ESMPRO Agent

Change in monitoring interval of file system and threshold value of free space monitoring do not reflect:

→ Change in monitoring interval by the file system monitoring function of ESMPRO Agent, threshold value of free space monitoring do not reflect immediately. The configuration change becomes effective in the next monitoring interval of monitoring service after changing the setting.

ESMPRO Manager does not receive traps from ESMPRO Agent properly:

→ When the trap community which receives traps in the setting of ESMPRO Manager is changed from the default setting "public", SNMP service setting needs to be changed. See the separate user's guide (Setup), and set the same community name configured in ESMPRO Manager. For ESMPRO Manager to receive traps from ESMPRO Agent properly, both community names must match.

Alert is redundantly reported to ESMPRO Manager:

→ When ESMPRO Manager's IP address (or host name) assigned to SNMP service to send traps is assigned in the message manager (TCP/IP), a warning message for redundancy is displayed. Alert is redundantly reported when the same ESMPRO Manager is assigned.

Cannot monitor from ESMPRO Manager:

→ When a community name besides "public" is entered in SNMP service trap properties sheet, see the separate user's guide (Setup) and add the value to "Accepted community names" in security properties sheet. When the choice of "Accepted community names" is set other than "READ CREATE" or "READ WRITE", monitoring from ESMPRO Manager cannot be done.

ESMPRO Agent cannot receive SNMP packet from ESMPRO Manager:

→ When you changed the community name which receive SNMP packet of SNMP service from the default name "public" to the desired name, you must register new community name of ESMPRO Agent from the [Control Panel]. Follow the steps below:

1. Double-click the [ESMPRO Agent] icon in [Control Panel].

2. Select a desired community name from the [SNMP Community] list box in [SNMP Setting] of the [General] sheet.

    The community names to receive SNMP packets are listed in the [SNMP Community] list box.

3. Click the [OK] to terminate the operation.

    The community name to send SNMP packet from ESMPRO Manager and the community name to receive SNMP service in ESMPRO Agent must be the same to receive SNMP packet properly.

ESMPRO Agent does not operate properly:

→ When SNMP service is added after applying service pack when OS is installed, apply service pack again. Otherwise, SNMP service does not run properly and ESMPRO Agent may not run.

→ SNMP service is necessary for ESMPRO Agent to run. If you deleted SNMP service after installing ESMPRO Agent, reinstall ESMPRO Agent after installing SNMP service.

→ SNMP service may be used among other software. If you install SNMP service and ESMPRO Agent while such software is installed, ESMPRO Agent service may not be able to start. In such case, delete SNMP service once and install it again. Then, reinstall ESMPRO Agent and other software described above.

[Unknown] or illegal information is displayed in CPU information:

→ If you select [CPU Module]–[CPU] in the FTServer tree of the data viewer, unknown or incorrect information appear in some information items.

→ The CPU information can be viewed by selecting [System]–[CPU] in the [ESMPRO] tree.

Status of logical PCI slot:

→ There is no effect to PCI module (IO module) since I/O hub and a display controller on PCI module (IO module) are logical PCI slot information. Hence, for [PCI slot (ID:0/10/102)] and [PCI slot (ID:0/10/103)] under [PCI module (ID:0/10)] of FT tree of the date viewer, "Status" becomes "Online" and the status colour becomes green.

Message prompting to reconfigure a tree in the date viewer is displayed:

→ If you dynamically change the configuration of the CPU or PCI module (IO module) in the relevant system during review of the server information by using the data viewer, the message prompting you to reconstruct the tree of the data viewer will appear. If you click the [Yes] button, the tree is reconstructed in the data viewer to reflect the change of the system configuration on the data viewer. If you click [No] button, the tree will not be reconstructed in the data viewer. If such case, the information in the data viewer may be different from the current system information because the change of the system configuration is not reflected on the data viewer.

Module status is shown "Fault":

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

Status colour changes to different colours after mounting a hard disk drive:

→ The status of hard disk drive and its upper component, SCSI enclosures change while generation of the mirror is completed after mounting a hard disk drive. In addition, it may take several minutes for OS to recognize the change of disk status and/or disk may need to be scanned again. A status colour may turn to abnormal during the process, but it will return to normal colour once a mirror is successfully generated.

Line fault and high line load are reported:

→ The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period of time. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is immediately reported, temporal high line impedance may have occurred. Hence, there is no problem.

Threshold value of LAN monitoring does not reflect:

→ Because the NovaScale/ft Server series detects hardware faults on the network in the driver level, ESMPRO Agent does not monitor line faults. Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [ESMPRO Agent properties] in the control panel is not used.

Remote shutdown function or change of threshold value function from ESMPRO Manager cannot be used:

→ Depending on your OS type or its version, settings for community, SNMP service's security function, are not made, or default settings of authority are different. To enable the remote shutdown and threshold change functions via ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

Machine in a sleep state cannot be monitored:

→ ESMPRO Manager cannot monitor the ESMPRO Agent machine in the sleep state (system standby or system halt state).

→ While ESMPRO Manager monitors server shutdown, the relevant ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status colour of the server icon becomes gray. This cannot indicate whether the ESMPRO Agent machine is shut down or entered into the sleep state. Keep these in mind when operating the system where systems to be monitored may enter the sleep state.

Some items cannot be monitored in ESMPRO Manager:

→ ESMPRO Manager Ver4.23 or later is necessary to monitor NovaScale/ft Server series. If you are using older version, install ESMPRO Manager CD-ROM that comes with the device.

Various logs cannot be referred in ESRAS Utility:

→ ESRAS Utility is software that refers various logs, print out, output to a file, and initialization in NovaScale/ft Server series in which ESMPRO Agent is installed. When ESRAS Utility of ESMPRO Manager is used, there are some devices that cannot refer various logs.

→ Use ESRAS Utility of ESMPRO Agent. It is registered in CD-ROM that comes with the device. Install it from related utility of ESMPRO setup.

Managing dual mode system:

→ When managing dual mode system, install Operation/Standby separately to local disk. Installation of ESMPRO Agent is same as normal installation except installing to two servers.

The monitoring event is not alerted:

→ The alert function is based on the event information registered in the event log of the system. Thus, set the event log process on the event viewer to [Overwrite events as needed]. The monitoring event is not alerted in the setting other than that.

→ The event registered in the monitoring event tree on the setting tool of alert function (Alert Manager) is not alerted to the manager if Alert Manager Main Service does not operate. Even when the service is operating, if the enabled/disabled flag of each alerting ways is disabled, the event is not alerted. The alert enabled/disabled flag is set by selecting [Base Setting] – [Report] Properties from [Setting] of Alert Manager. Also the event occurred before Eventlog Service started at the time of system start-up cannot be alerted.

→ You can set the time to the shutdown by selecting [Base Setting] – [Other] on the setting tool of the alert function (Alert Manager). The initial value is 20 seconds. When you set smaller value than this, the alert may not be performed at the time of shutdown.

→ When an alert failure occurs at the time of alerting of monitoring target event, an error message is logged in the event log. If you newly log the error message which occurs at the time of alerting as a monitoring target event, the error at the time of alerting will be alerted again. As the result, large number of alerts will be sent when recovering the failure. This leads to the increase of system load and the degradation of the performance. Do not register the events especially which are produced by the following alert function services as the monitoring target.

Alert Manager ALIVE(S) Service
Alert Manager Main Service
Alert Manager Socket(S) Service

Printer Information's Available Time:

When you add a new printer, install its driver and make its settings, if you do not make settings for the available time from the properties window of the printer, the printer's available time (From and To) in [Printers and Faxes] are [00:00], on the other hand, ESMPRO Manager's time are [9:00]. To display them properly, make the settings of printer from its properties window. The procedures are as follows:

1. From [Control Panel], click [Printers and Faxes], and open the properties window of a printer for making settings.

2. Select the [Advanced] tab.

3. Enter values in the available time ("Available from" and "To"), and click [OK] on the properties window to exit.

Now, you can see the correct information from ESMPRO Manager, too.

The disk related works are desired while ESMPRO Agent is running:

→ The following works to disks (hard disk drive or magneto optical) are not allowed while ESMPRO Agent is running.

● To format or delete a partition by Disk Administrator or by other means.

● To request programmatically to remove media from removable disks such as MO, Zip and PD.

Please conduct these works by following the procedure written below.

1. Open [Control panel] – [Service].

2. Select a service named "ESM Common Service" and click [Stop].

3. Confirm that "ESM Common Service" is stopped, and close the [Service] in [Control Panel].

4. Do the disk–related works.

5. Open the [Service] in [Control Panel] again. Select "ESM Common Service" and click the [Start].

6. Confirm that "ESM Common Service" is started and close the [Service] and [Control Panel].

Changing the threshold of temperature/voltage/fan monitoring is desired:
→ Displaying/changing the threshold of the temperature/voltage /fan from ESMPRO Agent is not allowed. However, you can display the threshold on the data viewer of ESMPRO Manager on some models. ESMPRO Agent monitors using the appropriate threshold that is set for each model.

The detail information of alert is displayed as "Unknown":
→ Detail information of some alert displayed on the alert viewer may be displayed as "Unknown".

Monitoring the failures of the tape device is desired:
→ ESMPRO Agent does not monitor the failures of the tape device. If you want to conduct monitoring, use backup software or tape monitoring application. Using the event monitoring function of ESMPRO Agent allows you to monitor the event log of backup software or applications.

File system monitoring cannot be inherited on the system using EXPRESSCLUSTER:
→ When using ESMPRO Agent in the cluster environment configured by EXPRESSCLUSTER, there is the following limitation:
If a failover occurs, the settings of the threshold for the empty space monitoring function and the enable/disable of monitoring of the operating sever are not inherited to the standby server. Make sure to reset the threshold and the enable/disable of monitoring on the standby server.

Temperature/voltage/fan sensors appear in an incorrect manner:

→ Some models are equipped with temperature/voltage/fan sensors that do not have information on status, current values, rpm, threshold etc. Therefore, if you view such a sensor on ESMPRO Manager, it may be displayed as follows:

■ The status becomes "Unknown" (greyed out) on the data viewer.

■ The current value or rpm is displayed as "Unknown" on the data viewer.

■ The status is greyed out on the Web component data viewer.

■ The current value or rpm becomes blank on the Web component data viewer.

Even if the sensor is stated like stated above, it is monitoring the server.

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

→ At the time when a temperature or voltage error occurs on CPU/PCI module (CPU/IO module), necessary actions will differ depending on their status as shown below. You can check the status of each module from the data viewer of ESMPRO Manager or Server Maintenance Utility.

Status	Operation
Duplex	Stop the failed CPU/PCI module (CPU/IO module).
Simplex	Shut down the system.

■ If the status is "Empty", the module is not mounted. Sensor monitoring is not conducted.

■ If disks are mounted on PCI modules (IO modules), the status of both modules is "Simplex" while the disks are mirrored. Temperature or voltage error occurring during disk mirroring will result in the system to shut down.

Network drive is not displayed in the data viewer:

→ On Windows XP or the OS released after it, the drive connected to network is not displayed under the file system tree in the data viewer of ESMPRO Manager.

Shutdown monitoring:

→ When performing shutdown monitoring, all shutdown processes are to be monitored. If there is an application that performs shutdown without rebooting OS or turning off the power, set the timeout value longer or disable the monitoring function.

The external clock of CPU is listed as "Unknown":

→ In [CPU information] of Data Viewer's system tree, the external clock is listed as "Unknown".

[ft Server] tree appears on data viewer in an incorrect manner:

→ After the system starts up, the tree or the state of a Data Viewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system start-up, when a pop-up message which prompts you to reconstruct a Data Viewer appears, click [OK]. The Data Viewer will be reconstructed and the tree and the status will be displayed correctly.

The information on the floppy disk appears in an incorrect manner:

→ After switching on and off the power of the CPU/PCI module (CPU/IO module), the floppy disk drive name of [I/O Device] on Data Viewer may be different from the name that is recognized by the OS.

(Example: drive name on Data Viewer: "A"

drive name recognized by the OS "B")

Check the floppy disk drive name on Explorer.

→ If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the data viewer will be updated at the next system start-up.

When the Displayed BIOS Information is Incorrect

Additional information of BIOS which is displayed by clicking [ft] - [CPU Module] - a CPU module - [General] - [BIOS Information] on a Data Viewer or by clicking a CPU module and clicking [BIOS Information] on Server Maintenance Utility may not be displayed correctly. In such a case, display the BIOS information on a Data Viewer by clicking [ESMMIB] - [BIOS].

The status of Ethernet board is displayed as an error:

→ If an Ethernet adapter is not used (not connected to cable), set it to "Disable" in [Network Connections] from Control Panel. If an Ethernet adapter are about to disable has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

ESMPRO Agent does not work properly in the environment where Oracle products and ESMPRO Agent coexist:

→ The installation of the Oracle products may change Start-up type of SNMP Service into "Manual". If so, change the setting back to "Automatic" and set up correctly according to the description of the Oracle product.

SCSI Status on a Data Viewer:

> □ "Unknown" is always displayed for the following items:

> - "Serial Number", "Firmware Revision" and "ROMBIOS Revision" in "General" of "SCSI Adapter"

> - "Reassign Block Count" and "Reassign Block threshold" in "General" of "SCSI Slot"

SCSI Status while the IO Module is Starting or being Stopped:

> → While an IO module is starting or being stopped, the status of the SCSI adapters, SCSI bus, SCSI enclosure, SCSI slots, and mirror disks temporarily indicates an undefined status. Once the module is started or stopped, the status will return to normal.

Status of SCSI Slots and Mirrored Disks at High Load:

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

Event of "ESM HAS Storage Service" when Starting the Server for the First Time:

> → After installing the server and when it is started for the first time or when it is started for the first time after the system is reset up, an event that SCSI-related status has changed is registered. However, the previous status in the message shows an undefined value.

Event 401 and 402 of "ESM HAS Storage Service":

> → An event "Status of SCSI Slot (ID:41/n) has changed from Empty to Empty" may be registered to the event log because, internally, there are two types of the status "Empty" which indicates that a disk is not mounted. For example, when no disk is mounted in both Slot 1 and Slot 4, "Empty" is simply informational. Slot 1 also indicates "Empty" when a disk on which no volume is created is in Slot 4. However, if a simple volume is created on the disk in Slot 4, the status "Empty" of Slot 1 is handled as a warning in order to maintain redundancy. In such a case, check the status of volume creation and configure mirror volumes.

SCSI Slot Indication when a Disk Fails:

> → When a disk which has failed before it is mounted, the SCSI slot status becomes "Broken." The status changes from "Broken" when a mirror volume is created on the disk or any mirror volume is resynchronized.

ESMhstrg.dat:

> → While the server is running, the "\data\ESMhstrg.dat" file in the installation directory (default is "C:\ESM") of NEC ESMPRO Agent cannot be accessed. For this reason, when a backup software is used, this file is not backed up. However, because the "ESMhstrg.dat" file is recreated while the server is running, there will not be any problem even if the file is not backed up.

PCI Module Status is "Empty":

> → If devices such as LANs and FCs in the PCI module are not duplicated, the PCI module status becomes "Empty." If the PCI module status is "Empty," make sure that the LAN and FC cables are connected to and LANs are teamed.

"Warning" is displayed for a "Normal" mirror volume on Disk Management:

> → If the combination of the disks that configure a mirror is different from the one described in "Disk Operations" in Chapter 3, "Warning" is displayed for a normal mirror volume.

COLLECTING TROUBLE LOGS

In the event of trouble, you can get information in the procedures described below:

IMPORTANT:

■ You can perform the procedures described below only when you are asked by your maintenance personnel to get trouble logs.

■ When the system restarts after the trouble, it may show a message that there is a shortage of virtual memory. However, continue the system start-up. If you reset and restart the system, you cannot get correct information.

Collecting Event Logs

Collect the logs of various events that have occurred in the NovaScale/ft Server series.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start collecting event logs.

1. Click [Start] - [Settings] - [Control Panel] - [Administrative Tools] - [Event Viewer].

2. Select the type of the log to be collected.

   [Application Log] contains events related to the applications that were active at occurrence of the events. [Security Log] contains security-related events. [System Log] contains events that occurred in system components of Windows Server 2003 Enterprise Edition.

3. Click [Save Log File As...] in the [Action] menu.
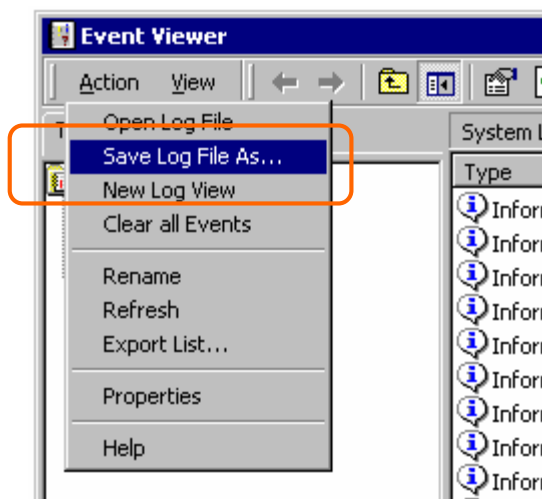
4. Enter the name of the target archive log file in the [File name] box.

5. Select the format of the target log file from the [Save as type] list box, and click [OK].

Collecting Configuration Information

Collect information such as the hardware configuration and internal setting information of the NovaScale/ft Server series.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start the work.

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1. Click [Start] - [All Programs] - [Accessories] - [System Tools] - [System Information].

2. Select the [Save…] from the File menu.
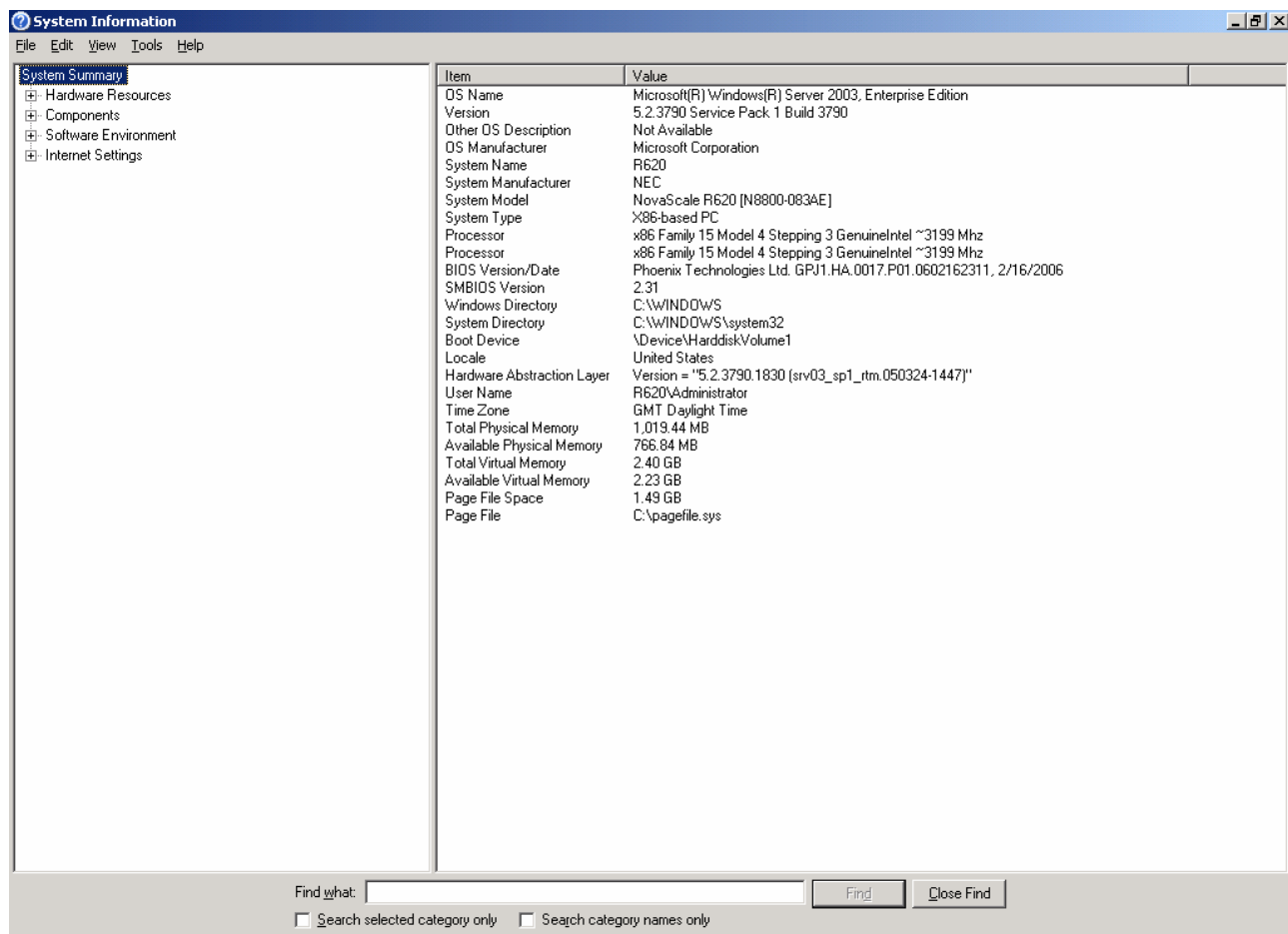
3. Enter the name of the target file in the [File name] box.

4. Click [Save].

Collecting Diagnostic Information by Dr. Watson

Collect diagnostic information related to application errors by using Dr. Watson.

You can designate any destination to save diagnostic information.

For details, see help information. Click [Start] - [Run...], execute "drwtsn32.exe," and click [Help] in the [Dr. Watson for Windows] dialog box.

COLLECTING THE MEMORY DUMP

If a failure occurs, the memory data should be dumped to acquire the required information. If you stored the dump data in a DAT, label it so as to indicate the software (e.g. NTBackup) you used for storing it. You may save the diagnosis data to a desired destination.

IMPORTANT:

■ Consult with your sales agent before dumping the memory. Executing memory dumping while the server is in the normal operation may affect the system operation.

■ Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system again may result in dumping improper data.

Preparing for Memory Dump

Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Enabled" is selected for "Switch Inhibit" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and start the BIOS setup utility, SETUP.

2. Select "Disabled" for "Switch Inhibit" in the Security menu.

3. Save the configuration data and exit the SETUP.

Saving Dump Files

Press the DUMP (NMI) switch to save the dump file when an error occurs. Insert something sharp-pointed like a pen into the switch hole to press the DUMP switch.

Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)

IMPORTANT: Do not use a toothpick or plastic stick that is easy to break.
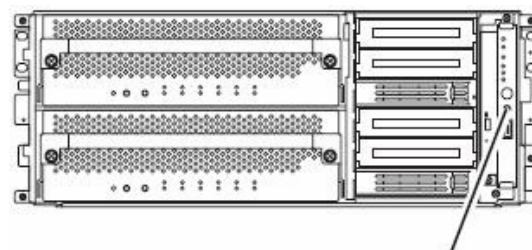
Dump (NMI) switches

BACKUP OF IPMI INFORMATION

You can collect the IPMI information. ESMPRO Agent must be installed to collect the information.

1 From the Start menu, select [All Programs] – [ESMPRO Agent] – [ESRAS Utility]. The [ESRAS Utility] window appears.

2 Select [Most recent IPMI Data] from the tree view to obtain the information of the local computer. If the data is displayed, that means the information is successfully obtained.
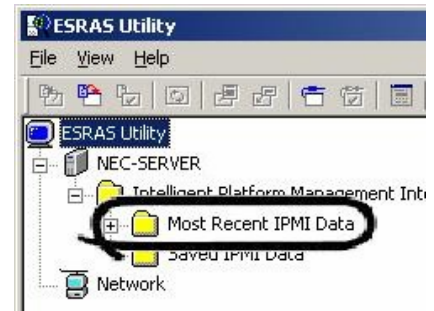
3 Select [File] – [Back up the current IPMI information…].
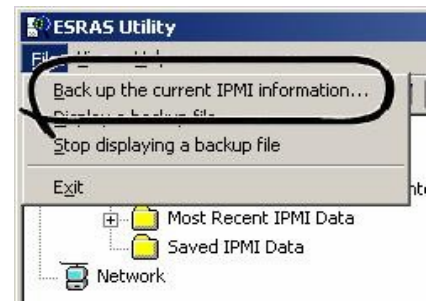
4 Check the name of the computer of which you want to create backup.

5 Specify the backup file name and the location where IPMI information is to be saved, and click [OK].
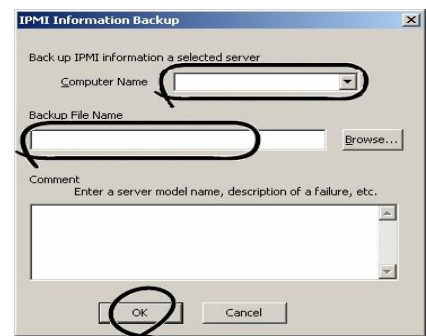
Chapter 8

System Upgrade

This chapter describes procedures to add options and replace failed components.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by the user. However, Bull does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. Bull recommends you ask your sales agent to install or remove any optional devices.

- Be sure to use only optional devices and cables designated by Bull. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.

SAFETY PRECAUTIONS

Observe the following notes to install or remove optional devices safely and properly.

⚠ **WARNING**
Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See "PRECAUTIONS FOR SAFETY" in Chapter 1 for details. • Do not disassemble, repair, or alter the server. • Do not look into the CD-ROM drive. • Do not remove the lithium battery. • Disconnect the power plug before working with the server.

⚠ **CAUTION**
Observe the following instructions to use the server safely. There are risks of fire, personal injury, or property damage. See "PRECAUTIONS FOR SAFETY" in Chapter 1 for details. • Do not install or remove components by a single person. • Do not install the server leaving the cover removed. • Make sure to complete component installation. • Do not pinch your finger(s). • High temperature

ANTI-STATIC MEASURES

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

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

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

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

- Select a suitable workspace.

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

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

- Use a worktable.

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

- Clothes

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

  – Wear anti-static shoes to work with the server.

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

- Handling of components

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

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

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

PREPARING YOUR SYSTEM FOR UPGRADE

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

- With the NovaScale/ft Server series, devices can be replaced during the continuous operation. Take extreme care for electric shock and damage to the component due to short-circuit.

- Optional devices cannot be installed or removed during continuous operation. Normally, shutdown Windows Server 2003, check that the server is powered off, disconnect all power cords and interface cables from the server before installing or removing the optional devices.

- To remove the CPU or PCI module during the continuous operation, disable the intended module (place the module off-line) by using the Server Maintenance Utility of the ESMPRO Agent or the ESMPRO Manager from the management PC on the network. After a new module is installed to the server, enable the module using the Server Maintenance Utility or the ESMPRO Manager.

  TIPS:

  The system is defaulted to automatically boot the module, once installed. For more information, see Chapter 5.

- Make sure to provide the same hardware configuration on both groups.

- Use the same slots and sockets on both groups.

- Do not install devices having different specifications, performance, or features.

- Before removing the setscrews from the CPU/IO modules, place the desired module off-line using the Server Maintenance Utility or the ESMPRO Manager.

.

3.5-INCH HARD DISK DRIVE

The 3.5-inch hard disk drive bay in front of the server contains six slots in which hard disks with the SCA2 interface are installed.

IMPORTANT:

■ Do not use any hard disks that are not authorized by Bull. Installing a third-party hard disk may cause a failure of the server as well as the hard disk. Purchase hard disks of the same model in pair. Contact your sales agent for hard disk drives optimum for your server.

TIPS:

■ The primary CPU/IO module is determined by the order of connecting power cords (see Chapter3).

The R620-MR model is used in the example quoted here. However steps you should take are the same for other models. You can install 25.4mm (1-inch) high hard disk drives to six 3.5-inch hard disk drive bays on the server. 3.5-imch hard disk drive bays have labels with slot number.

The hard disk drives installed on the slot 0, 1 and 2 are mirrored with the slot 3, 4, and 5 respectively. (The OS is installed on the mirror volumes that consist of the hard disks in the slot 0 and 3)

Slots to execute the mirroring process
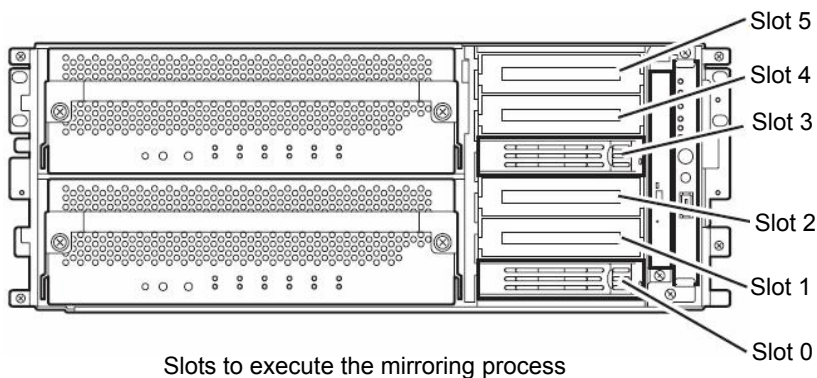
Empty slots in the 3.5-inch hard disk drive bay contain dummy trays. The dummy trays are inserted to improve the cooling effect within the device. Always insert the dummy trays in the slots in which hard disks are not installed.

Attach an HDD ID label indicating the slot number of installed hard disk to the handle of the hard disk.

Installing 3.5-inch Hard Disk Drive

Follow the procedure below to install the hard disk. A hard disk may be installed in another slot in the same procedure.

IMPORTANT:

Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.

1. Click [Start] - [Administrative Tools] - [Computer Management]. The [Computer Management] window appears.

2. Click [Disk Management] under [Storage] in the console tree.

3. Unlock the front bezel with the security key and detach it.

4. Identify the slot to which you want to install the hard disk.

Install a hard disk in an empty slot in the group, starting from the lower slot. (In the order of slot 0, slot 3, slot 1, slot 4, slot 2, and slot 5)

5. Hold the handle of the dummy tray to remove the tray.

IMPORTANT:

Keep and store the dummy tray with care.
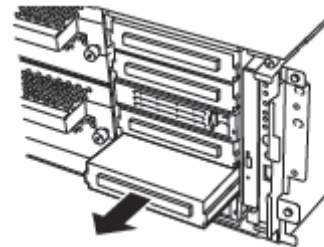
6. Unlock the hard disk to be added.
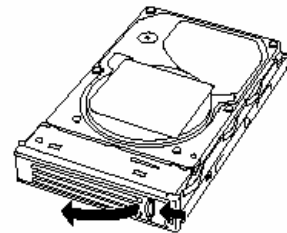
7. Firmly hold the handle of the hard disk to install and insert the hard disk into the slot.

TIPS:
- Insert the disk until the lever hook touches the server frame.
- Check the orientation of lever. Insert the hard disk with the lever unlocked.
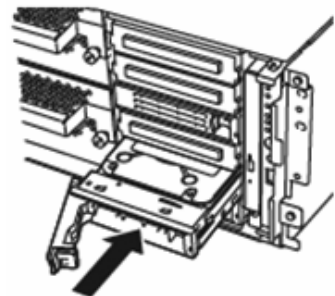
8. Slowly close the lever.

When the lever is locked, you will hear a click.

IMPORTANT:

Be careful not to pinch your finger(s) between the lever and handle.

TIPS:

Check the hook of the lever is engaged with the frame.
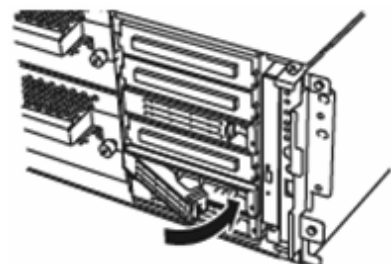
9. Connect the power cord.

10. Press the POWER switch to power on.

11. Install the front bezel and lock it with the security key.

12. Set the dual disk configuration (see Chapter 3).

Removing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the hard disk.

IMPORTANT:

Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.

---

1. Shutdown Windows Server 2003.

The system turns off automatically.

2. Disconnect all the power cords from the power outlet.

3. Unlock the front bezel with the security key and detach it.

4. Push the lever of the hard disk to unlock the handle.
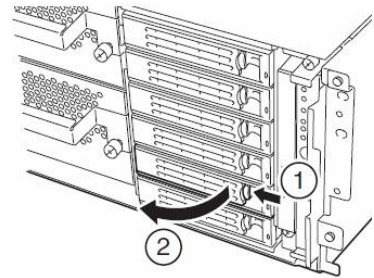
5. Hold the handle and hard disk to pull them off.

6. Install the dummy tray in an empty tray according to procedures described in "Installation".

Make sure to install the dummy slot in the empty slot to improve the cooling effect within the device.
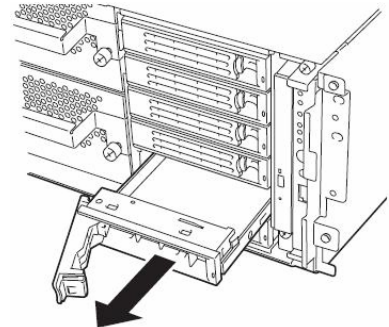
Replacing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the failed hard disk. If the hard disk fails, it should be replaced with new device with the server powered-on.

> **IMPORTANT:** Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options. You can replace disks during continuous operation.

Replacing the Hard Disk Drive

1. Locate the failed hard disk.

   When a hard disk fails, the DISK LED on the hard disk drive's handle lights amber.

   The DISK Access LED of the amber lit disk also lights amber.

2. Remove the failed hard disk referring to "Replacing Failed Hard Disk Drives" in chapter 3 and "Removing 3.5-inch Hard Disk Drive" earlier in this chapter.

   No need to shutdown Windows Server 2003.

3. Refer to the steps in "Installing the hard disk" to install a new hard disk.

> **TIPS:**
> - The hard disk to be installed for replacement must have the same specifications as its mirroring hard disk.
> - Use an unsigned hard disk to replace the failed one. If you use a signed disk, you need to restore the redundant configuration in the procedure of "How to Restore Redundant Configuration Manually" below.

4. Restore the redundant configuration (see Chapter 3).

CPU/IO MODULE

To replace a CPU (processor, DIMM (memory), PCI card, you need to remove the CPU/IO module.

IMPORTANT:
- Ask your sales agent to replace the CPU/IO module and components of the CPU/IO module.

- Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before installing or removing options.

- To install or remove CPU or DIMM, first power off the server before removing the CPU/IO module.

- Removing the module being operating may cause unexpected trouble. Use the management software (e.g., Server Maintenance Utility or ESMPRO Manager) to identify the module to be removed so that the module is removed when it is stopped, without fail
Then remove the relevant module after verifying the Status LED on the CPU/IO module. See Chapter 2 "LEDs" for details of the Status LED.

- After installing the CPU/IO module, always power on the module using the power switch.

Precautions

When replacing a CPU/IO module, replace one module and wait until dual configuration is established to replace the other module. If you replace both modules simultaneously, establishing dual CPU/IO module configuration, which can result in interruption of the whole system. (See Chapter 7 "Troubleshooting.")

Removing CPU/IO Module

Follow the procedure below to remove the CPU/IO module.

The R620-MR model is used in the example quoted here. However steps you should take are the same for other models.

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

> To this end, use the Server Maintenance Utility of the ESMPRO Agent installed to your server or the Data Viewer of the ESMPRO Manager.

> For the detailed procedure, see "ESMPRO Agent and Manager" - "Maintenance of NovaScale/ft Server series" in Chapter 5.
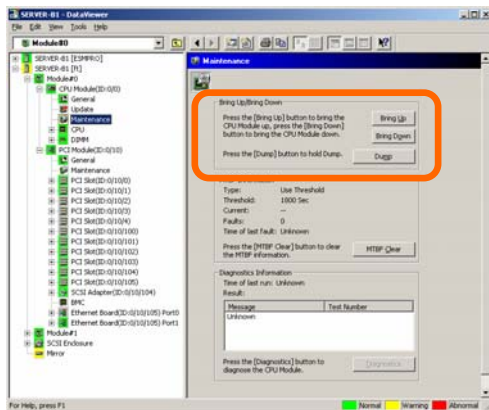
ESMPRO Manager
Select [ft] - [CPU Module] - [CPU Module (to be removed)] - [Maintenance] - [Bring Up/Bring Down] - [Bring Down].
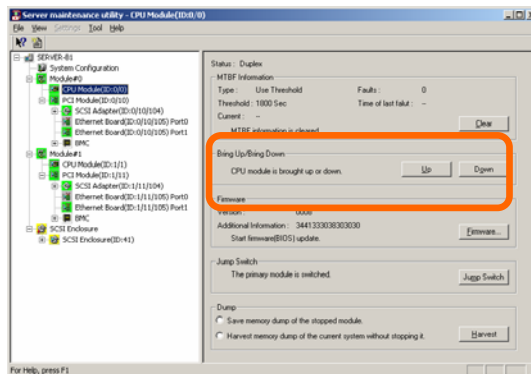
Server Maintenance Utility
Select [FTServer] - [CPU Module] - [CPU Module (to be removed)] - [Bring Up/Bring Down] - [Down].

> Repeat the operation mentioned above for the IO module and confirm that the status of the CPU/IO module and the IO module are "Removed."

2. If the module POWER LED of the module to be removed is illuminated, press the module POWER switch to power off the module.

3. Unlock the front bezel with the security key and detach it.

4. Loosen the screws securing the CPU/IO module handle to press down the handle.

> The lock is unlocked and the CPU/IO module is pulled out.

Handle

> **IMPORTANT:**
>
> Before you pull out a CPU/IO module, check the rear of the server to make sure cables for connection with peripheral equipment or network are disconnected. If any cables are connected, keep a record of where the cables are connected and then disconnect all cables connected to the module you are to pull out.
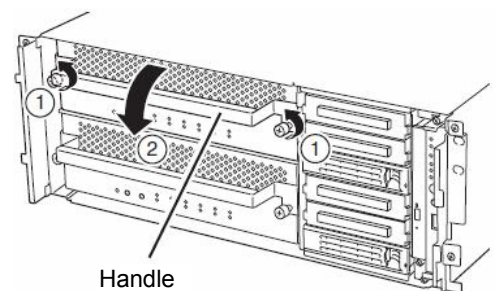
5. Hold the release levers of the CPU/IO module and pull it off.

> **IMPORTANT:**
>
> ■ Do not hold part other than the handle to pull the module.
>
> ■ Handle the CPU/IO module carefully. Do not drop the module or bump it against parts in the device when you remove it.
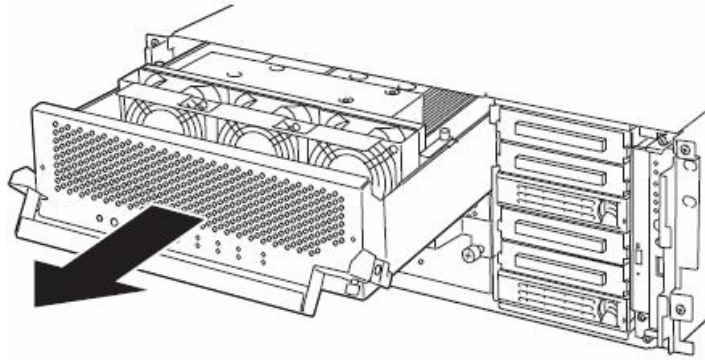
6. Carefully place the CPU/IO module on a flat and sturdy table.

    Avoid the dusty or humid place.

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

Installing CPU/IO Module

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

The R620-MR model is used in the example quoted here. However steps you should take are the same for other models.

IMPORTANT:

Make sure to read "ANTI-STATIC MEASURES" (page 8-3) and "PREPARING YOUR SYSTEM FOR UPGRADE" (page 8-4) before starting installing or removing options.

1. Firmly hold the CP/IOU module with both hands and insert it into the rack.

Hold the CPU/IO module in such a way that its back panel connector faces the back of the rack and engage the guides of the module and chassis, and insert it slowly.

2. Hold the handle to push the module as far as it goes.
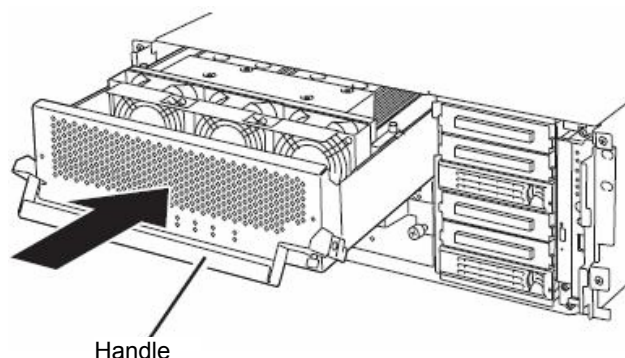
Handle

3. Put the handle back in the position where it was.

The installed CPU/IO module will start automatically.

IMPORTANT:

Connect the cables that you disconnected before removing the CPU/IO module to where they were originally connected. Connect cables while the handle is leaned toward you.

4. Secure the handle with the screws.
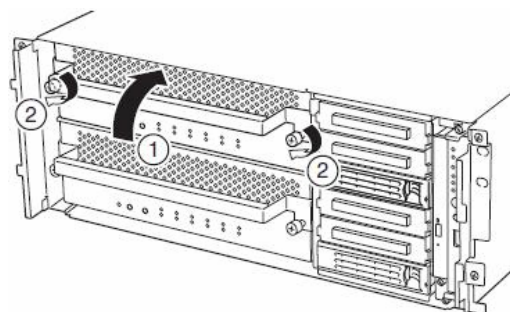
IMPORTANT:

■Secure the handle with the screws. If it is not secured by the screws, the CPU/IO will not be powered on.

■In some system statuses or settings, auto start up or integration does not take place when the module is connected. In such a case, check the status by using the Server Maintenance Utility or ESMPRO Manager data viewer, and then power on by the module POWER switch or start up the IO and CPU modules.

■After installing the CPU/IO module, always power on the module using the power switch.

DIMM

The DIMM (Dual Inline Memory Module) is installed to the DIMM socket in the CPU/IO module on the NovaScale/ft Server series.

The CPU/IO module board is equipped with six sockets. Two DIMMS are installed on the DIMM slot A1 and B1 as standard equipment. (The standard DIMMs can be replaced with other DIMMs.)

DIMMs should be installed to these sockets, starting from the lowest socket number.

TIPS:

- You can add memory up to:
  R620-LR models: 12 GB (2 GB x 6)
  R620-MR models: 12 GB (2 GB x 6)

- In the error messages and logs in POST ESMPRO, or Off-line Maintenance Utility, the DIMM connector may be described as "group". The number next to "group" corresponds to the connector number shown in the figure on the next page.

IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or onboard parts with a bare hand or place the DIMM directly on the desk. For more information on static electricity, see "ANTI-STATIC MEASURES."

- Make sure to use the DIMM authorized by Bull. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.

- Before adding or removing DIMMs, power off the server and detach the CPU/IO module.

- Make sure to read "ANTI-STATIC MEASURES" (page 8-3) and "PREPARING YOUR SYSTEM FOR UPGRADE" (page 8-4) before installing or removing options.

DIMM slot A1
DIMM slot B1
DIMM slot A2
DIMM slot B2
DIMM slot A3
DIMM slot B3
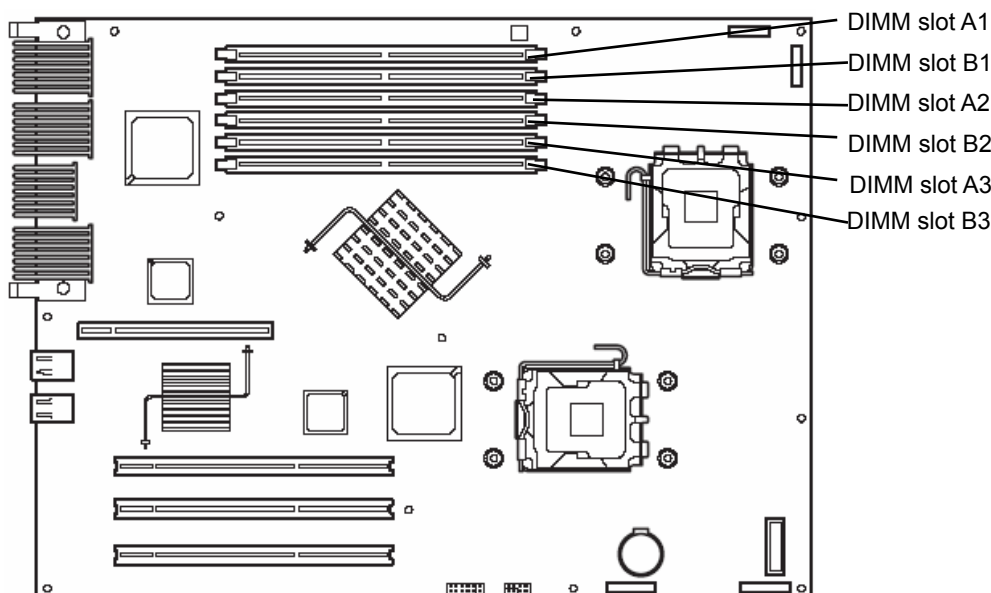
Precautions

Note the following to install or replace DIMM.

- The DIMMs with the same number are linked among the groups. When a DIMM is added to one group, another identical DIMM should be installed to the socket with the same number in another group. This rule is applied to the case of removal.

- The linked DIMMs should be of the same product with the same performance.

- DIMMs should be installed in sockets from the lowest socket number to the highest socket number.

Installing DIMM

Follow the procedure below to install the DIMM.

1. Shut down OS.

The sever turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module referring to page 8-11.

4. Remove the screw securing the memory duct, and remove the memory duct.

Memory duct
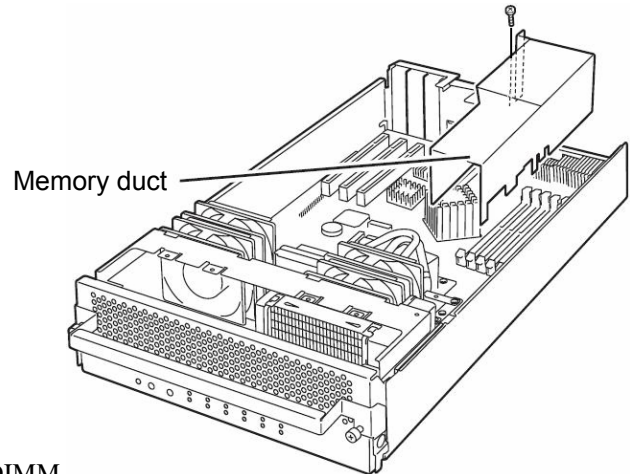
5. Check to be sure in which socket you are mounting the DIMM.

6. Remove the connector cover from the socket.

A DIMM connector cover is installed to the open socket. When the levers on both ends of the connector are opened, the DIMM connector cover is unlocked and you can remove the cover.

DIMM connector cover

IMPORTANT:

Keep the removed DIMM connector cover.
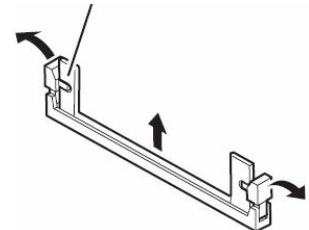
7. Insert a DIMM into the DIMM socket vertically.

TIPS:

Pay attention to the orientation of the DIMM. The terminal of the DIMM has a cut-out to prevent misinsertion.

After the DIMM is completely inserted into the socket, the levers are automatically closed.
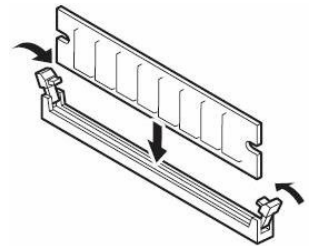
8. Mount the CPU/IO module referring to page 8-13.

9. Reattach the removed memory duct and secure it with the tree screws.

10. Connect the power cords.

11. Press the POWER switch to power on the server.

12. Verify that POST displays no error message.

If POST displays an error message, write it down and see the POST error message list on page 7-4.

13. After starting the OS, set the paging file size to at least the recommended value (1.5 times the installed memory size). (See "Size of the Partition to be Created" in Chapter 4 of the User's Guide (Setup).)

Changing Memory Dump Setting after Installing Additional Memory

Perform the steps below to change your memory dump setting, if a total memory capacity exceeds 2 GB after additional memory has been installed in the system with complete memory dump enabled. If the setting is not changed, incorrect dump files may be collected.

1. Go to [Control Panel] –> [System] –> [Advanced] –> [Startup and Recovery].
Choose "Small memory dump" and click [OK].

2. Return the setting to "Kernel memory dump" and click [OK].
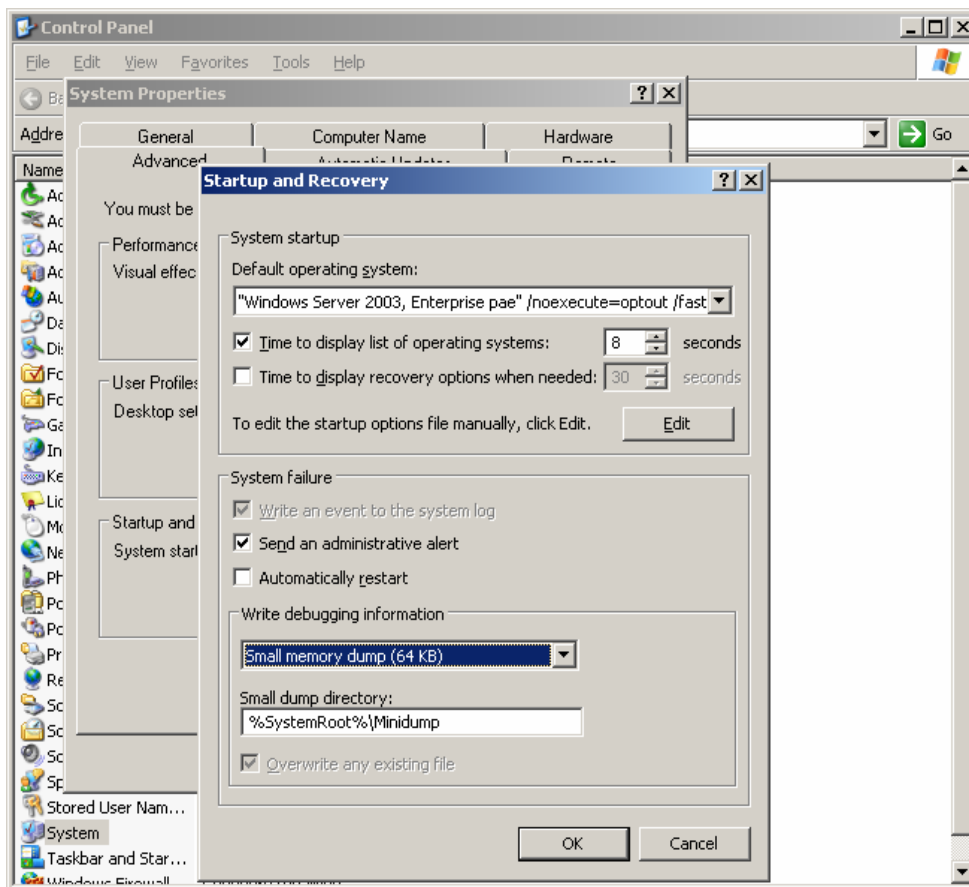
Removing DIMM

Follow the procedure below to remove the DIMM.

TIPS:

Unless at least two DIMMs are installed, the server does not work.

1. Shutdown OS.

   The system turns off automatically.

2. Disconnect the power cords from the outlets.

3. Remove the CPU/IO module referring to page 8-11.

4. Open the lever on both ends of the target DIMM socket to unlock the DIMM. Then, remove the DIMM.

5. Mount the CPU/IO module referring to page 8-13.

6. Connect the power cords.

7. Press the POWER switch to power on the server.

8. Verify that POST displays no error message.

   If POST displays an error message, write it down and see the POST error message list on page 7-4.
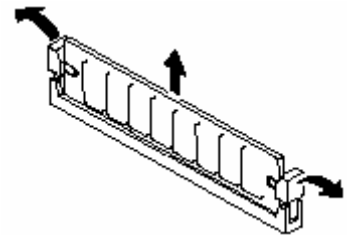
Replacing DIMM

Follow the procedure below to replace a failed DIMM.

1. Identify the failed DIMM using the Data Viewer of ESMPRO Manager.
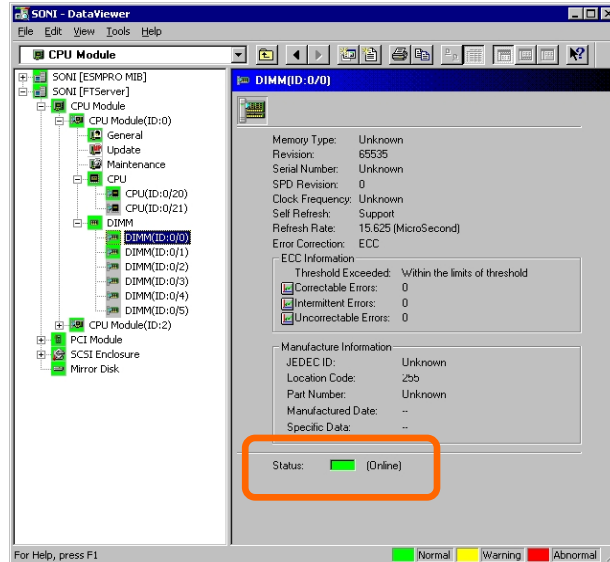
2. Remove the CPU/IO module referring to page 8-11.

3. Replace the DIMM

4. Install the CPU/IO module referring to page 8-13.

5. Start up the CPU/IO module using ESMPRO Manager or Server Maintenance Utility.

PROCESSOR (CPU)

In addition to the standard CPU   (Dual-Core Intel® Xeon® Processor), you can add one CPU to make a multi-processor system.

IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU terminals or onboard parts with a bare hand or place the CPU directly on the desk. For more information on static electricity, see "ANTI-STATIC MEASURES."

- Do not use the system before checking to see it works correctly.

- Make sure to use the CPU specified by Bull. Installing a third-party CPU may cause a failure of the CPU as well as the server.

- Before adding or removing a CPU, power off the server and then remove the CPU/IO module.

- Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.

CPU#1
(Standard CPU)

CPU#2
(Additional CPU)
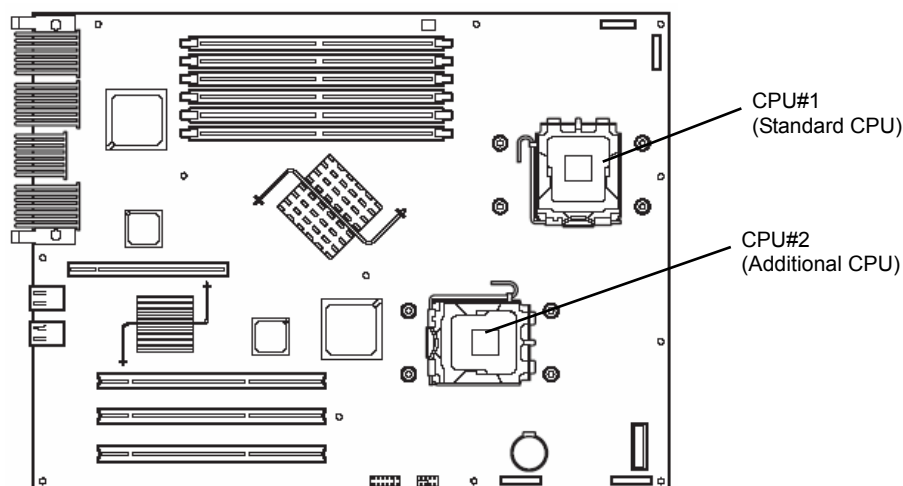
Installing CPU (Model with Air-cooling Kit)

Follow the steps below to install a CPU (model with air-cooling kit).

1. Shut down the OS.
The server is automatically powered off.

2. Unplug the power cords.

3. Remove the CPU/IO module referring to page 8-11.

4. Remove the two screws securing the cooling fan unit, remove the cable and then remove the cooling fan unit.

Cooling fan unit

5. Check to be sure of the location of the CPU socket.

6. Detach the socket cover on the CPU socket.

> **IMPORTANT:**
>
> Keep the socket cover.

7. Lift the socket lever.

> **IMPORTANT:**
>
> Open the lever fully. It can be opened 120° or more.

8. Lift the CPU socket holder.

9. Place the CPU on the socket carefully.

> **TIPS:**
>
> Pay attention to the orientation of the CPU. The CPU and socket have pin marks to prevent misinsertion. Check the pin marks of the CPU and the socket and insert the CPU correctly.

10. After pressing the CPU softly against the socket, place the CPI
socket holder back to its original place.
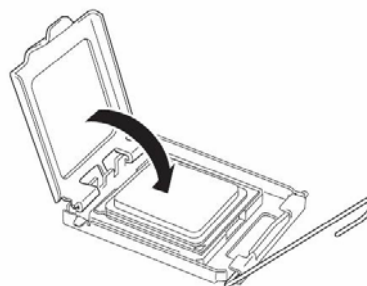
11. Return the socket lever back to its original place.
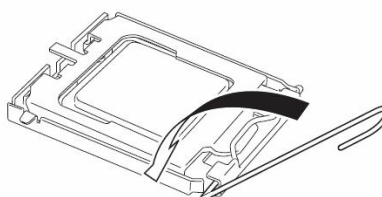
12. Place the heat sink on the CPU and secure it with 4 screws. Loosely
fasten the screws in the cross-coupling way, and then fasten them tightly.
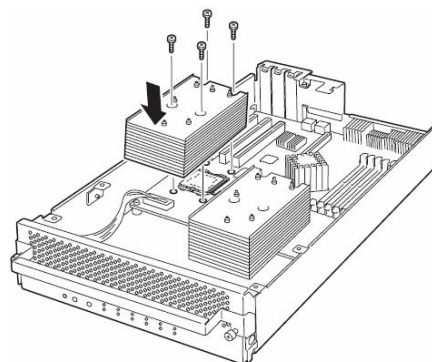
**13.** Check that the heat sink mounted on the CPU is level with the motherboard.

> **IMPORTANT:**
>
> ■ If the heat sink is leaning, remove it and then mount it again. The following are possible causes:
>
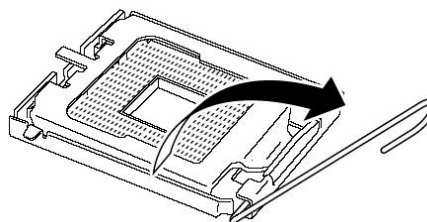> - The CPU has not been installed correctly.
>
> - The screws have not been fastened tight enough.
>
> ■ Do not move the heat sink that has been secured with the screws.

14. Insert the cable and fix the cooling fan unit.
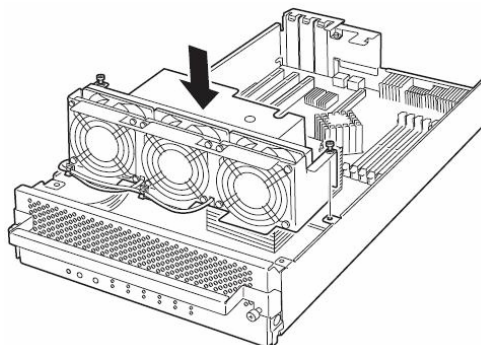
15. Install the CPU/IO module referring to page 8-13.

16. Connect the power cord.

17. Turn on the power by pressing the POWER switch.

18. Verify that POST displays no error message. If an error message is displayed, write it down and check it in the error message list on page 7-4.

Removing CPU (Model with Air-cooling Kit)

Removal of a CPU (model with air-cooling kit) is the reverse of installation.

Installing CPU (Model with Water-cooling Kit)

Follow the steps below to install a CPU (model with Water-cooling Kit).

1. Shut down the OS.
 The server is automatically powered off.

2. Unplug the power cords.

3. Remove the CPU/IO module referring to page 8-11.

4. Remove the two screws securing the
cooling fan unit, remove the cable and then
remove the cooling fan unit.

Cooling fan unit

5. Check to be sure of the location of the CPU socket.
6. Detach the socket cover on the CPU socket.

> **IMPORTANT:**
>
> Keep the socket cover.
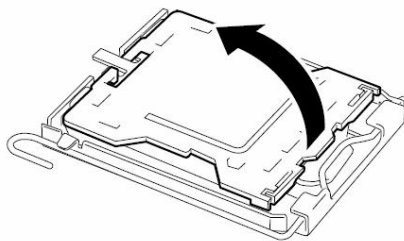
7. Lift the socket lever.

> **IMPORTANT:**
>
> Open the lever fully. It can be opened 120° or more.

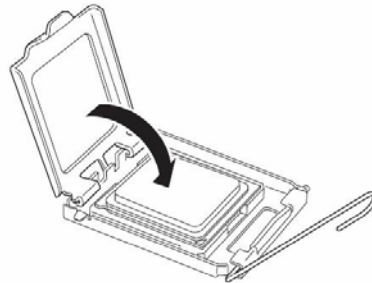**8.** Lift the CPU socket holder.

9. Place the CPU on the socket carefully.
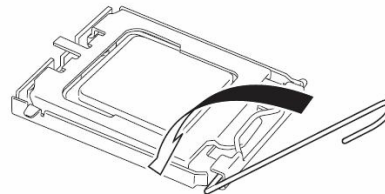
> **TIPS:**
>
> Pay attention to the orientation of the CPU. The CPU and socket have pin marks to prevent misinsertion. Check the pin marks of the CPU and the socket and insert the CPU correctly.
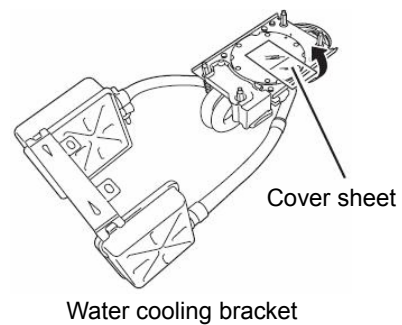
10. After pressing the CPU softly against the socket, return the socket holder back to its original place.
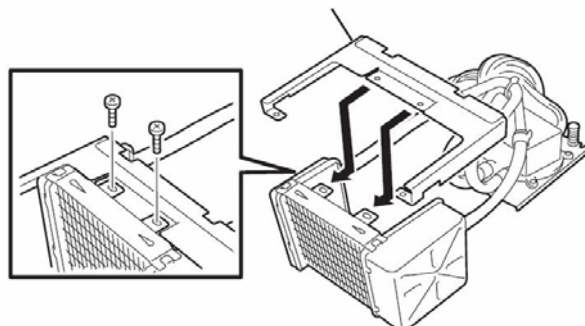
11. Return the socket lever back to its original place.

12. Remove the cover sheet on the rear of the water-cooling kit gently.

Cover sheet

Water cooling bracket

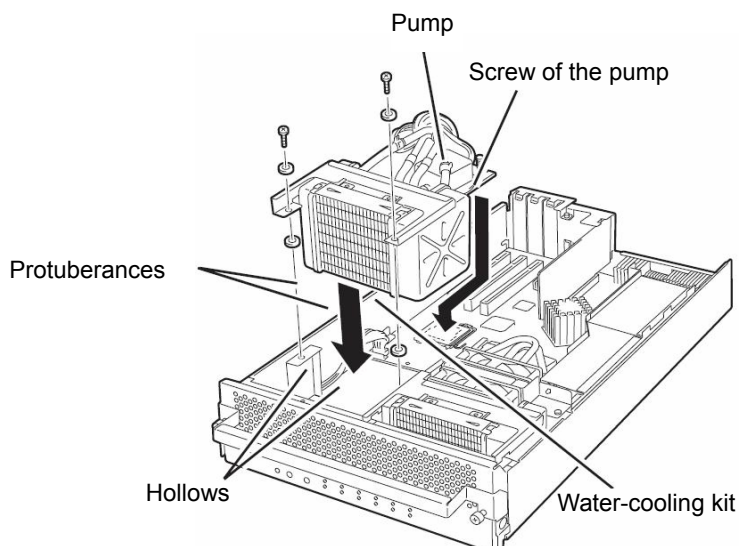**13.** Install the water-cooling bracket and secure it with two screws.

14. Fix the water-cooling kit on the motherboard with four screws of the pump area.

> **IMPORTANT:**
>
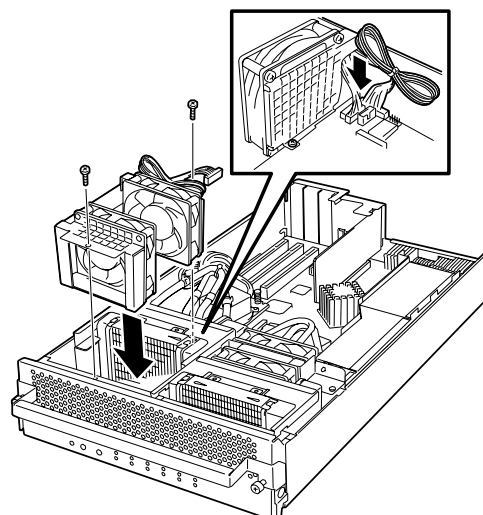> Place the protuberances of the water-cooling kit in the hollows of the module.

15. Mount the cooling fan unit, insert the cable, and secure the cooling fan unit with two screws.

> **IMPORTANT:**
>
> When mounting the water-cooling fan unit, avoid catching or damaging the tube of the water cooling kit.

16. Install the CPU/IO module referring to page 8-13.

17. Connect the power cord.

18. Turn on the power by pressing the POWER switch.

19. Verify that POST displays no error message. If an error message is displayed, write it down and check it in the error message list on page 7-4.
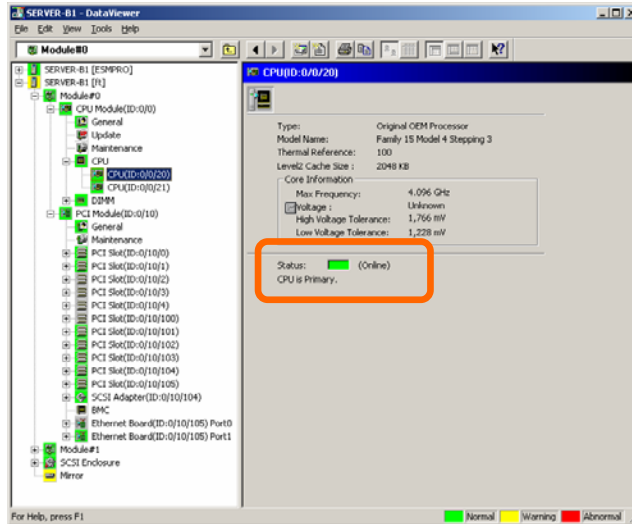
Removing CPU (Model with Water-cooling Kit)

Removal of a water-cooling kit is the reverse of installation.

Replacing CPU

Follow the steps below to replace a failed CPU:

1. Use Data Viewer of ESMPRO Manager to identify the failed CPU.

2. Remove the CPU/IO module referring to page 8-11.

3. Replace the CPU.

4. Install the CPU/IO module referring to page 8-13.

   The installed CPU/IO module will start automatically.

ft Remote Management Card

ft Remote Management Card function is compatible only with R620-LR model (R620-MR model is installed as a standard).
An ft Remote Management Card needs to be installed on each CPU/IO module in order to use ft Remote Management Cards.

IMPORTANT:
- Even when the server is powered off (the POWER LED is off), the power is supplied to the server if the power cords are connected. Therefore, before adding any ft Remote Management Card, you must remove all power cords from the AC inlets. If ft Remote Management Cards are installed with the power cords connected, the server and the ft Remote Management Cards may be damaged.

- ft Remote Management Cards can only be installed into the dedicated slots. If they are installed into other slots such as slots for PCI EXPRESS, the server and the ft Remote Management Cards may be damaged.

- Since the sensor information specific to the server is not written to the added ft Remote Management Card, the messages below are displayed and the start-up process temporally stops when starting the server (POST). The server may be in such a state when our logo screen is displayed and the start-up process is stopped. Press **ESC** to delete the logo screen and check the diagnostic message.

  H/W Configuration of BMC is corrupted.
  !! Update BMC H/W Configuration by configuration tool !!
  !! Refer to BMC configuration manual !!

  When the messages above are displayed, press **F1** or POST starts if you wait for a while. EXPRESSBUILDER starts by inserting the EXPRESSBUIDER CD-ROM that comes with the server into the CD-ROM drive. Select the [Tools] menu - [Initialize Remote Management Card] from the EXPRESSBUILDER main menu and write the sensor information specific to the server.

- The ft Remote Management Card is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the board terminals or its parts with a bare hand or place the board directly on the desk. For more information on static electricity, see "ANTI-STATIC MEASURES" on page 8-3.

- Make sure to read "ANTI-STATIC MEASURES" on page 8-3 and "PREPARING YOUR SYSTEM FOR UPGRADE" on page 8-4 before starting installing or removing options.

Installing ft Remote Management Card

Follow the procedures below and install ft Remote Management Card.

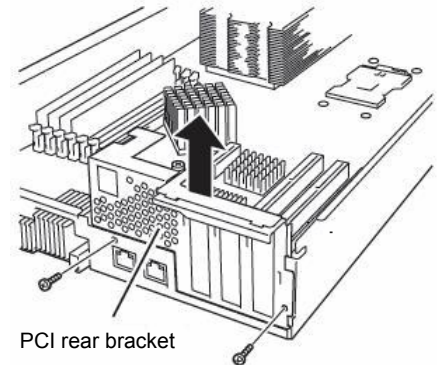**1.** Remove CPU/IO module referring page 8-11.

> **TIPS:**
>
> If PCI board is already installed to the CPU/IO module, remove the PCI board referring to page 8-33.

2. Remove PCI rear bracket installed to the CPU/IO module as a standard with two screws.

PCI rear bracket

3. Remove the blank cover for LAN connector of ft Remote Management Card. Grab the top and bottom of the blank cover to unlock and remove it.

Blank cover for LAN connector
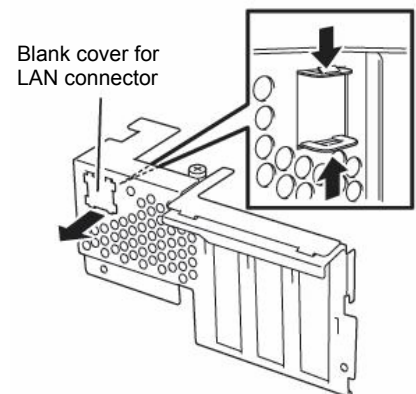
4. Install ft Remote Management Card to PCI rear bracket with one screw.

ft Remote Management Card
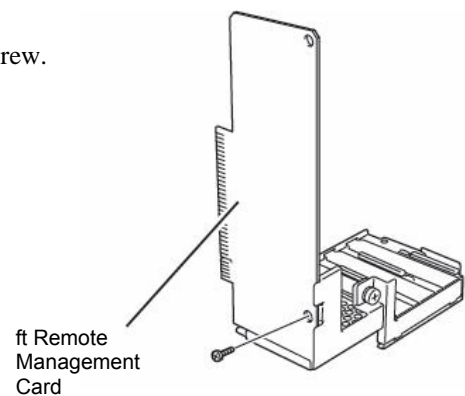
5. Check the slot for ft Remote Management Card and remove the connector cap installed in the slot.

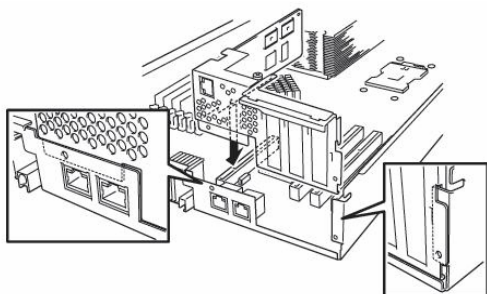> **IMPORTANT:**
>
> Keep and store the removed connector cap with care.

6. Insert ft Remote Management Card slowly against the connecting part to the slot board on the motherboard.

7. Insert the connecting part of the card against the slot and secure it with two screws.

IMPORTANT:

If you have trouble installing the card, remove the card once and install it again. Be careful since the card gets damaged if you press it too hard.
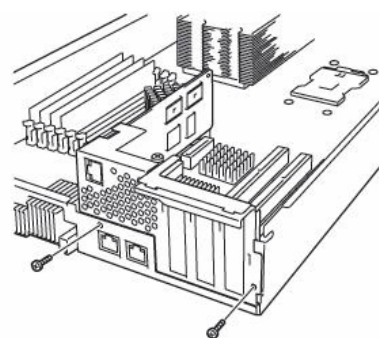
TIPS:

If PCI board is removed in the first step, remount it referring to page 8-32.

8. Install CPU/IO module referring to page 8-13.

9. Turn ON the power by pressing the POWER switch of installed CPU/IO module.

Removing ft Remote Management Card

Removal of PCI riser card follows the reverse procedure of the installation and remove the connector cap.

PCI BOARD

Up to three PCI boards can be installed to the CPU/IO module. The R620-MR model is used in the example quoted here. However steps you should take are the same for other models.

IMPORTANT:

■ The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or onboard parts by a bare hand or place the PCI board directly on the desk. For more information on static electricity, see "ANTI-STATIC MEASURES" on page 8-3.

■ Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.
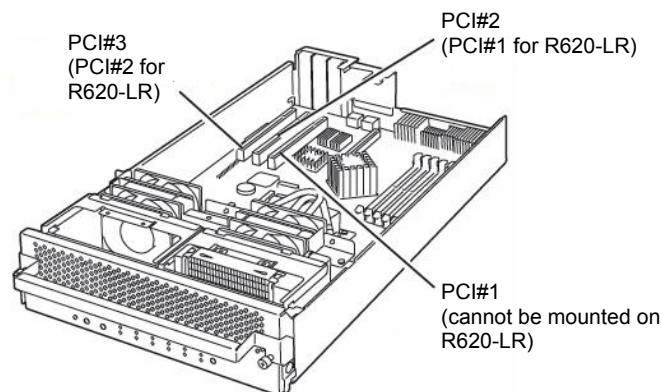
Note the following to install or replace PCI board.

■ To make a dual PCI board configuration, install the same type of board (i.e., having the same specifications and performance) to the same slot in another group.

   When a PCI board is installed to one group, another identical PCI board should be installed to the same slot in another group. This rule is applied to the case of removal.

■ Install the PCI boards, starting from the one with the smallest number.

List of option PCI boards and installable slots:

Product name	320Fb-MR			Remarks
	PCI-1	PCI-2	PCI-3	
PCI slot performance	64bit/100MHz			
Slot size	Low Profile			
PCI board type	3.3V			
Mountable board size	MD2			
1000BASE-T 1ch board set	○	○	○	Only one board can be mounted when 1000BASE-T 2ch board or Fibre Channel board is installed
1000BASE-SX 1ch board set	○	○	○	
1000BASE-T 2ch board set	○	○	○	Up to one board can be mounted per CPU/IO module
SCSI board	○	○	○	
Fibre Channel board set	○	○	○	

Installing a PCI Board

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

> **TIPS:**
>
> To install the PCI board, make sure the shape of the board connector matches with the shape of the PCI board slot connector.

1. Remove the CPU/IO module referring to the page 8-11.

2. Identify the slot to which you want to install a PCI board and remove the connector cap.

> **IMPORTANT:**
>
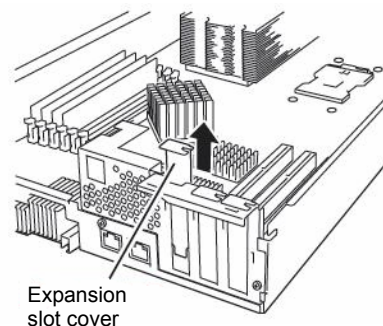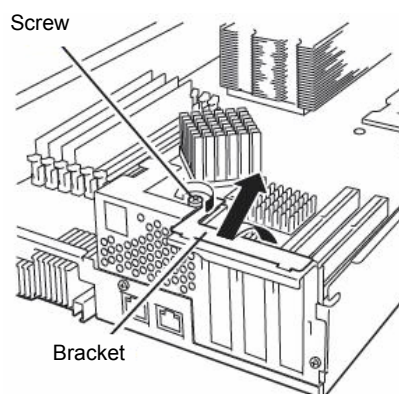> Carefully keep the removed connector cap.

3. Remove the PCI bracket by loosening the screw and remove the slot cover of an expansion slot.

> **IMPORTANT:**
>
> Keep and store the removed slot cover with care.

Screw

Bracket

Expansion slot cover

4. Remove the connector cap installed in the slot in which the board is installed.

> **TIPS:**
>
> To install the PCI board, make sure the shape of the board connector matches with the shape of the PCI board slot connector.
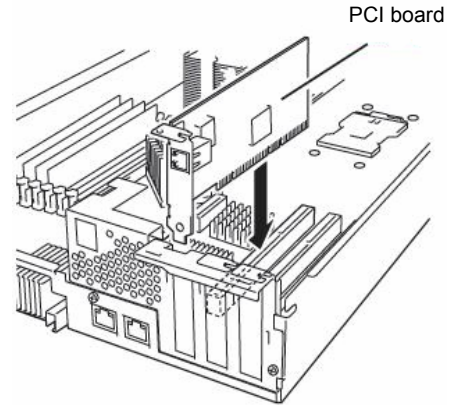
> **IMPORTANT:**
>
> Keep and store the removed connector cap with care.

5. Gently insert the slot on the board against the connecting part of the board.

PCI board

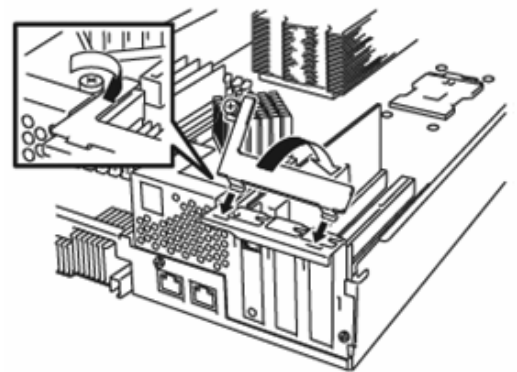**6.** Insert the board for connecting part of the board to securely connect to the slot.

IMPORTANT:

If you have trouble installing the board, remove the board once and install it again. Be careful since the board gets damaged if you press it too hard.

7. Install the PCI bracket and secure the board.

8. Install CPU/IO module referring to the page 8-13.

9. Turn ON the power by pressing the POWER switch of installed CPU/IO module.

Removing PCI Board

Removal of PCI board card follows the reverse procedure of the installation and installs the expansion slot cover.

Replacing a PCI Board

Follow the procedure below to replace a failed PCI board.

1. Check the PCI board LED and identify the failed PCI board.

When the PCI board is failed or incorrectly installed, the three LEDs associated with the PCI board slot are being turned off.

2. Remove the CPU/IO module referring to the page 8-11. .

3. Remove the PCI bracket, and then remove the PCI board.

4. Replace the board and fasten it.

5. Install the CPU/IO module referring to the page 8-13. .

6. Connect the network cable and cables for PCI boards.

7. The installed CPU/IO module will start automatically.

8. Confirm that the PCI board is correctly recognized by POST and OS.

Setup of Optional PCI Board

IMPORTANT:

■ To enable the fault-tolerant feature of the optional device, identical PCI boards must be installed to the slots with the same number in CPU/IO module#0 and CPU/IO module#1.

■ The BIOS settings need to be modified when mounting some optional PCI boards. To change the BIOS settings, start the BIOS setup utility to change the [Boot Monitoring] configuration in [Server] – [Monitoring Configuration]. See chapter 4 for more details.

■ For the supported connecting devices, contact your sales agent.

1000BASE-T 1ch board set

1000BASE-SX 1ch board set

1000BASE-T 2ch board set

IMPORTANT:

For LAN cable's connector, use a RJ-45 connector which is compliant with IEC8877 standard. If any other connector is used, it may not be removed easily.

■ List of slots to install optional PCI boards

Refer to "List of option PCI boards and installable slots:" on page 8-31.

■ Driver installation procedure

TIPS:

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

For NovaScale/ft Server series, use two option PCI boards in a pair to make dual configuration.

After installing OS, install drivers in the following procedure and make dual configuration of the PCI boards.

Follow the steps below to install the driver and establish a dual configuration:

1. Mount the 1000BASE-T 1ch board set, 1000BASE-SX 1ch board set to the slots with the same number in CPU/IO module #0 and #1, and then start Windows Server 2003.

After the OS is started, drivers are installed automatically.

IMPORTANT:

If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Set a dual LAN configuration.

Refer to chapter 3 for the dual configuration of the network.

Now the 1000BASE-T 1ch board set, 1000BASE-SX 1ch board set, or 1000BASE-T 2ch board set is installed.

SCSI Board

■ The lists of slots to install optional PCI boards

Refer to "List of option PCI boards and installable slots:" on page 8-31.

■ Driver installation procedure

TIPS:

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

1. Mount an SCSI board in one CPU/IO module. Then, connect the power cord of that CPU/IO module, power on the server, and start the system.

2. Insert the "EXPRESSBUILDER" CD-ROM into the CD-ROM drive, and run UPDATE.VBS located at *CD-ROM_drive*:\HAS\W2K3\HASSETUP*SCSI_folder*.

If the pop-up window for confirming to overwrite a file appears, click [Yes] and continue the installation.
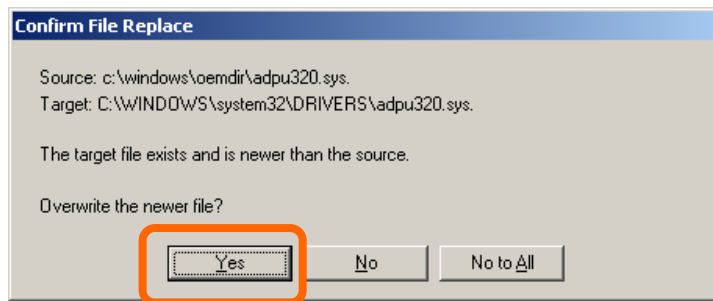
3. After one minute, remove the CD-ROM and shut down the server.

4. Install an SCSI board into the other CPU/IO module. (Skip this step if unnecessary.)

5. Connect the power cable of the CPU/IO module you mounted the SCSI board in 4, power on the server, and confirm that the dual configuration of the SCSI boards are set when the system starts up.

6. Insert the "EXPRESSBUILDER" CD-ROM into the CD-ROM drive, and run UPDATE.VBS located at *CD-ROM_drive*:\HAS\W2K3\HASSETUP*SCSI_folder* again.

7. After one minute, remove the CD-ROM and reboot the server.

Now the driver is applied.

Fibre Channel Board Set

■ List of slots to install optional PCI boards

"List of option PCI boards and installable slots:" on page 8-31.

■ Driver installation procedure

TIPS:

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

---

1. Install a Fibre Channel board set, and then start the system.

2. Start Device Manager from [Start] - [Program] - [Administrative Tool] - [Computer Management], and check if "Emulex LP1050 Fibre Channel Host Adapter" appear under the [SCSI and RAID Controllers] as many as mounted.
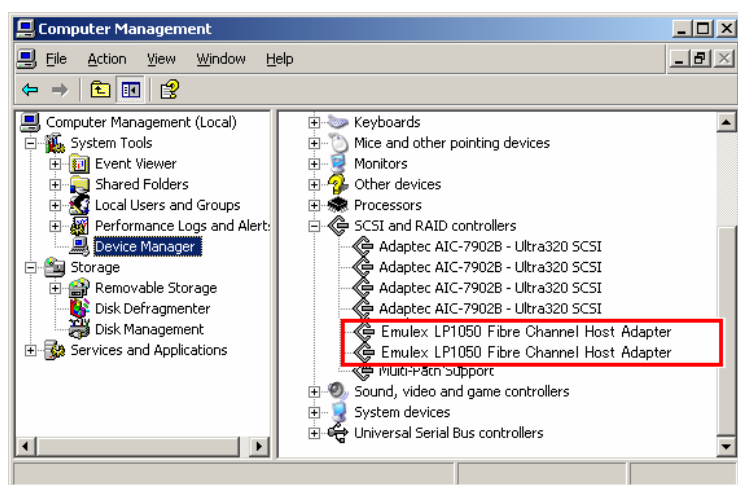
3. Insert the "EXPRESSBUILDER" CD-ROM into the CD-ROM drive and run \HASSETUP\FC\FCUPDATE.BAT.

4. When the following pop-up window appears, click [Yes].
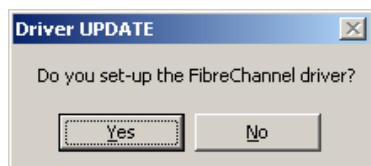
5. The driver is updated. When the following pop-up window appears, click [OK]. The system will reboot automatically.
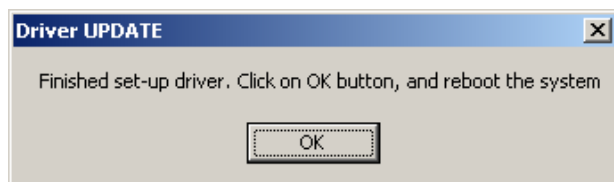
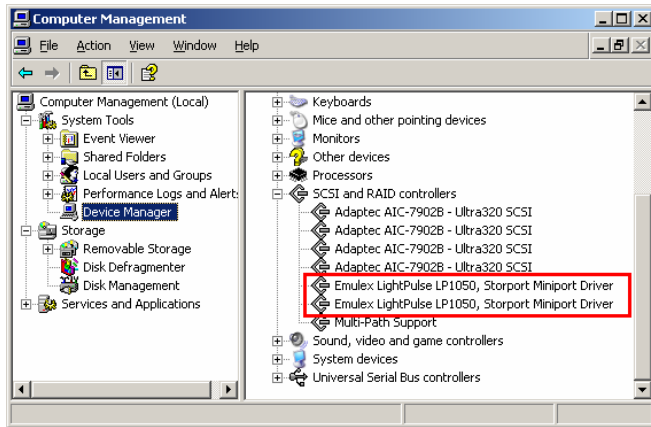**6.** After the system is rebooted, start Device Manager from [Start] - [Program] - [Administrative Tool] - [Computer Management], and check that "Emulex LightPulse LP1050, Storport Miniport Driver" are displayed under the [SCSI and RAID Controllers] as many as installed.

IMPORTANT:

■ Install Fibre Channel boards after completing the OS installation. They are used in a pair or in a set of four. Mount each controller on the slot of the same position of each PCI module.

■ The following error will be recorded to the event log (as many as installed) at each OS start-up until Fibre Channel boards are installed and their driver is updated. Continue using it since there will be no effect to the driver.
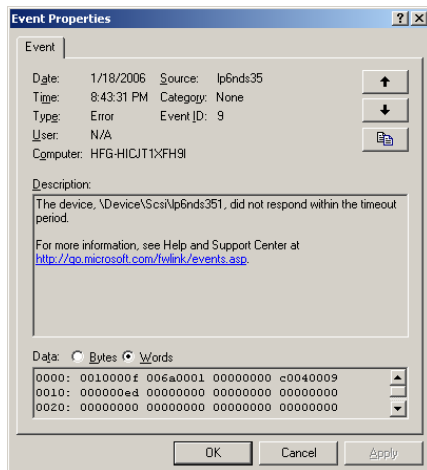
Appendix A

Specifications

Item		NovaScale/R620-LR
CPU	Type	Intel® Xeon® Processor × 1
	Clock/second cache	1.6 GHz/4 MB
	Number of processors	1 processor (the number of processors installed per module)
	Maximum	Up to 2 processors (the number of processors installed per module)
Chipset		GeminiEngine (NEC original chipset)
Memory	Standard	None
	Maximum	12 GB (The standard DIMM must be replaced.)
	Expansion unit	2 DIMMs (512 MB × 2/ 1 GB × 2 / 2 GB x 2))
	Memory module	DDR533 SDRAM DIMM (Registered Type)
	Error check	ECC
Graphics (VRAM)		ES1000 (32 MB)
Auxiliary input device	Floppy disk (standard)	3.5-inch drive × 1 (USB)
	Hard disk (standard)	None
	Hard disk (maximum)	1.8 TB* (300 GB × 6) * The user area is reduced to a half of the physical capacity due to software mirroring.
	CD-ROM (standard)	ATAPI interface × 1 (Load on tray type, x24 speed)
File bay	5.25 inch	None
	3.5 inch	6 slots
Additional slot	PCI, 64-bit	4 slots (Low profile)
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (2 ports)
External interface	USB	4-pin connector (3 ports). Keyboard occupies one port.
	Network	RJ-45 (4 ports)
	Display	MINI D-sub 15-pin (1 port)
Cabinet design		Rack-mount type
External dimensions		485 mm (w) x 177 mm (h) x 635 mm (d)
Weight		38 kg (Max. 47 kg)
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz
Power consumption		829 VA, 819 W
Environmental requirements	In operation	Temperature 10 to 35°C Humidity 20 to 80% RH (non-condensing)
	In storage	Temperature -10 to 55°C Humidity 20 to 80% RH (non-condensing)

Item		NovaScale/R620-MR
CPU	Type	Intel® Xeon® Processor × 1
	Clock/second cache	2.4 GHz/2 MB x2
	Number of processors	1 processor (the number of processors installed per module)
	Maximum	Up to 2 processors (the number of processors installed per module)
Chipset		GeminiEngine (NEC original chipset)
Memory	Standard	None
	Maximum	12 GB (The standard DIMM must be replaced.)
	Expansion unit	2 DIMMs (512 MB x 2/ 1 GB × 2/ 2 GB × 2)
	Memory module	DDR533 SDRAM DIMM (Registered Type)
	Error check	ECC
Graphics (VRAM)		ES1000 (32 MB)
Auxiliary input device	Floppy disk (standard)	3.5-inch drive × 1 (USB)
	Hard disk (standard)	None
	Hard disk (maximum)	1.8 TB* (300 GB × 6) * The user area is reduced to a half of the physical capacity due to software mirroring.
	CD-ROM (standard)	ATAPI interface × 1 (Load on tray type, x24 speed)
File bay	5.25 inch	None
	3.5 inch	6 slots
Additional slot	PCI, 64-bit	6 slots (Low profile)
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (2 ports)
External interface	USB	4-pin connector (3 ports) Keyboard occupies one port.
	Network	RJ-45 (4 ports)
	Display	MINI D-sub 15-pin (1 port)
Cabinet design		Rack-mount type
External dimensions		485 (w) × 177 (h) × 635 (d) mm
Weight		38 kg (Max. 44kg)
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz
Power consumption		829 VA, 819 W
Environmental requirements	In operation	Temperature 10 to 35°C Humidity 20 to 80% RH (non-condensing)
	In storage	Temperature -10 to 55°C Humidity 20 to 80% RH (non-condensing)

Appendix B

I/O Port Addresses

The factory-set I/O port addresses for the server are assigned as follows:

Address	Chip in Use
00000000 - 0000000F	DMA controller
00000020 - 00000021	Programmable interruption controller
0000002E - 0000002F	Motherboard resource
00000040 - 00000043	System timer
0000004E - 0000004F	Motherboard resource
00000060 - 00000060	Motherboard resource
00000061 - 00000061	System speaker
00000064 - 00000064	Motherboard resource
00000070 - 00000073	System CMOS/real-time clock
00000080 - 0000008F	DMA controller
000000A0 - 000000A1	Programmable interruption controller
000000C0 - 000000DF	DMA controller
000000E0 - 000000F0	Motherboard resource
000000F0 - 000000FF	Numerical data processor
00000274 - 00000277	ISAPNP read data port
00000279 - 00000279	ISAPNP read data port
000002E8 - 000002EF	Motherboard resource
000002F8 - 000002FF	Motherboard resource
000003B0 - 000003BB	PCI standard PCI-to-PCI bridge
000003B0 - 000003BA	Graphics controller (NEC GA Driver)
000003C0 - 000003DF	PCI standard PCI-to-PCI bridge
000003C0 - 000003DE	Graphics controller (NEC GA Driver)
000003E8 - 000003EF	Motherboard resource
000003F8 - 000003FF	Motherboard resource
000004D0 - 000004D1	Motherboard resource
00000540 - 0000055F	Motherboard resource
00000560 - 0000056F	Motherboard resource
00000600 - 0000061F	Motherboard resource
00000A79 - 00000A79	ISAPNP read data port
00000CA2 - 00000CA5	Motherboard resource
00000CF8 - 00000CFF	PCI configuration
0000FE00 - 0000FE20	Motherboard resource

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