N8800-027F/028F

NEC Express5800/320Lb/320Lb-R User's Guide

1st Edition
02-2003
856-122693-901-A

PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

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

SAFETY INDICATIONS

To use NEC Express5800 Series safely, follow the instructions in this User's Guide.

This guide explains components that pose a danger, types of dangers caused by failing to follow the instructions, and actions taken to prevent them; such components are labeled 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 a failure to follow the instructions could cause a 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
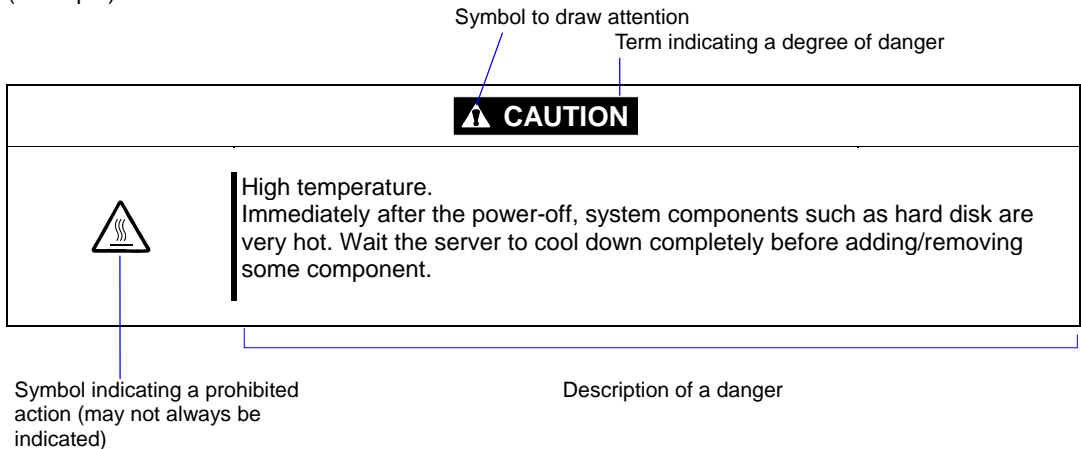
SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attention

	Indicates a risk of an electric shock.
	Indicates a risk of an 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 are not defined herein.
	Indicates a risk of losing eyesight due to laser beam.
	Indicates a risk of an injury or damage to physical assets due to a hazardous material.

Prohibited actions

	Indicates a general prohibition that is not defined herein.
	Do not disassemble, repair, or modify the equipment. Otherwise, there is a risk of an electric shock or fire.

Mandatory actions

	Unplug the server. Otherwise, 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.

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numériqeu 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).

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.

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Microsoft Windows 2000 Server operating system, Microsoft Windows 2000 Advanced Server operating system and Microsoft Windows 2000 Professional operating system are called Windows 2000 for short.   Microsoft Windows NT Server network operating system version 3.51/4.0 and Microsoft Windows NT Workstation operating system version 3.51/4.0 are called Windows NT for short.   Microsoft Windows Millennium Edition Operating System is called Windows Me for short. Microsoft Windows 98 operating system is called Windows 98 for short.   Microsoft Windows 95 operating system is called Windows 95 for short.

Names used with sample applications are all fictitious.   They are unrelated to any existing product names, names of organizations, or individual names.

To prevent voltage sag:

This product may be affected by voltage sag caused due to lightning.   To prevent voltage sag, you are recommended to use an AC uninterruptible power supply (UPS) unit.

Notes:

(1) No part of this manual may be reproduced in any form without prior written permission of NEC Corporation.

(2) The contents of this manual are subject to change without prior notice.

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PREFACE

Welcome to the NEC Express5800/ft series.

NEC Express5800/ft 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 NEC Express5800 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 ft series in a mission-critical system where high availability is required. By the use of Windows2000 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 NEC Express5800/ft 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:

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 theproduct. 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   Setup
> This chapter walks you through the setup procedures from unpacking of the product. See also this chapter when you perform a re-setup.

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 "NEC 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
NOTE:	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 NEC 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.

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CONTENTS

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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.

The figures below show locations of the labels on tower model and rack-mount model servers.

Tower model

Label A

⚠ 注　意 ⚠
CAUTION
感電や火災の恐れがありますので、モジュール／ケーブルの
取り付け取り外しについては取り扱い説明書をお読みください。
In order to prevent electrical shock or fire hazards,
disconnect all cables connected with the module to be serviced.

Label B

⚠ 重量物注意
WARNING:
HEAVY ITEM

ぎっくり腰や落下事故防止のため装置の移動は4人以上で行ってください。
To avoid the risk of personal injury or damage to the unit, move the unit with at least four or more people.

Label C

⚠ 注　意　CAUTION   ⚠ ⚠ ⚠

指を挟んだり、ぶつけたりしないようにご注意下さい。
Exercise caution when handling the system to avoid personal injuries.

取付直近の電源を切った直後は、ハードディスクの装置が高温になっているので、取扱いには十分に注意してください。
As the hard disk drives may retain heat after powering down, allow ample time for cooling prior to handling.

ホットスワップ非対応のモジュール等の保守時は、感電防止の為に全てのコード及び外部接続ケーブルを抜いて下さい。
In order to prevent accidents such as electrical shock, disconnect all cables and external connections when servicing non-hotswappable modules.

高温になるコンポーネントがあります。十分に冷えてから触れるようにして下さい。
As some components may become very hot during system operation, give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down.

火災の原因になる可能性がありますので、ネジは本体内部へ落とさないようネジに注意下さい。
In order to prevent short circuits and fire hazards, exercise caution and avoid dropping screws inside the system.

Label D   Label E

⚠ 警告
WARNING

保守担当者の方は、装置を分解しないで下さい。感電など重大な危険となります。
Risk of electric shock - do not open. Qualified service personnel only. No user serviceable components inside.

Rack-mount model

Label A

Label B

Label C

Label D

Label A

⚠ 注 意 ⚠ ⚠ CAUTION ⚠	感電や火災の恐れがありますので、モジュール／ケーブルの 取り付け取り外しについては取り扱い説明書をお読みください。 In order to prevent electrical shock or fire hazards, disconnect all cables connected with the module to be serviced.

Label B

⚠ 注 意 CAUTION   ⚠ ♺ ⚠

指を挟んだり、ぶつけたりしないように注意して下さい。
Exercise caution when handling the system to avoid personal injuries.

動作時及び電源を切った直後は、ハードディスクの表面が高温になっているので、取扱いには十分に注意してください。
As the hard disk drives may retain heat after powering down, allow ample time for cooling prior to handling.

CPUモジュールやPCIモジュール以外の保守時は、感電防止の為に全てのコード及び外部接続ケーブルを抜いて下さい。
In order to prevent accidents such as electrical shock, disconnect all cables and external connections
when servicing non-hotswappable modules.

高温になるコンポーネントがあります。十分に冷えてから触れるようにして下さい。
As some components may become very hot during system operation, give ample time to allow cooling
as well as use precation when handling internal components immediately after powering down.

火災の原因になる可能性がありますので、ネジは本体内部へ落とさないよう十分ご注意下さい。
In order to prevent short circuits and fire hazards, exercise caution and avoid dropping screws inside the system.

Label C   Label D

⚠ 警告
WARNING

🚫 保守員以外の方は、装置を
分解しないで下さい。感電
など事故の原因となります。
Risk of electric
shock - do not open.
⚡ Qualified service
personnel only.
No user servicable
components inside.

PCI/CPU Modules

PCI Module

Label A

CPU Module

Label A

Label A

⚠ 注 意 CAUTION ⚠ ⓬ ⚠
高温になるコンポーネントがあります。十分に冷えてから触れるようにしてください。 As some components may become very hot during system operation, give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down.
電源を切ってもバッテリで動作している部分があります。保守をする前に 各々のコンポーネントに取り扱い説明書をお読みください。 Some internal components may still be operational on battery power. Refer to instruction for this system as well as options prior to maintenance.

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.   NEC assumes 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, odor, or noise.
If the equipment emits smoke, odor, 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. Otherwise, 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 you sales agent.
Do not install the equipment on a nonconforming rack.
Install the equipment on a 19-inch rack confirming to the EIA standard.   Do not use the equipment without a rack or install it on a nonconforming rack.. Otherwise, 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.

> ### ⚠ **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.
>
> **Do not touch any damaged LCD.**
>
> The LCD on the server front contains a liquid harmful to the human body.   If the liquid leaked from the LCD accidentally gets in your mouth, immediately gargle and see a doctor.   If it accidentally gets on your skin or in your eye, rinse it with water immediately for at least 15 minutes.

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 cord in a nonconforming outlet.

Use a wall outlet with specified voltage and power type.   Otherwise, 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.   Otherwise, 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.

Use only the power cords that come with the product.   If the rated current is exceeded, there is a risk of a fire.
You also have to observe the following prohibitions to prevent damage to the cords.
■ 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 place any object on the cord.
■ Do not bundle several cords.
■ 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

Never attempt to lift the equipment alone.

The equipment weighs around 70 kg (depending on its hardware configuration). If you carry it alone, you may strain your back.   It takes at least four people to carry it; hold the equipment firmly by its bottom.   Do not hold the front bezel, or it may become detached, causing an injury.

Do not install the equipment in an unsuitable place .

Install 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.

⚠ 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 NEC; 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.

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 of 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.

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.
>
> Do not touch the fan.
>
> While the equipment is on, be careful not to get your fingers or hair caught in the cooling fan that is located in the back.
>
> 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 server may fall down to cause damage to physical assets.
>
> 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 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 carry or install the equipment alone.
>
> It takes at least two people to carry or install a rack.   Otherwise, it may be dropped and cause injuries or damage to physical assets.   A tall rack (such as 44U rack) is quite unstable, especially when not fixed by stabilizers.
>
> ⊘ 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. Otherwise, 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.   Otherwise, 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 Chapter 3.

- 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 the "NEC" logo appears on the screen.

- 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 (Rc232-C) or the control using PowerChutePlus.

- 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 NEC'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.

TRANSFER TO THIRD PARTY

When you transfer (or sell) the product or its included items, you must observe the following:

Server

Attach this User's Guide to the server you are transferring (or selling) to a third party.

> **IMPORTANT:** Data remaining on hard disk:
>
> When you transfer your server, you are responsible for erasing important data stored on its hard disk (e.g., customer information, accounting information); you must be careful to prevent such data from leaking out to outsiders.
>
> Even if you perform "Empty trash" on Windows or Linux operating system or execute a "format" command to erase data superficially, the data actually remains on the hard disk.   If data is not erased completely, it could be restored by certain software and be used for unexpected purposes.
>
> You are strongly recommended to buy a special type of software or service to avoid such trouble.   For details, contact your sales agent.
>
> NEC shall not be accountable for such data leakage caused by your failure to take necessary measures.

Included Software

When you transfer or sell the included software to a third party, you must meet the following conditions:

- Transfer all of the software included with the system.   Do not retain any copies.
- Meet the conditions of transfer described in each software license agreement.
- Uninstall untransferable programs, if any, from the server before the transfer.

DISPOSAL OF EQUIPMENT AND CONSUMABLES

■ When you dispose of the main unit, hard drive, floppy disks, CD-ROMs, optional boards, etc., you need to observe your local disposal rules.   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, mouse).   For stable operation, it is recommended to replace them regularly.   For lifetime of individual components and replacing procedures, ask your sales agent.
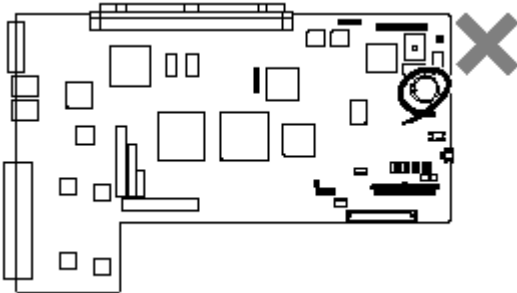
⚠ WARNING
Do not detach a lithium battery yourself. This equipment has a lithium battery.   Do not detach it yourself.   If the battery is exposed to fire or water, it could explode. RISK OF EXPLOSION IF BATTERY IS REPLACED WITH INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS. 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. *PCI module board*

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 NEC Express5800/ft 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 OUR WEB SERVICE

Information on NEC Express5800/ft series including modification modules is also available on our web site, NEC Express5800 Web Site Asia Pacific, at
http://www.nec.co.jp/epxress/index.html

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.
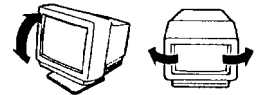
Adjust Brightness and Contrast
Displays allow you to adjust brightness and contrast.   Optimum brightness and contrast vary depending on the individual, age, brightness of the room, etc; you need to make an adjustment accordingly.   If the screen is too bright or too dark, it is bad for your eyes.
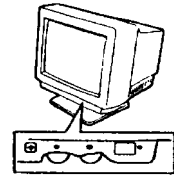
Adjust the installation angle of Keyboard
Some types of keyboards allow you to adjust the angle.   If you adjust the angle to make the keyboard more comfortable to use, you can greatly reduce stresses on your shoulders, arms, and fingers.
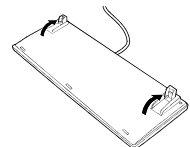
Clean the Equipment
Cleanliness of the equipment is very important not only for reasons of appearance but also from the viewpoints of function and safety.   Especially, you need to regularly clean the display, which gets unclear due to the accumulation of dirt.

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.

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Chapter 2

General Description

This chapter describes what you need to know to use the NEC Express5800/ft 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 (2.4 GHz)
- High-speed Ethernet interface (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access (Ultra160 SCSI Wide)

Expandability
- Wide variety of optional I/O slots Two 64-bit/33 MHz, four 32-bit/33 MHz PCI slots
- Large memory of up to 3 GB
- 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 door and front bezel)

Various Features
- Graphic accelerator "CT69000" supported
- El Torito Bootable CD-ROM (no emulation mode) format supported
- POWER switch mask
- Remote power-on feature
- AC-LINK feature
- Consoleless feature

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

Management Utilities
- NEC ESMPRO
- NEC Management Workstation Application (NEC MWA)

Maintainability
- Off-line Maintenance Utility

Ready-to-use
- Quick cableless connection: hard disk, CPU module, and PCI module (hot-swap supported)

Easy and Fine Setup
- NEC EXPRESSBUILDER (system setup utility)
- SETUP (BIOS setup utility)
- *Fast!*UTIL (SCSI device utility)

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

The NEC Express5800/ft 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 wit each other and detecting anomalous diversions in operation.

Even if one hardware module stops, the server can continue operation with the other module.   After the failed module is replaced, the new module will obtain information from the other and resume operation.
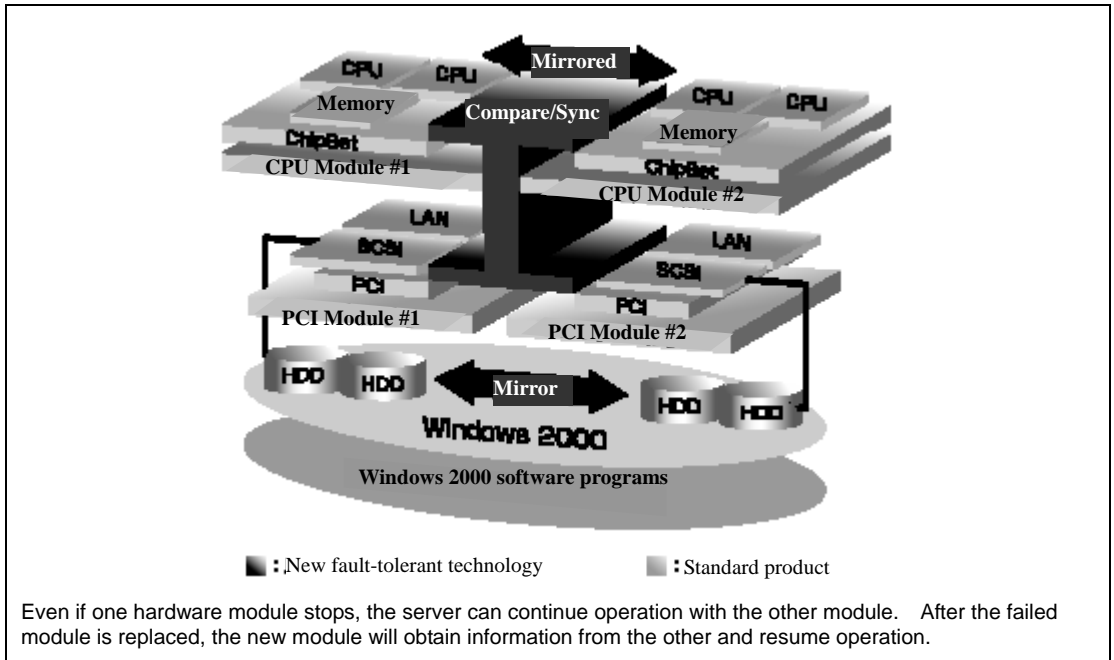
NEC Express5800/ft series is a highly fault-tolerant Windows 2000 server that achieves continuous computing operations, data storage mirror, and continuous network connection.   It allows you to run Windows 2000-based applications.

NEC Express5800/ft series achieves continuous computing operations for the Windows 2000 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, NEC Express5800/ft series achieves high fault-tolerance.

NEC Express5800/ft series detects status changes, errors and other events and notifies the Windows 2000 Event Log of these events.   If you use an alarm notification tool, you can configure NEC Express5800/ft 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 NEC Express5800/ft series.   This tool also supports both local and remote management of NEC Express5800/ft series.

NEC Express5800/ft series mainly provides the following advantages:

- Highly fault-tolerant processing and I/O subsystems

  NEC Express5800/ft 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

  NEC Express5800/ft 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 NEC Express5800/ft series without losing network traffic or client connection.

- Support of multiple network connections

  Since NEC Express5800/ft series can support multiple Ethernet connections, you can add network redundant control or network traffic control.

- Industry standard hardware platform

  NEC Express5800/ft series uses IA (Intel Architecture)-based system hardware.

- No need to modify applications

  You can run Windows 2000-compliant applications on NEC Express5800/ft series.   Thus, unlike other highly fault-tolerant products, special API or scripts are not necessary.

- Automatic mirroring

  NEC Express5800/ft series automatically maintains data as the current data.   (You need to make a setting with VERITAS Volume Manager.)

- Automatic detection and notification of faults

  NEC Express5800/ft series detects and sorts out all events such as general status changes and faults, and notifies Windows 2000 Event Log of these events.

- Transparent migration

  NEC Express5800/ft series constantly monitors events.   If trouble occurs on NEC Express5800/ft 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, NEC Express5800/ft 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, NEC Express5800/ft series automatically restores redundancy of the server modules after recovery.

■ Local and remote management

NEC Express5800/ft series uses ESMPRO as a server management tool.   This tool uses a GUI that enables monitoring and setting of NEC Express5800/ft series.   ESMPRO can be used both locally and remotely on Windows 2000/NT or Windows 95/98/Me.

■ Event notification function

When trouble or other events are detected on NEC Express5800/ft series, they will be notified to Windows 2000 Event Log and saved.   Therefore, you can view the log items locally or remotely by a usual Windows 2000 procedure.   Since an NEC Express5800/ft series events use unique IDs, they are easy to distinguish.

■ In-service repairing

You can repair or replace a failed module even if NEC Express5800/ft series is operating.

NAMES AND FUNCTIONS OF COMPONENTS

Names and functions of components are shown below:

Front View

Tower model

Rack-mount model
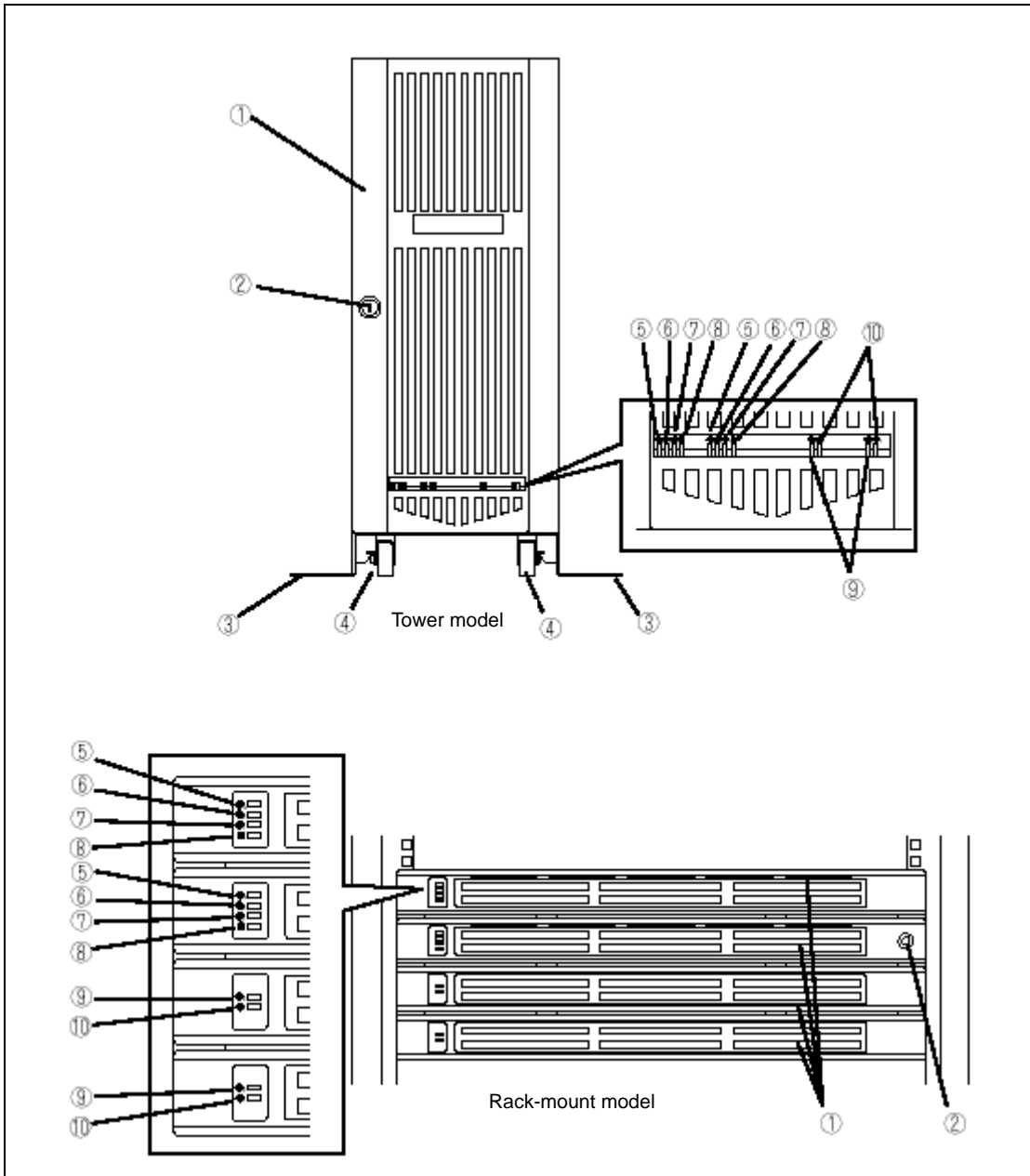
1   **Front bezel**
         A door that covers internal components.   You can lock it with the included security key.
2   **Key slot**
         Insert the security key in this slot to unlock the front bezel.
3   **Stabilizers**
         Parts for stabilizing a tower-model unit.
4   **Casters**
         Wheels for moving a tower-model unit.
5   **BMC status LED**
         See "LEDs" in this chapter for details.
6   **PCI module status LED 1**
         See "LEDs" in this chapter for details.
7   **PCI module status LED 2**
         See "LEDs" in this chapter for details.
8   **DISK ACCESS LED**
         See "LEDs" in this chapter for details.
9   **CPU module status LED 1**
         See "LEDs" in this chapter for details.
10   **CPU module status LED 2**
         See "LEDs" in this chapter for details.

Front View (inside)
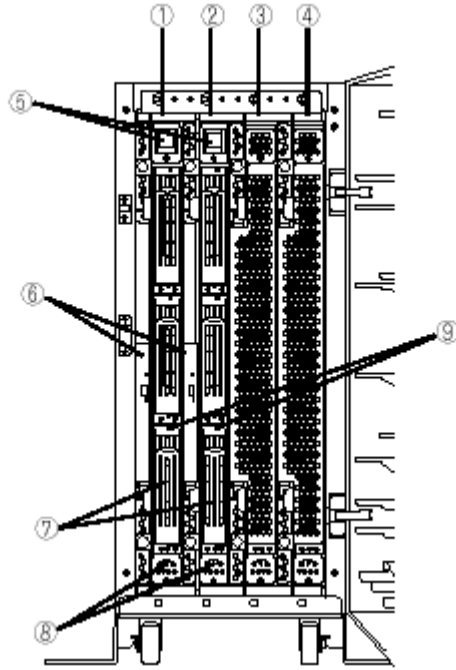
Tower model
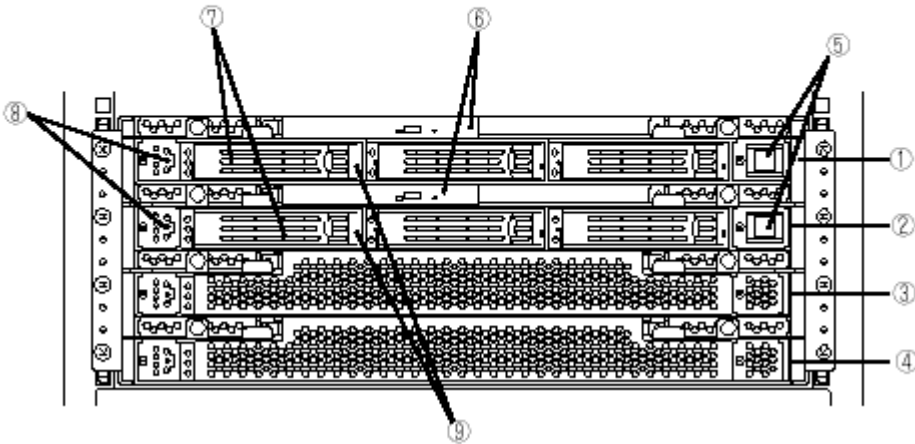
Rack-mount model

1   PCI module (for group 1)

A module that includes a PCI board and LAN controller.

2   PCI module (for group 2)

A module that includes a PCI board and LAN controller.

3   CPU module (for group 1)

A module that includes a CPU (processor) and memory (DIMM).

4   CPU module (for group 2)

A module that includes a CPU (processor) and memory (DIMM).

5   POWER switch

A switch for turning on/off power to the system.   The POWER switch on the primary PCI module will be lit.   Press it once to turn on power.   Press it again to turn off power. Depress the switch for more than four seconds to force the system to power down.   The POWER switch on the secondary PCI module will be unlit and will not respond until a failure in the primary PCI module causes the secondary PCI module to assume primary functionality.

6   CD-ROM drive

Used for reading data from CD-ROMs.

Although there are two CD-ROM drives, only the one on the active primary PCI module can be used (the module with the lit POWER Switch LED).

7   3.5-inch disk bay

Slots for adding hard disks.   On a tower model, they are called Slots 1, 2, and 3 from the bottom.   On a rack-mount model, they are called Slots 1, 2, and 3 from the left.   Slots of the same number are mirrored between the groups 1 and 2.

8   DUMP switch

A switch for outputting a memory image from the kernel to a file.

9   DISK LED (green/amber)

An LED that blinks in green while the hard disk is accessed.   When operating in simplex mode or the hard disk fails, it will turn amber.

CD- ROM Drive
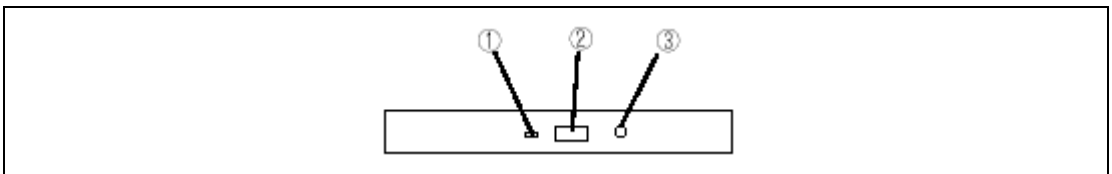
1   Status LED

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.

CPU module (for Group1)   PCI module (for Group2)

Rear View   CPU module (for Group2)   PCI module (for Group1)

Tower model

Rack-mount model

PCI module (for Group1)

PCI module (for Group2)

CPU module (for Group1)

CPU module (for Group2)
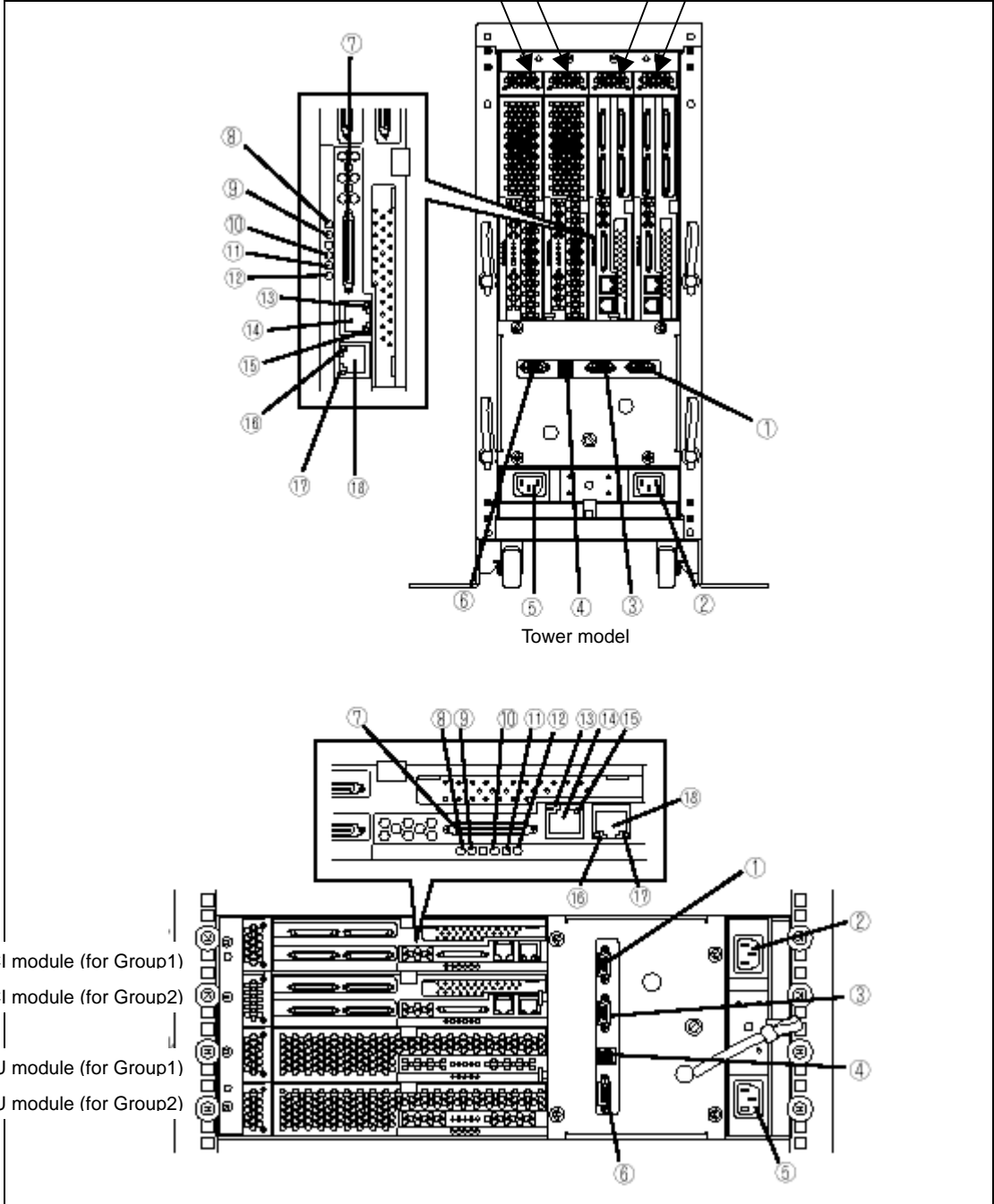
1	**Serial port A connector**
	Connected to a device that has a serial interface. For maintenance use only.
2	**AC inlet**
	PC socket for plugging a power cord.
3	**Serial port B connector**
	Connected to a device that has a serial interface. For maintenance use only.
4	**USB connector 1 (top)/USB connector 2 (bottom)**
	Connected to devices that support the USB interface.
	Connect the mouse to USB 1; connect the keyboard to USB 2.
5	**AC inlet**
	PC socket for plugging a power cord.
6	**Monitor connector**
	Connected to the display unit.
7	**SCSI connector**
	Used for connecting external SCSI devices.
8	**PCI module status LED 1**
	See "LEDs" in this chapter for details.
9	**PCI module status LED 2**
	See "LEDs" in this chapter for details.
10	**PCI board slot status LED (Slot1)**
	See "LEDs" in this chapter for details.
11	**PCI board slot status LED (Slot2)**
	See "LEDs" in this chapter for details.
12	**PCI board slot status LED (Slot3)**
	See "LEDs" in this chapter for details.
13	**LINK/ACT LED**
	See "LEDs" in this chapter for details.
14	**LAN connector 2**
	A connector for 1000BASE-TX, 100BASE-TX, and 10BASE-T. Connected to the network system on LAN.
15	**100/10 LED**
	See "LEDs" in this chapter for details.
16	**LINK/ACT LED**
	See "LEDs" in this chapter for details.
17	**100/10 LED**
	See "LEDs" in this chapter for details.
18	**LAN connector 1**
	A connector for 100BASE-TX and 10BASE-T. Connected to the network system on LAN.

CPU Module
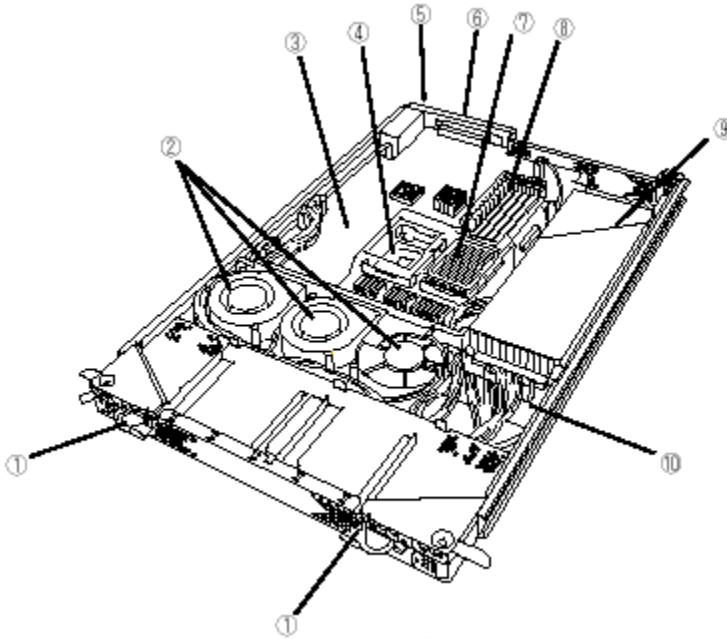
Group 1 and group 2 have the same configuration.

1   Module handle
2   Cooling fan
3   CPU module board
4   CPU socket #2 (additional)
5   AC inlet (in the back)
6   Backboard connector (in the back)
7   CPU socket #1 (standard)
8   DIMM
9   Power unit
10   Power backboard

CPU module board

Group 1 and group 2 have the same configuration.
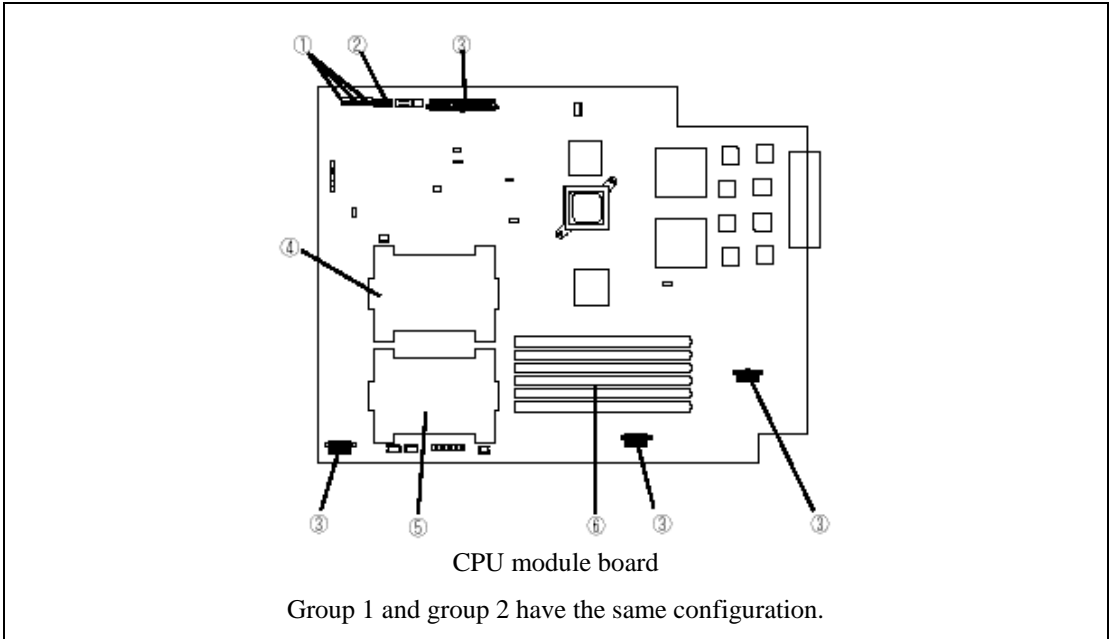
1   Cooling fan connector
2   LED connector
3   Power connector
4   CPU socket #2
5   CPU socket #1
6   DIMM sockets (Slots #1 to #6 from left.   Add memory modules in pairs: #1 and #2, #3 and #4, #5 and #6.)

*This section only describes connectors that are used for replacing parts or upgrading.   Other connectors have been setup before shipment.

PCI Module
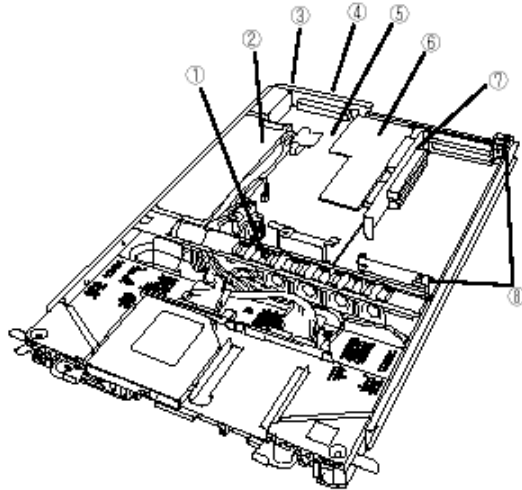
Group 1 and group 2 have the same configuration.

1   Cooling fan
2   Power unit
3   AC inlet (in the rear)
4   Backboard connector (in the rear)
5   PCI module board
6   Video board
7   PCI riser card
8   PCI board retention bracket

PCI module board

Group 1 and group 2 have the same configuration.
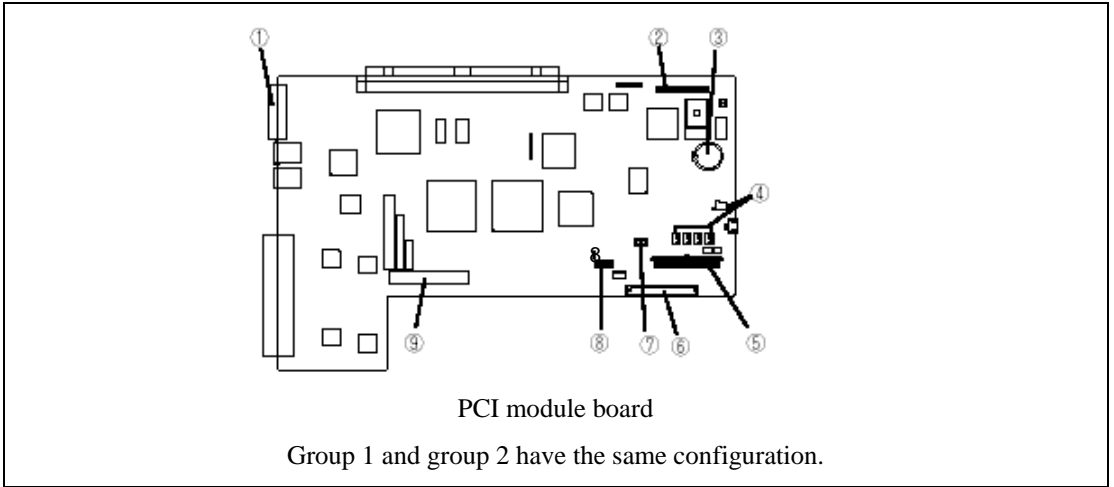
1   SCSI connector (external)
2   Configuration jumper pin
3   Battery (lithium battery)
4   Cooling fan 1 connector
5   Power connector
6   IDE connector
7   Power switch connector
8   LED connector
9   SCSI connector (internal)

Chassis Board Layout

Rack-mount model

Clock board   Interface board   Back panel
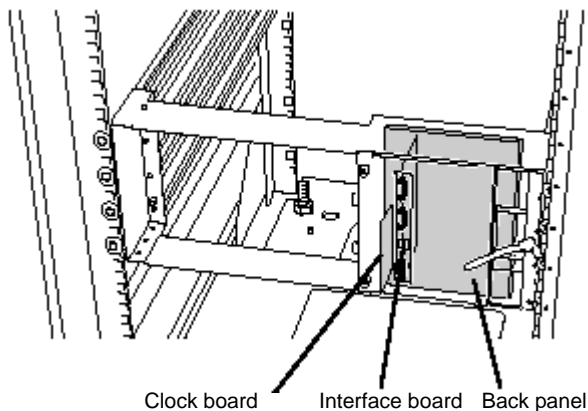
LEDs

This section describes indications and meanings of the LEDs on NEC Express5800/ft series.

POWER LED

The POWER switch of the PCI module also functions as a POWER LED.   When power is supplied to the modules, POWER LED on the primary side will illuminate (the switch also works on the primary side alone).

BMC Status LED

The BMC Status LED indicates the status of the Baseboard Management Controller (BMC) installed on NEC Express5800/ft series.

The LED stays green while the server is running normally.   If the LED is not green, there is something wrong with the server.

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

> **Tips:**
> - To determine the cause of trouble, use the NEC ESMPRO or the Off-line Maintenance Utility to view the error log.
>
> - When you want to restart the server, perform a shutdown if the OS allows you to shut down the system.   If not, perform a reset or forced shutdown, or you can restart the server by unplug and plugging the power cord.

LED indications	Description	Action
Green	BMC operates normally and CPU and PCI modules are in duplex mode.	–
Green (blinking every 1 second)	CPU or PCI modules are not in duplex mode during operation.	Remount components whose Status LED is red. If the problem persists, replace that module.
Off	AC power is all off.	Turn on the AC power.
	Performing POST.	Wait for a while; it will illuminate in green shortly after POST.
	CPU module error occurred.	After turning off the power, turn it on to restart the system. If some error message appears on the POST screen, write it down and contact your sales agent.
	PCI module error occurred.	

LED indications	Description	Action
Amber	Detected a fatal temperature error.	If LCD displays some error message, refer to the error message list (see Chapter 7). Check if dust is accumulated on internal fans and confirm that the fan cables are connected firmly. If the message does not disappear, contact your sales agent.
	Detected a fatal voltage error.	Contact your sales agent.
Amber (blinking every 1 second)	Detected a temperature error to be warned.	If LCD displays some error message, refer to the error message list (see Chapter 7). Check if dust is accumulated on internal fans and confirm that the fan cables are connected firmly. If the message does not disappear, contact your sales agent.
	Detected a voltage error to be warned.	Contact your sales agent.
	Detected a device defect.	
	Detected a fan alarm.	If LCD displays some error message, refer to the error message list (see Chapter 7). Check if dust is accumulated on internal fans, and confirm that the fan cables are connected firmly. If the message does not disappear, contact your sales agent.
Red in one module	BMC is being dumped	Wait for a while; it will go off soon.
	PCI module may be connected incorrectly.	Check if PCI module is connected correctly. Look for loose screws.
	BMC may be out of order.	BMC firmware may need reprogramming. Contact your sales agent.
Red in both modules	Both BMCs are out of order.	Check if both PCI modules are connected correctly. Look for loose screws. If the message does not disappear, contact your sales agent.
Red (blinking every 1 second)	Revisions to BMC firmware don't match.	Contact your sales agent.
Red (blinking every 0.5 second)	Transfer of synced data after a PCI module is replaced (this is not an error).	Do not loosen a screw on PCI modules or turn off the AC power before the LED stops blinking.

PCI Module Status LEDs (1 and 2)

Disk Access LED

The PCI module has three LEDs.
Combined, the three LEDs show the status of the PCI modules and hard disks:

LED indications			Description	Action
1	**2**	**Disk Access**		
Off	Green	Green	Status LEDs and Disk Access LED stay green on both PCI modules, they operate normally in duplex mode.	–
			Status LEDs and Disk Access LED stay green only on one module, there is some kind if trouble with the hard disk. In this case, Status LED 2 and Disk access LED on the other PCI module stay in amber.	Check the condition of hard disk mirrors. If the problem persists, contact your sales agent.
		Off	Disk Access LED is off only on one PCI module; power is not supplied to the hard disk. In this case, Status LED 2 and Disk access LED on the other PCI module stay in amber.	Check the condition of hard disk mirrors. Remount the hard disks. If the problem persists, contact your sales agent.
	Off	Off	AC power is not supplied to the PCI modules.	Remount the PCI module. Check the condition of power unit. Check if the power cord is connected correctly. Check the condition of breaker and UPS. If the problem persists, contact your sales agent.
	Amber	Amber	Status LEDs and Disk Access LED stay amber on both PCI modules, they are shifting to duplex mode by mirroring.	Wait until the mirroring is finished.
			The PCI module is mounted correctly and operates in simplex mode.	Start the other PCI module to use ft series features. If the problem persists, contact your sales agent.
Red	Green	Off	The PCI module is performing diagnosis.	–
	Off	Off	On standby (AC power is supplied through the cord, but the system has not been powered on yet.)	After turning on the power, wait for the OS to start. When the OS starts and duplex mode is established, the indications will get back to normal. If they do not get back to normal, remount the CPU module.
			Power is not supplied due to a failure of the CPU module.	Remount the CPU module. If the problem persists, contact your sales agent.
	Amber	Green	Memory is being dumped.	
		Amber		

CPU Module Status LEDs (1 and 2)

The CPU module has two LEDs.

Combined, the two LEDs show the status of CPU modules:

| LED status | | Description | Action |
1	2		
Off	Green	The CPU module operates normally in duplex mode.	–
	Off	Power is not supplied to the CPU module.	Remount the CPU module. Check the condition of power unit. Check if the power cord is connected correctly. Check the condition of breaker and UPS. If the problem persists, contact your sales agent.
	Amber	The CPU module is mounted correctly and operates in simplex mode.	Start the other CPU module to use ft series features. If the problem persists, contact your sales agent.
Red	Green	The CPU module is performing diagnosis.	–
	Off	On standby (AC power is supplied through the cord, but the system has not been powered on yet.)	After turning on the power, wait for the OS to start. When the OS starts and duplex mode is established, the indications will get back to normal. If they do not get back to normal, remount the CPU module.
		Power is not supplied due to a failure of the CPU module.	Remount the CPU module. If the problem persists, contact your sales agent.
	Amber	Memory is being dumped.	–

PCI Board Slot Status LEDs (P1, P2, P3)

To show the status of PCI board slots, each PCI module has three status LEDs.

LED indications	Description	Action
Off	PCI board is mounted correctly and operates in duplex mode.	The system operates normally.
	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	If the PCI board is not mounted or is mounted incorrectly, just mount it correctly; there is no problem. Check the condition of power unit. If the problem persists, contact your sales agent.
Amber	Performing POST; or the PCI board is mounted correctly and operates in simplex mode.	Simplex mode is not a problem. To use ft series features, attach a PCI board to a slot of the same on the other PCI module.
Red	Although the PCI board is mounted, it may be offline or not be working.	Remount the PCI board correctly. Remount the PCI module correctly. If the problem persists, contact your sales agent.

For LED indications when option boards are attached, see "PCI Module" in Chapter 8.

Hard Disk LED

A hard disk LED shows the status of hard disks that are mounted in the 3.5-inch device bay.

Combined, the two hard disk LEDs on PCI modules 1 and 2 show the status of the hard disks.

PCI module 1	PCI module 2	Description	Action
Green	Green	Hard disks are mirrored and operate normally.	–
Green	Amber	Some trouble occurred on the hard disk of the PCI module 1. The hard disk on the PCI module 2 is operating without mirroring.	Check the condition of hard disk mirrors. If the problem persists, contact your sales agent.
Amber	Amber	Hard disk mirroring is being performed.	Wait until the mirroring is finished.

Tips:

■ When there are many accesses, the access LED will blink frequently. Check if the LED blinks in green when the number of accesses decreases, or if it is green when there are no accesses anymore.

■ When you power on NEC Express5800/ft series and the access LEDs do not illuminate green, remount the hard disks.

LAN Connector LEDs

Two LAN ports (connectors) located in the back have two LEDs each.

• 100/10 LED (LAN connector 1), 1000/100/10 LED (LAN connector 2)

  These LEDs show the transfer rate of the network that is being connected.

LED indications	LAN connector 1 100/10	LAN connector 2 1000/100/10
Amber	Operating as 100BASE-TX.	Operating as 1000BASE-T.
Off	Operating as 10BASE-T.	Operating as 10BASE-T.

• 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.

BASIC OPERATION

This section describes basic operation procedures of NEC Express5800/ft series.

Locking and Unlocking the Front Bezel

The front bezel covers built-in components of the server such as the POWER switch, CD-ROM drive, and hard disks.

The tower model server has a door-type bezel (it can also be detached).   The rack-mount model server has a cover-like detachable bezel

You need to open the front bezel when you access the POWER switch, CD-ROM drive or hard disk.

> **IMPORTANT:**
> - Without using the security key, you cannot open or detach the front bezel.
> - It is not recommended to use the server with its bezel detached.

Tower Model

Insert the security key into the slot and turn it to release the lock.   Hold the handle on the left side of the bezel and pull it.   After closing the front bezel, lock it with the key for security.
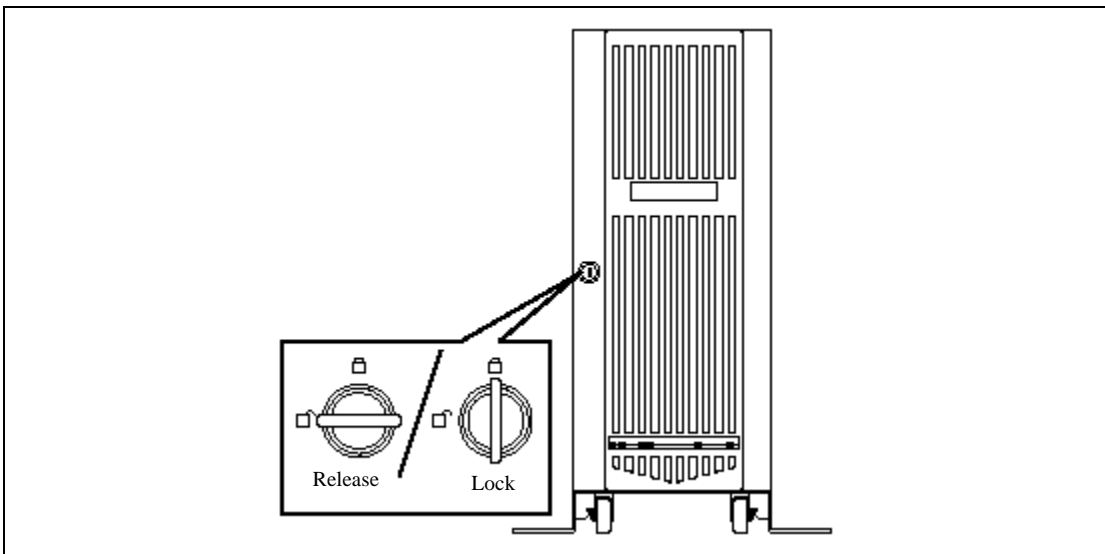
Rack-mount Model

The rack-mount model server is equipped with a detachable front bezel.

Detach

Follow the steps below to detach the front bezel:

1. Insert the security key into the slot and turn it with a little pressure to release the lock.
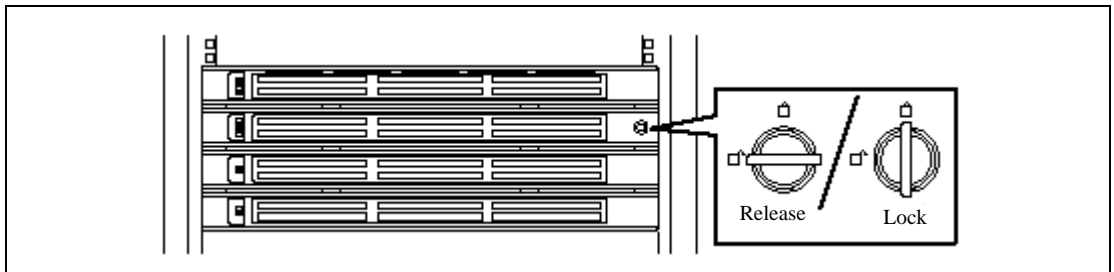
2. Hold the right side of the front bezel lightly and pull it open.

3. Detach the bezel from the main unit by sliding it to the left a little to disengage the tabs from the frame.
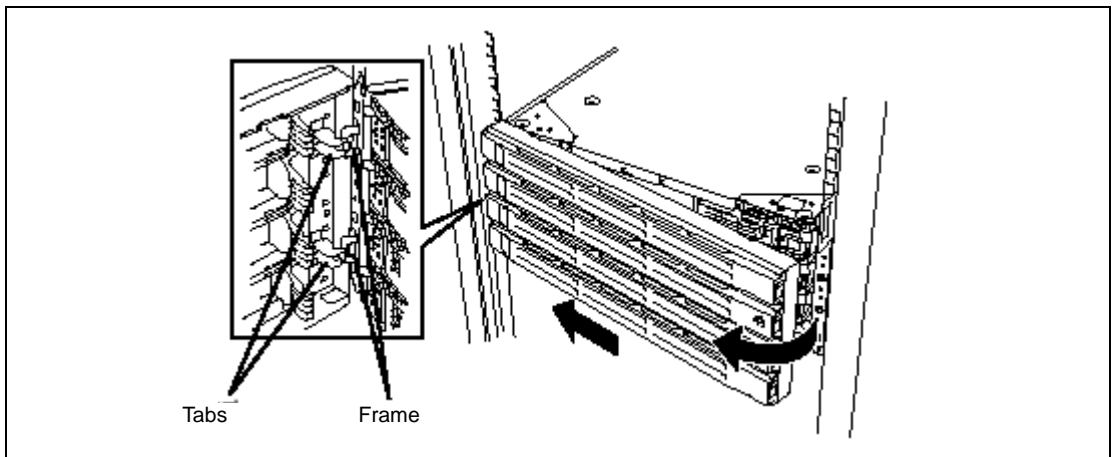
Attach

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 NEC Express5800/ft series, press the POWER switch located on the front panel.

Follow the steps below to turn on the power. (A rack-mount model is shown here for convenience of explanation.   However, the steps are the same for a tower model except that the modules are mounted vertically.)

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

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

2.   Open the front bezel (or detach it in the case of a rack-mount model).

3.   Press the POWER switch located on the front panel.

   After a while, the "NEC" logo will appear on the screen.

POWER switches* (LEDs)
*You can only use a power switch whose LED is on.
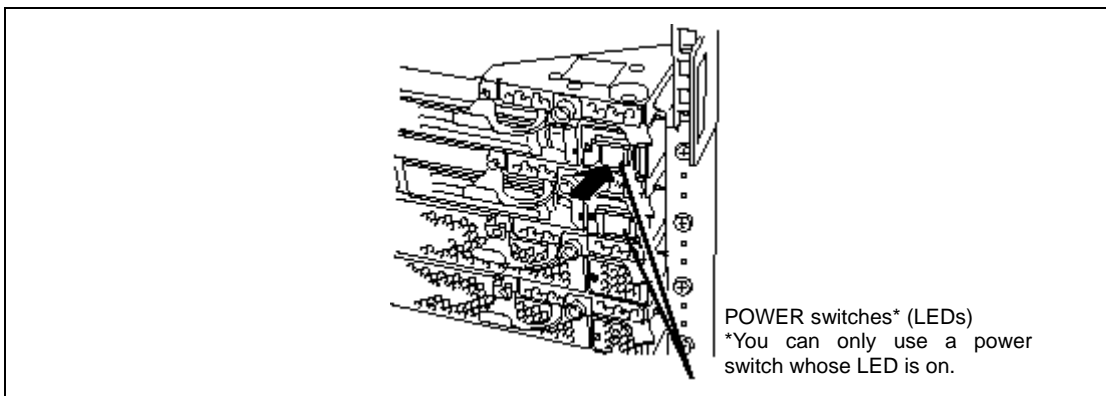
> **IMPORTANT:** Do not turn off the power before the "NEC" logo appears.

While the "NEC" logo is displayed on the screen, NEC Express5800/ft series is performing a power-on self test (POST) to check itself.   For details, see "Check by POST" described later in this manual.   Upon the completion of POST, Windows 2000 Advanced Server will start.

> **NOTE:** 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 NEC Express5800/ft 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 2000 Advanced Server.

The system will be powered off automatically and the POWER LED will turn off.

2. Power off all peripheral devices.

POST Check

POST (power-on self test) is a self-test function stored on the motherboard of NEC Express5800/ft 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.

NEC

According to the factory default settings, the "NEC" 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 NEC ESMPRO Manager or MWA is installed.

You don't always need to check POST details.   You will need to check messages when:

■ You install a new NEC Express5800/ft series.

■ A failure is suspected.

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

■ The display unit or the LCD* shows an error message.

   *For details, see "Error Messages on LCD" in Chapter 7.

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 modify the configuration for using the server. Unless this message appears together with an error message, you don't 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** + **Q**, the SCSI BIOS setup utility will start.   For setting and parameter functions, see the section on SCSI setup.

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

Behavior 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/PCI module and run POST or OS startup.

In this manner, the server retries POST or OS startup with different combinations of CPU/PCI modules.   If POST does not finish normally with any combinations, the server will stop with the state of DC OFF.

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

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.

- Displays an error message on the LCD*.

- Makes a beeping sound.

    *For details, see "Error Messages on LCD" in Chapter 7.

These notification methods are described in the *Operation and Maintenance Guide*.

> **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.

Floppy Disk Drive

A USB floppy disk drive is attached to the main unit.   It allows you to read and write (save) data using floppy disks.

The USB floppy disk drive accepts the following types of floppy disks:

- 2HD floppy disk (1.44MB)
- 2DD floppy disk (720KB)
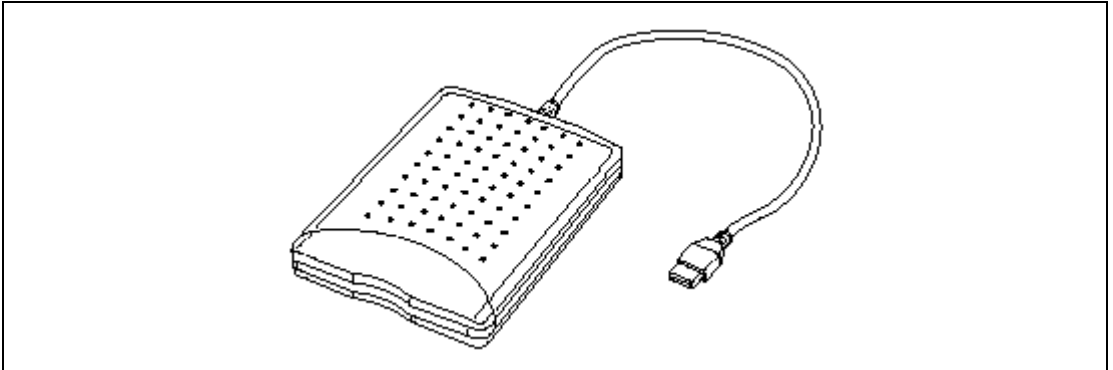
Drive letter of floppy disk drive

The drive letter will change when the primary PCI module is switched to the standby PCI module while the Windows 2000operating system is in operation.   The drive letter of the floppy disk will be determined as follows:

"A" will be assigned to the floppy disk drive for the PCI module that is operating as the primary PCI module during Windows 2000 operating system boot-up.   "B" will be assigned to the floppy disk drive for the standby PCI module.

Only the floppy disk drive of the primary PCI module will be recognized by the Windows 2000 operating system.   The floppy disk drive of the secondary PCI module will not be recognized. (Only one floppy disk drive is recognized at any given time.)

Ex) Primary PCI module connects the floppy disk drive to the group 1 for the first time, initial floppy disk drive connection made when the primary PCI module is group 1.

Primary PCI module

PCI module (for group 1):   A drive

PCI module (for group 2):   B drive

> **IMPORTANT:** In the event that the active PCI module switches to the standby PCI module due to a failure while the system is in operation, the floppy disk drive letter will change at the point PCI module switches to the standby module.

Insert/Remove Floppy Disk

Before inserting a floppy disk into the drive, make sure that NEC Express5800/ft series is on and that the drive's USB cable is connected to the USB connector at the back of the server.

Insert a floppy disk into the drive firmly with the label side up and its protective shutter facing the drive.

> **NOTES:**
>
> ■ 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 NEC Express5800/ft 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.

> **NOTE:** Before removing a floppy disk, make sure that the 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 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.   To write-protect a 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 disks that are included with NEC Express5800/ft series.)

CD-ROM Drive

NEC Express5800/ft 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.   Otherwise, there are risks of a burn, injury, or damage to physical assets.   For details, see safety precautions in Chapter 1.   ■ Do not leave the CD tray ejected.

When you cannot eject a CD-ROM

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

Manual release hole
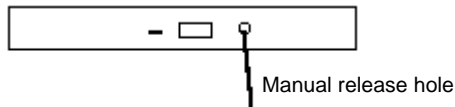
  1.   Press the POWER switch to power off the server.

  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 to the right of the eject button 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.

Use of CD-ROM

Observe the following when you use a CD-ROM on NEC Express5800/ft 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.

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Chapter 3

Setup

This chapter describes setup procedures to make NEC Express5800/ft series ready for use.

BEFORE SETUP

This section describes the setup procedures of your server.   Set up the hardware first.

Setup of Hardware

Set up the hardware as follows:

Procedures are different between the standard configurations and the custom configurations of "build-to-order".

- Standard configurations

   1. Install the optional memory and/or CPU purchased separately (for the NEC Express5800/ft series supporting the expansion of CPU). (See Chapter 8)

IMPORTANT: Install hard disks and optional PCI boards after the setup of the operating system is completed.

   2. Install NEC Express5800/ft series in a most suitable place (environment).

   3. Connect the display unit, external USB-FDD, mouse and keyboard to the server.

IMPORTANT: Connect peripherals such as external backup device to the server after the setup of the operating system is completed.

   4. Connect the accessory power cord to the receptacle on the server and an AC outlet.

   5. Change the BIOS settings depending on the configuration of the server and system uses.

      See the sample setup shown in Chapter 4.

IMPORTANT: Set BIOS correctly depending on your environment. Make sure that the date and time are set correctly.

- Custom configurations for "Build-to-Order"

    1. Confirm that options specified in "Build-to-Order" are all installed.

    2. Install NEC Express5800/ft series in a most suitable place (environment).

    3. Connect the display unit, external USB-FDD, mouse and keyboard to the server.   And connect the optional PCI card and external devices.

IMPORTANT: Connect peripherals and PCI card with cables.

    4. With the attached power cord, connect the server to an AC outlet.

    5. Change the BIOS settings depending on the configuration of the server and system uses.

       See the sample setup shown in Chapter 4.

IMPORTANT: Set BIOS correctly depending on your environment. Make sure that the date and time are set correctly.

Setup of Windows 2000 Advanced Server

After completing hardware setup, set up the Windows 2000 Advanced Server.   Procedures are different depending on your hard disks or whether to install it for the first time.

SETUP OF HARDWARE

Follow the procedures below to make NEC Express5800/ft series ready for power-on:

Unpacking

NEC Express5800/ft series comes with various accessories.   See the component list to make sure everything is included and check the individual components.   If some component is missing or damaged, contact your sales agent.

IMPORTANT: Accessories

- 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 NEC EXPRESSBUILDER components, see the attached list.

- Always mail the software registration card attached to the operating system after filling the proper information in the card.

- 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.

Installation

This section describes installation of NEC Express5800/ft series.

Tower Model

> **IMPORTANT:** NEC Express5800/ft series is a precision instrument.   You should ask maintenance personnel to install it.

Select a suitable site for tower model.

⚠ **CAUTION**

Observe the following instructions to use the equipment safely.   Failure to follow these instructions could cause a burn, injury, or damage to physical assets.   For details, see safety precautions in Chapter 1.

- Do not lift the equipment alone.
- Do not install the equipment in non-designated places.

Close enough to connect the mouse and the display.

Room that can maintain the following conditions during operation:
Temperature: 10 to 35ºC
Humidity: 20 to 80% (non-condensing)

100V - 120 V or 200V - 240 V parallel bi-polar power outlet with grounding

Floor or a level and robust desk or table.

Wall outlet within the reach of supplied power cord.

Clean and tidy room

Place having a space enough to fully open the front door (The front door extrudes about 50 mm from the right side of the server when fully opened.)

UPS to prevent momentary voltage drop due to power failure or lightning *
* Optional.   UPS is recommended for best use of features of ft server.

* It is recommendable to use the server in a room where temperature can be kept between 15 and 25ºC.

Do not install NEC Express5800/ft series in such places as listed below.   Otherwise, the server may malfunction.

- Place where temperatures change widely (near a heater, air conditioner, or refrigerator).

- Place that is subject to intense vibration.

- Place where corrosive gas (sodium chloride, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, or ozone) is generated, or a place that is close to chemicals or exposed to chemicals.

- Place whose floor is covered with non-antistatic carpet.

- Place that may be subject to falling objects.

- Place where you may step or trip on the power cords or interface cables.

- Place that is close to some equipment that generates intense magnetic field (e.g., TV set, radio, broadcasting/communications antenna, power transmission wire, and electromagnetic crane). (If unavoidable, contact your sales agent to request proper shield construction.)

- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption.

- Place that is close to some equipment that causes power noises (e.g., sparks caused by power-on/off using a relay).   If you must install the server close to such equipment, request your sales agent for separate power cabling or noise filter installation.

It takes at least four people to carry the server; hold it firmly by its bottom and place it slowly on the selected site.

IMPORTANT: Do not hold the front door to lift it, or it may become detached and fall down.

After placing the main cabinet, lock its two front casters and screw the attached four stabilizers on the cabinet adjusting their height.
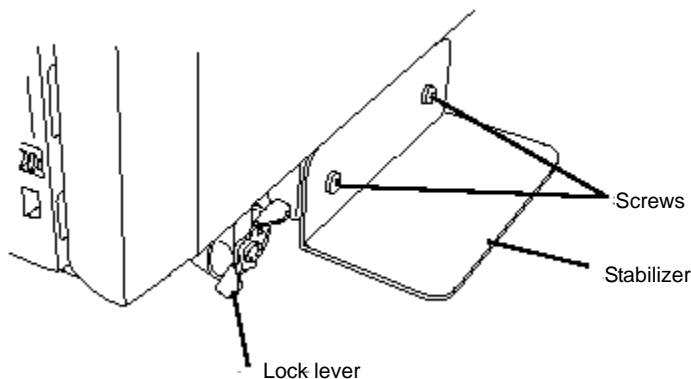
After fastening the main cabinet, open its front door to mount the CPU and PCI modules.   For details, see the following section "Installation of Rack-mount Model."   Procedures are basically the same for the tower model except that its modules are mounted vertically instead of horizontally.

IMPORTANT: Follow the procedures below to install the CPU and PCI modules. Note the followings before installing them.

■ Confirm the main cabinet is immobilized.

■ Place removed modules to the side of the system.   Do not place modules   on top of the system.

■ It takes at least two people to mount the modules; mount them slowly and carefully.

■ If you cannot install modules smoothly, remove them and try again.

■ Install the CPU modules in the left two slots, the PCI modules in the right two slots.

■ Perform installation from the left slots.

Installation of Rack-mount Model

IMPORTANT: NEC Express5800/ft series is a precision instrument.   You should ask maintenance personnel to install it.

You can mount NEC Express5800/ft series on a rack that conforms to the EIA standards.   To install a rack, contact your sales agent or maintenance personnel.

⚠ CAUTION

Do not attempt to install the server.

To avoid the risk of personal injury, users should not attempt to install the server into the rack assembly.   The server should be installed in the rack only by trained maintenance personnel.
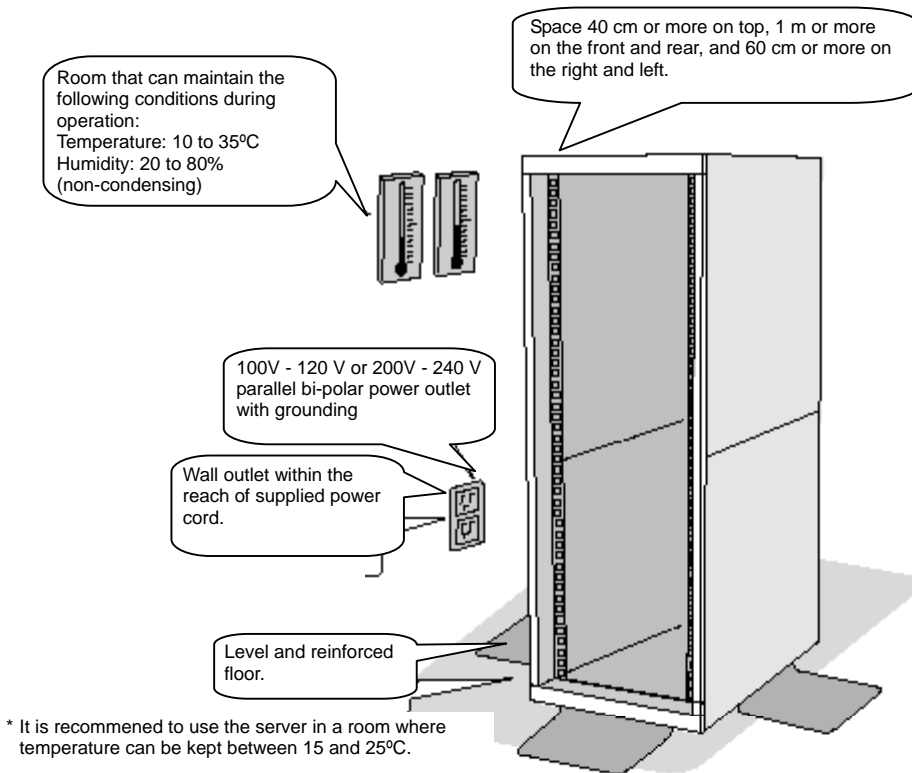
Space 40 cm or more on top, 1 m or more on the front and rear, and 60 cm or more on the right and left.

Room that can maintain the following conditions during operation:
Temperature: 10 to 35ºC
Humidity: 20 to 80% (non-condensing)

100V - 120 V or 200V - 240 V parallel bi-polar power outlet with grounding

Wall outlet within the reach of supplied power cord.

Level and reinforced floor.

* It is recommened to use the server in a room where temperature can be kept between 15 and 25ºC.

⚠ **WARNING**
Observe the following instructions to use the server safely.   Failure to follow these instructions could lead to a death or serious injury.   For details, see safety precautions in Chapter 1. ■ Do not install the equipment in non-designated places. ■ Do not connect the ground wire to a gas pipe.

⚠ **CAUTION**
Observe the following instructions to use the equipment safely.   Failure to follow these instructions may cause a burn, personal injury, or damage to physical assets.   For details, see safety precautions in Chapter 1. ■ Do not carry or install the equipment alone. ■ Do not install the equipment in such a manner that its weight is imposed on a single place. ■ Do not assemble or disassemble parts alone. ■ Do not pull a device out of the rack if it is unstable. ■ Do not leave two or more devices pulled out from the rack. ■ Do not install excessive wiring.

Do not install NEC Express5800/ft series in such places as listed below.   Otherwise, the server may malfunction.

■ Place where you cannot pull out the components fully.

■ Place that cannot sustain the total weight of the rack system.

■ Place where you cannot mount stabilizers or where you cannot perform installation without quake-resistant engineering.

■ Place whose floor is uneven or inclined.

■ Place where temperatures change widely (near a heater, air conditioner, or refrigerator).

■ Place that is subject to intense vibration.

■ Place where corrosive gas (sodium chloride, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, or ozone) is generated, or a place that is close to chemicals or exposed to chemicals.

■ Place whose floor is covered with non-antistatic carpet.

■ Place that may be subject to falling objects.

■ Place that is close to some equipment that generates intense magnetic field (e.g., TV set, radio, broadcasting/communications antenna, power transmission wire, and electromagnetic crane). (If unavoidable, contact your sales agent to request proper shield construction.)

■ Place where the power cord of the server must be connected to an AC outlet that shares

the outlet of another device with large power consumption.

■ Place that is close to some equipment that causes power noises (e.g., sparks caused by power-on/off using a relay).   If you must install the server close to such equipment, request your sales agent for separate power cabling or noise filter installation.

IMPORTANT: Temperature increase inside the rack and airflow

If you install several components or the ventilation isn't good inside the rack, the internal temperature may increase due to heat emitted from the components.   When the operating temperatures of NEC Express5800/ft series (10° to 35°C) are exceeded, there is a risk of malfunction.   You must take adequate precautions and measures for airflow inside the rack as well as in the room so that the internal temperature can be kept within this range during operation.

Connection

Connect peripheral devices to NEC Express5800/ft series.   The server is provided with connectors for wide variety of peripheral devices on its front and rear.   The figure below illustrates available peripheral devices for the server in the standard configuration, and locations of the connectors for the devices.   After connecting t the peripheral devices, connect the provided power cord with the server, then plug the power cord into the power outlet.

⚠ **WARNING**
Observe the following instructions to use the server safely.   Failure to follow these instructions could lead to a death or serious injury.   For details, see safety precautions in Chapter 1. ■ Do not hold the power plug with a wet hand. ■ Do not connect the ground wire to a gas pipe.

⚠ **CAUTION**
Observe the following instructions to use the equipment safely.   Failure to follow these instructions may cause a burn, personal injury, or damage to physical assets.   For details, see safety precautions in Chapter 1. ■ Do not plug the power cord in a nonconforming outlet. ■ Do not plug too many cords in a single outlet. ■ Do not plug the cord insecurely. ■ Do not use nonconforming power cords.

IMPORTANT:

- Power off the server before connecting peripheral devices, with the exception of peripherals with USB interface.   Connecting a powered peripheral device to the powered server will cause malfunctions and failures.

- To connect a third-party peripheral device or interface cable to the server, check with your sales agent to see if they are compatible with NEC Express5800/ft series.   Some third-party devices may not be used with the server.

- The total cable length of SCSI device connections is up to 6 m, including the internal SCSI cables.

- The serial port connectors are reserved for maintenance.

A tower model is shown here for convenience of explanation.   However, the steps are the same for a rack-mount model except that its modules are mounted horizontally.

IMPORTANT: Place the USB floppy disk drive on top of the tower cabinet. However, to place it on a rack-mount model, put a distance of one unit between the disk drive and the module.
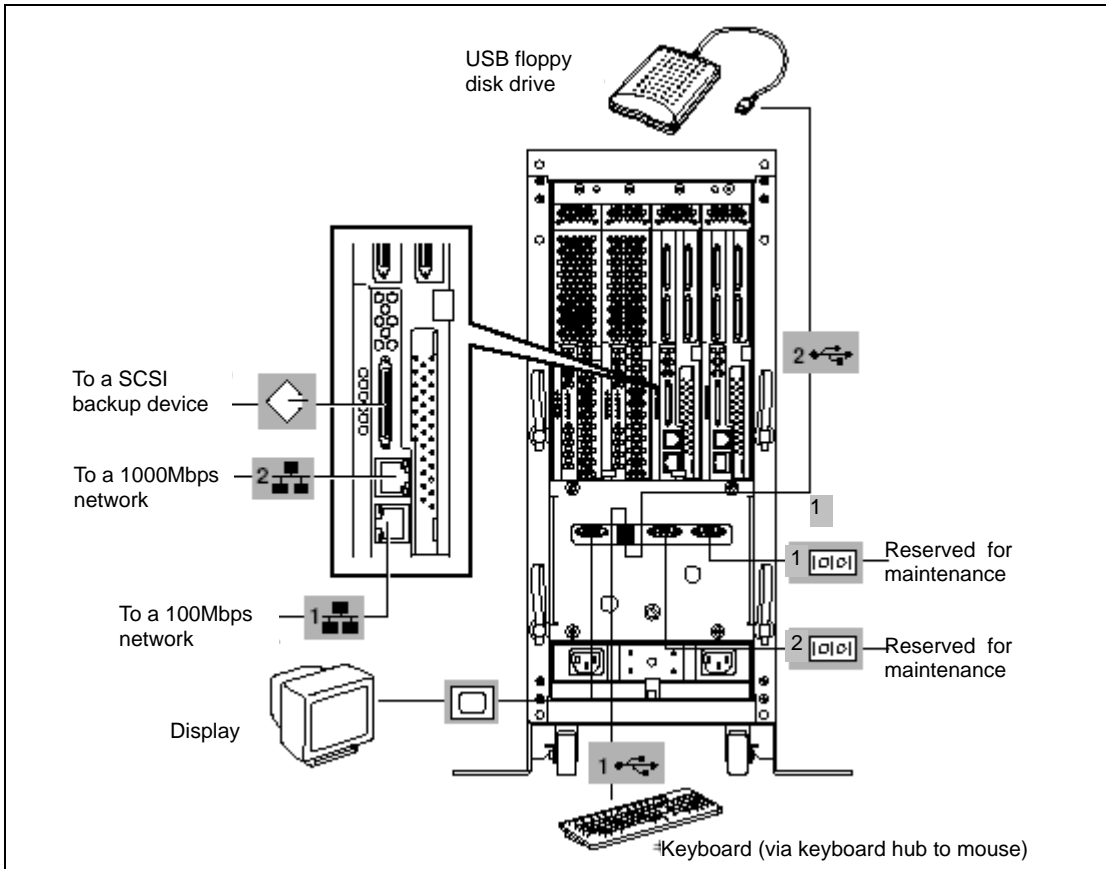
IMPORTANT: Connection of optional devices

- In the case of standard configuration, you need to complete setup of the operating system before mounting optional PCI cards or hard disks that you bought separately.

- In the case of "Build-to-Order" configurations, if N8803-030 or 031 is mounted, be sure to connect cables to the additional cabinets before going on to the next steps.

After connecting cables to PCI modules, secure them with the cable ties.

<Tower model>
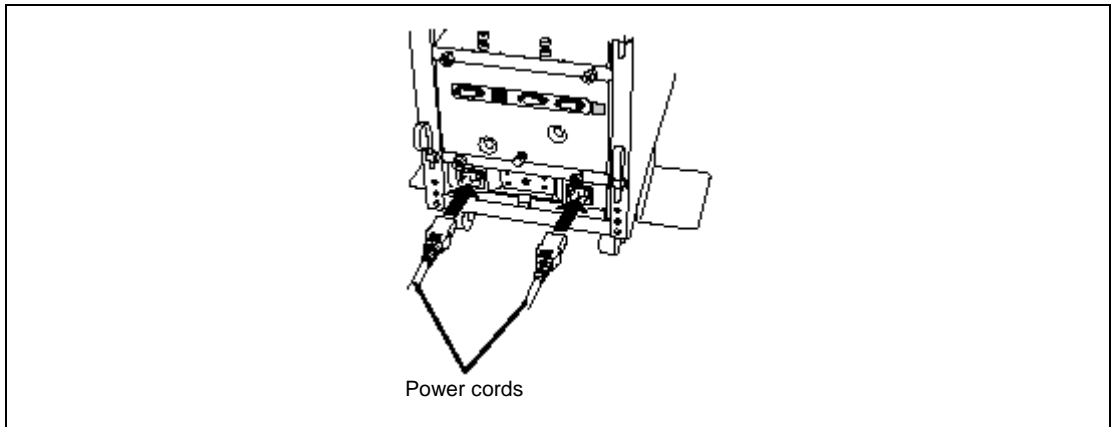
Power cords

When completing connection to peripheral equipment, connect the two provided power cords to the server.   After that, secure the cables with the cable tie provided in the server.

Connect the plug at the other end of the power cord to a wall outlet with parallel double-pole grounds provided or to an uninterruptible power supply (UPS).

To use the functions of the server, you should connect the server to the UPS.

IMPORTANT:

- Be sure to use both of the power cords to use ft series functions.

- If both PCI modules are mounted, the one you plug in first will become the primary module. The power connector A is used for Group 1; the power connector B is for Group 2.

- The module whose POWER switch LED is on is the primary.

To connect the power cord from the server to an uninterruptible power supply (UPS), use service outlets on the rear of the UPS.

The UPS service outlets are categorized into two groups: SWITCH OUT and UN-SWITCH OUT. (They may be called "OUTPUT1" and "OUTPUT2".)

To control power supply with an application (NEC ESMPRO/UPSController) that controls the UPS, connect the power cord to a SWITCH OUT outlet.

For constant power supply, connect the power cord to a UN-SWITCH OUT outlet.   (Connect the modem that is in service for 24 hours to this outlet.)

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

Select [System Hardware] → [AC-LINK] on the BIOS setup utility and change parameters.   See Chapter 4 for details.

< Example>

UN-SWITCH OUT
(OUTPUT2)

SWITCH OUT
(OUTPUT1)
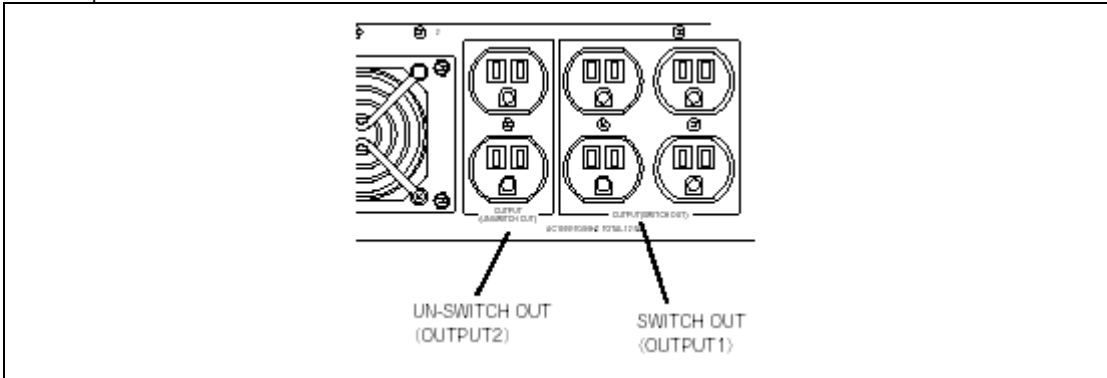
Setup of Windows 2000 Advanced Server

Set up Windows 2000 Advanced Server and the system after hardware installation.   When reinstalling the system, also see this section.

IMPORTANT:
- Be sure to use the methods described here.   If you use the other ways, the installation of Windows 2000 Advanced Server will fail.

- The status LEDs of CPU and PCI modules stay red; this is not a failure of the module. When the setup is finished and the duplex module is established, these LEDs will turn green.   For details, see "LEDs" in Chapter 2.

   ■ ft series Setup

   The ft series Setup is the install program for the NEC Express5800/ft series.   The ft series Setup helps you to install Windows 2000 Advanced Server.   You can use the ft series Setup is for reinstalling Windows 2000 Advanced Server to your server as well.

IMPORTANT: Using the ft series Setup will format your system disk.

   The "NEC EXPRESSBUILDER" CD-ROM that comes with your server is used to run the ft series Setup program.

   You will also use the ft series Setup when you reinstall the operating system.

IMPORTANT:

If your computers have Windows 2000, Windows NT, or Windows 95/98/Me that communicate with the NEC Express5800/ft series through TCP/IP protocol, make the following settings for each computer:

(1) Copy WINNT\W2K\FTREG.EXE from the NEC EXPRESSBUILDER CD-ROM into an arbitrary directory.
(2) Activate the command prompt, enter desired directory for copying the above file, and then enter the following command:
FTREG.EXE
This setting is to avoid a timeout caused by non-communication state between the NEC Express5800/ft series and computers connected by the LAN protocol that may occur immediately after the NEC Express5800/ft series startup or a CPU module reinstallation (dual processing).
Non-communication time immediately after the NEC Express5800/ft series startup or module reinstallation is proportional to the size of memory mounted.

Memory size	Non-communication time
256MB	About 2.3 seconds
512MB	About 4.7 seconds
1GB	About 9.3 seconds
2GB	About 18.6 seconds
3GB	About 27.9 seconds

This setup program sets the following Windows registry:

■ Windows NT or Windows 2000:

Registry key:
   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters
Values:
   TcpMaxConnectRetransmissions
   Type: REG_DWORD
   Set value: 5
Values:
   TcpMaxDataRetransmissions
   Type: REG_DWORD
   Set value: 8
Values:
   TcpMaxConnectREsponseRetransmissions
   Type: REG_DWORD
   Set value: 5

■ Windows 95/98/Me:

Registry key:
   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\VxD\MSTCP
Values:
   MaxConnectRetries
   Type: String
   Set value: 5
Values:
   MaxDataRetries
   Type: String
   Set value: 8

Setup Flow

Follow the flowchart below to setup the server.   See also this section when re-installing the system.

```
          ┌──────────────┐
          │    START     │
          └──────┬───────┘
                 ↓
          ┌──────────────┐
          │ ft series Setup │
          └──────┬───────┘
                 ↓
    ┌───────────────────────────┐
    │ Setup for Failure Management │
    └──────────────┬────────────┘
                   ↓
    ┌───────────────────────────┐
    │   System Data Backup      │
    └──────────────┬────────────┘
                   ↓
          ┌──────────────┐
          │ Setup Completed │
          └──────────────┘
```
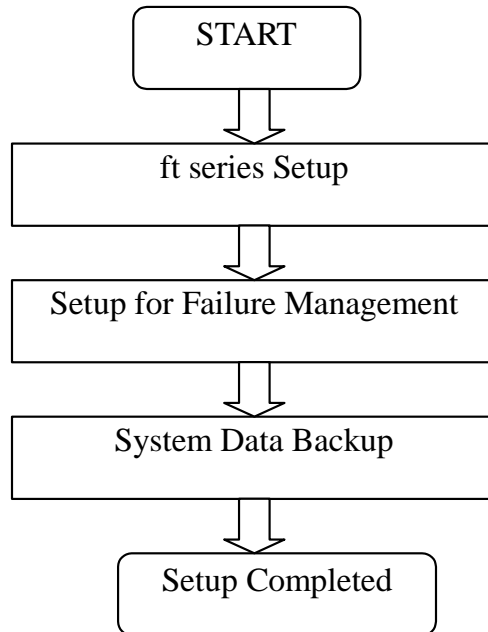
ft Series Setup

Use NEC EXPRESSBUILDER to setup the NEC Express5800/ft series.

IMPORTANT:

- NEC Express5800/ft series is a precision instrument.   You should ask maintenance personnel to install it. You perform ft series setup for reinstallation.

The ft series Setup program is exclusively used for the NEC Express5800/ft series.   To execute the setup program, simply select the item [Setup] from the menu displayed when starting the system through the provided CD-ROM "NEC EXPRESSBUILDER."   The setup program automatically performs the complete setups from hardware internal parameter/status settings to installation of the operating system (Windows 2000 Advanced Server) and various utilities.

Use the ft series Setup program for the first installation and reinstallation of the operating system. This program accomplishes complicate setups.

Before performing ft Series Setup, contact your sales agent about the latest release of ft control software.

Operating System Installation

Read the notes here carefully before installing the operating system.

Operating System Supported by the NEC Express5800/ft series

NEC Express5800/ft series supports the operating system, Microsoft Windows 2000 Advanced Server (English) (hereinafter called "Windows 2000 Advanced Server").

NEC Express5800/ft series does not support any operating systems (e.g., Windows 2000 Server and Windows NT 4.0) other than the above.

BIOS Setup

Check the BIOS settings for hardware before installing Windows 2000 Advanced Server.   The items in BIOS setting include functions (e.g., plug and play, and USB interface) that became available from Windows 2000 Advanced Server.   For details, see Chapter 4.

About Windows 2000 Advanced Server

Use the ft series Setup program to install Windows 2000 Advanced Server.   Note the following at installation

IMPORTANT:

- Complete all the setups such as the memory expansion and BIOS setting before installing Windows 2000 Advanced Server.

- NEC software package, which is to be purchased separately, is also provided with the documentation for installation.   However, see this User's Guide for installation into this server.

- After completing the ft series Setup program, make settings for failure management (e.g., memory dump (debug information) setting) according to Chapter 3.

Installation into a Mirrored Volume

To install Windows 2000 Advanced Server into mirrored volumes by using [Volume Manager for Windows], disable volume mirroring to return to the basic disk before starting the installation, and mirror the volumes when completing the installation.

To create mirrored volumes or disable/delete them, select [Volume Manager for Windows] from [Computer Management].

Size of the Partition to be Created

The required minimum size of a partition to install the system can be obtained from the following formula:

> 2048MB + paging file size + dump file size
> > 2048MB   = size required for installation
> > Paging file size (recommended)   = size of memory mounted* $\times$ 1.5
> > Dump file size   = size of memory mounted* + 12MB

IMPORTANT:

- The above paging file size is necessary for collecting debug information (memory dump).   If a value smaller than the [Recommended] value is set for the initial size of the paging file, correct debug information (memory dump) may not be collected.

- The maximum paging file size is 4095MB in a partition.   If 1.5 times the size of mounted memory is larger than 4095MB, set the size at 4095MB.

- If the size of mounted memory is larger than 2GB, the maximum size of dump file is "2048MB+12MB."

NOTE: The mounted memory size means the total of memory installed on a single CPU module

For example, if memory of 512MB is mounted, the required minimum partition size obtained from

the above formula is as follows:

2048MB +(512MB $\times$ 1.5)+(512MB +12MB)=3340MB

NOTE: In the case of ft series setup, you need to create a partition of 3072MB or more to perform auto installation.

About Auto Installation of Utilities

The ft series setup installs the following utilities automatically.

- NEC ESMPRO Agent
- VERITAS Volume Manager
- NEC ESMPRO report service for VERITAS Volume Manager

Flowchart of Setup by the ft series Setup Program

The following is the flowchart of setup by the ft series Setup program:

Preparation for installing Windows 2000

```
Make setting of BIOS
        ↓
Run [Setup] from NEC EXPRESSBUILDER top menu
        ↓
Get ready to install Windows2000 Advanced Server
and ft control software
        ↓
Enter the product ID of Windows 2000
        ↓
Specify the size of the partition to install the OS
        ↓
Insert Windows 2000 Advanced Server CD-ROM
        ↓
Copy OS module to hard disk
        ↓
Insert Windows 2000 Service Pack CD-ROM
        ↓
Automatic installation starts:
Windows2000 Advanced Server
ft control software
NEC ESMPRO Agent
VERITAS Volume Manager
        ↓
Windows2000 Setup Wizard starts
        ↓
Agree to the terms of software license
Enter user name and company name
```

```
Set dual LAN configuration
        ↓
Set dual disk configuration
        ↓
Do necessary post-installation work
        ↓
Setup completed
```

☐ : Entered or selected by the user
☐ : Proceeds automatically

Installing Windows 2000 Advanced Server

The following explains the setup procedure using the ft series Setup program:

IMPORTANT: Be sure to apply the required version of Windows2000 Service Pack. Other service packs cannot be applied.

If you apply the service pack again after the setup, see "Apply Windows2000 Service Pack."

NOTE: For the latest information on support for Windows 2000 Service Pack, contact your sales agent.

You need the following to install Windows 2000 Advanced Server:

- NEC EXPRESSBUILDER (CD-ROM)

- ft Control Software UPDATE CD-ROM

  This CD-ROM is used to update ft control software; it may not be included with the equipment. (Not included if "NEC EXPRESSBUILDER" CD-ROM contains the latest version of software programs at the time of shipment.)

- Microsoft Windows 2000 Advanced Server CD-ROM

- Windows 2000 Service Pack CD-ROM

- User's Guide (this manual)

IMPORTANT: For the latest release of ft control software and purchase of the latest version of its Update CD-ROM, contact your sales agent.

   1.   Turn on the peripheral equipment, and then the NEC Express5800/ft series.

IMPORTANT:

- You can mount only one disk into Slot #1 of the PCI module (for Group 1); the PCI module (for Group2) must be detached.   If more than one disk is mounted, you cannot specify the disk to perform installation.   If the PCI module (for Group2) is attached, the system may not recognize the hard disk during installation.

- Before starting setup, attach all CPU modules.

- Detach all LAN cables.

- Detach all optional PCI boards before starting setup.

   2.   Change the BIOS setup.

      Select [Advanced] → [Monitoring Configuration], and select [Disable] for [Boot Monitoring].   For details, see Chapter 4.

IMPORTANT: If you skip this setting, BIOS will be restarted forcefully while Windows2000

Advanced Server setup screen is shown and the setup will be unsuccessful; BIOS may repeat Windows2000 setup in an invalid manner.   In this case, you will need to restart the setup procedures from the beginning.

3. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

4. When having inserted the CD-ROM correctly, reset the system (press **Ctrl**, **Alt**, and **Delete** together), or turn the power off and then turn it on to restart the NEC Express5800/ft series.

    The system starts through the CD-ROM, and NEC EXPRESSBUILDER is activated.

5. Click [Setup].

    The "Notice" window appears.

6. Press **Enter**.

    After the system restarts, formatting starts. The following message is displayed.

    "When you use ft control software UPDATE CD-ROM, please insert CD-ROM."

7. If you have the "ft control software (Ver:n.n) UPDATE" CD-ROM, change the CD in the drive to the UPDATE CD-ROM, and press any key. If you do not have the UPDATE CD-ROM, press any keywithout changing the CD.

    When the system files are   copied, the product ID input box appears.

8. Enter the product ID of Windows 2000 Advanced Server.

    The product ID of Windows 2000 Advanced Server is printed on the label of NEC Express5800/ft series.

9. Specify the size of the partition to install the operating system.

    For details on partitions, see Chapter 3.

10. Remove the "NEC EXPRESSBUILDER CD-ROM" or the "ft control software (Ver:n.n) UPDATE CD-ROM" from the CD-ROM drive according to the message, and insert the Windows CD-ROM into the CD-ROM drive.

11. When the contents of the Windows 2000 Advanced Server CD-ROM are copied, remove the Windows 2000 Advanced Server CD-ROM from the CD-ROM drive according to the message, and insert the Windows 2000 service pack CD-ROM into the CD-ROM drive.

    Installation of Windows 2000 Advanced Server automatically starts.

IMPORTANT:

■   During automatic installation, a
window will appear to show messages
on progress and the applications will
show their install wizards.   However,
before "Windows 2000 Setup Wizard"
window appears, do not do any
operation on the screen.

■   If you close the installation progress
window, the installation will be
interrupted and Windows will be ready
for use.   However, the dual
configuration will not be established
successfully.   In this case, you will
need to install Windows 2000
Advanced Server all over again.
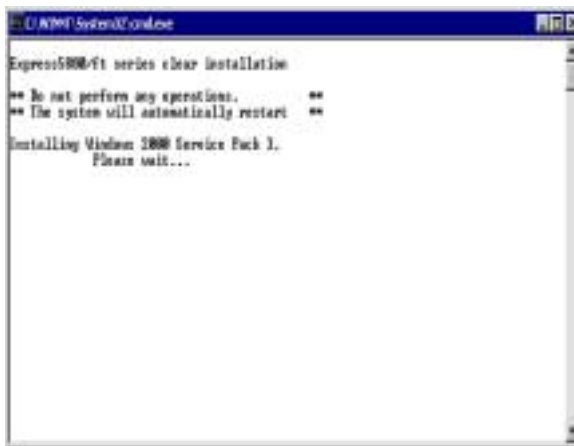
■   If you find "Previous Operating
System C:" on the OS selection screen, never select this.   If you have selected "Previous
Operating System C:," the following message will appear; press a key as instructed to return to
the OS selection screen.

Non-system disk or disk error

Press a key to reboot

When the installation is completed, the [Welcome to the Windows 2000 Setup Wizard]
screen appears.

12.   Click [Next].

The [License Agreement] screen appears.

13.   Carefully read the terms of software license agreement, and click [Agree] when you agree
to the terms, and then click [Next].   If you do not agree to the terms, click [Disagree],
and then [Next].

IMPORTANT: If you do not agree to the terms of software license, the ft series
Setup program terminates and Windows 2000 Advanced Server will not be installed.

---

14.   Enter user-specific information such as the user name and company name according to the
messages, and complete the setup.

15.   After the setup is completed and the system restarts, log on   as
Administrator.

16.   Update software programs

If you have performed installation using "NEC Express5800/ft series ft control software
(Ver:n.n) UPDATE CD-ROM," apply all update modules by referring to "ft control
software (Ver:n.n)" in the CD-ROM.   However, it is unnecessary to apply individual
update modules here because the latest update module is automatically applied from the

NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM.

– ft control software (Ver:n.n) update module
– VERITAS Volume Manager
– ESMPRO Report Service for VERITAS Volume Manager

Although NEC ESMPRO Agent is automatically installed at ft series setup, the latest module is not applied.   You need to apply an update module separately from NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM.

17.   Register VERITAS Volume Manager's authentic license key.

Perform replacement of the license key by referring to [General Procedures] – [License Procedures] – [Using the System License Command] of *VM3.1_Win2k_Users_Guide.pdf* stored on the included NEC EXPRESSBUILDER CD-ROM.   This pdf file is located in the following directory:

CD-ROM: \VXVM\VM Documentation

You will find VERITAS Volume Manager's authentic license key in an ID label that is placed on NEC Express5800/ft series.   The license key does not use the following alphanumeric characters: 1, 5, and Q.

IMPORTANT: Do not use VERITAS Volume Manager's dynamic relocation and hot spare functions for this server.

18.   After the re-startup, log on to the system as Administrator.

19.   Insert a PCI module (for Group 2).

IMPORTANT: Do not mount disks in advance into the module you are going to insert.   You will mount disks in the procedures of setting dual disk configuration.

Installation of Windows2000 Advanced Server is completed.   After checking if there are four icons for "Network and Dial-up Connections," go on to dual configuration of LAN and disk.

Setting Dual LAN Configuration

The NEC Express5800/ft series builds a dual LAN configuration by using "Stratus emb-82559 10/100 Enet Adapter" (100Base) and "Stratus emb- 82544GC Copper Gigabit Adapter" (1000Base) mounted as standard on the PCI module.

1. Click [Start] → [Settings] → [Control Panel].

    The [Control Panel] dialog box appears.

2. Double-click the [Intel(R)PROSet II] icon in the [Control Panel] dialog box.

    The [Intel(R)PROSet II] dialog box appears.

3. Select [Network Components] from Network Component Tree.   The pop-up menu appears. Select [Create New Team...] → [Fault Tolerance].
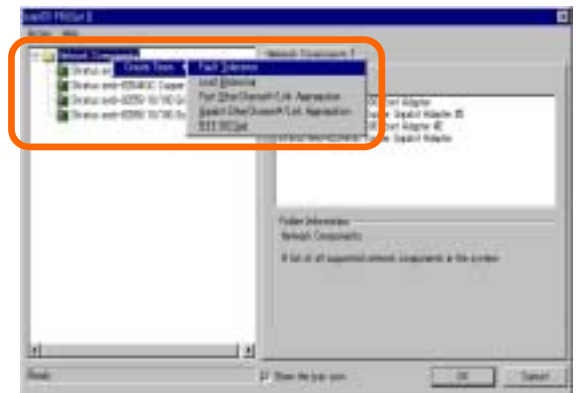
IMPORTANT: Do not select the command other than [Fault Tolerance] on the standard PCI module.

[Team #1: Adaptive Fault Tolerance Mode] is added to Network Component Tree.
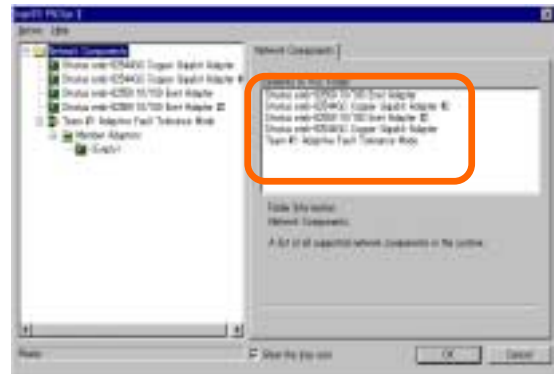
4. Select [Stratus emb- 10/100 Enet Adapter] from Network Component Tree.   The pop-up menu appears.   Select [Add to Team] → [Team #1: Adaptive Fault Tolerance Mode], and add the adapters.

    You will see the warning message when you add the team.   You can ignore this warning message by clicking [OK]. This warning message is to inform you that only one adapter is added to the team.

5. Select [Stratus emb-82559 10/100 Enet Adapter
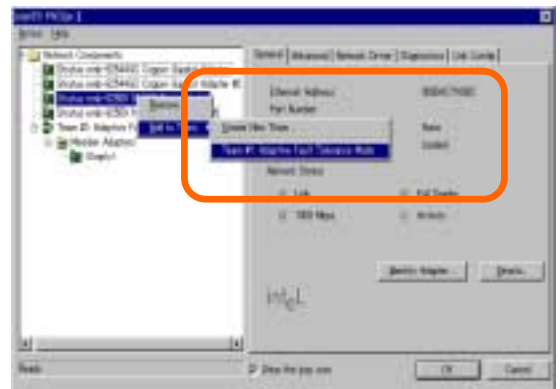
#2] from Network Component Tree in the same manner as for step 4.   The pop-up menu appears.   Select [Add to Team] → [Team #1: Adaptive Fault Tolerance Mode], and add the adapters.

IMPORTANT: Do not set [Preferred Primary] or [Preferred Secondary] to each adapter.

6. Make settings of dual configuration for "Stratus emb- 82544GC Copper Gigabit Adapter" (1000Base) as well.

   Perform Steps 3 –5 in the same manner, replacing [Stratus emb-82559 10/100 Enet Adapter] with [Stratus emb- 82544GC Copper Gigabit Adapter].

   In Step 3, you can also select [Load Balancing].   In this case, [Team #X: Adaptive Load Balancing Mode] will be added.

7. Click [OK].

   The [Intel(R)PROSet II] dialog box closes after a while, and the settings become effective.

   ### IMPORTANT:

   - [Digital signature not found] dialog box may appear (several times).   If it appears, click [Yes].

   - After the settings of dual configuration, "Intel(R) Advanced Network Services Virtual Adapter" will appear on [Network and dialup connection] or [Device Manager] dialog box.   Do not "disable" the status of this adapter.   If you enable it again, the system may become unstable and you may need to restart it.
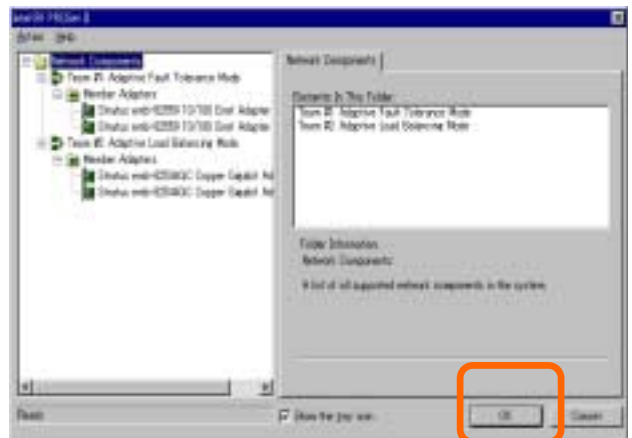
Setting Dual Disk Configuration

NEC Express 5800/ft series secures data by mirroring disks.   Be sure to make dual disk settings.

NOTE: To set dual disk configuration, log on as "Administrator" or a member of the group "Administrators".

IMPORTANT:

- Make sure to mirror the volumes not only when installing an operating system but also when creating partitions.

- After upgrading the volume that contains system partition to dynamic disk, set the disk for mirroring to the slot. Do not set the disk to the slot before upgrading.

- Set the mirroring for the disk with the same target ID. See "Hard Disk configurations that can be built by VxVM on the NEC Express5800/ft series" in Chapter 5 for details.

1. Select [Start] → [Setting] → [Control Panel], and then [Control Panel] screen appears

2. Double-click [Administration Tool], double-click [Computer Management], and then [Computer Management] window appears.

3. In the Tree view, under [Storage], click [Volume Management] → [VERITAS Enterprise Administrator].

4. In the [Connection] dialog box, select "localhost (or machine name)" in [Host name].
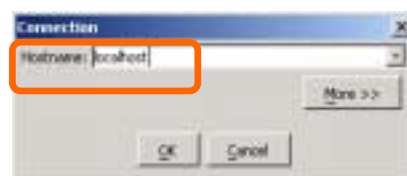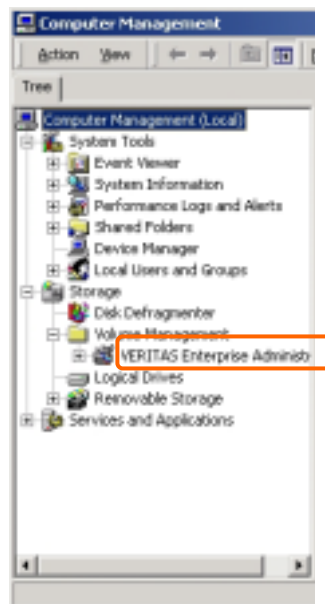
5. In the tree under localhost (or machine name) of [VERITAS Enterprise Administrator], click [Disk group] → [Basic group] to list hard disks on the right panel.   Right-click the disk on which the system is installed, and select [New dynamic disk group].

A Dynamic Disk Group creation wizard will appear.
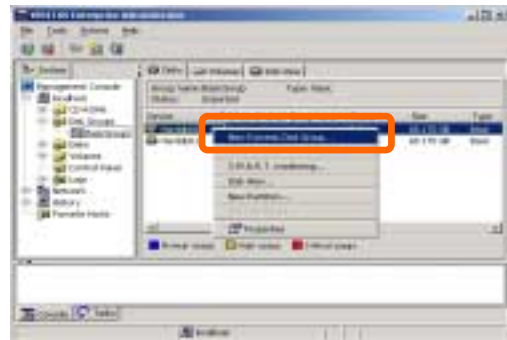
6. Enter "DynamicGroup" in [Group name], and select the [Create Windows2000 Disk Management compatible group] check box.

7. Check to see if the selected disk is the one where you installed the system, and click [Next].

8. Check the list of disks you are going to upgrade and click [Next].
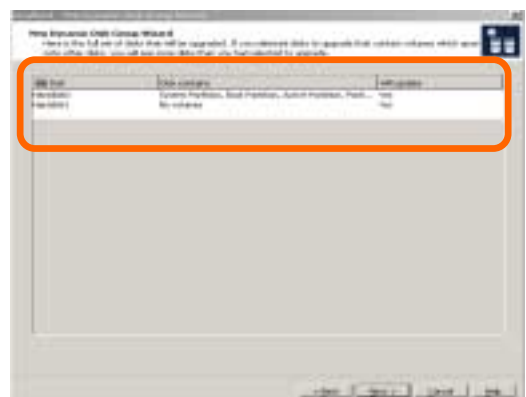
9. Click [Finish] to upgrade the disk to a dynamic disk.

If the selected disk contains a system partition, you will have to restart the computer to complete the upgrade of the disk. The message also states that file systems on any of the disks to be upgrade will be forcedly dismounted. This means if any file systems are in use at the time of upgrade, they will be dismounted, so that the upgrade can continue.

Before restarting the server, check if the PCI module has a dual configuration.

IMPORTANT: Note the following when restarting the machine for dual disk settings:

- For the upgrade to the dynamic disk in which the system is installed, machine restarting may be requested several times. Always restart the machine after confirming the PCI module duplication. When the machine is restarted before the PCI module duplication, the dual LAN may become invalid If the dual LAN becomes invalid, make the settings of dual Lan again.

- Check the PCI module duplication as follows:

  The PCI module duplication is valid if both the status LED of PCI module #1 and that of PCI module #2 are lit green. See "PCI Module Status LED 1/2" for details.

10. After reboot, when [VERITAS Volume Manager] appears, make settings of the disk to mirror volumes.

When [Disk Upgrade and Signature] wizard appears, perform a disk upgrade and signature.

> **IMPORTANT:** A disk for mirroring should be placed in its corresponding slot.
> See "3.5-inch Hard Disk Drive" in Chapter 8 for details.

11. Choose "Display a list of the known drivers for this device so that I can choose a specific driver", click [Next].

12. Check and see that the device model is displayed as "Stratus Dual initiated disk Device" in the list,   and then keep on clicking [Next] until [Finish] appears.

13. If the disk that has been set is not dynamic dick, upgrade the disk to dynamic disk.

14. Right-click a volume and then click [Mirror]→[Add] to access the Add Mirror Wizard.

15. When the Add Mirror wizard appears, check [Select disk manually], select a disk to mirror, and click [Select].
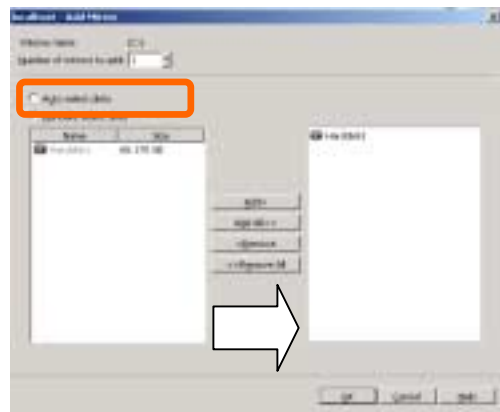
16. After checking the settings, click [OK].

TIPS: To add mirror to the volume having 18-GB, it will take about 37 minutes.

IMPORTANT: If you reboot system while mirroring the volume, mirroringwill not complete. Until the mirroring is finished, DO NOT reboot the system.

And then follow the instructions on the screen to continue operation.

Procedures after Completion of Installation

Then make the following settings.

- Connections and settings of several option devices

  If there are optional PCI boards and/or peripherals to be connected, turn off the power of the server and connect them referring to "Setup of Optional PCI Module" in Chapter 8 and the operation manuals of the peripheral devices. Set dual configurations after the LAN cards and hard disk drives are added. See "Setting Dual LAN Configuration" and "Mirroring the Volume with Volume Manager for Windows 2000" in Chapter 3.

- Changes to BIOS settings

  After completing the installation, start the BIOS setup utility to set [Boot Monitoring] of [Advanced] - [Monitoring Configuration] to [Enable], save the settings, and restart the NEC Express5800/ft series. See Chapter 4 for details.

- Setup for failure management

- Backup of system information

Setup for Failure Management

Make the following settings beforehand to ensure quick recovery from failure.

Setting Memory Dump (Debug Information)

This section explains the setting for collecting memory dump (debug information) in the server.

IMPORTANT: Notes on memory dump

- ■ The maintenance personnel designated by your sales agent are responsible for collecting memory dump.   Customers should make settings of memory dump only.

- ■ Sometimes a message indicating a shortage of virtual memory appears at the system startup, when a failure has occurred after making settings described here and you have restarted the system to save the memory dump.   Continue the startup.   If you restarting the system, you may not be able to collect the memory dump accurately.

Take the following steps to set memory dump:

1. Click [Start] → [Settings] → [Control Panel].

    The [Control Panel] dialog box appears.

2. Double-click the [System] icon.

    The [System Properties] dialog box appears.

3. Click the [Advanced] tab.

4. Click [Setup and Recovery...].
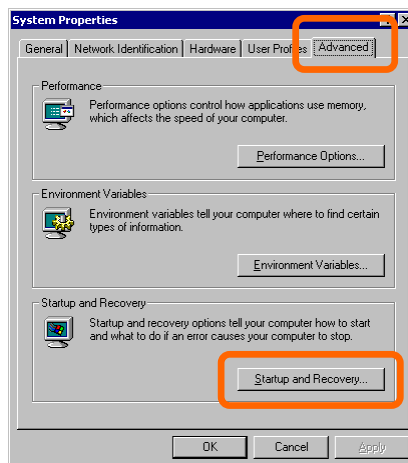
5. Enter the location, where debug information is to be written, in the text box.

When writing debug information
under the file name
"MEMORY.DMP" in the D drive:

D:\MEMORY.DMP
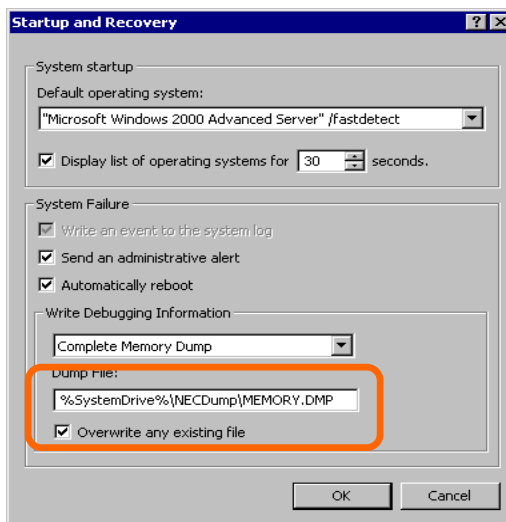
This server has the following location as a default value for installation.   It is
recommendable to store file in this default location.

%SystemDrive%\NECDump\MEMORY.DMP

IMPORTANT:

- [Full Memory Dump] should be specified for writing debug information.   However, if the
  mounted memory size is over 2GB, specify [Kernel Memory Dump]; you cannot specify [Full
  Memory Dump]

- Specify a drive which has a free space of the size of memory in the NEC Express5800/ft
  series + 12MB or more.

- If the memory has been expanded, the size of debug information (memory dump) to be
  collected changes.   Check the size of free space where debug information (memory dump) is
  to be written.   If memory of 2GB or more is mounted, the dump file size can be up to
  2048MB.   Free space of about [2048MB + 12MB] is required.

6. Click [Performance Options...].

7. Click [Change...] in the [Virtual Memory] dialog box.

8. Change the value set for [Initial Size] in the [Paging file size for selected drive] box to the
[Recommended] value or more, and then click [Set].

IMPORTANT:

- Be sure to create the file in the above size in the OS partition.   If a value smaller than the
  [Recommended] value is set for [Initial Size] of the paging file, accurate debug information
  (memory dump) may not be collected.

- For the [Recommended] value, see "Size of the partition to be created" in Chapter 3.

■   To be prepared for failure, it is recommended to press the dump button to see if the memory
     dump can be collected in normally beforehand.

■   If the memory has been expanded re-set the paging file according to the memory size

   9. Click [OK].

         A message is displayed asking you to restart the system depending on the changed settings.
         Restart the system according to the messages.

Setting Dr. Watson

Dr. Watson of Windows 2000 is a debugger for application errors.   When detecting an application error, Dr. Watson diagnoses the NEC Express5800/ft series, and records the diagnostic information (log).   Take the following steps to collect diagnostic information:

1.   Click [Start] → [Run...].

2.   Enter "drwtsn32.exe" in the [Open] box, and click [OK].

   The [Dr. Watson for Windows 2000] dialog box appears.
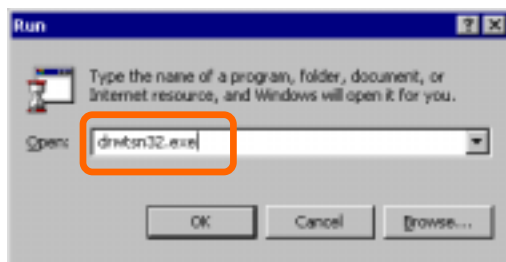
3.   Specify where you want to save diagnostic information in the [Log File Path] box.

   Diagnostic information is saved under the file name "DRWTSN32.LOG."
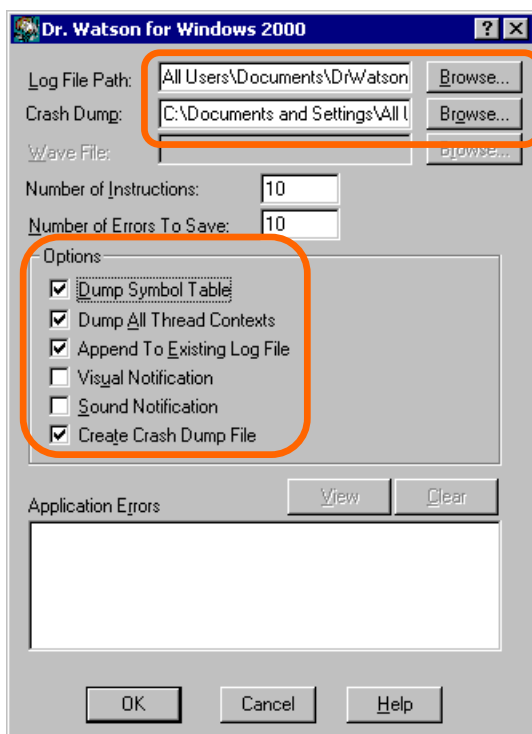
NOTE: Do not specify a network path.   Be sure to specify a path on the local computer.

4.   Specify the crash dump file save destination in the [Crash Dump] box.

TIPS: A "crash dump file" is a binary file that can be read by Windows Debugger.

5.   Select the following check boxes in the [Options] box.

   ☐ [Dump Symbol Table]

   ☐ [Dump All Thread Contexts]

   ☐ [Append To Existing Log File]

   ☐ [Create Crash Dump File]

   For the above functions, see the online help.

6.   Click [OK].

Installing a Network Monitor

A network monitor is useful for examining the causes of network failures and taking the countermeasures.   To use the network monitor, you need to restart the system after the installation. It is recommended to install the network monitor before a failure occurs.

1. Click [Start] → [Settings] → [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click the [Add/Remove Programs] icon.

   The [Add/Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Components].

   The [Windows Components Wizard] dialog box appears.

4. Select the   [Management and Monitoring Tools] check box of components, and click [Next].

5. If a message is displayed asking you to insert "Windows 2000 Advanced Server" or "Service Pack 3" disk, insert the "Windows 2000 Advanced Server" CD-ROM into the CD-ROM drive, and click [OK].

6. Click [Finish] in the [Windows Components Wizard] dialog box.

7. Click [Close] of the [Add/Remove Programs] dialog box.

8. Close the [Control Panel] dialog box.

You can also activate the network monitor by clicking [Start] → [Programs] → [Administrative Tools] → [Network Monitor].

For details on the operation, see the online help.

About Terminal Services installation

When you install Windows 2000 Advanced Server Terminal Services in Application Server mode, you should install the service in the following procedure.

1. Uninstall the hotfix of VERITAS Volume Manager.

(If the hotfix isn't applied, skip 1)

2. Uninstall the VERITAS Volume Manager.

(If the VERITAS Volume Manager isn't installed, skip 2)

From [Add/Remove Programs] on [Control Panel], uninstall the three programs in the listed order:

(1) VERITAS Volume Manager

(2) VERITAS Enterprise Administrator Service

(3) VERITAS Enterprise Administrator

3. Install the Terminal Services.

4. Install VERITAS Volume Manager.

5. Install the hotfix of VERITAS Volume Manager.

(If there is no hotfix to apply, skip 5)

TIPS: When the installation of terminal services is started, the warning for the four applications appears as you see in the figure below.   Ignore the warning because it does not show any trouble.
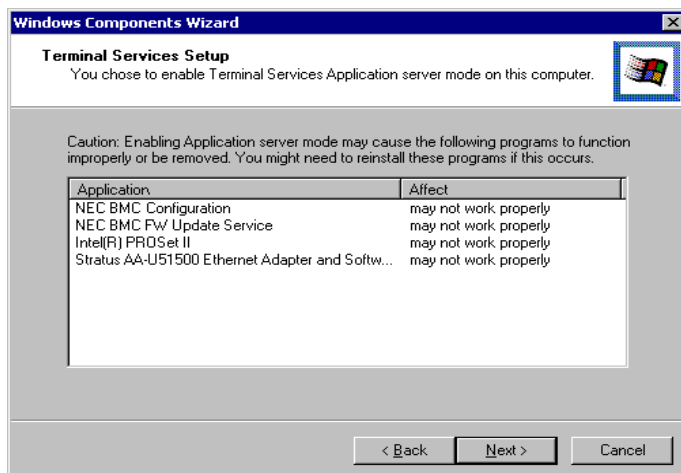
NOTE: If any application other than the four applications in the figure above appears, uninstall the application. Then reinstall it after the terminal services are installed.

Updating the System

IMPORTANT: NEC Express5800/ft series is a precision instrument.   You should ask maintenance personnel to update the system.

You will need to update the system after you repair the system using the repair process.

IMPORTANT: Applying Windows 2000 Service Pack 3

Windows2000 Service Pack 3 is pre-loaded in the NEC Express5800/ft series. If you want to reinstall Service Pack 3 for an application or a service installation, follow the steps in "Applying Windows2000 Service Pack." You do not need to use the system update function.

IMPORTANT:

- After you implement the following procedure, update a system.

- Update the system after all the optional PCI boards are removed.

    1. Log on to the system with OS installed as user with Administrator authority.

IMPORTANT: Check that the dual system is configured properly. (Check that STATUS2 LED of each PCI module stays green.)

    2. Dual LAN is canceled.

IMPORTANT: When dual LAN is disabled, a setup of LAN will be deleted. Note down the setup information.

        a. Click [Start]-[Settings]-[Control Panel].

          And then, the [Control Panel] dialog box will be displayed.

        b. Double Click the [Intel(R)PROSet II] icon on the [Control Panel] dialog box.

          And then, the [Intel(R)PROSet II] dialog box will be displayed.

c. Remove the adapter from dual configuration.

Right-click the [Stratus emb-82559 10/100 Enet Adapter] adapter on control-tree which is left side of [Intel(R)PROSet II] dialog box.
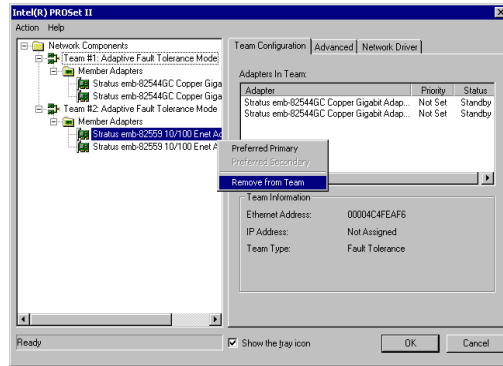
You will then see the dialogue box on the right of this paragraph. This is because one of two teamed adapters constituting dual configuration is removed.
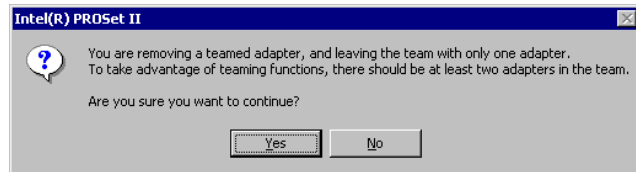
Click [Yes] button, to remove the adapter from Team.

Remove the other adapter [Stratus emb-82559 10/100 Enet Adapter] and [Stratus emb-82544GC Copper Gigabit Adapter] in the same way.

d. Right click [Team #1:Adaptive Fault Tolerance Mode] and select [Remove].
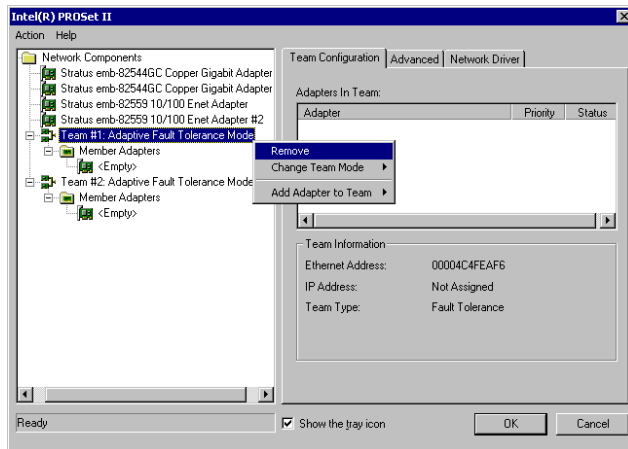
At that time, the dialog box shown on the right is displayed. This is a message for confirmation, so click [Yes] button.

Remove the [Team #2:Adaptive Fault Tolerance Mode] in the same way.
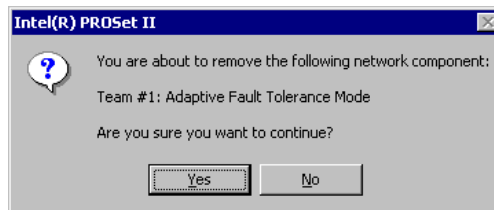
e. Click [OK] button on [Intel PROSet II] dialog box, close it, and make a setup effective.

The dual LAN will be canceled.
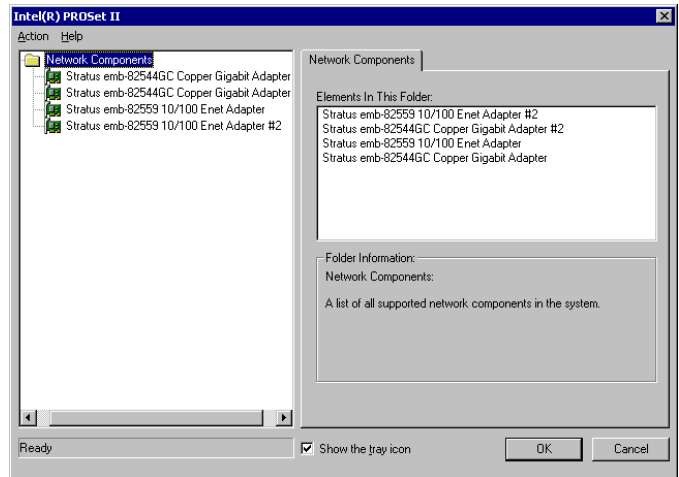
3. Uninstallation of Intel(R) PROSet II

   a. Click [Start]-[Settings]-[Control Panel].

      And then, the [Control Panel] dialog box will be displayed.

   b. Double-click the [Add/Remove Programs] icon on the [Control Panel] dialog box.

      And then, the [Add/Remove Programs] dialog box will be displayed.

   c. Select [Intel(R) PROSet II] from a list of [Currently installed programs:].

   d. Click the [Change/Remove] button.

      At that time, the message on dialog box will be displayed.

      This is a message for confirmation of deletion, so click [OK] button.

e. Click the [Close] button on the [Add/Remove Programs] dialog box to close it.

f. Reboot the system.

> **IMPORTANT:** Be sure to perform the following procedure No.6 after rebooting the system
> If you perform the next procedure (installation of PROSet II) without rebooting, PROSet II does not start after reboot.
> The system may become unstable.

4. After rebooting the system, log on to the system as a user with Administrative rights.

> **IMPORTANT:** Check the dual system is configured properly.
> (Check that STATUS2 LED of each PCI module stays green.)

5. Follow the steps below to update the system:

Apply Windows 2000 Service Pack 3 during the system update.

● If you do not have an UPDATE CD-ROM of NEC Express5800/ft series' ft control software (and use NEC EXPRESSBUILDER CD-ROM):

a) After logging in to the system as an account (such as Administrator), insert NEC EXPRESSBUILDER CD-ROM into the drive.

b) On the "Master Controller Menu" screen that appears, click [Software Setup] and click [System Update] on the menu.

c) Follow the messages that appear on the screen to continue.

● If you have an UPDATE CD-ROM of NEC Express5800/ft series' ft control software:

a) After logging in to the system as an account (such as Administrator), insert the UPDATE CD-ROM into the drive.

b) From [Start] of the taskbar, select [Specify filename and run] to run CD-ROM drive:\WINNT\W2K\UPDATE.EXE.

c) Follow the messages that appear on the screen to continue.

Applying Windows2000 Service Pack 3

To reapply Windows 2000 Service Pack 3 when you install some application on NEC Express5800/ft series, follow the steps below:

IMPORTANT: Do not apply other service pack versions.   For the latest information on support for Windows 2000 Service Pack, contact your sales agent.

1.   Insert Windows 2000 Service Pack 3 CD-ROM into the drive.

2.   Run \W2Ksp3.exe.

3.   When finished, restart the system.

4.   Start Explorer from [Program] of Start menu.

5.   Overwrite the following files by copying them:

	File names:	USBD.SYS
		OPENHCI.SYS
From:	C:/PNPDRVRS	
To:	C:/Winnt/system32/drivers	

Since the NEC Express5800/ft series module is replaced with the Service Pack module by applying Windows 2000 Service Pack 3, you will need to replace it with ft series module again. After that check to see that the file version is 1.0.1700.0 (file version is shown in the file properties).

Modules	File version
ft series module	OPENHCI.SYS: 1.0.1700.0 USBD.SYS: 1.0.1700.0
Service Pack 3 module	OPENHCI.SYS: 5.0.2195.3649 USBD.SYS: 5.0.2195.4943

6.   Restart the system.

INSTALLING MANAGEMENT UTILITIES

The provided "NEC EXPRESSBUILDER" CD-ROM contains "NEC ESMPRO Agent" for monitoring NEC Express5800/ft series and "NEC ESMPRO Manager" for managing the NEC Express5800/ft series.   Install and setup these utilities in the NEC Express5800/ft series or the computer (management PC) that manages the NEC Express5800/ft series.

NEC ESMPRO Agent

NEC ESMPRO Agent is automatically installed by executing the "ft series Setup program."   (It has been installed on the hard disk of a pre-installed model at shipment.)

Click [Start] → [Programs], and make sure that the installed utility folder exists.   If it has not bee installed while setting up the ft series, see Chapter 5 and install it.

IMPORTANT: Make sure that NEC ESMPRO Agent is installed because it is indispensable for continuous operation of NEC Express5800/ft series.

To set details about NEC ESMPRO Agent, double-click the [NEC ESMPRO Agent] icon in the [Control Panel] dialog box. The properties dialog box appears for changing the settings.

For details on the set items, see the online help displayed by clicking on [Help].
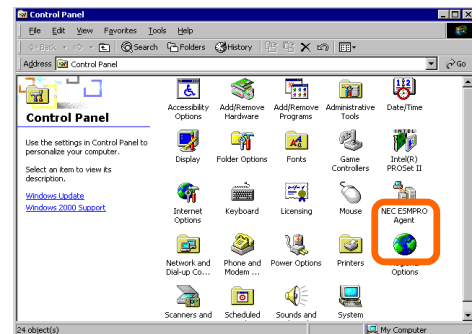
NEC ESMPRO Manager

Linked with NEC ESMPRO Agent installed in the server, NEC ESMPRO Manager monitors the server status and receives alerts from the server.
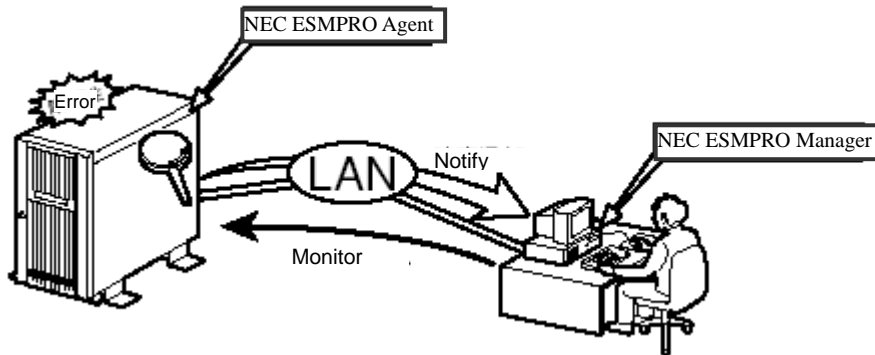
When a failing module in the server is to be replaced, NEC ESMPRO Manager enables logical module disconnection from the server and logical installation after module replacement.

For the installation of NEC ESMPRO Manager and notes on the operation, see Chapter 5.

NEC MWA

Management Workstation Application (NEC MWA) is an application program for remote management of NEC Express5800/ft series from a management PC (a computer with the NEC ESMPRO Manager running) through a network.   The MWA provides management on the process from power-on, POST execution, to OS boot-up of the server.

- Checking the BIOS setup of the NEC Express5800/ft series from the management PC
- Starting the server through the floppy disk in the floppy disk drive of the management PC

To establish communication between the NEC Express5800/ft series and the management PC via a LAN, WAN, or serial port, install "MWA Manager" in the management PC.

For the installation of NEC MWA and notes on the operation, see Chapter 5.

Global Array Manager

Global Array Manager (hereinafter called GAM) is a utility that manages and maintains N8190-82F/82AF Fibre Channel Disk Array Unit. For GAM functions and installation, see the manuals provided with N8190-82F/82AF Fibre Channel Disk Array Unit.

BACKUP OF SYSTEM INFORMATION

After setting up the system, back up the system information using the Off-line Maintenance Utility.

Without backup for system information, the information and settings that are specific to your server cannot be restored if the server is repaired.   Take the following steps to make a backup copy of the system information:

1.   Get a 3.5-inch floppy disk.

2.   Insert the "NEC EXPRESSBUILDER" CD-ROM into the CD-ROM drive of the server, and restart the system.

   NEC EXPRESSBUILDER is activated and the [NEC EXPRESSBUILDER Top Menu] is displayed.

3.   Select [Tool] → [Off-line Maintenance Utility].

4.   Select [Save System NVRAM/ROM Data] from [System Information Management].

   Follow the instructions you see on the screen.

SETTING UP THE OPTIONAL BOARDS

If one or more optional boards for the NEC Express5800/ft series including the SCSI controller and network boards are inserted, see "Setup of Optional PCI Board in Chapter 8.

IMPORTANT: NEC Express5800/ft series is a precision instrument.   You should ask maintenance personnel to set up optional boards.

CONFIRMATION OF THE ft CONTROL SOFTWARE VERSION

The following describes how to check the version of ft control software, which consists of various types of software for fault tolerance.   Perform the procedure when you need to check the ft control software version of the current system before adding units or attachment to NEC Express5800/ft series.

A tool for checking the version is provided.   Confirm the version afollowing the steps below:

1. Log in the system as an authorized Administrator.

2. Insert the provided "NEC EXPRESSBUILDER" CD-ROM in the CD-ROM drive.

Use the "NEC Express5800/ft series ft control software UPDATE" CD-ROM, if it is available.

3. Run the tool installed in the CD to check the version of ft control software.

Tool name: ftVerChk.exe

Location: <CD-ROM drive>: FTSVTOOL\VERSION

The ft control software version of the current system is displayed.
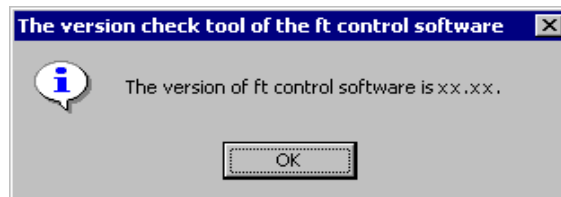
This completes confirmation of the version.

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Chapter 4

System Configuration

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

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

SYSTEM BIOS ~ SETUP ~

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

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

IMPORTANT:

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

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

- Do not set any password before installing the OS.

- The server contains the latest version of the SETUP utility.   Dialog boxes 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. If the NEC 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, Press <F12> to 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 <F1> to resume, <F2> SETUP, <F12> Network
```

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.)

Indicates the current menu.

```
                       Phoenix BIOS Setup Utility
   Main        Advanced        Security      System Hardware      Boot      Exit

                                                        Item Specific Help
  ▶ Thermal Sensor
  ▶ Wake On Events
    AC-LINK:                 [Last State]            Thermal Sensor Menu.
    Error Log Initialization:    Enter
  ▶ Console Redirection
  ▷ ft Memory




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

Setup item menu

Indicates there are submenus.

Online help window

Parameter (high-lights upon selection) menu

Explanation of key function menu

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.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "✳") is selected, these keys are disabled.
Enter	Press **Enter** to choose 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:	Sets the default parameter to the parameter of the currently displayed item. (The default parameter may differ from the factory setting.
F10:	Save configuration values and exit.

Configuration Examples

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

Link with Management Software

To link thermal sensor monitoring feature with NEC ESMPRO

Select [System Hardware] → [Thermal Sensor] → [Thermal Sensor] → [Disabled].

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

Select [System Hardware] → [AC-LINK] → [StayOff].

To use the management PC with "NEC MWA" installed for remote operations

■   Remote operation via LAN

Select [Advanced] → [Advanced] → [RomPilot Support] → [Enabled].

■   Remote operation via direct connection using cross cable

Select [System Hardware] → [Console Redirection] → [Direct].

■   Remote operation via WAN

Select [System Hardware] → [Console Redirection] → [Modem].

UPS

To link power supply with the UPS

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

Select [System Hardware] → [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 [System Hardware] → [AC-LINK] → [Last State].

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

Select [System Hardware] → [AC-LINK] → [StayOff].

Keyboard

To set Numlock and key repeat

Select [Advanced] → [Numlock] and set each item.

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] → [Power Switch Mask] → [Unmasked].

Select [Security] → [Power Switch Mask] → [Masked].

> **IMPORTANT:** Masking the POWER switch disables forced
> shutdown (see Chapter 7) as well as power on/off using the POWER
> switch.

External Devices

To setup external devices

Select [Advanced] → [Peripheral Configuration] and setup each device.

Internal Devices

To install the disk array controller board or graphic accelerator board

Select [Advanced] → [Option ROM] [PCI Slot n] → [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] → [Advanced] → [Boot-time Diagnostic Screen] → [Enabled].

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

To control from the HW console

■ Remote operation via LAN

Select [Advanced] → [Advanced] → [RomPilot Support] → [Enabled].

■ Remote operation via WAN

Select [System Hardware] → [Console Redirection] and set each item.

Memory

To check the installed memory (DIMM) status

Select [Advanced] → [Memory Reconfiguration] and check the status indications.

Saving the Configuration Data

To save the BIOS configuration data

Select [Exit] → [Save Changes & Exit] or [Save Changes].

To discard changes to the BIOS configuration data

Select [Exit] → [Exit Without Saving Changes] or [Load Previous Value].

To restore the factory-set BIOS configuration data

Select [Exit] → [Get Default Values].

Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

- Main

- Advanced

- Security

- System Hardware

- 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.

Phoenix BIOS Setup Utility	
Main **Advanced** **Security** **System Hardware** **Boot** **Exit**	

		Item Specific Help
Processor Type:	**Intel(R) Xeon(TM)processor**	
Processor Speed:	**2.40 GHz**	**<Tab>, <Shift-Tab>, or**
Cache RAM:	**512KB**	**<Enter> selects field.**
System Memory:	**584KB**	
Extended Memory:	**511MB**	
BIOS Version:	**REL.6.0.8:M-1**	
System Time:	**[18:54:08]**	
System Date:	**[1/ 12/ 2002]**	
Language:	**[English(US)]**	
Primary Master:	**CD-ROM**	

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

Available options in the Main and descriptions are listed below.

Option	Parameter	Description	Your Setting
Processor Type	Intel®Xeon™Processor	Indicates the type of the installed CPU (view only).	
Processor Speed	2.4GHz	Indicates the clock speed of the installed CPU (view only).	
Cache RAM	512KB	Indicates the cache RAM size (view only).	
System Memory	584KB	Indicates the total size of the basic memory (view only).	
Extended Memory	(Extended memory size)	Indicates the total size of the extended memory (view only).	
BIOS Version	(Version of BIOS)	Indicates the version of the system BIOS (view only).	
System Time	HH:MM:SS	Specify the current time.	
System Date	MM/DD/YYYY	Specify the current date.	
Language	English (US) Français Deutsch Italiano Español	Select a language in which the SETUP is displayed.	
Primary Master	CD-ROM	Indicates device type connected to IDE (Primary master). (View only)	

[   ]: Factory-set

Advanced

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

```
                        Phoenix BIOS Setup Utility

   Main      Advanced      Security     System Hardware     Boot      Exit

                                                   Item Specific Help

  ▶ Advanced
  ▶ Processor Information                         Select Advanced
  ▶ Memory Information                            options.
  ▶ Peripheral Configuration
  ▶ Monitoring Configuration
  ▶ Option ROM
  ▶ Keyboard Features




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

There is no configurable items on the above Advanced menu screen .   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.

Advanced

Select "Advanced" on the Advanced menu to display the following screen.

```
                        Phoenix BIOS Setup Utility
           Advanced

         Advanced                                    Item Specific Help

                                               Display the diagnostic
                                               screen during POST
                                               instead of the Logo.
    Boot-time Diagnostic Screen:   [Disabled]   The boot-time diagnostic
    RomPilot Support:              [Disabled]   screen is redirection
    POST Error Pause:              [Enabled]    or rompilot is enabled.




    F1    Help      ↑ ↓  Select Item      -/+      Change Values      F9   Setup Defaults
    Esc Exit        ← →  Select Menu    Enter Select    ▶ Sub-Menu    F10 Save Changes & 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, the NEC logo appears while POST is in progress. (To display POST check results, press **Esc**.) If "RomPilot Support" is set to "Enabled" or "Console Redirection" is set, this option is unconditionally set to "Enabled".	
RomPilot Support	[Disabled] Enabled	Enable or disable the RomPilot (the remote console and remote drive features during OS start-up). If this option is set to "Enabled", "Boot-time Diagnostic Screen" is unconditionally set to "Enabled".	
Post Error Pause	[Enabled] Disabled	Specify whether to stop POST at the end of POST when an error occurs during POST.	

[   ]: Factory-set

NOTE: "RomPilot" is a BIOS feature for communications with the NEC Management Workstation Application (NEC MWA).   To use the MWA for management of the server, select "Enable" for "RomPilot Support."   Use of the RomPilot features requires setups for the MWA.

Processor Information

Select "Processor Information" on the Advanced menu to display the following screen.
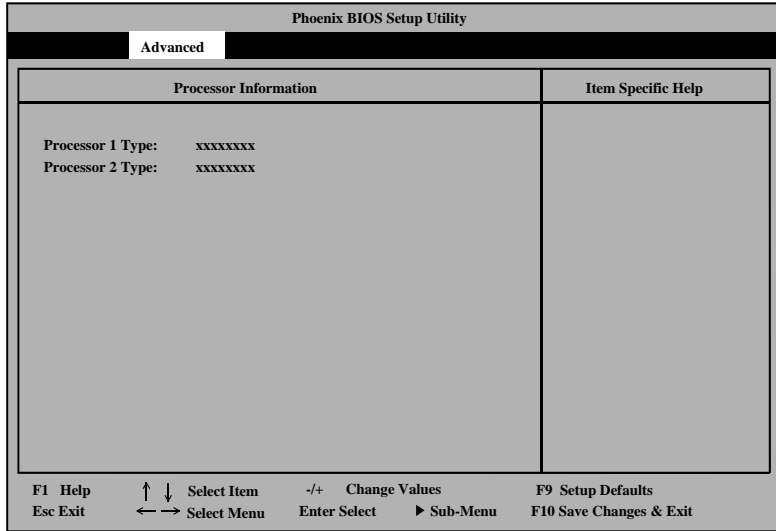
```
                        Phoenix BIOS Setup Utility
              Advanced

                    Processor Information                    Item Specific Help

      Processor 1 Type:      xxxxxxxx
      Processor 2 Type:      xxxxxxxx




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

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Processor 1 Type Processor 2 Type	–	Indicates processor type installed on Processor 1 or Processor 2 (view only).	

[   ]: Factory-set

Memory Information

Select "Memory Information" on the Advanced menu to display the following screen.
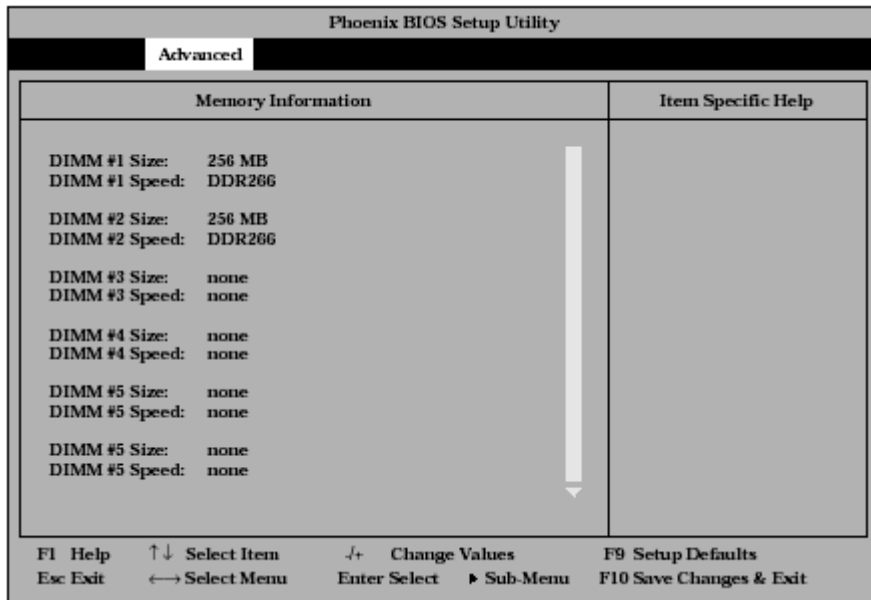
```
                    Phoenix BIOS Setup Utility
        ┌──────────┐
        │ Advanced │
        └──────────┘
   ┌────────────────────────────────────┬─────────────────────┐
   │        Memory Information           │  Item Specific Help │
   ├────────────────────────────────────┼─────────────────────┤
   │  DIMM #1 Size:    256 MB            │                     │
   │  DIMM #1 Speed:   DDR266            │                     │
   │                                     │                     │
   │  DIMM #2 Size:    256 MB            │                     │
   │  DIMM #2 Speed:   DDR266            │                     │
   │                                     │                     │
   │  DIMM #3 Size:    none              │                     │
   │  DIMM #3 Speed:   none              │                     │
   │                                     │                     │
   │  DIMM #4 Size:    none              │                     │
   │  DIMM #4 Speed:   none              │                     │
   │                                     │                     │
   │  DIMM #5 Size:    none              │                     │
   │  DIMM #5 Speed:   none              │                     │
   │                                     │                     │
   │  DIMM #5 Size:    none              │                     │
   │  DIMM #5 Speed:   none              │                     │
   │                                     │                     │
   ├────────────────────────────────────┴─────────────────────┤
   │ F1  Help    ↑↓ Select Item   -/+  Change Values    F9 Setup Defaults │
   │ Esc Exit    ←→ Select Menu   Enter Select  ▶ Sub-Menu  F10 Save Changes & Exit │
   └───────────────────────────────────────────────────────────┘
```

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
DIMM #1- #6 Size	–	Indicates the size of memory installed on DIMMs 1 (#1) to 6 (#6). "None" indicates no DIMM installed (view only).	
DIMM #1- #6 Speed	–	Indicates the type of DIMM (DDR200/DDR266) installed on DIMMs 1 (#0) to 6 (#6). "None" indicates no DIMM installed (view only).	

[   ]: Factory-set

Peripheral Configuration

Select "Peripheral Configuration" on the Advanced menu to display the following screen.

```
                        Phoenix BIOS Setup Utility
             Advanced

            Peripheral Configuration                 Item Specific Help

    Serial Port A:   [3F8, IRQ 4]                Disables serial port 1
    Serial Port B:   [2F8, IRQ 3]                or sets the base
                                                 address/IRQ of
                                                 serial port 1.




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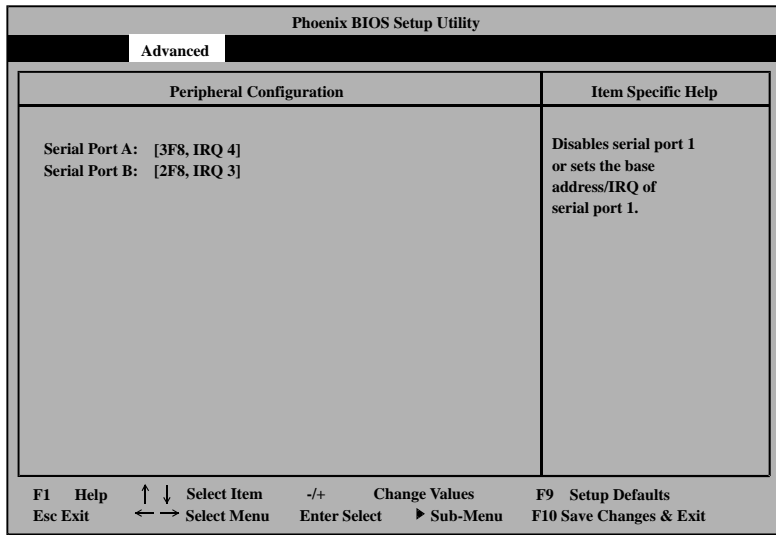
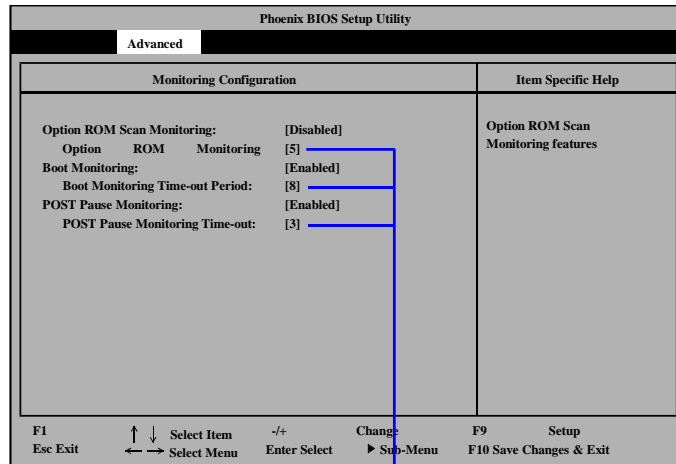See the table below for setup options on the screen.

> **IMPORTANT:** Make sure to avoid any conflict in the interrupt
> requests or the base I/O addresses.

Option	Parameter	Description	Your Setting
Serial Port A Serial Port B	Disabled 3F8, IRQ 3 [3F8, IRQ 4][*1] [2F8, IRQ 3][*2] 2F8, IRQ 4 3E8, IRQ 3 3E8, IRQ 4 2E8, IRQ 3 2E8, IRQ4 Auto	Enable or disable the serial port A and B, or specify a base address and interrupt. *1 Factory setting for the serial port A *2 Factory setting for the serial port B	

[   ]: Factory-set

Monitoring Configuration

Select "Monitoring Configuration" on the Advanced menu to display the following screen.

```
                        Phoenix BIOS Setup Utility

              Advanced

              Monitoring Configuration                    Item Specific Help

    Option ROM Scan Monitoring:        [Disabled]        Option ROM Scan
       Option    ROM    Monitoring     [5]               Monitoring features
    Boot Monitoring:                   [Enabled]
       Boot Monitoring Time-out Period:   [8]
    POST Pause Monitoring:             [Enabled]
       POST Pause Monitoring Time-out:  [3]



    F1              ↑ ↓  Select Item    -/+      Change      F9          Setup
    Esc Exit        ← →  Select Menu   Enter Select  ▶ Sub-Menu  F10 Save Changes & Exit
```

Displayed only when "Enabled" is selected for "Option ROM Scan
Monitoring", "Boot Monitoring" or "POST Pause Monitoring".

See the table below for setup options on the screen.

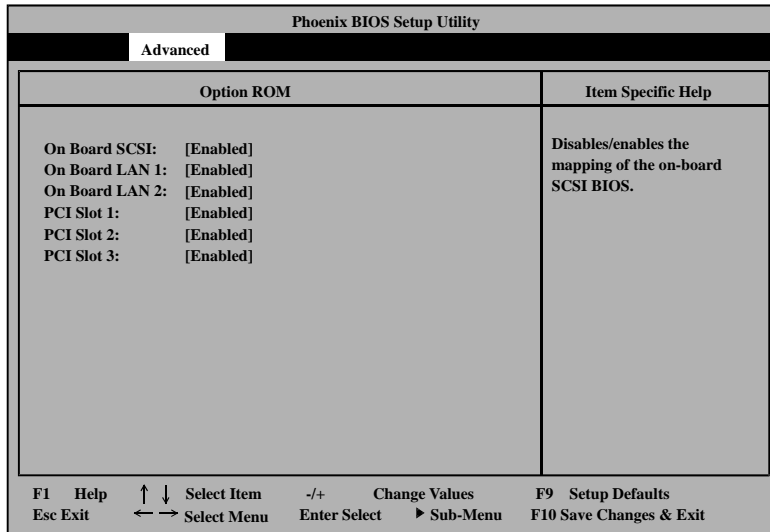| Option	Parameter	Description	Your Setting
Option ROM Scan Monitoring	[Disabled] Enabled	Enable or disable the Option ROM scan monitoring feature.	
Option ROM Monitoring Time-out	1 - [5] - 20	Specify the Option ROM monitoring time-out period. This option is displayed only when "Enabled" is selected for "Option ROM Scan Monitoring".	
Boot Monitoring	Disabled [Enabled]	Enable or disable the boot monitoring feature. This function is unique to the ft series: detects errors until the OS boots up, and immediately reboots the OS upon detection of an error. (For details, see "Behavior at Occurrence of Error" in Chapter 2.) Enable this function if NEC ESMPRO Agent is installed on the OS. Disable this function if NEC ESMPRO Agent is not installed or when you install the OS. Otherwise, the OS will boot up after "Specified boot timeout."	
Boot Monitoring Time-out Period	1 - [10] - 20	Specify the boot monitoring time-out period. This option is displayed only when "Enabled" is selected for "Boot Monitoring".	
POST Pause Monitoring	[Disabled] Enabled	Enable or disable the POST monitoring feature during boot-up restriction.	
POST Pause Monitoring Time-out	1 - [3] - 20	Specify the POST monitoring time period during boot-up restriction.	

[   ]: Factory-set

IMPORTANT: When connecting a Fibre Channel disk array device, change the set value of "Boot Monitoring Time-out Period" depending on the wait time for the completion of the Fibre Channel disk array device initialization.

> Ex.: If the wait time for the completion of the Fibre Channel disk array
>   device initialization is 4 minutes, change the value of "Boot
>   Monitoring Time-out Period" from 8 (default) to 12 minutes.

Option ROM

Select "Option ROM" on the Advanced menu to display the following screen and enable/disable
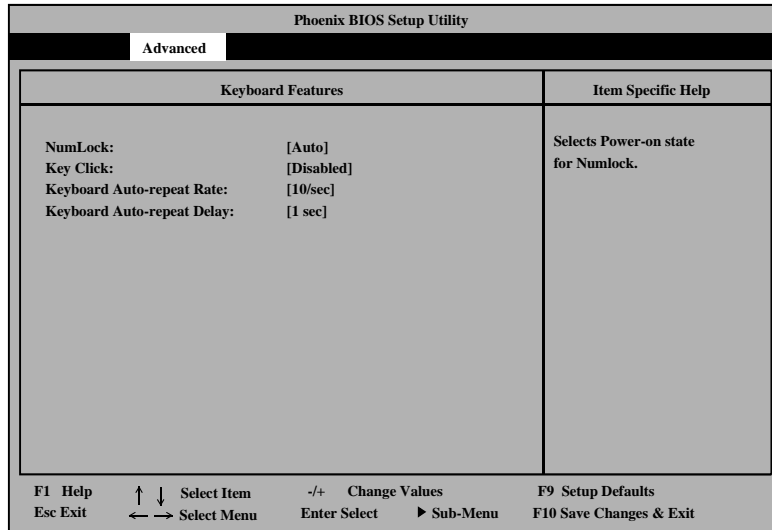expansion of Option Rom BIOS on the PCI bus.

```
                        Phoenix BIOS Setup Utility
            Advanced

                Option ROM                              Item Specific Help

   On Board SCSI:     [Enabled]                    Disables/enables the
   On Board LAN 1:    [Enabled]                    mapping of the on-board
   On Board LAN 2:    [Enabled]                    SCSI BIOS.
   PCI Slot 1:        [Enabled]
   PCI Slot 2:        [Enabled]
   PCI Slot 3:        [Enabled]




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

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
On Board SCSI	Disabled [Enabled]	Enable or disable expansion of SCSI BIOS on the motherboard.	
On Board LAN 1, 2	Disabled [Enabled]	LAN1: Enable or disable 10/100BASE LAN controller on the motherboard. LAN2: Enable or disable 1000BASE LAN controller on the motherboard.	
PCI Slot 1 - PCI Slot 3	Disabled [Enabled]	Enable or disable BIOS on a device (board) connected to the PCI bus. Select "Enabled" for the graphic accelerator board. Always select "Enabled" for the SCSI PCI device to which the hard disk that contains OS is connected. Select "Disabled" for Option ROM of PCI LAN device when the network boot feature is not used.	#1: #2: #3:

[   ]: Factory-set

Keyboard Features

Select "Keyboard Features" on the Advanced menu to display the following screen.   The Numlock submenu allows you to make keyboard settings.
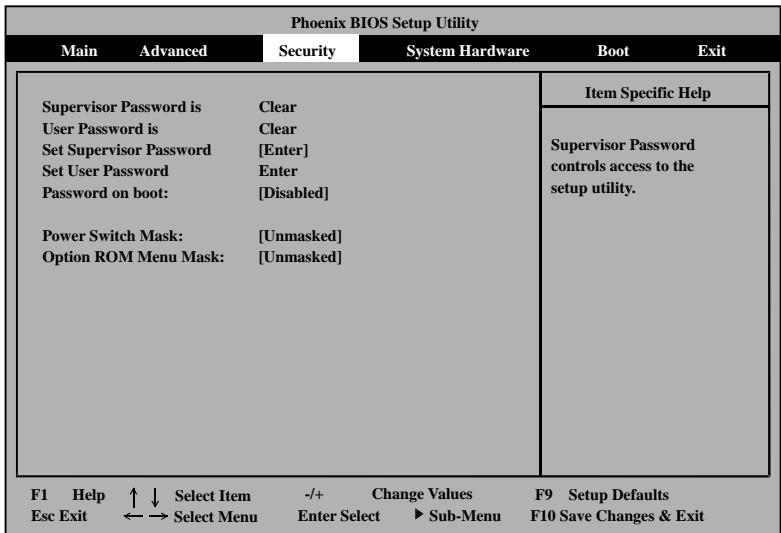
```
                        Phoenix BIOS Setup Utility
        ┌──────────────┐
        │   Advanced   │
        ├──────────────┴──────────────────────────┬──────────────────────────┐
        │            Keyboard Features             │     Item Specific Help    │
        ├──────────────────────────────────────────┼──────────────────────────┤
        │                                          │  Selects Power-on state   │
        │  NumLock:                    [Auto]      │  for Numlock.             │
        │  Key Click:                  [Disabled]  │                           │
        │  Keyboard Auto-repeat Rate:  [10/sec]    │                           │
        │  Keyboard Auto-repeat Delay: [1 sec]     │                           │
        │                                          │                           │
        │                                          │                           │
        │                                          │                           │
        │                                          │                           │
        │                                          │                           │
        │                                          │                           │
        │                                          │                           │
        ├──────────────────────────────────────────┴──────────────────────────┤
        │  F1  Help    ↑ ↓  Select Item     -/+    Change Values    F9  Setup Defaults    │
        │  Esc Exit    ← →  Select Menu     Enter Select   ▶ Sub-Menu   F10 Save Changes & Exit │
        └───────────────────────────────────────────────────────────────────────┘
```

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Numlock	[Auto] On Off	Enable or disable the Numlock feature at system start-up. If "Auto" is selected, the Numlock feature will be enabled when an entry with the keypad is detected.	
Key Click	[Disabled] Enabled	Enable or disable the key click sound.	
Keyboard Auto-repeat Rate	2/sec 6/sec [10/sec]	Select the number of characters repeatedly output in one second when a key is pressed.	
Keyboard Auto-repeat Delay	0.25 sec 0.5 sec 0.75 sec [1 sec]	Select a period before a key character starts repeated.	

[   ]: Factory-set

Security

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

```
                              Phoenix BIOS Setup Utility
   Main      Advanced        Security       System Hardware       Boot         Exit

                                                          Item Specific Help
   Supervisor Password is        Clear
   User Password is              Clear
   Set Supervisor Password       [Enter]          Supervisor Password
   Set User Password             Enter            controls access to the
   Password on boot:             [Disabled]       setup utility.

   Power Switch Mask:            [Unmasked]
   Option ROM Menu Mask:         [Unmasked]

   F1   Help     ↑ ↓  Select Item    -/+     Change Values      F9   Setup Defaults
   Esc Exit      ←→  Select Menu     Enter Select   ▶ Sub-Menu  F10 Save Changes & Exit
```
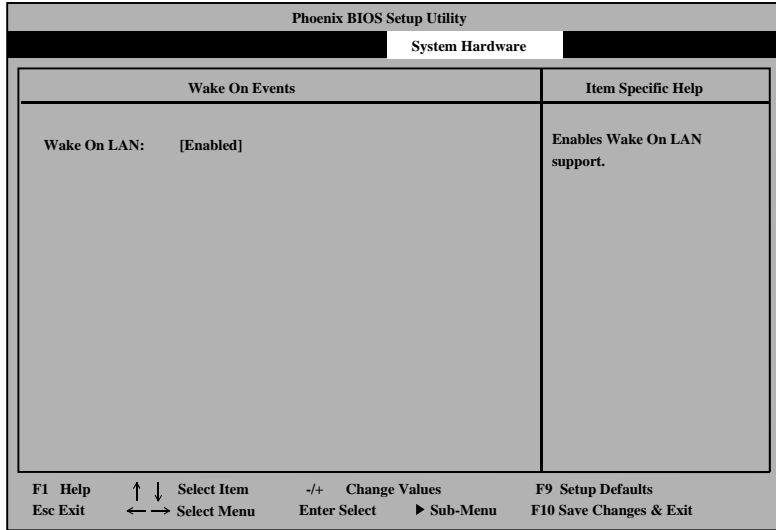
Select "Set Supervisor Password" or "Set User Password" and press **Enter** to display the following pop-up screen.

The screen below shows when "Set Supervisor Password" is selected.

```
                              Phoenix BIOS Setup Utility
   Main      Advanced        Security       System Hardware       Boot         Exit

                                                          Item Specific Help
   Supervisor Password is        Clear
   User Password is              Clear
   Set Supervisor Password       [Enter]          Supervisor Password
   Set User Password             Enter            controls access to the
   Password on boot:             [Disabled]       setup utility.

                          Set Supervisor Password
   Power Switch Mask:
   Option ROM Menu M    Enter new password:      [
                        Confirm new Password:    [

   F1   Help     ↑ ↓  Select Item    -/+     Change Values      F9   Setup Defaults
   Esc Exit      ←→  Select Menu     Enter Select   ▶ Sub-Menu  F10 Save Changes & Exit
```
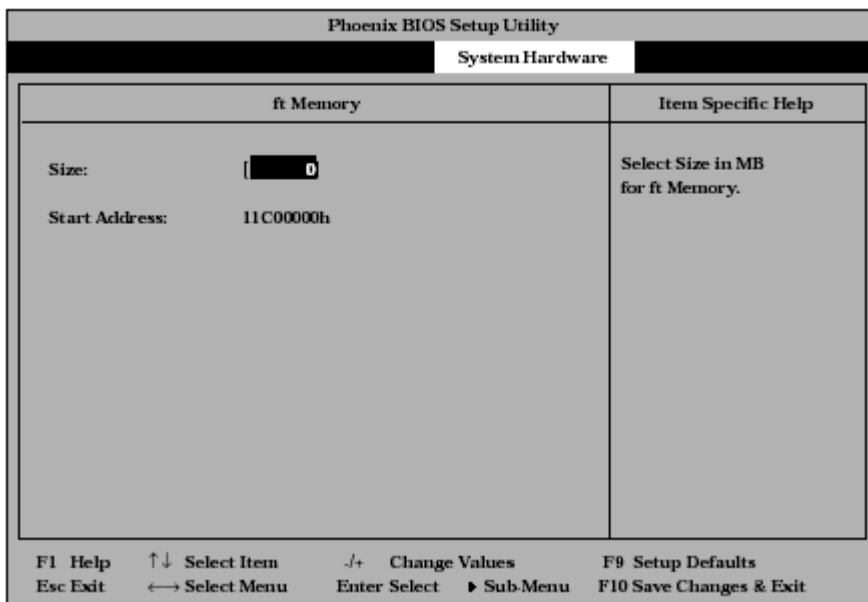
Set a password on this pop-up screen.   Enter a password of up to seven alphanumeric characters and symbols from the keyboard.

IMPORTANT:

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

- Do not set any password before installing the OS.

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Supervisor Password is	[Clear] Set	Indicates Supervisor password setup status (view only).	
User Password is	[Clear] Set	Indicates User password setup status (view only).	
Set Supervisor Password	Up to 7 alphanumeric characters	Press **Enter** to display the supervisor password entry screen. With the supervisor password, all SETUP menus are available for access. This option is available only when you log into the SETUP utility with the supervisor password.	
Set User Password	Up to 7 alphanumeric characters	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.	
Password on boot	Enabled [Disabled]	Specify whether to request a password entry at boot-up. Supervisor password setup is required beforehand. When the supervisor password is specified and this option is disabled, the BIOS assumes that a system boot attempt is made by a user.	
Power Switch Mask	[Unmasked] Masked	Enable or disable the POWER switch on the server. If "Masked" is selected, power-off with the POWER switch becomes unavailable after OS boot-up. (Forced shut down also becomes unavailable. Forced shut down is a feature to shut down by pressing the POWER switch for over four seconds.)	
Option ROM Menu Mask	[Unmasked] Masked	Enable or disable key entries during optional ROM expansion.	

[   ]: Factory-set

System Hardware

Move the cursor onto "System Hardware" to display the System Hardware menu.

```
                    Phoenix BIOS Setup Utility
   ┌──────────────────────────────────────────────────────────────────┐
   │  Main    Advanced    Security    System Hardware    Boot    Exit  │
   ├────────────────────────────────────────────┬─────────────────────┤
   │                                            │  Item Specific Help │
   │  ▶ Thermal Sensor                          │                     │
   │  ▶ Wake On Events                          │                     │
   │    AC-LINK:                 [Last State]   │  Thermal Sensor Menu.│
   │    Error Log Initialization:   Enter       │                     │
   │  ▶ Console Redirection                     │                     │
   │  ▶ ft Memory                               │                     │
   │                                            │                     │
   │                                            │                     │
   │                                            │                     │
   │                                            │                     │
   ├────────────────────────────────────────────┴─────────────────────┤
   │  F1  Help     ↑↓  Select Item      -/+   Change Values    F9  Setup Defaults        │
   │  Esc Exit     ←→  Select Menu      Enter Select   ▶ Sub-Menu   F10 Save Changes & Exit │
   └──────────────────────────────────────────────────────────────────┘
```
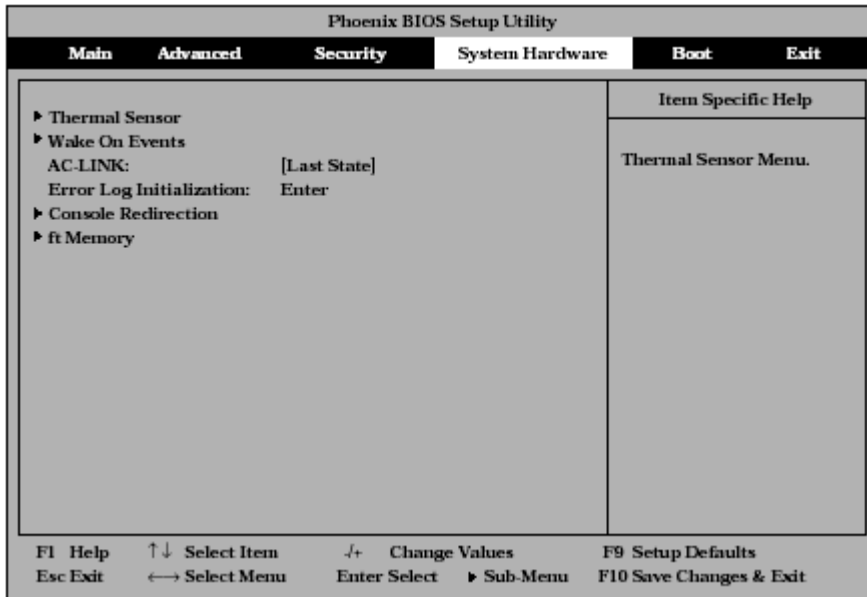
The table below lists options that you can specify on the System Hardware menu screen and their functions.   To make a selection for "Thermal Sensor", "Wake On Event", and "Console Redirection", first select a desired option and press **Enter** to display its submenu.

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
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 below for details.) Do not select the parameters other than "Stay Off" when "Enabled" is selected for "Wake On Lan."	
Error Log Initialization	Enter	Press **Enter** to initialize the error log. The message "Error Log Cleared" appears upon successful completion. If failed, the message "Error Log Not Cleared!" appears.	

[   ]: Factory-set

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.

Thermal Sensor

Select "Thermal Sensor" on the System Hardware menu and press **Enter** to display the following screen.

```
                     Phoenix BIOS Setup Utility
                                    System Hardware

          Thermal Sensor                          Item Specific Help

   Thermal Sensor:      [Enabled]          Determines if BIOS will
                                           disable boot, if the
   Upper Limit:         [48]               temperature is not
   Lower Limit:         [5]                within safe range.












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

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Thermal Sensor	[Enabled] Disabled	Enable or disable the thermal sensor monitoring feature.	
Upper Limit	7 - [48] - 80	Specify the upper limit temperature for boot-up restriction in Celsius. Specify a value greater than the "Lower Limit" by at least 8 using **+** and **–** keys.	
Lower Limit	0 - [5] - 73	Specify the lower limit temperature for boot-up restriction in Celsius. Do not specify 4 degrees or lower. Specify a value smaller than the "Upper Limit" value by at least 8 using **+** and **–** keys.	

[   ]: Factory-set

Wake On Events

Select "Wake On Events" on the System Hardware menu and press **Enter** to display the following screen.

```
                    Phoenix BIOS Setup Utility
                                    System Hardware

              Wake On Events                        Item Specific Help

    Wake On LAN:      [Enabled]                 Enables Wake On LAN
                                                support.














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

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Wake On LAN	Disabled [Enabled]	Enable or disable the remote power-on feature via the network. When "Enable" is selected, change the "AC-LINK" setting in the "System Hardware" to "Stay Off".	

[   ]: Factory-set

Console Redirection

Select "Console Redirection" on the System Hardware menu and press **Enter** to display the following screen.

```
                        Phoenix BIOS Setup Utility
                                    System Hardware

                 Console Redirection                      Item Specific Help

     Serial Port Address:      [Disabled]             If enabled, the console
                                                      will be redirected to
     Baud Rate:                [19.2K]                this port.
     Flow Control:             [XON/XOFF]
     Console Connection:       [Direct]








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

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Serial Port Address	[Disabled] On-board COM B	Select a serial port to connect the HW console. Selecting "On-board COM B" changes "Boot-time Diagnostic Screen" to "Enabled".	
Baud Rate	[19.2K] 57.6K	Select a baud rate for communications with the connected HW console.	
Flow Control	[None] XON/XOFF	Select a flow control method.	
Console Connection	[Direct] Via modem	Select a connection with the HW console.	

[   ]: Factory-set

ft Memory

Select "ft Memory" on the System Hardware menu and press **Enter** to display the following screen.

```
                    Phoenix BIOS Setup Utility
                                    System Hardware

                    ft Memory                        Item Specific Help

   Size:              [        0]               Select Size in MB
                                                for ft Memory.
   Start Address:     11C00000h







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

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Size	[0]	Size of ft Memory is specified (MB)	
Start Address	-	Shows the start address of ft Memory (view only)	

[   ]: Factory-set

IMPORTANT:

■ Unless you use ft Memory, do not change the factory setting.

■ To use ft Memory, you need to prepare an "ft Memory RAM Disk."

■ If you specify/change the size of ft Memory on the ft Memory RAM Disk (not this menu), the changes will take effect automatically.

■ For details, see manuals included with the ft Memory RAM Disk.

Boot

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

Phoenix BIOS Setup Utility					
Main	Advanced	Security	System Hardware	Boot	Exit

Item Specific Help

ATAPI CD-ROM Drive
+ **Removable Device**
+ **Hard Drive**
   Intel(R) Boot Agent Version 4.0.1.7

Use <↑>or<↓>to
select a device, then
press <+> to move it up
the list, or <−>to
move it down the list.
Press <Esc> to exit
this menu.

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

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.

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 NEC EXPRESSBUILDER.

Exit

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

Phoenix BIOS Setup Utility					
Main	**Advanced**	**Security**	**System Hardware**	**Boot**	**Exit**

Save Changes & Exit
Exit Without Saving Changes
Get Default Value
Load Previous Value
Save Changes

Item Specific Help

Exit System Setup and save your changes to CMOS.

F1 Help   ↑ ↓ **Select Item**   **-/+   Change Values**   **F9 Setup Defaults**
Esc Exit   ← → **Select Menu**   **Enter Select**   ▶ **Sub-Menu**   **F10 Save Changes & Exit**
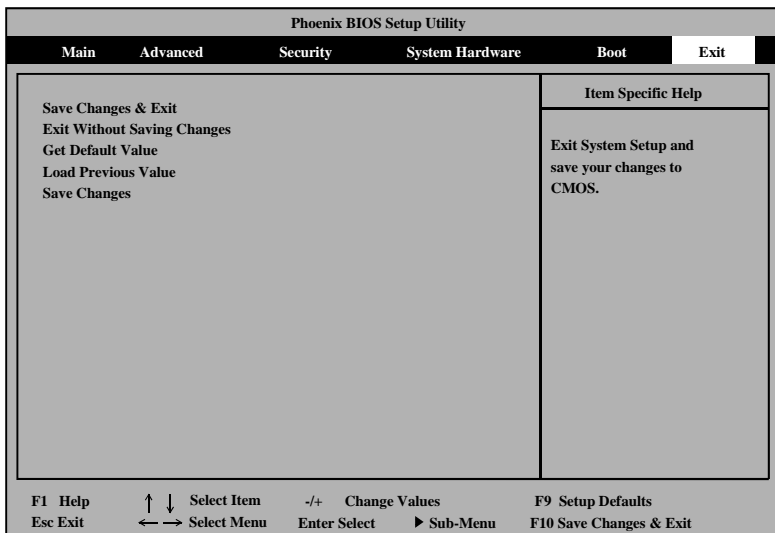
The following describes each option on the Exit menu:

■   Save Changes & Exit

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

The following screen appears:

Setup Confirmation!

Save configuration changes and exit now?

[Yes]   [No]
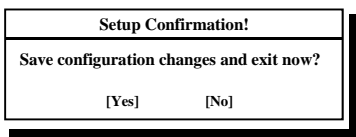
Select "Yes" to save the current configuration data into the CMOS (non-volatile memory) and exit the SETUP utility.   The server will automatically restart the system.

■   Exit Without Saving Changes

Select this option to discard the current configuration data and exit the SETUP utility.

Setup Warning!

Configuration has not been saved!
Save before exiting?

[Yes]   [No]
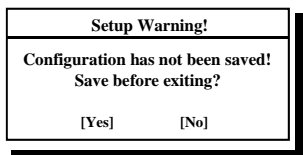
Select "No" to discard the current configuration data and exit the SETUP utility.   Select "Yes" to save the current configuration data into the CMOS, to exit the SETUP utility, and to restart the server automatically.

■   Get Default Value

Select this option to restore all default values (factory-set values) of the SETUP utility.

The following screen appears:

| Setup Confirmation! |
| Load default configuration now? |
| [Yes]   [No] |

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

■   Load Previous Values

Select this option to discard the current configuration data and restore the previous configuration data.

The following screen appears:

| Setup Confirmation! |
| Load previous configuration now? |
| [Yes]   [No] |

Select "Yes" to discard the current configuration data and restore the previous one.

■   Save Changes

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

The following screen appears:

| Setup Confirmation! |
| Save configuration changes now? |
| [Yes]   [No] |

Select "Yes" to save the current configuration data into the CMOS (non-volatile memory).

SCSI BIOS ~ *FAST!*UTIL ~

For several settings of the SCSI controller on the motherboard (or the SCSI controller on the optional board), the SCSI BIOS utility "*Fast!*UTIL" is used.

The SCSI BIOS utility can be started by simple keystrokes during execution of POST without use of a special start disk.

The SCSI BIOS built in the server is set to the optimum at the shipment. Accordingly, the SCSI BIOS may not be changed by using this utility.

> **IMPORTANT:**
> - Use *Fast!*UTIL only when an optional SCSI controller is used. Leave the settings for the SCSI controller to which built-in hard disks are connected as they are at shipment. If any of the settings are changed, see the description in this document to return to the settings at shipment.   The controllers installed in each module must be configured individually.
> - *Fast!*UTIL of the latest version is installed in the NEC Express5800/ft series. Accordingly, the setting screen may be different from that described in this document. See the online help or contact your sales agent for the setting items different from those in this document.

Start

The procedure of starting *Fast!*UTIL is described below.

Notes

Note the following before starting *Fast!*UTIL.

- Settings for built-in hard disk

  Leave the settings for the built-in hard disk as they are at shipment. The built-in host adapter is specified as QLA12160 Ultra3 5000 in the Select Host Adapter dialog box.

- Settings of SCSI controller installed in each group
  - Only the PCI module in which the SCSI controller card to be set is installed should be inserted into the system before *Fast!*UTIL can be started for the setting. Remove the other PCI module from the system.
  - Make sure that the number of the PCI slot connected with the SCSI controller card installed in a PCI module is the same as the number of the PCI slot connected with the SCSI controller card installed in the other PCI module. Provide the same settings for both the PCI modules.
  - Don't change the factory settings of the SCSI controller card.
  - Although there may be descriptions that the SCSI BIOS of the host adapter needs to be configured in manuals for tape devices, etc., this server does not require modifications to the settings.   Do not change the settings.

Start Procedure

Start *Fast!*UTIL in the procedure below:

1. Turn on the power of the server.

The start message appears on a screen in the middle of POST.

2. Press **Q** and **Ctrl** together.

*Fast!*UTIL is started.

> **IMPORTANT:** Press these keys before message "QLogic Adapter using IRQ number x" or later appears.

QLogic Corporation
QLA 1216x PCI SCSI ROM BIOS Version X.XX
Copyright (C) QLogic Corporation 1993-2001 All rights reserved.
www.qlogic.com

Press <CTRL-Q> for Fast!UTIL

ISP12160 Firmware Version xx.xx.xx
QLogic Adapter using IRQ number X

Device Number	Device Type	Adapter Number	SCSI ID	SCSI LUN	Vendor ID	Product ID	Product Revision
81	Disk	0	0	0	SEAGATE	ST32550	7394

---

3. Highlight "Select Host Adapter" using the cursor keys and press **Enter**.

Fast!UTIL Options

Configuration Settings
Scan SCSI Bus
SCSI Disk Utility
Select Host Adapter
Exit Fast!UTIL

4.   Select the proper adapter.

> **IMPORTANT:** The adapter "QLA12160 Ultra3 5000" is used for
> built-in hard disk. Do not select it.

Highlight the displayed item with the cursor keys and press **Enter**.

```
                        Select Host Adapter

            Adapter Type        I/O Address

            QLA12160 Ultra3        5000
            xxxxxxxxxxxxxxxxxxxxxxx  xxxx
            xxxxxxxxxxxxxxxxxxxxxxx  xxxx
```

The display returns to "Fast!UTIL Options." The name of the selected host adapter
appears at the upper left corner of the screen.

```
                  Fast!UTIL Options

              Configuration Settings
              Scan SCSI Bus
              SCSI Disk Utility
              Select Host Adapter
              Exit Fast!UTIL
```

Configuration Settings

If you select "Configuration Settings" from the "Fast!UTIL Options" menu, the screen for setting the configuration appears.

```
━━━━━━━━ Configuration Settings ━━━━━━━━

   Host Adapter Settings
   SCSI Device Settings
   SCSI Bus Settings
   Autoconfigure SCSI Device
   Selectable Boot Settings
   Restore Default Adapter Settings
   Raw Nvram Data
```
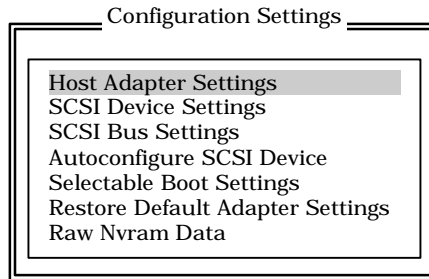
Host Adapter Settings

If you put the cursor on "Host Adapter Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the host adapter appears.

The table below shows the parameters of the setting items and their factory settings.

Submenu item	Parameter	Description
BIOS Address	-	View only
BIOS Revision	-	View only
Adapter Serial Number	-	View only
Interrupt level	-	View only
Host Adapter BIOS	[Enable] Disable	Specify whether the BIOS extension of the host adapter is enabled or disabled.
PCI Bus DMA Burst	[Enable] Disable	Specify whether the DMA burst transfer on the PCI bus is enabled or disabled.
CDROM Boot	Enable [Disable]	Specify whether the start from CD-ROM is enabled or disabled.
Adapter Configuration	Auto [Manual] Safe	Specify whether the adapter configuration is set automatically by BIOS, manually, or safely.
Drivers Load RISC	[Enable] Disable	Specify whether the load of RISC codes is enabled or disabled.
>4GByte Addressing	Enable [Disable]	Specify whether hard disks of 4 GB or larger is used or not.
Fast Command Porting	[Enable] Disable	Do not change the factory setting.

[   ]: Factory-set

SCSI Device Settings

If you put the cursor on "SCSI Device Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the device connected to the host adapter appears.

The table below shows the parameters of the setting items and their factory settings.

> **IMPORTANT:** The settings can be made for each SCSI bus.

Submenu item	Parameter		Description
	SCSI Bus0	**SCSI Bus1**	
Disconnects OK	[Yes] No*	[Yes] No*	Specify whether the disconnection of SCSI devices from the SCSI bus is enabled or disabled. * On Bus0, select "No" for ID8.
Check Parity	[Yes] No	[Yes] No	Specify whether the parity check is provided or not.
Enable LUNs	[Yes] No	[Yes] No	Specify whether more than one LUN numbers are given to SCSI ID.
Enable PPR	[Yes] No	[Yes] No	Do not change the factory setting.
Enable Device	[Yes] No	[Yes] No	Do not change the factory setting.
Negotiate Wide	[Yes] No	[Yes] No	Specify whether the wide (32 bits) transfer is enabled or disabled.
Negotiate Synchronous	[Yes] No	[Yes] No	Specify whether the synchronous transfer is enabled or disabled.
Tagged Queuing	[Yes] No	[Yes] No	Do not change the factory setting.
Sync Offset	00, 02, 04, 06, 08, 10, 12, 14, 16, 18, 20, 22, [24]	00, 02, 04, 06, [08], 10, 12, 14, 16, 18, 20, 22, 24	Select the proper offset value in synchronous transfer.
Sync Period		Transfer Rate (Mbytes/sec)		Transfer Rate (Mbytes/sec)	Select the proper speed in synchronous transfer.

Sync Period					
	[9]	160 (Ultra3 SCSI)	9	160 (Ultra3 SCSI)	
	10	80 (Ultra2 SCSI)	[10]	80 (Ultra2 SCSI)	
	12	40 (Ultra SCSI)	12	40 (Ultra SCSI)	
	25	20 (Fast SCSI)	25	20 (Fast SCSI)	
	40	12.5	40	12.5	
Exec Throttle	1, 4, 8, [16], 32, 64, 128, 255		1, 4, 8, [16], 32, 64, 128, 255		Do not change the factory setting.

[   ]: Factory-set

SCSI Bus Settings

If you put the cursor on "SCSI Bus Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the SCSI bus of the host adapter appears.

The table below shows the parameters of the setting items and their factory settings.

IMPORTANT: The settings can be made for each SCSI bus.

Submenu item	Parameter		Description
	SCSI Bus0	**SCSI Bus1**	
SCSI Bus SCSI ID	0, 1, 2, 3, 4, 5, 6, [7], 8, 9, 10, 11, 12, 13, 14, 15	0, 1, 2, 3, 4, 5, 6, [7], 8, 9, 10, 11, 12, 13, 14, 15	Select the SCSI ID given to SCSI bus.
SCSI Bus Reset	[Enable] Disable	[Enable] Disable	Make the reset valid or invalid in SCSI buses.
SCSI Bus Reset Delay	0, 1, 2, 3, 4, [5], 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	0, 1, 2, 3, 4, [5], 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Leave this item as factory-set.
SCSI Bus Termination	Auto High only Disabled [Enabled]	[Auto] High only Disabled Enabled	Set the termination resistance of SCSI bus.

[   ]: Factory-set

Autoconfigure SCSI Device

If you put the cursor on "Autoconfigure SCSI Device" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the device connected to the host adapter appears.

The parameters of the setting items and their factory settings are the same as those shown in the table for "SCSI Device Settings."

IMPORTANT:

- The settings can be made for each SCSI bus and SCSI ID. Check the SCSI ID of the target device before changing the settings.

- The factory settings are the same for both SCSI bus 0 and SCSI bus 1.

- The following items can be changed by setting "Adapter Configuration" in "SCSI Device Setting" to "Manual."
    – Enable Device
    – Enable LUNs
    – Negotiate Wide
    – Negotiate Sync
    – Tagged Queuing
    – Sync Offset
    – Sync Period
    – Exec Throttle

Selectable Boot Settings

If you put the cursor on "Selectable Boot Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the start from the device connected to the host adapter appears.

Submenu item	Parameter	Description
Selectable SCSI Boot	Enabled [Disabled]	Specify whether the boot from SCSI device can be selected or not.
SCSI Bus	[0] 1	Select the bus to which the started SCSI device is connected.
SCSI Boot ID	[0], 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Set the SCSI ID of the started SCSI device.
SCSI Boot Lun	[0], 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Select the number of the LUN to which the started SCSI device is bound.

[   ]: Factory-set

Restore Default Settings

If you put the cursor on "Restore Default Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the display changes to the screen for returning the setting values to the default values.

> **IMPORTANT:** The default values can be restored for each SCSI bus.

Raw Nvram Data

If you put the cursor on "Raw Nvram Data" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the information on NvRAM installed in the host adapter is displayed in the hexadecimal format.

This function is provided to solve problems. The information cannot be edited.

Scan SCSI Bus

If you select "Scan SCSI Bus" from the "Fast!UTIL Options" menu, the list of devices connected to each SCSI bus is displayed in the order of SCSI IDs. The information to be displayed includes the device manufacturer, product name and firmware revision.

SCSI Disk Utility

If you select "SCSI Disk Utility" from the "Fast!UTIL Options" menu, the utility menu which is used to format or verify the connected SCSI devices appears.

> **IMPORTANT:**
> - Devices can be processed in each SCSI bus and SCSI ID. Be careful not to forget the selected bus and ID.
> - The selection of "Continue With Format" in "Low- Level Format" causes all data in disks to be lost.

- Low-Level Format

    Formats the device selected in "Continue With Format" physically. If you select "Do Not Format Disk," the previous menu appears again.

- Verify Disk Media

    Verifies the device selected in "Continue With Verify." If you select "Do Not Verify Media," the previous menu appears again.

- Select Different Disk

    Selects another SCSI device on the same SCSI bus.

Select Host Adapter

If you select "Select Host Adapter" from the "Fast!UTIL Options" menu, the list of the host adapters installed in the main system is displayed. Select the adapter for which the settings are modified.

> **IMPORTANT:** The adapter "QLA12160 Ultra3 5000" is used for built-in hard disk. Do not select it.

The utility menu, which is used to format or verify the connected SCSI devices, appears.

Exit *Fast!*UTIL ~ Termination and Storage of *Fast!*UTIL ~

After changing the settings, press **Esc** several times to display the "Fast!UTIL Options" menu.   If you select "Exit Fast!UTIL" from the menu, the screen for terminating *Fast!*UTIL appears.

However, if the settings are different from those before the start, the screen prompting you to save the settings appears before the display of the termination screen.

```
Configuration settings modified

   Save Changes
   Do not save changes
```
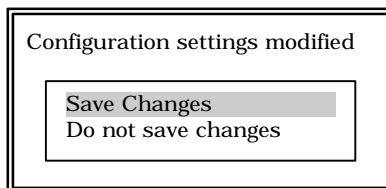
Select either "Save changes" or "Do not save changes" by using keyboard cursors ($\downarrow$ and $\uparrow$) and press **Enter**.

Pressing **Enter** causes the screen for terminating *Fast!*UTIL to appear.

```
          Exit Fast!UTIL

    Reboot System
    Return to Fast!UTIL
```
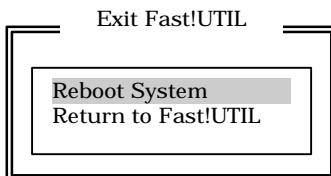
Select either "Reboot System" or "Return to Fast!UTIL" and press **Enter**.

Setting List for Optional SCSI Device

If you add an optional SCSI device, don't change the factory settings of SCSI controller card.
For information on optimal SCSI devices for the NEC Express5800/ft series, contact your sales
   agent.

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 10 seconds after turning off the power (forced shutdown).

<Rack-mount model>
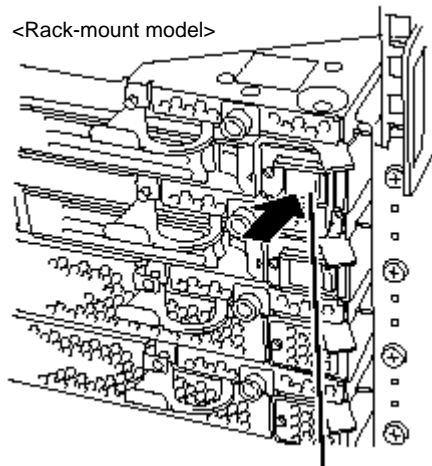
Press it for over 4 seconds.

> **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.

Clear CMOS / Password (Configuring Motherboard Jumpers)

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 passwords, 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 passwords or CMOS data, power off the server.

To clear passwords or the CMOS data, use the jumper switch on the PCI module board of the server. The following figure illustrates the jumper switch location.

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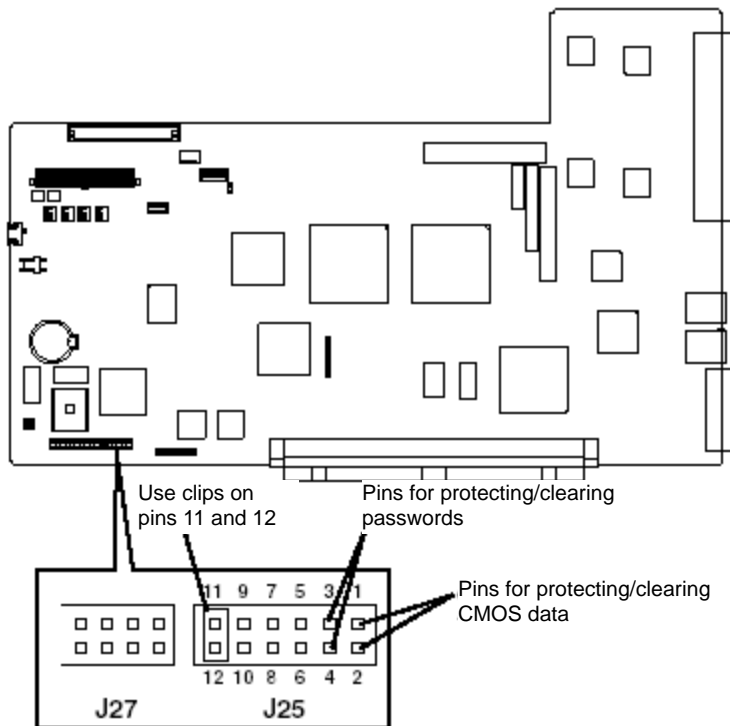
■ Pins for protecting/clearing the passwords

Place the clip on the two pins to clear the passwords.

Remove the clip from these pins to protect the passwords (factory-set).

■ Pins for protecting/clearing the CMOS data

Place the clip on the two pins to clear the CMOS data.

Remove the clip from these pins to protect the CMOS data (factory-set).

The following describe the clearing procedure.

⚠ **WARNING**
Observe the following instructions to use the server safely.   Failure to follow these instructions may result in death or serious personal injury.   See safety precautions in Chapter 1. ■ Do not disassemble, repair, or alter the server.

How to Clear CMOS

1. Power off the server and unplug the power cord(s).

2. Remove the PCI modules (#1 and #2) from the server (see Chapter 8).

3. Make setting of jumper switch on one PCI module (PCI Module #1 in this example) to clear CMOS.

> **IMPORTANT:**
>
> ■ Before clearing CMOS, NEC Express5800/ft series must be ready for use with a keyboard hooked up.
>
> ■ Use the clip located on jumper pins (pins 11 and 12) on the motherboard.
>
> ■ Be careful not to lose the clip.

4. Mount only PCI Module#1 (where a CMOS clear jumper has been mounted) to the server (see Chapter 8).

5. Plug the power cord; when the POWER Switch LED turns on, press it to power on the server.

6. Shortly after the startup, the following message will appear:
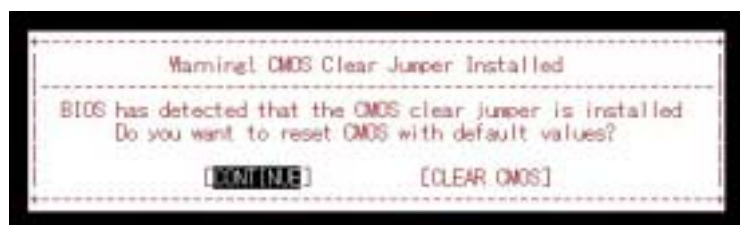
7. Use the cursor to select [CLEAR CMOS] and press **Enter.**

> **NOTE:**
>
> A message appears for 10 seconds prompting you to clear CMOS. If
> you select [CONTINUE] or do nothing (considered as "CONTINUE"),
> the process goes on. However, the server stops after sounding beeps
> (1-3-3-2). In this case, power off/on the server and perform the
> procedure again.

```
Phoenix ServerBIOS Version 2.00 (PB 4:0, rel 6:20).
Copyright 1985-2001 Phoenix Technologies Ltd., All Rights Reserved.
NEC BIOS Version 1.0:0. (Express 5800/320Lb)
Copyright (c) 2000-2002 NEC Corporation, All Rights Reserved.


CPU2 PCI1 Module Present
CPU = 2 Intel(R) Xeon(TM) CPU 2.40GHz
Non volatile memory cleared
583K System RAM Passed
511M Extended RAM Passed
512K Cache SRAM Passed
System BIOS shadowed
Video BIOS shadowed
ATAPI CD-ROM: SR243T




Press <F2> to enter SETUP
```

This means that CMOS clear jumper is mounted.

This is not a message to show that CMOS clear has been completed.

8. After CMOS is cleared, the system will reboot automatically.

9. When the following message appears, press the POWER button to turn off the server and then unplug the cord.

```
+-------------------------------------------------+
|          Warning! CMOS Clear Jumper Installed   |
+-------------------------------------------------+
|   CMOS data has been reset with default values  |
|        Please remove the CMOS clear jumper      |
|                                                 |
|                  [CONTINUE]                     |
|                                                 |
+-------------------------------------------------+
```
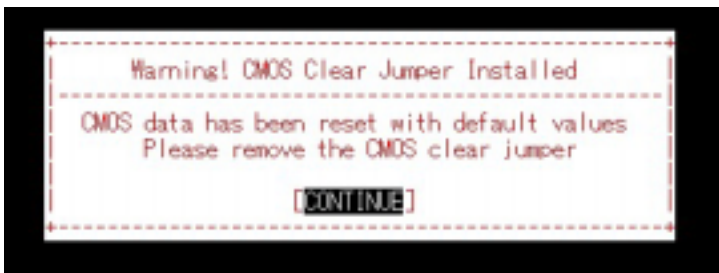
NOTE:

After CMOS clear is completed, a message will appears for 10 seconds prompting you to remove the jumper. If you select [CONTINUE] or do nothing (considered as "CONTINUE"), the process goes on. However, the server stops after sounding beeps (1-3-3-2) during POST.

This is not an error; this rechecks the presence of the jumper to prevent you from forgetting to dismount it. In this case, power off/on the server and continue from Step 10.

10. Remove the PCI Module #1 from the server (see Chapter 8).

11. Reset the jumper switch.

TIPS:

Place the clip on the jumper pins 11 and 12 after use to keep the clip. If you place it on other pins, the server may malfunction.

12. Mount PCI Module #1 again to the server (see Chapter 8).

13. Mount PCI Module #2 (on which CMOS has not been cleared) to the server.

14. Shortly after you connect the power cord, the BMC status LED of PCI Module #2 will start to blink.

15. When CMOS clear is completed, the BMC status LED will go off.

NOTE:

The BMC status LED blinks to show that synchronous processing is being performed between the two modules. When this process is complete, CMOS has also been cleared on PCI Module #2

TIPS:

- For the location of the BMC status LED, see "Names and Functions of Components" in Chapter 2.

- For description of the BMC status LED, see "LED" in Chapter 2.
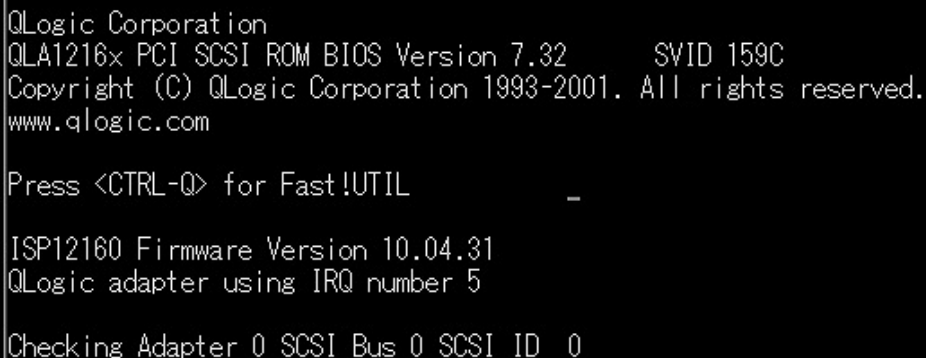
How to Clear Passwords

1. Power off the server and unplug the power cord(s).

2. Remove the PCI modules (#1 and #2) from the server (see Chapter 8).

3. Make setting of jumper switch on one PCI module (PCI Module #1 in this example) to clear passwords.

    > **IMPORTANT:**
    >
    > ■ Use the clip located on jumper pins (pins 11 and 12) on the motherboard.
    >
    > ■ Do not lose the clip.

4. Mount the PCI module to the server (see Chapter 8).

5. Plug the power cord; when the POWER Switch LED turns on, press it to power on the server.

6. When the following POST screen appears after the startup, press the POWER Switch to turn off the power.

```
QLogic Corporation
QLA1216x PCI SCSI ROM BIOS Version 7.32     SVID 159C
Copyright (C) QLogic Corporation 1993-2001. All rights reserved.
www.qlogic.com

Press <CTRL-Q> for Fast!UTIL           _

ISP12160 Firmware Version 10.04.31
QLogic adapter using IRQ number 5

Checking Adapter 0 SCSI Bus 0 SCSI ID  0
```

7. Unplug the power cord.

8. Remove PCI Module #1 from the server (see Chapter 8).

9. Reset the jumper switch.

TIPS:

Place the clip on the jumper pins 11 and 12 after use to keep the pin.
If you place it on other pins, the server may malfunction.

10. Remove the PCI Module #1 from the server (see Chapter 8).

11. Mount PCI Module #2 (on which Password has not been cleared) to the server.

12. Shortly after you connect the power cord, the BMC status LED on PCI Module #2 will start to blink.

13. When Password clear is completed, the BMC status LED will go off.

NOTE:

The BMC status LED blinks to show that synchronous processing is being performed between the two modules.   When this process is complete, Password has also been cleared on PCI Module #2

TIPS:

- For the location of the BMC status LED, see "Names and Functions of Components" in Chapter 2.

- For description of the BMC status LED, see "LED" in Chapter 2.

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Chapter 5

Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER, integrated setup software, can automatically detect the hardware connected to an NEC Express5800/ft series machine to advance the processing. The hardware subject to setup with the NEC EXPRESSBUILDER should have the same configuration as that for operation.

Start Menu

The NEC 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 NEC EXPRESSBUILDER CD-ROM

For the procedure, insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the NEC Express5800/ft series and start the NEC Express5800/ft series from the system in the NEC EXPRESSBUILDER. When the NEC Express5800/ft series is started by using this procedure, the NEC EXPRESSBUILDER top menu shown on the right appears.

Perform the NEC Express5800/ft series setup from this menu.

IMPORTANT:

■ Don't use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 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 "NEC EXPRESSBUILDER Top Menu" for details.

■ Booting (starting) the server from NEC EXPRESSBUILDER CD-ROM in the consoleless state

If the NEC EXPRESSBUILDER is started from the CD-ROM drive in the server with the keyboard, mouse, and/or display unit not connected to the server, the NEC EXPRESSBUILDER Tools Menu shown on the right appears on the screen of the management computer (PC) connected to the server through LAN or COM (serial port).
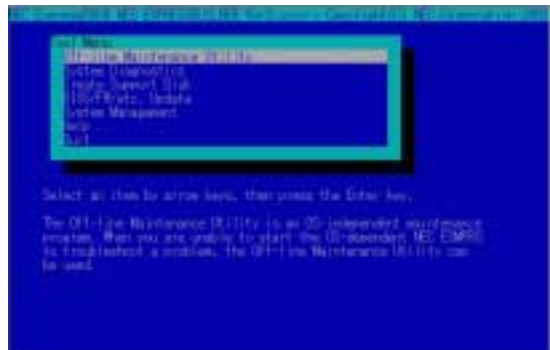
Then operate the server remotely from the management PC by using the items in the menu.

> **IMPORTANT:**
>
> - Don't use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.
>
> - To use the consoleless feature, make sure that keyboard is not connected to the server. When a keyboard is connected, the consoleless feature is disabled because the NEC EXPRESSBUILDER determines that the server has a console. (The menu will not be displayed on the management PC.)

See "Consoleless Menu" described later for details.

- Inserting NEC EXPRESSBUILDER CD-ROM after Windows startup

  The "Master Control Menu" (see figure below) starts automatically after you place the "NEC EXPRESSBUILDER" in the CD-ROM drive. A dialog box called "Master Control Menu" will appear.

  For this dialog, see "Master Control Menu" described later.
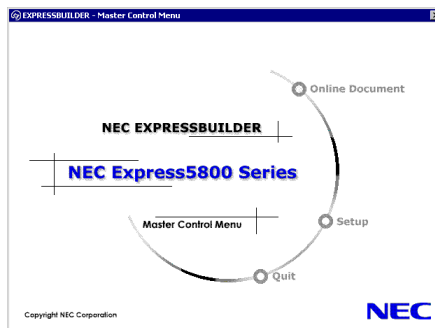
NEC EXPRESSBUILDER Top Menu

The NEC EXPRESSBUILDER top menu is used for the setup of hardware and the setup and installation of OS.

Start

Start the NEC 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 NEC 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 NEC EXPRESSBUILDER.

After the NEC EXPRESSBUILDER is started, the NEC EXPRESSBUILDER top menu shown below appears.
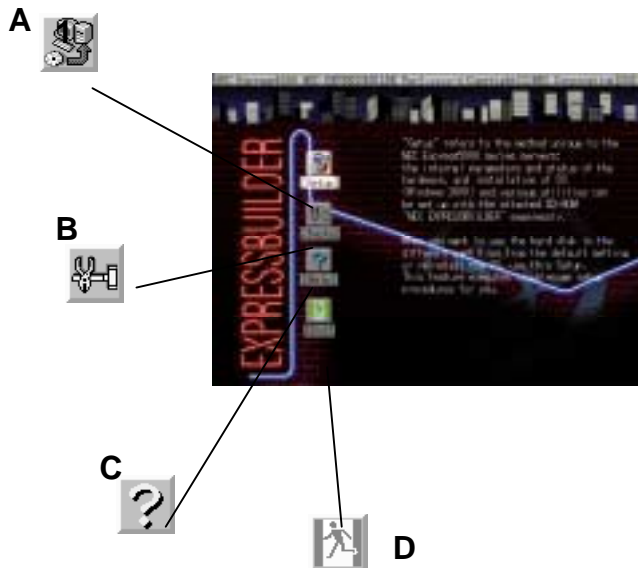
A   Setup
Performs various automatic setup operations including settings of internal parameters and states of hardware and installations of Windows 2000 Advanced Server and several utilities. Select this setup procedure if hard disks are used in a partition different from that defined at the purchase, or if OS is reinstalled.

B   Tool
Starts each of the utilities stored in the NEC EXPRESSBUILDER individually to allow the operator to provide setup.   Enables the setup without influence of installed OS.

C   Help
Describes the NEC EXPRESSBUILDER. We recommend you to read through the help

before the setup.

D   Exit
The NEC EXPRESSBUILDER termination screen appears.

Setup

The setup program is exclusively used for your server to perform automatic setup operations within the range from the settings of internal parameters and states of hardware to the installation of Windows 2000 Advanced Server and several 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 2000 Advanced Server in your server, use the setup program (excluding the case of performing the setup for the first time after the purchase). Any other methods cannot install Windows 2000 Advanced Server in the server.

 ■ Because the setup is started from its first stage, the execution of the setup causes the data in the hard disk to be erased.

Tools

The Tools Menu is used to start each of the several utilities stored in the NEC 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 diagnosis is performed or a support disk is created. The items in the Tools Menu are described below.

```
NEC Express5800 NEC EXPRESSBUILDER Ver3. xxxx-x Copyright (C) NEC Corporation 2003

Tools Menu                                    RAID Board: None
                                              Server Management Board: None
Off-line Maintenance Utility                  System Configuration: None
System Diagnostics
Create Support Disk
BIOS/FW/etc. Update
System Management
Help
Return to the Top Menu
```
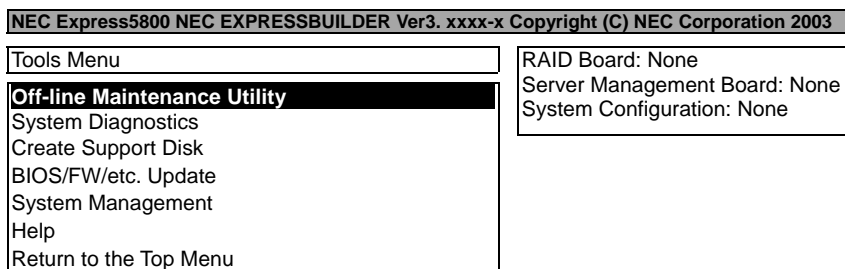
■ Off-line Maintenance Utility

   The Off-line Maintenance Utility analyzes the cause of a fault if it occurs. See the description in 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 diagnosis 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 starting support disk for starting a utility within the NEC 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 appearing on the screen on the floppy disk labels, they can be easily managed later.

   The customer should prepare the floppy disks for creating the support disks.

   – Windows 2000 OEM-DISK for NEC EXPRESSBUILDER

       Creates a support disk for installing Windows 2000 Advanced Server. (No need to create this disk when installing the operating system with the Setup.)

   – ROM- DOS Startup FD
       The support disk for starting the ROM -DOS system is created.

   – Off-line Maintenance Utility FD
       The support disk for starting the Off-line Maintenance Utility is created.

   – 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/FW were stored in. After the reboot, an update program is started automatically from the floppy disk, and various BIOS/FW's 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.

■ System Management functions

Allow you to make settings of BMC (Baseboard Management Controller) to use its report functions and remote control from the management PC.

■ Help

Indicates the descriptions on several features of the NEC EXPRESSBUILDER.

■ Return to the Top Menu

Indicates the NEC EXPRESSBUILDER top menu.

Consoleless Menu

The NEC EXPRESSBUILDER contains the "consoleless" feature that enables configuration of the server by remote operation from the management PC, even if a console device such as keyboard is not connected to the server.

> **IMPORTANT:**
>
> - Don't use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.
>
> - To use the consoleless feature, make sure that keyboard is not connected to the server. When a keyboard is connected, the consoleless feature is disabled because the NEC EXPRESSBUILDER determines that the server has a console. (The menu will not be displayed on the management PC.)

Starting

Depending on the connection between the management PC and the main unit, there are two ways for startup:

- Startup from the management PC connected to LAN

- Startup from the management PC directly connected (serial port B)

For startup procedures, see "Remote Console Connection When no Console is Hooked up" described later in this chapter.

> **IMPORTANT:**
>
> - Do not change the boot device order in the BOOT menu of BIOS SETUP.   The consoleless feature cannot be used if the CD-ROM drive is not the first device to launch the system.
>
> - For LAN connection, you can only use LAN port 1.
>
> - For direct connection, you can only use Serial port B.
>
> - For consoleless remote operation of the NEC Express5800/ft series, you need to save configuration information to a floppy disk.   Prepare a formatted floppy disk.

> **TIPS:** BIOS will be set as follows:
>
> - RomPilot Support: [Enabled]
> - Serial Port B: [2F8, IRQ3]
> - Serial Port Address: [On-board COM B]
> - Baud Rate: [19.2K]
> - Flow Control: [None]
> - Console Connection: [Direct]

Menu Items

Only the menu items available in consoleless operation are extracted from the NEC EXPRESSBUILDER Top Menu.   See the NEC EXPRESSBUILDER Top Menu described earlier for each function.
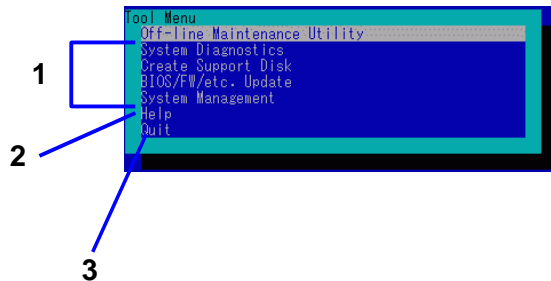
1 See the "NEC EXPRESSBUILDER Top Menu".
2 Shows detailed explanation of each function.
3 Terminate the NEC EXPRESSBUILDER.

IMPORTANT:

- The following functions differ from the Tools Menu in the NEC EXPRESSBUILDER Top Menu.

    – Contents and operations of System Diagnostics (see "System Diagnostics" in Chapter 6 for details.)

    – Disk type created in "Created Support Disk".

- System Diagnostics Utility
  When no keyboard is connected to the server, the System Diagnostic window is not displayed on the local console.   Make sure to connect the keyboard to the server if you work on this utility from the local console.

Master Control Menu

The Master Control Menu is used to:

- Read documentation,

- Install the management software, and

- Install the viewer application (Adobe Acrobat Reader).

NOTES:

- ■ Master Control Menu requires Microsoft Windows 95 (or later) or Windows NT 4.0 (or later).

- ■ To read documentation (HTML and PDF files) in the NEC EXPRESSBUILDER CD-ROM, the HTML browser (Microsoft Internet Explorer Version 5.0 (or later) or Netscape Communicator Version 4.0 (or later)), and Adobe Acrobat Reader Version 4.05 (or later) are required in your system.

Put the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive. Master Control Menu automatically appears on the screen. If the Autorun feature is invalid in your system, run the \MC\1ST.EXE file in the CD-ROM directly. Some items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application.

To use Master Control Menu:

- Click [Online Document], [Setup] or [Quit], or

- Right-click Master Control Menu window.

NEC ESMPRO Agent and Manager

NEC Express5800/ft series system management applications "NEC ESMPRO Manager" and "NEC ESMPRO Agent" are bundled to accessory CD-ROM "NEC EXPRESSBUILDER."

This manual describes the functions and features provided by NEC ESMPRO Manager and NEC ESMPRO Agent and the notes on their operations.

These applications are necessary for continuous operation of NEC Express5800/ft series.

Overview

NEC ESMPRO Manager and NEC 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 NEC ESMPRO Manager and NEC ESMPRO Agent?

  NEC ESMPRO Manager and NEC ESMPRO Agent are server management software used to manage and monitor NEC Express5800 series systems on the network. The installation of NEC ESMPRO Manager and NEC ESMPRO Agent enables the server configuration, performance, and fault information to be acquired, managed, and monitored realtime and also the occurrence of a fault to be detected immediately by the alert report function.

■ Effects of using NEC ESMPRO Manager and Agent

NEC ESMPRO Manager and NEC ESMPRO Agent have sufficient effects on a variety of needs in versatile and complicated system environments.

– Detection of server fault

NEC ESMPRO Agent collects a variety of fault information on NEC Express5800 series systems to identify the states of the systems. If a server detects a fault, the server provides NEC ESMPRO Manager with the proper alert report.

– Prevention of server fault

NEC ESMPRO Agent includes the preventive maintenance function predicting the occurrence of a fault in advance as countermeasures for preventing faults from occurring. It can previously detect the increase in the cabinet temperature and the empty capacity in a file system.

– Management of server operation status

NEC ESMPRO Agent can acquire the detailed hardware configuration and performance information on NEC Express5800 series systems. The acquired information can be viewed at any point through NEC ESMPRO Manager.

– Collective management of distributed servers

NEC ESMPRO Manager provides the GUI interface that allows servers distributed on the network to be managed efficiently.

Detection of Server Fault

NEC ESMPRO Manager and NEC 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, NEC ESMPRO Agent detects the fault and reports the occurrence of the fault to NEC ESMPRO Manager (alert report). NEC ESMPRO Manager displays the received alert in the alert viewer and also changes the status colors 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 NEC ESMPRO Agent.

Component	Reported information
CPU	• CPU load is over the threshold • CPU degrading, etc.
Memory	ECC 1-bit error detection, etc.
Power supply	• Voltage lowering • Power failure, etc.
Temperature	Temperature increase in cabinet, etc.
Fan	Fan failure (decrease in the number of revolutions), etc.
Storage	File system usage rate, etc.
LAN	• Line fault threshold over • Send retry or send abort threshold over, etc.

Prevention of Server Fault

NEC ESMPRO Agent includes the preventive maintenance function forecasting the occurrence of a fault as countermeasures for preventing faults from occurring.

NEC ESMPRO Manager and NEC ESMPRO Agent can set the threshold for each source in the server. If the value of a source exceeds the threshold, NEC ESMPRO Agent reports the alert to NEC ESMPRO Manager.

The preventive maintenance function can be set for a variety of monitoring items including cabinet temperature, and CPU usage rate.

Management of Server Operation Status

NEC ESMPRO Agent manages and monitors a variety of components installed in the server. You can view the information managed and monitored by NEC ESMPRO Agent on the data viewer of NEC ESMPRO Manager.

NEC 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.

Monitoring (Management) of NEC Express5800/ft series

NEC Express5800/ft series is a fault tolerant system. It can continue the operation even if a major component fails. NEC Express5800/ft series improves the system availability with the hardware, NEC ESMPRO, and system software functions.

If a major componentfails, the NEC ESMPRO fault report function can notify the system Administrator of the occurrence of the fault. In addition, the data viewer of NEC ESMPRO Manager can monitor the system status and also identify the failed component.

NEC ESMPRO provides several maintenance functions such as the update of F/W and BIOS in the NEC Express5800/ft series in the online state (in which the system continues the operation but the components used to update F/W or BIOS is suspended) and the suspension of a specific component.

The table below lists the NEC Express5800/ft series management tasks using NEC ESMPRO and system functions.

NEC Express5800/ft series management task	NEC ESMPRO function or tool (on managed NEC Express5800/ft series)*	NEC ESMPRO function or tool (on management manager)
Monitoring of major component states	–	NEC ESMPRO Manager data viewer
Diagnosis and start/stop of major components and F/W update	NEC ESMPRO Agent ft server utility	NEC ESMPRO Manager data viewer
BMC F/W update	NEC ESMPRO Agent BMC F/W update utility	NEC ESMPRO Manager BMC F/W update utility
Confirmation of alert or confirmation of fault occurrence event information	Windows 2000 standard management tool Event Viewer	NEC ESMPRO Manager Alert Viewer
Confirmation of H/W error log	NEC ESMPRO Agent	NEC ESMPRO Manager

*   When the administration manager is also the managed NEC Express5800/ft series (or NEC ESMPRO Manager is installed on the managed NEC Express5800/ft series), all functions of the administration manager can be used on the managed NEC Express5800/ft series.

The report of a fault occurrence in the NEC Express5800/ft series (alert) is immediately sent to the NEC ESMPRO Manager. When the NEC 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.
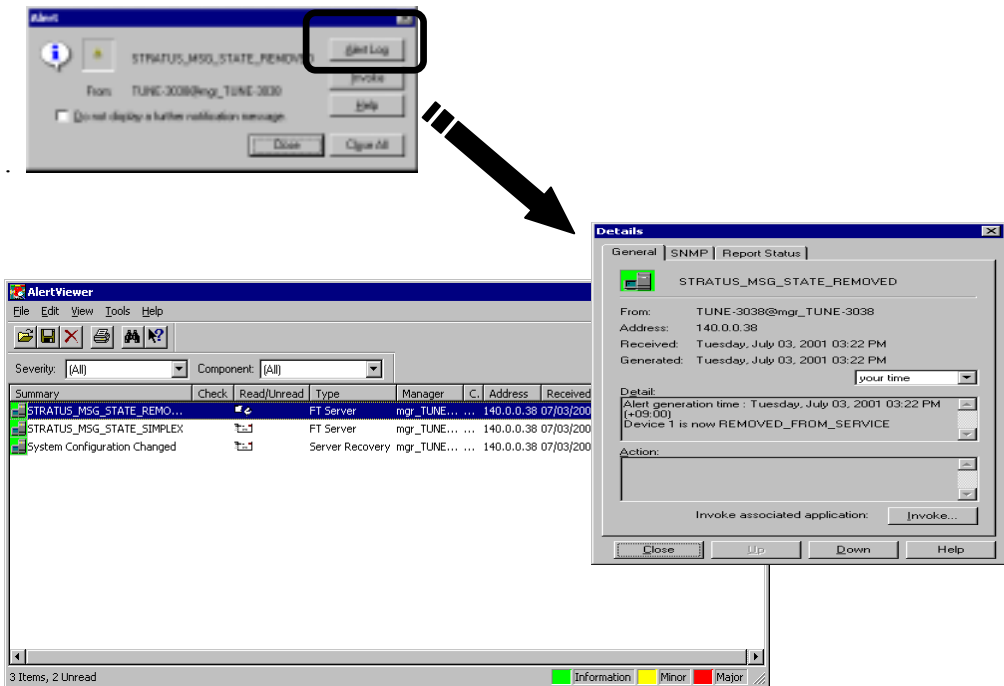
Collective Management of Distributed Servers

The excellent GUI provided by NEC 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.

NEC 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.
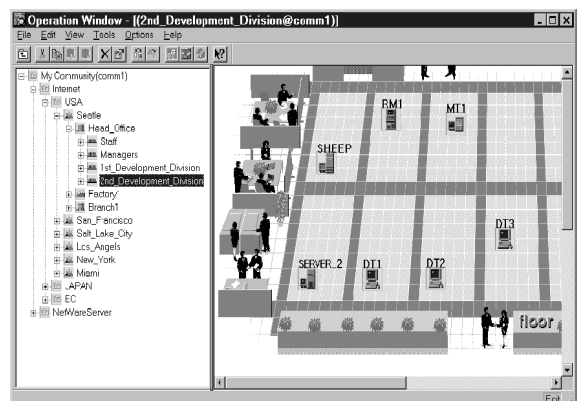
■ Data Viewer

The data viewer indicates the server source configuration information in the Explorer format. In addition, it changes the status color of the failed server component. This enables you to identify the failed portion.
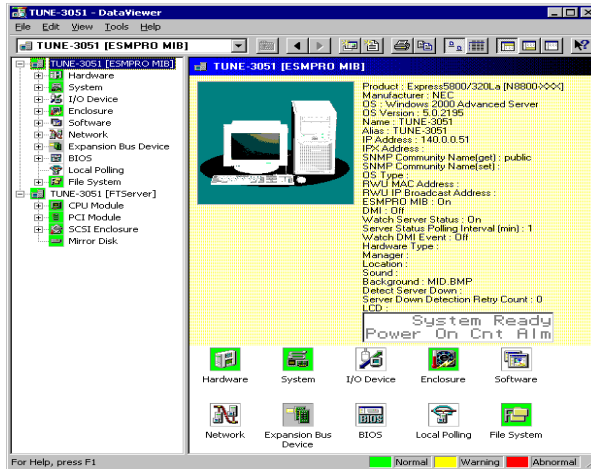
■ Alert Viewer

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.
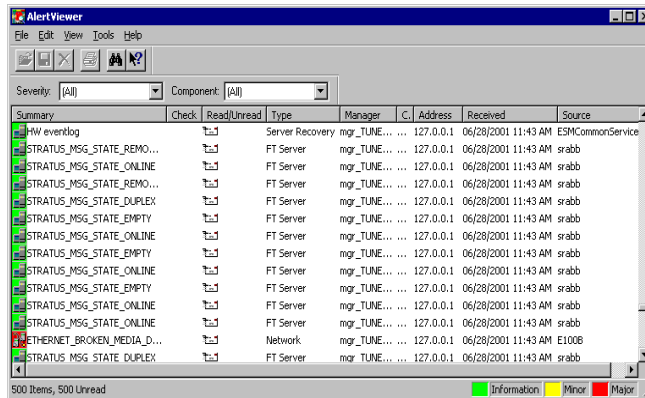
NEC ESMPRO Agent

The NEC ESMPRO Agent utility plays the role of the agent between the NEC Express5800/ft series and NEC ESMPRO Manager (management PC).

Operation Environment

NEC ESMPRO Agent can be operated in the hardware and software environments shown below.

- Hardware

  - Installation system   NEC Express5800/ft series

  - Memory   Memory capacity required to operate OS + 22.0 MB or larger

  - Empty capacity of hard disk   36.0 MB or larger

- Software   Windows 2000 Advanced Server

Preparation before Setup

Be sure to read the following description before system installation or setup.

To operate NEC ESMPRO Agent, you need to make settings of TCP/IP and the SNMP of components associated with TCP/IP.

TCP/IP Setting

See the Help started from the Start menu for how to set TCP/IP.

SNMP Service Setting

To install the SNMP Service:

1. Open [Add/Remove Programs] in [Control Panel].

2. Click [Add/Remove Windows Components].

3. Select [Management and Monitoring Tools] in the Windows component wizard and click the [Details...] button.

4. Check the check box of [Simple Network Management Protocol].

5. Click the [Next] button.

The file copy operation is started.

6. After the file copy is finished, click the [Finish] button.

To change the settings of the SNMP Service:

1. Double-click [Administrative Tool] in [Control Panel].

2. Start [Services] in [Administrative Tool].

3. Select [SNMP Service] from the service list and then [Properties] in the [Action] menu.

The "SNMP Properties" dialog box appears.

4. Enter "public" in the [Community name] box in the [Traps] property sheet and click the [Add to list] button.

> **IMPORTANT:** To change the community name of traps to be received from the default "public" in the NEC ESMPRO Manager site, enter the same name as the community name newly set in the NEC ESMPRO Manager site.

5. Click the [Add...] button in [Trap destinations].   After entering the IP address of the NEC ESMPRO Manager machine of the send destination in the [Host name, IP or IPX address] box, click the [Add] button.

Set the receive community name in the NEC ESMPRO Manager site and the community name to be sent together with the trap in the NEC ESMPRO Agent site so that they have the same value. It is intended to have NEC ESMPRO Manager receive the trap from NEC ESMPRO Agent correctly.

> **IMPORTANT:** If the IP address (or host name) of the remote NEC ESMPRO Manager specified as the trap send destination in the setup of the manager report (TCP/IP), the message warning the duplication appears. The specification of the same NEC ESMPRO Manager causes to be reported doubly.

6. Open "Security" property sheet; add "public" to "Accepted community names" and set its authority to "READ CREATE" or "READ WRITE. "

Select [Accept SNMP packets from any host.]

> **IMPORTANT:**
>
> ■ If you entered another community name instead of "public" in Step 4, add that name to "Accepted community names" too.
>
> ■ Unless you set the acceptable community's authority to "READ CREATE" or "READ WRITE," you cannot perform monitoring from NEC ESMPRO Manager.

< Setup of receiving SNMP packets from specific hosts only >

Select [Accept SNMP packets from these hosts], specify IP addresses of the hosts, IP addresses of the servers to install Agent, and the loop-back address (127.0.0.1).

< Setup of receiving SNMP packets from specific communities only >

Change the name of the community receiving SNMP packets from the default "public" to any name.

> **IMPORTANT:**
>
> ■ If the community name is changed, the community of NEC ESMPRO Agent is changed and registered by starting from [Control Panel]. To change the community to another and register it, use the [SNMP Community] list box in the [General] tab.
>
> ■ To allow NEC ESMPRO Agent to receive SNMP packets sent from NEC ESMPRO Manager, set the send community name in NEC ESMPRO Manager to be the same as that accepted by the SNMP Service in NEC ESMPRO Agent.

7. Terminate the network setup.

> **IMPORTANT:**
>
> ■ If the SNMP Service is added after adaptation of the service pack in installation of OS, adapt the service pack again. If not, the SNMP Service may not operate correctly. This then disables NEC ESMPRO Agent to be operated.
>
> ■ The SNMP Service is required for operating NEC ESMPRO Agent. If the SNMP Service is deleted after the installation of NEC ESMPRO Agent, install the SNMP Service and then reinstall NEC ESMPRO Agent.
>
> ■ Some software products provided by other vendors use the SNMP Service. If the SNMP Service and NEC ESMPRO Agent are installed in the system in which such software as above is installed, it may be impossible to start NEC ESMPRO Agent services. If so, delete the SNMP Service once and install the service again. After which, reinstall NEC ESMPRO Agent and the other vendor's software.

System Update

To install NEC ESMPRO Agent in Windows 2000 Advanced Server, necipmi.sys needs to be installed in advance. For the installation of necipmi.sys, use the NEC EXPRESSBUILDER CD-ROM shipped with the system to update the system.

Refer to Chapter 3 for the system update.

If necipmi.sys is not installed yet, the message shown below appears and the setup of NEC ESMPRO Agent is suspended.

> "NEC ESMPRO Agent requires the following file.
> Please update the NEC Express5800 system before installing NEC ESMPRO Agent.
> necipmi.sys"

Installation

NEC ESMPRO Agent is automatically installed together with the installation or re-installation of the NEC Express5800/ft series.

NEC ESMPRO Agent may be installed manually on the master control menu of NEC EXPRESSBUILDER as follows:

1. Login to the system with user name "Administrator."

2. Insert CD-ROM "NEC EXPRESSBUILDER" into the CD-ROM drive.

> **TIPS:** The CD-ROM drive may be either the drive connected to the system or any drive located on the network and connected by the LAN Manager. (These are collectively called CD-ROM drive hereafter).

> **IMPORTANT:** To use a CD-ROM drive on the network, assign the network driver to the drive and then execute MC\1ST.EXE of the drive. Do not start the CD-ROM drive from the network computer in Explorer.

The autorun function automatically displays the master control menu of NEC EXPRESSBUILDER.

3. Click [NEC ESMPRO] in [Software Setup].

The NEC ESMPRO setup is started to display the main menu.

4. Click [Agent] in the main menu of the NEC ESMPRO setup.
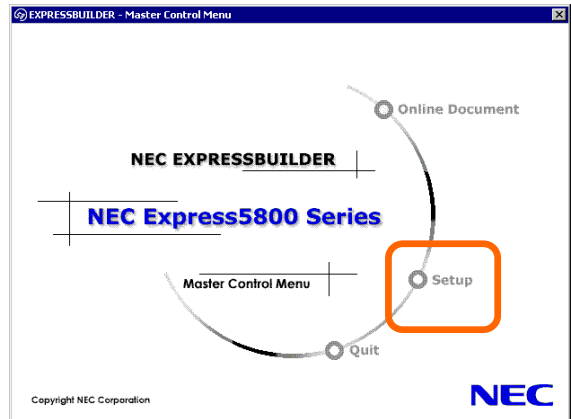
TIPS: The available menus vary depending on OS types. (The menus that cannot be installed are displayed gray.)
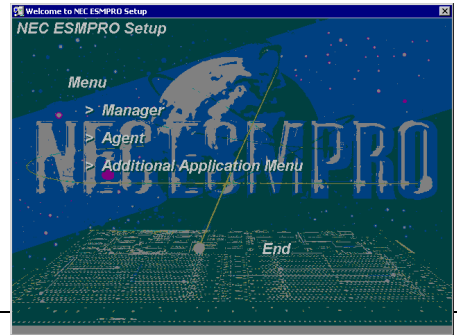
IMPORTANT:

- Double-clicking to select a menu may display two same dialog boxes. Click the [End] button to close one of the dialog boxes.

- If you click the [Cancel] button during setup, the message asking whether to stop or not to stop the installation will appear. You can stop the installation by clicking on the [Stop] button (the main menu remains displayed). However, the file having been setup halfway will not be deleted.

5. Click the [Next] button.

TIPS: If NEC ESMPRO Agent is already installed, the dialog box "NEC ESMPRO Agent already installed" appears. Clicking on the [Update] button and then the [Next] button will erase the old agent and install the NEC ESMPRO Agent anew.
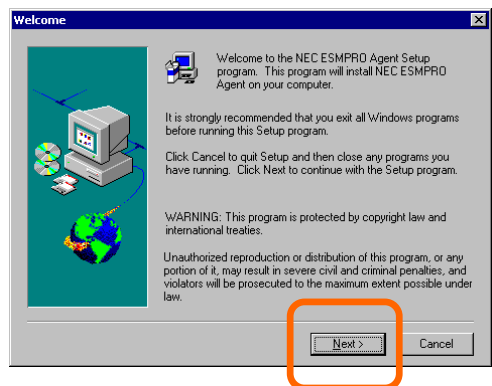
6.   Select a machine to install from the list.

> **TIPS:** If the setup program succeeds in the definition of the machine
> type, the operation is advanced to the next step without displaying the
> dialog box for selecting the machine type.

7.   Enter the path in which NEC ESMPRO Agent is installed and click the [Next] button.

The NEC ESMPRO Agent module is installed below the \ESM directory of the root
partition in default. If no problem is found, click the [Next] button without any
modification.

To change the installation directory, click the [Reference] button, specify the desired
installation directory with the full path including the drive name, and click the [Next]
button.

8.   Enter the path in which DMI is installed and click the [Next] button.

The DMI module is installed in the \DMI\WIN32 directory of the root partition as default.
If DMI2.0 SP is already installed, the path will be the default installation path.

To change the installation directory, click the [Reference] button, specify the desired
installation directory with the full path including the drive name, and click the [Next]
button.

The setup of the file copy and NEC ESMPRO Agent operation environments is started.

9.   When the installation end window appears, click the [OK] button.

The installed is complete. The functions of installed NEC ESMPRO Agent will be enabled
after the system is restarted.

> **IMPORTANT:** If the installation of NEC ESMPRO is completed, the
> main menu for the NEC ESMPRO setup remains displayed. Note that
> the main menu may be hidden by another dialog box. To terminate the
> NEC ESMPRO setup, click [End] in the main
> menu.

Setup of NEC ESMPRO Agent

The settings of installed NEC ESMPRO Agent remain
unchanged from those at shipment. Click the [Start] button,
[Setting], and [Control Panel] sequentially to open the
[Control Panel].

If you double-click the [NEC ESMPRO Agent] icon in
[Control Panel], the property dialog box will appear. Modify
the setting of each sheet in the dialog box to be fit to the used
environment. The notes on setup and the necessary
information will be explained in "Supplement" described
below. See the supplement for setup or suspicion of
malfunction.
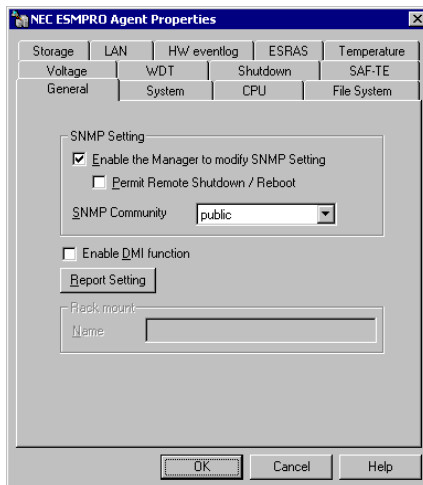
Device ID in Alert Report

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

Device name	Device ID
CPU module 1	0
DIMM1 on CPU module 1	0/0
DIMM2 on CPU module 1	0/1
DIMM3 on CPU module 1	0/2
DIMM4 on CPU module 1	0/3
DIMM5 on CPU module 1	0/4
DIMM6 on CPU module 1	0/5
CPU1 on CPU module 1	0/20
CPU2 on CPU module 1	0/21
Power supply unit on CPU module 1	0/100
CPU module 3	2
DIMM1 on CPU module 3	2/0
DIMM2 on CPU module 3	2/1
DIMM3 on CPU module 3	2/2
DIMM4 on CPU module 3	2/3
DIMM5 on CPU module 3	2/4
DIMM6 on CPU module 3	2/5
CPU1 on CPU module 3	2/20
CPU2 on CPU module 3	2/21
Power supply unit on CPU module 3	2/100
PCI module 1	10
PCI slot 1 on PCI module 1	10/0
PCI slot 2 on PCI module 1	10/1
PCI slot 3 on PCI module 1	10/2
PCI slot 4 on PCI module 1	10/3
SCSI adapter 1 on PCI module 1	10/5
SCSI bus 1 of SCSI adapter 1 on PCI module 1	10/5/0
SCSI bus 2 of SCSI adapter 1 on PCI module 1	10/5/1
Ethernet Board 1 on PCI module 1	10/6
Power supply unit on PCI module 1	10/100
PCI module 2	11
PCI slot 1 on PCI module 2	11/0
PCI slot 2 on PCI module 2	11/1
PCI slot 3 on PCI module 2	11/2
PCI slot 4 on PCI module 2	11/3
SCSI adapter 1 on PCI module 2	11/5
SCSI bus 1 of SCSI adapter 1 on PCI module 2	11/5/0
SCSI bus 2 of SCSI adapter 1 on PCI module 2	11/5/1
Ethernet Board 1 on PCI module 2	11/6
Power supply unit on PCI module 2	11/100
SCSI enclosure 1	10/40
SCSI slot 1 on SCSI enclosure 1	10/40/1
SCSI slot 2 on SCSI enclosure 1	10/40/2
SCSI slot 3 on SCSI enclosure 1	10/40/3
Electronics 1 on SCSI enclosure 1	10/40/120
Power supply unit on SCSI enclosure 1	10/40/100
SCSI enclosure 2	11/40
SCSI slot 1 on SCSI enclosure 2	11/40/1
SCSI slot 2 on SCSI enclosure 2	11/40/2
SCSI slot 3 on SCSI enclosure 2	11/40/3
Electronics 1 on SCSI enclosure 2	11/40/120
Power supply unit on SCSI enclosure 2	11/40/100

The figure below shows the actual locations of the device names displayed on the NEC ESMPRO screen.   In the case of the tower model, modules are mounted vertically instead of horizontally.
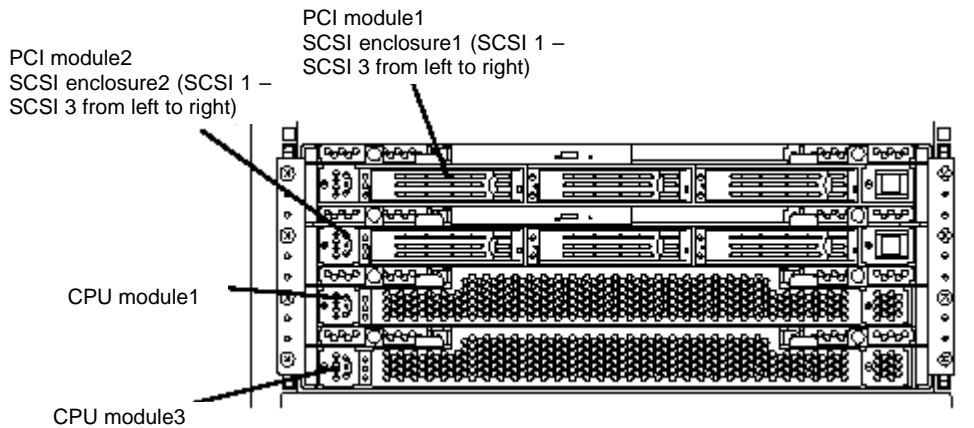
Supplement

Check the following when NEC ESMPRO Agent is installed.

Dual registration of event logs

At some types of errors, two event logs are registered for a single occurrence. (However, in the case of NEC 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 of the NEC Express5800/ft series, contact your maintenance personnel.

CPU Information

If you select [CPU Module]–[CPU] in the FTServer 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 NEC ESMPRO MIB tree.

CPU Module Status

If the CPU module is suspended, the status color of the [CPU Module] icon in the FTServer tree of the data viewer does not change from green. If the report indicating the occurrence of the system configuration change is received, check the current status with the "Status" item appearing by selecting [CPU Module]–[General].

PCI Module Status

The removal of the Ethernet cable of onboard does not change "State" of [PCI Module]–[General] in the FTServer tree of the data viewer. Check the current state with the "State" item of [PCI Module]–[Ethernet board]–[General].

Event Logs at PCI Module Startup

When a PCI module is brought up either along with OS boot or manually while OS is running, the following event will be reported to the event log.

Source: srabb
Event ID: 32
Description: "Device 10/0 is now EMPTY" or "Device 11/0 is now EMPTY"

The above event is just informational and can be ignored if the following event is reported the Event Log within a few minutes after the above precedent event is reported.

Source: srabb
Event ID: 62
Description: "Device 10/0 is now ONLINE" or "Device 11/0 is now ONLINE"

Change of Installation States of CPU and PCI Modules

If you dynamically change the configuration of the CPU or PCI 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.

SCSI Adapter Information

When you select [SCSI Adapter] → [General Information], incorrect information may appear in the "Serial number" column.

SCSI Slot Information

When the PCI module is detached and you select [SCSI Slot] → [General Information], the displayed "Hardware LED" information may not be correct.

To check the status of SCSI slots, see the string information in the "Status" column.

Impact When Module Status Changes

PCI 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 Color 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 frequently after you mount a hard disk until the mirror is completed. During this process, the status color may turn to abnormal, but when the mirror is created successfully, it will return normal.

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 temporal 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 the NEC Express5800/ft series detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults. Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [NEC ESMPRO Agent properties] in the control panel.

Community Authority

For Windows 2000 Advanced Server, the community authority, or the security function of the SNMP Service, is set to "READ ONLY" in default. With the community authority being "READ ONLY, " the remote shutdown and threshold change functions are not available with NEC ESMPRO Manager. If you desire to use these functions, set the community authority to "READ CREATE" or "READ WRITE."

Monitoring in Sleep State

NEC ESMPRO Manager cannot monitor the NEC ESMPRO Agent machine in the sleep state (system standby or system halt state).

While NEC ESMPRO Manager monitors server shutdown, the relevant NEC ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status color of the server icon becomes gray. This cannot indicate whether the NEC 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.

Installation of DMI2.0 SP (Service Provider)

NEC ESMPRO Agent uses Intel DMI2.0 SP Ver.2.54.

DMI2.0 SP creates the environment subordinate to the DMI installation directory selected in installation of NEC ESMPRO (system environment variable: WIN32DMIPATH).

If DMI2.0 SP is already installed, the installation directory cannot be changed because   the specified installation destination will be used.

Monitoring with NEC ESMPRO Manager Ver.3.8 or Earlier

Some items cannot be monitored with NEC ESMPRO Manager of version 3.8 or earlier.

NEC ESMPRO Manager Ver.4.0 is registered in NEC EXPRESSBUILDER CD-ROM. Use the NEC ESMPRO Manager Ver.4.0.

Monitoring File System in Floppy Drive

The sleep operation may fail when the Windows 2000 sleep function is used. If so, try the sleep again.

Change of SNMP Community

If the security setting of the SNMP Service of a system, where the NEC ESMPRO Agent is installed, is changed from the default "public" to a community name, change the community settings of the NEC ESMPRO Agent, too.

1. Double-click the [NEC 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.

Cooperation with BIOS on Temperature Monitoring

For temperature monitoring, NEC ESMPRO Agent is linked to BIOS to keep the temperature threshold in the BIOS of the peripheral temperature sensor to be the same as that in the NEC ESMPRO Agent. This enables the change of either threshold to be reflected on the other threshold automatically.

> **IMPORTANT:** If OS has the ACPI function, the threshold of the temperature in the BIOS links to the ACPI function managed by OS. Thus, the threshold of the temperature in NEC ESMPRO Agent has an independent value without temperature monitoring cooperation.
>
> Either of the following operations can disable the temperature monitoring by NEC ESMPRO Agent:
>
> ■ Change the setting of the temperature monitoring in the BIOS from Enable to Disable, save the setting value, and exit the BIOS SETUP.
>
> ■ If the temperature monitoring in the BIOS is already set to "Disable," save the setting (even if there was no modification to the settings) and exit the BIOS SETUP.

Even if the temperature monitoring in the BIOS is disabled, the temperature monitoring in the NEC ESMPRO Agent can be enabled from the NEC ESMPRO Manager.

The setting of the temperature monitoring in the BIOS can be changed in the procedure below:

1. Start the system. When the "NEC" logo appears, press **Esc**.

2. Press the **F2** while "Press <F2> to enter SETUP" is displayed on the screen.

   The SETUP utility of BIOS is started.

3. Select "Thermal Sensor" in the "System Hardware" menu.

4. After changing the settings, save the values and then exit the SETUP utility.

CPU Load in Coexistence with Microsoft SQLServer6.5

If NEC ESMPRO Agent is used in the following environment, the CPU load for NEC ESMPRO Agent services may increase (by 10% or higher).

Condition

■ Both Microsoft SQLServer6.5 and NEC ESMPRO Agent are installed in a single machine and the services are started.

■ The check of [Performance monitor integration], an option of Microsoft SQLServer6.5, is set to ON.

Confirmation procedure

Compare the following values defined when checking [Performance monitor integration], an option of Microsoft SQLServer6.5, when unchecking the option by using the Windows 2000/Windows NT performance monitor:

Object:	Process
Counter:	%Processor Time
Instance:	ESMCMN

IMPORTANT: After the option is changed, be sure to restart the machine. If not, the performance monitor cannot acquire the correct load rate of the service.

Countermeasures

The CPU load rate acquired in the confirmation procedure above may vary largely depending on whether the check of the SQLServer option is placed at ON or OFF. That may be caused by the increase in the CPU load rate by placing the check at ON.

This occurs due to the cause as follows; setting of the SQLServer option to ON increases the performance data items acquired from OS and thus much time is required for the performance data analysis processing in the service acquiring the performance data from OS.

If monitoring the performance data of the SQLServer is not necessary, set the SQLServer option to OFF to keep the CPU load from increasing due to acquisition of unnecessary performance data.

CPU Load Ratio of SNMP Service (snmp.exe)

While monitoring the server from NEC ESMPRO Manager, the CPU load ratio of SNMP Service on the NEC ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

NEC ESMPRO Manager and NEC ESMPRO Agent exchange information through SNMP Service. If the server status monitoring by NEC ESMPRO Manager is on (default: ON), NEC ESMPRO Manager regularly issues a request to NEC ESMPRO Agent to get the current status of the server. In response, NEC 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 NEC ESMPRO Manager or extend the monitoring interval.

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.

Setting Thresholds after Update Installation

The threshold and other setting are maintained automatically if you perform an update installation of NEC EXMPRO Agent Ver4.0.

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 EMPRO Manager, it may be displayed as follows:

- The status becomes "Unknown" (grayed out) on the data viewer.

- The current value or rpm becomes "Unknown" on data viewer.

- The status is grayed 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, necessary actions will differ depending on their status as shown below.   You can check the status of each module from the data viewer of NEC ESMPRO Manager or ft server utility.

Status	Actions
Duplex	Stop the failed CPU/PCI module.
Other than duplex or empty	Shut down the system.

NOTE:

■ If the status is "Empty," the module is not mounted.   Sensor monitoring is not conducted.

■ If disks are mounted on PCI modules, the status of both modules is "Simplex" while the disks are mirrored.   Temperature or voltage error occuring 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."

1000Base Ethernet Board Information

If you select [FTServer] → [PCI Module] → [PCI Module (ID:XX)], you will not find a 1000Base Ethernet Board tree.

See [ESMPRO MIB] → [Network].

You can judge errors at the 1000Base Ethernet Board from error notifications to a PCI slot in which a board is mounted.

You cannot clear MTBF information with ft server utility, because a 1000Base Ethernet Board tree is not created.

However, you can automatically clear MTBF information on the network board by unplugging and re-plugging the live wire.

When [ft Server] Tree Appears on Date Viewer in an Incorrect Manner

If you perform a Data Viewer startup or tree rebuilding just after the system starts up or after the PCI module starts up/shuts down, the [Ft Server] tree side may not appear normally on the Data Viewer.   In this case, wait for 5 minutes before retrying a Data Viewer startup.

Event Log Output by Inventory Service

If the service cannot get information from the system, it will list the following messages in the system event log.

The following messages will also appear if the SNMP community name in not "public."

If the following event log messages are listed, you need to restart Inventory Service.

However, even if you restart the service, device configuration, monitoring will not be performed, provided the SNMP community name in not "public."

When the following messages are listed, change detection will not be notified even if changes have been made to the device configuration.

Source: ESMSAFT

Type: Error

Event ID: 1040

Description: Error occurred at ESMPRO InventoryService during Snapshot. Specified file not found.

Source: ESMSAFT

Type: Error

Event ID: 513

Description: Error occurred at ESMPRO InventoryService during device configuration get wait.

Floppy Disk Drive Name

After unplugging and plugging the Core I/O of the primary side, 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.

Uninstall

The configuration of NEC ESMPRO Agent and BMC and the uninstallation of BMC FW Update Service are described below.

Uninstallation of NEC ESMPRO Agent

The procedure of uninstalling NEC ESMPRO Agent is described below.

IMPORTANT: Uninstallation of NEC ESMPRO Agent

- Start the uninstallation of NEC ESMPRO Agent after the system is started completely.

- If NEC ESMPRO Agent is uninstalled just after the system startup, the setup program may freeze displaying the [Service Being Deleted…] dialog box. Shutdown the system by using "Task Manager" or other operation. Then uninstall NEC ESMPRO Agent after the system is started completely.

- The installation of NEC ESMPRO Agent causes the uninstaller of DMI2.0 SP (Service Provider) to be registered. DMI2.0 SP can be deleted by using the uninstaller. However, NEC ESMPRO Agent should be uninstalled before DMI2.0 SP can be deleted.

    (1)   Start [Add/Remove Programs] in [Control Panel].

    (2)   Select [DMI2.0 SP (NEC ESMPRO)] and click [Add or Delete].

- With use of NEC EXPRESSBUILDER:

    1. Make the main menu of the NEC ESMPRO setup appear by referring to the section "Install" in this document.

    2. Click [NEC ESMPRO Agent].

    The [Welcome to Setup of NEC ESMPRO Agent] dialog box appears.

    3. Click the [Next] button.

    Message "NEC ESMPRO Agent is already installed" appears.

    4. Select [Delete] and then click the [Next] button.

    Now NEC ESMPRO Agent is uninstalled.

- Without use of NEC EXPRESSBUILDER:

    1. Start [Add/Remove Programs] on [Control Panel].

    2. Select [NEC ESMPRO Agent] and click [Add/Remove].

    Now NEC ESMPRO Agent is uninstalled.

Uninstallation of BMC Configuration and BMC FW Update Service

If NEC ESMPRO Agent is installed, the uninstaller of the BMC configuration and that of NEC BMC FW Update Service are registered.

The use of these uninstallers allows the BMC configuration and NEC BMC FW Update Service to be deleted as follows:

1. Start [Add/Remove Programs] on [Control Panel].

2. Select [NEC BMC Configuration] or [NEC BMC FW Update Service] and click [Change/Remove].
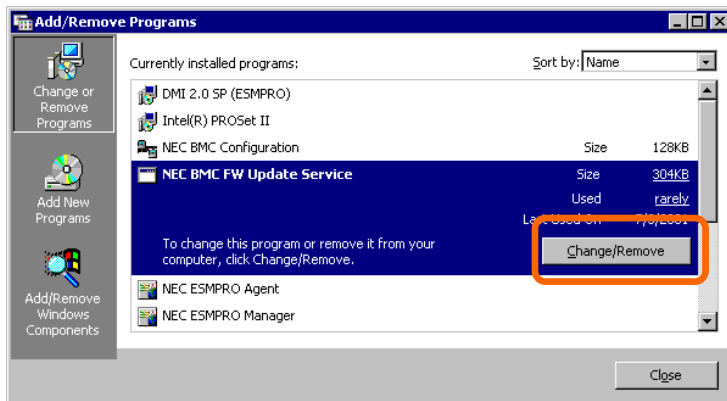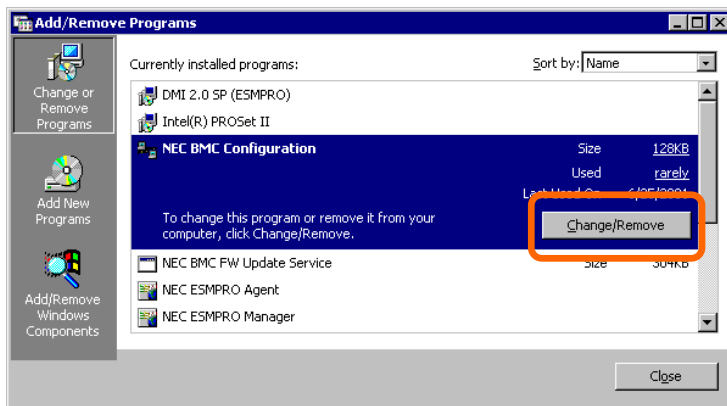
NEC ESMPRO Manager

To monitor and manage a computer, on which NEC ESMPRO Agent is installed, with a management PC online, use NEC ESMPRO Manager that is bundled with the product.

For detailed procedures of installation and setting, see online documents or NEC ESMPRO Online Help.

> **TIPS:** Online documents provide cautions and information for using NEC ESMPRO Manager. See *NEC ESMPRO Ver. 4.0 User's Guide* in the NEC EXPRESSBUILDER CD-ROM.

Monitoring by Use of Data Viewer

To monitor the state of the NEC Express5800/ft series on a management computer with installation of NEC 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 NEC 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 NEC ESMPRO Manager to start the data viewer (in the following description, the start procedure of the data viewer is omitted).

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 [FTServer] 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, dump acquisition, and diagnosis of the
   CPU modules to be provided. See "Maintenance of NEC Express5800/ft series" 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 NEC Express5800/ft series" described later for the update of BIOS of the CPU modules. The detailed device identification information can be checked by selecting [ESMPRO MIB] tree→[Hardware] tree→[Field Replaceable Unit] tree.

■ CPU

Allows the information of the CPU on the CPU modules to be viewed.
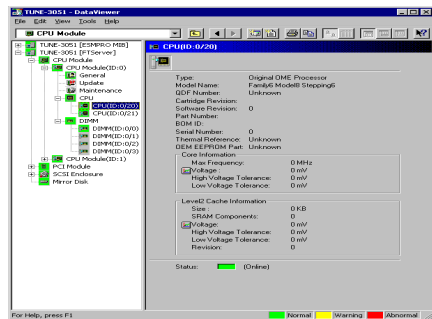
■ DIMM

Allows the information of DIMM on the CPU modules to be viewed.
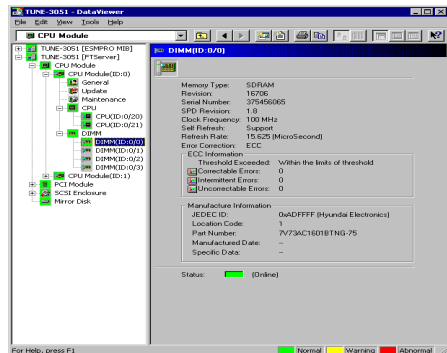
Monitoring PCI Module

To monitor the PCI modules and the components on the PCI modules, refer to the [PCI Module] tree. To see the information on the [PCI Module] tree, select the target PCI module from [PCI Module] in the [FTServer] tree.

You can see the following information on the PCI modules and the components on the PCI modules of the [PCI Module] tree.

(This section describes the general information screens of the PCI modules. The components on the PCI modules are described later.)

■ General

Allows the configuration and other information of the PCI modules to be viewed.

■ Maintenance

Allows the start/stop, MTBF information clear, and diagnosis of the PCI modules to be provided. See "Maintenance of NEC Express5800/ft series" described later for the start/stop and MTBF information clear of the CPU modules.

■ Update

Allows the device identification information of the PCI modules to be viewed. The detailed device identification information can be checked by selecting [ESMPRO MIB] tree→[Hardware] tree→[Field Replaceable Unit] tree.

Monitoring PCI Slots and Devices on PCI Module

To monitor the PCI slots and devices on the PCI 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 [FTServer] 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.

■ 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.

■ PCI Bridge – General

Allows the information of bridges on the PCI bus to be viewed
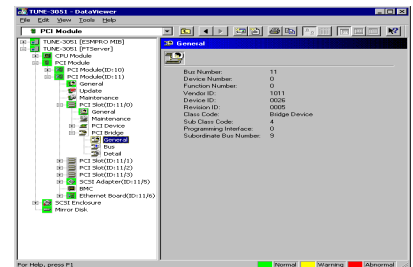
■ PCI Bridge – Bus information

Allows the bus information of a bridge on the PCI bus to be viewed.
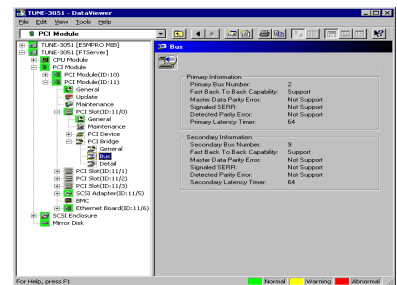
■ PCI Bridge – Detailed information

Allows the detailed information of a bridge on the PCI bus to be viewed.

Monitoring SCSI Adapter on PCI Module

To monitor the SCSI adapter on the PCI modules, see the [SCSI adapter] tree. To see the information on the [SCSI adapter] tree, select [PCI Module]→[PCI module (to which the SCSI adapter to be viewed is connected)]→[SCSI adapter] of the [FTServer] tree.

You can see the following information of the SCSI adapter in the [SCSI adapter] tree.

- General

    Allows the configuration and other information of the SCSI adapter to be viewed.

- Maintenance

    Allows the MTBF information of the SCSI adapter to be viewed or cleared.

    See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information of the SCSI adapter.

- Update

    Allows the firmware of the SCSI adapter to be updated.

    However, this function is not supported in the current version.

■ SCSI bus

Allows the information of the SCSI bus through which the SCSI adapter is connected with devices to be viewed.

See "Maintenance of NEC Express5800/ft series" described later for the primary setting of the SCSI bus.

Monitoring BMC on PCI Module

To monitor the base management controller (BMC), controller for system management, on the PCI 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 [FTServer] tree.

You can see the BMC F/W version and other information in the [BMC] tree.

Monitoring Ethernet Adapter on PCI Module

To monitor the Ethernet adapter on the PCI modules, see the [Ethernet adapter] tree. To see the information on the [Ethernet adapter] tree, select [PCI Module]→[PCI module (connected with Ethernet adapter to be seen)]→[Ethernet adapter] of the [FTServer] tree. You can see the following information of the Ethernet adapter from the [Ethernet adapter] tree.

IMPORTANT:

A 1000Base Ethernet Board tree is not created at [FTServer].　See [Network] at [ESMPRO MIB].

To check errors of 1000Base Ethernet Board, see error notifications to a PCI slot in which a board is mounted.

- General

  Allows the configuration and other information of the Ethernet adapter to be viewed.

- Detailed

  Allows the detailed statistic and other information of the Ethernet adapter to be viewed.

- Maintenance

  Allows the MTBF information of the Ethernet adapter to be viewed or cleared. See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the Ethernet adapter.

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 [FTServer] 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 When Module Status Changes" described above.

■ Maintenance

Allows the MTBF information of the SCSI adapter to be viewed or cleared.

See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI enclosure.

■ Update

Allows the firmware of the SCSI enclosure to be updated.

However, this function is not supported in the current version.

■ Electronics – General

Allows the configuration and other information of the SCSI enclosure electronics to be viewed.

■ Electronics – Maintenance

Allows the MTBF information of the SCSI enclosure electronics to be viewed or cleared.

See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI electronics enclosure.

■ 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 Color Changes after Hard Disk is Mounted" described above.

■ SCSI Slot – Maintenance

Allows the MTBF information of the SCSI slot to be viewed or cleared.

See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI slot.

Monitoring Mirror Disk

To monitor the mirror disk components, see the [Mirror Disk] tree. To view information on [Mirror Disk] tree, select [Mirror Disk] under [FTServer] 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 Disk]

Monitoring Hard Disk

To monitor the hard disks and detect disk failures at an early stage, use the NEC 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 NEC ESMPRO Agent detects some problem with a hard disk, it will report an alert of the problem to NEC ESMPRO Manager. Please 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.

   Device 10/40/1 is now BROKEN.

   And manager displays the problem information of the hard disk in the [SCSI enclosure] → [SCSI Slot] → [General] of the data viewer.
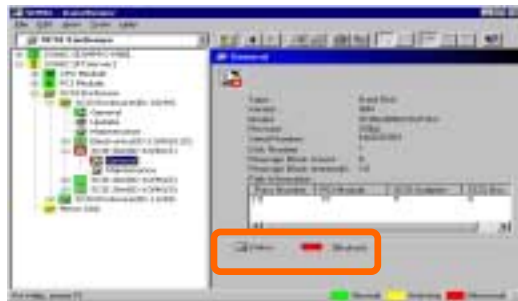
[SCSI Slot] → [General]

2. Confirmation of mirror status

To check the redundancy status of the failed mirror disk, open [Mirror Disk] screen under [FTServer].   On this screen, you can check the redundancy status of the mirror and the status of the mirrored hard disks.

[Mirror Disk]

IMPORTANT: The mirroring redundancy status will change depending 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	-
	Others	Warning
Simplex	Duplex	-
	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:
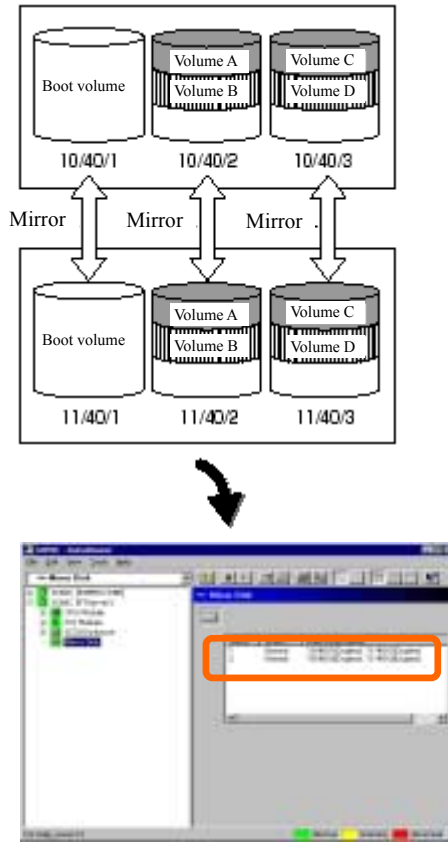
The screen shows information on a pair of hard disks that make up a mirror.   It does not show information based on volumes (ex. Volume A, Volume B).

● A volume that spans a few hard disks is mirrored (mirror volume, span volume)
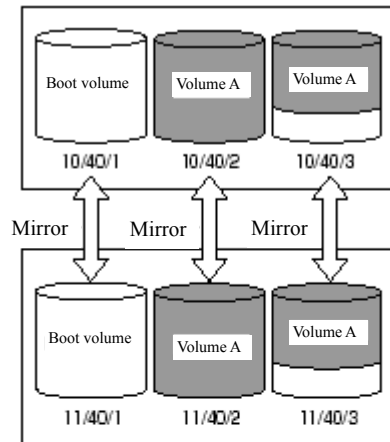
Even if a volume consists of a few hard disks, the screen shows information on each pair of hard disks that make up a mirror.   In the above example, Volume A is shown in Mirror 2 (10/40/2, 11/40/2) and Mirror 3 (10/40/3, 11/40/3), separately.   When a hard disk fails, that status will be reflected in both mirrors.

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, NEC 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."
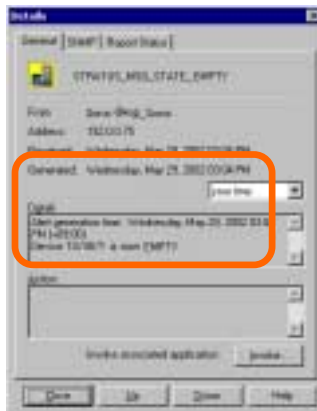
NOTE: You can identify the new hard disk by DevicePathID (ex. 10/40/1).

When one hard disk with problem was disconnected, SCSI slot changes the status to "Warning".
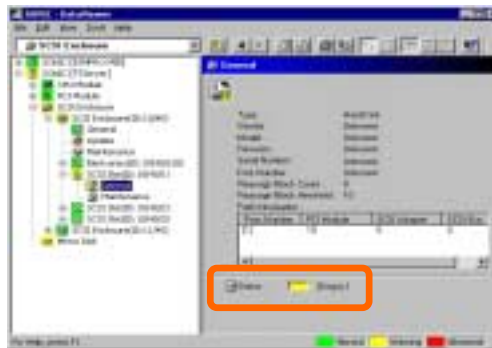
[SCSI Slot] → [General]

IMPORTANT: The status color 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".
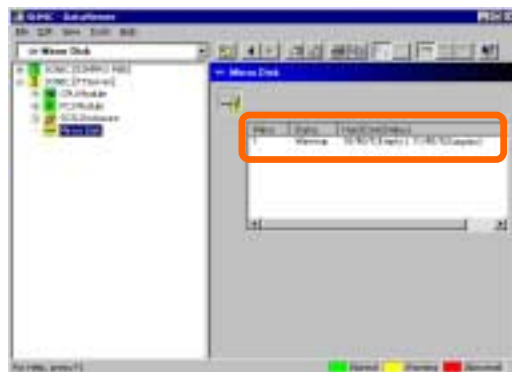
[Mirror Disk]

(3) Connect a new hard disk

Next, connect a new hard disk to the same SCSI Slot. At this time, NEC ESMPRO Agent reports the following alert to manager. And icons related to the hard disk are changed to the state of normal in the data viewer.

When the hard disk is connected, SCSI Slot changes the status to "Normal".
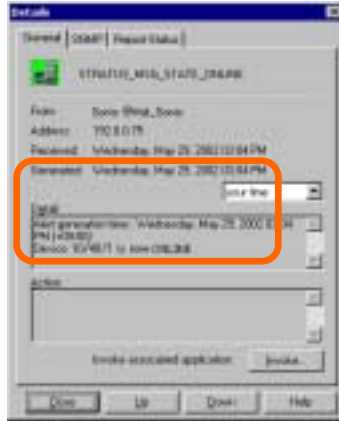
[Alert report]

TIPS: You can identify the new hard disk by DevicePathID (ex. 10/40/1).

When the hard disk is connected, SCSI Slot changes the status to "Normal".

[SCSI Slot] → [General]

Also, at this time, the state of the mirrored disks change to "Normal".
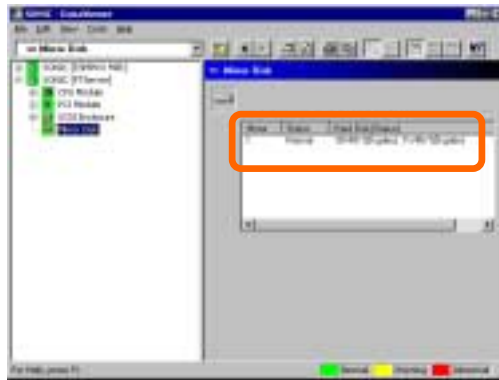
[Mirror Disk]

Maintenance of NEC Express5800/ft series

NEC Express5800/ft series maintenance can be done in two ways; one is to use NEC ESMPRO Manager for remote maintenance and the other is to use the NEC ESMPRO Agent ft server utility on the NEC Express5800/ft series for local maintenance.

> **TIPS:** To start the NEC ESMPRO Agent ft server utility installed in the NEC Express5800/ft series, select the items as follows:
>
> Start Menu→[Programs]→[NEC ESMPRO Agent]→[ft server utility]

The maintenance functions that can be executed from NEC 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	√	√	√	√	√	√	√	√	√	√
PCI module	√	√	√	√	√	√	√	√	–	–
PCI slot	–	–	–	–	–	–	–	–	–	–
Ethernet adapter	–	–	–	–	√	√	–	–	–	–
SCSI adapter	–	–	–	–	√	√	–	–	–	–
SCSI enclosure	–	–	–	–	√	√	–	–	–	–
SCSI electronics	–	–	–	–	√	√	–	–	–	–
SCSI slot	–	–	–	–	√	√	–	–	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√:   Support
–:   Not support

The table below shows the component-specific maintenance functions executable from NEC 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 NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√:   Support
–:   Not support

Component	Bus reset		Change of primary SCSI bus	
	R	L	R	L
SCSI bus	–	√	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√:   Support
–:   Not support

Component	BMC firmware update	
	R	L
BMC	√	√

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√:   Support
–:   Not support

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 NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√:   Support
–:   Not support

The table below shows the support of the preventive disk maintenance (S.M.A.R.T.) setup function.

Component	Preventive disk maintenance (S.M.A.R.T.) setup	
	R	L
SCSI disk	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√:   Support
–:   Not support

Start and Stop of Components

To start or stop a component with NEC ESMPRO Manager, use the [Maintenance] tree of the component in the [FTServer] 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 ft server 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: • Only the red LED is on Only the red LED is on when the module is in one of the following states: • 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: • Only the green LED is on and in redundant configuration state The both green LEDs are on when the module is in the following state: • Duplex
PCI Module	Same as above	Same as above	Same as above	Same as above
SCSI Slot	–	–	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–:   Not support

> **IMPORTANT:** PCI 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 PCI module. For details, see "Impact When Module Status Changes" described above.

Procedure in NEC ESMPRO Manager

Start

1. Select the target component in the [FTServer] tree.

2. Check the current state with the "Status" 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 NEC Express5800/ft series as an alert.

Stop

Perform the procedure below before replacing a component.

1. Select the target component in the [FTServer] 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 NEC Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager 1
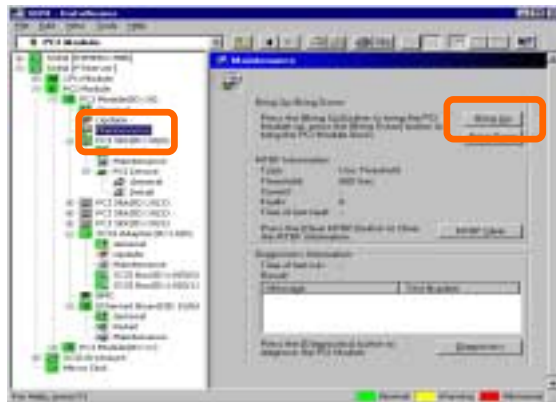
[Maintenance] screen of PCI module
[PCI Module] – [Maintenance]

Sample screen of NEC ESMPRO Manager 2
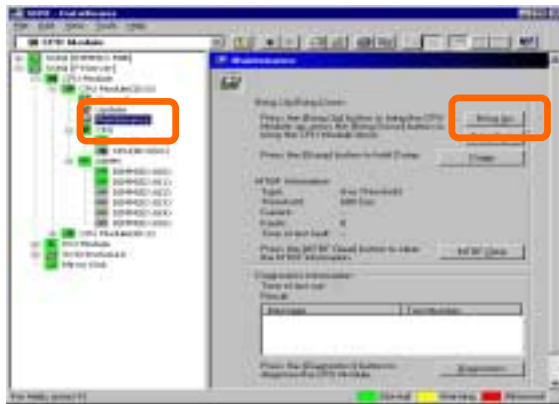
[Maintenance] screen of CPU module
[CPU Module] – [Maintenance]

Procedure in the ft server utility

Start

1. Select the target component by using the ft server 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.

Stop

   Stop before replacing components.

1. Select the target component by using the ft server 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.

Sample screen of ft server utility

Check and Clear of MTBF Information

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

NEC Express5800/ft series manages the MTBF (mean time between failure) of each component. If a fault occurs in a component, the NEC Express5800/ft series calculates the MTBF of the component again. If the calculated value is lower than the pre-defined threshold, the NEC Express5800/ft series 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 NEC ESMPRO Manager, use the [Maintenance] tree of the component of the [FTServer] 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 ft server 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.
	Executable in the following module state (this can be viewed on manager screen):	Executable in the following module state:
	• Broken MTBF is lower than the threshold.	• Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
PCI Module	Same as above	Same as above
Ethernet Adapter	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component.	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component.
	Executable in the following module state (this can be viewed on manager screen): Broken MTBF is lower than the threshold.	Executable in the following module state (this can be viewed on manager screen): • Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
	You can clear MTBF information by unplugging and plugging the live wire of the PCI module.	You can clear MTBF information by unplugging and plugging the live wire of the PCI module.
SCSI Adapter	Same as above	Same as above

Component	MTBF clear	
	Remote	**Local**
SCSI Enclosure	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Broken MTBF is lower than the threshold.	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to maldunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
SCSI Electronics	Same as above	Same as above
SCSI Slot	Same as above	Same as above

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

Perform the procedure below before replacement of a component.

1. Select the target component in the [FTServer] 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 "State" on the target component screen. The result of the MTBF clearing operation is reported by the NEC Express5800/ft series as an alert.

4. Start the component.

Sample screen of NEC ESMPRO Manager
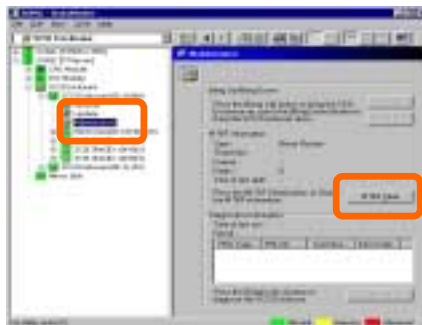
[Maintenance] screen of SCSI enclosure
[SCSI Enclosure] – [Maintenance]

Procedure in the ft server utility

Perform the procedure below before replacement of a component.

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

2. Check the current state of the target component with the LEDs and event log.

3. Click the [Clear] button in [MTBF Clear] 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.

4. Start the component.

Sample screen of ft server utility
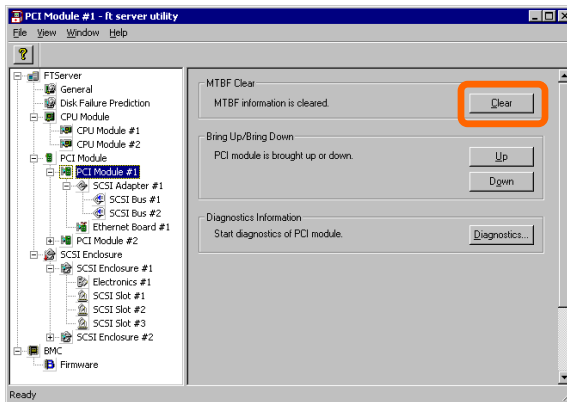
[PCI Module]

Diagnostics

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

To diagnose a component with the NEC 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 ft server utility, use the utility screen of the component.

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

Component	Diagnosis	
	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 diagnosis.	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: • Only the red LED is on Only the red LED is on when the module is in one the following states: • Removed • Broken • Shot • Firmware Update Complete (no fault found by diagnosis) To diagnose the module under operation, bring down the module before the diagnosis.
PCI Module	Same as above	Same as above

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

1. Select the target component in the [FTServer] tree.

2. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

3. Click the [Diagnostics] button in the [Maintenance] screen for the target component.

   The diagnosis result can be confirmed by "Result" of the diagnosis on the target component screen. The result of the diagnosis is reported by the NEC Express5800/ft series as an alert.

   The result of diagnosis executed last is displayed in the [Diagnosis Information] column. In addition, if a fault is detected by the result of the diagnosis, the state of the [General Information] tree of the component is changed.

Sample screen of NEC ESMPRO Manager
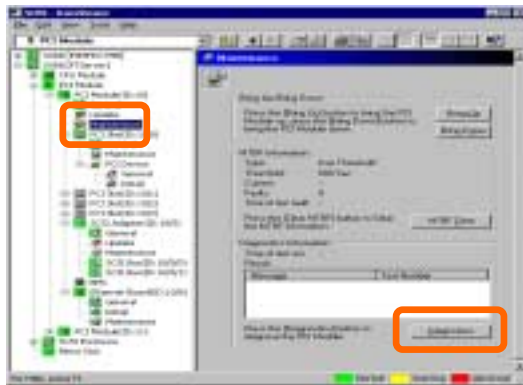
[Maintenance] screen of PCI module
[PCI Module] – [Maintenance]

Procedure in the ft server utility

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

2.   Check the current state of the target component with the LEDs. If the component is operating, stop the component.

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

   The diagnosis result can be confirmed by the LEDs on the target component. The result of the diagnosis is registered in the event log.

4.   Start the component.

Sample screen of ft server utility
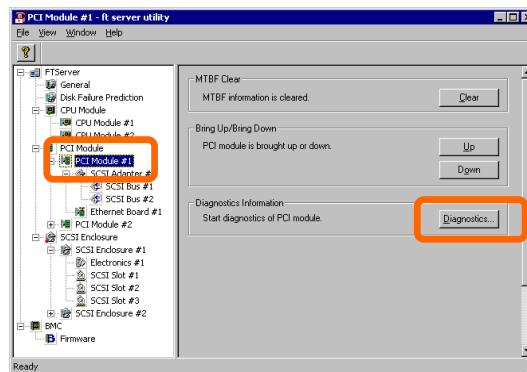
[PCI Module]

Firmware Update

NEC Express5800/ft series 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 NEC 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 ft server 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 or forced stop • No fault found by diagnosis 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: • Only the red LED lit red is on Only the red LED is on when the module is in one of the following states: • Removed • Broken or forced stop • No fault found by diagnosis (Firmware Update Complete) To update the module under operation, bring down the module before the update.

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

1. Save the image data of the update firmware in an arbitrary directory of the NEC Express5800/ft series.

Save the image data in any way. Write down the path to the directory in which the image data is saved.

2. Select the target component in the [FTServer] tree.

3. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

4. Click the [Firmware Update] button in the [Update] screen for the target component.

Sample screen of NEC ESMPRO Manager
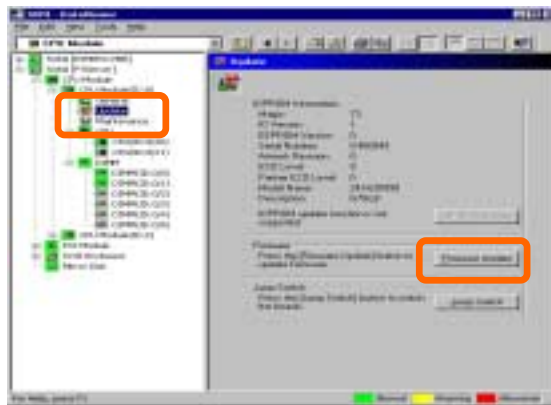
[Update] screen of CPU module
[CPU Module] – [Update]

5. Select [Specify the file path to update], enter the directory in which the updated firmware specified in the input box in step 1 is saved, and click the [Execute] button.

Perform the firmware update.

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 NEC Express5800/ft series as an alert.
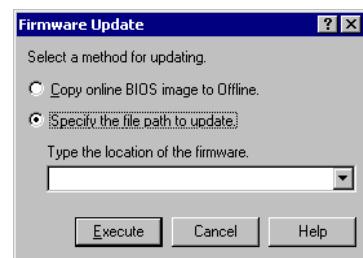
6. After the BIOS for a single CPU module is completed, click the [Jump Switch] button. The module completely updated is started and the active module is stopped.

7. Start the other module stopped.

Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is invalid, update the module in the procedure as follows:

(1) Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

(2) Click the [Firmware Update] button in the [Update] screen for the target component.

(3) Select the update method in the [Firmware Update] dialog box and click the [Run] button.

(4) Start the module.

Under the following conditions, the modules can have the same new firmware version by copying the firmware between modules.

- Due to the replacement of either of the CPU modules, the version of the firmware in a module does not match that in another module.

- The image data of the update firmware has not been acquired yet.

1. Start the system only with the CPU module of the copy source.

2. Make invalid the [Enable automatic firmware update] property.

3. Select the target component in the [FTServer] tree.

4. Check the current state with the "State" display on the screen of the CPU module to be copy destination. If the module is operating, stop the module.

5. Click the [Firmware Update] button in the [Update] screen for the target component.

6. When the firmware update dialog appears, check [Copy firmware from Online module to Offline one.] to run the firmware update.

Copying the firmware in the online module to the offline module allows the firmware update to be completed.

7. Start the inactive module.

Procedure in ft server utility

1. Save the image data of the update firmware in a desired directory of the NEC Express5800/ft series.

    Save the image data in some manner. Write down the path to the directory in which the image data is saved.

2. Select the target component with the ft server utility.

3. Check the current state of the target component with the LEDs. If the component is operating, stop the component.

4. Click the [Firmware Update] button for the target component.

Sample screen of ft server utility
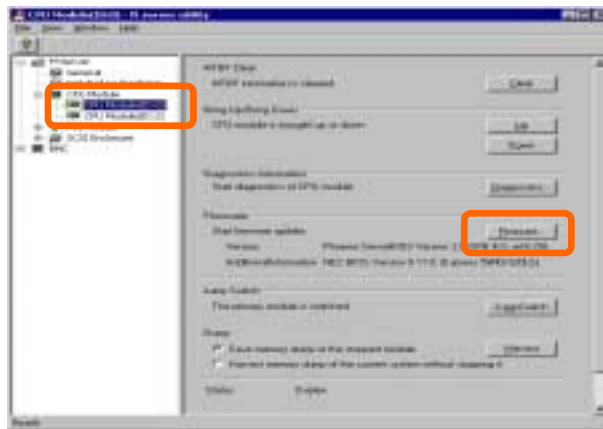
[CPU Module]

5. Select [Specify new firmware for update], enter the directory in which the updated firmware specified in the input box in step 1 is saved, and click the [Run] button.

    Perform the firmware update.

6. Check the update result with the event log.
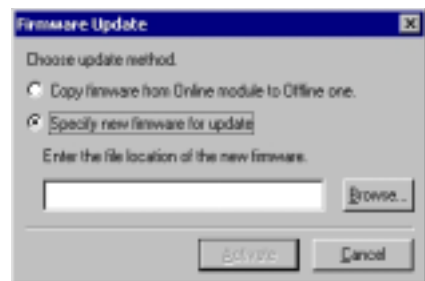
7. After the BIOS for a single CPU module is completed, click the [Jump Switch] button.

   The module completely updated is started and the module under operation is stopped.

8. 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, update the module in the procedure as follows:

   (1) Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

   (2) Click the [Firmware Update] button in the [Update] screen for the target component.

   (3) Select the update method in the [Firmware Update] dialog box and click the [Run] button.

   (4) Start the module.

Under the following conditions, the modules can have the same new firmware version by copying the firmware between modules.

   ■ Due to the replacement of either of the CPU modules, the version of the firmware in a module does not match that in another module.

   ■ The image data of the update firmware has not been acquired yet.

1. Start the system only with the CPU module of the copy source.

2. Make invalid the [Enable automatic firmware update] property.

3. Select the target component with the ft server utility.

4. Check the current state with the "State" display on the screen of the CPU module to be copy destination. If the module is operating, stop the module.

5. Click the [Firmware Update] button in the [Update] screen for the target component.

6. When the firmware update dialog appears, check [Copy firmware from Onlinemodule to Offline one] to run the firmware update.

   Copying the firmware in the online site to the offline site allows the firmware update to be completed.

7. Start the inactive module.

Dump Collection

To collect the dump file with NEC ESMPRO Manager, use [CPU Module] →[Maintenance] tree in the data viewer.

To collect the dump with the ft server utility, use the utility screen of the component.

> **IMPORTANT:** Acquire the dump only for the examination of a fault.

The dump can be collected in two ways. In each way, the dump file is collected with the same path and file name "%SystemRoot%\memory.dmp" as the dump file of the OS standard.

- Collecting dump of inactive module

  The dump is acquired from the inactive CPU module (due to the occurrence of a fault or forced stop).

- 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: • Only the red LED is on However, this function operates only in a fault state. An execution error occurs in any other cases. Only the red LED is on when the module is in one of the following states: • Removed • Broken • Shot • Firmware Completion of update • No fault found by diagnosis	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: • When only the green LED is on and the module is in redundant configuration state Only the green LED is on when the module is in the following state: • Duplex

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–:   Not support

Procedure in NEC ESMPRO Manager

The [Dump] button of NEC ESMPRO Manager performs the function of "saving dump during system operation."

1. Select [CPU Module] in the [FTServer] 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 %SystemRoot%\memory.dmp on the managed server.

   The result of the dump saving is reported by the NEC Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager
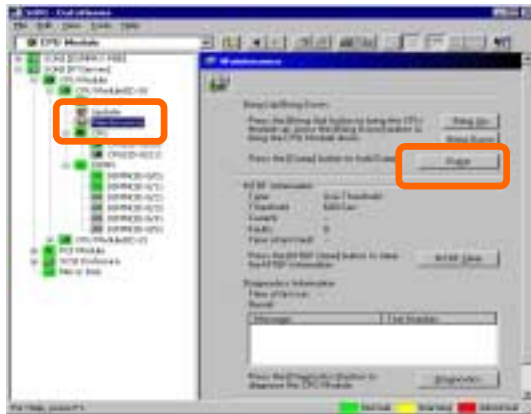
[Maintenance] screen of CPU module
[CPU Module] – [Maintenance]

Procedure in ft server utility

1. Select the target CPU module by using the ft server 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 %SystemRoot%\memory.dmp on the server.

   The result of the dump acquisition can be confirmed in the event log.

Sample screen of ft server utility

[CPU Module]

SCSI Bus Reset

The SCSI bus can be reset.

Select [FTServer] tree→[PCI Module]→[SCSI adapter]→[SCSI bus] screens with the ft server utility. Open the tree of the component for which the SCSI bus is to be reset and select the [SCSI bus] tree.

The table below shows the potential cases in which the SCSI bus is reset.

Component	Bus reset	
	Remote	Local
SCSI Bus	–	When a malfunction occurs in the SCSI bus to require the bus reset. Provide the bus reset if requested by maintenance personnel. Executable in the following module state: • Only the green LED is on Only the green LED is on when the module is in the following state: • Duplex

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–:   Not support

Reset the SCSI bus with the ft server utility in the following procedure. NEC ESMPRO Manager cannot reset the SCSI bus. However, because the ft server utility cannot check the setup of the SCSI bus, check the bus state with NEC ESMPRO Manager in advance.

   1.   Select the target SCSI Bus in the [FTServer] tree.

   2.   Click the [Reset] button for [Bus Reset] in the SCSI bus screen.

         The modification result can be checked in the event log.

 Sample screen of ft server utility
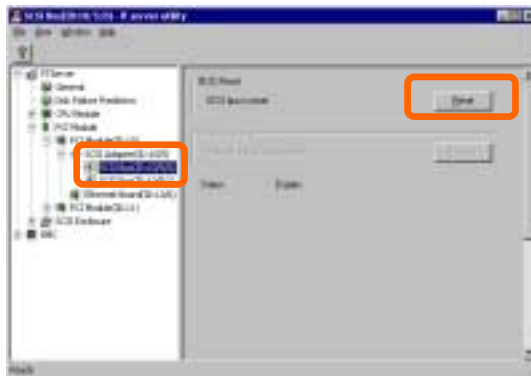
[PCI Module] – [SCSI Adapter] – [SCSI Bus]

Setup of Preventive Disk Maintenance

In this section, the preventive disk maintenance (S.M.A.R.T.) is configured.

If the preventive disk maintenance (S.M.A.R.T.) is enabled (by checking Enable on the setting screen), the disk fault monitoring function is enabled to detect possible disk faults. Disabling the preventive disk maintenance disables the disk fault monitoring function.

The table below shows the potential cases in which the setup of the preventive disk maintenance is modified.

> **IMPORTANT:** The disk failure prediction (S.M.A.R.T.) feature is not supported in this server.   Use ft server utility to disable this feature.

When a disk is replaced, be sure to change the setting described below.

(Contact your maintenance personnel for changing the setup of the preventive disk maintenance in any case other than above.)

Component	Setup of preventive disk maintenance (S.M.A.R.T.)	
	Remote	**Local**
SCSI disk	–	Executable if the system is operating. Use this function at disk replacement Change the setting to "Disable" before removing disk. Insert a new disk and, after termination of disk replacement, change the setting to "Enable."

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–:   Not support

Change the setup of the preventive disk maintenance with the ft server utility in the following procedure. NEC ESMPRO Manager cannot set the preventive disk maintenance.

   1.   Select [Disk Failure Prediction] in the [FTServer] tree.

   2.   Check the check box of [Enable disk failure prediction [SMART]] (or cancel the check).

   3.   Click the [Apply] button.

Sample screen of ft server utility
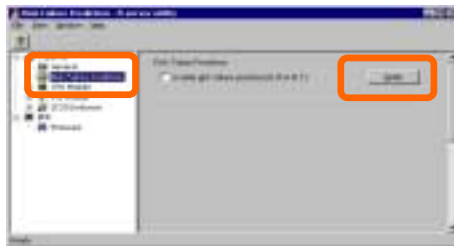
[Preventive Disk Maintenance]

Setup of System Operation

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

■ Quick dump

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

The initial setup value is "Enable."

■ Auto firmware update

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

The initial setup value is "Enable."

■ Auto module start

If this property is enabled (by checking "Enable" on the setup screen), the CPU or PCI module newly inserted is automatically started to be operable. If this property is disabled, the module is not started automatically.

The initial setup value is "Enable."

The system operation can be set on [FTServer] tree→[General] screen of the ft server 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 CPU module	–	Executable if the system is operating. When firmware is updated manually at insertion of new CPU/PCI module

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–:   Not support

Configure the system settings using the ft server utility in the following procedure. The system cannot be configured using the NEC ESMPRO Manager.

1. Select [General] in the [FTServer] tree.

2. Check the property of carrying out the modification with [System Settings] (or cancel the check).

3. Click the [Apply] button.

Sample screen of ft server utility
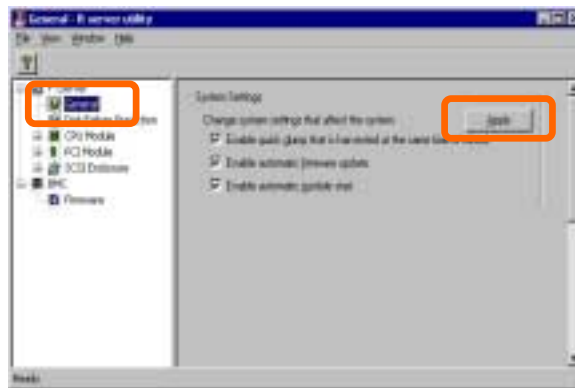
BMC Firmware Update

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 NEC ESMPRO Manager and the ft server 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 • Only the green LEDs on all PCI modules are on Executable in the following state when only the green LEDs on all PCI modules are on: • Duplex

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
–:   Not support

Procedure of Update from NEC ESMPRO Manager Menu

Update firmware in the procedure as
follows:

    1. Select [Program]→[NEC
ESMPRO Manager]
sequentially from the start
menu. Then click [BMC FW
Update Utility].

        The [BMC FW Update]
dialog box appears.
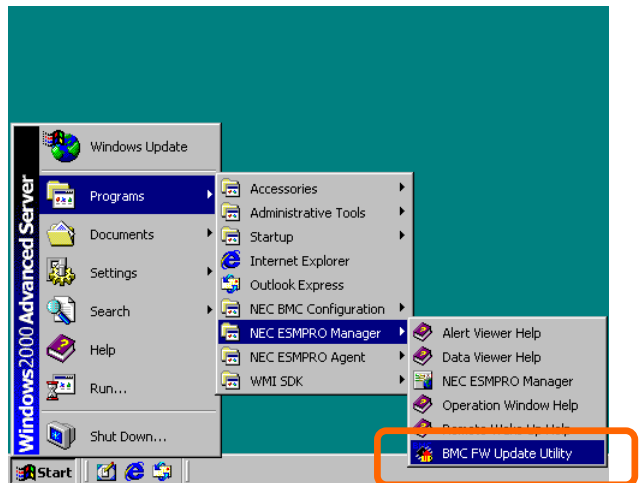
    2. Enter the device name and click [OK].

        The [Execution Check] dialog box appears.
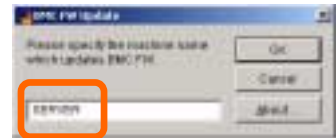
    3. Store the firmware in the directory specified by
[Location].

        The storage area may be modified. See "Change of
Update Data Storage Destination" describedlater.
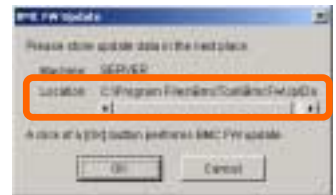
    4. Click [OK].

        Run firmware update.

        The advance of the update appears
during update.

        At the termination of update, the
update result is displayed.
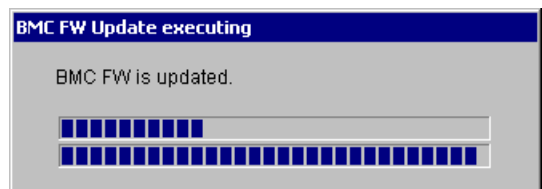
    5. Click [OK].
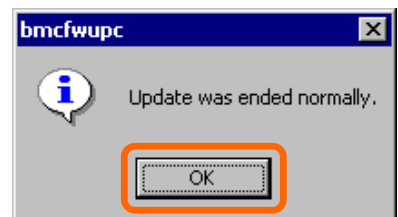
Procedure of Update from ft server utility

Update the firmware in the procedure as follows:

1. Click the [Firmware] button in the [Firmware] tree.

The [BMC FW Update] dialog box appears.
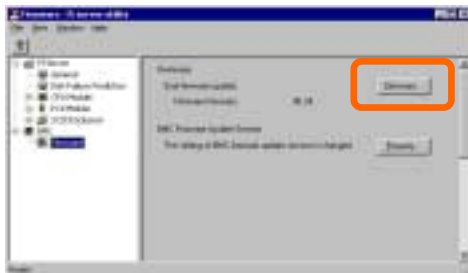
2. Enter the device name and click [OK].

The [Execution Check] dialog box appears.
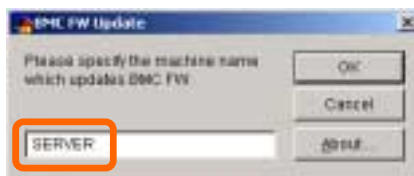
3. Store the firmware in the directory shown in [Location].

The storage area may be changed. See "Change of

Update Data Storage Destination" described later.
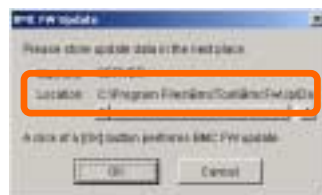
4. Click [OK].

Execute the firmware update.

The progress of the update appears during the update.
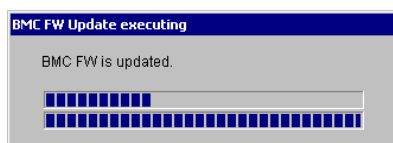
The update result appears after the update is terminated.

5. Click [OK].
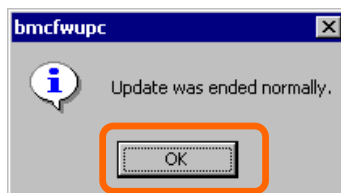
Change of Update Data Storage Destination

Perform the firmware update by using the ft server utility in the procedure below:

1. Click the [Property] button in [BMC Firmware Update Service].

The [BMC FW Update Service Properties] dialog box appears.

2. Enter the storage destination in [Storage directory for update data:] and click [Register].
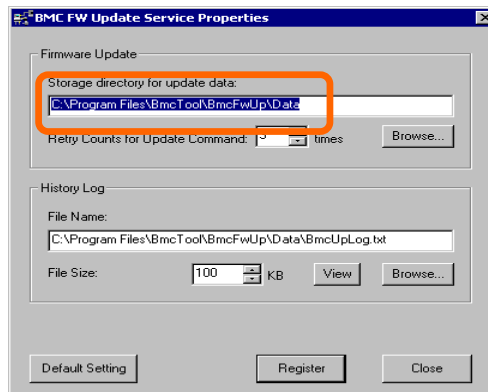
Refresh of View based on State Change Alert Setting

A new function is supported so that NEC 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.

NEC ESMPRO Manager window is updated by one minute-interval polling by default.   Therefore, there is some time-lag for NEC ESMPRO Manager to recognize changes in NEC 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 NEC ESMPRO Manager as some kind of alert.

[Setting]

1.   Select [Program] → [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.
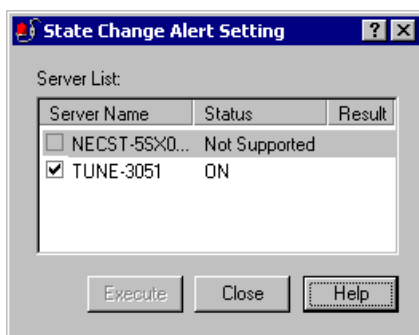
[State Change Alert Setting] dialog box

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.

Change of Device State Color on DataViewer

From Manager Ver3.88 and Agent Ver3.8a, some change has been made to the color of device state in order to improve intuitive recognition at an abnormality or a system trouble occurrence..

Device	State	Old color	New color
CPU Module	Empty	Gray	Yellow
CPU Module	Removed	Gray	Yellow
CPU Module	Simplex	Yellow	Green
PCI Module	Empty	Gray	Yellow
PCI Module	Removed	Gray	Yellow
PCI Module	Simplex	Yellow	Green
SCSI Slot	Empty (in case of mirroring)	Gray	Yellow

As shown above, the device state color of troubled components (components that is "Empty" or "Removed") affecting the FT system's redundancy has been changed to yellow (Warning) in order to make it easier to determine problems. However, for the device state color of modules operating without hardware trouble, the color indicating the simplex state has been changed from yellow (Warning) to green (Normal).

(Example of old window)
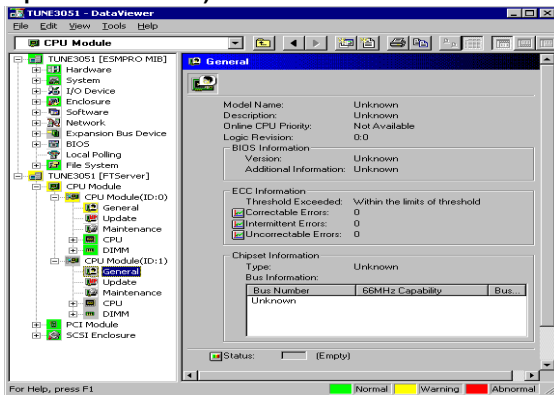
(Example of new window)
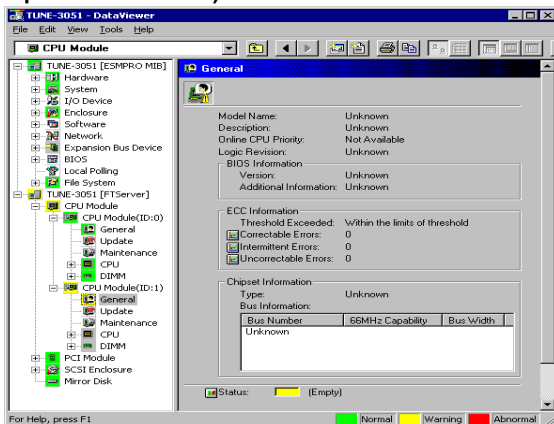
NEC MWA ~ Management Workstation Application ~

NEC MWA is an application that enables the remote management of the server through a management PC over the network.   (A management PC is a computer running NEC ESMPRO Manager.)   This application assists in reducing responsibility of the Administrator for managing the operation of the server.

> **TIPS:** See the online documented "NEC MWA First Step Guide" in NEC EXPRESSBUILDER CD-ROM for the details on NEC MWA setup and how to use.   See NEC MWA Online Help for the details on the functions and how to operate them.

Communications (Connection)

To use the NEC MWA, the management PC must be connected to the server via LAN, WAN or COM port (Serial Port.)

> **IMPORTANT:**
>
> ■ The Console Redirection feature (via WAN or COM port) cannot be used when the server is operated remotely from the other management PC by using the RomPilot feature (via LAN port).
>
> ■ Before using the Console Redirection feature to operate the server remotely, change the "RomPilot Support" in the "Advanced" menu of the BIOS setup utility to "disable".   See Chapter 4 for detail explanation.
>
> ■ The COM2 port or LAN1 port is used to communicate the Base Management Controller (BMC) in the server with the management PC.   See Chapter 2 for connector location.

NEC MWA Functions

NEC MWA enables the following functions by connecting to the extended BIOS (RomPilot), the standard BIOS and BMC (Baseboard Management Controller) of the server.

■ Remote console function

This function enables you to remotely monitor the server screen during POST (Power On Self-Test) or booted MS-DOS through NEC MWA window on a management PC. During the time, you can also key in data to the NEC Express5800 series from the keyboard of the management PC.

■ Remote drive function*

NEC MWA enables to boot the servers from the floppy disk drive or disk image file on the management PC.

* Available only when connected via LAN.

■ Remote power control

NEC MWA on a management PC enables the sending the following power control commands to the server remotely.

– Power on/off

– Power cycle (power-off, then power-on)

– Reset

– Power switch

■ Remote information collection

NEC MWA on a management PC enables the collection of the following information remotely.

– System Event Log (SEL)

– Sensor Device Report (SDR)

– Field Replaceable Unit (FRU)

– CMOS, DMI, PCI information*

– BMC setting information

* Available only when connected via LAN.

> **IMPORTANT:** ESCD information is not collected in this system. "ESCD data read error server report: Plug and Play call error" is generated when attempting to collect the ESCD information.

■ Linkage with NEC ESMPRO*

When NEC MWA receives an alert (such as device failure) from BMC on the server, it analyzes the alert and automatically registers to the alert log of NEC ESMPRO.

*Available at the time of LAN connection only.

Operating Environment

You can run NEC MWA in the following hardware/software environment:

■ Management PC (on which to install NEC MWA)

MWA runs on a computer where a Windows OS is installed.   For details, see *MWA First Step Guide*.

■ Equipment that can be maintained remotely by NEC MWA

NEC Express5800 series whose user's guide refers to MWA.   Such servers are equipped with RomPilot or BMC.   This server has BMC (IPMI Ver. 1.0).

Installation of NEC MWA Manager

To manage the server by using NEC MWA, install NEC MWA in the management PC.   NEC ESMPRO Agent must be installed in the NEC Express5800/ft series.

Use the "NEC EXPRESSBUILDER CD-ROM" to install NEC MWA.

1. Boot Windows NT 4.0/2000 or Windows 95/98/Me on a management PC.

> **TIPS:** For OS compatibility, see *MWA First Step Guide.*

2. Insert NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.   Master Control Menu of NEC EXPRESSBUILDER will be automatically displayed.

3. Click [Setup] → [NEC MWA].

> **TIPS:** Right-clicking on the window shown below also displays the pop-up menu.
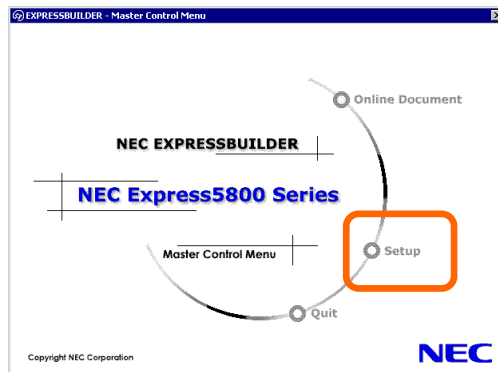
4. Click [NEC MWA Manager].

NEC MWA installer will start.   Follow the directions of the installation program.

Configuration

Prepare the followings for configuring remote management.

- NEC EXPRESSBUILDER CD-ROM

- Configuration data

  The following configuration data must be set for each of the NEC Express5800/ft series servers to be remotely managed:

  Two configuration methods are available for the NEC Express5800/ft series server:

  - Configuration by starting the Express5800 series through the NEC EXPRESSBUILDER CD-ROM and executing "System Management Setup," and

  - Configuration by BMC Configuration Tool that is started on Windows 2000 Advanced Server or Windows NT of the NEC Express5800/ft series server.   Start the BMC configuration from the ft server utility of NEC ESMPRO Agent.

  The BMC configuration tool is similar to existing NEC MWA Agent.

  Configuration is necessary for both NEC MWA and NEC Express5800/ft series servers. For details on the procedure, see the "NEC MWA First Step Guide" in the "NEC EXPRESSBUILDER CD-ROM" or the online help of NEC MWA.

Remote Console Connection When No Console is Hooked Up

If the main unit does not have a console such as keyboard, you can operate tools on the server remotely using MWA's remote console functions and NEC EXPRESSBUILDER's consoleless functions.

There are two ways of remote console connection depending on the condition of connection between the management PC and the main unit:

- Connect from the management PC linked to the main unit through LAN.

- Connect from the management PC directly linked (through Serial port B) to the main unit.

Connect from the Management PC Linked through LAN

On the management PC that is linked through LAN, perform the steps below:

1. Start the management PC where MWA is installed.   From the Start menu, select [Program] → [NEC MWA] → [MWA].

When MWA starts, the initial screen "Remote Control Manager" will appear.

2. Insert a formatted 1.44MB floppy disk into the drive.

3. From MWA's [File] menu, select [Configuration] command to open [Configuration] dialog box.

4. Select [New] to display the [Select a model] dialog box.

5. Check [Write to FD] and select an applicable model to open [Configuration for ft Series] dialog box.

Ex)   The model name is printed on the front cover like "NEC Express5800/320Lb," or "NEC Express5800/320Lb-R."

6. [Configuration for ft Series] dialog box, specify/register configuration information including the names of computers to be managed, and then write the information to FD as the following filename:

  <Filename>

   CSL_LESS.CFG

  Specify the items as follows:

   IP address: arbitrary   Default gateway: arbitrary

   Subnet mask: arbitrary   Primary contact: Management PC's IP address

7. Right-clicking the server name to open the pop-up menu, from which select [Property] command to open [Property] dialog box.

8. When the [Property] dialog box appears: specify the items as follows:

   <[ID] page>

   Connection mode: LAN

   <[Alert notification] page>

   Uncheck [Use Default Settings] and check [Reset] of [Activate].

9. Right-clicking the server name to open the pop-up menu and select [Open Remote Console] to open [MWA Remote Console].

10. Select the [Action at Remote Console Connect] command from the popup menu displayed by right-clicking the server window to display the [Action at Remote Console Connect] dialog box.   Then select [Go MWA mode].

11. Insert NEC EXPRESSBUILDER CD-ROM into the drive of the computer to be managed and insert floppy disk storing the configuration information (CSL_LESS.CFG) into the FDD drive.

12. Hook up the management PC to LAN.

13. Power off and on the main unit to reboot the system.

After one reboot, the main menu will appear on the management PC's screen, on which you can perform hardware setup and run utilities.

> **TIPS:** If the configuration information (CSL_LESS.CFG) in the FD has already been loaded, the main menu will appear without a reboot.

14. When the main menu appears on the management PC's screen, eject the floppy disk.

15. If you use other tools, exit NEC EXPRESSBUILDER and power on/off the main unit.

> **IMPORTANT:** After completing the procedure for remote console connection, uncheck [Reset] of [Activate] in [Property] dialog box.

Connect from the Management PC Directly Linked (through Serial port B)

On the management PC that is linked directly to Serial port B of the main unit, perform the steps below:

1. Start the management PC where MWA is installed.   From the Start menu, select [Program] → [NEC MWA] → [MWA].

When MWA starts, the initial screen "Remote Control Manager" will appear.

2. Select [Environment] – [Direct Connection Setting] from the [File] menu of NEC MWA to display the [Direct Connection] dialog box.   Configure the following settings:

<Direct Connection>
Port No.:   COM port on the management PC to be connected
Baud Rate: 19200
Flow Control: None

3. From MWA's [File] menu, select [Configuration] command to open [Configuration] dialog box.

4. Select [New] to display [Select a model] dialog box.

5. Check [Write to FD] and select an applicable model to open [Configuration for ft Series] dialog box.

Ex)   The model name is printed on the front cover like "NEC Express5800/320Lb," or "NEC Express5800/320Lb-R."

6. [Configuration for ft Series] dialog box, specify/register configuration information including the names of computers to be managed, and then write the information to FD as the following filename:

   <Filename>
     CSL_LESS.CFG

7. Right-clicking the server name to open the pop-up menu and select [Property] command to open [Property] dialog box.

8. When [Property] dialog box appears: specify the items as follows:

<[ID] page>
Connection mode: COM
COM: Direct (cross cable)

9. Right-clicking the server name to open the pop-up menu and select [Open Remote Console] to open [MWA Remote Console].

After checking to see if the server window is open on [MWA Remote Console], click the [Connect] button.

10. Hook up the management PC directly to Serial port B of the computer to be managed.

11. Insert NEC EXPRESSBUILDER CD-ROM into the drive of the managed computer and insert the floppy disk storing the configuration information (CSL_LESS.CFG) into the FDD drive.

12. Power off and on the main unit to reboot the system.

After one reboot, the main menu will appear on the management PC's screen, on which you can perform hardware setup and run utilities.

> **TIPS:** If the configuration information (CSL_LESS.CFG) in the FD has already been loaded, the main menu will appear without a reboot.

13. If you use other tools, exit NEC EXPRESSBUILDER and power on/off the main unit.

> **IMPORTANT:** After completing the procedure for remote console connection, click [Disconnect] on the [MWA Remote Console] window.

VERITAS VOLUME MANAGER

Installing Volume Manager for Windows 2000

In the NEC Express5800/ft series, since VERITAS Volume Manager is indispensable, it needs to be installed.

VERITAS Volume Manager offers the comprehensive solution in storage management.

Local and remote storages connected to the system can be configured and managed online.

Installation Procedures

1. Login as "Administrator".

2. Insert the "NEC EXPRESSBUILDER" CD-ROM into the CD-ROM drive.

   The autorun function has the Master Control Menu of NEC EXPRESSBUILDER displayed automatically.

   Select [Setup] and click [VERITAS Volume Manager]. Then the installer will start.

3. When the installation wizard screen appears, click [Next] to start the installation.

4. Click [Yes] when the [Question] dialog box appears.
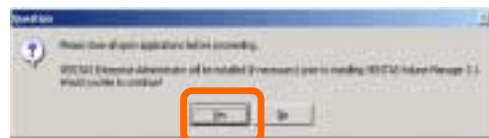
5. Click [Next] when [VERITAS Volume Manager 3.1 for Windows2000 setup] dialog appears.
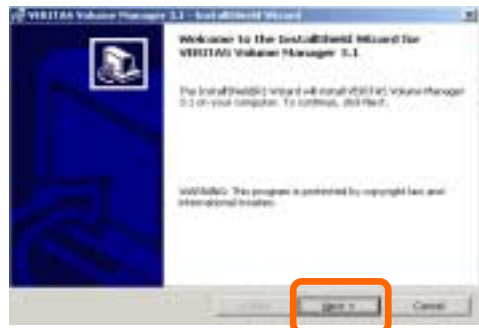
6. Click [OK] to install the VERITAS Enterprise Administrator Language Pack.
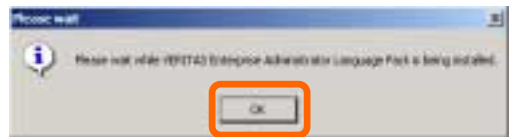
7. When the [Select Installation Type] screen appears, choose the installation type, "Server", click [Next] to continue.

8. When the [User Information] screen appears, enter your name, organization, and license key, and click [Next].

Input the License Key that appears in "Software License Key Certificate".
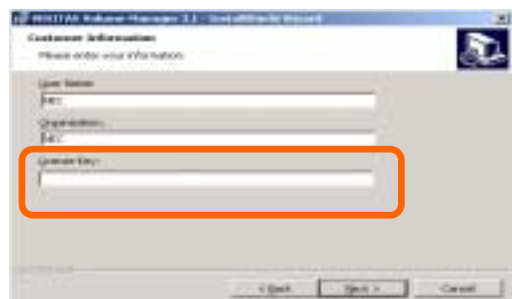
9. When the [Select Features] screen appears, delete the features "Volume Manager 3.1 MSCS Support," "Volume Manager 3.1 DMP Support," "Volume Manager 3.1 VVR Support," and "Volume Manager 3.1 VCS Support" with a red X.

After checking the installation features selection and the installation files location, click [Next].
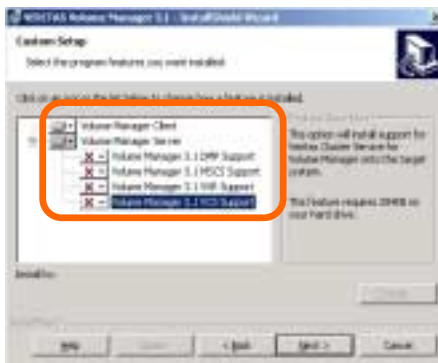
10. When the [Ready to Install the Application] screen appears, click [Install] again to start the installation.
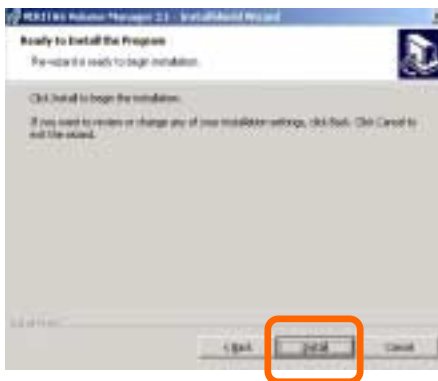
11. After a screen appears with the messages that the program has been successfully installed, click [Finish].
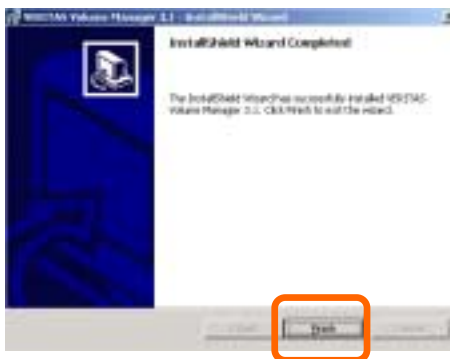
And additional screen comes up to inform you that the system must be rebooted, click

[Yes] to restart now or [No] to restart later.

You may be required to perform a second reboot.
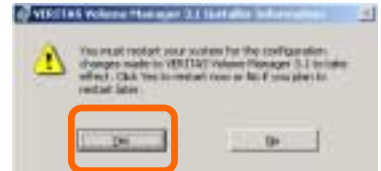
12. Login as "Administrator".

13. Insert the "NEC EXPRESSBUILDER" CD-ROM into the CD-ROM drive.   The autorun function has the Master Control Menu of NEC EXPRESSBUILDER displayed automatically.

14. Select [Setup] and click [NEC ESMPRO report service for VERITAS Volume Manager]. Then the installer is started.

Now the installation of the VERITAS Volume Manager is completed.

Perform the following procedure successively if you have the NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM.

About License Keys

NEC Express5800/ft series includes an official license key for using FastResync function with VERITAS Volume Manager™ 3.1 (hereinafter "VxVM" 3.1).   The key is printed on the label which is place on the server cabinet.

When you reinstall VxVM or replace the evaluation license with the official license after installation, use the license key printed on the label.

This product was installed with the evaluation license key.   Be sure to replace it with the permanent key before using this product.

1. Reinstalling

   To reinstall Volume Manager, see procedures in Chapter 2 "Install" on NEC EXPRESSBUILDER CD-ROM included with NEC Express5800/ft series:

   <CD-ROM>\VM\Eng\VM Documentation\VM3.1_Win2k_Quick_Start_Guide.pdf

2. Replacement with Official License Key

   To replace the license key, see procedures to use "License Operation" and "System License" commands and add/replace license keys on the NEC EXPRESSBUILDER CD-ROM included with NEC Express5800/ft series:

   <CD-ROM>\VM\Eng\VM Documentation\VM3.1_Win2k_Users_Guide.pdf

Numbers "0," "1," and "5," or an alphabet "Q" are not used in license keys.

When you have the NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM:

If you have the NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM, install the NEC ESMPRO report service for VERITAS Volume Manager in the following procedure. See "ft control software (Ver:n.n).doc" in the CD-ROM for details.

1.   Insert the NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM into the CD-ROM drive.

2.   Select [Program (P)] → [Accessory] → [Command Prompt] from [Start] menu in the task bar.

3.   Change the current directory to \VXVM\ALERTMAN of the CD-ROM drive at the command prompt as described below.

C:\Documents and Settings\Administrator>Q: <Enter>

Q:\>cd VxVM\ALERTMAN <Enter>

Change the specified CD-ROM drive appropriately to meet the environment which you use.

The display image of the command prompt may be different depending on the used environment.

4.   Run the commend below:

Q:\VxVM\ALERTMAN> NECSETUP.EXE add <Enter>

The setting is completed if "command successfully" appears.

5.   NEC ESMPRO/AlertManager requires following settings.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\NEC\NVBASE\AlertViewer\AlertType\VxVM]

"WavDefault"="Server.wav"
"AniDefault"="Default.bmp"
"Image"="Default.bmp"
"SmallImage"="Default.bmp"
```

> **IMPORTANT:**
>
> - The VERITAS Volume Manager is required in the system. Never uninstall it.
> - If the NEC Express5800/ft series ft control software (Ver:n.n) UPDATE CD-ROM includes the latest VERITAS Volume Manager HotFix, apply the latest HotFix.

FastResync Configuration Procedures

FastResync use: The contents of the following sections will be described as below.
1. Creating disk groups

The disk group containing the boot disk will not be able to utilize the FastResync function. Therefore to utilize the FastResync function, a new disk group must be created.

2. Creating mirror volumes.

This section will describe the creation of standard mirror volumes.

3. Adding FastResync

This section will describe the addition of the FastResync log to a newly created mirror volume.

4. Notes

This section includes precautions and notes pertaining to the use of the FastResync function.

Using the VERITAS Enterprise Administrator

Disk volume operations will be performed using the VERITAS Enterprise Administrator. Before performing any operations, the VERITAS Enterprise Administrator must connect to the machine in which it will administer. To make connection, follow the procedures described below.

Start the VERITAS Enterprise Administrator:
[Start] menu → [Programs] → [VERITAS] → [VERITAS Enterprise Administrator].

The "Connection" window will appear. Enter the host name ("localhost" in case of local machine) of the machine to which it will connect, then click the [OK] button to continue.

When login is correctly completed and connection is established, the login host will appear in the top left corner of the tree view window.
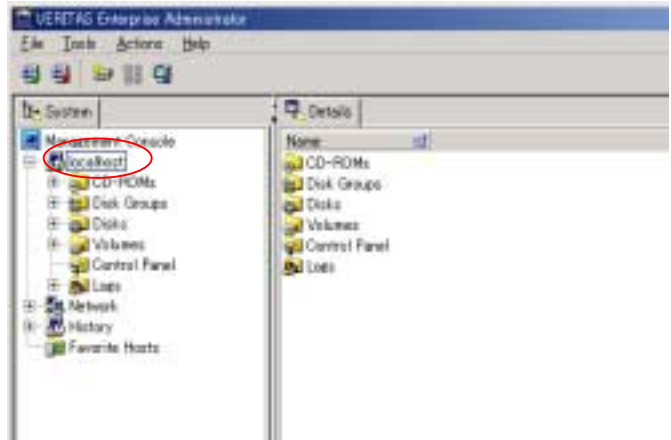
Creating a dynamic disk group

The disk group containing the boot disk can not utilize the FastResync function.   To utilize this function, a new disk group must be created.

After inserting the new HDD to be used in the new disk group, the list of available hard disks will appear in the view window located in the right pane of the window. Right click the hard disk which appears at the top of the list, and chose (left-click) [New Dynamic Disk Group]
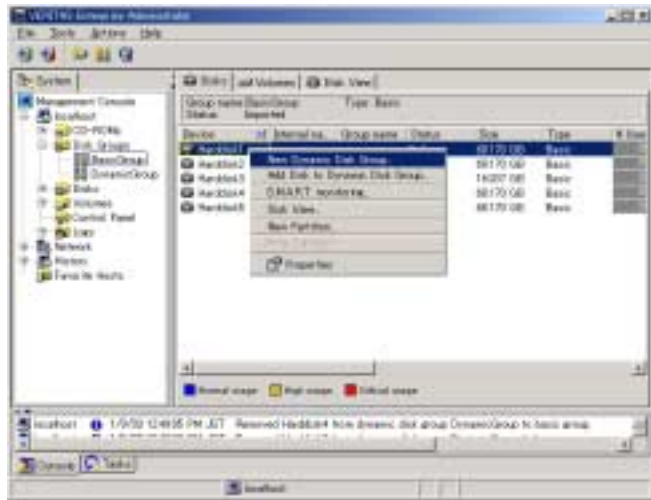
The "New Dynamic disk Group Wizard" will start automatically.

Click the [(N)ext] button to continue.

Enter the optional group name in the text box marked [Group Name] (newdg is used in this example), then select the hard disks which will be used in the New disk group.

Confirm that only the desired disks appear under [Selected disks], then click [Next] to continue.
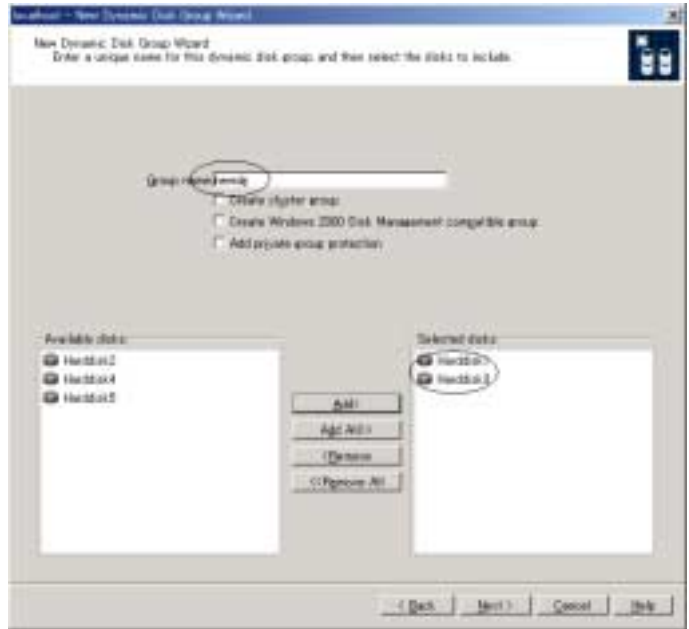
Confirm that the configurations are correct, then click [Next] to continue.

The final configuration confirmation screen will appear. Check that there are no mistakes in the configuration. If there are no mistakes, click [Finish]. If there are mistakes in the configuration, click the [Back] button to return to the previous screen

Once the operation has been completed the newly created disk group will appear under the [Disk Groups] folder in the tree view pane.
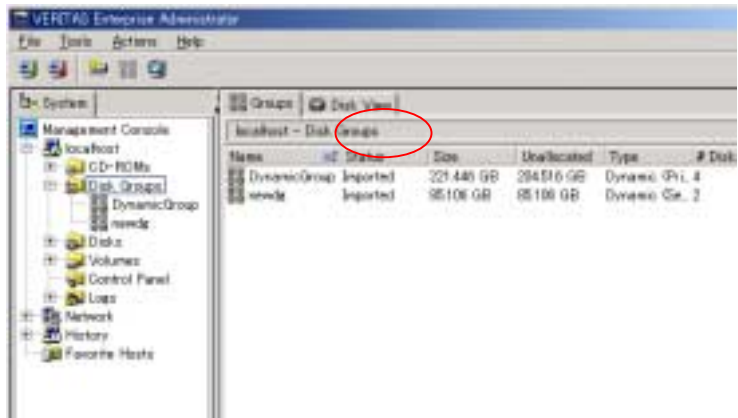
Creating a mirror volume

In the view pane located on the right side of the window, right click the disk group in which a disk volume will be created.   When the menu list appears, chose [New Volume].
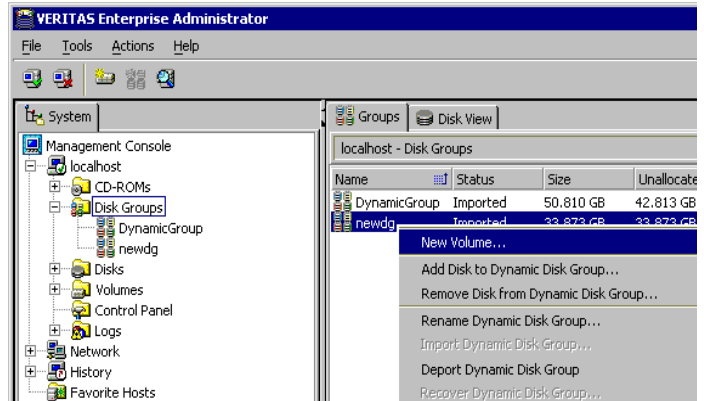
The "New Volume Wizard" will start. Click [Next] to continue.

Enter the configuration information of the volume to be created. After entering the [Volume Name] and [Size], check the [Mirrored] checkbox, and remove the check from [Enable logging], then click [Next]. (This example utilizes the volume named mirror_vol_1)

Caution: After the creation of the mirror volume, the FastResync log will be created; FastResync requires a small amount of space to function, therefore do not allocate the full quantity of the HDD for the volume.

Choose the HDD which will be used in the mirror volume. Mark the radio button labeled [Manually Select Disks], the click [Add All]. Confirm that the 2 HDD have been added to the mirror volume then click [Next].

Specify the drive letter for the volume to be created. The default drive letter will be the lowest drive letter that is presently available. If there is no need for change, click [Next] to continue.

Chose the desired file system, and click [Next] to continue.
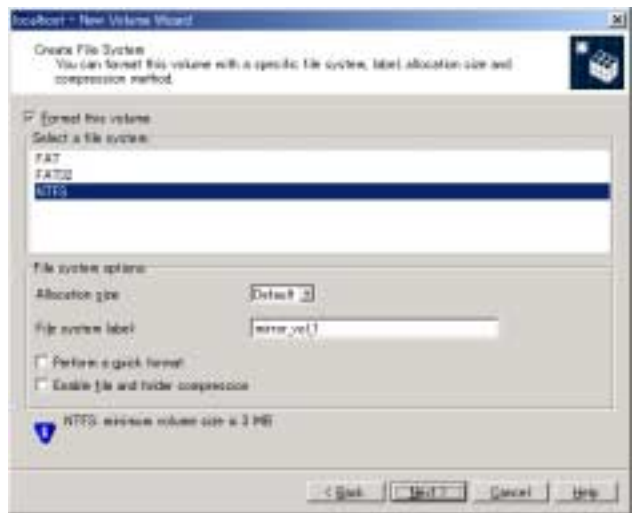
The final configuration confirmation window will appear. After confirmation, click [Finish] to complete the process.
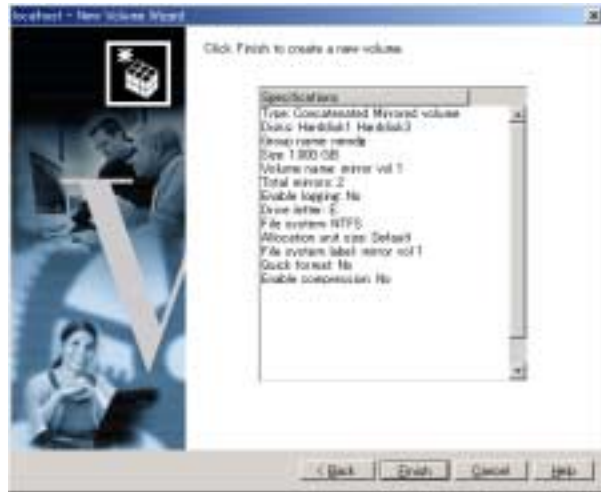
The formatting and resynchronization of the mirror volume will automatically start. The process of the "format" and "Resync" can be confirmed by choosing the "Tasks" tab located towards the bottom of the window.
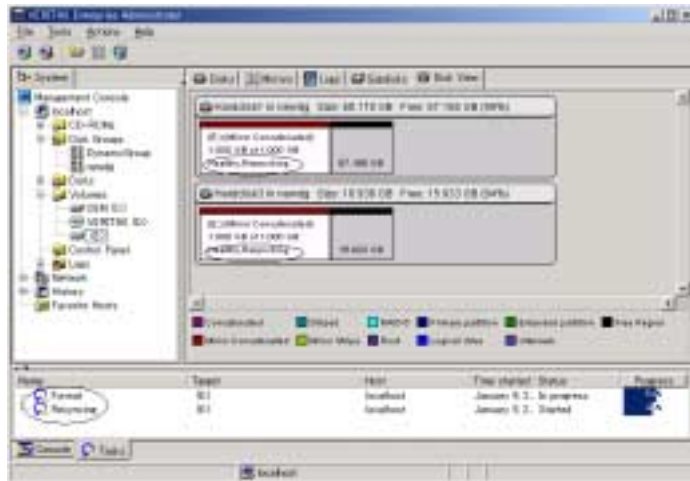
Once formatting and resynchronization of the mirror volume has completed, the window should be displayed as illustrated to the right.
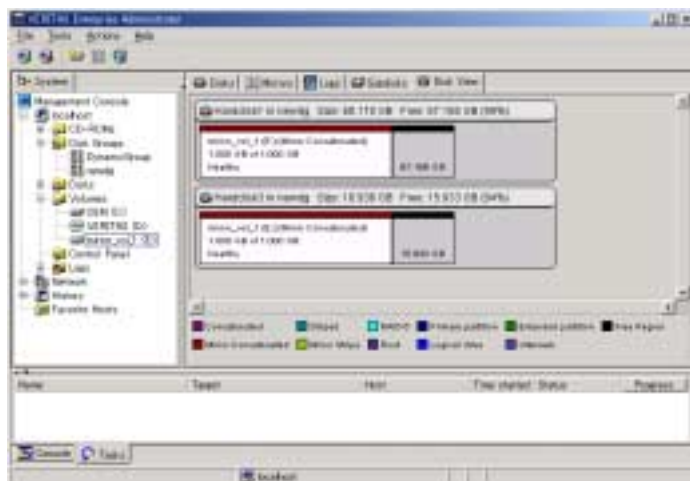
Adding a FastResync log

To allow for the quick resynchronization of the mirror volume, the "FastResync" log must be added to the newly created mirror volume.

From the tree view pane, right click the newly created volume (mirror_vol_1 in this case), and chose [FastResync] → [Add].
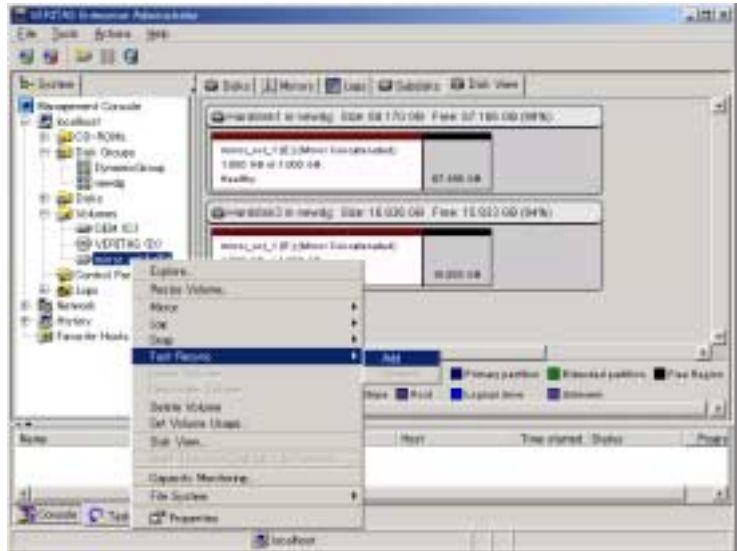
A confirmation window will appear.   Click [Yes] to continue.
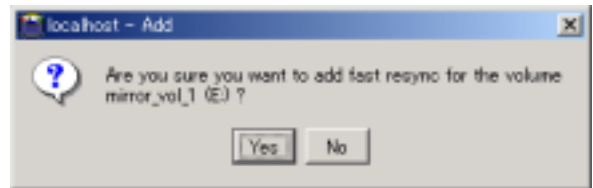
When the operation is completed, a "DCO_VOLUME" will be created for the mirror volume.

Caution: If the [Create Windows 2000 Disk Management Compatible Group] is checked when creating the disk group, a disk group upgrade will be prompted during the addition of FastResync. In such a case, left-click the disk group from the tree view pane, and chose [Upgrade to dynamic disk group].

From the disk view pane, right click the newly created "DCO_VOLUME" and chose [mirror]→[Add].
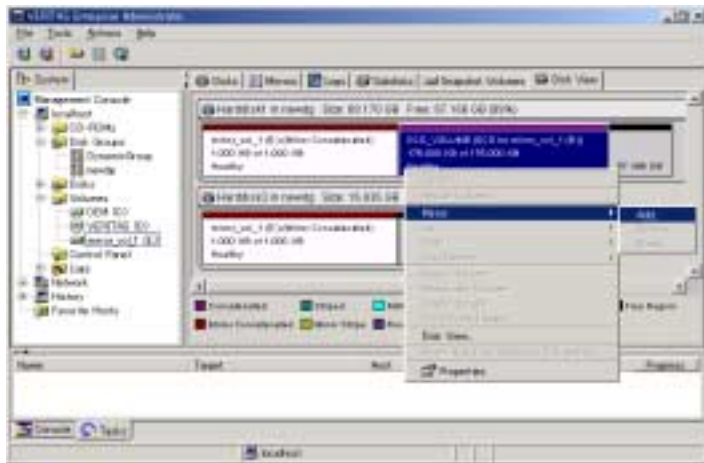
To select the hard disk that will be used in the mirror volume, check the radio button marked [Manually Select Disks] then chose the disk corresponding to the mirror volume by clicking [Add].

Confirm that the disk has been added and click [OK].
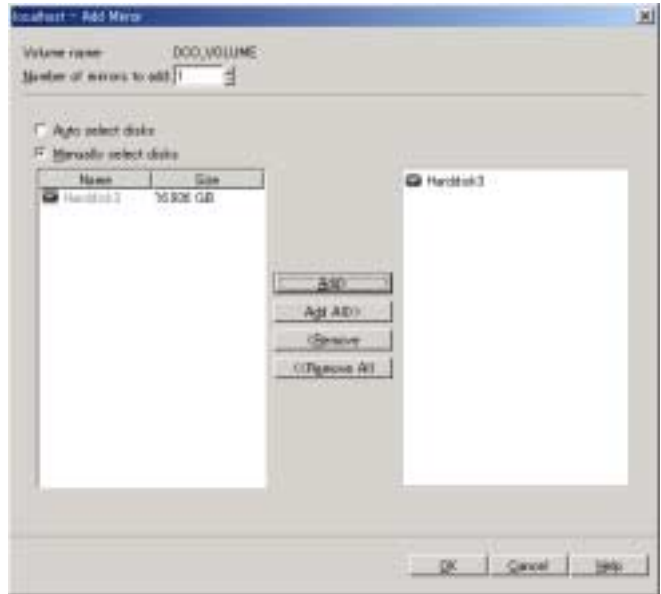
When the operation has completed successfully, the window should be displayed as illustrated to the right.
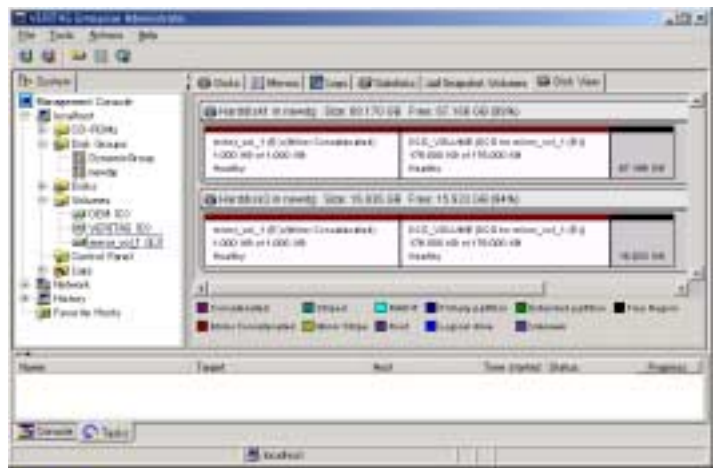
Notes

・Regarding the Creation of a New Mirror Volume.

> After creating a mirror volume, a FastResync log will be created. Therefore, do not use the full quantity of the HDD for the volume. Be sure to leave a few MB of space for this function.
>
> Approximate required DCO log space for each volume.

Volume Size		DCO Size
1.0GB	→	176KB
10GB	→	1.297MB
20GB	→	2MB

・Regarding FastResync & Snapshot

The "Snapshot" function can be used to utilize the "FastResync" function. In such a case, the contents of the mirror volume configuration will become "Snapshot".

Caution: When "Snapshot" is used for the internal HDD of the machine, the LED of the machine will be displayed incorrectly. The "SnapShot" volume must be deleted by using "Snapclean" before a "FastResync" can be created.

・Regarding Error messages

The error message illustrated to the right may appear when FastResync is added to the mirror volume. In such a case, register the license key for FastResync.
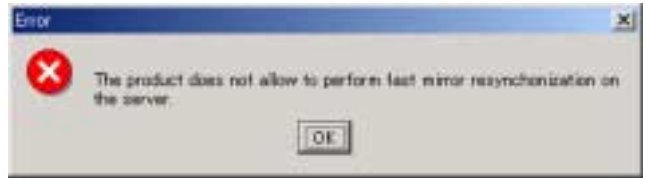
FastResync can not be used without the registration   of a proper license key.

・Volume types supported by "FastResync"

When using the internal HDD of the server for mirroring, only the "Simple Volume" (1 mirror to 1 LUN construction) is supported. Striped volumes and RAID-5 volumes are not supported.

Hard Disk Configurations that can be built by VxVM on the NEC Express5800/ft series

The NEC Express5800/ft series enables creation of three types of dynamic volumes (simple, mirror, and stripe) as shown in the figure below.   All volumes need creation of mirror disks.

	Can/cannot be built
Dynamic simple volume	√
Dynamic span volume	√
Dynamic mirror volume	√
Dynamic stripe volume	√
Dynamic RAID5 volume	–

Create mirror disks by selecting disks that are in the same slot of the SCSI enclosure.   For example, if the hard disks are positioned as shown in the table below, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs.
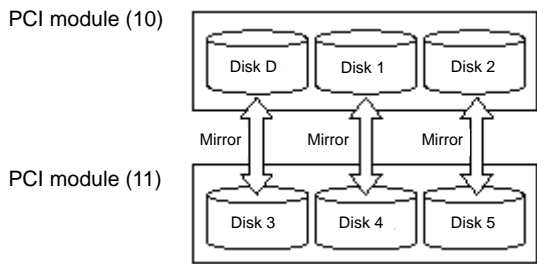
The pairs of mirror disks as shown above can be created by selecting hard disks whose target IDs are identical in the disk properties, which are displayed through [Disk View].   The following explains how to confirm the target ID:

1.   Click [Start] → [Settings] → [Control Panel].   The [Control Panel] window appears.

2.   Double-click the [Administrative Tools] icon.   The [Administrative Tools] window appears.

3.   Double-click the [Computer Management] icon.   The [Computer Management] window appears.

4.   Click [Volume Manager for Windows] under [Storage] in the console tree.

5.   In [Connection] dialog box, specify "localhost" as [Host name].

6. Open the [Disk View] tab, select the target disk, and view the properties.
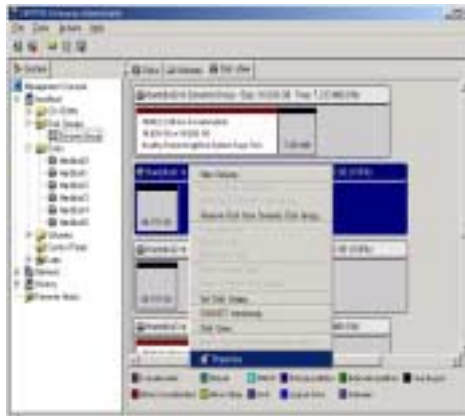
7. Confirm the target ID shown for [Device Type].   The target ID is "1" in the following display sample.
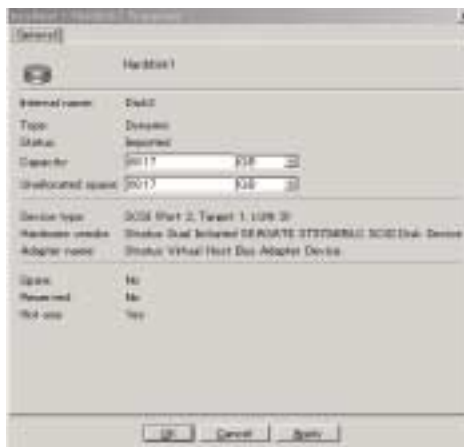
8. Similarly, confirm the target IDs of the other disks.   In this example, the target ID of each disk in the [Disk View] tab is as shown below.

	Target ID
Hard disk 0	0
Hard disk 1	1
Hard disk 2	2
Hard disk 3	0
Hard disk 4	1
Hard disk 5	2

In this case, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs, and add mirror volumes through [Volume Manager for Windows].

The following shows examples of creating a mirror volume for each volume in the above configuration:

- With simple volumes
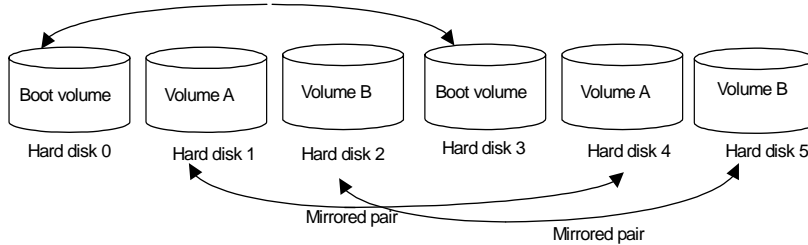
- With mirror volumes
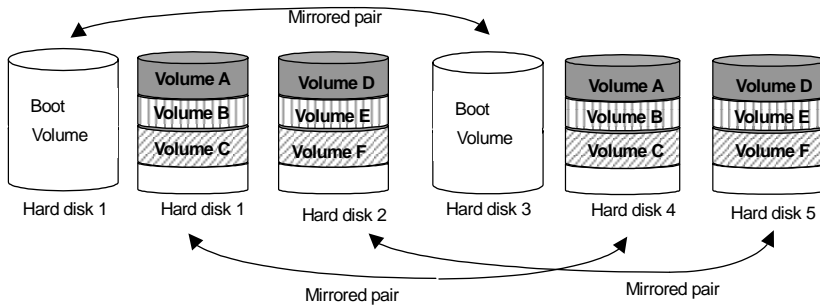
Even if mirror volumes have been already created on hard disks in the same enclosure, be sure to define hard disks in the corresponding SCSI enclosure to be mirror disks and create mirror volumes.

■ With stripe volumes
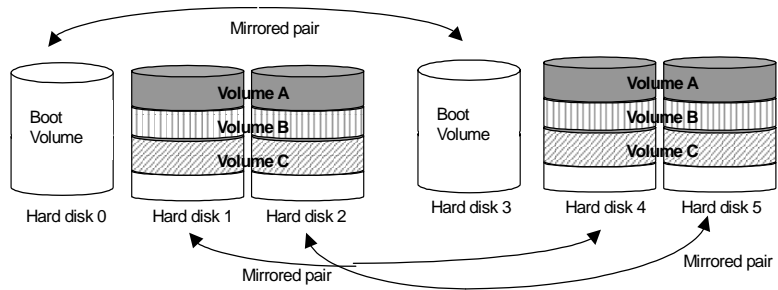
Do not create stripe volumes on the hard disk containing the OS.
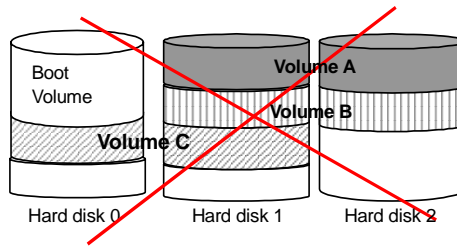
■ With span volumes
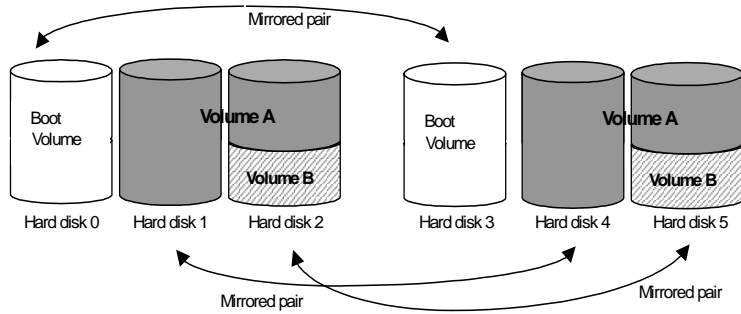
Do not create span volumes on the hard disk containing the OS.
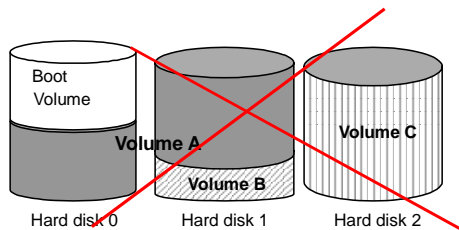
ftMemory RAM Disk

ftMemory RAM Disk is ft series-specific software that improves performance and increases usability of the applications that are running on the ft series.   It allows you to use the main memory as RAM disk that can be identified as partition disks of 10 to 256MB.

Since ftMemory RAM Disk is not included with the NEC Express5800/ft series, you need to purchase it if necessary.

Improve performance and usability of applications

■ With ftMemory RAM Disk, you can read and write data between applications and the RAM disk faster than disk I/O.

■ You can speed up applications by using ftMemory RAM Disk to save temp files that are frequently accessed and updated by the applications, and Web server data that you also save to physical media.

■ In addition to applications, you can speed up database processing by saving Oracle log files onto ftMemory RAM Disk.

■ Since data in the main memory is not lost by the restarting of Windows without power-off, ftMemory RAM Disk will be ready for use by applications just after the system re-startup.   You can speed up application re-start at the server startup by using ftMemory RAM Disk to save application status control files that are necessary to start applications.

Fault-tolerant memory that can deliver quick recovery from hardware failure

■ ftMemory RAM Disk uses redundancy feature provided by the ft series.   If a hardware failure occurs at the main memory of one CPU module, the memory data will be retained on the other module.

■ In the event of OS rebooting due to a STOP error of Windows, data on the main memory will be retained by ftMemory RAM Disk.   In conjunction with ft series' high-speed reboot and online dump features, ftMemory RAM Disk can restore its data that you've been using.   Hereby, server downtime can be minimized.

Chapter 6

Maintenance

This chapter describes the daily maintenance of NEC Express5800/ft series and precautions when relocating or storing the server.

DAILY MAINTENANCE

To use your NEC Express5800/ft series in best condition, check and maintain regularly as described below.   If an error is found on your NEC Express5800/ft series, consult your sales agent.

Checking Alert

Monitor the failure occurrence by NEC ESMPRO during the system operation.

Always check whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Joint Viewer, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

Viewers of NEC ESMPRO
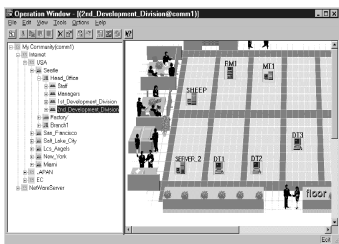
Joint Viewer
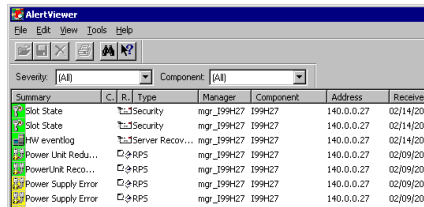
Alert Viewer
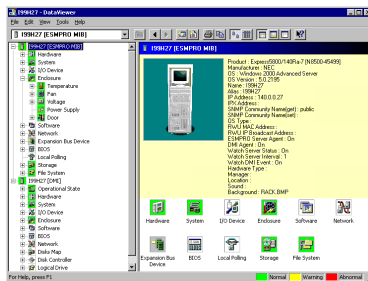
Data Viewer

Checking STATUS LEDs and LCD Display

Check the LED indication on the front of the NEC Express5800/ft series, on hard disks installed in 3.5-inch device 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 any indication that shows an error, contact your sales agent.

Making Backup Copies

NEC recommends you make backup copies of your valuable data stored in hard disks of the server on a regular basis.   For backup storage devices suitable for the server and backup tools, consult with your sales agent.

When you have changed the hardware configuration or BIOS configuration, 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.    │
│          Failure to follow these instructions may result in death or     │
│          serious personal injury.   See safety precautions 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 NEC Express5800/ft series

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth.   Follow the procedure below if stains remain on the surfaces:

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

1. Make sure that the server is off-powered (the POWER LED goes off).

2. Unplug the power cord of the server from a power outlet.

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

4. Soak a soft cloth in neutral detergent that is diluted with cold or 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

Make sure that the server and peripheral devices are all off-powered (the POWER LED goes off), and then wipe the keyboard surface with a dry cloth.

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. Make sure that the server is off-powered (the POWER LED goes off).

2. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise 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.

Mouse
Mouse ball

Mouse cover

Bottom

Rollers
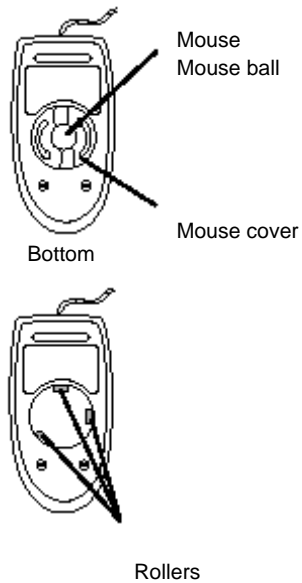
Cleaning the Floppy Disk Drive

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 (the POWER LED is lit).

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 center 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.
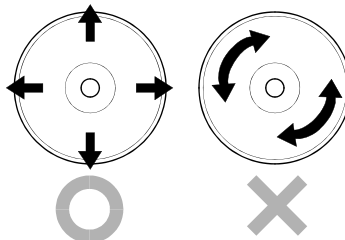
Cleaning Tape Drive

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 [Tool] → [System Diagnostics] in the NEC EXPRESSBUILDER to diagnose the server.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk 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.

> **NOTE:** On checking the hard disk, no data is written into the disk.

Startup and Exit of System Diagnosis

Procedures to start the diagnostic program is as follows:

1. Shutdown the OS, and power off the server.   Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to reboot the server.

   The following menu appears when the server is started using the NEC EXPRESSBUILDER.

5.   Select [Tool].

6.   Select [System Diagnostics].

Thesystem diagnosus starts and will be completed in approximately three minutes.

When the diagnosis is completed, the following appears on the screen of the display unit.
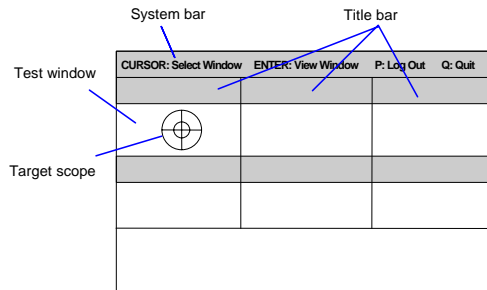
System bar: Shows information including time of progress during the diagnostics. Upon completion of the diagnostics, and descriptions on key operations to navigate the windoware shown.

Title bar: Shows items for diagnosis.   If an error is detected, the bar is indicated in red.

Test window: Shows the progress or result of diagnostics.

Target scope: A cursor to select the test window.   Use the cursor keys on the keyboard to move it to another test window.   (Move the target scope to a desired window and press **Enter**.   Now you can view detailed information on the selected window.   To return to the previous window, press **Enter** once again.)

If an error is detected during the system diagnostics, the title bar turns in red, and error information is displayed in red characters.   Note down the error message and contact your sales agent.

7.   Press **Q** and select [Reboot] from the menu.

The server restarts and the system is started from the NEC EXPRESSBUILDER.

8.   Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the CD-ROM drive.

9.   Power off the server and unplug the power cord from the receptacle.

10.   Reconnect all the LAN cables to the server.

11.   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 NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

> **IMPORTANT:**
>
> - The Off-line Maintenance Utility is intended for use of your sales agent.   The NEC 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 two ways.

NEC Express5800/ft series does not support the feature to start the Off-line Maintenance Utility from the maintenance partition.

- From the CD-ROM

  Select [Tools] → [Off-line Maintenance Utility] to start the Off-line Maintenance Utility from the CD-ROM.

- From the floppy disk

  Set 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 NEC EXPRESSBUILDER top menu.

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) in IPMI (Intelligent Platform Management Interface) and to make a backup copy of them.

  Using this feature, you can find system errors and events to determine which part should be replaced.

- BIOS Setup Viewer

  Provides the functions to view the current configuration data defined with the SETUP

utility and export it to a text file.

■ System Information Viewer

Provides the functions to view information on the processor and the BIOS and export it to a text file.

■ System Information Management

Provides the function to make a back-up copy of your data.   Without the backup data, the system-specific information and/or configuration may not be restored.

> **NOTE:** For information on making backup copy of system information, see Chapter 3.   Only the authorized personnel is allowed to restore the backup data.

NOTES ON CONNECTION WITH FIBRE CHANNEL DISK ARRAY

When connecting with Fibre Channel disk array unit (ST12000 or NEC iStorage)

■ The device manager may display the name of logical drives on Fibre Channel Disk Array in two ways. However, there will be no difference in operation in both the cases.

  ■ ST12000

    "Stratus Dual Initiated Mylex DACARMRB xxxx SCSI Disk Device"
    (xxxx: arbitrary alphanumeric)

    "Mylex RAID Disk Device"

  ■ NEC iStorage

    "Stratus Dual Initiated NEC iStorage xxxx SCSI Disk Device"
    (xxxx: numeric such as 1000 or 2000 for device identification)

    "Disk Drive"

■ Disk access at occurrence of primary FC fault

  If a fault occurs in any of the FC boards and cables on the primary PCI module at system boot, it is not possible to access the FC-connected disk before the secondary PCI module is booted. It takes a rather long time to boot the secondary PCI module. This may cause unsuccessful start up of applications and/or services installed in the FC-connected disk. If such cases, start the applications and/or services again after the secondary PCI module is booted.

■ No recognition of added disk

  If the added disk does not appear on the VERITAS Volume Manager console, run "Action/Rescan." If the disk status is other than online after the execution of "Action/Rescan,", take the proper measures depending on the status by referring to "Troubleshooting" and "Using Disk and Volume Status Information" in the VERITAS Volume Manager manual.

■ Output of alert message during rescanning

  If the disk configuration is changed and the disks are rescanned, an alert message "pnp provider reported physical disk \Device\Harddiskx was removed or temporarily unavailable." may appear. The VERITAS Volume Manager always retains the configuration of the running disk. If the disk configuration at the rescanning is different from the saved disk configuration, the above message may appear. In such cases, perform the rescanning again. If the disk status is other than online after the execution of the rescanning, take the proper measures depending on the status by referring to "Troubleshooting" and "Using and Volume Status Information" in the VERITAS Volume Manager manual.

When connecting with Fibre Channel disk array unit ST12000

■ If all logical drives on ST12000 are removed, always run [Administration] → [Scan Devices] on the SAN Array Manager Client. If a popup message "Error returned by the server. Error code: 0xd001." appears after device scanning, perform the device scanning again. Do not run scanning for hardware changes from the device manager if no logical drives are created on ST12000.

■ Display of unreadable disk

If no logical drives are created on ST12000, an unreadable disk may appear on the Volume Manager. However, this does not cause any trouble for the system operation. In addition, if logical drives are created in this status, a popup message "Unsafe Removal of Device" and an alert message in the Volume Manager "pnp provider reported physical disk \Device\Harddiskx was removed or temporarily unavailable." may appear. This does not also cause any trouble for the system operation.

■ Update for NEC ESMPRO Agent

NEC ESMPRO Agent does not manage a fibre channel disk array.   Therefore, you need not run the update for NEC ESMPRO included in CD-ROM bundled with the fibre channel disk array.

RELOCATING/STORING THE NEC Express5800/ft 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.)

⚠ WARNING

Do not attempt to remove the server.

To avoid the risk of personal injury, users should not attempt to remove the server from the rack assembly.   Removal of the server from the rack assembly should be performed by suitably trained maintenance personnel.

⚠ CAUTION

Observe the following instructions to use the server safely.   Failure to follow these instructions may cause a fire, personal injury, or property damage.   See safety precautions 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 .

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1. Take a floppy disk and a CD-ROM out of the server, if any.

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

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

4. Remove all the cables from the server.

5. Remove the server from the rack cabinet.

6. Hold the server by its bottom with at least four persons to carry the server.

> **IMPORTANT:** Do not hold the front bezel to lift the server.   The front bezel may get detached and fall off from the server, causing damage to the server.

7. Protect the server with the shock-absorbing materials, and pack it securely.

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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 NEC ESMPRO to Monitor the occurrence of fault during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the language PC.   Check whether any alert is reported on the Joint Viewer, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

[Example]

NEC ESMPRO Manager

Determine type and location of server/workstation trouble.

ERROR MESSAGES

If the NEC Express5800/ft 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 NEC Express5800/ft series and near the handles of hard disks inform the user of the various server statuses by the colors 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 Chapter 2.

Error Messages on the Liquid Crystal Display (LCD)

The LCD on the front panel of the NEC Express5800/ft series displays the NEC Express5800/ft series status all the time.   If an error occurs, the LCD displays the error message.

The following tables show the messages that are to be displayed on the LCD, and explain the meanings and procedures:

> **IMPORTANT:** Although NEC Express5800/320Lb(-R) does not have an LCD on its front, you can check error messages from MWA or NEC ESMPRO Manager as follows:
>
> - MWA: On a desired server, select [Start BMC dialog] from the Server menu.   BMC dialog box will show the LCD status as well as server power status and LED status.
>
> - NEC ESMPRO Manager: On Joint Viewer, select a desired server and start Data Viewer.   You can check the messages on Data Viewer.

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
= A =					
`AmbientTempAlm 00`	Amber	Blink	CPU module	Temperature alarm (lower limit)	Contact your sales agent.
`AmbientTempAlm 02`	Amber	Lit	CPU module	Fatal temperature alarm (lower limit)	
`AmbientTempAlm 07`	Amber	Blink	CPU module	Temperature alarm (upper limit)	
`AmbientTempAlm 09`	Amber	Lit	CPU module	Fatal temperature alarm (upper limit)	
= B =					
`BMC Unsync`	-	-	PCI module #1	The BMC cannot be synchronized.	Contact your sales agent.
`BMC0 Not Ready`	Green	Blink	PCI module #1	PCI module's BMC is disconnected	If disconnection continues for a while, contact your sales agent.
`BMC1 Not Ready`	Green	Blink	PCI module #2		
= C =					
`Cor0 +12vAlm 00`	Amber	Blink	PCI module #1	12-V power voltage alarm (lower limit)	Contact your sales agent.
`Cor0 +12vAlm 02`	Amber	Lit	PCI module #1	Fatal 12-V power voltage alarm (lower limit)	
`Cor0 +12vAlm 07`	Amber	Blink	PCI module #1	12-V power voltage alarm (upper limit)	
`Cor0 +12vAlm 09`	Amber	Lit	PCI module #1	Fatal 12-V power voltage alarm (upper limit)	
`Cor0 +2.5vAlm 00`	Amber	Blink	PCI module #1	2.5-V power voltage alarm (lower limit)	
`Cor0 +2.5vAlm 02`	Amber	Lit	PCI module #1	Fatal 2.5-V power voltage alarm (lower limit)	
`Cor0 +2.5vAlm 07`	Amber	Blink	PCI module #1	2.5-V power voltage alarm (upper limit)	
`Cor0 +2.5vAlm 09`	Amber	Lit	PCI module #1	Fatal 2.5-V power voltage alarm (upper limit)	
`Cor0 +3.3vAlm 00`	Amber	Blink	PCI module #1	3.3-V power voltage alarm (lower limit)	
`Cor0 +3.3vAlm 02`	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (lower limit)	
`Cor0 +3.3vAlm 07`	Amber	Blink	PCI module #1	3.3-V power voltage alarm (upper limit)	
`Cor0 +3.3vAlm 09`	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (upper limit)	
`Cor0 +3.3vsAlm 00`	Amber	Blink	PCI module #1	3.3-V power voltage alarm (lower limit)	
`Cor0 +3.3vsAlm 02`	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (lower limit)	
`Cor0 +3.3vsAlm 07`	Amber	Blink	PCI module #1	3.3-V power voltage alarm (upper limit)	
`Cor0 +3.3vsAlm 09`	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (upper limit)	
`Cor0 +5.0vAlm 00`	Amber	Blink	PCI module #1	5-V power voltage alarm (lower limit)	Contact your sales agent.
`Cor0 +5.0vAlm 02`	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (lower limit)	
`Cor0 +5.0vAlm 07`	Amber	Blink	PCI module #1	5-V power voltage alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
Cor0 +5.0vAlm 09	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (upper limit)	Contact your sales agent.
Cor0 +5.0vsAlm 00	Amber	Blink	PCI module #1	5-V power voltage alarm (lower limit)	
Cor0 +5.0vsAlm 02	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (lower limit)	
Cor0 +5.0vsAlm 07	Amber	Blink	PCI module #1	5-V power voltage alarm (upper limit)	
Cor0 +5.0vsAlm 09	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (upper limit)	
Cor0 -12vAlm 00	Amber	Blink	PCI module #1	-12-V power voltage alarm (lower limit)	
Cor0 -12vAlm 02	Amber	Lit	PCI module #1	Fatal -12-V power voltage alarm (lower limit)	
Cor0 -12vAlm 07	Amber	Blink	PCI module #1	-12-V power voltage alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
Cor0 -12vAlm 09	Amber	Lit	PCI module #1	Fatal -12-V power voltage alarm (upper limit)	Contact your sales agent.
Cor0 Bus PERR 01	Green	Blink	PCI module #1	PCI bus parity error	
Cor0 Bus SERR 01	Green	Blink	PCI module #1	Fatal PCI bus error	
Cor0 CLK Alm 00	Amber	Blink	CLOCK board	Clock alarm (lower limit)	
Cor0 CLK Alm 02	Amber	Lit	CLOCK board	Fatal Clock alarm (lower limit)	
Cor0 CLK Alm 07	Amber	Blink	CLOCK board	Clock alarm (upper limit)	
Cor0 CLK Alm 09	Amber	Lit	CLOCK board	Fatal Clock alarm (upper limit)	
Cor0 FAN Alm 01	Amber	Blink	PCI module #1	Cooling fan1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
Cor0 FAN Alm 02	Amber	Blink	PCI module #1	Cooling fan2 alarm	
Cor0 FAN Alm 03	Amber	Blink	PCI module #1	Cooling fan3 alarm	
Cor0 FAN Alm 04	Amber	Blink	PCI module #1	Cooling fan4 alarm	
Cor0 FAN Alm 05	Amber	Blink	PCI module #1	Cooling fan5 alarm	
Cor0 offline	Green	Blink	PCI module #1	PCI module logically isolated	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
Cor0 removed	Green	Blink	PCI module #1	PCI module detached	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
Cor0 Temp Alm 00	Amber	Blink	PCI module #1	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
Cor0 Temp Alm 02	Amber	Lit	PCI module #1	Fatal temperature alarm (lower limit)	
Cor0 Temp Alm 07	Amber	Blink	PCI module #1	Temperature alarm (upper limit)	
Cor0 Temp Alm 09	Amber	Lit	PCI module #1	Fatal temperature alarm (upper limit)	
Cor1 +12vAlm 00	Amber	Blink	PCI module #2	12-V power voltage alarm (lower limit)	Contact your sales agent.
Cor1 +12vAlm 02	Amber	Lit	PCI module #2	Fatal 12-V power voltage alarm (lower limit)	
Cor1 +12vAlm 07	Amber	Blink	PCI module #2	12-V power voltage alarm (upper limit)	
Cor1 +12vAlm 09	Amber	Lit	PCI module #2	Fatal 12-V power voltage alarm (upper limit)	
Cor1 +2.5vAlm 00	Amber	Blink	PCI module #2	2.5-V power voltage alarm (lower limit)	
Cor1 +2.5vAlm 02	Amber	Lit	PCI module #2	Fatal 2.5-V power voltage alarm (lower limit)	
Cor1 +2.5vAlm 07	Amber	Blink	PCI module #2	2.5-V power voltage alarm (upper limit)	
Cor1 +2.5vAlm 09	Amber	Lit	PCI module #2	Fatal 2.5-V power voltage alarm (upper limit)	
Cor1 +3.3vAlm 00	Amber	Blink	PCI module #2	3.3-V power voltage alarm (lower limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
Cor1 +3.3vAlm 02	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (lower limit)	Contact your sales agent.
Cor1 +3.3vAlm 07	Amber	Blink	PCI module #2	3.3-V power voltage alarm (upper limit)	
Cor1 +3.3vAlm 09	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (upper limit)	
Cor1 +3.3vsAlm 00	Amber	Blink	PCI module #2	3.3-V power voltage alarm (lower limit)	
Cor1 +3.3vsAlm 02	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (lower limit)	
Cor1 +3.3vsAlm 07	Amber	Blink	PCI module #2	3.3-V power voltage alarm (upper limit)	
Cor1 +3.3vsAlm 09	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (upper limit)	
Cor1 +5.0vAlm 00	Amber	Blink	PCI module #2	5-V power voltage alarm (lower limit)	
Cor1 +5.0vAlm 02	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (lower limit)	
Cor1 +5.0vAlm 07	Amber	Blink	PCI module #2	5-V power voltage alarm (upper limit)	
Cor1 +5.0vAlm 09	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (upper limit)	
Cor1 +5.0vsAlm 00	Amber	Blink	PCI module #2	5-V power voltage alarm (lower limit)	
Cor1 +5.0vsAlm 02	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (lower limit)	
Cor1 +5.0vsAlm 07	Amber	Blink	PCI module #2	5-V power voltage alarm (upper limit)	
Cor1 +5.0vsAlm 09	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (upper limit)	
Cor1 -12vAlm 00	Amber	Blink	PCI module #2	-12-V power voltage alarm (lower limit)	
Cor1 -12vAlm 02	Amber	Lit	PCI module #2	Fatal -12-V power voltage alarm (lower limit)	
Cor1 -12vAlm 07	Amber	Blink	PCI module #2	-12-V power voltage alarm (upper limit)	
Cor1 -12vAlm 09	Amber	Lit	PCI module #2	Fatal -12-V power voltage alarm (upper limit)	
Cor1 Bus PERR 01	Green	Blink	PCI module #2	PCI bus parity error	
Cor1 Bus SERR 01	Green	Blink	PCI module #2	Fatal PCI bus error	
Cor1 CLK Alm 00	Amber	Blink	CLOCK board	Clock alarm (lower limit)	
Cor1 CLK Alm 02	Amber	Lit	CLOCK board	Fatal Clock alarm (lower limit)	
Cor1 CLK Alm 07	Amber	Blink	CLOCK board	Clock alarm (upper limit)	
Cor1 CLK Alm 09	Amber	Lit	CLOCK board	Fatal Clock alarm (upper limit)	
Cor1 FAN Alm 01	Amber	Blink	PCI module #2	Cooling fan1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
Cor1 FAN Alm 02	Amber	Blink	PCI module #2	Cooling fan2 alarm	
Cor1 FAN Alm 03	Amber	Blink	PCI module #2	Cooling fan3 alarm	
Cor1 FAN Alm 04	Amber	Blink	PCI module #2	Cooling fan4 alarm	
Cor1 FAN Alm 05	Amber	Blink	PCI module #2	Cooling fan5 alarm	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
Cor1 offline	Green	Blink	PCI module #2	PCI module logically isolated	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
Cor1 removed	Green	Blink	PCI module #2	PCI module detached	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
Cor1 Temp Alm 00	Amber	Blink	PCI module #2	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
Cor1 Temp Alm 02	Amber	Lit	PCI module #2	Fatal temperature alarm (lower limit)	
Cor1 Temp Alm 07	Amber	Blink	PCI module #2	Temperature alarm (upper limit)	
Cor1 Temp Alm 09	Amber	Lit	PCI module #2	Fatal temperature alarm (upper limit)	
CPU IERR 00	Green	Blink	CPU module #1	CPU#1 internal error	Contact your sales agent.
CPU IERR 01	Green	Blink	CPU module #1	CPU#2 internal error	
CPU IERR 20	Green	Blink	CPU module #2	CPU#1 internal error	
CPU IERR 21	Green	Blink	CPU module #2	CPU#2 internal error	
CPU T-Trip 00	Green	Blink	CPU module #1	CPU#1 thermal change error (upper limit)	
CPU T-Trip 01	Green	Blink	CPU module #1	CPU#2 thermal change error (upper limit)	
CPU T-Trip 20	Green	Blink	CPU module #2	CPU#1 thermal change error (upper limit)	
CPU T-Trip 21	Green	Blink	CPU module #2	CPU#2 thermal change error (upper limit)	
CPU0 +12ss Alm 00	Amber	Blink	CPU module #1	+12-V power voltage alarm (lower limit)	
CPU0 +12ss Alm 02	Amber	Lit	CPU module #1	Fatal +12-V power voltage alarm (lower limit)	
CPU0 +12ss Alm 07	Amber	Blink	CPU module #1	+12-V power voltage alarm (upper limit)	
CPU0 +12ss Alm 09	Amber	Lit	CPU module #1	Fatal +12-V power voltage alarm (upper limit)	
CPU0 +12v Alm 00	Amber	Blink	CPU module #1	12-V power voltage alarm (lower limit)	
CPU0 +12v Alm 02	Amber	Lit	CPU module #1	Fatal 12-V power voltage alarm (lower limit)	
CPU0 +12v Alm 07	Amber	Blink	CPU module #1	12-V power voltage alarm (upper limit)	
CPU0 +12v Alm 09	Amber	Lit	CPU module #1	Fatal 12-V power voltage alarm (upper limit)	
CPU0 +1.5v Alm 00	Amber	Blink	CPU module #1	1.5-V power voltage alarm (lower limit)	
CPU0 +1.5v Alm 02	Amber	Lit	CPU module #1	Fatal 1.5-V power voltage alarm (lower limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU0 +1.5v Alm 07	Amber	Blink	CPU module #1	1.5-V power voltage alarm (upper limit)	Contact your sales agent.
CPU0 +1.5v Alm 09	Amber	Lit	CPU module #1	Fatal 1.5-V power voltage alarm (upper limit)	
CPU0 +2.5vAlm 00	Amber	Blink	CPU module #1	2.5-V power voltage alarm (lower limit)	
CPU0 +2.5vAlm 02	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (lower limit)	
CPU0 +2.5vAlm 07	Amber	Blink	CPU module #1	2.5-V power voltage alarm (upper limit)	
CPU0 +2.5vAlm 09	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (upper limit)	
CPU0 +2.5vcAlm 00	Amber	Blink	CPU module #1	2.5-V power voltage alarm (lower limit)	
CPU0 +2.5vcAlm 02	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (lower limit)	
CPU0 +2.5vcAlm 07	Amber	Blink	CPU module #1	2.5-V power voltage alarm (upper limit)	
CPU0 +2.5vcAlm 09	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (upper limit)	
CPU0 +3.3vAlm 00	Amber	Blink	CPU module #1	3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vAlm 02	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vAlm 07	Amber	Blink	CPU module #1	3.3-V power voltage alarm (upper limit)	
CPU0 +3.3vAlm 09	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (upper limit)	
CPU0 +3.3vsAlm 00	Amber	Blink	CPU module #1	3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vsAlm 02	Amber	Lit	CPU module #1	3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vsAlm 07	Amber	Blink	CPU module #1	Fatal 3.3-V power voltage alarm (upper limit)	
CPU0 +3.3vsAlm 09	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (upper limit)	
CPU0 +5.0vAlm 00	Amber	Blink	CPU module #1	5-V power voltage alarm (lower limit)	
CPU0 +5.0vAlm 02	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (lower limit)	
CPU0 +5.0vAlm 07	Amber	Blink	CPU module #1	5-V power voltage alarm (upper limit)	
CPU0 +5.0vAlm 09	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (upper limit)	
CPU0 +5.0vsAlm 00	Amber	Blink	CPU module #1	5-V power voltage alarm (lower limit)	
CPU0 +5.0vsAlm 02	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (lower limit)	
CPU0 +5.0vsAlm 07	Amber	Blink	CPU module #1	5-V power voltage alarm (upper limit)	
CPU0 +5.0vsAlm 09	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (upper limit)	
CPU0 broken	Green	Blink	CPU module #1	CPU module breakdown	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU0 FAN Alm 01	Amber	Blink	CPU module #1	Cooling fan1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU0 FAN Alm 03	Amber	Blink	CPU module #1	Cooling fan2 alarm	
CPU0 FAN Alm 04	Amber	Blink	CPU module #1	Cooling fan3 alarm	
CPU0 offline	Green	Blink	CPU module #1	PCI module logically isolated	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
CPU0 removed	Green	Blink	CPU module #1	PCI module detached	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
CPU0 Temp Alm 00	Amber	Blink	CPU module #1	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU0 Temp Alm 02	Amber	Lit	CPU module #1	Fatal temperature alarm (lower limit)	
CPU0 Temp Alm 07	Amber	Blink	CPU module #1	Temperature alarm (upper limit)	
CPU0 Temp Alm 09	Amber	Lit	CPU module #1	Fatal temperature alarm (upper limit)	
CPU0 VccpAlm 00	Amber	Blink	CPU module #1	CPU operating voltage alarm (lower limit) (VCCP)	Contact your sales agent.
CPU0 VccpAlm 02	Amber	Lit	CPU module #1	Fatal CPU operating voltage alarm (lower limit) (VCCP)	
CPU0 VccpAlm 07	Amber	Blink	CPU module #1	CPU operating voltage alarm (upper limit) (VCCP)	
CPU0 VccpAlm 09	Amber	Lit	CPU module #1	Fatal CPU operating voltage alarm (upper limit) (VCCP)	
CPU0 Vtt Alm 00	Amber	Blink	CPU module #1	1.25-V power voltage alarm (lower limit)	
CPU0 Vtt Alm 02	Amber	Lit	CPU module #1	Fatal 1.25-V power voltage alarm (lower limit)	
CPU0 Vtt Alm 07	Amber	Blink	CPU module #1	1.25-V power voltage alarm (upper limit)	
CPU0 Vtt Alm 09	Amber	Lit	CPU module #1	Fatal 1.25-V power voltage alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU00 Temp AI m 00	Amber	Blink	CPU module #1	CPU#1 temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU00 Temp AI m 02	Amber	Lit	CPU module #1	CPU#1fatal temperature alarm (lower limit)	
CPU00 Temp AI m 07	Amber	Blink	CPU module #1	CPU#1temperature alarm (upper limit)	
CPU00 Temp AI m 09	Amber	Lit	CPU module #1	CPU#1 fatal temperature alarm (upper limit)	
CPU01 Temp AI m 00	Amber	Blink	CPU module #1	CPU#2 temperature alarm (lower limit)	
CPU01 Temp AI m 02	Amber	Lit	CPU module #1	CPU#2 fatal temperature alarm (lower limit)	
CPU01 Temp AI m 07	Amber	Blink	CPU module #1	CPU#2 temperature alarm (upper limit)	
CPU01 Temp AI m 09	Amber	Lit	CPU module #1	CPU#2 fatal temperature alarm (upper limit)	
CPU2 +12ss AI m 00	Amber	Blink	CPU module #2	12-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +12ss AI m 02	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +12ss AI m 07	Amber	Blink	CPU module #2	12-V power voltage alarm (upper limit)	
CPU2 +12ss AI m 09	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (upper limit)	
CPU2 +12v AI m 00	Amber	Blink	CPU module #2	12-V power voltage alarm (lower limit)	
CPU2 +12v AI m 02	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (lower limit)	
CPU2 +12v AI m 07	Amber	Blink	CPU module #2	12-V power voltage alarm (upper limit)	
CPU2 +12v AI m 09	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (upper limit)	
CPU2 +1. 5vAI m 00	Amber	Blink	CPU module #2	1.5-V power voltage alarm (lower limit)	
CPU2 +1. 5vAI m 02	Amber	Lit	CPU module #2	Fatal 1.5-V power voltage alarm (lower limit)	
CPU2 +1. 5vAI m 07	Amber	Blink	CPU module #2	1.5-V power voltage alarm (upper limit)	
CPU2 +1. 5vAI m 09	Amber	Lit	CPU module #2	Fatal 1.5-V power voltage alarm (upper limit)	
CPU2 +2. 5vAI m 00	Amber	Blink	CPU module #2	2.5-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +2. 5vAI m 02	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (lower limit)	
CPU2 +2. 5vAI m 07	Amber	Blink	CPU module #2	2.5-V power voltage alarm (upper limit)	
CPU2 +2. 5vAI m 09	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU2 +2.5VcAlm 00	Amber	Blink	CPU module #2	2.5-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +2.5VcAlm 02	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (lower limit)	
CPU2 +2.5VcAlm 07	Amber	Blink	CPU module #2	2.5-V power voltage alarm (upper limit)	
CPU2 +2.5VcAlm 09	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (upper limit)	
CPU2 +3.3vAlm 00	Amber	Blink	CPU module #2	3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vAlm 02	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vAlm 07	Amber	Blink	CPU module #2	3.3-V power voltage alarm (upper limit)	
CPU2 +3.3vAlm 09	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (upper limit)	
CPU2 +3.3vsAlm 00	Amber	Blink	CPU module #2	3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vsAlm 02	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vsAlm 07	Amber	Blink	CPU module #2	3.3-V power voltage alarm (upper limit)	
CPU2 +3.3vsAlm 09	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (upper limit)	
CPU2 +5.0vAlm 00	Amber	Blink	CPU module #2	5-V power voltage alarm (lower limit)	
CPU2 +5.0vAlm 02	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (lower limit)	
CPU2 +5.0vAlm 07	Amber	Blink	CPU module #2	5-V power voltage alarm (upper limit)	
CPU2 +5.0vAlm 09	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (upper limit)	
CPU2 +5.0vsAlm00	Amber	Blink	CPU module #2	5-V power voltage alarm (lower limit)	
CPU2 +5.0vsAlm02	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (lower limit)	
CPU2 +5.0vsAlm07	Amber	Blink	CPU module #2	5-V power voltage alarm (upper limit)	
CPU2 +5.0vsAlm09	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (upper limit)	
CPU2 broken	Green	Blink	CPU module #2	CPU module breakdown	
CPU2 FAN Alm 01	Amber	Blink	CPU module #2	Cooling fan 1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU2 FAN Alm 03	Amber	Blink	CPU module #2	Cooling fan 2 alarm	
CPU2 FAN Alm 04	Amber	Blink	CPU module #2	Cooling fan 3 alarm	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU2 offline	Green	Blink	CPU module #2	The CPU module has been logically disconnected.	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
CPU2 removed	Green	Blink	CPU module #2	The CPU module has come off.	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
CPU2 Temp Alm 00	Amber	Blink	CPU module #2	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU2 Temp Alm 02	Amber	Lit	CPU module #2	Fatal temperature alarm (lower limit)	
CPU2 Temp Alm 07	Amber	Blink	CPU module #2	Temperature alarm (upper limit)	
CPU2 Temp Alm 09	Amber	Lit	CPU module #2	Fatal temperature alarm (upper limit)	
CPU2 VccpAlm 00	Amber	Blink	CPU module #2	CPU operating voltage alarm (lower limit) (VCCP)	Contact your sales agent.
CPU2 VccpAlm 02	Amber	Lit	CPU module #2	Fatal CPU operating voltage alarm (lower limit) (VCCP)	
CPU2 VccpAlm 07	Amber	Blink	CPU module #2	CPU operating voltage alarm (upper limit) (VCCP)	
CPU2 VccpAlm 09	Amber	Lit	CPU module #2	Fatal CPU operating voltage alarm (upper limit) (VCCP)	
CPU2 VttAlm 00	Amber	Blink	CPU module #2	1.25-V power voltage alarm (lower limit)	
CPU2 VttAlm 02	Amber	Lit	CPU module #2	Fatal 1.25-V power voltage alarm (lower limit)	
CPU2 VttAlm 07	Amber	Blink	CPU module #2	1.25-V power voltage alarm (upper limit)	
CPU2 VttAlm 09	Amber	Lit	CPU module #2	Fatal 1.25-V power voltage alarm (upper limit)	
CPU20 TempAlm 00	Amber	Blink	CPU module #2	CPU#1 temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU20 TempAlm 02	Amber	Lit	CPU module #2	Fatal CPU#1 temperature alarm (lower limit)	
CPU20 TempAlm 07	Amber	Blink	CPU module #2	CPU#1 temperature alarm (upper limit)	
CPU20 TempAlm 09	Amber	Lit	CPU module #2	Fatal CPU#1 temperature alarm (upper limit)	
CPU21 TempAlm 00	Amber	Blink	CPU module #2	CPU#2 temperature alarm (lower limit)	
CPU21 TempAlm 02	Amber	Lit	CPU module #2	Fatal CPU#2 temperature alarm (lower limit)	
CPU21 TempAlm 07	Amber	Blink	CPU module #2	CPU#2 temperature alarm (upper limit)	
CPU21 TempAlm 09	Amber	Lit	CPU module #2	Fatal CPU#2 temperature alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
= D =					
`DUMP Request!`	Off		-	DUMP switch request	Contact your sales agent.
= F =					
`FRB Processing`	Off		-	During POST execution or OS start processing	The server is operating normally.
= M =					
`Memory U-Err 01`	Green	Blink	CPU module #1	DIMM#1 2-bit error	
`Memory U-Err 02`	Green	Blink	CPU module #1	DIMM#2 2-bit error	
`Memory U-Err 03`	Green	Blink	CPU module #1	DIMM#3 2-bit error	
`Memory U-Err 04`	Green	Blink	CPU module #1	DIMM#4 2-bit error	
`Memory U-Err 05`	Green	Blink	CPU module #1	DIMM#5 2-bit error	
`Memory U-Err 06`	Green	Blink	CPU module #1	DIMM#6 2-bit error	
`Memory U-Err 21`	Green	Blink	CPU module #2	DIMM#1 2-bit error	
`Memory U-Err 22`	Green	Blink	CPU module #2	DIMM#2 2-bit error	
`Memory U-Err 23`	Green	Blink	CPU module #2	DIMM#3 2-bit error	
`Memory U-Err 24`	Green	Blink	CPU module #2	DIMM#4 2-bit error	
`Memory U-Err 25`	Green	Blink	CPU module #2	DIMM#5 2-bit error	
`Memory U-Err 26`	Green	Blink	CPU module #2	DIMM#6 2-bit error	
= O =					
`OS shutdown Alm`	Off		-	Shutdown due to a timeout error of the watch dog timer (fatal error)	Contact your sales agent.
= P =					
`Power-off`	Off		-	The DC power is turned off.	-
= S =					
`SSR Processing`	Off		-	Reboot processing for recovery	DUMP is being collected.
= W =					
`WDT timeout`	Off		-	Timeout error of the watch dog timer (fatal error)	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
```
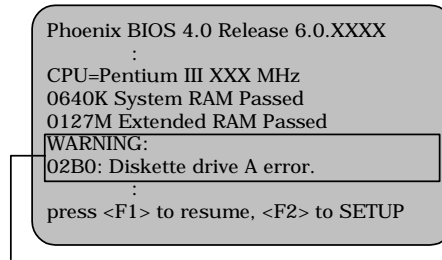
Message indicating a floppy disk drive error

TIPS: For error messages on optional SCSI controller board and disk array controller, refer to the manual provided with those options.

On-screen error message	Cause	Action
0200 Failure Fixed Disk	• Configuration error in Setup menu. • Hard disk is faulty. • CPU module board is faulty. • PCI module board is faulty.	• Check configuration in Setup menu. • Replace the hard disk. • Replace the CPU module board. • Replace the PCI module board.
0210 Stuck Key	Keyboard connection error	• Disconnect the keyboard and connect it back again. • Replace the keyboard. • Replace the PCI module board.
0211 Keyboard error	Keyboard is faulty.	• Check the keyboard connection. • Restart the server. • Replace the PCI module board.
0212 Keyboard Controller Failed	Keyboard controller is faulty.	
0213 Keyboard locked - Unlock key switch	Keyboard is locked.	Unlock the key switch.
0220 Monitor type does not match CMOS - Run SETUP	Illegal monitor type is specified.	• Select "Get Default Value" from the Setup menu. • Clear the CMOS data.
0230 System RAM Failed at offset	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0231 Shadow RAM Failed at offset	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.

On-screen error message	Cause	Action
0232 Extend RAM Failed at address line	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0233 Memory type mixing detected	DIMMs of the different types are installed.	Replace DIMM with appropriate one.
0234 Single - bit ECC error	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0235 Multiple - bit ECC error	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0250 System battery is dead -Replace and run SETUP	NvRAM battery is dead.	Replace the CPU module board.
0251 System CMOS checksum bad-Default configuration used	NvRAM is faulty.	• Re-configure using the Setup menu. • Replace the PCI module board.
0252 Password checksum bad -Password cleared	NvRAM is faulty.	• Re-set the password in the Setup menu. • Replace the PCI module board.
0260 System timer error	CPU module board is faulty.	Replace the CPU module board.
0270 Real time clock error	RTC is faulty.	Replace the CPU module board.
0271 Check date and time setting	Date and time of RTC are incorrectly set.	• Set the correct date and time in Setup menu. • Replace the PCI module board.
0280 Previous boot incomplete -Default configuration used	Configuration error in Setup menu.	Check configuration in Setup menu.
02B0 Diskette drive A error	Floppy drive A is faulty.	Replace the floppy disk drive A.
02B2 Incorrect Drive A type - run SETUP	Configuration error in Setup menu.	Specify the correct drive type in Setup menu.
02D0 System cache error - Cache disabled	• CPU is faulty. • CPU module board is faulty.	• Replace the CPU. • Replace the CPU module board.
0B1B PCI System Error on Bus/Device/Function	PCI device is faulty.	• Replace the PCI device board.
0B1C PCI Parity Error on Bus/Device/Function	PCI device is faulty.	• Re-install the PCI device board. • Re-configure the PCI board.
0B22 CPUs are installed out of order	CPU is faulty.	Replace the CPU.
0B28 Unsupported Processor detected on Processor 1	The processor (CPU) not supported by this server is installed in Processor 1.	Install the CPU appropriate to the server.

On-screen error message	Cause	Action
0B29 Unsupported Processor detected on Processor 2	The processor (CPU) not supported by this server is installed in Processor 2.	Install the CPU appropriate to the server.
0B30 CPU FAN #1 Alarm occurred 0B31 CPU FAN #2 Alarm occurred	• Dusts are clogged in fan. • Fan is faulty. • CPU module board is faulty.	• Replace the fan. • Replace the CPU module board. • Connect fan cable properly.
0B32 CPU FAN #3 Alarm occurred	• Dusts are clogged in fan. • Fan is faulty. • PCI module board is faulty.	• Replace the fan. • Replace the PCI module board. • Connect fan cable properly.
0B40 Invalid System Configuration Data	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Reset the setting by selecting [Yes] at [Reset Configuration Data] • Replace the CPU/PCI module board.
0B41 System Configuration Data Read error	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Reset the setting by selecting [Yes] at [Reset Configuration Data] • Replace the CPU/PCI module board.
0B42 Resource Conflict	Configuration error in SETUP.	Correct device configuration in SETUP
0B43 Warning: IRQ not configured	Configuration error in SETUP.	Correct settings in SETUP
0B44 Expansion Rom not initialized	Configuration error in SETUP.	In SETUP, disable decompression of expansion ROM on unnecessary optional PCI cards.
0B45 System Configuration Data Write error	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Reset the setting by selecting [Yes] at [Reset Configuration Data] • Replace the CPU/PCI module board.
0B47 Missing date and time synchronization	The date and time are incorrect due to a communication error between BMCs.	• Restart the system. • Re-set the date and time in SETUP. If the error persists, replace the PCI module board.
0B49 BMC Issued Reset Command, but failed System Reset	• System cannot be reset by BMC's reset command.	Replace PCI module board.
0B6E DIMMs are installed out of order	• DIMM is faulty.	Replace DIMM.
0B70 The error occurred during temperature sensor reading	• SMBus device is faulty. • SMBus is faulty.	Replace the CPU/PCI module or back panel board.
0B71 System temperature out of Range	• Ambient temperature is out of range. • Fan is faulty. • CPU/PCI module board is faulty.	• Check the setting in SETUP • Clean the fan. • Replace the fan. • Replace the CPU/PCI module board.

On-screen error message	Cause	Action
0B80 BMC Memory Test Failed	BMC is faulty.	Replace the PCI module board.
0B81 BMC Firmware Code Area CRC check failed		
0B82 BMC core Hardware failure		
0B83 BMC IBF or OBF check failed		
0B90 BMC Platform Information Area corrupted	BMC is faulty.	Replace the PCI module board.
0B91 BMC update firmware corrupted		
0B92 Internal Use Area of BMC FRU corrupted	• SROM is faulty. • BMC is faulty.	
0B93 BMC SDR Repository empty	BMC is faulty.	Replace the PCI module board.
0B94 IPMB signal lines do not respond		
0B95 BMC FRU device failure		
0B96 BMC SDR Repository failure		
0B97 BMC SEL device failure		
0B98 BMC SEL Overflow	SEL (System Event Log) overflowed.	Erase the unnecessary SEL.
0BB0 SMBIOS - SROM data read error	• SROM is faulty. • Front panel board is faulty.	Replace the back panel board.
0BB1 SMBIOS - SROM data checksum bad		
0BD0 1st SMBus device address not acknowledged	Board is faulty.	• Check cable connection. • Replace the board.
0BD1 1st SMBus device Error detected		
0BD2 1st SMBus timeout		
0BD3 2nd SMBus device address not acknowledged		
0BD4 2nd SMBus device Error detected		
0BD5 2nd SMBus timeout		
0BD6 3rd SMBus device address not acknowledged		
0BD7 3rd SMBus device Error detected		
0BD8 3rd SMBus timeout		
0BD9 4th SMBus device address not acknowledged		
0BDA 4th SMBus device Error Detected		

On-screen error message	Cause	Action
0BDB 4th SMBus device timeout	Board is faulty.	• Check cable connection. • Replace the board.
0BDC 5th SMBus device address not acknowledged		
0BDD 5th SMBus device Error detected		
0BDE 5th SMBus timeout		
0BDF 6th SMBus device address not acknowledged		
0BE0 6th SMBus device Error detected		
0BE1 5th SMBus timeout		
0BE2 7th SMBus device address not acknowledged		
0BE3 7th SMBus device Error detected		
0BE4 7th SMBus timeout		
0BE5 8th SMBus device address not acknowledged		
0BE6 8th SMBus device Error detected		
0BE7 8th SMBus timeout		
0BF0 Vendor ID cannot be retrieved from BP IDPROM	Back panel board is faulty.	Replace the back panel board.
0BF1 System Structure cannot be retrieved from BP IDPROM	Back panel board is faulty.	Replace the back panel board.
0C00 Rompilot reports error number xx	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Re-configure Rompilot. • Replace the CPU/PCI module board.
8600 No working DQS value found	• DIMM is faulty • DIMM is not supported	• Replace DIMM • Replace DIMM with appropriate one.
8610 MAC Address update failed – CoreI/O#010/100Mbit Ethernet COntroller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board.
8611 MAC Address update failed – CoreI/O#0 Gbit Ethernet COntroller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board.
8612 MAC Address update failed – CoreI/O#110/100 Mbit Ethernet Controller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board.

On-screen error message	Cause	Action
8613 MAC Address update failed – Corel/O#1 Gbit Ethernet Controller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board.

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 module board.
1-1-2-4	ROMEXEC code error	Check the installation of DIMM board. If the error persists, contact your sales agent to replace the DIMM or CPU module board.
1-3-1-1	DRAM refresh test error	
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 module board.
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 module board.
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	
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 module board.
	Failed to initialize the option ROM	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 module board, PCI module board or added PCI board with new one.
	Failed to expand the option ROM	

Windows 2000 Advanced Server Error Messages

If a fatal error (e.g., a STOP or system error) occurs after Windows 2000 Advanced Server 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".
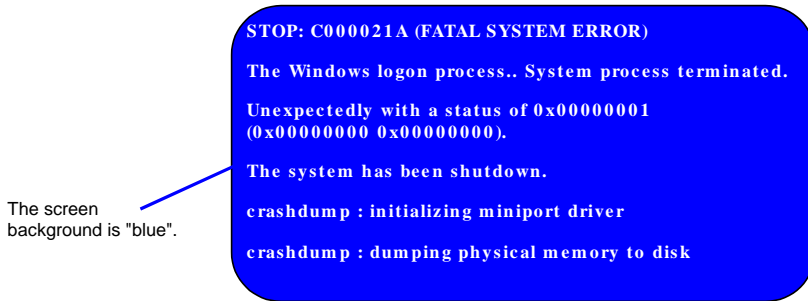
Take notes of the messages displayed on the screen, and call your sales agent.

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.

> **NOTE:** 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 $\times$ 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 NEC ESMPRO Agent, NEC ESMPRO Manager, or GAMServer has been installed in the NEC Express5800/ft 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.
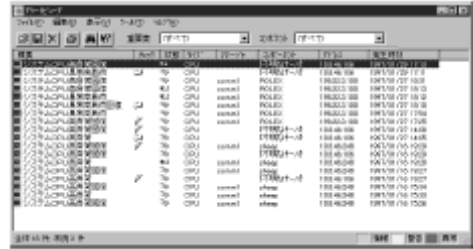
SOLVING PROBLEMS

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 NEC Express5800/ft 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: [System Hardware] → [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 NEC Express5800/ft series to turn on the power (the POWER LED lights).

☐   Did you install the CPU/PCI module properly?

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

The screen turns blue during OS boot:

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

→ Start the OS from the other PCI module's hard disk.

Fail to power off the server:

☐   Is the POWER switch enabled?

→ Restart the server and start the BIOS setup utility.

<Menu to check: [Security] → [Power Switch Mask] → [Unmasked]>

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.

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 NEC Express5800/ft 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.

→ Some optional devices connected to the serial port require settings for I/O port address and operation mode. Refer to the manual that comes with the device to configure the device.

<Menu to check: [Advanced] → [Peripheral Configuration]>

☐   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 BIOS setup 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.

CPU not in Dual mode:

→ Check if the memory configuration is correct.

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

Disk not in Dual 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 NEC Express5800/ft series?

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

☐   Is BIOS configuration correct?

→ The keyboard and mouse may be disabled with the BIOS setup utility of the server. Check the settings with the BIOS setup utility.

<Menu to check: [Advanced] → [Keyboard Features]>

☐   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.

☐   Are you using a PS2-USB conversion connector?

→ The PS2-USB conversion connector is not supported.   Use the keyboard and mouse that come with the server or use N-code products.

Screen freezes, keyboard and mouse don't work:

     → If the amount of memory is large, it take time to copy the memory in dual mode and the system stops working during the copying.   It's not system trouble.

Message "New Hardware Found" appears:

     → Such a message may appear at the system startup or when a PCI 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.

□   Is the CD-ROM on the PCI module whose POWER switch is on (primary module)?

          → Although there are two CD-ROM drives, you can only use the one located on the primary module whose POWER switch is on.

Fail to access the hard disk:

□   Is the hard disk applicable to the server?

     → Operation of any device that is not authorized by NEC 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 a floppy disk in the floppy disk drive?

       → Take out the floppy disk and restart the server.

    □   Is the NEC EXPRESSBUILDER CD-ROM (or the other 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.

Failed to install Windows 2000 Advanced Server:

    □   Did you install Windows 2000 Advanced Server according to precautions for installation?

       → See Chapter 3.

Reboot starts during setup:

    □   Are BIOS settings correct?

       → See settings of Boot Monitoring.

OS behavior is unstable:

    □   Have you updated your system?

       → If you install a network driver after installing the OS, the OS may become unstable.   For update procedure, see Chapter 3.

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 2000 Advanced Server 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 4 seconds. Pressing the POWER switch only once 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.

☐   Is BIOS configuration correct?

→ The internal LAN controller may be disabled with the BIOS setup utility of the server.   Check the setting with the BIOS setup utility.

<Menu to check: [Advanced] → [Option Rom] → [On Board LAN]>

☐   Have the protocol and service already configured?

→ Install the distinctive network driver for the server.   Make sure that the protocol, such as TCP/IP, and services are properly specified.

☐   Is the transfer speed correct?

→ Open the [Network Property] dialog box in control panel to specify the "Link Speed & Dual" value the same as the value specified for HUB.

Icon of drive A is changed to that of removal disk:

→ Does not cause any problem.

"The NMS Service 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:

→ Although the following log may be recorded in the system event log when starting the system, there is no real problem on operation (In the description, "X" represents a number).

"Source: iANSMiniport
Event ID: 35
Description: Initializing Team #X missing adapters. Check the configuration to verify that all the adapters are present and functioning."

ESMCpuPerf-related logs are recorded in the system event log:

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

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

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

WMI log is recorded in the application event log:

When you view the Application Event Viewer log on your computer, one or more of the following events may be logged. This has no effect on the functionality of VERITAS Volume Manager.

> Source: WinMgmt
>
> ID: 41
>
> Description: WMI ADAP was unable to create object index 2902 for Performance Library vxio because no value was found in the 009 subkey.

vmperf log is recorded in the application event log:

When you view the Application Event Viewer log on your computer, one or more of the following events may be logged. This has no effect on the functionality of VERITAS Volume Manager.

> Source: vmperf
>
> ID: 11
>
> Description: The description for Event ID (11) in Source (vmperf) cannot be found. The local computer may not have the necessary registry information or message DLL files to display messages from a remote computer. The following information is part of the event:
>
> Source: vmperf
>
> ID: 12
>
> Description: The description for Event ID (12) in Source (vmperf) cannot be found. The local computer may not have the necessary registry information or message DLL files to display messages from a remote computer. The following information is part of the event:

Failure in PCI module duplication:

→ At the occurrence of PCI module fail-over, the PCI module duplication may fail with the following message saved in the system event log. If so, the system can be recovered from the failure by reinserting the PCI module for which the duplication failed.

Source: srabb

ID: 98

Description: Diagnostic Test Failure! 11: IRQ1 Interrupt (0xd5a1)

→ If the simultaneous replacement of the CPU and PCI modules causes the CPU and PCI to operate synchronization control for duplication simultaneously, the PCI module duplication may fail with the following message saved in the system event log. If so, the system can be recovered from the failure by reinserting the PCI module for which the duplication failed.

Source: srabb

ID: 98

Description: Diagnostic Test Failure! 10: Xena Sanity Check (0xd630)

Disk information is not correct on VERITAS Enterprise Administrator after system starts:

→ If the primary PCI cannot access the FC disk, the disk information may not be displayed correctly. In this case, run "Action/Update" or "Action/Rescan."

If the information is not displayed correctly even after the above step, check the connection between the module and disk.

"Stratus Fault Tolerant Virtual 69000 Video" is displayed on "Remove Hardware" dialog box:

→ If you double-click an icon "Remove Hardware" on the system tray, two "Stratus Fault Tolerant Virtual 69000 Videos" will appear.   Do not remove them. Otherwise, the connected PCI modules will be disconnected forcefully and the system may operate normally.

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER CD-ROM, check the following:

□   Did you set the NEC EXPRESSBUILDER during POST and restart the server?

→ If you do not set the NEC EXPRESSBUILDER during POST and restart the
server, an error message will appear or the OS will boot.

□   Is BIOS configuration correct?

→ The boot device order may be specified with the BIOS setup utility of the server.
Use the BIOS setup utility to change the boot device order to boot the system from
the CD-ROM drive first.

<Menu to check: [Boot]>

When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message
appears.   After this message appears, check the error and take the appropriate corrective action
according to the error codes listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error	An access to the nonvolatile 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.
The system-specific information does not exist on the baseboard. Please restore the backup data or write the data by using [System Information Management] of the Off-line Maintenance Utility. Only the authorized personnel are allowed to do this operation.	These messages appear when NEC EXPRESSBUILDER cannot find sever-specific information, for example when you replace the motherboard. Maintenance personnel can use the offline utility to write the information.

An error message will also be displayed when an error was detected during system
diagnosis.   Take a note or print the error message displayed, and contact your sales agent.

Problems with NEC Express5800 ft series Setup

The following message is displayed when the setup starts.

> The specified disk is not found.   Terminating SW installation.

> → The disk to install the system is not connected properly.   Check if the hardware is properly installed and connected.

The following message is displayed while copying files from CD-ROM.

> xxxxx : Not Ready xxxxxxxxxxxxxxxxxxZ
> xxxxx(A), xxxxx(R), xxxxx(F)

> → Press **R**.   If this message still appears, perform the setup again.   If the error persists, contact your sales agent to examine the CD-ROM drive.

Entered an incorrect Product ID or CD-key.

> → You will be prompted to enter again when the entry you made was incorrect. Enter the correct one.

Failed to setup in detail for network adapter.

> → The detailed setup of network adapter is not available in setup of NEC Express5800/ft series.   Open the control panel after starting Windows 2000 Advanced Server to configure the network adapter.

Problems with Master Control Menu

Failed to read online documentation

☐   Is HTML browser installed properly?

> → Online documentation is an HTML-format file.   Install the HTML browser (Internet Explorer 5.x or later) in your operating system.

☐   Is HTML file properly associated to the browser software?

> → Online documentation accesses the local files in CD-ROM.

> If the extension of HTML file (.htm or .html) is not associated to your browser correctly, the local HTML file may not be browsed from Internet Explorer or the other applications.   Initialize your browser and set the association of extension (.htm or .html) correctly.

□   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 NEC EXPRESSBUILDER.   Launch the Master Control Menu and select [Setup] → [Adobe Acrobat Reader].

Image of online documentation is not clear

□   Is your display unit set to display 256 colors or more?

→ Set the display unit to display 256 colors 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.

Problems with NEC ESMPRO

NEC ESMPRO Agent

→ See Chapter 5.

NEC ESMPRO Manager

→ See Chapter 5.   See also online document in NEC EXPRESSBUILDER CD-ROM for troubleshooting and other supplementary information.

COLLECTION OF 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 startup. If you reset and restart the system, you cannot get correct information.

Collection of Event Logs

Collect the logs of various events that have occurred in the NEC Express5800/ft 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 2000 Advanced Server.

3. Click [Save Log File As...] in the [Action] menu.
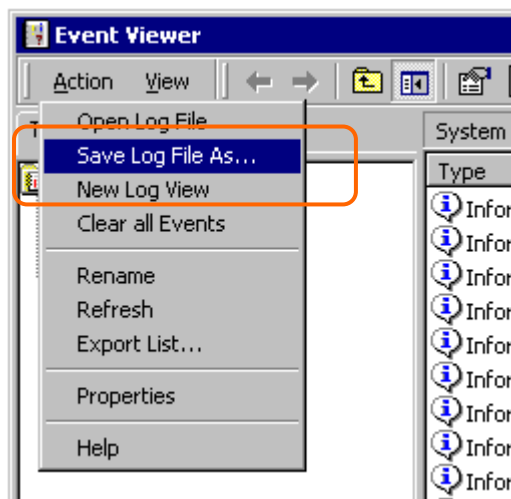
4. Enter the name of the target archive log file in the [File name] box.

5. Select the format of the target log file from the [Save as type] list box, and click [OK].

Collection of Configuration Information

Collect information such as the hardware configuration and internal setting information of the NEC Express5800/ft series.

> **IMPORTANT:** If a STOP error or system error has occurred or the system has stalled, restart the system, and then start the work.

1. Click [Start] → [Settings] → [Control Panel].

   The [Control Panel] window appears.

2. Double-click the [Administrative Tools] icon, and then the [Computer Management] icon.

   The [Computer Management] window appears.

3. Click [System Tools] → [System Information].

4. Click [Save As System Information File...] in the [Action] menu.
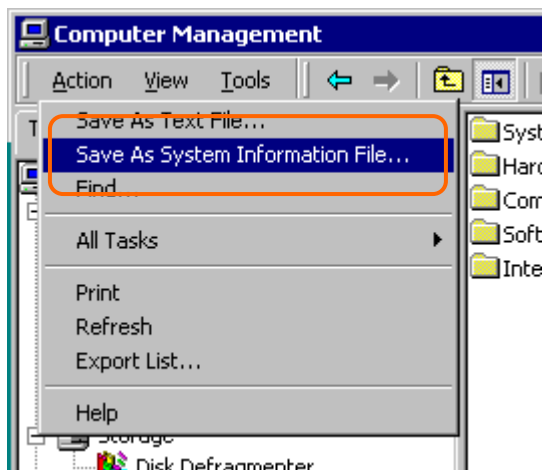
5. Enter the name of the target file in the [File name] box.

6. Click [Save].

Collection of 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 2000] dialog box.

Collection of 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 "Masked" is selected for "Power Switch Mask" 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 "Unmasked" for "Power Switch Mask" in the Security menu.

3. Save the configuration data and exit the SETUP.

Saving Dump Files

Press the DUMP switch to save the dump file when an error occurs.   Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.

Pressing the DUMP switch saves the dump file in the specified directory.   (Memory dumping may not be available when the CPU stalls.)

> **IMPORTANT:** Do not use a toothpick or plastic stick that is easy to break.
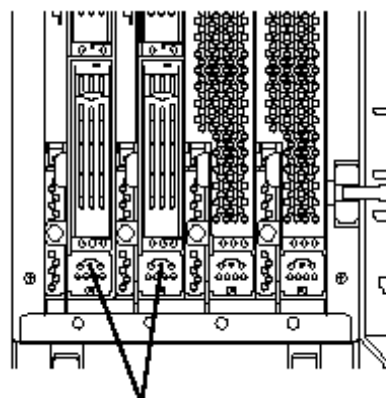
Dump switches

SYSTEM REPAIR

If a file required to operate OS is defected, repair the system by using the repair process.

> **IMPORTANT:**
> - After the system repair, always update several drivers referring to "System update" in Chapter 3.
> - If hard disks cannot be recognized, the system cannot be repaired.
> - After removing all of the PCI board that is the option, start setup.

Before performing procedures described here to repair a system, you need to prepare a support disk called "Windows 2000 OEM-DISK for EXPRESSBUILDER."

- If you do not have a computer that runs Windows 2000/NT or Windows 95/98/Me.

  Follow the steps below to create a "Windows 2000 OEM-DISK for EXPRESSBUILDER":

1. Prepare a 3.5-inch floppy disk.

2. Power on the peripherals and then NEC Express5800/ft series.

3. Modify the BIOS settings.

   Select [Advanced] → [Monitoring Configuration] and "Disable" the settings of [Boot Monitoring].

4. Insert the EXPRESSBUILDER CD-ROM into the drive of the server.

5. Then, reset (pressing **Ctrl** + **Alt** + **Delete**) or power off/on NEC Express5800/ft series to reboot it.

   The system will start up from the CD-ROM to start EXPRESSBUILDER.

6. From [Tool] menu, select [Create Support Disk].

7. From [Create Support Disk] menu, select [Windows 2000 OEM-DISK for EXPRESSBUILDER].

8. Follow the instructions on the screen to insert the floppy disk.

   Windows 2000 OEM-DISK for EXPRESSBUILDER will be created on the floppy disk. Write-protect and place a label on the disk and keep it in a safe place.

■ If you have a computer that runs Windows 2000/NT or Windows 95/98/Me.

You can also create a "Windows 2000 OEM-DISK for EXPRESSBUILDER" by the steps below:

1. Prepare a 3.5-inch floppy disk.

2. Insert the EXPRESSBUILDER CD-ROM into the drive of a computer that runs Windows 2000/NT or Windows 95/98/Me.

3. From [Software Setup], select [Create OEM disk].

4. Follow the instructions on the screen to insert the floppy disk.

Windows 2000 OEM-DISK for EXPRESSBUILDER will be created on the floppy disk. Write-protect and place a label on the disk and keep it in a safe place.

■ If you have an update CD-ROM "NEC Express5800/ft Series ft Control Software (Ver:n.n)."

Follow the steps below to create a "Windows 2000 OEM-DISK for EXPRESSBUILDER":

1. Prepare a 3.5-inch floppy disk.

2. Insert the update CD-ROM into the drive of a computer that runs Windows 2000/NT or Windows 95/98/Me.

3. From the Start menu, select [Specify Filename and Run] to run \WINNT\BINMAKEFD\W2K\MAKEOEM.BAT on the CD-ROM.

4. Follow the instructions on the screen to insert the floppy disk.

Windows 2000 OEM-DISK for EXPRESSBUILDER will be created on the floppy disk. Write-protect and place a label on the disk and keep it in a safe place.

In the steps below, repair the system using information inside the disk instead of a system repair disk:

1. Modify the BIOS settings.

    Select [Advanced] → [Monitoring Configuration], and "Disable" the setting of [Boot Monitoring]. For details, see Chapter 4 "Monitoring Configuration".

2. Power on the system.

3. Insert the Windows 2000 Advanced Server CD-ROM into the drive of the server.

4. Then, reset (pressing **Ctrl** + **Alt** + **Delete**) or power off/on NEC Express5800/ft series to reboot it.

5. Wait until message "Press any key to boot from CD" appears on the screen.

6. Press any key to select the start from CD-ROM.

    > **IMPORTANT:** Unless an arbitrary key is pressed during the display of the message, the system is started from the hard disk drive. The repair process cannot be started.

7. Wait until message "Press F6 if…" appears on the screen.

8. Press the **F5** and **F6** quickly.

    > **IMPORTANT:** If you press neither the **F5** nor **F6**, the repair process is not started.

9. If the text-base setup is started, follow the directions on the screen to proceed.

    As you follow the directions, the screen for selecting HAL will appear.

10. Insert the Windows 2000 OEM-DISK for EXPRESSBUILDER into the floppy disk drive and specify the module saved in the OEM disk.

    As you follow the directions, the screen for selecting the SCSI driver will appear.

11. Insert the Windows 2000 OEM-DISK for EXPRESSBUILDER into the floppy disk drive and specify the SCSI driver saved in the OEM disk.

    As you follow the directions, the screen for selecting the SCSI driver will appear.

    > **NOTE:** The OEM disk contains more than one SCSI driver. Press **S** to select all the SCSI drivers.

    Message "Press R key to repair Windows 2000 already installed" appears.

12. Press **R** to select the repair option.

13. Select the type of the keyboard.

14. If the selection is prompted, press **R** to select the system repair processing.

15. If the selection is prompted, select either of the following options:

[Manual repair]
(press **M**)

Do not select this option unless you are skilled user or system Administrator. The use of this option allows the problems of system files, partition boot sectors, and startup environment to be repaired.

[High speed repair]
(press **F**)

This option can be used quite simply. The user may not do anything. If this option is selected, the system repair disk program starts repairing the problems associated with system file, system disk partition boot sector, and startup environment (when more than one operating system are installed in the system).

16. Followi the directions on the screen. Press **L** on the screen prompting you to insert the system repair disk.

After the disk is reviewed, the system is restarted once.

> **NOTE:** The processes without use of the system repair disk are performed.

17. Repeat Steps 1 to 15 above.

The repair process is started.

During the repair process, unfound or defected files are replaced with the corresponding files in C:\1386 of the hard disk or the systemroot\ Repair folder of the system partition. The configuration changes performed after the setup are notupdated to the replaced files .

18. Follow the directions on the screen.

Write down the names of files in which faults are detected. This helps to diagnose how the system has been defected.

19. Terminate the process if it succeeds in the system repair.

If the computer is restarted without any problem, the replaced files are copied to the hard disk appropriately.

20. Execute system update.

For details, see Chapter 3 "Updating the System".

21. Change the BIOS setup.

Select [Advanced] → [Monitoring Configuration], and select "Enable" the setting of [Boot Monitoring]. For details, see Chapter 4 "Monitoring Configuration".

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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, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user.   NEC recommends you ask your sales agent to install or remove any optional devices.
>
> - Be sure to use only optional devices and cables designated by NEC. 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.   Failure to follow these instructions may result in death or serious personal injury.   See safety precautions 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.   Failure to follow these instructions may cause a fire, personal injury, or property damage.   See safety precautions in 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 followings, when installing or replacing devices, to improve the performance of NEC Express5800/ft series.

- With the NEC Express5800/ft series server, 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 2000 Advanced Server, 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 ft series utility of the NEC ESMPRO Agent or the NEC ESMPRO Manager from the management PC on the network.   After a new module is installed to the server, enable the module using the ft series utility or the NEC ESMPRO Manager.

  > **NOTE:** The system is defaulted to automatically boot the module, once installed.   This setting can be changed with the ft series utility or the NEC ESMPRO Manager.   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 those devices having different specifications, performance, or features.

- Before removing the setscrews from the CPU and PCI modules, place the desired module off-line using the ft series utility or the NEC ESMPRO Manager.

3.5-INCH HARD DISK DRIVE

The 3.5-inch device bay in front of the server contains six slots in which hard disks with the SCA2 interface are installed.

The figures used in this section show the tower model.   The orientation is the only difference from the rack-mount model.

IMPORTANT:

- Do not use any hard disks that are not authorized by NEC.   Installing a third-party hard disk may cause a failure of the server as well as the hard disk. Purchase hard disks of the following models (as of June 2001):

  – N8150-105F (18.1GB, 10,000rpm, Ultra 160/m SCSI)
  – N8150-106F (36.3GB, 10,000rpm, Ultra 160/m SCSI)

- The OS starts from the hard disk that is mounted in Slot 1 of the primary module (whose POWER LED is on).

- A SCSI controller error having sraql160 as its source may sometimes be recorded in the system event log. This error is likely to be issued when the hard disk drive processing cannot keep up in time with requests of the OS, but the processing is carried on normally thanks to the retry function. So, this does not affect the operation at all. In case such an error is issued, check the detailed data indicated below, and if it is "f0030004" or "f0030015," just ignore that log.
  If, however, a SCSI controller error whose detailed data is "f0030004" or "f0030015" is recorded repeatedly (ten times or more in a week time as a rough guide), a hard disk drive failure is suspected. Contact the maintenance personnel in such a case.
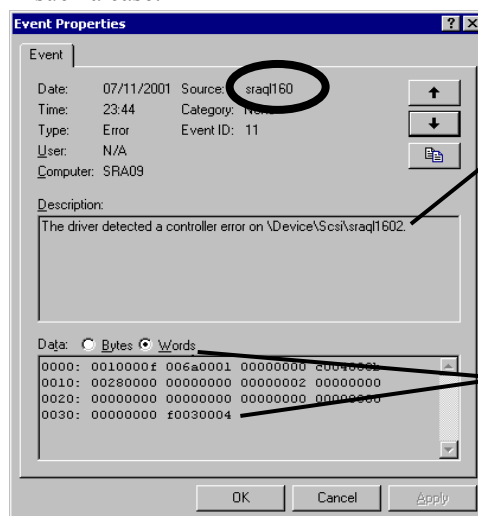
Description:
The driver detected a controller error on \Device\Scsi\sraql160x [x is a numeral as 1 or 2 for example.]

In the case where the detailed data of the above event properties is represented in words, the error represents no trouble if the value from 0034:is "f0030004" or "f0030015".

NOTES:
- POWER LED is on to indicate that it is the primary module.

- The module that you plug in first will be the primary module (see Chapter 3).

You can install hard disks, each of which is about 25.4 mm (1 inch) in thickness, to the three slots of each module.   Each device bay has a label describing the slot number.

Disks of the same slot number are mirrored between the groups.   The figure below shows the groups and mirroring slots.

Slots used in mirroring
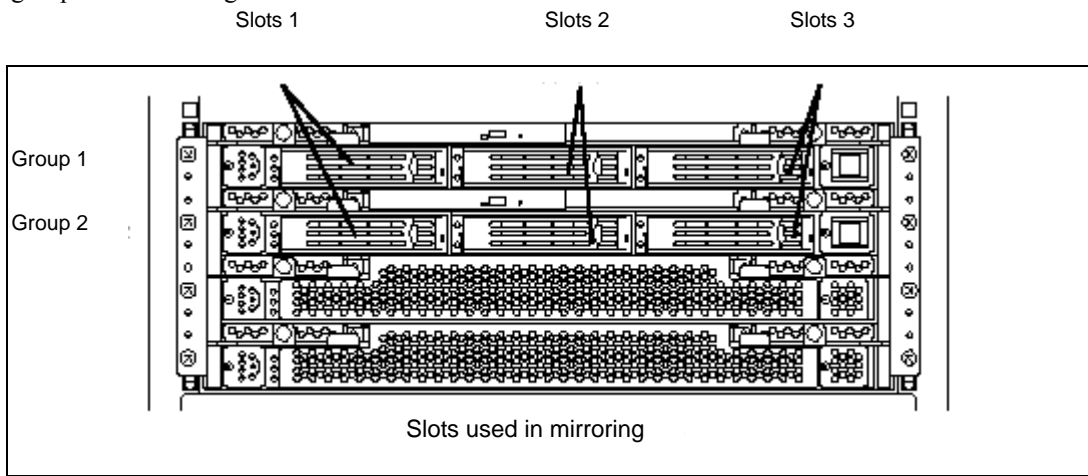
Empty slots in the hard disk bay contain dummy trays.   The dummy trays are inserted to improve the cooling effect within the device.   Always insert the dummy trays in the slots in which hard disks are not installed.

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.
>
> - Install two hard disks for dual disk configuration before starting Windows 2000 Advanced Server.   Make sure to configure the hard disks as dual disk.

1. Shutdown Windows 2000 Advanced Server.

The system turns off automatically and the POWER LED goes off.

2. Disconnect all the power cords from the power outlet.

3. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model >

Unlock the front bezel with the security key and remove the upper and lower panels.

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 left slot.

5. Remove dummy trays.

All the slots except Slot 1 have a dummy tray.

> **IMPORTANT:** Carefully keep the removed dummy tray.
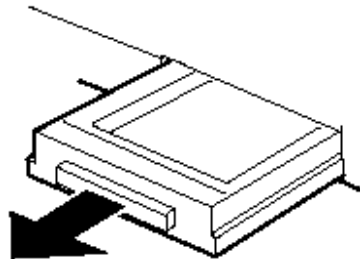
6. Unlock the hard disk to be added.
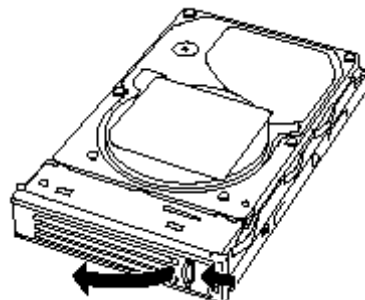
7.   Firmly hold the handle of the hard disk to install
and insert the hard disk into the slot.

> **NOTES:**
>
> ■   Engage the upper and lower frames of the
>   tray with the left and right grooves on the
>   device bay and insert the hard disk.
>
> ■   Insert the disk until the lever hook touches
>   the server frame.
>
> ■   Check the orientation of lever.   Insert the
>   hard disk with the lever unlocked.
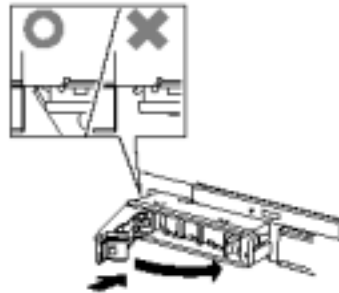
8.   Slowly close the lever.

When the lever is locked, you will hear a click sound.

> **IMPORTANT:** Be careful not to pinch your finger(s) between the lever
> and handle.

> **NOTE:** Check the hook of the lever is engaged with the frame.

9.   Connect all the power cords.

10.   Press the POWER switch to turn on the system power.

11.   <Tower model>

Close the front bezel and lock it with the security key.

<Rack-mount model>

Install the upper and lower panels and lock the front bezel with the security key.

A while after Windows 2000 Advanced Server is started, [New Hardware Detection]
wizard is displayed.

12.   Select [Make known drivers for this device displayed and select a driver from the list] and
click [Next].

13.   Check that "Stratus Dual Initiated disk Device" is displayed in the list, and click [Next]
repeatedly until [Finish] is displayed.

14.   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 2000 Advanced Server.

The system turns off automatically and the POWER LED goes off.

2. Disconnect all the power cords from the power outlet.

3. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model>

Unlock the front bezel with the security key and remove the upper and lower panels.

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 tray in the empty slot to improve the cooling effect within the device.
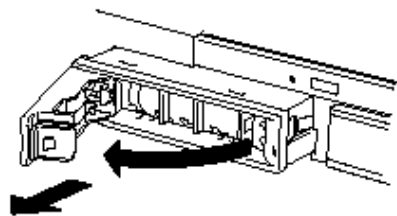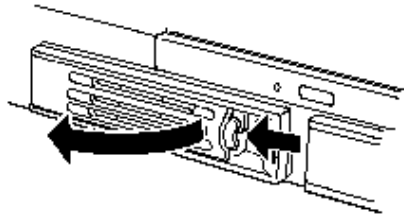
Replacing 3.5-inch Hard Disk Drive

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 of which DISK Error LED on the handle of the hard disk drive is lit in amber.

The DISK Power/Access LED also lights in amber.

> **NOTE:** Even if a hard disk is faulty, the DISK LED may not illuminate in amber.   See "How to Locate Failed Disks" on the next section to identify failed disks.

2. Referencing the steps in "Removing the hard disk", remove the failed hard disk.

No need to shutdown Windows 2000 Advanced Server.

3. Refer to the steps in "Installing the hard disk" to install a new hard disk.

> ### NOTE:
> - 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. The system will automatically restore its redundant configuration.

Since the redundant configuration is restored automatically, you do not need to use VERITAS Volume Manager to restore it.

> **IMPORTANT:** The redundant configuration is not restored automatically in the following cases:
> - If you use a signed hard disk.
> - If you replace a disk that is connected to a fibre channel.
> - If you replace a disk that has partitions or volumes.
> - If you replace a disk while the system is shut down.

How to Locate Failed Disks

This section describes a procedure to locate failed disks.

1. Open [Data Viewer] from ESMPRO Manager.

If trouble occurs, the color changes from green to red.

In this case, you will notice that there is trouble with both the SCSI Enclosures (ID:10/40) and (ID:11/40).
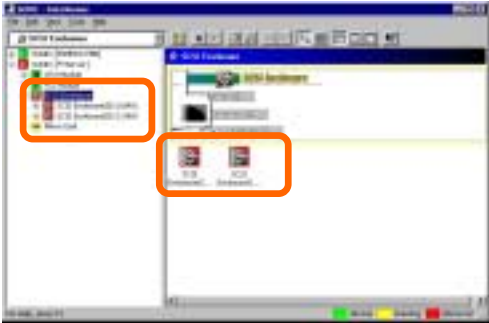
2. Check the SCSI Enclosures (ID:10/40) and (ID:11/40) on the tree.

See the path information in [General Information] of [SCSI Slot] to locate a group of 3.5-inch device bays that corresponds to each enclosure.
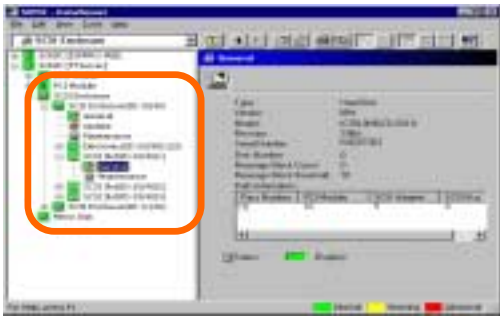
The table below shows the path information on Groups 1 and 2:

Slot	PCI module	SCSI adapter	SCSI bus
Group1	10	5	0
Group2	11	5	0

3. See the path information in [General Information] of [SCSI Slot (ID: 10/40/1)].

It shows that PCI module, SCSI adapter, and SCSI bus are 10, 5, and 0, respectively.

This allows you to find that SCSI Slot (ID: 10/40/1) belongs to Group 1.   SCSI slots under SCSI Enclosure (ID: 10/40/1) correspond to Group 1.   Therefore, Group 2

corresponds to SCSI slots under SCSI Enclosure (ID: 11/40).

You will find that the failed disks located in SCSI slots (ID: 10/40/2) and (ID: 11/40/3) are the 2nd disk of Group 1 and 3rd disk of Group 2, respectively.

How to Format Disks

After replacing a hard disk that has partitions or volumes inside, the redundant configuration will not be restored automatically.   To restore the configuration, you need to format the new disk.

1. Insert only the desired hard disk into the slot.
To avoid formatting other disks by mistake, insert only the desired hard disk into Slot 1.

2. Insert the "ROM-DOS Startup FD" into the floppy disk drive, and start the machine.

For the creation of " ROM -DOS Startup FD," see Chapter 5, 'NEC EXPRESSBUILDER Top Menu'-'Tool'-'Create Support Disk' of the User's Guide.

Short time after ROM-DOS starts up, the A:\ prompt will appear.

3. Execute the FDISK command.

4. Select 3 (Delete partition or Logical DOS Drive) from the menu.

5. Select 4 (Delete Non-DOS Partition) from the menu, and delete the area according to the messages.

6. Repeat Step 5 until deleting all the areas.

7. Press **Esc** to terminate the FDISK command when having deleted all the areas.

8. The message "System will now restart." appears.   Press any key to restart the system.

9. When the restart processing starts, remove the "MS-DOS Startup FD" from the floppy disk drive, and turn off the power.

How to Restore Redundant Configuration Manually

If the system does not restore the redundant configuration automatically after you replace the failed disks, follow the steps below to restore the configuration manually:

> **IMPORTANT:** The redundant configuration is not restored automatically in the following cases:
>
> - If you use a signed hard disk.
>
> - If you replace a disk that is connected to a fibre channel.
>
> - If you replace a disk that has partitions or volumes.
>
> - If you replace a disk while the system is shut down.

This section describes procedures to re-establish the dual configuration of hard disks whose volumes are created by VERITAS Volume Manager at the time of failure recovery.   Although there are procedures for simple volume, stripe volume, and span volume, see "In the Case of Simple Volume Mirroring" for the basic procedure.

> **IMPORTANT:**
>
> - If you need to remove a hard disk due to a failure, identify that hard disk on Data Viewer, not the disk number on [VERITAS Enterprise Administrator].
>
> - When you make resetting of the mirrors, see the target IDs of [Device types] listed in [Properties], not the disk numbers on [VERITAS Enterprise Administrator].
>
> - If a hard disk included a Boot volume (if it was used to store OS), you cannot use it in a dual disk configuration (you cannot import it by [Import dynamic group] command).   You need to format the disk before using it in a dual configuration.

In the Case of Simple Volume Mirroring

The following steps use the example described in Section "How to Locate Failed Disks" above, where the second disk of Group 1 (in Slot#2) and the third disk of Group 2 (in Slot#3) failed.

1.   In [Start] menu, click [Setting] and [Control Panel].

   [Control Panel] window will appear.

2.   Double-click [Management Tools] icon.

   [Management Tools] window will appear.

3.   Double-click [Computer Management] icon.

   [Management Tools] window will appear.

4. Under [Storage Area] of the Console tree, click [Disk Management] and [VERITAS Enterprise Administrator] to connect to the localhost.

An example in this figure shows that one of the mirrored disks in which Drives E and F are included broke.   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:
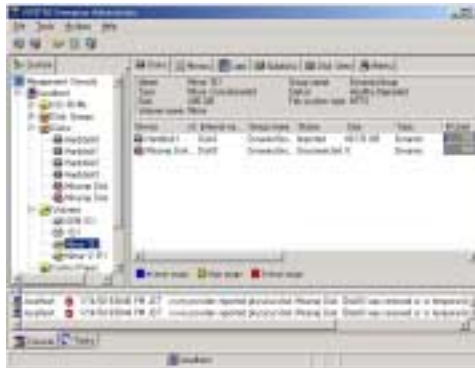
5. Remove the hard disks from Slot#2 of Group 1 and Slot#3 of Group 2.
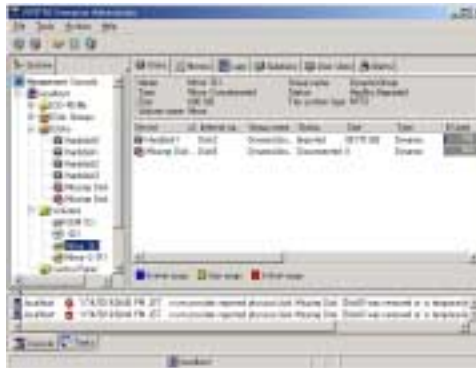
6. Open [VERITAS Enterprise Administrator].
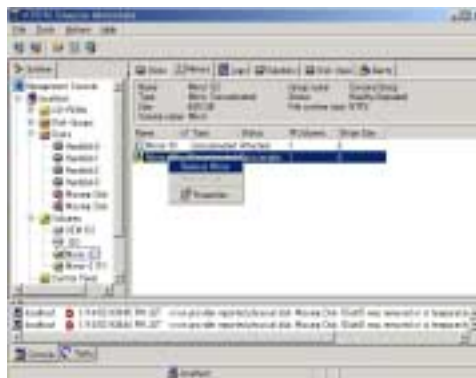
7. Select a volume that has "x" and view the mirror tab.

8. Right-click the degenerated mirror and select [Erase mirror].

9.   After checking to see if the "degenerate" disk is selected, click [Yes].
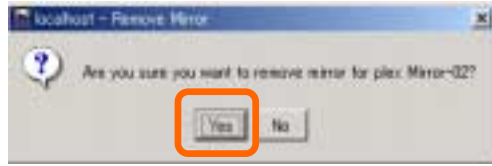
At Drive (F), [Mirror] and [Degenerate] will change to [Connected] and [Normal].

10.   At [DynamicGroup], right-click [Unknown] disk that no longer has any volumes, and select [Erase disk from Dynamic Disk Group].

11. After checking to see if [Unknown disk] is selected, click [OK].
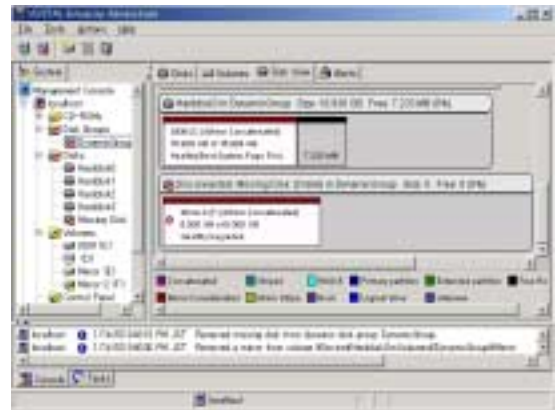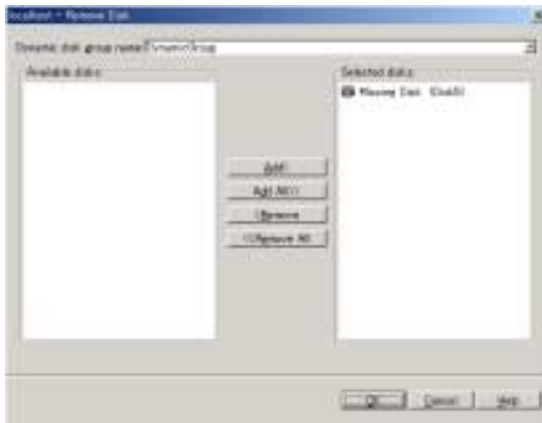
12. In the same way, erase the other [Unknown] disk.
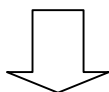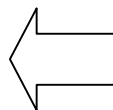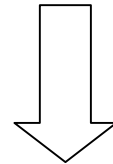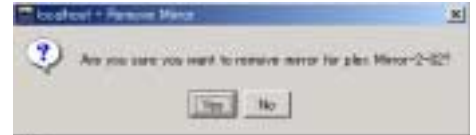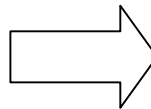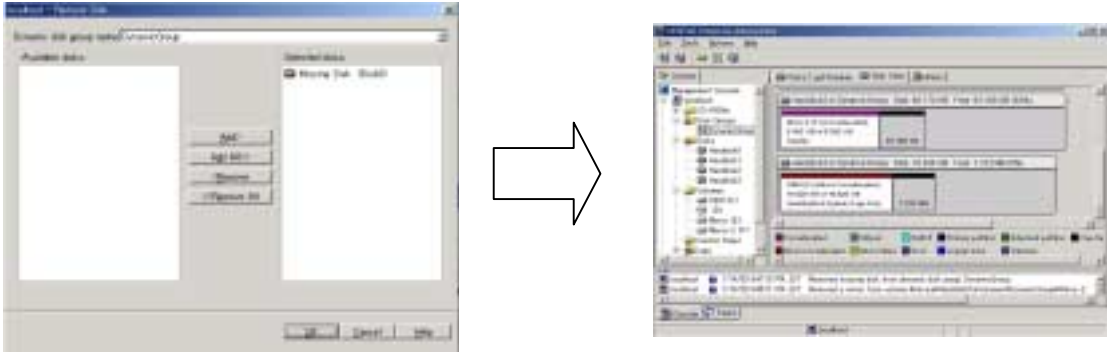
13. The inserted disks will appear on [VERITAS Enterprise Administrator].

If the status of a disk is "No signature," right-click that disk to place signature.
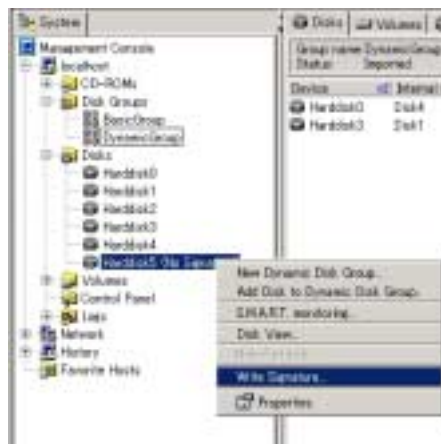
14. Select and right-click a disk and select [Add to dynamic disk group].

IMPORTANT: If you add a used disk, do the following steps:

■ If [Unknown disk group] appears:

Perform [Disk outer join].   Then, erase [Unknown disk] as described in Steps 7 to 11 above.   Erase the volumes and perform [Erase disk from dynamic disk group].   Follow the wizard to perform [Add disk to dynamic disk group].

■ If [Different format] appears:

Perform [Erase disk from dynamic disk group]. Then, follow the wizard to perform [Add disk to dynamic disk group].

---

15. Check the disk you selected and click [Next].

16. Click [Complete].

17. Check the properties of Disk 1 to see if the Target ID is 1.   Check also the other disks:

Disk 1:   Target ID 1

Disk 2:   Target ID 2

Disk 3:   Target ID 1

Disk 4:   Target ID 2

Disk with the same ID are mirrored.

IMPORTANT:

Hard disks are numbered at the time of OS startup based on their inserted positions.   After the OS startup, each time you insert a new hard disk, a larger number will be given.   When you restart the OS, the hard disks will be numbered again based on their inserted position regardless of their former numbers.   Since disk numbers change due to restartup in this way, you need to make mirror setting of disks based on their IDs instead of their numbers.

18. Make a mirror setting of Disks 1 and 4.

Right-click a volume on Disk 4 (Drive (E) in this example) and select [Mirror] and [Add].
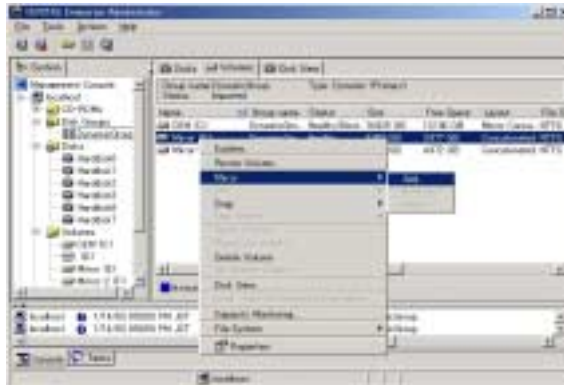
19. When [Add mirror] appears, check [Select disks manually], select Disk 1, and click [Select].

After checking to see if the configuration is correct, click [OK] to add the mirror.

NOTE: Although Disks 1 and 4 are mirrored in this example, other disks may be selected at the default.   If so, click [Modify], select Disk 1, and click [OK].

20. In the same way, make a mirror setting of Disks 2 and 5.

Upon completion of synchronous processing, recovery is completed.
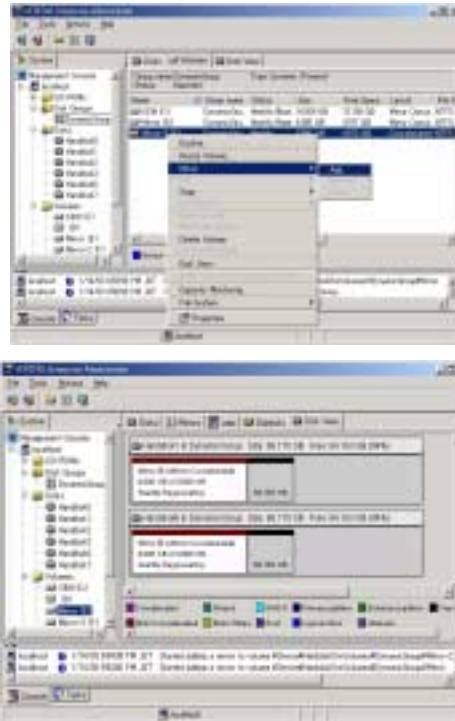
In the Case of Stripe Volume Mirroring

The following is a procedure of mirror recovery for stripe volumes.

In this example, stripe volumes are mirrored as shown below:

The figure below shows [View Disk] tab of Dynamic Disk Group.

System Upgrade   8-23
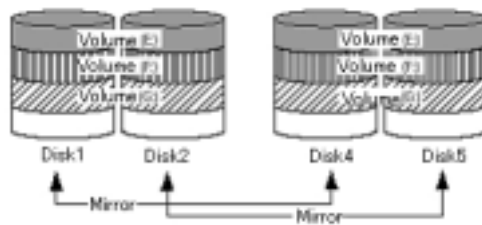
> **TIPS:** In this example, assume that target IDs are the same between
> Disks 1 and 4, and between Disks 2 and 5.

The figure below shows Drive (E) in [View Disk] tab of Volume.   Appearance is the same in other
stripe volumes.   The volume type is dynamic mirror stripe volume.

The next procedure is to perform recovery when Disk 2 fails in the above environment.

   1. Check disks.

   If a failure occurs on a disk that includes a mirror volume, the volume will show
   [Degenerate] status.   Its disk name will change to [Unknown Disk] and "x" will appear
   on its disk icon.   "!" will appear on the failed disk and on the stripe volume disk.
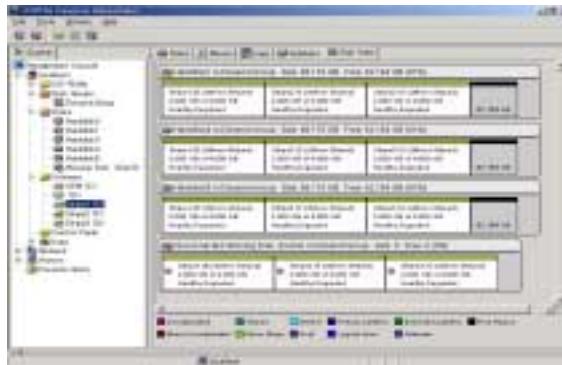
   If you click [View Disk] tab of [Unknown Disk], "!" marks are placed on each volume to
   indicate that a redundancy failure occurred.

Click [Volume] tab to see the volumes in the disk where the failure occurred.
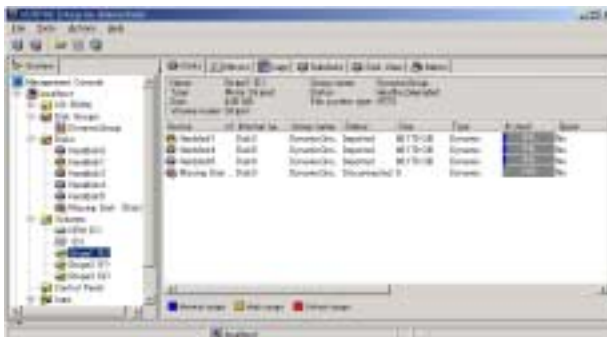
2. Locate the failed disk and remove it from the slot.

For procedures to locate failed disks, see "How to Locate Failed Disks" above.

3. Erase stripe volume mirrors on [Unknown Disk].

After selecting Volume (E:) on [Unknown Disk], right-click a mirror with "x" on [Mirror] tab and select [Erase Mirror].

When a confirmation message appears, click [Yes].
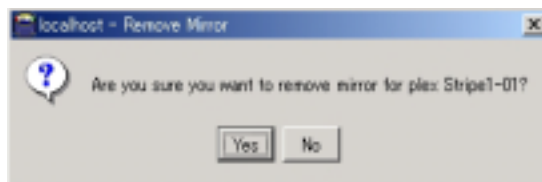
After you erase the mirrors, Volumes (E:) in Disks 4 and 5 change from "Degenerate" to "Normal" dynamic stripe volume.

Then perform [Erase Mirror] for Volumes (F:) and (G:) as well.   After you erase all volume mirrors on [Unknown Disk], there are no volumes on [Unknown Disk] and the space of Disk 1, which made up stripe volumes with Disk 2, is empty.

4. Erase [Unknown Disk]

Right-click [Unknown Disk] and select [Erase Disk from Dynamic Disk Group].

5.   Mount a new hard disk.

If the new disk is indicated as [Basic Disk], right-click the disk in [View Disk] and select [Add Disk to Dynamic Disk Group].

If the new disk is indicated as [Different Format] or [Unknown Disk], right-click the disk in [View Disk], select [Erase Disk from Dynamic Disk Group] and select [Add Disk to Dynamic Disk Group].

IMPORTANT: You need to format a used hard disk before reusing it in a disk dual configuration.   Perform the steps described in "How to Format Disks" above.

---

6.   Create mirrors for each stripe volumes.

Create mirrors of disks based on their target IDs in Disk Properties, not their disk numbers in [View Disk].   In this example, create mirrors between Disks 1 and 4, and between Disks 2 and 5.   For details of disk combination, see Step 17 of "In the Case of Simple Volume Mirror" above.

Use [Add Mirror] to add a new mirror in the new disk's space.

At Disk 4 or 5, right-click Volume (E:), and select [Mirror] → [Add].
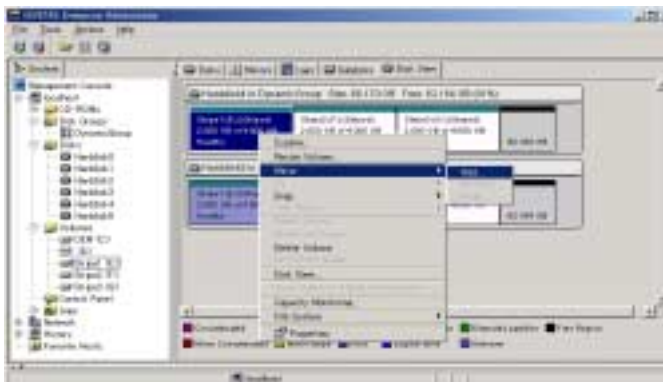
Select [Select Disk Automatically] and check to see if the mirror combinations are correct.

Perform [Mirror] → [Add] for Volumes (F:) and (G:) as well.

Upon completion of synchronous processing between the volumes where mirrors have been added, recovery is completed.
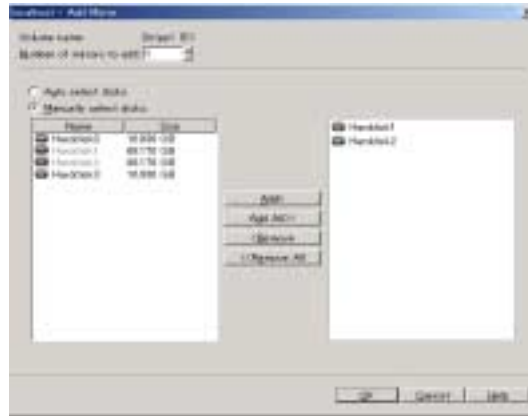
In the Case of Span Volume Mirror

The following is a procedure of mirror recovery for span volumes.

In this example, span volumes are mirrored as shown below:
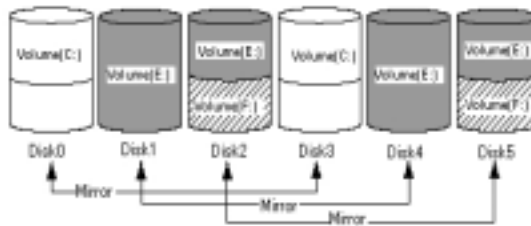
Volumes (E:) are span volumes.

The figure below shows [View Disk] tab of Dynamic Disk Group.
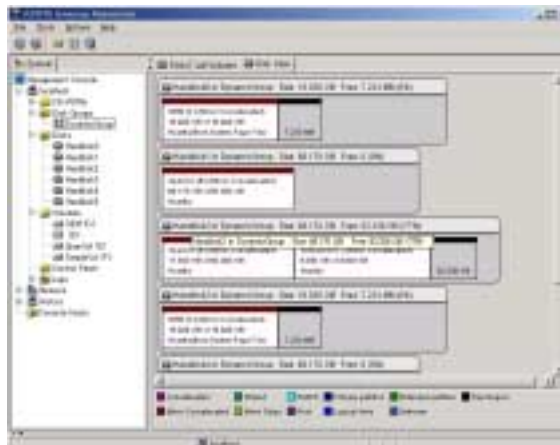
The figure below shows Drive (E) in [View Disk] tab of Volume.   Although the volume type is dynamic mirror stripe volume, they are span volume mirrors because one prefix includes more than one disk.
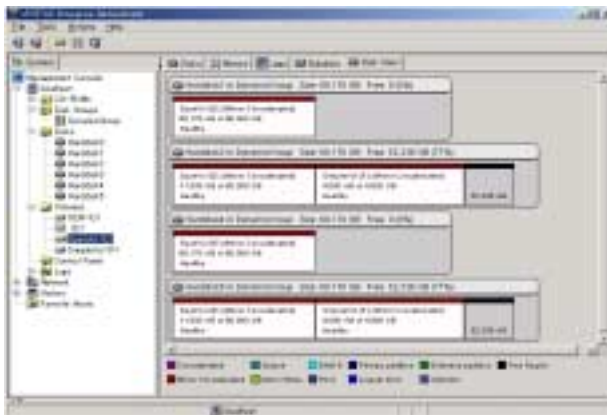
The next procedure is to perform recovery when Disk 1 fails in the above environment.

1.   Check disks.

If a failure occurs on a disk that includes a mirror volume, the volume will show [Degenerate] status.   Its disk name will change to [Unknown Disk] and "x" will appear on its disk icon.   "!" will appear on the failed disk and on the stripe volume disk.
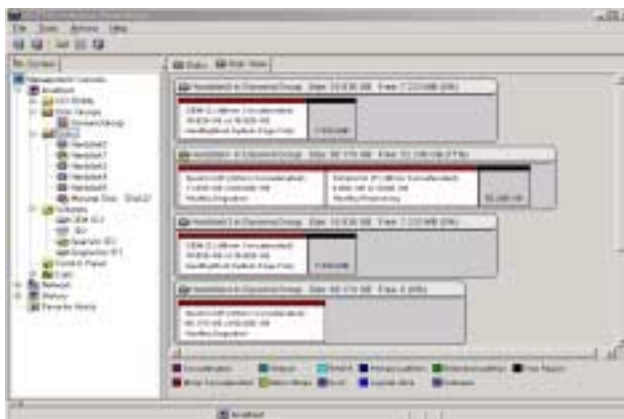
2.   Locate the failed disk and remove it from the slot.

For procedures to locate failed disks, see "How to Locate Failed Disks" above.

3.   Erase span volume mirrors on [Unknown Disk].

After selecting Volume (E:) on [Unknown Disk], right-click a mirror with "x" on [Mirror] tab and select [Erase Mirror].

4. Erase [Unknown Disk].

[Right-click [Unknown Disk] and select [Erase Disk from Dynamic Disk Group].

5. Mount a new hard disk.

If the new disk is indicated as [Basic Disk], right-click the disk in [View Disk] and select [Add Disk to Dynamic Disk Group].

If the new disk is indicated as [Different Format] or [Unknown Disk], right-click the disk in [View Disk], select[Erase Disk from Dynamic Disk Group] and select [Add Disk to Dynamic Disk Group].

> **IMPORTANT:** You need to format a used hard disk before reusing it in a disk dual configuration.   Perform the steps described in "How to Format Disks" above.

6. Create mirrors.
Create mirrors of disks based on their target IDs in Disk Properties, not their disk numbers in [View Disk].   In this example, create mirrors between Disks 1 and 4, and between

Disks 2 and 5.   For details of disk combination, see Step 17 of "In the Case of Simple Volume Mirror" above.

When creating span volume mirrors, disks with different target IDs may be combined if other disks have free space.   In this case, you can make correct combinations by creating temporary volumes in such free space.
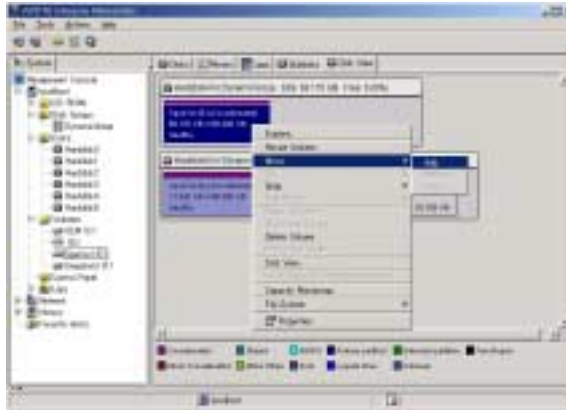
Select [Select Disk Manually] and check to see if the mirror combinations are correct.

Erase the temporary volumes you created before.

Upon completion of synchronous processing, recovery is completed.
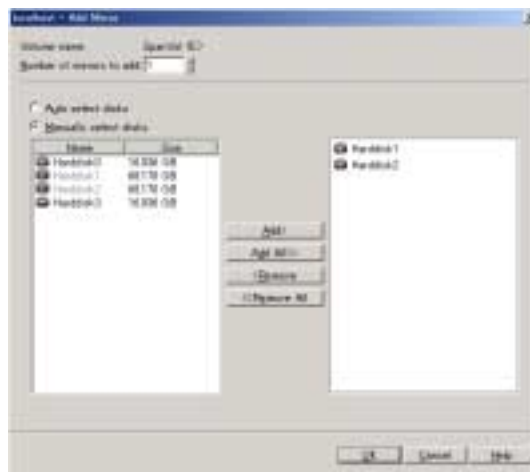
CPU MODULE

Concerning the CPU module, you can add or replace the following components, or CRU (customer-replaceable units):

- CPU (processor)
- DIMM (memory)

Remove the CPU module to install or remove these devices.   The figures used in this section show the tower model.   The orientation is the only difference from the rack-mount model.

IMPORTANT:

- Ask your sales agent to replace the CPU module and components of the PCI 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 module.   The procedures described below are for replacement of DIMMs.

- Removing the module being operating may cause unexpected trouble. Use the management software (e.g., ft series utility or NEC 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 module.

- Handle the module fixing screw with your hand, not by using any tool.

- If you have replaced the module, attach an HDD ID label indicating the replaced module number to the upper part of the fixing screw of the module.
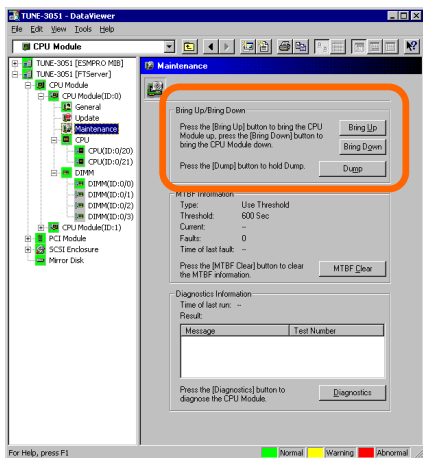

Removing CPU Module

Follow the procedure below to remove the CPU module.
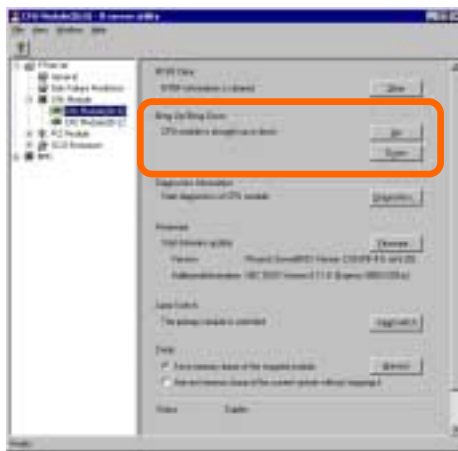
1. Stop the CPU module you want to remove.

To this end, use the ft series utility of the NEC ESMPRO Agent installed to your server or the Data Viewer of the NEC ESMPRO Manager.

For the detailed procedure, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.

NEC ESMPRO Manager
Select [FTServer] → [CPU Module] → [[*]CPU Module (to be removed)] → [Maintenance] → [Bring Up/Bring Down] → [Bring Down].

ft series utility
Select [FTServer] → [CPU Module] → [CPU Module (to be removed)] → [Bring Up/Bring Down] → [Down].

After the CPU module enters into off-line status, the status LED will change as follows.

Fail LED: Red

State LED: Off

2. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model>

Unlock the front bezel with the security key and remove the upper and lower panels.

3. Loosen the setscrews that secured the CPU module's release lever.

4. Hold the release lever of the CPU module and pull it off.

The CPU module is slightly pulled out toward you.

5. Firmly hold the handle and pull the CPU module slowly and carefully until the main unit is locked.

> **IMPORTANT:** Do not hold the other parts than the release lever to pull the module.

6. Pull off the module, pushing down the latch lever to unlock it.

When half of the module is pulled out, ask another person to support it.

> **IMPORTANT:**
>
> - Do not hold the other parts than the release lever to pull the module.
>
> - Carefully handle the CPU module so that you will not drop it or strike it against other server internal devices.

Latch lever
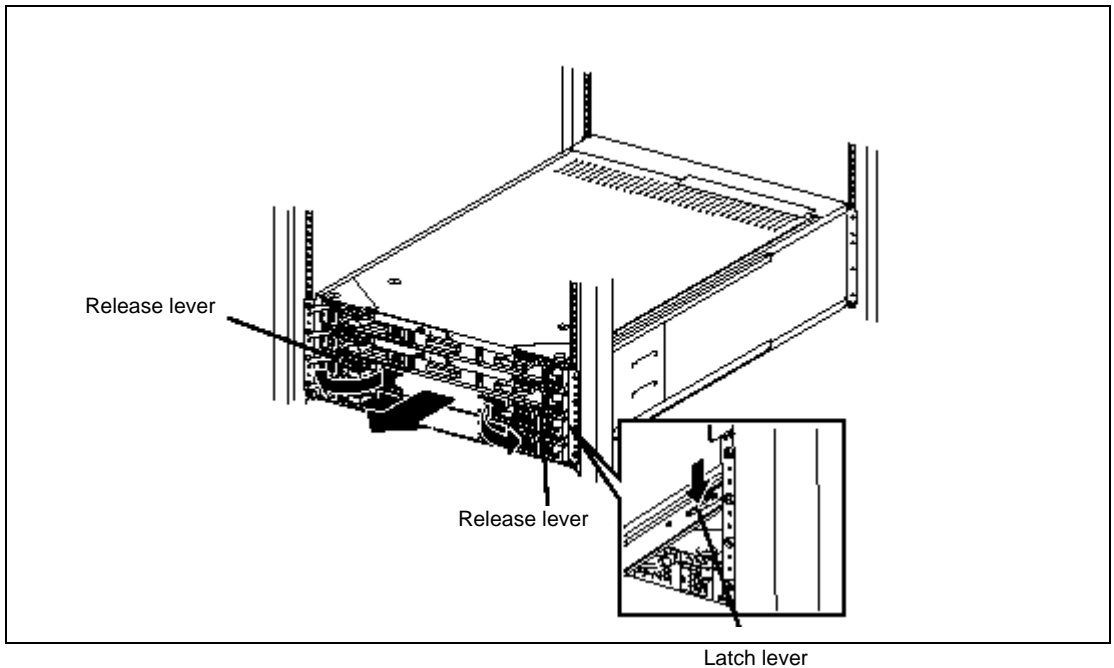
7. Carefully place the CPU module on the flat and sturdy table.

Avoid the dusty or humid place.

8. Remove the two setscrews on the front of the CPU module and one setscrew on the back.
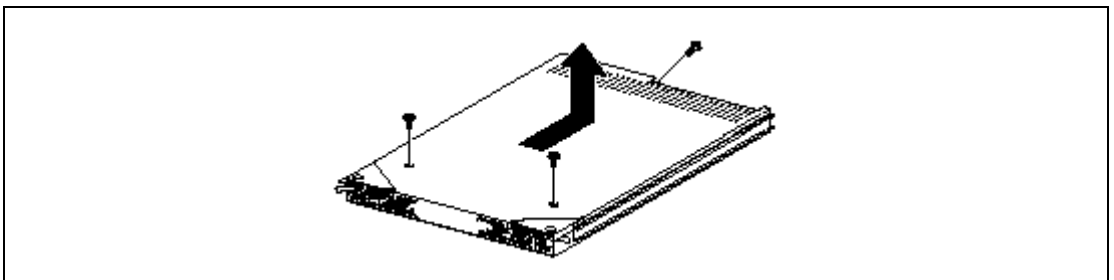
9. Slide the top cover a little to remove it.

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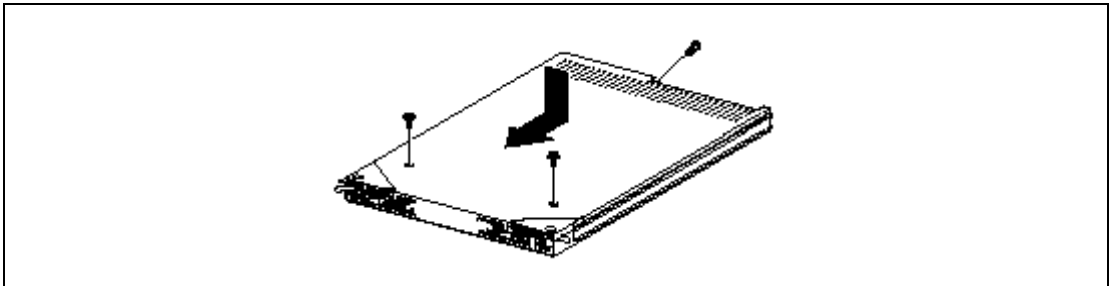
Installing CPU Module

Follow the procedure below to install the CPU module:

> **IMPORTANT:** Make sure to read "Anti-static Measures" and
> "Preparing Your System for Upgrade" before starting installing or
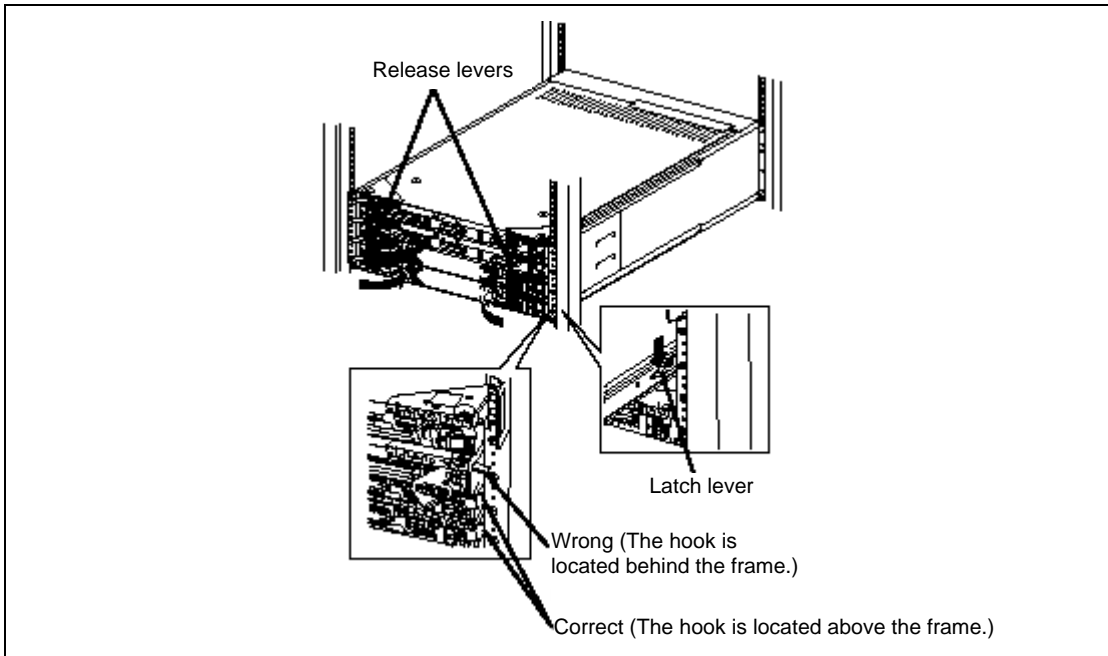> removing options.

1. Install the top cover to the CPU module.

> **NOTE:** Check the left, right, and upper tabs on the cover are certainly
> engaged with the CPU module.

2. Secure the top cover to the CPU module with the three setscrews.

3. Firmly hold the CPU module with both hands and insert it into the server.

Hold the module in such a way that its back plane connector faces the back of the rack and
engage the guides of the module and chassis to insert it slowly.

Release levers

Latch lever

Wrong (The hook is located behind the frame.)

Correct (The hook is located above the frame.)

4. Hold and push the release lever until the module is locked.

5. Push down the latch lever to unlock it and push the module as far as it goes.

6. Hold the release lever to push the module as far as it goes.

7. Close the release lever.

> **IMPORTANT:** Unless the release levers are located inside the rack frame, the module won't be mounted correctly.

8. Screw the release levers.

9. Boot the installed CPU module.

The system is defaulted to automatically boot the CPU module, once installed.

If the automatic feature is disabled, boot the CPU module using the ft series utility of the NEC ESMPRO Agent installed to the server or the Data Viewer of the NEC ESMPRO Manager.

For the detailed procedure, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.
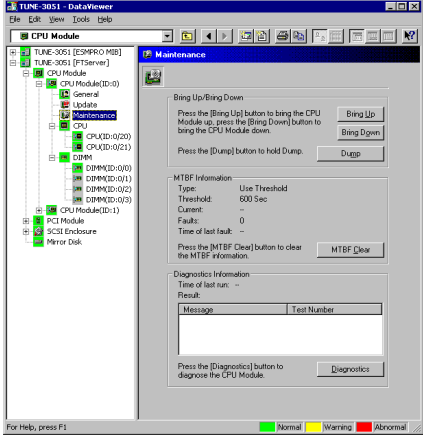
NEC ESMPRO Manager
Select [FTServer] → [CPU Module] → [(installed) [*]CPU Module] → [Maintenance] → [Bring Up/Bring Down] → [Bring Up].

ft series utility
Select [FTServer] → [CPU Module] → [(installed) CPU Module] → [Bring Up/Bring Down] → [Up].

DIMM

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

The CPU module board is equipped with six sockets.   Two standard DIMMs are mounted in DIMM#1 and #2 each.   (The standard DIMM can be replaced with another DIMM.)

- N8800-027F: Two 128MB DIMMs
- N8800-028F: Two 256MB DIMMs

DIMMs should be installed to these sockets, starting from the lowest socket number.

> **TIPS:**
> - The memory capacity can be increased up to 3 GB (four 512 MB DIMMs).
> - The DIMM connector may be identified as "group" in POST, NEC ESMPRO, or error message/log of the Off-line Maintenance Utility. The number displayed after the group corresponds to the connector number shown in the figure below.

> **IMPORTANT:**
> - The DIMM is extremely sensitive to static electricity.   Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM.   Do not touch the DIMM terminals or on-board parts with a bare hand or place the DIMM directly on the desk.   For static notes, see the section "Anti-static Measures" described earlier.
> - Make sure to use the DIMM authorized by NEC.   Installing a third-party DIMM may cause a failure of the DIMM as well as the server.   Repair of the server due to failures or damage resulted from installing such a board will be charged.
> - Before adding or removing DIMMs, power off the server and detach the CPU module.
> - Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before installing or removing options.

CPU module board
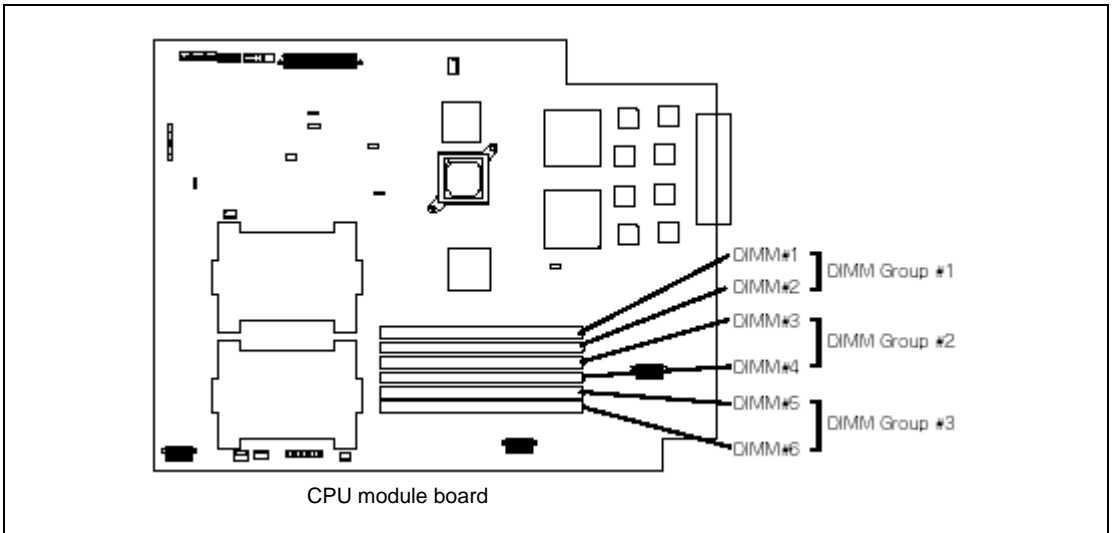
Note the followings to install or replace DIMM.

- 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 same performance.

- DIMMs should be installed in sockets, starting from the lowest socket number.

Installing DIMM

Follow the procedure below to install the DIMM.   Make sure to power off the server before starting installation except when replacing DIMM.

1.   Shutdown OS.

     The system turns off automatically and the POWER LED goes off.

2.   Disconnect power cord from outlet.

3.   Remove the CPU module.

4.   Check to be sure in which socket you are mounting the DIMM.

5.   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.

     IMPORTANT: Carefully keep the removed DIMM connector cover.
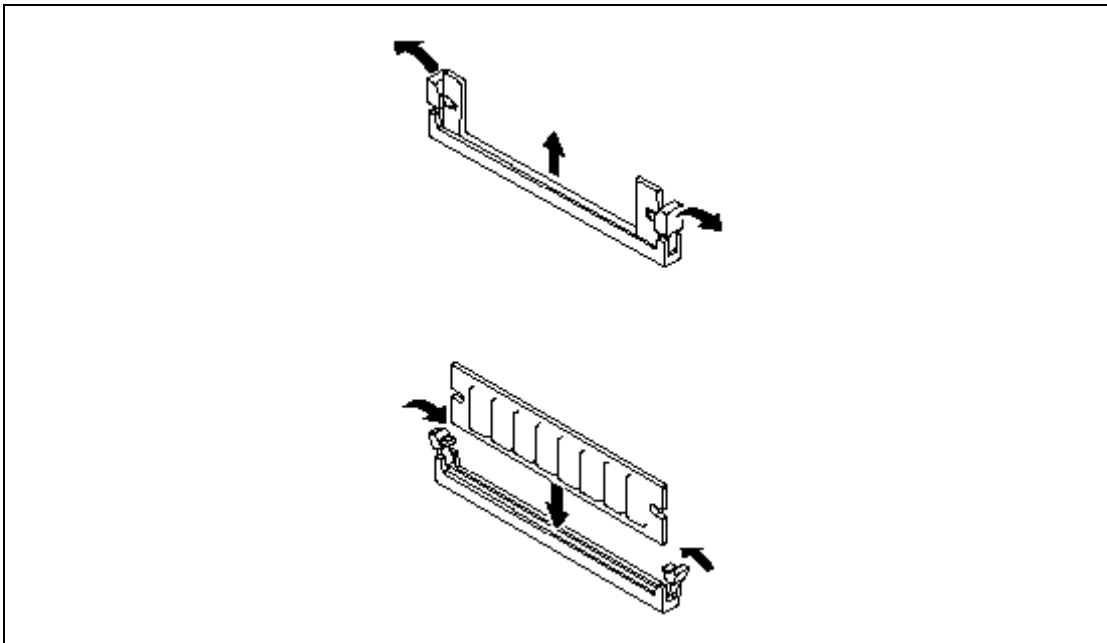
6. Insert a DIMM into the DIMM socket straight.

> **NOTE:** Pay attention to the orientation of the DIMM.   The terminal of
> the DIMM has a cutout to prevent misinsertion.

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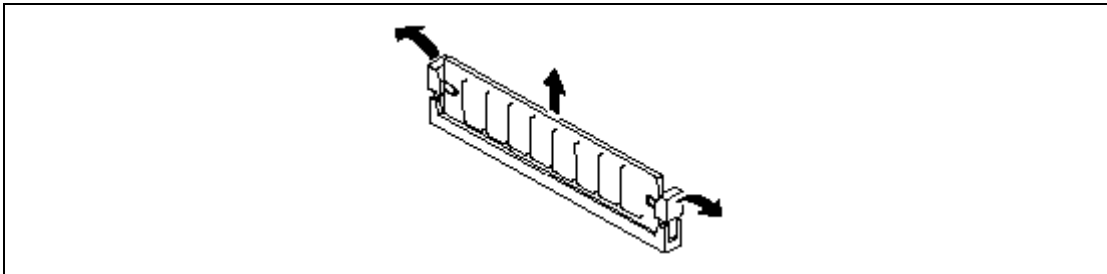closed.

7. Mount the CPU module.

8. Connect the power cords.

9. Press POWER switch to power on the module.

10. Verify that POST displays no error messages.

If POST displays an error message, take a note on the massage and see the POST error
messages listed in Chapter 7.

11. After starting the OS, set the paging file size to at least the recommended value (1.5 times
the installed memory size).

Removing DIMM

Follow the procedure below to remove the DIMM. Make sure to power off the server before installation except when replacing DIMM.

> **NOTE:** Unless at least two DIMMs are installed, the server does not work.

1. Shutdown OS.

    The system turns off automatically and the POWER LED goes off.

2. Disconnect power cord from outlet.

3. Remove the CPU module.

4. Open the levers on the target DIMM socket.   The DIMM is unlocked and you can remove the device.
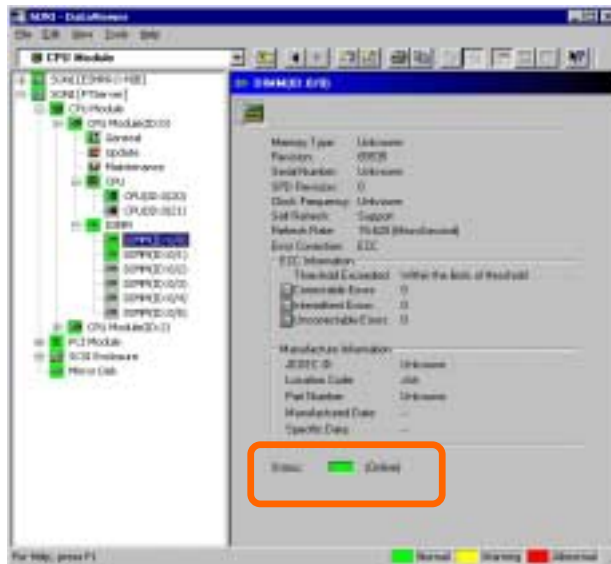
5. Mount the CPU module.

6. Connect the power cable.

7. Press the POWER switch to power on the module.

8. Verify that POST displays no error messages.

    If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

Replacing DIMM

Follow the procedure below to replace the failed DIMM.

1. Identify the failed DIMM using the Data Viewer of the NEC ESMPRO Manager.

2. Remove the CPU module.

3. Replace a DIMM

4. Install the CPU module.

5. Boot the CPU module using the NEC ESMPRO Manager or ft series utility.

PROCESSOR (CPU)

In addition to the standard CPU (Intel® Xeon™ Processor), you can add one CPU to make a multi-processor system.
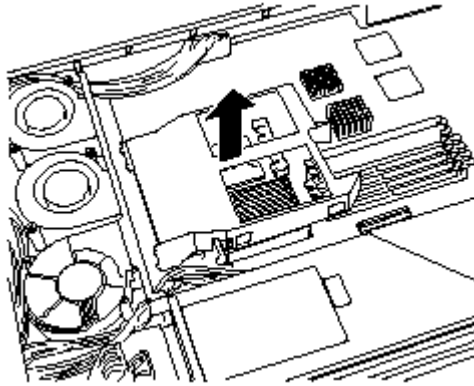
IMPORTANT:

- 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 on-board parts with a bare hand or place the CPU directly on the desk.   For static notes, see the section "Anti-static Measures" described earlier.

- Do not use the system before checking to see it works correctly.

- Make sure to use the CPU authorized by NEC.   Installing a third-party CPU may cause a failure of the CPU 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 CPU, power off the server and detach the CPU module.

- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.
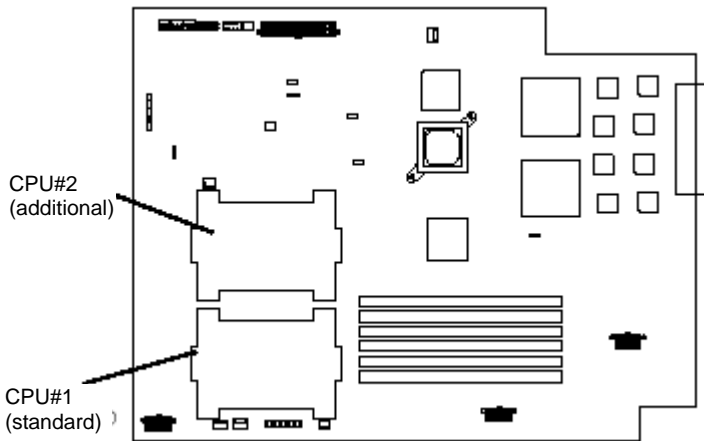
Installation

Follow the steps below to mount a CPU:

1. Shut down OS.

The server will be powered off automatically.

2. Unplug the power cord.

3. Remove the CPU module.
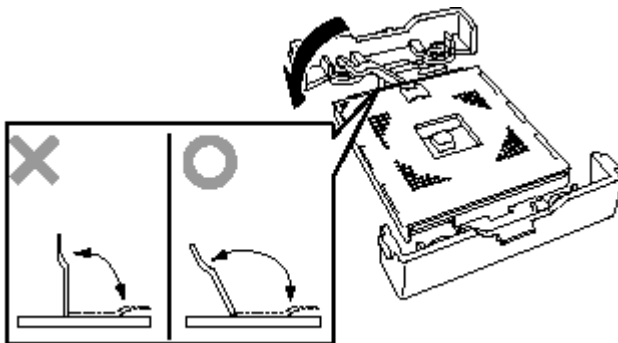
4. Detach the CPU air duct.

5. Check to be sure of the location of the CPU socket.

6. Remove the anti-dust sheet from the socket.
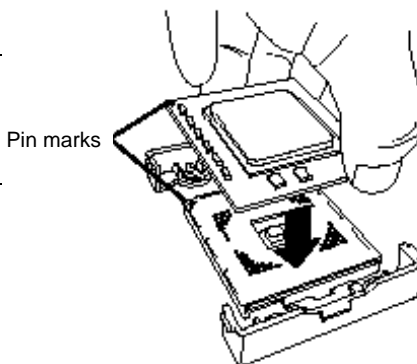
> **IMPORTANT:** Carefully keep the removed sheet.

7. Lift the socket lever.

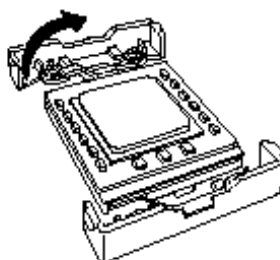> **IMPORTANT:** Open the lever fully. It can be opened 120° or more.

8.   Place the CPU carefully on the socket.

> **NOTE:** Pay attention to the orientation of the CPU.   The CPU and socket have pin marks to prevent misinsertion.

Pin marks

9.   After pressing the CPU softly against the socket, close the levers to fasten it.

10.   Affix an included cool sheet (heat-radiation sheet: one piece) on top of the CPU.

Place the sheet to cover the chip segment.

> **IMPORTANT:**
>
> ■ Since a cool sheet is very easy to break, you need to handle it carefully.   If it breaks, replace it with new one.   It cannot be reused.
>
> ■ Use one sheet for one CPU. Do not place more than one sheet on a single CPU.   Keep the rest of the sheets for future use.
>
> ■ Sometimes, a cool sheet has already been affixed on the heat sink.

Cool sheet

Chip
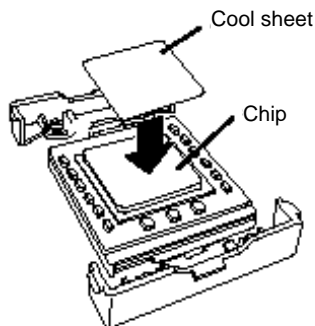
11.   Place the heat sink on top of the CPU.
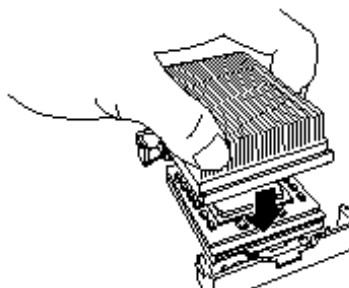
12. Fasten the heat sink with its clip.

Engage the clip holes with tabs on the sides of the retention: engage one hole first and engage the other holding the first hole.
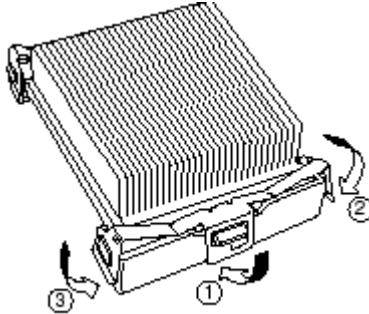
13. Check to see if the heat sink is mounted parallel with the motherboard.

> **IMPORTANT:**
>
> - If the heat sink is not parallel to the motherboard, dismount and remount it.   You cannot mount the heat sink correctly due to the following:
> - CPU is not mounted correctly
> - The heat sink clip is not engaged correctly.
> - Do not hold the fastened heat sink to move the CPU.

14. Attach the CPU air duct.

> **NOTE:** Check to see if the air duct is attached securely with its projected parts inserted into the chassis.
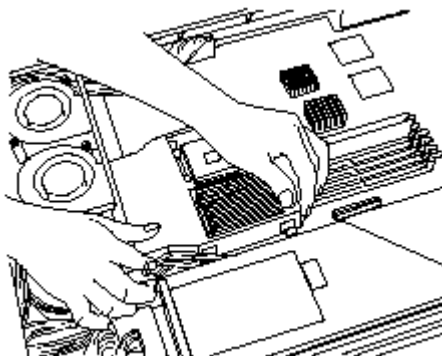
15. Install the CPU module.

16. Connect the power cord.

17. Press the POWER switch to power on the module.

18. Verify that POST displays no error messages.

If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

19. To operate a multi-processor system, do the following:

If in "Computer" of Device Manager, [Driver] is set to "ACPI single processor PC," change it to "ACPI multi-processor PC" and restart the server to update the system.

Removing CPU

Follow the steps below to remove the CPU.   Except when you replace the CPU with a new one, power off the server.

> **IMPORTANT:**
>
> ■ Do not remove the CPU unless it is faulty.
>
> ■ If a CPU is not mounted on CPU#2, cover it with an anti-dust sheet.
>
> ■ After operation, the cool sheet at the bottom of the heat sink may stick to the CPU because of heat.   When you dismount the heat sink, turn it lightly to make sure that the heat sink is not sticking to the CPU.   Otherwise, the CPU or socket may be damaged.

1. Shut down OS.

The server will be powered off automatically.

2. Unplug the power cord.

3. Remove the CPU module.

4. Detach the CPU air duct.

5. Dismount the heat sink using the dismount tool included with the additional CPU.

System Upgrade   8-49
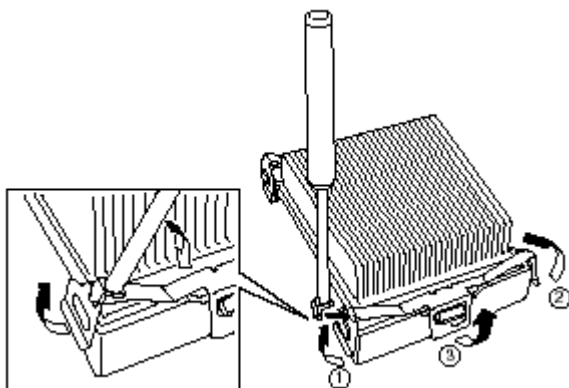
6. Remove the CPU.

7. Affix an anti-dust sheet on the CPU socket.

   Place the adhesive part on the opposite side of the lever.   Any part of the sheet place off the socket.

8. Install the CPU module.

9. Connect the power cable.

10. Press the POWER switch to power on the module.

11. Verify that POST displays no error messages.

    If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

Replacing CPU

Follow the steps below to replace a failed CPU:

1. Use Data Viewer of NEC ESMPRO Manager to check the failed CPU.

2. Remove the CPU module.

3. Replace the CPU.

4. Install the CPU module.

5. Start the CPU module from ft Series Utility or NEC ESMPRO Manager.

   In the initial setting, the server will start up automatically upon mounting the PCI module. If it is set not to start up automatically, use Data Viewer of NEC ESMPRO Manager or ft Series Utility to start it.

PCI MODULE

Three PCI boards can be installed to the PCI module.

Up to two PCI boards can be added to each PCI module, therefore, the server can accommodate four additional PCI boards at a maximum (one video board has already been installed to each PCI module in standard configuration).

Remove the PCI module when adding or replacing the PCI board.   The figures used in this section show the tower model.   The orientation is the only difference from the rack-mount model.

> **IMPORTANT:**
>
> ■ Ask your sales agent to replace the cooling fan and PCI module.
>
> ■ Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.
>
> ■ Handle the module fixing screw with your hand, not by using any tool.
>
> ■ If you have replaced the module, attach an HDD ID label indicating the module number to the upper part of the screw fixing the module.

> **TIPS:** The primary PCI module is the one whose POWER LED is on.

Precautions

■ If you remove a PCI module during operation, dual configuration of its internal hard disks will be cancelled.   If you mount the module again, the dual configuration will be restored automatically.   However, do not perform a system shutdown or remove any of the PCI modules before the dual configuration is completed.   Otherwise, hard disk data could be corrupted.

■ Removing the primary (active) module will cause unexpected trouble.   Be sure to remove the secondary (inactive) module.

■ When the secondary BMC is not in synchronous condition, removing the PCI module on the primary BMC will lose the SG data (system data).   If one of the STATUS LEDs is blinking in red, do not remove the PCI module associated with another STATUS LED.

When DC power is off:

BMC#1	BMC#2	Status
Off (Primary)	Blinking in red (Secondary) (At 1-second intervals)	Do not remove the PCI module on Primary BMC side. BMC Sync disabled.
Off (Primary)	Lit in red (Secondary)	Do not remove either PCI modules. During BMC Sync.
Off (Primary)	Blinking in red (Secondary) (At 0.5-second intervals)	Do not loosen a screw securing the PCI module or turn off the system power while the LED is blinking in red.

When DC power is on:

BMC#1	BMC#2	Status
Lit in green (Primary)	Blinking in red (Secondary) (At 1-second intervals)	Do not remove the PCI module on Primary BMC side. BMC Sync disabled.
Lit in green (Primary)	Lit in red (Secondary)	Do not remove either PCI modules. During BMC Sync.
Lit in green (Primary)	Blinking in red (Secondary) (At 0.5-second intervals)	Do not loosen a screw securing the PCI module or turn off the system power while the LED is blinking in red.

■ When you remove a PCI module, the system will be powered off automatically.   If there is a CD-ROM in the drive, eject it before removing the module.

Removing PCI Module

Follow the procedure below to remove the PCI module.

1. Stop the PCI module you want to remove.

To this end, use the ft series utility of the NEC ESMPRO Agent installed to your server or the Data Viewer of the NEC ESMPRO Manager.

For more information, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.
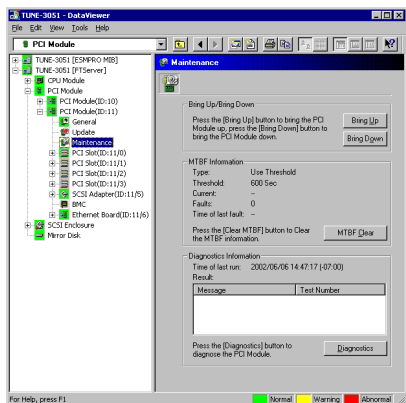
NEC ESMPRO Manager
Select [FTServer] → [PCI Module] → [[*]PCI Module (to be removed)] → [Maintenance] → [Bring Up/Bring Down] → [Bring Down].

ft series utility
Select [FTServer] → [PCI Module] → [PCI Module (to be removed)] → [Bring Up/Bring Down] → [Down].

After the CPU enters into off-line status, the status LEDs of the PCI board and PCI module will change as follows.

PCI board slot status LEDs (all of them): Off

PCI module

Fail LED: Red

State LED: Off

2. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model>

Unlock the front bezel with the security key and remove the upper and lower panels.

3. Disconnect the PCI module's network cable and cables connected to the options.

4. Loosen the setscrew securing the PCI module's release lever.

5. Hold the release lever of the PCI module and pull it off.

The PCI module is slightly pulled out toward you.

6. Firmly hold the handle and pull the PCI module slowly and carefully until the main unit is locked.

> **IMPORTANT:** Do not hold the other parts than the release lever to pull the module.

7. Pull off the module, pushing down the latch lever to unlock it.

When half of the module is pulled out, ask another person to support it.

> **IMPORTANT:**
> - Do not hold the other parts than the release lever to pull the module.
> - Carefully handle the PCI module so that you will not drop it or strike it against other server internal devices.

Release lever   Latch lever
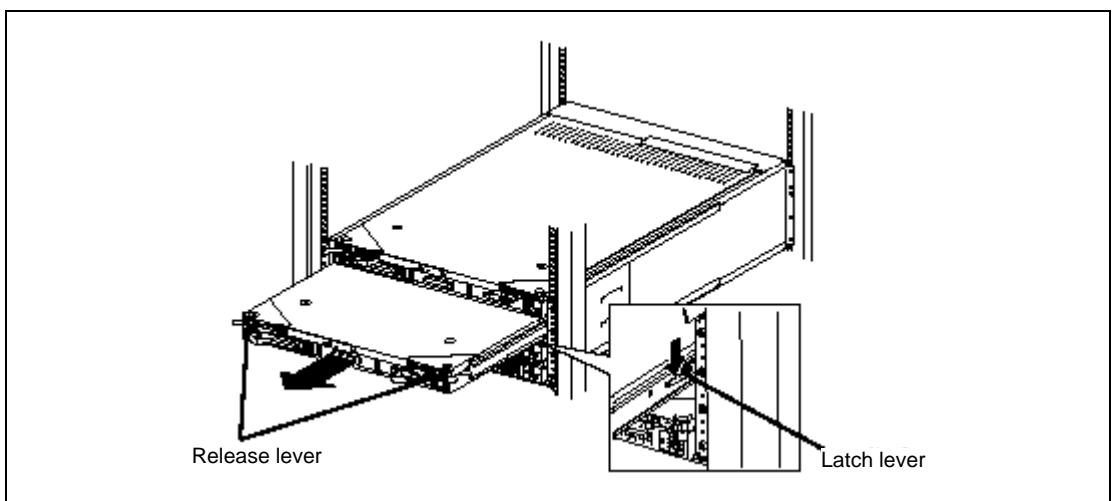
8. Carefully place the PCI module on the flat and sturdy table.

Avoid the dusty or humid place.

9.   Remove the two setscrews on the front of the PCI module and one setscrew on the back.

10.   Slide the top cover a little to remove it.

This allows you to access the devices in the PCI module.   For more information on how to handle these devices, see the associated sections.
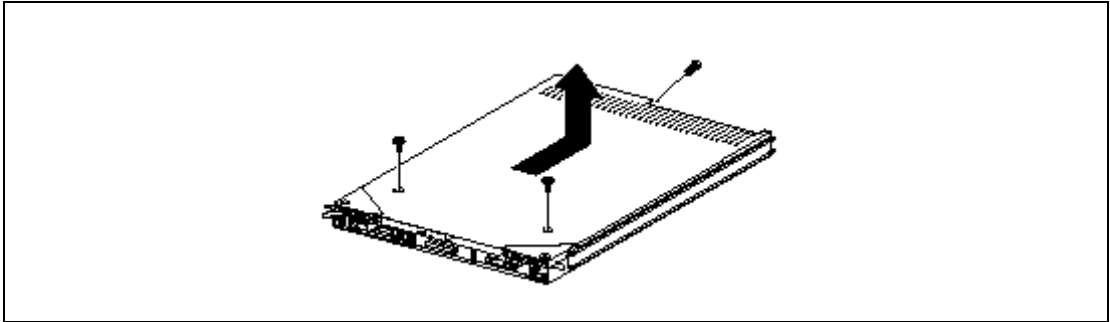
Installing PCI Module

Follow the procedure below to install the PCI module:

> **IMPORTANT:** Make sure to read "Anti-static Measures" and
> "Preparing Your System for Upgrade" before starting installing or
> removing options.

1. Install the cover to the PCI module.

> **NOTE:** Check the left, right, and upper tabs on the cover are certainly
> engaged with the PCI module.
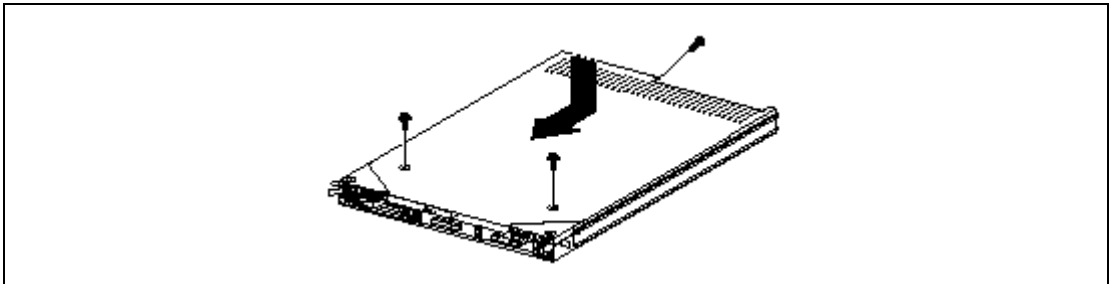
2. Secure the top cover to the PCI module with the three setscrews.

3. Firmly hold the PCI module with both hands and insert it into the server.

4. Hold the module in such a way that its back plane connector faces the back of the rack and engage the guides of the module and chassis to insert it slowly.

5. Hold and push the release lever until the module is locked.

> **IMPORTANT:** Do not hold the other parts than the release lever to pull
> the module.

6. Push down the latch lever to unlock it and push the module as far as it goes.

Release lever

Latch lever
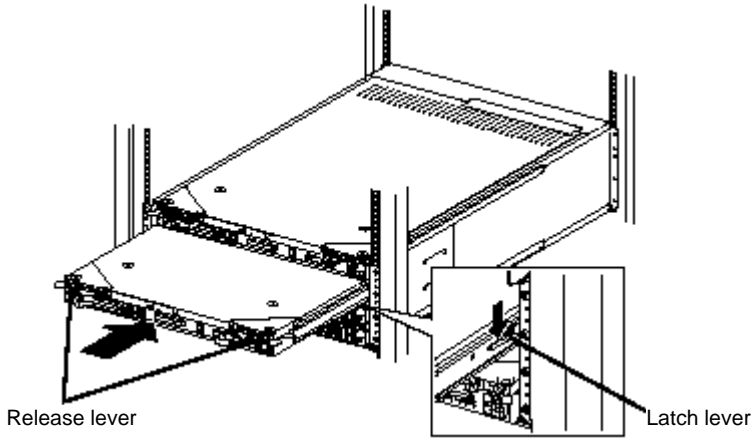
7. Connect the network cable and option cables.

8. Close the release lever.

> **IMPORTANT:** Unless the release levers are located inside the rack
> frame, the module won't be mounted correctly.

9. Screw the release levers.

Release lever

Wrong (The hook is located behind the frame.)

Correct (The hook is located above the frame.)
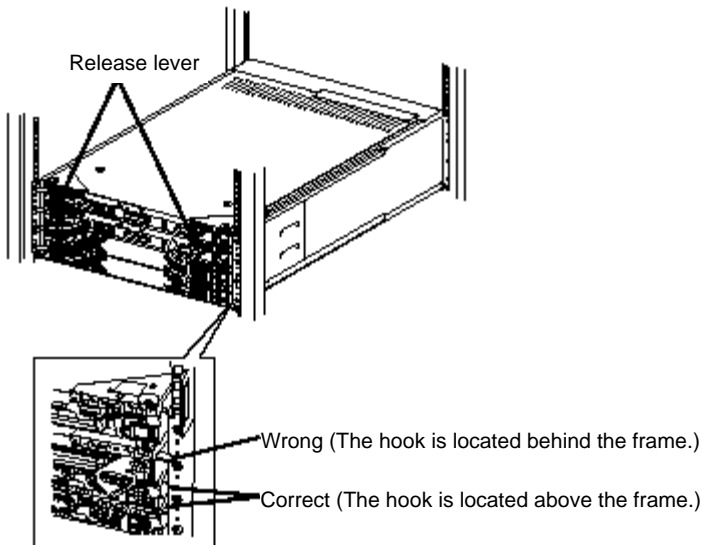
10. Boot the installed PCI module.

The system is defaulted to automatically boot the PCI module, once installed.   If this feature is disabled, boot the PCI module using the ft series utility of the NEC ESMPRO Agent installed to the server or the Data Viewer of the NEC ESMPRO Manager.

For more information, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.
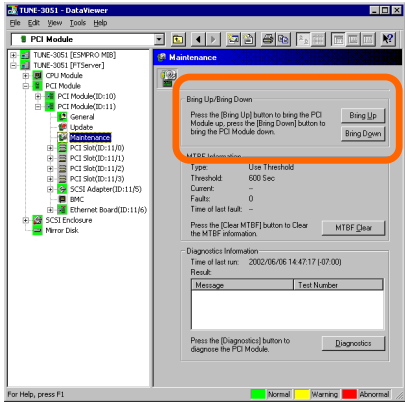
NEC ESMPRO Manager
Select [FTServer] → [PCI Module] → [(installed)
[*]PCI Module] → [Maintenance] → [Bring
Up/Bring Down] → [Bring Up].
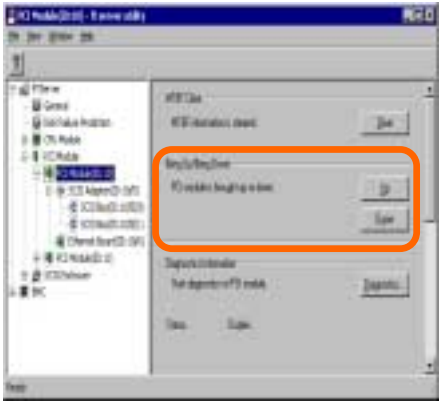
ft series utility
Select [FTServer] → [PCI Module] → [(installed)
PCI Module] → [Bring Up/Bring Down] → [Up].

PCI BOARD

Up to four PCI boards can be installed to the PCI module (however, one video board is already installed in each module in standard configuration).

IMPORTANT:

■ The PCI board is extremely sensitive to static electricity.   Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board.   Do not touch the PCI board terminals or on-board parts by a bare hand or place the PCI board directly on the desk.   For static notes, see the section "Anti-static Measures" described earlier.

■ Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.

■ PCI#1 is a slot dedicated for video board, which is standard equipment.   Do not replace this broad with any other board.

TIPS: When a PCI board is installed or removed, or the slot is changed, use the BIOS setup utility "SETUP" to change the detailed settings such as interrupt line (IRQ), when necessary.   See Appendix B for details.

Built-in riser cards of PCI module
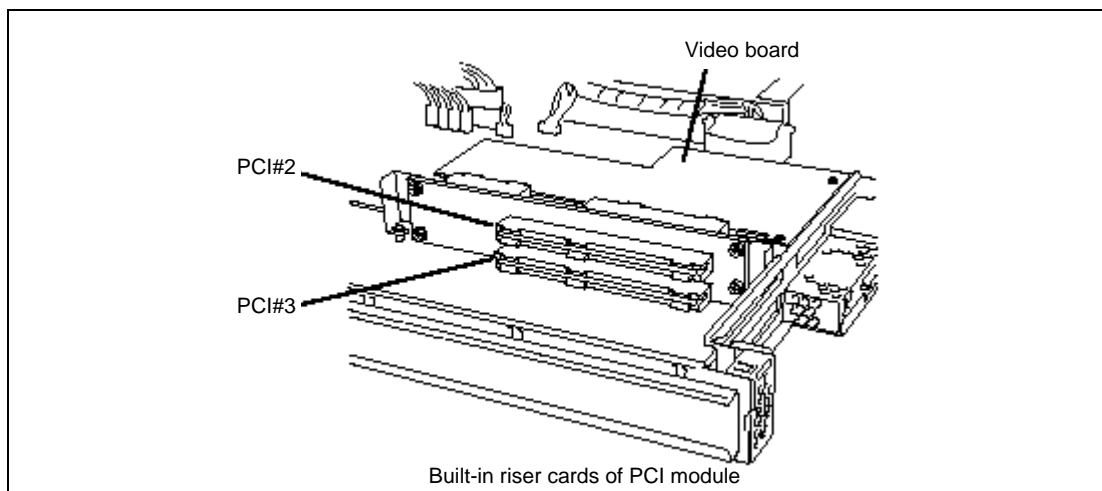
Note the followings to install or replace PCI board.

■ 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.

Installing PCI Board

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

> **NOTE:** 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 PCI module.

2. Remove the PCI module's top cover.

3. Identify the slot to which you want to install a PCI board and remove the connector cap.

   > **IMPORTANT:** Carefully keep the removed connector cap.
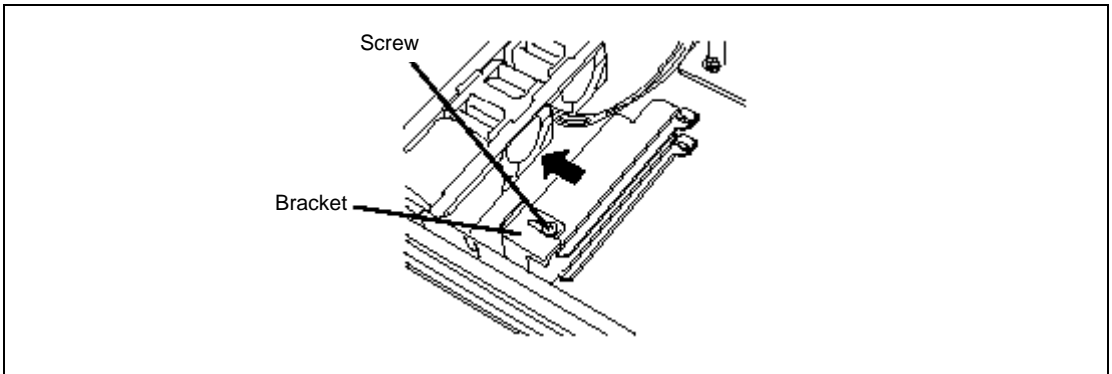
4. To install a long card, loosen the setscrew, slide the bracket, and secure it with the setscrew.

5. Pull the PCI board retainer bracket from the inside.

6. Unscrew the setscrew of the additional slot cover at the same position (level) as the target slot, and remove the slot cover.

   > **IMPORTANT:** Carefully keep the removed additional slot cover.

PCI board retainer
bracket

Additional slot cover
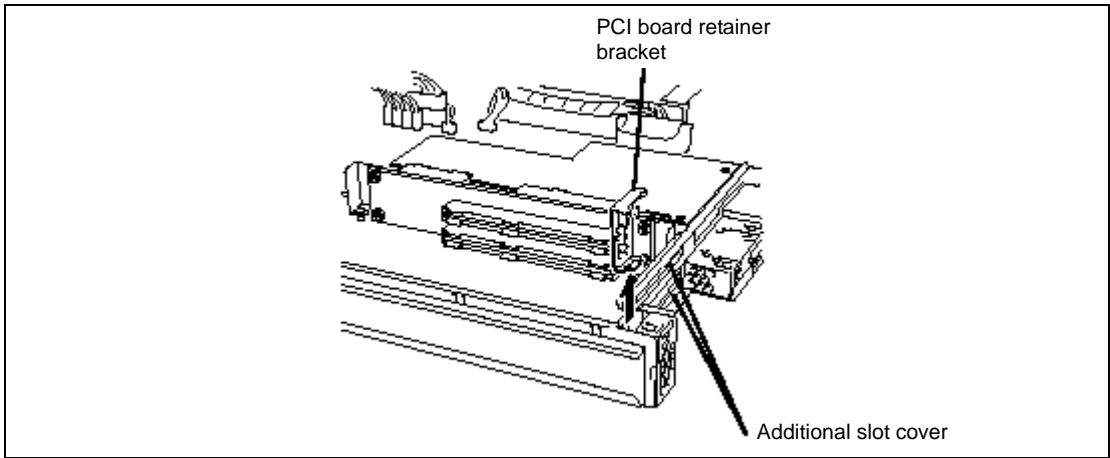
7. Align the terminal segment of the board with the connection of the slot and insert the
board slowly into the slot.

Guide

Slots for inserting
bracket edges
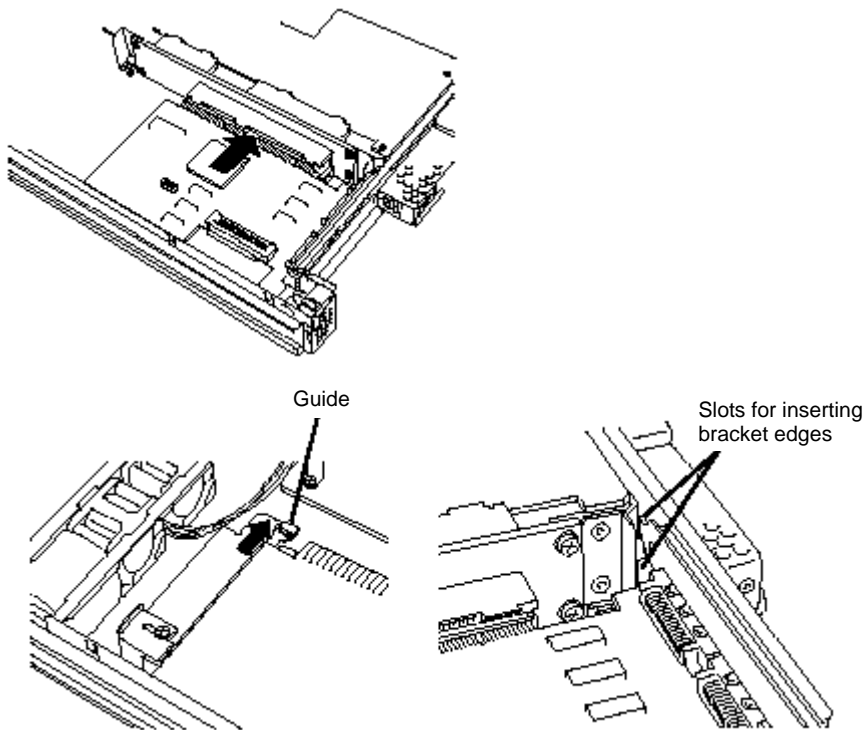
NOTE: Check to see if the edge of the bracket (taper) is inserted into a
slot of the chassis.   In the case of a long board, check also to see if its
other edge is inserted into the bracket guide.

8. Align the PCI board with the guide rail groove and insert the board slowly.
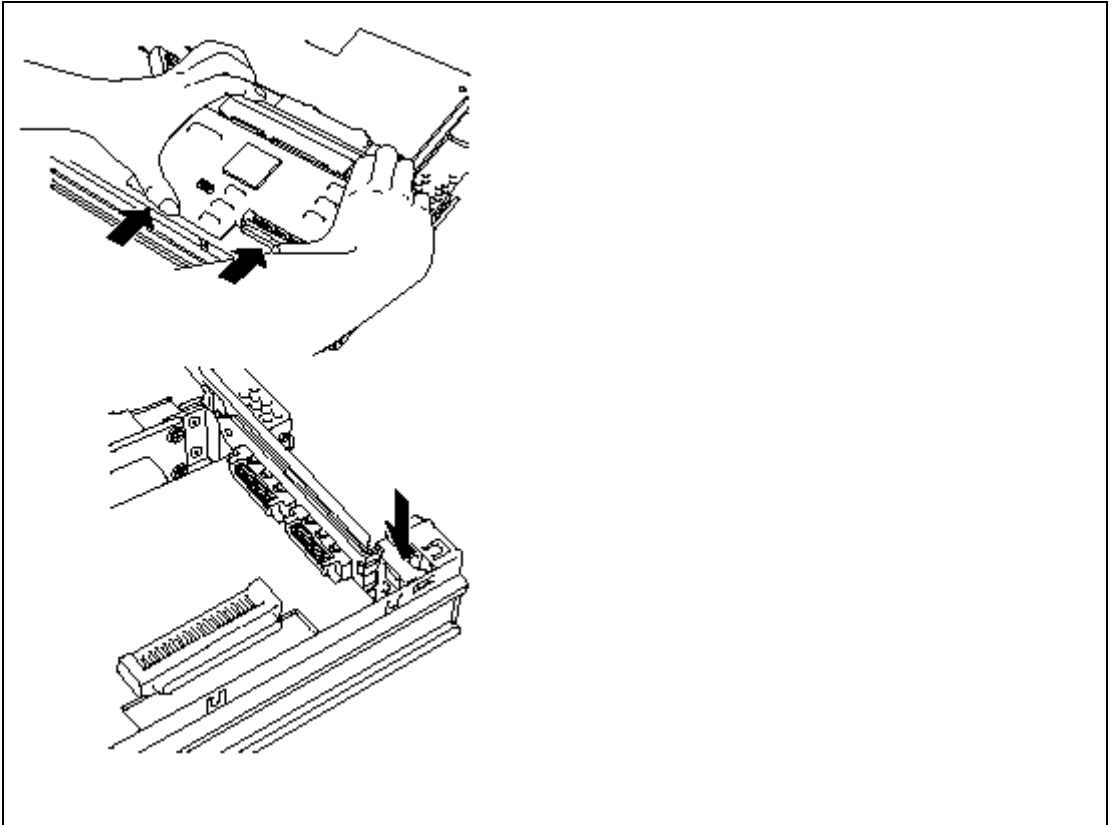
IMPORTANT:

- If the insertion is unsuccessful, remove the board once and retry installation.   Note that if excessive force is applied to the board, it may be damaged.

9. Attach the retainer bracket to fasten the PCI board.

10. In the case of a long board, slide the bracket to fasten the other edge of the board.

Screw

Bends for fastening
boards
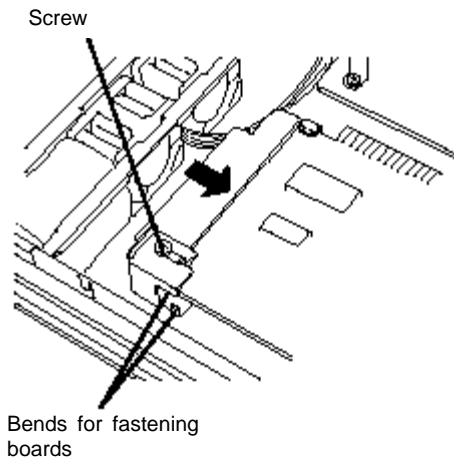
11. Install the PCI module cover.

12. Install the PCI module.

13. Connect the network cable and option cables.

14. Close the release lever.

15. Secure the release lever with the setscrew.

16. Boot the PCI module using the NEC ESMPRO Manager or ft series utility to establish a
dual configuration.

In the initial setting, the server will start up automatically upon mounting the PCI module.
If it is set not to start up automatically, use Data Viewer of NEC ESMPRO Manager or ft
Series Utility to start it.

For more information, refer to "NEC ESMPRO Agent and Manager" - "Maintenance of
NEC Express5800/ft series" in Chapter 5.

17. Check the PCI module status LED and PCI board status LED.

For description of LED indications, see "LED" in Chapter 2 and "Setup of Optional PCI
Board" later in this chapter.

18. Use cable ties to fasten the extra length of cables.
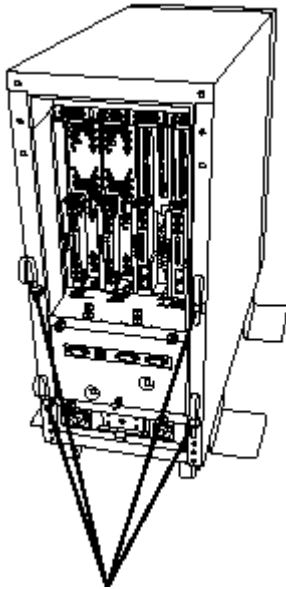
Cable ties (included
with cabinet)

Removing PCI Board

Follow the procedure below to remove the PCI board.

1. Remove the PCI module.

2. Remove the PCI module's top cover.

3. Remove the PCI board retainer bracket to dismount the PCI board.

In the case of a long board, unscrew the guide at the other edge and slide it to the front of the board.

4. Install the additional slot cover to the open slot.

5. Install the connector cover to the relevant slot.

6. Attach the PCI board retainer bracket.

7. Install the PCI module's top cover.

8. Install the PCI module.

Do not close the release lever at this time.

9. Connect the network cable and option cables.

10. Close the release lever.

11. Secure the release lever with the setscrew.

12. Boot the PCI module using the NEC ESMPRO Manager or ft series utility to establish a dual configuration.

In the initial setting, the server will start up automatically upon mounting the PCI module. If it is set not to start up automatically, use Data Viewer of NEC ESMPRO Manager or ft Series Utility to start it.

For more information, refer to "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.

13. Check the PCI module status LED and PCI board status LED.

For description of LED indications, see "LED" in Chapter 2 and "Setup of Optional PCI Board" later in this chapter.

Replacing PCI Board

Follow the procedure below to replace the 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 two LEDs associated with the PCI board slot are being turned off.

2. Remove the PCI module.

3. Remove the PCI module's top cover.

4. Remove the PCI board retainer bracket to dismount the PCI board.

In the case of a long board, unscrew the guide at the other edge and slide it to the front of the board.

5. Replace the board and fasten it.

6. Install the PCI module's top cover.

7. Install the PCI module.

Do not close the release lever at this time.

8. Connect the network cable and option cables.

9. Close the release lever.

10. Secure the release lever with the setscrew.

11. Boot the PCI module using the NEC ESMPRO Manager or ft series utility to establish a dual configuration.

In the initial setting, the server will start up automatically upon mounting the PCI module. If it is set not to start up automatically, use Data Viewer of NEC ESMPRO Manager or ft Series Utility to start it.

For more information, refer to "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.

12. Check the PCI module status LED and PCI board status LED.

For description of LED indications, see "LED" in Chapter 2 and "Setup of Optional PCI Board" later in this chapter.

Setup of Optional PCI Board

> **IMPORTANT:**
>
> - To enable the fault-tolerant feature of the optional device, the identical devices must be installed to the same slots in groups 1 and 2, respectively.
>
> - A video board is already installed to slot #1 as standard configuration.   This board may not be removed or replaced with any other board.
>
> - Change the BIOS settings.   For some optional PCI boards you may need to start up the BIOS setup utility to change the [Boot Monitoring Time-out Period] configuration in [Advanced] – [Monitoring Configuration].   For more details, see page 4-15.

N8803-002F SCSI Controller

- Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8803-002F	SCSI controller	–	√	√	–	√	√	Each PCI module can contain one board only.

√: Can be installed.   –: Cannot be installed.

- Installation of driver

  When you start the system with the N8803-002F SCSI Controller installed, the driver automatically becomes available by the plug-and-play feature.

  If the [Digital Signature Not Found] dialog box appears, click [Yes].

  > **IMPORTANT:** Insert N8803-002F after the installation of OS is completed.

■ PCI Board Status LED Indications

LED indications	Description	Action
Off	PCI board is mounted correctly and operates in duplex mode.	The system operates normally.
	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	If the PCI board is not mounted or is mounted incorrectly, just mount it correctly; there is no problem. Check the condition of power unit. When not solved, contact your sales agent.
Amber	Performing POST; or the PCI board is mounted correctly and operates in simplex mode.	Simplex mode is not a problem. To use ft series features, attach a PCI board to a slot of the same on the other PCI module.
Red	Although the PCI board is mounted, it may be offline or not be working.	Remount the PCI board correctly. Remount the PCI module correctly. When not solved, contact your sales agent.

N8804-001P1 100BASE-TX Adapter Set

■ Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8804-001P1 100BASE-TX adapter set	100BASE-TX Adapter	−	√	√	−	√	√	

√: Can be installed.   −: Cannot be installed.

■ Installation of driver

The NEC Express5800/ft series duplicates one or two pairs of 100BASE-TX adapter sets (N8804-001P1) before using.

After installing Operating System, install the drivers in the following procedure and make dual settings of the PCI board.

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

After installing the OS, follow the steps below to install a driver and establish a dual configuration:

1. Mount the N8804-001P1 100BASE-TX adapter to the slot with the same number in PCI module #1 and #2, and then start Windows 2000 Advanced Server.

   After starting Windows 2000 Advanced Server, the drivers are installed automatically.

   > **IMPORTANT:** If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Setting Dual LAN Configuration")

   > **IMPORTANT:**
   >
   > ■ You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration".   In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
   >
   > ■ Moreover, select [Stratus AA-U51500 10/100 Enet Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.
   >
   > ■ If you build a dual configuration by using two pairs of adapters in Step 5, add an adapter in the same way.

   ■ PCI Board Status LED Indications

LED indications	Description	Action
Green	Duplex is specified, however, the server works in simplex mode.	Specify duplex (AFT, ALB). Specify an appropriate driver.
Off	PCI board is properly installed and operates in non-duplex mode (AFT, ALB). (Does not depend on simplex or duplex.)	In non-duplex mode, no special problem occurs.
	POST is operating or the PCI board is installed to operate in the duplex mode.	The system is operating normally in duplex mode.
	The PCI board is not installed yet, the PCI board is installed incorrectly, or the power is not supplied.	Mount the PCI board correctly. If the PCI board was not mounted, there is no problem. Check the condition of power unit. Remount the PCI module.
Red	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	Wait for a while until the indication changes. If the indication unchanged, check the PCI board slot status using NEC ESMPRO Manager.
	Although the PCI board is mounted, it may be offline or not be working.	Make the slot of the board installed from NEC ESMPRO Manager online. Mount the PCI board correctly.

N8803-030F Fibre Channel Controller

N8803-031F Fibre Channel Controller

■ Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8803-030F	Fibre Channel Controller	–	√	√	–	√	√	Each PCI module can contain one board only.
N8803-031F	Fibre Channel Controller	–	√	√	–	√	√	Only one of them can be mounted. (cannot be mounted together)

√: Can be installed.   –: Cannot be installed.

■ Installation of driver

When you start the system with the N8803-030F/031F Fibre Channel Controller installed, the driver automatically becomes available by the plug-and-play feature

If the [Digital Signature Not Found] dialog box appears, click [Yes].

IMPORTANT: Insert Fibre Channel Controllers after the installation of OS is completed. Use Fibre Channel Controllers in pairs. Insert a Fibre Channel Controller into a slot in a PCI module and another Fibre Channel Controller into the slot at the same location in another PCI module.

■ PCI Board Status LED Indications

LED indications	Description	Action
Off	PCI board is mounted correctly and operates in duplex mode.	The system operates normally.
	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	If the PCI board is not mounted or is mounted incorrectly, just mount it correctly; there is no problem. Check the condition of power unit. When not solved, contact your sales agent.
Amber	Performing POST; or the PCI board is mounted correctly and operates in simplex mode.	To use ft series features, attach a PCI board to a slot of the same on the other PCI module.
Red	Although the PCI board is mounted, it may be offline or not be working.	Remount the PCI board correctly. Remount the PCI module correctly. When not solved, contact your sales agent.

N8104-84 1000BASE-SX Adapter

Consult your sales personnel for details when purchasing this hardware.

> **IMPORTANT:** Note the following about this product:
>
> - It is advisable to add this product to such environment that each system is used for a different purpose (ex. system line, maintenance, monitoring) and multiple accesses do not occur simultaneously.
>
> - If there are multiple accesses, the processing power and transmission speed may be somewhat affected.

- Slots to install the board

| N code | Name | PCI slot | | | | | | Remarks |
| | | Group 1 | | | Group 2 | | | |
		#1	#2	#3	#1	#2	#3	
N8104-84	1000BASE-SX Adapter	–	√	√	–	√	√	Each PCI module can contain one board only.

√: Can be installed.   –: Cannot be installed.

- Installation of driver

  The NEC Express5800/ft series uses a pair of N8104-84 boards in duplex mode.

  After installing the drivers in the following procedure, perform a dual configuration setup.

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

  After installing the OS, follow the steps below to install a driver and establish a dual configuration:

1. Mount the N8104-84 adapter to the slot with the same number in PCI module #1 and #2, and then start the Windows 2000 Advanced Server.

   After starting Windows 2000 Advanced Server, the drivers are installed automatically.

   > **IMPORTANT:** If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Setting Dual LAN Configuration")

   > **IMPORTANT:**
   >
   > - You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration".   In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
   >
   > - Moreover, select [Stratus AA-U5700 Fiber Gigabit Server Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.

■ PCI Board Status LED Indications

LED indications	Description	Action
Green	Duplex is specified, however, the server works in simplex mode.	Specify duplex (AFT, ALB). Specify an appropriate driver.
Off	PCI board is properly installed and operates in non-duplex mode (AFT, ALB). (Does not depend on simplex or duplex.)	In non-duplex mode, no special problem occurs.
	POST is operating or the PCI board is installed to operate in the duplex mode.	The system is operating normally in duplex mode.
	The PCI board is not installed yet, the PCI board is installed incorrectly, or the power is not supplied.	Mount the PCI board correctly. If the PCI board was not mounted, there is no problem. Check the condition of power unit. Remount the PCI module.
Red	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	Wait for a while until the indication changes. If the indication unchanged, check the PCI board slot status using NEC ESMPRO Manager.
	Although the PCI board is mounted, it may be offline or not be working.	Make the slot of the board installed from NEC ESMPRO Manager online. Mount the PCI board correctly.

N8104-103 1000BASE-T Adapter

Consult your sales personnel for details when purchasing this hardware.

> **IMPORTANT:** Note the following about this product:
>
> - It is advisable to add this product to such environment that each system is used for a different purpose (ex. system line, maintenance, monitoring) and multiple accesses do not occur simultaneously.
> - If there are multiple accesses, the processing power and transmission speed may be somewhat affected.

- Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8104-103	1000BASE-T Adapter	–	√	√	–	√	√	Each PCI module can contain one board only.

√: Can be installed.   –: Cannot be installed.

- Installation of driver

  The NEC Express5800/ft series uses a pair of N8104-103 boards in duplex mode.

  After installing the drivers in the following procedure, perform a dual configuration setup.

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

  After installing the OS, follow the steps below to install a driver and establish a dual configuration:

1. Mount the N8104-103 adapter to the slot with the same number in PCI module #1 and #2, and then start the Windows 2000 Advanced Server.

   After starting Windows 2000 Advanced Server, the drivers are installed automatically.

   > **IMPORTANT:** If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Setting Dual LAN Configuration")

   > **IMPORTANT:**
   >
   > - You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration".   In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
   > - Moreover, select [NEC 8490XT Copper Gigabit Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.

■ PCI Board Status LED Indications

LED indications	Description	Action
Green	Duplex is specified, however, the server works in simplex mode.	Specify duplex (AFT, ALB). Specify an appropriate driver.
Off	PCI board is properly installed and operates in non-duplex mode (AFT, ALB). (Does not depend on simplex or duplex.)	In non-duplex mode, no special problem occurs.
	POST is operating or the PCI board is installed to operate in the duplex mode.	The system is operating normally in duplex mode.
	The PCI board is not installed yet, the PCI board is installed incorrectly, or the power is not supplied.	Mount the PCI board correctly. If the PCI board was not mounted, there is no problem. Check the condition of power unit. Remount the PCI module.
Red	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	Wait for a while until the indication changes. If the indication unchanged, check the PCI board slot status using NEC ESMPRO Manager.
	Although the PCI board is mounted, it may be offline or not be working.	Make the slot of the board installed from NEC ESMPRO Manager online. Mount the PCI board correctly.

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Appendix A

Specifications

Item		NEC Express5800/320Lb	NEC Express5800/320Lb-R
		N8800-027F	N8800-028F
CPU	Type	Intel® Xeon™ Processor × 1	
	Clock/second cache	2.4GHz/512KB	
	Number of processors	1	
Chipset		Server Works Server Set III GC-LE	
Memory	Standard	256MB (128MB × 2*)	
		*Each module has a DIMM in standard configuration.	
	Maximum	3GB (The standard DIMM must be replaced.)	
	Expansion unit	2 DIMMs (128MB × 2/ 256MB × 2/ 512 MB × 2)	
	Memory module	DDR200 SDRAM DIMM (Registered Type)	
	Error check	ECC	
Graphics (VRAM)		CT69000 (VRAM 2MB)	
Auxiliary input device	Floppy disk (standard)	3.5-inch drive × 1 (USB)	
	Hard disk (standard)	None	
	Hard disk (maximum)	329.0GB* (18.1GB × 2 + 73.2GB × 4)	
		* 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)	
		A ready drive is indicated by POWER LED of that PCI module.	
File bay	5.25 inch	None	
	3.5 inch	6 slots	
Additional slot	PCI	6 slots	
		(2 slots are used for graphics board.)	
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (2 ports); 100BASE-TX/10BASE-T (2 ports)	
External interface	USB	4-pin (2 ports) 2 ports are used by keyboard and external USB FDD.	
	Serial	D-sub 9-pin (2 ports)	
	Network	RJ-45 (4 ports)	
	Display	MINI D-sub 15-pin (1 port)	
Cabinet design		Deskside and mini-tower	Rack-mount type
External dimensions		222 (width)* × 560 (height) × 795 (depth) mm	480 (width) × 177 (height) × 790 (depth) mm
		*370mm if stabilizers included	
Weight		68 kg (Max. 73kg)	56 kg (Max. 61kg)
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz	
Power consumption		880 VA, 870 W	
Environmental requirements	Temperature	10 to 35°C	
	Humidity	20 to 80% RH (no condensation)	

Use the factory-set configuration.   Modifications to the hard disk configuration may cause trouble.

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Appendix B

I/O Port Address

The factory-set I/O port addresses for the server are assigned as follows:

Address	Chip in Use
00-1F	8-bit DMA control register
20-21	Master 8259 programming interface
2E-2F	Configuration
40-43	8254 programming interface
60	Keyboard & mouse
61	NMI status register
64	Keyboard & mouse
70-71	NMI enable register/real-time clock
80-8F	16-bit DMA control register
A0-A1	Slave 8259 programming interface
C0-DF	DMA controller page register
E0-E9	Base address register
F0	Register IRQ13
F1-FF	Logical device configuration
170-177 or BAR2	EDMA2-compatible mode primary command block register
1F0-1F7 or BAR0	EDMA2-compatible mode secondary command block register
278-27F	(Parallel port 3)
2F8-2FF	Serial port 2
BAR or 376	EDMA2-compatible mode secondary command block register
370-377	(Floppy disk drive 2), IDE 2
378-37F	(Parallel port 2)
3B0-3BB	VGA
3BC-3BE	Parallel port 1
3C0-3DF	VGA
3F6 or BAR1	EDMA2-compatible mode primary command block register
3F0-3F7	(Floppy disk drive 1), IDE 1
3F8-3FF	Serial port A
40B	DMA1 expansion write mode register
4D0	Master 8259 ELCR programming
4D1	Slave 8259 ELCR programming
4D6	DMA2 expansion write mode register
580-58F	SMBus control
C00	PCI IRQ mapping index register
C01	PCI IRQ mapping data register
C14	PCI error status register
C49	Address & status control
C4A	Rise time counter control
C52	General register (GPMs)
C6C	ISA wait register
C6F	Other control registers
CA2-CA3	IPMI (IMPI KCS interface)

Address	Chip in Use
CA4-CA5	IPMI (SMI interface)
CA6-CA-7	IPMI (SCI/SW1 interface)
CD6	Power management index register
CD7	Power management data register
CF8, CFC	PCI configuration space
CF9	Reset control
F50-F58h	General chipset
BAR4+00-0F	EDMA2 PCI base address register 4

* Expressed in hexadecimal digits.
* I/O port addresses of PCI devices are specified based on the type and number of PCI devices.