NEC Express5800 Series

N8800-107F, EXP320HR
NEC Express5800/320Fc-MR

User's Guide

N8800-107F, EXP320HR

NEC Express5800/320Fc-MR

User's Guide

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PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

The NEC product(s) discussed in this document are warranted in accordance with the terms of the Warranty Statement accompanying each product. However, actual performance of each such product is dependent upon factors such as system configuration, customer data, and operator control. Since implementation by customers of each product may vary, the suitability of specific product configurations and applications must be determined by the customer and is not warranted by NEC.

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Printed in Japan

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, and actions taken to prevent them; such components are labeled warning.

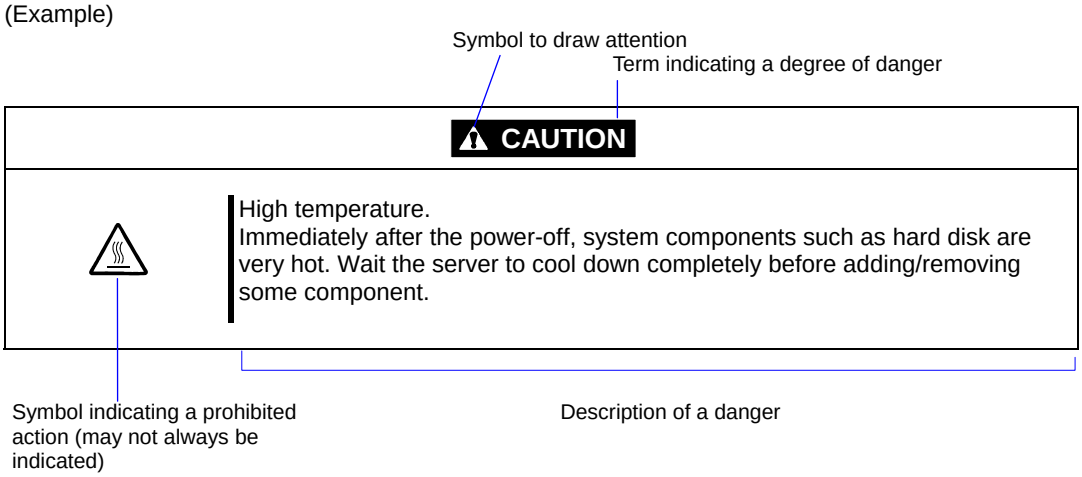
This guide and warning labels use “WARNING” and “CAUTION” to indicate a danger depending on the degree. These terms are defined as follows:

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

(Example)



SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attention

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

Prohibited actions

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

Mandatory actions

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

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

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，

在這種情況下，使用者會被要求採取某些適當的對策.

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

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).

CLASS 1
LASER PRODUCT

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

NOTE: This product provides resistance against hardware faults with its redundant hardware modules. However, this does not mean complete fault-tolerance is assured. For example, there is a risk of system down when:

- A fatal fault occurs in software.
- Both modules within a redundant hardware pair break down.
- A fatal fault occurs in a non-redundant component, such as the clock generator circuitry or the interconnect backplane.
- The entire system is cut off from AC power.

安全注意事項

安全標示

請參考本用戶指南中的指示以安全使用NEC Express5800系列伺服器。

本用戶指南說明了設備何處有危險、危險類型、如何避免危險等。在設備可預計到的危險之處或其附近貼有警告標籤。

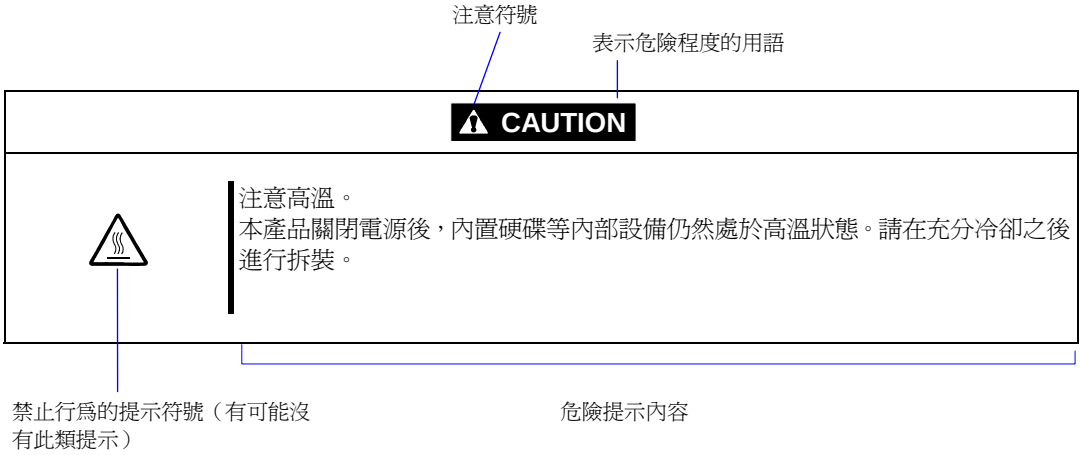
用戶指南及警告標籤中，根據危險程度不同，使用“警告”、“注意”等詞，含義如下：

⚠ WARNING	表示如不遵守該指示，可能引發人員傷亡。
⚠ CAUTION	表示如不遵守該指示，可能發生燒傷等身體損傷或造成物質損失。

對危險的提示表示有如下三種符號，具體含義如下所述：

	表示該處可能發生危險。符號爲危險內容的圖案。（注意）
	表示禁止行爲。符號中或其附近的圖案爲禁止行爲內容。（禁止行爲）
	表示強制行爲。符號中的圖案爲強制必須做的行爲內容。即爲避免危險必需的行爲。（強制行爲）

(用戶指南中範例)



本書及警告標籤中使用的符號

注意

	表示有觸電的危險。
	表示有因高溫而負傷的危險。
	表示有手指等被夾住的危險。
	表示有冒煙或者著火的危險。
	表示非特定的一般的提醒警告。
	表示有因雷射導致失明的危險。
	表示有爆炸的危險。
	表示有受傷的危險。

禁止行爲

	表示非特定的一般禁止。
	不要觸摸指定區域。有觸電或著火的危險。
	不要用濕手觸摸。有觸電的危險。
	遠離火源。有著火的危險。
	遠離液體。如果沾到液體，有觸電或著火的危險。
	請不要對本設備進行拆卸、修理、改造。有觸電和發生火災的危險。

強制行爲

	請將本設備的電源插頭從伺服器上拔下。有發生火災和觸電的危險。
	對非特定的一般使用者的行爲進行指示。請按照說明進行操作。

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.

這是CLASS 1 LASER PRODUCT。該標籤貼於系統的內部光碟。

注意： 本產品通過多餘的硬體模組提供硬體容錯性能。但是這並不表示能夠保證完全容錯。如，在以下情況下可能發生宕機：

- 軟體發生致命故障。
- 多餘硬體雙方均發生故障，不能運行。
- 時鐘產生器線路或內部連接背板等非多餘元件發生致命故障。

切斷了整個系統的AC**電源**

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Microsoft Windows Server 2003 R2 Standard x64 Edition operating system, Microsoft Windows Server 2003 R2 Enterprise x64 Edition operating system, Microsoft Windows Server 2003 Standard x64 Edition operating system, and Microsoft Windows Server 2003 Enterprise x64 Edition operating system are called Windows Server x64 Edition for short.

Microsoft Windows Server 2003 R2 32-bit Standard Edition operating system, Microsoft Windows Server 2003 R2 32-bit Enterprise Edition operating system, Microsoft Windows Server 2003 Standard Edition operating system and Microsoft Windows Server 2003 Enterprise Edition operating system are called Windows Server 2003 for short. 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 Vista Business operating system is called Windows Vista for short. Microsoft Windows XP Professional x64 Edition operating system is called Windows XP x64 Edition for short. Microsoft Windows XP Home Edition operating system and Microsoft Windows XP Professional operating system is called Windows XP 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.

(3) The contents of this manual shall not be copied or altered without prior written permission of NEC Corporation.

(4) All efforts have been made to ensure the accuracy of all information in this manual. If you find any part unclear, incorrect, or omitted in this manual, contact the sales agent where you purchased this product.

(5) NEC assumes no liability arising from the use of this product, nor any liability for incidental or consequential damage arising from the use of this manual regardless of (4) above.

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 NEC Express5800/ft series in a mission-critical system where high availability is required. By the use of Linux 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 Linux operating systems and general I/O devices such as a keyboard and mouse.

How to Use This User's Guide

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

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

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

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

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

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
TIPS:	Helpful information, something useful to know

Accessories

This product is shipped with various accessories. See the packing 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.

CONTENTS

Chapter 1

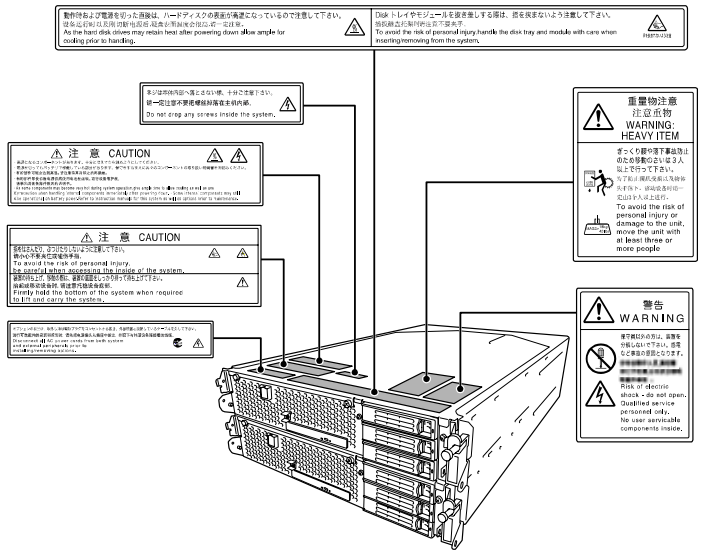
Precautions for Use

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

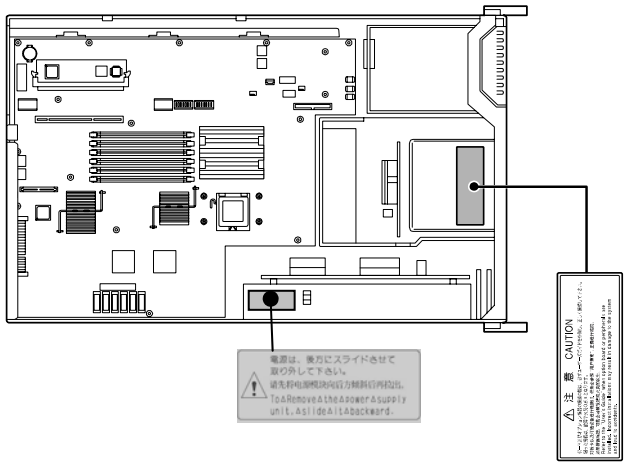
WARNING LABELS

Warning labels are placed in certain parts of the system so that the user stays alert to possible risks (Do not remove or damage these labels). If some label is missing, about to peel off, or illegible, contact your sales agent.

The following pictures show the places where the labels are placed.



Front of device



Inside of device

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.
Other systems also may be affected, and the rack may fall over to cause a fire or injuries. For details about installation environment and quake-resistant engineering, see the attached manual or contact your sales agent.

⚠ CAUTION

Prevent water or foreign objects from getting into the equipment.

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

Use of Power Supply and Power Cord

⚠ WARNING

Do not handle a power plug with a wet hand.

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

Do not connect the ground wire to a gas pipe.

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

⚠ CAUTION

Do not plug the attached cord in a nonconforming outlet.

Use a wall outlet with specified voltage and power type. There is a risk of a fire or current leakage.

Avoid installing the equipment where you may need an extension cord. If the cord that does not meet the power specifications, there is a risk of overheating that could lead to a fire.

Do not plug too many cords in a single outlet.

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

Do not plug the cord insecurely.

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

Do not use nonconforming power cords.

AC cord is to spend the thing of the next specifications.
You also have to observe the following prohibitions about handling and connecting interface cables.

- Do not pull on the cord.
- Do not pinch the cord.
- Do not bend the cord.
- Keep chemicals away from the cord.
- Do not twist the cord.
- Do not tread on the cord.
- Do not place any object on the cord.
- Do not use cords as bundled.
- Do not alter, modify, or repair the cord.
- Do not staple the cord.
- Do not use any damaged cord. (Replace it with a new one of the same specifications. For replacement procedures, contact your sales agent.)

Installation, Relocation, Storage and Connection

⚠ WARNING

Disconnect the power cord(s) before installing or removing the equipment.

Be sure to power off the equipment and unplug its power cords from the wall outlet before installation/relocation. All voltage is removed only when the power cords are unplugged.

⚠ CAUTION

Do not install or store the equipment in an unsuitable place.

Install or store the equipment in such a place as specified in this User's Guide. Avoid the following, or there is a risk of a fire.

- a dusty place
- a humid place located near a boiler, etc
- a place exposed to direct sunlight
- an unstable place

Be careful not to hurt your fingers.

Exercise great care not to hurt your fingers on the rail when you mount/dismount the equipment into/from the rack.

Do not use or store this product in corrosive environment.

Avoid the usage or storage of this product in an environment which may be exposed to corrosive gases, such as those including but not limited to:
sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia and/or ozone.
Avoid installing this product in a dusty environment or one that may be exposed to corrosive materials such as sodium chloride and/or sulfur.
Avoid installing this product in an environment which may have excessive metal flakes or conductive particles in the air.
Such environments may cause corrosion or short circuits within this product, resulting in not only damage to this product, but may even lead to be a fire hazard.
If there are any concerns regarding the environment at the planned site of installation or storage, please contact your sales agent.

⚠ CAUTION

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

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

Do not use any non-designated interface cable.

Use only interface cables designated by 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.
- Do not use any damaged cable.

Cleaning and Handling of Internal Devices

⚠ WARNING

Do not disassemble, repair, or alter the server.

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

Do not look into the DVD-ROM drive.

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

Do not detach a lithium battery yourself.

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

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

Disconnect the power plug before cleaning the server.

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

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

⚠ CAUTION

High temperature

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

Make sure to complete installation.

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

⚠ CAUTION

Protect the unused connectors with the protective cap.

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

During Operation

⚠ CAUTION

Do not pull out a device during operation.

Do not pull out or remove a device while it works. There is a risk of malfunction and injuries.

Do not touch the equipment when it thunders.

Unplug the equipment when it threatens to thunder. If it starts to thunder before you unplug the equipment, do not touch the equipment and cables. There is a risk of a fire or electric shock.

Keep animals away.

Animal's waste or hair may get inside the equipment to cause a fire or electric shock.

Do not place any object on top of the server.

The object may fall off to cause injuries, damage to hardware and/or a fire.

Do not leave the DVD tray ejected.

Dust may get in the equipment to cause malfunction. The ejected tray may also become a cause of injuries.

Rack-mount Model

⚠ CAUTION

Do not install the equipment on a nonconforming rack.

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

Do not attempt to install the server yourself.

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

< For Maintenance Personnel Only >

Do not install the equipment in such a manner that its weight is imposed on a single place.

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

Do not assemble parts alone.

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

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

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

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

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

Do not install excessive wiring.

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

For Proper Operation

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

- 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.
- Perform installation in a place where the system can operate correctly. For details, see the separate volume “User’s Guide (Setup).”
- Before turning off the power or ejecting a disk, make sure that the access LED is off.
- When you have just turned off the power, wait at least 30 seconds before turning it on again.
- Once you have turned on the server, do not turn it off until the "NEC" logo appears on the screen.
- After plugging in the power cord, do not turn on the power of the equipment for 30 seconds.
- For safe operation, it is recommended to reboot the OS after duplication is completed.
- Before you move the equipment, turn off the power and unplug the cord.
- This server shall not assure reproduction of copy-protect CDs using reproduction equipment if such disks do not comply with CD standards.
- Clean the equipment regularly. (For procedures, see Chapter 6.) Regular cleaning is effective in preventing various types of trouble.
- Lightning may cause voltage sag. As a preventive measure, it is recommended to use UPS (uninterruptible power supply).

  This equipment does not support the connection through an UPS serial port (RS-232C) or the control using PowerChutePlus.
- Check and adjust the system clock before operation in the following conditions:

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

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

- When you store the equipment, keep it under storage environment conditions (Temperature: -10 to 55°C, Humidity: 20 to 80%, non-condensing).
- If NEC Express5800/ft series, the built-in optional devices, and the media set for the backup devices (tape cartridges) are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. In order to protect important stored data and assets, make sure to wait for a sufficient period of time to use the server or components in the operating environment.

  Reference: Length of the time effective at avoiding condensation in winter (more than 10°C

differences between room temperature and atmospheric temperature)
Disk devices: Approximately 2-3 hours
Tape media: Approximately 1 day

- Make sure that the optional devices are attachable and connectable to the equipment. There is a risk of malfunctions that could lead to a breakdown of the equipment even if you could attach and connect.
- Make sure that your options are compatible with the system. If you attach any incompatible option, there is a risk of malfunction that could lead to a breakdown.
- It is recommended to use 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.

DISPOSAL OF EQUIPMENT AND CONSUMABLES

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

  For details, ask your municipal office.

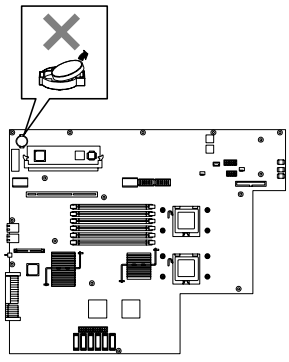
  IMPORTANT:
  For disposal (or replacement) of batteries on the motherboard, consult with your sales agent.
  If data remains on the hard disk, backup data cartridges, floppy disks, or other writable media (such as CD-R and CD-RW), it could be restored and reused by outsiders. The customer is responsible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

- Some of the system components have limited lifetime (e.g., cooling fans, built-in batteries, built-in DVD-ROM drive, floppy disk drive and mouse). For stable operation, it is recommended to replace them regularly. For lifetime of individual components and replacing procedures, ask your sales agent.

⚠ WARNING

Do not detach a lithium battery yourself.

This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode.
RISK OF EXPLOSION IF BATTERY IS REPLACED WITH INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.



IF SYSTEM TROUBLE IS SUSPECTED

Before sending the equipment for repair, try the following:

1. Check if its power cord and connection cables are attached correctly.
2. See “Error Messages” in Chapter 7 to check if there is a relevant symptom. If yes, take measures as instructed.
3. Certain software programs are required for operation of 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 REPAIR PARTS

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

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/express/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:

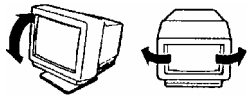
Sit in a good posture

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.

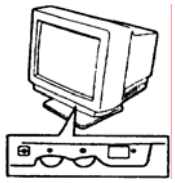
Adjust the installation angle of Display

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.



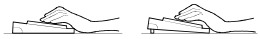
Adjust Brightness and Contrast

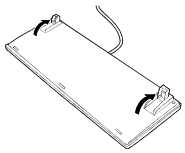
Displays allow you to adjust brightness and contrast. Optimum brightness and contrast vary depending on the individual, age, brightness of the room, etc; you need to make an adjustment accordingly. If the screen is too bright or too dark, it is bad for your eyes.



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.



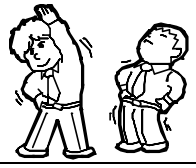


Clean the Equipment

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.



安全注意事項

本節講述安全使用本伺服器所需的注意事項。爲了您正確安全地使用本伺服器，請仔細閱讀該節內容。符號的相關說明請參考“安全標示（SAFETY INDICATIONS）”說明。

一般注意事項

⚠ WARNING

不要用於危及人命和需要高度可靠性的操作上。

本產品不要安裝在醫療設備、原子能設備、航空宇宙機器、運輸設備等會危及人命以及需要高度可靠性的設備和機器上，也不要使用本產品來控制這些機器。如果將本產品用於這類系統的設備及機器，造成人身事故及財產損失等後果，本公司概不負責。

發生冒煙、異味、雜音時不要使用。

發生冒煙、異味、雜音等時，請直接關閉電源POWER，並將電源插頭從插座上拔下。然後請與經銷商或維護服務公司聯繫。繼續使用會導致火災。

不要插入鐵絲和金屬片。

不要將金屬片和鐵絲等異物插入通氣孔或軟碟機、光碟機的縫隙。有觸電的危險。

不要在未指定的場所使用本產品。

不要在未指定的環境中安裝伺服器機架。
否則，其他系統可能會受到影響，並且機架脫落可能導致火災或者人身傷害。有關安裝環境和防震技術的詳細事項請參閱附帶的用戶手冊或與經銷商或維護服務公司聯繫。

⚠ CAUTION

設備內不要進水和異物。

設備內不要進入水、針、夾子等異物。有可能導致火災和觸電。一旦進入異物，請立即關閉電源，將電源插頭從插座上拔下來。不要自行拆卸，請與經銷商或維護服務公司聯繫。

使用電源及電源線注意事項

⚠ WARNING

不要用濕手拿電源插頭。

不要用濕手插拔電源插頭。有觸電的危險。

不要把地線連接到煤氣管道上。

請勿將地線連接到煤氣管道上。有導致煤氣爆炸的危險。

⚠ CAUTION

不要插入未指定的插座。

電源請使用指定電壓及電源的壁式插座。使用未指定的電源會造成火災和漏電。請避免使用延長線安裝設備。如果連接與本產品電源規格不相符的電線，會因過熱而導致火災。

不要在一個插座上插接多個電源線。

插座如果超過額定電流，會因過熱而導致火災的危險。

不要只插入一半。

請將電源插頭直插到底部。如果插入一半會因接觸不良而發熱，造成火災。另外，插入部如附著灰塵、水滴等，會因發熱導致火災。

不要使用未指定的電源線。

請使用下列規格的AC電源線。
此外，操作和連接電源線時請遵循以下注意事項。

- 不要拖拽電源線。
- 不要夾電源線。
- 不要彎折電源線。
- 不要使電源線靠近化學藥品。
- 不要扭曲電源線。
- 不要踩踏電源線。
- 不要在電源線上載入物品。
- 不要捆綁電源線。
- 不要對電源線進行改造、加工、修復。
- 不要用固定器等固定電源線。
- 不要使用損傷的電源線。（損傷的電源線要立即更換爲相同規格的電源線。更換事宜請與經銷商或維護服務公司聯繫）

安裝，移動，保管及連接注意事項

⚠ WARNING

在安裝或移動設備之前請拔下電源插頭。

在安裝或移動設備之前要切斷設備電源，並拔下電源插頭。只有在拔下電源線後，設備的電壓才會消除。

⚠ CAUTION

不要安裝或存放在未指定的場所。

不要將本設備放置在如下場所和本書未指定的場所，有導致火災的危險。
- 灰塵較多的場所
- 熱水器旁等濕氣較高的場所
- 陽光直射的場所
- 不平穩的場所

請小心不要夾住或碰傷手指。

將本機器安裝到機架上或者從機架上卸載的時候，請務必小心以免被滑軌劃傷手指。

不要在腐蝕性環境中使用或存放設備。

不要在有腐蝕性氣體（如二氧化硫、氫化硫、氮、氫、氨或臭氧等）的環境中使用或存放本產品。
不要將本產品安裝在灰塵較多或含有腐蝕性物質如氯化鈉或硫磺等的地方。
不要將本產品安裝在空氣中含有過量金屬碎末或傳導粒子的地方。
上述環境可能導致本產品腐蝕或短路，因而損壞產品，甚至引起火災。
對產品安裝或存放環境有任何疑問，請與經銷商或維修服務公司聯繫。

⚠ CAUTION

不要在插入插頭的狀態下進行信號線的連接。

在安裝/拆除可選配件或者拆裝信號線前先將電源線從插座拔下。即使電源已切斷，在電源線連接的狀態下，可能因接觸信號線和介面產生觸電、或因短路而引起火災。

不要使用未指定的信號線。

使用NEC指定的信號線，並在確認連接設備和介面後進行連接。使用未指定信號線或連接錯誤等會造成短路、導致火災。
信號線的操作和連接，須遵守以下注意事項：

- 不要使用任何損壞的信號線接頭。
- 不要踩踏信號線。
- 不要在信號線上載入物品。
- 信號線接鬆動時不要使用。
- 不要使用任何損壞的信號線。

整理及操作內部設備時的注意事項

⚠ WARNING

不要自行拆卸、修理或改造本伺服器。

除本書記載的情況外，不要進行拆卸、修理、改造。否則，不但可能導致設備不能進行正常運行，還有發生觸電和火災的危險。

不要看光碟機內部。

光碟機使用了雷射，請不要在電源打開的狀態下觀看內部或插入鏡子等。雷射射入眼睛有導致失明的危險（雷射肉眼看不見）。

不要擅自拆除鋰電池。

本產品內部安裝有鋰電池。請不要拆下電池。鋰電池靠近火或浸水均有可能發生爆炸。

由於電池使用期限而導致設備不能正常運行時，不要自行拆卸、更換、充電等，請與經銷商或維護服務公司聯繫。

清潔伺服器前請拔下電源插座。

整理或拆裝本設備內部的選購配置時，要切斷設備電源，並拔下電源插頭。即使已關閉電源，但連接著電源線，接觸到任何內部設備也有觸電的危險。

另外，請經常拔下電源插頭，用乾布擦拭灰塵和附著物。有灰塵或水滴等附著時會發熱，有導致火災的危險。

⚠ CAUTION

注意高溫

本產品關閉電源後，內置硬碟等內部設備仍然處於高溫狀態。請在充分冷卻之後進行拆裝。

確認安裝完畢。

電源線和信號線、配件板要確實安裝妥當。
安裝不牢有可能引起接觸不良，可能造成冒煙和著火。

⚠ CAUTION

請用保護蓋保護好未使用的介面。

請用保護蓋保護好未使用的電源線介面以防止短路或觸電。從內部設備上拔下電源插頭時，用保護蓋蓋好介面，否則有導致火災或觸電的危險。

操作注意事項

⚠ CAUTION

不要在設備運行時拔出設備。

不要拔出或拆除運行中的設備。有導致系統故障和損壞的危險。

不要在打雷時觸摸機器。

打雷時請拔下電源插頭。如來不及拔下電源插頭，請不要觸摸設備及線纜等，防止發生火災或觸電。

不要讓寵物靠近。

寵物的排泄物和毛髮進入設備可能導致火災和觸電。

設備上不要放置物品。

物品倒下可能引起傷亡，破壞硬體或導致火災。

不要將光碟機托盤拉出放置。

防止托盤中進入灰塵引起運轉錯誤。同時防止因碰撞等造成托盤損傷。

不要在設備附近使用行動電話或呼叫器。

在本產品附近時請關閉行動電話及呼叫器電源，防止因電波影響導致運轉錯誤。

機架式伺服器的注意事項

⚠ CAUTION

不要將設備安裝在未指定的機架上。

請將設備安裝在符合EIA標準的19英寸機架上。一定要將設備安裝在指定的機架上才能使用。否則設備可能無法正常使用，並有可能損壞機器零部件或導致人身傷害。關於合適的機架，請與您的經銷商聯繫。

請不要自行安裝本設備。

爲了避免人身傷害，請不要自行將本機器安裝到機架上。應該由受過專業訓練的維護人員來安裝。

<僅供維護人員閱讀>

安裝機器時不能將機器的所有重量由一個地方來承載。

爲了分散重量，應該加裝固定器或者同時安裝兩個或更多的機架，否則機架可能會傾倒導致人身傷害。

不要擅自組裝零部件。

將前門和托架安裝到機架上至少需要兩人共同完成，否則可能會因爲零部件跌落而導致損壞或者人身傷害。

不要從不牢固的機架中抽出設備。

在抽出設備之前請確認機架已經被穩固器或者通過抗震技術固定。

不要從機架抽出兩個或者兩個以上的設備。

同時抽出兩個或者兩個以上的設備可能導致機架傾倒。一次只能抽出一個設備。

不要裝配過多電線。

爲了避免火災和設備損壞，請務必確保不要超過線路的額定負載。有關電力設備的安裝和電線的更多資訊請聯繫電工或者當地的電力公司。

操作注意事項

爲使伺服器正常運行，請遵守以下注意事項。如無視這些注意事項進行操作可能導致伺服器的運行錯誤和故障。

- 請將本產品安放在能正常運行的場所。具體請參考分冊“用戶指南(安裝)”。
- 關閉電源和取出軟碟前，請確認設備的訪問燈是否已滅。
- 電源切斷後，請間隔 30 秒以上再開啓電源。
- 一旦開啓了伺服器，在螢幕顯示“NEC”圖示之前請不要關閉伺服器。
- 將附帶的電纜插在電壓爲 100V 的電源插座上。
- 插上電源線纜後，請等待 30 秒以後再打開設備電源。
- 移動本產品前請關閉電源，拔掉電源插頭。
- 本產品在使用不符合標準的 CD（複製保護式 CD）時，不保證 CD 驅動器能夠識別。
- 請定期清潔本產品（具體步驟請參考第六章）。定期清潔可使部分故障防患於未然。
- 爲防止因雷擊等原因造成的瞬間電壓的下降，建議使用不間斷電源設備（UPS）。

  該產品不支援通過不間斷電源序列埠(RS-232C)進行連接或者使用 PowerChutePlus 進行控制。
- 在下列情況下進行操作時，請檢查並調整系統時鐘：
  - 對本設備進行運輸後
  - 對本設備進行一段時間的儲存後
  - 當設備在超出正常環境條件下(溫度 10~35 °C, 濕度：20~80%)停止時。

  請每月檢查一次系統時鐘。如果系統對時間要求很高的精確度且安裝有時間伺服器（NTP）的話，建議您用時間伺服器來作業系統時鐘。如果即使進行了時鐘調整，但是隨著時間的流逝系統時鐘仍然顯著偏離正常水平的話，請向經銷商或維護服務公司諮詢。
- 如果要保存該設備，請將設備保存在以下環境溫度下(溫度: -10 to 55 °C，濕度: 20 to 80%，無結露)。
- 在將 NEC Express5800/ft 系列、內部可選設備或備份媒體設備(盒式磁帶)突然從溫度很低的地方轉移到溫暖的地方時，會發生結露現象。如果在這種狀態下使用的話，會引起故障或系統崩潰。爲了保證重要資料以及資產不至於受到損壞，請先等候充分時間後，再使用伺服器或其中的元件。

  參考：冬季避免結露問題的有效時間長度（當室內與室外溫度差超過 10 °C 時）

  磁片設備：約 2-3 小時

  磁帶媒體：約 1 天
- 請確認可選設備能安裝或連接在本設備上，否則即便安裝或連接上，不僅設備不能正常運行，還可能導致設備本身故障。
- 請確認可選設備與系統可以相容。如果使用了不可相容的可選設備，可能導致設備故障。
- 可選設備建議使用 NEC 原裝正品。其他公司生產的記憶體和硬碟等，雖然也可適用於

本產品，但是由此產生的破損或故障，即便在保修期間內也要收取維修費用。

設備及消耗品的廢棄

- 伺服器主機及硬碟驅動器、軟碟、光碟及可選配件板卡等的廢棄方式，請遵守各地方廢棄規定。請將設備附帶的電源線纜一併廢棄以免用於其他設備。

  詳情請諮詢各地方機構。

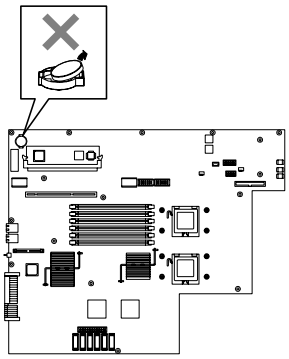
  重要：
  伺服器主板電池的廢棄（以及更換）請向經銷商或維護服務公司諮詢。
  爲防止設備的硬碟、備份光碟、軟碟及其他可寫媒體（CD-R/CD-RW 等）中存儲的資料，可能被第三者複製或恢復後，被挪作他用，請客戶負責切實刪除這些資料。
  在廢棄設備時應充分考慮保護個人隱私及企業的機密資訊。

- 伺服器的某些部件到使用期限必須更換（風扇、內置電池、內置光碟機、軟盤機、滑鼠等）。爲使設備穩定運行，建議定期更換這些部件。使用期限及更換相關事宜請與經銷商或維護服務公司聯繫。

⚠ WARNING

不要擅自拆開鋰電池。

本設備內裝有鋰電池。請不要拆下電池，防止鋰電池近火、浸水發生爆炸。
用不同型號的電池更換有可能引起爆炸。請根據本書說明來處理舊電池。
電池用完，設備無法正常工作時，不要自行拆卸、更換、充電等，請與維護服務公司聯繫。



懷疑系統出現故障時

當伺服器不能正常運行時，請在送修之前，先對照下述內容，找出問題所在並進行相應處理：

1. 請檢查電源線和連接線纜連接是否正確。
2. 請參照第七章的“錯誤消息”檢查是否出現相應症狀。如果有，請按提示採取相應的措施。
3. 請確認運行 NEC Express5800/ft 系列伺服器所需的軟體程式是否都已經正確安裝。
4. 請使用市場上銷售的抗病毒程式對伺服器進行檢查。

如果進行了相應的處理之後仍然不能正常運行，請停止使用本伺服器並與經銷商或維護服務公司聯繫。在這種情況下請檢查伺服器的指示燈顯示並記錄顯示器顯示的資訊，這些提示有助於機器的維護。

部件維修

部件保修期在各個國家不同，請諮詢NEC銷售代表。
如果沒有指定時期，部件維修將在停產後被保留5年。

網路服務

有關NEC Express5800/ft系列以及相關修正模組的資訊，可以參考NEC Express5800 亞太地區網站：
http://www.nec.co.jp/express/index.html

保護健康的建議

長時間連續使用電腦，有時身體各部位會出現異常反應。使用電腦時，請注意以下幾點，不要給身體造成負擔。

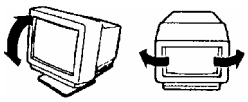
保持良好的坐姿

使用電腦時的基本姿勢是伸直腰背坐在椅子上，將鍵盤放置在與兩手和地板基本平行的高度，電腦螢幕比視線水平高度略低爲宜。如果採用該基本姿勢，身體的任何部位都不用施加多餘的力，這是最能夠減小肌肉緊張的姿勢。

不好的作業姿勢：如果彎腰曲背，臉離顯示器很近，這種狀態下工作會造成疲勞和視力下降。

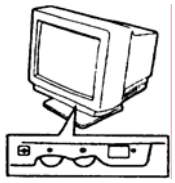
調整顯示器的角度

顯示器角度大多可上下、左右調節。爲防止耀眼強光射入畫面、保持顯示內容清晰，調節顯示器的角度必常重要。如果不調節角度，在不易觀看的角度下工作，則無法保持良好坐姿，很容易疲勞。因此，使用前，爲便於觀看，請調整好顯示器的角度。



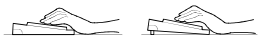
調整畫面亮度和對比度

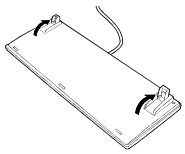
顯示器具有調節亮度、對比度的功能。根據年齡和個人的差異、周圍的亮度不同，畫面的最佳亮度、對比度也有所不同，因此請根據具體情況將畫面調節到易於觀看的狀態。畫面過亮、過暗都會對眼睛產生不良影響。



調整鍵盤角度

有些鍵盤可以調節角度。調節鍵盤角度以便更易於輸入，對於減輕肩、腕和手指的負擔非常有效。



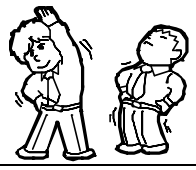


清潔機器

保持機器的整潔不論從美觀的角度，還是從功能和安全角度來看都是非常重要的。特別是顯示器的畫面上如果有灰塵等髒物，顯示內容就會看不清楚，所以定期清潔是很必要的。

疲勞時請注意放鬆

建議您疲勞時停下雙手休息一下，做做輕體操，轉換一下心情。



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

The NEC Express5800/ft series is the server that has hardware for two servers.

High performance

- Quad-Core Intel® Xeon™ Processor (2.66GHz)
- High-speed Ethernet interface (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access (SAS (Serial Attached SCSI))

Expandability

- Three slots (low profile (133MHz) x 1, full size/full height (100MHz) x 2) of PCI-X bus
- Large capacity memory (max: 12 GB)
- USB interface

High-reliability

- Memory monitoring feature (1-bit error correction/ 2-bit error detection)
- Bus parity error detection
- Error notification
- BIOS password feature

Management Utilities

- NEC ESMPRO

Ready-to-use

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

Fault-tolerant Feature

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

Various Features

- Graphic accelerator " ES1000" supported
- DVD Combo

Self-diagnosis

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

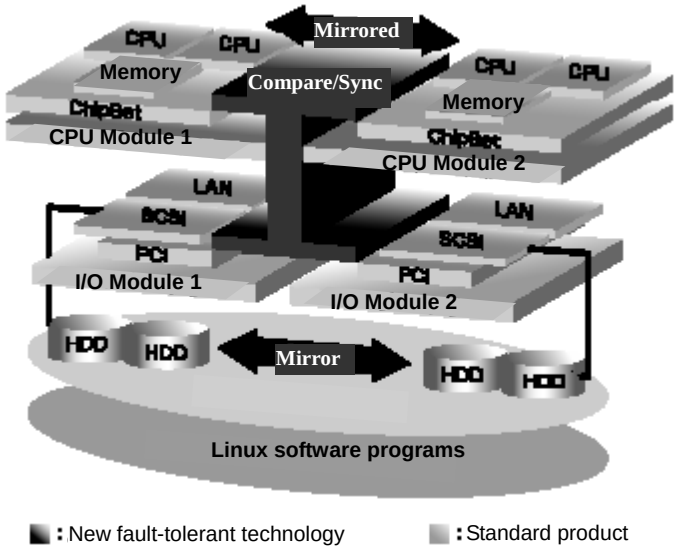
Maintainability

- Off-line Maintenance Utility

Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- SETUP (BIOS setup utility)

Hardware modules work while synchronizing and comparing with each other. Even if one hardware module stops, the server can continue its operation as the service with the other hardware module.



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 server that achieves continuous computing operations, data storage mirror, and continuous network connection. It allows you to run Linux-based applications.

NEC Express5800/ft series achieves continuous computing operations for the Linux 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 user of these events. If you use an alarm notification tool, you can configure NEC Express5800/ft series to notify you when certain events occur.

NEC ESMPRO is installed on the system as a server management solution. NEC 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 Linux-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.

- Automatic detection and notification of faults

  NEC Express5800/ft series detects and sorts out all events such as general status changes and faults, and records these events to syslog.

- 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 NEC ESMPRO as a server management tool. This tool uses a GUI that enables monitoring and setting of NEC Express5800/ft series. NEC ESMPRO can be used both locally and remotely on work station PCs or server PCs.

- Syslog function

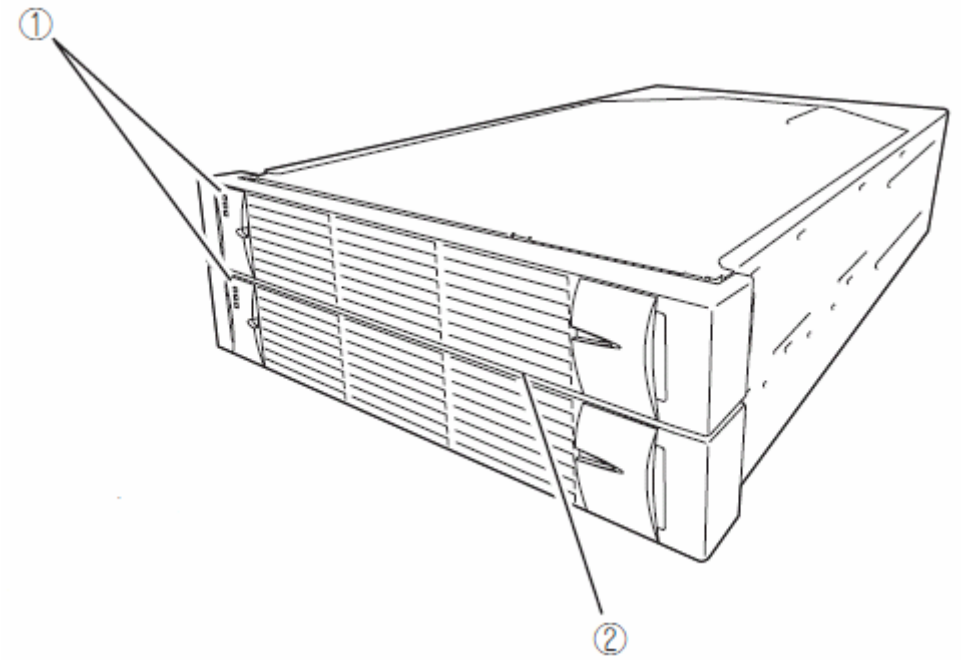
  When trouble or other events are detected on NEC Express5800/ft series, they will be recorded in syslog.

- In-service repairing

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

NAMES AND FUNCTIONS OF COMPONENTS

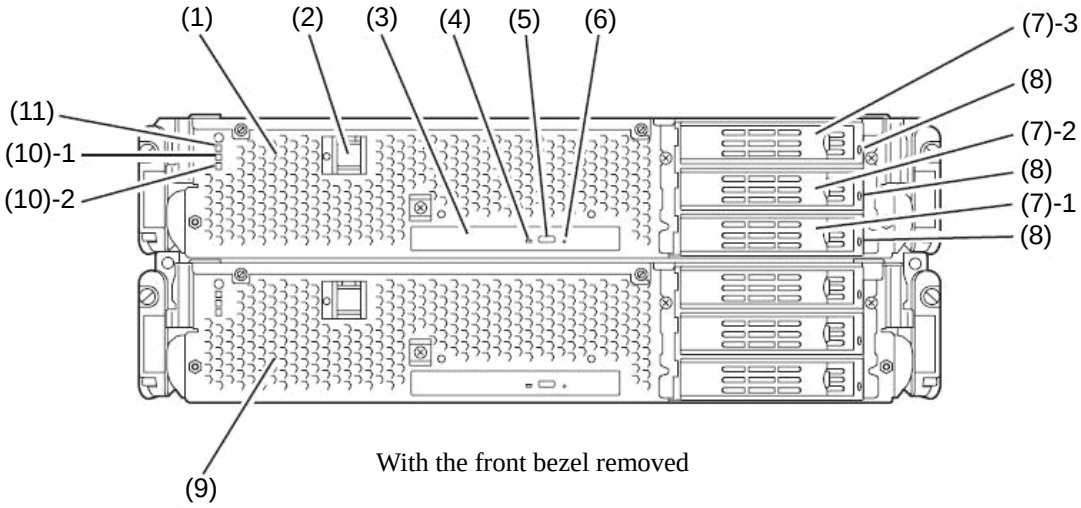
Names and functions of components are shown below:



(1) LEDs
For more information, see the description on the front view (page 2-7).

(2) Front bezel
The cover to protect devices in the front.

Front View



With the front bezel removed

(1) CPU/IO module 0
This is a module with a set of CPU (processor), memory (DIMM), PCI board, cooling fan unit, and hard disk drive.

(2) POWER switch
This switch is used to power on/off the server. The in-built LED illuminates for the primary CPU/IO module, showing that it is primary. (The secondary POWER LED (off) cannot be used. If the switch is pressed once, the server is powered on. If the switch is pressed again, the server is powered off. If the switch is pressed for more than 4 seconds, the server is forcibly shut down.

(3) DVD-ROM drive
This device is used to read data from an optical disk.

(4) DISK ACCESS LED
This LED illuminates when the set optical disks are accessed.

(5) Tray eject button
This button ejects the tray.

(6) Forcible eject hole
This is the hole for forcibly eject by inserting a metal pin.

(7) Hard disk drive bay
This is the bay to mount the hard disk drive. The number after the parenthesized number indicates a slot number.

(8) CPU/IO module DISK ACCESS LED (green/amber)
This LED illuminates in green when the internal hard disk drives are accessed. If any internal hard disk drive is failing, the LED illuminates in amber.

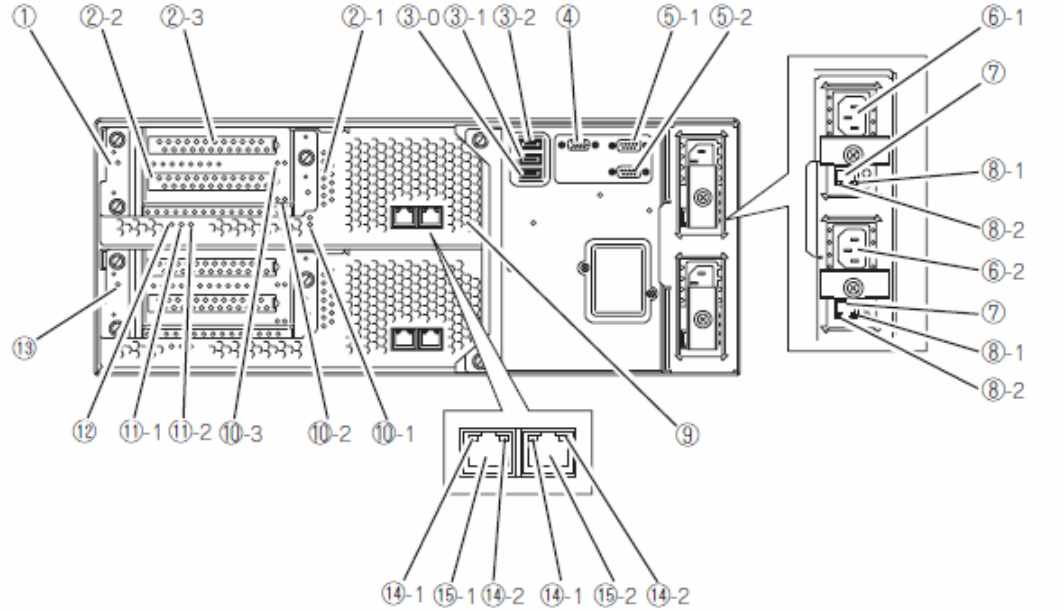
(9) CPU/IO module 1
This is a module with a set of CPU (processor), memory (DIMM), PCI board, cooling fan unit, and hard disk drive.

(10)-1 CPU/IO module status LED 1 (amber)
This LED indicates the status of the CPU/IO module. When the module is successfully running, the LED is powered off. If a module has a problem, the LED illuminates in amber.

(10)-2 CPU/IO module status LED 2 (green)
This LED indicates the status of the CPU/IO module. When both of the CPU/IO modules are running, the LED illuminates in green. When one of the modules is running, the LED blinks in green or is powered off.

(11) CPU/IO module POWER LED (green)
When the power is turned on, the LED illuminates in green.

Rear View


①
②-2
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⑩-2
⑩-1
⑨
⑭-1
⑮-1
⑭-2
⑭-1
⑮-2
⑭-2

(1) CPU/IO module 0
This is a module with a set of CPU (processor), memory (DIMM), PCI board, and cooling fan unit.

(2)-1, 2, 3 PCI-X slots 1, 2, 3
(2)-1 is the slot on which the low profile type PCI board is mounted (64 bit 133MHz 3.3V PCI-X).
(2)-2, 3 are the slots on which the FullSize and FullHeight types PCI boards are mounted (64bit 100MHz 3.3V PCI-X).

(3)-0, 1, 2 USB connector 0, 1, 2
This connector is connected with the system that supports the USB2.0 interface.

(4) Monitor connector
This connector is used to connect a display device.

(5)-1, 2 serial port 1, 2 connector
This connector is connected to the system with the serial interface. It cannot be used for this server.

(6)-1 AC inlet A connector
A power cord is connected to this socket (for the CPU/IO module 0). If you want make the CPU/IO module 0 primary, connect a power cord to this inlet first.

(6)-2 AC inlet B connector
A power cord is connected to this socket (for the CPU/IO module 1). If you want to make the CPU/IO module 1 primary, connect a power cord to this inlet first.

(7) LAN connector
Do not use this in this server.

(8)-1 LINK/ACT LED
It is not supported in this server.

(8)-2 Speed LED
It is not supported in this server.

(9) DUMP (NMI) switch
This is the switch to perform a memory dump.

TIPS:

Press the DUMP switch on the primary CPU/IO module, whose POWER LED has been blinking, for four to eight seconds. Use something sharp, such as curved clips to press the DUMP switch on CPU/IO module 1.

(10)-1, 2 PCI slot status LED (Slot 1, 2, 3)
This is the LED to display the status of the PCI slot. The status is shown by the display combination of the 2 LEDs.

(11)-1 CPU/IO module status LED 1 (amber)

This LED indicates the status of the CPU/IO module. When the module is successfully running, the LED is powered off. If a module has a problem, the LED illuminates in amber.

(11)-2 CPU/IO module status LED 2 (green)

This LED indicates the status of the CPU/IO module. When both modules are operating, the LED illuminates in green. When one module is operating, the LED blinks in green or is powered off.

(12) CPU/IO module POWER LED (green)

This Led illuminates in green when the system is powered on.

(13) CPU/IO module 1

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

(14)-1 LINK/ACT LED

This is the LED to indicates the access status of the LAN connector.

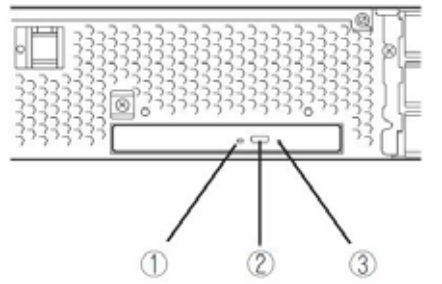
(14)-2 Speed LED

The LED indicates the transfer speed of the LAN connector.

(15)-1, 2 LAN connector 1, 2

This is the connector to support 1000BASE-T/100BASE-TX/10BASE-T. This is connected to the network system on LAN.

DVD-ROM drive



(1) Status LED

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

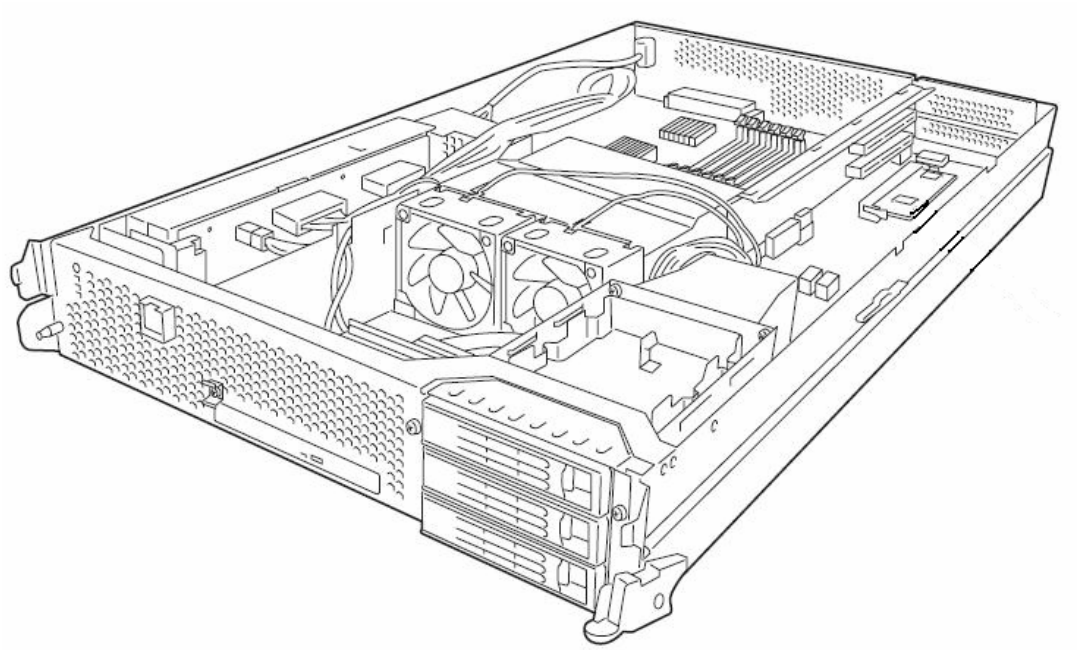
(2) Tray eject button

A button for ejecting the tray.

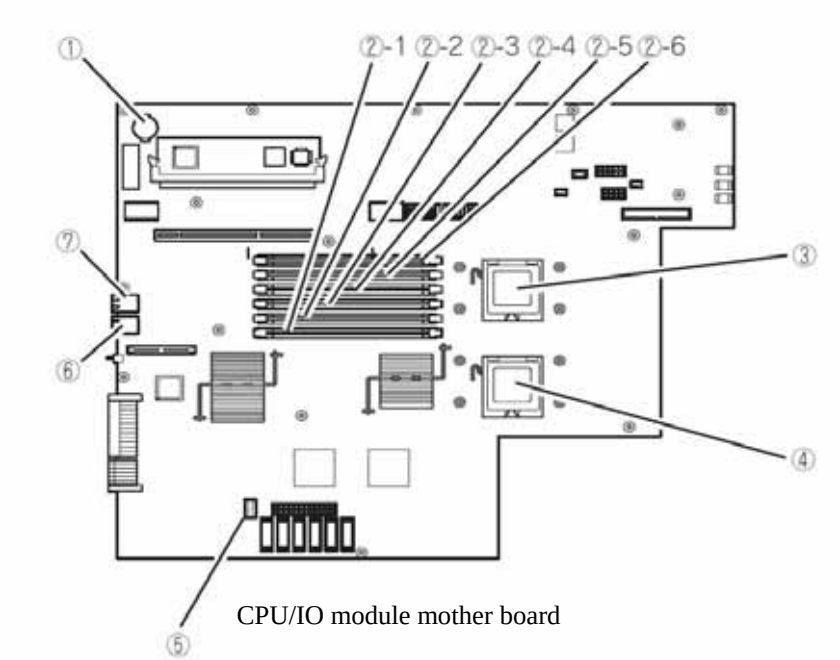
(3) Manual release hole

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

CPU/IO Module



Mother Board



CPU/IO module mother board

(1) Lithium battery

(2) DIMM slot ((2)-1 from the bottom)

(2)-1 DIMM CH0 Slot 0
(2)-2 DIMM CH0 Slot 1
(2)-3 DIMM CH0 Slot 2
(2)-4 DIMM CH1 Slot 0
(2)-5 DIMM CH1 Slot 1
(2)-6 DIMM CH1 Slot 2

(3) Processor 0 socket (CPU0)

(4) Processor 1 socket (CPU1)

(5) Jumper switch for clearing CMOS/password

(6) LAN 2 connector

(7) LAN 1 connector

LEDs

POWER LED

The POWER switch of the CPU/IO module has an in-built LED. If the AC power is supplied, the LED of the primary POWER switch illuminates (only the primary POWER switch functions). Also, the CPU/IO module has the POWER LED to show the status of the module power status.

CPU/IO Module POWER LED

LED indication	Description	Action
Not on	Power supply is off.	Check that the status LED 1 on both CPU/IO modules is powered off, and then press the POWER LED to power on the system.
On	Power supply is on.	

CPU/IO Module Status LED 1, 2

There are two kinds of LEDs that indicate the module status on the front and back sides of the CPU/IO module. The display combination of the two LEDs indicates the CPU/IO module status.

Status LED1	Status LED2	Description	Action
Not on	Not on	Power supply is off.	
	Blinking in green	When the system is starting, the initialization process is performed.	Wait for a while; the LED will illuminate in green.
		If the OS is running, duplex configuration is not made for one of the components in the CPU/IO modules.	Check that the cable is firmly connected. If the LED does not illuminate in green after a while, record the status LED status, and contact a maintenance service company.
	Green	The device is duplexed and running normally.	
Amber	Not on	After the AC power is supplied, the device running in the standby power mode is being initialized.	Wait for a while. The status LED 1 will be powered off, and the POWER switch will be enabled.
		When the system is starting, the initialization process is performed.	Wait for a while; the status LED 1 is powered off.
		When the OS is running, the CPU/IO module has a problem.	Check that the cable is firmly connected. If the LED does not illuminate in green after a while, record the status LED status, and contact a maintenance service company.

PCI Slot status LED 1, 2

There are two kinds of LEDs that indicate the PCI slot status on the back of the CPU/IO module. The PCI slot status is indicated by the display combination of the two LEDs.

Status LED1	Status LED2	Description	Action
Not on	Not on	Power supply is off.	
		When the system is starting, the initialization process is performed.	Wait for a while; the LED illuminates in white.
	Blinking in white	If the OS is running, it is in the Simplex mode, and the PCI slot of the other CPU/IO module is degenerated.	Check that the cable is firmly connected. If the LED does not illuminate in white after a while, record the status LED status, and contact a maintenance service company.
	White	If the PCI slot status LED 2 of the other CPU/IO module is on, the device is successfully running in the Duplex mode.	
		If the PCI slot status LED 2 of the other CPU/IO module is lit, the cable may be disconnected, or the option PCI board of the slot has a problem.	Check that the cable is connected securely. If the PCI slot status LED 2 of the other CPU/IO module does not illuminate white, record the status of the status LED, and call your maintenance service company.
Amber	Not on	When the system is starting, the initialization process is performed.	Wait for a while; the status LED 1 is powered off.
		When the OS is running; 1) The optional PCI board of the slot has a problem. 2) The CPU/IO module has a problem.	Check that the cable is firmly connected. If the LED does not illuminate in white after a while, record the status LED status, and contact a maintenance service company.

Hard Disk Drive LED

Hard Disk LED	Description	Action
Not on	The disk is in the idle state.	
Green	Accessing the disk	
Amber	Disk failure	Contact a maintenance service company.
Blinking in amber (Illuminate in green when accessing the disk)	The mirror of the disk is disconnected.	Perform mirroring.
Blinking in green and amber in turn	The hard disk drive configuration (rebuild) is on going.	Wait for a while; the LED blinks in green after rebuild finishes. If the rebuild fails, the LED illuminates in amber.

Access LED on the DVD-ROM drive

This LED illuminates when the installed optical disk is being accessed.

LAN Connector LED

- LINK/ACT LED

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

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

- Speed LED

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

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

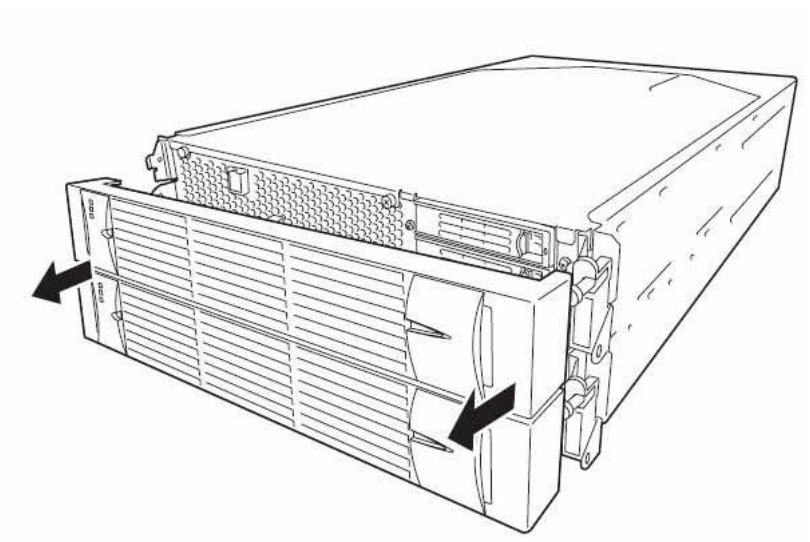
BASIC OPERATION

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

Installing/removing the front bezel

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

(1) Lightly hold the front bezel and pull it out.



When installing the front bezel, install it while holding both sides of the front bezel.

Power ON

To power on NEC Express5800/ft series, press the POWER switch (the one whose in-built LED is illuminating).

Follow the steps below to turn on the power.

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

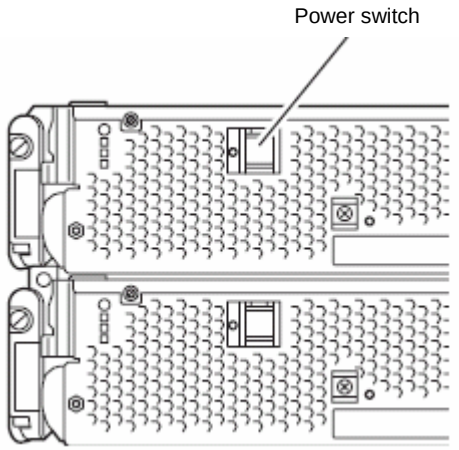
   CHECK:

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

2. Remove the front bezel.

3. Press the power switch located on the front of the front panel.

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



IMPORTANT:

- Do not turn off the power before you see the “NEC” logo and a character below the logo.

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 "POST Check" described later in this chapter. Upon the completion of POST, the OS will start.

CHECK:

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

Power OFF

Follow the steps below to turn off the power. If 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 Linux.

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

2. Power off all peripheral devices.

POST Check

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

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

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 is installed.

You do not 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 shows an error message.

Flow of POST

This section walks you through how POST is performed.

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

   POST will be performed on this selected CPU/IO 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.

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

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

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

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

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

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

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

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

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

   If you press **Ctrl** + **A**, the SAS BIOS setup utility will start. However, you usually do not need to use the setup utility. For setting and parameter functions, see "SAS BIOS" (page 4-33).

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

6. The screen shows the ID numbers of the connected disk drive.

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

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

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

IMPORTANT:

Do not set a password before installing the OS.

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

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/IO module and run POST or OS startup.

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

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

For details of error messages, see Chapter 7 “Troubleshooting.”

POST Error Messages

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

- Displays an error message on the display unit.

These notification methods are described in “POST Error Messages” (Page 7-4).

IMPORTANT:

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

CPU/IO Module Status

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

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

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

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

TIPS:

As for DVD-ROM drive, the DVD-ROM drive of both CPU/IO modules 0 and 1 can be accessed. If one CPU/IO module is disconnected because of the failure, only the DVD-ROM of the other module can be accessed

Floppy Disk Drive (Option)

If you want to use a floppy disk drive with this server, connect N8460-002USB FDD UNIT, which are available optionally to a USB connector.
This server supports 3.5-inch 2HD (1.44 MB) and 2DD (720KB) floppy disks.

IMPORTANT:

When using a USB floppy disk drive, the access to the floppy disk is delayed on rare occasions if the display graphic load is high because a moving picture is being played. In such a case, retry the operation with the floppy disk inside the floppy disk drive.

Insert/Remove Floppy Disk

Before inserting a floppy disk into the drive, make sure that NEC Express5800/ft series is on (the POWER LED illuminates).

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

CHECK:

- You cannot use 1.2 MB-formatted disks.
- If you insert an unformatted disk, you will see a message that the disk cannot be read or that needs formatting. To format a floppy disk, see your OS manual.
- If you power on or restart 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.

CHECK:

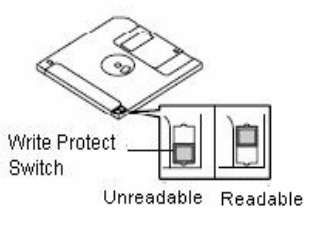
- Before removing a floppy disk, make sure that the floppy disk access LED is off. If you eject a floppy disk while the LED is on, the stored data could be damaged.
- When using a USB floppy disk drive, the access to the floppy disk is delayed on rare occasions if the display graphic load is high because a moving picture is being played. In such a case, retry the operation with the floppy disk inside the floppy disk drive.

Use of Floppy Disk

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

- Push the floppy disk gently into place.
- Attach the label on a proper position.
- Do not use a pencil or ballpoint pen to write on the floppy disk.

- Do not open the protective shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a place that is subject to direct sunlight or high temperatures (e.g., near a heater).
- Keep away from cigarette smoke.
- Do not leave the floppy disk near water or chemicals.
- Keep away from magnetic objects.
- Do not clip disks. Be careful not to drop.
- Store floppy disks in a protective case where they are kept away from magnetic waves or dust.
- To prevent data from being erased accidentally, the floppy disk has a write-protect notch. When the disk is write-protected, you can read data, but you cannot write the data or format the disk. It is recommendable to write-protect floppy disks that contain important data except when you write data to the floppy disk. To write-protect a 3.5-inch floppy disk, slide the write-protect notch located on its back.



- The floppy disk is a very delicate storage medium. Dust or changes in temperature could cause data to be lost. Data loss could also be caused by faulty operation and computer trouble. To avoid such possible data loss, it is recommendable to back up important data regularly. (Be sure to make back-up copies of the floppy disks that are included with NEC Express5800/ft series.)

DVD-ROM drive

NEC Express5800/ft series has a DVD-ROM drive on the front panel. It is a device used to read data from an optical disk (compact disc read-only memory). Compared to a floppy disk, an optical disk allows for larger volume and fast data readout.

⚠ CAUTION

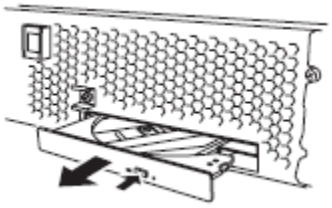
Observe the following instructions to use the server safely. There are risks of a burn, injury, or damage to physical assets. For details, see "PRECAUTIONS FOR SAFETY" in Chapter 1.

- Do not leave the DVD-ROM drive tray ejected.

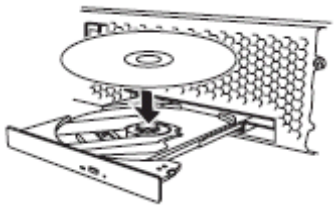
Insert/Remove an optical disk

Follow the steps below to set an optical disk.

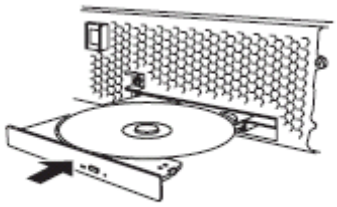
1. Before you insert an optical disk, make sure that the server is powered on. When the server is powered on, the LED illuminates in green.
2. Press the tray-eject button located in the front of the DVD-ROM drive. The tray is then ejected.



3. Hold the optical disk with its signaling side facing the tray.
4. As shown in the figure on the right, place the optical disk on the tray and press lightly on the center to lock.



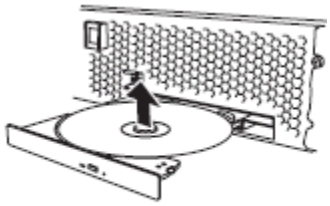
5. Push the front side of the tray gently to the drive-closed position.



IMPORTANT:

If you hear noise while running the DVD-ROM drive, reset the optical disk.

To remove the optical disk, press the tray-eject button as you did in setting the optical disk.



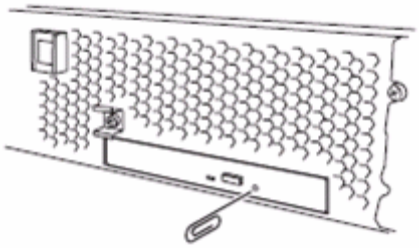
When the access LED illuminates in orange, it indicates the optical disk is being accessed. Make sure the access LED is not illuminating in orange before you press the tray-eject button.

Press the locking part in the center of the tray and pick the optical disk gently. When you have removed the optical disk, push the tray to the drive-closed position.

When you cannot eject an optical disk

When you cannot eject the optical disk from the server even by pressing the eject button, follow the steps below to eject it:

1. Press the POWER switch to power off this server (i.e. the POWER LED is off).
2. Use a metal pin of about 1.2 mm in diameter and 100 mm long (alternatively, you can use a fairly large paper clip after straightening). Insert it gently into the manual release hole located at the low front side of the server until the tray is ejected.



IMPORTANT:

- Do not use a toothpick, plastic pin, or other breakable objects.
- If you cannot eject the optical disk by following the steps above, contact your sales agent.

3. Hold the tray and pull it out.
4. Take out the optical disk.
5. Push the tray back.

Handling optical disks

Observe the following when you use an optical disk 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 optical disk.
- Do not bend or place anything on the optical disk.
- Do not attach labels on the optical disk.
- Do not touch the signal side (blank side).
- Place the optical disk gently on the tray with the printed side up.
- Do not scratch, or use a pencil or ballpoint pen to write on the optical disk.
- Keep away from cigarette smoke.
- Do not leave the optical disk in a place that is subject to direct sunlight or high temperatures (e.g., due to a heater).
- If the optical disk gets dirty with dust or fingerprints, wipe it gently from its center to edge with a dry soft cloth.
- When you clean the optical disk, use the cleaner expressly meant for it. Do not use a record cleaner (spray), benzine, or thinner.
- Store the optical disk in a protective case when not in use.

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Chapter 3

Linux Setup and Operation

This chapter describes setup procedures to make NEC Express5800/ft series ready for use. CPU/IO module has a processor function part and IO function part. In utilities in this chapter, the processor function part is referred to as CPU module and IO function part PCI module.

DISK OPERATIONS

NEC Express5800/ft series duplicates disks to secure data integrity by Software-RAID. This section describes how to replace a disk.

IMPORTANT:

It is recommended to create only a system partition on the disks with OS.

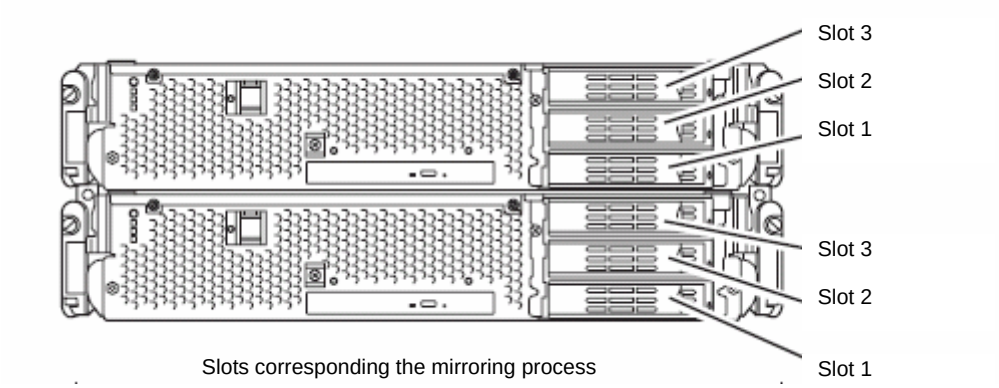
When you create a partition other than a system partition on the disk with the OS, note the following:

If you reinstall the OS, the entire disk will be cleared. If there is any data partition other than the system partition, the data must be backed up before reinstalling the OS.

Operable disk configuration

RAID must be configured for all the internal disks in NEC Express5800/ft series. For NEC Express5800/ft series, RAID 1 is configured by software.

RAID is configured by hard disk drives pairing the slot 1 of CPU/IO module 0 and the slot 1 of CPU/IO module 1, the slot 2 of CPU/IO module 0 and the slot 2 of CPU/IO module 1, and the slot 3 of CPU/IO module 0 and the slot 3 of CPU/IO module 1.



Slots corresponding the mirroring process

Corresponding slots
PCI module 0 Slot 1 ⇔ PCI module 1 Slot 1
PCI module 0 Slot 2 ⇔ PCI module 1 Slot 2
PCI module 0 Slot 3 ⇔ PCI module 1 Slot 3

Note: In the above table, the PCI module names correspond to the following modules:
PCI module (for CPU/IO module 0): PCI module 0
PCI module (for CPU/IO module 1): PCI module 1

IMPORTANT:

When a disk is added or RAID is reconfigured, the status of each disk becomes RESYNC or RECOVERY. When a disk is in this status, do not insert or remove the disk, power off, or restart the system until the status is switched from RESYNC or RECOVERY. Check to see the status of RAID using the ftdiskadm command, which is described later in this document. For further information, see the *User's Guide (Setup)*.

Two hard disk drives configuring RAID 1 must have same amount of disk capacity. Also they must be configured in same logic structure.

The operation such as mounting for a partition of an internal disk is done for the RAID device (md) that is configured by Software -RAID but not for partition.
For the ftdiskadm command described later in this document, slot numbers of internal disks are allocated as follows;

Disk slot number for H/W	Disk slot number for ftdiskadm
PCI module 0 Slot 1	Slot 1
PCI module 0 Slot 2	Slot 2
PCI module 0 Slot 3	Slot 3
PCI module 1 Slot 1	Slot 4
PCI module 1 Slot 2	Slot 5
PCI module 1 Slot 3	Slot 6

Boot disks are installed in the slot 1 of PCI module 0 and the slot 1 of PCI module 1 as factory default.

Replacing a hard disk drive

To replace a failing hard disk, follow the steps below. Replace a hard disk when the CPU/IO module 0 and 1 are powered on.

Determining a failing disk

This section provides information on how to determine a failing hard disk drive.

IMPORTANT:

This must be operated by root user.

1. In the ftdiskadm command, select [RAID] and [Status(Raid1)], information on the device (md) for RAID is displayed.
2. In the Member column, if [F] is displayed, it means the partition of corresponding disk is having a failure. The number enclosed with brackets is a slot number telling you which internal disk is having a problem.

The following is an example when a failure occurred on the internal disk stored in the slot 4 (PCI module 1 – Slot 1).

```
#ftdiskadm
Command action
  1 => SCSI
  2 => RAID
  3 Environment
  9 QUIT

Command:2

Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:1

[Status(Raid1)]

Name  Partition      (Label)       Status          Member
================================================================================
md0   swap           ( - )         DUPLEX          (1)sda2     (4)sdd2
md1   /boot          ( - )         DUPLEX          (1)sda1     (4)sdd1
md2   /              ( - )         SIMPLEX         (1)sda3   F(4)sdd3
```

Restoring the redundant configuration manually

This section provides information on how to replace a failing internal disk and restore duplication.

IMPORTANT:

This must be operated by root user.

The status of two disks is displayed as RESYNC or RECOVERY while RAID is being restored. (The time required for restoring varies depending on disk capacity.) Do not stop or restart the system until the restoration is completed.

1. In the command prompt of ftdiskadm, select [RAID**]** and [Remove Half Disk**]**, isolate the disk specified by slot number from RAID and the system.
2. Remove the disk from the system, and then, insert a new disk.
3. Wait approximately 1 minute until the system automatically performs resynchronization.
4. If the system does not perform resynchronization automatically in step 3, recover RAID manually by selecting [RAID] and [Repair Disk] in ftdiskadm.

The following is an example of command prompt for the procedure from isolating the internal disk stored in the slot 4 (PCI module 1 - Slot 1) through restoring redundancy.

```
#ftdiskadm
Command action
  1 => SCSI
  2 => RAID
  3 Environment
  9 QUIT

Command:2

Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:6     <<< Separate the disk specified with the slot number from RAID and the system.
 >>>

[Remove Half Disk]
* Which scsi SLOT? [1-6] 4

mdadm: hot removed /dev/sdd5
mdadm: hot removed /dev/sdd3
mdadm: hot removed /dev/sdd2
mdadm: hot removed /dev/sdd1
scsi remove-single-device 13 0 128 0

Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:1     <<< Check that the specified disk has been separated from RAID. >>>

[Status(Raid1)]

Name  Partition      (Label)        Status         Member
=====================================================================
md0   /boot          ( - )          SIMPLEX        (1)sda1
md1   swap           ( - )          SIMPLEX        (1)sda2
md2   /              ( - )          SIMPLEX        (1)sda3
md3   /var/crash     ( - )          SIMPLEX        (1)sda5

Command action
```

```
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:2      <<< Check that the specified disk has been separated from the system. >>>

[Scsi Disk Status(System Disks)]

Slot  Name [use]    Information (Vendor/Model/Serial)          path
=================================================================
1     sda [3]       AAA/BBB/#CCC                              h5c0t128l0
2     -
3     -
4     -
5     -
6     -
```

<<< Replace the disk after checking that the disk is not configured for the target slot. After the new disk is set, wait approximately 1 minute for the system to resynchronize automatically. If the system does not perform resynchronization automatically, execute the following to recover the disk manually. >>>

```
Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:1      <<< Check that the disk has been added to the system. >>>

[Scsi Disk Status(System Disks)]

Slot  Name [use]   Information (Vendor/Model/Serial)       path
=================================================================
1     sda [3]       AAA/BBB/#CCC                              h5c0t128l0
2     -
3     -
4     sdd [3]       AAA/BBB/#DDD                              h6c0t128l0
5     -
6     -

Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
```

```
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:3      <<< Recover the disk manually when the system does not resynchronize
 automatically. >>>

[Repair Disk]
* Which scsi SLOT? [1-6] 4

Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:1      <<< Check that duplication has started. >>>

[Status(Raid1)]

Name  Partition      (Label)      Status             Member
=================================================================
md0   /boot          ( - )          RECOVERY(62.0%) (1)sda1   R(4)sdd1
md1   swap           ( - )         RESYNC            (1)sda2   R(4)sdd2
md2   /              ( - )         RESYNC            (1)sda3   R(4)sdd3
md3   /var/crash     ( - )         RESYNC            (1)sda5   R(4)sdd5


<<< Recover each RAID device (md). After a while, check the status again with the following
commands. “RESYNC” stands for resynchronization or recovery stand-by, and a disk partition with
the prefix “R” in its member name stands for recovery stand-by or in recovery.
>>>

Command action
  1 Status(Raid1)
  2 Status(System Disks)
  3 Repair Disk
  4 Auto Repair Disks
  5 New Disks
  6 Remove Half Disk
  7 Remove Full Disks
  9 <= RETURN

Command:1

[Status(Raid1)]

Name  Partition      (Label)        Status         Member
=================================================================
md0   /boot          ( - )          DUPLEX         (1)sda1    (4)sdd1
md1   swap           ( - )          DUPLEX         (1)sda2    (4)sdd2
md2   /              ( - )          DUPLEX         (1)sda3    (4)sdd3
```

```
md3   /var/crash     ( - )          DUPLEX          (1)sda5    (4)sdd5
```

<<< When the status of each RAID device (Name) is “DUPLEX”, replacing the disk is completed.
>>>

DUAL LAN CONFIGURATION

NEC Express5800/ft series uses Bonding for duplex of 1000 BASE LAN cards controlled by the e1000 driver and builds them as bond*(*=0,1,2…) device.

Functional overview

For duplicating a LAN, active backup for bonding is used. Active backup is a coupled-interface using multiple LAN controllers. When only active LAN controller fails, this function allows for continued operation by immediately switching to a backup controller.

Operable network configuration

For NEC Express5800/ft series, network interface names are based on the naming convention as described in the table below. Network duplication is achieved by pairing network interfaces of PCI slots in CPU/IO module 0 and network interfaces in the same PCI slots in CPU/IO module 1.

PCI slot and network interface name

PCI slot	Port	CPU/IO module 0	CPU/IO module 1
On Board	#1	eth100200 (1)	eth110200 (1)
	#2	eth100201 (2)	eth110201 (2)
PCI-X slot 1	#1	eth100600 (3)	eth110600 (3)
	(#2)	eth100601 (4)	eth110601 (4)
PCI-X slot 2	#1	eth100808 (7)	eth110808 (7)
	(#2)	eth100809 (8)	eth110809 (8)
PCI-X slot 3	#1	eth100700 (5)	eth110700 (5)
	(#2)	eth100701 (6)	eth110701 (6)

*Port enclosed with brackets can be used when NIC is mounted on two ports.

*The number enclosed with brackets in the CPU/IO module column is slot numbers allocated by vndctl described later. The numbers from 1 to 8 are allocated to the interface names in alphabetical order.

Configuring duplication

The following shows information on how to configure duplication by using the settings shown below as an example.

<Configuration information>

Slot number: 3
SLAVE0 interface name: eth100600
SLAVE1 interface name: eth110600
IP address: 192.168.0.1
Subnet mask: 255.255.255.0
Default gateway: 192.168.0.1

IMPORTANT:

This must be operated by root user.

1. Execute the following command. Configure network interfaces eth100600 and eth110600 that are corresponding to slot 3 as a coupled interfaces.

```
# vndctl add 3
```

2. Execute the command below to configure the network settings (the parts with * are to be specified by a user) on the combined interface that has been constructed. When you enter default gateway, you can omit the process by pressing ENTER without specifying anything.

```
# vndctl config 3
*Boot Protocol? [none/dhcp/bootp] none
*IP address? 192.168.0.1
*Netmask? 255.255.255.0
*Default gateway (IP)? 192.168.0.1

*Are you sure to set it? [y/n] y

DEVICE=bond2
ONBOOT=yes
BOOTPROTO=none
IPADDR=192.168.0.1
NETMASK=255.255.255.0
GATEWAY=192.168.0.1
```

3. Execute the following command to activate the configured coupled-interfaces.

```
# vndctl up 3
```

4. Execute the following command to check the status of the configured coupled-interfaces.

```
# vndctl status

--Virtual Network Status--
BondingDevice Slot Status  InetAddress  RXErrors TXErrors Collisions
bond0         1    ONLINE  -            0         0         0
bond1         2    ONLINE  -            0         0         0
bond2         3    ONLINE  192.168.0.1  0         0         0
bond3              OFFLINE -            0         0         0
bond4              OFFLINE -            0         0         0

Slot       RealDevice  Status    Interface LinkState LinkSpeed
1    top    eth100200  DUPLEX      UP      LINK     1000Mb/s-FD
     bottom eth110200  DUPLEX      UP      LINK     1000Mb/s-FD
2    top    eth100201  DUPLEX      UP      LINK     1000Mb/s-FD
     bottom eth110201  DUPLEX      UP      LINK     1000Mb/s-FD
3    top    eth100600  DUPLEX      UP      LINK     1000Mb/s-FD
     bottom eth110600  DUPLEX      UP      LINK     1000Mb/s-FD
4    top    -
```

```
     bottom -
5    top    -
     bottom -
6    top    -
     bottom -
7    top    -
     bottom -
8    top    -
     bottom -
```

When bond2 (bond 0 and bond 1 are configured by default.) is configured for the slot 3 and as shown above, and the status of each SLAVE interface (eth100600, eth110600) is DUPLEX, duplication is successfully completed.

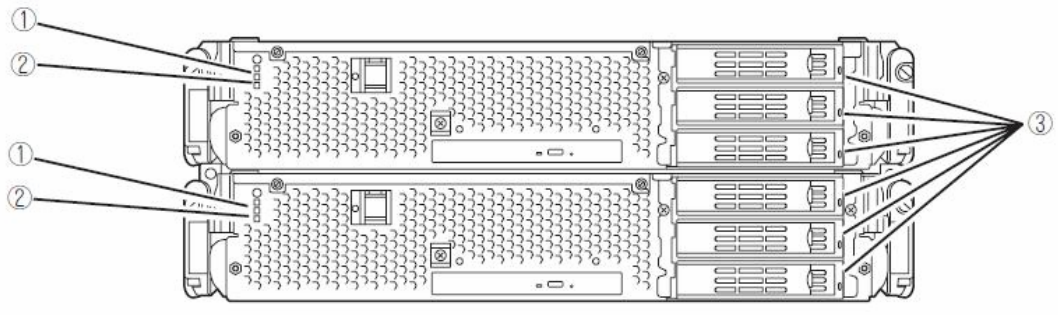
CHECK THE DUPLICATING OPERATION OF MODULES

This section describes how to check if the system runs properly after system installation or reinstallation. CPU/IO module has a processor function part and IO function part. Each part is monitored and managed by the module. In this section, the processor function part is referred to as CPU module and IO function part PCI module.

Evaluate Startup and Stop of PCI Modules

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

1. Check which is the primary PCI module.
   The PCI module with the POWER switch illuminated is the primary module.
2. Check whether the PCI modules are duplicated.
   To check if the PCI modules are duplicated, see the CPU/IO modules' status LEDs.

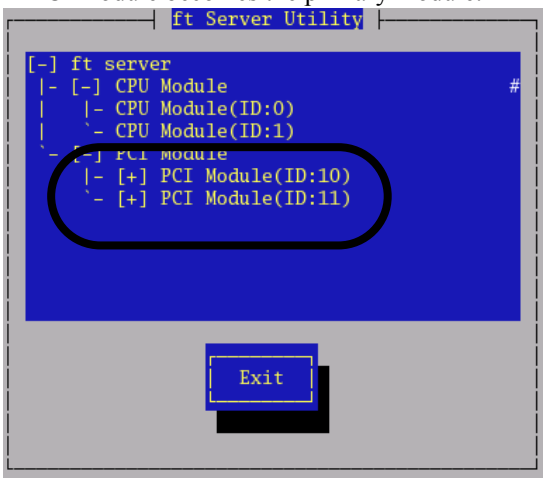


[Indications of the status LEDs when PCI modules are duplicated]

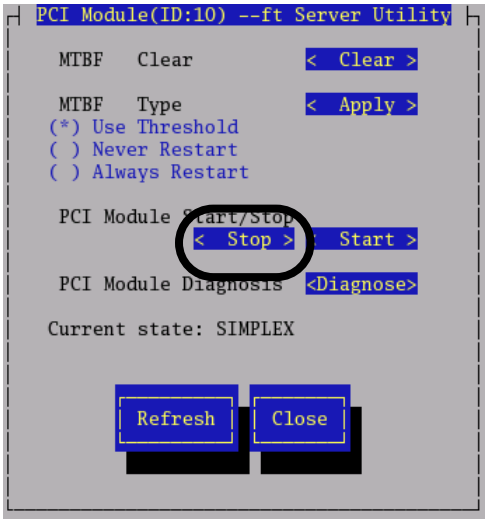
LED		Primary	Secondary
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	Green	Green
3	DISK ACCESS LED	Green blinking	Green blinking

* The numbers in the table correspond to the numbers in the above figure.
The DISK ACCESS LED (3) lights when the hard disk drive is accessed.

3. Stop the operation of a PCI module using the ft server utility.
Move to the directory where the NEC ESMPRO Agent is installed.
cd /opt/nec/esmpro_sa
Move to the directory where the ft server utility is stored.
cd bin
Start the ft server utility.
./ESMftcutil
The screen of the ft server utility will appear.
Select [ftServer] - [PCI Module] - [PCI Module (to be removed)]. The screen of the PCI Module(to be removed) will appear.
Select [PCI Module Start/Stop] - [Stop] to the stop of the PCI .Module.
* As for the primary PCI module (*), if the PCI module 0 is primary select [PCI Module(ID:10)]. If the PCI module 1 is primary, select [PCI Module (ID:11)].
When you stop the operation of the primary PCI module, a failover occurs and the secondary PCI module becomes the primary module.



ft server utility



PCI Module

4. Restart the PCI module.
From the ft server utility, click [Start] of [Start/Stop] to the PCI module which was stopped in the step 3, and the PCI module will be started. Once the PCI module is started, PCI module diagnosis, mirror volume duplication and PCI module duplication are performed.

IMPORTANT:

If BrightStor ARCserve 2000 or Backup Exec is installed, the tape will not be recognized due to the failover of the PCI module. Thus be sure to stop the services before starting the PCI module.

1. Start [Services] from [Administrative Tools] of [Control Panel].
2. Select a service of backup software.
3. Choose "Stop" from the "Action" menu.
4. Repeat 2 and 3 for all services of the backup software.

The PCI modules' status LEDs changes as shown below:
[Indications of the status LEDs]
Immediately after the PCI module startup until the completion of diagnosis

LED		Secondary	Primary
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	-	Green blinking
3	DISK ACCESS LED	-	Amber or Green blinking (when the disk is accessed, this LED illuminates in green)

When duplication of disks is started after the completion of PCI module diagnosis
* The status of LEDs varies depending on the method of disk duplication.

LED		Secondary	Primary
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	Green blinking	Green blinking
3	DISK ACCESS LED	Amber or Green blinking (when the disk is accessed, this LED illuminates in green)	Amber or Green blinking (when the disk is accessed, this LED illuminates in green)

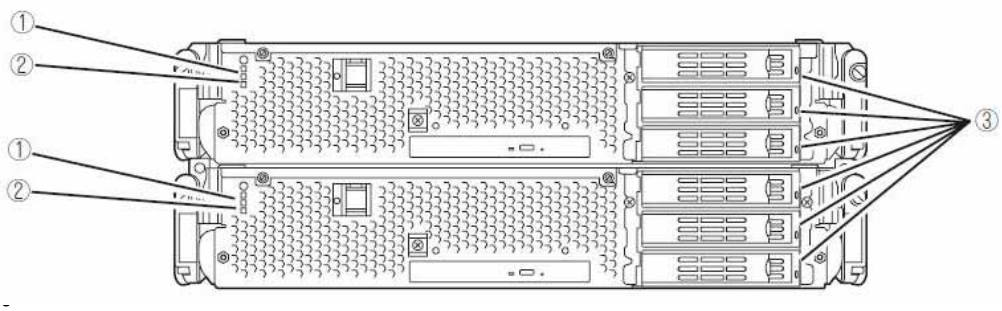
After the completion of disk duplication and when the PCI modules are duplicated

LED		Secondary	Primary
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	Green	Green
3	DISK ACCESS LED	Green blinking	Green blinking

Evaluate Start and Stop of CPU Modules

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

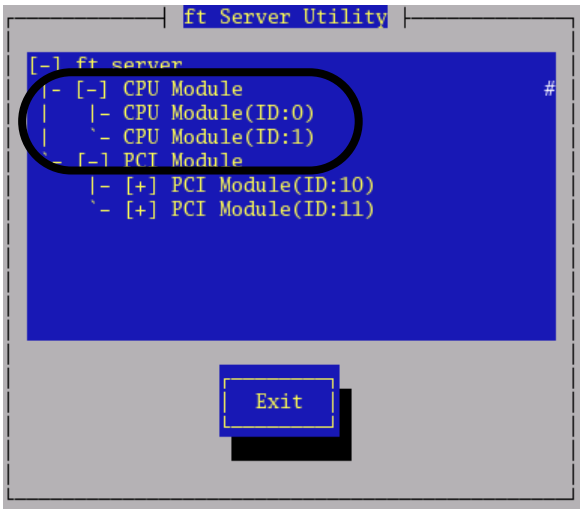
1. Confirm that the CPU modules are duplicated.
To check if the CPU modules are duplicated, see the status LEDs of the CPU modules.



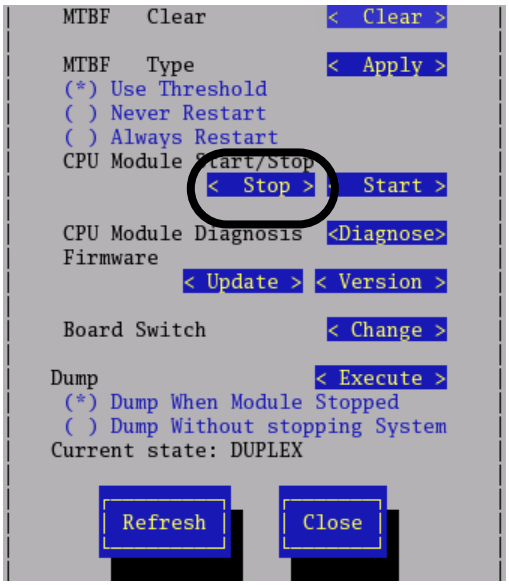
[Indications of status LEDs when CPU modules are duplicated]

LED		CPU module 0 (Operating)	CPU module 1 (Operating)
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	Green	Green
3	DISK ACESSS LED	Green blinking	Green blinking

2. Use the ft server utility to stop the operation of a CPU module to remove.
Move to the directory where the NEC ESMPRO Agent is installed.
```
# cd /opt/nec/esmpro_sa
```
Move to the directory where the ft server utility is stored.
```
# cd bin
```
Start the ft server utility.
```
# ./ESMftcutil
```
The screen of the ft server utility will appear.
Select [ftServer] - [CPU Module] - [CPU Module (to be removed)]. The screen of the CPU Module(to be removed) will appear.
Select [CPU Module Start/Stop] - [Stop] to the stop of the CPU .Module.
* As for the CPU module to stop, select [CPU Module(ID:0)] to stop CPU module 0, select [CPU Module(ID:1)] to stop CPU module 1.



ft server utility



CPU Module

3. Press the start button of the CPU module stopped by ft server utility.
In the ft server utility, select the stopped CPU module and click [Start] of [CPU Module Start/Stop].
Once the CPU module is started, hardware diagnosis and then synchronization of memory (memory copy) are performed, and the duplication process is completed.
Note that the system is paused temporarily for copying memory during memory synchronization.

[Indications of status LEDs during diagnosis]

LED		CPU module 0 (Started)	CPU module 1 (Operating)
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	-	Green blinking
3	DISK ACCESS LED	Green blinking	Green blinking

[Indications of status LEDs after completion of duplication]

LED		CPU module 0 (Operating)	CPU module 1 (Operating)
1	CPU/IO module status LED1	-	-
2	CPU/IO module status LED2	Green	Green
3	DISK ACCESS LED	Green blinking	Green blinking

IMPORTANT:

After duplication is completed, the status of memory will be checked.

Wait until this process ends to perform the next step (evaluation of start and stop of PCI and CPU modules). When the process is complete, the following event log will be output:

Kernel: EVLOG: INFORMATION – Memory consistency check has completed memory scan.

ft Server service

NEC Express5800/ft series provides the services required for the system operation by the following service programs in addition to the dedicated drivers.

Service names:

- ft-cclogger
- ft-firstboot
- ft-snmp
- snmpd
- ESMntserver
- ESMamvmain
- ESMftreport
- ESMcmn
- ESMfilesys
- ESMlan
- ESMIS
- ESMps
- ntagent

The service programs above are required for operating NEC Express5800/ft series. Do not stop them.

Notes on access to USB FDD

When you attempt an access by directly specifying an sd device name as described below while a USB FDD is connected, the device name may be changed due to separation or integration of one of the PCI modules, which can destroy partition information etc. of other disks unintentionally.

[Example]
If you execute a command for the USB FDD after you integrate one of the PCI modules with the same sd device name that was specified before the system was separated, partition information etc. of the disk A is destroyed.

Transition of sd device names

	Disk A	USB FDD	Disk B
Before one of the PCI modules is separated	sda	sdb	sdc
After one of the PCI modules is separated	none	sda	sdc
After one of the PCI modules is integrated	sdb	sda	sdc

1) Before one of the PCI modules is separated
   # tar cf /dev/sdb files
   → Files are written in the USB FDD.

2) After one of the PCI modules is integrated
   # tar cf /dev/sdb files
   → Files are written in the disk A unintentionally → partitions are destroyed

Note:
It is a feature of NEC Express5800/ft series that the device names of the device files change due to integration or separation of one of the PCI modules.

Configuring the video mode

This section describes how to configure the video mode for this device.

1. Open /etc/X11/xorg.conf as a root user by using an editor.

IMPORTANT:

xorg.conf is a very important file for the X server system. It is recommended to create a backup because corrupting xorg.conf can result in failure to start up the X server in the worst case scenario. When you make a backup, use a different file name for the backup since the file name /etc/X11/xorg.conf.backup is used by the system.

2. Modify the following configuration in xorg.conf.

Enter the value you want to configure in (1)'s ModeLine in the (2)'s Modes line.

Changing the numbers of colors

Change the value indicated by (3) to the number of colors you want (8bpp, 16bpp or 24bpp). If you have chosen 24bpp, delete # at the top of the line indicated by (4). (If you have chosen 8bpp or 16bpp, make sure the line starts with #. If there is no #, enter it.)

```
Section "Monitor"
        Identifier   "Monitor0"
        VendorName   "Monitor Vendor"
        ModelName    "Unprobed Monitor"
        HorizSync    30.0 - 95.0
        VertRefresh  60.0 - 180.0
        ModeLine     "1024x768 @ 60Hz" 65.0 1024 1048 1184 1344 768 771 777 806 -hsync -vsync
        ModeLine     "1024x768 @ 70Hz" 75.0 1024 1048 1136 1328 768 771 777 806 -hsync -vsync
        ModeLine     "1024x768 @ 75Hz" 78.8 1024 1040 1136 1312 768 769 772 800 +hsync +vsync
        ModeLine     "640x480 @ 60Hz" 25.2 640 656 752 800 480 490 492 525 -hsync -vsync
        ModeLine     "800x600 @ 60Hz" 40.0 800 840 968 1056 600 601 605 628 +hsync +vsync
        ModeLine     "800x600 @ 72Hz" 50.0 800 856 976 1040 600 637 643 666 +hsync +vsync
        ModeLine     "800x600 @ 75Hz" 49.5 800 816 896 1056 600 601 604 625 +hsync +vsync
        ModeLine     "800x600 @ 85Hz" 56.3 800 832 896 1048 600 601 604 631 +hsync +vsync
        Option       "dpms"
EndSection

Section "Device"

#       Driver      "ati"
        Identifier  "Videocard0"
        Driver      "fbdev"
        VendorName  "Videocard vendor"
        BoardName   "ATI Radeon RV100 framebuffer mode"
        Option      "UseFBDev"
EndSection

Section "Screen"

# Uncomment next line if DefaultDepth 24 only
#       DefaultFbBpp    24
        Identifier "Screen0"
        Device     "Videocard0"
        Monitor    "Monitor0"
        DefaultDepth    16
        SubSection "Display"
                Viewport   0 0
                Depth     16
                Modes    "800x600 @ 75Hz"
        EndSubSection
        SubSection "Display"
                Viewport   0 0
                Depth     24
                Modes    "1024x768 @ 75Hz" "1024x768 @ 70Hz" "1024x768 @ 60Hz" "800x600 @ 85Hz" "800x600 @ 75Hz" "800x600
72Hz" "800x600 @ 60Hz"
```

(1) (2) (3) (4)

3. If the X server is started, shut down the server by entering 'init 3' in a command line.
4. The mode is switched to the console mode (CUI), and then, start up the X server by entering 'init 5' in a command line.

Note:

- You cannot use xrandr to modify the resolution because the xrandr function is not supported.
- If you use the X server on the console, operate the system at the run level 5 and perform graphical login. If X is not started when the system is started (i.e run level 3), log in as root and enter ”init 5” from a command line on the text console to start the X server.
- You cannot change the resolution and the number of colors from application menu due to hardware specification.

If you cannot restore the system since you have changed the resolution from application menu, follow the steps below.

(1) Swith to the console mode. (Enter “init 3” in the command line. If the window cannot be displayed, press [Ctrl] + [Alt] + any one of the keys from F1 through F6 to switch to the console mode, and then log in as a root user and type “init 3”.)

(2) Open /etc/X11/xorg.conf by an editor.

(3) The value of Modes in (2) is as shown in the figure below. Select the value you want to configure in (1)’s ModeLine and enter it in the (2)’s Modes line.

(4) Enter “init 5” in the command line to start the X server.

```
Section "Monitor"
        Identifier   "Monitor0"
        VendorName   "Monitor Vendor"
        ModelName    "Unprobed Monitor"
        HorizSync    30.0 - 95.0
        VertRefresh  60.0 - 180.0
        ModeLine     "1024x768 @ 60Hz" 65.0 1024 1048 1184 1344 768 771 777 806 -hsync -vsync
        ModeLine     "1024x768 @ 70Hz" 75.0 1024 1048 1184 1328 768 771 777 806 -hsync -vsync
        ModeLine     "1024x768 @ 75Hz" 78.8 1024 1040 1136 1312 768 769 772 800 +hsync +vsync
        ModeLine     "640x480 @ 60Hz" 25.2 640 656 752 800 480 490 492 525 -hsync -vsync
        ModeLine     "800x600 @ 60Hz" 40.0 800 840 968 1056 600 601 605 628 +hsync +vsync
        ModeLine     "800x600 @ 72Hz" 50.0 800 856 976 1040 600 637 643 666 +hsync +vsync
        ModeLine     "800x600 @ 75Hz" 49.5 800 816 896 1056 600 601 604 625 +hsync +vsync
        ModeLine     "800x600 @ 85Hz" 56.3 800 832 896 1048 600 601 604 631 +hsync +vsync
        Option       "dpms"
EndSection

Section "Device"

#       Driver      "ati"
        Identifier  "Videocard0"
        Driver      "fbdev"
        VendorName  "Videocard vendor"
        BoardName   "ATI Radeon RV100 framebuffer mode"
        Option      "UseFBDev"
EndSection

Section "Screen"

# Uncomment next line if DefaultDepth 24 only
#       DefaultFbBpp    24
        Identifier "Screen0"
        Device     "Videocard0"
        Monitor    "Monitor0"
        DefaultDepth    16
        SubSection "Display"
                Viewport   0 0
                Depth     16
                Modes    "1024x768" "800x600" "640x480"
        EndSubSection
        SubSection "Display"
                Viewport   0 0
                Depth     24
                Modes    "1024x768 @ 75Hz" "1024x768 @ 70Hz" "1024x768 @ 60Hz" "800x600 @ 85Hz" "800x600 @ 75Hz" "800x600 @
72Hz" "800x600 @ 60Hz"
```

(1)

(2)

Chapter 4

System Configuration

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

When you install the NEC Express5800/ft series for the first time or install/remove optional devices, thoroughly read this chapter for better understanding and correct setups.

SYSTEM BIOS ~ SETUP ~

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

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

IMPORTANT:

- The SETUP utility is intended for system Administrator use only.
- The SETUP utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The server contains the latest version of the SETUP utility. Dialog boxes appearing on your SETUP utility, thus, may differ from descriptions in this User's Guide. If you find anything unclear, see the online help or ask your sales agent.

Starting SETUP Utility

Powering on the server starts POST (Power On Self-Test) and displays its check results. 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 or Press <F12> to boot from Network
```

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

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

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

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

```
Enter password:[                ]
```

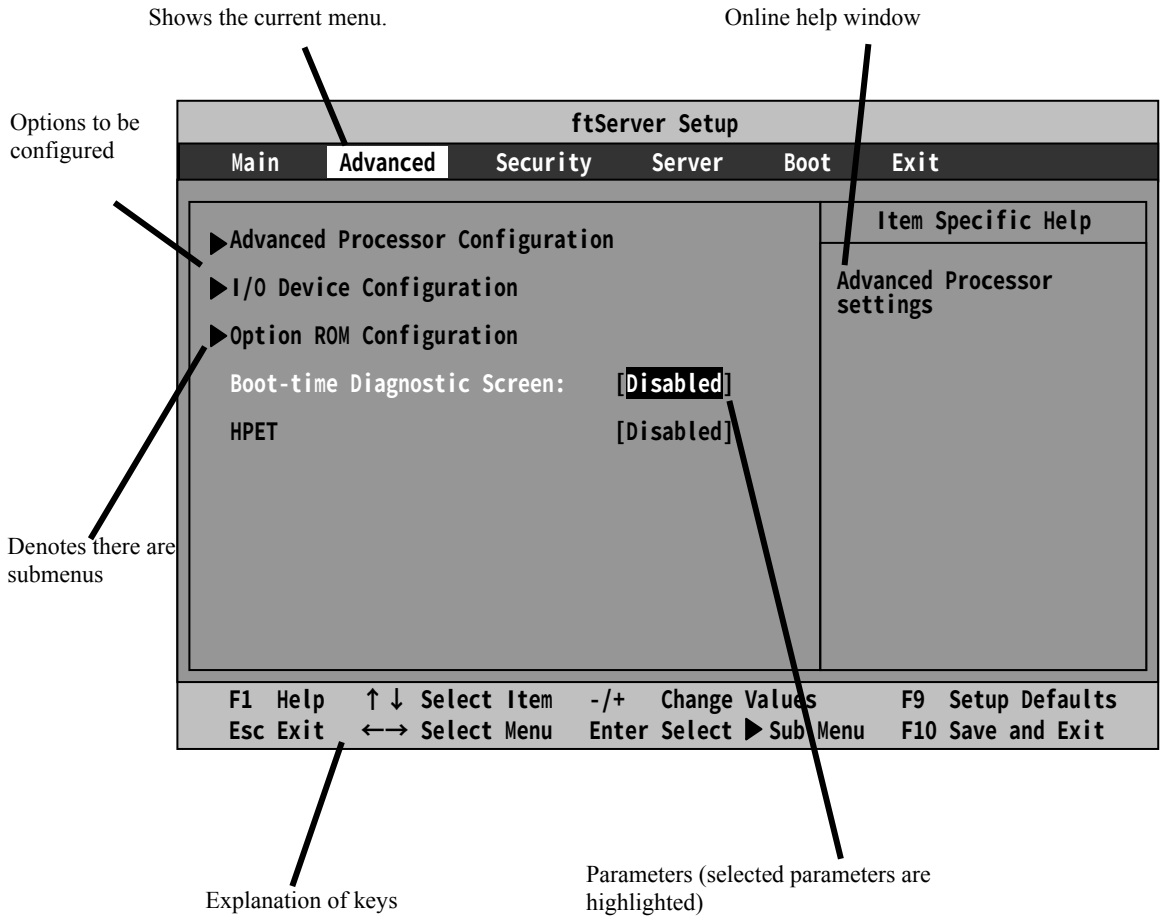
Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

TIPS:

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

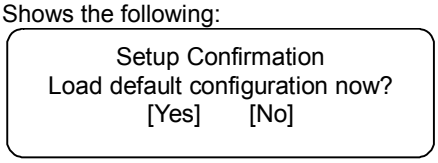
Description of On-Screen Items and Key Usage

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



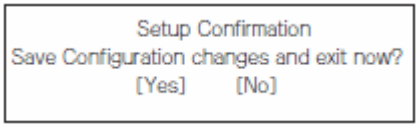
Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, Server, Boot, or Exit menu.
–	Changes the value (parameter) of the selected item to the previous value.
+	Changes the value (parameter) of the selected item to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

F9: Shows the following:



If you select “Yes” and then press the **Enter** key, all items in the setup are set to default values. If you select “No” and then press either the **Enter** or **Esc** key, the status before pressing the **F9** key is restored.

F10: Shows the following:



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

Configuration Examples

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

UPS

To link power supply with the UPS

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

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

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

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

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

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

Keyboard

To set Num Lock and key repeat

Select [Advanced] - [I/O Device Configuration] - [NumLock]

Security

To set passwords on the BIOS level

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

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

Set Supervisor password first, then User password.

Optional PCI–related devices

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

Select [Advanced] - [Option ROM Configuration] - [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] - [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 Serial

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

Memory

To check the installed memory (DIMM) status:

Select [Main] - [System Memory] and [Extended Memory] and check the status indications.

Saving the Configuration Data

To save the BIOS configuration data

Select [Exit] - [Exit Saving Changes]

To discard changes to the BIOS configuration data

Select [Exit] - [Exit Discarding Changes]

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

Select [Exit] - [Load Setup Defaults].

Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

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

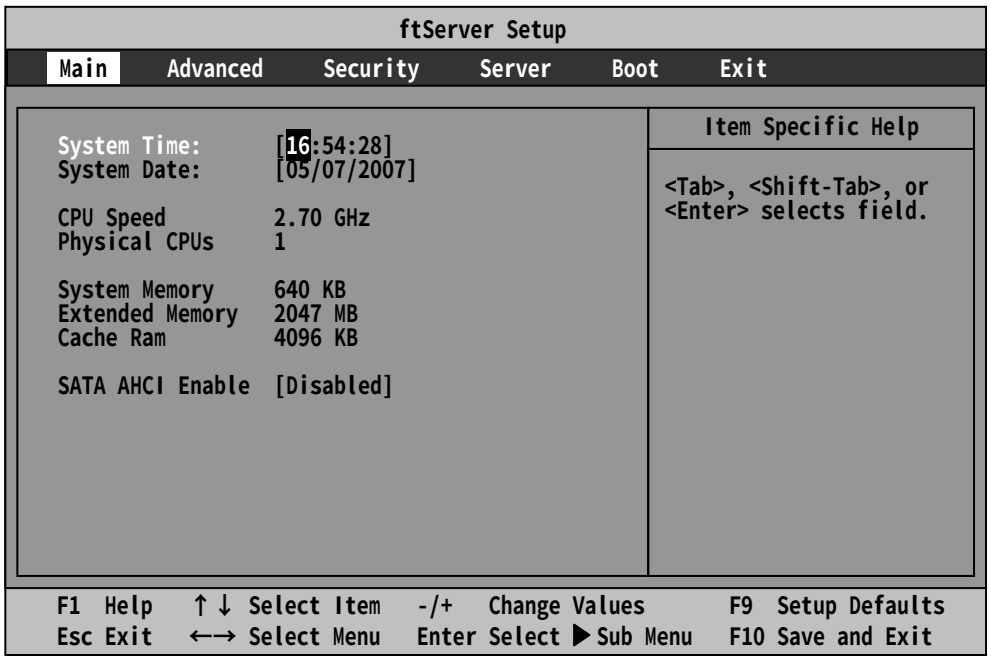
To configure detailed settings of functions, select a submenu from the above menus. Below describes configurable functions and parameters and the factory settings displayed in the screen for each menu.

Main

Start the SETUP utility to display the Main menu.

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

<Example>



Available options in the Main and descriptions are listed below.

Option	Parameter	Description
System Time	HH:MM:SS	Specify the system time.
System Date	MM/DD/YYYY	Specify the system date.
CPU Speed	XXXX MHz	Displays the processor clock frequency.
Physical CPUs	X	Displays the number of processor installed.
System Memory	XXXX KB	Displays the size of system memory.
Extended Memory	XXXX MB	Displays the size of extended memory.
Cache Ram	XXXX KB	Displays the capacity of LS cache.
SATA AHCI Enable	[Disabled] Enabled	Specify whether or not to enable AHCI mode.

[ ] factory - set

IMPORTANT:

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

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

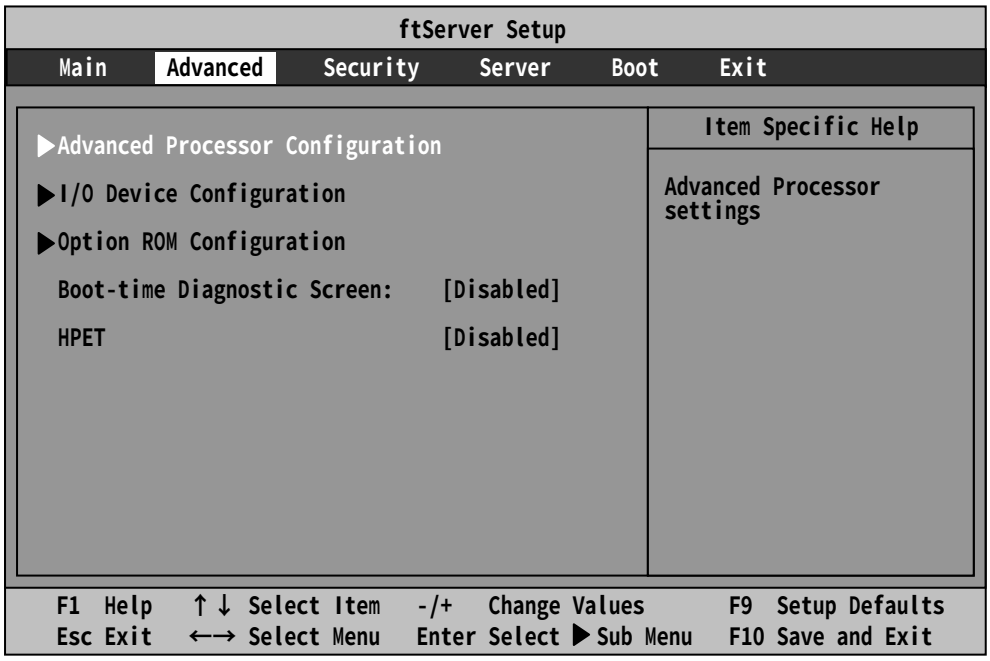
Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level of time accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment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

■ Do not change [SATA AHCI Enable] to [Enabled]. If [Enabled] is specified, BIOS version might not be displayed in the ft server utility.

Advanced

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

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



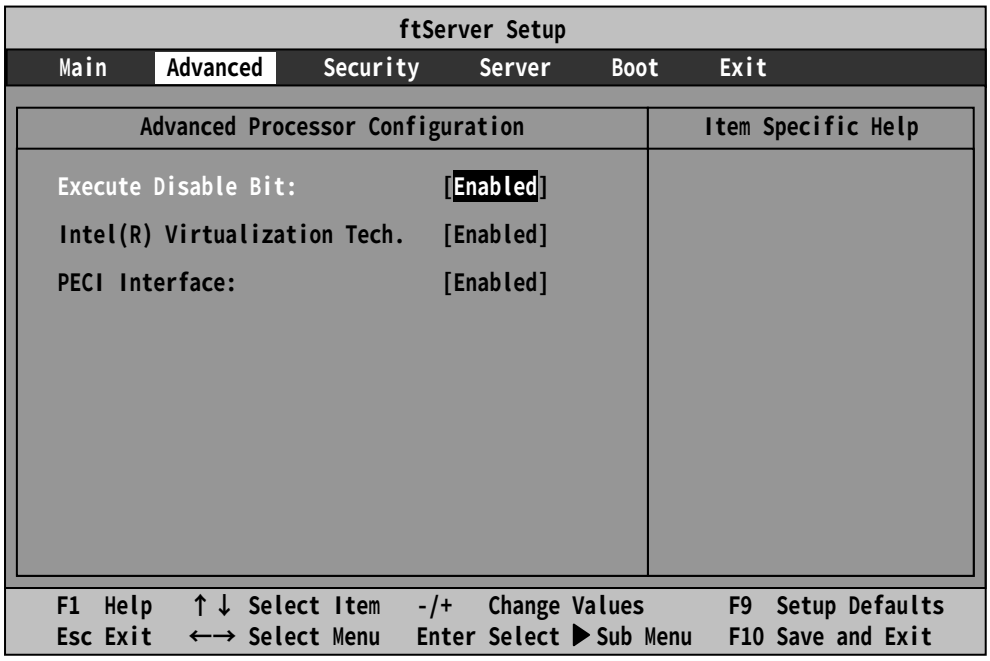
See the table below for setup options on the screen.

Option	Parameter	Description
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**.)
HPET	[Disabled] Enabled	Specify whether or not to enable High Precision Event Timer feature.

[ ]: factory-set

Advanced Processor Configuration

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



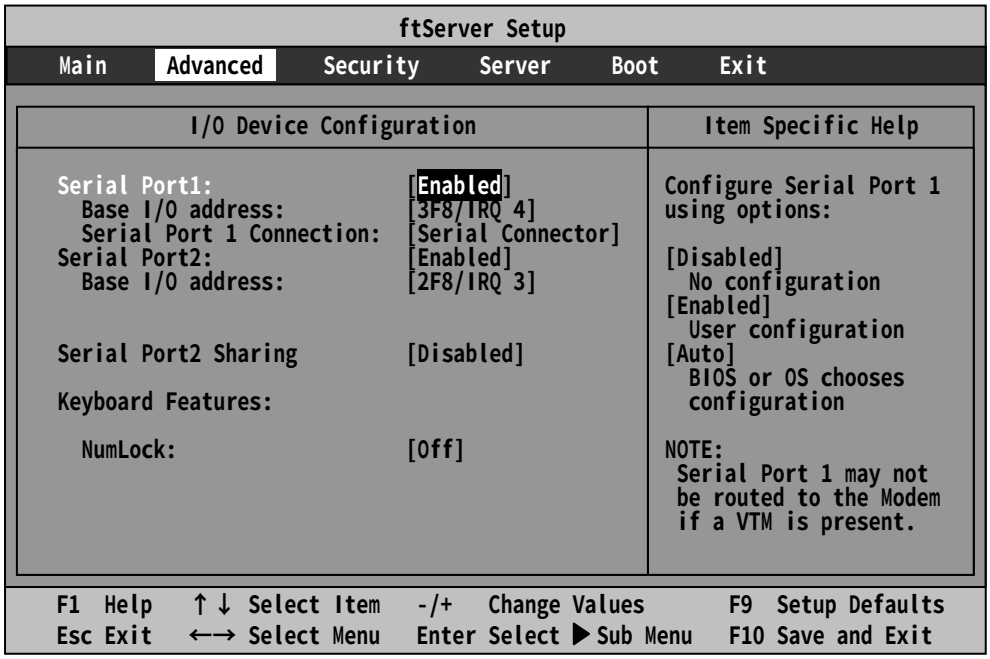
Refer to the table below for information on options.

Option	Parameter	Description
Execute Disable Bit	[Enabled] Disabled	Specify whether or not to enable Execute Disable Bit feature.
Intel(R) Virtualization Tech	[Enabled] Disabled	Specify whether or not to enable Intel Virtualization Technology feature.
PECI Interface	[Enabled] Disabled	Specify whether or not to enable Platform Environment Control Interface feature.

[ ]: factory-set

I/O Device Configuration

When you select "I/O Device Configuration" in the Advanced menu, the following screen appears. If you select a menu with the "▶" mark and press **Enter**, its submenu appears.



Refer to the table below for information on options.

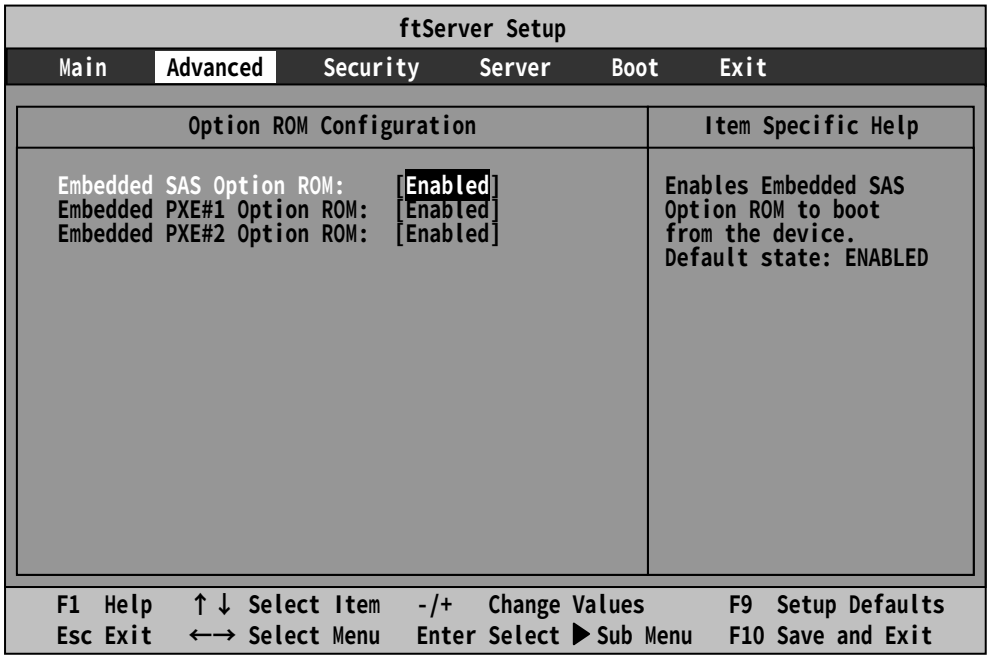
Option	Parameter	Description
Serial Port 1	Enabled [Disabled] Auto	Specify whether or not to enable Serial Port 1.
Base I/O address	[3F8/IRQ4] 2F8/IRQ3 3E8/IRQ4 2E8/IRQ3	Specify the I/O address and IRQ of Serial Port 1.
Serial Port 1 Connection	[Serial Connector] Internal Modem	Specify Serial Connector or Internal Modem for Serial Port 1 connection.
Serial Port 2	Enabled [Disabled] Auto	Specify whether or not to enable Serial Port 2.
Base I/O address	3F8/IRQ4 [2F8/IRQ3] 3E8/IRQ4 2E8/IRQ3	Specify the I/O address and IRQ of Serial Port 2.
Serial Port 2 Sharing	Enabled [Disabled]	Specify whether or not to use Serial Port 2 in BMC.

Keyboard Features		Display only.
NumLock	AUTO On [Off]	Specify whether or not to enable NumLock at system startup.

[ ]: factory-set

Option ROM Configuration

When you select “Option ROM Configuration” in the Advanced menu, the following screen appears.



Refer to the table below for information on options.

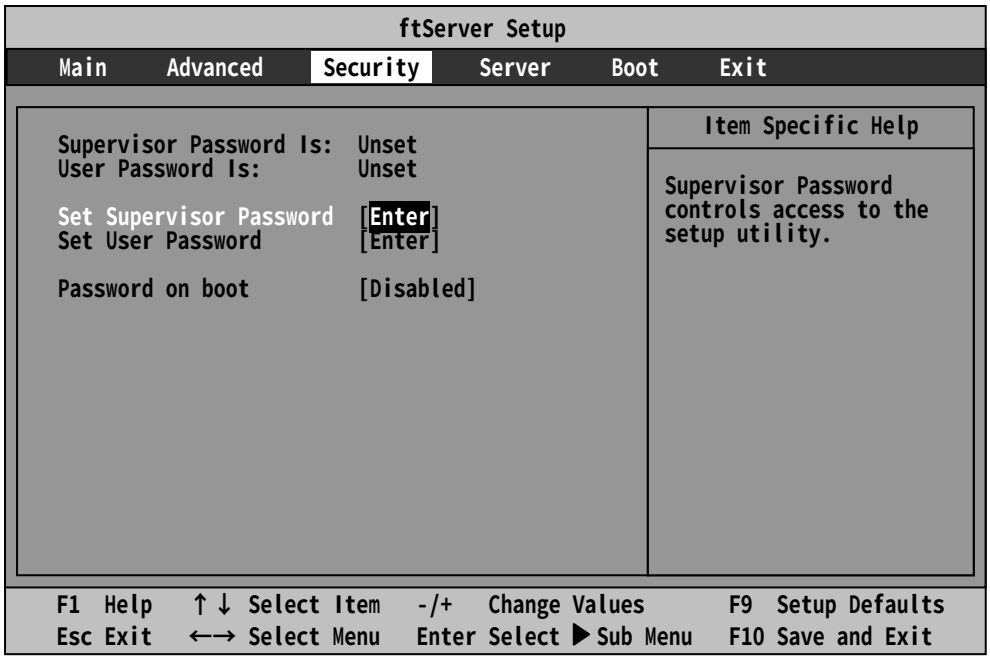
Option	Parameter	Description
PCI Slot 1 (upper) Option ROM	Enabled [Disabled]	If “Enabled” is selected, the extended ROM of the PCI card installed on PCI Slot 3 is initialized. Note: this option is displayed only when a PCI card is installed.
PCI Slot 2 (lower) Option ROM	Enabled [Disabled]	If “Enabled” is selected, the extended ROM of the PCI card installed on PCI Slot 2 is initialized. Note: this option is displayed only when a PCI card is installed.
PCI Slot 3 (onboard) Option ROM	Enabled [Disabled]	If “Enabled” is selected, the extended ROM of the PCI card installed on PCI Slot 1 is initialized. Note: this option is displayed only when a PCI card is installed.
Embedded SAS Option ROM	[Enabled] Disabled	If “Enabled” is selected, SAS extended ROM that is embedded in the motherboard will be initialized.

Embedded PXE#1 Option ROM	[Enabled] Disabled	If “Enabled” is selected, the extended ROM of LAN #1 that is embedded in the motherboard will be initialized.
Embedded PXE#2 Option ROM	[Enabled] Disabled	If “Enabled” is selected, the extended ROM of LAN #2 that is embedded in the motherboard will be initialized.

[ ]: factory-set

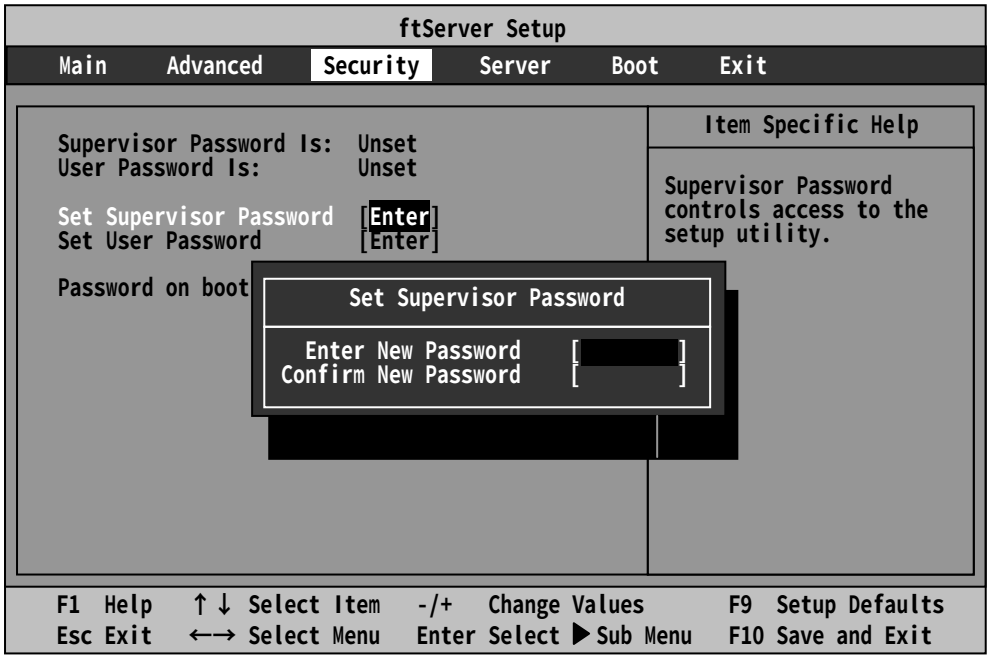
Security

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



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

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



IMPORTANT:

- User password setup is not available before Supervisor password setup.
- Do not set any password before installing the OS.
- If you forget your password, contact your sales agent.

See the table below for setup options on the screen.

Option	Parameter	Description
Supervisor Password Is	Unset Set	Indicates Supervisor password setup status (view only).
User Password is	Unset Set	Indicates User password setup status (view only).
Set Supervisor Password	[Enter]	Press **Enter** to display the supervisor password entry screen. This option is available only when you log into the SETUP utility with the supervisor password.
Set User Password	[Enter]	Press **Enter** to display the user password entry screen. With a user password, accessing the SETUP menus is restricted.

Option	Parameter	Description
Password on boot	[Disabled] Enabled	Specify whether to request a password entry at boot-up. User password setup is required beforehand.

[ ]: factory-set

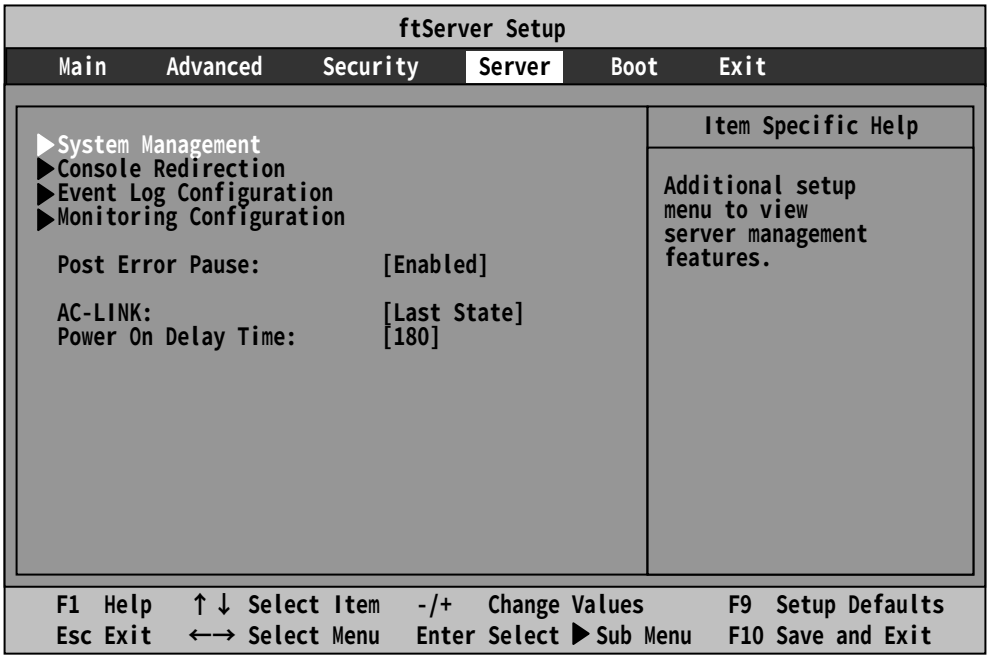
IMPORTANT:
If you have logged in SETUP by using the Supervisor Password, you can check and change all settings. If you have logged in SETUP by using User Password, you see the settings but cannot make changes on the settings except System Time, System Date and User Password of Main.

Server

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

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

Refer to the table below for information on options.



Option	Parameter	Description
Post Error Pause	Disabled [Enabled]	Set whether or not to pause POST at the end of POST if an error has occurred during POST execution.
AC LINK	Stay Off [Last State] Power On	Specify the AC LINK feature by selecting the status of the power supply unit of the server when the AC power supply restarts. (See the following table for details.)
Power ON Delay Time	[180]-255(s)	Configure the DC ON delay time if AC LINK is set to “Power On” or “Last State” (unit: second).

[ ]: 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.

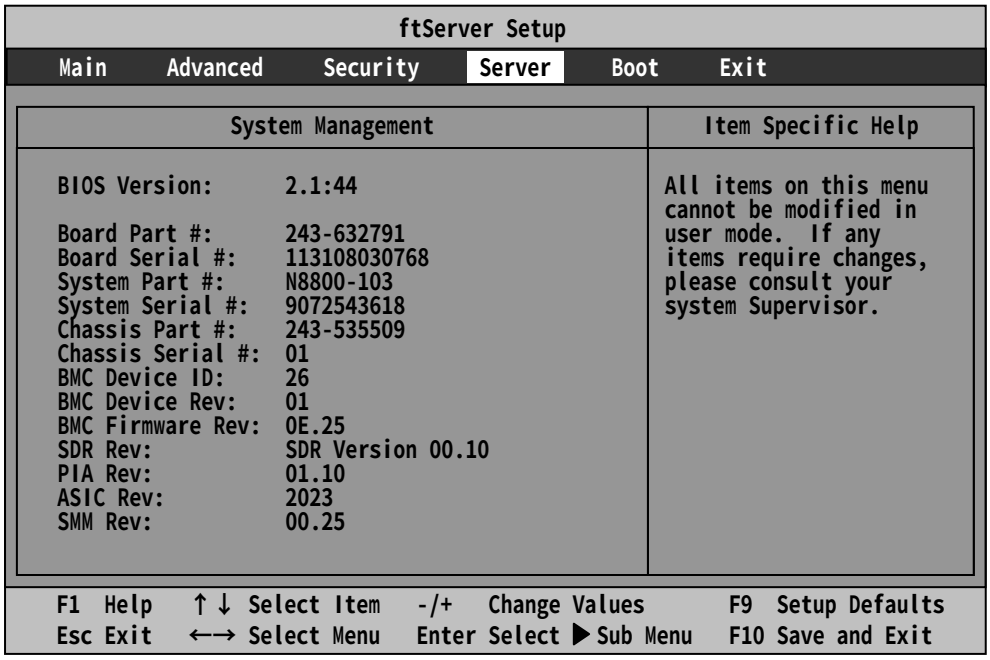
State before powered off	Parameter		
	Stay Off	Last State	Power On
In service	Off	On	On
Out of service (DC power: Off)	Off	Off	On
Forced shutdown *	Off	Off	On

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

System Management

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

Example



See the table below for setup options on the screen.

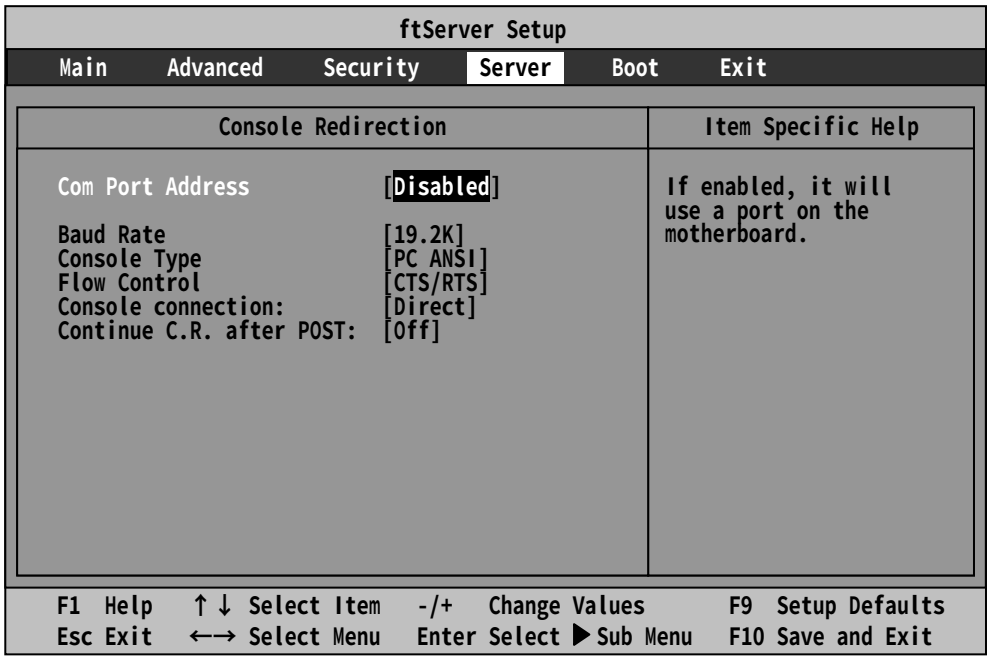
Option	Parameter	Description
BIOS Version	—	Displays the BIOS version.
Board Part Number	—	Displays the board information.
Board Serial Number	—	Displays the board information.
System Part Number	—	Displays the system information.
System Serial Number	—	Displays the system information.
Chassis Part Number	—	Displays the chassis information.

Option	Parameter	Description
Chassis Serial Number	–	Displays the chassis information.
BMC Device ID	–	Displays the BMC information.
BMC Device Revision	–	Displays the BMC information.
BMC Firmware Revision	–	Displays the BMC information.
SDR Revision	–	Displays the revision of SDR (sensor device information).
PIA Revision	–	Displays the PIA (plat form information) revision.
ASIC Rev	–	Displays the firmware information of the fault-tolerant chipset.
SMM Rev	–	Displays the firmware information of System Management.

[ ]: factory-set

Console Redirection

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



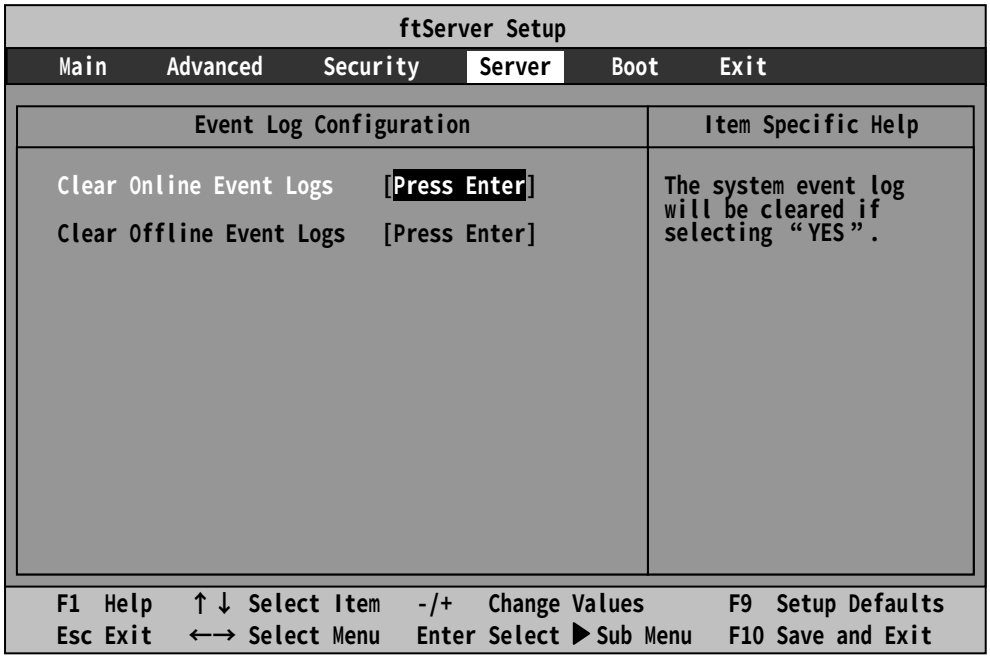
See the table below for setup options on the screen.

Option	Parameter	Description
Com Port Address	[Disabled] Serial Port1 Serial Port2	Select a serial port.
Baud Rate*	9600 [19.2K] 38.4K 57.6K 115.2K	Select a port rate used for the interface with a hardware console to be connected.
Console Type*	VT100 VT100, 8bit PC-ANSI, 7bit [PC-ANSI] VT100+ VT-UTF8	Select a console type.
Flow Control*	None XON/XOFF [CTS/RTS]	Select a flow control method.
Console Connection	[Direct] Via modem	Select a connector.
Continue C.R. after POST	[Off] On	Specify whether or not to continue Console Redirection after OS is loaded.

[ ]: factory-set

Event Log Configuration

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

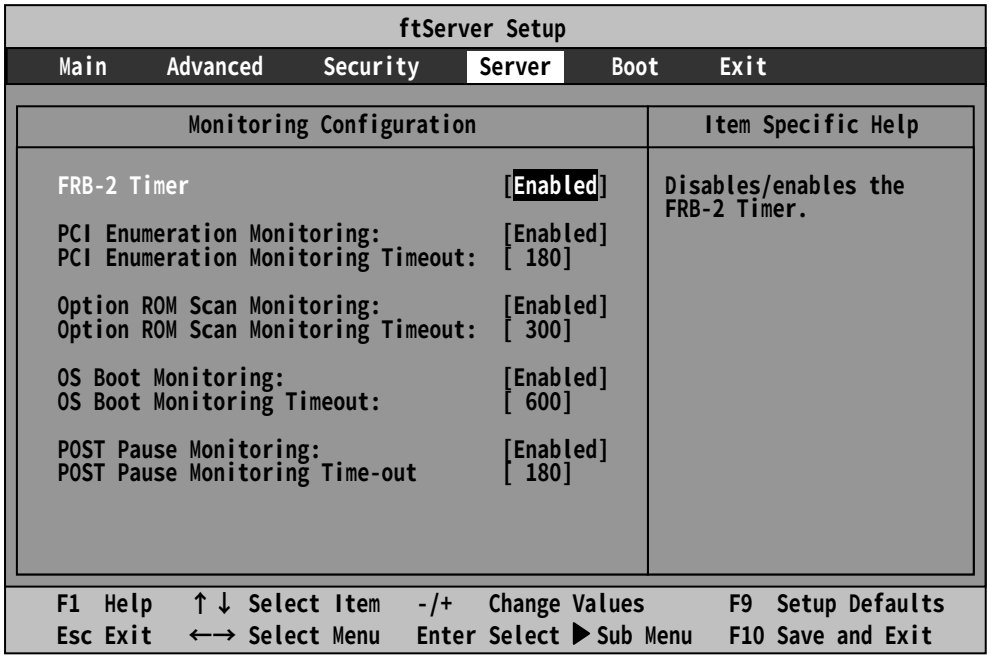


See the table below for setup options on the screen.

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

Monitoring Configuration

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



Option	Parameter	Description
FRB-2 timer	Disabled [Enabled]	Select whether or not to enable the FRB-2 timer.
PCI Enumeration Monitoring	Disabled [Enabled]	Select whether or not to enable the function to monitor PCI Device scan.
PCI Enumeration Monitoring Timeout	60-[180]-1200	Set the timeout for PCI Device scan. (unit: second)
Option ROM Scan Monitoring	Disabled [Enabled]	Select whether or not to enable the function to monitor the extended ROM scan.
Option ROM Monitoring Timeout	60-[300]-1200	Set the timeout of the extended ROM scan. (unit: second)
OS Boot Monitoring	Disabled [Enabled]	Select whether or not to enable the function to monitor OS boot-up. If you are starting up from an OS with no NEC ESMPRO Agent installed, disable this option. If you use Disaster Recovery Option for ARCServe, select [Disabled].
OS Boot Monitoring Timeout	60-[600]-1200	Set the timeout at OS boot-up. (unit: second)
POST Pause Monitoring	Disabled [Enabled]	Set whether or not to enable the POST monitoring function during boot pause. (unit: second)

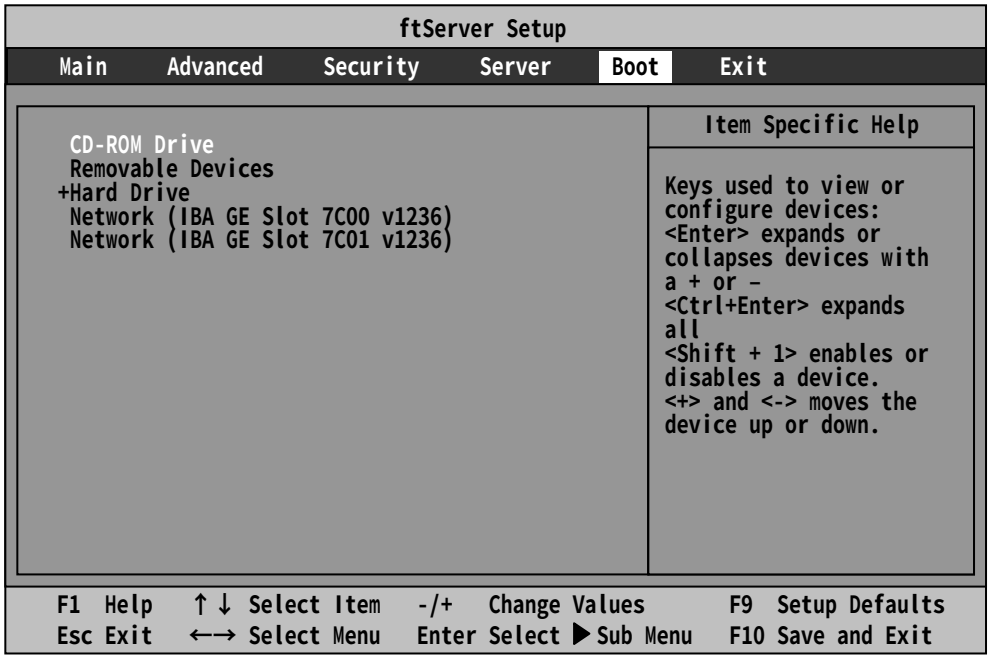
POST Pause Monitoring Time-out	60-[180]-1200	Set the time for POST monitoring during boot pause. (unit: second)

[ ]: factory-set

Boot

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

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



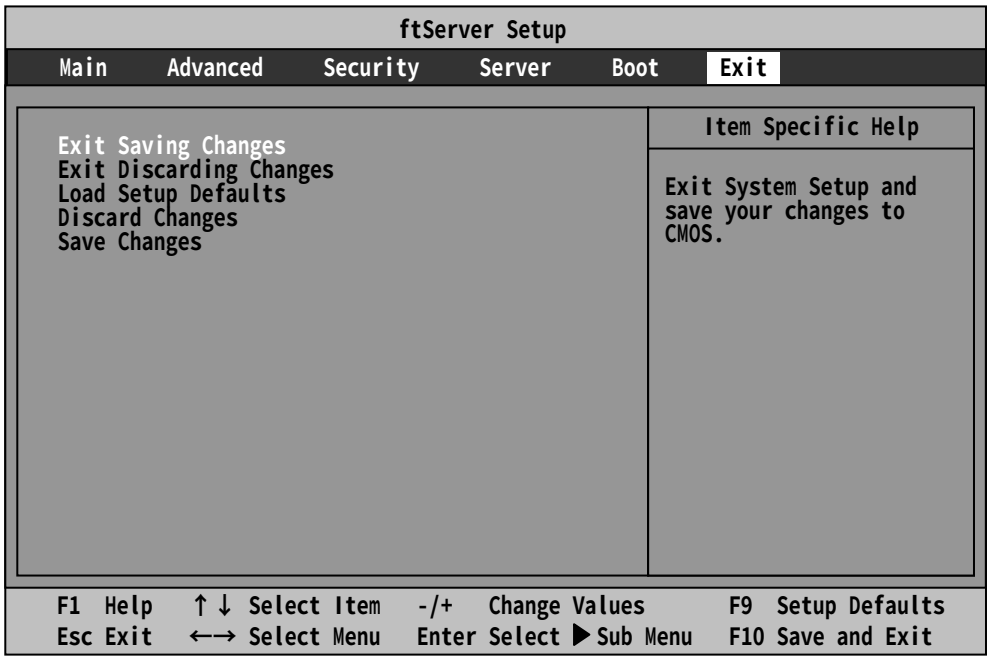
You can change the boot device order using ↑ or ↓ and + or –. Move the cursor to select the device by ↑ or ↓, and then change the priority using + or –.

IMPORTANT:

Move the CD-ROM Drive above Hard Drive to start the NEC EXPRESSBUILDER.

Exit

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

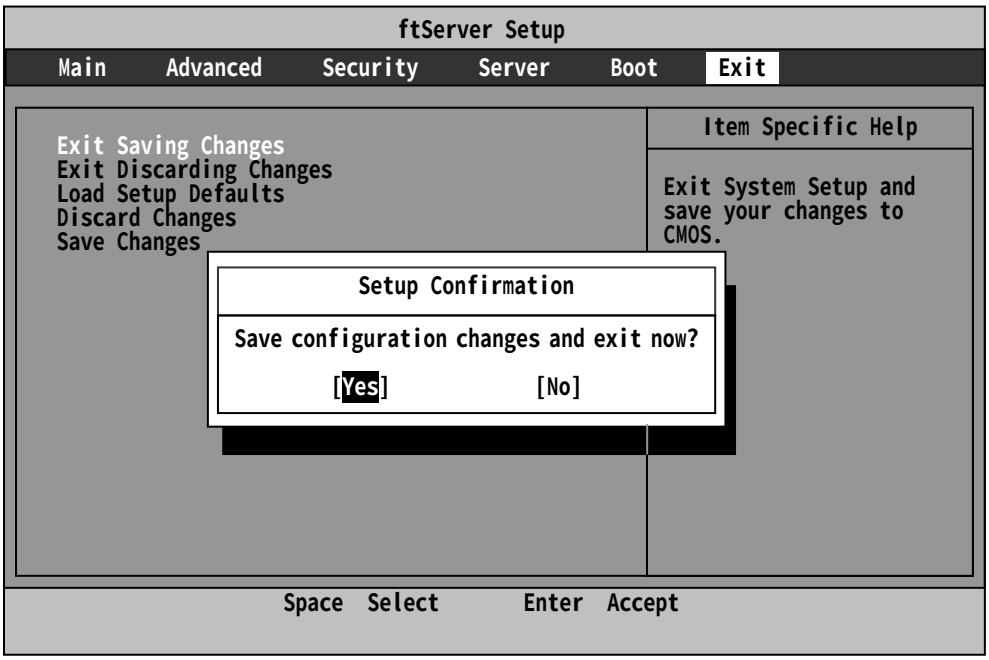


The following describes each option on the Exit menu:

Exit Saving Changes

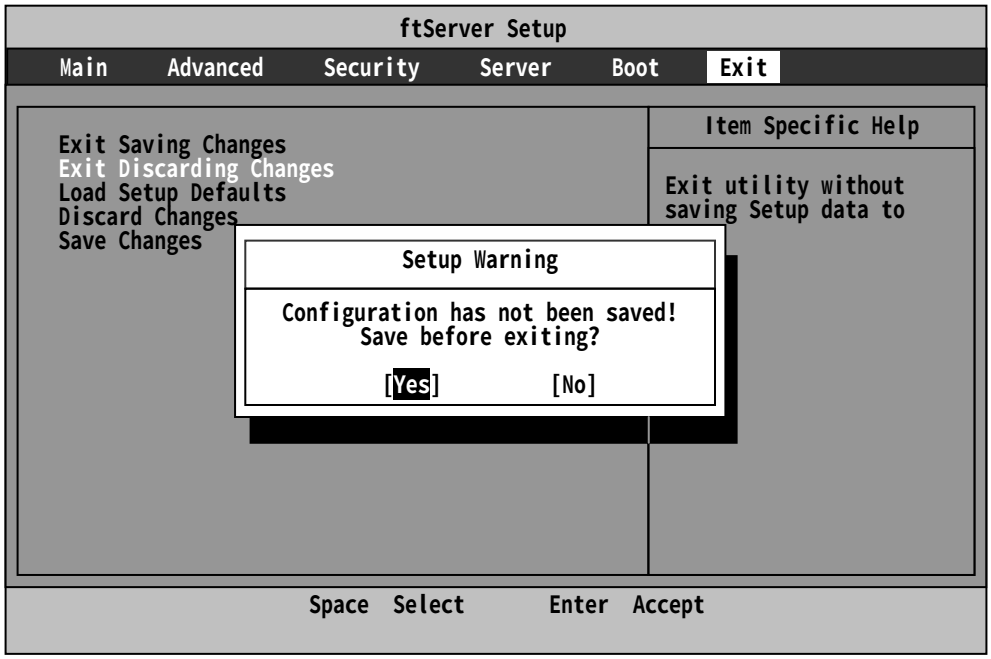
Select this option to save the current configuration data into the CMOS (non-volatile memory) and exit the SETUP utility.

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



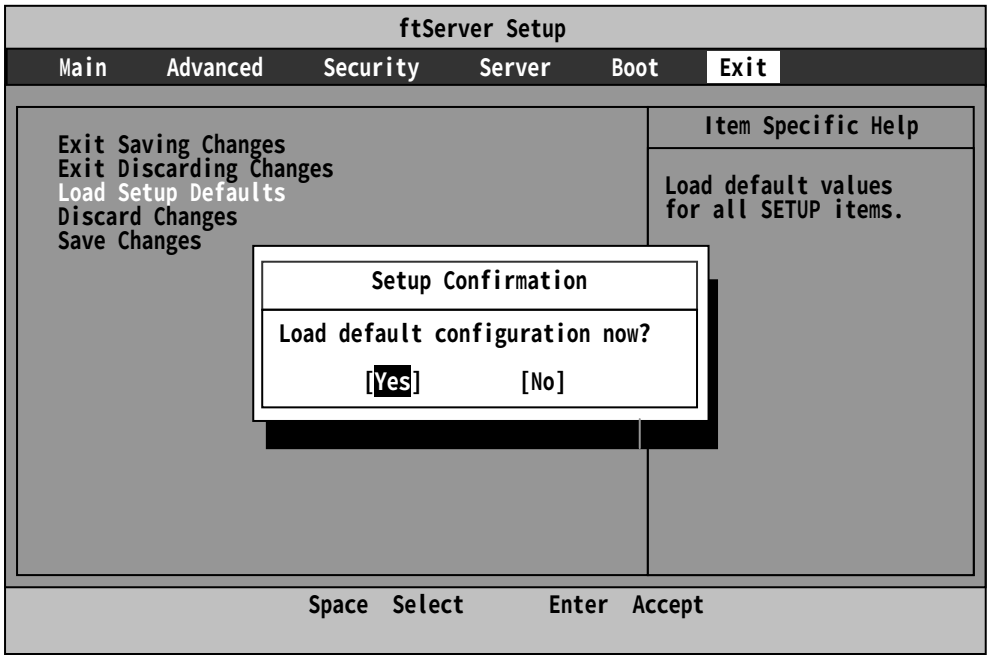
Exit Discarding Changes

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



Load Setup Defaults

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

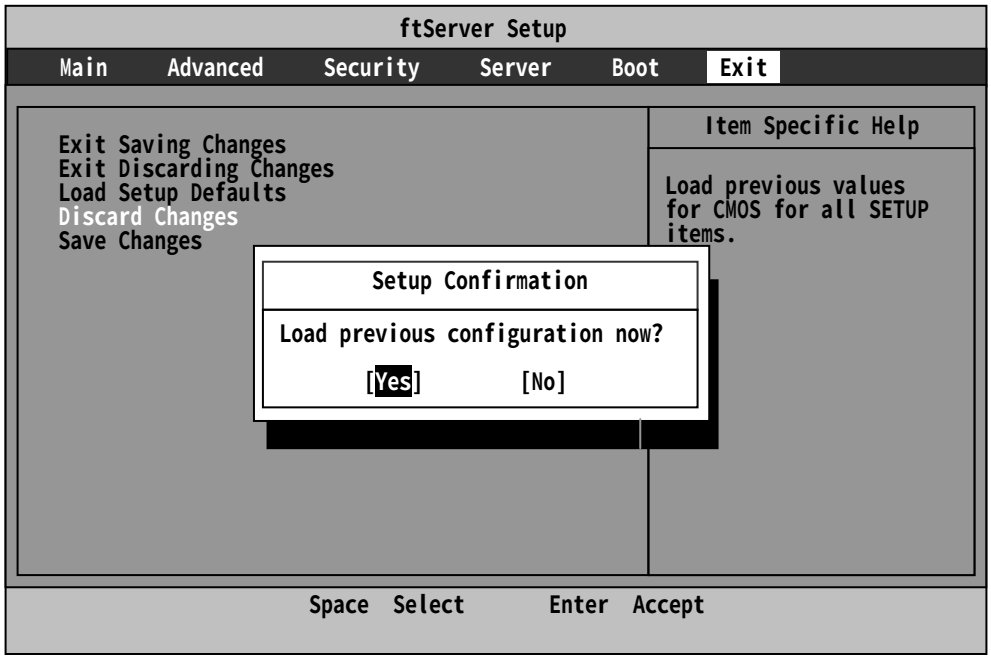


IMPORTANT:

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

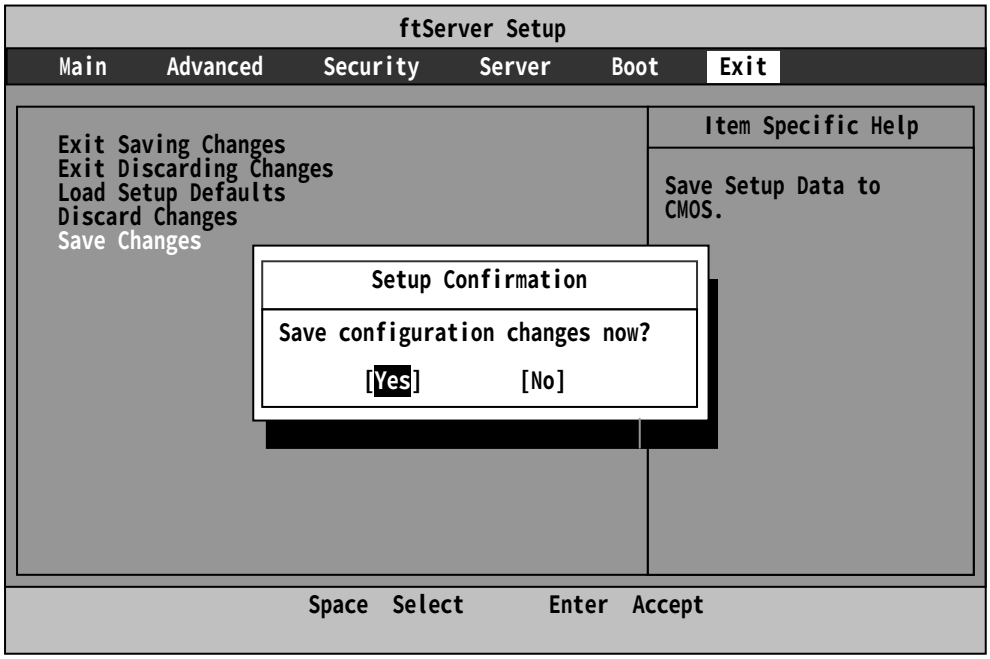
Discard Changes

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



Save Changes

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



SAS BIOS ~Adaptec SAS/SATA Configuration Utility~

Adaptec SAS/SATA Configuration utility makes settings of the built-in SAS controller on a motherboard. You can start it up by simple key operation during POST execution without using any special startup disk.

IMPORTANT:

- Because the server is installed with the latest version of the utility, your screen display may be different from the one described in this guide. For information on options different from those described in this guide, refer to the online help or ask your service agent.
- When you start this utility, select [Server], [Monitoring Configuration], [Option ROM Scan Monitoring], and [Disabled]. If [Enabled] is selected, system may reboot while you are making settings. However, set [Option ROM Scan Monitoring] to [Enabled] after making settings.

Starting and Quitting the Adaptec SAS/SATA Configuration utility

The following section describes the procedures from starting the Adaptec SAS/SATA Configuration utility to quitting the utility.

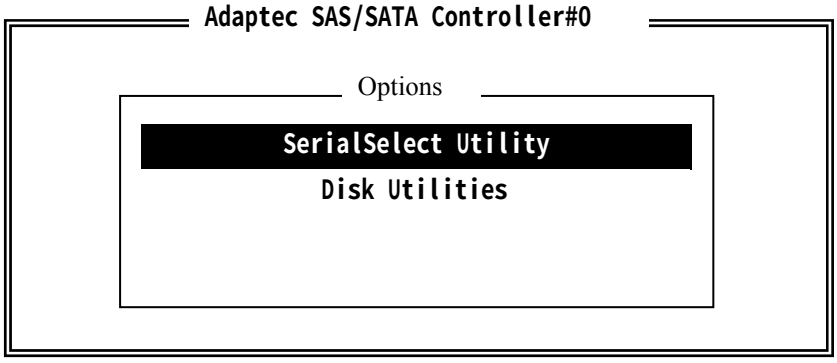
1. Power on the server.

The following message appears on the screen during POST execution.

```
Adaptec Serial Attached SCSI(SAS) BIOS Vx.x-x
(C) 1998-2006 Adaptec, Inc. All Rights Reserved.
◀◀◀ Press <CTRL><A> for Adaptec SAS/SATA Configuration Utility! ▶▶▶
```

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

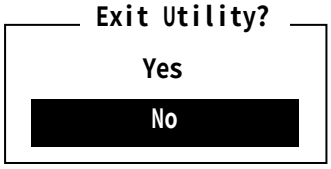
The Adaptec SAS/SATA Configuration utility starts up with the "Main" menu displayed.



3. Select a menu in the “Options”, and then press the **Enter** key.

If you want to make settings of the adapter, select “SerialSelect Utility.”
If you want to format or verify the hard disk drive connected to the adapter, select “Disk Utility.”
For more information, see the explanation below.

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



Parameter and description

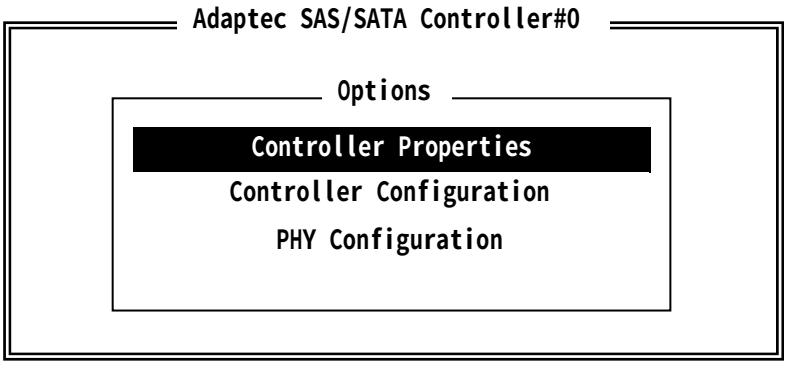
Adaptec SAS/SATA Configuration utility has two types of menu.

- SerialSelect Utility
- Disk Utilities

You can set features that are more detailed by selecting a submenu from these menus. The following describes the features and parameters that can be set in each menu and factory settings displayed on the screen.

SerialSelect Utility

The following screen is displayed when you select “SerialSelect Utility” in the “Options” menu.

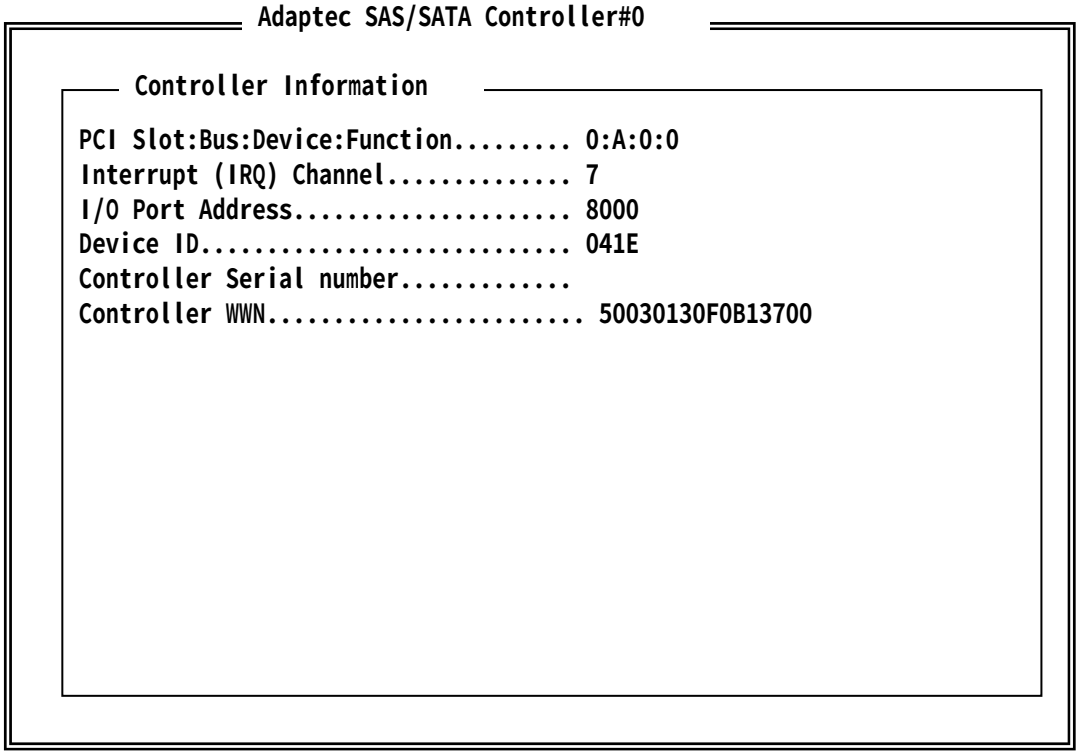


Select an item using the UP and DOWN ARROW keys and press **Enter**. The following describes the menu and parameters.

Tips:
You do not need to specify the parameters. The following is described for reference.

Controller Properties

The following screen is displayed when “Controller Properties” is selected in the menu.



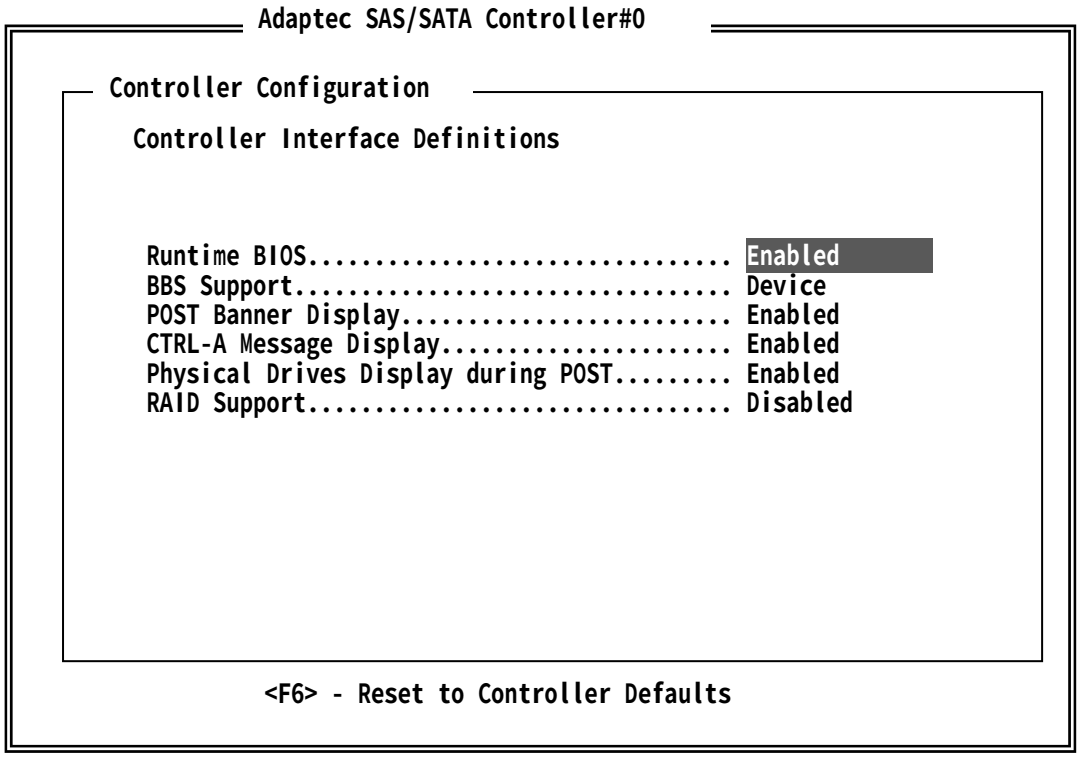
See the following table for each item.

Item	Parameter	Description
PCI Slot Bus: Device:Function	—	Displays the storage device bus on the SAS controller.
Interrupt(IRQ) Channel	—	Displays the interrupt.
I/O Port Address	—	Displays the I/O port device.
Device ID	—	Displays the device ID.
Controller Serial Number	—	Displays the controller serial number.
Controller WWN	—	Displays the controller WWN.

[ ]: factory-setting

Controller Configuration

The following screen is displayed when "Controller Configuration" is selected in the menu.



See the following table for each item.

Item	Parameter	Description
Runtime BIOS	[Enabled] Disabled Disabled:Scan bus	Controls the BIOS status at the POST. If [Enabled] is selected, the controller can be operated as a boot device by SAS controller BIOS. If [Disabled] is selected, other appropriate SAS controllers operate as boot devices.
BBS Support	[Device] Controller	If the setting of BBS support is set to [Device], the boot device connected to SAS controllers is registered to the boot menu of system BIOS. If BBS support is set to [Controller], only SAS controllers are registered to the BIOS boot menu.
POST Banner Display	[Enabled] Disabled	If [Enabled] is selected, Adaptec banner, the version, and copyright are displayed. If [Disabled] is selected, Adaptec banner, the version, and copyright are not displayed.

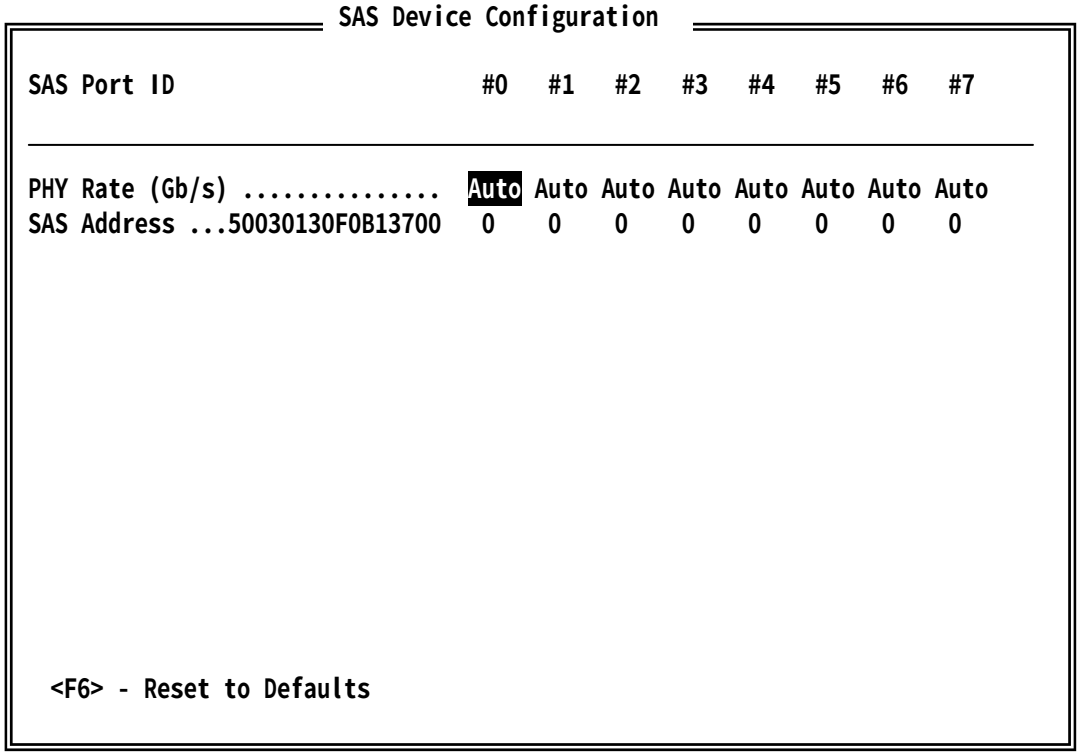
Item	Parameter	Description
CTRL-A Message Display	[Enabled] Disabled	If [Enabled] is selected, the message “Press <CTRL><A> for Adaptec SAS/SATA Configuration Utility!” is displayed in SAS controller BIOS during the POST. Even if this option is set to [Disabled], the utility can be started by pressing **CTRL+A** after the BIOS title of SAS controllers is displayed.
Physical Drivers Display During Post	[Enabled] Disabled	If [Enabled] is selected, connected physical devices are displayed during the system POST. However, depending on the device display, the time that it takes to complete entire POST can become a few seconds longer.
RAID Support	Enabled [Disabled]	Do not set to [Enabled] since RAID is not supported.

[ ]: factory-setting

1. Press **F6** to return to the initial value.
2. To quit, press **Esc** until you see the closing message (If any changes have been made, the massage asking you whether or not to save the changes is displayed.).
3. When the closing message is displayed, select [Yes] to quit SerialSelect Utility and restart the system by pressing any key. The changes made in SerialSelect Utility are enabled after the system is restarted.

PHY Configuration

The following screen is displayed when “PHY Configuration” is selected in the menu.



See the following table for each item

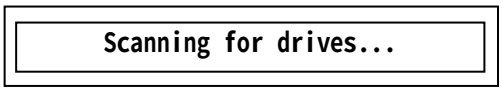
Item	Parameter	Description
PHY Rate	[Auto] 1.5 3.0	Data transfer rate between SAS controller and devices. The initial value is set to [Auto]. SAS card adjusts the rate if necessary.
SAS Address	0-F	Specifies the last digit of a 64-bit SAS address of the SAS controller, device, and each port using a globally unique worldwide name (WWN) identifier.

[ ]: factory-setting

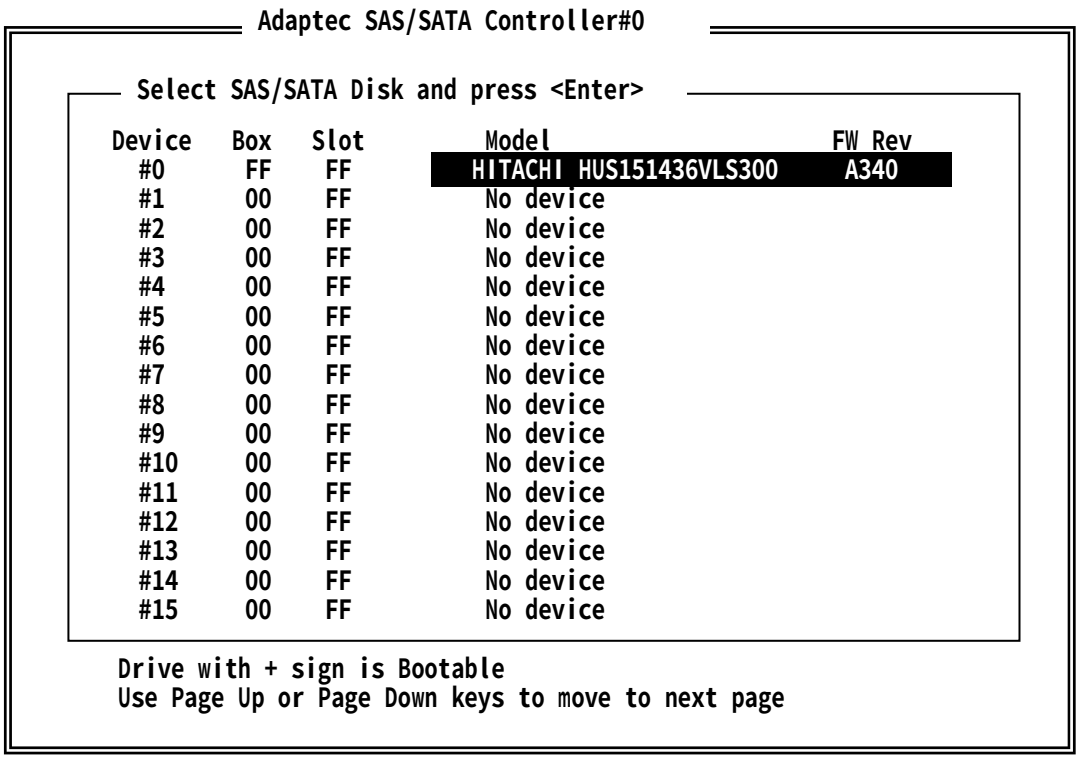
1. Press **F6** to return to the initial value.
2. To quit, press **Esc** until you see the closing message (If any changes have been made, the massage asking you whether or not to save the changes is displayed.).
3. When the closing message is displayed, select [Yes] to quit SerialSelect Utility and restart the system by pressing any key. The changes made in SerialSelect Utility are enabled after the system is restarted.

Disk Utilities

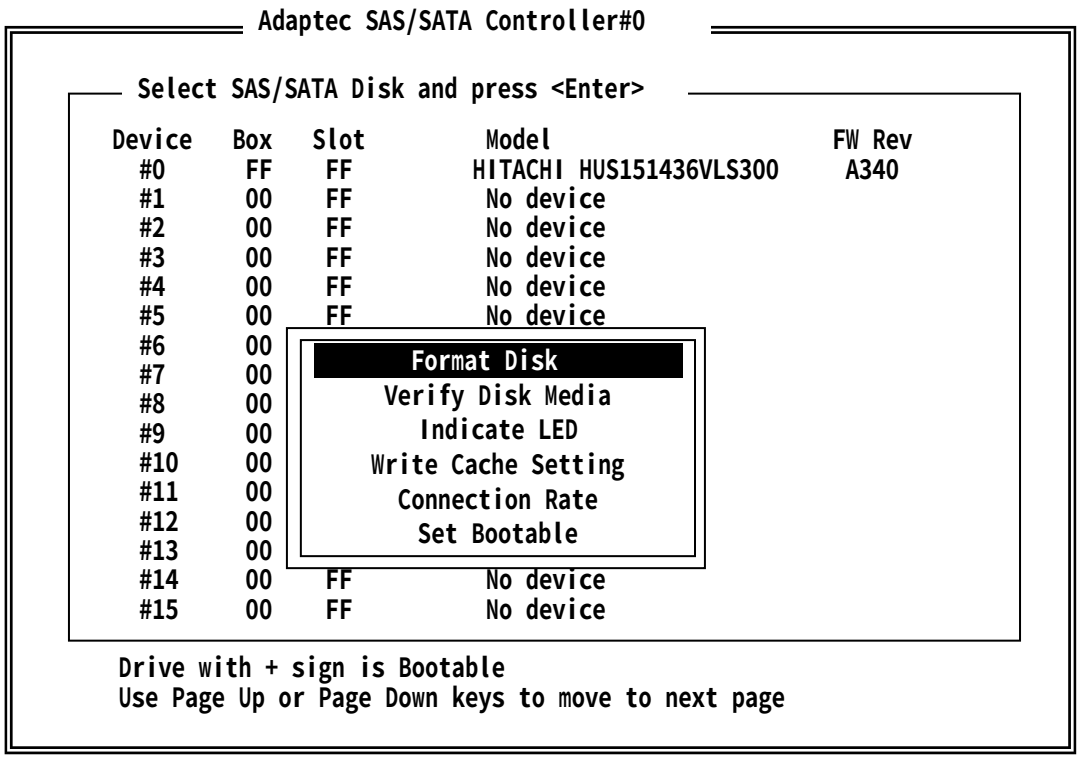
The following screen is displayed when “Disk Utilities” is selected in the menu.



The following screen is displayed after a while.



Select an item using the UP and DOWN ARROW keys and press **Enter**. The following menu will appear.



See the following table for each item.

Item	Parameter	Description
Format Disk	—	Low-level format is simulated by writing entire disk to zero. **TIPS:** Low-level format is performed to the disk drive at factory. You do not need to perform low-level format again. **IMPORTANT:** All the data on the disk is deleted. Back up your data before performing this operation.
Verify Disk Media	—	Check for errors by scanning the disk drive media
Indicate LED	—	Flash the LED on the selected disk drive.
Write Cache Setting	Enabled [Disabled]	Enable/Disable Write Cache.
Connection Rate	[Auto] 1.5Gb/s 3.0Gb/s	The data transfer rate of disk drive. The initial value is set to [Auto]. You do not need to change it.
Set Bootable	Enabled [Disabled]	Set the disk drive to the bootable disk drive. You do not need to change it.

[ ]: factory-setting

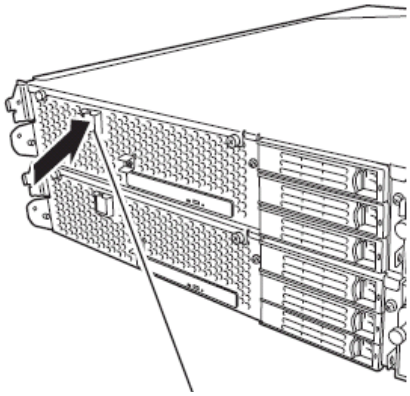
FORCED SHUTDOWN AND CLEAR

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



Press it for over 4 seconds.

CLEAR CMOS/PASSWORD

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

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

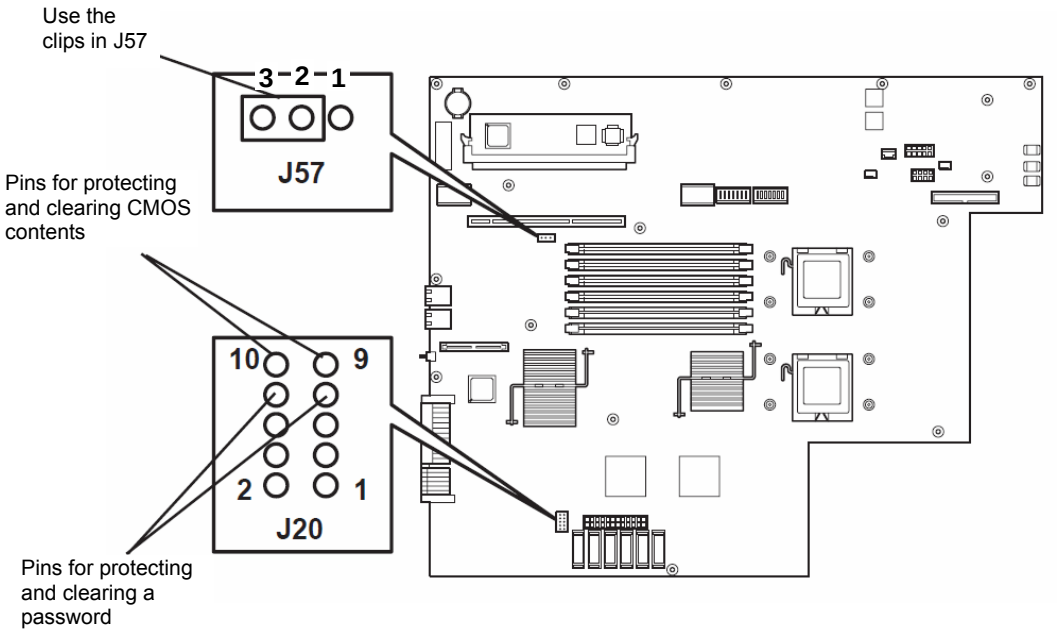
IMPORTANT:

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

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

IMPORTANT:

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



- Pins for protecting/clearing the password

  Short-circuiting the two pins: Clears the password

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

- Pins for protecting/clearing the CMOS data

  Short-circuiting the two pins: Clears the CMOS data

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

The following describe the clearing procedure.

⚠ WARNING

Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See "PRECAUTIONS FOR SAFETY" in Chapter 1.

- Do not disassemble, repair, or alter the server.

How to Clear CMOS

1. Power off the NEC Express5800/ft series and unplug the both power cords.
2. Remove the both CPU/IO modules (0 and 1) from the NEC Express5800/ft series (see "Removing CPU/IO Module" on page 8-11).
3. Make setting of jumper switch for clearing CMOS of CPU/IO module 0.
   Remove the clips from the jumper pins (J57) 2-3 and place them on the jumper pins (J20) 9-10 on the CPU/IO Module 0.
4. Connect only the power cord of the CPU/IO module 0 and press the POWER switch to power on.
5. When POST is completed after the startup, press the POWER switch to power off, and then disconnect the power cord from the outlet.

6. By referring to “Removing CPU/IO Module” on page 8-11, remove the CPU/IO module 0 from the server.
7. Restore the previous CMOS clear jumper switch settings. Remove the jumper pins (J20) 9-10 of the CPU/IO module 0 and install them on the jumper pins (J57) 2-3.
8. By referring to “Installing CPU/IO Module” on page 8-15, install the CPU/IO module 0 on the server.
9. Reconnect only the power cord of the CPU/IO module 0 and press the POWER switch to power on.
10. After the startup, press the **F2** key during POST to start BIOS SETUP.
11. Make settings in SETUP as you desire and then save the settings by selecting “Exit”→ “Exit Saving Changes.” Switch the power off and disconnect the power cord from the outlet.
12. Clear CMOS for the CPU/IO module 1 by following the steps 3 to 12.
13. By referring to “Installing CPU/IO Module” on page 8-15, connect both CPU/IO modules to the device.
14. Connect both power cords.

HOW TO CLEAR PASSWORDS

1. Power off NEC Express5800/ft series and unplug the both power cords.
2. Remove the both CPU/IO modules (0 and 1) from the NEC Express5800/ft series (see "Removing CPU/IO Module" on page 8-11).
3. Make setting of jumper switch for clearing the password of CPU/IO module 0.

   Remove the clips from the jumper pins (J57) 2-3 on CPU/IO module 0 and place them on the jumper pins (J20) 7-8 on the CPU/IO module 0.
4. Mount the CPU/IO module 0 to NEC Express5800/ft series (see "Installing CPU/IO Module" on page 8-15).
5. Connect the power cord of CPU/IO module 0 only, and then press the POWER switch to power on.
6. When POST is completed after the startup, press the POWER switch to power off, and then disconnect the power cord from the outlet.
7. By referring to "Removing CPU/IO Module" on page 8-11, remove the CPU/IO module 0 from the server.
8. Reset the jumper switch setting.

   Remove the clips from the jumper pins (J20) 7-8 and place them on the jumper pins (J57) 2-3 on the CPU/IO module 0.
9. Clear password for the CPU/IO module 1 by following the steps 3 to 8.
10. By referring to "Installing CPU/IO Module" on page 8-15, install both CPU/IO modules on the server.
11. Connect both power cords.

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. CPU/IO module has a processor function part and IO function part. In utilities in this chapter, the processor function part is referred to as CPU module and IO function part PCI module.

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 two 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 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.

  Setup the NEC Express5800/ft series from this menu.

IMPORTANT:

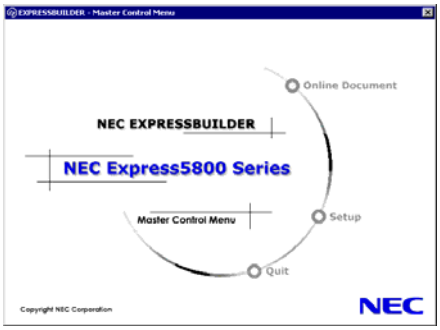
- Do not use this CD-ROM on computers other than this server with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.

As for the NEC EXPRESSBUILDER top menu, see “NEC EXPRESSBUILDER Top Menu” described next.

- Inserting NEC EXPRESSBUILDER CD-ROM after Windows startup

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

  For this dialog, see “Master Control Menu” described later.



NEC EXPRESSBUILDER Top Menu

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with local console.

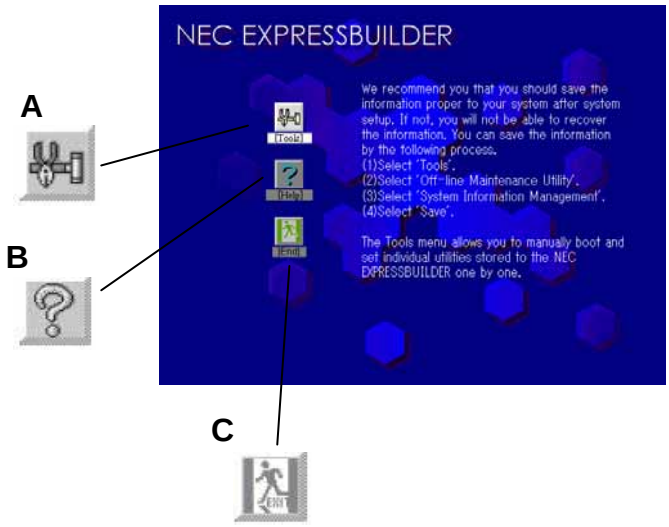
Start

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 DVD-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.



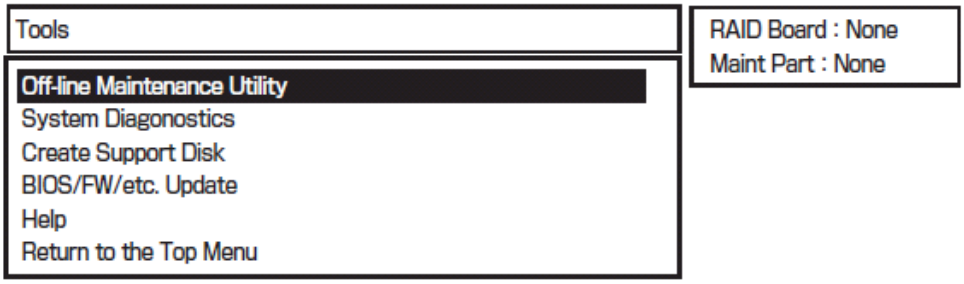
A Tools
Starts each of the utilities stored in the NEC EXPRESSBUILDER individually to allow the operator to provide setup. Enables the setup without influence of installed OS.

B Help
Describes the NEC EXPRESSBUILDER. We recommend you to read through the help before the setup.

C Exit
The NEC EXPRESSBUILDER termination screen appears.

Tools Menu

"Tools" is also intended for initial setup of the server. It permits the user to quickly create utility support disks, run the Off-lineMaintenance Utility and system diagnostic utility, and update the various BIOS programs.



- Off-line Maintenance Utility

  Off-line Maintenance Utility is a utility for performing preventive maintenance and error analysis for your server. See Chapter 6 or the online help for details.

- System Diagnostics

  Executes several tests on the main system to examine the features of the system and the connections between the system and extension boards. If the system diagnostics is executed, the system check program is started depending on the system status. See the description in Chapter 6 to manipulate the system check program.

- Create Support Disk

  In the support disk creation procedure, the startup 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 displayed on the screen onto the floppy disk labels, they can be easily managed later.

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

  - Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER
    Creates a support disk required for recovering the system.
  - ROM- DOS Startup FD
    The support disk for starting the ROM -DOS system is created.
  - Off-line Maintenance Utility FD
    Creates a support disk for activating the Off-line Maintenance Utility.
  - System Diagnostics Utility FD
    The support disk for starting the system check program is created.

- BIOS/FW/etc. Update

  The program which is necessary for the update work is transferred to the floppy disk which the various update modules of BIOS and firmware were stored in. After the reboot, an update program is started automatically from the floppy disk, and various BIOS and firmware are updated.

  IMPORTANT:

  During the execution of the update program, do not turn off the power of the system. If the update is interrupted halfway, the system will not be able to be started.

- Help

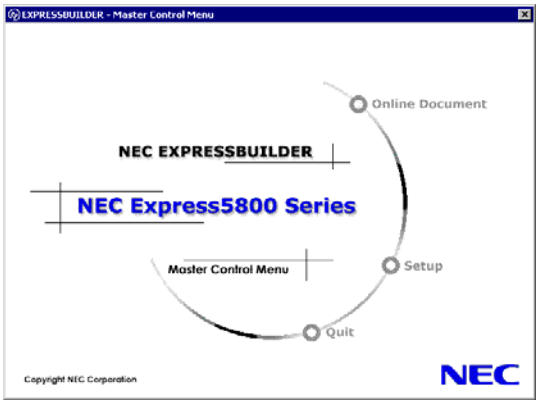
  Displays descriptions on features of the NEC EXPRESSBUILDER.

- Return to the Top Menu

  Displays the NEC EXPRESSBUILDER top menu.

Master Control Menu

The Master Control Menu automatically appears when the “NEC EXPRESSBUILDER” CD-ROM is loaded on a computer running Windows (Windows 95 or later or Windows NT 4.0 or later).



TIPS:
Depending on the condition of the system, the menu may not be automatically started. In such a case, execute the file below on the CD-ROM from Windows Explorer or by other means:

\MC\1ST.exe

From the Master Control Menu, you can install various software which runs on Windows or view online documents.

TIPS:

Some online documents are provided in the PDF format. Acrobat Reader of Adobe Systems Incorporated is required for viewing such files. If it is not installed, click [Setup] - [Acrobat Reader] and install Acrobat Reader.

To use the Master Control Menu, click items displayed on the window or use the shortcut menu which is displayed by right-clicking.

IMPORTANT:

Before ejecting the CD-ROM, close all online documents and terminate tools started from the Master Control Menu and Menu.

NEC ESMPRO Agent AND Manager

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

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 in real time and also the occurrence of a fault to be detected immediately by the alert report function.

- Effects of using NEC ESMPRO Manager and NEC ESMPRO 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 chassis 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 AlertViewer 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 chassis, 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 the CPU usage rate and the empty capacity in a file system, etc. 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 the 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 DataViewer of NEC ESMPRO Manager.

NEC ESMPRO Agent also manages and monitors components and conditions required to keep the server reliability at a high level such as hard disks, CPU, 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 component fails, the NEC ESMPRO fault report function can notify the system Administrator of the occurrence of the fault. In addition, the DataViewer of NEC ESMPRO Manager can monitor the system status and also identify the failed component.

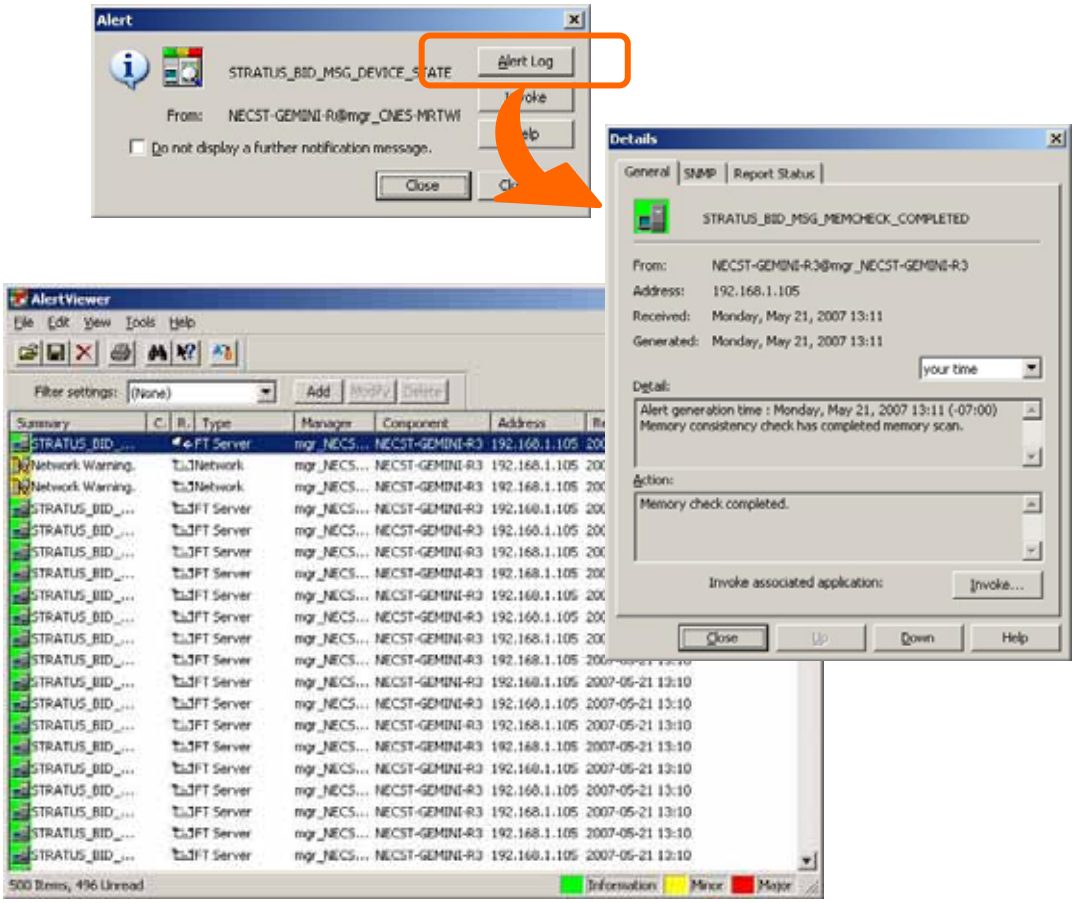
NEC ESMPRO provides several maintenance functions such as the update of F/W and BIOS in the NEC Express5800/ft series in the online state (in which the system continues the operation but the components used to update F/W or BIOS is suspended) and the suspension of a specific component.

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 DataViewer
Start/stop of major components and F/W update	NEC ESMPRO Agent ft server utility	NEC ESMPRO Manager DataViewer
Confirmation of alert or confirmation of fault occurrence event information	Syslog	NEC ESMPRO Manager AlertViewer

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.



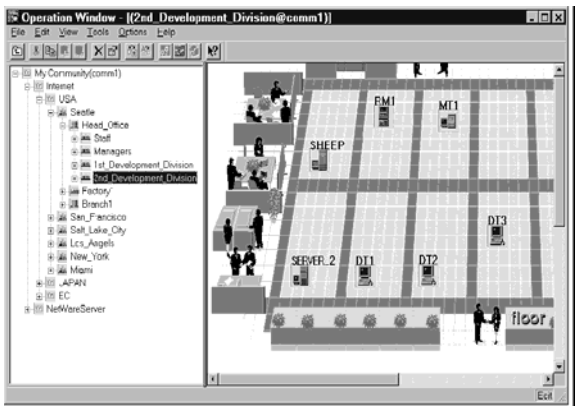
Collective Management of Distributed Servers

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.

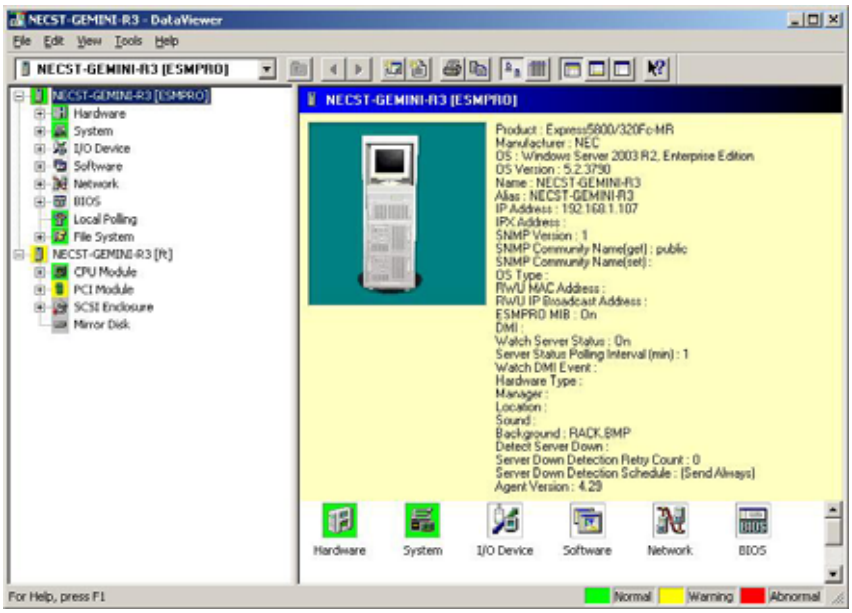
- Operation Window

  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.



- DataViewer

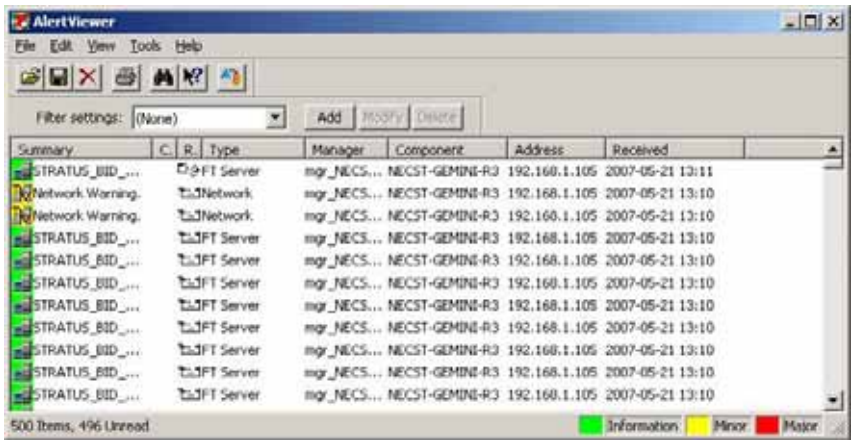
  The DataViewer indicates the server source configuration information in the Explorer format. In addition, it changes the status color of the failed server component. This enables you to identify the failed portion.



- AlertViewer

  The AlertViewer manages fault reports sent from servers together. A fault occurred in a server is immediately reported to the AlertViewer.

  The Administrator can recognize all faults on the network instantly.



NEC ESMPRO Agent

NEC ESMPRO Agent is a utility which acts as an agent (proxy) between NEC Express5800/ft series and NEC ESMPRO Manager (management PC). For details on the operating environment, the setting required before the setup, and the installation procedure, see the separate volume “User’s Guide (Setup)”.

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 0	0
DIMM CH0/CH1 SLOT 0 on CPU module 0	0/0
DIMM CH0/CH1 SLOT 1 on CPU module 0	0/1
DIMM CH0/CH1 SLOT 2 on CPU module 0	0/2
DIMM CH0/CH1 SLOT 3 on CPU module 0	0/3
DIMM CH0/CH1 SLOT 4 on CPU module 0	0/4
DIMM CH0/CH1 SLOT 5 on CPU module 0	0/5
CPU0 on CPU module 0	0/20
CPU1 on CPU module 0	0/23
CPU module 1	1
DIMM CH0/CH1 SLOT 0 on CPU module 1	1/0
DIMM CH0/CH1 SLOT 1 on CPU module 1	1/1
DIMM CH0/CH1 SLOT 2 on CPU module 1	1/2
DIMM CH0/CH1 SLOT 3 on CPU module 1	1/3
DIMM CH0/CH1 SLOT 4 on CPU module 1	1/4
DIMM CH0/CH1 SLOT 5 on CPU module 1	1/5
CPU0 on CPU module 1	1/20
CPU1 on CPU module 1	1/23
PCI module 0	10
PCI slot 1 on PCI module 0	10/6
PCI slot 2 on PCI module 0	10/7
PCI slot 3 on PCI module 0	10/8
Ethernet Board 1 on PCI module 0	10/2
PCI module 1	11
PCI slot 1 on PCI module 1	11/6
PCI slot 2 on PCI module 1	11/7
PCI slot 3 on PCI module 1	11/8
Ethernet Board 1 on PCI module 1	11/2

Device name	Device ID
SCSI enclosure 0	10/40
SCSI slot 1 on SCSI enclosure 0	10/40/1
SCSI slot 2 on SCSI enclosure 0	10/40/2
SCSI slot 3 on SCSI enclosure 0	10/40/3
SCSI enclosure 1	11/40
SCSI slot 1 on SCSI enclosure 1	11/40/1
SCSI slot 2 on SCSI enclosure 1	11/40/2
SCSI slot 3 on SCSI enclosure 1	11/40/3

Supplement

Note the followings when using NEC ESMPRO Agent.

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 [ft] tree of the DataViewer, unknown or incorrect information appears in some information items.

The CPU information can be viewed by selecting [System] – [CPU] in the [ESMPRO] tree.

Status during CPU Module Diagnosis

While diagnosing a stopped CPU module, the CPU is no longer in the duplex mode and the CPU and the memory cannot be used. However, the status of [CPU] and [DIMM] displayed under [CPU module] in the ft tree on a DataViewer becomes “Online” and the status color becomes green.

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 DataViewer, the message prompting you to reconstruct the tree of the DataViewer will appear. If you click the [Yes] button, the tree is reconstructed in the DataViewer to reflect the change of the system configuration on the DataViewer. Clicking the [No] button does not cause the tree to be reconstructed in the DataViewer. If so, the information in the DataViewer may be different from the current system information because the change of the system configuration is not reflected on the DataViewer.

SCSI Slot Information

When the PCI module is detached and you select [SCSI Slot] – [General], 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 Drive

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.

Total Status of the PCI Module

When each module's status is simplex, the total status of the PCI module displayed on the DataViewer is yellow (warning) and the status will be reflected to the server status. The ft control software 3.0 or later does not display the information on Ethernet or SCSI adapter on the tree of the DataViewer. If an error occurs on an Ethernet or SCSI adapter, view the alert reports.

The Information on the Hard Disk Drive in the Disk Expansion Unit is not Displayed Correctly.

When the Disk Expansion Unit is mounted, the information on the hard disk drive in the Disk Expansion Unit may not be displayed on the [SCSI Enclosure] – [SCSI Slot] information on a DataViewer. In such case, reboot the system.

LAN Monitoring Report

The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is reported immediately, temporal high line impedance may have occurred thus there is not any problem.

LAN Monitoring Threshold

Because 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 is not used.

snmpd configuration files used by ft-snmp

Unlike /etc/snmp/snmpd.conf, which is default of snmpd, /etc/opt/ft/snmp/snmpd.conf which is used by ft-snmp does not work properly without the modification described below.

Configure the appropriate IP address at "IP_ADDR_1" and "IP_ADDR_2" described in “source” of “security name”, otherwise an error occurs on “IP_ADDR” described in “SNMP trap configuration section.”
If the IP address is not used, comment out the lines including those related with "group","view" and "access".

```
# community -> security name
#           sec.name        source                  community
com2sec   local           localhost               private
com2sec   mib2-user       IP_ADDR_1                 public
com2sec   ucd-user        IP_ADDR_2                 public


# ---- SNMP trap configuration section ----

trapcommunity     public
trapsink          IP_ADDR          public
trap2sink         IP_ADDR          public
informsink        IP_ADDR          public
```

For details on each configuration, refer to online help of snmpd. To enable the configuration for snmpd.conf, it is required to execute the following command and restart snmpd.
service ft-snmpd restart

Community Authority

Depending on your OS type or its version, settings for community, snmpd daemon's security function, are not made, or default settings of authority are different.

To enable the remote shutdown and threshold change functions via NEC ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

Hardware Monitoring by ESMPRO

In NEC Express5800/320Fc-MR, an alert report is not issued if an error on temperature/fan/power supply/voltage is detected in CPU module and PCI module.

Moreover, the trees [Temperature], [Fan], [Voltage], and [Power Supply] are not displayed on [System Environment] of DataViewer of NEC ESMPRO Manager.

Change of SNMP Community

If the security setting of the snmpd daemon of a system, where the NEC ESMPRO Agent is installed, is changed to a community name, change the community settings of the NEC ESMPRO Agent, too.

1. Log on to the system as a user with a root authority.
2. Move to the directory where the NEC ESMPRO Agent is installed.

   # cd /opt/nec/esmpro_sa
3. Move to the directory where Control Panel is stored.

   # cd bin

4. Execute the following command:

   # ./ESMagntconf

   Control Panel will start.

5. You choose arbitrary community name among [SNMP Community] list box in the [General].

   Community name becoming the object of the reception is displayed with a list by "SNMP Community" list box.

6. Please choose [OK].

Alert is redundantly reported to NEC ESMPRO Manager:

When NEC ESMPRO Manager's IP address (or host name) assigned to SNMP to send traps is assigned in the message manager (TCP/IP), a warning message for redundancy is displayed. Alert is redundantly reported when the same NEC ESMPRO Manager is assigned.

NEC ESMPRO Agent does not operate properly:

When SNMP service is added after applying service pack when OS is installed, apply service pack again. Otherwise, SNMP service does not run properly and NEC ESMPRO Agent may not run.

SNMP service is necessary for NEC ESMPRO Agent to run. If you deleted SNMP service after installing NEC ESMPRO Agent, reinstall NEC ESMPRO Agent after installing SNMP service.

SNMP service may be used among other software. If you install SNMP service and NEC ESMPRO Agent while such software is installed, NEC ESMPRO Agent service may not be able to start. In such case, delete SNMP service once and install it again. Then, reinstall NEC ESMPRO Agent and other software described above.

When installing NEC ESMPRO Agent, describe the following three lines for snmpd.conf.

```
dlmod ntpass /opt/nec/esmpro_sa/lib/ntpass.so
ntpass    .1.3.6.1.4.1.219.2.2.4.4
ntpass    .1.3.6.1.2.1.10.7
```

If you use non-NEC software or an original snmpd.conf, NEC ESMPRO Agent does not operate properly. In such a case, describe the three lines shown above on the snmpd.conf file that you are intending to use.

In NEC Express5800/ft series, the configuration file for snmpd uses /etc/opt/ft/snmp/snmpd.conf. If you restart snmpd, NEC ESMPRO Agent does not operate successfully because right configuration file is not applied. To avoid this problem, you must restart the ft-snmp file for this server.

```
# service ft-snmpd restart
```

Connection with Hard Disk Drive

The preventive hard disk drive maintenance function may not work properly when a hard disk drive which was used in a system where NEC ESMPRO Agent is installed is connected to other systems. Make sure not to connect such hard disk drives.

Change Settings of File System Monitoring Function

New settings in thresholds of monitoring interval and free space monitoring are not reflected immediately after they are changed. They are reflected at the next monitoring interval of monitoring service.

CPU Load Ratio of snmpd daemon

While monitoring the server from NEC ESMPRO Manager, the CPU load ratio of snmpd daemon 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 snmpd daemon. 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 snmpd daemon 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 snmpd daemon

snmpd daemon has a module called "SNMP Extended Agent." This module may be registered when you install some software that uses snmpd daemon.

If you start snmpd daemon, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, snmpd daemon 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 snmpd daemon.

CPU Information

In [CPU Information] of DataViewer's system tree, the external clock is listed as "Unknown."

When [ft] Tree Appears on Date Viewer in an Incorrect Manner

If you open a DataViewer immediately after the system starts up, the tree or the state of a DataViewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system startup, when a pop-up message (below) which prompts you to reconstruct a DataViewer appears, click [OK]. The DataViewer will be reconstructed and the tree and the status will be displayed correctly.

> DataViewer
>
> The system configuration of the host may have been changed. Do you wish to reconstruct the tree?

Floppy Disk Drive Information

If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the DataViewer will be updated at the next system startup.

Information of the keyboard/mouse connected with USB

When the keyboard or mouse is connected with USB, the keyboard or mouse information under the [I/O Device] in the DataViewer is listed as "Unknown."

Ethernet Adapters You Do Not Use

Disable the unused Ethernet adapter (that is not connected to cable) by using vndctl utility. If an Ethernet adapter you are about to disable has dual LAN configuration, remove the dual LAN configuration before disable it.

DataViewer display when only one of the PCI modules (IO modules) is operating

When only one of the PCI modules (IO modules) is operating (non-dual configuration), the SCSI enclosure or mirror disk status cannot be displayed normally.

To check if the dual configuration is changed to the simplex operation mode, check the syslog, AlertViewer log, or the status color of PCI module of DataViewer.

Display of Ethernet Board of ftServer Utility

ftServer Utility displays the information of Network Controller.
NEC Express5800/320Fc-MR has four in-built Network Ports. Two trees of the Ethernet Board are displayed since a module has two network controllers.

Memory usage of ntagent

When the DataViewer of NEC ESMPRO Manager is displayed, about 10 KB per hour is used on the memory usage of ntagent. Display the DataViewer only when a failure occurs.

The status color of Ethernet Board of DataViewer

The status color of DataViewer in [ft] - [PCI module] - [Ethernet Board] depends on the “LINK” status of network device. If it is not linked up, it turns red (Abnormal).

NEC Express5800/320Fc-MR has in-built Network Ports. Two trees of the Ethernet Board are displayed since a module has two network controllers, yet the icon color for two ports shows being effective. Therefore, when the network device is not linked up without using one of ports, the icon of [ft] tree of DataViewer turns red.

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 Manager User's Guide* in the NEC EXPRESSBUILDER CD-ROM.
- The sample screen shown in this subsection may differ from that of your server software; however, it offers the same function.

Monitoring by Use of DataViewer

To monitor the state of the NEC Express5800/ft series on a management computer with installation of NEC ESMPRO Manager, the DataViewer 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 DataViewer 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 DataViewer.

To make the DataViewer 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 DataViewer (in the following description, the start procedure of the DataViewer is omitted).

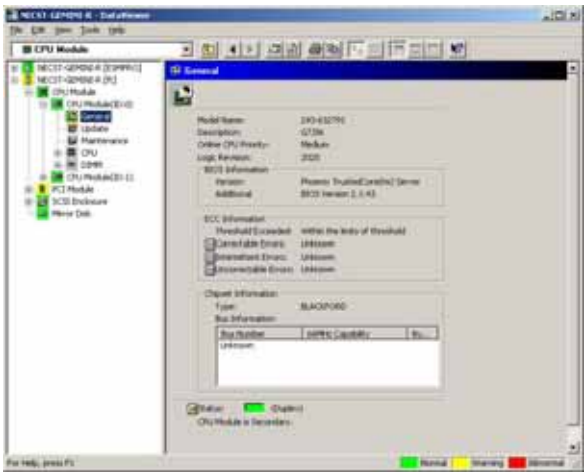
Monitoring CPU Module

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 [ft] tree.

You can see the following information on the modules and the components on the CPU modules in the [CPU Module] tree.

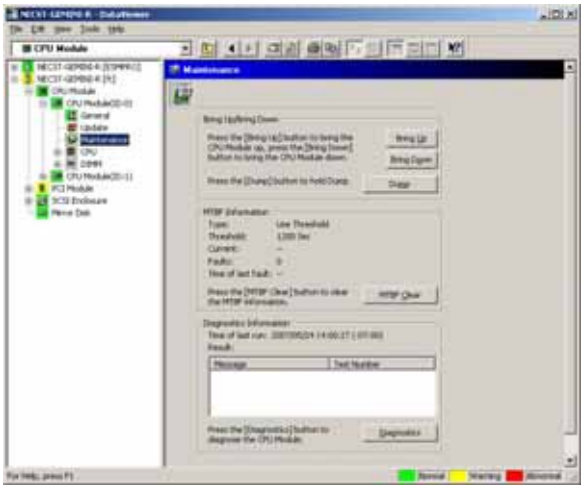
- General

  Allows the configuration and other information on the CPU modules to be viewed.



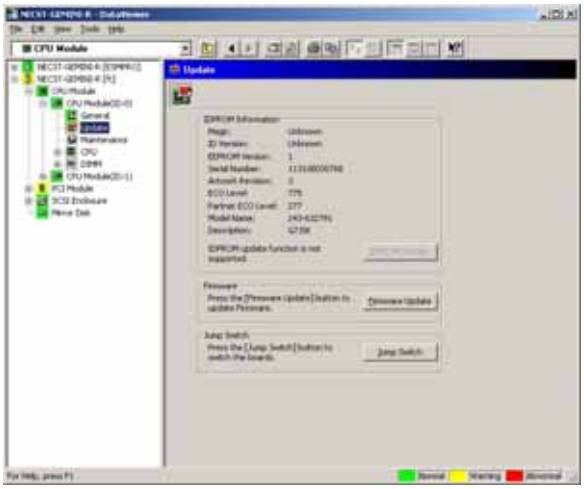
- Maintenance

  Allows the start/stop, MTBF information clear 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 PCI modules.



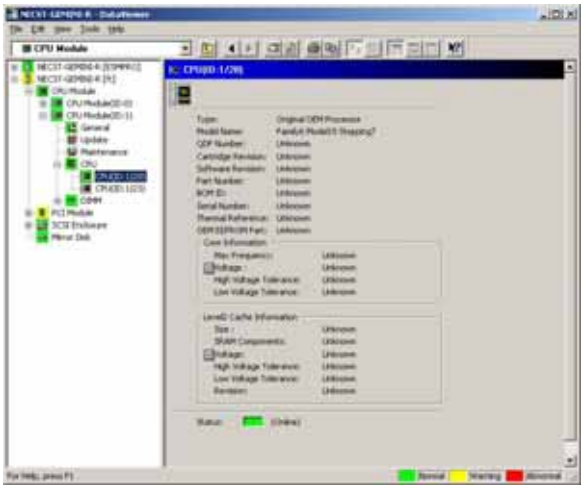
- Update

  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] tree→[Hardware] tree→[Field Replaceable Unit] tree.



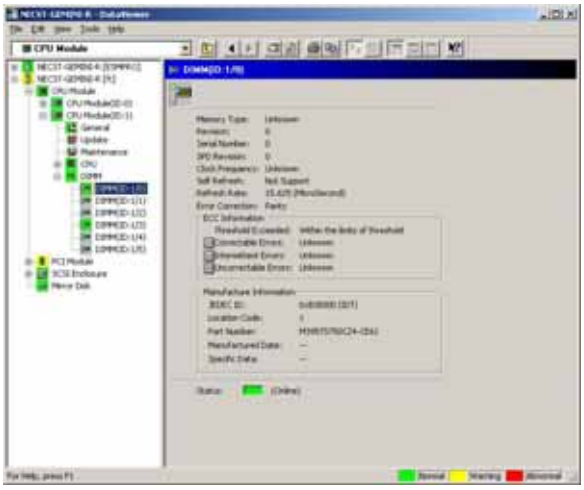
- CPU

  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.



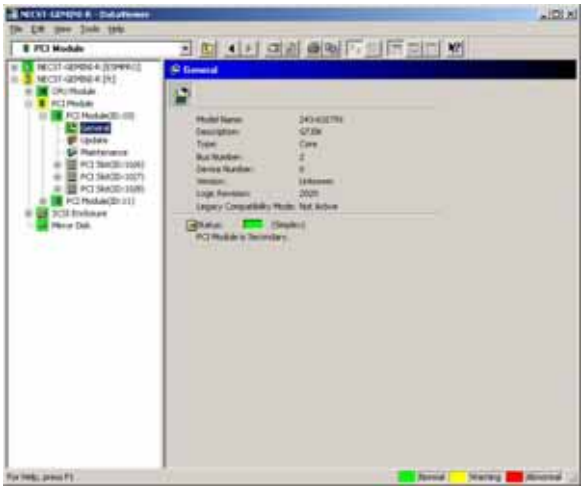
Monitoring PCI Module

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 [ft] tree.

You can see the following information on the PCI modules and the components on the PCI modules of the [PCI Module] tree.

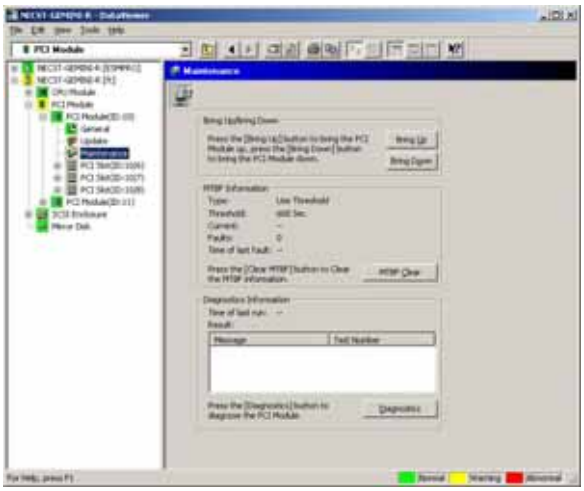
(This section describes the general information screens of the PCI modules. The components on the PCI modules are described later.)

- General
  Allows the configuration and other information of the PCI modules to be viewed.



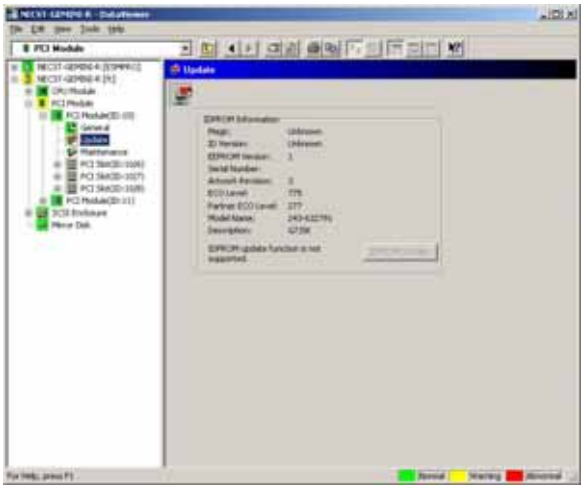
- Maintenance

  Allows the start/stop, MTBF information clear 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 PCI 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] tree→[Hardware] tree→[Field Replaceable Unit] tree.

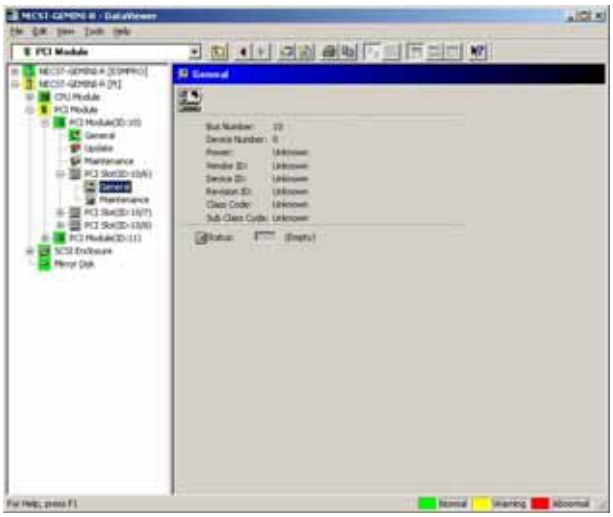


Monitoring PCI Slots and Devices on PCI Module

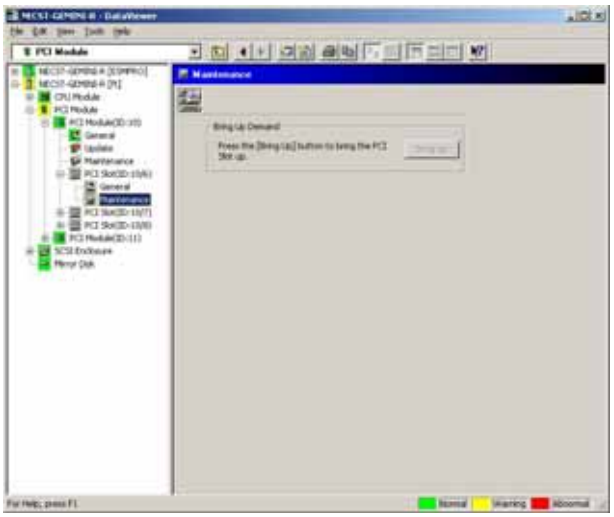
To monitor the PCI slots and devices on the PCI modules, see the [PCI slot] tree. To see the information on the [PCI slot] tree, select [PCI Module]→[PCI module (containing PCI slot to be seen)]→[PCI slot] of the [ft] tree.

You can see the following information on the PCI slot and the devices on the PCI slot in the [PCI slot] tree.

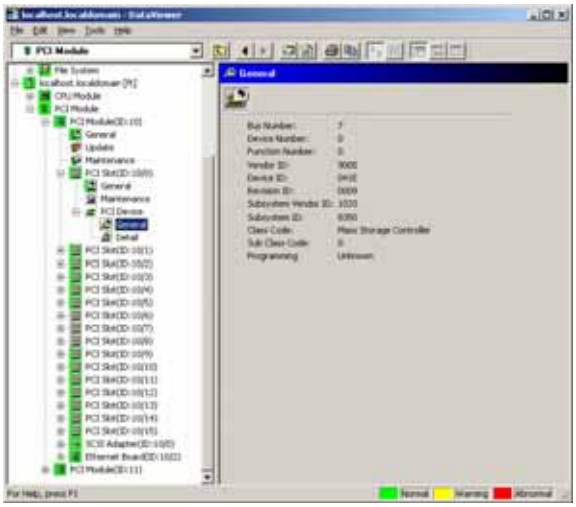
- General
  Allows the PCI slot configuration information to be viewed.



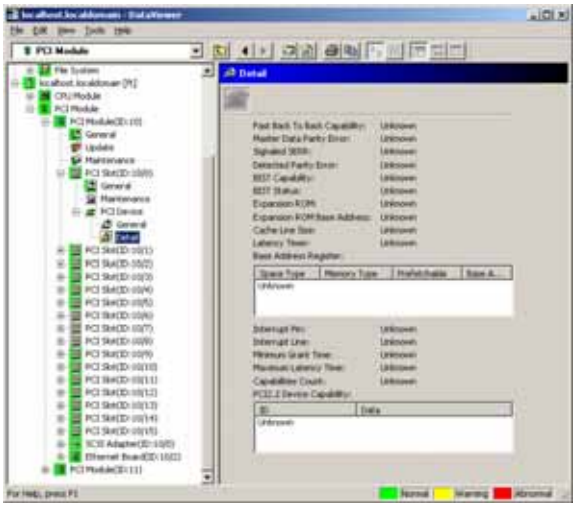
- Maintenance
  Allows a device on the PCI slot to be started. This function is not supported in the current version.



- PCI Device – General
  Allows the information of devices on the PCI slot to be viewed.



- PCI Device – Detail
  Allows the detailed information of a device on the PCI slot to be viewed.



- PCI Device – General
  Allows the information of devices on the PCI slot to be viewed.
  This function is not supported in the current version.
- PCI Device – Detail
  Allows the detailed information of a device on the PCI slot to be viewed.
  This function is not supported in the current version.
- PCI Bridge – General

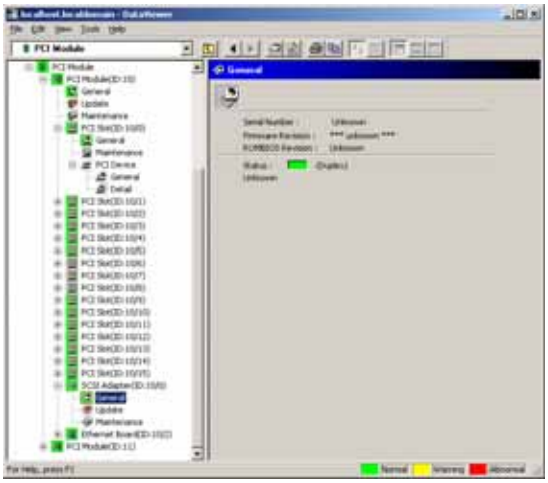
Allows the information of bridges on the PCI bus to be viewed.
This function is not supported in the current version.

- PCI Bridge – Bus
  Allows the bus information of a bridge on the PCI bus to be viewed.
  This function is not supported in the current version.
- PCI Bridge – Detail
  Allows the detailed information of a bridge on the PCI bus to be viewed.
  This function is not supported in the current version.

Monitoring SCSI adapter on PCI module

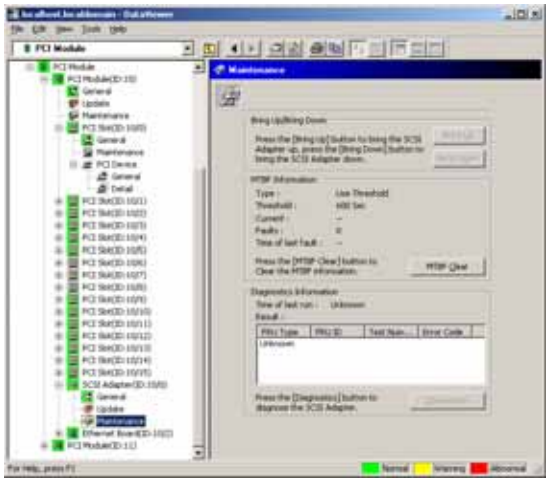
To monitor the SCSI adapters on the PCI modules, see the [SCSI adapter] tree. To see the information on the [SCSI adapter] tree, select [PCI Module]→[PCI module (connected to SCSI adapter to be seen)]→[SCSI adapter] of the [ft] tree.
You can see the following information on the SCSI adapters in the [SCSI adapter] tree.

- General
  Allows the SCSI configuration information to be viewed.



- Update
  Allows the firmware of SCSI adapters to be updated. This function is not supported in the current version.

- Maintenance
  Allows the MTBF information of SCSI adapters to be viewed and cleared. See "Maintenance of NEC Express5800/ft series" described later for the MTBF information clear of the SCSI adapter.



- SCSI bus
  Allows the information on the SCSI bus connected to SCSI adapters and devices to be viewed. This function is not supported in the current version.

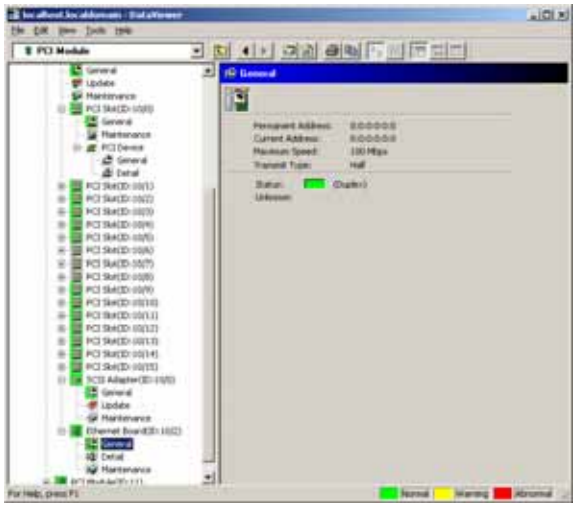
Monitoring Ethernet adapter on PCI module

To monitor the Ethernet adapters on the PCI modules, see the [Ethernet adapter] tree. To see the information on the [Ethernet adapter] tree, select [PCI Module]→[PCI module (connected to the Ethernet adapter to be seen)]→[Ethernet adapter] of the [ft] tree. You can see the following information on the Ethernet adapters in the [Ethernet adapter] tree.

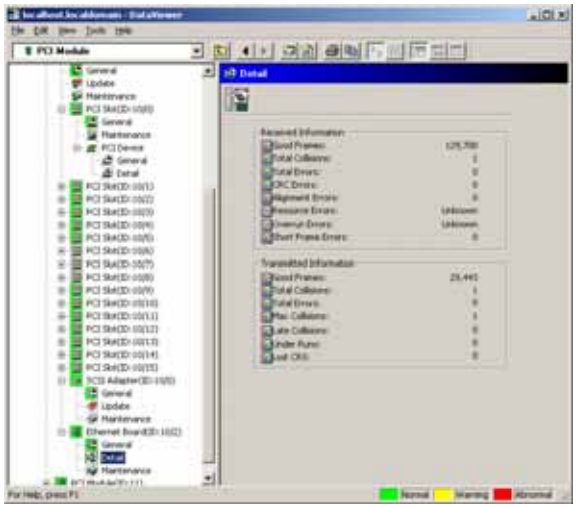
IMPORTANT:

Disable the unused Ethernet adapter (that is not connected to cables) by using vndctl utility. If the Ethernet adapter to be disabled is set to dual LAN configuration, remove the dual LAN configuration adapter before disable it.

- General
  Allows the Ethernet adapter configuration information to be viewed.

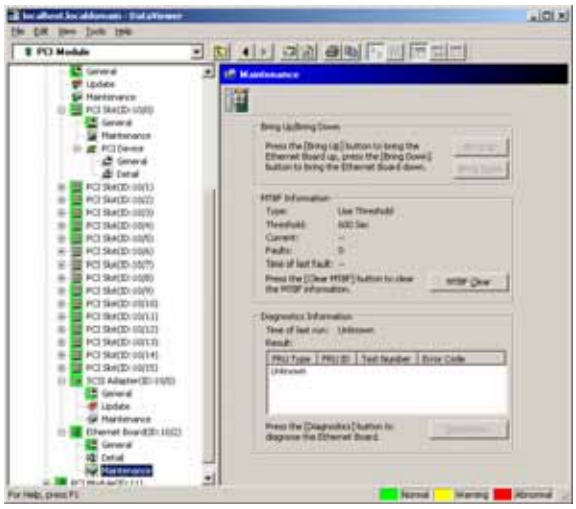


- Detail
  Allows the detailed information of the Ethernet adapter to be viewed.



- Maintenance

  Allows the MTBF information of Ethernet adapters to be viewed and cleared. See "Maintenance of NEC Express5800/ft series" described later for the MTBF information clear of 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 [ft] tree.

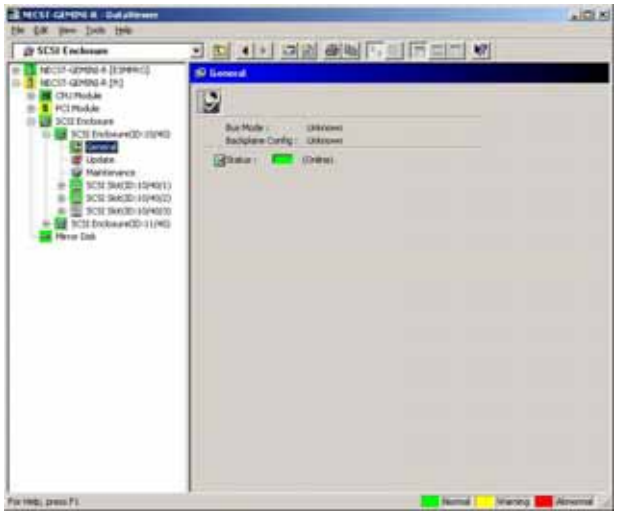
You can see the following information of the SCSI enclosure from the [SCSI enclosure] tree.

This function is not supported in the current version.

- General
  Allows the configuration and other information of the SCSI enclosure to be viewed.

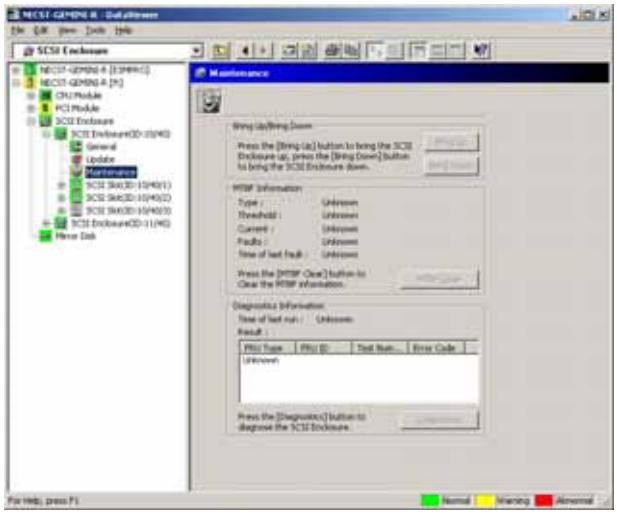
  This function is not supported in the current version.

> **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.



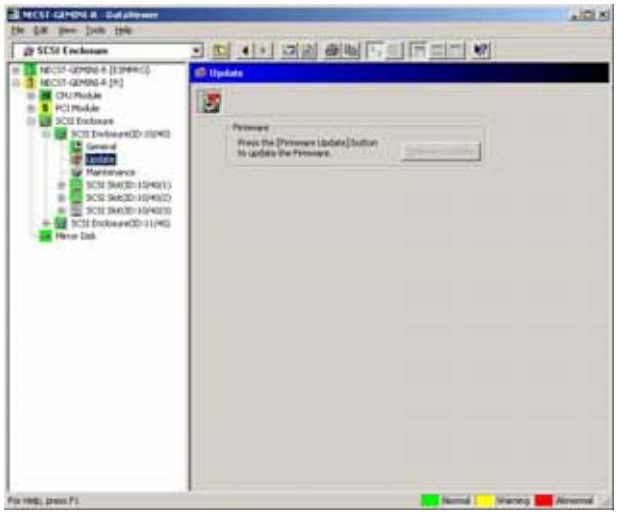
- Maintenance
  Allows the MTBF information of the SCSI enclosure to be viewed or cleared.

  This function is not supported in the current version.



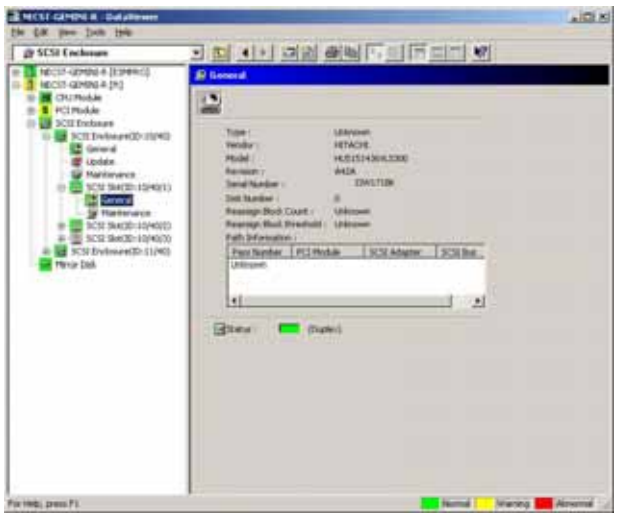
- Update
  Allows the firmware of the SCSI enclosure to be updated.

  This function is not supported in the current version.

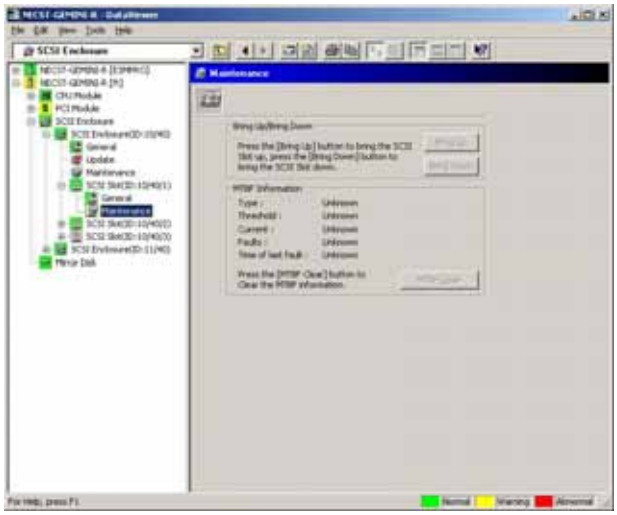


- Electronics – General
  This function is not supported in the current version.

- Electronics – Maintenance
  This function is not supported in the current version.
- SCSI Slot – General
  This function is not supported in the current version.



- SCSI Slot – Maintenance
  This function is not supported in the current version.



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:

/opt/nec/esmpro_sa/bin/ESMftcutil

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

Note*: Supported only when updating from /etc/opt/ft/BIOS.ROM.

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

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 [ft] tree of the DataViewer. 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): • Offline • 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: • When the status LED 1 is amber and the status LED 2 is off Only the status LED illuminates amber when the module is in one of the following states: • Offline • 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	–	–	–	–

Remote: Executable from remote management PC by using NEC ESMPRO Manager
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 earlier in this chapter.

Procedure in NEC ESMPRO Manager

Start

1. Select the target component in the [ft] 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.

Stop

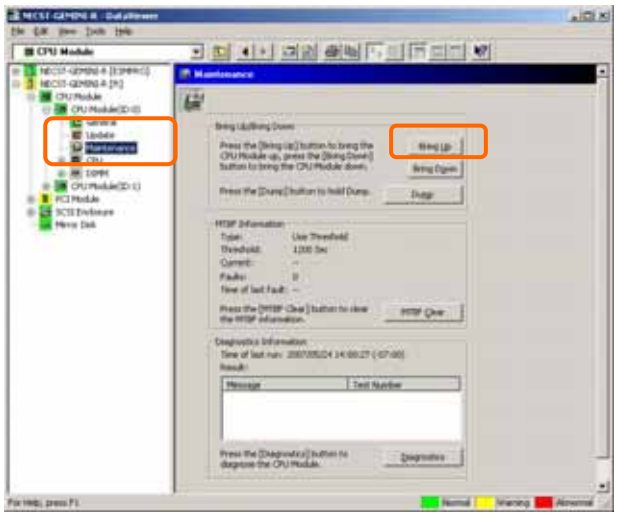
Perform the procedure below before replacing a component.

1. Select the target component in the [ft] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [Bring Down] button in the [Maintenance] screen for the target component.

   A certain time is required for the stop.

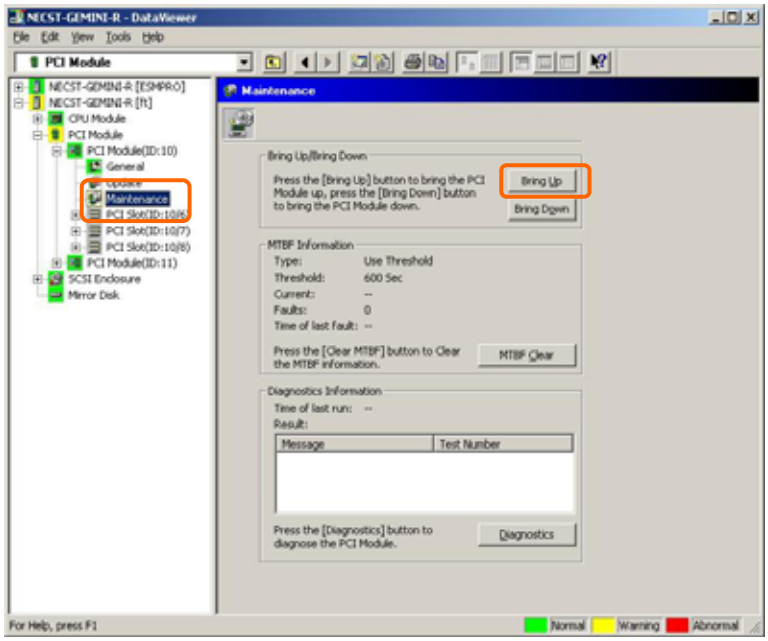
   The stop result can be confirmed by "State" on the target component screen.

Sample screen of NEC ESMPRO Manager 1



[Maintenance] screen of PCI module
[PCI Module] – [PCI Module] - [Maintenance]

Sample screen of NEC ESMPRO Manager 2



[Maintenance] screen of PCI module
[PCI 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 [Start] 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 syslog.

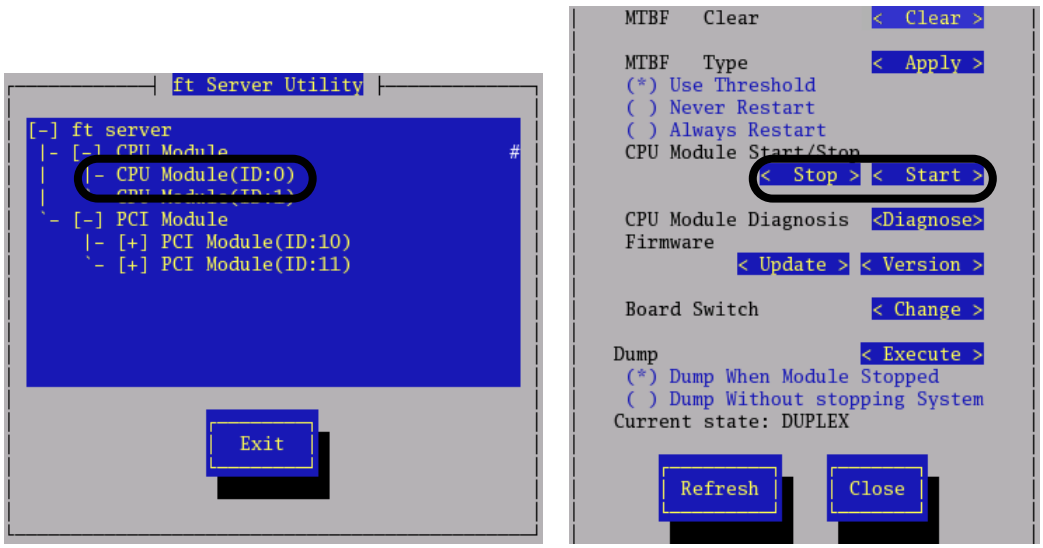
Stop

1. Stop before replacing components.
2. Select the target component by using the ft server utility.
3. Check the current state of the target component with the LEDs.
4. Click the [Stop] button of the target component.

   A certain time is required for the start.

   The stop result can be confirmed by the LEDs on the target component. The result of the stop operation is registered in the syslog.

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 [ft] tree of the DataViewer. 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. Executable in the following module state (this can be viewed on manager screen): • Broken MTBF is lower than the threshold.	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: • The amber LED is on. • The event indicating that MTBF is lower than the threshold is registered in the syslog.
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. 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 malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): • The amber LED is on. • The event indicating that MTBF is lower than the threshold is registered in the syslog.
SCSI Adapter	Same as above	Same as above

IMPORTANT: You can also clear MTBF information for the PCI module, Ethernet Adapter and SCSI Adapter by unplugging and plugging the live wire of the PCI module.

Component	MTBF clear	
	Remote	Local
SCSI Enclosure	–	–
SCSI Electronics	–	–
SCSI Slot	–	–

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

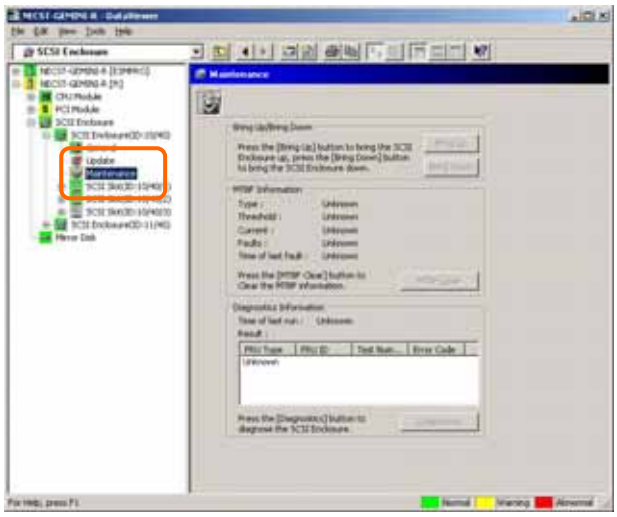
Procedure in NEC ESMPRO Manager

Perform the procedure below before replacement of a component.

1. Select the target component in the [ft] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [MTBF Clear] button in the [Maintenance] screen for the target component.

   The MTBF clearing result can be confirmed by "State" on the target component screen.
4. Start the component.

Sample screen of NEC ESMPRO Manager



[Maintenance] screen of SCSI enclosure
[PCI module] – [Maintenance]

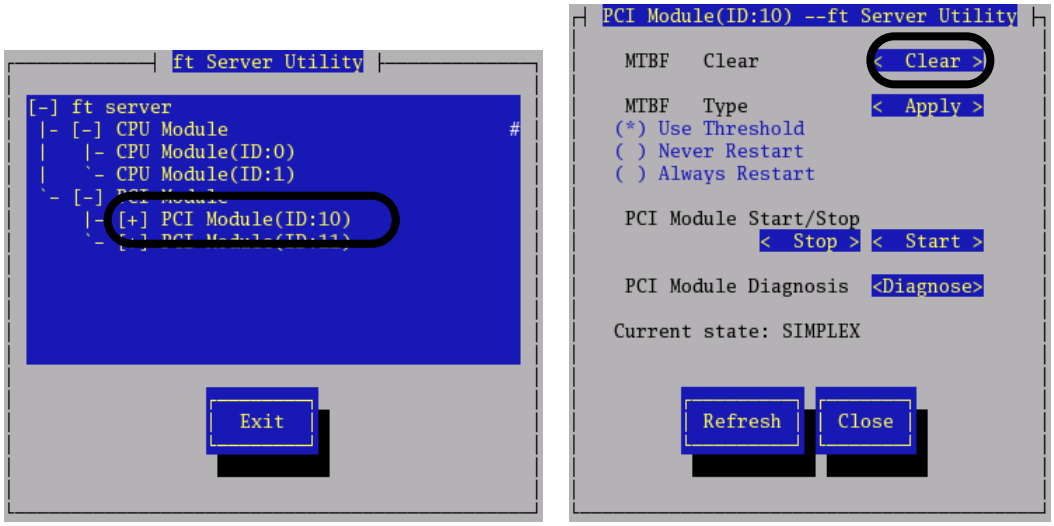
Procedure in the ft server utility

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 syslog.
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 syslog.
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 DataViewer. 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 the following module state: • When the status LED 1 is amber and the status LED 2 is off Only the status LED 1 illuminates amber when the module is in one of the following states: • Offline • Removed • Broken or forced stop • Firmware Update Complete Supported only when updating from /etc/opt/ft/BIOS.ROM.

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

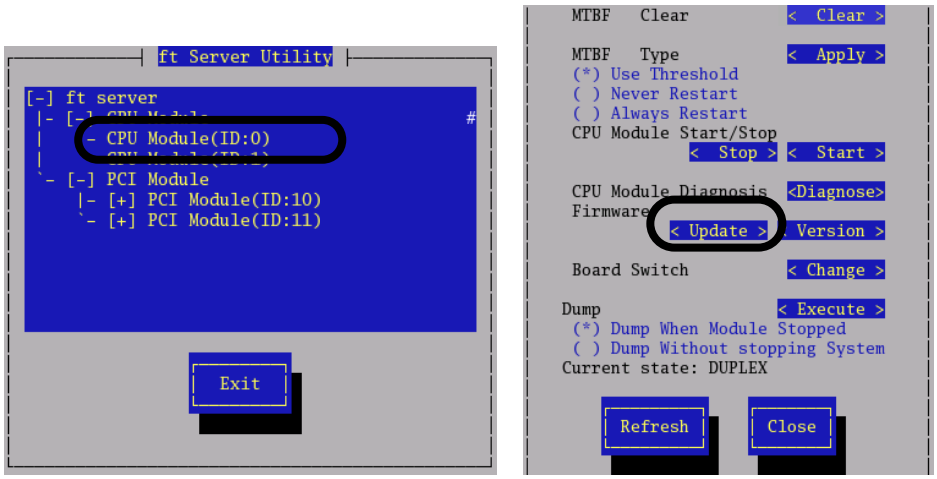
Procedure in ft server utility

1. Save the image data of the update firmware in a /etc/opt/ft/BIOS.ROM 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 [Update] button for the target component.

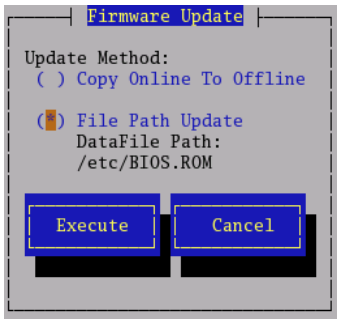
Sample screen of ft server utility



[CPU Module]

5. Select [File Path Update], and click the [Execute] button.

   Perform the firmware update.



6. Check the update result with the syslog.

Procedure of Update from NEC ESMPRO Manager Menu

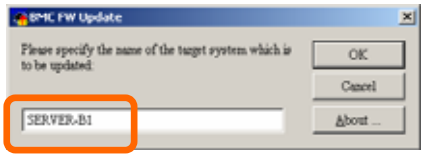
Update firmware in the procedure as follows:

1. Select [Tools]→[BMC FW Update Utility] from the Operation Window's menu.

   The [BMC FW Update] dialog box appears.

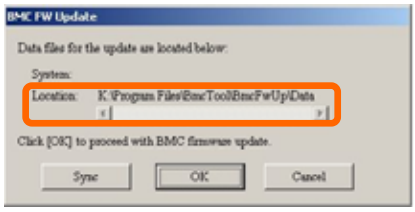
2. Enter the device name and click [OK].

   The [Execution Check] dialog box appears.



3. Store the firmware in the directory specified by [Location].

   The storage area may be modified.

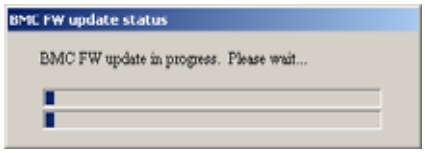


4. Click [OK].

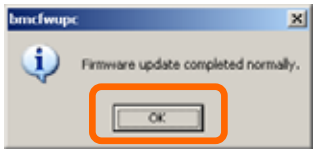
   Run firmware update.

   The advance of the update appears during update.

   At the termination of update, the update result is displayed.



5. Click [OK].



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.

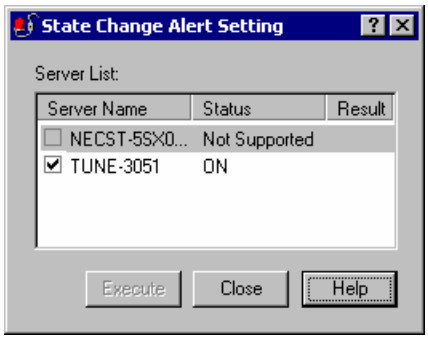
NEC ESMPRO Manager window is updated by one minute-interval polling by default. Therefore, there is some time-lag for NEC ESMPRO Manager to recognize changes in NEC Agent. By using this function, the time-lag can be reduced. However, it may consume a little bit more network band width since each state change will be notified to NEC ESMPRO Manager as some kind of alert.

[Setting]

1. Select [All Programs] → [Esmpro] from the start menu and click [Manager Settings].

[Manager Settings] dialog box

2. Check [Enable the State Change Alert Setting].
3. Click the [Agent Setting...] button.



[State Change Alert Setting] dialog box

4. Check the name of servers sending the state change alert to the Manager when the Agent recognizes changes in the state.

   Click the [Execute] button for the setting change to take effect.

   Refer to “To change the settings of the SNMP Service:” in “Preparation before Setup” in Chapter 5 of the User’s Guide (Setup) to configure destinations to send state change alerts. (This server sends state change alerts by SNMP).

Chapter 6

Maintenance

This chapter describes the daily maintenance of NEC Express5800/ft series and precautions when relocating or storing the server.

DAILY MAINTENANCE

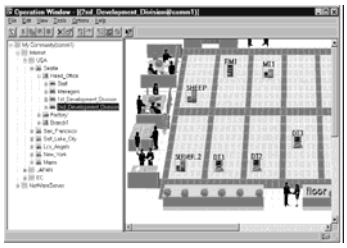
To use your NEC Express5800/ft series in best condition, check and maintain regularly as described below. If an error is found on your NEC Express5800/ft series, consult your sales agent.

Checking Alert

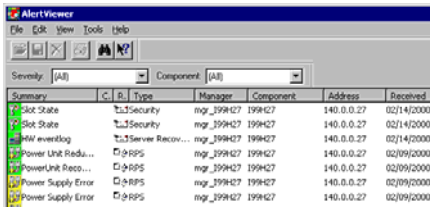
Monitor the failure occurrence by NEC ESMPRO during the system operation.

Always check whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, DataViewer, or AlertViewer of NEC ESMPRO Manager.

Viewers of NEC ESMPRO



Operation Window



AlertViewer

DataViewer

Checking STATUS LEDs

Check the LED indication on the front of the NEC Express5800/ft series, on hard disks installed in 3.5-inch hard disk drive bay, or on LCD display when the server is powered on or powered off by the shut down operation. The functions and indications of LEDs are described in Chapter 2. If 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. There are risks of death or serious personal injury. See “PRECAUTIONS FOR SAFETY” in Chapter 1.

- Do not disassemble, repair, or alter the server.
- Do not look into the DVD-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 powered off.
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or warm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly and wipe the server with it once again.

7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Keyboard and Mouse

IMPORTANT:

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

Disconnect the keyboard from the server while the devices in the system (the server and the peripheral devices) remain turned on. Wipe the keyboard surface with a dry cloth. Then connect the keyboard to the server.

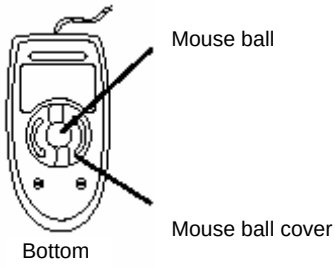
The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Disconnect the mouse from the USB port of the keyboard while the server remains powered on.
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.
7. Connect the mouse to the server .



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 optical disk

A dusty optical disk or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and optical disk regularly:

1. Make sure that the server is powered on.
2. Press the Eject button on the front of the DVD-ROM drive.
   The tray comes out.
3. Hold the optical disk lightly and take it out from the tray.

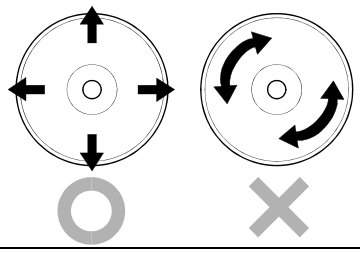
   IMPORTANT: Do not touch the signal side of the optical disk with your hand.

4. Wipe the tray with a dry soft cloth.

   IMPORTANT: Do not wipe the lens of the DVD-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 optical disk with a dry soft cloth.

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



Cleaning Tape Drive

Dirt on the tape head may be a cause of unsuccessful backup and damage to tape cartridge. Clean the tape head regularly using a cleaning tape. For procedure and interval of cleaning as well as lifetime of a tape cartridge to use, see instructions included with the tape drive.

SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tools] - [System Diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the system diagnostics, make sure to remove the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

TIPS: On checking the hard disk drive, no data is written into the disk.

Startup and Exit of System Diagnostics

Follow the steps below to start the system diagnostics. (If the server is running, shut it down, and execute Step 1 through Step 12.)

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to start the system.

   Refer to “NEC EXPRESSBUILDER” of Chapter 5 “Installing and Using Utilities”, to start the system properly. “NEC EXPRESSBUILDER Top Menu” is displayed on the screen, when starting the system from the NEC EXPRESSBUILDER.

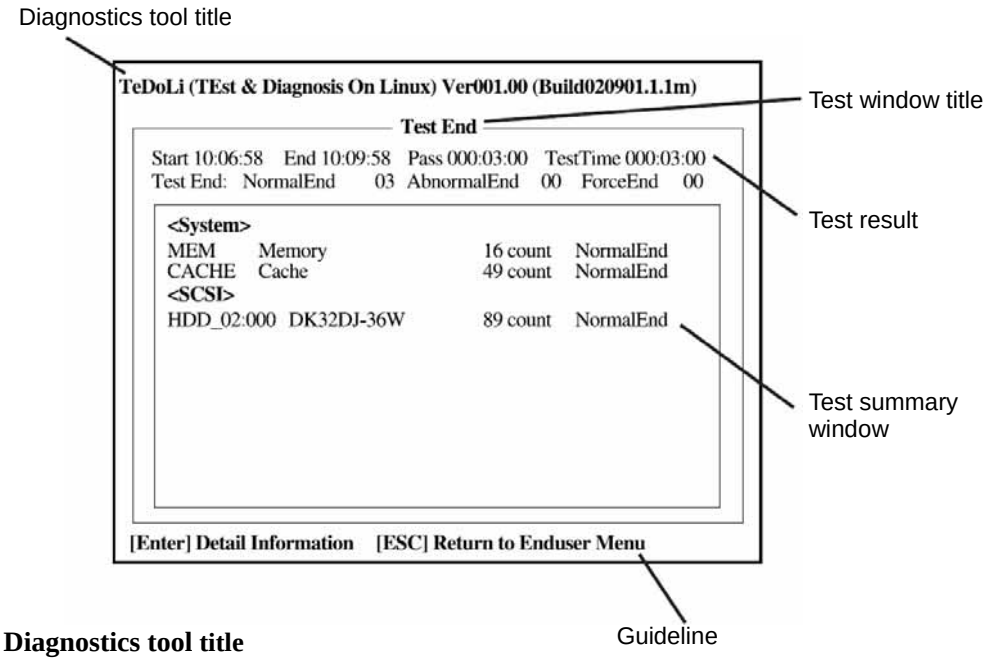
NEC EXPRESSBUILDER Top Menu

5. Select [Tools].

6. Select [System Diagnostics].

The system diagnostics starts and will be completed in approximately three minutes.

When the diagnostics is completed, the screen of the display changes as shown below:



Diagnostics tool title

Shows the name and version of the diagnostic tool.

Test window title

Shows the progress of the diagnostics. “Test End” is displayed when the diagnostics completes.

Test result

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

Guideline

Shows the details of the keys to operate window.

Test summary window

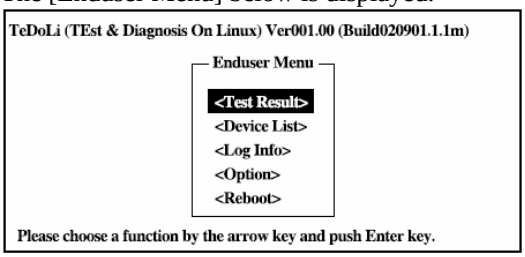
Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the test summary window is highlighted in red, and “Abnormal End” is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your sales agent.

7. Follow the guideline shown at the bottom of the screen, and press the **Esc** key.

   The [Enduser Menu] below is displayed.



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

   <Device List>
   Shows a list of connected devices.

   <Log Info>
   Shows the log information of the diagnostics. It can be saved on a floppy disk. To save it on a floppy disk, insert a formatted floppy disk to the floppy disk drive, and select <Save(F)>.

   <Option>
   Allows the use of option feature.

   <Reboot>
   Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

   The server restarts and the system is started from the NEC EXPRESSBUILDER.

9. Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the DVD-ROM drive.

10. Power off the server and unplug the power cord from the receptacle.

11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.

12. Plug the power cord.

This completes the system diagnostics.

OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent 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 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

  Set the NEC EXPRESSBUILDER CD-ROM in the DVD-ROM drive and reboot the system. After the menu is displayed on the screen, select [Tools] - [Off-line Maintenance Utility]. The Off-line Maintenance Utility program starts from the CD-ROM.

- From the floppy disk

  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.

Features of Off-line Maintenance Utility

The Off-line Maintenance Utility provides the following features.

- IPMI Information Viewer

  Provides the functions to view the system event log (SEL), sensor data record (SDR), and field replaceable unit (FRU) and to make a backup copy of them.

  Using this feature, you can find system errors and events to determine a maintenance part.

- BIOS Setup Viewer

  Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

- System Information Viewer

  Provides the functions to view information on the processor (CPU) and the BIOS and export it to a text file.

- System Information Management

  Provides the function to make a back-up copy of your data. Without the backup data, the system-specific information and/or configuration may not be restored.

  TIPS: For information on making backup copy of system information, see the separate volume "User's Guide (Setup)." Only the authorized personnel are allowed to restore the backup data.

- Chassis Identification

  Provides the function to distinguish the server using the LEDs of the server. This function is convenient to distinguish the server from others when multiple servers are on the rack.

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.)

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of fire, personal injury, or property damage. See “PRECAUTIONS FOR SAFETY” in Chapter 1 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the sales agent.
- Make sure to make a backup copy of your valuable data in the hard disk, if any.
- When moving the server with hard disks, make sure not to give a shock to the hard disks.
- When storing the server, keep it under storing environment conditions (temperature: -10 to 55°C, humidity: 20 to 80%, non-condensing).

1. Take a floppy disk and an optical disk out of the server, if any.
2. Power off the server.
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Remove all the mounted CPU/IO modules.
6. Remove the 4U chassis and the rails from the rack cabinet.
7. Carry 4U chassis and CPU/IO modules separately.
8. Protect the server with the shock-absorbing materials, and pack it securely.

IMPORTANT:

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

If the server and the built-in optional devices are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. When you start operating these equipments again after the transportation or the storage, make sure to wait for a sufficient period of time to use them in the operating environment.

If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

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Chapter 7

Troubleshooting

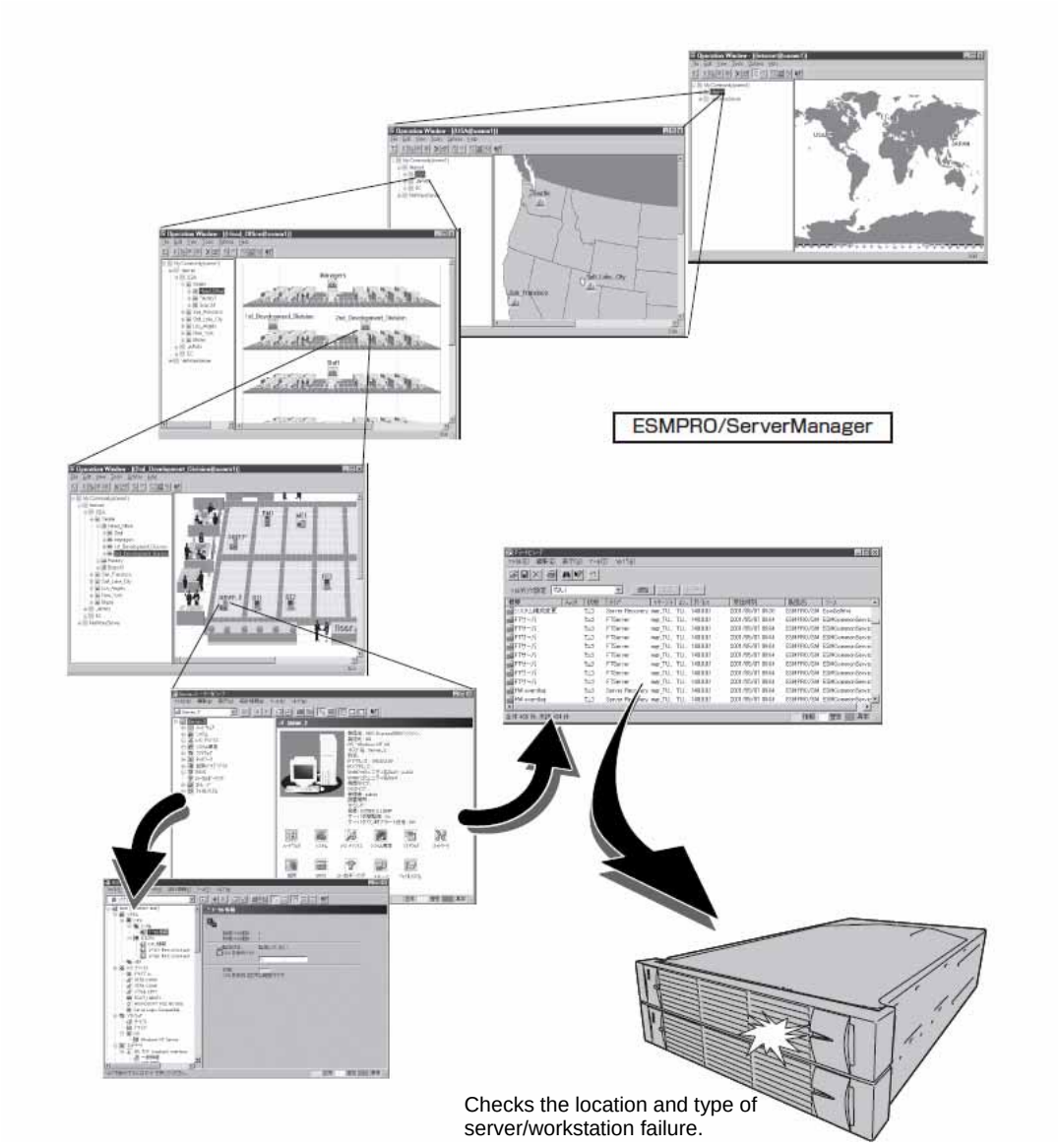
If the product does not work properly, see this chapter before deciding that it is a breakdown.

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 management PC. Check whether any alert is reported on the Operation Window, DataViewer, or AlertViewer of NEC ESMPRO Manager.

[Example]



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.

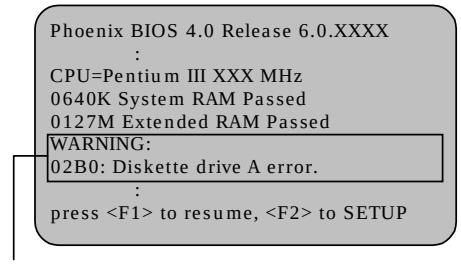
Error Messages by LED Indication

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 page 2–15 “LEDs.”

This User’s Guide describes actions to be taken for watch error message. However, if replacement of modules is necessary, contact your sales agent.

POST Error Messages

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When POST detects any error, it displays an error message and its measure on the display unit. Follow the table below to troubleshoot such errors.



Message indicating a floppy disk drive error

TIPS:

For error messages on optional PCI boards, refer to the manual provided with those options.

On-screen error message	Cause	Action
0200 Failure Fixed Disk	• Hard disk is faulty • CPU/IO module is faulty.	• Replace the hard disk. • Replace the CPU/IO module.
0210 Stuck Key	Keyboard connection error	• Disconnect the keyboard and connect it back again. • Replace the keyboard.
0211 Keyboard error	Keyboard is faulty.	• Disconnect the keyboard and connect it back again. • Replace the keyboard. • If restarting does not help, replace the CPU/IO module.
0212 Keyboard Controller Failed	Keyboard controller is faulty.	If restarting the server does not help, replace the CPU/IO module.
0213 Keyboard locked - Unlock key switch	Keyboard is locked.	Unlock the key switch.
0230 System RAM Failed at offset	DIMM is faulty.	• Replace DIMM. • Replace the CPU/IO module.
0231 Shadow RAM Failed at offset	Shadow RAM is faulty.	• Replace DIMM. • Replace the CPU/IO module.
0232 Extended RAM Failed at address line	Extended RAM is faulty.	• Replace DIMM. • Replace CPU/IO module.
0233 Memory type mixing detected	Memory of the different types is installed.	Memory of the different types is installed. Replace DIMM with appropriate one.
0250 System battery is dead -Replace and run SETUP	System battery is dead.	• Replace system battery. • Replace CPU/IO module.

On-screen error message	Cause	Action
0251 System CMOS checksum bad-Default configuration used	System CMOS configuration is changed.	• Reconfigure the system CMOS by using BIOS setup. • Clear system CMOS using hardware jumper.
0252 Password checksum bad -Password cleared	Password is cleared.	• Reconfigure by using BIOS setup. • Clear system CMOS using hardware jumper.
0260 System Timer error	System Timer is faulty.	Reconfigure by using BIOS setup. If the error cannot be solved after this, replace the CPU/IO module.
0270 Real time clock error	RTC is faulty.	
0271 Check date and time setting	Date and time are incorrectly set.	
02D0 System cache error - Cache disabled	CPU cache is faulty.	If replacing the CPU does not help, replace the CPU/IO module.
02D1 System Memory exceeds the CPU's caching limit	CPU cache is faulty.	
0613 COM A configuration change	COM A configuration is faulty.	If restarting does not help after resetting the setting to default by using BIOS setup, replace the CPU/IO module.
0614 COM A config, error - device disable	Device constructing COM A is faulty.	
0615 COM B configuration change	COM B configuration is faulty.	
0616 COM B config, error - device disable	Device constructing COM A is faulty.	
0B28 Unsupported Processor detected on Processor 1	Unsupported CPU is mounted.	Check the supported CPU and replace it. If this does not help, replace the CPU/IO module.
0B29 Unsupported Processor detected on Processor 2	Unsupported CPU is mounted.	
0B80 BMC Memory Test Failed	RMC device is faulty.	Replace the CPU/IO module.
0B81 BMC Firmware Code Area CRC check failed		
0B82 BMC core Hardware failure		
0B83 BMC IBF or OBF check failed	RMC device is faulty.	Replace the CPU/IO module.
0B8B BMC progress check timeout	BMC check is suspended.	Replace the CPU/IO module.
0B8C BMC command access failed	BMC command access failed.	Replace the CPU/IO module.
0B90 BMC Platform Information Area corrupted	BMC device is faulty.	Replace the CPU/IO module.
0B91 BMC update firmware corrupted		
0B92 Internal Use Area of BMC FRU corrupted	Data within SROM is faulty.	Replace the system backboard.
0B93 BMC SDR Repository empty	SDR data is faulty.	If updating SDR does not help, replace the CPU/IO module.

On-screen error message	Cause	Action
0B94 IPMB signal lines do not respond	SMC is faulty.	Replace the CPU/IO module or a system backboard after determining where IPMB error has occurred based on OS information.
0B95 BMC FRU device failure	NVRAM within BMC is faulty.	Replace the CPU/IO module.
0B96 BMC SDR Repository failure	SDR repository within BMC is faulty.	
0B97 BMC SEL device failure	SEL repository within BMC is faulty.	
0B98 BMC RAM test error	BMC RAM is faulty.	
0B99 BMC Fatal hardware error	BMC FPGA is faulty.	If updating FPGA does not help, replace the CPU/IO module or ft Remote Management Card (option).
0B9A BMC not responding	BMC device is faulty.	Replace the CPU/IO module.
0B9B Private I2C bus not responding	I2C bus is faulty.	If turning AC power off and on does not help, replace the CPU/IO module or the system backboard.
0B9C BMC internal exception	BMC device is faulty.	Replace the CPU/IO module.
0B9D BMC A/D timeout error		
0B9E SDR repository corrupt	SDR data is faulty.	If updating SDR does not help, replace the CPU/IO module or ft Remote Management Card (option).
0B9F SEL corrupt	SEL repository within BMC is faulty.	Replace the CPU/IO module.
0BA0 SDR/PIA mismatched. SDR, PIA must be updated.	SDR and PIA data do not match.	If updating SDR/PIA does not help, replace CPU/IO module.
0BB0 SMBIOS - SROM data read error	• I2C bus is faulty. • SROM is faulty. • BMC is faulty.	If turning AC power off and on does not help, replace the system backboard.
0BB1 SMBIOS - SROM data checksum bad	Data within SROM is faulty.	
0BC0 POST detected startup failure of 1st Processor	CPU is faulty.	Replace the CPU.
0BC1 POST detected startup failure of 2nd Processor		
8100 Memory Error detected in DIMM group #1	DIMM is faulty.	Replace the DIMM Slot0 (2 DIMMs).
8101 Memory Error detected in DIMM group #2	DIMM is faulty.	Replace the DIMM Slot1 (2 DIMMs).
8102 Memory Error detected in DIMM group #3	DIMM is faulty.	Replace the DIMM Slot2 (2 DIMMs).
8120 Unsupported DIMM detected in DIMM group #1	Unsupported DIMM is mounted.	Check supported DIMMs and replace them. If replacing the DIMMs does not help, replace the CPU/IO module.
8121 Unsupported DIMM detected in DIMM group #2		

On-screen error message	Cause	Action
8122 Unsupported DIMM detected in DIMM group #3		
8130 Mismatch DIMM detected in DIMM group#1	DIMM group do not match.	
8131 Mismatch DIMM detected in DIMM group#2		
8132 Mismatch DIMM detected in DIMM group#3		
8150 NVRAM Cleared By Jumper	CMOS clear jumper is mounted.	Turn off the DC power and change back the jumper setting.
8151 Password Cleared By Jumper	Password clear jumper is mounted.	
8160 Mismatch Processor Speed detected on Processor 1	CPU frequency does not match.	Check supported CPUs and replace them. If replacing the CPU does not help, replace CPU/IO module.
8161 Mismatch Processor Speed detected on Processor 2		
9064 Mixed CPU Steppings detected	Different CPU steppings are found.	Check supported CPUs and replace them. If replacing the CPU does not help, replace CPU/IO module.
9002 Memory not installed.	DIMM is not implemented. DIMM is faulty.	Mount or replace the DIMM.
9003 Memory implementation error detected	Error is detected on memory implementation.	Check supported DIMMs and replace the DIMM. If replacing the DIMM does not help, replace the CPU/IO module.
9006 HW Memory Test failed.	Memory is faulty.	Replace the DIMM. If replacing it does not help, replace the CPU/IO module.
9000	A serious error occurred during a POST.	There are some error messages in addition to this error code. Check the other error message.
9090-9097	A memory error has occurred, or memory is faulty.	(a) Verify that the memory is mounted properly. (b) Replace the memory. If this does not help, replace the module.

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: [Server] - [AC-LINK] - [Power On]>
  - → Make sure the POWER switch on the power unit is on.
- ☐ Did you press the POWER switch?
  - → Press the POWER switch on the front of the NEC Express5800/ft series to turn on the power (the POWER LED lights).
- ☐ Did you install the CPU/IO module properly?
  - → Check if the CPU/IO module is properly installed in the server. Secure the CPU/IO module with screw located on the module removable handle.

POST fails to complete:

- ☐ Is the DIMM installed?

  → At least one DIMM is required for operation.

- ☐ Is the memory size large?

  → The memory check may take a time if the memory size is large. Wait for a while.

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

  → If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

- ☐ Does the server have appropriate memory boards or PCI card?

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

Server reboots while running the Adaptec SAS/SATA Configuration utility:

- ☐ Have you modified the Setup settings?

  → From [Server] - [Monitoring Configuration] - [Option ROM Scan Monitoring] of Setup, select “Disabled.” If [Option ROM Scan Monitoring] is enabled, the system may reboot while using the utility. Change back the setting after you finish using the utility.

Fail to access to 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.

- ☐ Is SCSI controller (including options) configuration correct?

  → If the sever has an optional SCSI controller board and SCSI devices are hooked up to the server, make correct settings by the SCSI controller board’s SCSI BIOS utility. For details, see manuals included with the SCSI controller board.

CPUs not in Duplex mode:

→ Check if the memory configuration is correct.

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

Disks not in Duplex mode:

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

RAID configuration is not automatically resynchronized even though the failed hard disk is replaced:

→Generally, when you replace a failed hard disk, RAID configuration is automatically resynchronized.
If RAID configuration is not resynchronized automatically, you can resynchronize it manually.
(See Chapter 3 “Replacing a hard disk drive” for details.)
Occasionally, the replaced disk may not be recognized.
If this happens, follow the steps below.

1) Remove the disk, wait for approximately 15 seconds and then insert the disk again.
2)If the disk is not recognized even after the operation above,stop the PCI module in which the unrecognized disk is installed by using ft server utility, then restart.
See Chapter 3 “Evaluate Startup and Stop of PCI Modules” for information on starting/stopping PCI module.

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.

- ☐ Does the server have drivers installed?

  → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

Screen freezes, keyboard and mouse don’t work:

→ If the amount of memory is large, it takes time to copy the memory in dual mode

and the system stops working temporarily during the copying, but it is not system trouble.

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.

- ☐ Is the medium mounted?

→ If a failover takes place with a medium mounted, the medium is forcefully unmounted, in which case remounting of the medium is necessary.

(An error such as Buffer I/O error may be reported in installing a CPU/IO module or at a fail over. The error is a feature of the device and will not affect the operation.) The device name of the floppy disk drive may change (for example, from sdc to sdb), which is again a feature of the device and will not affect the operation. If the device name has changed, use the new name for mounting.

Fail to access to the optical disk:

- ☐ Is the CD-ROM properly set in the DVD-ROM drive tray?

  → The tray is provided with a holder to secure the optical disk. Make sure that the optical disk is placed properly in the holder.

- ☐ Is the optical disk applicable to the server?

→ The optical disk for Macintosh is not available for use.

- ☐ Isn't the CPU/IO module isolated (i.e. off-line status)?

→ The DVD-ROM drive of an isolate PCI module cannot be used. If you try to mount the DVD-ROM drive of an separated module, the OS displays the following error message.

```
mount:/dev/hda is not a valid block device
```

If the CPU/IO module is isolated (i.e. off-line status) while the PRIMARY (active) DVD-ROM drive is mounted, it becomes impossible to access the DVD-ROM drive even if duplication is restored. In this case, make sure to access the SECONDARY (stand-by) DVD-ROM drive while the other CPU/IO module is in SECONDARY state. Note that if you access the DVD-ROM drive of the other CPU/IO module while it is in PRIMARY(active) state and then the CPU/IO module is isolated (i.e. off-line status), it becomes impossible to access the DVD-ROM drive even if duplication is restored. (Reboot of the system is required for recovery.)

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 DVD-ROM drive?

  → Take out the CD-ROM and restart the server.

- ☐ Is the OS damaged?

  → Use the recovery process of the OS to attempt to recover the damaged OS.

OS behavior is unstable:

☐ Aren't you making access to directory or file in /dev, /proc or /sys?

→ The NEC Express5800/ft series frequently saves and updates information related to system operation and management in the following directories. Because accessing any of these directories by a command or other means may impact fault tolerant functions and make behavior of the system unstable, do not access them.
/dev/mem
/proc/kcore
/proc/bus
/proc/ft
/proc/ide
/sys

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 server is not found on the network:

☐ Is the LAN cable connected?

→ Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure to use the LAN cable that conforms to the network interface standard.

☐ Have the protocol and service already configured?

→ Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

☐ Is the transfer speed correct?

→ The built-in LAN controller mounted as standard on this server can be used in network with the transfer speed of 1000Mbps, 100Mbps or 10Mbps. You can change the transfer speed or configure the setting from OS. However, do not use the "Auto Detect" function. Fix the setting of the transfer rate to the same with that of the connected hub. Also, check if the duplex mode is the same with that of the connected hub.

The transfer speed can be configured by editing /etc/modprobe.d/ft-network.conf. The configuration is effective internal network adapters N8804-002 and N8804-005. When you configure eth100200, for example, add the following description to /etc/modprobe.d/ft-network.conf.

option eth100200 Speed=1000 Duplex=2

Select one of the following three fro the speed value.
1000 = 1000Mbps

100 = 100Mbps
10 = 10Mbps

Select one of the following two for the duplex value.
1 = Half duplex
2 = Full duplex

Machine repeats rebooting at startup:

☐ Isn't reset working by the OS boot monitoring function?

→ When you are using the NEC Express5800/ft series, the OS boot monitoring function must be disabled in the following cases. For information on disabling the OS boot monitoring, see "Disable OS Boot Monitoring Function" in page 4-7 of User's Guide (Setup).

When the mode changes to the maintenance mode during the boot:
* The following message is shown on the screen.
Give root password for maintenance (or type Control-D to continue):

When any daemon or drive does not work correctly due to a failure or error:
* For the device configuration with large memory or disk volume, it is recommended to set an appropriate value for the BIOS setup from the default 10 minutes.

Disk access LEDs on the disks are off:

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

Memory dump (debug information) cannot be collected when a failure occurs:

☐ Is there any available storage space on a storage location?

→ Make sure that the partition (e.g. /var/crash) to which memory dump (debug information) is stored has free disk space that is ["system's physical memory size" + 12 MB] or larger. If your system's physical memory size is larger than 2GB, the free disk space must be [2048MB+12MB] or larger.

☐ Are CPU modules duplicated?

→ CPU modules must be duplicated for memory dump collection. Note that you cannot perform dump collection if only one CPU module is running. For checking CPU module duplication, see "Evaluate Start and Stop of CPU Modules" on page 3-16.

Warning message appears in POST after implementing ft Remote Management Card:

☐ Did you set "Initialize Remote Management Card"?

H/W Configuration of BMC is corrupted.
!! Update BMC H/W Configuration by configuration tool!!

!! Refer to BMC Configuration manual !!

If the message above appears, press **F1** key or wait for a while. Then POST proceeds. Insert NEC EXPRESSBUILDER CD-ROM attached to the server to the DVD-ROM drive to start NEC EXPRESSBUILDER. Select [Tools] - [Initialize Remote Management Card] from its main menu to write the sensor information specific to the server to the card.

A CPU/IO module cannot be integrated:

➔ When reinstallation is done due to a failure in a component, the reinstallation may stop with the following message recorded in a log file. If this occurs, MTBF of the component does not reach the threshold and the reinstallation cannot be performed as it is determined that repair is needed. Typically, device replacement is required. Contact your maintenance service engineer. Should any reason requires, you can forcefully reinstall the currenlty used device through consultation with the maintenance service engineer.
kernel: EVLOG: ERROR - x is now STATE_BROKEN / REASON_BELOW_MTBF
(x is a device number)

Screen under changing (distorted display) can be seen when screen resolution is changed.

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

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 CD-ROM during POST and restart the server?

  → If you do not set the NEC EXPRESSBUILDER CD-ROM during POST and restart the server, an error message will appear or the OS will boot.
- ☐ Is BIOS configuration correct?

  → The boot device order may be specified with the BIOS setup utility of the server. Use the BIOS setup utility to change the boot device order to boot the system from the DVD-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 EXPRESSBUILDER version cannot be used for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error	Cannot access to the nonvolatile memory (NvRAM).
Hard disk access error	The hard disk is not connected or it is faulty. 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.	This message is displayed when NEC EXPRESSBUILDER cannot find device specific information due to the replacement of a motherboard, etc. Maintenance personnel write information using offline maintenance utility.

Problems with Master Control Menu

Failed to read online documentation:

- ☐ Is Adobe Acrobat Reader installed properly?

  → A part of online documentation is supplied in PDF file format. Install the Adobe Acrobat Reader (Version 4.05 or later) in your operating system. You can also install the Adobe Acrobat Reader using the NEC EXPRESSBUILDER CD-ROM. Launch the Master Control Menu and select [Setup] - [Adobe Acrobat Reader]. (After installation, launch Adobe Acrobat Reader and agree on license agreement before you use it).

Image of online documentation is not clear:

- ☐ Is your display unit set to display 256 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.

Menu items are grayed out:

- ☐ Is your computer environment proper?

  → Some software requires the administrative authority for operation or needs to operate on the server. Use that software in the appropriate computer environment.

Problems with NEC ESMPRO

NEC ESMPRO Manager

→ See Chapter 5. See also online document in NEC EXPRESSBUILDER CD-ROM for troubleshooting and other supplementary information.

NEC ESMPRO Agent

→ See Chapter 5.

COLLECTION OF TROUBLE LOGS

If a failure occurs, you can collect information at the time of failure occurrence by the following ways.

IMPORTANT:

- Collect failure information that is described later only when you are asked to do so by a maintenance service engineer of the maintenance service company.
- You may see a message telling you the virtual memory is not sufficient in a reboot following a failure. Continue to start up the system. If you perform reset and attempt to restart again, collecting failure information fails.

Collection of System Information

The Linux system information is recorded in syslog, etc. When you collect system information in the NEC Express5800/ft series log in as root user and run the following command.

/opt/ft/sbin/buggrabber.pl

The collected data is created in the following directory.

/home/BugPool/

COLLECTION OF THE MEMORY DUMP

If a failure occurs, the memory data should be dumped to acquire the required information.

IMPORTANT:

- Collect memory dump through consultation with a maintenance service engineer of your maintenance service company. Collecting memory dump while the system is running successfully can result in a problem in system operation.
- You may see a message telling you the virtual memory is not sufficient in a reboot following a failure. Continue to start up the system. If you perform reset and attempt to restart again, dumping data may fail.
- Press the DUMP switch on the primary CPU/IO module, whose POWER LED has been blinking, for four to eight seconds. Use a clip whose tip is bent to press the DUMP switch of the CPU/IO module 1. .
- CPU modules must be duplicated for memory dump collection. Note that you cannot perform dump collection if only one CPU module is running. For checking CPU module duplication, see “Evaluate Start and Stop of CPU Modules” on page 3-16.

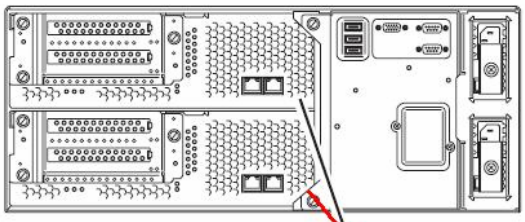
Preparing for Memory Dump

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.

Saving Dump Files

Press the DUMP (NMI) switch on the primary CPU/IO module to save the dump file when an error occurs. Insert something sharp-pointed like a pen into the switch hole to press the DUMP switch.

Pressing the DUMP switch saves the dump file in /ver/crash/. (Memory dumping may not be available when the CPU stalls.)



IMPORTANT: Do not use a toothpick or plastic stick that is easy to break.

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. There are risks of death or serious personal injury. See “PRECAUTIONS FOR SAFETY” in Chapter 1 for details.

- Do not disassemble, repair, or alter the server.
- Do not look into the DVD-ROM drive.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of fire, personal injury, or property damage. See “PRECAUTIONS FOR SAFETY” in Chapter 1 for details.

- Do not install or remove components by a single person.
- Do not install the server leaving the cover removed.
- Make sure to complete component installation.
- Do not pinch your finger(s).
- High temperature

ANTI-STATIC MEASURES

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

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

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

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

- Select a suitable workspace.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.

- Use a worktable.

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

- Clothes
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any metal accessories you wear (ring, bracelet, or wristwatch) before working with the server.

- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold a component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

PREPARING YOUR SYSTEM FOR UPGRADE

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

- With the NEC Express5800/ft series, devices can be replaced during the continuous operation. Take extreme care for electric shock and damage to the component due to short-circuit.
- Optional devices cannot be installed or removed during continuous operation. Normally, shutdown the OS, check that the server is powered off, disconnect all power cords and interface cables from the server before installing or removing the optional devices.
- To remove the CPU/IO module during the continuous operation, disable the intended module (place the module off-line) by using the ftServer 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 ftServer Utility or the NEC ESMPRO Manager.

  TIPS:

  The system is defaulted to automatically boot the module, once installed. For more information, see Chapter 5.

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

3.5-INCH HARD DISK DRIVE

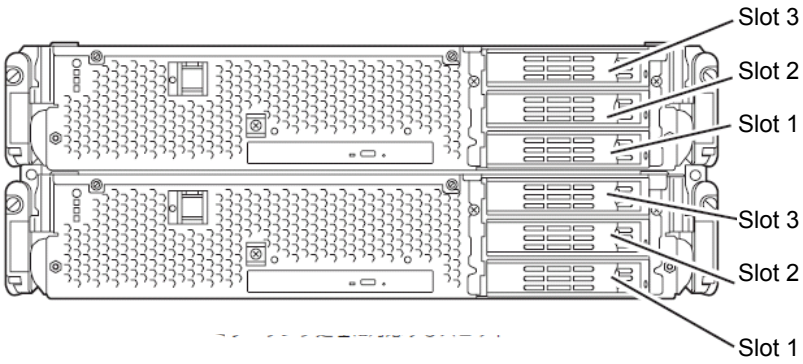
The 3.5-inch hard disk drive bay in front of the server contains six slots in which hard disks with the SAS interface are installed.

IMPORTANT:

- Do not use any hard disks that are not authorized by NEC. Installing a third-party hard disk may cause a failure of the server as well as the hard disk. Purchase hard disks of the same model in pair. Contact your sales agent for hard disk drives optimum for your server.

You can install 25.4mm (1-inch) high hard disk drives to six 3.5-inch hard disk drive bays on the server.

The hard disk drives installed on the slot 1, 2, and 3 of the CPU/IO module 0 and 1 are mirrored respectively. (The OS is installed on the mirror volumes that consist of the hard disks in the slot 1.)



Slots to execute the mirroring process

Empty slots in the 3.5-inch hard disk drive bay contain dummy trays. The dummy trays are inserted to improve the cooling effect within the device. Always insert the dummy trays in the slots in which hard disks are not installed.

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.

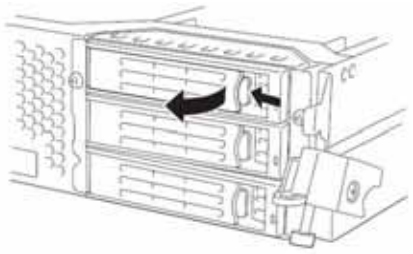
IMPORTANT:

- Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.
- Start OS after installing two hard disk drives that make up of disk dual configuration.

1. Shut down OS. The system turns off automatically.
2. Remove the front bezel.
3. Identify the slot to which you want to install the hard disk drive.

   Install a hard disk in an empty slot in the group, starting from the lower slot. (In the order of slot 1, slot 2, and slot 3 in CPU/IO module 0 and 1)

4. Pull the lever toward you while pushing the green lock of the dummy tray to the left.



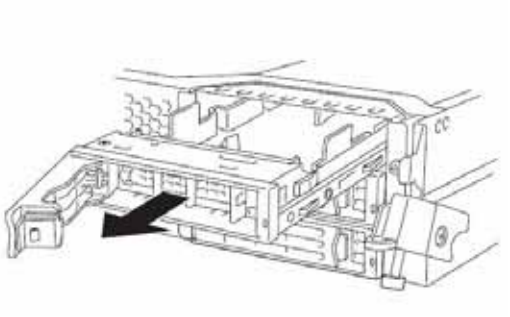
5. Hold the handle of the dummy tray to remove the tray.

IMPORTANT:

Keep and store the dummy tray with care.

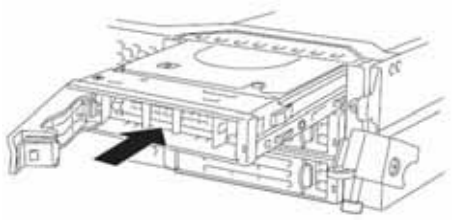
TIPS:

The lever on the slot 3 may be hard to pull toward you. This does not become a problem for proper operation.



6. Unlock the hard disk to be added.

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

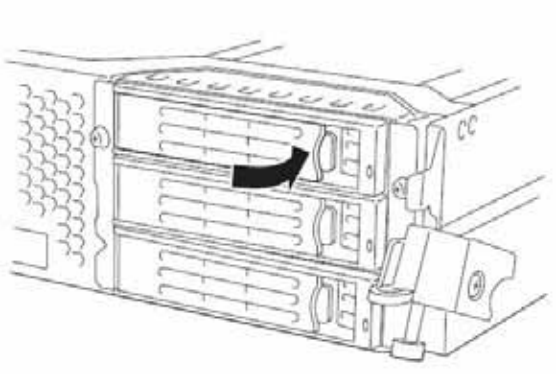


TIPS:

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

8. Slowly close the lever.

When the lever is locked, you will hear a click sound.



IMPORTANT:

Be careful not to pinch your finger(s) between the lever and handle.

TIPS:

Check the hook of the lever is engaged with the frame.

9. Press the POWER switch to power on.

10. Install the front bezel.

11. Set the dual disk configuration (see “Step 7: Set Dual Disk Configuration” in Chapter 4 in the User’s Guide (Setup).).

Removing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the hard disk.

IMPORTANT:

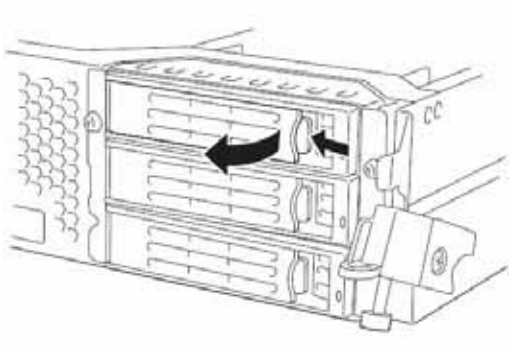
Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.

1. Shut down OS.

   The system turns off automatically.

2. Remove the front bezel.

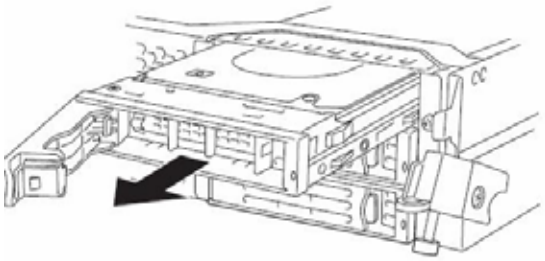
3. Push the lever of the hard disk to unlock the handle.



4. Hold the handle and hard disk to pull them off.

5. Install the dummy tray in an empty tray according to procedures described in "Installation".

   Make sure to install the dummy slot in the empty slot to improve the cooling effect within the device.



TIPS:

It may not be easy to pull the lever of slot 3 toward you, but it will not cause a problem for operation.

Replacing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the failed hard disk. If the hard disk fails, it should be replaced with new device with the server powered-on.

IMPORTANT: Make sure to read “ANTI-STATIC MEASURES” and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options. You can replace disks during continuous operation.

Replacing the Hard Disk Drive

1. Locate the failed hard disk.

   When a hard disk fails, the DISK ACCESS LED on the hard disk drive’s handle illuminates amber.

2. Remove the failed hard disk referring to “Determining a failing disk” on page 3-3 and “Removing 3.5-inch Hard Disk Drive” on page 8-8.

   No need to shut down the OS.

3. Refer to the steps in "Installing 3.5-inch Hard Disk Drive" to install a new hard disk.

   CHECK:

   - The hard disk to be installed for replacement must have the same specifications as its mirroring hard disk.
   - After disk physical format, refer to “Disk Operation” in Chapter 3 and restore the dual configuration. For physical format, see “SAS BIOS ~Adaptec SAS/SATA Configuration Utility~” in Chapter 4, “System Configuration,” and format disks with Disk Utilities. To format disks, select “Server,” “Monitoring Configuration” and set “Option ROM Scan Monitoring” to Disabled.” For how to configure the setting, see “System BIOS ~ SETUP ~” in Chapter 4, “System Configuration.”
   - After removing the disk, wait for more than 15 seconds, then insert the disk to be replaced.

4. Restore the redundant configuration (see Chapter 3).

CPU/IO MODULE

To replace a CPU (processor, DIMM (memory), PCI card, you need to remove the CPU/IO module.

IMPORTANT:

- Ask your sales agent to replace the CPU/IO module and components of the CPU/IO module.
- Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before installing or removing options.
- To install or remove CPU or DIMM, first power off the server before removing the CPU/IO module.
- Removing the module being operating may cause unexpected trouble. Use the management software (e.g., ftServer 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/IO module. See Chapter 2 “LEDs” for details of the Status LED.

Precautions

When replacing both CPU/IO modules, replace one module and wait until dual configuration is established to replace the other module. If you replace the both modules simultaneously, establishing dual CPU/IO module configuration can result in interruption of the whole system.

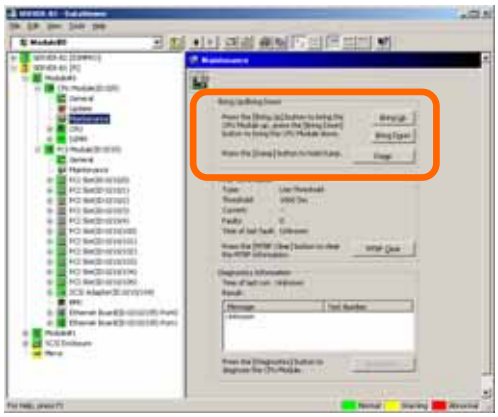
Removing CPU/IO Module

Follow the procedure below to remove the CPU/IO module.

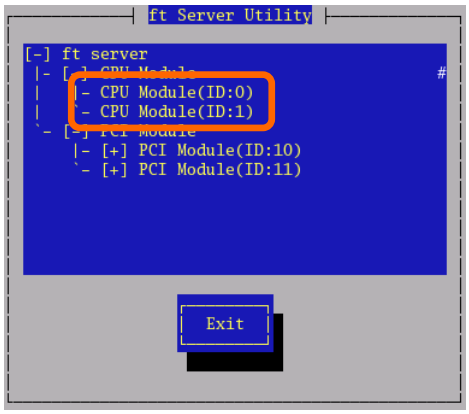
1. Stop the CPU/IO module you want to remove.

To this end, use the ftServer Utility of the NEC ESMPRO Agent installed to your server or the DataViewer of the NEC ESMPRO Manager.

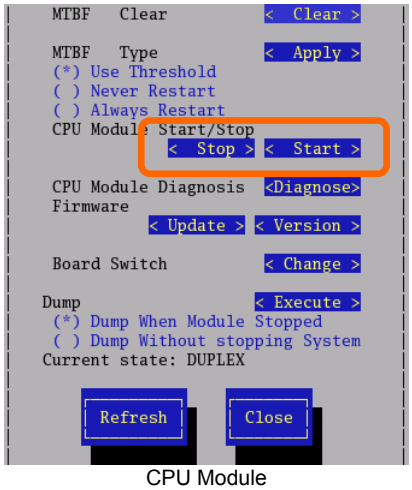
For the detailed procedure, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.



NEC ESMPRO Manager
Select [ft] - [CPU Module] - [CPU Module (to be removed)] - [Maintenance] - [Bring Up/Bring Down] - [Bring Down].



ft server utility
Select [ftServer] - [CPU Module] - [CPU Module (to be removed)]



CPU Module
Select [CPU Module Start/Stop] - [Stop]

Repeat the operation mentioned above for the IO module (PCI module) and confirm that the status of the CPU/IO module and the IO module (PCI module) are “Offline.”

TIPS:

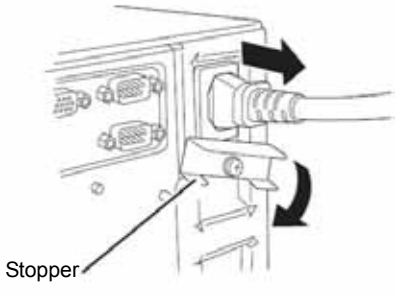
When removing CPU/IO modules 0, select [Bring Down] for CPU module (ID:0) and PCI module (ID:10)

2. Remove the front bezel.

3. Hold the stopper, and disconnect the power cable of the module to be removed.
The stopper will return to the vertical position when you release it.

CHECK:

Leave your hands and make sure that the stopper returned to the vertical position. If you disconnect the cable and the stopper does not go back to this position, you cannot pull out the CPU/IO module in the next step.



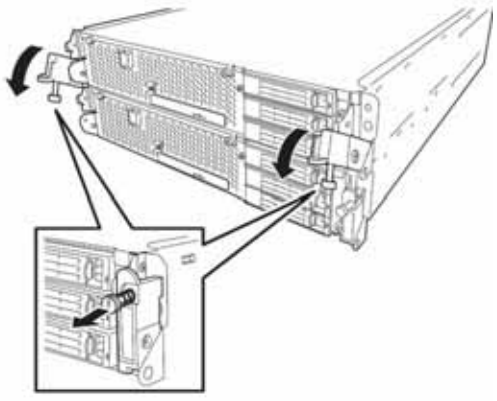
4. Loosen the screws securing the CPU/IO module handle to press down the handle.

IMPORTANT:

Before you pull out a CPU/IO module, check the rear of the server to make sure cables for connection with peripheral equipment or network are disconnected. If any cables are connected, keep a record of where the cables are connected and disconnect all cables connected to the module you are to pull out.

TIPS:

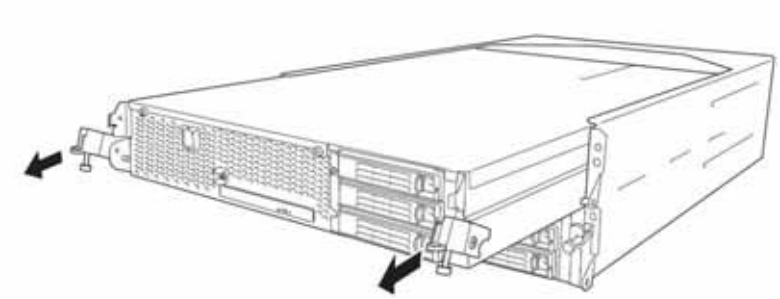
If you cannot disconnect the LAN cable easily, disconnect while pressing the latch with a slotted screwdriver.



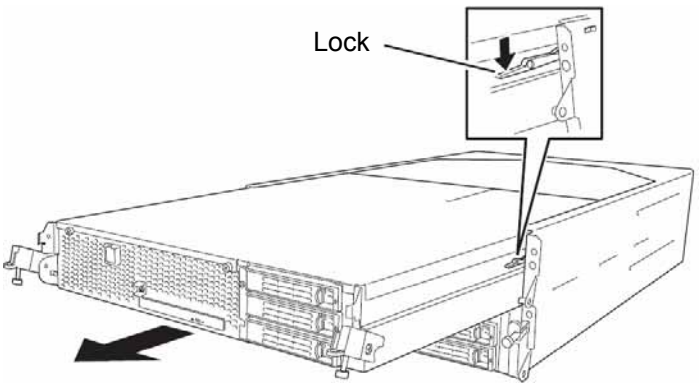
5. Hold the black levers of the CPU/IO module and pull it off.
Pull it off until it is locked and stopped.

IMPORTANT:

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



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



7. Pull out the CPU/IO module gently and carefully place it on a flat and sturdy table.

Avoid the dusty or humid place.

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

Installing CPU/IO Module

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

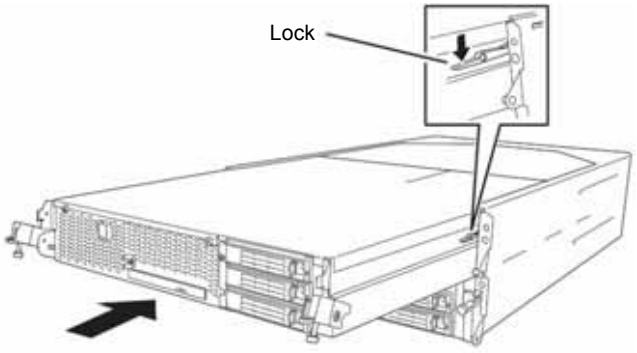
IMPORTANT:

Make sure to read "ANTI-STATIC MEASURES" (page 8-3) and "PREPARING YOUR SYSTEM FOR UPGRADE" (page 8-4) before starting installing or removing options.

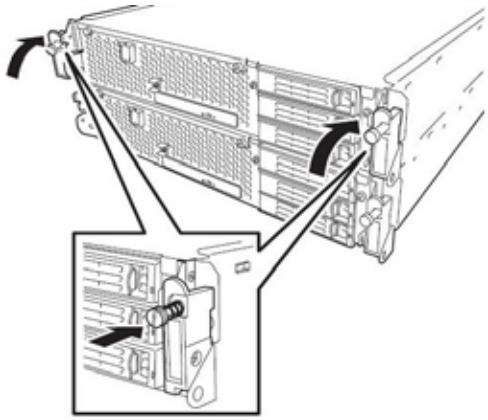
Insert the black lever slowly and fasten the screws tightly. Be careful not to cause a shock to the device at this time.

1. Firmly hold the CPU/IO module with both hands and insert it into the rack.

Hold the CPU/IO module in such a way that its back panel connector faces the back of the rack and engage the guides of the module and chassis, and insert it slowly.



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



IMPORTANT:

- Secure the handle with the screws. If it is not secured by the screws, the operation of the CPU/IO module will be unstable.
- In some system statuses or settings, auto start up or integration does not take place when the module is connected. In such a case, check the status by using the ftServer Utility or NEC ESMPRO Manager DataViewer, and then start up the CPU/IO modules.

3. Connect the cables for connecting the peripheral devices and network.
4. Hold the stopper with your hand and insert the cable of the installed module.
5. The installed CPU/IO module will be automatically started.

DIMM

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

The CPU/IO module board is equipped with six sockets.

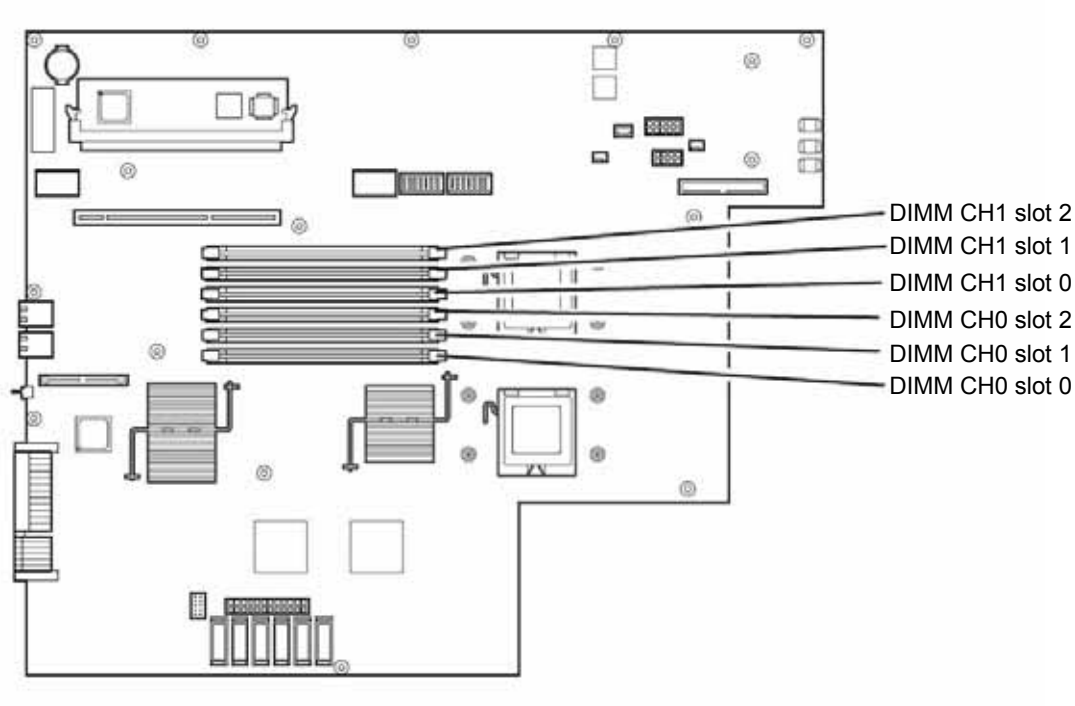
DIMMs should be installed in a set of 2 DIMMs, starting from the lowest socket number.

TIPS:

- You can add memory up to 12 GB (2GB x 6).
  In the error messages and logs in POST NEC ESMPRO, or Off-line Maintenance Utility, the DIMM connector may be described as “group.” The number next to “group” corresponds to the slot number shown in the figure on the next page.

IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or onboard parts with a bare hand or place the DIMM directly on the desk. For more information on static electricity, see “ANTI-STATIC MEASURES.”
- Make sure to use the DIMM authorized by NEC. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.
- Before adding or removing DIMMs, power off the server and detach the CPU/IO module.
- Make sure to read “ANTI-STATIC MEASURES” (page 8-3) and “PREPARING YOUR SYSTEM FOR UPGRADE” (page 8-4) before installing or removing options.



Motherboard of the CPU/IO module

Precautions

Note the following to install or replace DIMM.

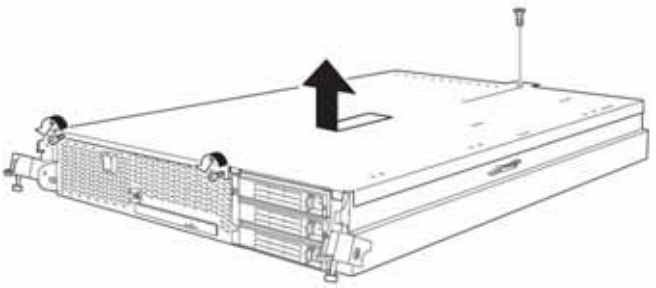
- The DIMMs with the same slot number are linked between the CH1 and CH0.. When a DIMM is added to one CH, another identical DIMM should be installed to the slot with the same number in another CH. This rule is applied to the case of removal.
- The linked DIMMs between CHs should be of the same product with the same performance.
- DIMMs should be installed in sockets from the lowest slot number to the highest slot number.
- To install DIMM, install the product with the same serial number to the same CHs and slots of the CPU/IO modules 0 and 1.

Installing DIMM

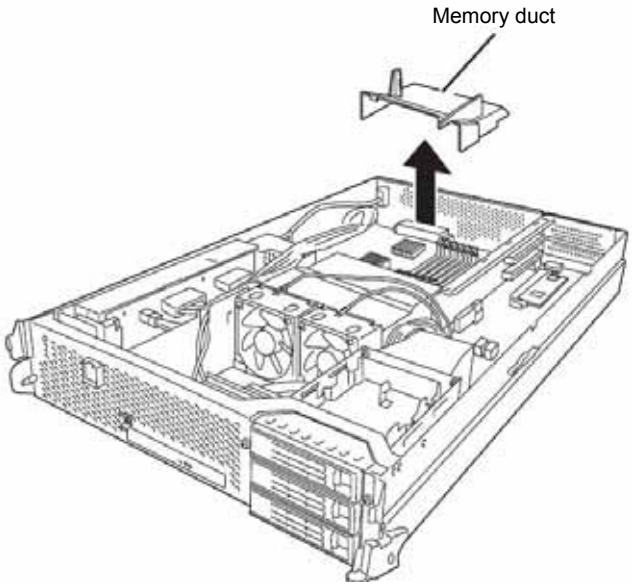
Follow the procedure below to install the DIMM.

1. Shut down OS.

   The sever turns off automatically.
2. Disconnect the power cords from the outlets.
3. Remove the CPU/IO module referring to page 8-11.
4. Remove the screw, and remove the top cover of the CPU/IO module.



5. Remove the memory duct.



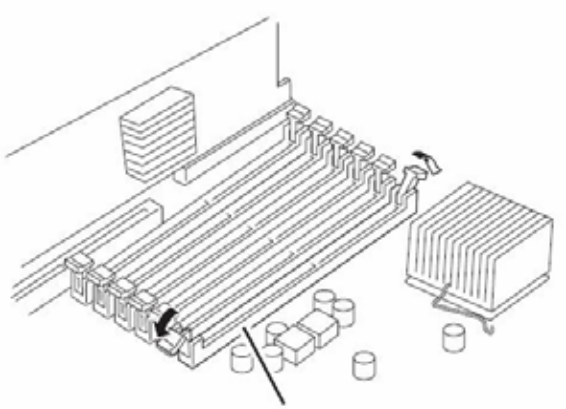
6. Check to be sure in which socket you are mounting the DIMM.

7. Remove the DIMM connector cover from the socket in which the DIMM is installed.

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:

Keep the removed DIMM connector cover.

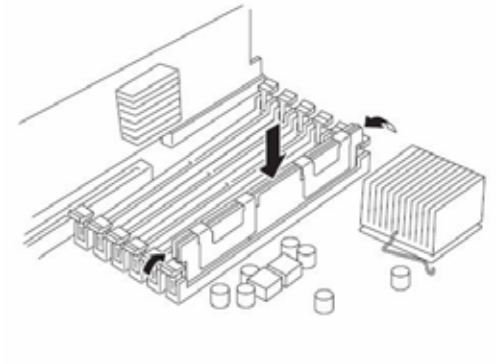


8. Insert a DIMM into the DIMM socket vertically.

TIPS:

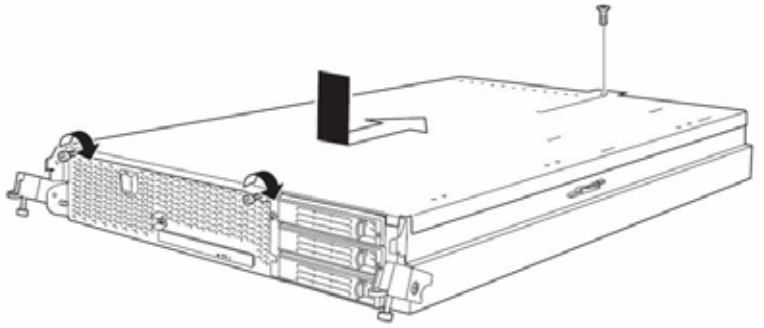
Pay attention to the orientation of the DIMM. The terminal of the DIMM has a cutout to prevent misinsertion.

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



9. Attach the memory duct

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



11. Refer to page 8-15 and install the CPU/IO module.

12. Connect the power cords.

13. Press the POWER switch to power on the server.

14. Verify that POST displays no error message.

If POST displays an error message, write it down and see the POST error message list on page 7-4.

15. After starting the OS, set the paging file size to at least the recommended value (1.5 times the installed memory size).

Removing DIMM

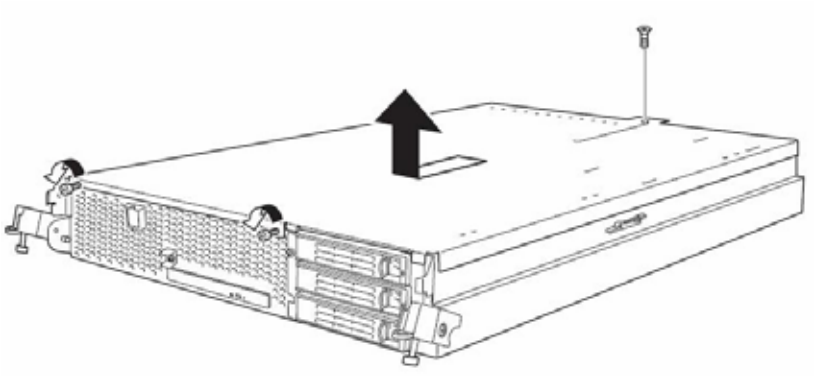
Follow the procedure below to remove the DIMM.

TIPS:

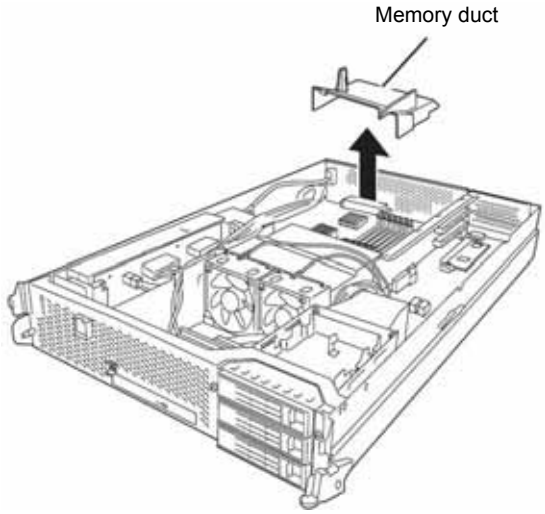
Unless at least two DIMMs are installed, the server does not work.

1. Shutdown OS.

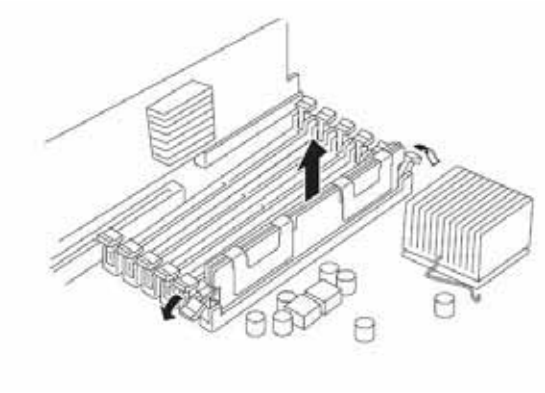
   The system turns off automatically.
2. Disconnect the power cords from the outlets.
3. Remove the CPU/IO module referring to page 8-11.
4. Remove the screws and the top cover of the CPU/IO module.



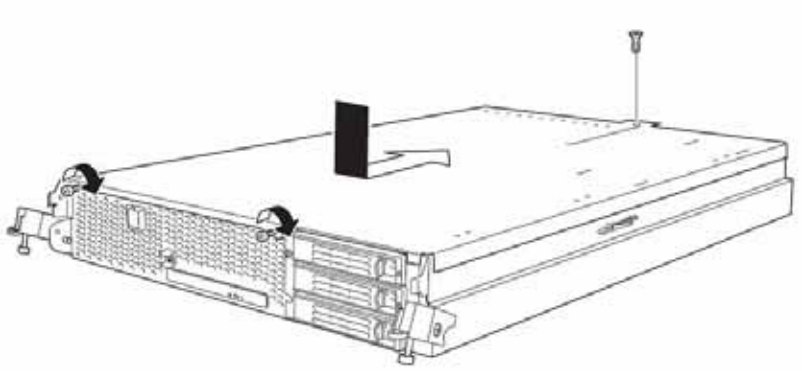
5. Remove the memory duct.



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



7. Attach the memory duct.
8. Attach the top cover of the CPU/IO module and secure it with screws.

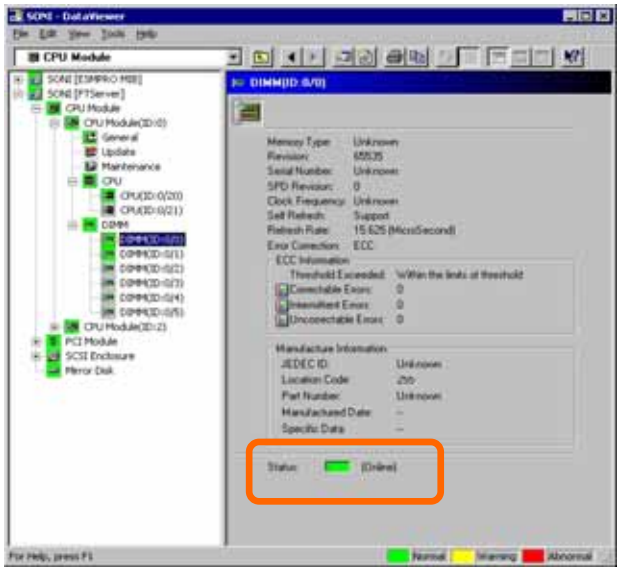


9. Refer to page 8-15 and install the CPU/IO module.
10. Connect the power cords.
11. Press the POWER switch to power on the server.
12. Verify that POST displays no error message.

    If POST displays an error message, write it down and see the POST error message list on page 7-4.

Replacing DIMM

Follow the procedure below to replace a failed DIMM.



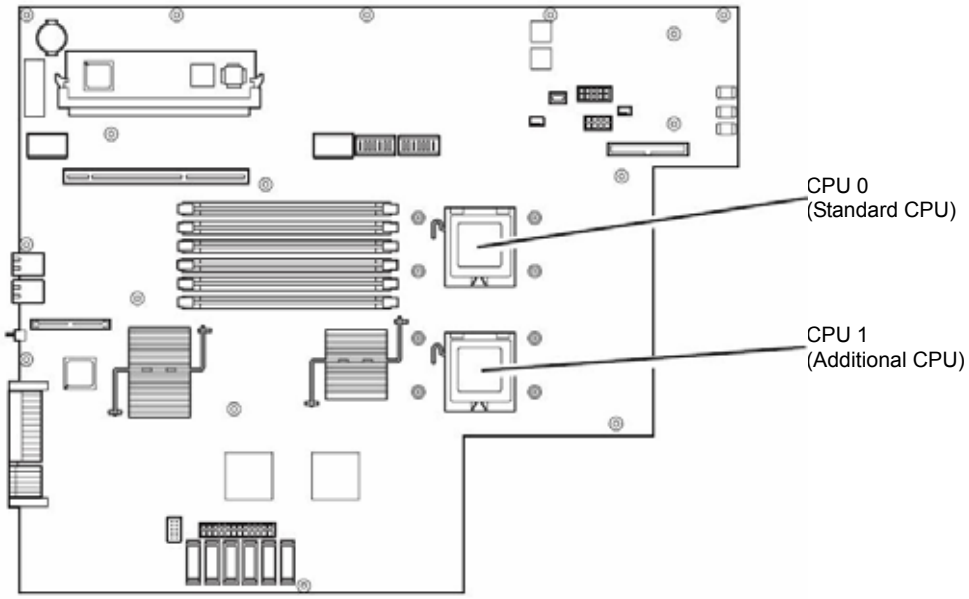
1. Identify the failed DIMM using the DataViewer of NEC ESMPRO Manager.
2. Remove the CPU/IO module referring to page 8-11.
3. Replace the DIMM.
4. Install the CPU/IO module referring to page 8-15.
5. Start up the CPU/IO module using NEC ESMPRO Manager or ftServer Utility.

PROCESSOR (CPU)

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

IMPORTANT:

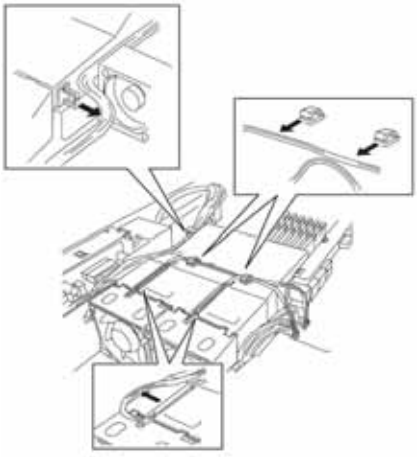
- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU terminals or onboard parts with a bare hand or place the CPU directly on the desk. For more information on static electricity, see “ANTI-STATIC MEASURES.”
- Do not use the system before checking to see it works correctly.
- Make sure to use the CPU specified by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the server. Repairing the server due to failures or damage resulting from these products will be charged even if it is under guarantee.
- Before adding or removing a CPU, power off the server and then remove the CPU/IO module.
- Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.



Installing CPU

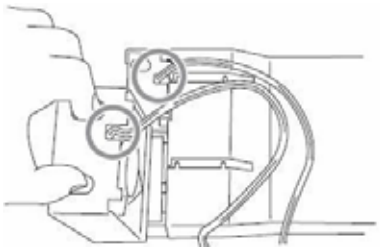
Follow the steps below to install a CPU (model with air-cooling kit).

1. Shut down the OS.
   The server is automatically powered off.
2. Unplug the power cords.
3. Remove the CPU/IO module referring to page 8-11.
4. Remove the cable connected to the CPU duct cover.

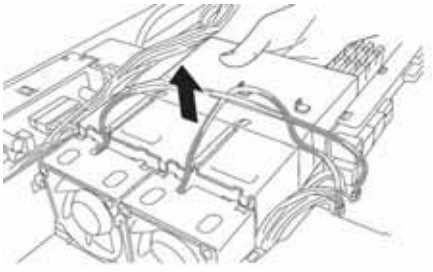


IMPORTANT:

Remove the cable without adding pressure to the bases of the fan cable.



5. Remove the CPU duct cover.

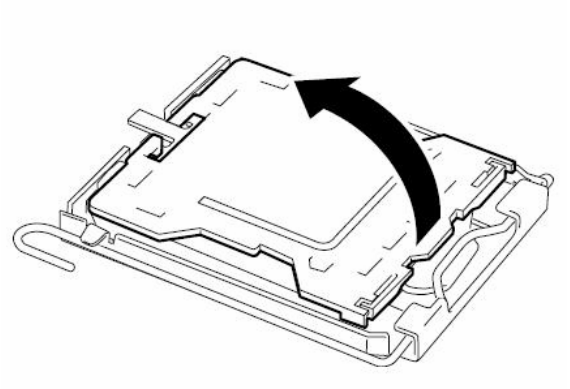


6. Check to be sure of the location of the CPUsocket.

7. Detach the socket cover on the CPU socket.

IMPORTANT:

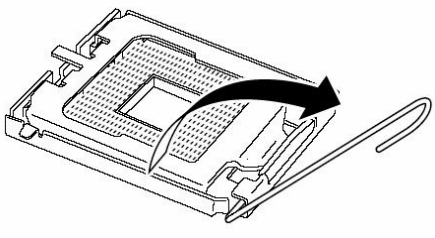
Keep the socket cover.



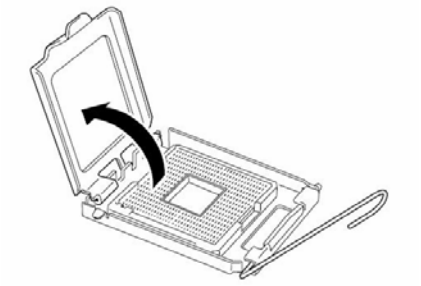
8. Lift the socket lever.

IMPORTANT:

Open the lever fully. It can be opened 120° or more.



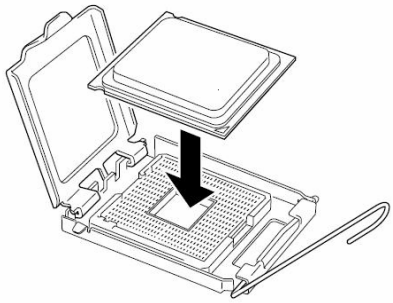
9. Lift the CPU socket holder.



10. Place the CPU on the socket carefully.

TIPS:

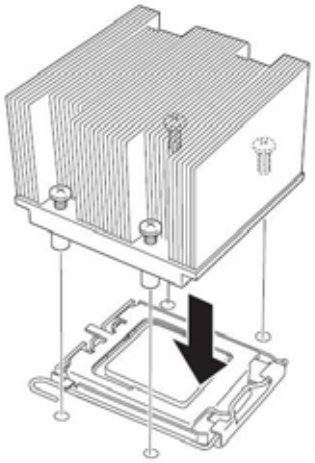
Pay attention to the orientation of the CPU. The CPU and socket have pin marks to prevent misinsertion. Check the pin marks of the CPU and the socket and insert the CPU correctly.



11. After pressing the CPU softly against the socket, place the CPU socket holder back to its original place.

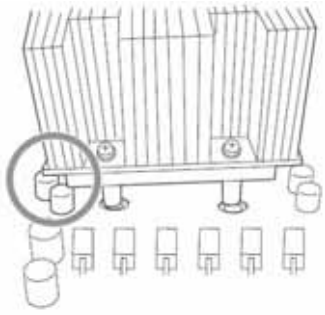
12. Return the socket lever back to its original place.

13. Place the heat sink on the CPU and secure it with 4 screws. Loosely fasten the screws in the cross-coupling way, and then fasten them tightly.



IMPORTANT:

Place the heat sink so that its corners will not bump against the parts on the motherboard.



14. Check that the heat sink is attached to the mother board horizontally.

IMPORTANT:

- If the heat sink is tilted, remove the heat sink and then attach it again. If the heat sink is not attached horizontally, it may be caused by the following.

  - The CPU is not attached correctly.
  - Screws are not secured tightly enough.

- Do not move around the heat sink fastened.

15. Connect the duct cover.

16. Fasten the cable to the duct cover.

17. Refer to page 8-15 and attach install the CPU/IO module.

18. Connect the power cord.

19. Turn on the power by pressing the POWER switch.

20. Verify that POST displays no error message. If an error message is displayed, write it down and check it in the error message list on page 7-4.

Removing CPU

Removal of a heat sink and CPU is the reverse of installation.

PCI BOARD

Up to three PCI boards can be installed to the CPU/IO module.

IMPORTANT:

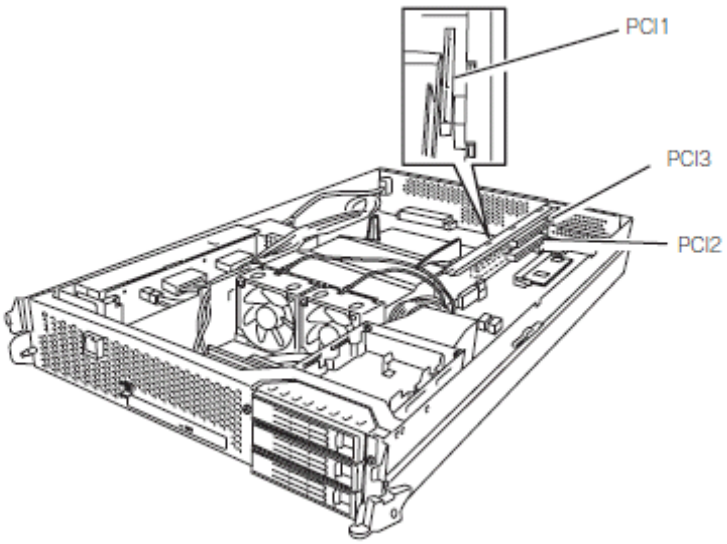
- The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or onboard parts by a bare hand or place the PCI board directly on the desk. For more information on static electricity, see "ANTI-STATIC MEASURES" on page 8-3.
- Make sure to read "ANTI-STATIC MEASURES" and "PREPARING YOUR SYSTEM FOR UPGRADE" before starting installing or removing options.

Note the following to install or replace PCI board.

- To make a dual PCI board configuration, install the same type of board (i.e., having the same specifications and performance) to the same slot for each 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 full height PCI boards, starting from the one with the smallest slot number.



List of option PCI boards and installable slots:

N-code	Product name	PCI-1	PCI-2	PCI-3	Remarks
	PCI slot performance	PCI-X 133MHz/64bit	PCI-X 100MHz/64bit		
	Slot size	Low Profile	Full Height		
	PCI board type	3.3V			
	Mountable board size	MD2	Full Size		
N8804-002	1000BASE-T 1ch board set	○			When a PCI board is installed to CPU/IO module0, another identical PCI board should be installed to the same slot in CPU/IO module1. Only one board can be mounted when N8804-005 or N8803-034 is installed.
N8804-003	1000BASE-SX 1ch board set	○			When a PCI board is installed to CPU/IO module0, another

					identical PCI board should be installed to the same slot in CPU/IO module1. Only one board can be mounted when N8804-005 or N8803-034 is installed.
N8804-005	1000BASE-T 2ch board set		○	○	Up to one board can be mounted per CPU/IO module. When a PCI board is installed to CPU/IO module0, another identical PCI board should be installed to the same slot in CPU/IO module1. One board other than N8804-005 can be mounted when it is not N8803-034.
N8803-032	SCSI board		○	○	Up to one board can be mounted per CPU/IO module. When a PCI board is installed to CPU/IO module0, another identical PCI board should be installed to the same slot in CPU/IO module1.
N8803-034	Fibre Channel board set	○	○	○	-Bracket replacement -Up to one board can be mounted per CPU/IO module. When a PCI board is installed to CPU/IO module0, another identical PCI board should be installed to the same slot in CPU/IO module1. One board other than N8803-034 can be mounted when it is not N8804-005.

Installing PCI Board

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

TIPS:

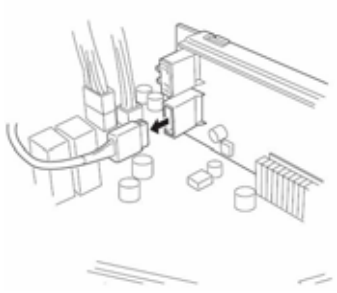
To install the PCI board, make sure the shape of the board connector matches with the shape of the PCI board slot connector.

1. Remove the CPU/IO module referring to the page 8-11.

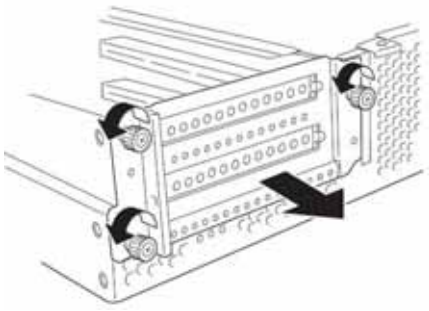
The following steps explain how to install a PCI board on the PCI board slot (PCI-X slot 2, PCI-X slot 3) of the riser card.

Go to step 10 to install a PCI board on the PCI board slot (PCI-X slot 1).

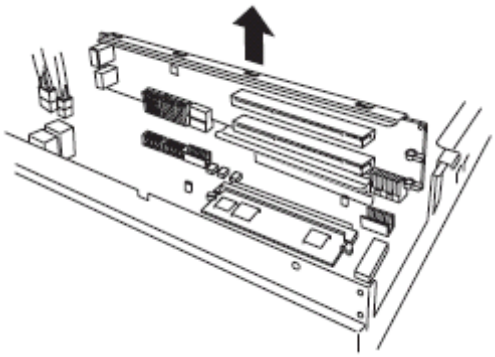
2. Disconnect the cable from the connector of the riser card.



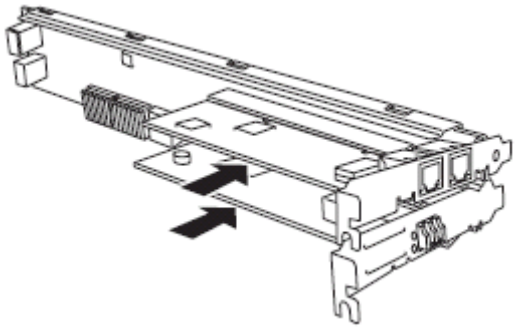
3. Loose the 3 fixed screws on the PCI bracket on the rear side of the device, and pull the PCI bracket.



4. Remove the riser card from the motherboard.



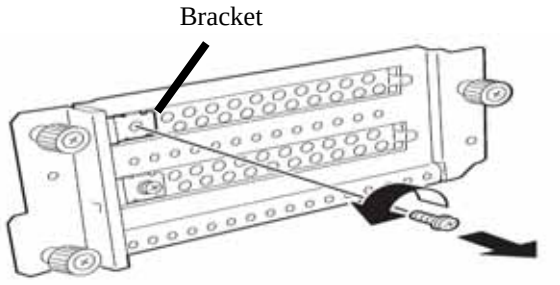
5. Insert optional PCI boards into the two PCI slots of the riser card.



6. Remove the screws, and then the bracket.

IMPORTANT:

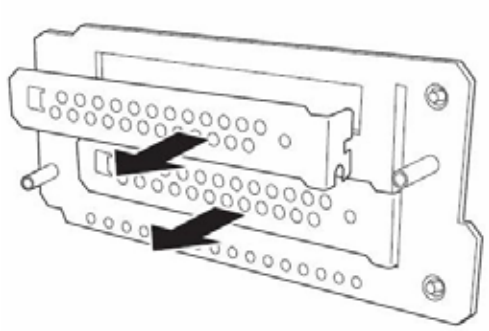
Carefully keep the removed screws and bracket.



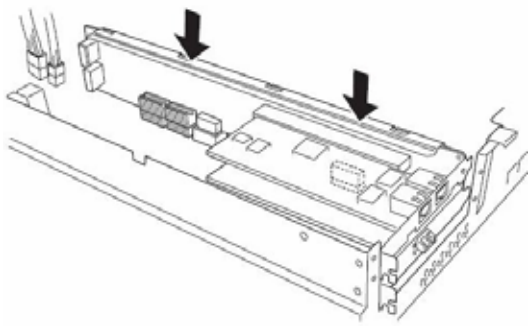
7. Remove the bracket cover (for two slots) from the PCI bracket.

IMPORTANT:

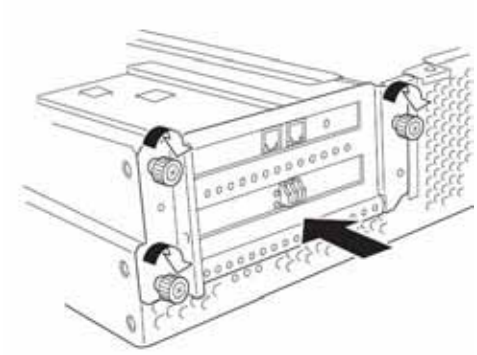
Carefully keep the removed PCI bracket.



8. Install the riser card on which the PCI board is installed on the motherboard.



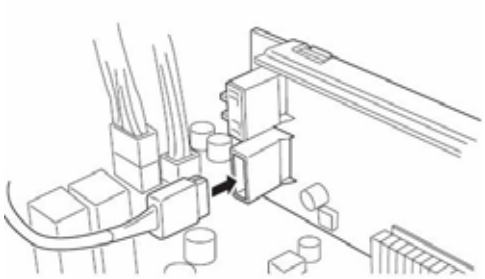
9. Secure the PCI brackets with 3 screws.



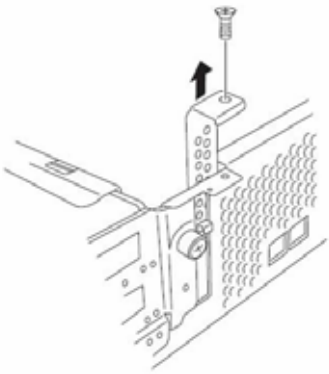
10. Connect the disconnected cable to the connector of the riser card.

IMPORTANT:

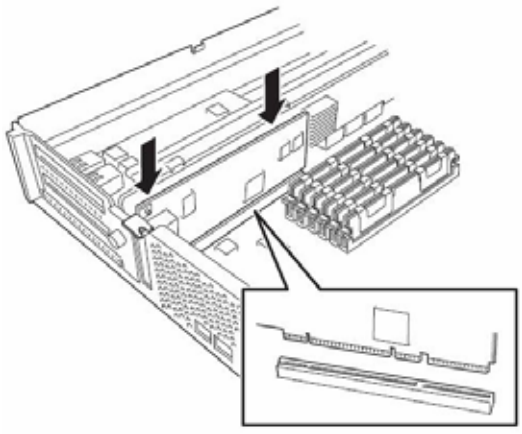
Connect the cable to the connector on the lower part.



11. Loosen the fixed screw on the bracket cover that corresponds to another PCI slot that is hidden behind the riser card, and remove the bracket cover.



12. Install the optional PCI board to another PCI slot hidden behind the riser card.



13. Secure the PCI board with a fixed screw.

Removing PCI Board

To remove PCI board card, follow the reverse procedure of the installation and install the expansion slot cover.

Replacing PCI Board

Follow the procedure below to replace the failed PCI board.

1. Check the failed board from the syslog.
2. Remove the CPU/IO module referring to the page 8-11.
3. Remove the PCI bracket, then remove the PCI board.
4. Replace the board and fasten it.
5. Install the CPU/IO module referring to the page 8-15.
6. Connect the network cable and cables for PCI boards.
7. The installed CPU/IO module will start automatically.
8. Confirm that the PCI board is correctly recognized by POST and OS.

Setup of Optional PCI Board

IMPORTANT:

- To enable the fault-tolerant feature of the optional device, the identical PCI boards must be installed to the slots with the same number in CPU/IO module 0 and CPU/IO module 1.
- The BIOS settings need to be modified when mounting some optional PCI boards. To change the BIOS settings, start the BIOS setup utility to change the [OS Boot Monitoring] configuration in [Server] – [Monitoring Configuration]. See page 4-24 for more details.
- For the supported connecting devices, contact your sales agent.

N8804-002 1000BASE-T 1ch board set

N8804-003 1000BASE-SX 1ch board set

N8804-005 1000BASE-T 2ch board set

IMPORTANT:

For LAN cable's connector, use a RJ-45 connector which is compliant with IEC8877 standard. If any other connector is used, it may not be removed easily.

- List of slots to install optional PCI boards

  Refer to "List of option PCI boards and installable slots" on page 8-32.

- Driver installation procedure

  You do not need to install a driver since the driver for N8804-002, N8804-003 and N8804-005 boards is included in the OS.
  After attaching the boards, configure duplication settings with reference to "DUAL LAN CONFIGURATION" in pages 3-9.

N8803-032 SCSI Board

- The lists of slots to install optional PCI boards

  Refer to the table "List of option PCI boards and installable slots" on page 8-32.

- Driver installation procedure

You do not need to install a driver since the driver for N8803-032 board is included in the OS.
After attaching the board, check that the following directory exists by ls command etc.
/proc/scsi/aic79xx

If the above directory is not created, the board is not recognized normally.
(When the board is not mounted,this directory does not exist.)

N8803-034 Fibre Channel Board Set

■ List of slots to install optional PCI boards

"List of option PCI boards and installable slots:" on page 8-32.

■ Driver installation procedure

You do not need to install a driver since the driver for N8803-034 board is included in the OS.
However, in some environment, you may need to add the following to /etc/modprobe.conf:

<If you use N8190-119>
options lpfc lpfc_topology=0
<in environment other than above>
options lpfc lpfc_topology=6

After configuring the above settings, use the following commands to reboot the system.

(1) #sync
(2) #reboot

■ Configuring duplication of path

IMPORTANT:

■ This must be operated by the root user.

1. Execute the following command to create a multi path device.

```
# multipath
```

By executing this command, dm device of md-N under /dev and mapper/mpathN, dm-mp device (symbolic link of dm device) of mapper/mpathNpM (N and M indicate 1 or greater number) are created.
This virtualizes the sd device of FibreChannel for dm-mp device for every path.
The dm device uses dm-mp device because dm device does not distinguish partitions from entire device.
mpathN is the N-th LUN. mpathNpM is the M-th partition of mpathN.

2. Execute the following command to start the path monitoring daemon (multipathd).

```
# chkconfig multipathd on
# /etc/init.d/multathd start
```

3. Execute the following command to check the status of path.

```
# multipath -l
```

This command allows you to check the status of path of every dm-mp device.

■ Changing environment during the operation.

(1) Changing partitions
Execute the fdisk command for virtualized /dev/mapper/mpathN (N indicates 1 or greater number).

Reboot the OS to update the changes you made on the system.

(2) Adding, changing, or deleting LUN

Reboot the OS to make the changes effective on the system.

Appendix A

Specifications

Item		NEC Express5800/320Fc-MR N8800-107F
CPU	Type	Quad-Core Intel® Xeon® Processor 2.66GHz
	Clock/second cache	1333MHz/4MB × 2
	Number of processors	1 processor (the number of processors installed per module)
	Maximum	Up to 2 processors (the number of processors installed per module)
Chipset		Intel Blackford + ESB2M
Memory	Maximum	12GB
	Expansion unit	2 DIMMs
	Memory module	DDR II SDRAM DIMM (Fully Buffered)
	Error check	ECC
Graphics (VRAM)		ATI ES1000
Auxiliary input device	Floppy disk (option)	3.5 inch drive x 1 (USB)
	DVD-ROM (standard)	DVD Combo（Load type: tray. Speed: x6）
	Hard disk (standard)	None
	Hard disk (maximum)	900 GB* (300 GB × 3) * The user area is reduced to a half of the physical capacity due to software mirroring.
File bay (3.5 inch)		3 slots
Additional slot		1 slot (Low profile : PCI-X 133MHz, 64 bit), 2 slots (Full size, full height : PCI-X 100MHz, 64 bit)
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (2 ports)
External interface	USB	4-pin connector (3 ports) Keyboard occupies one port.
	Network	RJ-45 (2 ports)
	Display	MINI D-sub 15-pin (1 port)
Cabinet design		Rack-mount type
External dimensions		483 (w) × 178 (h) × 762 (d) mm
Weight		47.5 kg (Max. 53.5kg)
Power supply		100 to 240 VAC ±10%, 50/60 Hz ±1 Hz
Power consumption		1503VA / 1500W
Environmental requirements	In operation	Temperature 10 to 35°C Humidity 20 to 80% RH (non-condensing)
	In storage	Temperature -10 to 55°C Humidity 20 to 80% RH (non-condensing)

Appendix B

I/O Port Addresses

The factory-set I/O port addresses for the server are assigned as follows:

Address	Chip in Use
0x00000000-0x00000CF7	Direct memory access controller
0x00000010-0x0000001F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Motherboard resources
0x00000028-0x00000029	Motherboard resources
0x0000002C-0x0000002D	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000037	Motherboard resources
0x00000038-0x00000039	Motherboard resources
0x0000003C-0x0000003D	Motherboard resources
0x00000040-0x00000043	System timer
0x00000050-0x00000053	Motherboard resources
0x00000060-0x00000060	Motherboard resources
0x00000061-0x00000061	System speaker
0x00000062-0x00000063	Motherboard resources
0x00000064-0x00000064	Motherboard resources
0x00000066-0x00000067	Motherboard resources
0x00000070-0x00000073	System CMOS/real time clock
0x00000074-0x00000077	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000081-0x0000008F	Direct memory access controller
0x00000090-0x0000009F	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Motherboard resources
0x000000A8-0x000000A9	Motherboard resources
0x000000AC-0x000000AD	Motherboard resources
0x000000B0-0x000000B5	Motherboard resources
0x000000B8-0x000000B9	Motherboard resources
0x000000BC-0x000000BD	Motherboard resources
0x000000C0-0x000000DF	Direct memory access controller
0x000000E0-0x000000E3	Motherboard resources
0x000000E4-0x000000E6	Stratus BMC Device
0x000000E7-0x000000EF	Motherboard resources
0x00000120-0x00000120	Stratus Virtual ATI Video
0x00000274-0x00000277	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003B0-0x000003BB	PCI standard PCI-to-PCI bridge
0x000003B0-0x000003BB	Stratus Fault Tolerant North PCI to PCI Bridge
0x000003B0-0x000003BB	Stratus Fault Tolerant East/West PCI to PCI Bridge
0x000003B0-0x000003BB	Stratus Fault Tolerant Core

Address	Chip in Use
0x000003B0-0x000003BB	Intel(R) 82801 PCI Bridge - 244E
0x000003B0-0x000003BB	Stratus Virtual ATI Video
0x000003C0-0x000003DF	PCI standard PCI-to-PCI bridge
0x000003C0-0x000003DF	Stratus Fault Tolerant North PCI to PCI Bridge
0x000003C0-0x000003DF	Stratus Fault Tolerant East/West PCI to PCI Bridge
0x000003C0-0x000003DF	Stratus Fault Tolerant Core
0x000003C0-0x000003DF	Intel(R) 82801 PCI Bridge - 244E
0x000003C0-0x000003DF	Stratus Virtual ATI Video
0x0000040B-0x0000040B	Direct memory access controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x000004D6-0x000004D6	Direct memory access controller
0x00000500-0x0000057F	Motherboard resources
0x00000580-0x0000059F	Motherboard resources
0x000005A0-0x000005BF	Motherboard resources
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000C00-0x00000C01	Programmable interrupt controller
0x00000CA2-0x00000CA2	Stratus BMC Device
0x00000CA3-0x00000CA3	Stratus BMC Device
0x00000CA4-0x00000CA7	Stratus BMC Device

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