N8800-164F, EXP320L

NEC Express5800/R320a-E4

N8800-165F, EXP320M

NEC Express5800/R320b-M4

User's Guide (Setup)

1st Edition
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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 caused by failing to follow the instructions, and actions taken to prevent them; such components are labeled warning.

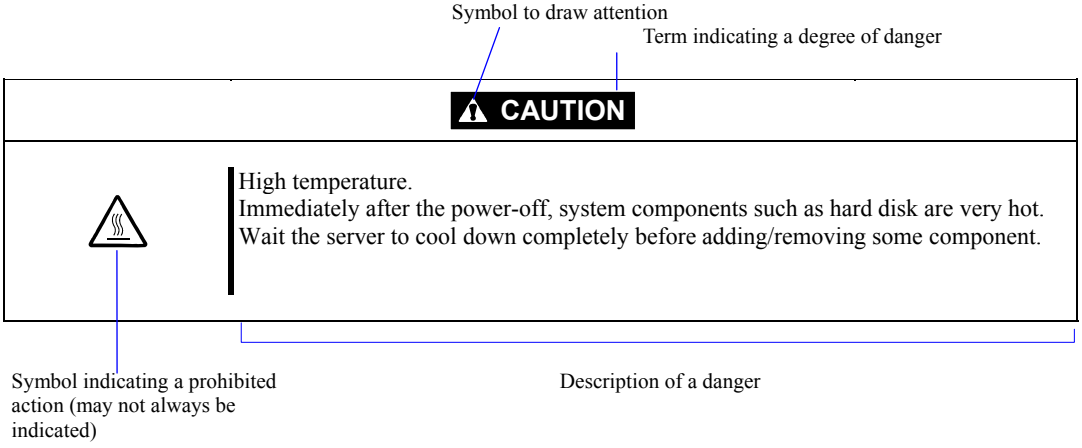
This guide and warning labels use “WARNING” and “CAUTION” to indicate a danger depending on the degree. These terms are defined as follows:

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

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

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

(Example)

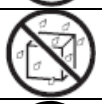


Symbols and its descriptions used in this User's Guide and warning labels are as follows:

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 a personal injury due to 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.
	Be sure to provide earthing. Otherwise, an electric shock or fire may be caused.

For detailed notes to set up the machine safely, refer to “PRECAUTION FOR SAFETY” on page 1-3.

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.

BSMI Statement

警告使用者：
此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

CCC Statement

声　明
此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

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CE Statement

Australia EMI:
NOTE: This is a Class A product. In domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Canada EMI:
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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.

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Windows Server 2008 is the abbreviation for Microsoft Windows Server 2008 Standard operating system and Microsoft Windows Server 2008 Enterprise operating system.

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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.

The patent numbers for the DVC technology of Avocent US.

US Patent Number: 5,732,212/5,937,176/6,633,905/6,681,250/6,701,380 (others patents pending)
Taiwanese Patent Number: 173784
European Patent Number: 0 740 811

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Preface

Welcome to the NEC Express5800/ft series.

NEC Express5800/ft series is a “fault-tolerant (ft)” server focusing on “high reliability” in terms of fault-tolerance, in addition to “high performance,” “scalability,” and “general versatility” provided by NEC Express5800 series. In the event of trouble, its dual configuration will allow the system to isolate instantaneously 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 NEC Express5800/ft series in a mission-critical system where high availability is required.

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 when you set up the product.

Keep this manual and the separate volume of User’s Guide handy.

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

How to Use This User's Guide

This guide explains the procedures you should perform before you begin system operation after you purchased the product. Read the guide in order from Chapter 1. If you perform procedures according to this guide, you will set up the product properly.

Chapter 4 describes how to install the ESX. Chapter 5 describes post-installation procedures. Chapter 6 explains how to troubleshoot if you cannot set up the product properly. Refer to “SYSTEM REPAIR” on page 6-2 for details about system configurations and repairs of this product. Refer to “TROUBLESHOOTING” on page 6-3 if you feel you failed to set up the product.

See this User’s Guide for details of this product’s operation, and functions and operations of the hardware and the system.

Additional Symbols

The following symbols are used throughout this User's Guide in addition to the caution symbols described 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 or software
TIPS:	Helpful information, something useful to know

About our Web Service

Information on NEC Express5800/ft series including modification modules is also available on our web site, NEC Global Site:

http://www.nec.com/

CONTENTS

Chapter 1

Before Using

This chapter includes information necessary for proper and safe operation of the server, the main unit and its accessories. Go through this chapter before you start setup of the product.

NOTES FOR SAFE HANDLING

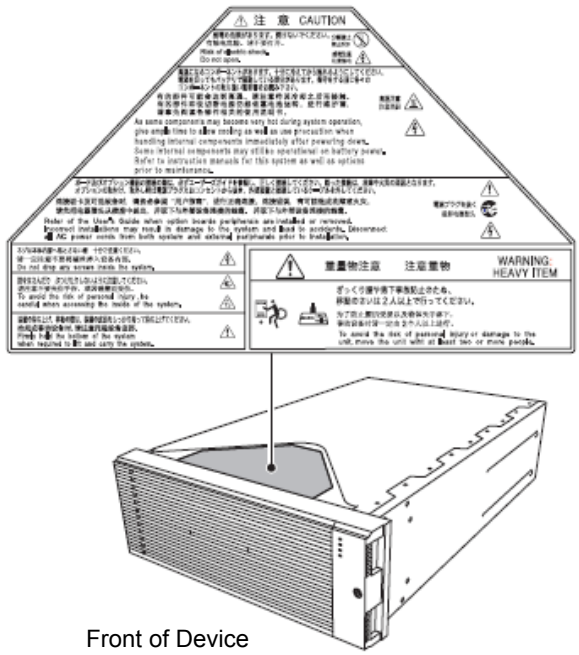
The following section describes necessary information to use the product properly and safely.

Warning Label

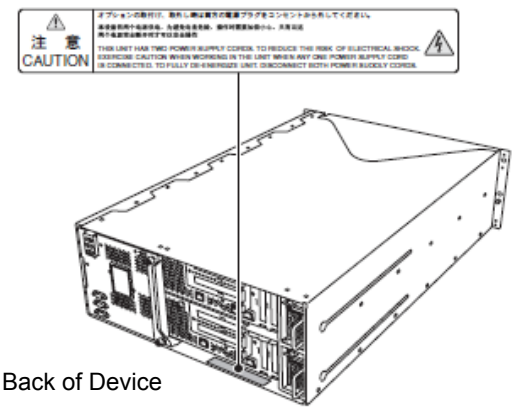
Warning label is placed in the certain part of the system so that the user stays alert to possible risks. Do not remove or damage the label.

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

The figures below show the location of this label on the server.



Front of Device



Back 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 device in an operation where human lives are involved or high reliability is required.

This equipment is not intended for use and control in facilities/systems where human lives are involved or high reliability is required, including medical devices, nuclear facilities, aerospace equipment, transportation facilities or 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.

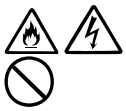
Do not continue to use the equipment if you detect smoke, odor, or noise.

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 if you continue to use the equipment.

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.

⚠ CAUTION



Prevent water or foreign objects from getting into this equipment.

Do not let water or foreign objects (e.g., pins or paper clips) enter this equipment. There is a risk of a fire, electric shock, and breakdown. When such things accidentally enter this equipment, immediately turn off the power and unplug the cord. Contact your sales agent without 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.

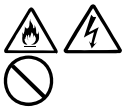
⚠ CAUTION

Do not plug the power cord in a nonconforming outlet.

Use a wall outlet with specified voltage and power type.
There is a risk of a fire or electricity leakage if you use a nonconforming outlet.
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.

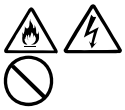
Do not plug multiple cords in a single outlet.

If the current exceeds the rating, 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 when you insert the plug insecurely. 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.

Do not use any nonconforming AC cord. There is a risk of fire when the current exceeds the rating on the cord. You also have to observe the following prohibitions about handling and connecting interface cables.

- Do not pull on the cord.
- Do not pinch the cord.
- Do not bend the cord.
- Keep chemicals away from the cord.
- Do not twist the cord.
- Do not place any object on the cord.
- Do not step on the cable.
- 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.)

⚠ CAUTION

Do not use any power outlet other than one for 3-prong.

This equipment has a 3-prong outlet. You can only plug-in to a 3-prong plug. If you connect any plug other than the 3-prong one, you may get electric shock.

Installation, Relocation, Storage and Connection

⚠ 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. There is a risk of a fire if you place the server in a place such as follows.

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

Do not use or store this product under corrosive gas 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 of the printed board 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.

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 an inappropriate 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:

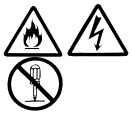
- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the equipment with loose cable connections.
- Do not use any damaged cable.

Do not disable the lock mechanism.

Do not use this product with the lock mechanism being removed or disabled.
Doing so may cause personal injury if this product drops.

Cleaning and Handling of Internal Devices

⚠ WARNING



Do not disassemble, repair, or alter the server.

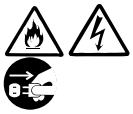
Unless described herein, never attempt to disassemble, repair, or alter the equipment. There is a risk of an electric shock or fire as well as malfunction.

Do not look into the optical disk drive.

The optical disk 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 are exposed to the laser beam, there is a risk of losing eyesight.

Do not remove the lithium battery and NiMH (or Li-Ion) batteries.

Your server contains the lithium and NiMH (or Li-Ion) batteries. Do not remove the battery. Danger of explosion if the battery is incorrectly replaced.
Placing the battery close to a fire or in the water may cause an explosion. When the server does not operate appropriately due to the dead lithium and NiMH (or Li-Ion) batteries, contact your service representative to replace only with the same or equivalent type recommended by NEC. Do not disassemble the server to replace or recharge the battery by yourself.



Caution for electric shock.

You can replace internal, optional devices while the equipment is powered-on. However, carefully follow the instructions on this guide when you do so. If you touch the internal devices other than the ones described in this guide, there is a risk of electrical shock.

Make sure to power off the equipment and disconnect the power plug from a power outlet before cleaning. Touching any internal device of the equipment 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.

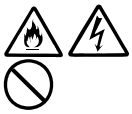
⚠ CAUTION

High temperature

Immediately after powering off the system, system components such as hard disk drive 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.

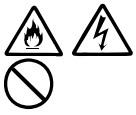


Protect the unused connectors with the protective cap.

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

During Operation

⚠ CAUTION



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 optical disk drive's tray ejected.

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

Do not touch this equipment when it thunders.

If it starts to thunder, do not touch the equipment and cables.
And do not install or remove the equipment. There is a risk of an electric shock.

Rack-mount Model (R320a-E4/R320b-M4)

⚠ WARNING

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 use in the spot other than the designated one.

Install this equipment in the spot where it satisfies the conditions of installation. Installing this equipment in an undesirable spot causes negative effects on the equipment itself and other systems. There is also a risk of a fire as well as an injury caused by the rack that falls. Refer to the description that is attached the rack, or contact your maintenance service agent for the detailed accounts of the installation spot or a seismic construction.

⚠ CAUTION

Be careful not to hurt your fingers.

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

Do not attempt to install the server yourself.

Transport and install the rack with three and more people. Doing so with two or less people could cause the falling of the rack and damaging the surroundings. High rack such as 44U rack is unstable if it is not fixed with stabilizers or other materials. Make sure to support transport and install it with three or more people.

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 combine two or more racks. There is a risk of falling down to cause injuries.

Do not assemble parts alone. Check the pins on hinges.

Mount doors and trays to a rack with two or more people. Make sure that the pins on hinges on the top and the bottom of the door when you install it. Neglecting this check could lead to dropping some parts and cause a breakage of them or could result in injuries.

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

Before pulling out the equipment, make sure that the rack is fixed (by stabilizers or quake-resistant engineering). It may fall down to cause injuries.

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

If you pull out two or more, it may fall down to cause injuries. You can only pull out one 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.

Do not pull out the equipment from the rack during operation.

Do not pull out the equipment while it works. There is a risk of malfunction and injuries.

UNPACKAGING

This product and various accessories are in the special shipping box. Take them out from the box and check the individual items. Store the box and unused accessories in a safe place.

Accessories

This product is shipped with various accessories. See the packing list to make sure everything is included and check the individual items. If any 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 shipped with the operating system.
- Make backup copies of included floppy disks, if any or Flash FDD. Keep the original disks as the master disks; use these copies in operation.
- Improper use of an included floppy disk, Flash FDD, or CD/DVD may alter your system environment. If you find something unclear, stop using them and contact your sales agent.

Transporting Device

This unit and options use lithium-metal battery or lithium-ion battery.
Contact your local reseller for transporting the unit by air or shipping since the regulation is applied to air and maritime transportation of lithium battery

Chapter 2

About Operating System

This chapter gives essential information on the ESX system supported by the server and how to install it.

Vmware ESX 4.0 Update2

For installing VMware ESX 4.0 Update2 on the NEC Express5800/ft series, follow the procedure in “Setup procedure to install ESX” (page 4-3) to setup.

Supported OS

You need to install VMware ESX 4.0 Update2, hereinafter called as “ESX”, for using the NEC Express5800/ft series. Refer to the website below for the operating systems which can run on the ESX virtual machine (hereinafter referred to as guest OS).

http://www.nec.com/global/solutions/servervirtualization/vmware.html

IMPORTANT:

- The NEC Express5800/ft series is a precision instrument. It is recommended to ask maintenance personnel for a set up.

Chapter 3

Installing Server

This chapter describes requirements for using the product properly and safely, the setup procedures to make NEC Express5800/ft series ready for use, and how to connect peripherals.

INSTALLATION

This section describes installation of NEC Express5800/ft series.

Rack-mount Model

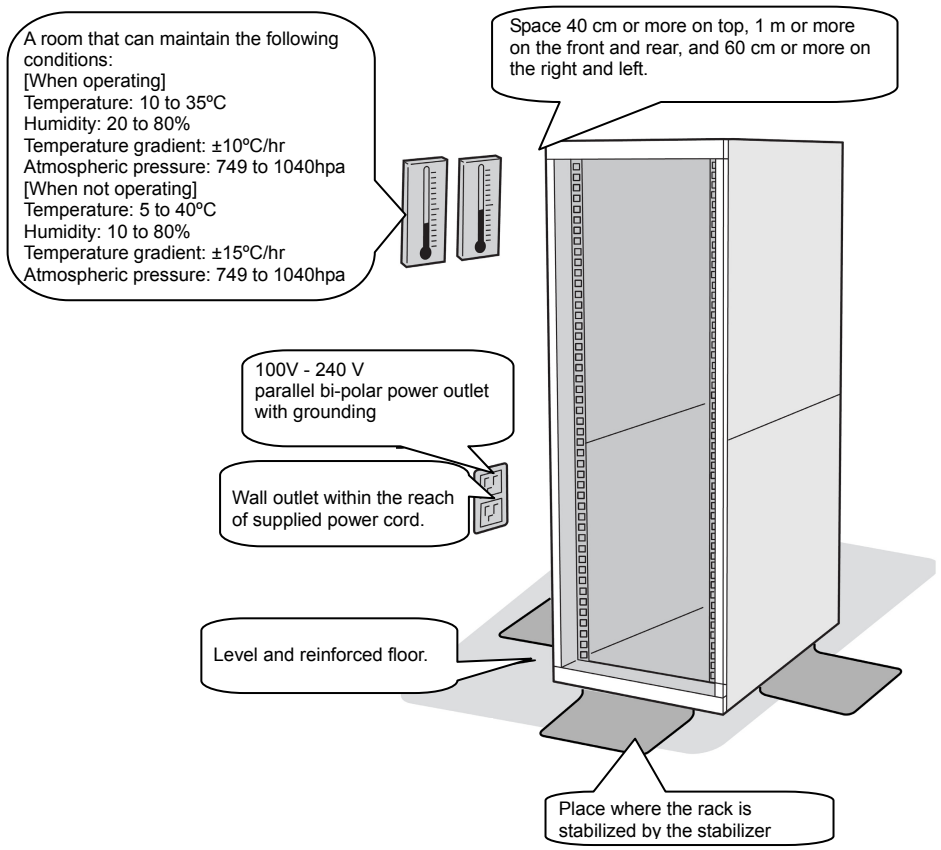
You can mount NEC Express5800/ft series on a rack that conforms to the EIA standards.

IMPORTANT:

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

Installing a rack

To install a rack, see the instruction that comes with the rack, or contact your sales agent or maintenance personnel.



⚠ WARNING

Observe the following precautions to use the server safely. There is a risk of a death or serious injury. For details, see “Notes for Safe Handling” in Chapter 1.

- Do not install the server in non-designated places.
- Do not connect the ground wire to a gas pipe.

⚠ CAUTION

Observe the following precautions to use the server safely. There is a risk of a burn, personal injury, or damage to physical assets. For details, see “Notes for Safe Handling” in Chapter 1.

- Do not carry or install a rack alone.
- Do not install a rack in such a manner that its weight is imposed on a single place.
- Do not assemble or disassemble parts alone.
- Do not pull a device out of the rack if the rack is unstable.
- Do not leave more than one device pulled out from the rack.
- Do not install excessive wiring.

Do not install NEC Express5800/ft series in such places as listed below. If you locate racks or install the server in such places, the server may malfunction.

- Place where you cannot pull out the components fully.
- Place that cannot sustain the total weight of the rack and its components.
- Place where you cannot use stabilizers or where you cannot perform installation without quake-resistant engineering.
- Place whose floor is uneven or inclined.
- Place where temperatures change widely (near a heater, an air conditioner, or a refrigerator).
- Place that is subject to intense vibration.
- Place where corrosive gas (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, or ozone) is generated, or a place that is close to chemicals or exposed to chemicals.
- Place whose floor is covered with non-antistatic carpet.
- Place that may be subject to falling objects.
- Place that is close to some equipment that generates intense magnetic field (e.g., TV set, radio, broadcasting/communications antenna, power transmission wire, and electromagnetic crane). (If unavoidable, contact your sales agent to request proper shield construction.)
- Place where the power cords of the server must be connected to outlets that share the outlet of another device with large power consumption.
- Place that is close to some equipment that causes power noises (e.g., sparks caused by power-on/off using a relay). If you must install the server close to such equipment, request your sales agent for separate power cabling or noise filter installation.

Installing the device to the rack (N8140-74/92/93/94/98/99)

Install this device to the rack.

Installing the device to our company's racks (N8140-74/92/93/94/98/99) or to other company's racks is explained in this section.

⚠ WARNING

Observe the following precautions to use the server safely.
There is a risk of a death or serious injury. For details, see "Notes for Safe Handling" in Chapter 1.

- Do not use the product with the unspecified rack.
- Do not use the product at non-designated places.

⚠ CAUTION

Observe the following precautions to use the server safely.
There is a risk of a burn, personal injury, or damage to physical assets.
For details, see "Notes for Safe Handling" in Chapter 1.

- Remove all CPU/IO modules before moving the rack.
- Do not assemble or disassemble parts alone.
- Do not install the server with the cover removed.
- Do not squeeze your fingers in the product.

IMPORTANT:

Temperature increase inside the rack and airflow

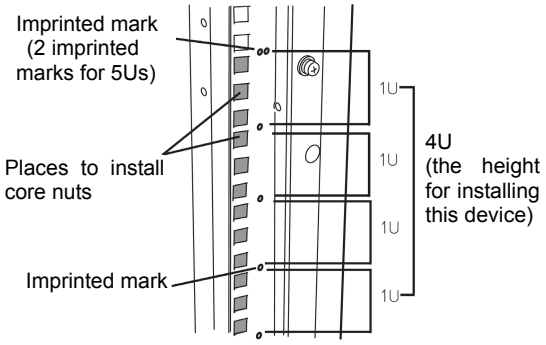
If you install several components or the ventilation isn't good inside the rack, the internal temperature may increase due to heat emitted from the components. When the operating temperatures of NEC Express5800/ft series (10 to 35°C) are exceeded, there is a risk of malfunction. You must take adequate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

● Required tool

To install the device to the rack, a Phillips-head screw drive is required.

● Checking the place to install

Decide the place (height) to install.
To keep balance, install it as low as you can on the rack.
To install the rack, the height for 4U is required.



IMPORTANT:

To install this device to the rack, the space for 1U is required for installing the USB-compatible floppy disk drive, in addition to the space for 4U.

Next to the square hole of the rack, an imprinted mark is placed for 1U (This is the unit to show the height of the rack). This device is as high as 4U (about 176 mm), so install it between the imprinted marks that indicate the height of 4U.

● Installing this device

Follow the steps below to set the 4U chassis to the rack.

IMPORTANT:

■4U chassis weighs about 10 Kg. To mount, remove or replace it, be sure to hold it with two or more people.

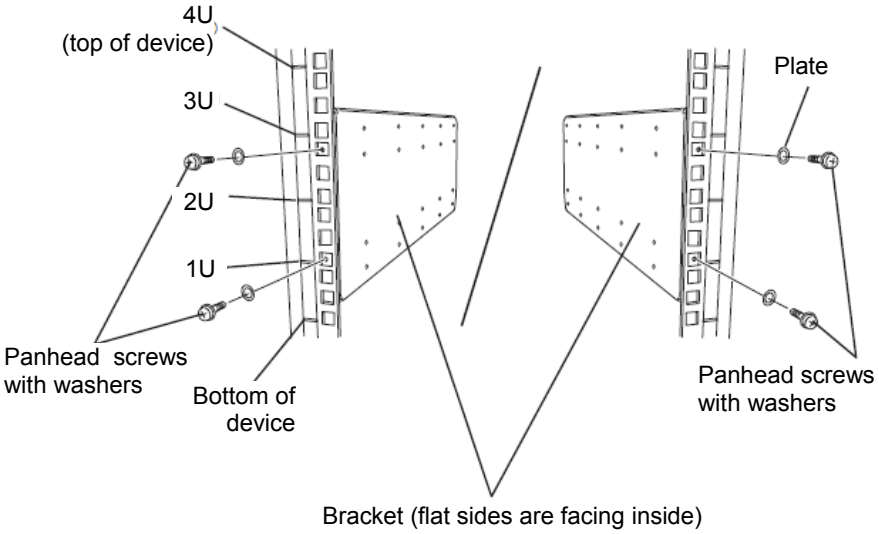
■The following are the required accessories. Check if you have them all.

Tool Name	Qty
Bracket	2
Washer for panhead screw	4
Plate screw	8
Panhead screw	8

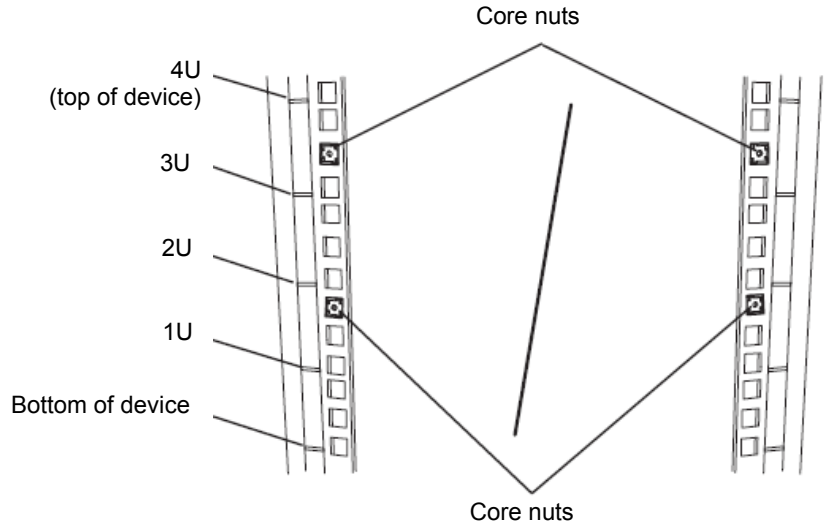
TIPS:

Core nuts (4 pieces) are not included. Use the core nuts that are attached to the rack.

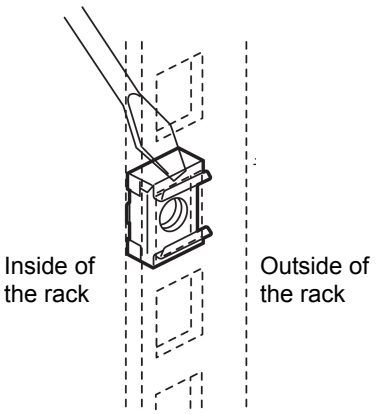
1. If the rack has front and rear doors, read the instruction that comes with the rack, and open them.
2. Install the brackets from the rear side of the rack. Install the brackets with its flat side facing inside. Place them with the round screws with washers that come with the device symmetrically (total: 4). Fasten the screws tentatively not tightly.



3. Fix the core nuts to the front side of the rack.
Attach them symmetrically (total: 4 core nuts).

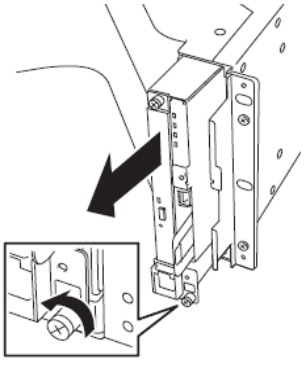


Fix a core nut from inside of the rack. Hook either of the clips of the core nut to a square hole of the rack, and hook the other clip to a hole by a flat-blade screwdriver.

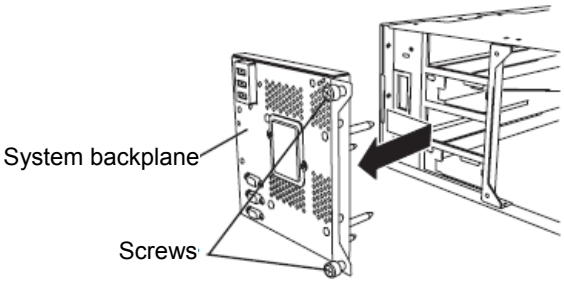


4. Remove two CPU/IO modules from the 4U chassis.

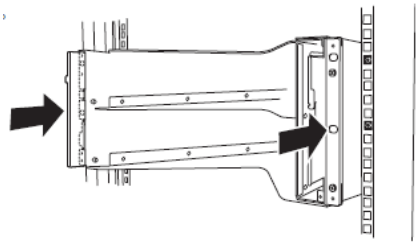
5. Remove the DVD drive unit from the 4U chassis.



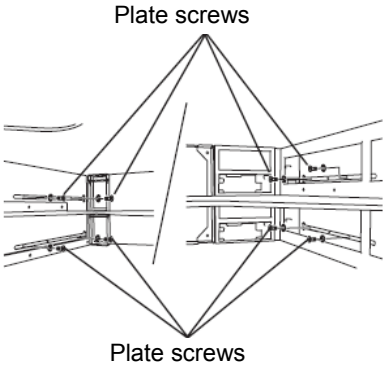
6. Remove the system Backplane from the 4U chassis.



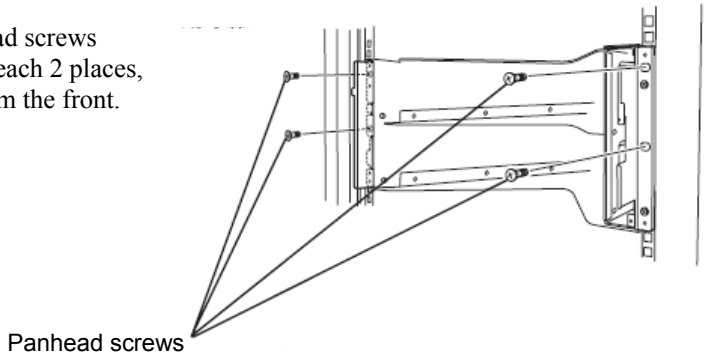
7. Insert the 4U chassis from the front side of the rack.



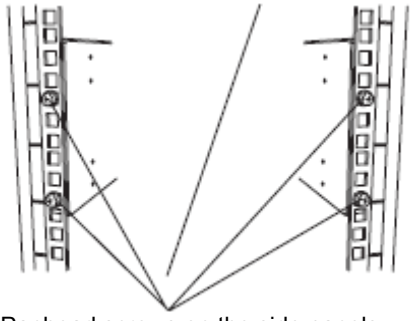
8. Tentatively fasten the plate screws attached to the device to the 4 places at the top and the bottom on front, and back sides (total: 8) from the rear.



9. Fasten tightly the pan-head screws attached to the device to each 2 places, right and left (total 4) from the front.



10. Fasten tightly the 4 round screws on the back side and the 8 plate screws on the side panels (which you fastened tentatively).



Panhead screws on the side panels

Plate screws on the side panels

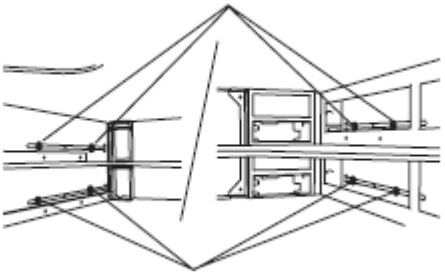
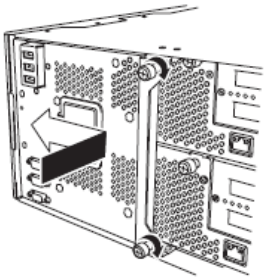


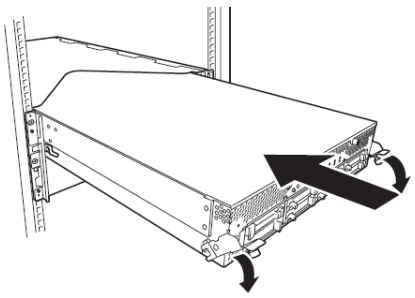
Plate screws on the side panels

11. Mount the System Backplane and fasten screws.

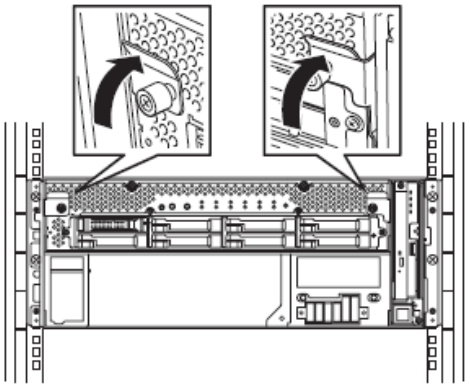


12. Mount the DVD drive unit and fasten screws.

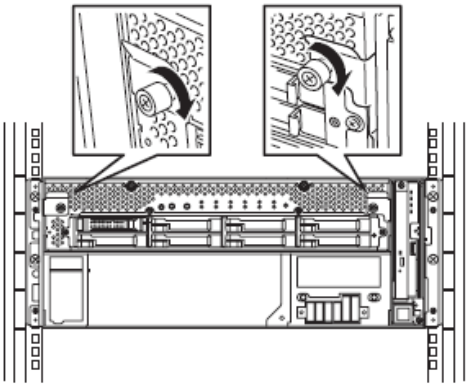
13. Mount the CPU/IO module 0.



14. Push up the levers on the left and right sides.



15. Fasten the screws on the left and right side with pressing closer against the front face of CPU/IO Modules.



16. Mount the CPU/IO module 1 in the same way.

Unmounting the device from the rack (N8140-74/92/93/94/98/99)

Follow the steps below and unmount the device from the rack.

⚠ CAUTION

Observe the following precautions to use the server safely. There is a risk of a burn, personal injury, or damage to physical assets. For details, see “Notes for Safe Handling” in Chapter 1.

- Do not carry or install a rack alone.
- Do not squeeze your fingers in the product
- Do not impose a weight on the device when it is pulled out from the rack.
- Do not pull a device out of the rack if the rack is unstable.
- Do not leave more than one device pulled out from the rack.
- Do not pull the device from the rack while it is operating.

1. Check that the device is powered off, and remove all the power cords and interface cables that are connected to the device.
2. Remove the front bezel.
3. Loosen the screws on the left and right sides of the front panel of the CPU/IO module and release the lock by pulling the ejector toward you.
4. Pull out the CPU/IO module gently from the rack.

IMPORTANT:

- When you pull out the device, do not load anything on its top. It is dangerous, since the device becomes unstable and it may fall.
- Do not hold the handle on the front side or the convex part on the back side. To move the device, hold the bottom.
- Since the device is locked and can not be pulled out, pull it out after releasing the lock by lowering the lock on the side of the CPU/IO module.

5. Hold tightly when you unmount 4U chassis from the rack.

To remove the mechanical parts of the rack, see the installation procedure.

INSTALLING the Tower Conversion Kit (N8843-003)

This section describes how to install the rack-mount model of NEC Express5800/ft series without using the dedicated rack.

IMPORTANT:

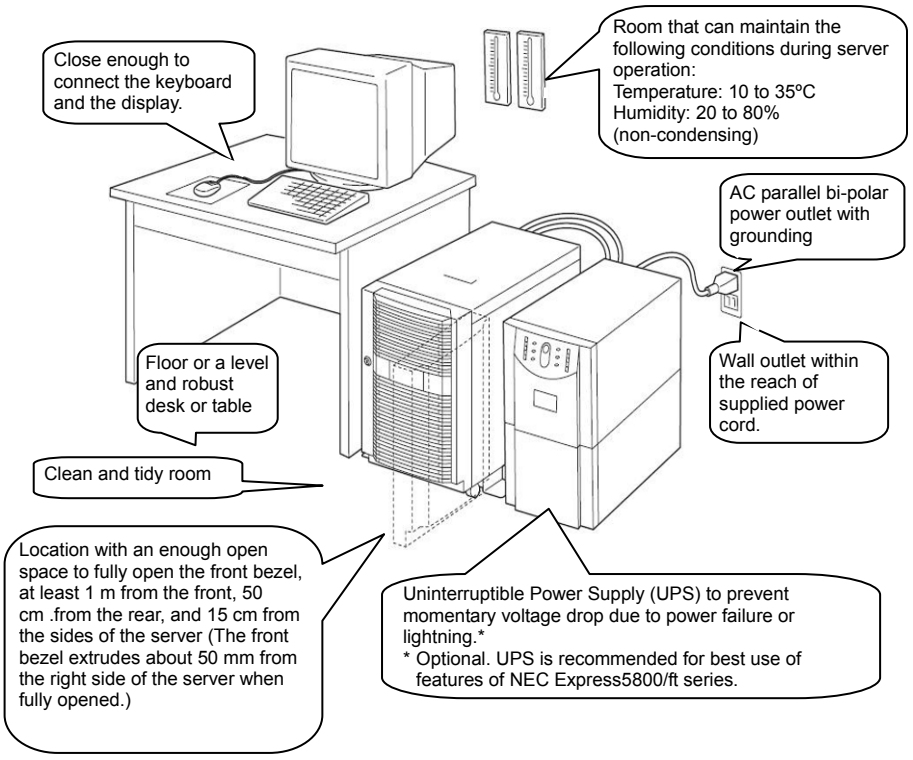
NEC Express5800/ft series is a precision instrument. You should ask maintenance personnel to install it.

Select a suitable site for tower model.

⚠ CAUTION

Observe the following precautions to use the equipment safely. There are risks of a burn, injury, or damage to physical assets. For details, see “Notes for Safe Handling” in Chapter 1.

- Remove all the CPU/IO modules of the server before moving the equipment.
- Do not install the equipment in non-designated places.



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

- Place where temperatures change widely (near a heater, air conditioner, or refrigerator).
- Place that is subject to intense vibration.
- Place where corrosive gas (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, or ozone) is generated, or a place that is close to chemicals or exposed to chemicals.
- Place whose floor is covered with non-antistatic carpet.
- Place that may be subject to falling objects.
- Place where you may step or trip on the power cords or interface cables.
- Place that is close to some equipment that generates intense magnetic field (e.g., TV set, radio, broadcasting/communications antenna, power transmission wire, and electromagnetic crane). (If unavoidable, contact your sales agent to request proper shield construction.)
- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption.
- Place that is close to some equipment that causes power noises (e.g., sparks caused by power-on/off using a relay). If you must install the server close to such equipment, request your sales agent for separate power cabling or noise filter installation.

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

IMPORTANT:

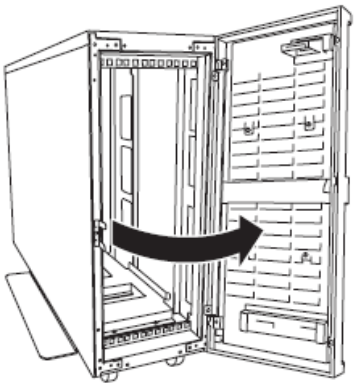
Do not hold the front bezel to lift it, or it may detach, fall down, and break the server.

After placing the main cabinet, lock its two rear wheels out of four.

Steps to Install the Rack-mount Model to the Tower Conversion Kit

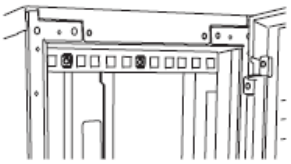
Follow the procedure below to install the devices to the tower conversion kit.

1. Open the front door of the tower conversion kit.
If the door is locked, use the server-accessory key to unlock.

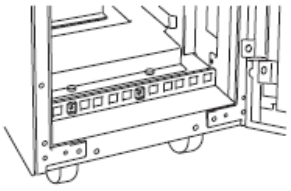


2. Confirm the spots to fix 4 core nuts on the front of the chassis.
See the figure on the right for where to fix the core nuts
(2 on the front top and 2 on the front bottom.)

4 core nuts have been installed on the front of the chassis.

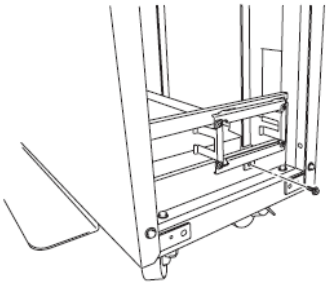


Tower conversion kit (on the front top)

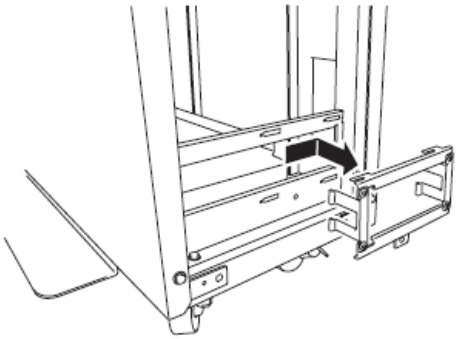


Tower conversion kit (on the front bottom)

3. Remove one screw that fixes the AC lock bracket on the rear of the tower conversion kit.



4. Remove the AC lock bracket.

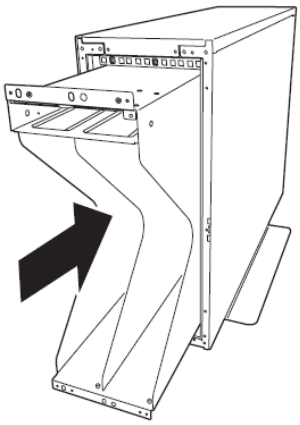


5. Remove two CPU/IO modules from the 4U chassis.

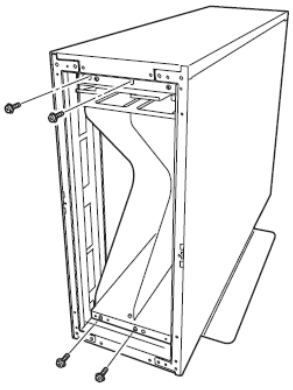
6. Remove the DVD drive unit from the 4U chassis.

7. When the system is installed to TOWER CONVERSION KIT, HANDLE equipped in front of the system must have been removed. If you do not remove, you cannot close front bezel.

8. Insert and securely tuck the 4U chassis from the front side of the tower conversion kit.

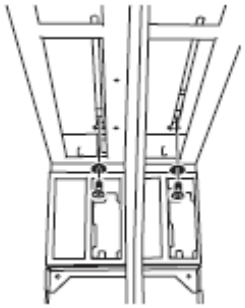


9. Fix each 2 places, top and bottom on the front side (total: 4) with 4 pan-head screws attached to the device.



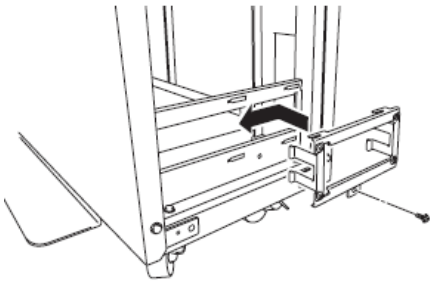
10. Fix the 4U chassis to the tower conversion kit with 4 plate screws.

Top (toward the backside)

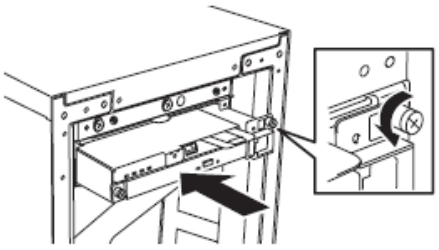


Bottom (toward the backside)

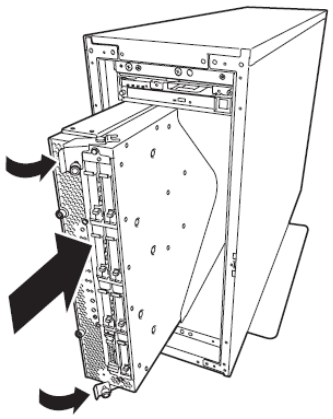
11. Install AC rock bracket and fasten the screws.



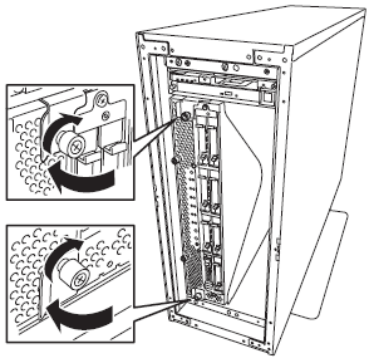
12. Insert the DVD drive unit to the 4U chassis and fasten with screws.



13. Slowly and carefully insert the CPU/IO module #0 into the 4U chassis.



14. Close the levers on the top and the bottom and fix the CPU/IO module with the screws.



15. Fix the CPU/IO module #1 to the 4U chassis with the same procedures.

Connect peripheral devices to NEC Express5800/ft series

The server provides connectors for a wide variety of peripheral devices on its front and rear. The figure on the next page illustrates available peripheral devices for the server in the standard configuration, and locations of the connectors for the devices. After connecting the peripheral devices, connect the provided power cords with the server, and then plug the power cords into the power outlet.

⚠ WARNING

Observe the following precautions to use the server safely. There is a risk of a death or serious injury. For details, see “Notes for Safe Handling” in Chapter 1.

- Do not hold the power plug with a wet hand.
- Do not connect the ground wire to a gas pipe.

⚠ CAUTION

Observe the following precautions instructions for the safe use of the equipment. There is a risk of a burn, personal injury, or damage to physical assets. For details, see “Notes for Safe Handling” in Chapter 1.

- Do not plug the power cord in a nonconforming outlet.
- Do not plug too many cords in a single outlet.
- Do not plug the cord insecurely.
- Do not use nonconforming power cords.

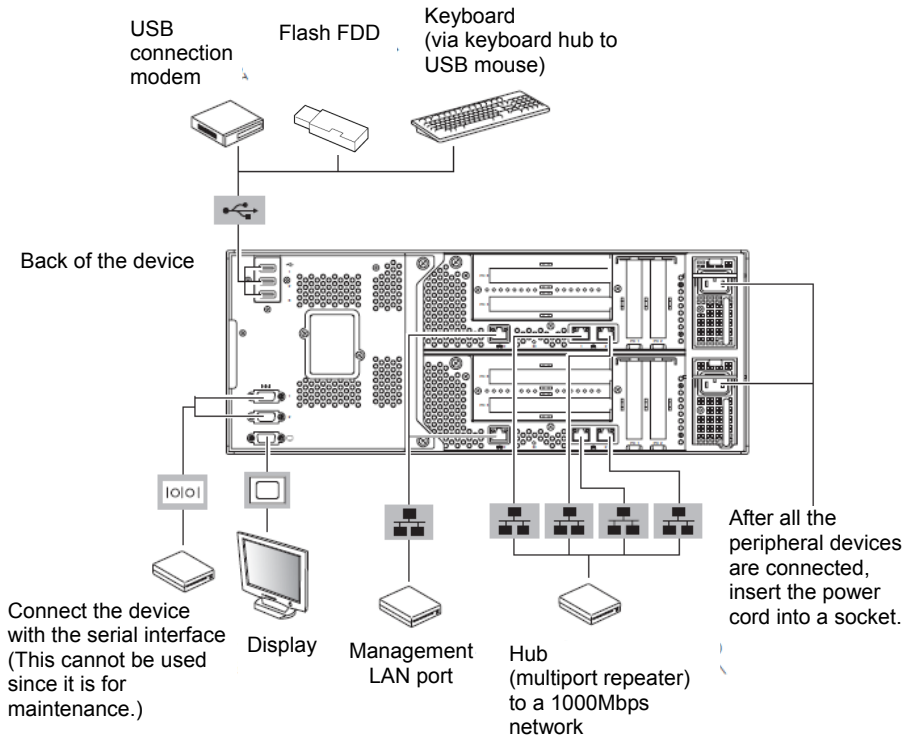
IMPORTANT:

- Power off the server before connecting peripheral devices, with the exception of peripherals with USB interface. Connecting a powered peripheral device to the powered server will cause malfunctions and failures.
- To connect a third-party peripheral device or interface cable to the server, check with your sales agent to see if they are compatible with NEC Express5800/ft series. Some third-party devices may not be used with the server.
- The serial port connectors are reserved for maintenance.
- Do not use USB devices as Keyboard or Mouse which is not supported in this server. Also do not use PS2-Keyboard or Mouse trough the KVM switch etc. If such a device is used, ERROR may occur in failover of CPU/IO module.

IMPORTANT:

Connection of optional devices

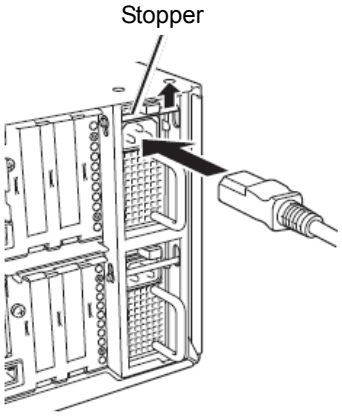
- In the case of standard configuration, you need to complete setup of the operating system before mounting optional PCI cards or hard disks that you purchased separately.



Insert the power cords to the AC inlets of the power unit.

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

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



IMPORTANT:

- Ensure to use both of the power cords to make the server fault-tolerant.
- After connecting the power cords, wait at least 30 seconds before pressing the power switch.
- By pressing the power switch, the power switch's fans starts to rotate.

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

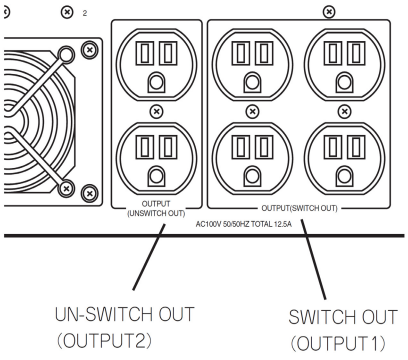
The UPS service outlets are categorized into two groups: SWITCH OUT and UN-SWITCH OUT. (They may be called "OUTPUT1" and "OUTPUT2".)

To restrict the power supply from ESMPRO/AutomaticRunningController, connect the power cable to SWITCH OUT.

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

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

<Example>



Select [AC-LINK] from [Server] on the BIOS setup utility and change parameters. See the separate volume of User's Guide for details.

Chapter 4

ESX Setup

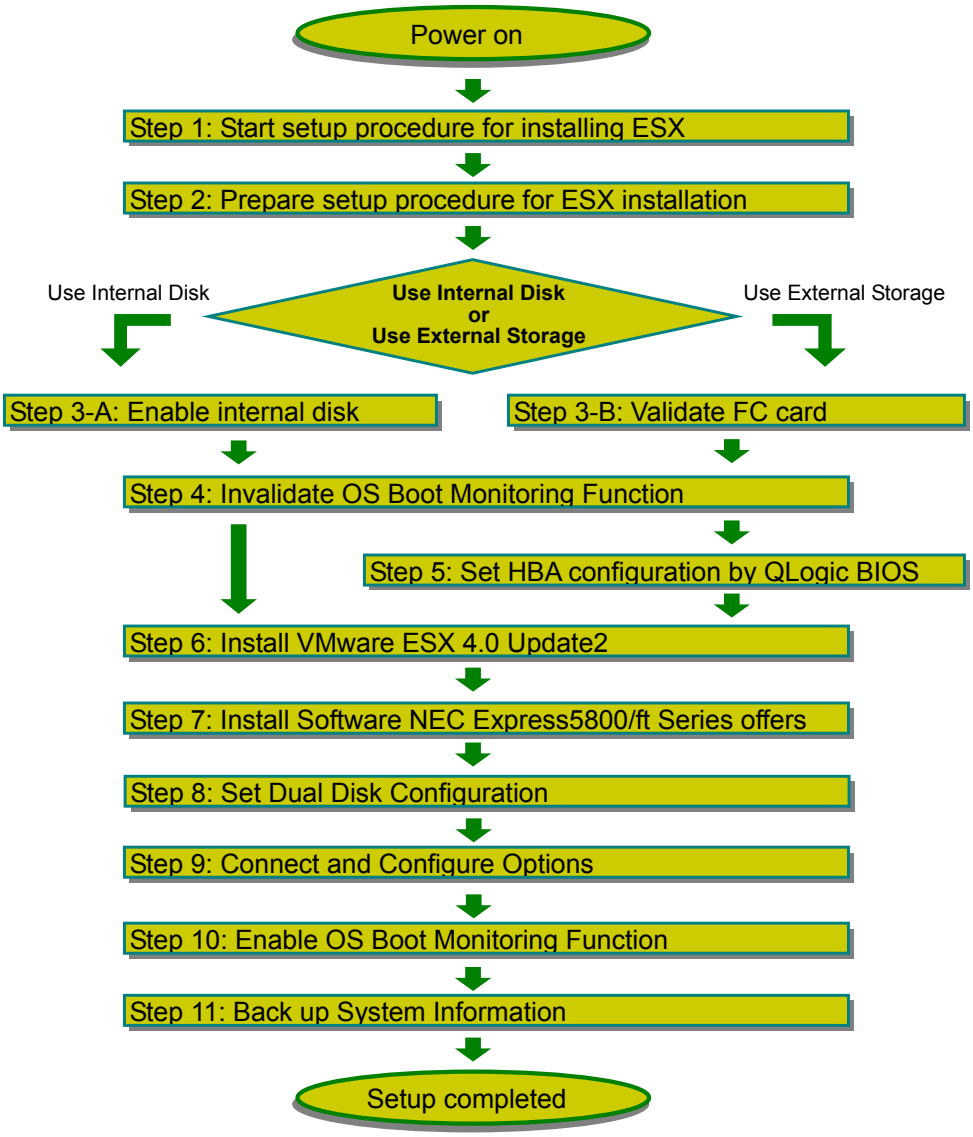
This chapter describes procedures for configuring OS Boot Monitoring function, setting up for ESX installation, various setting, and so on.

Before starting Setup

Read this section before starting setup.

SETUP FLOW

The flow-chart below illustrates the flow of the setup procedures for the server.



Setup procedure to install ESX

Follow the procedure below to install ESX.

IMPORTANT:

- NEC Express5800/ft series is a precision equipment. It is recommended to ask engineer from maintenance service provider with good knowledge for setup.

Operate the step 1 to 11.

Step 1: Start setup procedure for installing ESX

The followings are required for the ESX installation.

VMware vSphere 4 Media

- VMware ESX4.0 Update2 installation DVD

ESX Configuration Guide

This guide can be downloaded from the VMware's web site below.

http://downloads.vmware.com/d/

This web site is subject to change or delete without notice.

NEC ESMPRO Agent for VMware

- NEC ESMPRO Agent for VMware CD
- Installation Guide (Stored by the product CD : /doc/esmsa_inst_e.pdf)
- Installation Guide for ft server (Stored by the product CD : /doc/esmsa_ft-inst_e.pdf)

Components provided with the device:

- ft control software 3.1.2 for VMware vSphere4 Update2 installation DVD
- User's Guide (Setup) (this manual)
- User's Guide

CHECK:

- vSphere Client is necessary to set up ESX. For details, refer to the *ESX Configuration Guide* of VMware vSphere.

Step 2: Prepare setup procedure for ESX installation

Before installing ESX, be sure to do the following. If you do not prepare, setup cannot be performed properly.

Prepare NEC Express5800/ft series

With the power of NEC Express5800/ft series off, follow the steps below:

1. Prepare NEC Express5800/ft series.

   Follow the instructions below to prepare.

   <When installing or reinstalling ESX to the internal disk>

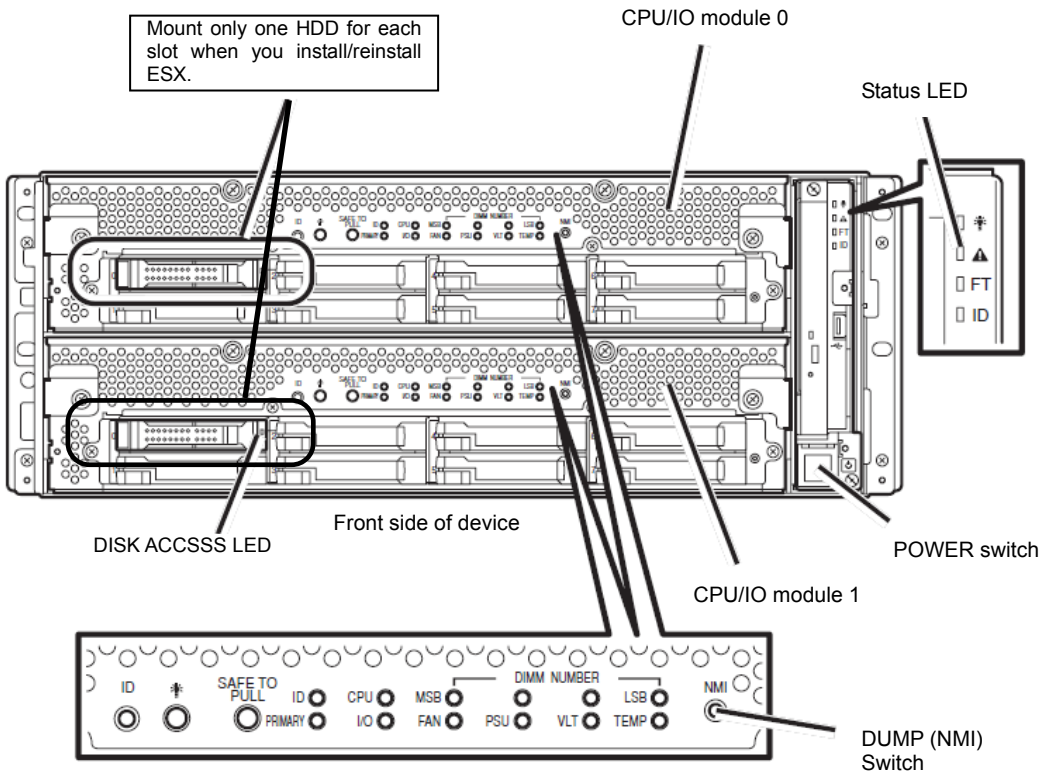
   - Mount only one hard disk drive to the slot 0 of each CPU/IO module.

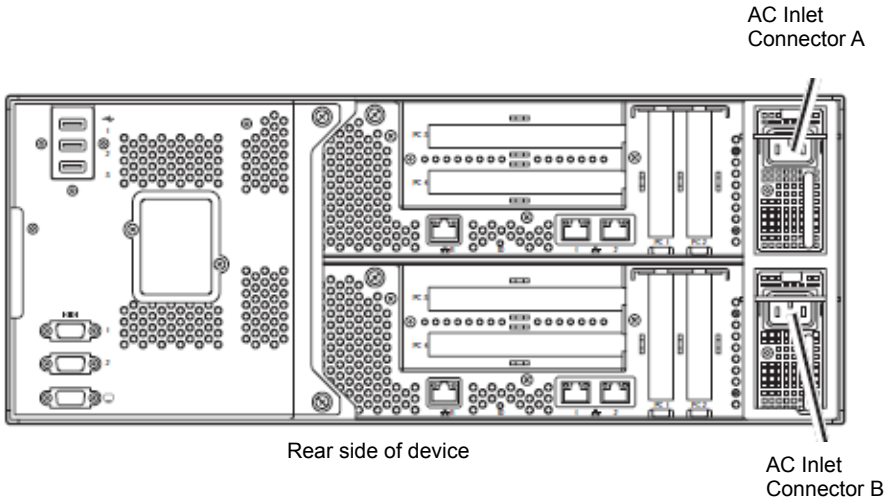
   <When installing or reinstalling ESX to the external storage>

   - If the FC card is not mounted, insert the FC cards into the same slot of each CPU/IO module (for the inserting positions, see the figures of “PCI BOARD” in the *User’s Guide*).
   - Connect each FC card and external storage with FC cables.
   - Remove all the optional PCI boards except FC card and peripheral equipments except external storage.
   - Remove all the LAN cables.

2. Set the CPU/IO module 0 primary.

The locations of the parts required for operations and check are shown below:





<When the AC power is on (The power cords are plugged to the wall outlet)>

(1) Confirm the POWER LED of the CPU/IO module.

- If the POWER LED is turned on, shut down the OS and unplug the AC power cord after the POWER LED turns off.
- If the POWER LED is turned off, unplug the AC power cord.

(2) Execute the operation to be taken when AC power supply is turned off.

<When the AC power is off (The power cord is not plugged into the outlet)>

Connect the power cords to NEC Express5800/ft series in the following order:

(1) Connect the power cord to the AC inlet A connector.

(2) Connect the power cord to the AC inlet B connector.

(3) Make sure that the CPU/IO module status LED is turned off.

Preparation is now completed.

Step 3-A: Enable internal disk

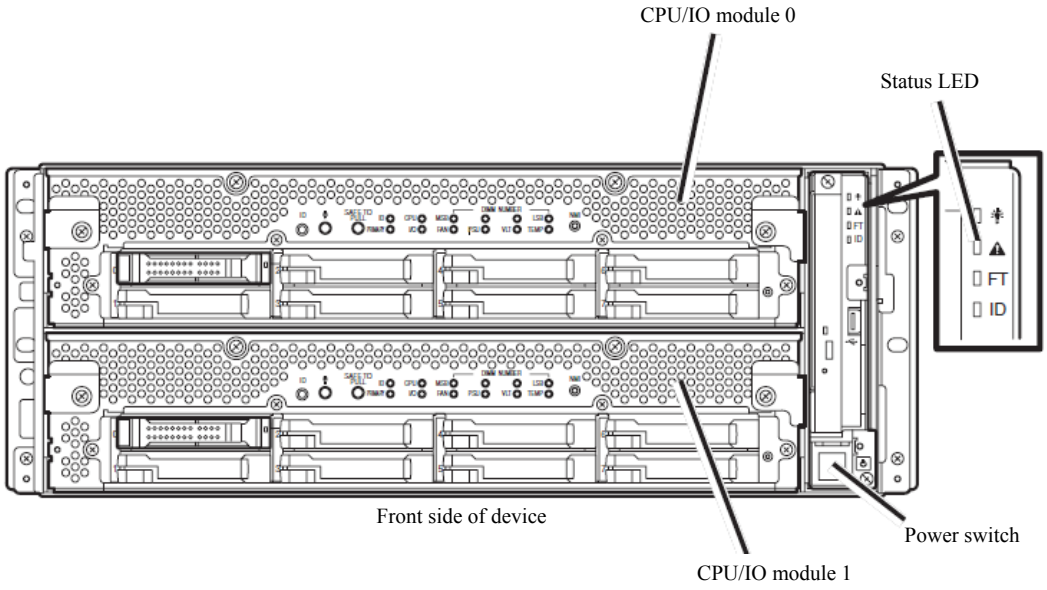
When installing or reinstalling ESX to the internal disk, enable the settings of the internal disk by using the BIOS setup utility. Follow the procedure below to enable the settings. (By default, the settings of the internal disk are enabled. When it is not necessary to change the initial settings, go to "Step 4: Invalidate OS Boot Monitoring Function".)

1. Turn on the display and the peripheral equipment connected to the NEC Express5800/ft series.

CHECK:

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

2. Detach the front bezel.
3. Press the POWER switch that is located on the front side of the server.



IMPORTANT:

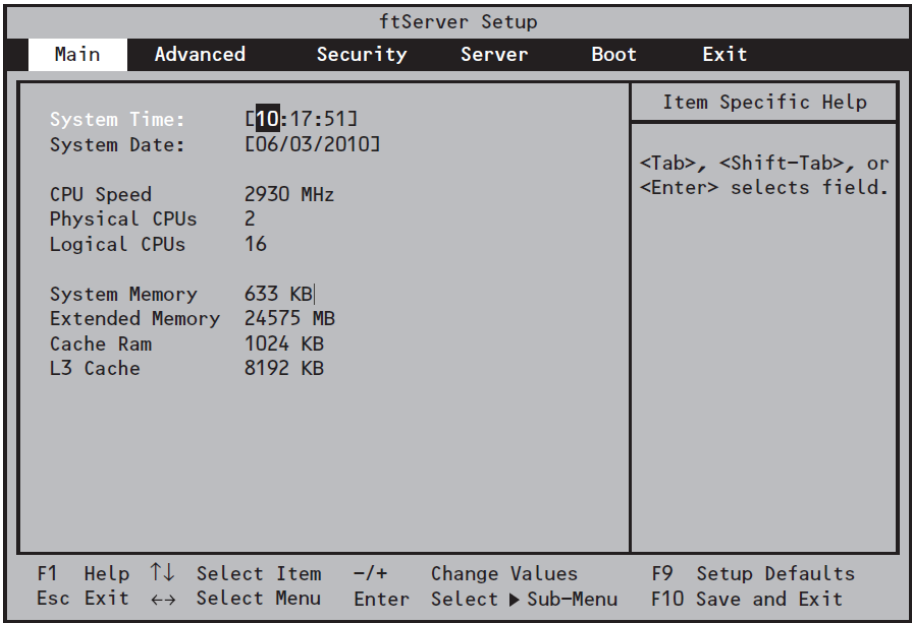
Do not turn off the power before the "NEC" logo appears.
After a while, the "NEC" logo will appear on the screen.
While the "NEC" logo is displayed on the screen, NEC Express5800/ft series is performing the power-on self test (POST) to check itself. For details, see the separate volume of User's Guide.

CHECK:

If the server finds errors during POST, it will interrupt POST and display the error message. See the separate volume of User's Guide.

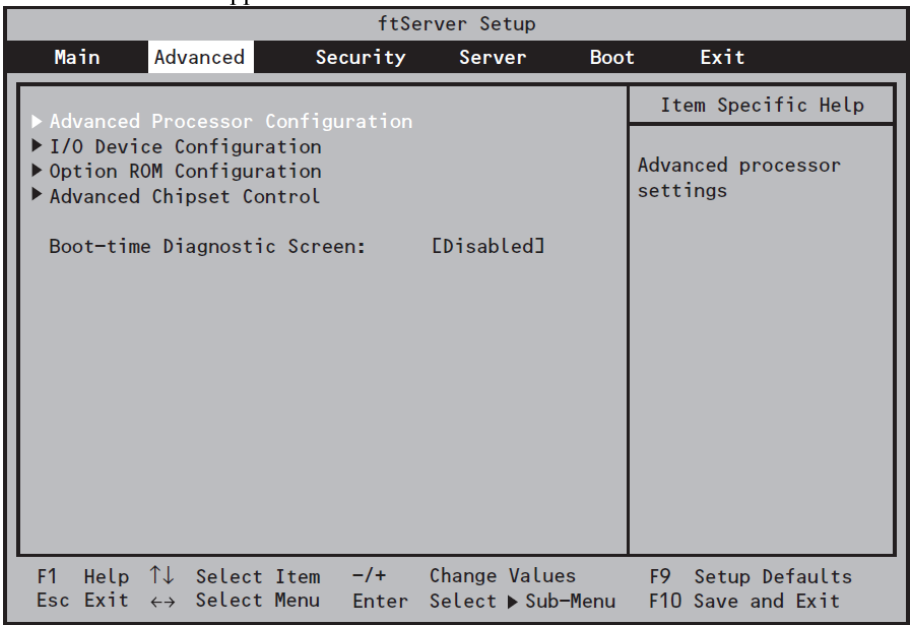
4. When the message “Press <F2> to enter SETUP” or “Press <F2> to enter SETUP or Press <F12> to boot from Network” is displayed on the display screen, press **F2**.

   The BIOS Setup Utility “SETUP” starts and the Main menu is displayed on the screen.



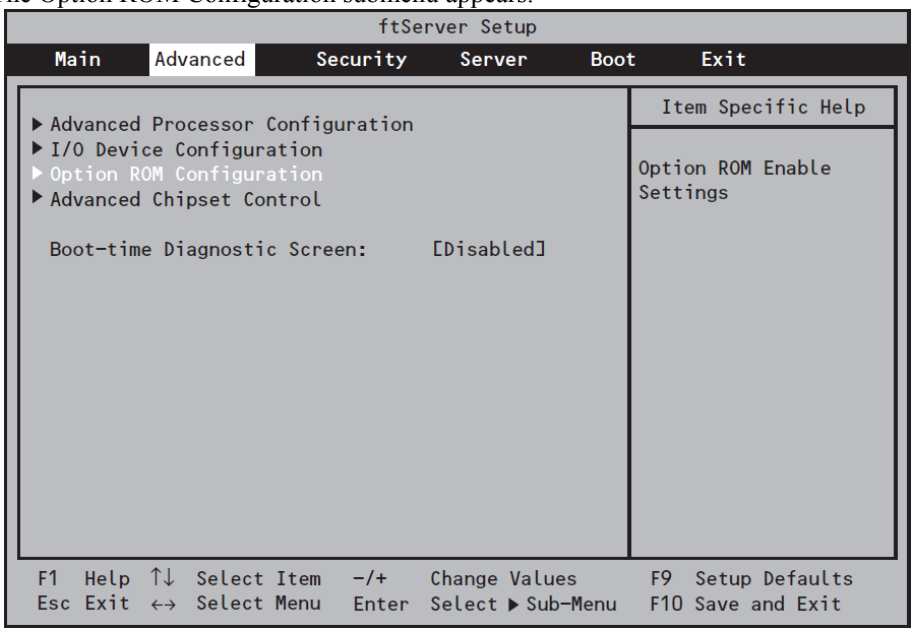
5. Move the cursor onto [Advanced] and select [Advanced].

   The Advanced menu appears.



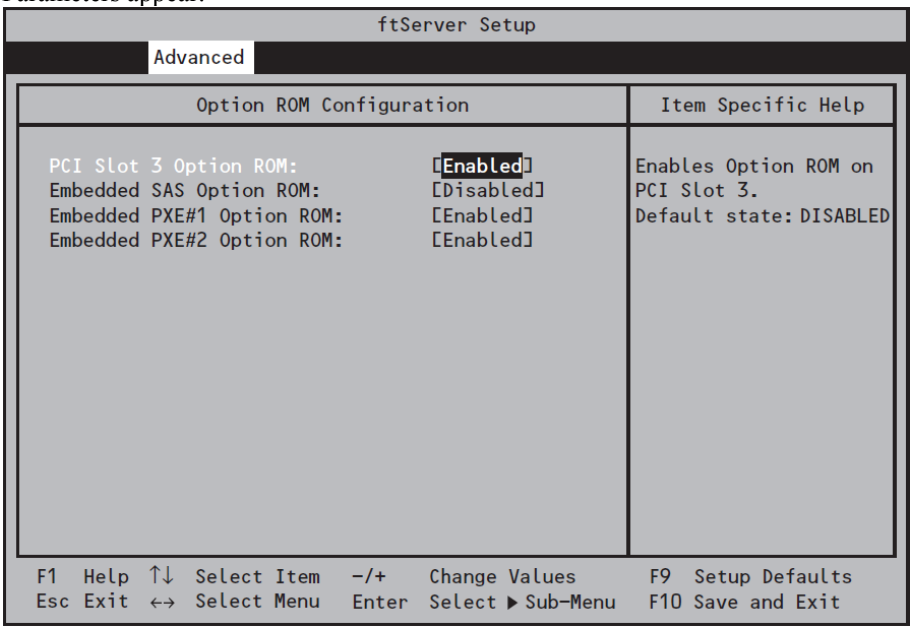
6. Move the cursor onto [Option ROM Configuration] and press **Enter**.

The Option ROM Configuration submenu appears.



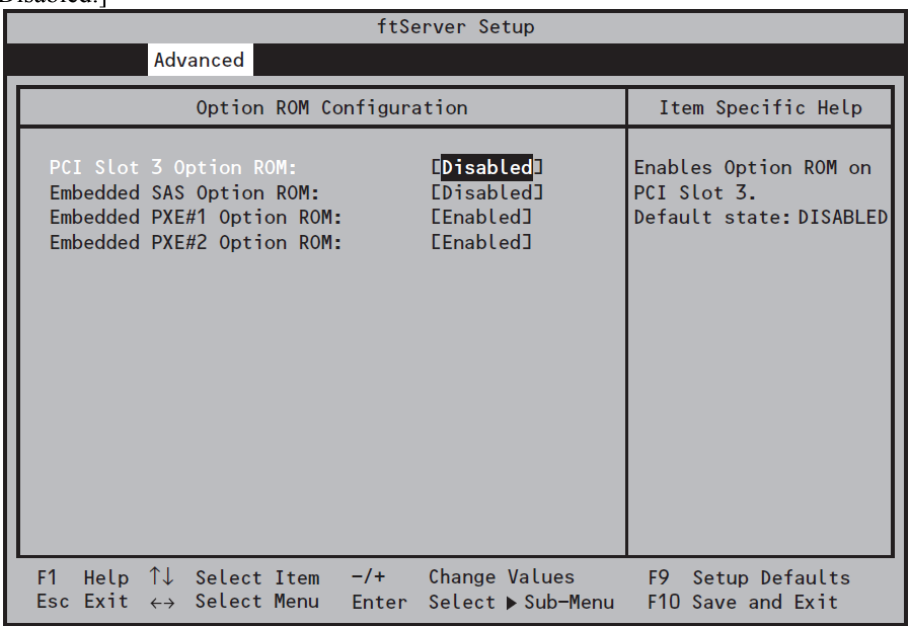
7. Move the cursor onto [PCI Slot3 Option ROM] and press **Enter**.

Parameters appear.



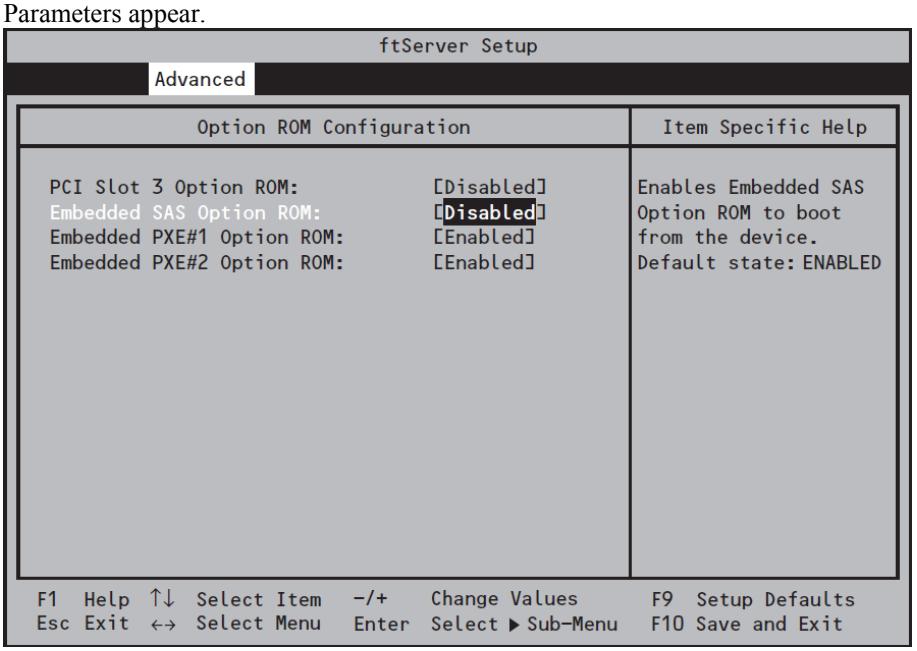
8. Among the parameters, choose [Disabled] and press **Enter**.

The current display of the configuration for PCI Slot3 Option ROM will be changed to [Disabled.]



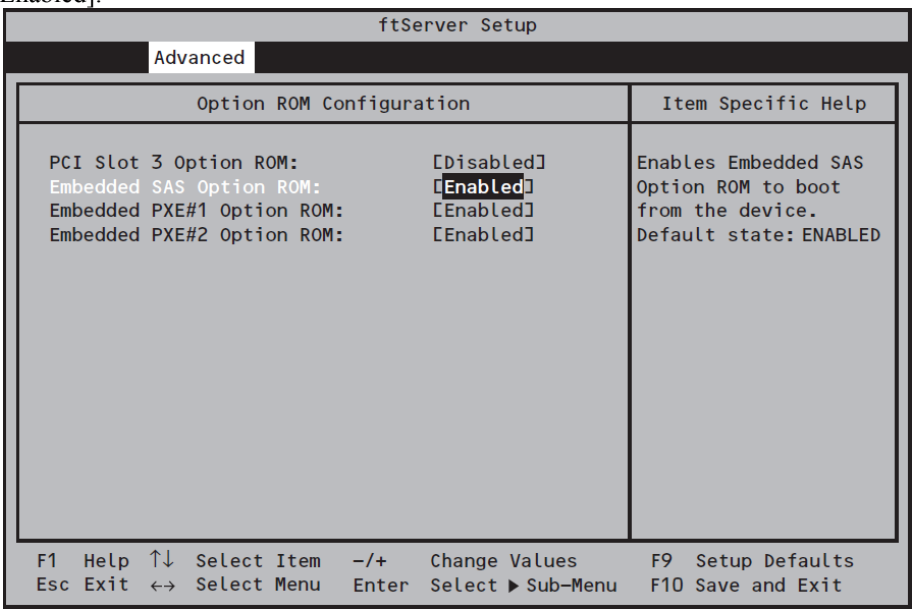
9. Move the cursor onto [Embedded SAS Option ROM] and press **Enter**.

Parameters appear.



10. Select [Enabled] from the parameter and press **Enter**.

The display of current configuration for [Embedded SAS Option ROM] becomes [Enabled].



This is the end of steps for enabling internal disk.

The following procedure shows how to invalidate the monitoring function. Go to “Step 4: Invalidate OS Boot Monitoring Function” and continue the settings.

Step 3-B: Validate FC card

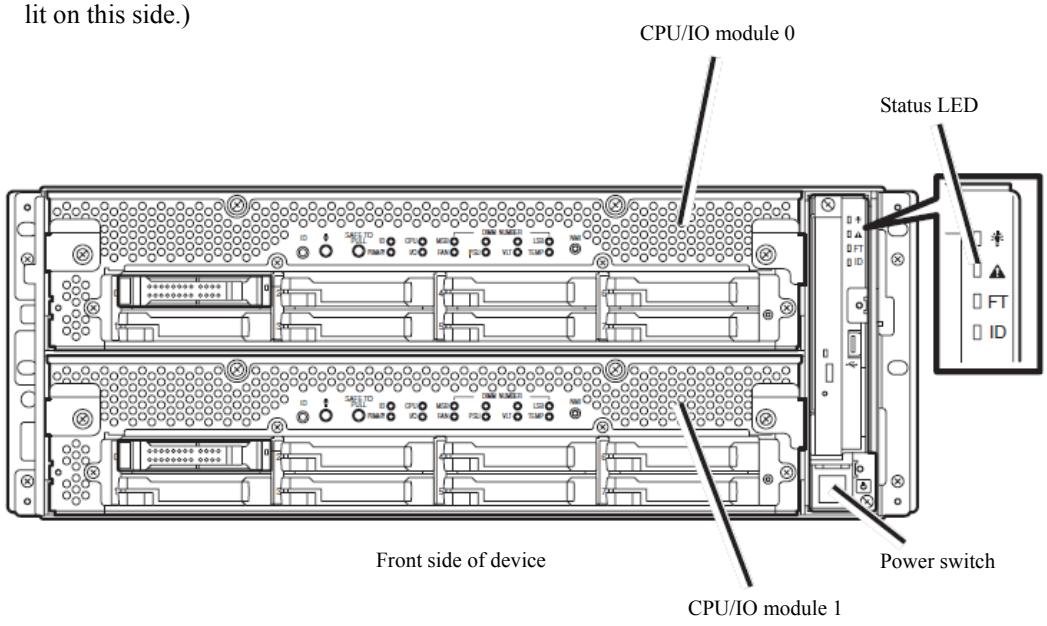
When installing or reinstalling ESX to the external storage through the FC card, enable the settings of the FC card by using the BIOS setup utility. Follow the procedure below to enable the settings.

1. Turn on the display and the peripheral equipment connected to the NEC Express5800/ft series.

   CHECK:

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

2. Detach the front bezel.
3. Press the POWER switch that is located on the front side of the server. (The in-built LED lit on this side.)



IMPORTANT:

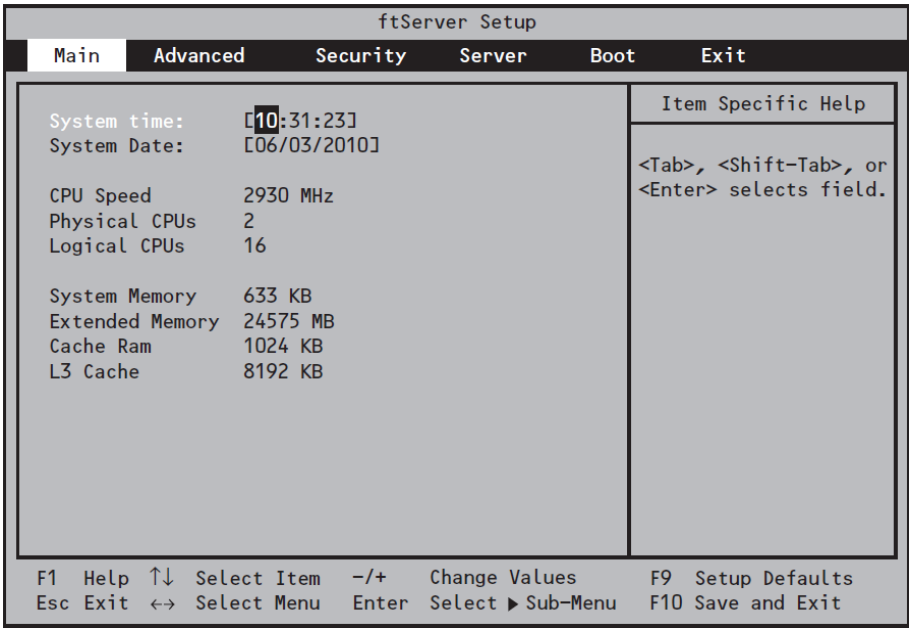
Do not turn off the power before the “NEC” logo appears.
After a while, the “NEC” logo will appear on the screen.
While the “NEC” logo is displayed on the screen, NEC Express5800/ft series is performing the power-on self test (POST) to check itself. For details, see the separate volume of User’s Guide.

CHECK:

If the server finds errors during POST, it will interrupt POST and display the error message. See the separate volume of User’s Guide.

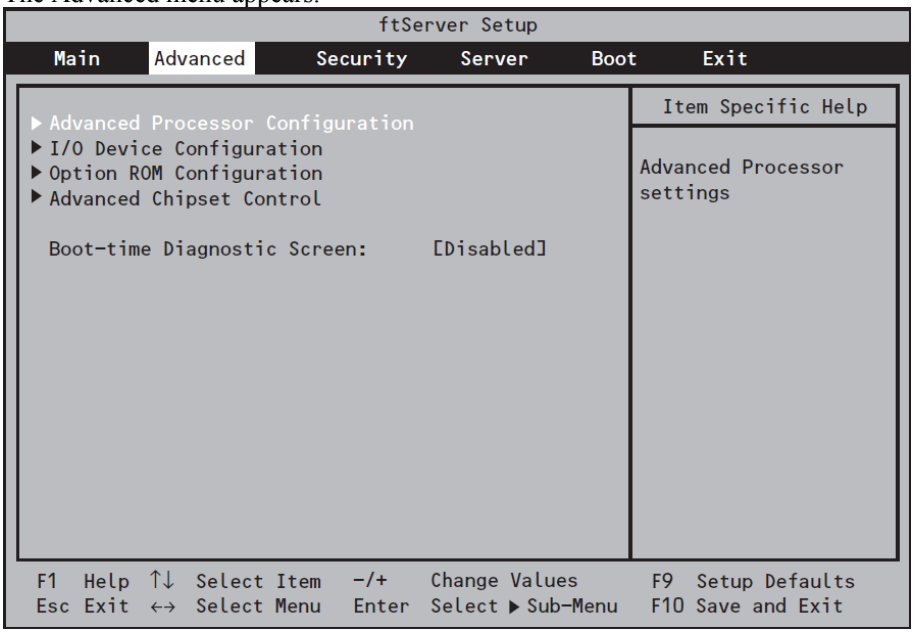
4. When the message “Press <F2> to enter SETUP” or “Press <F2> to enter SETUP or Press <F12> to boot from Network” is displayed on the display screen, press **F2**.

The BIOS Setup Utility “SETUP” starts and the Main menu is displayed on the screen.



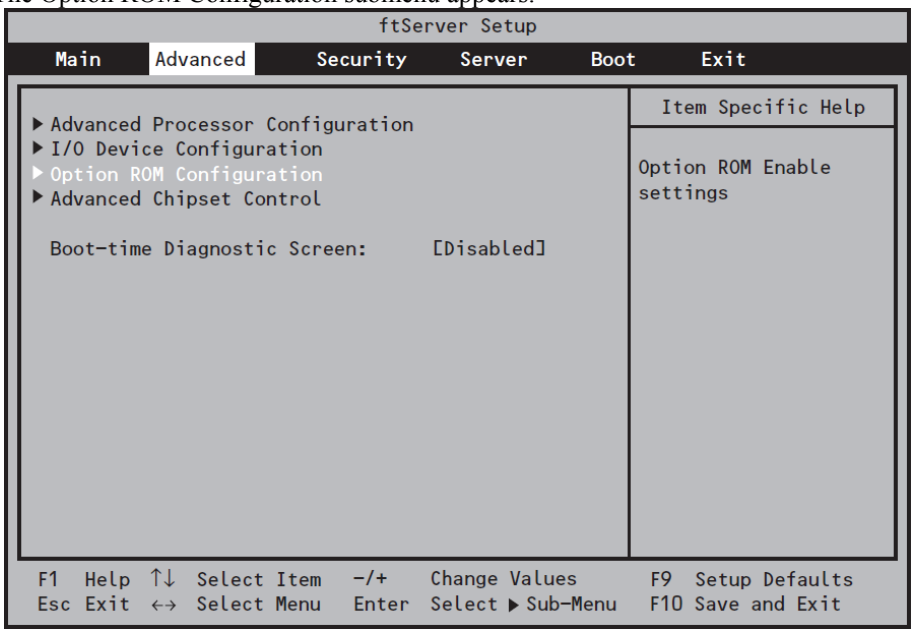
5. Move the cursor onto [Advanced] and select [Advanced].

The Advanced menu appears.



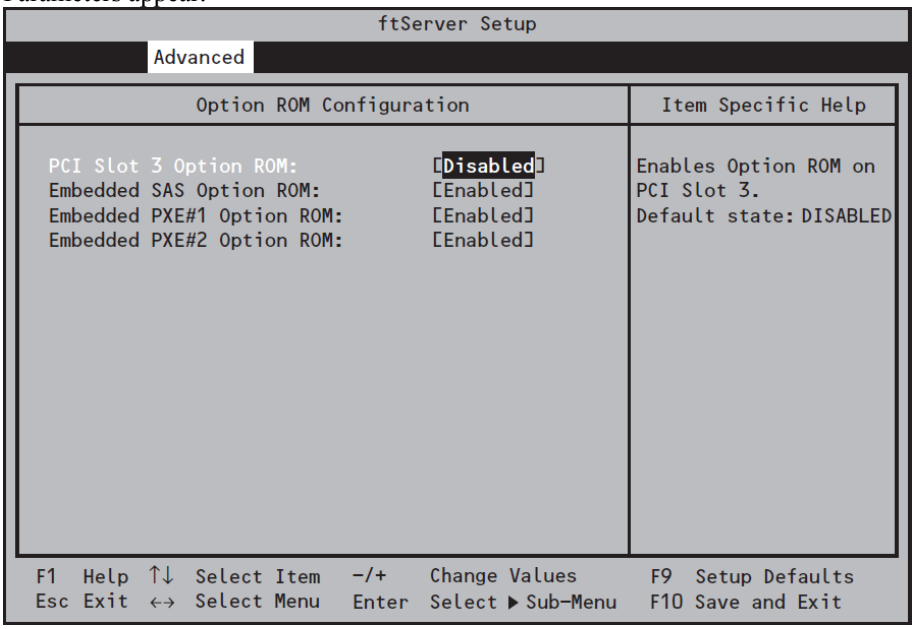
6. Move the cursor onto [Option ROM Configuration] and press **Enter**.

The Option ROM Configuration submenu appears.



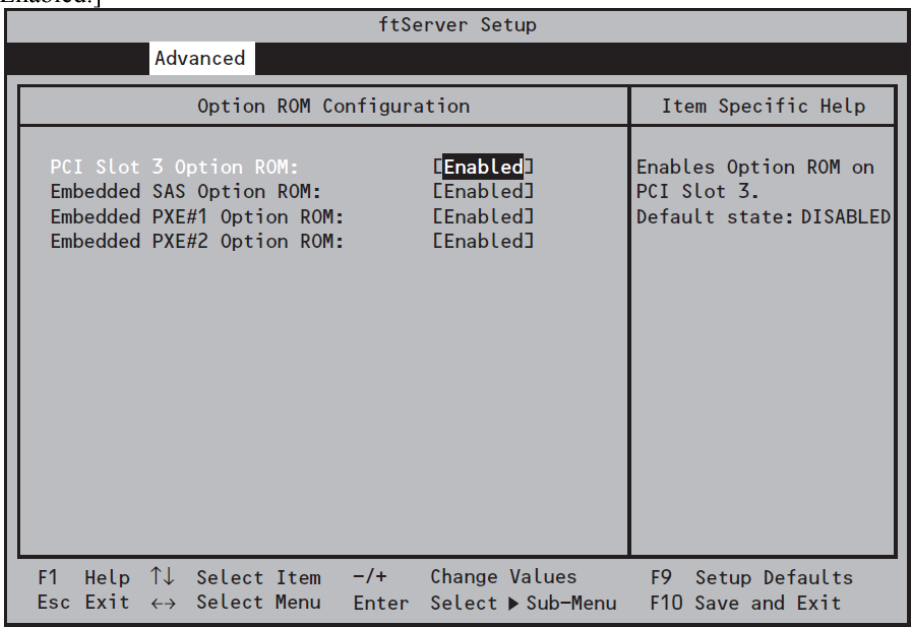
7. Move the cursor onto [PCI Slot3 Option ROM] and press **Enter**.

Parameters appear.



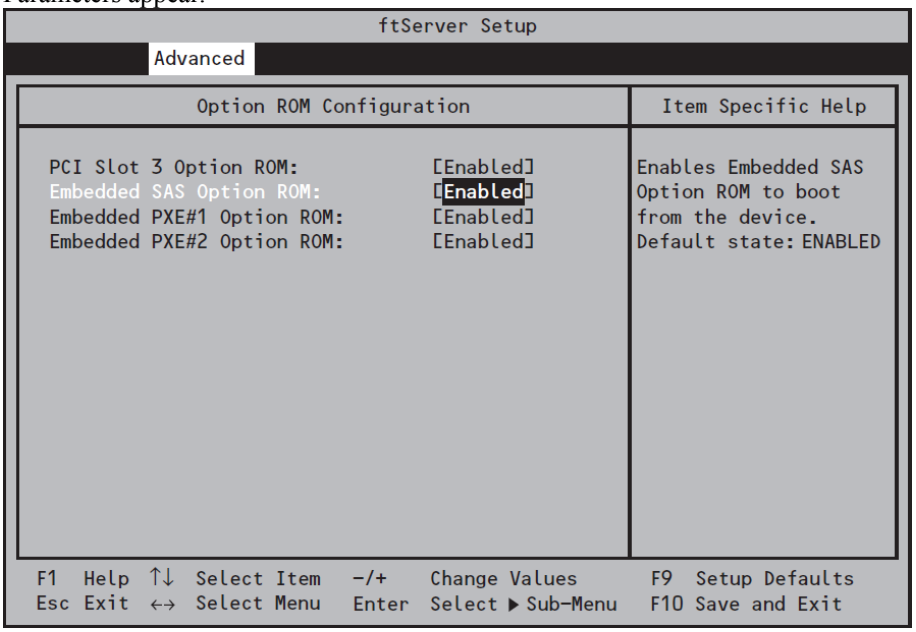
8. Among the parameters, choose [Enabled] and press **Enter**.

The current display of the configuration for PCI Slot3 Option ROM will be changed to [Enabled.]



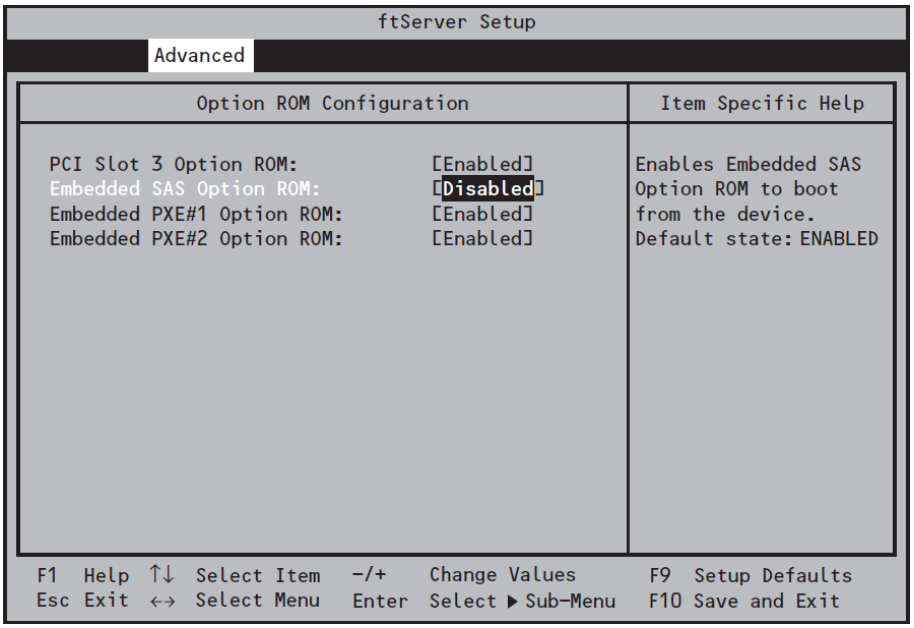
9. Move the cursor onto [Embedded SAS Option ROM] and press **Enter**.

Parameters appear.



10. Select [Disabled] from the parameter and press **Enter**.

The display of current configuration for [Embedded SAS Option ROM] becomes [Disabled].



This is the end of steps for validating FC card. .

The following procedure shows how to invalidate the monitoring function. Go to “Step 4: Invalidate OS Boot Monitoring Function” and continue the settings.

Step 4: Invalidate OS Boot Monitoring Function

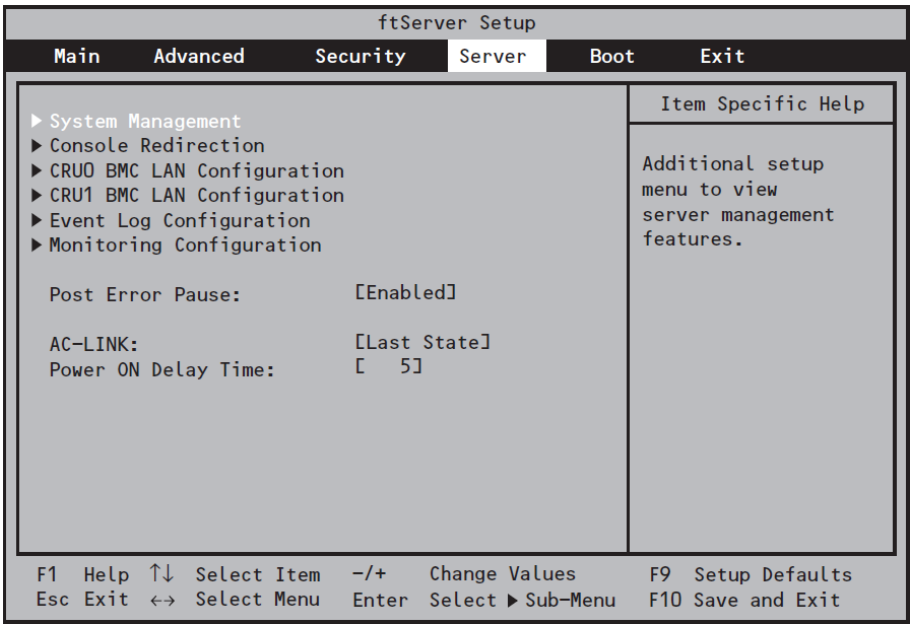
Configure this to confirm the power is on and to process appropriately the setup later.
The NEC Express5800/ft series has a monitoring function at start up.
Invalidate the monitoring function when installing.
If you do not invalidate the function, you will not be able to complete the installation correctly.
Follow the procedure described here to setup correctly.

Important:

If you do not process the setting described here, you cannot complete the setup correctly because the server forcibly reboot while displaying the OS setup screen. The server may repeat the setup inappropriately after forcibly rebooted. If the setup fails, you will not be able to use the server until you perform reinstallation from the beginning.

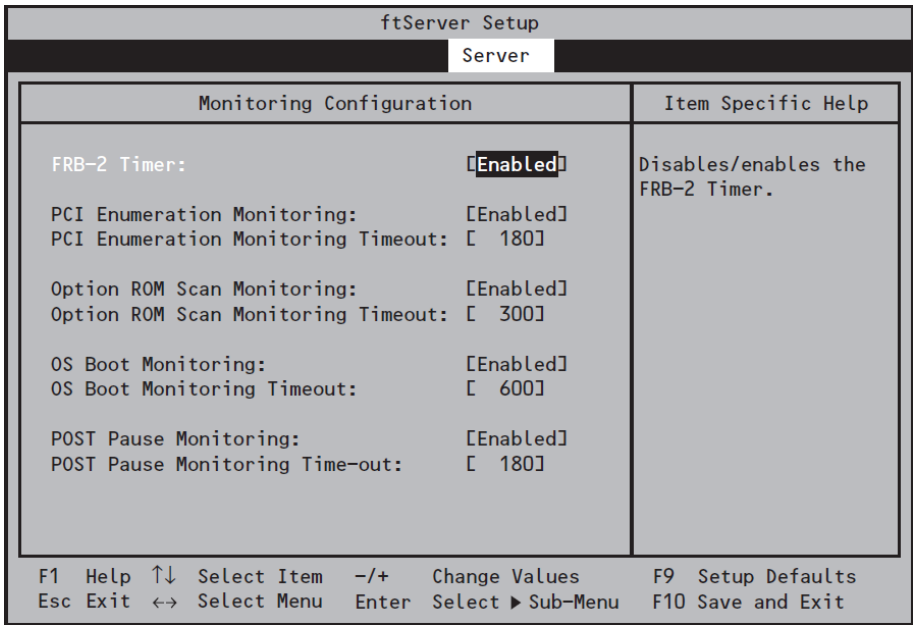
1. Press **Esc** key to back to Advanced menu, and then move the cursor onto [Server] and select [Server].

   The Server menu appears.



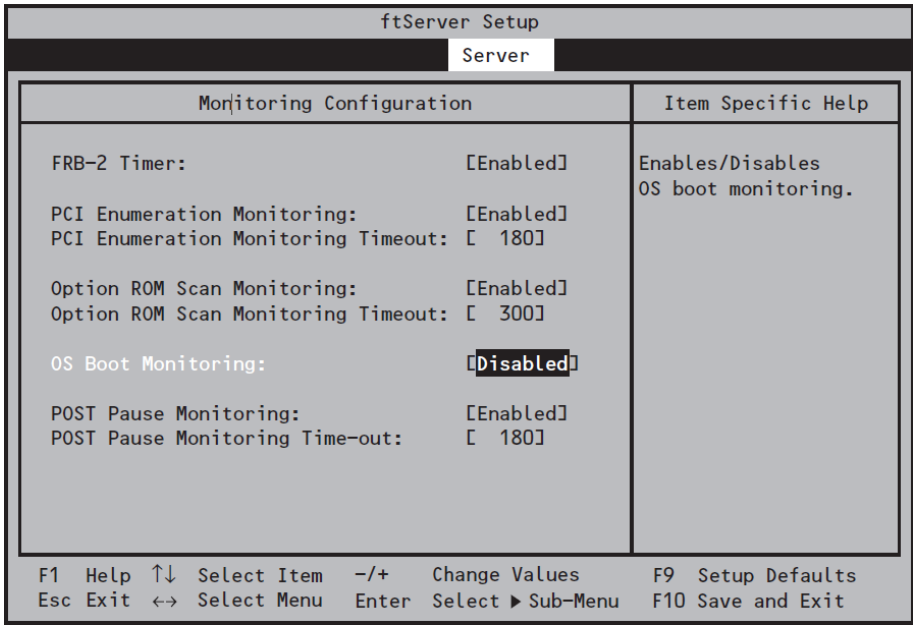
2. Move the cursor onto [Monitoring Configuration] and press **Enter**.

The Monitoring Configuration submenu appears.



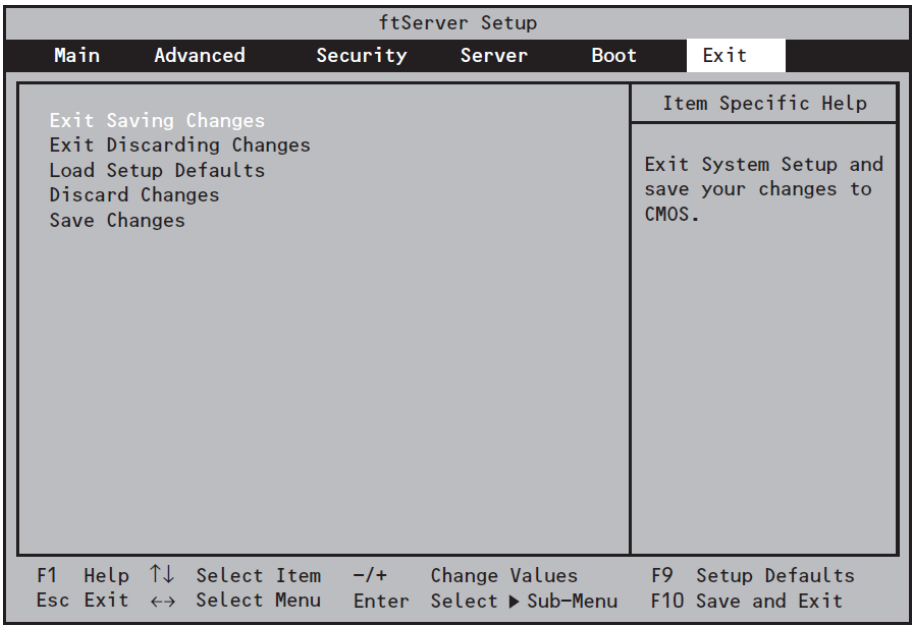
3. Move the cursor onto [OS Boot Monitoring] and press **Enter**.
Parameter appears.

4. Select [Disabled] from the parameter and press **Enter**.
The display of current setting for OS Boot Monitoring becomes [Disabled].



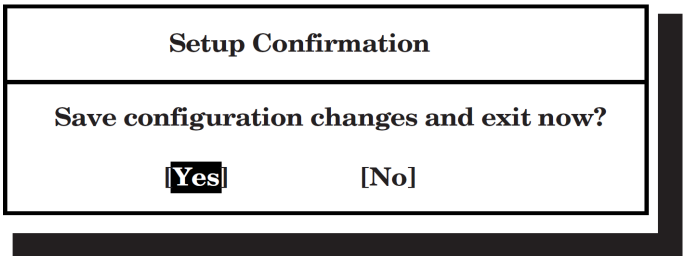
5. Press **Esc** key, then go back to Server menu, and move the cursor onto [Exit].

The Exit menu appears.



6. Move the cursor key onto [Exit Saving Changes] and Press **Enter**.

The Setup confirmation window appears.



7. Select [Yes] and press **Enter**.
Save the setting and quit the SETUP, and then reboot.

TIPS:

- When installing ESX, once power off the server for preparation of installation.
  To continue with the setup procedure, proceed to “Step 5: Set HBA configuration by QLogic BIOS” on the next page if the FC card is enabled, and to “Step 6: Install VMware ESX 4.0 Update2” if the internal disk is enabled.

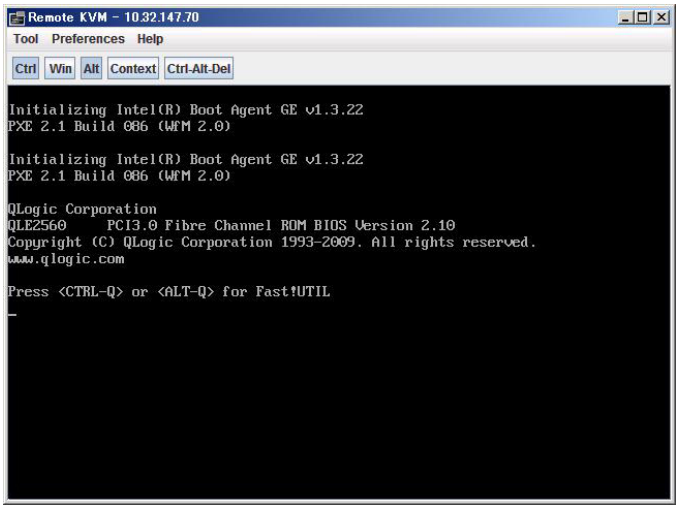
Step 5: Set HBA configuration by using QLogic BIOS

IMPORTANT:

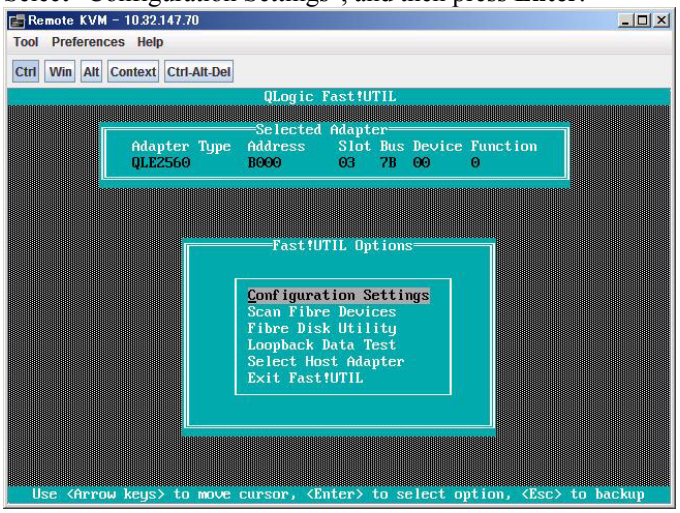
Before setting the HBA configuration by using QLogic BIOS, it is required to complete the storage settings such as creating a logical disk.

1. Start from the CPU/IO module 0, and then perform the following.

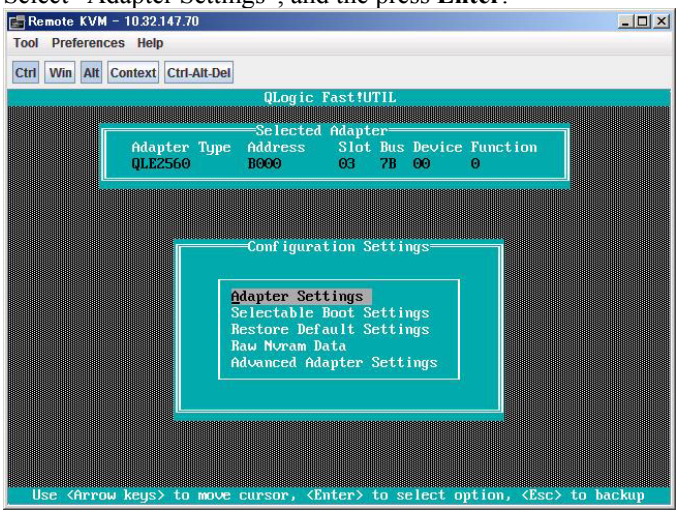
1.1 In the QLogic prompt window which appears during POST, press **CTRL** + **Q** or **ALT** + **Q**.



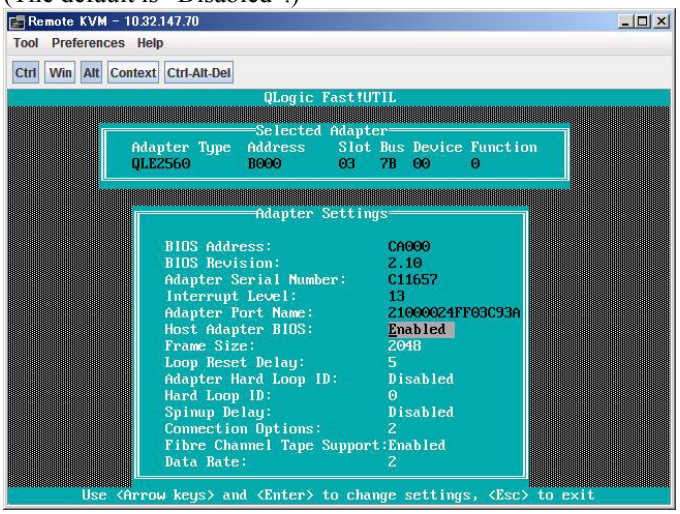
1.2 Select “Configuration Settings”, and then press **Enter**.



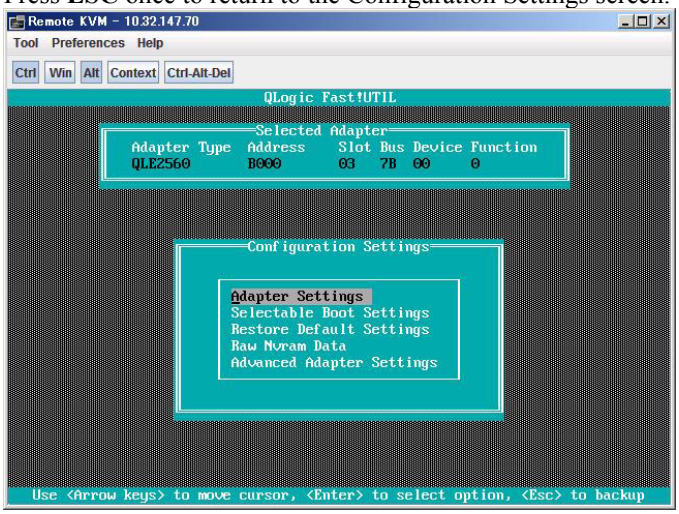
1.3 Select “Adapter Settings”, and the press **Enter**.



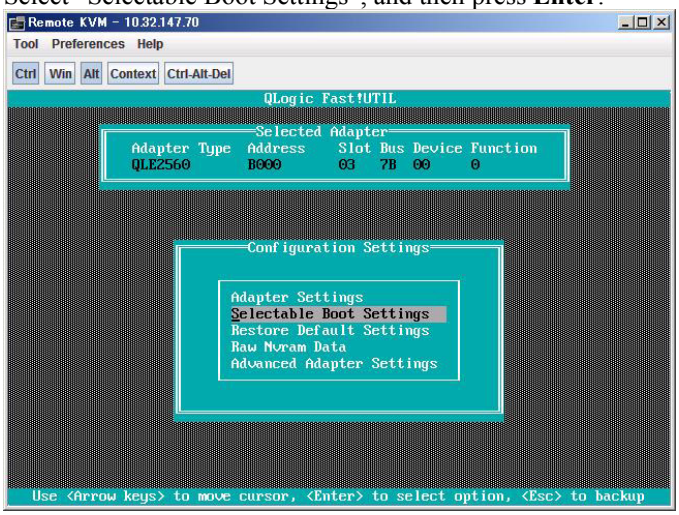
1.4 Select “Host Adapter BIOS”, and then press **Enter** to change the setting to “Enabled”. (The default is “Disabled”.)



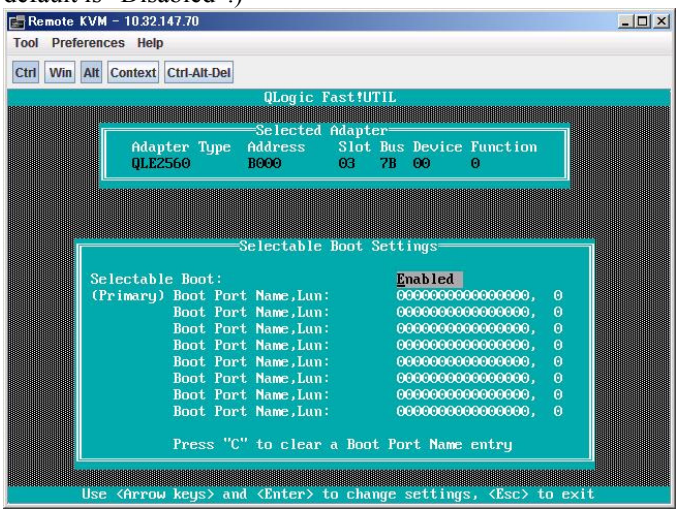
1.5 Press **ESC** once to return to the Configuration Settings screen.



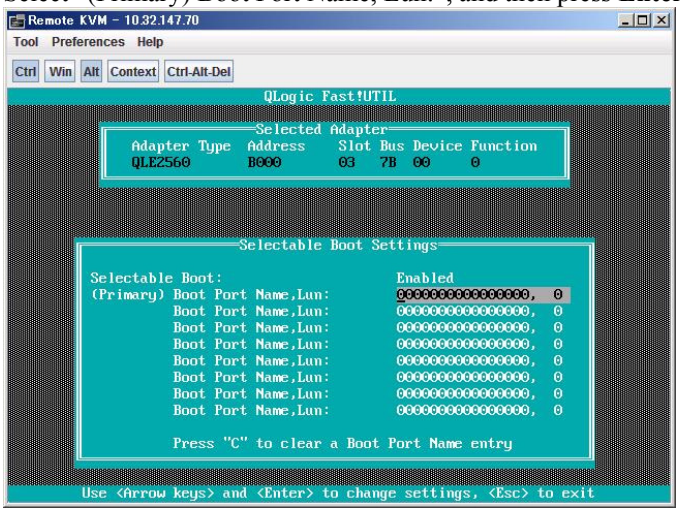
1.6 Select “Selectable Boot Settings”, and then press **Enter**.



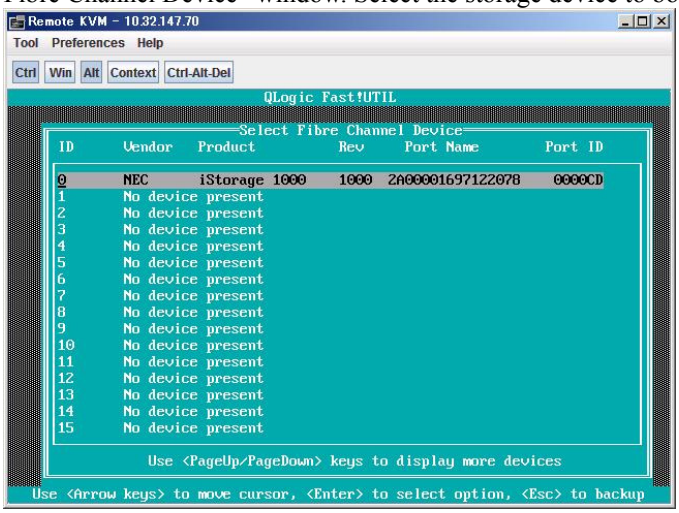
1.7 Select “Selectable Boot”, and then press **Enter** to change the setting to “Enabled”. (The default is “Disabled”.)



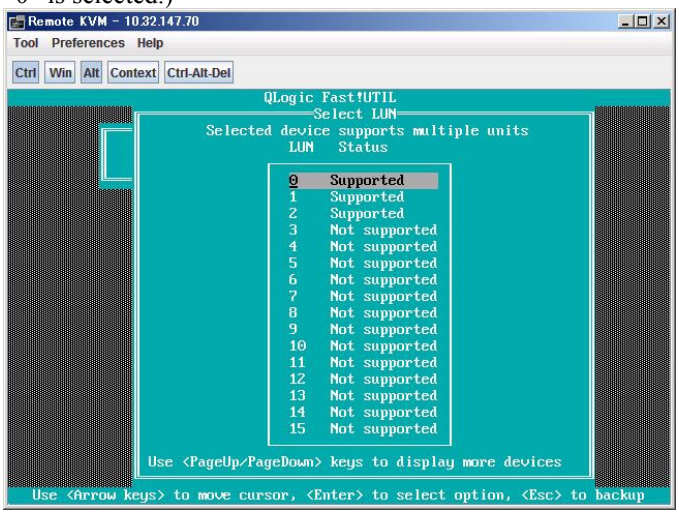
1.8 Select “(Primary) Boot Port Name, Lun:”, and then press **Enter**.



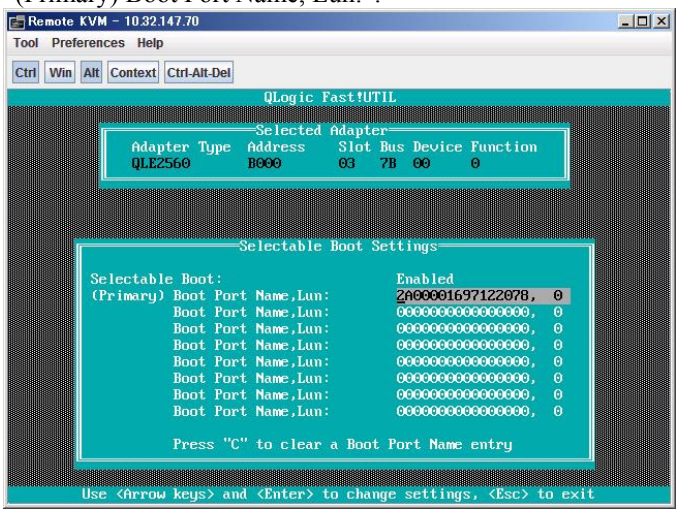
1.9 The storage devices that are recognized by the FC card are displayed in the “Select Fibre Channel Device” window. Select the storage device to boot, and then press **Enter**.



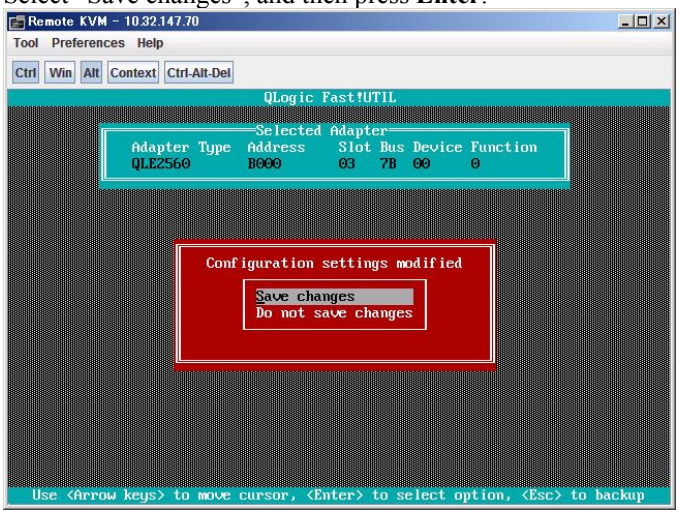
1.10 In the “Select LUN” window, select LUN to boot, and then press **Enter**. (By default, “0” is selected.)



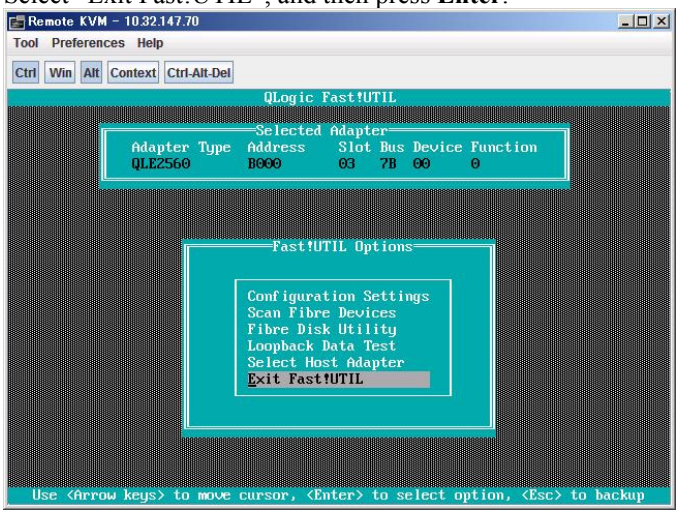
1.11 The port name and LUN specified in steps 1-9 and 1-10 respectively are applied to "(Primary) Boot Port Name, Lun:".



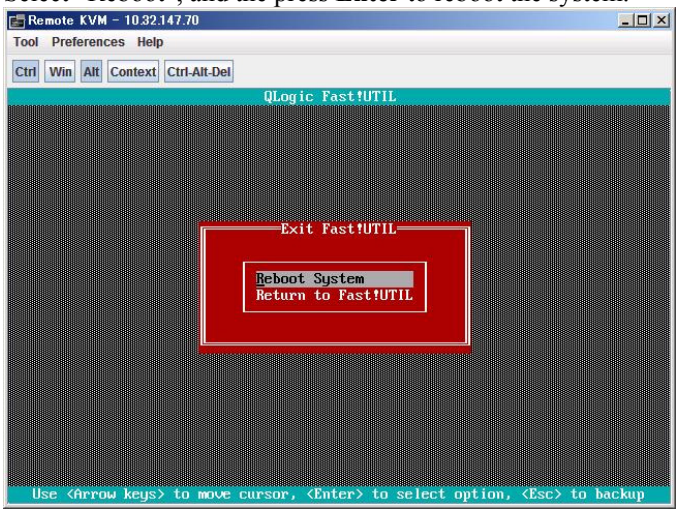
1.12 Press **ESC** twice to display the confirmation window.
Select "Save changes", and then press **Enter**.



1.13 Select “Exit Fast!UTIL”, and then press **Enter**.



1.14 Select “Reboot”, and the press **Enter** to reboot the system.



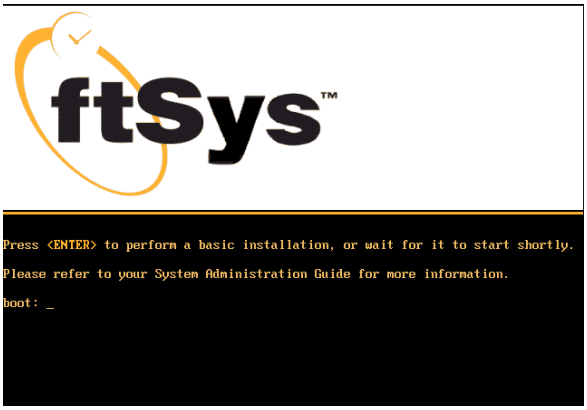
2. The settings for the CPU/IO module 0 are complete. Next, start from the CPU/IO module 1, and then perform steps 1.1 to 1.14 again.

CHECK:

- The images shown in 1.9-1.11 are examples. The information displayed varies depending on the product name of external storage and settings such as logical disk settings.

Step 6 Install VMware ESX 4.0 Update2

1. Insert the install DVD of ft control software 3.1.2 for VMware vSphere4 Update2 to start the machine.
   The ftSys logo is displayed.



IMPORTANT:

Boot CPU/IO module 0 as the primary. The capacity of the volume where VMware ESX4.0 Update 2 and ft control software are installed must be 20 GB or more.

2. At the boot: prompt, press **Enter** to start the installation process.

3. On the Welcome page, click **Next** to continue

CHECK:

- It is recommended to use memory of 8 GB or more.

NOTE:

If the message below is displayed, there is no problem when the displayed BIOS version is 5.0.16.

```
Unable to determine the required BIOS for model 'Express5800/R320b-M4'.
Please check that it is up to date.
```

4. The **Configure Internal Disks Mirrors** page appears and displays a table that describes the internal disks in your system.

   If installing to external storage, skip the procedure below. Select [Next] and proceed to the step 5.

   The table indicating the internal disk displays a pair of system disks inserted in the slot 1 of each PCI module. The table also displays additional disks inserted in other slots, if any.

   Slots containing disks that are not initialized are marked with an error symbol ( ). You must initialize these disks, and, if applicable, mirror them before installing the system software. If one or both disks in this slot are initialized, but not mirrored, that is marked with a caution symbol ( ).

Table1. **Internal Disk States**

State	Description
Ready 	Disks in this slot are initialized and mirrored
Caution 	One or both disks in this slot are initialized, but not mirrored.
Error 	Disks in this slot need to be initialized.

Initialize the disks in your system as follows:

CAUTION:
Initializing a disk destroys all existing data on the disk.

Select **Initialize** of the slot with an error mark or a caution mark to set to check mark () status which indicates that the pair of disks is initialized and is in mirroring status. Or click **Initialize All** to start initializing and mirroring all matched pairs of disks at one time.

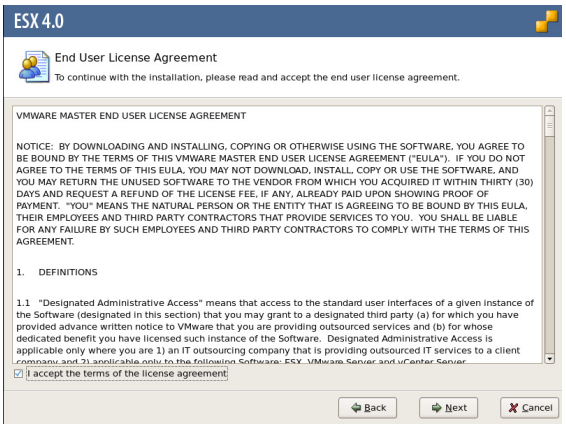
If any mirrored pair is missing a disk, or if you inserted a disk in the wrong slot, you can insert or move the disk and click **Rescan** to update the disk table.

When you are finished initializing disks, click **Next** to continue

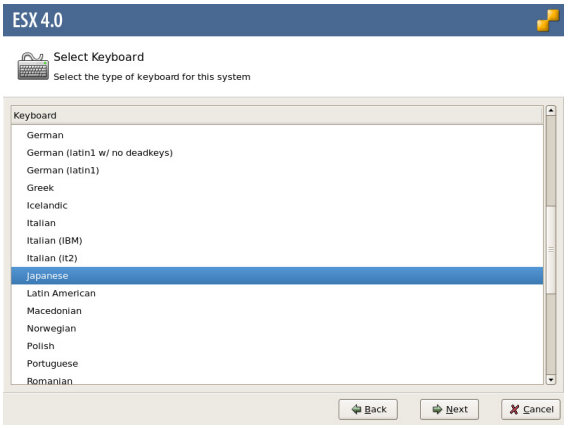
5. When prompted, remove the ftSSS DVD from the DVD drive and insert the VMware ESX4.0 Update2 installation DVD. The VMware ESX installer begins to load. After the ESX installer loads, click **Next.**

6. On the **Welcome to the ESX Installer** page, click **Next** to start the installation questionnaire.

7. On the **End User License Agreement** page, read VMware's license agreement and select the **I accept** option to accept the terms of the agreement. Click **Next**.

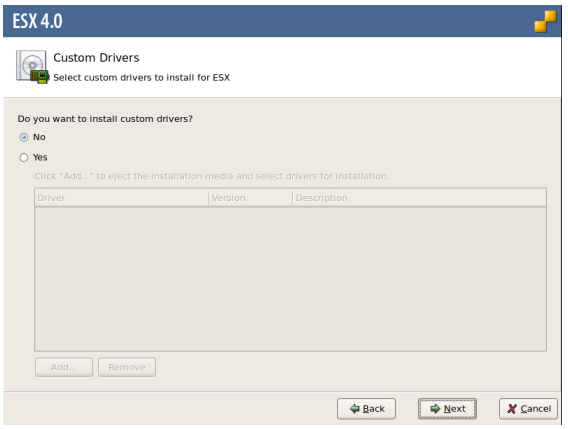


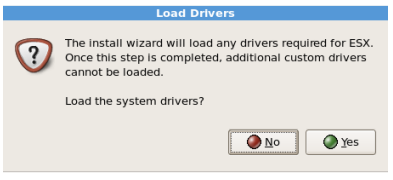
8. On the **Select Keyboard** page, select the option that best describes your keyboard, then click **Next**.



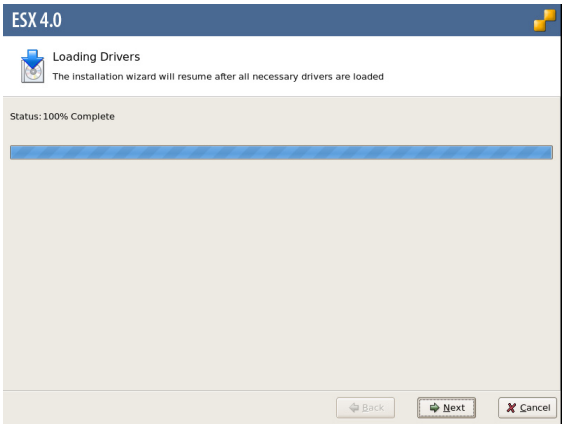
9. On the **Custom Drivers** page, select **No** to install only the default drivers, then click **Next**.

   In the Load Drivers dialog box, click **Yes** to start loading the drivers.





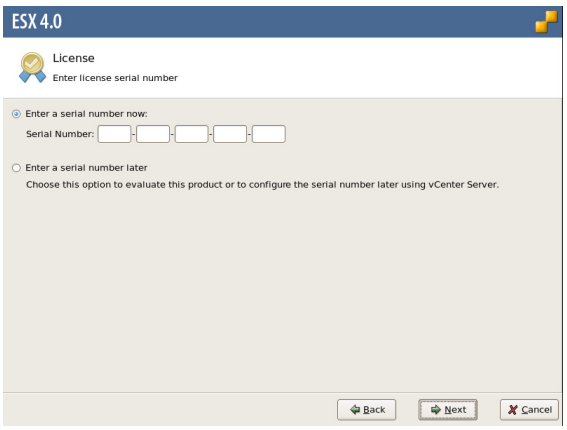
10. Click **Next** after the completion of loading.



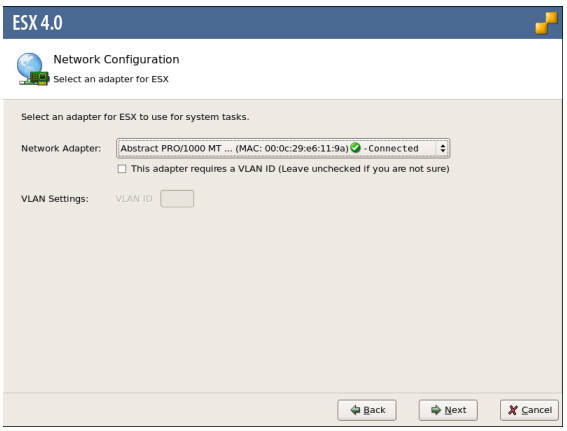
11. On the **License** page, click **Enter a serial number now**, then specify a serial number.

    Before leaving the License page, ensure that only the **left** embedded Ethernet port (labeled port **1**) in the **upper** CPU/IO module has an active network connection.

    Disconnect the network cables from all other Ethernet ports in the system Click **Next** to continue.

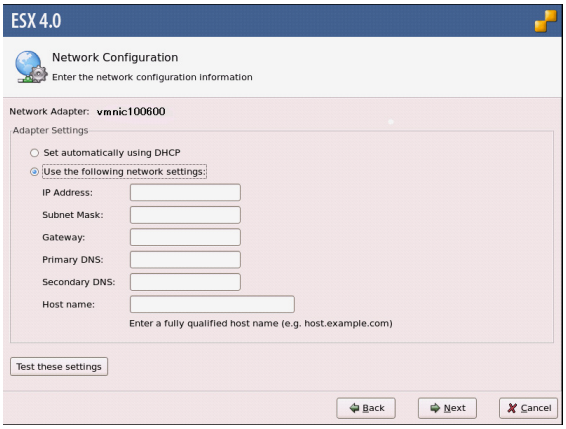


12. On the **Network Configuration** page, click the **Network Adapter** drop-down list and select the network adapter that is marked with a green check mark. Then, click **Next** to continue

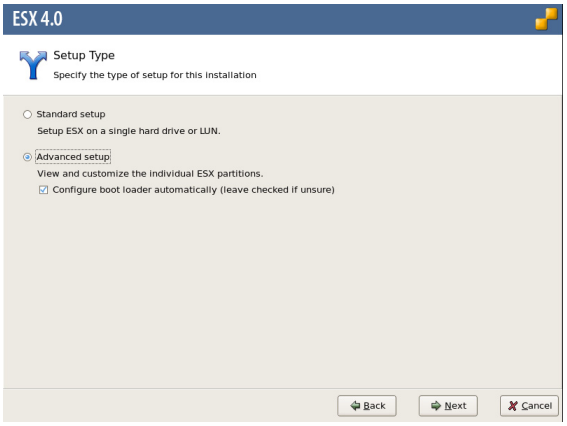


13. On the second **Network Configuration** page, verify that the network adapter you selected for the service console is **vmnic100600**.

    Reattach the network cable to the **left** embedded Ethernet port in the **lower** CPU/IO module. You can reconnect all other network cables at your convenience.
    Specify the network settings. Then, click **Next** to continue.

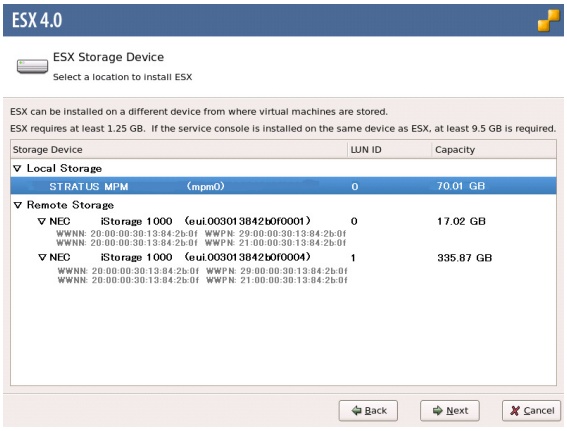


14. On the **Setup Type** page, select Advanced **Setup** and ensure that the check box for Configure boot loader in activated. Then, click **Next**.

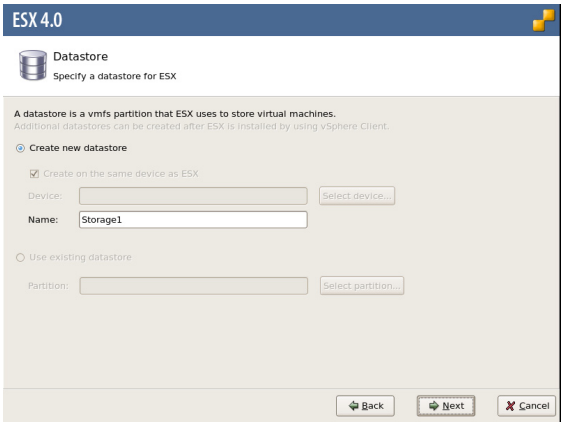


15. On the **ESX Storage Device** page, select the first device in the list (**mpm0**) and click **Next**.

    If the installer displays a message to warn that the contents of the disk will be erased or overwritten, and you are sure that you want to continue, click **OK** to dismiss the message. Otherwise, click **Cancel** and update your configuration.



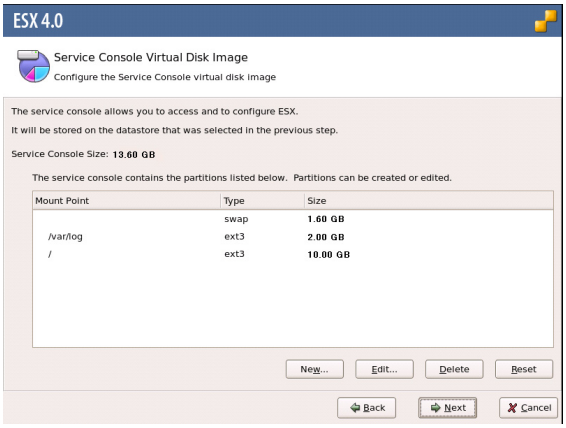
16. On the **Datastore** page, do one of the following;



- If you are installing the system software onto a blank disk, click **Create new datastore**. Then, enable the check box for **Create on the same device as ESX** to create a datastore using any disk space that remains on the disk after creating the system software partitions. Optionally, specify a name for the datastore, or keep the default of **Storage1**.
- If you are installing over a previous installation on this disk, and you want to preserve the existing datastore partition from that installation, click **Use existing datastore** and select the partition that contains the datastore.

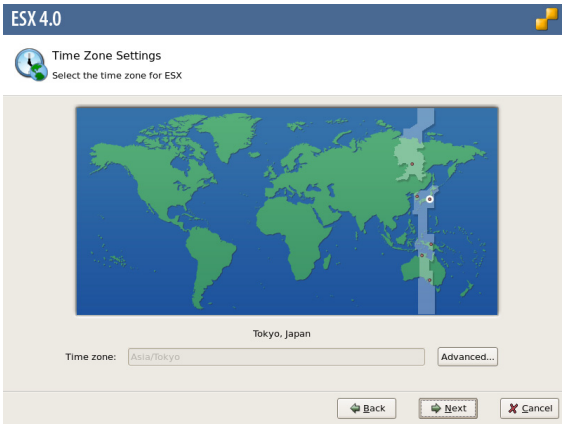
When you are finished specifying a datastore, click **Next** to continue.

17. On the **Service Console Virtual Disk Image** page, if necessary, customize the default partitions that the installer will create on the installation volume. Otherwise, click **Next** to accept the default partitions.



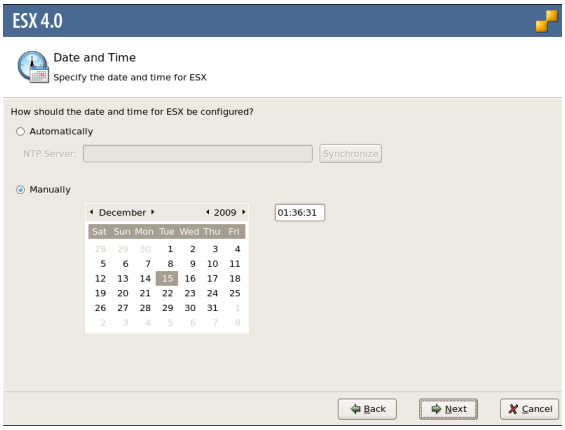
Basically, default setting is recommended. Ensure that your partition settings meet or exceed the default recommendations, which are required for normal operations.

18. On the **Time Zone Settings** page, select the time zone for your location and click **Next**.

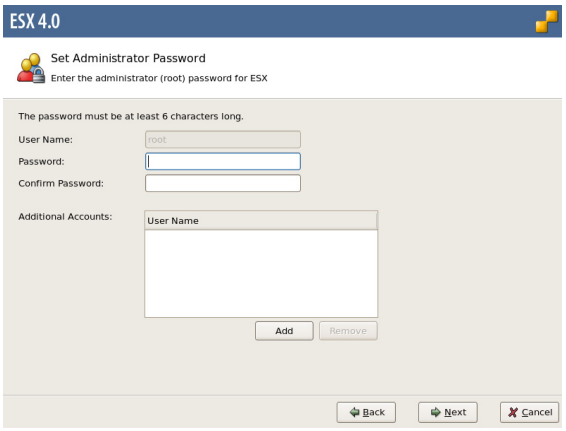


19. On the **Date and Time** page, do one of the following:

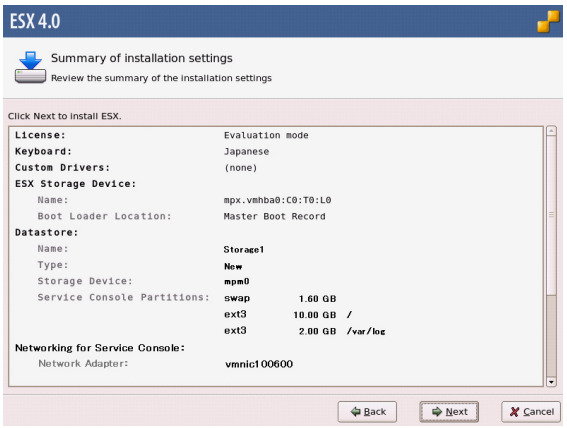
    - Click **Automatically**, specify an NTP server, and click **Next**.
    - Click **Manually**, set the date and time, and click **Next**.



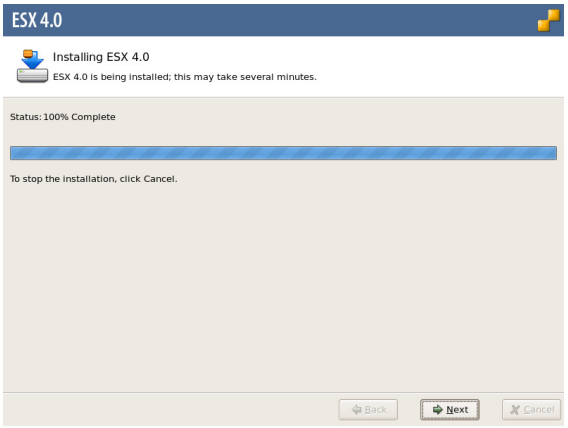
20. If the **Set Administrator Password** page is displayed, type the root password for the system in both text boxes. Optionally, create additional accounts, then click **Next**.



21. On the **Summary of installation settings** page, verify the settings and click **Next** to start the software installation process.



22. On the **Installing ESX 4.0** page, when the installer displays that the status is **100% Complete**, click **Next** to continue.



23. On the **Installation Complete** page, click **Finish** to reboot the system and eject the installation DVD.

Step 7 Install Software NEC Express5800/ft Series offers

Install the software provided by NEC Express5800/ft series by the following procedures.

ft Server Control Software

1. Select [VMware ESX 4.0] in the bootloader (Grub) window and press **Enter**. When starting ESX completes, [VMware ESX 4.0.0 – build - 261974] is displayed.
2. Press **ALT** + **F1** to switch the console windows.
3. Login as a root user.

   Account: root
   Password: **** (configured upon installation)
4. Set the install DVD of ft control software 3.1.2 for VMware vSphere4 Update2.
5. Execute the install script.
   # opt/ft/sbin/ft-install

   All input should remain to be default.
   "ftadmin" can be used in SSH connection etc.

   Be sure to specify a password for the ftadmin user.

   After inputting the password for the ftadmin user, the message below prompting to update the CPU firmware may be displayed. If displayed, enter "NO" so as not to update the CPU firmware.

   ```
   Updating the CPU firmware will take about 10 minutes and should not be
   interrupted. Do you want to update the firmware now?

   Enter Yes to update now or NO to update later:[YES]
   ```

   The message prompting to update the BMC firmware is also displayed. However, it is not necessary to update the BMC firmware.

   After installation completes, the prompt asking whether to reboot the OS is displayed. Then, eject the install DVD of ft control software 3.1.2 for VMware vSphere4 Update2 and enter "YES" to reboot the OS.

Report table of ft Server Control Software.

1. Select [VMware ESX 4.0] in the bootloader (Grub) window and press **Enter**. When starting ESX completes, [VMware ESX 4.0.0 – build - 261974] is displayed.
2. Press **ALT** + **F1** to switch the console windows.
3. Login as a root user.

   Account: root
   Password: **** (configured upon installation)
4. Set the install DVD of ft control software 3.1.2 for VMware vSphere4 Update2.

5. Mount the DVD.

   # /opt/ft/sbin/enable-usb-storage
   # mount /dev/cdrom /mnt/cdrom

6. Install the alert linkage functions with ESMPRO Agent.
   Install either Japanese version or English version.

   When you install Japanese version
   # cd /mnt/cdrom/NEC/report-table/
   # rpm –ivh ftexp-report-table.ja-3.0.0-NEC01.noarch.rpm

   When you install English version
   # cd /mnt/cdrom/NEC/report-table/
   # rpm –ivh ftexp-report-table.en-3.0.0-NEC01.noarch.rpm

7. Unmount the DVD media

   # cd
   # umount /mnt/cdrom

8. Eject the install DVD of ft control software 3.1.2 for VMware vSphere4 Update2.

9. Make a setting that vmkernel logs are output to syslog (/var/log/messages)
   Login to the service console as root account and edit /etc/syslog.conf
   Add the line of (*add)

   ```
   ---------------------------------
   # Log all kernel messages to the console.
   # Logging much else clutters up the screen.
   #kern.*                                                    /dev/console



   #send all local6.notice and higher    messages to vmkernel log.
   local6.notice                                        /var/log/vmkernel
   local6.notice                                        /var/log/messages          (*add)
   ---------------------------------
   ```

10. Restart the OS.

    #reboot

NEC ESMPRO Agent

Refer to the Installation Guide (/doc/esmsa_ft-inst_e.pdf) for ftserver and Installation Guide (/doc/esmsa_inst_e.pdf) stored in the NEC ESMPRO Agent for VMware CD-ROM for how to install.

IMPORTANT:

Mount the NEC ESMPRO Agent for VMware CD-ROM by the following procedures.

```
# /opt/ft/sbin/enable-usb-storage
# mount /dev/cdrom /mnt/cdrom
```

Step8 Set Dual Disk Configuration

At this point, CPU/IO module1-Slot1 and CPU/IO module 0-Slot1 have been duplex. Except when a disk has been added or RAID has been reconfigured, check if the duplication has succeeded and perform “Creating and Mounting File System”

NEC Express5800/ft series secures data integrity by setting dual disk configuration using “Software-RAID”. The section describes procedures to configure disks.

IMPORTANT:

Execute Disk settings and configure dual disk when a new hard drive is added.

Disk Configuration

RAID must be configured for all the internal disks in NEC Express5800/ft series.

As shown on the chart1, the internal disks redundancy is configured by software RAID with the internal disks of corresponding slots.

The internal disks path and device name

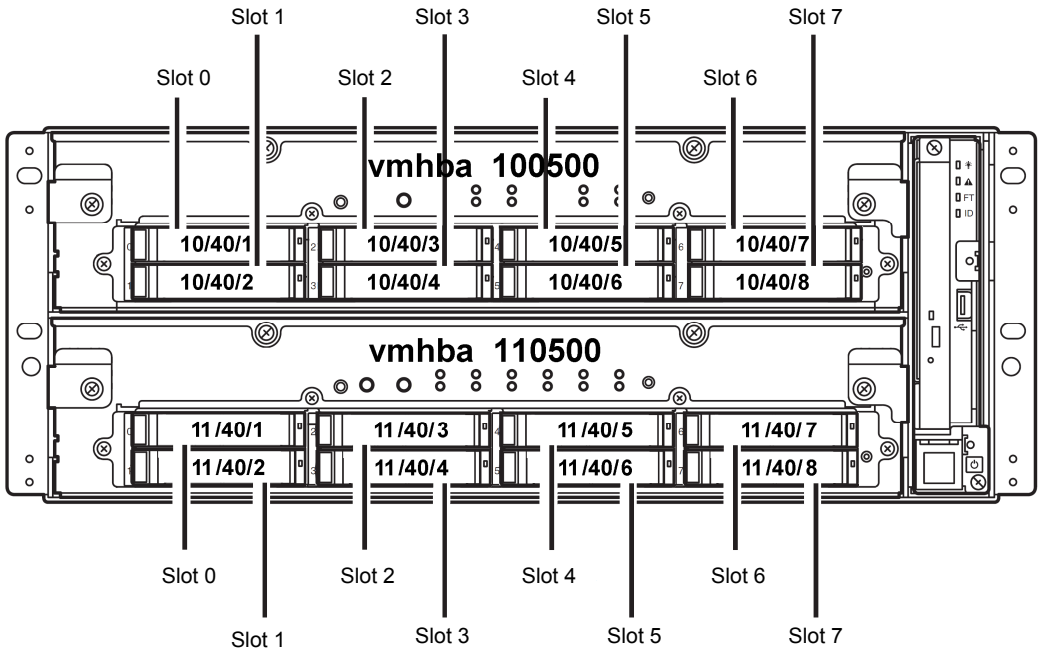


Chart1 Slots corresponding to the mirroring process

Corresponding slot
Slot 0 (10/40/1) ⇔ Slot 0 (11/40/1) Slot 1 (10/40/2) ⇔ Slot 1 (11/40/2) Slot 2 (10/40/3) ⇔ Slot 2 (11/40/3) Slot 3 (10/40/4) ⇔ Slot 3 (11/40/4) Slot 4 (10/40/5) ⇔ Slot 4 (11/40/5) Slot 5 (10/40/6) ⇔ Slot 5 (11/40/6) Slot 6 (10/40/7) ⇔ Slot 6 (11/40/7) Slot 7 (10/40/8) ⇔ Slot 7 (11/40/8)

To operate the internal disk. it need to use the Kernel device names.
The kernel device name is decided by being detected by system when the disk is inserted or system is booted. The kernel device name is displayed as "vmhba*nn*0500:C0:T*x*.L0".
The "*nn*" of "vmhba*nn*0500:C0:T*x*.L0" displays PCI Modules (10,11),and "*x*" that number more than 0 are assigned by detection order displays target number.

You can confirm the kernel device name corresponding to the slot by using "/opt/ft/bin/ftsmaint" command.
If you need to confirm the kernel device name of internal disk inserting in the slot2, carry out the following command such as example.

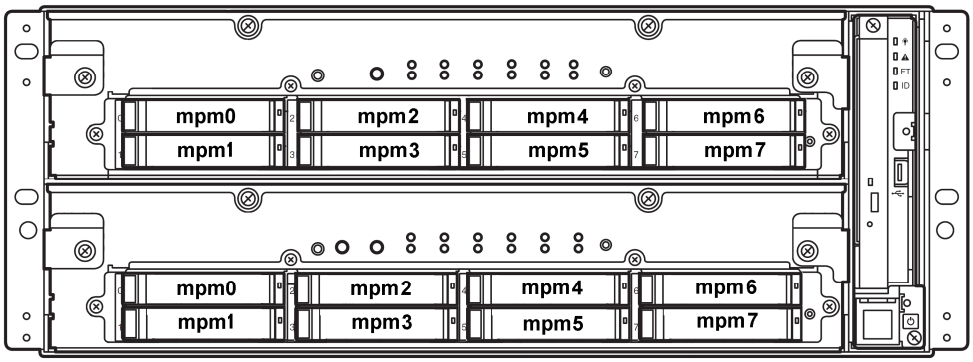
/opt/ft/bin/**ftsmaint ls 10/40/2**

H/W Path	: 10/40/2
Description	: Disk Drive
State	: ONLINE
Op State	: DUPLEX
Reason	: NONE
Modelx	: SEAGATE: ST973452SS
Firmware Rev	: 0005
Serial #	: 3TA02A9M00009929YFLA
Device Name	: disk_b
Udev Device Names	: -
Kernel Device Names	: vmhba100500:C0:T1:L0

*In above example, the kernel device name is "vmhba100500:C0:T*x*.L0".

Configuring the redundant configuration, it is necessary to use “mpmadm” command.
On this occasion, the RAID device name is expressed as “mpm*n*” (“*n*” is 0 to 7).

The internal disks path and device name



IMPORTANT:

When the status of each disk becomes RESYNC, RECOVERY, CHECK or REPAIR, do not add a disk, insert/remove HDD, power off or restart the system. Wait until the status indication of Raid device disappears and the status of each disks become “in_sync”. Check the status of RAID using the “mpmadm” command, which is described later in this document.

Use only the hard disk drives specified by NEC. There is a risk of hard disk as well as the entire device breakdown when you install a third-party hard disk drive.

Purchase two, paired hard disk drive of the same model to configure the hard drive redundancy. For information on which HDD suits this device the best, ask your sales agent.

To confirm the disk status, use “/opt/ft/sbin/mpmadm –l” command.
The following display is an example when “/opt/ft/sbin/mpmadm –l” is executed.

```
# cd /opt/ft/sbin/
# ./mpmadm -l
mpm0 [2/2]
  |_ vmhba110500:C0:T0:L0          [ in_sync ]
  |_ vmhba100500:C0:T0:L0          [ in_sync ]
```

Disk settings(RAID construction)

Use /opt/ft/sbin/mpmadm to construct RAID. Configure disks as follows:

IMPORTANT:

You must execute the following operations as root user.

Perform disk duplication by specifying and executing the RAID device name and the kernel device name indicating the disk for mpmadm -C.

The following is an example of configuration of disks set in slot2 (10/40/2) and slot2 (11/40/3) through creatiing

```
# cd /opt/ft/sbin/
<<< The disks loaded in the slot 2 of PCI module 0 and 1 are displayed in “Unused disks”>>>

# ./mpmadm -l
mpm0 [2/2]
  |_ vmhba110500:C0:T0:L0            [ in_sync ]
  |_ vmhba100500:C0:T0:L0            [ in_sync ]

Unused disks:
- vmhba110500:C0:T1:L0
- vmhba100500:C0:T1:L0

 <<< Perform disk duplication by specifying the RAID device name and the kernel device name indicating the
 disk.>>>

# ./mpmadm -C mpm1 vmhba110500:C0:T1:L0 vmhba100500:C0:T1:L0
Successfully created volume mpm1.
Successfully assembled volume mpm1.
```

<<< Check that synchronization has started with the specified RAID device name.>>>

```
# ./mpmadm -l
mpm0 [2/2]
  |_ vmhba110500:C0:T0:L0          [ in_sync ]
  |_ vmhba100500:C0:T0:L0          [ in_sync ]

mpm1 [2/2] resync=1.3% (930944/71484736) finish=13.8min (84631K/s)
  |_ vmhba110500:C0:T1:L0          [ in_sync ]
  |_ vmhba100500:C0:T1:L0          [ in_sync ]
```

<<< When synchronization is complete and the volume is fault-tolerant, the output appears as follows >>>

```
# ./mpmadm -l
mpm0 [2/2]
  |_ vmhba110500:C0:T0:L0          [ in_sync ]
  |_ vmhba100500:C0:T0:L0          [ in_sync ]

mpm1 [2/2]
  |_ vmhba110500:C0:T1:L0          [ in_sync ]
  |_ vmhba100500:C0:T1:L0          [ in_sync ]
```

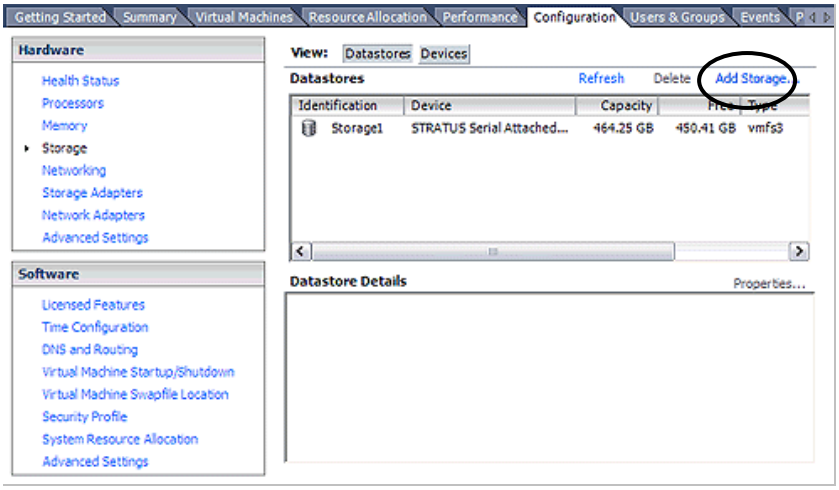
Status of RAID devices is the following for indications:

Status	Meaning
resync	It is in the process of recalculating RAID.
recover	It is in the process of reconfiguring (resynchronizing) the devices that are out of/illegal RAID configuration. The disk is displayed as [syncing] while being reconfigured, and [in_sync] after configuration is completed. When it is done, [in_sync] is displayed.
check	It is in the process of checking data consistency.
repair	It is in the process of checking/repairing data consistency.

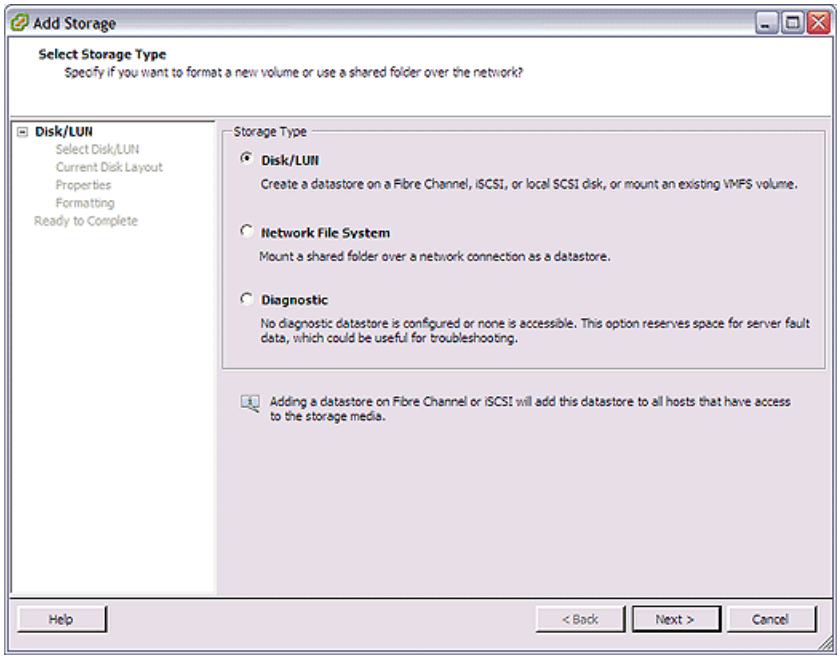
Creating and Mounting a Filesystem

To use the RAID device(mpm), you need to create a VMFS datastore in vSphere Client. The following is an example of creating datastore.

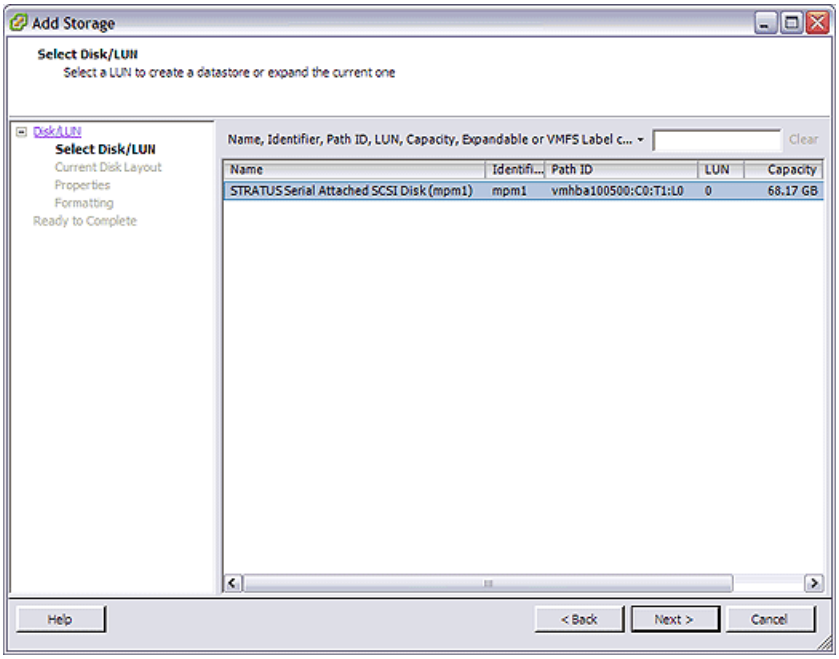
1. Open vSphere Client and log on to the ESX host.
2. Click the **Configuration** tab for the ESX host.
3. On the **Configuration** tab, in the Hardware box, click **Storage**.
4. Click **Add Storage**. The Add Storage wizard appears.



5. Select a storage type. To create a datastore on a mirrored volume of an internal disk, click **Disk/LUN** and click **Next**.

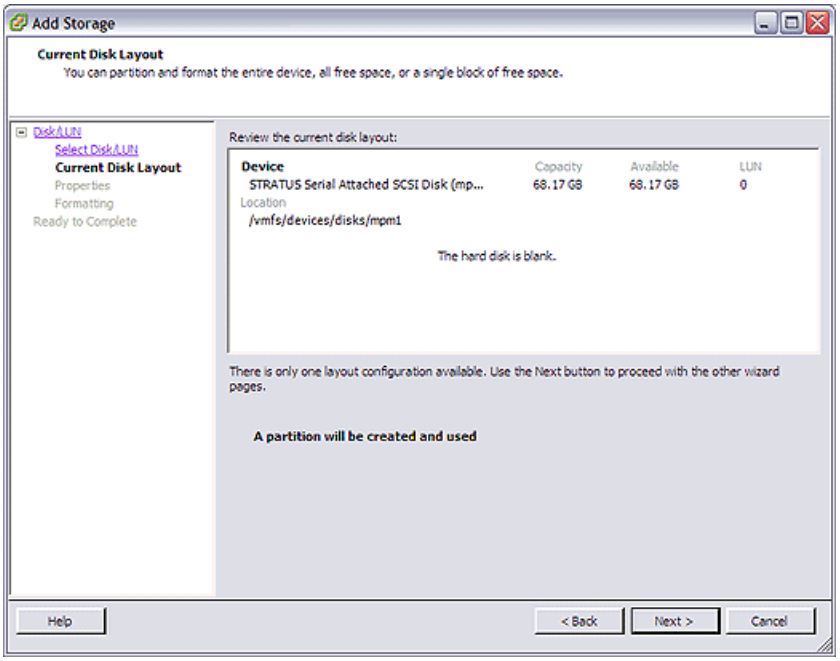


6. The Select Disk/LUN page displays a list of volumes that are available for formatting. Each mirrored volume you created with the mpmadm command is displayed as a Local **STRATUS Disk (mpm*n*)** .
   Select a mirrored volume on which to create the datastore and click **Next**.

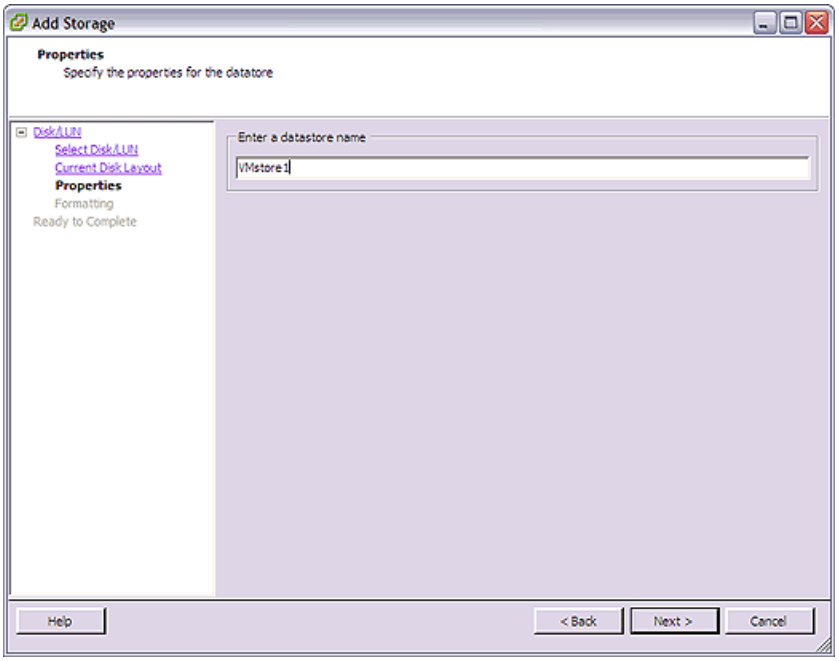


7. The Current Disk Layout page is displayed, do one of the following:

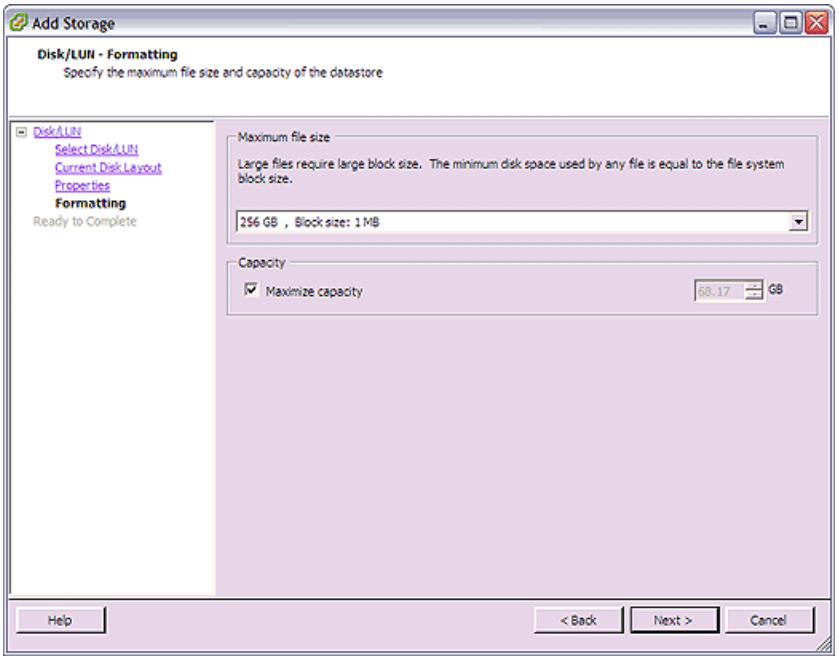
- If the wizard reports that **A partition will be created and used**, click **Next** to continue.
- If the wizard offers you the choice of how to partition the volume, select **Use all available partitions** (to delete all data on the disk), then click **Next** to continue.



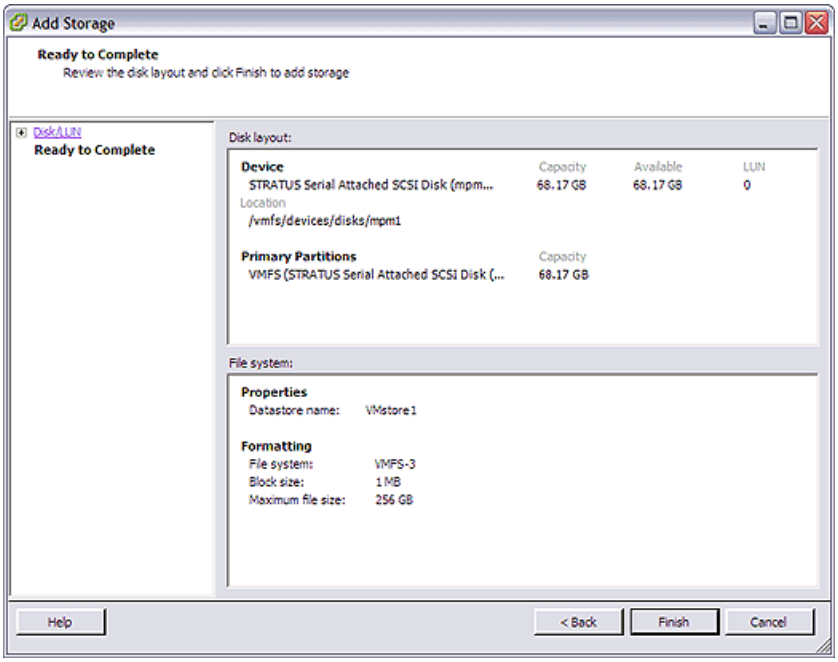
8. On the Properties page is displayed, enter a name for the new datastore and click **Next**.



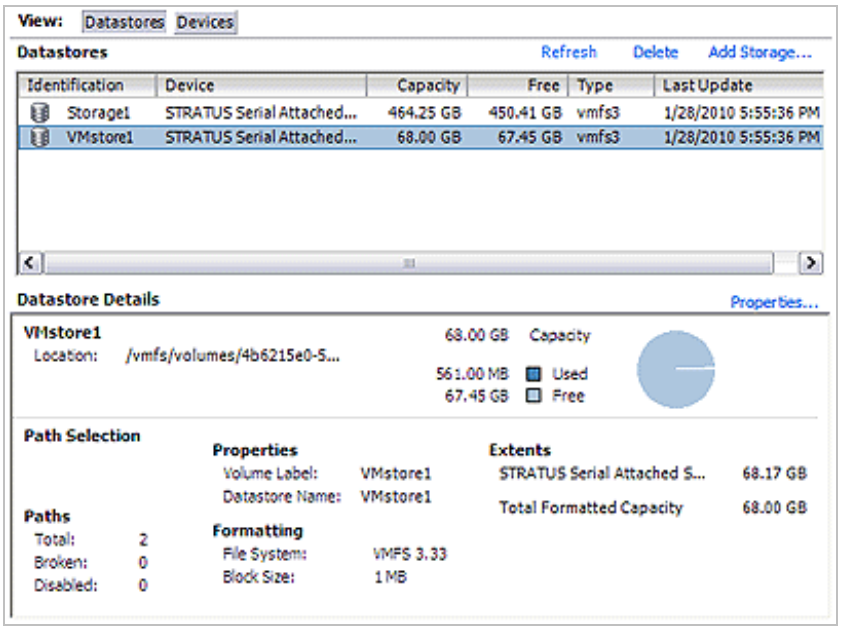
9. On the Formatting page, set the maximum file size. Unless you have specific needs, do not change the **256 GB, Block size: 1MB** and **Maximize capacity** defaults. Click **Next** to continue.



10. On the Ready to Complete page, Verify the disk layout and properties, then click **Finish** to create the datastore.



11. After a few seconds, the new datastore appears on the Storage page under **Datastores**. This is the end steps for creating and formatting datastore.



Step 9: Connect and Configure Options

If there is any optional PCI board or peripheral equipment to connect to NEC Express5800/ft series, turn off the power to NEC Express5800/ft series, and connect it according to the "PCI board" in *User's Guide* and the device's instruction.

Immediately after the installation completes, network configuration for a port is duplicated. When you change the network configuration or configure the duplication setting by adding a LAN card, it is necessary to configure the settings from vSphere Client.

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 (i.e. two network interfaces are bound to a switch).

PCI slot and network interface name

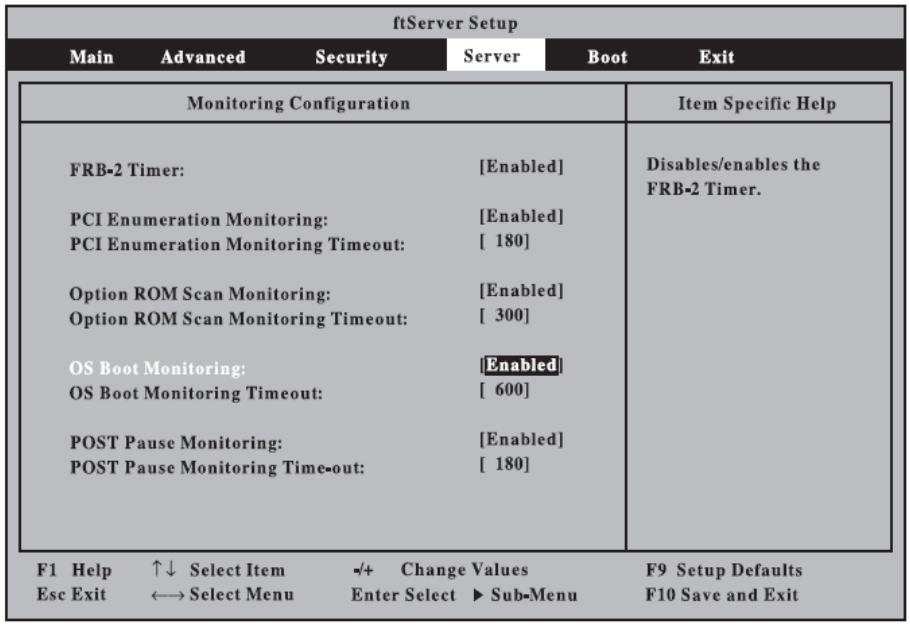
PCI slot	Port	CPU/IO module 0	CPU/IO module 1
On Board	#1	vmnic 100600	vmnic 110600
	#2	vmnic 100601	vmnic 110601
PCI-e slot 1	#1	vmnic 100100	vmnic 110100
	#2	vmnic 100101	vmnic 110101
PCI-e slot 2	#1	vmnic 100200	vmnic 110200
	#2	vmnic 100201	vmnic 110201
PCI-e slot 3	#1	vmnic 100300	vmnic 110300
	#2	vmnic 100301	vmnic 110301
PCI-e slot 4	#1	vmnic 100400	vmnic 110400
	#2	vmnic 100401	vmnic 110401

For detailed procedures, refer to the *User's Guide* packaged with this guide and the *ESX Configuration Guide* of VMware vSphere.

To have enough time to initialize Fibre Channel disk and Fibre Channel switch and so on, adjust [Server] - [Power On Delay Time] by setting System BIOS configuration Utility.

Step 10: Enable OS Boot Monitoring Function

When necessary for system operation, enable the [OS Boot Monitoring] setting which has been disabled in “Step 4: Invalidate OS Boot Monitoring Function”
Set appropriate time referring to “Step 4: Invalidate OS Boot Monitoring Function” (page 4-12). (Default is 10 minutes. Specify by second).



Step 11: Back up System Information

We recommend you to back up the system information using the Off-line Maintenance Utility after setting up the system.

With backup for system information, the information and settings that are specific to your server can be restored after the server is repaired. Follow the steps below to make a backup copy of the system information:

1. Prepare a 3.5-inch floppy disk.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive and reboot the system.

   NEC EXPRESSBUILDER is activated and [Boot selection] menu is displayed.
3. Select [Tool menu]
4. Select [English].
5. Select [Maintenance Utility].
6. Select [System Information Management].
7. Insert a floppy disk into the floppy disk drive.
8. Select [Save].

The setup is now completed.

Setup Procedures upon Installing Guest OS

For the setup procedures upon installing guest OS, see the *basic system management* of VMware vSphere. For the network configuration, refer to the *User's Guide* packaged with this guide and the *ESX Configuration Guide* of VMware vSphere.

NOTE:

Guest OS cannot use the optical disk drive on the ESX host during operation.

Chapter 5

Procedures after Completion of Installation

This chapter describes the procedures after installation such as how to install management utilities and how to setup PCs on the network. You may need to confirm these procedures while the system is running.

INSTALLING MANAGEMENT UTILITIES

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

“NEC ESMPRO Agent” for monitoring VMware is not attached at this device by default,so you need to purchase it if you use.

NEC ESMPRO Agent

NEC ESMPRO Agent is a utility to monitor the operating status, the configuration information, the failure occurrence status of hardware and software on the NEC Express5800/ft series. When it detects some problems, it sends messages to the computer in which the NEC ESMPRO Manager is installed.

NEC ESMPRO Agent is required to be installed by users. For the installation procedures, see the Installation Guide (/doc/esmsa_inst_e.pdf) and Installation Guide for ft server (/doc/esmsa_ft-inst_e.pdf)included in the CD-ROM of “NEC ESMPRO Agent for VMware”.
In order for NEC ESMPRO Agent to operate, it is necessary to configure the settings according to your environment. See the User’s Guide (/doc/esmsa_users_e.pdf) included in the CD-ROM of “NEC ESMPRO Agent for VMware”.

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

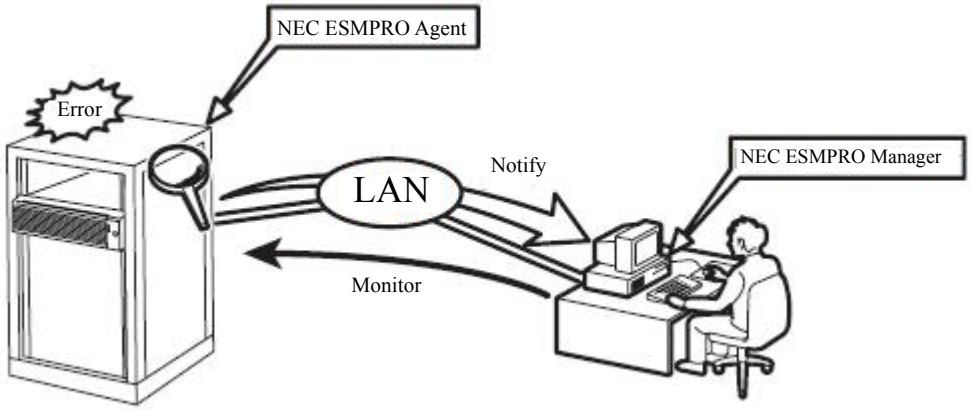
Operation Environment

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

- Hardware
  Installation system
  NEC Express5800/ft series
- Software
  NEC ESMPRO Agent for VMware

NEC ESMPRO Manager

Linked with NEC ESMPRO Agent installed in the server, NEC ESMPRO Manager monitors the server status and receives alerts from the server.



When a failing module in the server is to be replaced, NEC ESMPRO Manager enables logical module disconnection from the server and logical installation after module replacement.

For the installation of NEC ESMPRO Manager and notes on the operation, see the separate volume of the *User's Guide*.

Disable Auto Reinstallation of CPU Module

You can disable the auto reinstallation of CPU module with the following configuration. You can shift the timing of no communication that occurs during the installation process of CPU module by disabling the auto reinstallation of CPU module and manually enabling the installation of the module.

[Tips]

Auto reinstallation of CPU module is enabled by default.
Even if auto reinstallation of CPU is disabled, the installation process occurs only when the system is starting up by a reboot.

[Caution]

This configuration just shifts the timing of the connectio timeout and does neither control nor avoid the timeout. Furthermore, this configuration does not prevent no communication timeout from occurring.
You need to configure this as a root user.

Disable auto reinstallation of CPU module

1. Confirm auto reinstallation of CPU module is enabled

```
# /opt/ft/bin/ftsmaint bringupPolicy list
```

CPU bringup policy is enabled.

2. Disable auto reinstallation of CPU module

```
# /opt/ft/bin/ftsmaint bringupPolicy defer
```

Successfully deferred cpuBringupPolicy.

3. Confirm auto reinstallation of CPU module is disabled.

```
# /opt/ft/bin/ftsmaint bringupPolicy list
```

CPU bringup policy is deferred.

Manually install CPU module

1. Confirm which CPU/IO module is the primary.
   CPU/IO module 0 is the primary – Path of CPU module to be installed is 1.
   CPU/IO module 1 is the primary – Path of CPU module to be installed is 0.
2. Install CPU module (Run the following command depending on the status of CPU/IO module)-
   CPU/IO module 0 is the primary
   # /opt/ft/bin/ftsmaint bringup 1

   Completed bringUp on the device at path 1.

   - CPU/IO module 1 is the primary
   # /opt/ft/bin/ftsmaint bringup 0

   Completed bringUp on the device at path 0.
   Confirm LEDs illuminate in green.
   Status lamp 2 of CPU/IO module 0: Green
   Status lamp 2 of CPU/IO module 1: Green

Enable auto reinstallation of CPU module

1. Confirm auto reinstallation of CPU module is disabled.
   # /opt/ft/bin/ftsmaint bringupPolicy list

   CPU bringup policy is deferred.

2. Enable auto reinstallation of CPU module
   # /opt/ft/bin/ftsmaint bringupPolicy enable

   Successfully deferred cpuBringupPolicy.

3. Confirm auto reinstallation of CPU module is enabled.
   # /opt/ft/bin/ftsmaint bringupPolicy list

   CPU bringup policy is enabled.

You can also limit the auto reinstallation of CPU timing by combination with cron daemon.

1. Add configuration to /etc/crontab
   Example: Disable auto reinstallation of CPU module from 6:00 to 18:15 everyday.

   Add the following rows to /etc/crontab
   # Defer CPU bringup at 6:00 every day
   # Enable CPU bringup at 18:15 every day

   0 6 * * * root /opt/ft/bin/ftsmaint bringupPolicy defer
   15 18 * * * root /opt/ft/bin/ftsmaint bringupPolicy enable

Reflect the configuration file of cron daemon.

crontab –u root /etc/crontab

Confirmation of the Kernel Version

The following describes how to check the version of ESX and the version of the kernel in the service console.

Check the version following the steps below.

ESX

1. Run the following command on the service console.

   # cat /proc/vmware/version | grep VMware

Service Console

1. Run the following command on the service console.
   # uname -a

The version of the kernel in operation is displayed.

This completes version confirmation.

Confirmation of the ft Server Control Software Version

The following describes how to check the version of ft Server Control Software. Perform the procedure when you need to check the ft Server Control Software version of the current system such as before adding units or attachment to NEC Express5800/ft series.

Confirm the version following the steps below:

1. Execute the command below.

   # /opt/ft/bin/ftsmaint -v

The version of the ft Server Control Software in operation is displayed.
This completes the version confirmation.

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Chapter 6

Troubleshooting

This chapter describes what to do when files needed to operate the OS are damaged and any trouble occurs on the product.

SYSTEM REPAIR

For repairing the service console, try fsck.

IMPORTANT:

- If the sd device cannot be recognized by the service console, the system cannot be repaired.
- To execute this configuration, login as a user with root privilege.

```
# fsck -C -pvf /dev/sd*
*:device ID
```

Try the guest OS repairing method according to each OS.

TROUBLESHOOTING

This section describes what you should do when a trouble occurs in the product.

Problems with NEC EXPRESSBUILDER

When the NEC Express5800/ft series cannot be booted from the NEC EXPRESSBUILDER DVD, check the following:

- ☐ Did you set the NEC EXPRESSBUILDER DVD during POST and restart the server?

  → If you do not set the NEC EXPRESSBUILDER DVD during POST and restart the server, an error message will appear or the OS will boot.

- ☐ Is BIOS setup 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 so that the optical disk drive boots first.

  <Menu to be checked: [Boot]>

- ☐ Is the connected Flash FDD or inserted floppy disk formatted?

  → Make sure that the Windows recognizes that the connected Flash FDD or inserted floppy disk is formatted. If not, format it.

When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears. After this message appears, check the error and take the appropriate corrective action according to the error codes listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error	An access to the nonvolatile memory (NvRAM) is not acceptable.
Hard disk access error	The hard disk is not connected or it is failed. Check whether the hard disk is correctly connected.
The system-specific information does not exist on the baseboard. Please restore the backup data or write the data by using [System Information Management] of the Off-line Maintenance Utility. Only the authorized personnel are allowed to do this operation.	This message is displayed when NEC EXPRESSBUILDER cannot find device specific information due to the replacement of a motherboard, etc. Contact your maintenance service company.

An error message will also be displayed when an error was detected during system diagnosis. Take a note or print the error message displayed, and contact your sales agent.

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Appendix A

About Services

Information on NEC Express5800/ft series is provided the web at NEC Global Site

http://www.nec.com/

N8800-164F, EXP320L

NEC Express5800/R320a-E4

N8800-165F, EXP320M

NEC Express5800/R320b-M4

User's Guide (Setup)

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