N8800-147F, EXP320L

NEC Express5800/R320a-E4

N8800-148F, EXP320M

NEC Express5800/R320a-M4

User's Guide (Setup)

2nd Edition
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2nd Printing, March 2010

NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan

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.

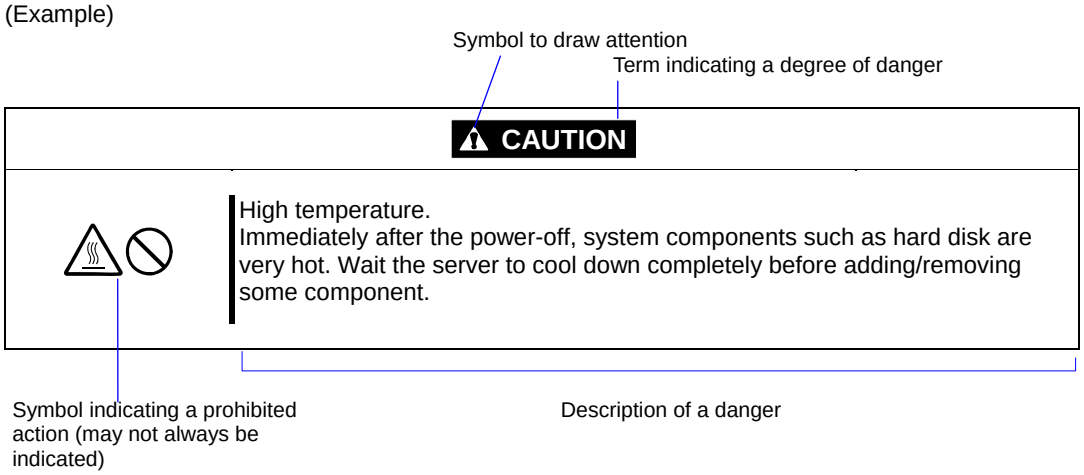
This guide and warning labels use “WARNING” and “CAUTION” to indicate a danger depending on the degree. These terms are defined as follows:

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)

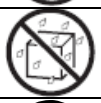


Symbols and its descriptions used in this User's Guide and warning labels are as follows:

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 an explosion.
	Indicates a risk of a personal injury.

Prohibited actions

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

Mandatory actions

	Unplug the server. There is a risk of an electric shock or fire.
	Indicates a general action to take that is not defined herein. Make sure to follow the instructions.
	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 “NOTES FOR SAFE HANDLING” on page 1-2.

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：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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 Mark 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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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. By the use of Linux operating system, it also provides outstanding openness for general-purpose applications, etc.

To make the best use of these features, read this User's Guide thoroughly to understand how to operate NEC Express5800/ft series.

About This User’s Guide

This User's Guide helps a user to properly setup and use the product. Consult this guide 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 Linux operating systems 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 operating system. 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 6-13 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

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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

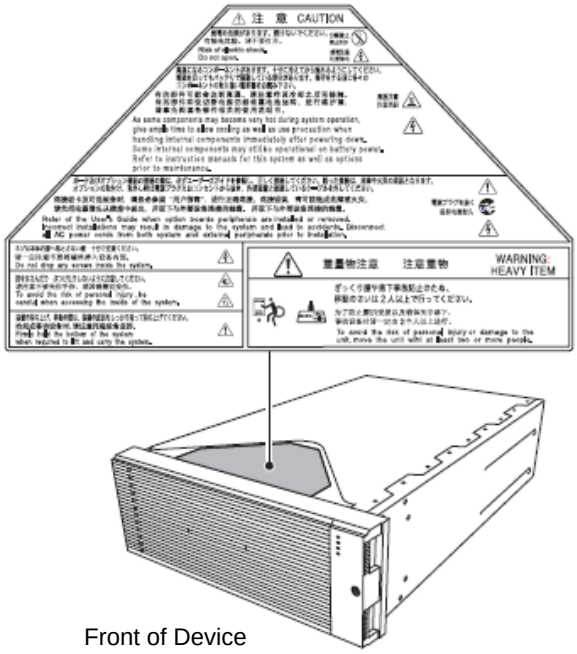
The following section describes necessary information to use the product properly and safely.

Warning Label

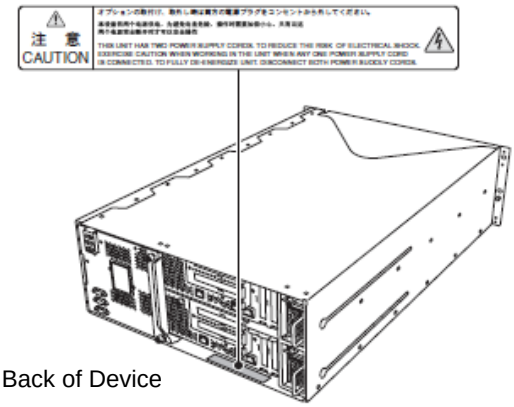
Warning label is placed in the certain part of the system so that the user stays alert to possible risks. Do not remove or damage the label.

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 equipment 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 equipments, 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.

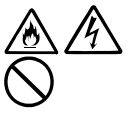
Do not continue to use the equipment if you detect smoke, odor, or noise.

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 the equipment.

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

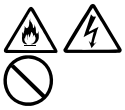
⚠ CAUTION

Do not plug the attached 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.

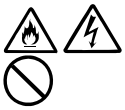
Do not plug multiple cords in a single outlet.

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.

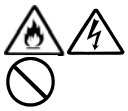
Do not use any AC cord other than the enclosed one. There is a risk of fire when the current exceeds the rating on the cord.
You also have to observe the following prohibitions about handling and connecting interface cables.

- 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 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 other than 3-prong plug outlet.

This equipment encloses a power cord with 3-prong plug that has the third pin (an earth pin). This plug can be used only on the outlet for the 3-prong.
There is a risk of an electric shock if you use other type of outlet.



Do not use the enclosed power cord to other devices or purposes.

The enclosed power cord is designated to connect to this equipment and use with the equipment. Never connect the cord to other devices or purposes.
There is a risk of a fire or 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:

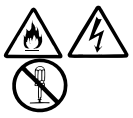
- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the equipment with loose cable connections.
- Do not use any damaged cable.

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.

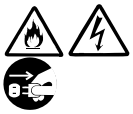
Do not look into the optical disk drive.

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 detach a lithium battery yourself.

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

When the equipment does not work correctly because of lithium battery life, contact your sales agent. Do not disassemble, replace or recharge the battery 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.

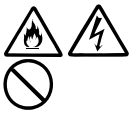
⚠ CAUTION

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.

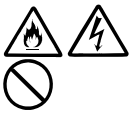
Firmly install all power cords, interface cables and/or boards. An incompletely installed component may cause a contact failure, resulting in fire and/or smoke.



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

Rack-mount Model (R320a-E4/R320a-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 a equipment out of the rack if it is unstable.

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

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

If you pull out two or more equipments, it may fall down to cause injuries. You can only pull out one equipment 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 a equipment from the rack during operation.

Do not pull out a 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. Keep the original disks as the master disks; use these copies in operation.
- Improper use of an included floppy disk or DVD may alter your system environment. If you find something unclear, stop using them and contact your sales agent.

Chapter 2

About Operating System

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

Red Hat Enterprise Linux 5.4 Server

For installing an operating system on NEC Express5800/ft series, follow “Chapter 4: Linux Setup” for setup.

About supported OS

The supported OS is Red Hat Enterprise Linux 5.4 Server. It is referred to as “Linux”.

About OS Reinstallation

To reinstall, Red Hat Enterprise Linux 5.4 Server, Red Hat Enterprise Linux 5.4 Server Supplementary and EXPRESSBUILDER DVD are required.

IMPORTANT:

- The NEC Express5800/ft series is a precision instrument. It is recommended to ask maintenance personnel to set up.
- When installing OS, refer to “Chapter 4: Linux Setup” to 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

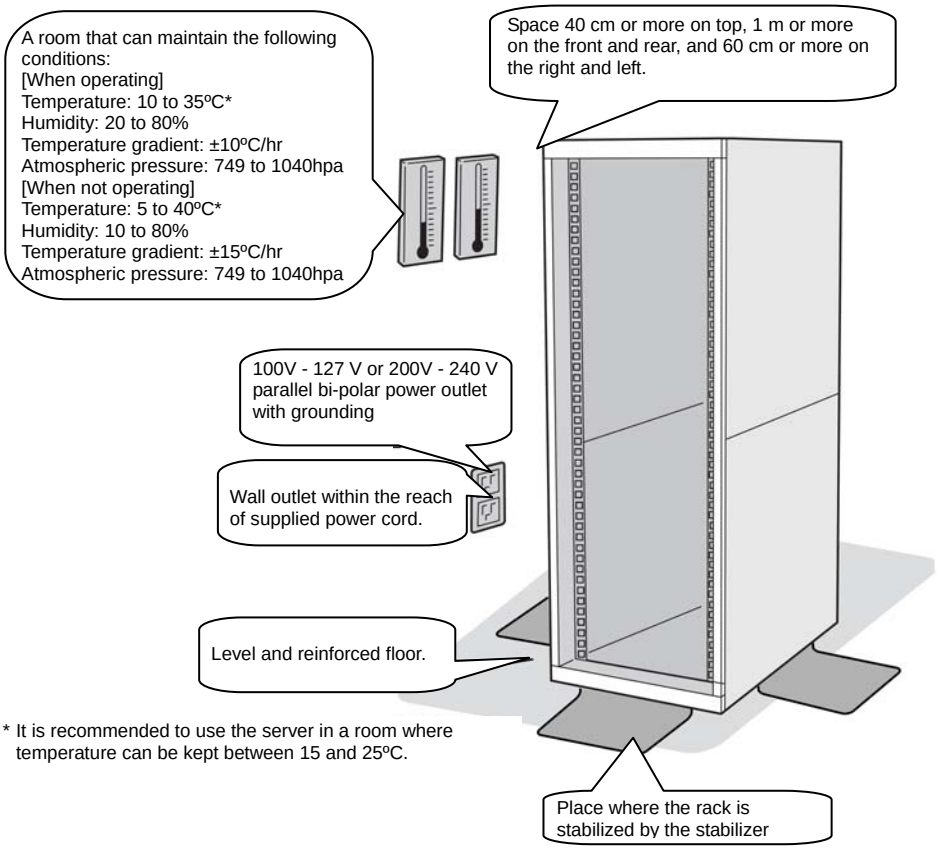
You can mount NEC Express5800/ft series on a rack that conforms to the EIA standards.

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.



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

⚠ 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 (sodium chloride, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, or ozone) is generated, or a place that is close to chemicals or exposed to chemicals.
- Place whose floor is covered with non-antistatic carpet.
- Place that may be subject to falling objects.
- Place that is close to some equipment that generates intense magnetic field (e.g., TV set, radio, broadcasting/communications antenna, power transmission wire, and electromagnetic crane). (If unavoidable, contact your sales agent to request proper shield construction.)
- Place where the power 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

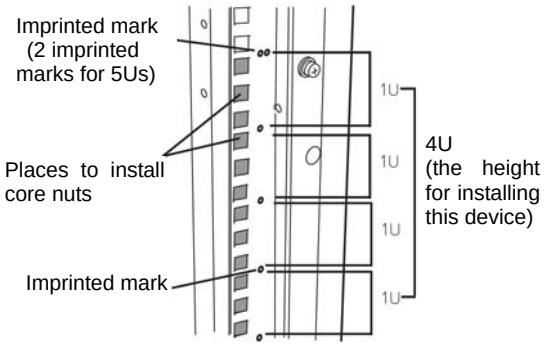
If you install several components or the ventilation isn't good inside the rack, the internal temperature may increase due to heat emitted from the components. When the operating temperatures of NEC Express5800/ft series (10 to 35°C) are exceeded, there is a risk of malfunction. You must take adequate 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.

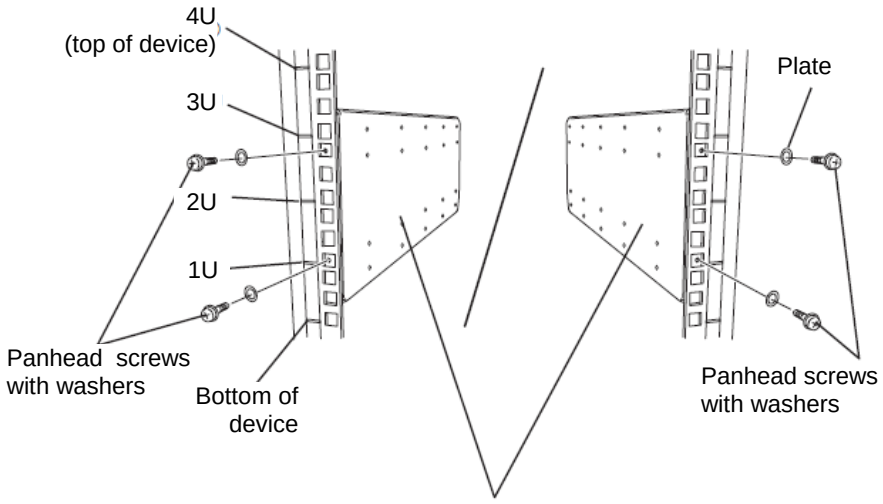
■The following are the required accessories. Check if you have them all.

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

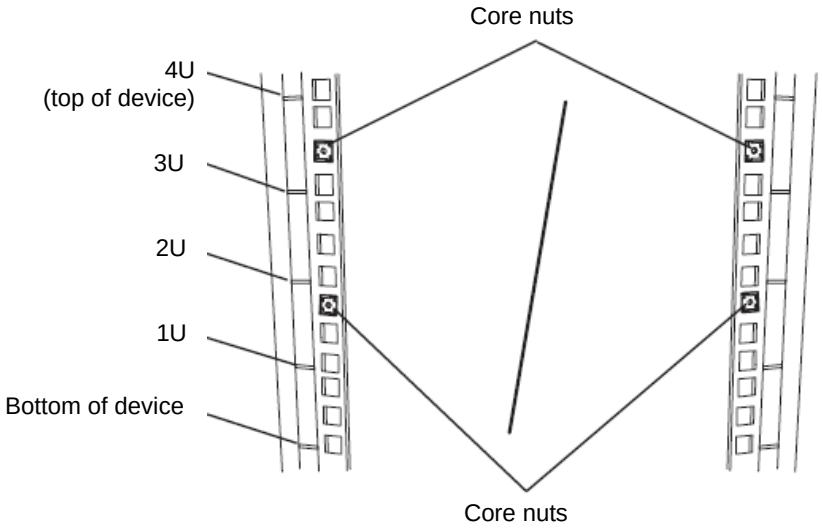
TIPS:

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

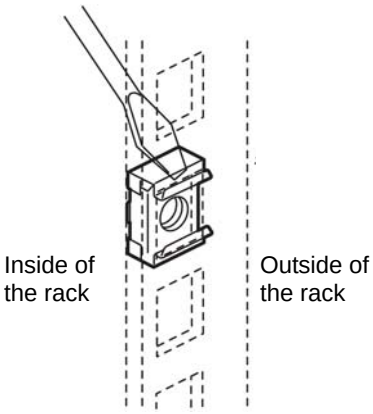
1. If the rack has front and rear doors, read the instruction that comes with the rack, and open them.
2. Install the brackets from the rear side of the rack. Install the brackets with its flat side facing inside. Place them with the round screws with washers that come with the device symmetrically (total: 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).

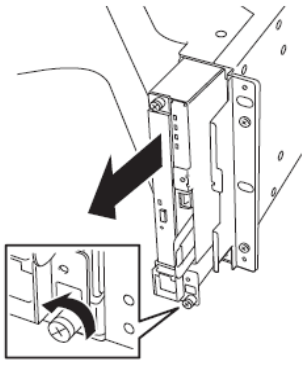


Fix a core nut from inside of the rack. Hook either of the clips of the core nut to a square hole of the rack, and hook the other clip to a hole by a flat-blade screwdriver.

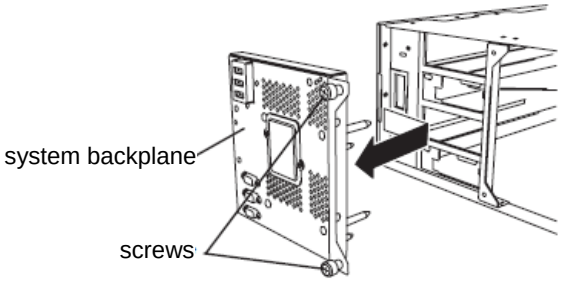


4. Remove two CPU/IO modules from the 4U chassis.

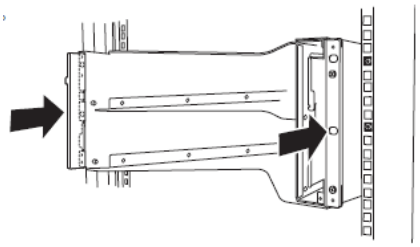
5. Remove the DVD drive unit from the 4U chassis.



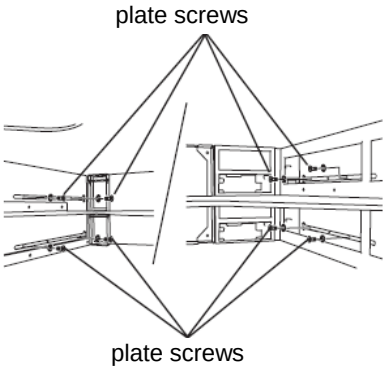
6. Remove the system Backplane from the 4U chassis.



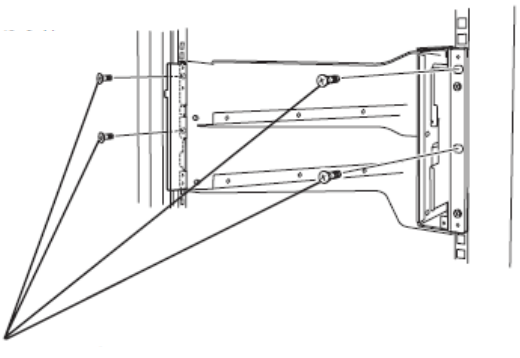
7. Insert the 4U chassis from the front side of the rack.



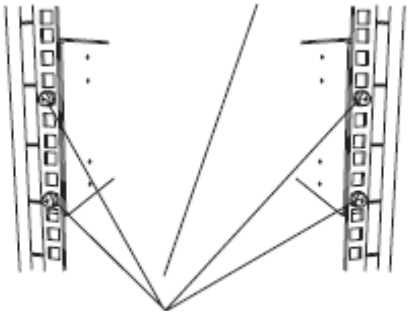
8. Tentatively fasten the plate screws attached to the device to the 4 places at the top and the bottom on front, and back sides (total: 8) from the rear.



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

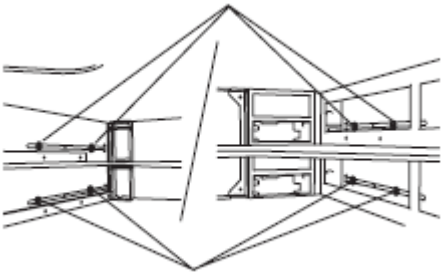
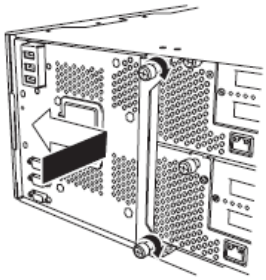


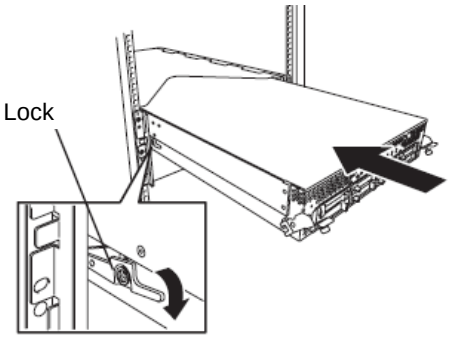
Plate screws on the side panels

11. Mount the System Backplane and fasten screws.

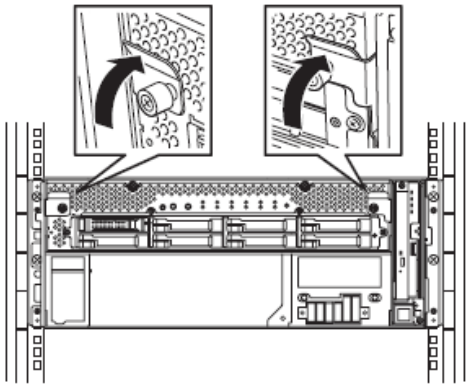


12. Mount the DVD drive unit and fasten screws.

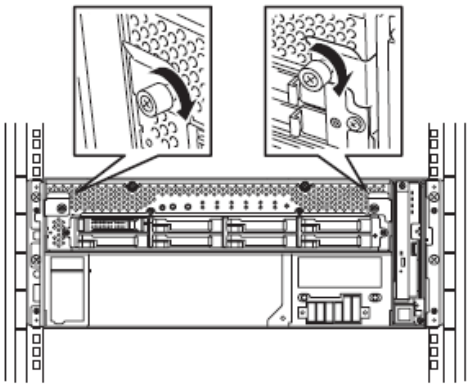
13. Mount the CPU/IO module 0.
Mount the module while lowering the lock so the module stacks on the way.



14. Fasten the levers on the left and right sides with screws.



15. Fasten the screws on the left and right side.



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:

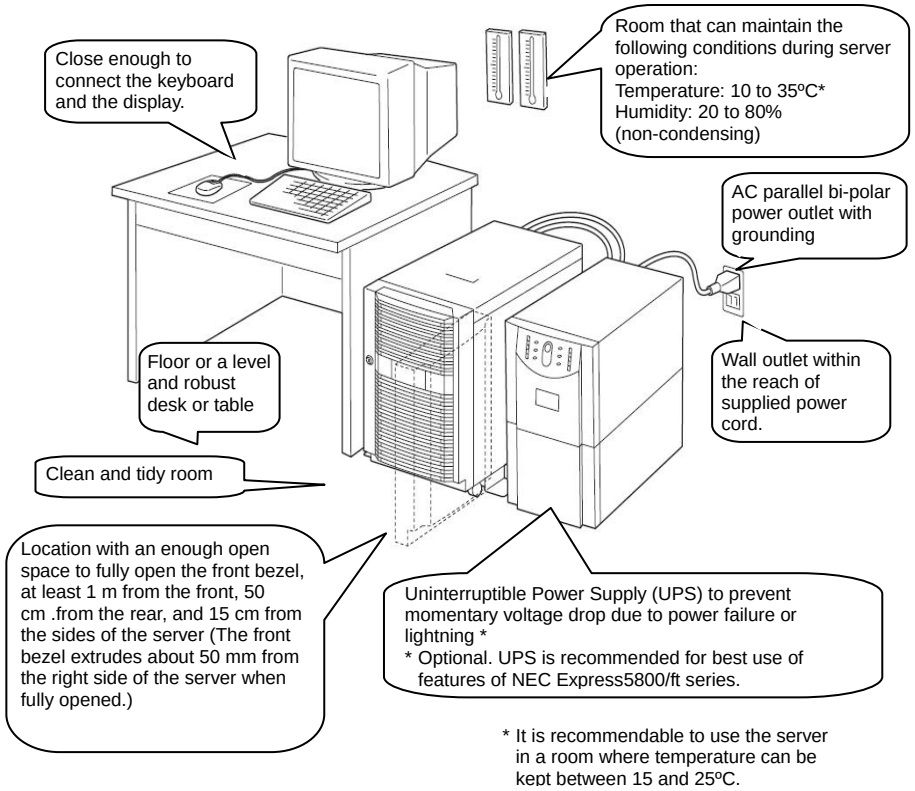
NEC Express5800/ft series is a precision instrument. You should ask maintenance personnel to install it.

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.



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

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

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

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

IMPORTANT:

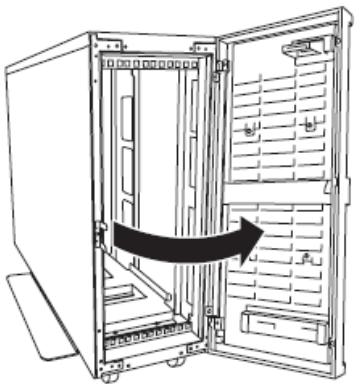
Do not hold the front bezel to lift it, or it may detach, fall down, and break the server.

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

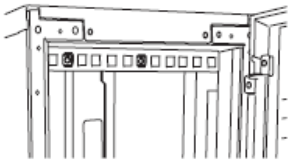
Follow the procedure below to install the devices to the tower conversion kit.

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

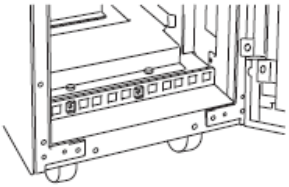


2. Confirm the spots to fix 4 core nuts on the front of the chassis.
See the figure on the right for where to fix the core nuts
(2 on the front top and 2 on the front bottom.)

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

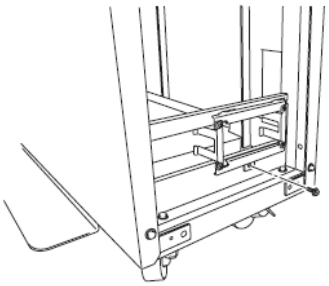


Tower conversion kit (on the front top)

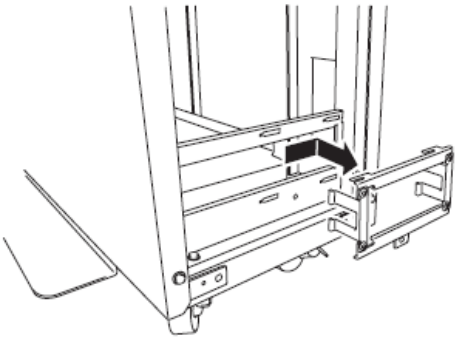


Tower conversion kit (on the front bottom)

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



4. Remove the AC lock bracket.

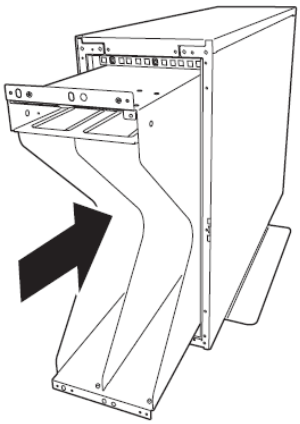


5. Remove two CPU/IO modules from the 4U chassis.

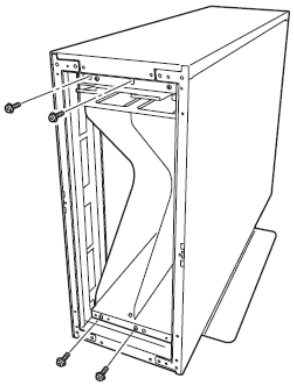
6. Remove the DVD drive unit from the 4U chassis.

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.

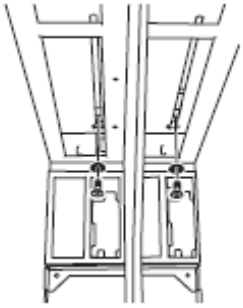


9. Fix each 2 places, top and bottom on the front side (total: 4) with 4 pan-head screws attached to the device.



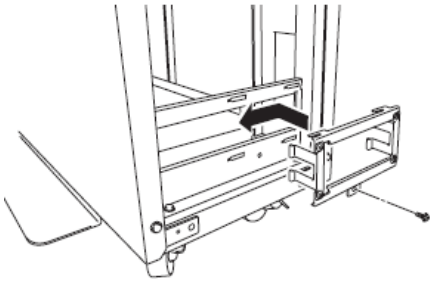
10. Fix the 4U chassis to the tower conversion kit with 4 plate screws.

Top (toward the backside)

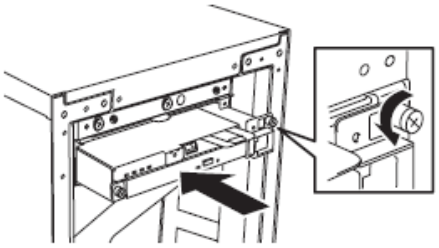


Bottom (toward the backside)

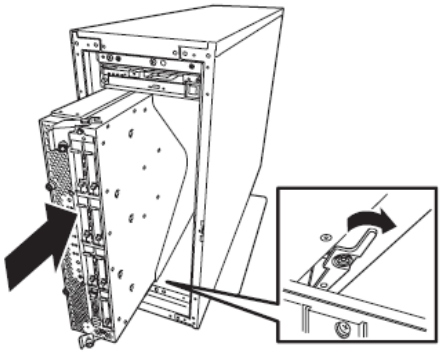
11. Install AC rock bracket and fasten the screws.



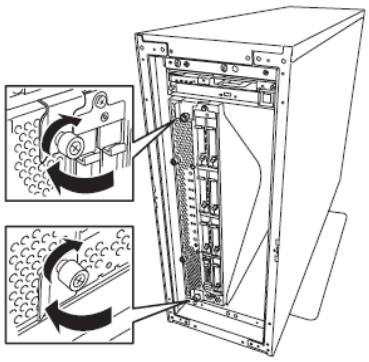
12. Insert the DVD drive unit to the 4U chassis and fasten with screws.



13. Slowly and carefully insert the CPU/IO module #0 into the 4U chassis. Keep pressing down the lock lever to keep it unlocked when the insertion is locked.



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.

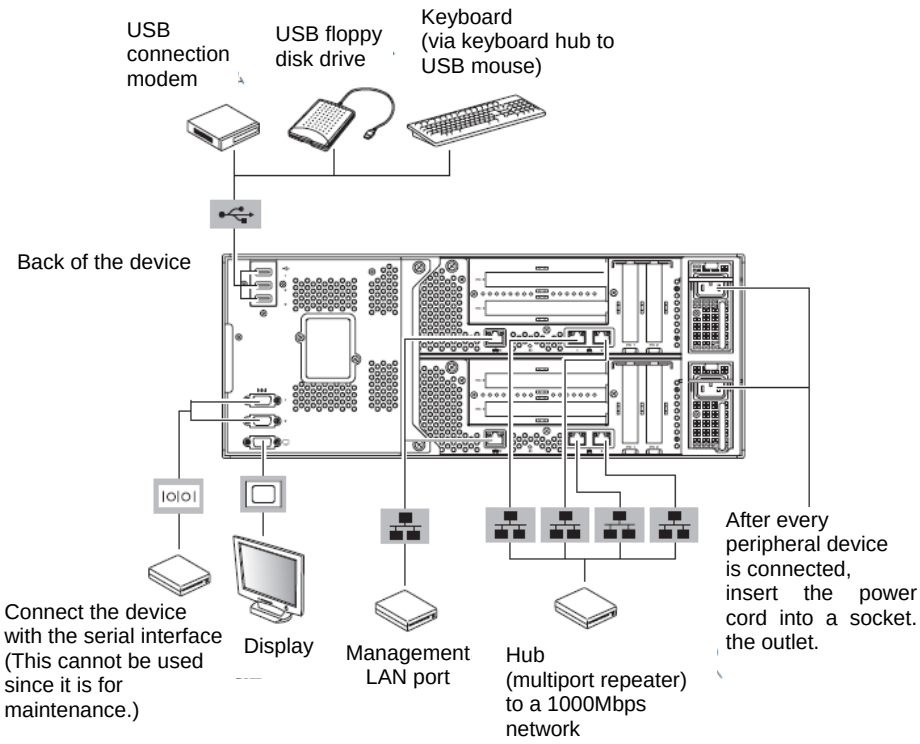
IMPORTANT:

- 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 total cable length of SCSI device connections is up to 6 m, including the internal SCSI cables.
- The serial port connectors are reserved for maintenance.
- Place the USB floppy disk drive on the server. Space of 1U is needed to put it on the server.

IMPORTANT:

Connection of optional devices

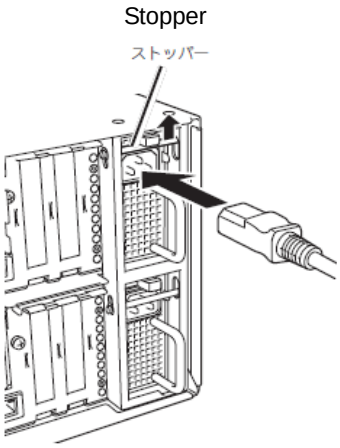
- In the case of standard configuration, you need to complete setup of the operating system before mounting optional PCI cards or hard disks that you purchased separately.
- If N8803-034 is mounted, be sure to connect cables to the FC array unit before going on to the next step.



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.

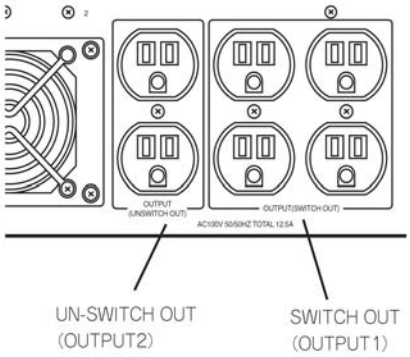
To connect the power cords from the server to an uninterruptible power supply (UPS), use service outlets on the rear of the UPS.

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.)

<Example>



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.

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

Linux Setup

This chapter describes procedures for configuring OS Boot Monitoring function, setting dual LAN configuration, setting dual disk configuration and so on.

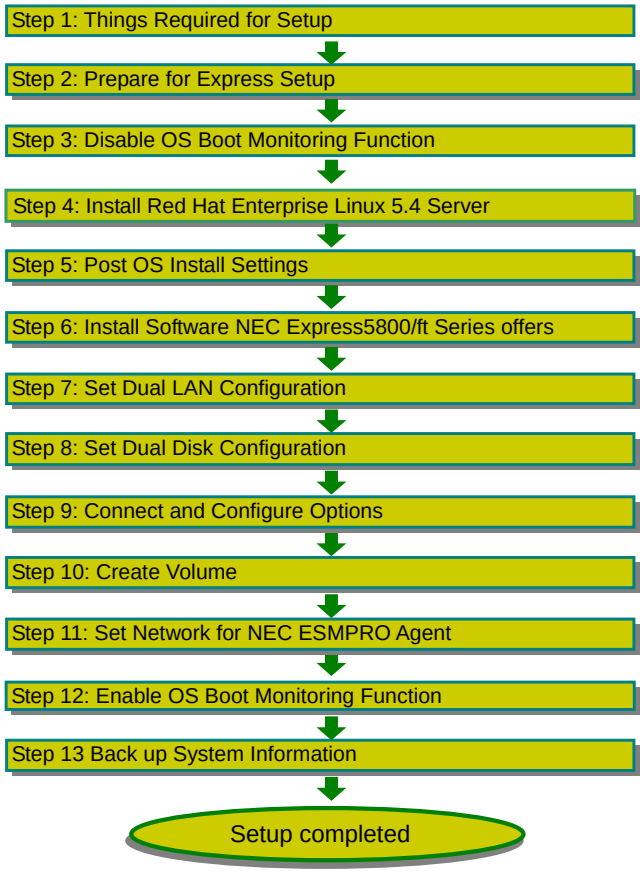
Before starting Setup

Read this section before starting setup.

Use Red Hat Enterprise Linux 5.4 Server and Red Hat Enterprise Linux 5.4 Server Supplementary for OS installation and the NEC EXPRESSBUILDER DVD for installation of the software provided by this device

SETUP FLOW

This flow chart illustrates the flow of the setup procedures for the NEC Express5800/R320a-E4/M4.



Step 1: Things Required for Setup

The following explains the setup procedure using the Express Setup program:

IMPORTANT:

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

You need the following to install Operating System:

- Red Hat Enterprise Linux 5.4 Server install DVD (EM64T)
- Red Hat Enterprise Linux 5.4 Server Supplementary DVD (EM64T)
- NEC EXPRESSBUILDER DVD
- User's Guide (Setup) (this manual)
- User's Guide

Step 2: Prepare for Express Setup

Before install LINUX server, be sure to do the following. If these preparations are not done, setup cannot be performed properly.

2-1: Prepare NEC Express5800/ft series

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

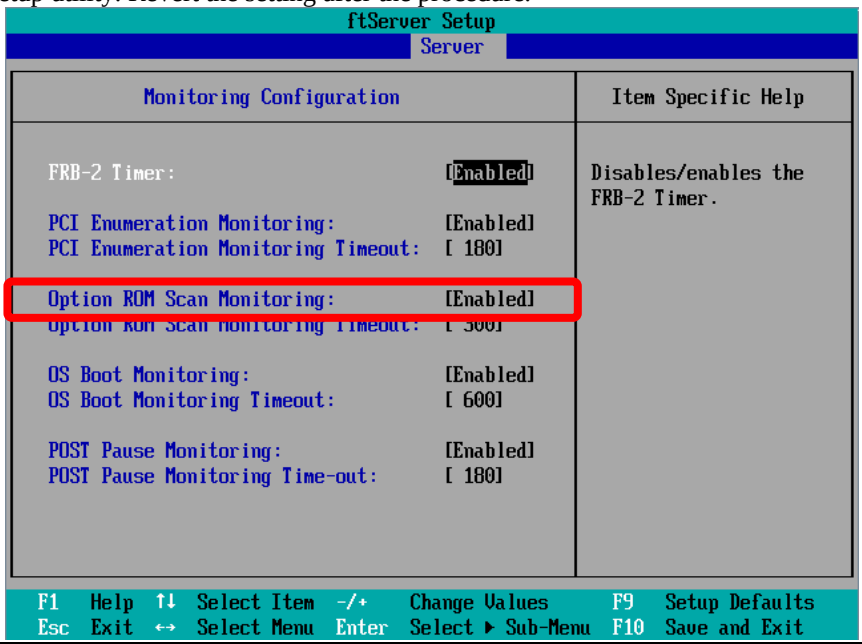
1. Prepare NEC Express5800/ft series.

   - Mount the modules for both systems.
   - Remove all LAN cables.
   - Remove SCSI- and SAS-connected devices such as a tape device from the connector.
   - Remove cables from the connectors attached to the Fibre Channel board.

IMPORTANT:

- You must perform OS installation on the server you actually use. Do not divert the HDD which was used for OS installation on a different server and do not use it as the system disk.

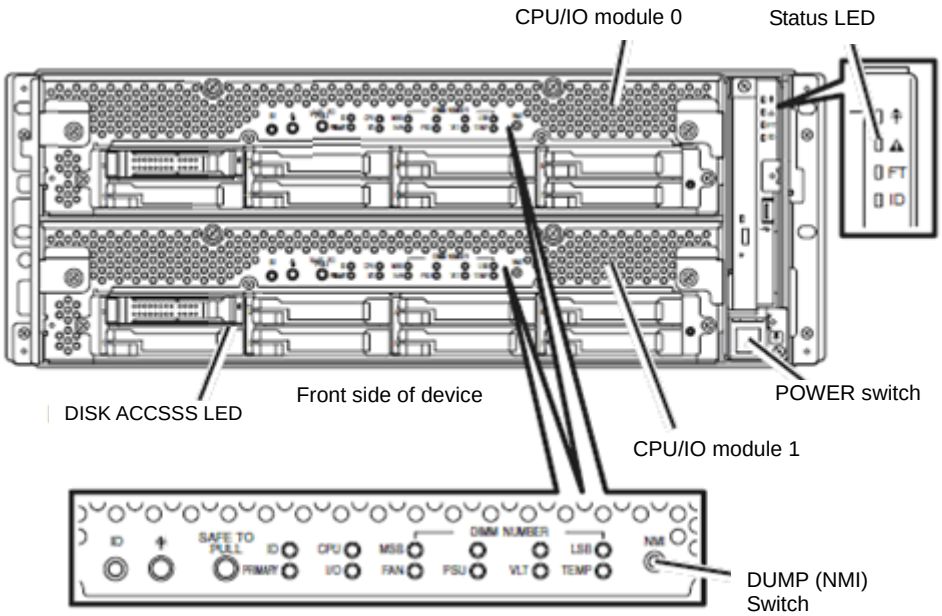
- If the HDD is not new, physically format it after changing [Option ROM Scan Monitoring] as [Disabled] on [Server] – [Monitoring Configuration] on the BIOS setup utility. Revert the setting after the procedure.

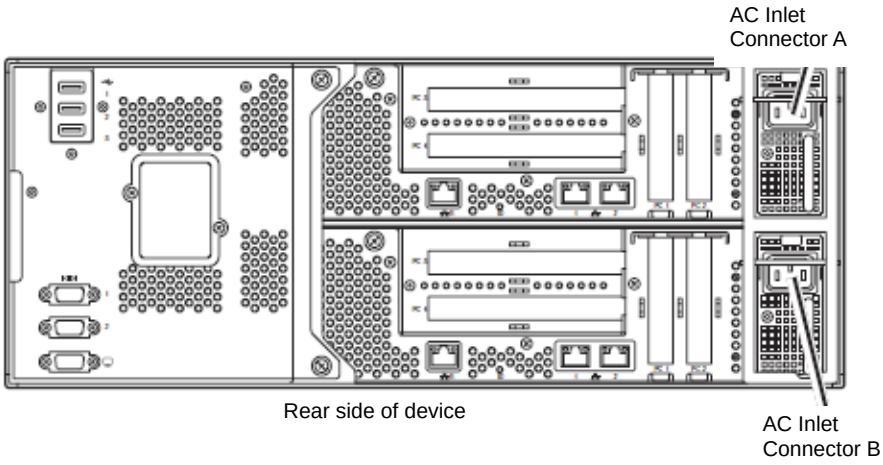


- As for physical format, refer to “SAS BIOS – SAS Configuration Utility –” in Chapter 4, “System Configuration” in the separate volume of the User’s Guide, and perform Format Disk with Disk Utilities.

  For how to configure the settings, see “System BIOS – SETUP –” in Chapter 4 “System Configuration” in the separate volume of the User’s Guide.

2. Prepare the installation from the CPU/IO module 0. The location of the parts required for operation and checking are shown below:





When the AC power is on (The power cords are plugged into the wall outlet)

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

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

CHECK:

Wait more than five seconds before you plug again the power cord when you unplugged it.

(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: Disable OS Boot Monitoring Function

Check whether the power is ON and make settings for properly performing setup for later on.
This server has a function to monitor the main unit at startup. (Enabled in the configuration at shipment)
When installing/reinstalling the operating system, this monitoring function needs to be disabled; otherwise the OS may not install properly. Follow the steps in this section and make proper settings.

IMPORTANT:

If you skip the settings described here, the system will be forcefully restarted while OS setup screen is shown and the setup will be unsuccessful. BIOS may repeat OS setup in an invalid manner. In this case, you will need to restart the setup procedures from the beginning.

TIPS:

For details of operations for BIOS Setup Utility and parameters, see the separate volume of User's Guide.

Procedure for Changing BIOS settings

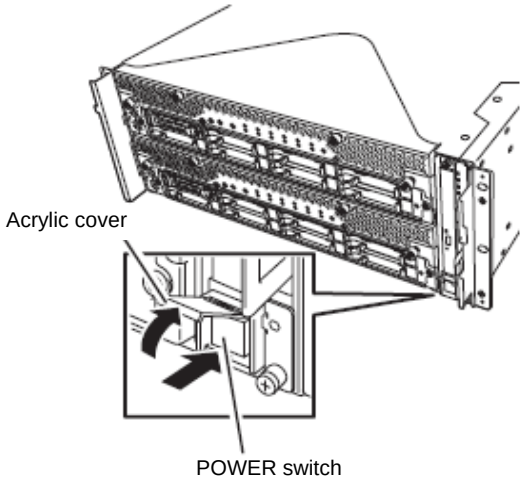
1. Turn on the display and the peripheral equipment connected to the NEC Express5800/ft series.

   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 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 performs a power-on self test (POST) to check itself. For details, see the separate volume of User’s Guide.

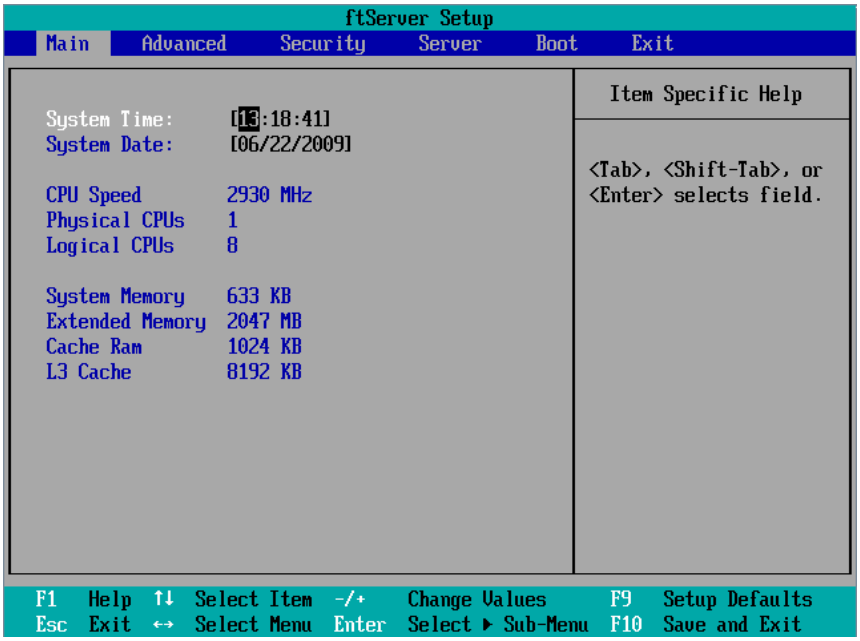
CHECK:

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**.

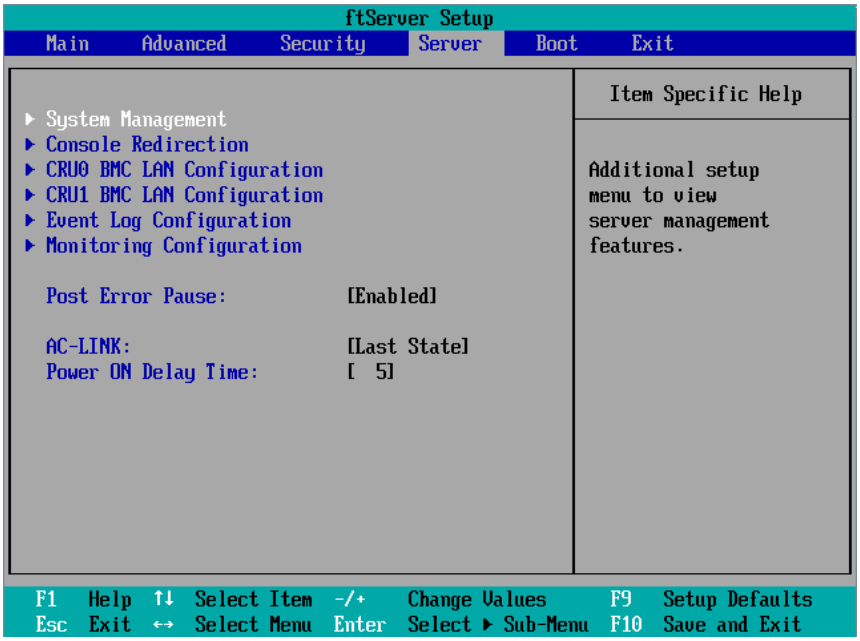
The BIOS Setup Utility “SETUP” starts and the Main menu is displayed on the screen.

Example:



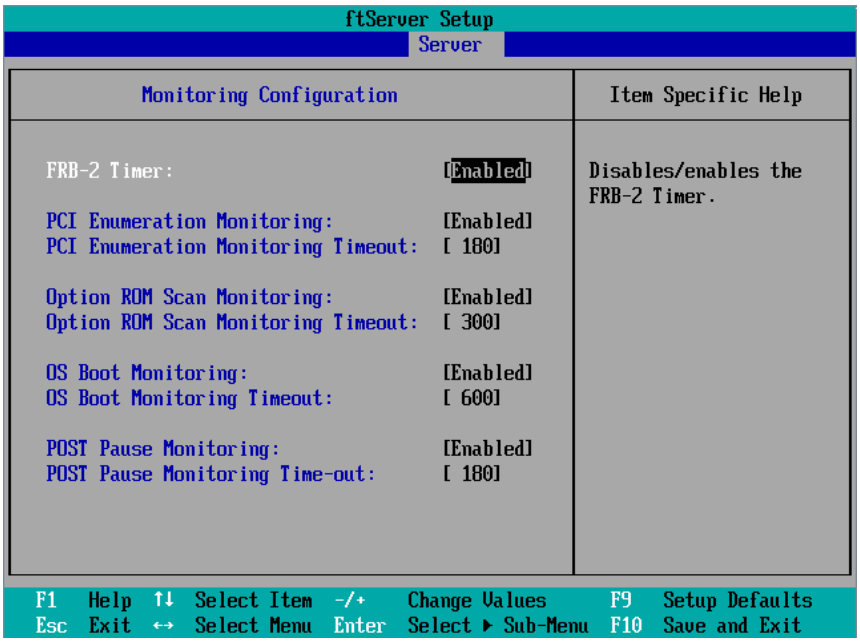
5. Move the cursor onto “Server” and select “Server.”

The Server menu will be displayed:



6. Move the cursor onto “Monitoring Configuration” and press **Enter**.

The Monitoring Configuration submenu appears:

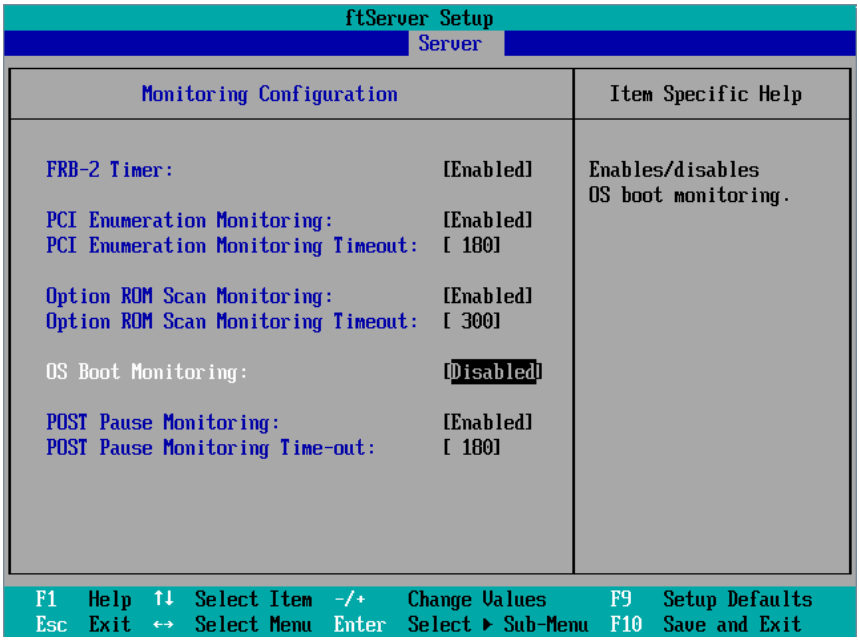


7. Move the cursor onto “OS Boot Monitoring” and press **Enter**.

   Parameters will be displayed.

8. Among the parameters, choose “Disabled” and press **Enter**.

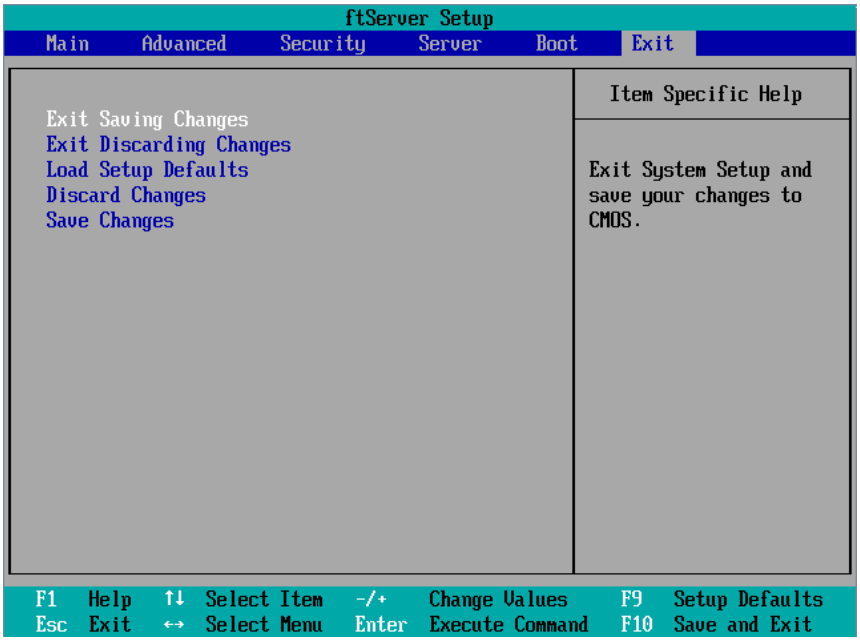
   The current display of the configuration for OS Boot Monitoring will be changed to “Disabled.”



IMPORTANT:

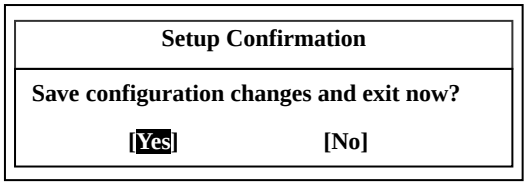
If you physically format the HDD, change [Option ROM Scan Monitoring] as [Disabled]

Press the **Esc** key to go back to the Server menu, and then move the cursor and select “Exit” to display the Exit menu.



9. Move the cursor onto “Exit Saving Changes” and press **Enter**.

The confirmation window will appear.



10. Select “Yes” and press **Enter**.

The configuration data is saved, SETUP terminated, and the system rebooted. This is the end of steps for switching OS Boot Monitoring function.

TIPS:

After the procedure above is completed, power off this server to prepare for installation. Then, referring to 4-14“Linux 5.4 Server.”

Step 4: Install Red Hat Enterprise Linux 5.4 Server

In NEC Express5800/ft series, all the internal disks configure RAID1 by software. RAID consists of pairs of hard disk drives, which are same devise number of module0 and module1 as CPU/IO module 0 – Slot 1 and CPU/IO module 1.

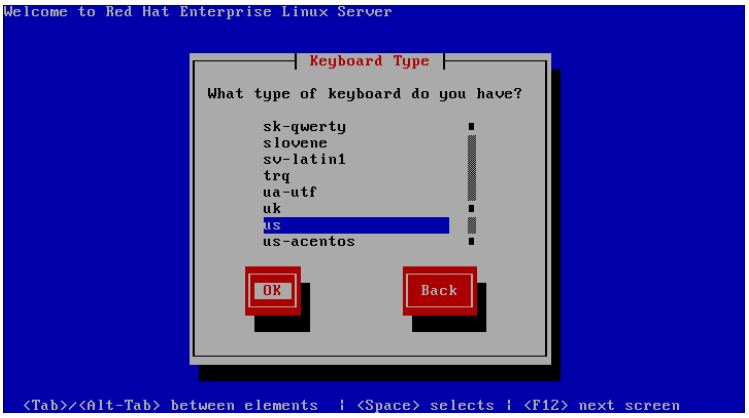
Follow the steps below to install Red Hat Enterprise Linux 5.4 Server.

1. Power on NEC Express5800/ft series.
2. Insert the Red Hat Enterprise Linux 5.4 Server install DVD-ROM (EM64T) into the optical disk drive.
3. Reset (i.e. press CTRL+ALT+DELETE) or power off/on server after setting the DVD-ROM.

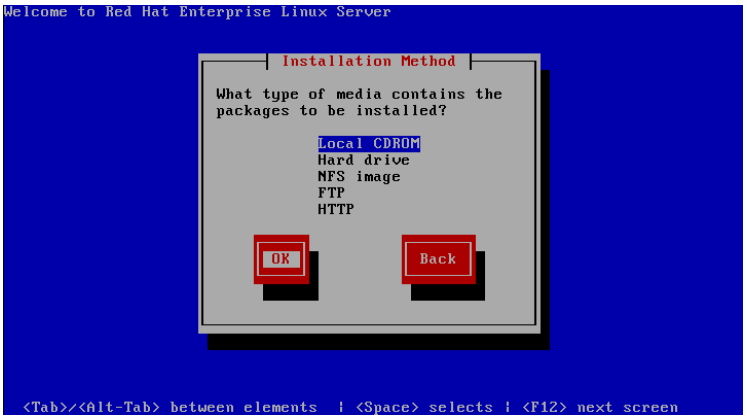
   Main menu appears after the restart.
   Press Enter and start installing with the graphical mode..

Language selection screen appears.
Choose the language to use and select [OK] to proceed.
(Hereafter, it is assumed that English is selected and the procedures are explained accordingly.)

Select the appropriate keyboard.
Click [OK] to proceed.



Select [Local CDROM] to proceed.



The message appears and prompts to confirm the install disk (“To begin testing the CD …”).

TIPS: If you need to check the install disk, click [OK].

Select [Skip].

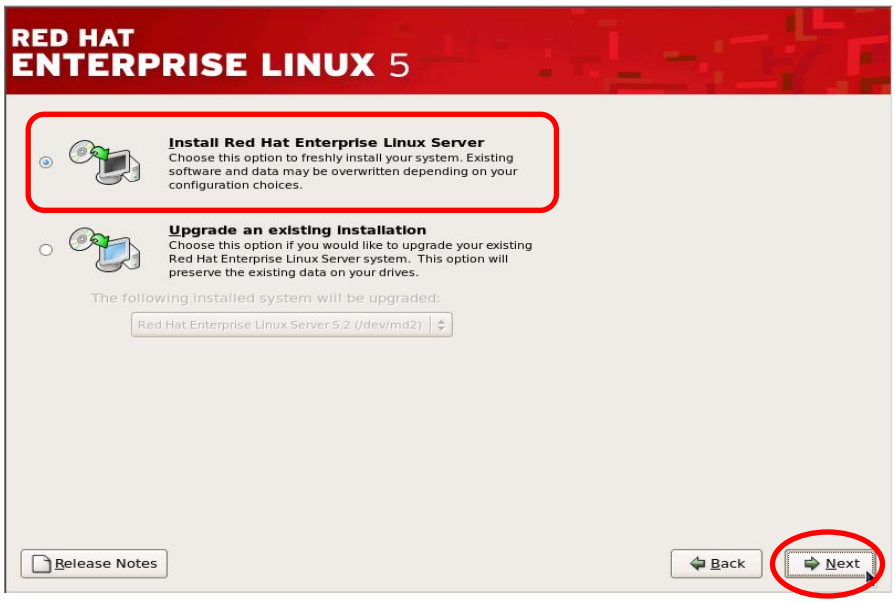
The installer starts with the graphical mode.
Select [NEXT] to proceed.

Enter the Installation Number and click [OK] to proceed.
If you do not have the Installation Number, select [Skip entering Installation Number] and click [OK] to proceed.

The warning message on the right may appear. If you have no problem with initializing the HDD, click [Yes] to proceed.

TIPS: This screen may not appear according to the system configuration at the install.

Select [Install Red Hat Enterprise Linux Server], and click [Next] to proceed.



Select [Create custom layout] as it is necessary to configure partitions for Express5800/ft server. Click [Next] to proceed.

CHECK: Device names change depending on the number of hard disk drives to be mounted. Check the device name of each hard disk drive.

	Device name							
Slot number\disk number	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**
CPU/IO module 0 – Slot 0	sda	sda	sda	sda	sda	sda	sda	sda
CPU/IO module 0 – Slot 1	-	sdb	sdb	sdb	sdb	sdb	sdb	sdb
CPU/IO module 0 – Slot 2	-	-	sdc	sdc	sdc	sdc	sdc	sde
CPU/IO module 0 – Slot 3	-	-	-	sdd	sdd	sdd	sdd	sdd
CPU/IO module 0 – Slot 4	-	-	-	-	sde	sde	sde	sde
CPU/IO module 0 – Slot 5	-	-	-	-	-	sdf	sdf	sdf
CPU/IO module 0 – Slot 6	-	-	-	-	-	-	sdg	sdg
CPU/IO module 0 – Slot 7	-	-	-	-	-	-	-	sdh
CPU/IO module 1 – Slot 0	sdb	sdc	sdd	sde	sdf	sdg	sdh	sdi
CPU/IO module 1 – Slot 1	-	sdd	sde	sdf	sdg	sdh	sdi	sdj
CPU/IO module 1 – Slot 2	-	-	sdf	sdg	sdh	sdi	sdj	sdk
CPU/IO module 1 – Slot 3	-	-	-	sdh	sdi	sdj	sdk	sdl
CPU/IO module 1 – Slot 4	-	-	-	-	sdj	sdk	sdl	sdm
CPU/IO module 1 – Slot 5	-	-	-	-	-	sdl	sdm	sdn
CPU/IO module 1 – Slot 6	-	-	-	-	-	-	sdn	sdo
CPU/IO module 1 – Slot 7	-	-	-	-	-	-	-	sdp

Mount Point	File System Type	RAID	Size
Pattern 1 [Number of disks=2 (put Slot0 of CPU/IO module 0 and Slot0 of CPU/IO module 1)]			
/boot	ext3	md0(RAID Level=1,Device=sda1,sdb1)	256MB*1
/var/crash	ext3	md1(RAID Level=1,Device=sda2,sdb2)	32 to 96GB*2
/	ext3	md2(RAID Level=1,Device=sda3,sdb3)	15GB
swap	swap	md3(RAID Level=1,Device=sda5,sdb5)	4 to 96GB *3
(Unused)	-	-	All rests
Pattern 2 [Number of disks=2 (put Slot0 of CPU/IO module 0 and Slot0 of CPU/IO module 1)]			
/boot	ext3	md0(RAID Level=1,Device=sda1,sdb1)	256MB*1
/var/crash	ext3	md1(RAID Level=1,Device=sda2,sdb2)	32 to 96GB*2
/	ext3	md2(RAID Level=1,Device=sda3,sdb3)	15GB
swap	swap	md3(RAID Level=1,Device=sda5,sdb5)	4 to 96GB *3
/home	ext3	md4(RAID Level=1,Device=sda6,sdb6)	All rests
Pattern 3 [Number of disks=2 (put Slot0 of CPU/IO module 0 and Slot0 of CPU/IO module 1)]			
/boot	ext3	md0(RAID Level=1,Device=sda1,sdb1)	256MB*1
/var/crash	ext3	md1(RAID Level=1,Device=sda2,sdb2)	32 to 96GB*2
/	ext3	md2(RAID Level=1,Device=sda3,sdb3)	All rests
swap	swap	md3(RAID Level=1,Device=sda5,sdb5)	4 to 96GB *3

IMPORTANT:

<Partition Layout>

Create the partition layout in your system in reference to the following partition configurations.

Partition Configuration

[Number of disks: 2(Mount CPU/IO module 0 Slot 0 and CPU/IO module Slot 0)]

*1 We recommend you to save 200 to 300MB size partition as described above because the latest kernel security and bug fixed should be additionally installed on the /boot partition (larger than 100MB) to use the system continuously.

*2 Save 32GB larger memory than the one implemented on NEC Express5800/ft Series. If the mounted memory is larger than 32GB, save same value as implemented memory value.

*3 Calculate swap partition size by following table. If mounted memory value is large enough, there is the case that swap is not used almost. Save an appropriate size depending on the purpose and the load of the system. You can check the swap usage by free command while running the system. You need to consider expanding the swap partition or adding memory when the swap usage remains high all the time.

Memory value	Swap partition size
Larger than 2GB, and less than 32GB	Mounted memory value + 2GB
Larger than 32GB	Mounted memory value

- If disk value is not enough comparing to memory value, there is the case of not saving swap partition size by above table. And if swap partition size is too large, other partition is compressed or system performance deteriorations. Above table is used only as a guide.
- The disk pair of software RAID must be configured in combination of corresponding slot numbers. The corresponding slot numbers are as follows.
  See the above CHECK column for each device name.

  Slot 0 of CPU/IO module 0 and slot 0 of CPU/IO module 1

  Slot 1 of CPU/IO module 0 and slot 1 of CPU/IO module 1

  Slot 2 of CPU/IO module 0 and slot 2 of CPU/IO module 1

  Slot 3 of CPU/IO module 0 and slot 3 of CPU/IO module 1

  Slot 4 of CPU/IO module 0 and slot 4 of CPU/IO module 1

  Slot 5 of CPU/IO module 0 and slot 5 of CPU/IO module 1

  Slot 6 of CPU/IO module 0 and slot 6 of CPU/IO module 1

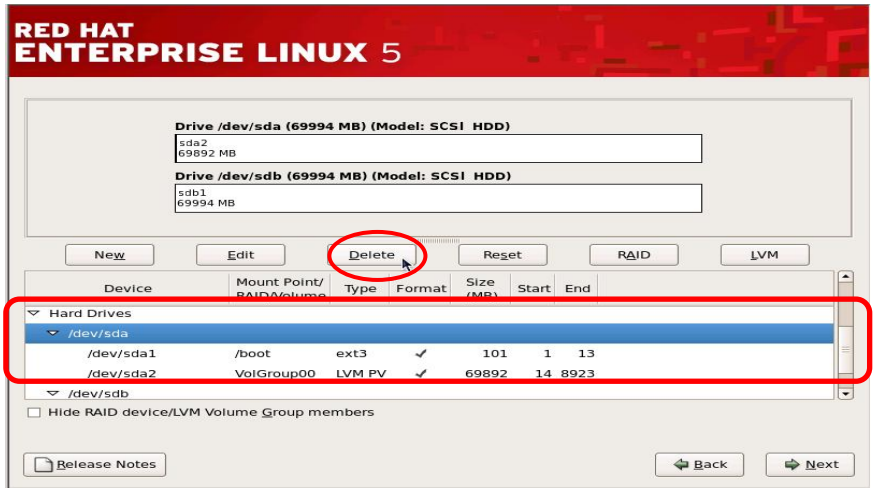
  Slot 7 of CPU/IO module 0 and slot 7 of CPU/IO module 1

- Configure all partitions (including a swap partition) with software RAID (LEVEL=1, number of disks=2, number of spare=0).
- Ensure to create /var/crash partition, as ft Server Control Software requires exclusive one for the dump.

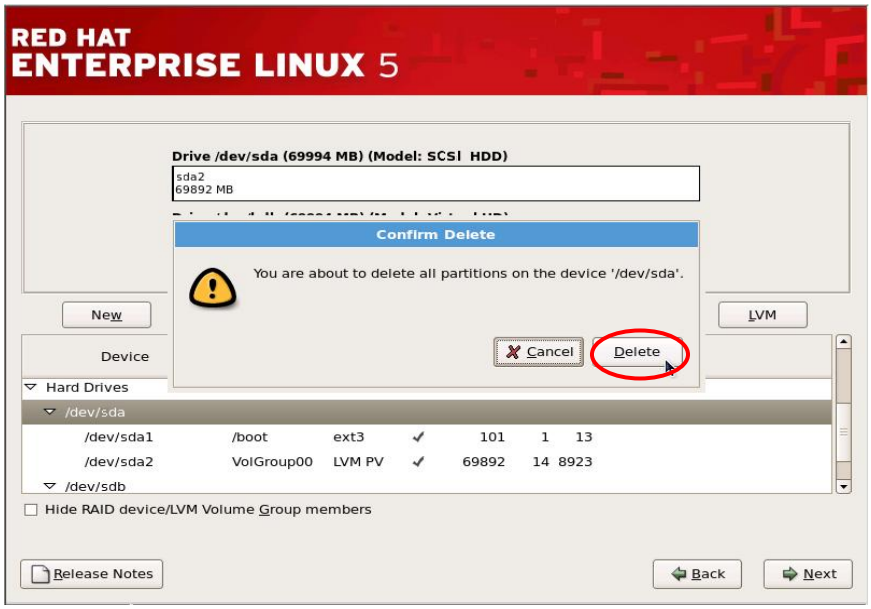
IMPORTANT:

Delete all the partition information of devices, if any remains.
Proceed to “Creating RAID Devices” if there is no device information on the partitions (formatted disk).

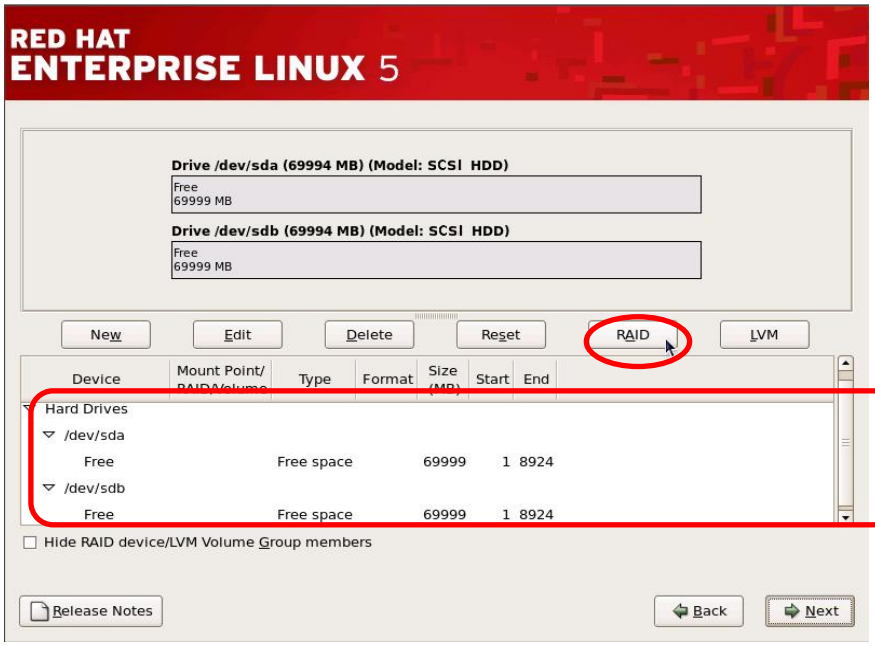
■ Deleting the partition information.
Select the device to delete and click [Delete].



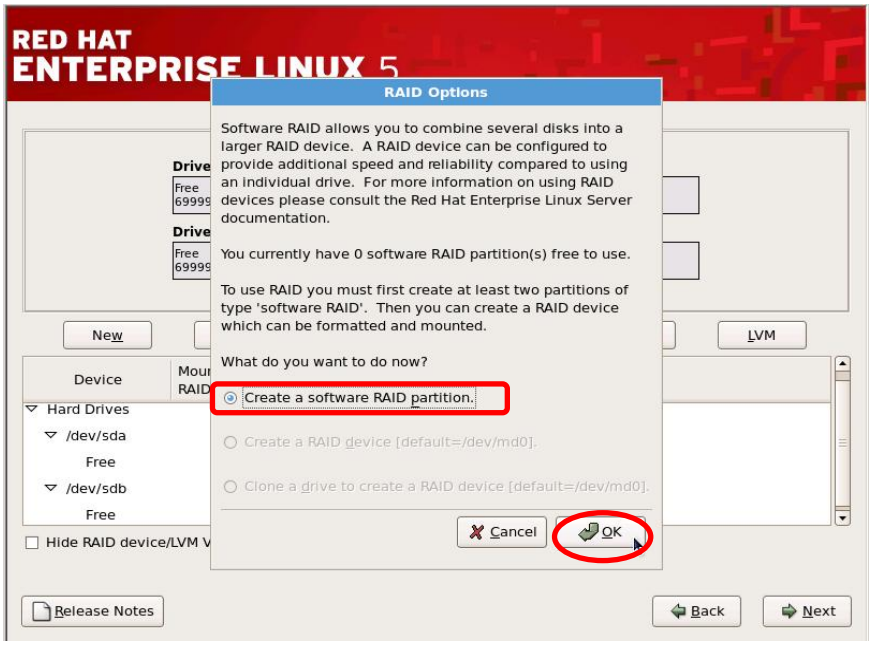
The message appears and prompts to confirm the deletion of the selected device.
Click [Delete] to delete.
If there is any remaining partition information on other devices, follow the same step to delete.


RED HAT
ENTERPRISE LINUX 5
Drive /dev/sda (69994 MB) (Model: SCSI HDD)
sda2
69892 MB
Confirm Delete
You are about to delete all partitions on the device '/dev/sda'.
Cancel
Delete
New
LVM
Device
Hard Drives
/dev/sda
/dev/sda1 /boot ext3 101 1 13
/dev/sda2 VolGroup00 LVM PV 69892 14 8923
/dev/sdb
Hide RAID device/LVM Volume Group members
Release Notes
Back
Next

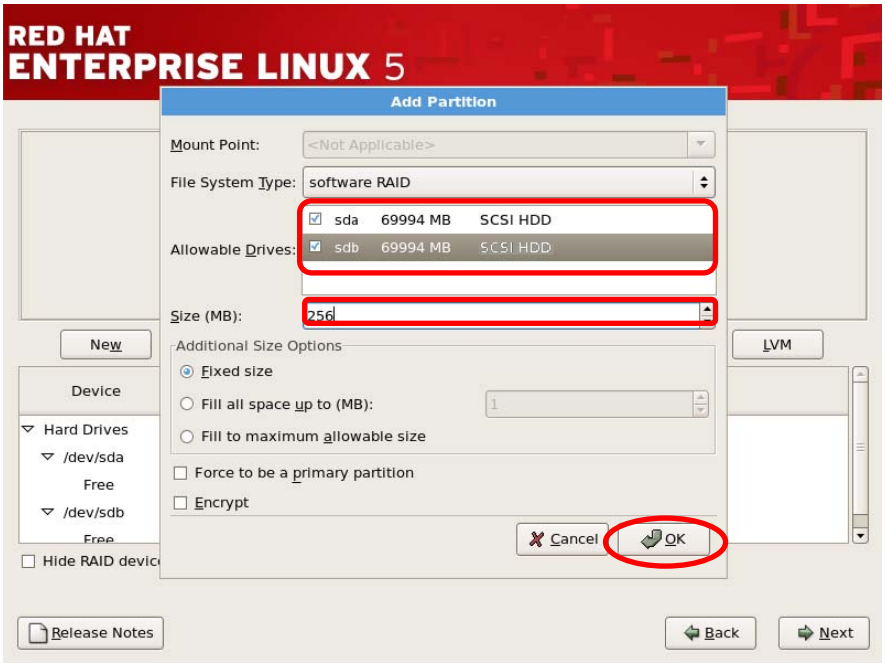
■ Creating RAID device (md device)
Click [RAID].



Select [Create a software RAID partition].
Click [OK] to proceed.

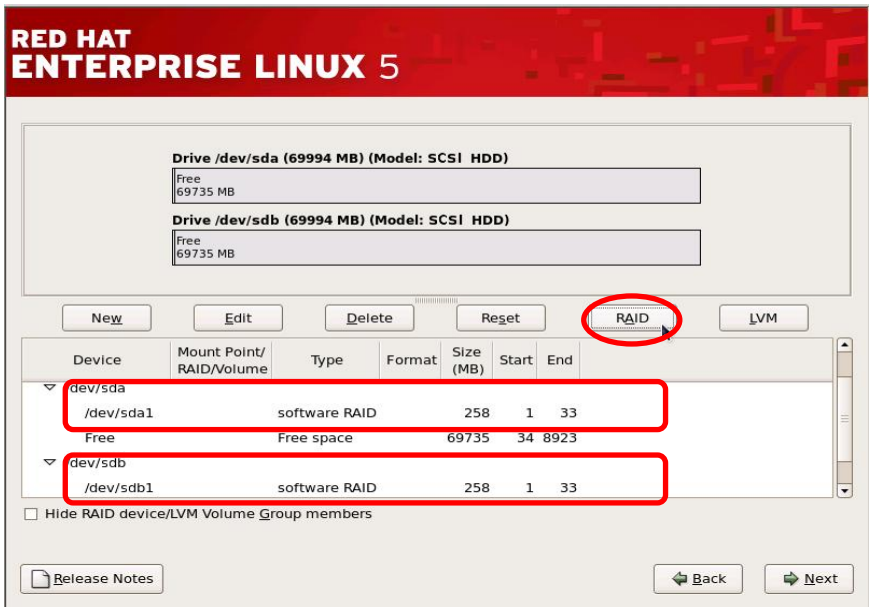


Select one drive to use and enter the volume of it.
Click [OK] to add a partition.

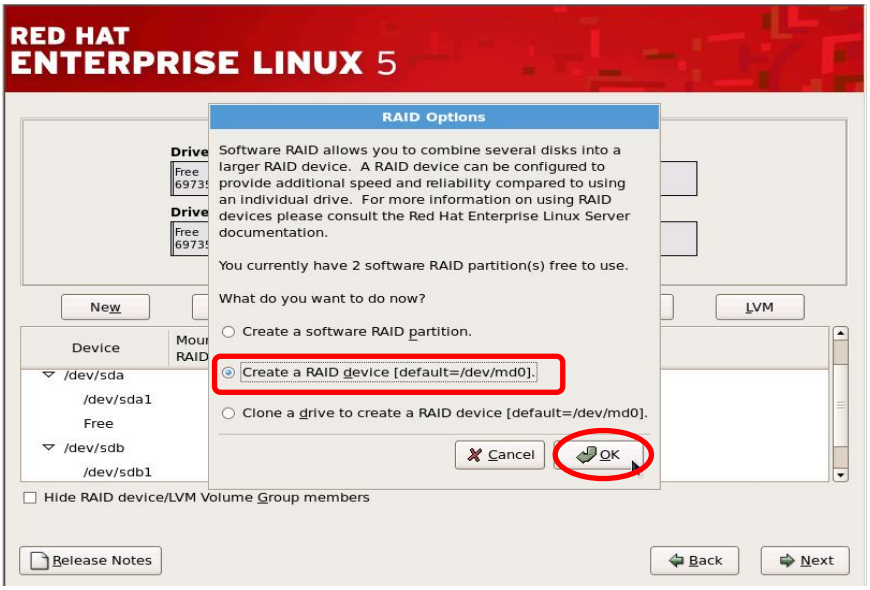


Repeat the same steps to add another partition on the other drive.
Ensure to set the identical size as the other partition that is already added

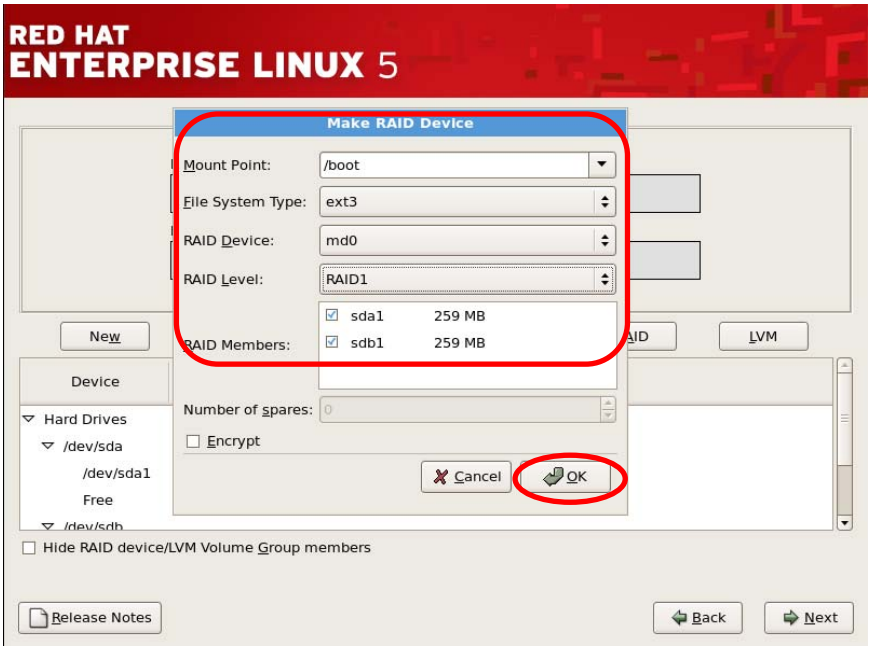
Verify that two software RAID partitions are now created.
Click [RAID] to proceed to create RAID device.



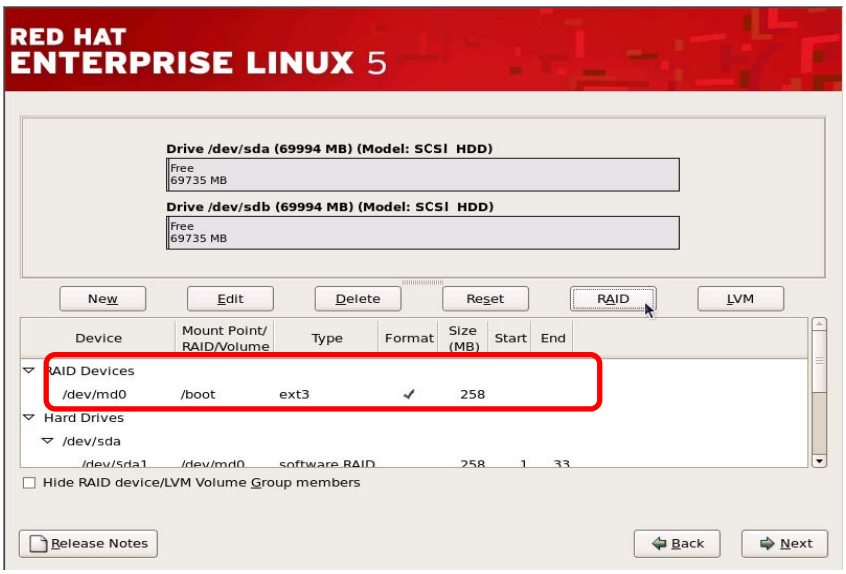
Select [Create a RAID device [default=/dev/md0].].
Click [OK] to proceed.



Configure mount point and file system type. Select “swap” if it is a swap partition.
Set the [RAID Level] as “RAID1”.
Confirm [RAID Members].
*[Number of spares] is disabled. (or enter “0”.)
Verify the setting items. Click [OK] to create RAID device if there is no problem.



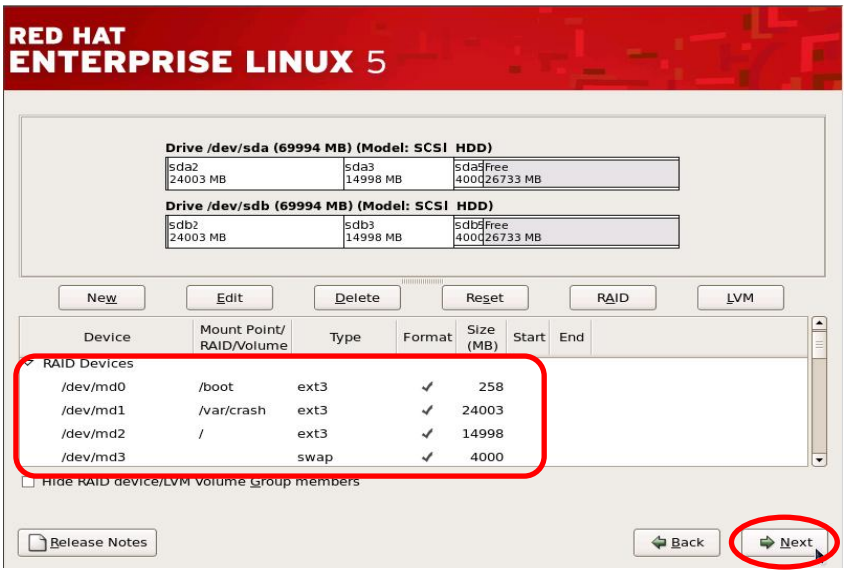
Verify that RAID device is created.



Create the necessary RAID devices with the same steps.

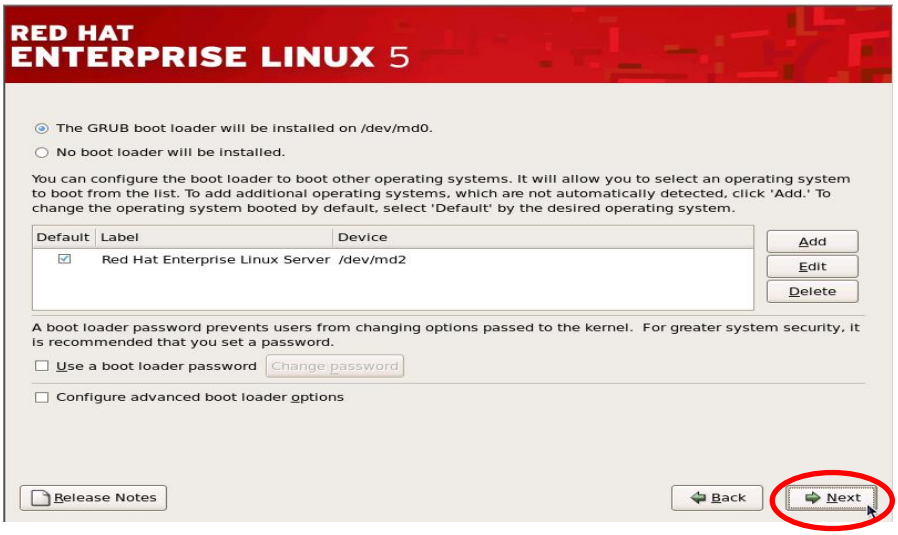
Verify that all necessary partitions are created.
If the necessary partitions are not created at this point, create them with the above steps.

Click [Next] to proceed if there is no problem.



No configuration of boot loader is necessary.
Do not change the device to install the boot loader.
If it is necessary, configure the boot loader password.

Click [Next] to proceed.

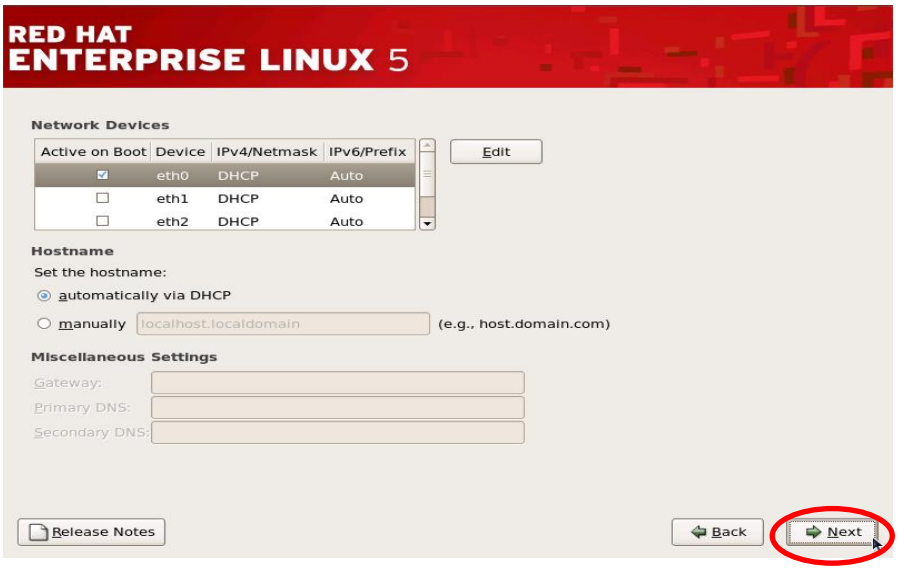


About boot loader:

- The only boot loader available for Express5800/FT servers is Grub.

No network configuration is necessary.
After completing the ft Server Control Software installation, refer to "**Step 7 Dual LAN Configuration**" and configure network settings.

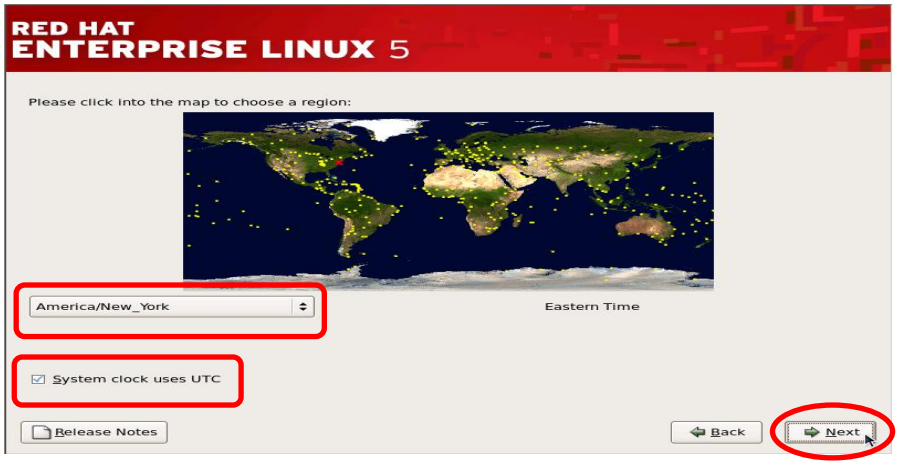
Click [Next] to proceed.



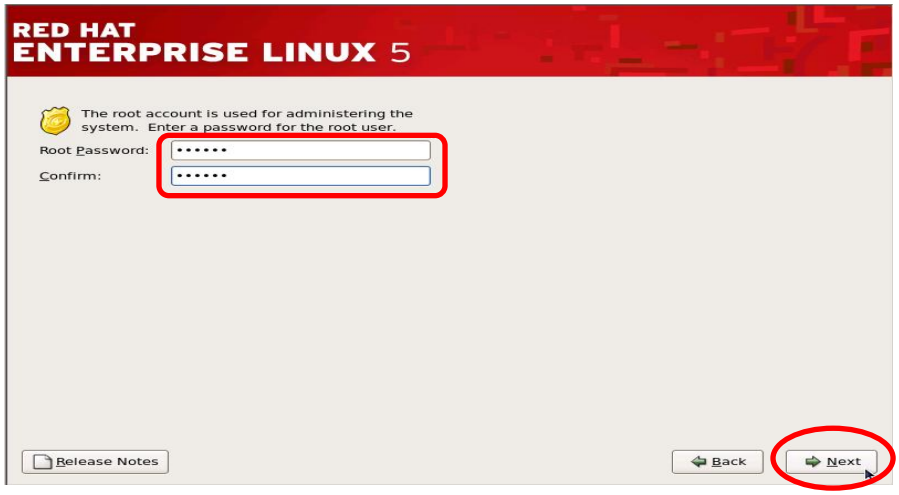
Configure time zone if necessary.
Select [System clock uses UTC] and click [Next] to proceed.

TIPS: The time zone is set as [America/New_York] in this procedure.

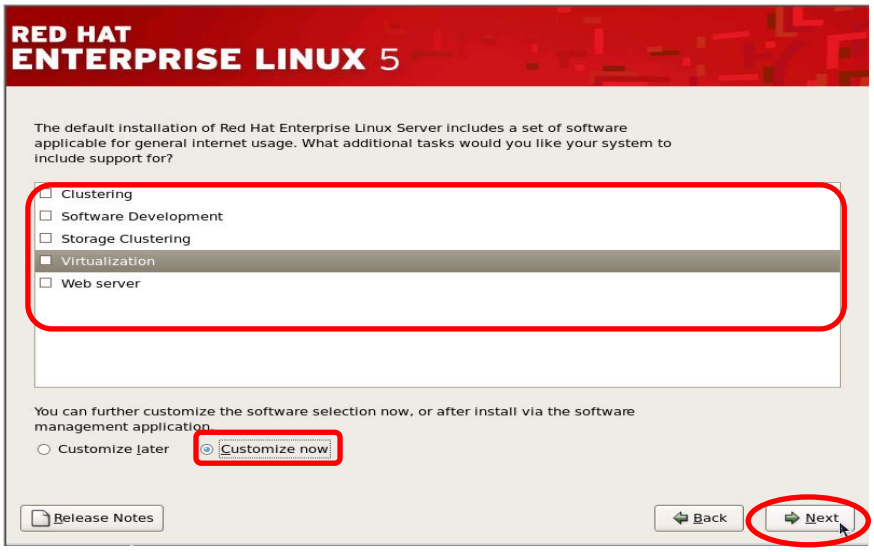
IMPORTANT:
Ensure to keep [System clock uses UTC] checked. Do not change this setting even after installation as well. (By default, system clock is set as UTC.)



Configure root password.
Click [Next] to proceed.



Selecting the package group
Uncheck all the components on the below screen asking for necessary package groups.
Select [Customize now], and click [Next] to proceed.



TIPS:

The above screen is an example of Red Hat Enterprise Linux 5 Advanced Platform. Selectable components differ according to Installation Number.

- If Installation Number is omitted:
  “Software Development”, “Web Server”
- If Red Hat Enterprise Linux 5 Installation Number is entered:
  “Software Development”, “Virtualization”, “Web server”
- If Red Hat Enterprise Linux 5 Advanced Platform Installation Number is entered:
  “Clustering”, “Software Development”, “Storage Clustering”, “Virtualization”, “Web server”

IMPORTANT:

- The ft Server Control software does not support virtualization and KVM.
  Please uncheck the components and proceed to the next procedure.
- This procedure is an example of package selection to install ft Server Control Software.
- If you separately select install packages other than this procedure, ensure to install the following essential packages for ft Server Control Software with attention. If essential packages are not installed, the installation described in “Step 6 Install Software NEC Express5800/ft Series offers” will fail. Ensure to install them.

alsa-lib-1.0.17-1.el5.i386.rpm
alsa-lib-1.0.17-1.el5.x86_64.rpm
bash-3.2-24.el5.x86_64.rpm
curl-7.15.5-2.1.el5_3.5.i386.rpm
curl-7.15.5-2.1.el5_3.5.x86_64.rpm
e2fsprogs-libs-1.39-23.el5.i386.rpm
e2fsprogs-libs-1.39-23.el5.x86_64.rpm
expat-1.95.8-8.2.1.i386.rpm
expat-1.95.8-8.2.1.x86_64.rpm
expect-5.43.0-5.1.i386.rpm
expect-5.43.0-5.1.x86_64.rpm
glibc-2.5-42.i686.rpm
glibc-2.5-42.x86_64.rpm
gcc-4.1.2-46.el5.x86_64.rpm
kernel-2.6.18-164.el5.x86_64.rpm
kernel-devel-2.6.18-164.el5.x86_64.rpm
krb5-libs-1.6.1-36.el5.i386.rpm
krb5-libs-1.6.1-36.el5.x86_64.rpm
jakarta-commons-codec-1.3-7jpp.2.x86_64.rpm
java-1.4.2-gcj-compat-1.4.2.0-40jpp.115.x86_64.rpm
kexec-tools-1.102pre-77.el5.x86_64.rpm
libgcj-4.1.2-46.el5.i386.rpm
libgcj-4.1.2-46.el5.x86_64.rpm
libidn-0.6.5-1.1.i386.rpm
libidn-0.6.5-1.1.x86_64.rpm
libX11-1.0.3-11.el5.i386.rpm
libX11-1.0.3-11.el5.x86_64.rpm

continue to next page.

IMPORTANT:

libXext-1.0.1-2.1.i386.rpm
libXext-1.0.1-2.1.x86_64.rpm
libXi-1.0.1-3.1.i386.rpm
libXi-1.0.1-3.1.x86_64.rpm
libxml2-2.6.26-2.1.2.8.i386.rpm
libxml2-2.6.26-2.1.2.8.x86_64.rpm
libXp-1.0.0-8.1.el5.i386.rpm
libXp-1.0.0-8.1.el5.x86_64.rpm
libXt-1.0.2-3.1.fc6.i386.rpm
libXt-1.0.2-3.1.fc6.x86_64.rpm
libXtst-1.0.1-3.1.i386.rpm
libXtst-1.0.1-3.1.x86_64.rpm
lm_sensors-2.10.7-4.el5.i386.rpm
lm_sensors-2.10.7-4.el5.x86_64.rpm
logrotate-3.7.4-9.x86_64.rpm
mod_perl-2.0.4-6.el5.x86_64.rpm
ncurses-5.5-24.20060715.i386.rpm
ncurses-5.5-24.20060715.x86_64.rpm
OpenIPMI-tools-2.0.16-5.el5.x86_64.rpm
openssl-0.9.8e-12.el5.i686.rpm
openssl-0.9.8e-12.el5.x86_64.rpm
perl-5.8.8-27.el5.x86_64.rpm
perl-libxml-perl-0.08-1.2.1.noarch.rpm
ppp-2.4.4-2.el5.x86_64.rpm
popt-1.10.2.3-18.el5.i386.rpm
popt-1.10.2.3-18.el5.x86_64.rpm
rpm-libs-4.4.2.3-18.el5.i386.rpm
rpm-libs-4.4.2.3-18.el5.x86_64.rpm
selinux-policy-devel-2.4.6-255.el5.noarch.rpm
tcp_wrappers-7.6-40.7.el5.i386.rpm
tcp_wrappers-7.6-40.7.el5.x86_64.rpm
unixODBC-2.2.11-7.1.i386.rpm
unixODBC-2.2.11-7.1.x86_64.rpm
xmlrpc-2.0.1-3jpp.1.x86_64.rpm
zlib-1.2.3-3.i386.rpm
zlib-1.2.3-3.x86_64.rpm

Select the package groups with check mark "✓" .

Package group	Without Installation Number	Red Hat Enterprise Linux 5	Red Hat Enterprise Linux 5 Advanced Platform	
Desktop Environments				
GNOME Desktop Environment	✓	✓	✓	
KDE (K Desktop Environment)				
Applications				
Authoring and Publishing				
Editors				
Engineering and Scientific				
Games and Entertainment				
Graphical Internet	✓	✓	✓	
Graphics				
Office/Productivity				
Sound and Video				
Text-based Internet	✓	✓	✓	
Development				
Development Libraries	✓	✓	✓	
Development Tools	✓	✓	✓	
GNOME Software Development	✓	✓	✓	
Java Development				
KDE Software Development				
Legacy Software Development	✓	✓	✓	
Ruby				
X Software Development	✓	✓	✓	
Servers				
DNS Name Server	✓	✓	✓	
FTP Server	✓	✓	✓	
Legacy Network Server	✓	✓	✓	*1
Mail Server	✓	✓	✓	
MySQL Database				
Network Servers	✓	✓	✓	*2
News Server	✓	✓	✓	
PostgreSQL Database	✓	✓	✓	
Printing Support	✓	✓	✓	
Server Configuration Tools	✓	✓	✓	
Web Server	✓	✓	✓	
Windows File Server	✓	✓	✓	

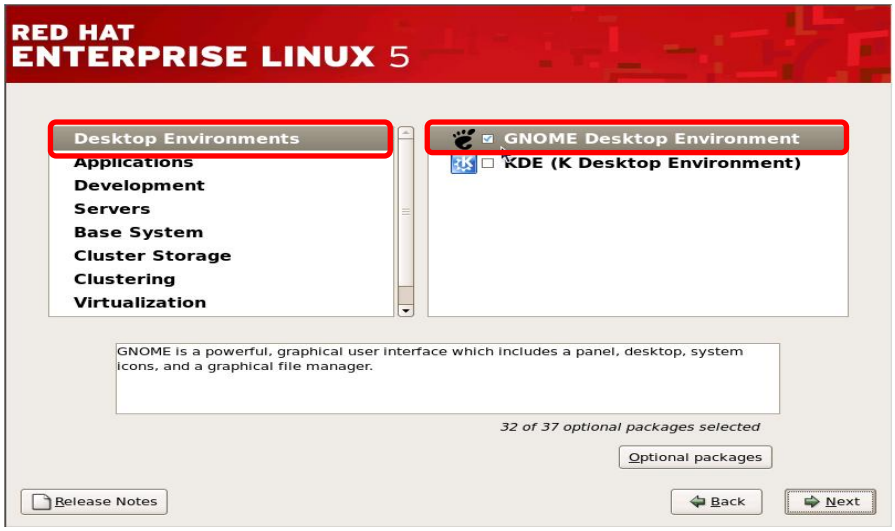
(Exclude the package groups without check mark "✓" from the choices.)

Package group	Without Installation Number	Red Hat Enterprise Linux 5	Red Hat Enterprise Linux 5 Advanced Platform	
Base System				
Administration Tools	✓	✓	✓	
Base	✓	✓	✓	
Dialup Networking Support				
Java				
Legacy Software Support				
OpenFabrics Enterprise Distribution				
System Tools	✓	✓	✓	*3
X Window System	✓	✓	✓	
Cluster Storage				
Cluster Storage				
Clustering				
Clustering				
Virtualization				
KVM				
Virtualization				

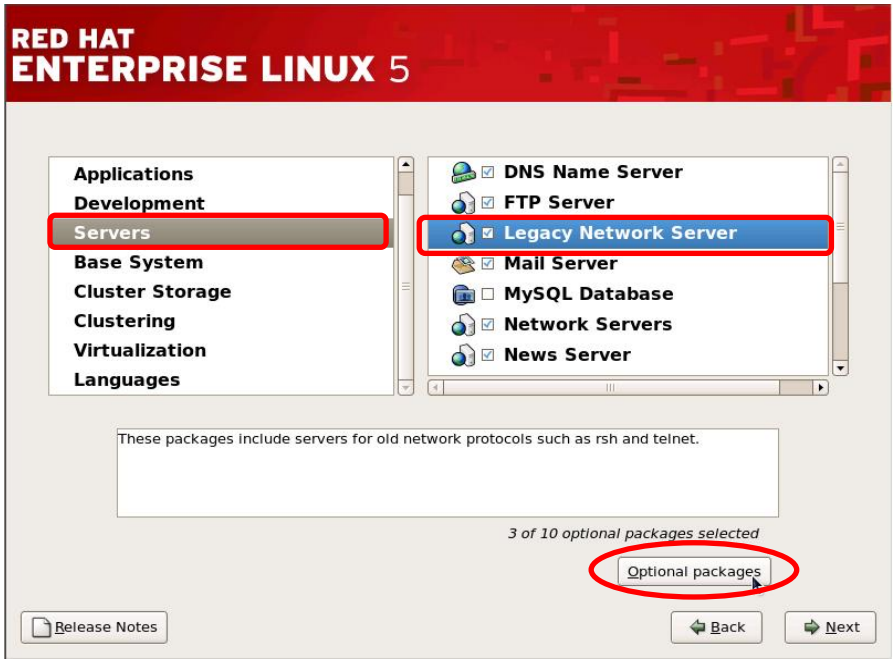
Package group selection is unavailable
Default-selected package groups by Red Hat Enterprise Linux 5 Server

*1 Click “Optional Packages” and select all package options.
*2 Click “Optional Packages” and then select “12:dhcp - [Version] - DHCP (Dynamic Host Configuration Protocol) server and relay agent”.
*3 Click “Optional Packages”, select the following packages, and uncheck all other packages.
“mt-st - [Version] – Install mt-st if you need a tool to control tape drives.”
“ntp - [Version] – Synchronizes system time using the Network Time Protocol(NTP).”
“samba-client - [Version] – Samba(SMB) client programs.”
“sysstat - [Version] – The sar and iostat system monitoring commands.”

<If you select “Desktop Environments”>
Select [GNOME Desktop Environment] for “Desktop Environments”.



<If you select optional packages from Optional packages under [Legacy Network Server].>
(Refer to the above mentioned note *1.)
Select [Legacy Network Server] for Servers, and click [Optional packages].



Select optional packages and click [Close] to close the Optional packages selection screen.

Verify that selection from Desktop Environments [GNOME Desktop Environment] to Base System [X Window System].
Click [Next] if there is no problem.

Click [Next] to begin installation.

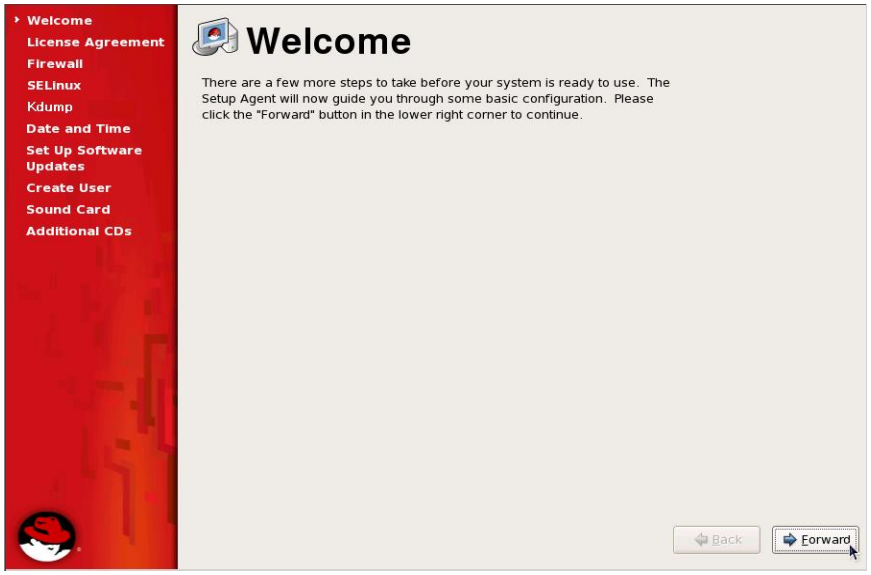
Take out the disk according to the instruction after installation.
Click [Reboot] to reboot.

The setup agent launches at the first boot.

IMPORTANT:

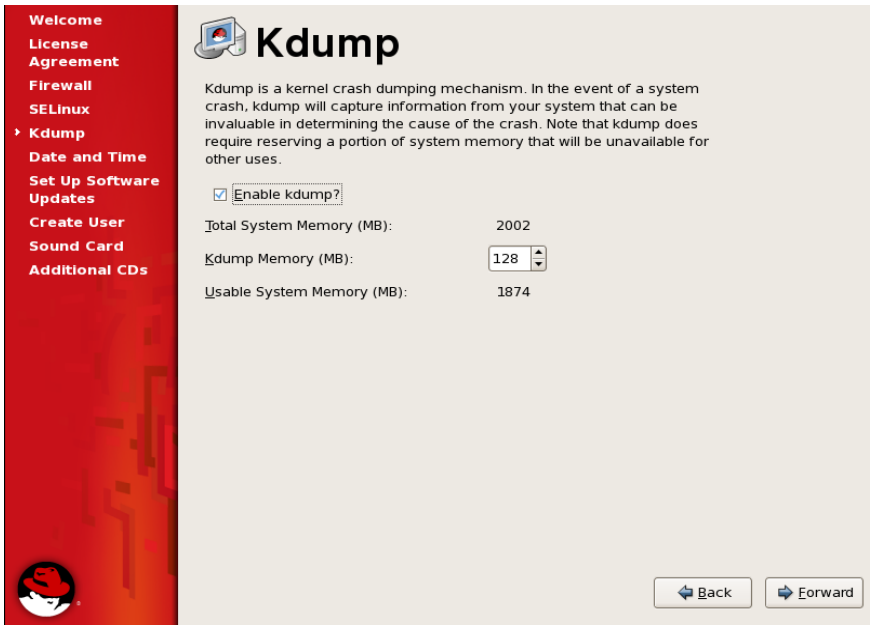
Here is explaining Kdump setting. In other setting, click [Forward] to proceed on the Welcome screen with default setting.

Follow the screens to configure.



Check [Enable kdump?], and the value of [Kdump Memory] is set to 128.

Push [Forward]b uttun.



Reboot confirming message is displayed after finishing configuration, push [Yes] button. (System is rebooting automatically after setup agent finishing.)

4. Install the essential packages for ft Server Control Software and NEC ESMPRO Agent.

Follow the below procedure to install the essential packages.
1. Ater booting OS, Login window is displayed. And then log in as root.

2. After login, create a current directory and copy all of the below essential packages to the current directory.

Red Hat Enterprise Linux 5.4 Server install DVD(EM64T)
- antlr-2.7.6-4jpp.2.x86_64.rpm
- beecrypt-4.1.2-10.1.1.i386.rpm
- beecrypt-4.1.2-10.1.1.x86_64.rpm
- beecrypt-devel-4.1.2-10.1.1.i386.rpm
- beecrypt-devel-4.1.2-10.1.1.x86_64.rpm
- elfutils-devel-0.137-3.el5.i386.rpm
- elfutils-devel-0.137-3.el5.x86_64.rpm
- elfutils-devel-static-0.137-3.el5.i386.rpm
- elfutils-devel-static-0.137-3.el5.x86_64.rpm
- elfutils-libelf-devel-0.137-3.el5.i386.rpm
- elfutils-libelf-devel-static-0.137-3.el5.i386.rpm
- elfutils-libs-0.137-3.el5.i386.rpm
- expect-5.43.0-5.1.i386.rpm
- expect-5.43.0-5.1.x86_64.rpm
- gjdoc-0.7.7-12.el5.x86_64.rpm
- jakarta-commons-codec-1.3-7jpp.2.x86_64.rpm
- jakarta-commons-httpclient-3.0-7jpp.1.x86_64.rpm
- jakarta-commons-logging-1.0.4-6jpp.1.x86_64.rpm
- java-1.4.2-gcj-compat-1.4.2.0-40jpp.115.x86_64.rpm
- jpackage-utils-1.7.3-1jpp.2.el5.noarch.rpm
- junit-3.8.2-3jpp.1.x86_64.rpm
- libgcj-4.1.2-46.el5.i386.rpm
- libgcj-4.1.2-46.el5.x86_64.rpm
- libsepol-devel-1.15.2-2.el5.i386.rpm
- libsysfs-2.0.0-6.i386.rpm
- libXp-1.0.0-8.1.el5.i386.rpm
- libXp-1.0.0-8.1.el5.x86_64.rpm
- lm_sensors-2.10.7-4.el5.i386.rpm
- lm_sensors-2.10.7-4.el5.x86_64.rpm
- lm_sensors-devel-2.10.7-4.el5.i386.rpm
- lm_sensors-devel-2.10.7-4.el5.x86_64.rpm
- mesa-libGLU-devel-6.5.1-7.7.el5.i386.rpm
- net-snmp-5.3.2.2-7.el5.x86_64.rpm
- net-snmp-devel-5.3.2.2-7.el5.i386.rpm
- net-snmp-devel-5.3.2.2-7.el5.x86_64.rpm
- net-snmp-libs-5.3.2.2-7.el5.i386.rpm
- net-snmp-utils-5.3.2.2-7.el5.x86_64.rpm
- nspr-devel-4.7.4-1.el5_3.1.i386.rpm
- nss-devel-3.12.3.99.3-1.el5_3.2.i386.rpm
- OpenIPMI-libs-2.0.16-5.el5.i386.rpm
- OpenIPMI-tools-2.0.16-5.el5.x86_64.rpm
- perl-libxml-perl-0.08-1.2.1.noarch.rpm
- perl-XML-Parser-2.34-6.1.2.2.1.x86_64.rpm
- sqlite-devel-3.3.6-5.i386.rpm
- tcl-8.4.13-4.el5.i386.rpm
- tomcat5-servlet-2.4-api-5.5.23-0jpp.7.el5_3.2.x86_64.rpm
- xmlrpc-2.0.1-3jpp.1.x86_64.rpm

[Copying Example]
Create the current directory.
(Here, current directory is referred to as /tmp/work.)

```
# mkdir /tmp/work
```

Set the Red Hat Enterprise Linux 5.4 Server install DVD(EM64T) to the optical disk drive of the server, and copy the essential packages to the current directory. Take out the Red Hat Enterprise Linux 5.4 Server install DVD(EM64T) after copying is completed.

```
# mount /dev/scd0 /mnt
# cp /mnt/Server/antlr-2.7.6-4jpp.2.x86_64.rpm /tmp/work
        .
        .
# cp /mnt/Server/xmlrpc-2.0.1-3jpp.1.x86_64.rpm /tmp/work
# eject /dev/scd0
```

With the above procedure, copy all essential packages to working directory.

```
# cd /tmp/work
# rpm –ivh *.rpm
```

3. Install the copied essential packages to the current directory.

```
# rm –rf /tmp/work
```

4. Delete the current directory.

Step 5: Post OS Install Settings

Initial Configuration Script

Run the initial configuration script after installing Red Hat Enterprise Linux 5.4 Server. Ensure to run this script, as this makes various settings for a stable OS operation.

For this operation, the server-accessory NEC EXPRESSBUILDER DVD is required.

Applying the Initial Configuration Script

Apply the initial setup script by the below procedure.

TIPS:

- The following procedure expects the mount point of the optical disk drive to be "/mnt". If this not the case, please remount the drive so that it is mounted under /mnt.
- In order to activate the initial setup, OS restart is required; however, the procedure five here can be omitted, as there is a OS reboot on the Step 6.

1. Set the NEC EXPRESSBUILDER DVD on the optical disk dive.

2. Enter the command described below and mount the DVD.

```
# mount /dev/scd0 /mnt
```

3. Apply the initial setup script with the below script.

```
# /mnt/002/lnx/ftsys/nec_setup.sh
```

4. Enter the below command and unload the NEC EXPRESSBUILDER DVD from the optical disk drive.

```
# eject /dev/scd0
```

5. Restart the system with the below command.

```
# reboot
```

Step 6: Install Software NEC Express5800/ft Series offers

ft Server Control Software

IMPORTANT:

- The installation of ft Server Control Software must be executed by root user.
- Java package is required for ft Server Control Software installation. Install the java package with the below procedure.

1. Set the Red Hat Enterprise Linux 5.4 Server Supplementary DVD(EM64T) on the optical disk drive of the device.

2. Enter the command described below and mount the DVD-ROM.
The mount point is described as /mnt here.
mount /dev/scd0 /mnt

3. Install java-1.6.0-sun.
rpm -ivh –nosignature /mnt/Supplimentary/java-1.6.0-sun-1.6.0.15-1jpp.1.el5.x86_64.rpm

4. Enter the below command and unload the Red Hat Enterprise Linux 5.4 Server Supplementary DVD(EM64T) from the optical disk drive.
eject /dev/scd0

5. Enter the below command to confirm whether all the RAID devices are synchronized.
(If they are in the middle of resync process, wait until the process completes before you move on to the next step.)
cat /proc/mdstat

6. Set the NEC EXPRESSBUILDER DVD on the optical disk dive.

7. Enter the command described below and mount the DVD.
The mount point is described as /mnt here.
mount /dev/scd0 /mnt

8. Install ft Server Control Software.

(a) Install the package.
/mnt/002/lnx/ftsys/install.sh

(b) After the installation, “Enter YES to reboot now or NO to allow a manual reboot later : [YES]” is displayed. Press <Enter>.

9. Restart the OS.

CHECK:

- From the next startup, use/media/cdrecorder as the mount point of the optical disk.

NEC ESMPRO Agent

1. Set the NEC EXPRESSBUILDER DVD on the optical disk dive.

2. Enter the command described below and mount the DVD.
   The mount point is described as /mnt here.
   # mount /dev/scd0 /mnt

3. Move to the directory where NEC ESMPRO Agent is stored.
   # cd /mnt/002/lnx/pp/esmpro_sa/

4. Apply the initial script with the below script.
   # sh esminst.sh

5. Enter the below command and unload the NEC EXPRESSBUILDER DVD from the optical disk drive.
   # cd ~/
   # eject /dev/scd0

6. 6.Restart the system with the below command.
   # reboot

TIPS:

Modify the environment-setting file of snmpd (/etc/snmp/snmpd.conf) to set a community privilege to "READ WRITE". To send alert from NEC ESMPRO Agent to NEC ESMPRO Manager, the alert settings need to be specified with “Alert Setting Functions” after reboot. For more on how to set alert, refer to “NEC ESMPRO Agent User’s Guide” stored in the NEC EXPRESSBUILDER.

An example of the snmpd.conf

```
For OID of .1 subordinates, it set "READ WRITE" privilege.
####
# Third, create a view for us to let the group have rights to:

# Make at least    snmpwalk -v 1 localhost -c public system fast again.
#name incl/excl subtree mask(optional)
#view systemview included .1.3.6.1.2.1.1
#view systemview included .1.3.6.1.2.1.25.1.1
view all included .1 80

####
# Finally, grant the group read-only access to the systemview view.

#group context sec.model sec.level prefix read write notif
#access notConfigGroup "" any noauth exact systemview none none
access notConfigGroup "" any noauth exact all all none

About the details of setting, refer to Help of the SNMP.
Carry out the following commands to confirm a help of snmpd.
# man snmpd
```

Processes made on esminst.sh

esminst.sh executes and processes the below.

1. snmpd environment setting

2. snmpd boot setting
   # /sbin/chkconfig --level 345 snmpd on

3. portmap boot setting
   # /sbin/chkconfig --level 345 portmap on

4. Install NEC ESMPRO Agent.

Step 7: Set Dual LAN Configuration

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

Overview

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

Network Configuration

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

PCI slot and network interface name

PCI slot	Port	CPU/IO module 0	CPU/IO module 1
On Board	#1	eth100600 (1)	eth110600 (1)
	#2	eth100601 (2)	eth110601 (2)
PCI-e slot 1	#1	eth100100 (3)	eth110100 (3)
	#2	eth100101 (4)	eth110101 (4)
PCI-e slot 2	#1	eth100200 (5)	eth110200 (5)
	#2	eth100201 (6)	eth110201 (6)
PCI-e slot 3	#1	eth100300 (7)	eth110300 (7)
	#2	eth100301 (8)	eth110301 (8)
PCI-e slot 4	#1	eth100400 (9)	eth110400 (9)
	#2	eth100401 (10)	eth110401 (10)

*The number enclosed with brackets in the CPU/IO module column is slot numbers allocated by vndctl described later. The slot numbers are allocated one-to-one to each interface pair.

Cautions on Network Configuration

Do not configure various network settings on either the CUI (Character User Interface) or the GUI (Graphical User Interface) with the system-config-network command that comes with the OS. There is a issue of the bonding interface network's configuration not updated properly; there is also a known issue of /etc/hosts file being edited illegally.

If you implement configurations on IP address, subnet mask or default gateway on the bonding interface, ensure to use the after-mentioned vndctl command. For other network configuration items, manually configure them by referring to such an online manual page of the man command.

Dual Configuration Setup

The following describes the procedure to set dual LAN configuration. The following example is used.

Since built-in network interfaces are combined and dual network is achieved with eth100600 and eth110600 combined as bond0, and eth100601 and eth110601 as bond1 at this point, perform only network configuration (step 2 and after).

<configuration detail>
Slot number : 3
SLAVE0 interface name : eth100100
SLAVE1 interface name : eth110100
IPaddress : 192.168.0.1
Subnet mask : 255.255.255.0
Default gateway : 192.168.0.1

IMPORTANT:

You must perform the following operation as a root user.

Stop the running interface with the following command before the setup.

vndctl down <slot number>

1. Execute the command below to construct the network interfaces (eth100100 and eth110100) corresponding to slot 3 as the bonding interface.
   # vndctl add 3

2. Execute the command below to check the status of the combined interface that has been constructed. When you enter default gateway, you can omit the process by pressing ENTER without specifying anything.

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

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

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

3. Execute the command below to activate the combined interface that has been constructed.
vndctl up 3

4. Execute the command below to check the status of the combined interface that has been constructed.

```
# vndctl status
--Virtual Network Status--
BondingDevice   Slot   Status      InetAddress      RXErrors      TXErrors      Collisions
bond0             1    ONLINE      -                0             0             0
bond1             2    ONLINE      -                0             0             0
bond2             3    ONLINE      192.168.0.1      0             0             0
bond3                  OFFLINE     -                0             0             0
bond4                  OFFLINE     -                0             0             0
bond5                  OFFLINE     -                0             0             0
bond6                  OFFLINE     -                0             0             0
bond7                  OFFLINE     -                0             0             0
bond8                  OFFLINE     -                0             0             0
bond9                  OFFLINE     -                0             0             0

Slot          RealDevice Status          Interface      LinkState      LinkSpeed
1      top    eth100600  DUPLEX          UP             LINK           1000Mb/s-FD
       bottom eth110600  DUPLEX          UP             LINK           1000Mb/s-FD
2      top    eth100601  DUPLEX          UP             LINK           1000Mb/s-FD
       bottom eth110601  DUPLEX          UP             LINK           1000Mb/s-FD
3      top    eth100100  DUPLEX          UP             LINK           1000Mb/s-FD
       bottom eth110100  DUPLEX          UP             LINK           1000Mb/s-FD
```

When bond2 (bond 0 and bond 1 are configured by default.) is configured for the slot 3 and as shown above, and the status of each SLAVE interface (eth100100,eth110100) is DUPLEX, duplication is successfully completed.

Note:
Follow the steps below to delete the dual LAN configuration.

1. Execute the command below to stop the combined interfaces corresponding to the slot number <slot>.
vndctl down <slot>

2. Execute the command below to delete the combined interfaces corresponding to the slot number <slot>.
vndctl del <slot>

Step 8: Set Dual Disk Configuration

At this point, CPU/IO module 1 - Slot 1 and CPU/IO module 0 - Slot 1 have been duplex. Except when a disk has been added or RAID has been reconfigured, check if the duplication has succeeded and perform “Step 9: Connect and Configure Options”.

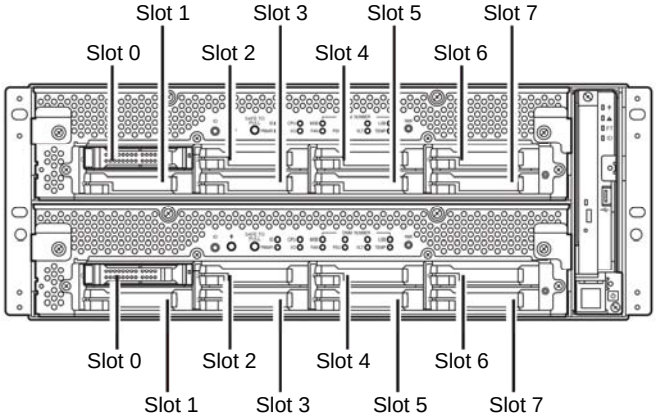
NEC Express5800/ft series secures data integrity by setting dual disk configuration using “Software-RAID.” The section describes procedures to configure disks.

IMPORTANT:

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

Disk Configuration

It is necessary to compose RAID in all internal disks in the Express5800/ft server.
The Express5800/ft server is composed of RAID1 by software.
This RAID is constructed with the hard disk drive of which the couple is the same slot number as PCI Module0 and PCI Module1 in the following figures.



Slots corresponding to the mirroring process

Corresponding slot
PCI module 10 Slot 0 ⇔ PCI module 11 Slot 0
PCI module 10 Slot 1 ⇔ PCI module 11 Slot 1
PCI module 10 Slot 2 ⇔ PCI module 11 Slot 2
PCI module 10 Slot 3 ⇔ PCI module 11 Slot 3
PCI module 10 Slot 4 ⇔ PCI module 11 Slot 4
PCI module 10 Slot 5 ⇔ PCI module 11 Slot 5
PCI module 10 Slot 6 ⇔ PCI module 11 Slot 6
PCI module 10 Slot 7 ⇔ PCI module 11 Slot 7

* In the table above, PCI module names correspond as follows:
PCI module (for CPU/IO module 0) - PCI module 10
PCI module (for CPU/IO module 1) - PCI module 11

IMPORTANT:

- When a disk is added or RAID is reconfigured, the status of each disk becomes "RESYNC", "RECOVERY", "CHECK" or "REPAIR". When a disk is in this status, do not insert or remove the disk, power off, or restart the system. Wait until the status is turned to "DUPLEX**"**. Check to see the status of each RAID device using the after-mentioned ftdiskadm command. See "Verifying duplication" on page "4-56".
- Use only the hard disk drives specified by NEC. If you install a third party product, not only the hard disk drive, but also the entire device may fail. Purchase a pair of two hard disks of the same model. Consult your sales agent for which ones are the best suitable.

The actual operation (e.g. mounting a disk) for a built-in disk is performed for the device (md) for RAID by software.

In ftdiskadm described later, slot numbers of the built-in disks are allocated as shown below to use.

Disk slot number for H/W	Disk slot number for ftdiskadm
PCI module 0 Slot 0	Slot 1
PCI module 0 Slot 1	Slot 2
PCI module 0 Slot 2	Slot 3
PCI module 0 Slot 3	Slot 4
PCI module 0 Slot 4	Slot 5
PCI module 0 Slot 5	Slot 6
PCI module 0 Slot 6	Slot 7
PCI module 0 Slot 7	Slot 8
PCI module 1 Slot 0	Slot 9
PCI module 1 Slot 1	Slot 10
PCI module 1 Slot 2	Slot 11
PCI module 1 Slot 3	Slot 12
PCI module 1 Slot 4	Slot 13
PCI module 1 Slot 5	Slot 14
PCI module 1 Slot 6	Slot 15
PCI module 1 Slot 7	Slot 16

Use ftdiskadm for checking the disk information.
The following is a display sample when you execute ftdiskadm, enter 2 for [RAID] and then 2 for [Status(System Disks)] (for displaying information on built-in disk).

```
# ftdiskadm

Command action
  1 List RAID Arrays
  2 List Internal Disks
  3 Make Mirroring Arrays    (RAID1)
  4 Repair Mirroring Arrays  (RAID1)
  5 Delete Mirroring Arrays  (RAID1)
  6 Remove Disk Partitions   (RAID1)
  7 Make Striping Array      (RAID1+0)
  8 Delete Striping Array    (RAID1+0)
  c Configurations
  q Quit

Command:2

[List of Internal Disks]

Slot  Name     [use]    Information (Vendor/Model/Serial)     path
=============================================================================
1     sda(sdq) [3]     AAA/BBB/#CCC                          h5c0t128l0
2     -
3     -
4     -
5     -
6     -
7     -
8     -
9     sdi(sdr) [3]     AAA/BBB/#DDD                          h6c0t128l0
10    -
11    -
12    -
13    -
14    -
15    -
16    -
```

<Explanation of items>

Slot	slot number of built-in disk
Name	device name (kernel device name) "-" is displayed for built-in disk that is not recognized by kernel.
use	current mount count
Information	vendor name/model/serial number
path	SCSI path (described as h<HOST number>c<CHANNEL number>t<TARGET number>l<LUN>)

Disk settings (RAID construction)

Use ftdiskadm to construct RAID. Configure disks as follows:

IMPORTANT:

You must execute the following operations as root user.

1. By selecting [Make Mirroring Arrays (RAID 1)] of ftdiskadm, arbitrary partitions are created for a disk specified by the slot number Then the partitions are copied to its corresponding pair disk automatically to create duplication.

The following is an example of configuration of disks set in slot 2 and 10 through creating

```
# ftdiskadm

Command action
  1 List RAID Arrays
  2 List Internal Disks
  3 Make Mirroring Arrays    (RAID1)
  4 Repair Mirroring Arrays  (RAID1)
  5 Delete Mirroring Arrays  (RAID1)
  6 Remove Disk Partitions   (RAID1)
  7 Make Striping Array      (RAID1+0)
  8 Delete Striping Array    (RAID1+0)
  c Configurations
  q Quit

Command:3

[Make Mirroring Arrays (RAID1)]
* Which scsi SLOT? [1-16] 2  <<Enter the slot number of the disk you want to configure duplication. The slot number of the pair disk (10) is also available.>>

Making the disk partition table: SLOT=2 SIZE=74752(MB)
       Reserved for the last partition: SIZE=1024(MB)
* How many partitions? [1-14] 3        <<< *1 >>>
* Input the SIZE of partition 1 [1- 73728(MB)]       1024
* Input the SIZE of partition 2 [1- 63488(MB)]       2024
                  partition 3                      14271
* Input the LABEL [1-12 character(s)]   <<< *2 >>>
* Are you sure to create it? [y/n] y
```

partitions of the disk to creating duplication.

*1 Enter the number of partitions to be created. Then enter the size for each partition by MB. The remainder is automatically allocated to the partition with the last number. As for partition number, after 3 comes 5, followed in ascending order. Since a certain amount of volume of disk is reserved for the last partition, the range of values that can be entered is smaller than that of the actual disk space. The value of actual partition volume varies slightly depending on the disk configuration.

*2 If necessary, configure the disk volume label. As a label, the entered value is used as it is when the disk is used in a single partition, and "<entered

value>_s<partition number>" is used when the disk is divided into multiple partitions. The volume labels specified here can be modified later by commands such as e2label.

2. When configuring the partitions of the specified disk is completed, the configuration is automatically copied to the paired disk. RAID is configured to the both disks' same partition numbers as RAID devices (md).

Verifying duplication

ftdiskadm is used to check if disks are duplicated.
The following shows an example when you execute ftdiskadm, enter 1 for [List of RAID Arrays] (status of each RAID device).

```
# ftdiskadm

Command action
  1 List RAID Arrays
  2 List Internal Disks
  3 Make Mirroring Arrays         (RAID1)
  4 Repair Mirroring Arrays       (RAID1)
  5 Delete Mirroring Arrays       (RAID1)
  6 Remove Disk Partitions        (RAID1)
  7 Make Striping Array           (RAID1+0)
  8 Delete Striping Array         (RAID1+0)
  c Configurations
  q Quit

Command: 1

[List RAID Arrays]

Name   Partition      (Label)     Status          Member
================================================================
<Mirroring Array (RAID1)>
md0    /boot          ( - )       DUPLEX          (1)sda1 (4)sdi1
md1    swap           ( - )       DUPLEX          (1)sda2 (4)sdi2
md2    /              ( - )       DUPLEX          (1)sda3  F(4)sdi3
md3    /var/crash     ( - )       DUPLEX          (1)sda5 (4)sdi5
md4    /home          ( - )       DUPLEX          (2)sdb1 (5)sdj1
md5                   ( - )       DUPLEX          (2)sdb2 (4)sdj2
```

<Explanation of items>

Name	Name of the software RAID device
Partition	Mount point When this is blank, it means the partition is not mounted as a file system.
Label	Volume label of the ext2/ext3 file systems. "-" is displayed when there is no label.
Member	The information on members that constitute RAID is displayed in the format of "(slot number) name". If there is an error and the member is out of the RAID, "F" is displayed on the left.
Status	Status of RAID devices. See the following for indications:

Status	Meaning
DUPLEX	It is duplicated successfully.
SIMPLEX	Only one RAID is incorporated. A member that is not incorporated is not displayed. If so, repairing is required.
RECOVERY(XX.X%)	It is in the process of reconfiguring (resynchronizing) the devices that are out of / illegal RAID configuration. When it is done, “DUPLEX” is displayed.
RESYNC(XX.X%)	It is in the process of recalculating RAID.
CHECK(XX.X%)	It is in the process of checking data consistency.
REPAIR(XX.X%)	It is in the process of checking/repairing data consistency.
RESYNC	It is on standby for recovery or synchronization. When “R” is added to Member column, the member is on standby for recovery.

Fast Resync Function

This function shortens the recovery time of partitions in the internal hard disk drives when the partitions are isolated from redundant configuration. (This is not the case when you replace the disks to the new ones.) Upon recovery, only refreshed data from the available hard disk drive is copied to the disk that is isolated from the redundant configuration. If this function is disabled, all the data is copied on to the hard disk drive. By enabling the function, required recovery time is made shorter.

IMPORTANT:

This function becomes available on each configured RAID device by default when you configure to duplicate the expanded hard disk drives using ftdiskadm. The system may not operate properly when this function becomes unavailable by the following mdadm command. Do not invalidate this function.

```
# mdadm --grow --bitmap=none /dev/<RAID device name>
```

Creating Striping Array

Striping array (RAID 0) is a RAID device that distributes I/O requests issued to striping array to each member. This function improves the I/O capacity and data writing/reading speed on striping array. Available disk capacity on striping array is the total of all members, which is different from redundant configuration RAID device (RAID 1 device). You must prepare individual hard disk drives for the members of striping array to improve I/O capacity.

When you configure striping array only, the whole array will be unavailable and the fault tolerance becomes low if a failure occurs on any of the members. However, you can configure the devices that have both fault tolerance and I/O capacity (called “RAID1+0 device” in this document and ftdiskadm) by configuring the member of the array with RAID 1 devices.

IMPORTANT:

- You must add 4 hard disk drives to utilize the feature of striping array when you create the array using ftdiskadm.
- When you create striping array using ftdiskadm, you must take data backup because the data written on the RAID 1 disappears as installing the existing RAID 1 device.
- The size of the each RAID 1 devices installed in striping array is expected to be the same in order to maximize the feature. (Prepare the same size partitions using the disk configuration that is used when expanding hard disk drive).
- You must execute the following operations as root user.

The following shows how to create striping array (RAID 1+0 device) using ftdiskadm. (The following procedure is an example of installing the RAID 1 device “md4” configured on the hard disk drives of slot 2 and 10, and the RAID 1 device “md6” configured on the hard disk drives of slot 3 and 11 in a striping array.)

```
# ftdiskadm

Command action
  1 List RAID Arrays
  2 List Internal Disks
  3 Make Mirroring Arrays   (RAID1)
  4 Repair Mirroring Arrays (RAID1)
  5 Delete Mirroring Arrays (RAID1)
  6 Remove Disk Partitions  (RAID1)
  7 Make Striping Array     (RAID1+0)
  8 Delete Striping Array   (RAID1+0)
  c Configurations
  q Quit

Command: 1

[List RAID Arrays]

Name  Partition      (Label)        Status         Member
=====================================================================
< Mirroring Array (RAID1)   >
md0 /boot             ( - )         DUPLEX (1)sda1 (9)sdi1
md1 swap              ( - )         DUPLEX (1)sda2 (9)sdi2
md2 /                 ( - )         DUPLEX (1)sda3 (9)sdi3
md3 /var/crash        ( - )         DUPLEX (1)sda5 (9)sdi5
md4                   ( - )         DUPLEX (2)sdb1 (10)sdj1
md5                   ( - )         DUPLEX (2)sdb2 (10)sdj2
md6                   ( - )         DUPLEX (3)sdc1 (11)sdk1
md7                   ( - )         DUPLEX (3)sdc2 (11)sdk2
<<< When you create striping array using RAID 1 devices md4 and md6,
    confirm the each device is operating properly (Status must be
    "DUPLEX"), and is not mounted as system file (There is no description
    in Partition). >>>
```

1. Confirm the status of the RAID 1 device to be installed in striping array.

2. Execute **Make Striping Array (RAID1+0)** of ftdiskadm and install the target RAID 1 device into striping array.

```
# ftdiskadm

Command action
  1 List RAID Arrays
  2 List Internal Disks
  3 Make Mirroring Arrays   (RAID1)
  4 Repair Mirroring Arrays (RAID1)
  5 Delete Mirroring Arrays (RAID1)
  6 Remove Disk Partitions  (RAID1)
  7 Make Striping Array     (RAID1+0)
  8 Delete Striping Array   (RAID1+0)
  c Configurations
  q Quit

Command: 7

[Make Striping Array     (RAID1+0)]
* Which raid1 device numbers? ['?' for help] => 4,6

<<< In the entering screen above, separate the RAID 1 device numbers
    by "," and define the RAID 1 device you would like to install (Do
    not include blank in the value).  When you create striping array using
    md4 and md6, enter "4,6" like above and then press ENTER. >>>
```

3. After the procedure 2., the screen shows the message that the process is going on. If the screen does not show any error and goes back to the main menu of ftdiskadm, that shows striping array is properly created. Confirm the striping array created with ftdiskadm.

```
# ftdiskadm

Command action
  1 List RAID Arrays
  2 List Internal Disks
  3 Make Mirroring Arrays   (RAID1)
  4 Repair Mirroring Arrays (RAID1)
  5 Delete Mirroring Arrays (RAID1)
  6 Remove Disk Partitions  (RAID1)
  7 Make Striping Array    (RAID1+0)
  8 Delete Striping Array   (RAID1+0)
  c Configurations
  q Quit

Command: 1

[List RAID Arrays]

Name  Partition      (Label)        Status         Member
================================================================
< Striping Array  (RAID1+0) >
md8                    ( - )          ACTIVE        md4      md6
< Mirroring Array (RAID1)   >
md0 /boot              ( - )         DUPLEX       (1)sda1 (9)sdi1
md1 swap               ( - )         DUPLEX       (1)sda2 (9)sdi2
md2 /                  ( - )         DUPLEX       (1)sda3 (9)sdi3
md3 /var/crash         ( - )         DUPLEX       (1)sda5 (9)sdi5
md4                    ( - )         DUPLEX       (2)sdb1 (10)sdj1
md5                    ( - )         DUPLEX       (2)sdb2 (10)sdj2
md6                    ( - )         DUPLEX       (3)sdc1 (11)sdk1
md7                    ( - )         DUPLEX       (3)sdc2 (11)sdk2

<<< Confirm following points: 1) Striping array md8 is created (Unused
    RAID device number is automatically allocated). 2) Status is
    "ACTIVE". 3) There is the RAID 1 device name defined in the procedure
    2 in "Member". >>>
```

4. This is the end of the procedure to create striping array. On the main menu of ftdiskadm, enter "q" in Command to quit ftdiskadm. The file system of the created striping array is ext3. If you would like to change the file system, use mkfs command.

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 of NEC Express5800/ft series, and connect it according to the “PCI board” in *User’s Guide* and the device’s instruction.

IMPORTANT:

If there is any option, PCI board or peripheral equipment that has been purchased other than by “build to order”, connect it.

When a LAN card or disk is added, dual configuration is required. For details of the procedures, see the chapter 4 “Step 7: Set Dual LAN Configuration” of this document and the following “Step 8: Set Dual Disk Configuration”

Step 10: Create Volume

If there is free disk space in the internal disk with the OS, you can create a volume. To create a volume in the free disk space and construct RAID partition, follow the steps below.

IMPORTANT:

- Ask maintenance service provider having expertise to perform the following operation.
- The following operation must be performed by root user.

1. Check the device name of the internal disk with OS by selecting [List RAID Arrays] in ftdiskadm (See page 4-56).

The following example shows that the internal disks with OS are set in slots 1 (slot 0 of CPU/IO module 0) and 9 (slot 0 of CPU/IO module 1), whose device names are /dev/sda and /dev/sdi, respectively.

Example)

```
[List RAID Arrays]

Name  Partition      (Label)        Status         Member
=============================================================================
< Mirroring Array (RAID1)   >
md0 /boot            ( - )          DUPLEX         (1)sda1 (9)sdi1
md1 swap             ( - )          DUPLEX         (1)sda2 (9)sdi2
md2 /                ( - )          DUPLEX         (1)sda3 (9)sdi3
md3 /var/crash       ( - )          DUPLEX         (1)sda5 (9)sdi5
```

2. Create additional partition in the free disk space in slots 1 (slot 0 of CPU/IO module 0) and 9 (slot 0 of CPU/IO module 1) with the fdisk command.

In the procedures below, a partition with 1024MB is added in the free disk space in slot 1 (slot 0 of CPU/IO module 0).

Example)

```
<<< Start fdisk and enter command "p" to check the partition status.>>>
# fdisk /dev/sda
Command (m for help): p

Disk /dev/sda: 73.4 GB, 73407868928 bytes
255 heads, 63 sectors/track, 8924 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Device    Boot  Start   End   Blocks  Id  System
/dev/sda1  *      1    33  265041   fd  Linux raid autodetect
/dev/sda2     34   4210  33551752+ fd  Linux raid autodetect
/dev/sda3    4211   6168  15727635  fd  Linux raid autodetect
/dev/sda4    6169   8924  22137570   5  Extended
/dev/sda5    6169   6751   4682916  fd  Linux raid autodetect

    <<< Create additional partition (/dev/sda4) by the command "n", and
    change ld to fd (Linux raid automatic detection) by the command
    "t".>>>

Command (m for help): n
First cylinder (6752-8924, default 6752):
Using default value 6752
Last cylinder or +size or +sizeM or +sizeK (6752-8924, default 6752):
+1024M

Command (m for help): t
Partition number (1-6): 6
Hex code (type L to list codes): fd
Changed system type of partition 6 to fd (Linux raid autodetect)

Command (m for help): w    <<< the modification is saved. >>>>
The partition table has been altered!

Calling ioctl() to re-read partition table.

WARNING: Re-reading the partition table failed with error 16: Device
or resource busy.
The kernel still uses the old table.
The new table will be used at the next reboot.
Syncing disks.
```

The procedures above should be similarly performed for slot 9 (slot 0 of CPU/IO module 1). Note that the size of the partition to be added must be the same.

3. In step 2, the partition table added (/dev/sda6, /dev/sdi6) is not read after saving the partition configuration. Reboot the system.

4. Add the created partition to the new RAID device (/dev/md4 that was not used in step 1). Example)

```
# /sbin/mdadm --create /dev/md4 --level=1 --raid-devices=2
--bitmap=internal /dev/sda6 /dev/sdi6
```

5. Create a file system in the new RAID device.

```
# /sbin/mkfs -t ext3 /dev/md4
```

Example)

6. On [List RAID Arrays] of ftdiskadm, check if the new RAID device (/dev/md4) is added.

Example)

```
[List RAID Arrays]

Name  Partition     (Label)        Status        Member
============================================================
< Mirroring Array (RAID1)   >
md0 /boot           ( - )          DUPLEX       (1)sda1 (9)sdi1
md1 swap            ( - )          DUPLEX       (1)sda2 (9)sdi2
md2 /               ( - )          DUPLEX       (1)sda3 (9)sdi3
md3 /var/crash      ( - )          DUPLEX       (1)sda5 (9)sdi5
md4                 ( - )          DUPLEX       (1)sda6 (9)sdi6
```

It shows that the new RAID device md4 successfully constitutes the added partitions /dev/sda6 and /dev/sdi6. To create more, repeat the same procedures.

Step 11: Set Network for NEC ESMPRO Agent

NEC ESMPRO Agent is required for continuous operation of the NEC Express5800 Server series. And to run NEC ESMPRO Agent, you need to make settings of the network.

< Setting firewall >

When the firewall is enabled, you need to open ports used by NEC ESMPRO Manager and Agent. When it is set the firewall in the environment of the errand, please perform setting to admit access to these.

Function	Manager	Direction	Agent	Remarks
Operation Window(SNMP) [Server Status Polling]	Undetermined	→ ←	161/udp	snmp
DataViewer(SNMP)				
Server Down Detection(SNMP)				
Report to Manager (SNMP)	162/udp	←	Undetermined	snmp-trap
Report to Manager (TCP/IP) [In-Band, Out-of-Band]	31134/tcp	← →	Undetermined	

■Between NEC ESMPRO Manager and NEC ESMPRO Agent
- The upper direction shows the direction at start-up, and the lower shows the return.
- It can change the port number to use by the Report to Manager (TCP/IP In-Band, Out-of-Band) than the setting screen of the report.
- "Undetermined" means that the unoccupied port at the communication start-up will be selected.

■Agent uses internal ports

NEC ESMPRO Agent uses the following inside ports. When it do the packet filtering setting that it used iptables for, please perform setting to admit access to these.

Function	Port
portmap	111/tcp
	111/udp
NEC ESMPRO Agent	Undetermined

- It is assigned in an available port range by the OS. Please refer to the following files for the port range.

/proc/sys/net/ipv4/ip_local_port_range

< Setting SELinux >

NEC ESMPRO Agent uses snmpd.
When a SELinux function is effective, run the following command and remove a limit of snmpd.

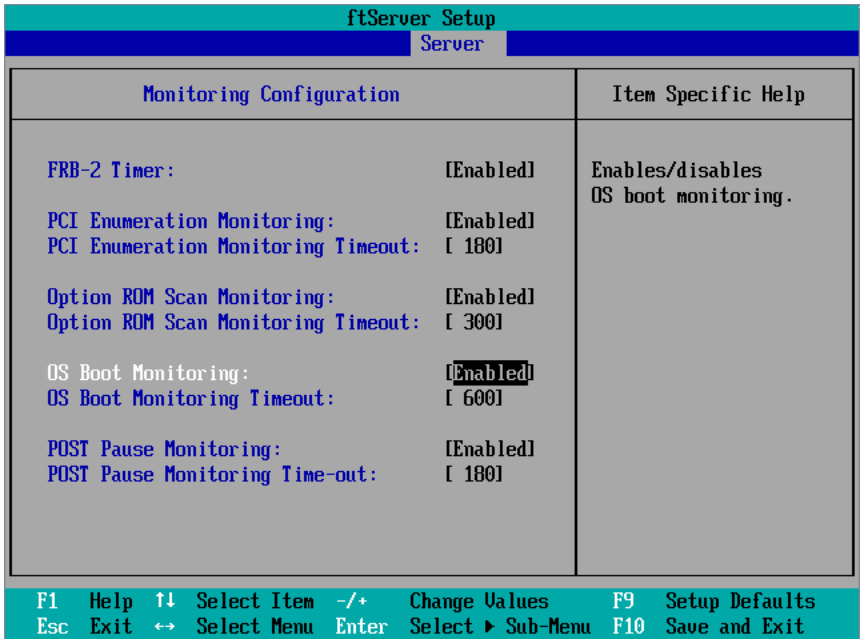
```
# setsebool -P snmpd_disable_trans 1
# /etc/init.d/ft-snmpd restart
```

Please confirm the setting situation of the SELinux function by carrying out a sestatus command. "SELinux status:" When is displayed with "enabled", a SELinux function becomes effective.

```
# sestatus -v
SELinux status: enabled        <- Please check here.
                :
                :
```

Step 12: Enable OS Boot Monitoring Function

Enable the “OS Boot Monitoring” setting which has been switched at “OS Boot Monitoring” (page 4-8). Refer to “Step 3: Disable OS Boot Monitoring Function“(page 4-8), change to “Enabled,” and set appropriate time (default is 10 min.).



Step 13: Back up System Information

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

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

1. Insert the "NEC EXPRESSBUILDER" DVD into the optical disk drive of the server, and restart the system.
2. Select [Tool menu].
3. Select [English].
4. Select [Maintenance Utility].
5. Select [System Information Management].
6. Insert a 3.5-inch floppy disk into the floppy disk drive.
7. Select [Save].

The setup is now completed.

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Chapter 5

Procedures after Completion of Installation

This chapter describes how you install management utilities, how you back up system information, and setup of PCs on the network. You may need to confirm these procedures while the system is running.

INSTALLING MANAGEMENT UTILITIES

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

NEC ESMPRO Agent

NEC ESMPRO Agent is 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 automatically installed by installing the software provided with NEC Express5800/ft series.

IMPORTANT:

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

Installation procedure

Please refer to the following chapters.

- Step 6: Install Software NEC Express5800/ft Series offers
- Step 11: Set Network for NEC ESMPRO Agent

Uninstallation procedure

1. Log in to the system as a root user.
2. Run the following command to uninstall the package:

   # rpm -e Esmpro-Express

   # rpm -e Esmpro-ft

   # rpm -e Esmpro-type1

   # rpm -e Esmpro-common
3. Restart the system with the below command.

   # reboot

Setup of NEC ESMPRO Agent

Follow the instructions below to setup the NEC ESMPRO Agent.

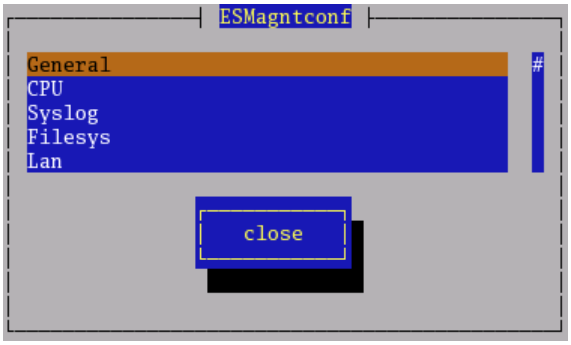
1. Log in the system as a root user.
2. Move to the directory where the NEC ESMPRO Agent is installed.

   # cd /opt/nec/esmpro_sa
3. Move to the directory where the control panel is stored.

   # cd bin
4. Start the control panel.

   # ./ESMagntconf

   The screen of the control panel will appear.



Report Setting

To report from the NEC ESMPRO Agent to the NEC ESMPRO Manager, you need to set the method of report.

Setting of Manager (SNMP)

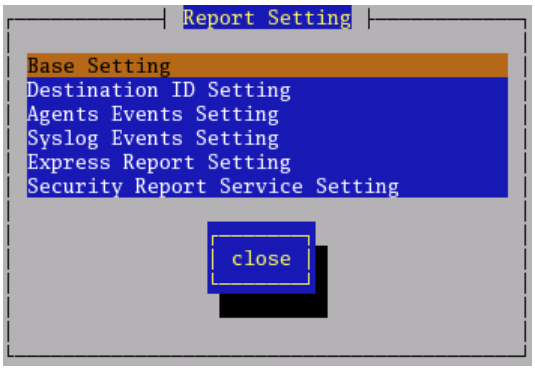
1. Log in the system as a root user.
2. Move to the directory where the NEC ESMPRO Agent is installed.

   # cd /opt/nec/esmpro_sa
3. Move to the directory where the Report Setting tool is stored.

   # cd bin
4. Start the Report Setting tool.

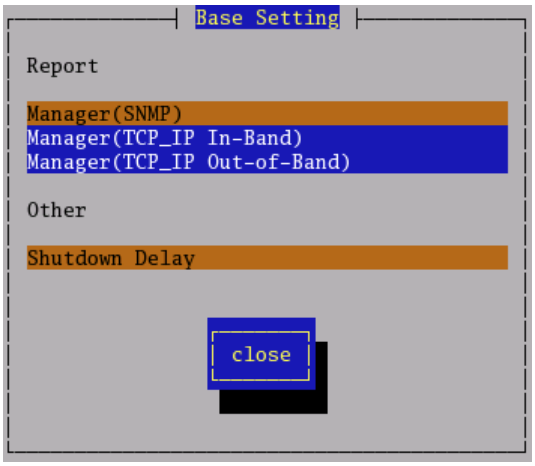
   # ./ESMamsadm

   The [Report Setting] screen will appear.

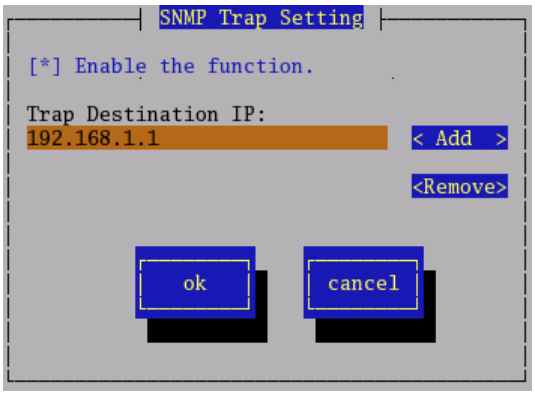


5. Select [Base Setting].

   The [Base Setting] screen will appear.



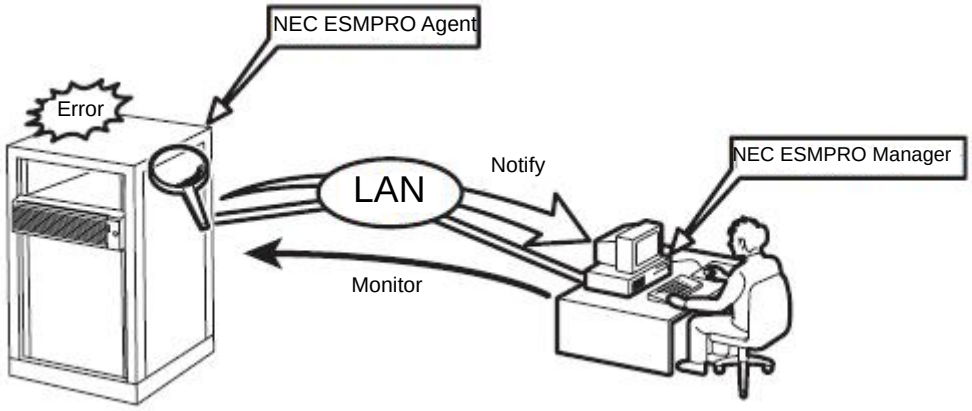
6. Select [Manager (SNMP)].
   The [SNMP Trap Setting] screen will appear.



7. Enable [Enable the function].
   Set enable/disable using space key. When checked, it is enabled. When not checked, it is disabled.
8. Select [Add] to set [Trap Destination IP].
   Set the IP address of the device where the NEC ESMPRO Manager is installed.
9. Finish the tool.
   The report will be performed to the NEC ESMPRO Manager.

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, refer to the online document "NEC ESMPRO Manager User's Guide" in the NEC EXPRESSBUILDER DVD.

Confirmation of the Kernel Version

The following describes how to check the version of the kernel, which is the core of the software achieving fault tolerance.
This process is performed when the version of the kernel in operation needs to be checked, such as when a device is added to NEC Express5800/ft series.

Confirm the version following the steps below.

1. Execute the command below.

```
# uname -a
```

The version of the kernel in operation is displayed.

This completes version confirmation.

CONFIRMING the ft Server Control Software version

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

Confirm the version following the steps below:

1. Execute the command below.

```
# rpm -q lsb-ft-eula_display
```

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

This completes the version confirmation.

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

If the system cannot be operated by some reason, use Recovery Console to restore the system. However, this method is only recommended to users or administrators who have good knowledge of the system.

When you have restored a damaged file by using Recovery Console, always update the system as described later in this chapter.

IMPORTANT:

- If hard disks are unrecognized, the system is unrepairable.
- To execute this configuration, login as a user with root privilege.

If fsck stops in the middle of startup at the time of boot, try fsck to each md device.

```
# fsck –y /dev/md*
*:md number
```

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 is not 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 configuration correct?

  → The boot device order may be specified with the BIOS setup utility of the server. Use the BIOS setup utility to change the boot device order to boot the system from the optical disk drive first.
  <Menu to check: [Boot]>

- ☐ If [Os installation] is selected at Boot Selection screen, following message is displayed.

  After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause
This EXPRESSBUILDER version was not designed for this computer. Insert the correct version and click [OK]. (When you click [OK], the computer reboots.)	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
EXPRESSBUILDER could not get the hardware parameters written in this motherboard. This version is not designed for this computer or the motherboard may be broken. (When you click [OK], the computer reboots	This message is displayed when NEC EXPRESSBUILDER cannot find system-specific information due to the replacement of a motherboard, and so on.
The hardware parameters written in this motherboard are incorrect. This version is not designed for this computer or the motherboard may be broken.	

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

Problems with NEC ESMPRO Setup

A menu which cannot be chosen with a setup main menu.

→ The available menus vary depending on the OS types. (The menus that cannot be installed are displayed in gray.)

Stop the setup of NEC ESMPRO Agent on the way.

→ If you click [Cancel] during the setup, the message asking whether to stop or not to stop the installation will appear. You can stop the installation by clicking [Stop] (the main menu remains displayed). However, the file having been setup halfway will not be deleted.

Start the uninstallation of NEC ESMPRO Agent after the system is started completely.

→ If NEC ESMPRO Agent is uninstalled just after the system startup, the setup program may freeze displaying the [Service Being Deleted…] dialog box. Shutdown the system by using Task Manager or other operation. Then uninstall NEC ESMPRO Agent after the system is started completely.

* For installation procedure and detailed explanations on NEC ESMPRO Manager, refer to the online document in the NEC EXPRESSBUILDER DVD.

Appendix A

About Services

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

http://www.nec.com/

N8800-147F, EXP320L

NEC Express5800/R320a-E4

N8800-148F, EXP320M

NEC Express5800/R320a-M4

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