

Installation Guide (VMware)

NEC Express Server
Express5800 Series

Express5800/R320g-E4
Express5800/R320g-M4
EXP320T, EXP320V

- Chapter 1 Installing Operating System**
- Chapter 2 Installing Bundled Software**
- Chapter 3 Configuring the Separate Log Server**

Manuals

Attached as a book

Safety Precautions and Regulatory Notices

Describes points of caution to ensure the safe use of this server.
Read these cautions before using this server.

Included in EXPRESSBUILDER as an electric manual

User's Guide

Chapter 1: General Description	Overviews, names, and functions of the server components
Chapter 2: Preparations	Installation of additional options, connection of peripheral devices, and suitable location for this server
Chapter 3: Setup	System BIOS configurations and summary of EXPRESSBUILDER
Chapter 4: Appendix	Specifications

Installation Guide (VMware)

Chapter 1: Installing Operating System	Installation of OS and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, BMC Configuration, and other bundled software
Chapter 3: Configuring the Separate Log Server	Configure the log server using other than ftSys Management Appliance

Maintenance Guide (VMware)

Chapter 1: Maintenance	Server maintenance, error messages, and troubleshooting
Chapter 2: Configuring and Upgrading the System	Changing hardware configuration, installing additional devices and setting up management tools
Chapter 3: Useful Features	The detail of system BIOS settings, SAS Configuration Utility, and EXPRESSBUILDER

Other manuals

The detail of NEC ESMPRO, BMC Configuration, and other features.

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Conventions Used in This Document

Notations used in the text

In addition to safety-related symbols urging caution, three other types of notations are used in this document. These notations have the following meanings.

Important	Indicates critical items that must be followed when handling hardware or operating software. If the procedures described are not followed, <u>hardware failure, data loss, and other serious malfunctions could occur.</u>
Note	Indicates items that must be confirmed when handling hardware or operating software.
Tips	Indicates information that is helpful to keep in mind when using this server.

Optical disk drive

This server is equipped with the following drive. This drive is referred to as *optical disk drive* in this document.

- DVD Super MULTI drive

Hard disk drive

Unless otherwise stated, *hard disk drive* described in this document refers to both of the following.

- Hard disk drive (HDD)
- Solid state drive (SSD)

Removable media

Unless otherwise stated, *removable media* described in this document refer to both of the following.

- USB flash drive
- Flash FDD

Abbreviations of Operating Systems (VMware)

VMware are referred to as follows.

Notations in this document	Official names of OS
VMware ESXi or ESXi	VMware ESXi 6.7 Update1

POST

POST described in this document refers to the following.

- Power On Self-Test

BMC

BMC described in this document refers to the following.

- Baseboard Management Controller

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Latest editions

This document was created based on the information available at the time of its creation. The screen images, messages and procedures are subject to change without notice. Substitute as appropriate when content has been modified.

The most recent version of the guide, as well as other related documents, is also available for download from the following website.

<https://www.nec.com/>

Installing Operating System

This chapter describes how to install an operating system. Read through this chapter to set up the system correctly.

1. Setup Procedure

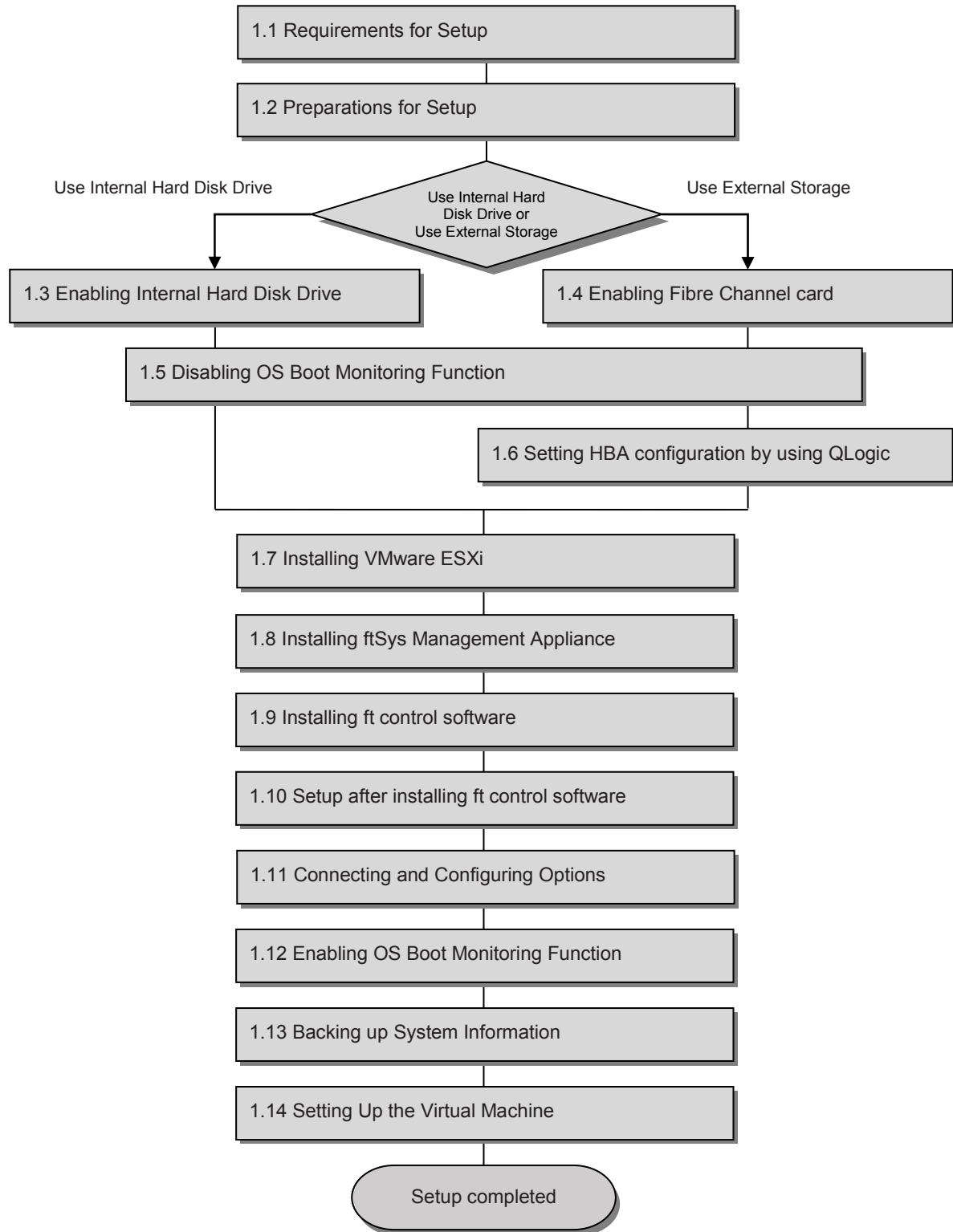
Describes how to set up VMware ESXi.

2. Procedures after Completion of Installation

Describes how to confirm kernel version and ft control software version, and precautions when changing configuration after setup.

1. Setup Procedure

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



1.1 Requirements for Setup

The followings are required.

Components provided with the device:

- ft control software Install DVD
- User's Guide
- Installation Guide (this manual)
- Maintenance Guide

VMware ESXi Install DVD:

From the VMware Web site, download the VMware ESXi installation image (original of VMware) corresponding to the ft control software version.

◆ ft control software 6.7.1 for VMware vSphere 6.7 Update1

<https://my.vmware.com/web/vmware/details?productId=742&rPId=31145&downloadGroup=ESXI67U1>

The contents of this web site are subject to change or delete without notice.

To download, login with the My VMware account is required.

- VMware vSphere Hypervisor (ESXi ISO) image (Includes VMware Tools)
Name: VMware-VMvisor-Installer-6.7.0.update01-10302608.x86_64.iso

Important The VMware ESXi version corresponding to the ft control software version is as shown above. The ft control software and VMware ESXi versions are designed to be paired. Thus, do not install any other VMware ESXi version.

VMware Host Client

This component is required to configure the VMware ESXi installed on ft server.

VMware Host Client manages the host on behalf of vSphere Client in vSphere 6.5 or later.

Since VMware Host Client runs on the Web browser, the requirements of Web browser must be met. For details, refer to the following Website.

<https://docs.vmware.com/en/VMware-vSphere/6.7/com.vmware.vsphere.html.hostclient.doc/GUID-83042A09-281D-4B74-9176-8E882AD23432.html>

The contents of this web site are subject to change or delete without notice.

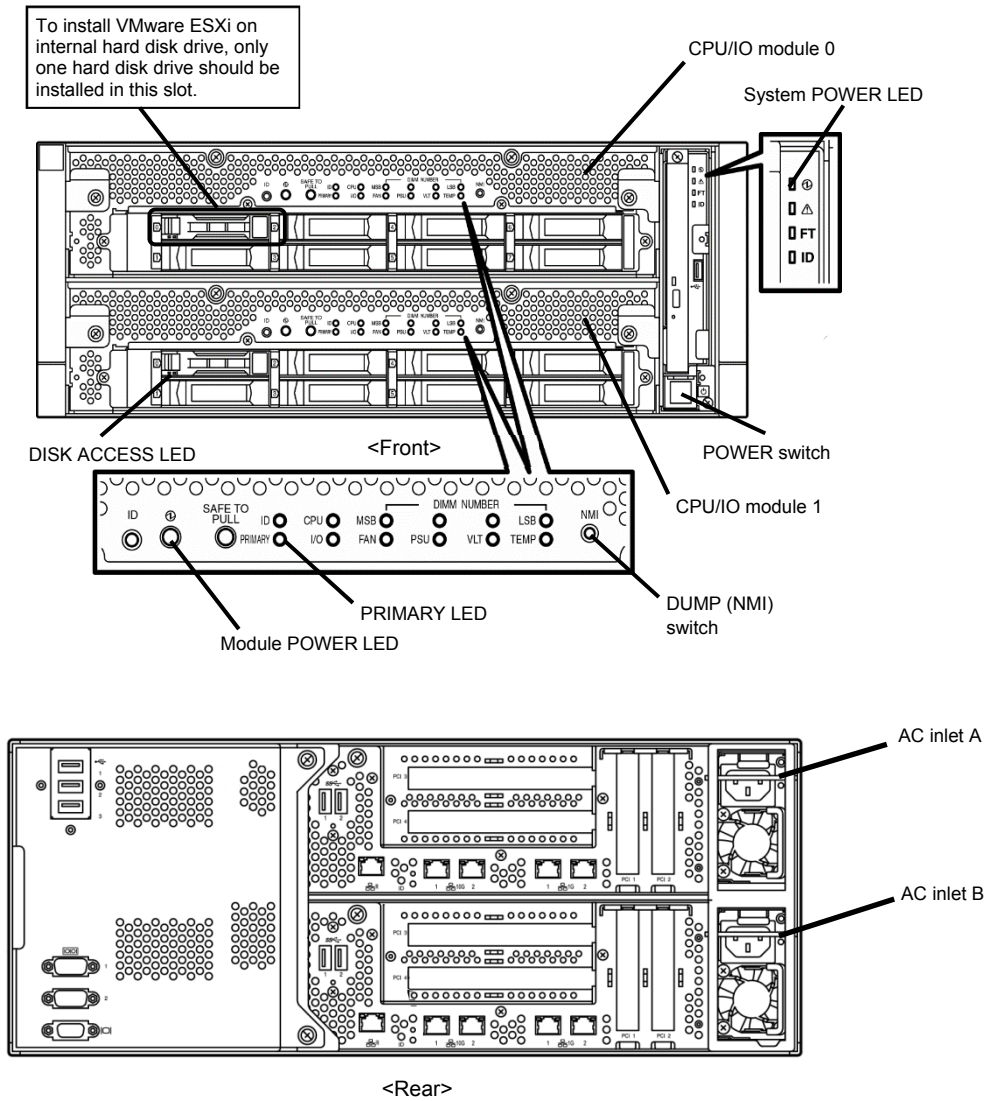
1.2 Preparations for Setup

Before SETUP, be sure to do the following.

If you do not prepare, setup cannot be performed properly.

1.2.1 Prepare NEC Express5800/ft series

The components shown below are required for setup.



With the power of the server off, follow the steps below:

Note

Make sure that the System POWER LED on the front panel is unlit.

1. Prepare NEC Express5800/ft series.

Follow the instructions below to prepare.

<When installing or reinstalling VMware ESXi to the internal hard disk drive>

- Disconnect all power cords from outlet.
- Remove all the LAN cables. (Connecting the Management LAN connector is optional.)
- Remove all the optional PCI boards.
- Install only one hard disk drive in slot 0 of CPU/IO module 0. Do not install any hard disk drive in CPU/IO module 1.

Important

- Installation must be performed on the device that is actually used. Do not use any hard disk drive of which system is installed on other device.
- Install only one hard disk drive in the slot specified here. If two or more hard disk drives are installed, the destination disk to install an OS cannot be identified.
- If the hard disk drive is not a new one, physically format it. Refer to *Chapter 3 (3.3 Physical Formatting of the Hard Disk Drive)* in *Maintenance Guide* for physical formatting.

<When installing or reinstalling VMware ESXi to the external storage>

- Disconnect all power cords from outlet.
- Remove all the LAN cables. (Connecting the Management LAN connector is optional.)
- Remove all the internal hard disk drives.
- Remove all the optional PCI boards except Fibre Channel card and peripheral equipment except external storage.
- If the Fibre Channel card is not mounted, insert the Fibre Channel cards into the same slot of each CPU/IO module.
- Connect each Fibre Channel card and external storage with FC cables.

2. Connect power cords in the following order to start the system from CPU/IO module 0.

- (1) Connect a power cord to AC inlet A.
- (2) Connect a power cord to AC inlet B.
- (3) Make sure that POWER LED on each module is blinking green.

Note

- Wait at least 15 seconds after step (1), and then perform step (2).
- If you disconnect a power cord, wait for at least 30 seconds before connecting it again.

Important

Make sure that the PRIMARY LED on CPU/IO module 0 is lit.

1.2.2 Prepare external storage device

Note the following when installing VMware ESXi on the external storage device.

Disk size required for installation

Secure at least 50 GB area in boot LUN to install the ESXi host and the fit control system.

1.3 Enabling Internal Hard Disk Drive

The following procedure shows when installing or reinstalling VMware ESXi to the internal hard disk drive.

Go to “1.4 Enabling Fibre Channel card” when installing or reinstalling VMware ESXi to the external storage.

1. Turn on the display and the peripheral equipment connected to the server.

Note

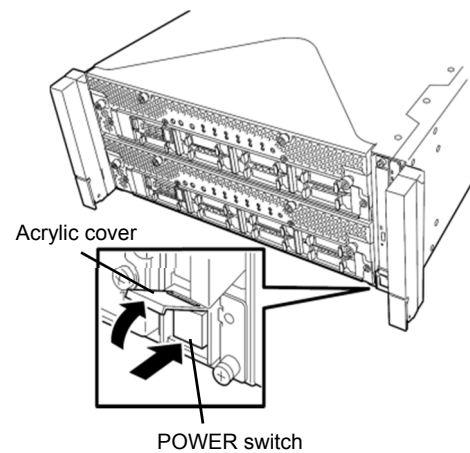
If the power cords are connected to a power controller like a UPS, make sure that it is powered on.

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

Lift the acrylic cover, and press the POWER switch.

Important

Do not turn off the power before the logo appears.



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

Tips

While the logo is displayed on the screen, the server performs a power-on self test (POST) to check itself. For details, refer to *Chapter 3 (1.1 POST) in User's Guide*.

Note

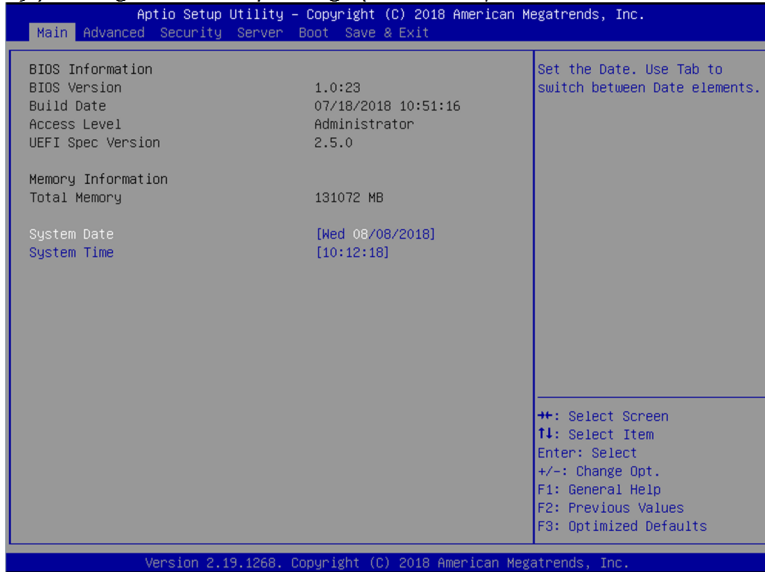
If the server detects errors during POST, it will interrupt POST and display the error message. Refer to *Chapter 1 (6.2 POST Error Message) in Maintenance Guide*.

4. Run POST.

After a while, the following message appears at lower left of the screen.

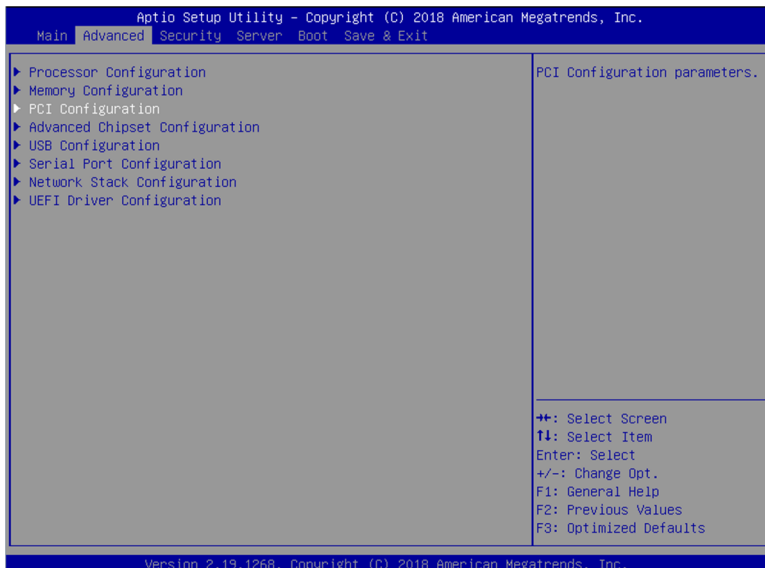
Press <F2> SETUP, <F4> ROM Utility, <F12> Network

If you press **F2**, SETUP will start after POST, and the Main menu appears. (You can also start SETUP by pressing **F2** while expanding option ROM.)

**Tips**

For [System Time], use Coordinated Universal Time (UTC). The specified UTC time is applied to the ESXi host to be installed later. In ftSys Management Appliance or other guest OS, set the time zone for each system.

5. When you move the cursor onto "Advanced", the Advanced menu appears. Choose "PCI Configuration" and press **Enter**.



6. Move the cursor onto "PCI Device Controller and Option ROM Settings", and press **Enter**.

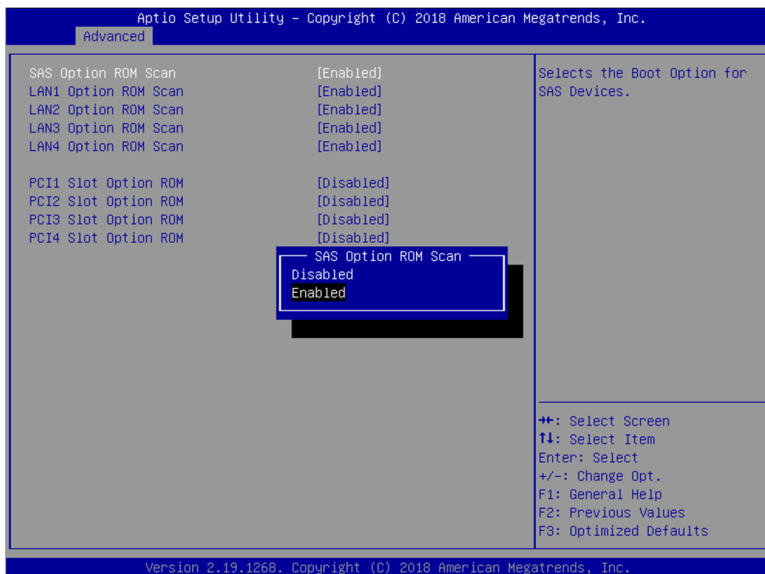


7. Move the cursor onto "SAS Option ROM Scan" and press **Enter**.

Parameters will be displayed. Select "Enabled" and press **Enter**.

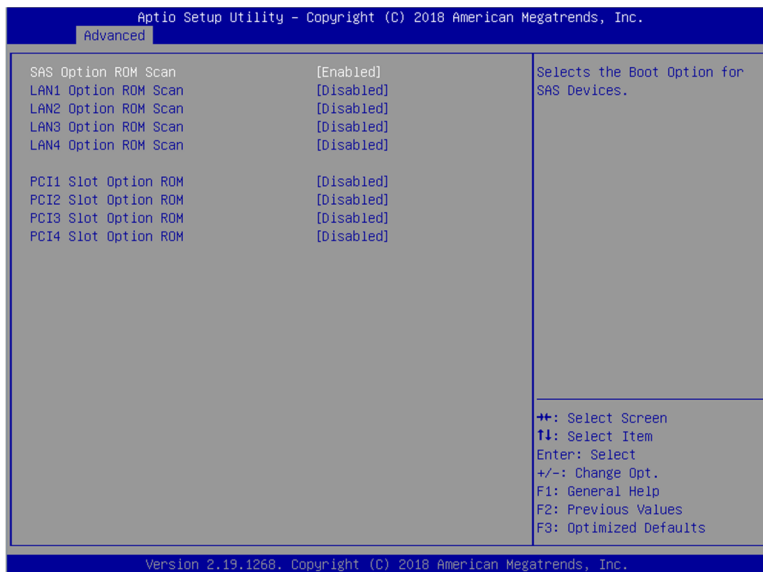
Among the parameters, choose "Enabled" and press **Enter**.

The current display of the configuration for SAS Option ROM Scan will be changed to "Enabled".



8. Select an item other than **SAS Option ROM Scan**, and press **Enter**. Select **Disabled** from the parameters displayed, and press **Enter**. Repeat these steps for all items other than **SAS Option ROM Scan**.

9. Make sure that **SAS Option ROM Scan** shows **Enabled**, and all other items show **Disabled**.



This is the end of steps for enabling internal hard disk drive. Press the ESC key two times to return to the previous screen.

10. It continues to disable OS boot monitoring Function.

Proceed to "*Chapter 1 (1.5 Disabling OS Boot Monitoring Function)*" to continue setup.

1.4 Enabling Fibre Channel card

The following procedure shows when installing or reinstalling VMware ESXi to the external storage.

1. Turn on the display and the peripheral equipment connected to the server.

Note

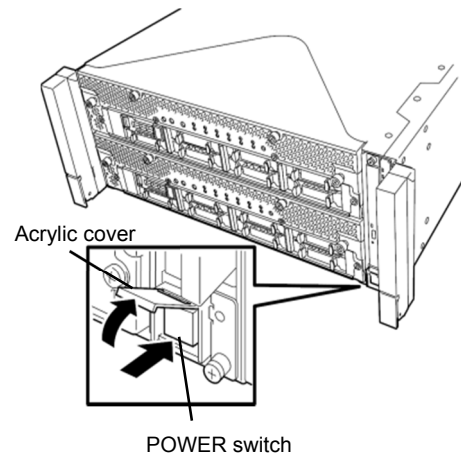
If the power cords are connected to a power controller like a UPS, make sure that it is powered on.

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

Lift the acrylic cover, and press the POWER switch.

Important

Do not turn off the power before the logo appears.



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

Tips

While the logo is displayed on the screen, the server performs a power-on self test (POST) to check itself. For details, refer to *Chapter 3 (1.1 POST) in User's Guide*.

Note

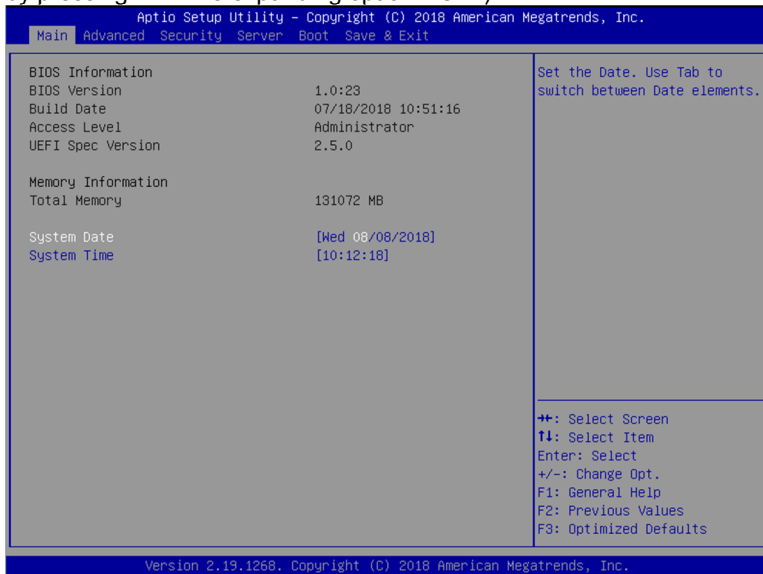
If the server detects errors during POST, it will interrupt POST and display the error message. Refer to *Chapter 1 (6.2 POST Error Message) in Maintenance Guide*.

4. Run POST.

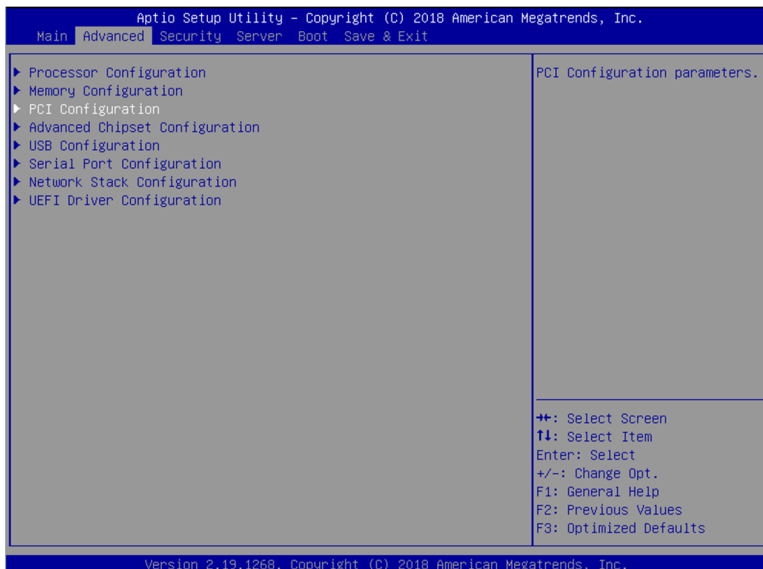
After a while, the following message appears at lower left of the screen.

Press <F2> SETUP, <F4> ROM Utility, <F12> Network

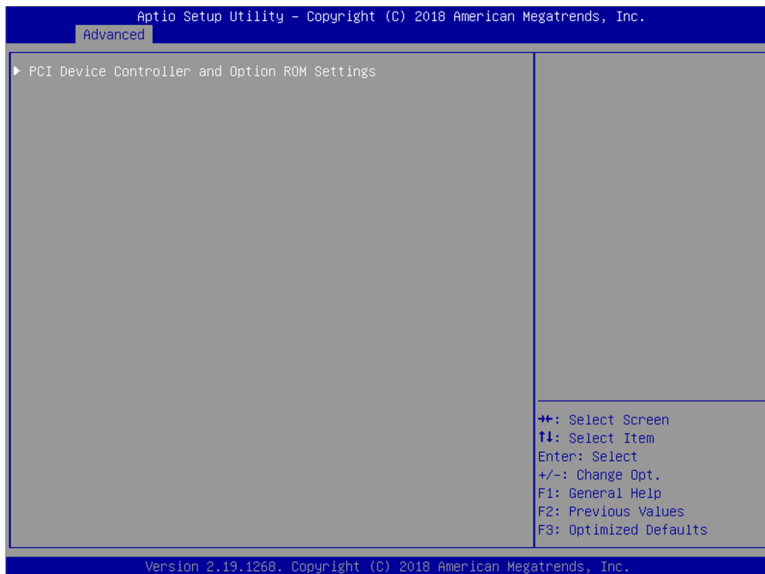
If you press **F2**, SETUP will start after POST, and the Main menu appears. (You can also start SETUP by pressing **F2** while expanding option ROM.)

**Tips**

For [System Time], use Coordinated Universal Time (UTC). The specified UTC time is applied to the ESXi host to be installed later. In ftSys Management Appliance or other guest OS, set the time zone for each system.

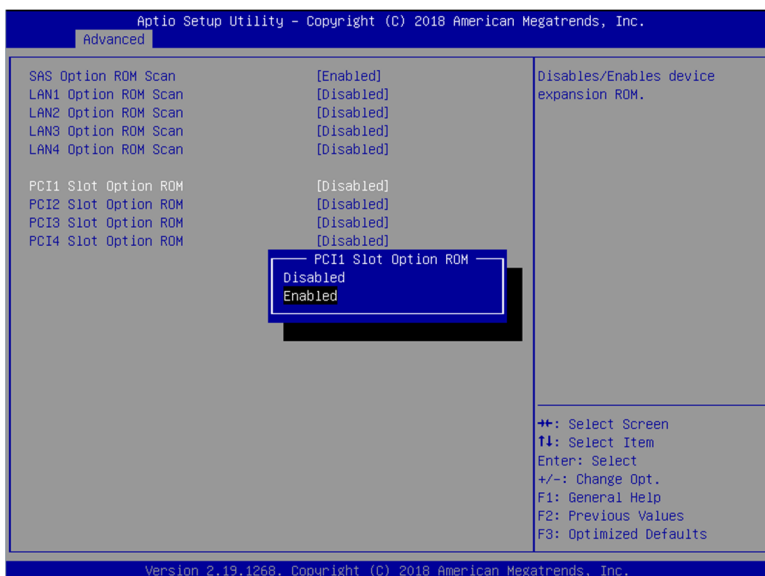
5. When you move the cursor onto "Advanced", the Advanced menu appears. Choose "PCI Configuration" and press **Enter**.

6. Move the cursor onto "PCI Device Controller and Option ROM Settings", and press **Enter**.



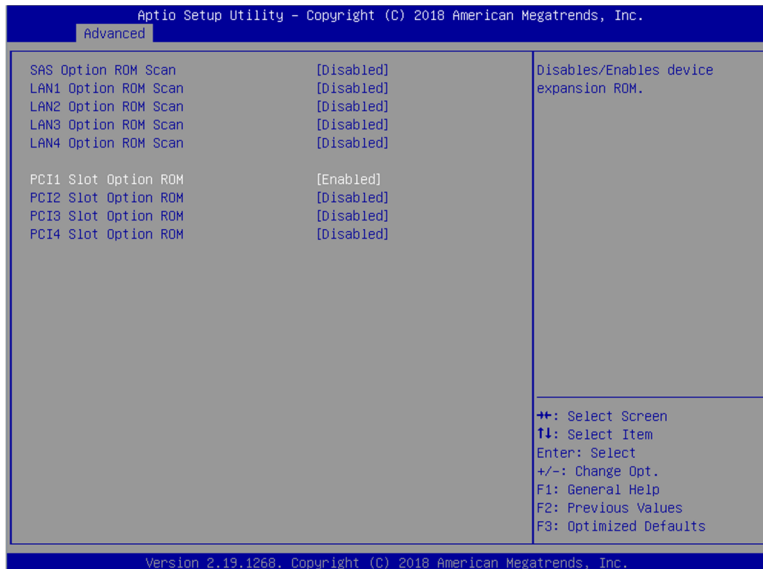
7. Move the cursor onto "PCI Slot x Option ROM" (x: the slot where Fibre Channel card is installed) and press **Enter**.

Parameters will be displayed. Select "Enabled" and press **Enter**. The current display of the configuration for **PCI Slotx Option ROM** will be changed to "Enabled".



8. Select an item other than **PCI Slot x Option ROM** for the PCI slot in which Fibre Channel card is installed, and press **Enter**. Select **Disabled** from the parameters displayed, and press **Enter**. Repeat these steps for all items other than **PCI Slot x Option ROM** for the PCI slot in which Fibre Channel card is installed.

9. Make sure that **PCI Slot x Option ROM** for the PCI slot in which Fibre Channel card is installed shows **Enabled**, and all other items show **Disabled**.



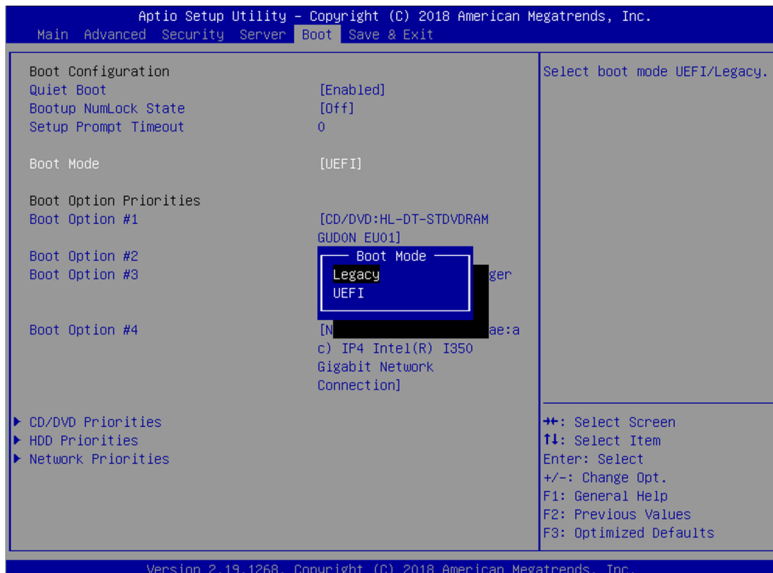
This is the end of steps for enabling Fibre Channel card. Press the ESC key two times to return to the previous screen.

10. Change "Boot Mode" Setting, because it's necessary to be set HBA configuration by next step.

When you move the cursor onto "Boot", the Boot menu appears.

Move the cursor onto "Boot Mode" and press **Enter**.

Parameters will be displayed. Select "Legacy" and press **Enter**.



11. It continues to disable OS boot monitoring Function.

Proceed to "[Chapter 1 \(1.5 Disabling OS Boot Monitoring Function\)](#)" to continue setup.

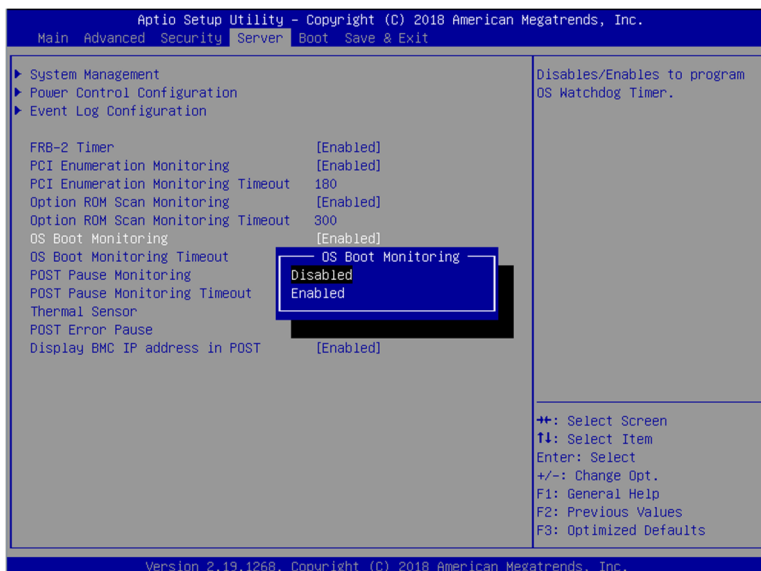
1.5 Disabling OS Boot Monitoring Function

Before starting system start up, the OS boot monitoring function needs to be disabled.

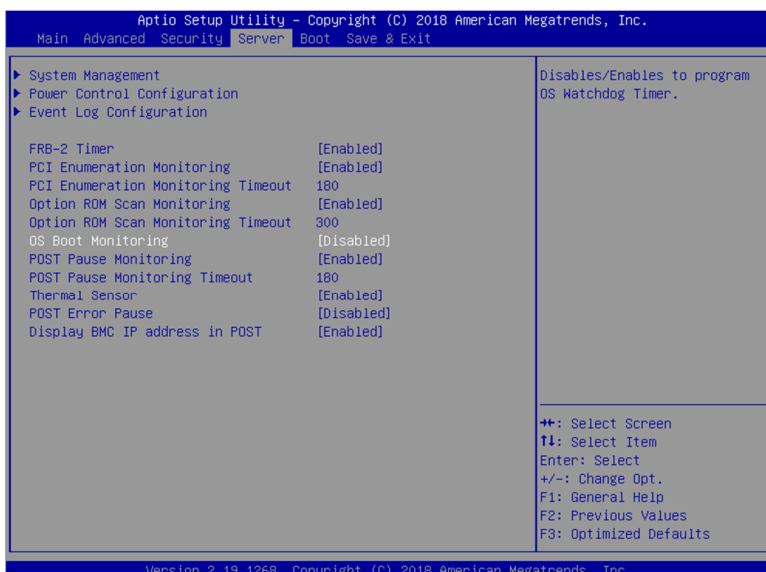
Important Be sure to disable boot monitoring function before setting up the system. This server has a function to monitor the server at startup. (Enabled in the configuration at shipment) If this function is enabled, the system will be forcibly restarted while OS setup screen is shown and the setup will be unsuccessful. BIOS may repeat OS setup in an invalid manner. If setup fails, you must re-install the operating system.

Tips For details of operations for BIOS Setup Utility and parameters for boot monitoring function, see Chapter 3 (1. System BIOS) in Maintenance Guide.

- When you move the cursor onto "Server", the Server menu appears. Move the cursor onto "OS Boot Monitoring" and press **Enter**. Parameters will be displayed.



- Among the parameters, choose "Disabled" and press **Enter**. The current display of the configuration for OS Boot Monitoring will be changed to "Disabled".



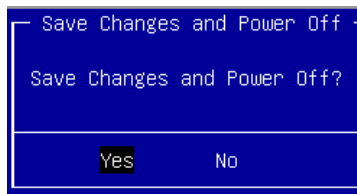
3. Move the cursor onto **Save & Exit**, the **Save & Exit** menu appears.



4. Select **Save Changes and Power Off**.

On the confirmation window shown below, select **Yes** to save parameters and exit SETUP.

System turns off when SETUP completes.



Now **OS Boot Monitoring** function is disabled.

Tips

To continue with the setup procedure, proceed to “1.6 Setting HBA configuration by using QLogic” on the next page if the Fibre Channel card is enabled, and to “1.7 Installing VMware ESXi” if the internal hard disk drive is enabled.

1.6 Setting HBA configuration by using QLogic

Setting HBA configuration by using QLogic. Setting is needed to HBA installed into each CPU/IO module 0 and 1.

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

1. Connect power cords in the following order to start the system from CPU/IO module 0.
 - (1) Connect a power cord to AC inlet A.
 - (2) Connect a power cord to AC inlet B.
 - (3) Make sure that POWER LED on each module is blinking green.

Note

- Wait at least 15 seconds after step (1), and then perform step (2).
- If you disconnect a power cord, wait for at least 30 seconds before connecting it again.

Tips See *Chapter 1 (1.2 Preparations for Setup)* for AC inlet connector.

Important Make sure that the PRIMARY LED on CPU/IO module 0 is lit.

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

- 2-1 In the QLogic prompt window which appears during POST, press **Ctrl+Q** or **Alt+Q** to launch QLogic Fast! UTIL.

```

QLE2670    PCI3.0 Fibre Channel ROM BIOS Version 3.27
Copyright (C) QLogic Corporation 1993-2014. All rights reserved.
www.qlogic.com

Press <CTRL-Q> or <ALT-Q> for Fast!UTIL

BIOS for Adapter 0 is disabled
ROM BIOS NOT INSTALLED
  
```

```

QLE2670    PCI3.0 Fibre Channel ROM BIOS Version 3.27
Copyright (C) QLogic Corporation 1993-2014. All rights reserved.
www.qlogic.com

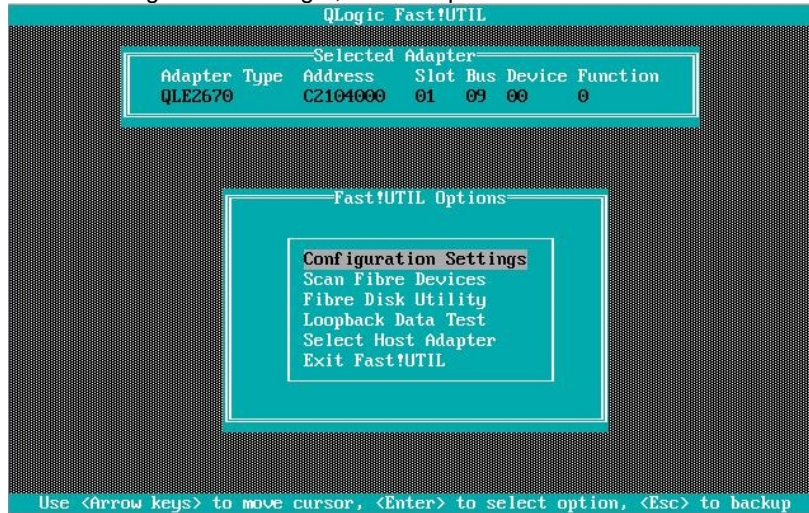
Press <CTRL-Q> or <ALT-Q> for Fast!UTIL

BIOS for Adapter 0 is disabled
ROM BIOS NOT INSTALLED

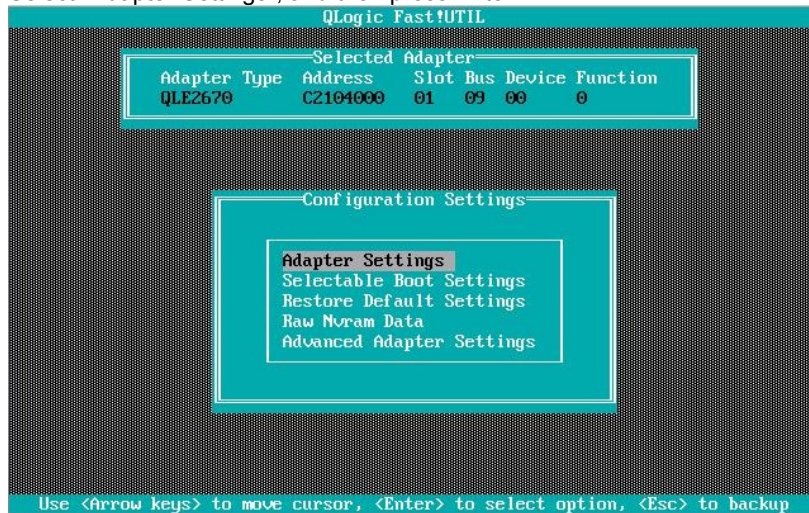
<CTRL-Q> Detected, Initialization in progress, Please wait...
  
```

Note If QLogic prompt is not indicates, check the "PCIx Slot Option ROM" and "Boot Mode" setting. Refer to step 9 and step 10 in "1.4 Enabling Fibre Channel card".

- 2-2 Select "Configuration Settings", and then press **Enter**.



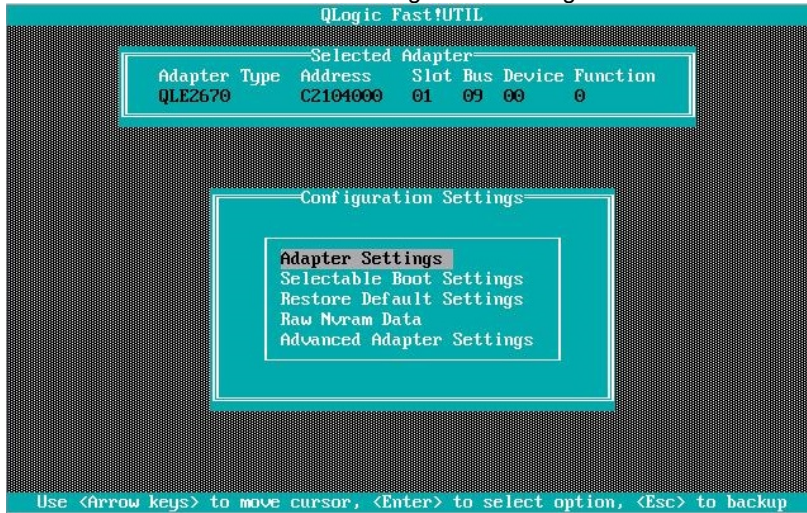
- 2-3 Select "Adapter Settings", and then press Enter.



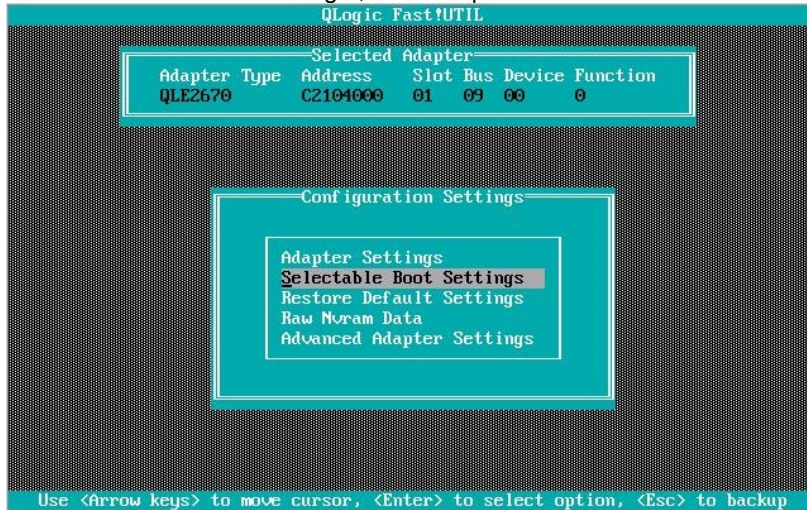
- 2-4 Select "Host Adapter BIOS", and then press **Enter** to change the setting to "Enabled". (The default is "Disabled".)



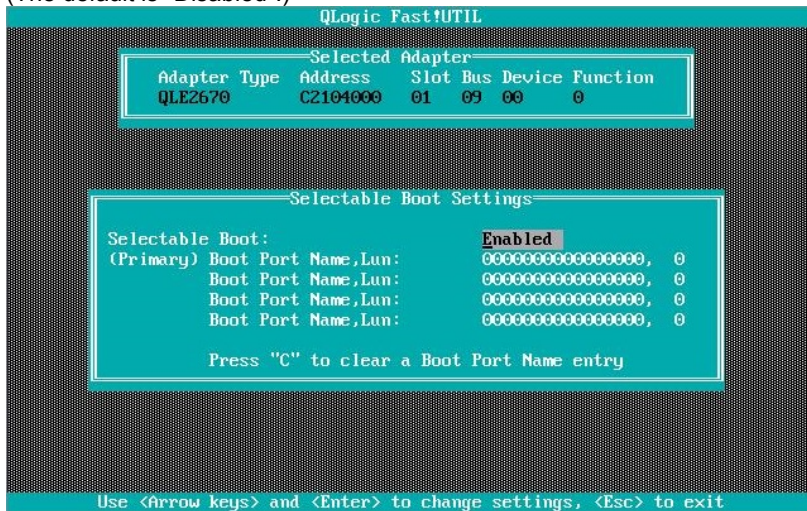
2-5 Press **ESC** once to return to the Configuration Settings screen.



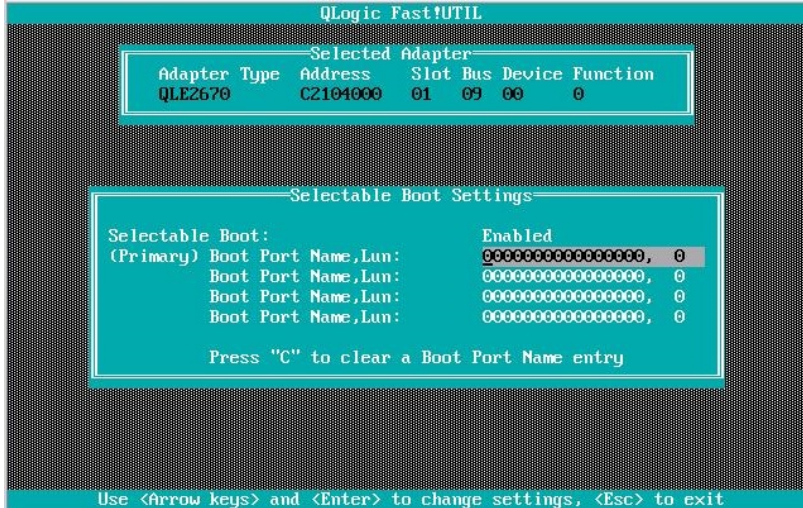
2-6 Select "Selectable Boot Settings", and then press **Enter**.



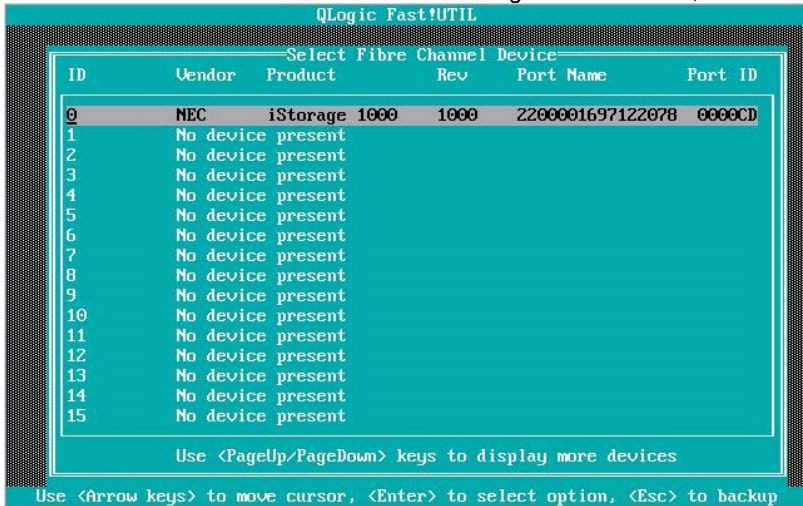
2-7 Select "Selectable Boot", and then press Enter to change the setting to "Enabled". (The default is "Disabled".)



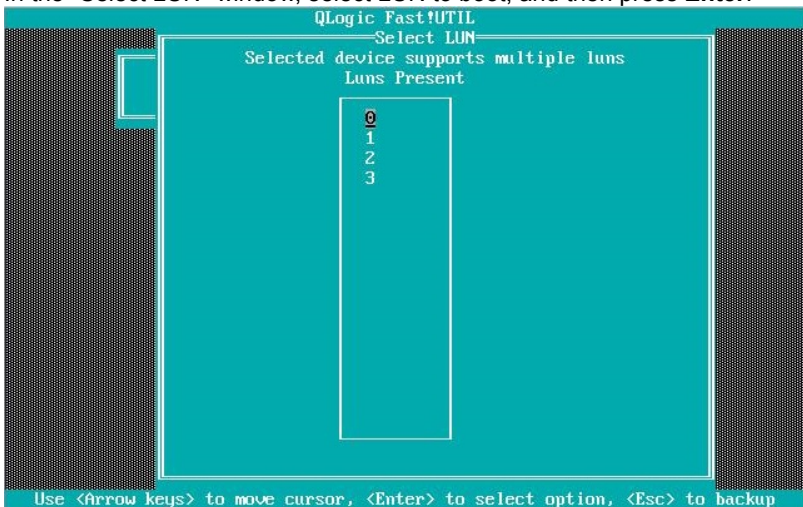
- 2-8 Select "(Primary) Boot Port Name, Lun:", and then press **Enter**.



- 2-9 The storage devices that are recognized by the Fibre Channel card are displayed in the "Select Fibre Channel Device" window. Select the storage device to boot, and then press **Enter**.

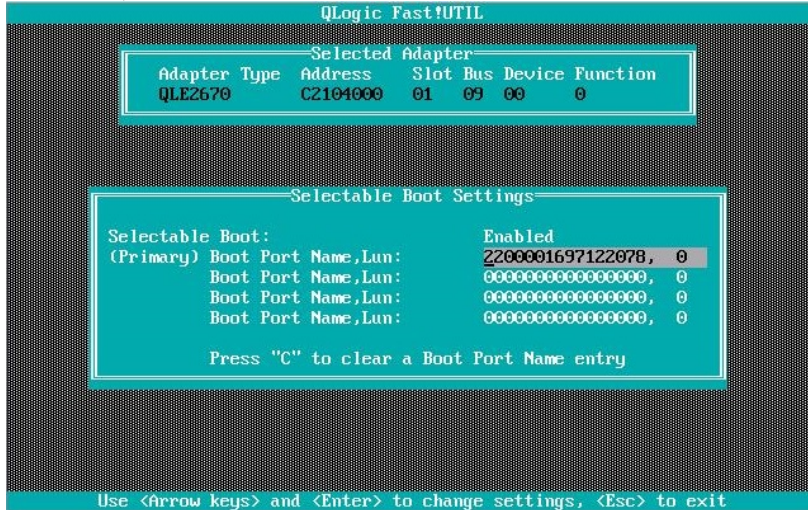


- 2-10 In the "Select LUN" window, select LUN to boot, and then press **Enter**.



Note This window is not displayed if there is only one LUN.

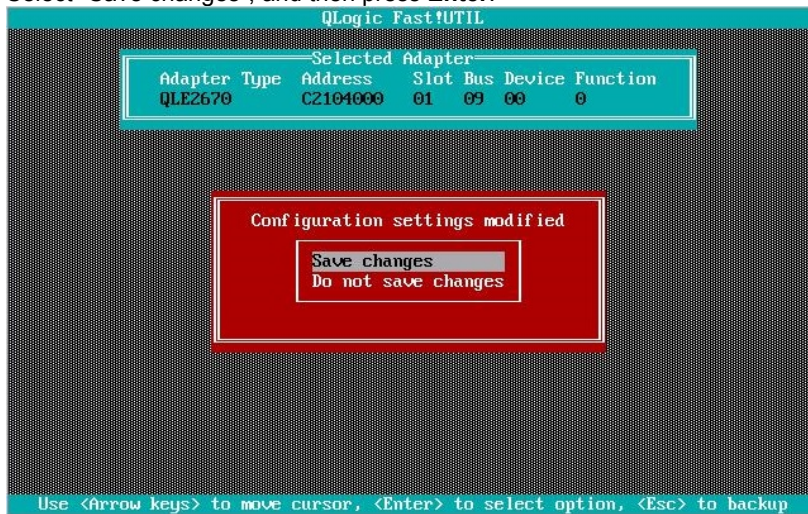
2-11 The port name and LUN specified in steps 2-9 and 2-10 respectively are applied to "(Primary) Boot Port Name, Lun:"



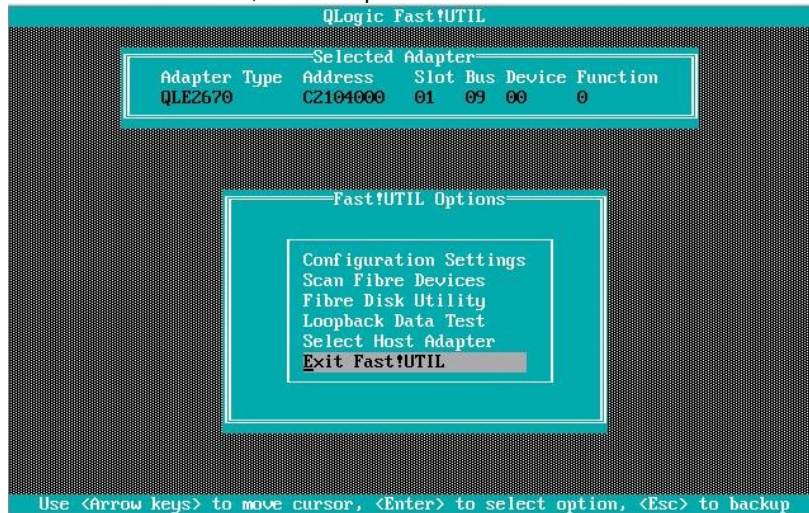
Note

The images shown in steps 2-9 through 2-11 are examples. The information displayed varies depending on the product name of external storage and settings such as logical disk settings.

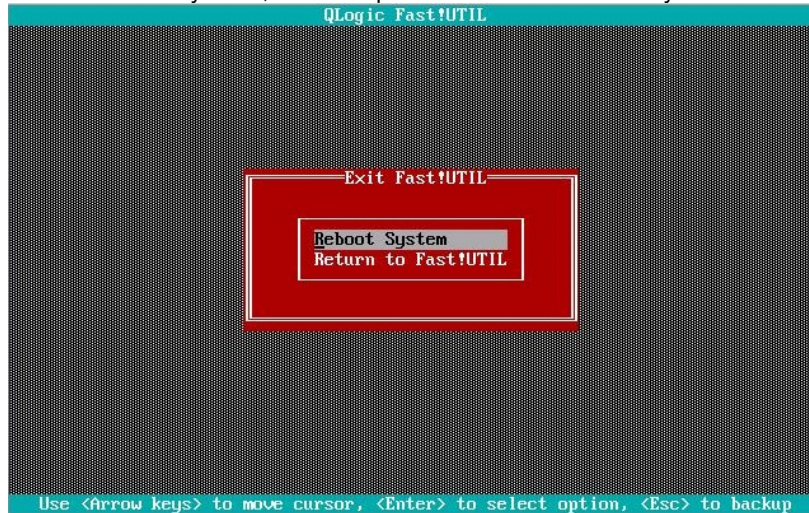
2-12 Press **ESC** twice to display the confirmation window. Select "Save changes", and then press **Enter**.



- 2-13 Select "Exit Fast!UTIL", and then press **Enter**.



- 2-14 Select "Reboot System", and then press **Enter** to reboot the system.



3. Configure CPU/IO module 1.

When the NEC logo is displayed on the screen of the display unit after the system reboots, press the POWER switch on the front of the unit to turn off the power. Then, disconnect all the power cords from the server.

Note Make sure that System POWER LED is unlit before disconnecting the power cord.

4. Connect power cords in the following order to start the system from CPU/IO module 1.

- (1) Connect a power cord to AC inlet **B**.
- (2) Connect a power cord to AC inlet **A**.
- (3) Make sure that POWER LED on each module is blinking green.

Note

- Wait at least 15 seconds after step (1), and then perform step (2).
- If you disconnect a power cord, wait for at least 30 seconds before connecting it again.

Tips See *Chapter 1 (1.2 Preparations for Setup)* for AC inlet connector.

Important Make sure that the PRIMARY LED on CPU/IO module 1 is lit.
If the PRIMARY LED on CPU/IO module 0 is lit, disconnect all the power cords from the server. Then after wait for at least 30 seconds, perform step 4 again.

- Press the POWER switch on front panel to start the system from the CPU/IO module 1, and perform Steps 2-1 to 2-14 in similar way.

This is the end of steps for setting HBA configuration by using Qlogic.

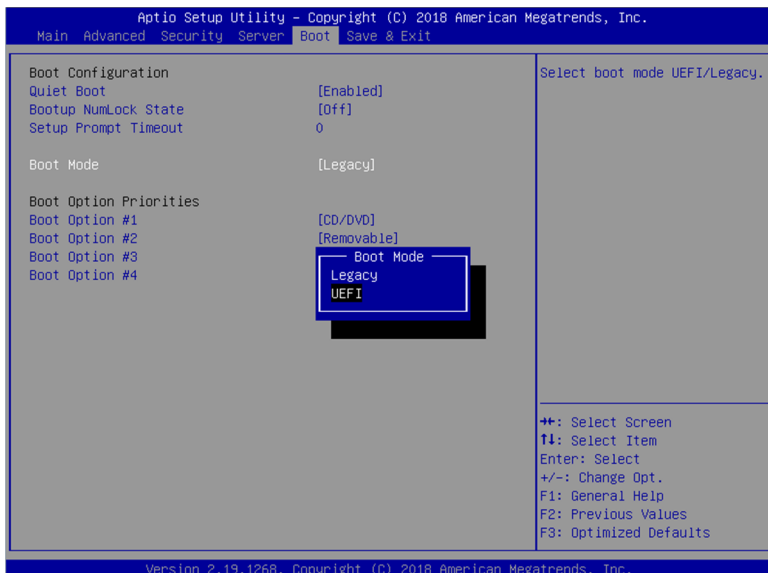
Because it's necessary to return setting, **perform next step definitely before installing VMware ESXi.**

- After configuring the settings for the CPU/IO module 1, set the CPU/IO module 0 as primary. When the NEC logo is displayed on the screen of the display unit after the system reboots, press the POWER switch on the front of the unit to turn off the power. Then, disconnect all the power cords from the server.

Note

Make sure that System POWER LED is unlit before disconnecting the power cord.

- Connect the power cord to the server according to step 1 in this section to start the system from CPU/IO module 0.
- Press the POWER switch that is located on the front side of the server. Refer to "1.4 Enabling Fibre Channel card", start BIOS Setup Utility. Select "Boot Mode" in the Boot menu. Change to "UEFI" from "Legacy".



- Check that "Boot Mode" is UEFI, then select **Save changes and Power Off** in Save & Exit menu, save parameters and exit SETUP.

1.7 Installing VMware ESXi

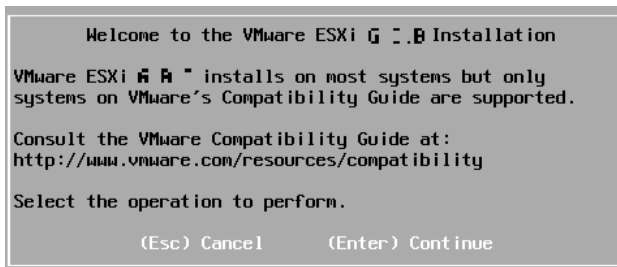
1.7.1 Installing VMware ESXi

1. Press the POWER switch on the front side of the server to start the system from CPU/IO module 0 and then perform the following procedures.

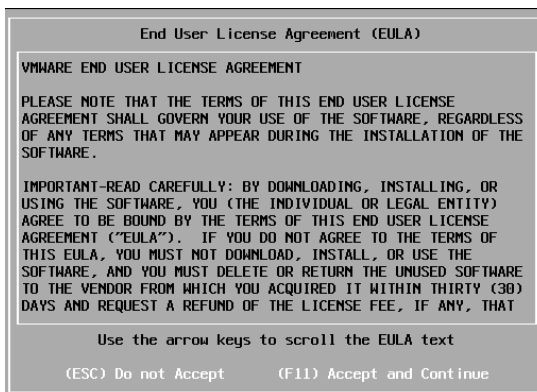
Important Make sure that the PRIMARY LED on CPU/IO module 0 is lit.

Note Make sure that Module POWER LEDs on both CPU/IO modules 0 and 1 are blinking, then press the POWER switch.

2. Immediately after powering on the server, insert the VMware ESXi Install DVD into the DVD drive of the server.
3. When an installation confirmation message appears, press **Enter**.



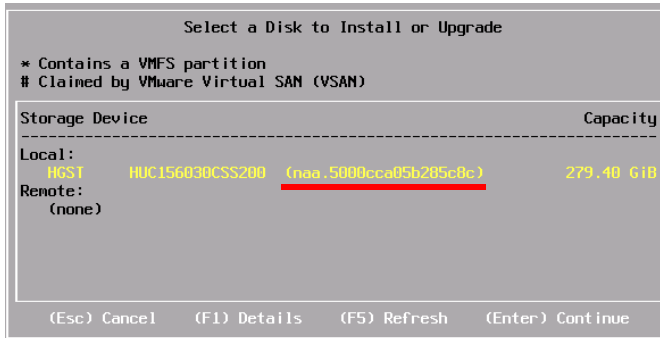
4. When the End User License Agreement (EULA) screen for VMware ESXi appears, press **F11**.



5. The disk selection screen [Select a Disk to Install or Upgrade] appears. Select the installation destination and take a note of its extent (the underlined part in the image shown below), and then, press **Enter**.

Note

The storage device name you have written is to be used when selecting an installation destination for ftSys Management Appliance (see *Chapter 1 (1.8 Installing ftSys Management Appliance)*).

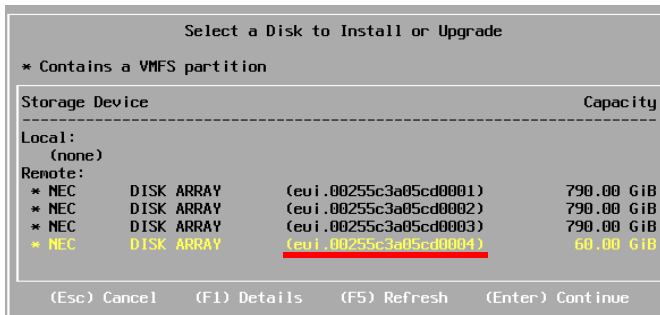
<When installing ESXi to the internal hard disk drive>**Tips**

The installer of VMware ESXi recognizes the built-in hard disk drive as a local disk. Therefore, the inserted built-in hard disk drive appears under the [Local] category.

Important

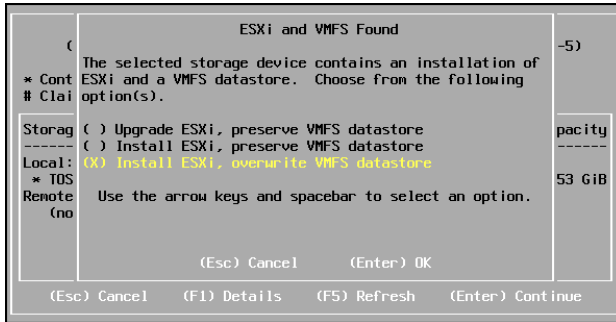
Note the following when reinstalling VMware ESXi:

If any data is contained in the destination hard disk drive, the installer does not display a message to prompt you to save data because the installer of VMware ESXi cannot recognize the Stratus MPM disk format. Therefore, make sure that the destination hard disk drive does not contain any data (or save the data, if any) before installing VMware ESXi.

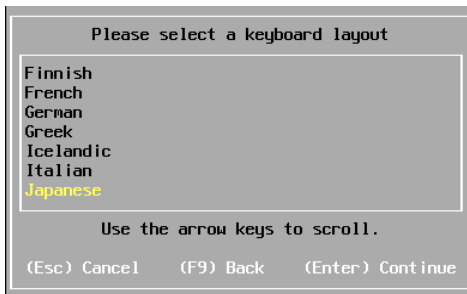
<When installing VMware ESXi to the external storage>**Tips**

The installer of VMware ESXi recognizes the external storage as a remote disk. Therefore, the external storage appears under the [Remote] category.

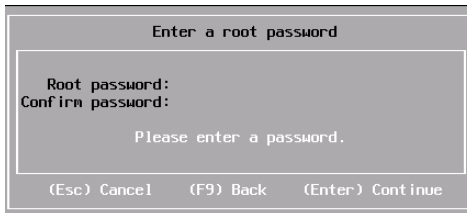
6. When reinstalling VMware ESXi, an overwrite confirmation message appears. Move the cursor onto [Install ESXi, overwrite VMFS datastore], press the space bar to determine it, and then press **Enter**.



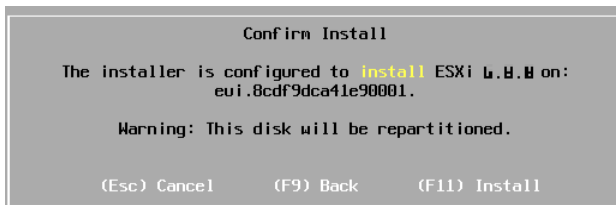
7. When the keyboard layout selection screen appears, select your desired keyboard layout and press **Enter**.



8. The root password input screen is displayed. Enter the password. Use the ↓ key or Tab key to move to the next input field, enter the same password again, and press the **Enter** key.



9. When the installation confirmation screen appears, press **F11** to start the installation.



10. In the [Installation Complete] screen, press **Enter**. The VMware ESXi Install DVD is ejected and the server reboots.

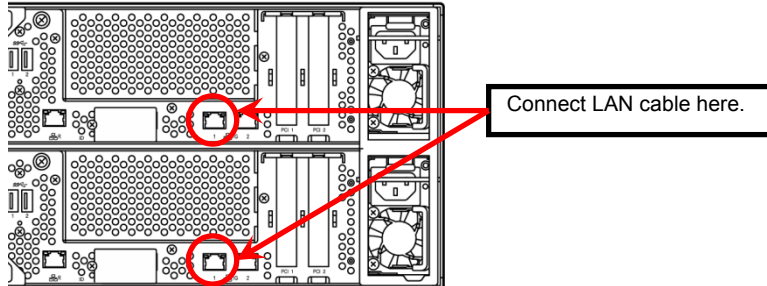


1.7.2 Configuring VMware ESXi

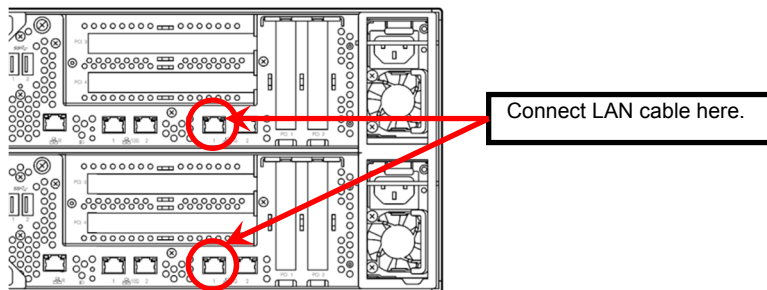
When LAN cables of the CPU/IO module 0 and 1 are removed, connect both of them.

Connect LAN cables to Port #1 connectors (1Gigabit) on CPU/IO modules 0 and 1. (At installation, the standard switch (vSwitch0) is created on this connector.)

<R320g-E4 Model>



<R320g-M4 Model>



When the installed VMware ESXi boots, press **F2** and log in to the system as a root user.

On the System Customization menu, configure each item as shown below.



– Set the IP address.

Note Set a static IP address instead of using DHCP.

Important The ESXi host and ftSys Management Appliance must exist on the same network.

1. Select [Configure Management Network] and press **Enter**.
2. Select [IPv4 Configuration] and press **Enter**.
3. Select [Set static IPv4 address and network configuration] and press the space bar.
4. Enter [IPv4 Address], [Subnet Mask] and [Default Gateway], and press **Enter**.
5. In the [Configure Management Network] screen, press **ESC** to display the confirmation screen. Press **Y** to enable the network settings and return to the main menu.

Note If the IP address is changed after installation, perform steps described in *Chapter 1 (2.3.1 If the network settings of the ESXi host or root user password has been changed)*.

– Follow the steps below when specifying the DNS server.

Important Specify the DNS server from which you can obtain a correct hostname and IP address. If an inappropriate DNS server is specified, installation may fail.

Note You can configure the DNS server after completion of installation.
If the host name is changed, perform steps described in *Chapter 1 (2.3.1 If the network settings of the ESXi host or root user password has been changed)*.

1. Select [Configure Management Network] and press **Enter**.
2. Select [DNS Configuration] and press **Enter**.
3. Enter [Primary DNS Server], [Alternate DNS Server] and [Hostname], and press **Enter**.
4. In the [Configure Management Network] screen, press **ESC** to display the confirmation screen. Press **Y** to enable the network settings and return to the main menu.

– Follow the steps below when configuring the settings for searching the DNS domain.

1. Select [Configure Management Network] and press **Enter**.
2. Select [Custom DNS Suffixes] and press **Enter**.
3. In the [Custom DNS Suffixes] dialog box, enter one or more DNS suffixes and press **Enter**.
4. In the [Configure Management Network] screen, press **ESC** to display the confirmation screen. Press **Y** to enable the network settings and return to the main menu.

Important If an inappropriate DNS domain is specified, installation may fail.

– Follow the steps below when enabling an SSH connection to the ESXi host.

1. Select [Troubleshooting Options] and press **Enter**.
2. Select [Enable SSH] and press **Enter** to change the setting from [SSH is Disabled] to [SSH is Enabled].
3. Press **ESC** to return to the [System Customization] menu.

Press **ESC** to log out.

Important Do not change the network configuration that is created at installation of the ESXi host before the setup procedure described in this guide completes.
If you need to add standard switch, perform it after setup process completes.

Note Set [Configuration Management Network] and [Troubleshooting Options] according to your environment.

Tips If IPv6 is disabled in Configure Management Network, the system reboots automatically.

1.7.3 Using Host Client

To enable Host Client to manage the ESXi host, input the following URL in the Web browser, and connect to the ESXi host.

`https://<ESXi host name or IP address>/ui`

If connection to the ESXi host is made successfully, the Host Client screen appears as shown below. Input the user name and password of the system administrator, and log into the ESXi host.



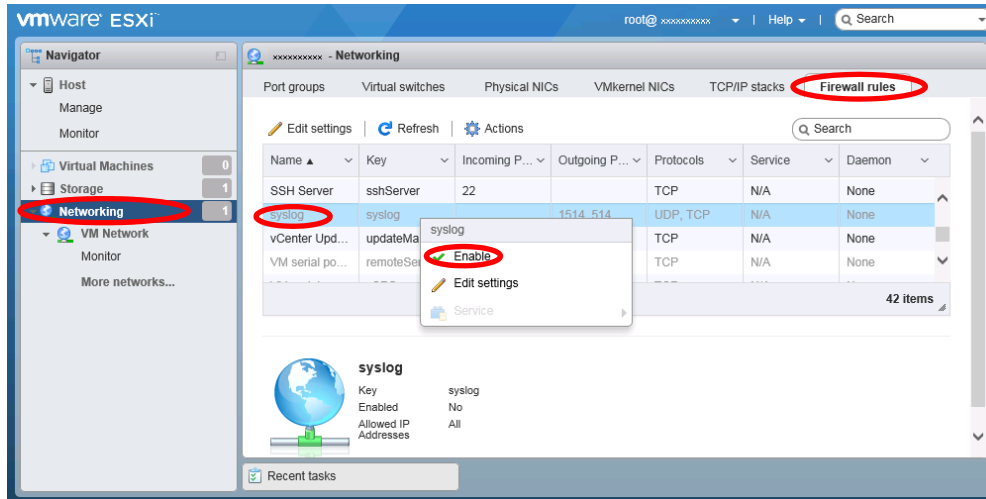
Important Use the terminal with the DNS server specified in the OS network setting for Host Client.

1.7.4 Firewall setting for the ESXi host

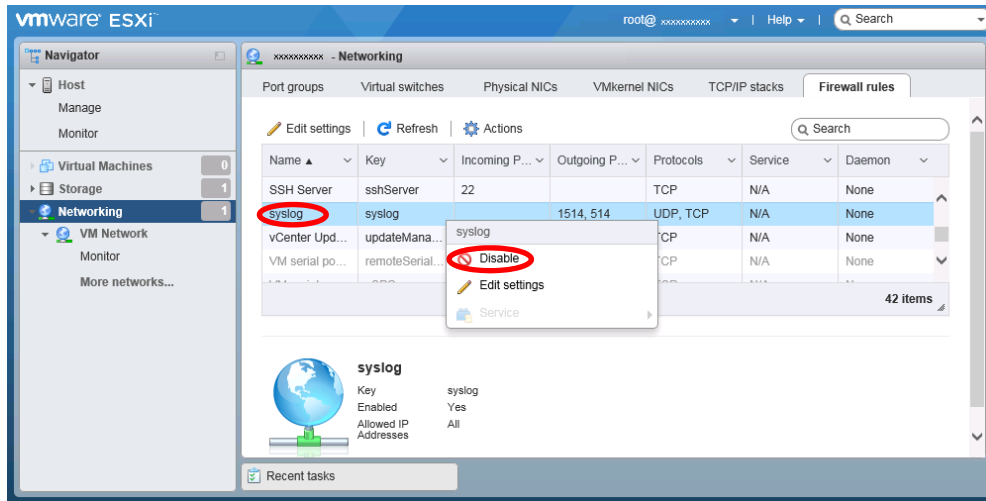
Connect to the ESXi host from Host Client to configure.

1. Connect to the ESXi host from the Web browser, select [Networking] of Navigator, and select the "syslog" item shown in the table from the [Firewall rules] tab.

Select [Enable] from the [Actions] menu or the items displayed by right-clicking.



2. Check that the "syslog" items are not disabled (displayed in gray) but enabled (displayed in black). From the [Actions] menu or [Disable] displayed by right-clicking, check again that the syslog is enabled.



VMware ESXi has been installed.

1.8 Installing ftSys Management Appliance

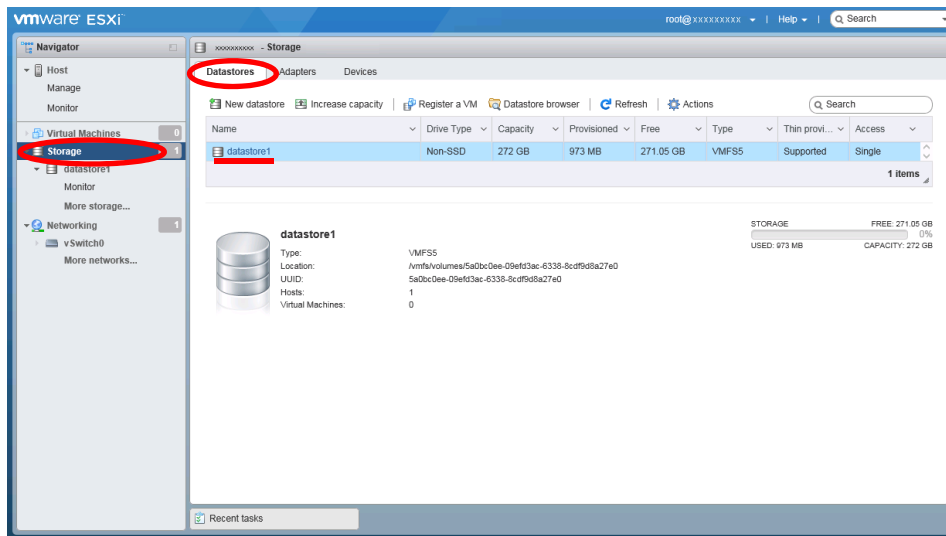
Connect to the ESXi host from Host Client to install.

Important Do not add the ESXi host to vCenter Server until the installation has been completed.

1.8.1 Checking the Installation Destination Disk

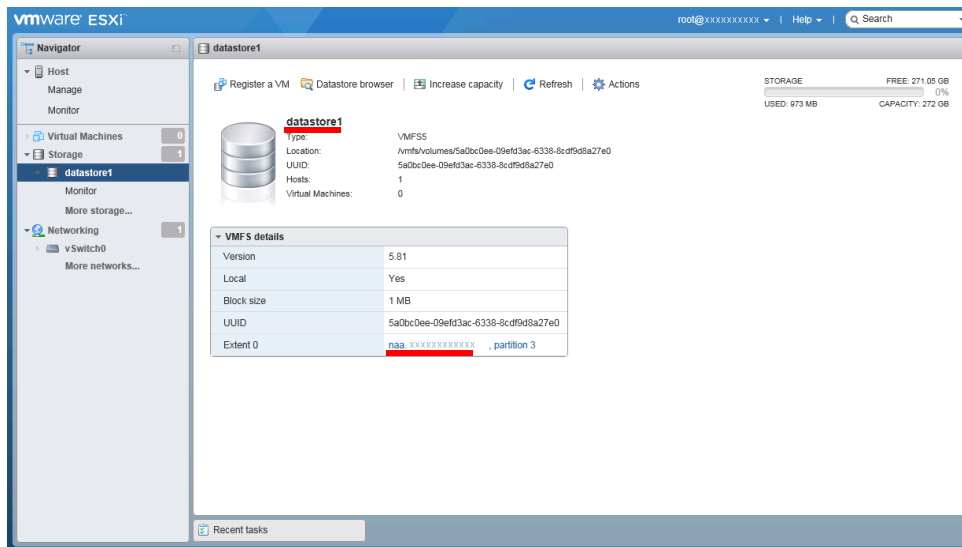
Note ftSys Management Appliance must be installed on the disk where the ESXi host exists. If several disks are contained in your system, perform the steps below in advance.

1. Connect to the ESXi host from the Web browser, select [Storage] of Navigator, and select the datastore name from the list in the [Datastores] tab.

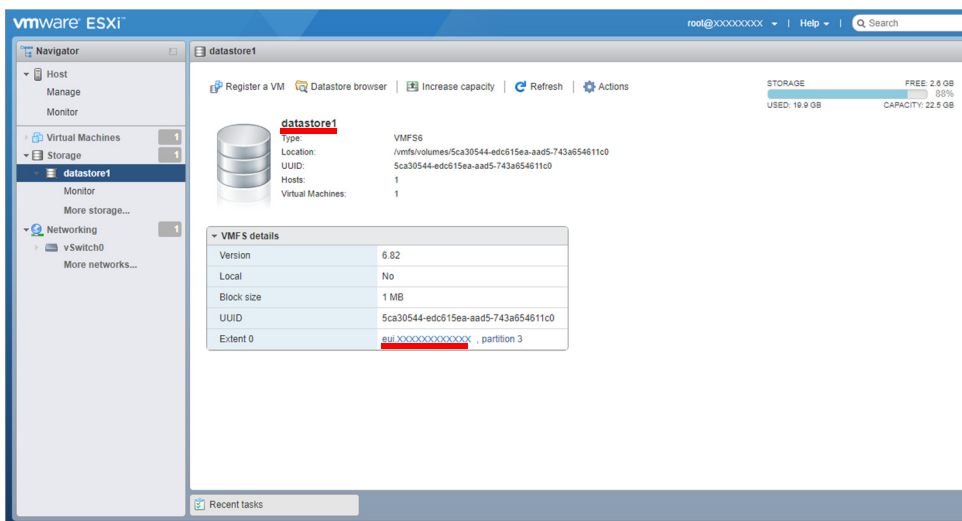


2. Check that the data store name is the same as that of the disk that was selected when installing the ESXi host by referring to the extent information in "Details of VMFS".

<Example when installed to internal hard disk drive>



<Example when installed to external storage>



Note

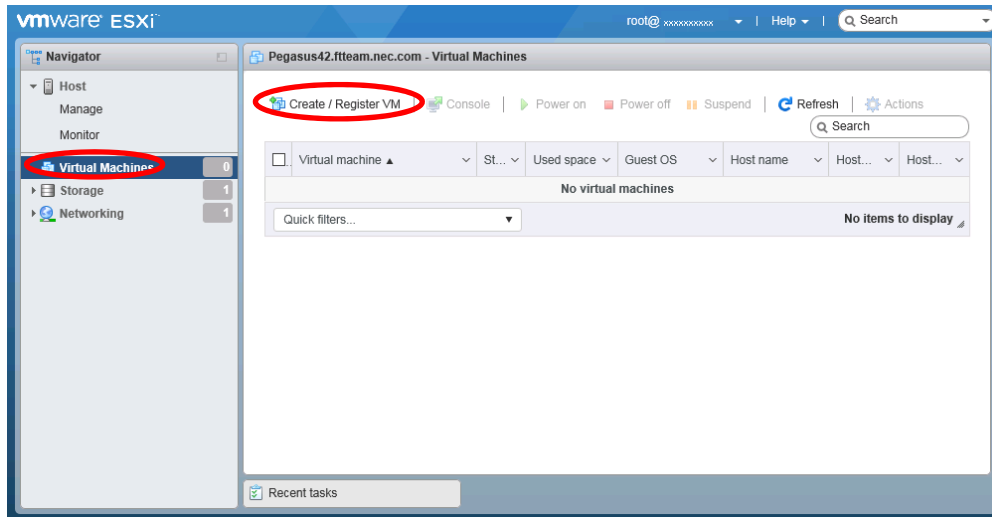
Make sure the storage has the same name as that you have written down in *Chapter 1 (1.7 Installing VMware ESXi)*.

Tips

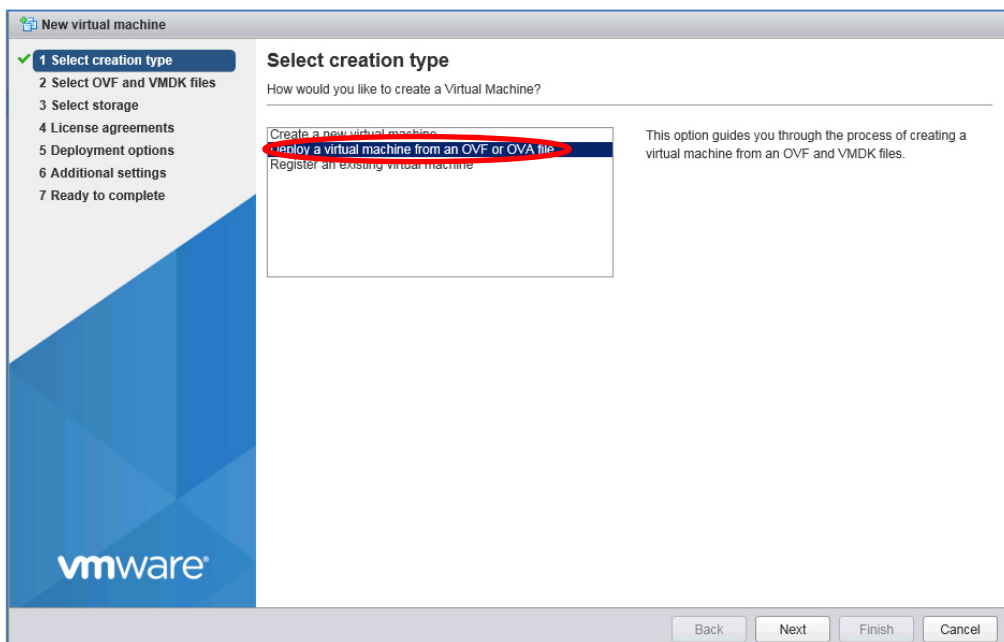
On the Storage screen displayed in *Chapter 1 (1.8.2 Installing ftSys Management Appliance)*, you cannot confirm the property of storage. You need to confirm it in advance by performing steps described here.

1.8.2 Installing ftSys Management Appliance

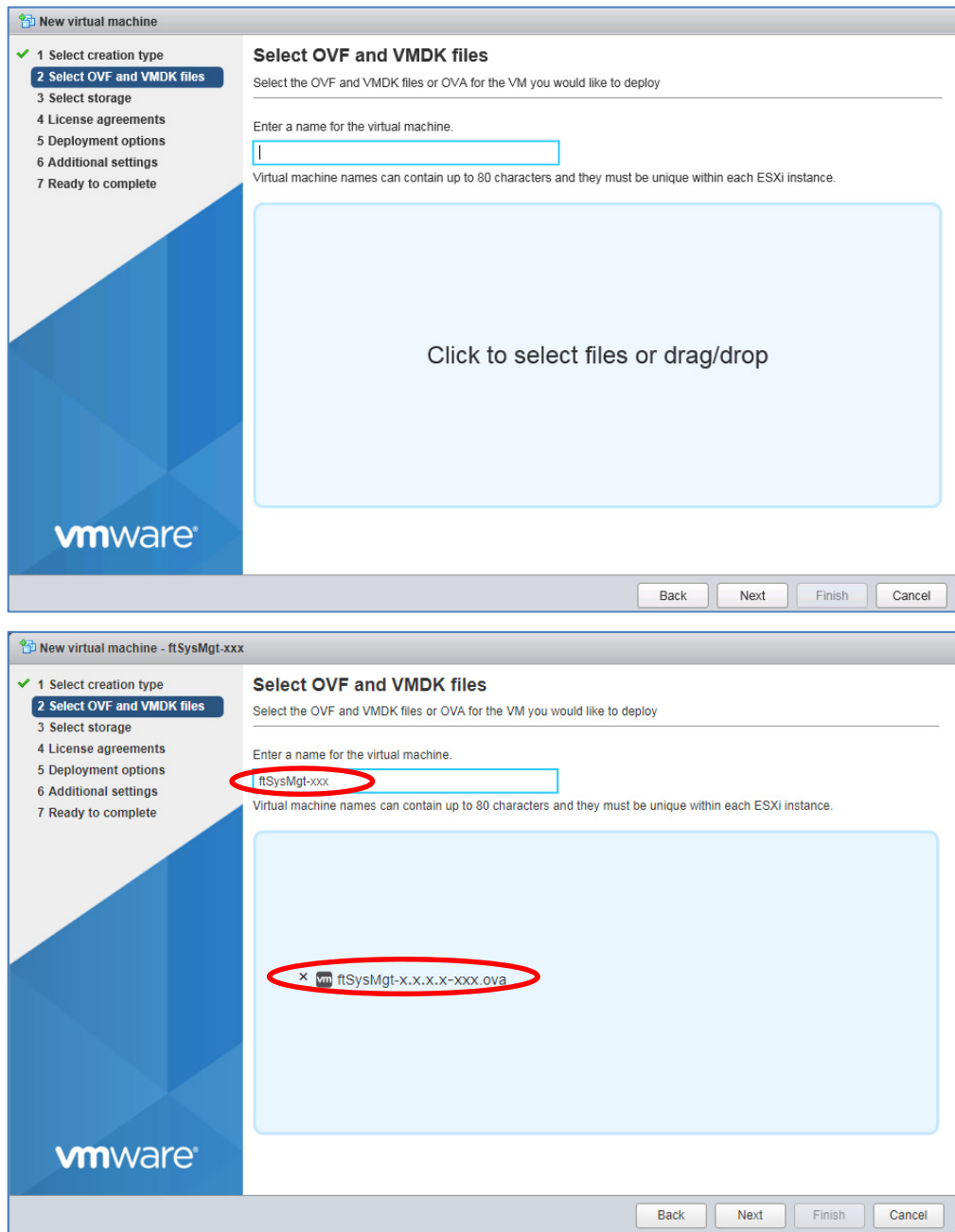
1. Insert the ft control software installation DVD into the DVD drive of the machine to be connected to the ESXi host from the Web browser.
2. Connect from the Web browser to the ESXi host, select [Virtual Machines] of Navigator, and select the [Create / Register VM] tab.



3. The [New virtual machine] screen appears. Select [Deploy a virtual machine from an OVF or OVA file] from the [Select Creation Type] list, and select [Next].



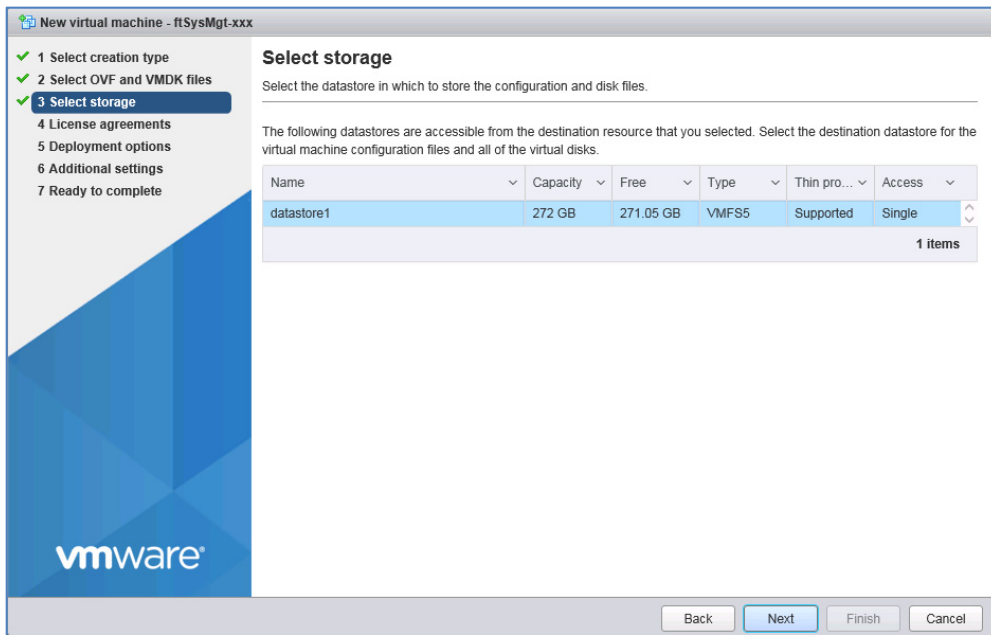
4. Specify the virtual machine name in [Select OVF and VMDK files], select the .ova file (\appliance\~.ova) of the installation DVD in the display area of [Click to Select files or drag/drop], and select [Next].

**Note**

For naming ftSys Management Appliance, it is recommended to create a consistent naming convention in the light of the system operations management.

Ex.) "ftSysMgt-[ESXi host name]"

5. Select the storage that was selected when installing the ESXi host from [Select Storage], and select [Next].



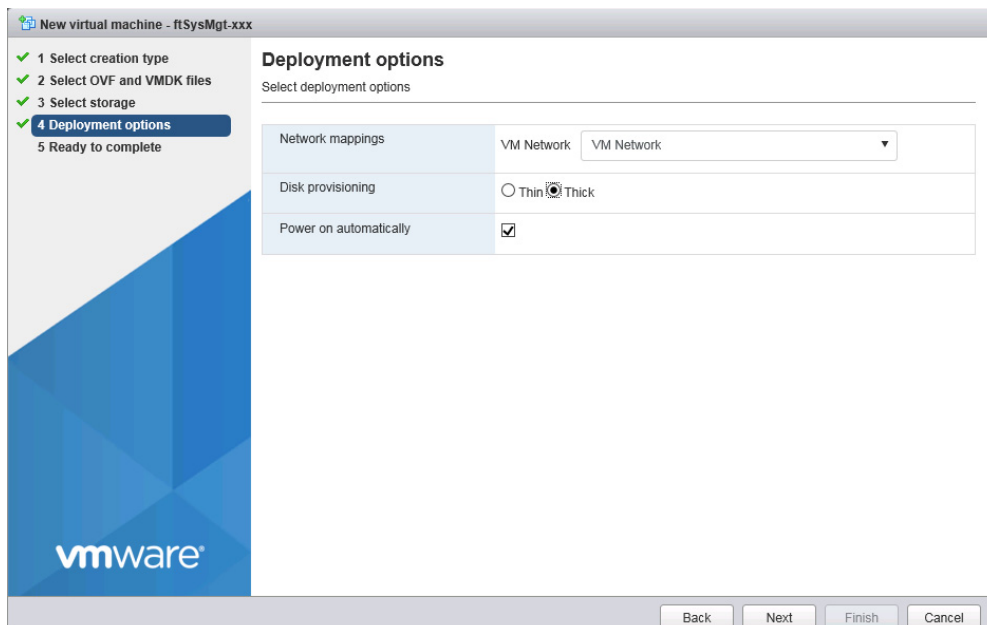
Important ftSys Management Appliance must be installed on the disk where the ESXi host exists. Accordingly, you need to select a datastore name you have selected at installation of ESXi.

Note For the storage that was selected when installing the ESXi host, select the data store name that was checked in "1.8.1 Checking the Installation Destination Disk" of this chapter.

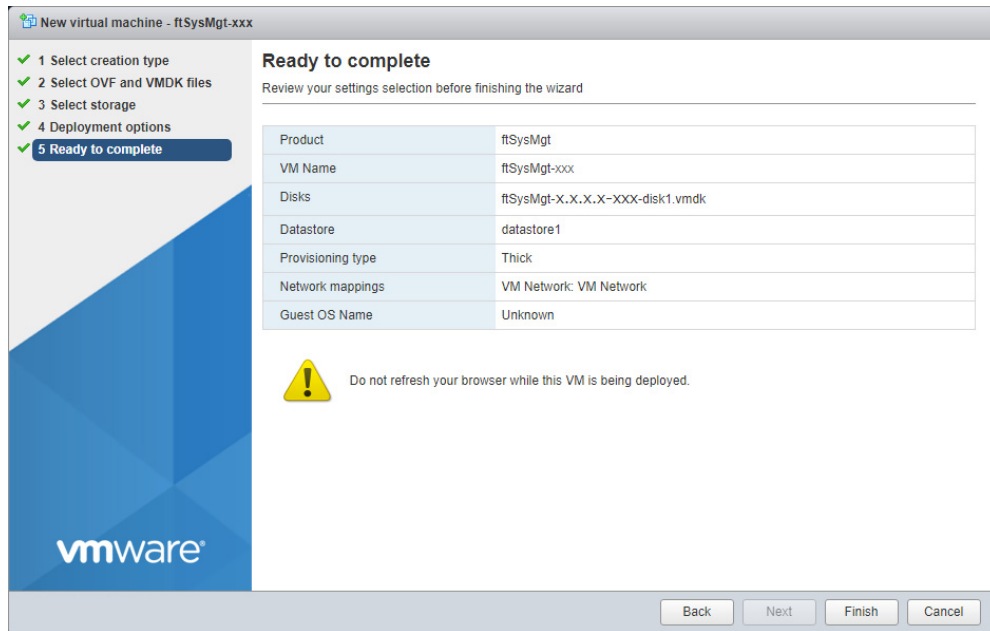
6. Select the options from [Deployment Options] as described below.


- Check (Input) the network name (Example: VM Network) to be used for the virtual machine in [Network mappings].
- Select [Thick] for [Disk provisioning].
- Check that a check mark is placed in [Power on automatically]. Place a check mark if it is not placed.

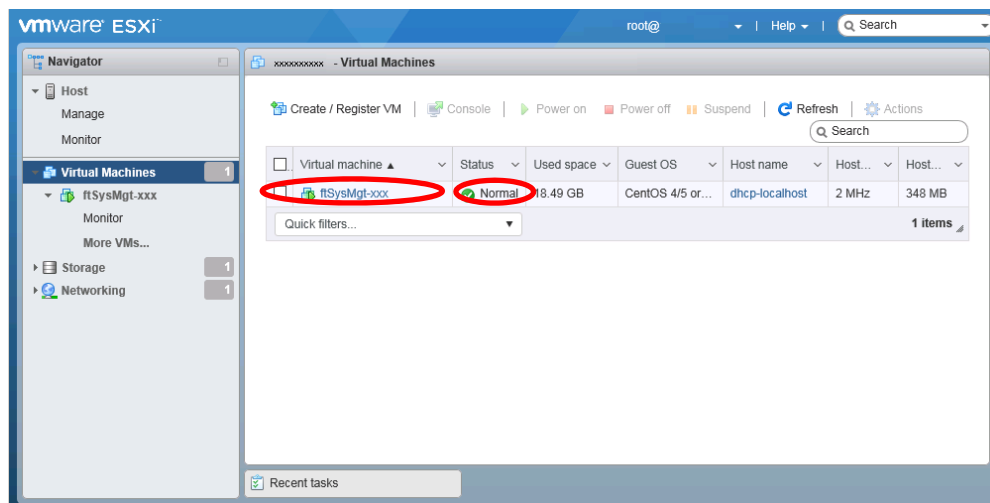
Select [Next].



7. Select [Finish] in [Ready to complete].

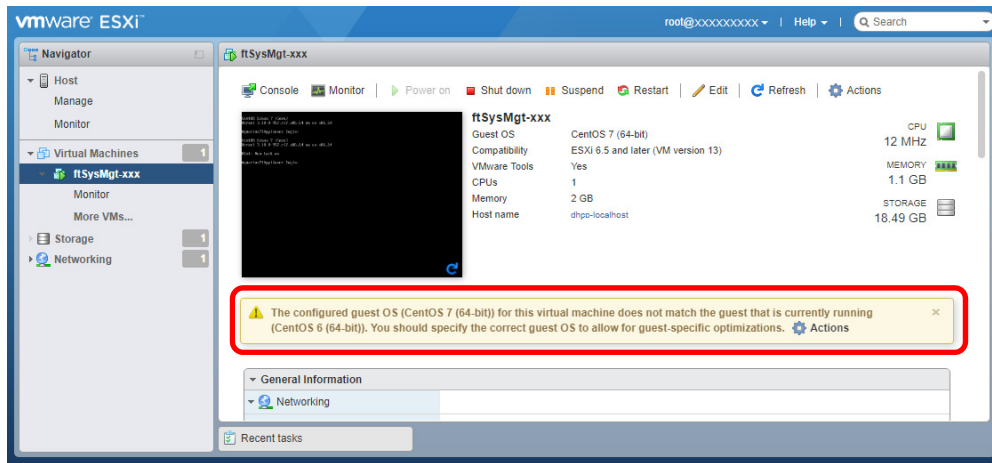


8. After the deployment has been completed, check that the ft management appliance is added in the ESXi host that the power is ON (), and that the status is Normal.



Note

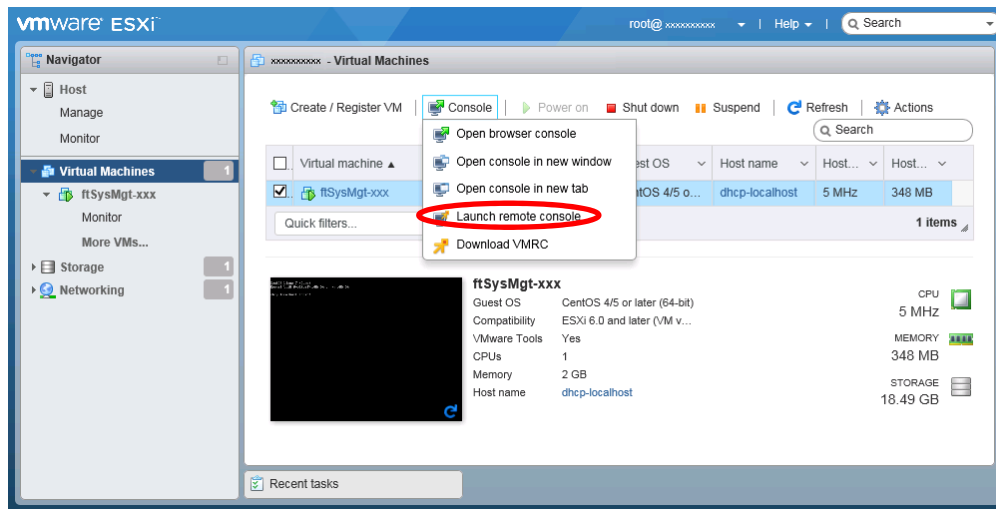
When you select the ft management appliance, the following warning message is displayed on the screen, and the status of the ft management appliance changes from Normal to Warning. You can ignore this warning because it does not affect operation.



The deployment of the ft management appliance has been completed.

9. The remote console screen (VMRC) of the ft management appliance is used for the subsequent settings.

Connect from the Web browser to the ESXi host, select [Virtual Machines] of Navigator, and select the ft management appliance from the list. Select [Launch remote console] from the [Console] tab.



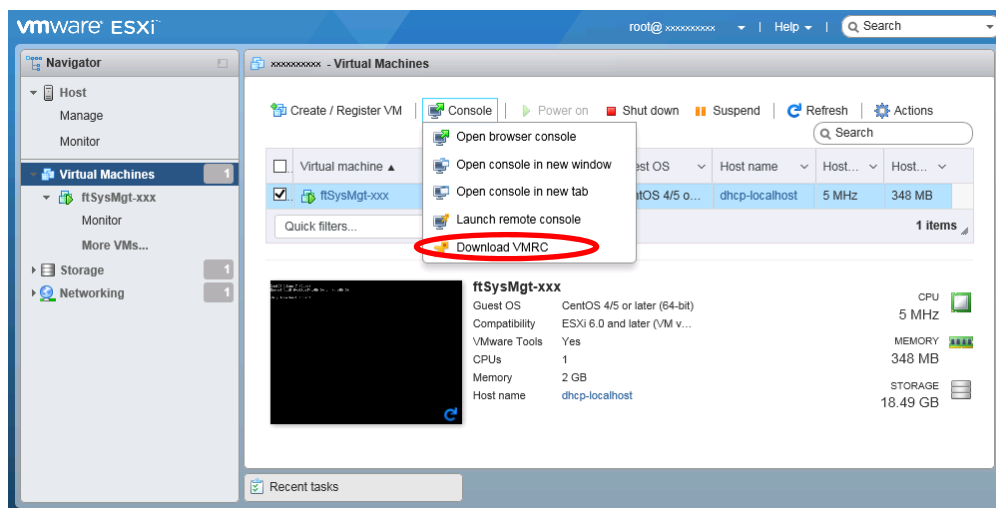
Note

VMRC (VMware Remote Console) is used on the console screen of the virtual machine from vSphere 6.5. To use the remote console, select [Virtual Machines] of the Host Client navigator, [Console] tab, and [Download VMRC] to obtain the installation file in an environment where the Internet can be connected in advance, and install VMRC to the client machine in which the Host Client (Web browser) is used.

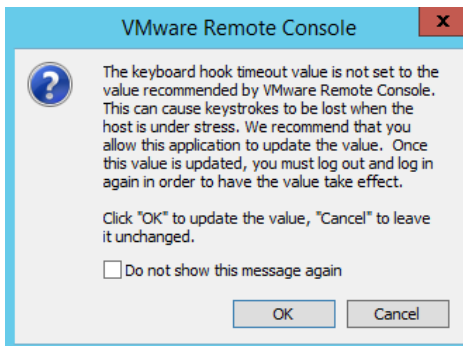
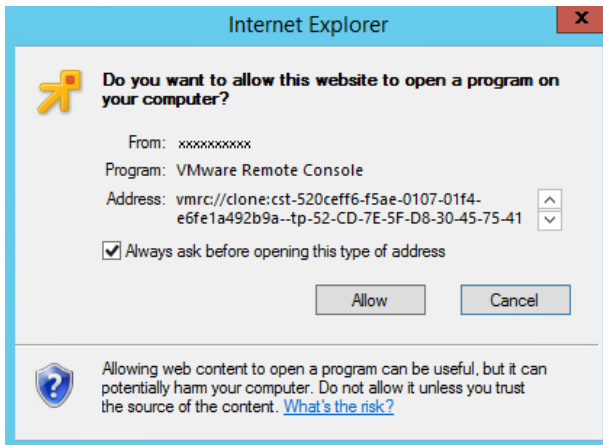
If the Internet cannot be connected, access the following website from another environment where the Internet can be connected, and obtain the installation file.

<http://www.vmware.com/go/download-vmrc>

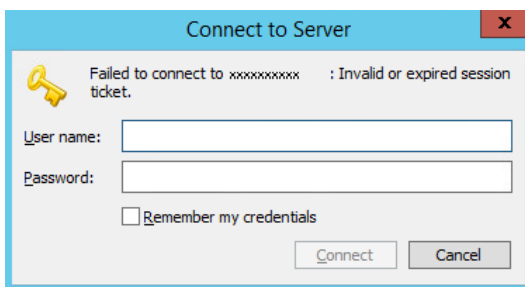
The URL of the above website may change without prior notice.



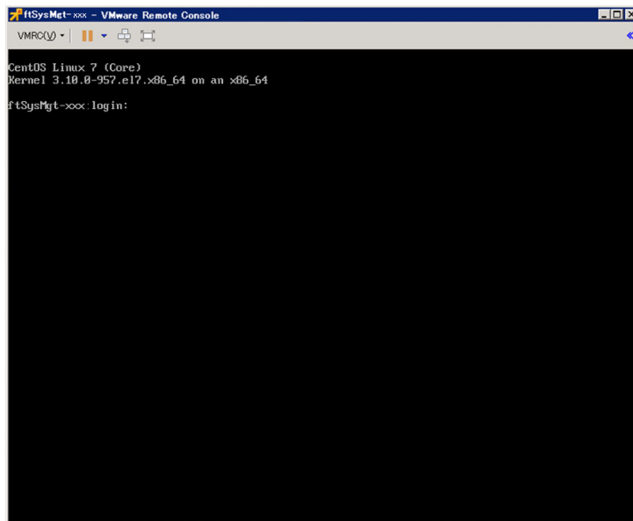
When VMRC starts up, the following message may appear.
If this message appears, select “Allow”, “OK”, etc.



Important If the message “Failed to connect to ESXi...” appears in Connect to Server, check that the DNS server is specified in the OS network setting of the terminal in which Host Client is used. If the DNS server is not specified, restart VMRC after specifying the DNS server or use the terminal in which the DNS server is set.



10. The remote console screen of the ft management appliance starts up.



11. To specify a time zone:

Log into the “login” prompt screen for the ft management appliance with “User: root, Password: (*1)”, and set the time zone appropriate to customer’s environment. (*1: The initial password is “ftServer”).

```
# timedatectl set-timezone <location>/<city>
```

(ex.) America/Phoenix

```
# timedatectl set-timezone America/Phoenix
```

Check the setting details as shown below.

```
# timedatectl
```

(ex.) Time zone: America/Phoenix (MST, -0700)

If the appropriate time zone is not the one shown above, please check the time zone using the following command.

```
# timedatectl list-timezones
```

12. To change the initial password:

Log into the “login” prompt screen for the ft management appliance with “User: root, Password: (*2)”, and change the password as required by the following command. (*2: The initial password is “ftServer”).

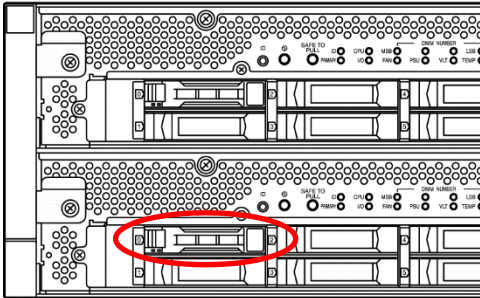
```
# passwd root
```

1.9 Installing ft control software

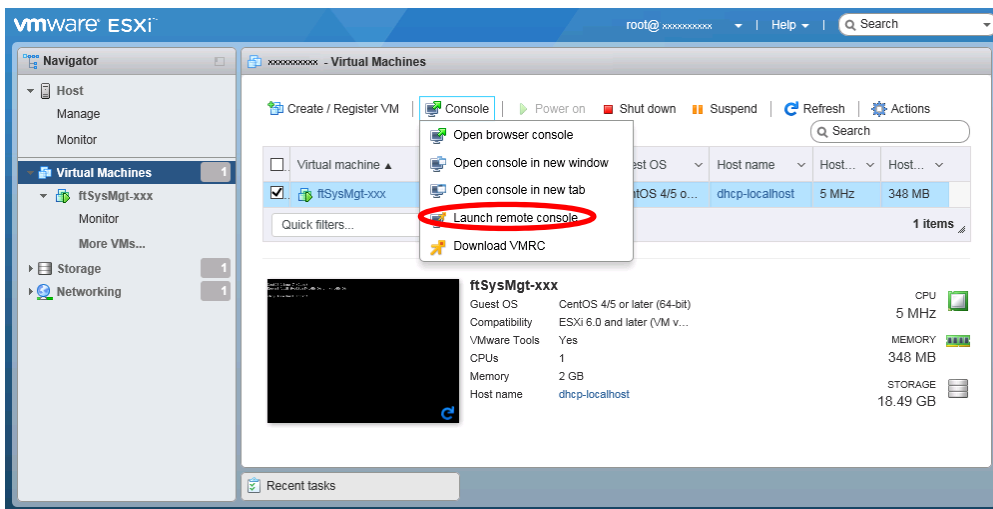
Connect to the ESXi host from Host Client to configure.

Important Do not add the ESXi host to vCenter Server until the installation has been completed.

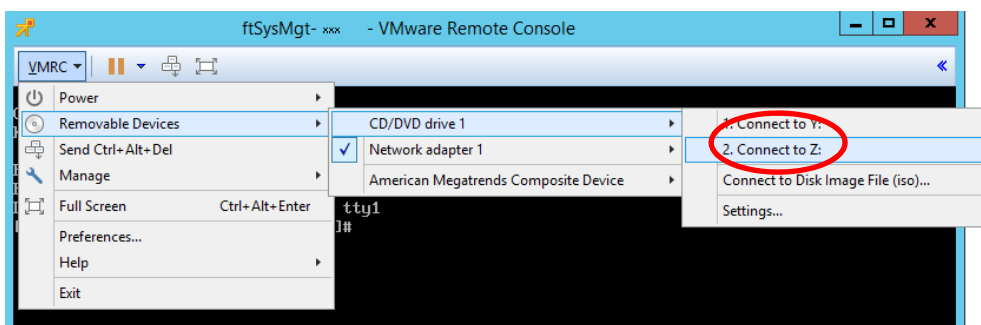
- To install ft control software on the internal hard disk drive, insert a hard disk drive in slot 0 of the CPU/IO module 1.



- Insert the ft control software installation DVD into the DVD drive of the machine to be connected to the ESXi host from the Web browser.
- Connect from the Web browser to the ESXi host, select the ft management appliance from [Virtual Machines] of Navigator, select [Launch remote console] on the [Console] tab, and start up the remote console (VMRC).



- Select the [VMRC] menu on the remote console screen, select [Removable Devices], [CD/DVD drive x], and [x.Connect to x], and connect to the DVD drive in which the ft control software installation DVD is inserted.



Tips If a message appears when connecting to the CD/DVD drive, select "Yes".

- Log in to ftSys Management Appliance as a root user.
The initial password is "ftServer".
- Run the following command on ftSys Management Appliance console.

```
# /opt/ft/sbin/ft-install /dev/cdrom
```

Important

Do not collect a snapshot of the ft management appliance by using the snapshot function of VMware before installing the ft control software. If ft-install is executed after collecting a snapshot, the ft management appliance may not start up.

- The EULA (End User License Agreement) information appears. Press the <Enter> key or <space> key in response to the following message.

```
Press any key to display the End User License Agreement
:
--More--
```

Display the EULA information till the end, and input "Yes" in response to the following message.

```
Do you accept the above terms and conditions (yes/no):
```

- Details of "Current network configuration" appear. Input "1".

```
Current network configuration:
Method          : auto
Hostname        : dhcp-localhost
DNS domain      :
IP Address/prefix: 192.168.1.249/24
Gateway         : 192.168.1.1
DNS Servers     :

1) Set hostname and static IP address
2) Set DHCP hostname
3) Make no network changes

Enter your desired network configuration option: 1
```

- Input the set values of the ft management appliance, and input "Y".

```
Hostname: [dhcp-localhost] ftSysMgt-xxx
DNS domain name: []
IP address/prefix: [ xxx.xxx.xxx.xxx / xx ]   xxx.xxx.xxx.xxx / xx
Gateway: [ xxx.xxx.xxx.xxx ]
DNS servers: []

New network configuration:
Hostname: ftSysMgt-xxx
DNS domain:
IP Address/prefix:   xxx.xxx.xxx.xxx / xx
Gateway: xxx.xxx.xxx.xxx
DNS Servers:

Do you want to save these network settings? [Yiniq]
```

Important

- The ESXi host and ftSys Management Appliance must exist on the same network.
- Specify the DNS server from which you can obtain a correct hostname and IP address. If an inappropriate DNS server is specified, installation may fail.

Tips

Enter the setting value in the ft management appliance rather than the setting value on the ESXi host.

Tips

Specify 24 for the prefix value to be input for IP Address/prefix if the Netmask value is 255.255.255.0. (Example of input) 192.168.1.1/24

Tips

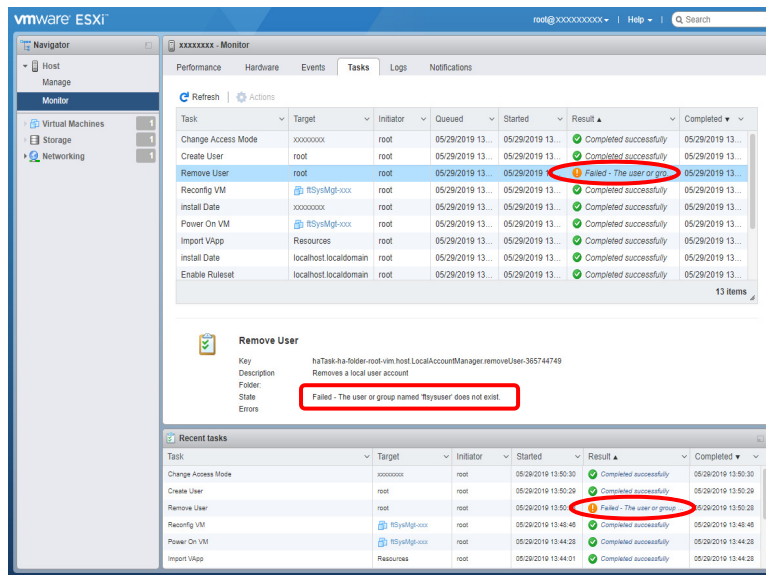
You can configure the DNS server after completion of installation.

10. Input the host name or IP address of the ESXi host, and press the <Enter> key. Input the root password of the ESXi host, and press the <Enter> key.

```
Name or IP address of the host machine[]:
Administrative password for xxx.xxx.xxx.xxx:
```

Note

The result of the task may be displayed as failed on the host client as shown below. You can ignore this because it does not affect operation.



11. The confirmation message appears. Input “Y”.

```
Please refer to your system documentation before proceeding.
Do you want to continue [Y/n]: _
```

12. The confirmation message appears again. Input “Y”.

```
Do you want to continue? [Y/n]: _
```

13. The following message appears, and the installation starts. (The message may be partially different depending on your environment.)

```
Installing to host xxx.xxx.xxx.xxx. Please wait...
Setting claimrule 119 for driver ftSys_msgpt3 to use NMP
Updating the host's system software...
Deactivating port 80 for host upgrades
```

14. As the installation is finishing, the confirmation message for restarting appears. Input “Y”. Check that the ESXi host has shut down, and remove the ft control software installation DVD.

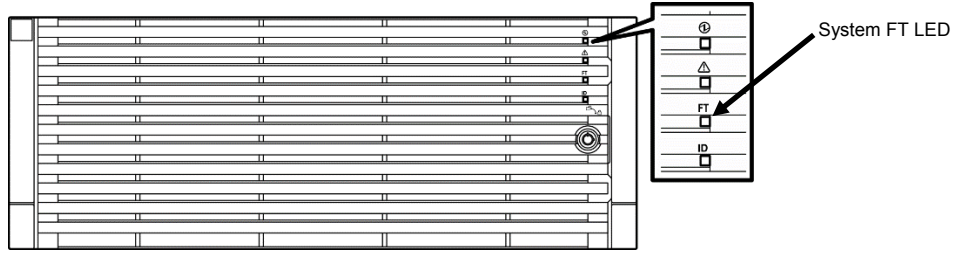
```
A host reboot is required to place these updates into service.
Do you want to reboot now [Y/n]: _
```

15. The system reboots, and the module registration for ft server and disk duplication are performed. These processes take several tens of minutes.

Note

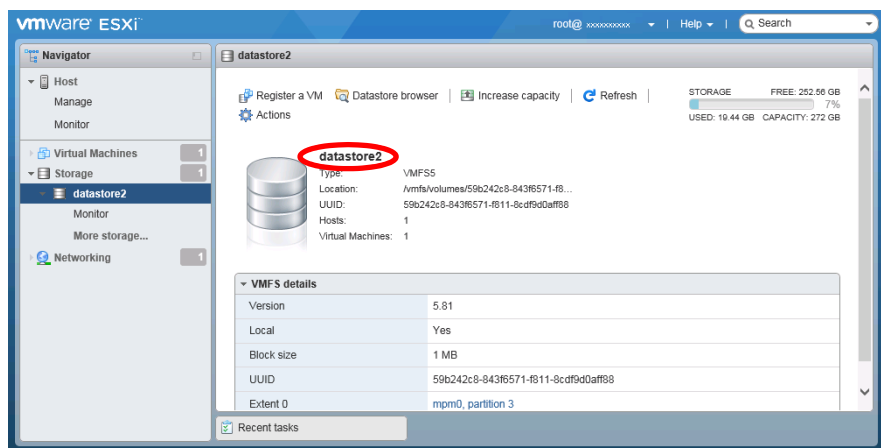
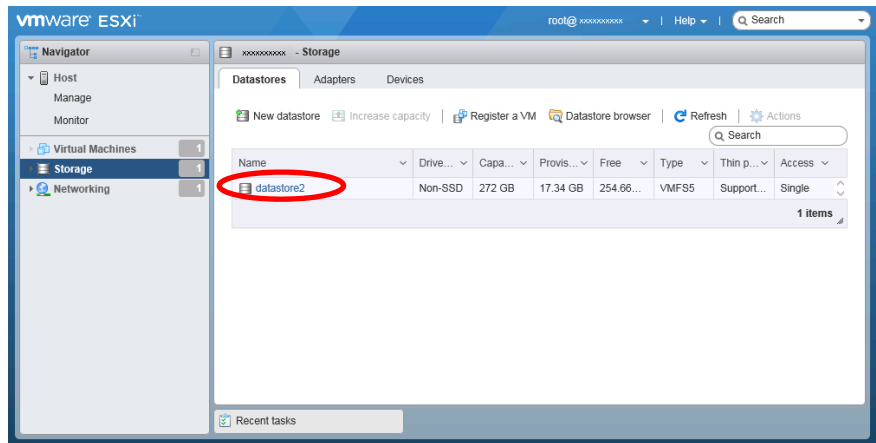
- The time required for completing the duplication varies depending on the disk space.
- The system will reboot twice if ft control software is installed in internal hard disk drive.
- The disk duplication is not performed if FT control software is installed in an external storage.

16. After the system reboot, confirm that the System FT LED at the front of the server lights.



Note If disk duplexing is in progress after the ESXi host starts up, the System FT LED does not turn ON. Wait for a while until the disk duplexing is completed.

- Tips**
- When installing ft control software to an internal hard disk drive, the PRIMARY LED of the CPU/IO module 0 is switched to the CPU/IO module 1 and datastore name of the internal hard disk drive is renamed from datasotre1 to datastore2 after the system restart.
 - When installing ft control software to an external storage, switching of the PRIMARY LED of the CPU/IO module and renaming of datastore name do not occur.

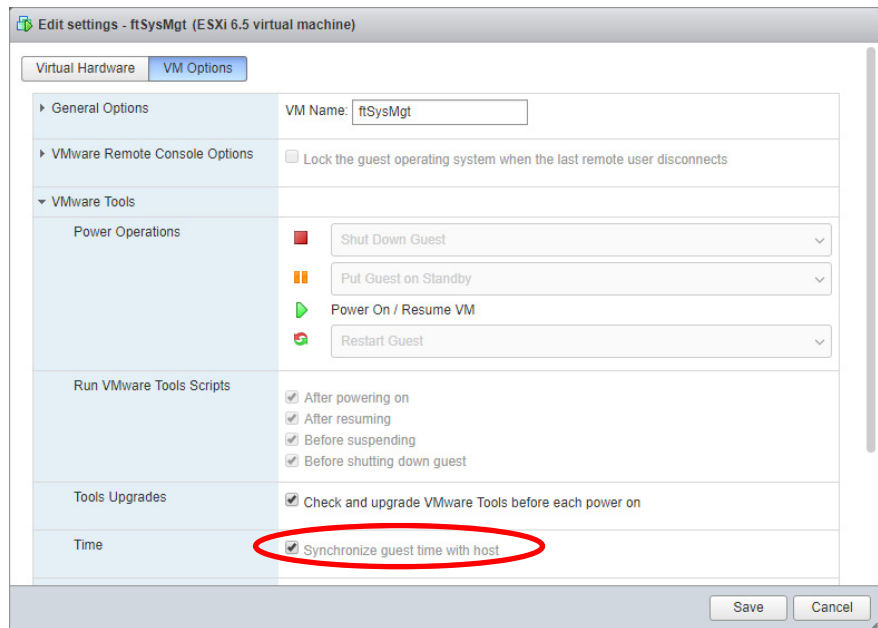


Note

With the ftSys Management Appliance, clock synchronization cannot be done using NTP. The ftSys Management Appliance performs clock synchronization with the ESXi host at intervals of 1 min by using VMware Tools.

You must not change the below setting because it is set by installation of the ft control software.

1. Right-click on the ftSys Management Appliance in Host Client.
2. Click "Edit Settings" in the right-click menu.
3. On the [VM Options] tab, select [VMware Tools]
4. Confirm that the [Time] - [Synchronize guest time with host] check box is on.

**Tips**

If you need accurate clock management with the ftSys Management Appliance, set up NTP on the ESXi host. If accurate clock management is active with NTP on the ESXi host, clock management more accurate than that by the ftSys Management Appliance is achieved by the VMware Tools clock synchronization function specified in Note above.

Note

When ESXi operates, the following alert message may appear on the console screen. This message does not affect the operation, and you can ignore it. If this message appears, press the <Alt + F2> key to switch the console screen.



1.10 Setup after installing ft control software

1.10.1 Log Server

VMware ESXi 5.0 or later version does not include a service console. Therefore, this model achieves the syslog reporting by forwarding the logs generated by ESXi to the log server on which NEC ESM PRO Agent is installed.

To set-up the log server, the below case exists.

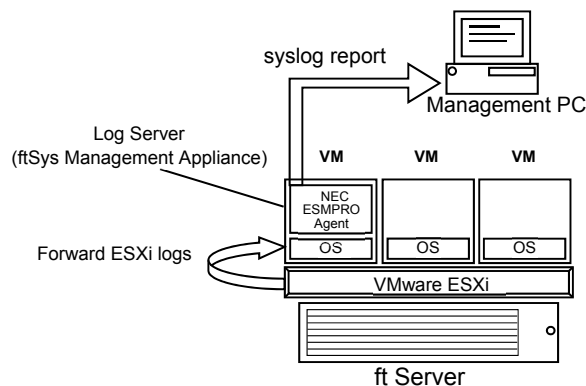
- Use ftSys Management Appliance as the log server
- Use any server other than ftSys Management Appliance as the log server

To use ftSys Management Appliance as the log server, no additional steps are required after following the steps in *Chapter 1 (1.10.2 Installing Additional Packages - When ftSys Management Appliance is set as the log server)* and *Chapter 2 (1.1 NEC ESM PRO Agent)* of this document, because the log server will be automatically configured and forwarding the logs generated by the ESXi becomes available.

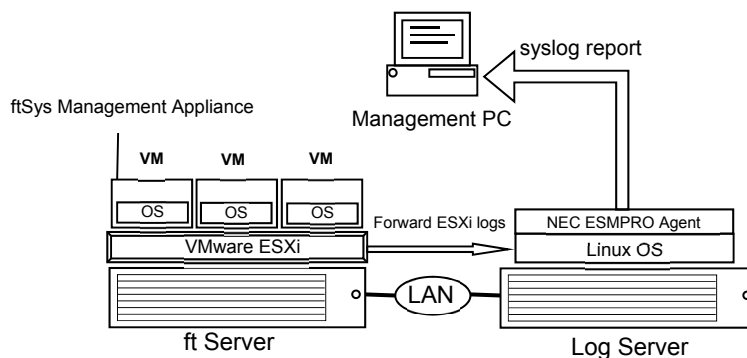
Note

To use any server other than ftSys Management Appliance as the log server, need to prepare a Linux server separately. After completing procedure of this Chapter1, see *Chapter 3 (1. Steps for Configuring the Separate Log Server)* of this manual for how to configure the Linux server.

The case of using ftSys Management Appliance as the Log Server.



The case of using other Linux server as the Log Server.



Note

If the log server is restarted alone, the log generated during restart is not transferred to log server.

If the log server is restarted due to restart of ESXi host, the log generated on ESXi host during the period from the startup of ESXi host to restart of log server, is not transferred to log server.

After the log server completes its startup process, the log transfer from the ESXi host does not resume automatically. Thus, run the following command to reload the syslog daemon..

```
# esxcli -s <IP address or hostname of ESXi host> system syslog reload
```

Tips

In some cases, the following error message may be displayed as the result of the esxcli command.

```
# esxcli -s ftESXi storage mpm list
Enter username: root
Connect to ftESXi failed. Server SHA-1 thumbprint:
48:01:F6:82:E1:92:F7:35:BE:C4:37:E3:9C:89:58:E6:03:9B:FE:95 (not
trusted).
```

If the above error message is output, execute the esxcli command with '--thumbprint' option. Specify the thumbprint shown in the error message for the '--thumbprint' option.

```
# esxcli
--
thumbprint=48:01:F6:82:E1:92:F7:35:BE:C4:37:E3:9C:89:58:E6:03:9B:FE:95 -s ftESXi storage mpm list
```

For details of the esxcli command, see the documents from VMware.

1.10.2 Installing Additional Packages

Connect to the ESXi host from Host Client to configure.

Important Do not add the ESXi host to vCenter Server until the installation has been completed.

1. Insert the ft control software installation DVD into the DVD drive of the machine to be connected to the ESXi host from the Web browser.
2. Connect from the Web browser to the ESXi host, select [Virtual Machines] of Navigator, and select the ft management appliance from the list. Select the [Console] tab and [Launch remote console], and start up the remote console (VMRC).
3. Select the [VMRC] menu on the remote console screen, select [Removable Devices], [CD/DVD drive x], and [x.Connect to x], and connect to the DVD drive in which the ft control software installation DVD is inserted.
4. Log in to ftSys Management Appliance as a root user.
5. Mount the ft control software Install DVD. When /mnt/cdrom directory exists, the making of the directory is unnecessary by mkdir command.

```
# mkdir /mnt/cdrom
# mount /dev/cdrom /mnt/cdrom
```

6. Run the installer of additional package.

• **When ftSys Management Appliance is set as the log server**

```
# /mnt/cdrom/NEC/install.sh
```

• **When a separate Linux server is set as the log server**

```
# /mnt/cdrom/NEC/install.sh -a
```

7. Select a keyboard layout ("us" for English 101 or "jp" for Japanese 106), and press **Enter**.

```
Please choose a keyboard layout: [us(101) | jp(106)]
```

Tips Select the keyboard layout of the machine in which the Host Client is installed.

8. Select a language (English or Japanese) for NEC ESMPRO report table and enter "E" or "J".

```
Please choose a language for ESMPRO alert messages: [E(english) |
J(japanese)]
```

Note If using a separate Linux server as the log server, this message will not appear.

Tips NEC ESMPRO Report Table installed in this step is used by NEC ESMPRO Agent. See *Chapter 2 (1.1 NEC ESMPRO Agent)* for detail of NEC ESMPRO Agent.

9. The IP address of the ESXi host is displayed. Make sure that the IP address shown is correct, enter the root password for the ESXi host, and press **Enter**.

```
ESXi host: xxx.xxx.xxx.xxx
Enter the root password:
```

10. The message prompting you to configure the log server appears. Enter the IP address of log server or the machine name, and press **Enter**. You can skip this step and set it later. (In that case, see *Chapter 3 (1. Steps for Configuring the Separate Log Server)*).

Note The message does not appear when ftSys Management Appliance is configured as the log server.

- When the message below appears, enter "yes" to restart the system. The ESXi host restarts.

```
A host reboot is required to place these updates into service.
Enter 'yes' to reboot now or 'no' to allow a manual reboot later: [yes]
```

- After making sure that the ESXi host is shutdown, take the ft control software Install DVD out from the drive.

1.10.3 Checking status of ft server

- After the ftSys Management Appliance restarts, check the duplication status. Confirm that the System FT LED on the front of the server lights.



- Run the following command to confirm if the system is running normally.

```
# /opt/ft/sbin/ft-verify
```

The results list for each of the configuration is output. If all items show [PASS], it indicates that the installation has been completed successfully (Output example:).

```
ftSys Management Appliance hosted by xxx.xxx.xxx.xxx [PASS]
Host is configured with enough memory [PASS]
ftSys installed on host [PASS]
Host software version matches expected version (x.x.x-xxx) [PASS]
ftSys Management Appliance firewall settings [PASS]
Host Firmware Boot Type - requires UEFI [PASS]
Host Legacy memory copy BIOS setting [PASS]
ftSys Management Appliance installed on boot volume [PASS]
Multiple paths to storage [PASS]
Network Configuration [PASS]
Host ftSys service started [PASS]
Host logs available after reboot [PASS]
DNS Configuration [PASS]
```

Note

The version displayed in "Host software version matches expected version" above is different from the version of the ft control software displayed in "2.2 Confirmation of the ft control software Version" of this chapter.

1.11 Connecting and Configuring Options

If there is any optional PCI board or peripheral equipment to connect to NEC Express5800/ft series, turn off the power to NEC Express5800/ft series, and connect it according to *Chapter 2 (5.7 PCI Card)* in *Maintenance Guide* and the device's instruction.

For how to install and use hard disk drive, see *Chapter 2 (2. Hard Disk Drive Operations)* in *Maintenance Guide*.

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

For detailed procedures, refer to VMware vSphere documents from the following Website.

<https://docs.vmware.com/en/VMware-vSphere/index.html>

* The contents of this web site is subject to change or delete without notice.

For how to add LAN cards or configure the duplicated network, see *Chapter 2 (5.7 PCI Card and 3. Duplex LAN Configuration)* in *Maintenance Guide*.

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

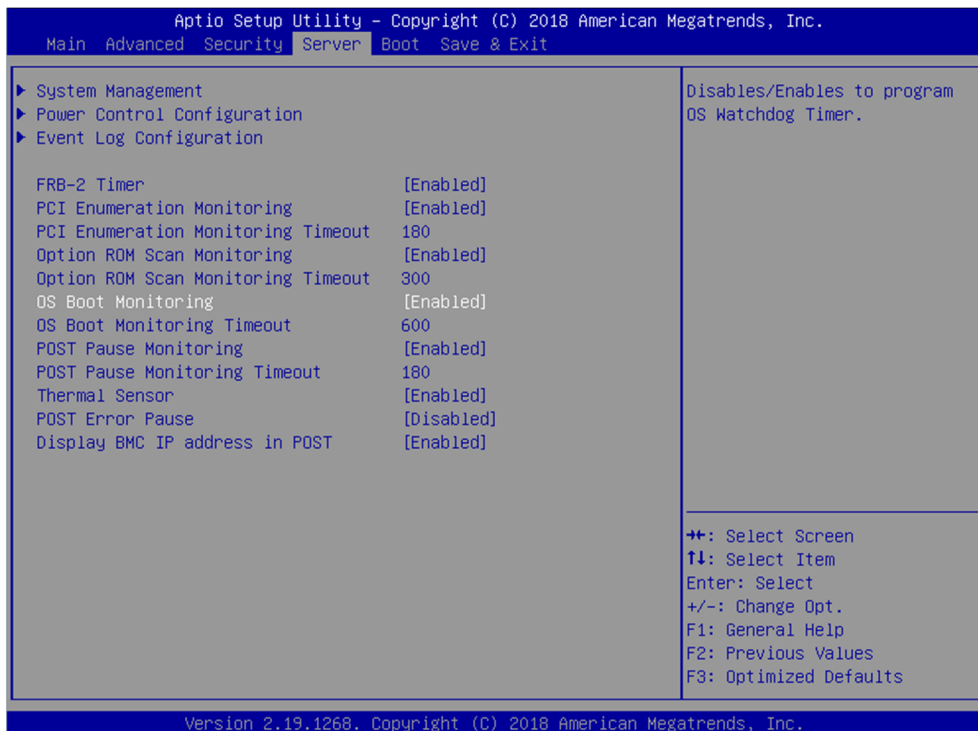
1.12 Enabling OS Boot Monitoring Function

Enables OS Boot Monitoring feature.

Set OS Boot Monitoring feature to **Enabled** on BIOS SETUP according to *Chapter 1 (1.5 Disabling OS Boot Monitoring Function)*. Then, specify the timeout time for **OS Boot Monitoring Timeout** parameter appropriately.

Tips

Specify the timeout time in seconds. Default setting is 600 seconds (10 minutes).



1.13 Backing up System Information

We recommend you to back up the system information after setting up the system.

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

1.13.1 BIOS SETUP

1. Power on the server, and run POST.
2. Press F2 while the following message is displayed on the screen.

Press <F2> SETUP, <F4> ROM Utility, <F12> Network

3. When POST completes, write down the new setting values.

< Example >

[Advanced] - [PCI Configuration] - [PCI Device Controller and Option ROM Settings]

- [SAS Option ROM Scan]

- [PCIx Slot Option ROM]

[Security]

[Server] - [OS Boot Monitoring]

[Server] - [Power Control Configuration]

- [AC-LINK]

- [Power On Delay Time]

[Boot] - [Boot Option Priorities]

4. Select Save changes and Exit.
On the confirmation window shown below, select [Yes].

Save configuration and exit?

Then, the server will restart.

1.13.2 System information

1. Run POST.
While the following message appears, press **F4**.
`Press <F2> SETUP, <F4> ROM Utility, <F12> Network`
2. When POST completes, the keyboard selection menu appears.
If you select your keyboard layout, the following menu will appear.

Off-line TOOL MENU
Maintenance Utility BMC Configuration Exit

3. Choose [Maintenance Utility] – [System Information Viewer] – [Display System Information] – [System Information]. Write down the following system information.
 “Product Name”
 “FR Number”
 “Serial Number”
4. Press **ESC** several times until the following menu appears.

Off-line TOOL MENU
Maintenance Utility BMC Configuration Exit

1.13.3 BMC Configuration

1. Choose [BMC Configuration] – [BMC Configuration]. Write down the BMC Configurations that have changed.
 < Example >
 [Network : CPU/IO module0] – [IPvx Property]
 [Network : CPU/IO module1] – [IPvx Property]
 [User Management] – [User Account]
2. Press **ESC** several times until the following menu appears.

Off-line TOOL MENU
Maintenance Utility BMC Configuration Exit

3. Choose “Exit” to exit.

1.14 Setting Up the Virtual Machine

Refer to the VMware vSphere documents for how to set up a virtual machine. Refer to User's Guide and the VMware vSphere documents for setting the network configuration.

- | | |
|------------------|---|
| Important | When "E1000" or "E1000E" is specified for the network adapter type of the virtual machine, the CPU module could not be incorporated during re-incorporation of the virtual machine. Thus, do not use "E1000" or "E1000E".
For the network adapter type, specify a type other than "E1000" or "E1000E". |
| Important | The optical disk drive on the main unit is available only for installation of VMware ESXi. If it is used to install the virtual machine, the ESXi host's system area may be destroyed. |
| Note | With the virtual machine, the optical disk drive on the main unit (i.e. host device) is not available.

To use the DVD drive of the virtual machine, insert the DVD into the DVD drive of the machine in which Host Client is used, turn the power of the virtual machine ON, start up the remote console (VMRC) from the console menu, and select [Removable Devices] of the [VMRC] menu, [CD/DVD drive x], and DVD drive.

For details, refer to the VMware vSphere document. |

2. Procedures after Completion of Installation

2.1 Confirmation of the Kernel Version

Explain how to check the kernel version of ftSys Management Appliance and a version of VMware ESXi.

Check the version following the steps below.

VMware ESXi

1. Run the following command on the ftSys Management Appliance.

```
# esxcli -s <IP address or hostname of ESXi host> system version get
Product: VMware ESXi
Version: 6.7.0
Build: Releasebuild-10302608
Update: 1
Patch: 28
```

Make sure that Version, Build, and Update are exactly same as those shown above.

Tips

In some cases, the following error message may be displayed as the result of the esxcli command.

```
# esxcli -s ftESXi storage mpm list
Enter username: root
Connect to ftESXi failed. Server SHA-1 thumbprint:
48:01:F6:82:E1:92:F7:35:BE:C4:37:E3:9C:89:58:E6:03:9B:FE:95 (not
trusted).
```

If the above error message is output, execute the esxcli command with '--thumbprint' option. Specify the thumbprint shown in the error message for the '--thumbprint' option.

```
# esxcli
--
thumbprint=48:01:F6:82:E1:92:F7:35:BE:C4:37:E3:9C:89:58:E6:03:9B:F
E:95 -s ftESXi storage mpm list
```

For details of the esxcli command, see the documents from VMware.

ftSys Management Appliance

1. Run the following command on the ftSys Management Appliance.

```
# uname -a
Linux ftSysMgt-Sample 3.10.0-957.e17.x86_64 #1 SMP Thu Nov 8 23:39:32
UTC 2018 x86_64 x86_64 x86_64 GNU/Linux
```

"3.10.0-957.e17" indicates version of kernel, and "#1 SMP Thu Nov 8 23:39:32 UTC 2018" indicates release information of kernel.

Make sure that the version of kernel is correct.

This completes version confirmation.

2.2 Confirmation of the ft control software Version

The following describes how to check the version of ft control software.

Confirm the version following the steps below:

Note

Running the following command may fail if the necessary process does not run immediately after the system startup. In this case, wait for a while (several minutes or so), and try again.

1. Run the following command on the ftSys Management Appliance.

```
# /opt/ft/bin/ftsmaint -v
ftsys-ftsmaint version 6.7.1-117
```

The version of the ft control software in operation is displayed.
Make sure that the version is exactly same as those shown above.

This completes the version confirmation.

2.3 Precautions for Changing the Configuration after Setup

If the network configuration has been changed after completing the setup, run the following command.

Important Configuration should be changed after setup is complete. If the configuration is changed during setup, it can cause an unexpected behavior.

2.3.1 If the network settings of the ESXi host or root user password has been changed

The process that runs on ftSys Management Appliance manages duplication by connecting with ESXi host.

If IP address or hostname of ESXi host, root user password has been changed, the process running on ftSys Management Appliance will be unable to login to ESXi host. Perform the following settings

1. Log in to ftSys Management Appliance as a root user.
2. Run the **configure-appliance** command. Then, enter the IP address or hostname of ESXi host, root user name, and root user's password.

```
# /opt/ft/sbin/configure-appliance
```

Note

Execution example: When the IP address of log server is 192.168.0.7:

```
# /opt/ft/sbin/configure-appliance
Enter Name or IP address of the host ftServer, [192.168.0.7]:
Enter Administrative user for 192.168.0.7, [root]:
Enter Administrative password for 192.168.0.7 []:
All entries have been removed successfully.
Created user ftsysuser successfully.
:
configure-appliance: Verifying permissions on the host system
:
Multiple paths to storage           [PASS]
Network Configuration              [PASS]
Host ftSys service started         [PASS]
Host logs available after reboot   [PASS]
DNS Configuration                  [PASS]
```

3. After running the command, reboot ftSys Management Appliance. Restart the virtual machine from Host Client, or run the following command.

```
# shutdown -r now
```

2.3.2 If the IP address of Log Server or Host Name has been Changed

If the IP address of log server or host name has been changed, perform the following steps.

Note See *Chapter 1 (1.10.1. Log Server)* for the log server.

1. Log in to ftSys Management Appliance as a root user.
2. Run the build-loghost command and specify the log server.
The new IP address or the host name is recognized as the log server.
3. Run the build-loghost command with no option specified to make sure that the new IP address or host name is properly recognized as the log server.

```
# /opt/ft/sbin/build-loghost update -l <IP address or hostname of log server>
```

```
# /opt/ft/sbin/build-loghost
```

Note Execution example: When the IP address of log server is 192.168.0.7:

```
# /opt/ft/sbin/build-loghost
Default Network Retry Timeout: 180
Local Log Output: /scratch/log
Local Log Output Is Configured: true
Local Log Output Is Persistent: true
Local Logging Default Rotation Size: 1024
Local Logging Default Rotations: 8
Log To Unique Subdirectory: false
Remote Host: 192.168.0.7
```

4. Reload the syslog daemon.

```
# esxcli -s <IP address or hostname of ESXi host> system syslog reload
```

Tips In some cases, the following error message may be displayed as the result of the esxcli command.

```
# esxcli -s ftESXi storage mpm list
Enter username: root
Connect to ftESXi failed. Server SHA-1 thumbprint:
48:01:F6:82:E1:92:F7:35:BE:C4:37:E3:9C:89:58:E6:03:9B:FE:95 (not
trusted).

If the above error message is output, execute the esxcli command with '--thumbprint' option.
Specify the thumbprint shown in the error message for the '--thumbprint' option.

# esxcli
--
thumbprint=48:01:F6:82:E1:92:F7:35:BE:C4:37:E3:9C:89:58:E6:03:9B:F
E:95 -s ftESXi storage mpm list
```

For details of the esxcli command, see the documents from VMware.

2.3.3 Changing the Firewall Rules on ftSys Management Appliance

The list of the ports used by NEC ESMPRO Agent (described as Agent in the table) is shown below. Allow access to these ports to set Firewall in your environment.

"Auto" in the table enables OS to allocate the available ports within a certain range. Therefore, this cannot be fixed. Additionally, "Direction" in the table includes the bi-directional arrows in the top row is at the starting time of the communication, and the lower shows the communication of return.

Function	in (Agent)	Direction	Out (default)	Note
Server Monitoring (SNMP)	Auto	→ ←	161/udp	
Manager Report (SNMP)	Auto	→	162/udp	Port opening (default)
Manager Report (TCP/IP)	Auto	→ ←	31134/tcp	
Via the Manager Express Report Service	Auto	→ ←	31136/tcp	
HTTPS (Via the Manager) Express Report Service	Auto	→ ←	31138/tcp	
Express Report Service (Internet email)	Auto	→ ←	25/tcp	smtp
		→ ←	110/tcp	pop3
Express Report Service (HTTPS)	Auto	→ ←	443/tcp	https Port opening (default)

Adding New Firewall Rules

Important Do NOT change or delete the default firewall rules. Only add individual rules as necessary. To handle the Firewall settings, take full responsibility for your actions.

Note To enable the firewall rules on ftSys Management Appliance, rebooting ftSys Management Appliance is required. Rebooting the ESXi host is not required.

- Add snmp port on ftSys Management Appliance.


```
# firewall-cmd --permanent --add-rich-rule='rule family="ipv4" port
port="161" protocol="udp" accept'
# firewall-cmd --reload
```
- Reboot ftSys Management Appliance to enable the rules.

Reboot the guest OS from the Host Client or run the following command on the console.

```
# shutdown -r now
```
- After rebooting ftSys Management Appliance, run the following command to make sure that the system is running successfully.


```
# /opt/ft/sbin/ft-verify
```

4. If successful, [PASS] appears in the output.

Output example:

```
ftSys Management Appliance hosted by xxx.xxx.xxx.xxx [PASS]
Host is configured with enough memory [PASS]
ftSys installed on host [PASS]
Host software version matches expected version (x.x.x-xxx) [PASS]
ftSys Management Appliance firewall settings [PASS]
Host Firmware Boot Type - requires UEFI [PASS]
Host Legacy memory copy BIOS setting [PASS]
ftSys Management Appliance installed on boot volume [PASS]
Multiple paths to storage [PASS]
Network Configuration [PASS]
Host ftSys service started [PASS]
Host logs available after reboot [PASS]
DNS Configuration [PASS]
```

Installing Bundled Software

This chapter explains the bundled software and how to install them.

1. Bundled Software for the Server

Describes the bundled software to be installed in the server system.

2. Bundled Software for "PC for Management"

Describes the bundled software to be installed in "PC for Management" that is used to monitor and manage the server system.

1. Bundled Software for the Server

The provided "NEC EXPRESSBUILDER" DVD contains "NEC ESMPRO Manager" for managing NEC Express5800/ft series. This utility monitors the status of Express5800/ft server.

1.1 NEC ESMPRO Agent

When NEC ESMPRO Agent detects some problems, it sends messages to the computer in which NEC ESMPRO Manager is installed.

NEC ESMPRO Agent is required to be installed on the log server by users.

In order for NEC ESMPRO Agent to operate, it is necessary to configure the settings according to your environment. See the *User's Guide* (NEC/esmpro-sa/doc/lnx_esm_users_e.pdf) included in ft control software Install DVD.

NEC ESMPRO Agent is stored in ft control software Install DVD.

Described below are procedures to configure ft Management Appliance as the log server. If you use any other server as the log server, see *Chapter 3 (1. Steps for Configuring the Separate Log Server)* for the log server.

Note See *Chapter 1 (1.10.1. Log Server)* for the log server.

Note Be sure to install NEC ESMPRO Agent on log server.

If the status of ft server changes due to failure, NEC ESMPRO Agent notifies of it.

NEC ESMPRO Agent notifies server status change only. It does not notify of hardware failure of ESXi host nor events related to VMware ESXi.

You can use `ftsmaint` command to confirm detailed status of ft server.

Refer to *Chapter 1 (4.3 ftsmaint Examples)* in *Maintenance Guide* (separate volume) for details of `ftsmaint` command.

1.1.1 Preinclination

SNMP is used for reporting to NEC ESMPRO Manager. Provide settings for SNMP as shown below.

1. Log in to ftSys Management Appliance as a root user.
2. Edit the `/etc/snmp/snmpd.conf`.
Change the `/etc/snmp/snmpd.conf`, and, for ESMPRO MIB (.1.3.6.1.4.1.119.2.2.4.4), set a right of the community in "READ WRITE".
In the example below, "READ WRITE" authority is given to all MIB (.1 subordinates) of default community (public).

Example

```
#####
# Third, create a view for us to let the group have rights to:
#   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
```

Modify these lines.

- Comment out the existing description.
- Add new descriptions.

Note

Refer to Help of `snmpd.conf` for detailed procedure. Run `man` command to open Help of `snmpd.conf`.

3. Check that enabled of `snmpd`.

```
# systemctl is-enabled snmpd.service
```

```
enabled
```

- In case of enabled, restart `snmpd`.

```
# systemctl restart snmpd.service
```

- In case of disabled, change the setting of `snmpd`, and start `snmpd`.

```
# systemctl enable snmpd.service
```

```
# systemctl start snmpd.service
```

4. Allow to receive the `snmp/udp` port on the ft management appliance.

```
# firewall-cmd --permanent --add-rich-rule='rule family="ipv4" port
port="161" protocol="udp" accept'
```

```
# firewall-cmd --reload
```


1.1.2 Install NEC ESM PRO Agent

Connect to the ESXi host from Host Client to configure.

1. Set fit control software install DVD in the DVD drive of the machine connected to ESXi host from Web Browser.
2. Connected to the ESXi host from Web Browser, select ftSys Management Appliance from [Virtual Machines] of Navigator, select [Launch remote console] of [Console] tab, the remote console (VMRC) is started.
3. Select [VMRC] menu of the remote console screen, select [Removable Devices] - [CD/DVDdrive x] - [x.Connect to x], and connect fit control software install DVD to the set DVD drive.
4. Log in to ftSys Management Appliance as a root user.
5. Mount fit control software Install DVD. When /mnt/cdrom directory exists, the making of the directory is unnecessary by mkdir command.

```
# mkdir /mnt/cdrom
# mount /dev/cdrom /mnt/cdrom
```

6. Run the following command to change the directory that contains NEC ESM PRO Agent.


```
# cd /mnt/cdrom/NEC/esmpro-sa/
```
7. Run the following command to install NEC ESM PRO Agent.


```
# rpm -ivh Esmpro-*
```
8. Run the following command to change setting of ESMstrg.


```
# systemctl disable ESMstrg
```
9. Running the following command displays the messages as shown below.

```
# cd /opt/nec/esmpro_sa/tools
# ./sethwinf
```

Enter the number and set the system information.

```
1. Product Name:          Other
2. Product Manufacturer: Other
3. Chassis Type:         Other
s. Save and quit
q. Quit without save
```

Please input your selection (1 to 3, s, q):

Examples)

```
1. Product Name:          NEC Express5800/R320g-M4
2. Product Manufacturer:  NEC
3. Chassis Type:         Rack
```

10. Change directory, and unmount fit control software Install DVD.


```
# cd /
# umount /mnt/cdrom
```
11. Press the <Ctrl>+<Alt> keys to release the mouse, select [VMRC] menu of the remote console screen, select [Removable Devices] - [CD/DVDdrive x] - [Disconnect x:], and then take fit control software Install DVD out from the DVD drive.
12. Restart ftSys Management Appliance.


```
# reboot
```

13. Perform a basic configuration of Manager Report (SNMP).
 1. Start the ESMamsadm, see "*Chapter 3 Report Features*" – "1. Report Setting" – "*Method of starting the Control Panel (ESMamsadm)*" of *NEC ESMPRO Agent User's Guide*.
 2. Set a trap notification destination IP, see "*Chapter 3 Report Features*" – "2.1.1. Base Setting of Manager (SNMP)" of *NEC ESMPRO Agent User's Guide*.
14. You register component of BMC with the ESXi host of this server on NEC ESMPROManager. After that do component registration of ftSys Management Appliance.
Refer to *Chapter 3 (7.2 NEC ESMPRO Manager)* in *Maintenance Guide*.

2. Bundled Software for "PC for Management"

This section describes the bundled software required to configure PC for Management used to manage the server system.

2.1 NEC ESMPRO Manager

NEC ESMPRO Manager remotely controls and monitors the server hardware. Install NEC ESMPRO Manager on PC for management.

To use these features, install the bundled software such as NEC ESMPRO Agent on the server.

For details, see *NEC ESMPRO Manager Installation Guide* in EXPRESSBUILDER.

Configuring the Separate Log Server

This chapter provides how to configure the log server other than ftSys Management Appliance.

1. Steps for Configuring the Separate Log Server

Describes how to configure the log server other than ftSys Management Appliance.

***I.* Steps for Configuring the Separate Log Server**

To use a log server separately, prepare a Linux server other than ftSys Management Appliance. To configure the server to be used for log server, install NEC ESMPRO Agent on it, and provide various settings (e.g., editing `snmpd.conf`, opening of port, and others). Refer to NEC ESMPRO Agent Installation Guide for detailed information.

If you have not specified IP address or machine name of log server in Step 9 of *Chapter 1 (1.10.2 Installing Additional Packages)*, perform the steps described in *Chapter 1 (2.3.2 If the IP address of Log Server or Host Name has been Changed)* so that the Linux server (log server) can be detected.

After configuring the server as described above, provide the following settings according to your environment.

Tips

If the separate log server is used, some event logs related to internal hard disk drive are not reported because these logs are output to syslog of ftSys Management Appliance. If you install NEC ESMPRO Agent and report table in ftSys Management Appliance and provide report settings, these logs can be reported. However, logs related to degradation of internal hard disk drives are reported without performing these steps.

***I.I* Setting Firewall for Log Server**

To forward logs from the ESXi server, use the 514/udp port. In the case of setting the firewall on the log server side, set it to receive logs from the 514/udp port.

Examples

1. Add below to `/etc/sysconfig/iptables`.

```
-A INPUT -p udp -dport 514 -j ACCEPT
```

2. Restart iptables.

```
# service iptables restart
```

1.2 Setting Syslog for Log Server

Set the 514/udp port in waiting state on the log server side. Additionally, the configuration to output transferred logs to `/var/log/messages` needs to be set as well.

Examples of setting an environment to use syslog

1. To set the 514/udp port in waiting state, edit `/etc/sysconfig/syslog`.

<Before the change>

```
SYSLOGD_OPTIONS="-m 0"
```

<After the change>

```
SYSLOGD_OPTIONS="-m 0 -r"
```

2. To output transferred logs to `/var/log/messages`, edit `/etc/syslog.conf`.

<Before the change>

```
*.info;mail.none;authpriv.none;cron.none /var/log/messages
```

<After the change>

```
*.info;mail.none;authpriv.none;cron.none;local4.none;local6.notice /var/log/messages
```

3. Restart syslog.

```
# service syslog restart
```

Examples of setting an environment to use rsyslog

1. To set the 514/udp port in waiting state, edit `/etc/sysconfig/rsyslog`.

<Before the change>

```
# Provides UDP syslog reception
```

```
#$ModLoad imudp.so
```

```
#$UDPServerRun 514
```

<After the change>

```
# Provides UDP syslog reception
```

```
$ModLoad imudp.so
```

```
$UDPServerRun 514
```

2. To output transferred logs to `/var/log/messages`, edit `/etc/rsyslog.conf`.

<Before the change>

```
*.info;mail.none;authpriv.none;cron.none /var/log/messages
```

<After the change>

```
*.info;mail.none;authpriv.none;cron.none;local4.none;local6.notice /var/log/messages
```

3. Restart rsyslog.

```
# service rsyslog restart
```

Note

The setting method may be changed depending on the package version. For the setting method, refer to Help, etc. for `.conf` files. For example, Help for `rsyslog.conf` can be checked by running the `man` command as below.

```
# man rsyslog.conf
```

1.3 Installing Reporting Function onto Log Server

Install the report table of NEC ESMPRO onto the log server so that NEC ESMPRO Agent can send the ft server-specific messages transferred to the log server to NEC ESMPRO Manager.

Note

If you want to change from the previously selected language to other language in the language selection for the report table, you need to uninstall the package installed before running the installer..

```
# rpm -qa | grep ftexp-report-table
ftexp-report-table.[language ID]-[version]
# rpm -e ftexp-report-table.[language ID]
```

When report table is uninstalled, restart NEC ESMPRO Agent

```
# /opt/nec/esmpro_sa/bin/ESMRestart
```

1. Log in to the log server as a root user.
2. Mount the ft control software Install DVD. When /mnt/cdrom directory exists, the making of the directory is unnecessary by mkdir command.

```
# mkdir /mnt/cdrom
# mount /dev/cdrom /mnt/cdrom
```

3. Run the command below to install NEC ESMPRO report table onto the log server.

```
# /mnt/cdrom/NEC/install.sh -e
```

4. Select a language for the report table. For English, select “E”, and for Japanese, select “J.”

```
Please choose a language for ESMPRO alert messages: [E(nglish) |
J(apanese)].
```

5. Change directory, and unmount ft control software Install DVD.

```
# cd /
# umount /mnt/cdrom
```

6. Restart NEC ESMPRO Agent on the log server.

```
# /opt/nec/esmpro_sa/bin/ESMRestart
```

Glossary

Term	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <F2> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
BMC Configuration Utility	Software for setting BIOS and BMC. You can use as Windows application or run this software when pressing <F4> key during POST.
CPU module	A CPU subsystem logically configured in a CPU/IO module. It includes CPUs and memory.
CPU/IO module	A module that includes CPUs (processors), memory, PCI boards, a cooling fan, hard disk drives and power supply units.
DUMP Switch	A switch that is used for collecting the memory dump if an error occurs. You can specify the destination of the dump by using the OS function.
EXPRESSBUILDER	Standard software for setting up the server easily. This also includes several useful applications and instruction manuals.
EXPRESSSCOPE ENGINE 3	A name of BMC for NEC Express5800 series.
Flash FDD	An optional USB device that can use as a floppy disk drive.
I/O module	An I/O subsystem logically configured in a CPU/IO module. It includes hard disk drives, PCI cards, BMC and 1G/10G LAN.
NEC ESMPRO	Standard software for the server management. This consists of several applications for managing or monitoring.
NEC ESMPRO Agent	Software for monitoring the server. This works with NEC ESMPRO Manager and resides as the OS service.
NEC ESMPRO Manager	Software for managing a number of servers on network.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can read and change SEL, SDR, FRU and other IPMI data. You can start Offline tools when pressing <F4> key during POST.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".

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