

Hitachi Data Ingestor

6.3.1

Virtual Machine Appliance Installation Guide

This guide describes how to install Hitachi Data Ingestor (HDI) Virtual Machine Appliance. This guide is intended for system administrators who operate and manage an HDI system.

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1. Overview

1.1. Purpose of this document

This document is an installation guide. It is intended to install Hitachi Data Ingestor (HDI) on VMware. This system is called Virtual Machine Appliance (VMA). This document explains the followings.

- Host environment to be applied
- Setting up HDI on VMware without VMware HA or FT
- Setting up HDI on VMware with VMware HA or FT

1.2. Intended audience

- A person who has basic knowledge of operating Virtual Computing Technology Data Center by using VMware.
- A person who has acquired knowledge described in Hitachi Data Ingestor Single Node Administrator's Guide.

1.3. Related document

The following document is the assumption.

- Hitachi Data Ingestor Installation and Configuration Guide
- Hitachi Data Ingestor Single Node Administrator's Guide
- Hitachi Data Ingestor Getting Started Guide

1.4. The intended version of HDI

This document is intended to HDI6.1.0 (or later).

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1.6. Document Revision History

Version	Date	Description
1	12.17.2010	STAR Virtual Machine Appliance Installation Guide <Newly Created>
2	2.18.2011	Add Update Installation and Maintenance Mode.
4	12.12.2011	Add VMware ESX 4.1 to supported product.
5	12.27.2011	Add VMware ESX 4.1 with VMware HA and FT to supported product.
6	1.18.2012	Add VMware ESXi 5.0 without VMware HA and FT to supported product
7	4.13.2012	Add OVF creation procedure.
8	4.26.2012	Fix a representation of the sentence.
9	10.19.2012	Add Assigning serial port, Setting time synchronization, and some notes for VMware ESXi 5.0. Change [Virtual Device Node] setting for Virtual Disk for user data
10	3.14.2013	Change the title
11	7.19.2013	Add Network Configuration. HDI 4.1.1 or later support user data LAN (eth0) other than mng0 on VMA instead of pm0. The information about negotiation mode is added to " Difference between VMA and HDI Single Node ".
12	9.3.2013	Add VMware ESXi 5.0 Update 2 and VMware ESXi 5.1 to supported product
13	2.26.2014	Add descriptions of VMware Tools
14	11.7.2014	Add VMware ESXi 5.1 Update 1 to support product
15	12.24.2014	Add VMware ESXi 5.5 to support product
16	11.02.2015	Modify capacity of size for HDI 6.0
17	5.26.2016	Add VMware ESXi 6.0 to support product.
18	6.22.2016	Clarify virtual disk size limit on VMware ESXi 6.0.
19	7.21.2016	Clarify the provisioning policies available on VMware ESXi 6.0.
20	9.12.2016	Change descriptions of installing VMA
21	11.21.2016	Add VMware ESXi 6.0 Update 2 to support product.
22	9.29.2017	Add VMware ESXi 6.5 to support product. Add descriptions of setting the I/O scheduler type

2. Overview of HDI on VMware Virtual Machine

VMA runs as a Guest OS on Host Machine where is installed VMware. VMA and HDI Single Node are equivalent in functionalities.

2.1. Overview of System Construction

The only difference between HDI VMA and HDI Single Node model is hardware platform. In VMA, physical hardware is replaced by a customer-installed VMware ESX/ESXi and a vSphere Client PC.

Fig 2-1 shows the system construction in the case of using VMware without VMware HA or FT.

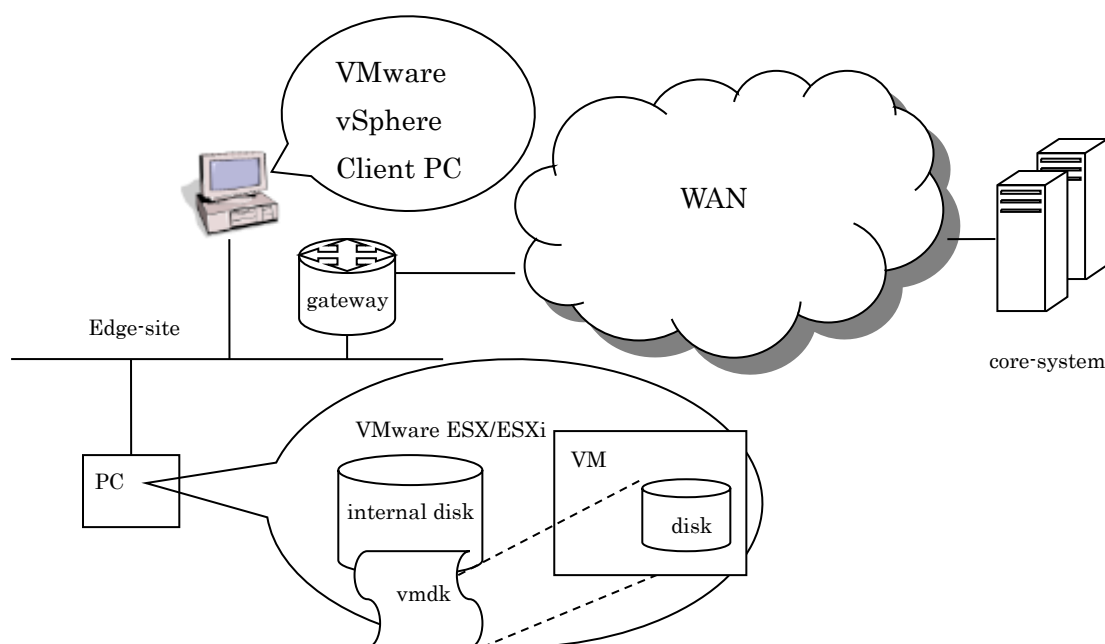


Fig.2-1. System Construction

2.2. Host Hardware reference configuration

The following table shows the configuration of verified hardware (Host) by ITPD for VMware without VMware HA or FT. This is equal to Single Node hardware configuration.

#	Element		Configuration
1	Chassis		Dell Power Edge R710 or T610
2	Processor		Intel(R) Xeon(R) E5620@2.40GHz (4 core) * 2
3	Capacity of Main Memory		12GB
4	RAID Controllers		PERC H700(RAID6)
5	Number of HDD		6
6	NIC	Number	2
		Type	Broadcom BCM5709
7	HBA		NA

Table 2-1 ITPD validated Host Hardware

2.3. Supported VMware product

VMware version verified by ITPD is the following.

- VMware ESXi 4.1
- VMware ESX 4.1
- VMware vSphere Client 4.1
- VMware vCenter Server 4.1
- VMware ESXi 5.0
- VMware ESXi 5.0 Update 2
- VMware ESXi 5.1
- VMware vSphere Client 5.1
- VMware vCenter Server 5.1
- VMware ESXi 5.1 Update 1
- VMware vSphere Client 5.1 Update 1
- VMware vCenter Server 5.1 Update 1
- VMware ESXi 5.5
- VMware vSphere Client 5.5
- VMware vCenter Server 5.5
- VMware vSphere Client 6.0
- VMware vCenter Server 6.0
- VMware ESXi 6.0 Update 2
- VMware vSphere Client 6.0 Update 2
- VMware ESXi 6.5
- VMware vCenter Server 6.5

2.4. Supported CLI commands of VMware Tools

The following table shows CLI commands and their options of VMware Tools supported by VMA.

#	Command	Content
1	vmware-toolbox-cmd	Command Description: Display some information of VMA Available Options (Note): (primary) stat (secondary) hosttime,speed,sessionid,swap,memlimit,memres,cpures,cpulimit
2	vmware-checkvm	Command Description: Distinguish the type of VMware hypervisor Available Option: -p

Table 2-2 ITPD validated CLI utility

Note:

Each of primary and secondary option is to be specified as the first and the second argument, respectively.

2.5. Difference between VMA and HDI Single Node

Compared with the HDI Single Node model, HDI VMA has the following characteristics:

- Tagged-VLAN and Link aggregation/alternation are not configurable. These functions are available in Host.
- The performance is subject to the load of VMware host.
- Negotiation mode cannot be changed when VMXNET3 is chosen as the NIC type of VMA.
- As for the [Speed] of the [List of Data Ports] screen of VMA, "-" is always displayed.
- As for the [Link Speed] of the [Ethernet Interface tab] in the [Network tab] of VMA, "---" is always displayed.
- As for the [linkspeed] of the [Network Interface] displayed when executing the hwstatus command on VMA, "-" is always displayed.

The hardware disruption/failure monitoring capability is lower.

2.6. Guest Machine reference configuration

The configuration of Guest verified by ITPD is the following.

#	Element		Configuration
1	Number of Virtual CPU		1 or 2(Note:1)
2	Capacity of Main memory		8GB
3	Capacity of Virtual Disk(Note:2)	OS Virtual Disk	26GB
		Virtual Disk for migration control	36GB
		Virtual Disk for user data	Min 2GB, Max 62TB(Note:3)
4	Number of Virtual Disk	OS Virtual Disk	1
		Virtual Disk for migration control	1
		Virtual Disk for user data	Min 1, Max 13
5	Virtual Disk Type	OS Virtual Disk	Thick Provision Lazy Zeroed Thick Provision Eager Zeroed(Note:5)
6		Virtual Disk for migration control	Thick Provision Lazy Zeroed Thick Provision Eager Zeroed(Note:5)
7		Virtual Disk for user data	Thin Provision Thick Provision Lazy Zeroed Thick Provision Eager Zeroed(Note:5)
8	SCSI Controllers		LSI logic SAS
9	NIC	Number	2
		Type	E1000 or VMXNET3 (exclusively)
10	Serial Port(Note:4)	Number	1 or None

		Connection Type	Output of file
11	CD/DVD drive		IDE Mapping ISO image
12	HBA		Nothing
13	Type of Guest OS		Debian GNU/Linux(64-bit)

Table 2-3 ITPD validated Guest Machine configuration

Notes :

Note1: When VMware FT is used, the number of Virtual CPU must be 1.

Note2: Virtual Disk cannot expand after installation. Capacity planning must be done before getting started.

Note3: In VMware vSphere 5.1 and earlier, the maximum disk (VMDK) size was limited to 2TB - 512 bytes.

Note4: When VMware HA or FT is used, no serial port must be assigned to the virtual machine.

Note5: When VMware FT is used, Thick Provision Eager Zeroed must be chosen by VMWare specification.

3. Creation of OVF

3.1. Summary of OVF

OVF (Open Virtualization Format) is a standard image formats to be run in Virtual Machines. It is possible to use a great variety of Virtual Machine image files safely and efficiently by using OVF. Installation is unnecessary, because to load OVF image on hypervisor is enough to use Virtual Machine.

3.2. Preliminaries

See the following preconditions.

- VMware ESX/ESXi is already installed in Host.
- VMware vSphere Client is already installed in vSphere Client PC and can access to Host.
- When VMware HA or FT is used, VMware vCenter Server is already installed in vCenter Server PC and can access to all the hosts by being launched from vSphere Client.

3.3. Procedure of OVF Creation

OVF Creation is conducted by using VMware vSphere Client. Steps are the followings.

Step No.	Steps	Note
1	Launching VMware vSphere Client	When using VMware HA or FT, launching vCenter Server from vSphere Client.
2	Creating vSwitch	Creating vSwitch for maintenance LAN or user LAN if necessary.
3	Constructing new Virtual Machine	Constructing the Guest Machine where Guest OS is installed.
4	Assigning Virtual Disk for migration control	
5	Assigning Virtual Disk for user data	
6	Setting Power-On Boot Delay Time	For setting BIOS up.
7	Installing VMA	Equivalent to Single Node in installing.
8	Reconfiguring Power-On Boot Delay Time	Restore the Power-On Boot Delay Time equal to Step No.6.
9	OVF Creation	

<NOTE>

The example of each step is described in Chapter 3.4 to 3.12.

3.4. Basic points of attention for using VMware ESXi

This section shows basic points of attention for using VMware ESXi.

The components of the system in the following procedure (from section 3.5 through chapter 3.12.5 are VMware vSphere Client on Windows XP and VMware ESXi 4.1 without VMware HA or FT.

The notes in general are followings.

- 1) To operate Console screen of VMware vSphere Client, click the pane of [Console] tab. To return to Windows, press [Ctrl] + [Alt].
- 2) In case of constructing multiple VMAs in the same virtual environment, the name of Virtual Machine must be unique.

And when using VMware HA or FT, the following conditions are required.

- 1) The datastore, in which the virtual machine is generated, must be allocated in the storage that each ESX host can access.
- 2) The number of Virtual CPU of the virtual machine must be 1 in the case of VMware FT.
- 3) No serial port must be assigned to the virtual machine in the case of VMware FT.

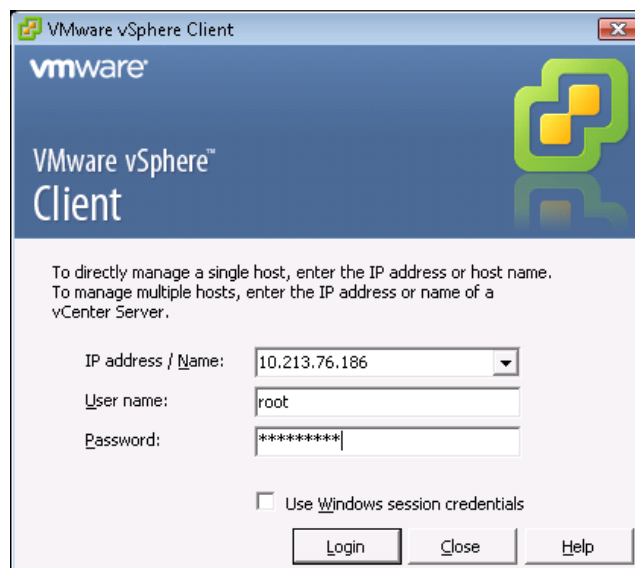
3.5. Launching VMware vSphere Client

- 1) Launch VMware vSphere Client.

Launch VMware vSphere Client installed in vSphere Client PC.

- 2) Connect to Host.

Enter appropriate information into VMware vSphere Client and login to Host.

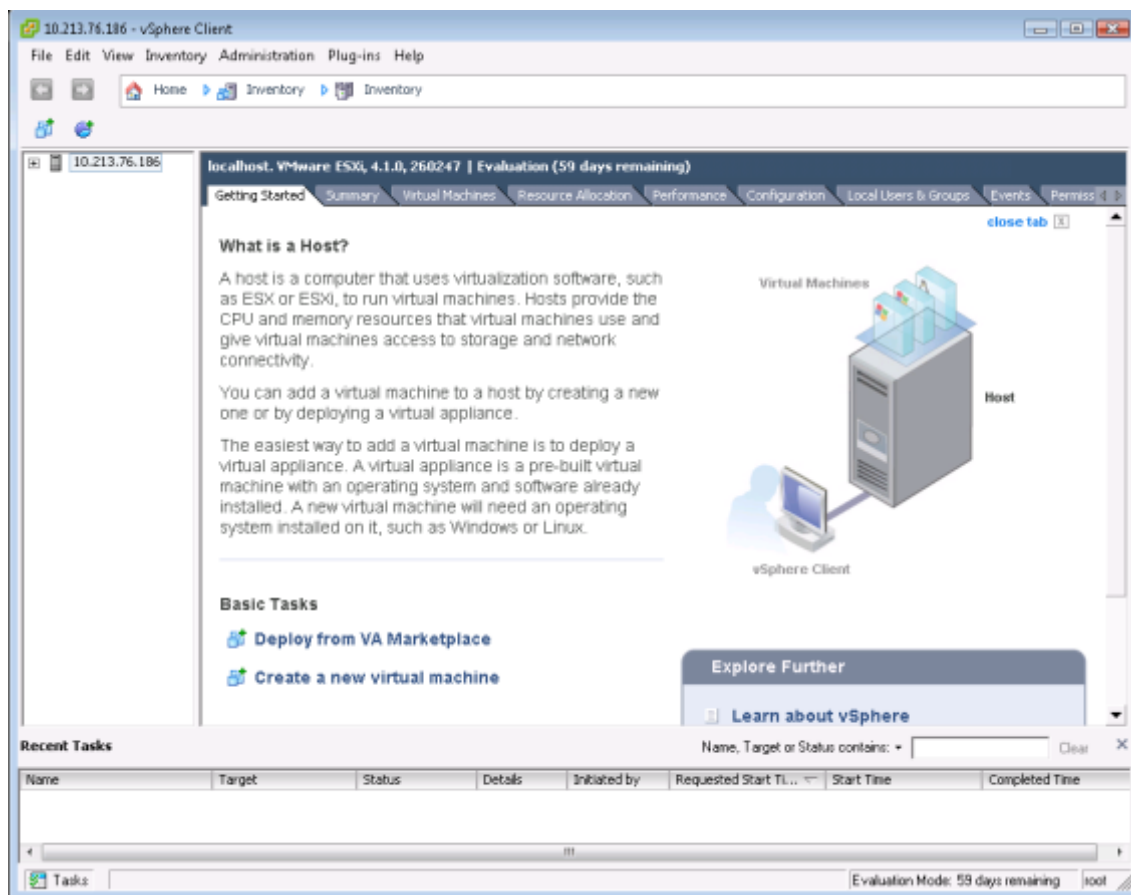


IP address/Name:	IP address of Host/Host name
User name:	name of User
Password:	password corresponds to User

<NOTICE>

The screen above is just an example. Enter the information set up on installation of VMware.

- 3) When the [Security Warning] pops-up, install necessary certification or ignore.
- 4) If [VMware Evaluation Notice] is displayed, acquire a license and register it, if it is necessary.
- 5) Operation screen of VMware vSphere Client displays.



<NOTICE>

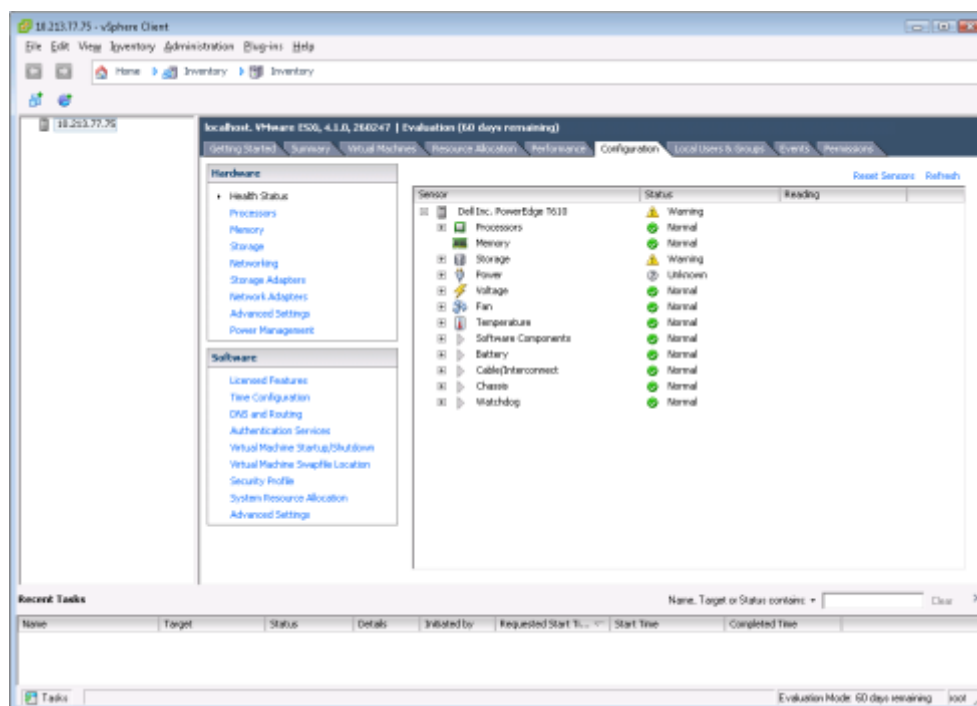
Confirm the screen on the left that Host is selected. if the virtual machine directly connect to physical port.

3.6. Creating vSwitch

Create vSwitch if the host doesn't have it. If you want to make a physical network adapter occupied by VMA, you can skip this section.

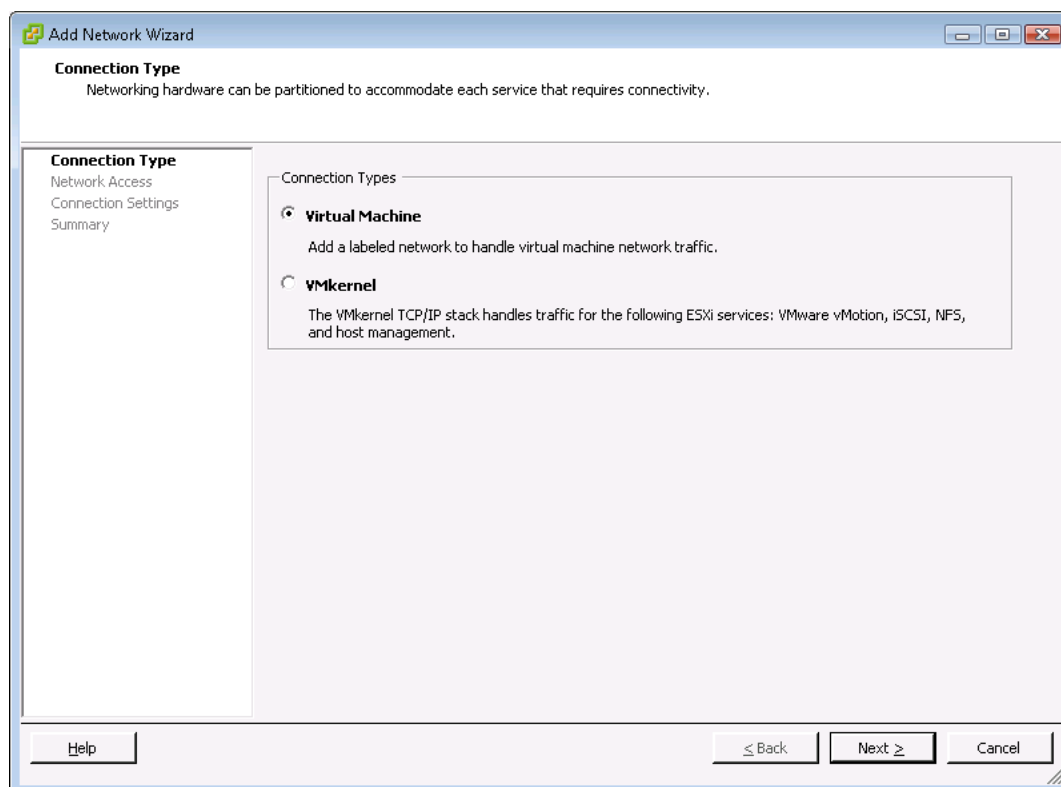
Followings are procedure to create a vSwitch:

- 1) Select the intended Host and click [Configuration] tab.
The following screen will be displayed.



2) Select [Hardware] pane - [Networking] and click [Add Networking].

The following screen will be displayed.



Select [Virtual Machine] and click [next].

3) [Add Network Wizard] - [Network Access] screen will be displayed.

Select a vmnic physically connected to the intended network and click [next].

4) [Add Network Wizard] - [Connection Settings] screen will be displayed.

Specify as follows.

[Network Label] : Enter the label of network to connect.

[VLAN ID (Optional)] : None(0)

Then click [next].

5) [Add Network Wizard] - [Summary] screen will be displayed.

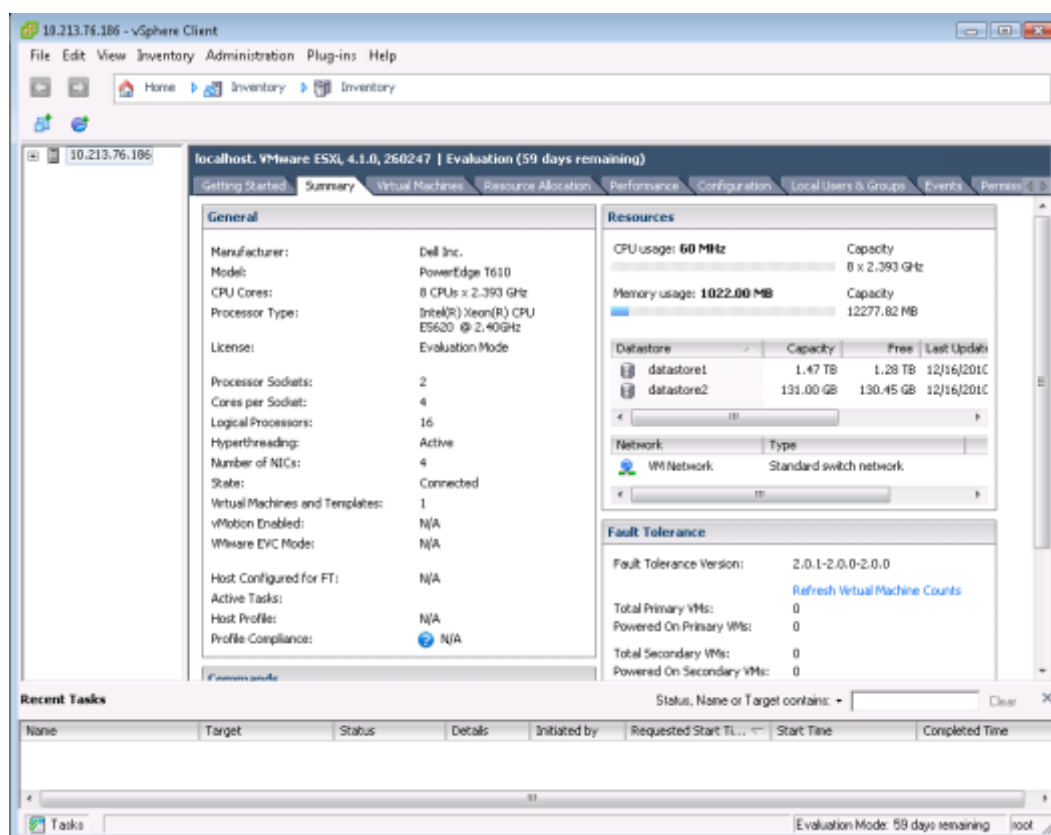
Confirm the specified information and click [finish].

3.7. Constructing Virtual Machine

1) Select the intended Host and click [Summary] tab.

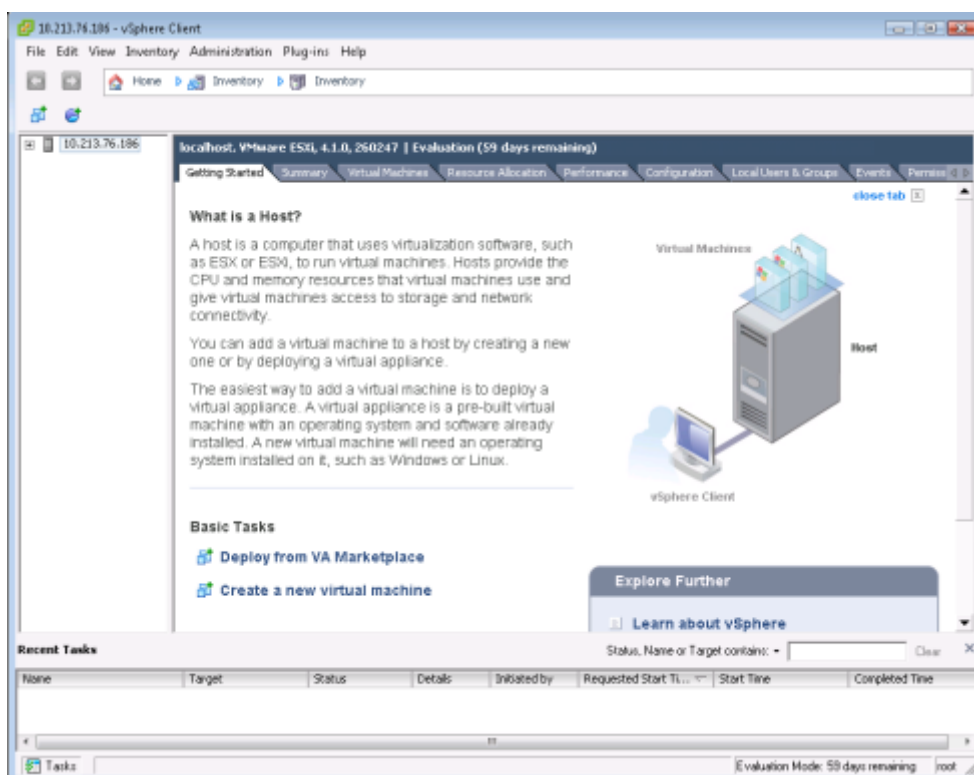
The following screen will be displayed. In this screen confirm the volume of data store whether to have enough free space to install VMA.

The example shows the installation into datastore2. Confirm the space of intended data store. It must be over the amount of each volume of Virtual Disk according to the Table 2-2. ITPD validated Guest Machine configuration #3 Capacity of Virtual Disk.

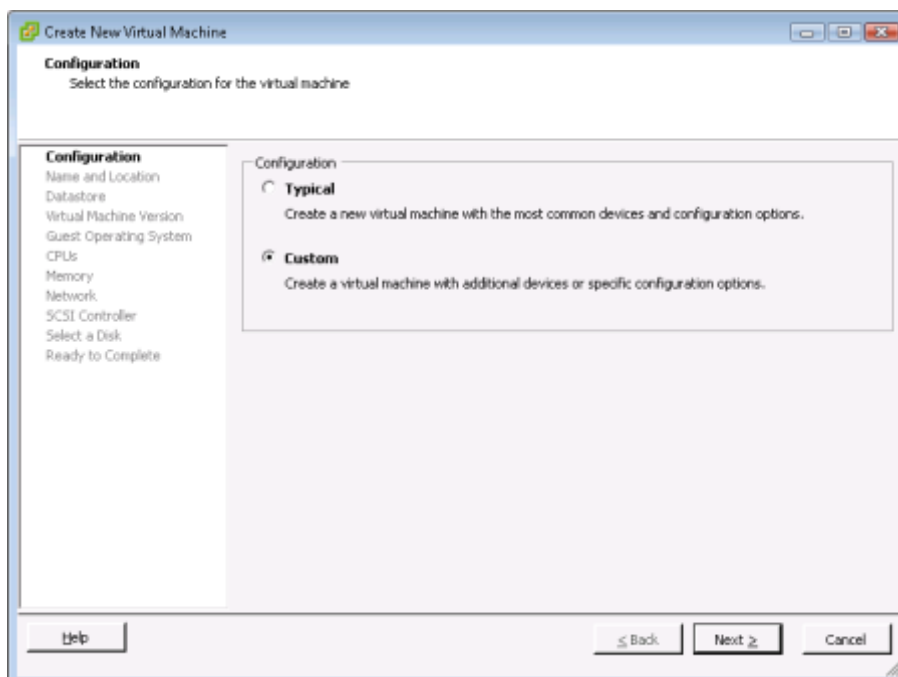


Confirm sufficient space is allocated on the host and open the [Getting Started] tab if OK. The screen returns to 3.5 5).

- 2) Click [Basic Tasks] - [Create a new virtual machine].

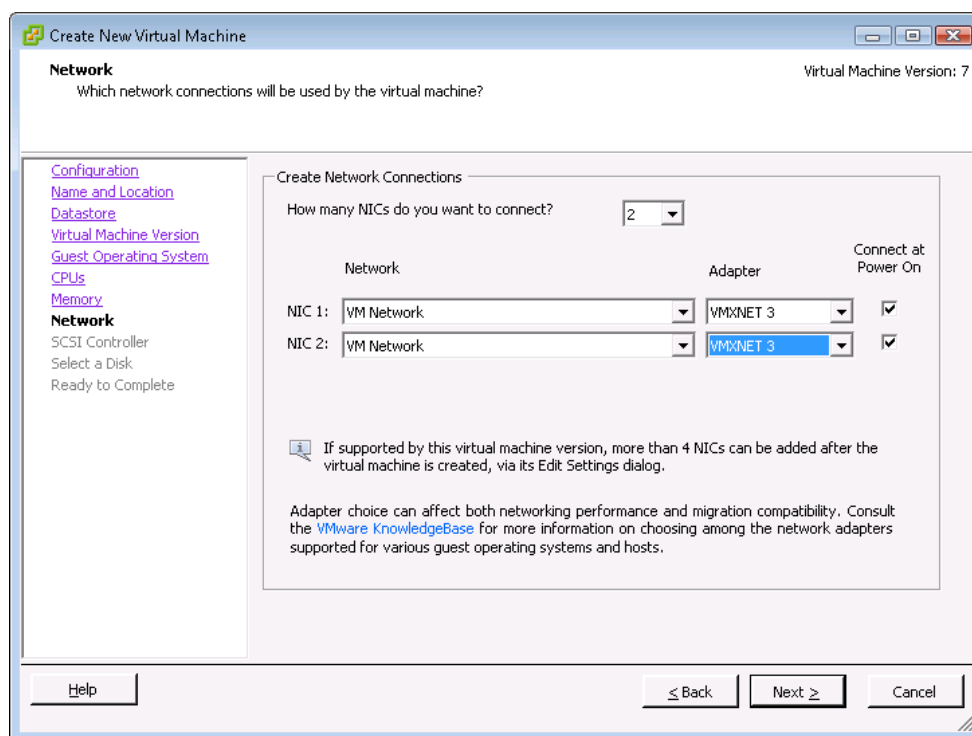


- 3) [Create New virtual Machine] - [Configuration] will be displayed.



Select [Custom] and click [Next].

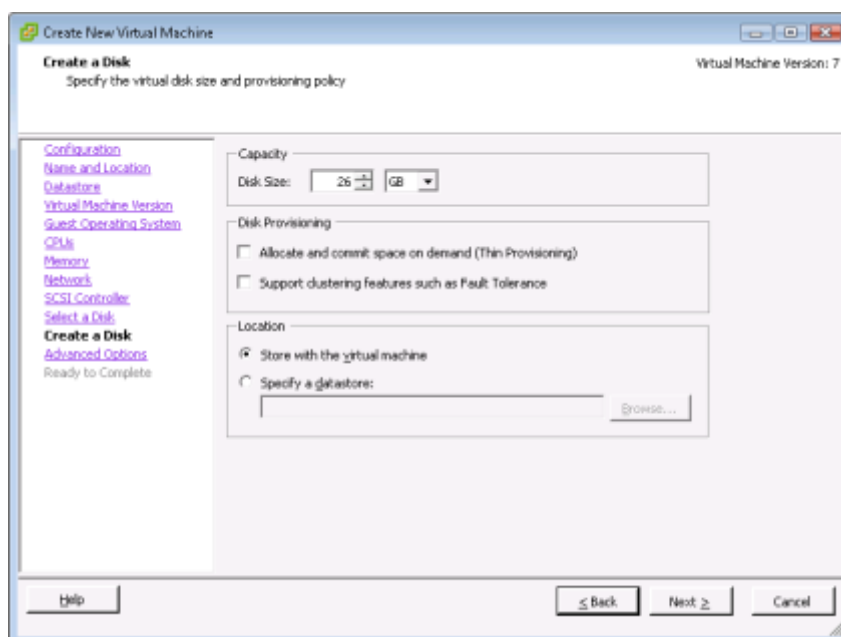
- 4) [Create New Virtual Machine] - [Name and Location] screen will be displayed.
In case of vCenter environment, give Virtual Machine a unique name. Then click [Next]. (The name is “VMA-0221” in example.)
- 5) [Create New Virtual Machine] - [Datastore] screen will be displayed.
Select a data store which stores Virtual Machine. Then click [Next].
Note: In VMware ESXi 6.0 update2, [Storage] screen will be displayed.
- 6) [Create New Virtual Machine] - [Virtual Machine Version] screen will be displayed.
Then click [Next].
- 7) [Create New Virtual Machine] - [Guest Operating System] screen will be displayed.
Select “Linux” for [Guest Operating System], and select “Debian GNU/Linux 5(64-bit)” for [Version] from list box. Then click [Next].
Note: In VMware ESXi 5.5, VMware ESXi 6.0 update2, select “Debian GNU/Linux 5(64-bit) (terminated)” for [Version] from list box and click [Next].
- 8) [Create New Virtual Machine] - [CPUs] screen will be displayed.
Select “2” for the number of Processor in [Number of virtual processors] (see Table 2-3. Validated Guest Machine). Then click [Next].
Note: In VMware ESXi 5, the number of virtual sockets and cores per socket must be specified.
In this verification, 2 for the number of virtual sockets and 1 for the number of cores per socket is specified.
- 9) [Create New Virtual Machine] - [Memory] screen will be displayed.
Enter “8GB” for memory size in [Memory size] (see Table 2-2 Validated Guest Machine). Then click [Next].
- 10) The following screen will be displayed.
Select “2” for the number of NIC in [How many NICs do you want to connect?]. For the [Adapter], select “E1000” for both or “VMXNET3” for both. Select equivalent vSwitch from the [Network] then click [Next].



- 11) [Create New Virtual Machine] - [SCSI Controller] screen will be displayed.
Select “LSI logic SAS” for SCSI Controller Type in [SCSI Controller] (see Table 2-2 Supported Guest Machine). Then click [Next].
- 12) [Create New Virtual Machine] - [Select a Disk] screen will be displayed.
Specify OS Virtual Disk. Check [Create a new virtual disk] for [Select the type of disk to use]. Then click [Next].
- 13) [Create New Virtual Machine] - [Create a Disk] screen will be displayed.
Specify as follows.

[Capacity]	: Enter over 26GB.
[Disk provisioning]	: Select nothing.
[Location]	: Select [Store with the virtual machine].

 Then click [Next].



Note: In VMware ESXi 5, “Disk Provisioning” has 3 ways. The default is “Thick Provisioning (Lazy Zeroed)”. In this verification, the default is used.

In VMware ESXi 6.0 update 2, “Disk Provisioning” has 3 ways. The default is “Thick Provision Lazy Zeroed”.

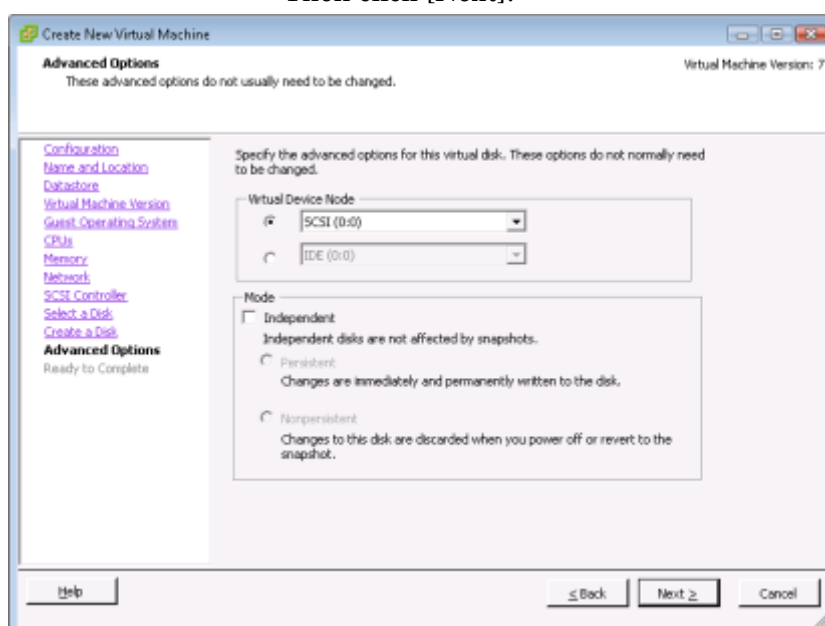
14) [Create New Virtual Machine] - [Advanced Options] screen will be displayed.

Specify as follows.

[Virtual Device Node] : Select “SCSI(0:0)”. In case of OS Virtual Disk, “SCSI(0:0)” must be selected.

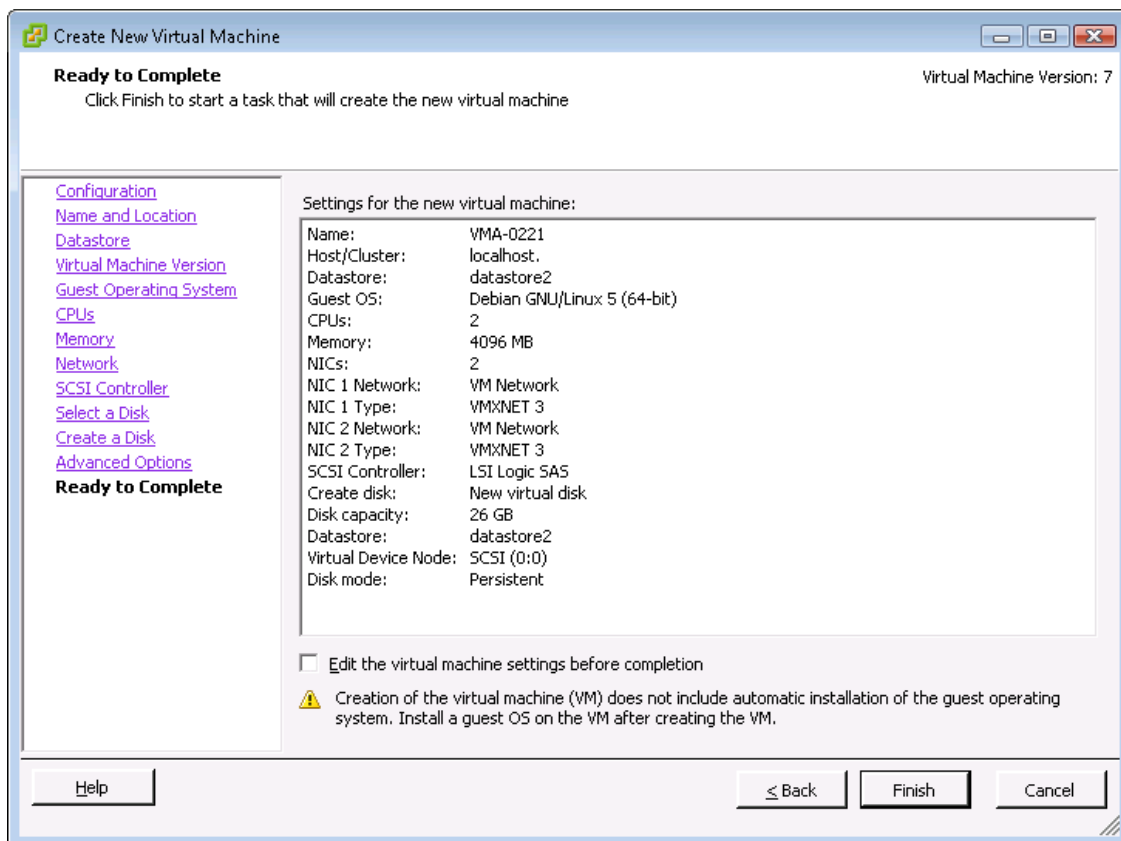
[Mode] : Select nothing. (Ensure [Independent] remains unchecked)

Then click [Next].



15) The following screen will be displayed.

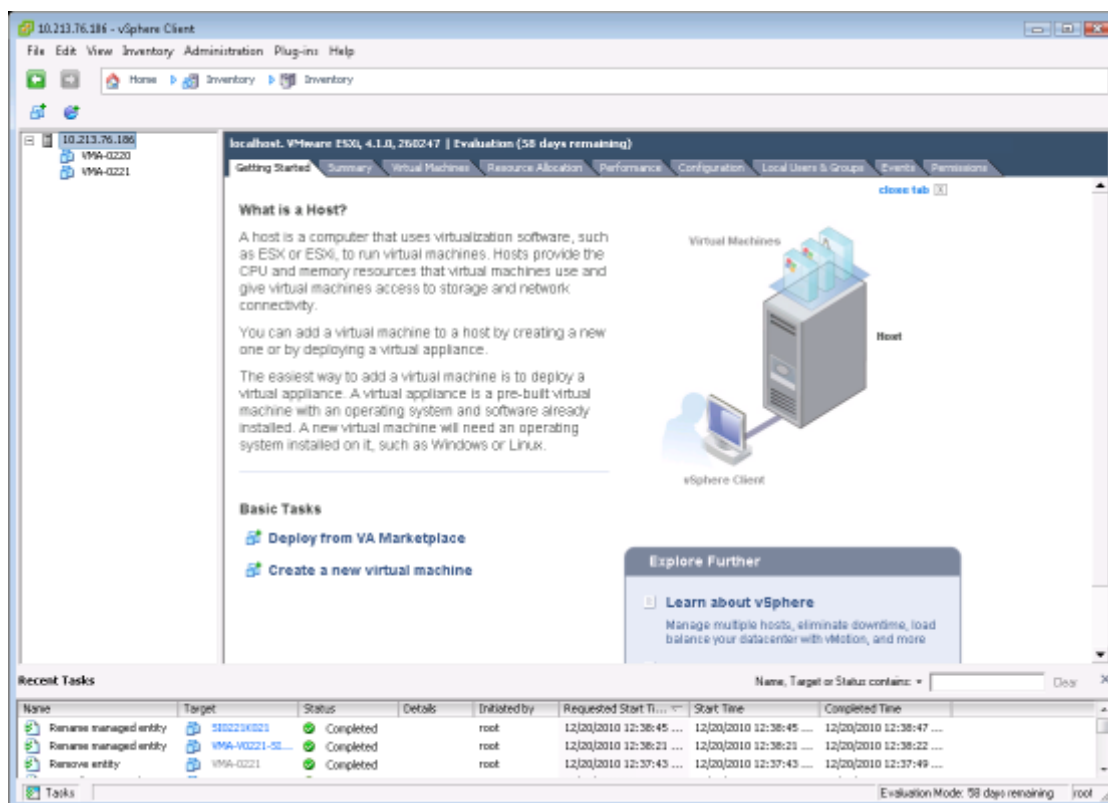
Confirm the specified information from step 4) to step 14) and click [Back] to modify the settings as required. Press [Finish] to complete the settings.



After clicking [Finish], constructing Virtual Machine will be finished.

16) The following screen will be displayed.

On the screen on the left, the newly constructed Guest name will be displayed. (This screen shows "VMA-0221", because "VMA-0220" is already constructed.)

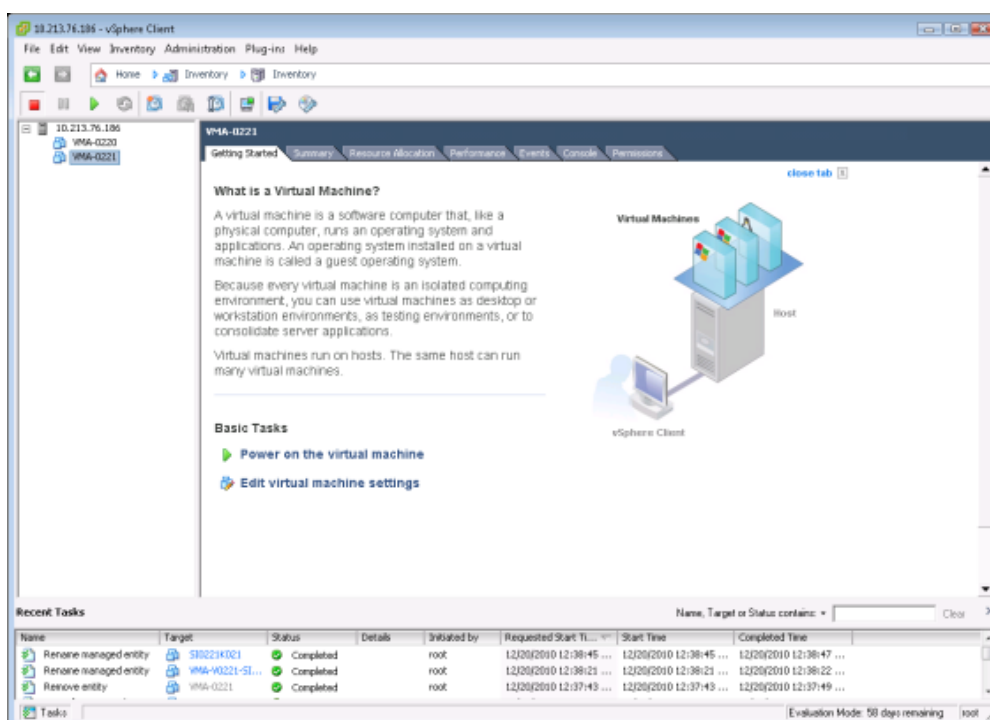


3.8. Assigning Virtual Disk for migration control and Virtual Disk for user data

The exactly same operation is required for Virtual Disk for migration control and user data.

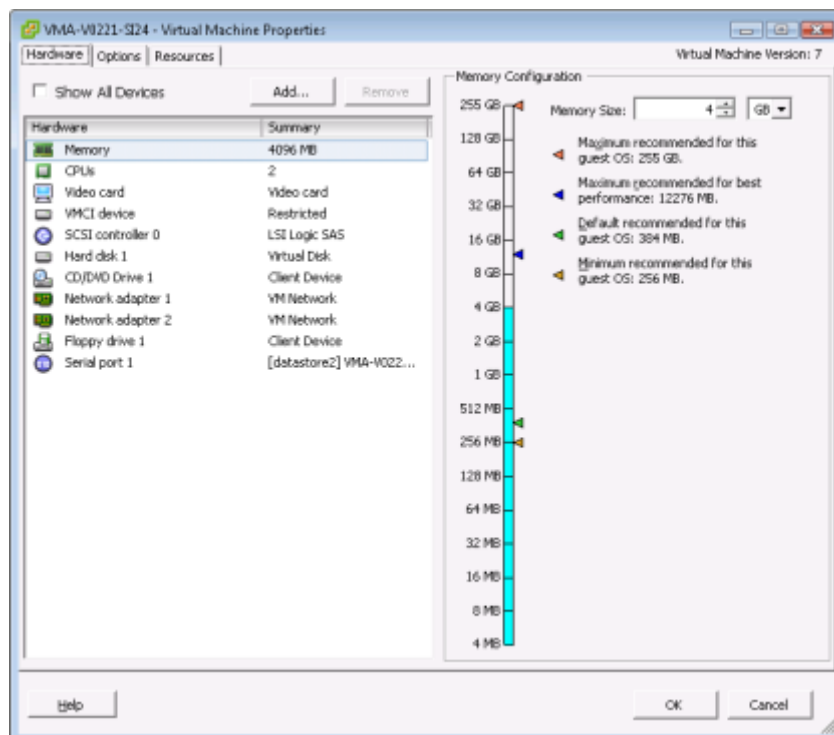
First, assign the Virtual Disk for migration control.

- 1) Select the intended Guest. Click [Getting Started] tab and click [Edit virtual machine settings].

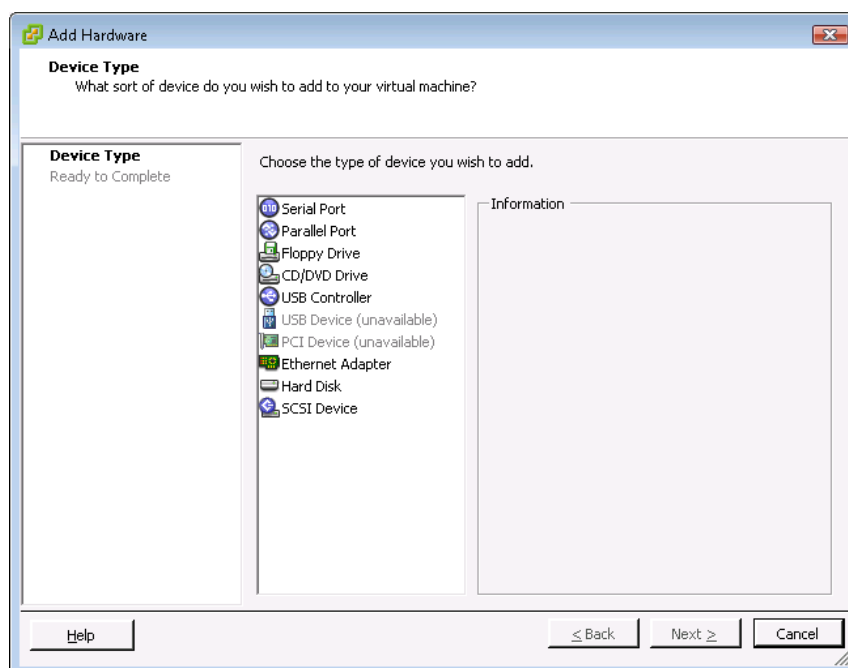


Note: In VMware ESXi 6.0 update2, if [Restricted Virtual Machine Settings] is displayed, click [OK],

- 2) The following screen will be displayed.
Select [Add]. Then click it.



- 3) The following screen will be displayed.
Select [Hard Disk] and click [Next].



- 4) [Add Hardware] - [Select a Disk] screen will be displayed.

Select [Create a new virtual disk]. Then click [Next].

- 5) [Add Hardware] - [Create a Disk] screen will be displayed. (see 3.7 13) screen)

Specify the disk volume to the intended Virtual Disk. Note that the disk volume of Virtual Disk for migration control and Virtual Disk for user data are different (see Table 2-2 Supported Guest Machine).

Capacity	: Virtual Disk for migration control requires 36GB. Virtual Disk for user data requires 2GB or more.
Disk Provisioning	: Select nothing.
Location	: Keep [Store with the virtual machine].

Then click [Next].

Note: In VMware ESXi 5, “Disk Provisioning” has 3 ways. The default is “Thick Provisioning (Lazy Zeroed)”. In this verification, the default is used.

In VMware ESXi 6.0 update 2, “Disk Provisioning” has 3 ways. The default is “Thick Provision Lazy Zeroed”.

- 6) [Add Hardware] - [Advanced Options] screen will be displayed. (see 3.7 14) screen)

Specify the Virtual Device Node to the intended Virtual Disk. Please note that the settings for Virtual Disk for migration control and Virtual Disk for user data are different.

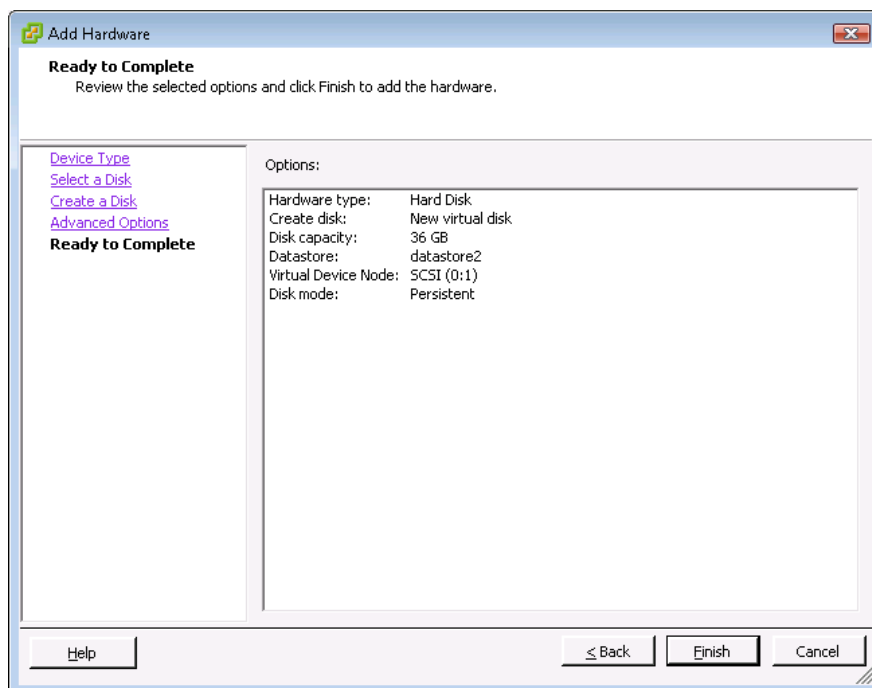
Virtual Device Node	: Choose the first radio button. Select SCSI(0:1) for Virtual Disk for migration from the list box. Select one out of SCSI(0:2) to SCSI(0:15) in the list box for Virtual Disk for user data.
Mode	: Specify nothing. Do not specify [Independent].

Then click [Next].

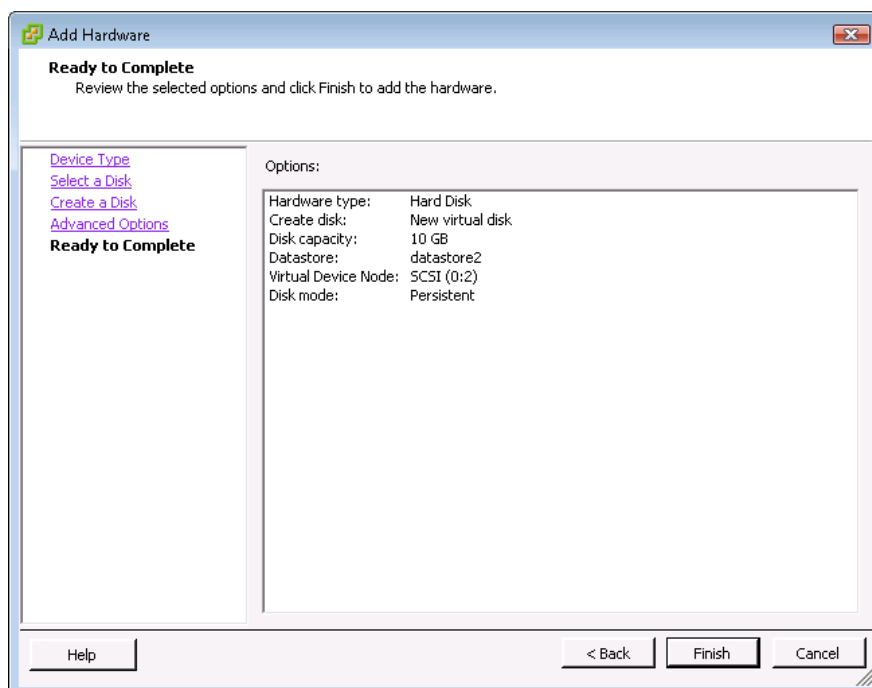
7) The following screen will be displayed.

If the specified information is correct, click [Finish]. If it is not correct, click [Back] to the intended screen, and modify if required.

Screen of Virtual Disk for migration control (volume: 36GB)

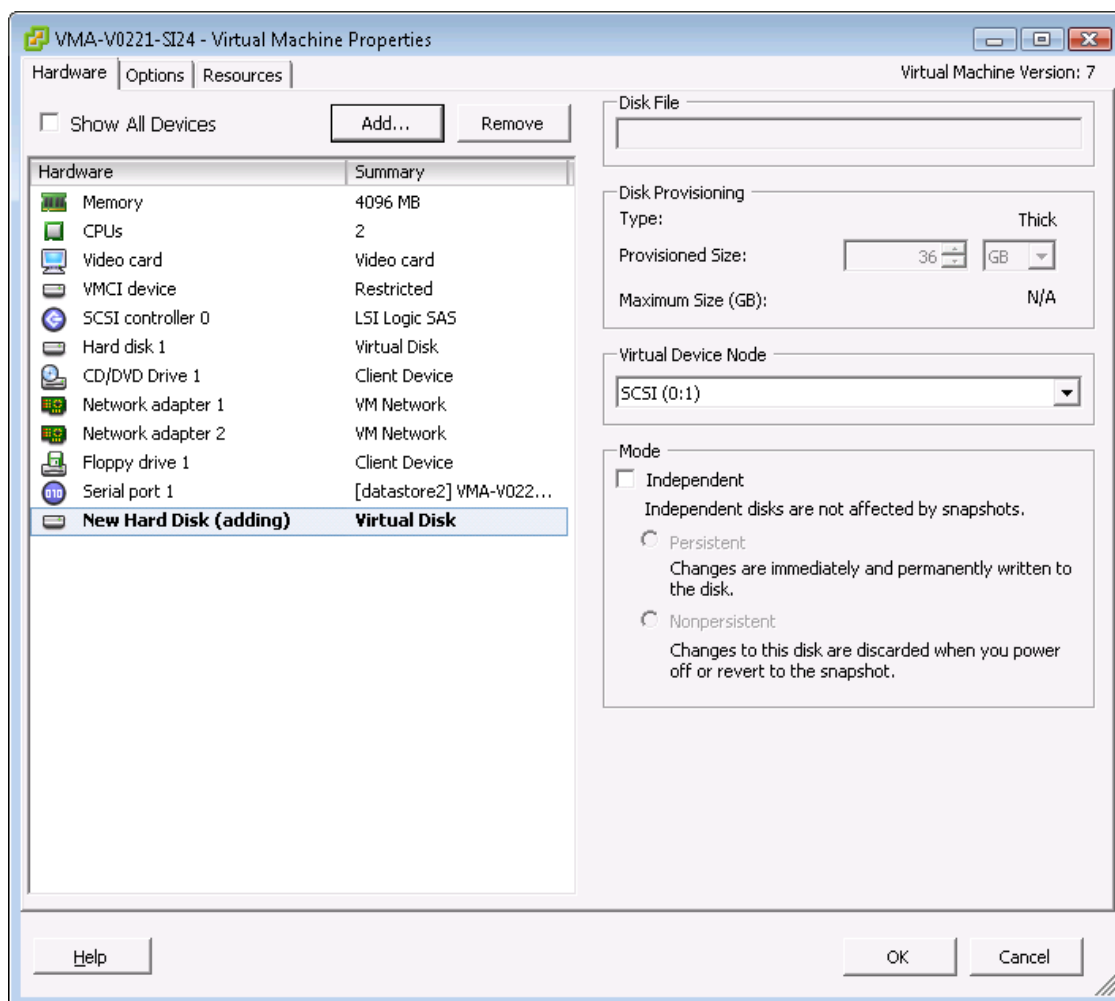


Screen of Virtual Disk for user data (volume: 10GB)



8) The following screen will be displayed.

Assigning Virtual Disk for migration control and Virtual Disk for user data are finished. If [OK] is clicked, the screen returns to 1). After Assigning Virtual Disk for migration control, assign Virtual Disk for user data from 1). If both have been assigned, proceed to the next step.



<NOTICE>

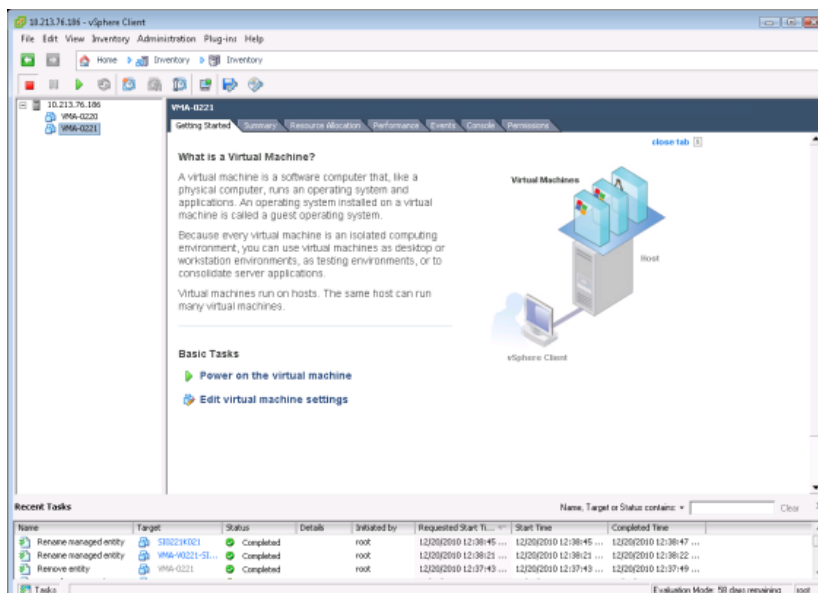
At the above screen.

- If [Cancel] is clicked, the Assignment of Management Disk Virtual will be canceled.
- If [Add] is clicked, the screen returns to 3.8 3). You can assign the Virtual Disk for user data if not yet.
- The maximum number of Virtual Disk for user data is 13.

3.9. Setting Power-On Boot Delay Time of Virtual Machine

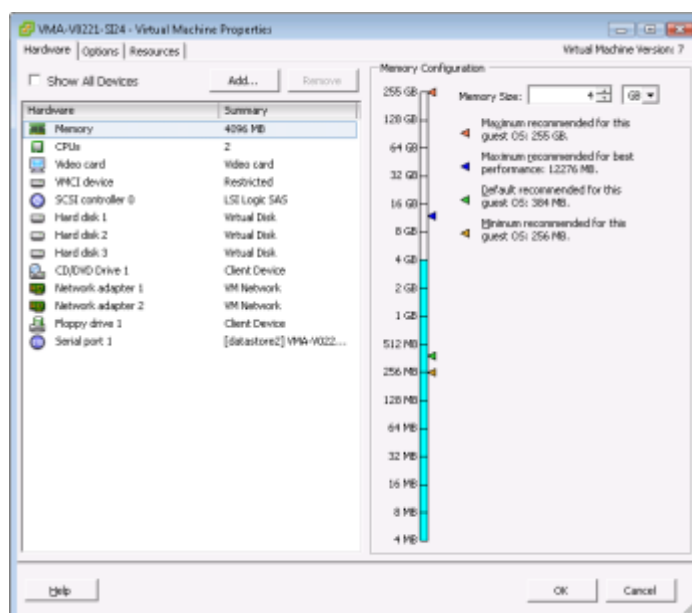
This section explains how to configure boot delay time for BIOS settings.

- 1) Select the intended Guest. Click [Getting Started] tab. Then click [Edit virtual machine settings].



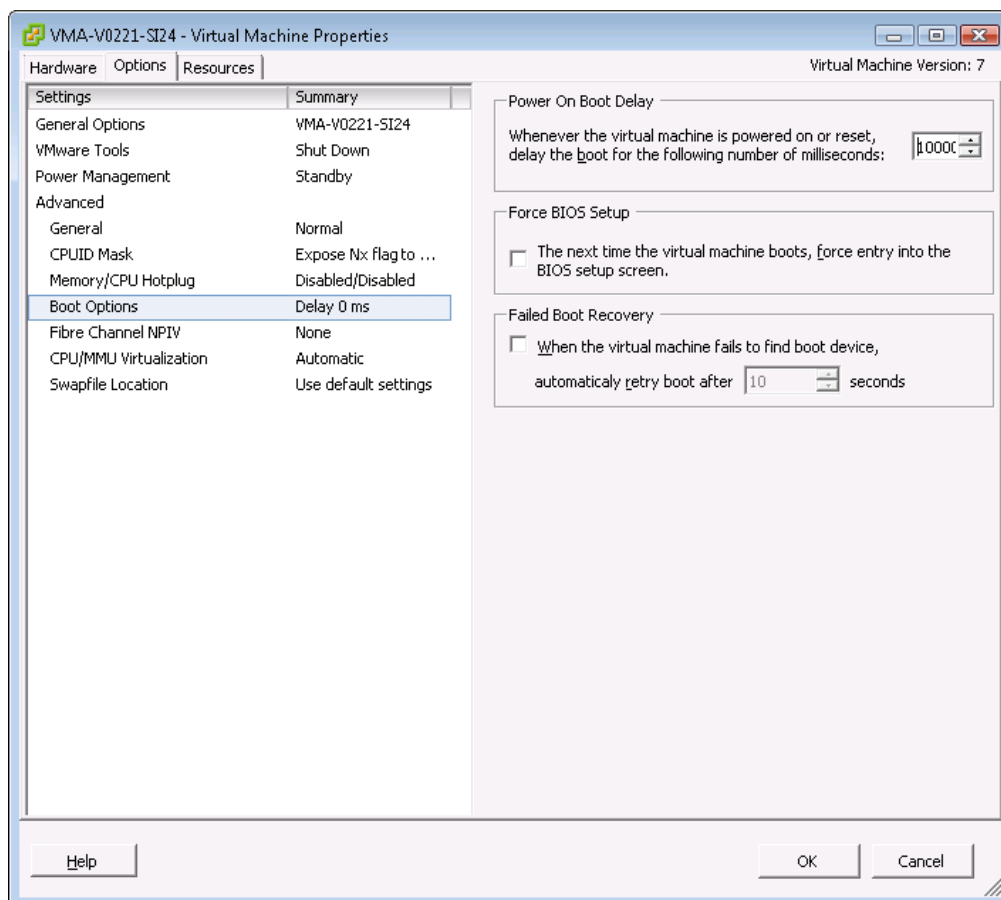
Note: In VMware ESXi 6.0 update2, if [Restricted Virtual Machine Settings] is displayed, click [OK],

- 2) The following screen will be displayed.
Click [Options].



- 3) The following screen will be displayed.
Select [Settings] - [Boot Options]. The following screen will be displayed.

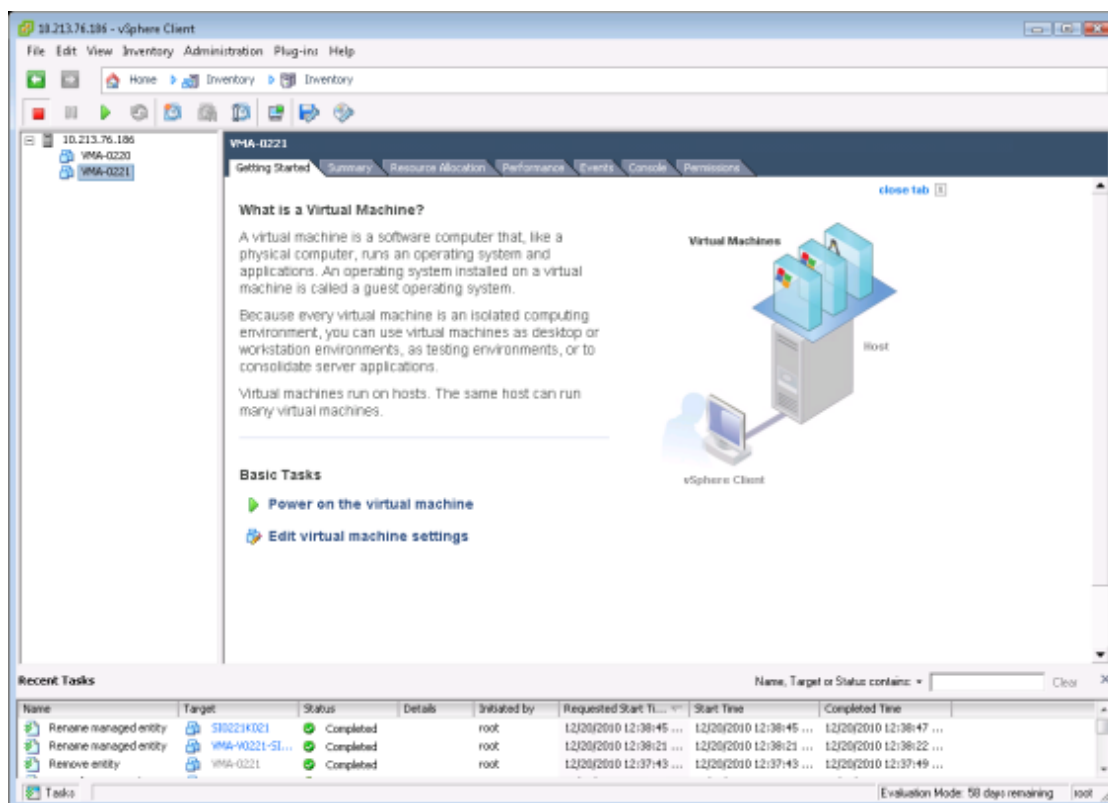
Specify sufficient delay time like 10000 in the
[Power On Boot Delay] menu.
Then click [OK].



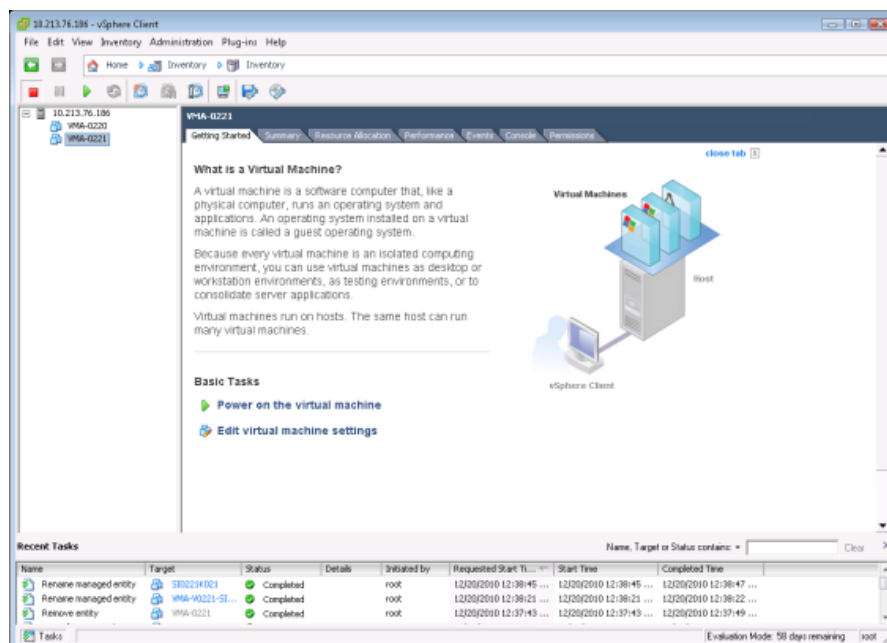
Note: In VMware ESXi 5, “Boot Firmware” box is added.

3.10. Installing VMA

- 1) Select the intended Virtual Machine for installing VMA (Guest OS).



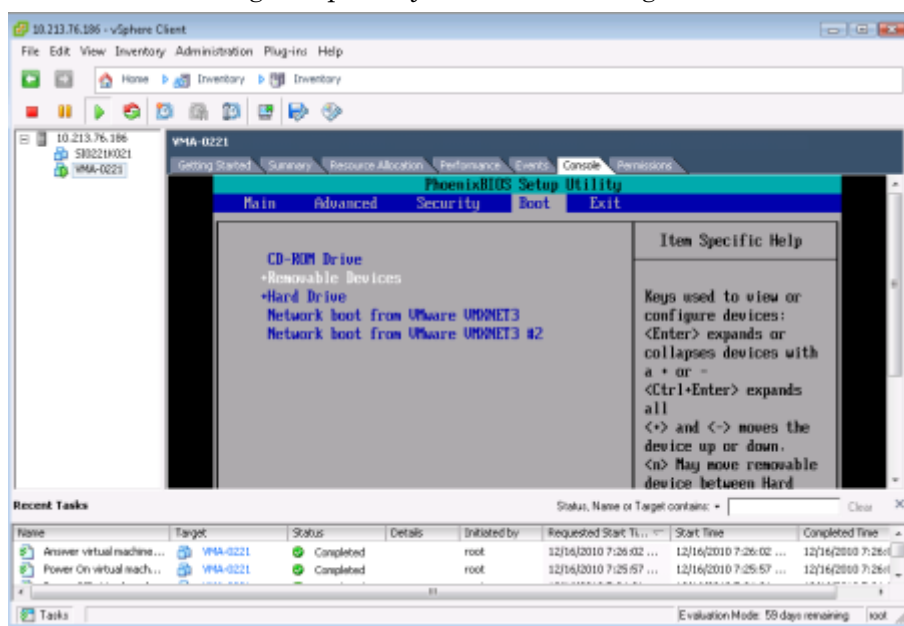
- 2) Switch the Virtual Machine to Power-On.
Select [Inventory] - [Virtual Machine] - [Power] - [Power On].



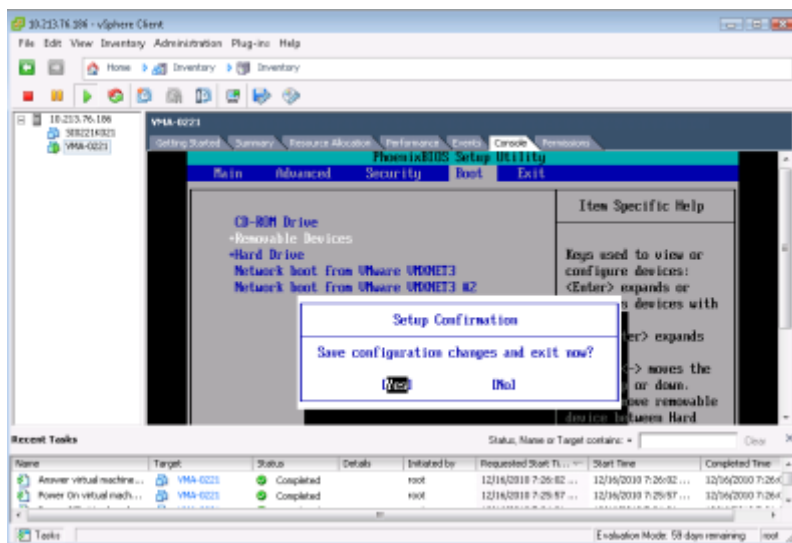
- 3) If [Press F2 to enter SETUP, F12...] screen is displayed, click the Console screen and press [F2] button.

- 4) BIOS screen will be displayed. Set up the priority of Boot.

Use the arrow key in the keyboard and move the cursor to [Boot]. Use <+> or <-> to specify the CD-ROM Drive to the highest priority like the following screen. Press [F10] button.

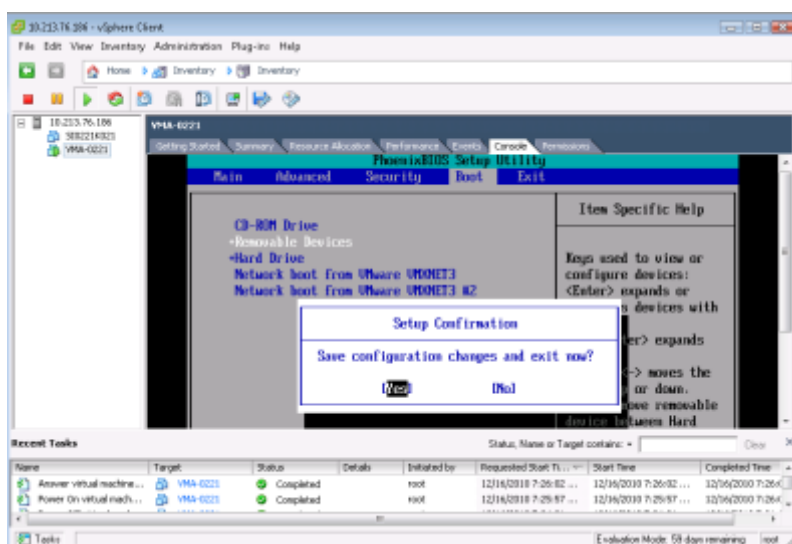


- 5) The following screen will be displayed.

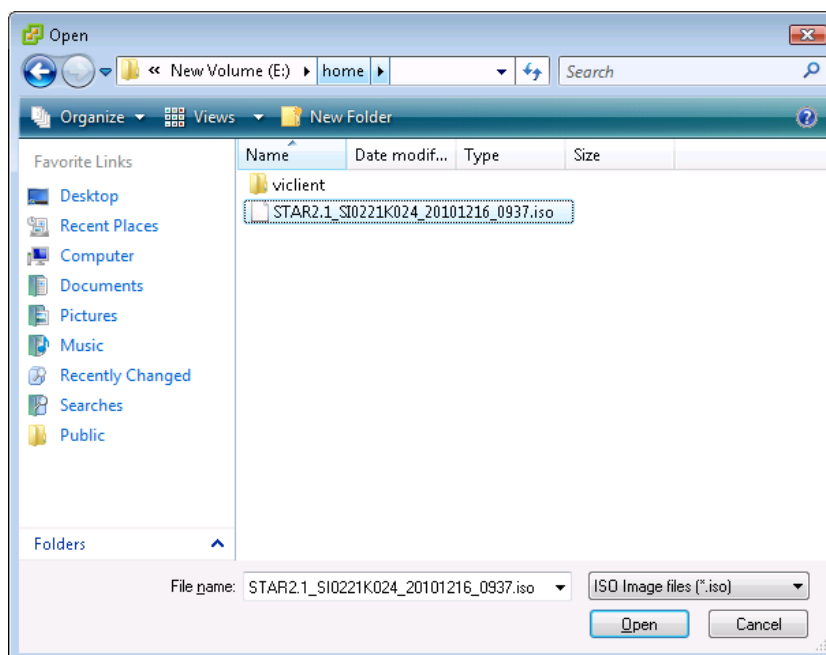


Press [Ctrl] + [Alt], so that the Console screen permits the input of mouse.

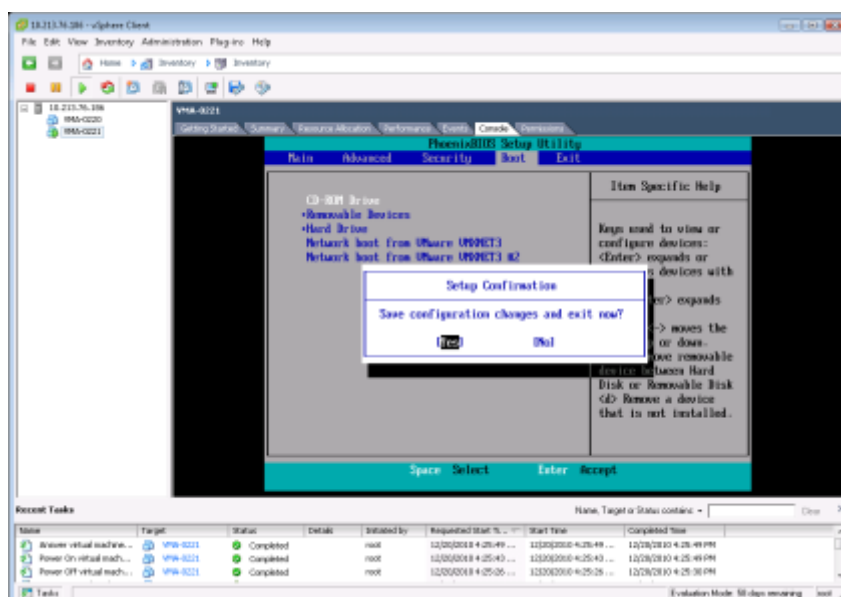
- 6) Click [CD] icon. Then click [CD/DVDdrive1] - [Connect to ISO image on local disk...].



- 7) The following screen will be displayed. Select the intended ISO image file of installing. Then click [Open].

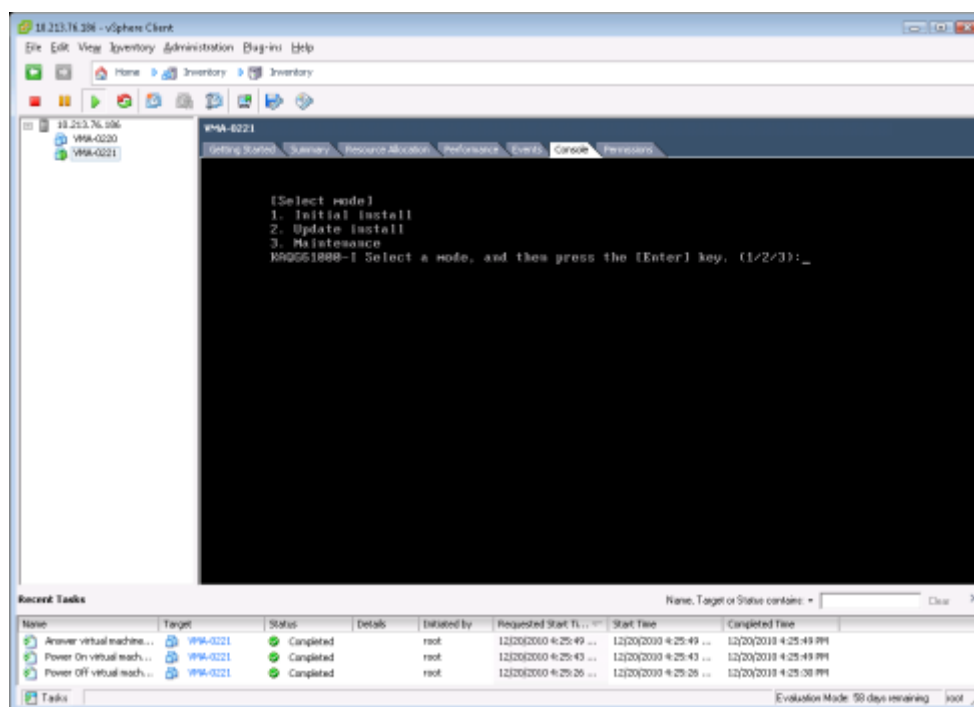


- 8) The screen will return to the Console screen. To permit the input in the Console screen, click the mouse in the Console screen. Select [Yes] and press [Enter].



9) The following screen will be displayed.

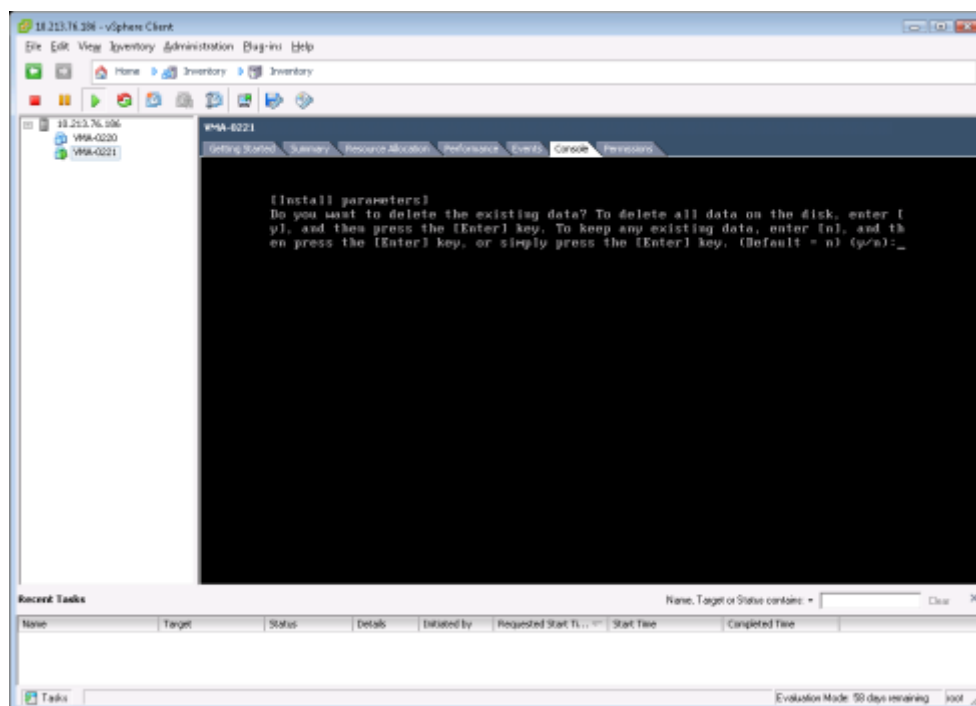
Enter "1" to select [1. Initial install], and press [Enter].



10) The following screen will be displayed.

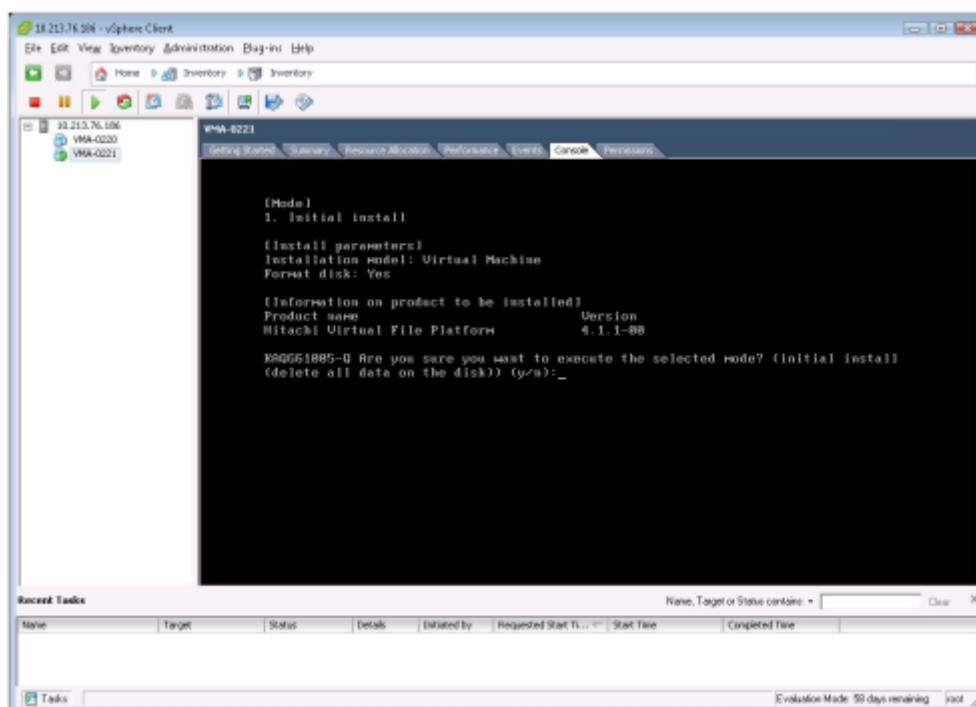
When you perform the new installation for the first time or restore the system configuration information and user data by a lump for some failures, enter "y". Then press [Enter].

When you want to restore only the system configuration information for the failures, enter "n". Then press [Enter].



11) The following screen will be displayed.

Confirm the specified information. If it is correct, enter “y”. Then press [Enter].

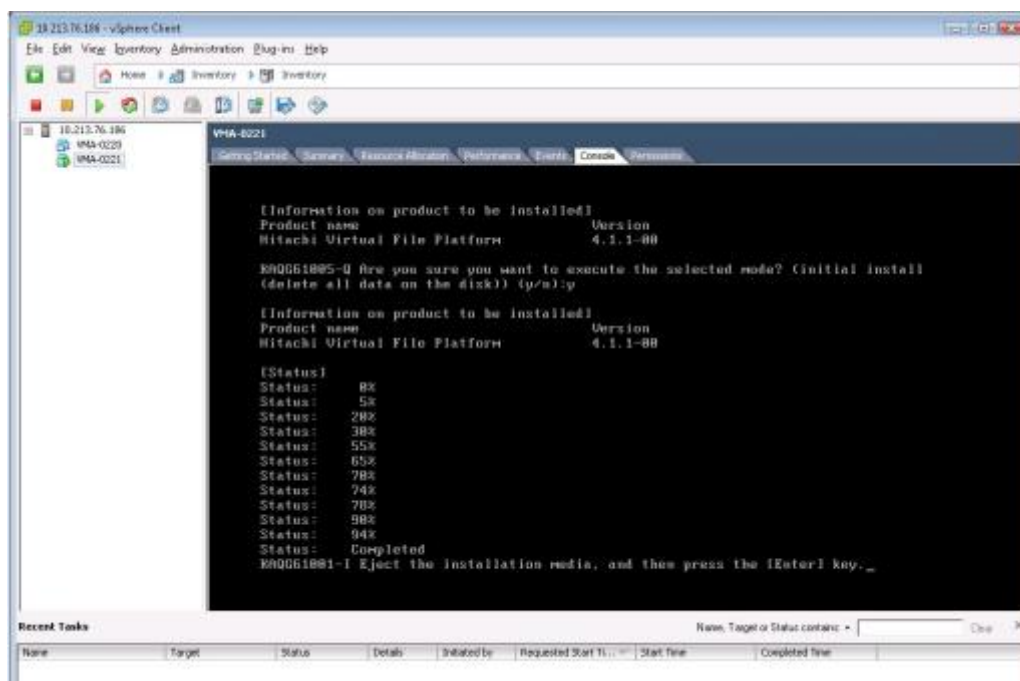


To install takes 15 minutes. If the following screen is displayed, the installing is finished.

12) The following screen and message will be displayed.

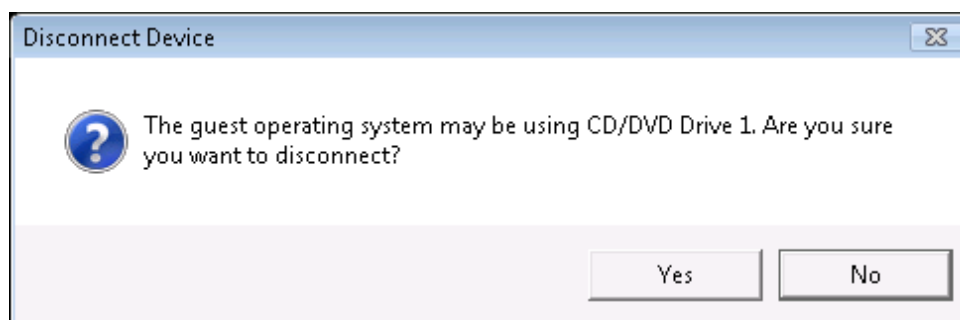
[KAQG61001-I Eject the installation media, and then press [Enter] key.]

Press [Ctrl] + [Alt], so that the Console screen permits the input of mouse.
Click [CD] icon - [CD/DVD Drive1] - [Disconnect from...].



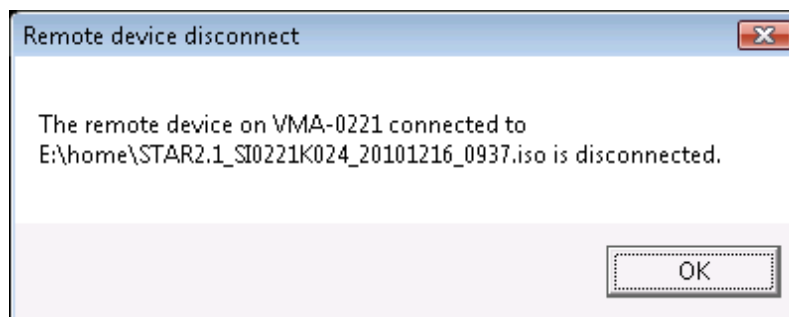
13) The following dialog box will be displayed.

Press [Ctrl] + [Alt], so that the Console screen permits the input of mouse. Click [Yes] to disconnect CD/DVD drive1.



14) The following dialog box will be displayed.

Click [OK].



- 15) Click the mouse in the Console screen. Press [Enter].

The whole OS installation has completed

3.11. Reconfigure the Power-On Boot Delay Time of Virtual Machine

Restore the default setting for the boot delay time to reduce the unnecessary delay for OS boot, if necessary. Refer 3.9-3) to specify 0 for the Power-On Boot Delay Time.

3.12. OVF Creation

3.12.1. Choose a Virtual Machine

(If the intended Virtual Machine on the following upper left screen is chosen, skip this section)

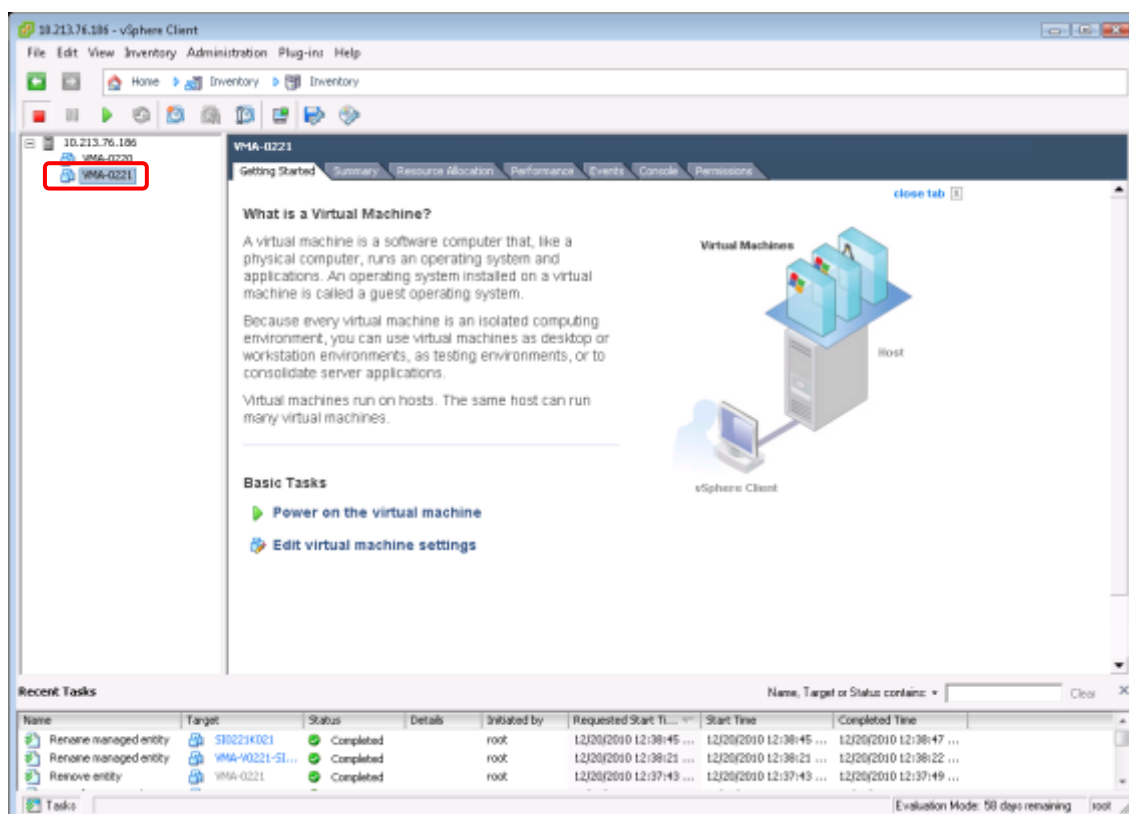
If the intended Virtual Machine is not chosen.

(a) By clicking VM Machine which is on the upper left screen, the names of created Virtual Machines will be listed.

(b) Choose a Virtual Machine to create OVF.

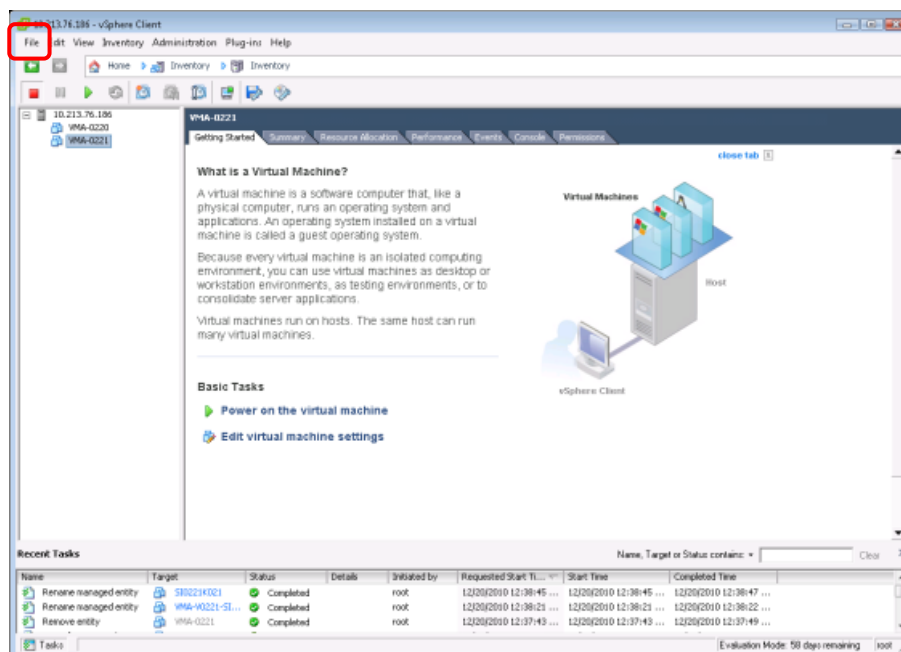
The following screen will be displayed.

(c) If the Virtual Machine is turned on, please turn off it.



3.12.2. Indicating to create OVF

Choose [File] -> [Export] -> [Export OVF Template].

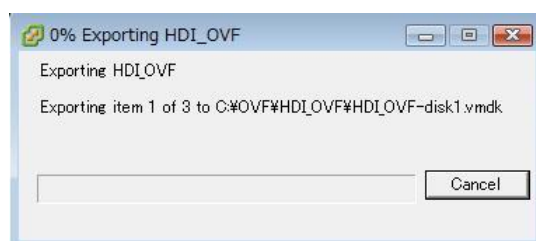


3.12.3. [Export OVF Template] will be displayed.

[Name]	: Enter OVF name.
[Directory]	: Enter the directory where OVF will be stored.
[Format]	: Select [Folder of files (OVF)].
[Description]	: Enter nothing.

Press [OK] after entering the items above.

3.12.4. The following dialog box will be displayed.



3.12.5. The following dialog box will be displayed, when OVF creating completes.



Press [Close] to finish the guide.

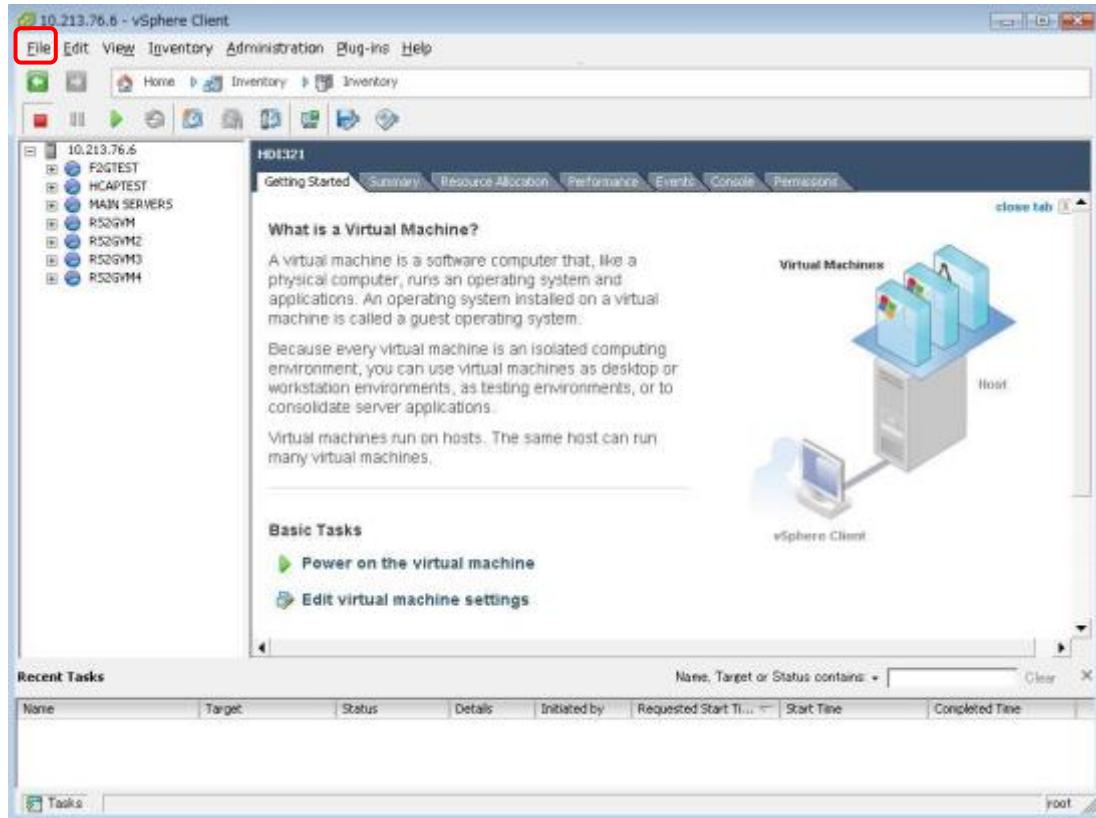
4. Installation of VMA

This chapter is written about how to install VMA by using OVF.

4.1. Deploying OVF template

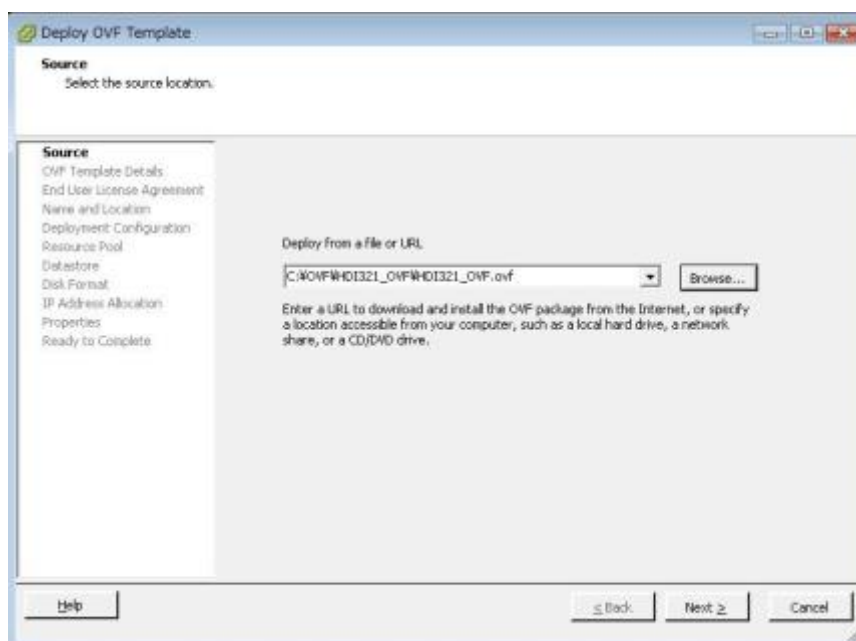
1) Deploying OVF template

Click [File] -> [Deploy OVF Template]



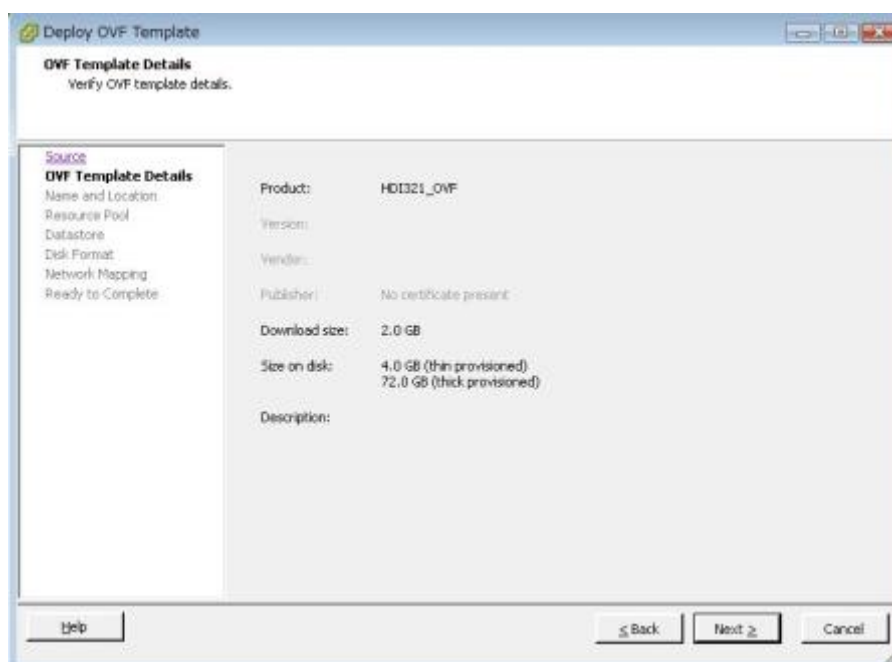
2) The following screen will be displayed.

Enter the directory (or URL) where OVF will be stored.



Click [Next].

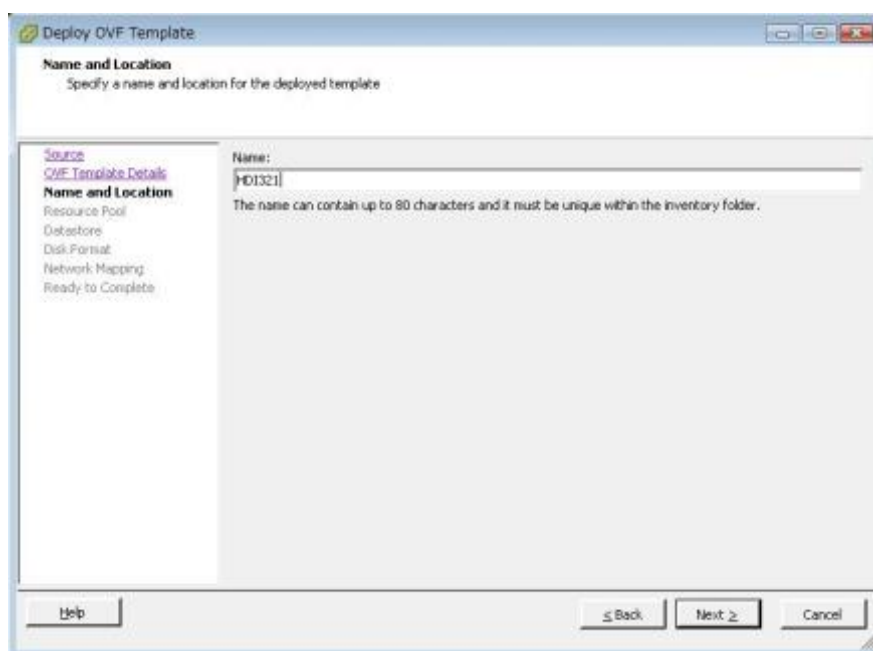
- 3) The following screen will be displayed.



Click [Next].

- 4) The following screen will be displayed.

Enter the name of Virtual Machine in [Name:].
(The name is “HDI321” in this example)

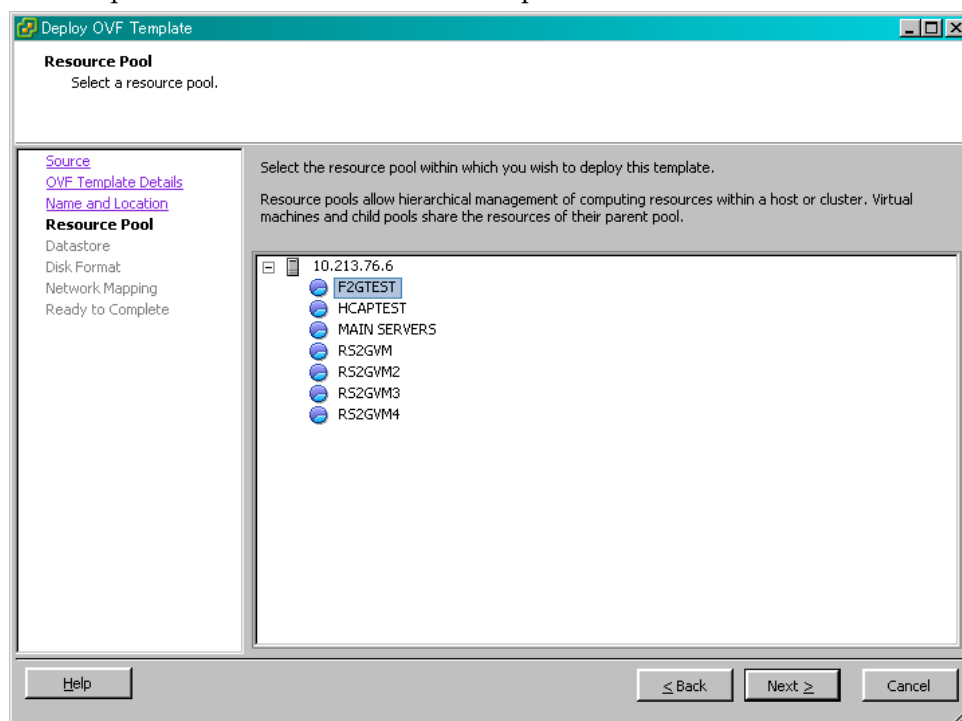


Click [Next].

5) The following screen will be displayed.

Select the resource pool to deploy Virtual Machine resource.

(The resource pool is “F2GTEST” in this example)

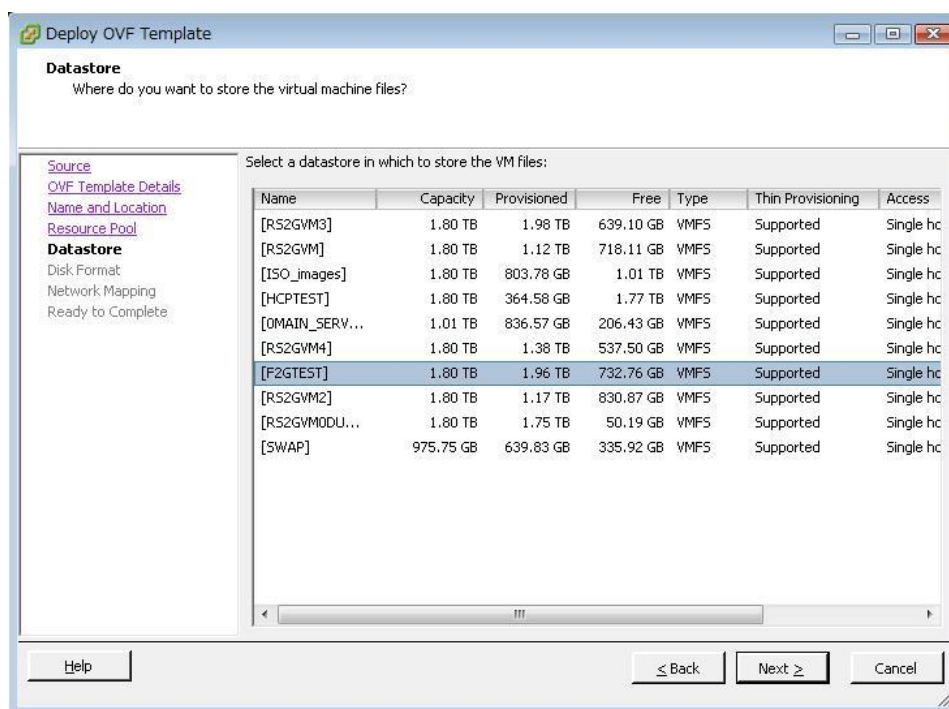


Click [Next].

Note: This page appears only if the host contains a resource pool.

6) The following screen will be displayed.

Select the datastore of Virtual Machine. (The datastore is “F2GTEST” in this example)



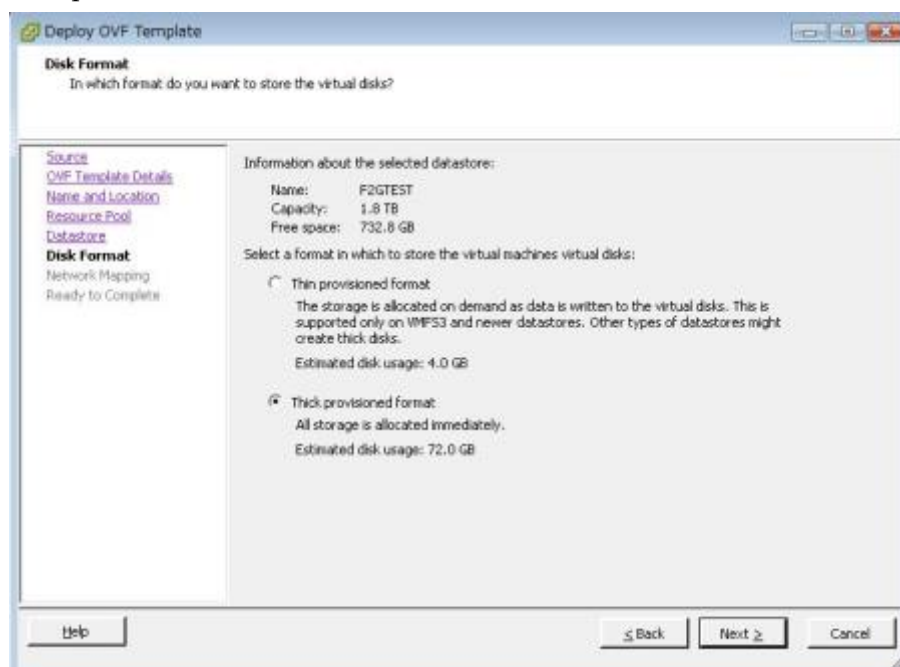
Click [Next].

Note: This page appears only if the host contains multiple datastores.

7) The following screen will be displayed.

Select Disk Format.

Select [Thick provisioned format].



Click [Next].

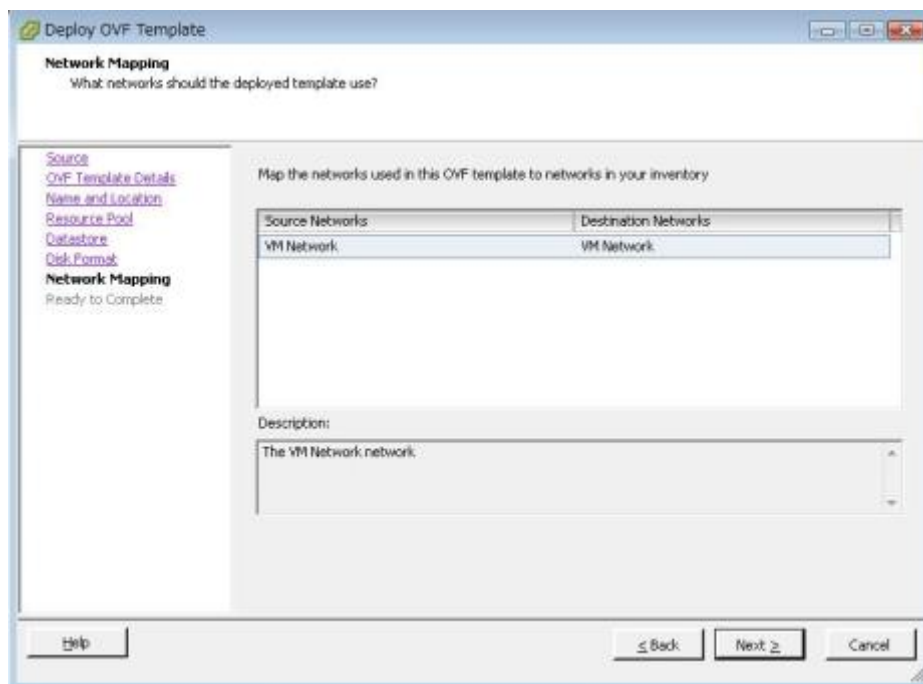
Note: In VMware ESXi 5, “Disk Provisioning” has 3 ways.

The default is “Thick Provisioning (Lazy Zeroed)”. In this verification, the default is used.

In VMware ESXi 6.0 update 2, “Disk Provisioning” has 3 ways. The default is “Thick

Provision Lazy Zeroed”.

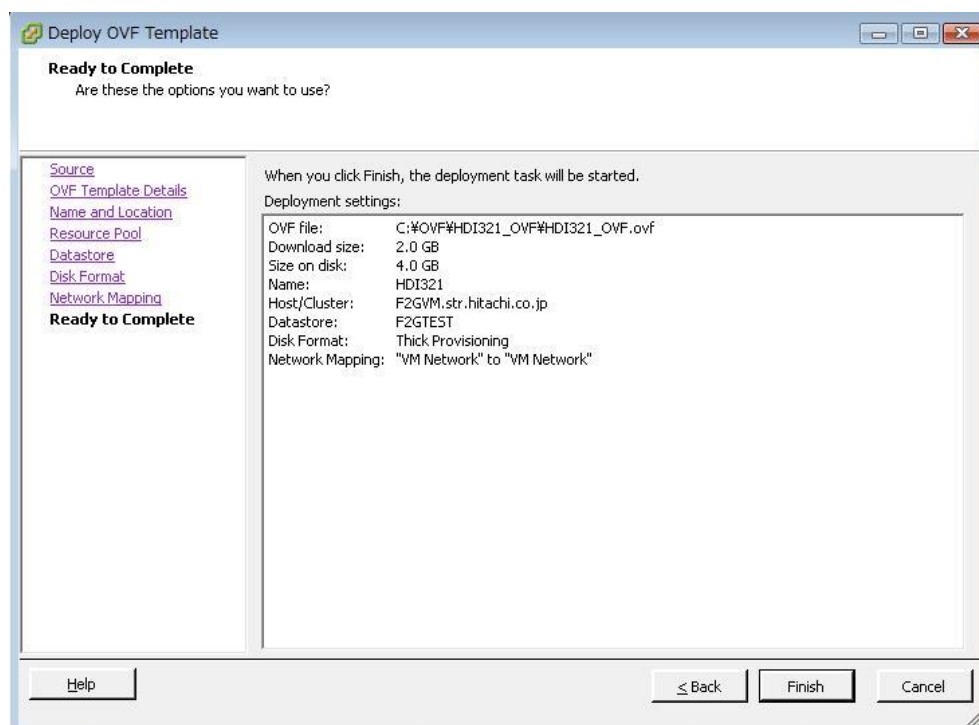
- 8) The following screen will be displayed.



Click [Next].

Note: This page appears only if the host contains multiple networks.

- 9) The following screen will be displayed.



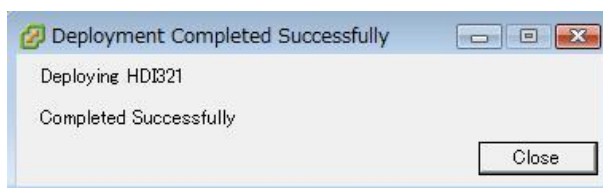
Click [Finish].

10) The following screen will be displayed.



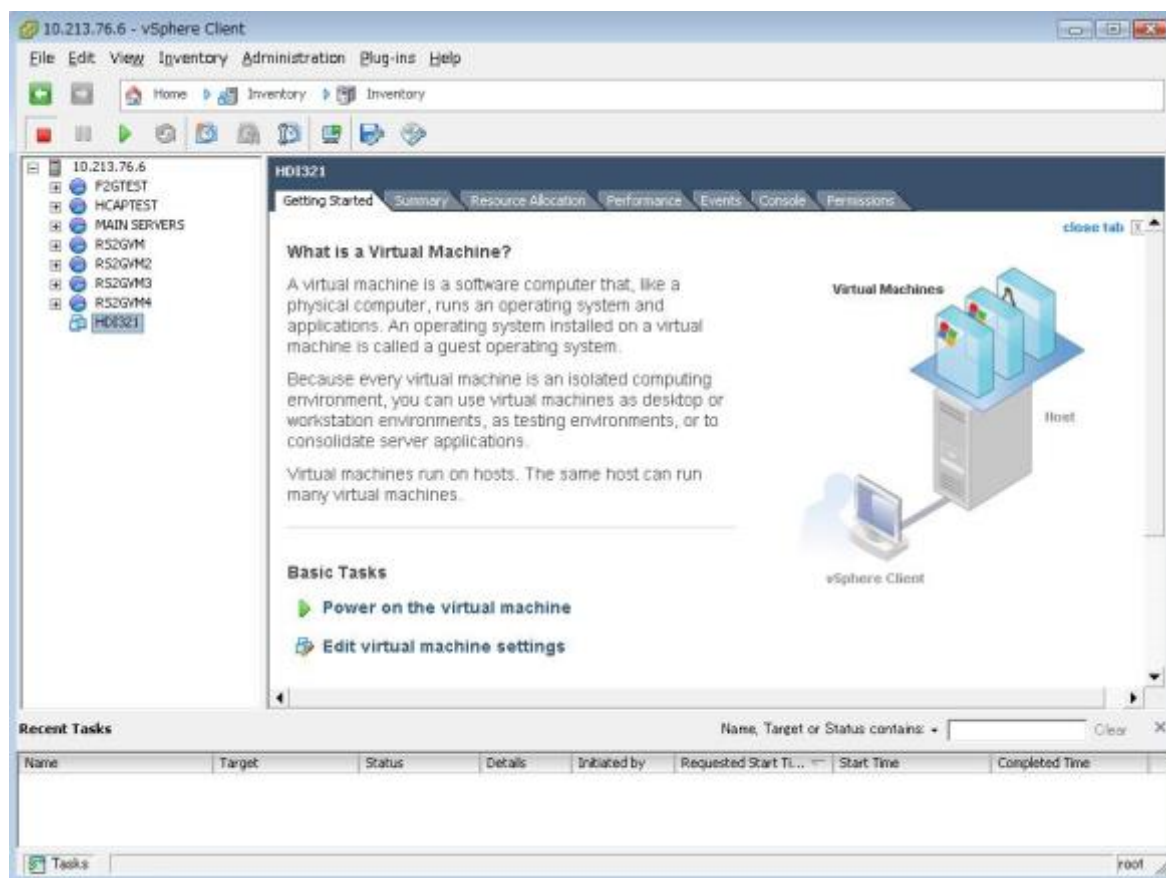
11) Deploying OVF is complete (VMA installation has finished).

If the following screen displays, click [Close].



12) Confirmation

Confirm that the Virtual Machine is created on the specified resource group.



4.2. Network Configuration

There are two network adapters on VMA, as shown in table below. Confirm the network interfaces belong to the appropriate networks.

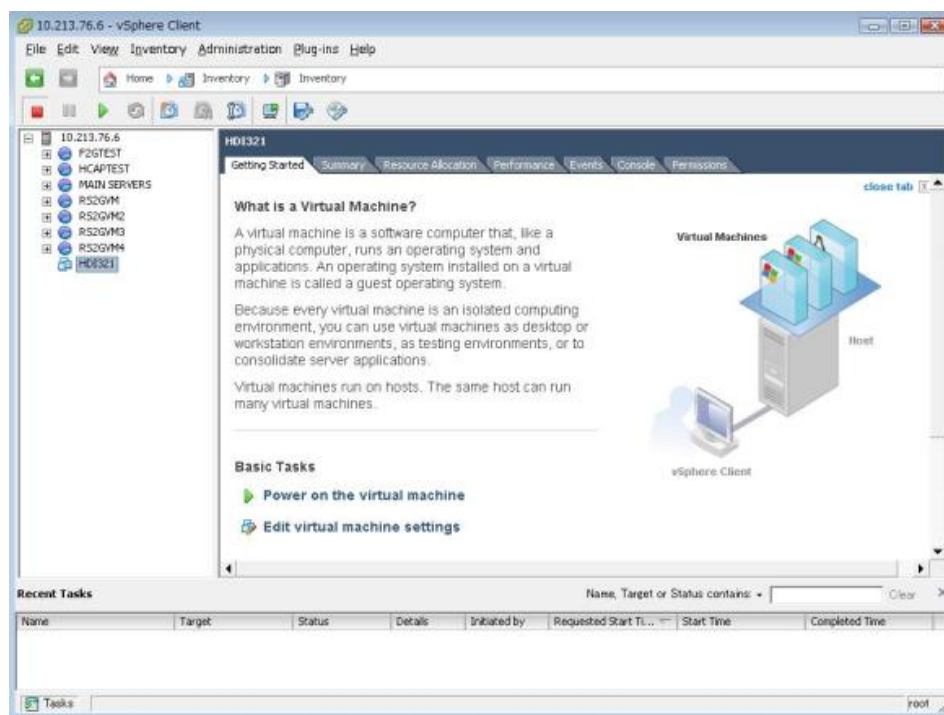
#	Virtual NIC on VMware ESX /ESXi	VMA interface
1	NIC1(Network Adapter 1)	mng0
2	NIC2(Network Adapter 2)	eth0

Note:

- From HDI 4.1.1, “pm0” is taken out on VMA, and NIC2 is recognized as “eth0” instead of “pm0”.
- After VMA upgraded the existing “pm0” changes to “eth0” automatically.
- After installation of VMA,
NIC number reduction (from 2 to 1) is not allowed.
NIC number increase (from 1 to 2) is allowed, but VMA must be stopped during assignment.

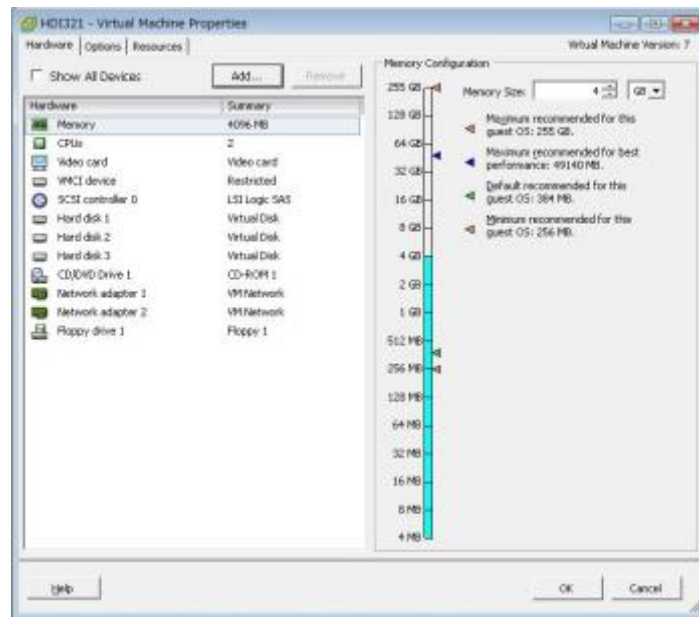
4.3. Assigning serial port

- 1) Select the intended Virtual Machine, and click [Getting Started]. Then click [Edit virtual machine settings].

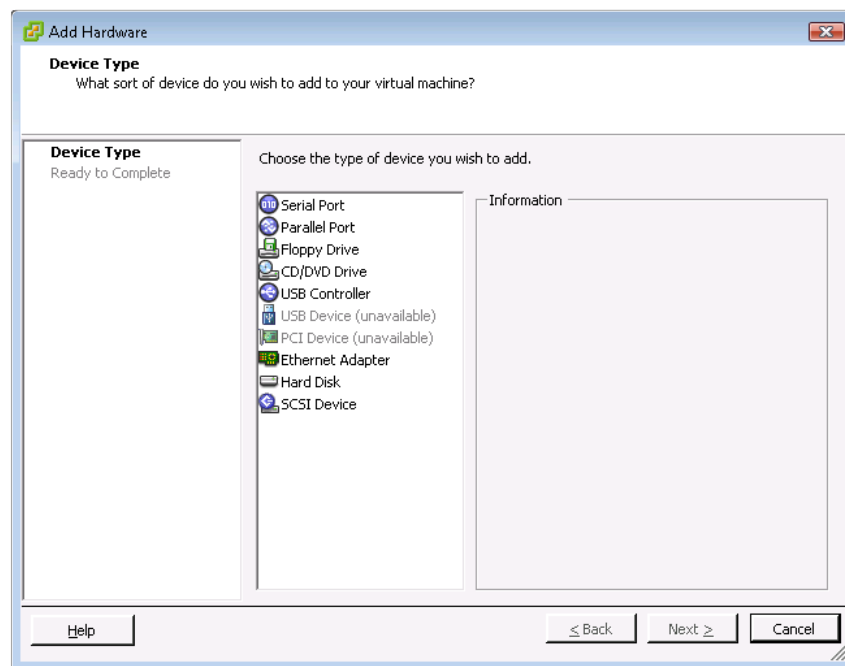


Note: In VMware ESXi 6.0 update2, if [Restricted Virtual Machine Settings] is displayed, click [OK],

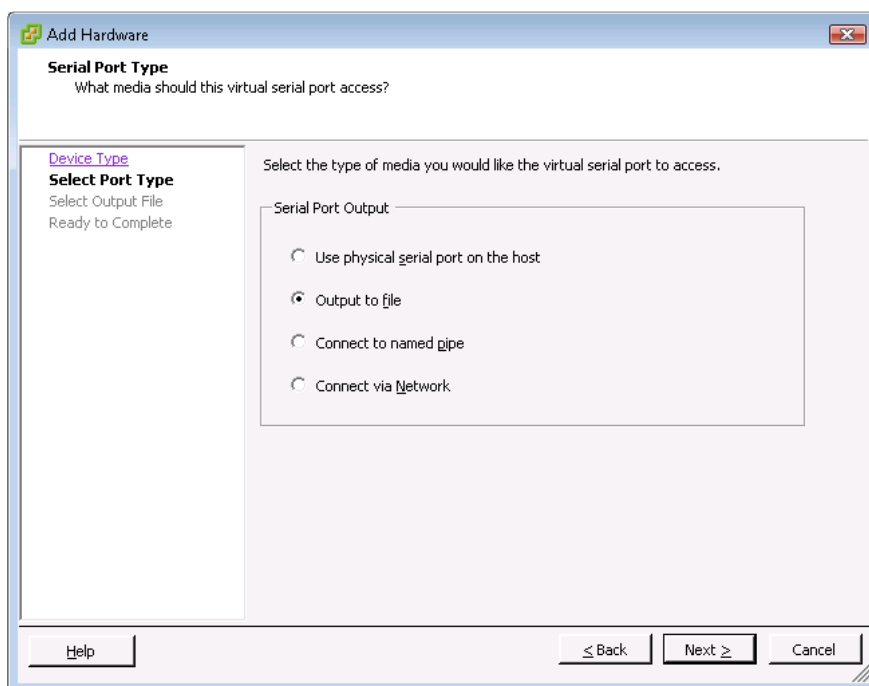
- 2) The following screen will be displayed. Select [Add] and click it.



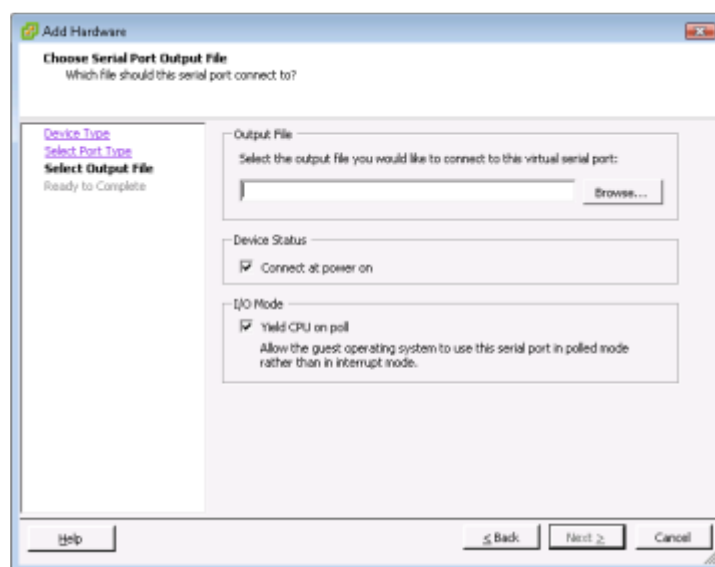
- 3) The following screen will be displayed. Select [Serial Port] and click [Next].



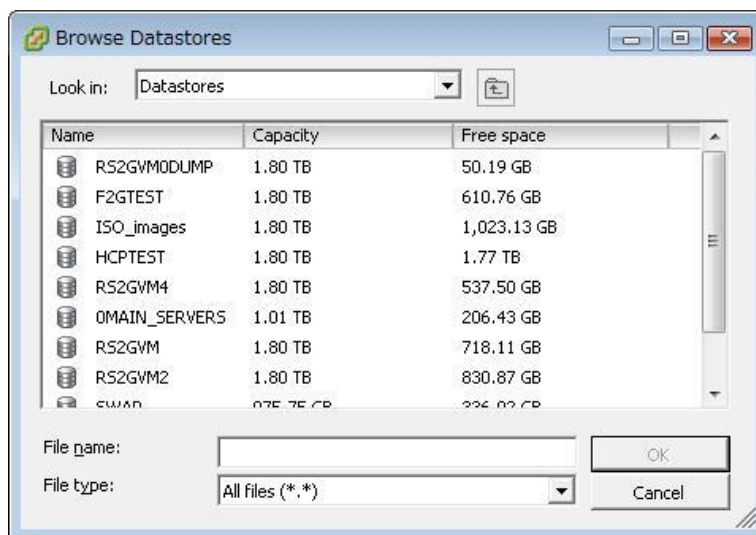
- 4) The following screen will be displayed. Select [Output to file] and click [Next].



- 5) The following screen will be displayed. Click [Browse].

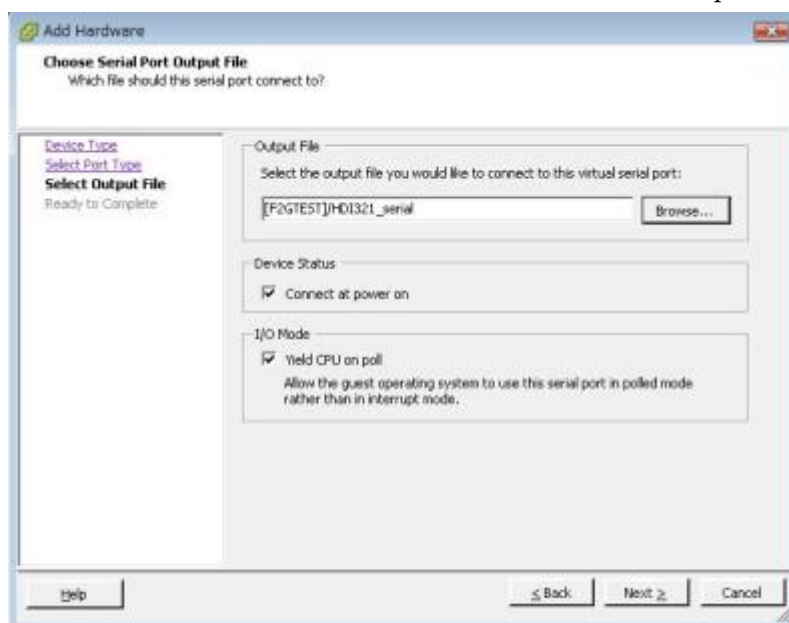


- 6) The following screen will be displayed. Select a datastore to create output file and double click it. In this example, the datastore “F2GTEST” is same as the datastore which has created Virtual Machine.

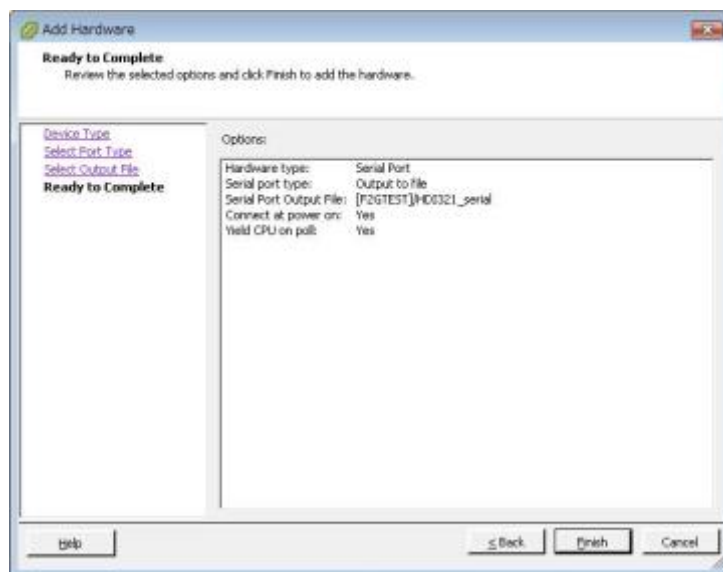


- 7) Select a datastore to create output file and double click it. Then the folders of the intended datastore will be listed. Select the folder whose name is same as the intended Virtual Machine and double click it.
- 8) By selecting the folder of the intended Virtual machine, files will be listed. Enter the name of output file in [File name] and click [OK].
- 9) The following screen will be displayed. Confirm the name of output file. If the settings are wrong, click [Back] until the intended screen and revise the mistake. Then continue the operation. (The datastore is “F2GTEST”, the folder is “VMA-0321” and the file name is “serial” in this example)

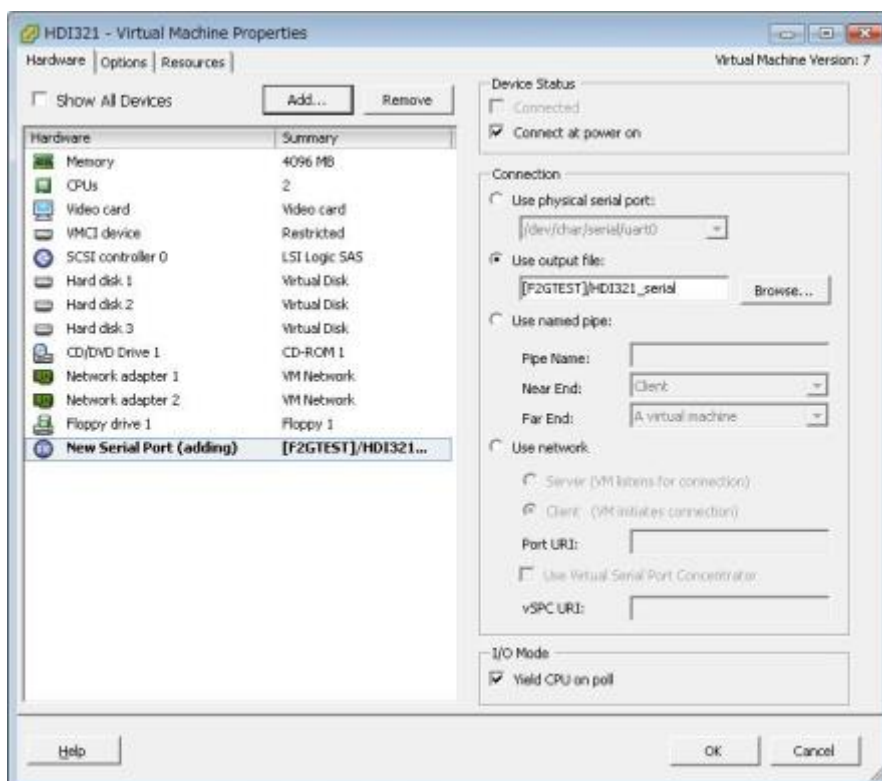
Let [Device Status] and [I/O Mode] to default. If the name of output file is correct, click [Next].



- 10) The following screen will be displayed. Confirm the specified information. If the settings are wrong, click [Back] until the intended screen and revise the mistake. Then continue the operation. If the settings are correct, click [Finish].



- 11) The following screen will be displayed. Click [OK].



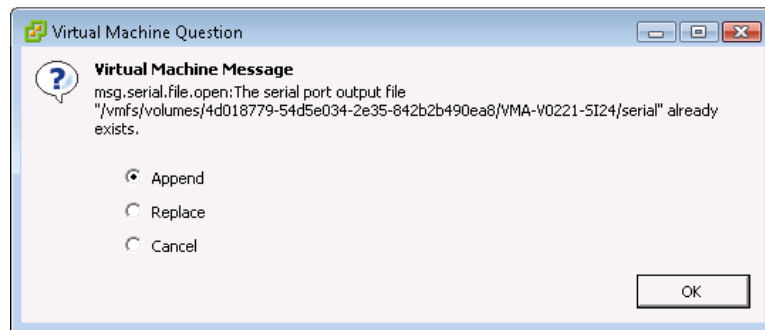
[Deploying Serial Port] operation is complete.

By clicking [Cancel], [Deploying Serial Port] operation will be cancelled.

<NOTE>

- [Deploying Serial Port] is able to operate when only the intended Virtual Machine is turned off.

- After deploying serial port, the following message will be displayed by turning on the intended Virtual Machine.
- Select [Append] and click [OK] by such message.

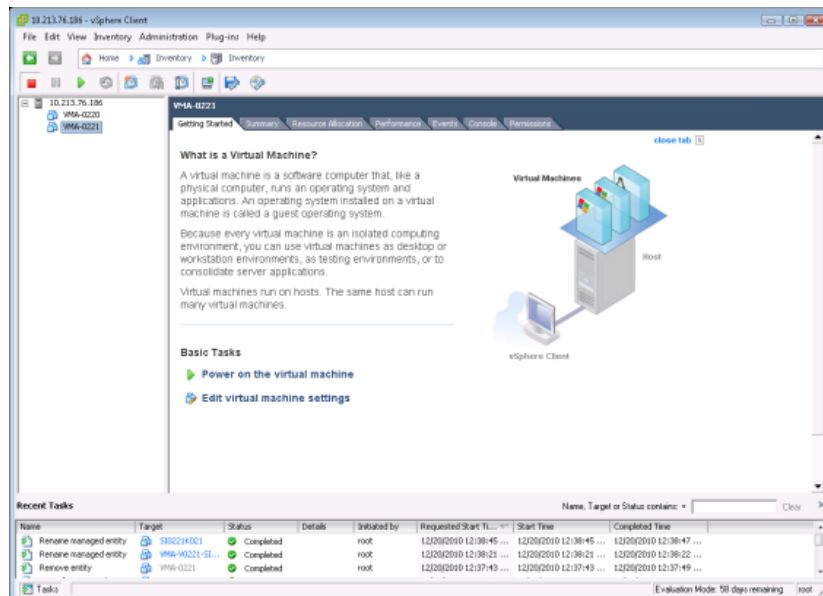


- The output file might be too large.

4.4. Setting time synchronization

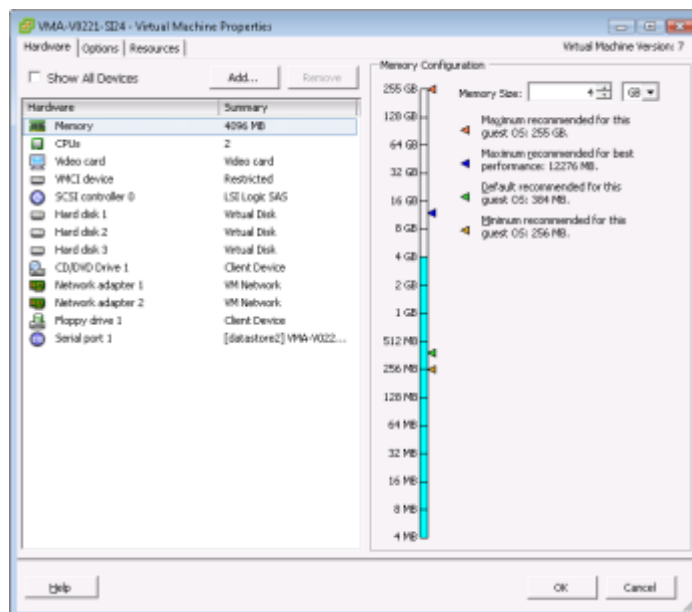
This section explains how to configure virtual machine to synchronize time with the host.

- 1) Select the intended Guest. Click [Getting Started] tab. Then click [Edit virtual machine settings].



Note: In VMware ESXi 6.0 update2, if [Restricted Virtual Machine Settings] is displayed, click [OK]

- 2) The following screen will be displayed.
Click [Options].

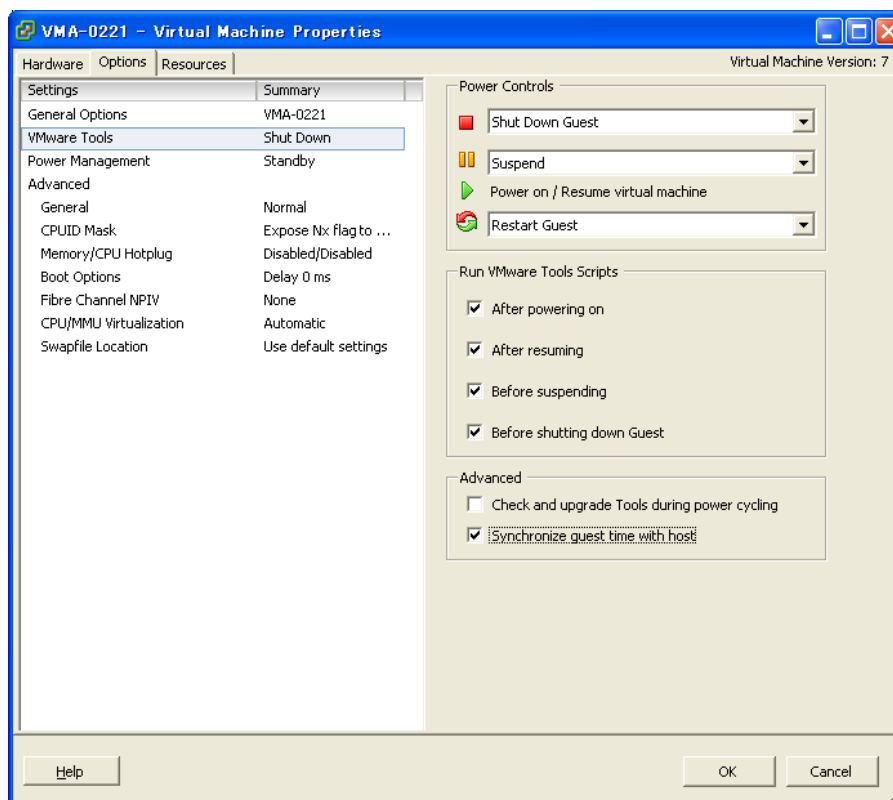


3) The following screen will be displayed.

Select [Settings] - [VMware Tools]. The following screen will be displayed.

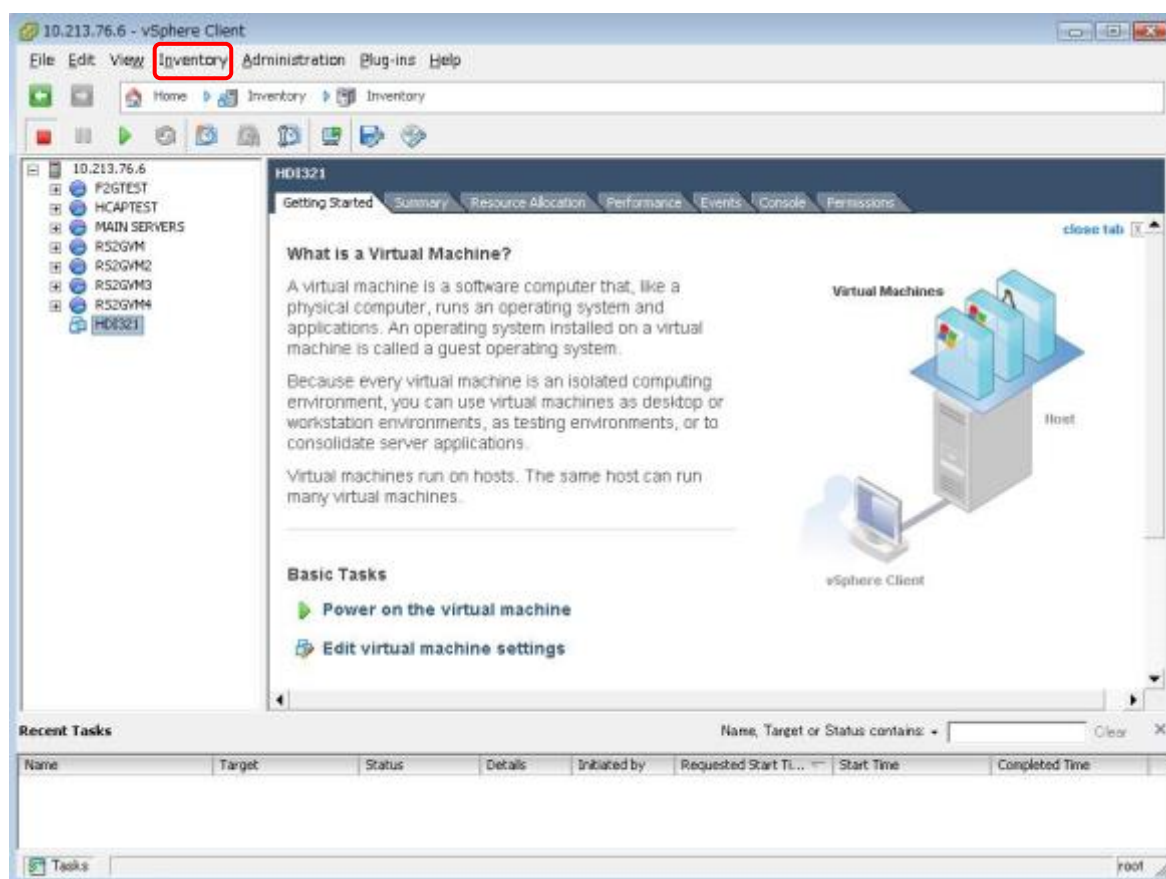
Select [Synchronize guest time with host].

Then click [OK].



4.5. Switch the Virtual Machine to Power-On.

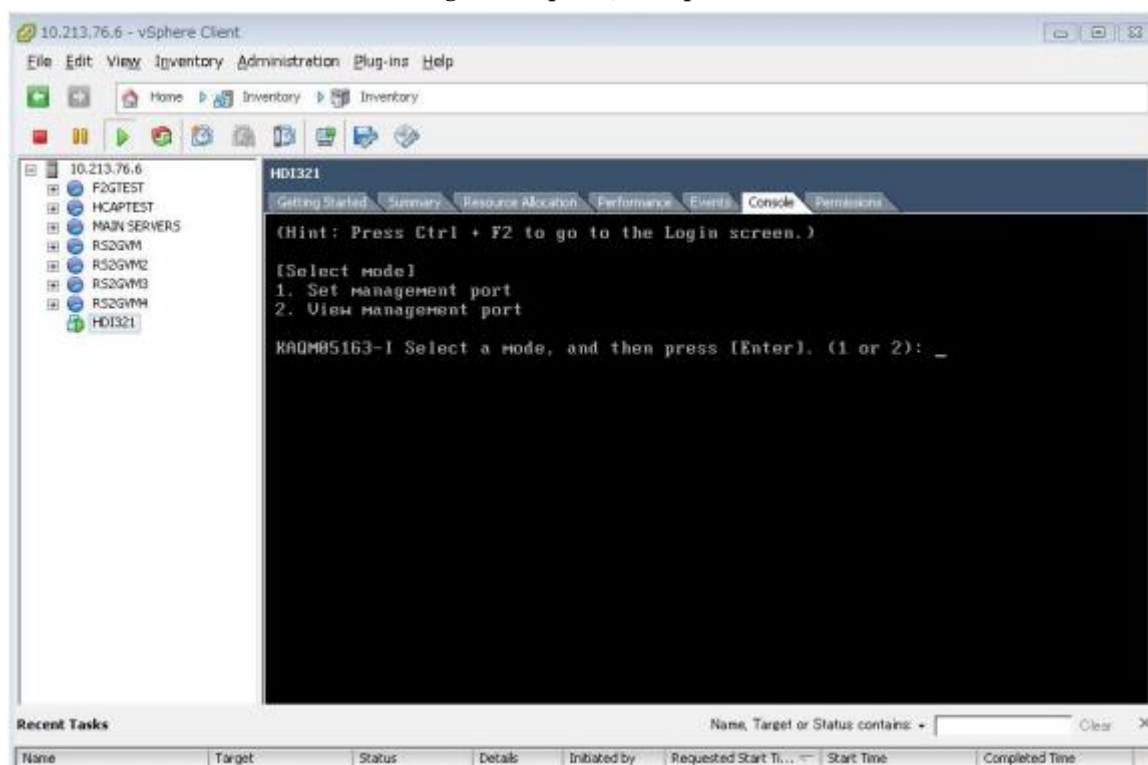
Select [Inventory] - [Virtual Machine] - [Power] - [Power On].



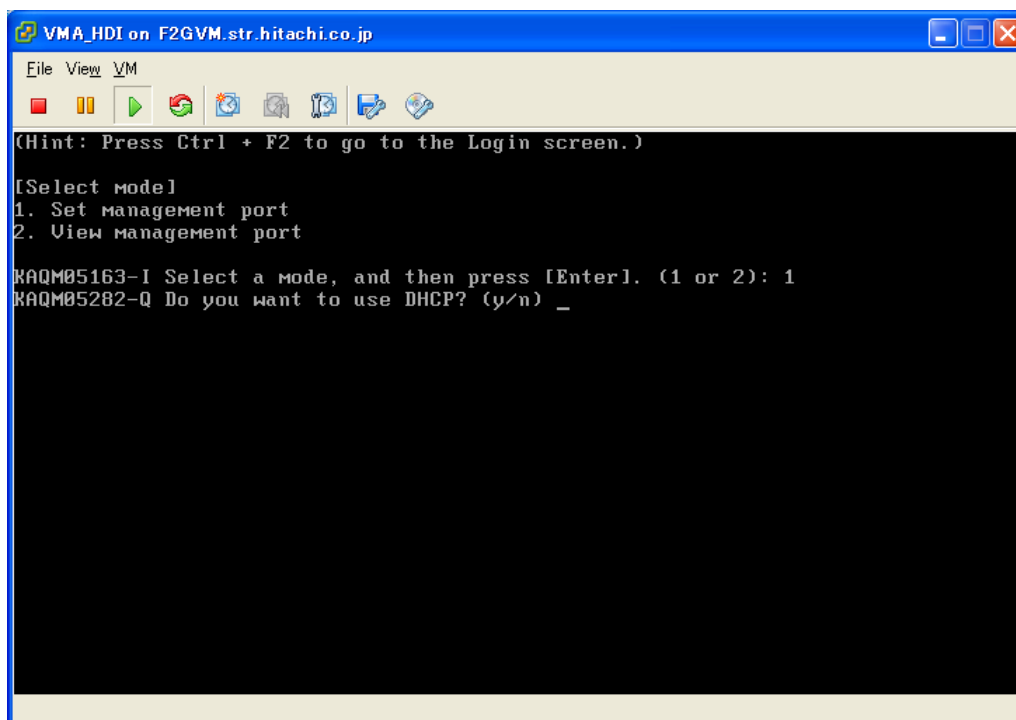
4.6. Setting management IP address

- 1) The following screen will be displayed.

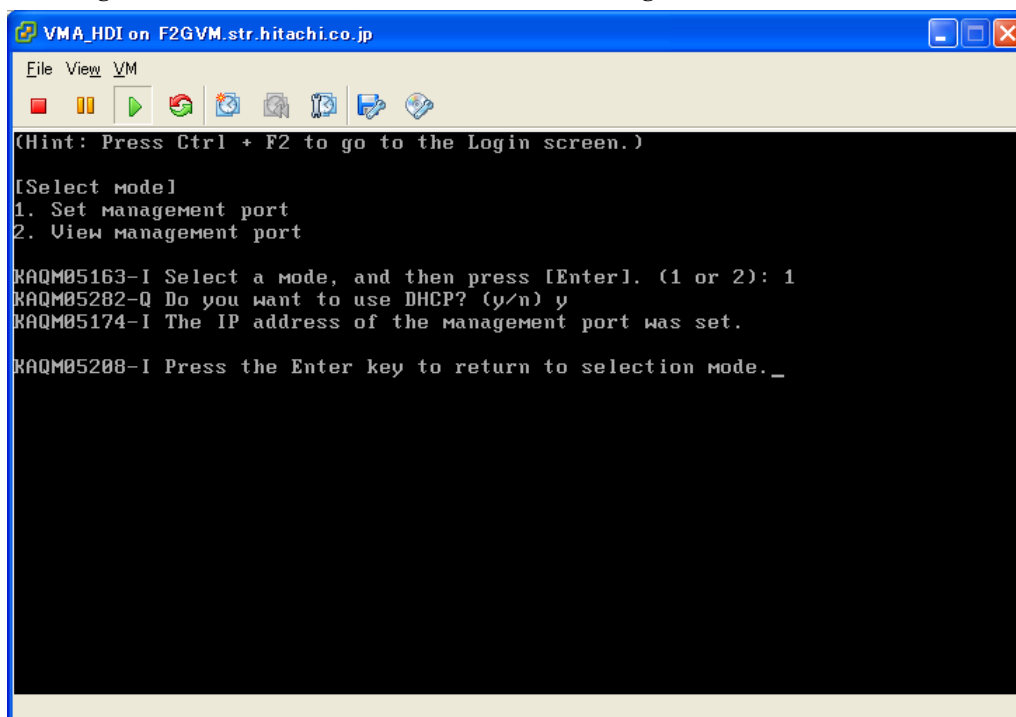
Enter “1” to select [Set management port], and press [Enter].



- 2) Select DHCP options. Enter “y” for network settings with DHCP or enter “n” for network settings without DHCP.

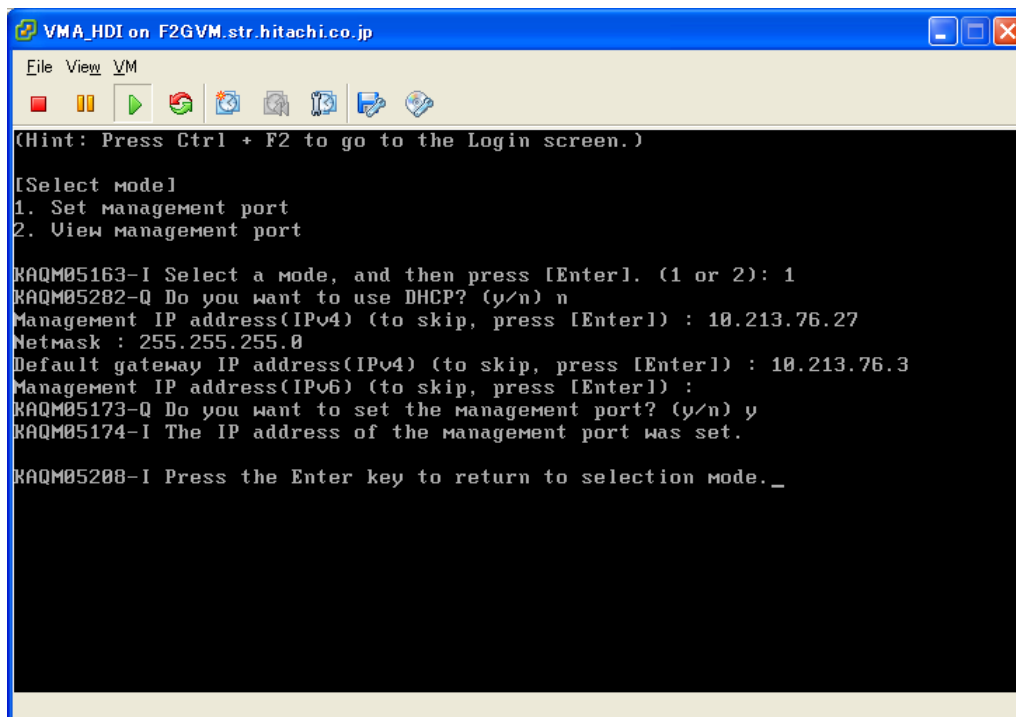


- 3) <Network settings with DHCP> Follow the network setting wizard.



- 4) <Network settings without DHCP> Follow the network setting wizard, and enter the required

information.



```

VMA_HDI on F2GVM.str.hitachi.co.jp
File View VM
[Icons: Stop, Pause, Play, Refresh, Home, Search, Print, Help]

(Hint: Press Ctrl + F2 to go to the Login screen.)

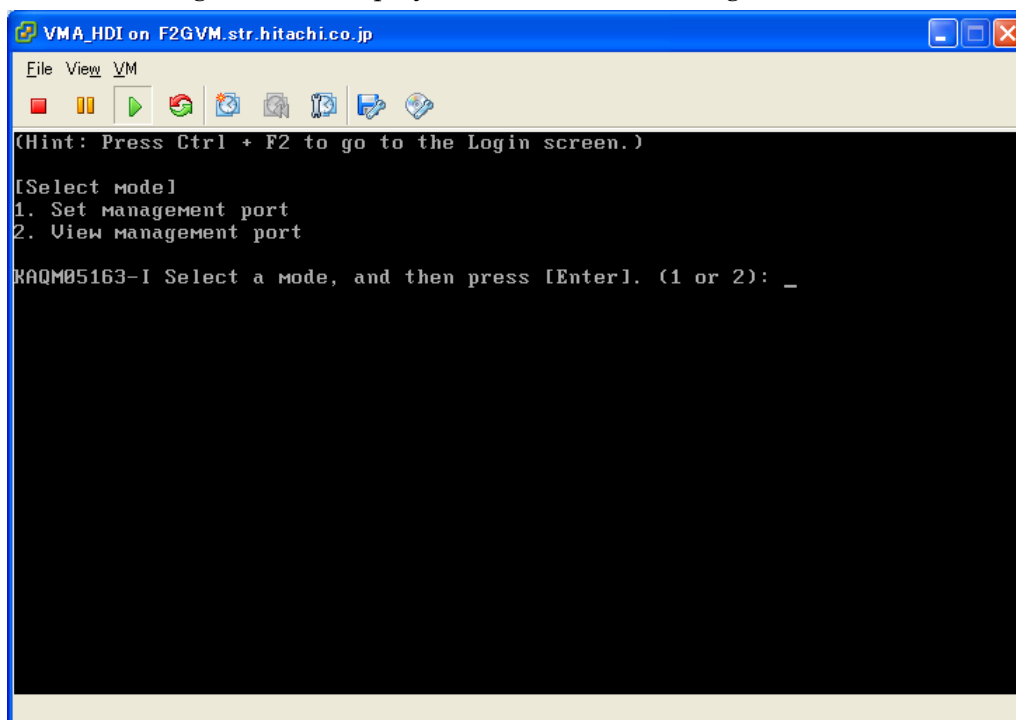
[Select mode]
1. Set management port
2. View management port

RAQM05163-I Select a mode, and then press [Enter]. (1 or 2): 1
RAQM05282-Q Do you want to use DHCP? (y/n) n
Management IP address(IPv4) (to skip, press [Enter]) : 10.213.76.27
Netmask : 255.255.255.0
Default gateway IP address(IPv4) (to skip, press [Enter]) : 10.213.76.3
Management IP address(IPv6) (to skip, press [Enter]) :
RAQM05173-Q Do you want to set the management port? (y/n) y
RAQM05174-I The IP address of the management port was set.

RAQM05208-I Press the Enter key to return to selection mode._

```

- 5) Confirm that the following screen is displayed after network settings is finished.



```

VMA_HDI on F2GVM.str.hitachi.co.jp
File View VM
[Icons: Stop, Pause, Play, Refresh, Home, Search, Print, Help]

(Hint: Press Ctrl + F2 to go to the Login screen.)

[Select mode]
1. Set management port
2. View management port

RAQM05163-I Select a mode, and then press [Enter]. (1 or 2): _

```

5. Creating an OVF file (VMware ESXi version 6.5 and Later)

5.1. OVF Overview

OVF (Open Virtualization Format) is a standard image format for virtual machines. OVF allows you to safely and efficiently use image files for a variety of virtual machines. Specifically, OVF allows you to quickly install and perform operations on virtual machines by simply loading an OVF image file in a hypervisor.

5.2. Prerequisites

The following are four prerequisites for implementing the deployment procedure described in this manual:

- VMware ESXi is already installed on the host machine.
- A web browser can be used on the management PC to access the host machine. Note that VMware ESXi 6.5 uses a web browser to access the host.
- A DVD drive is available on the management PC.
- If VMware HA/FT is used, VMware vCenter Server is already installed on the vCenter Server PC and is accessible to all the host machines to be managed.

5.3. Procedure for creating an OVF file

Use VMware vSphere Client and take the following steps to create an OVF file.

Step	Action	Remark
1	Start VMware vSphere Client.	If VMware ESXi version 6.5 or later is used, use a web browser to log in to VMware Host Client on the host. If VMware HA/HT and ESXi version 6.5 or later are used, use a web browser to log in to vCenter Server.
2	Create a virtual switch.	
3	Create a virtual machine.	Create a machine on which the guest OS will be installed.
4	Allocate cluster management LUs.	
5	Allocate user LUs.	
6	Set a boot delay to be used when the virtual machine is powered on.	Set the time required for installation.
7	Install a vMA.	
8	Reset the boot delay to be used when the virtual machine is powered on.	This operation resets the boot delay to be used when the virtual machine is powered on, so that the boot delay will revert to the default. Note that this operation is not required if the boot delay specified in step 6 will not be changed.
9	Create an OVF file.	

Note:

Examples of performing these steps are explained in sections 5.4 through 5.12.

5.4. Notes on operation examples

This section provides notes on VMware ESXi operations.

The notes provided in this section are also applicable to circumstances explained in other chapters.

The following system configuration elements are used in the procedures in this document: (1) an instance of VMware Host Client connected via Internet Explorer 11 in Windows 2012, and (2) an instance of VMware ESXi 6.5 that does not use VMware HA/FT.

General notes:

- 1) When you configure multiple vMAs in the same virtual environment, each virtual machine name must be unique within the environment. For each guest OS, you must allocate the required user LU capacity.

The following are the prerequisites for using VMware FT:

- 1) Both of the hosts can access the datastore on which a virtual machine is installed.
- 2) The number of virtual CPUs is 1 or 2.
- 3) No serial port is added to the virtual machine.

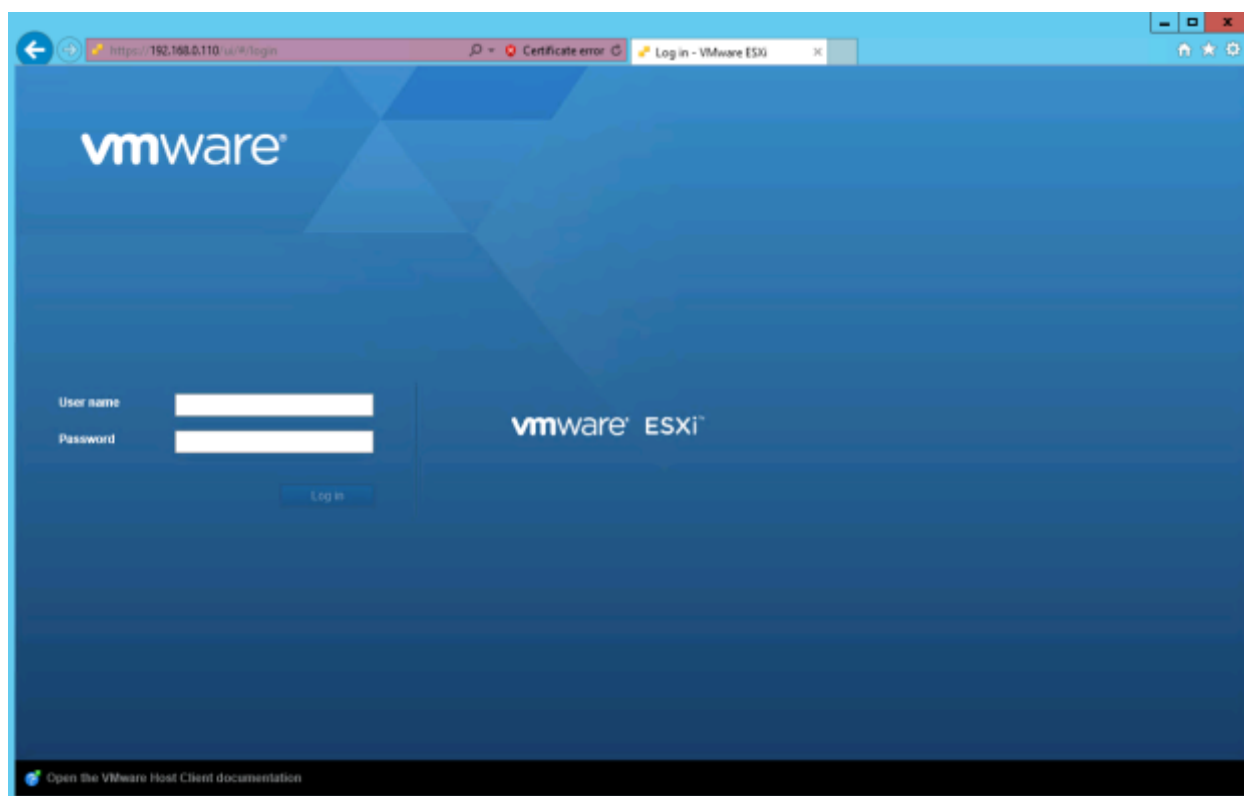
5.5. Starting VMware vSphere Client

- 1) Connect to the host machine.

In a web browser, enter `https://FQDN-or-IP-Address-of-ESXi-host/ui` and open the VMware Host Client login window. Next, enter information as follows:

User Name	Enter a user name.
Password	Enter the password.

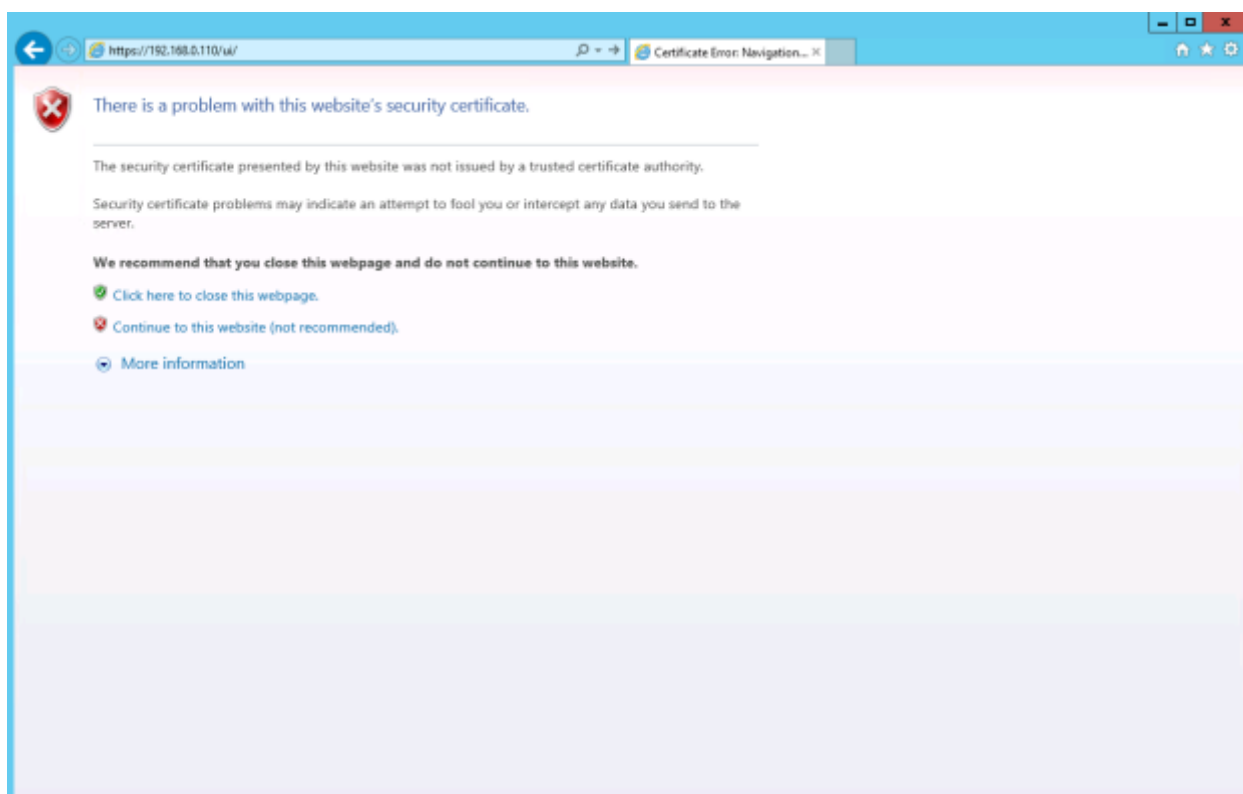
You are now logged in to the ESXi host machine.

**Note:**

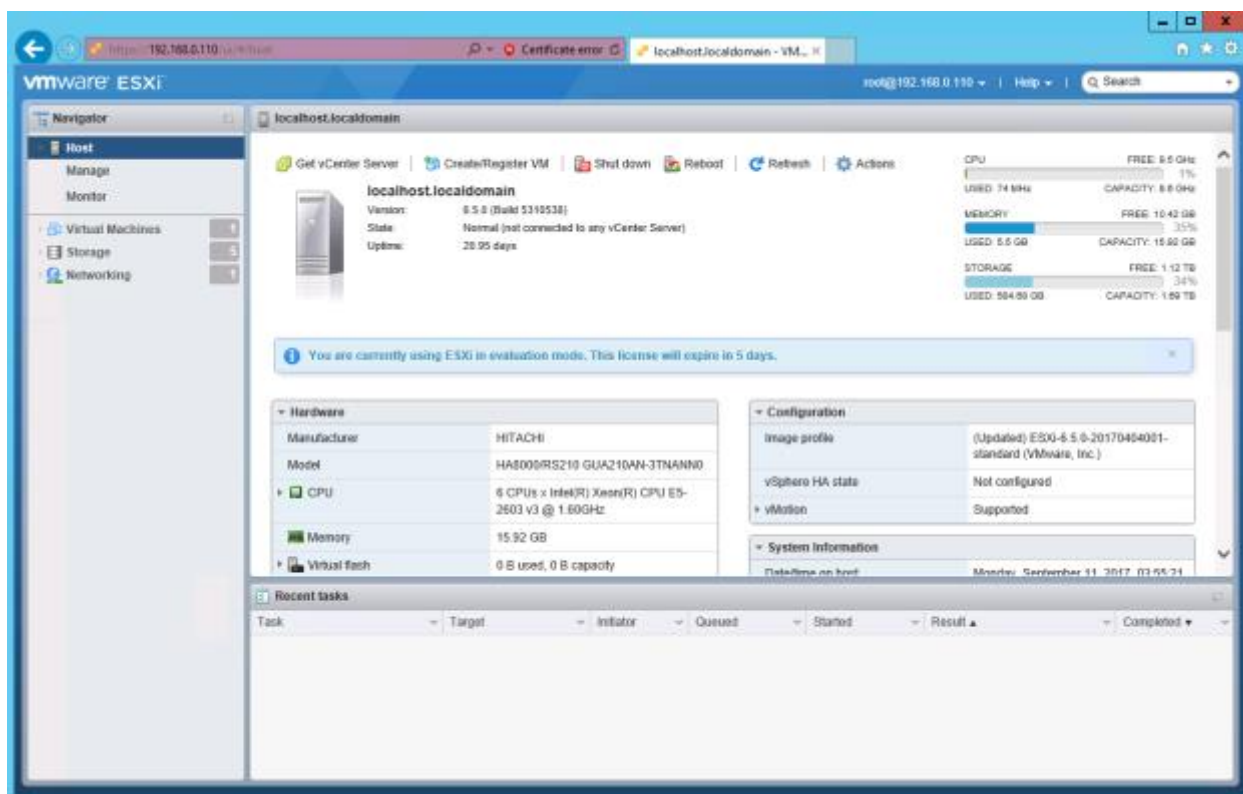
This is only an example. Be sure to enter a user name and password that were specified when VMware ESXi was installed.

- 2) If the web browser displays a security warning window, install a reliable security certificate. Alternatively, ignore the warning and open the website.

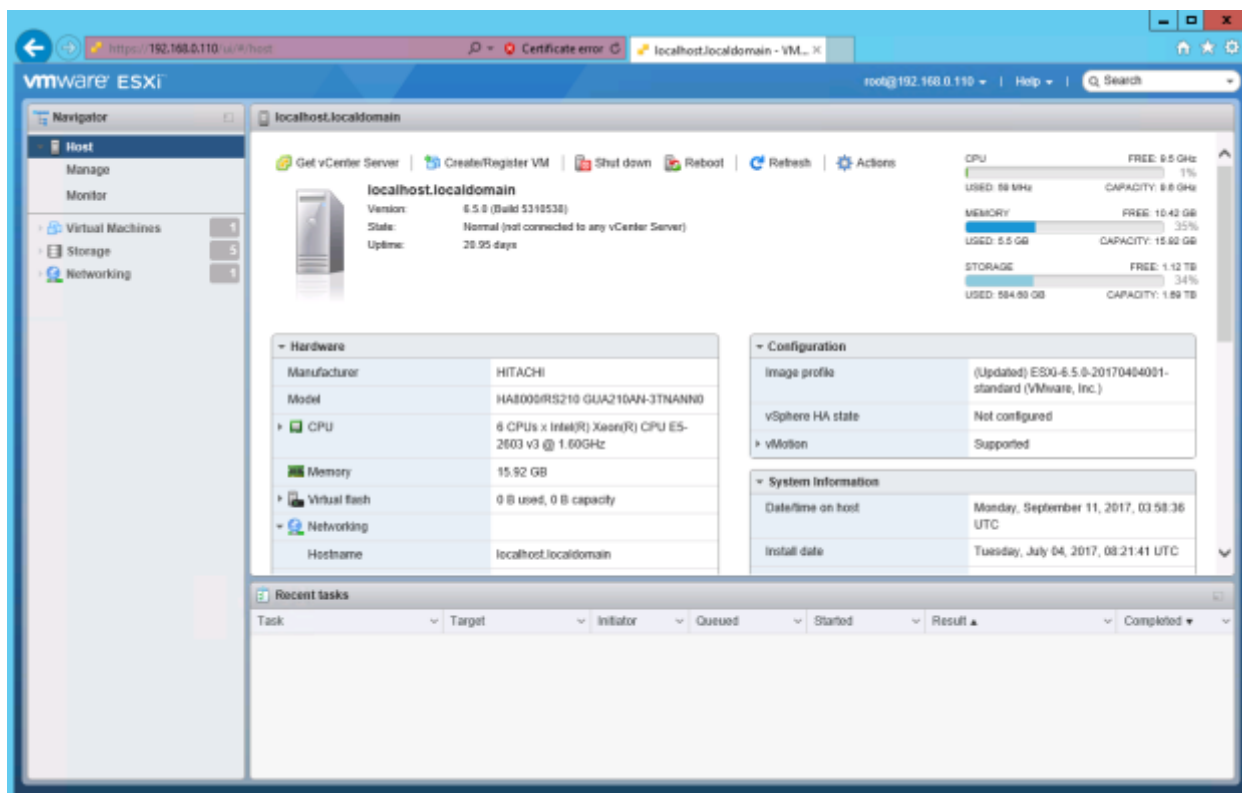
The following is an example screenshot from Internet Explorer 11. Click **Continue to this website (not recommended)** to open the website.



- 3) If the host screen of the navigator displays a message such as the following that states that you are currently using ESXi in evaluation mode and that the license will expire in x number of days, obtain and register the license as required.



- 4) The VMware Host Client window is displayed.



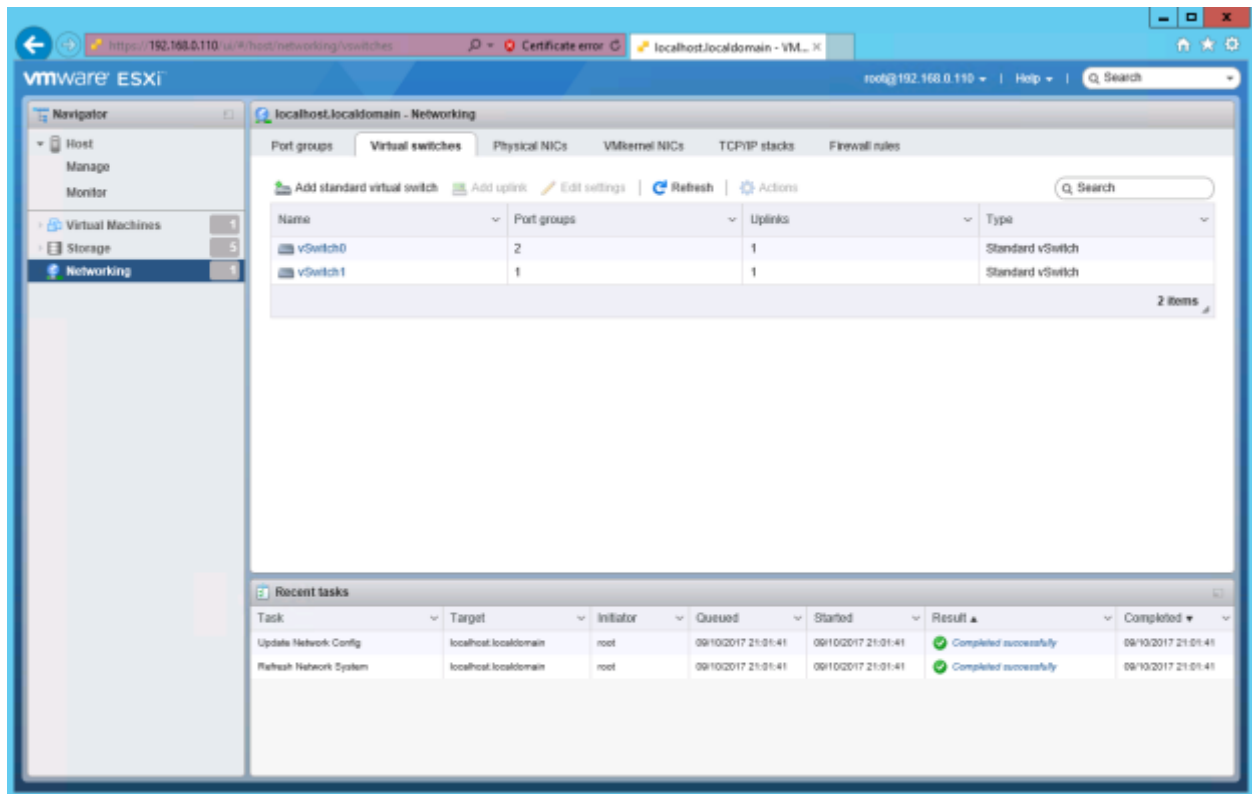
5.6. Creating a virtual switch

Create a virtual switch if one has not been configured. Note, however, that a virtual switch does not need to be created if the physical network adapter used exclusively by the vMA to be created.

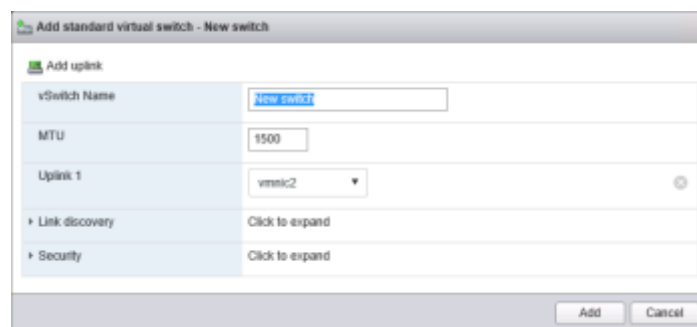
To create a virtual switch, perform the following procedure.

- 1) In the navigator, select **Networking**, and then click **Virtual Switches**.

The following window is displayed.



- 2) Click **Add standard virtual switch**. The following window is displayed.



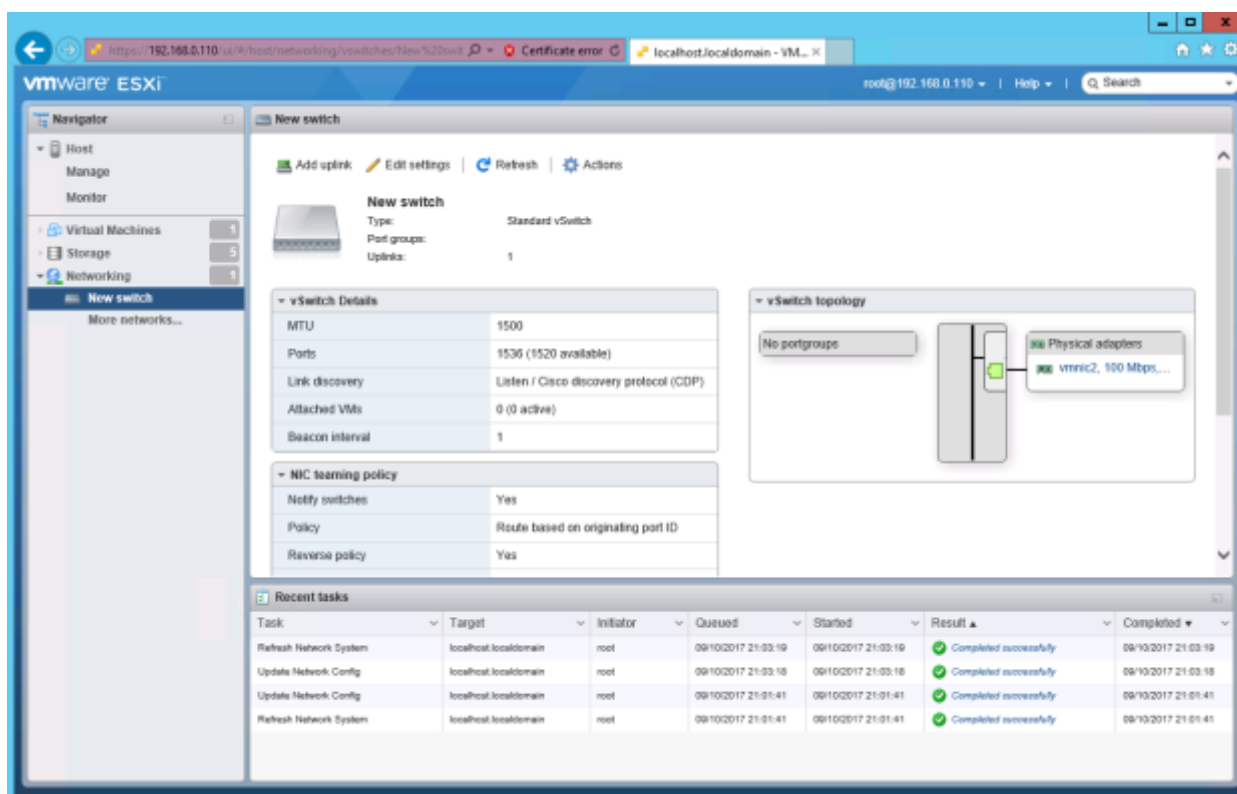
- 3) The **Add standard virtual switch - New switch** window is displayed. Select a vmnic that is physically connected to the desired network, and then click **Add**. Specify the options as follows:

Virtual Switch Name Enter a network label name.

MTU Specify **1500** (default). Note that this can be changed as required.

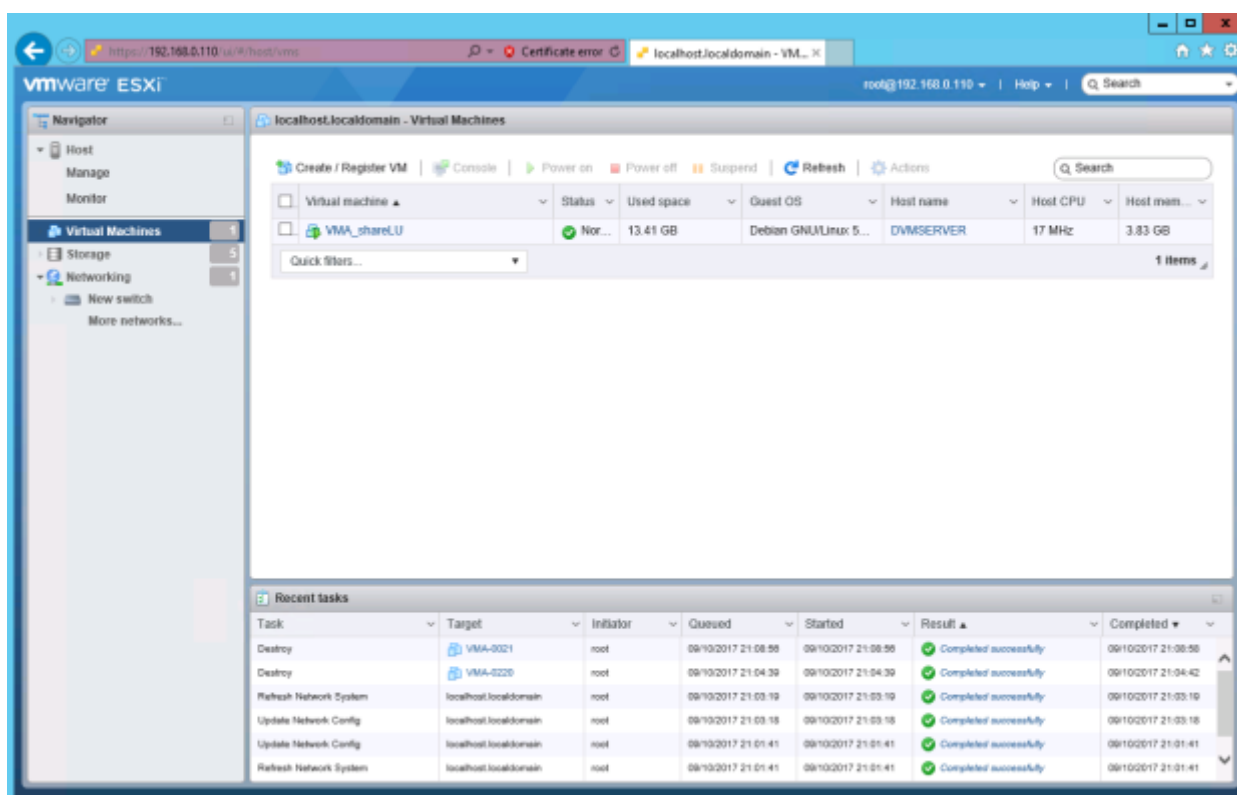
Other options Do not change the current settings.

- 4) A network switch is created. To modify the settings, select **Edit settings**.



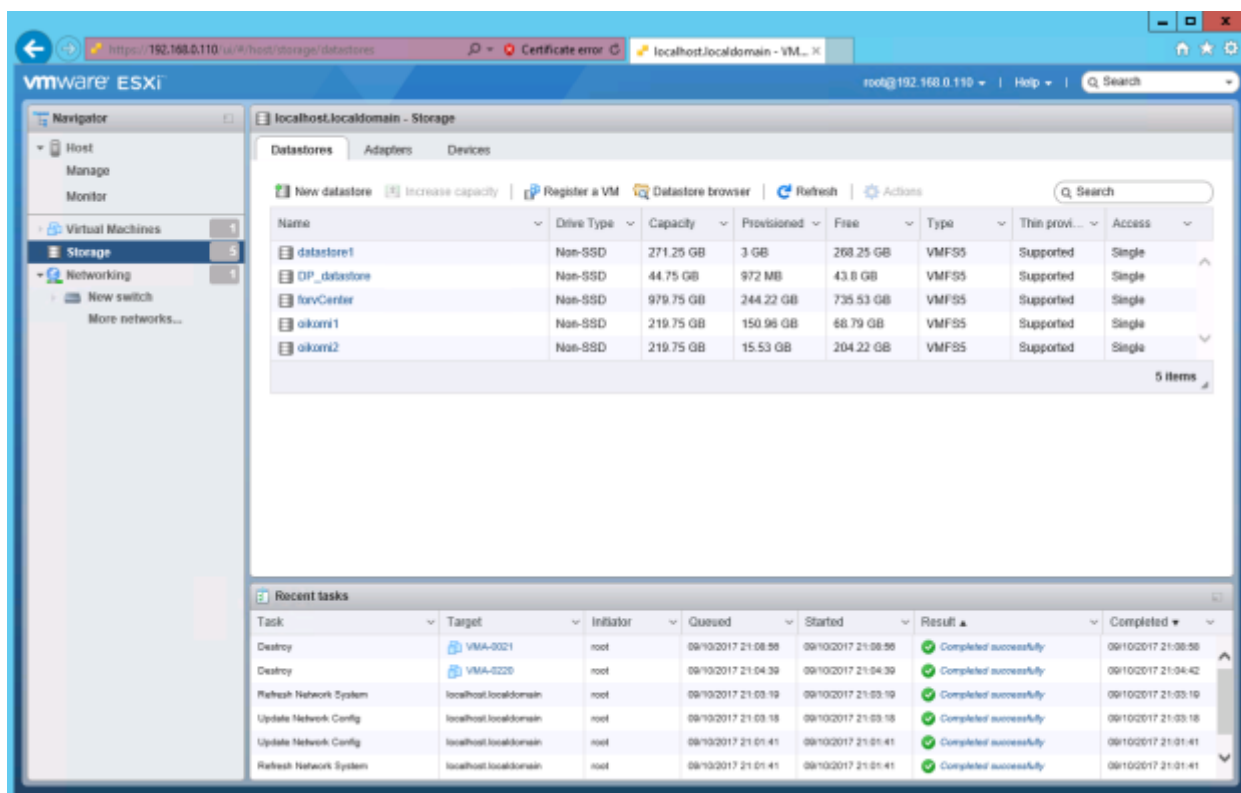
5.7. Creating a virtual machine

- 1) To create a virtual machine, select **Virtual Machines** from the navigator.



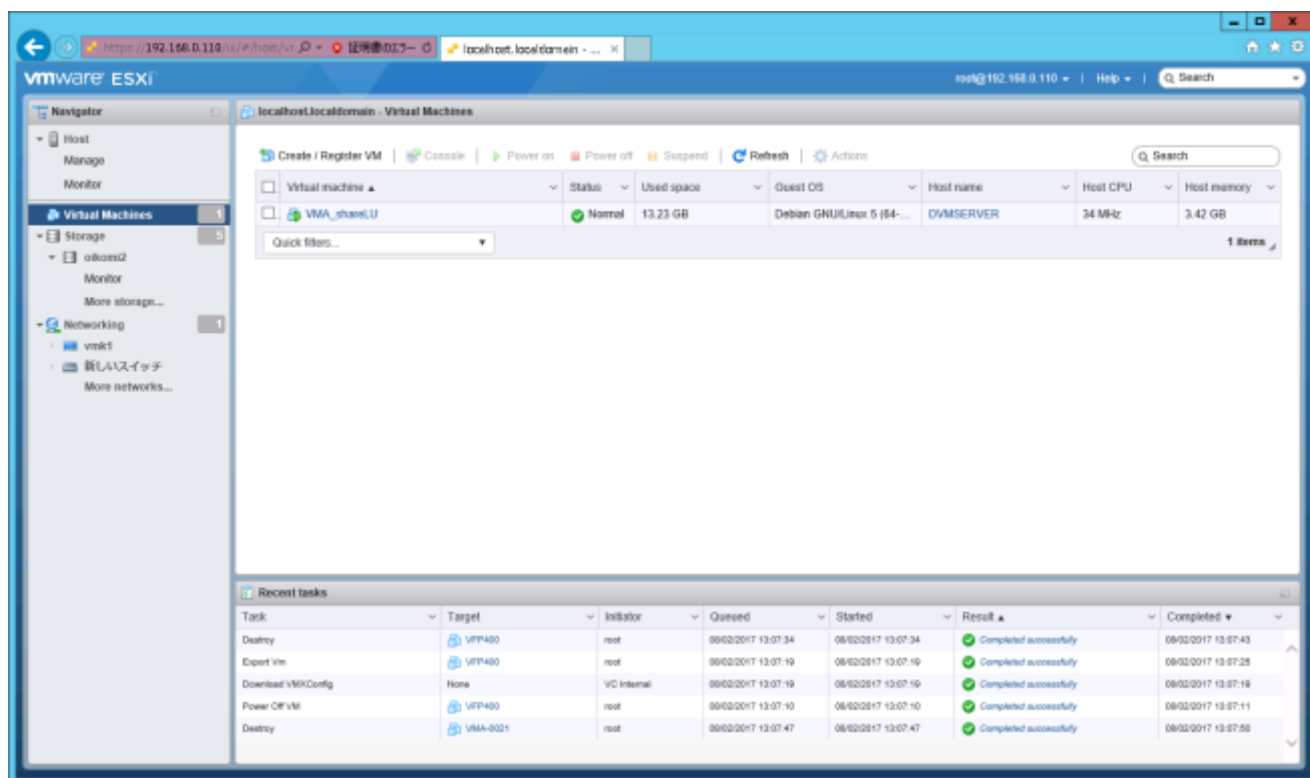
Before creating a virtual machine, confirm that there is enough free space available in the datastore on which the vMA will be installed. In this example, the vMA will be installed on **datastore1**. In the navigator, select

Storage and confirm that the amount of free space in the datastore is greater than or equal to the total capacity of LUs shown in Table 2-3.

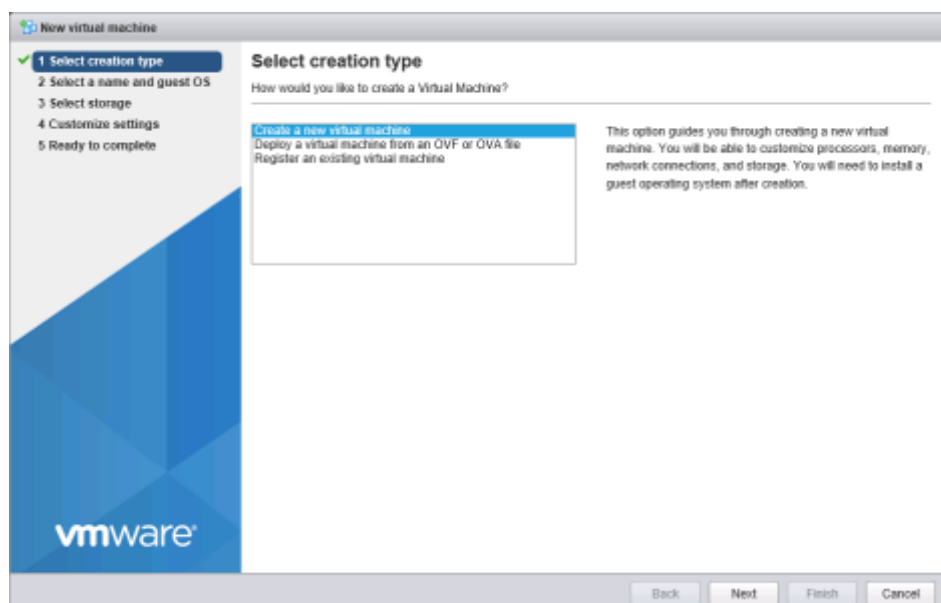


If free space is not available, ensure a sufficient amount of free space in the storage system, and then proceed to the next step.

- 2) In the navigator, select **Virtual Machines**, and then click **Create / Register VM**.



- 3) The **Select creation type** page in the **New virtual machine** window is displayed.



Select **Create a new virtual machine**, and then click **Next**.

- 4) The **Select a name and guest OS** page is displayed.

Specify the name of the virtual machine to be created. In the following example, the name is specified as vMA-0021. The name must be unique among the virtual machines to be managed in the same environment.

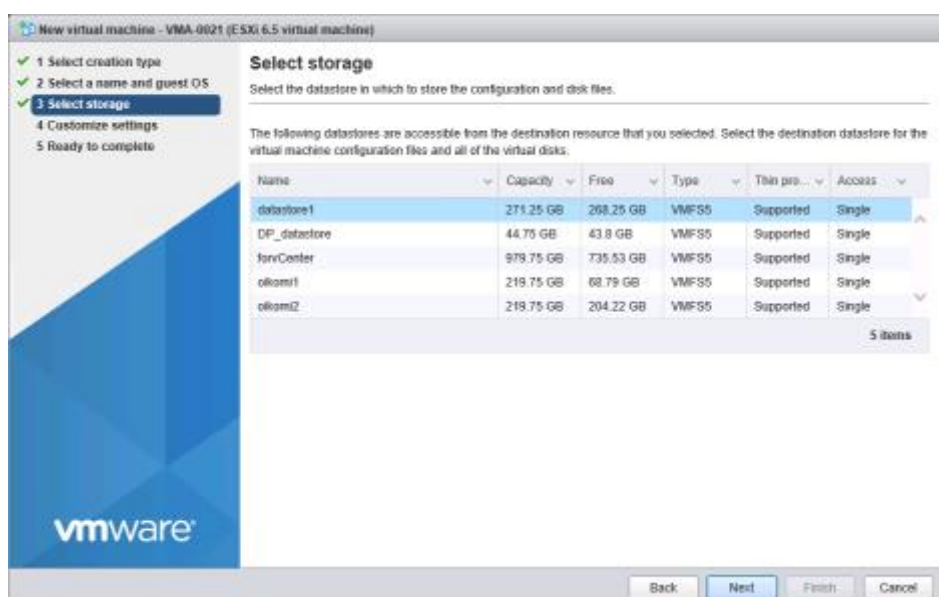


Select the following items from the pull-down lists:

- | | |
|-------------------------|---|
| Compatibility | Select ESXi 6.5 virtual machine . |
| Guest OS family | Select Linux . |
| Guest OS version | Select Debian GNU/Linux 5 (64-bit) . |

- 5) The **Select a name and guest OS** page is displayed.

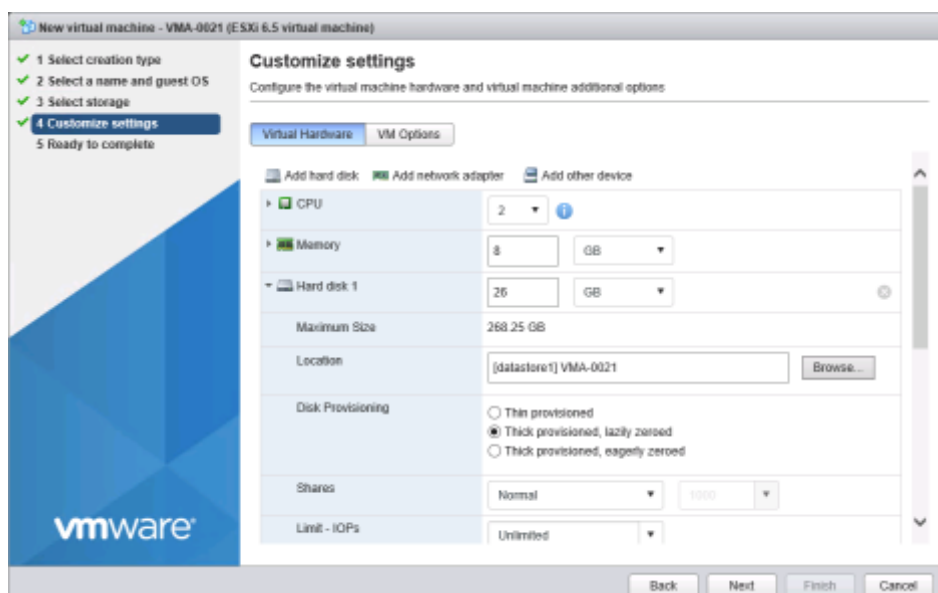
Select the storage system in which the virtual machine will be saved, and then click **Next**.



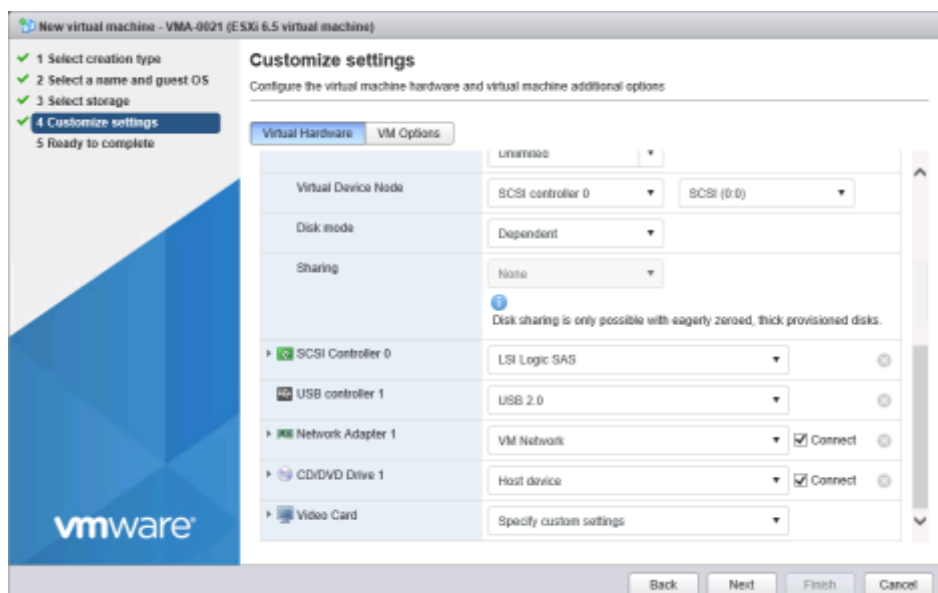
- 6) The **Customize settings** page is displayed.

To specify the number of virtual CPUs of the virtual machine, select **2** for **CPU**.

To specify the amount of memory to be allocated to the virtual machine, specify **8 GB** for **Memory** as shown in Table 2-3.

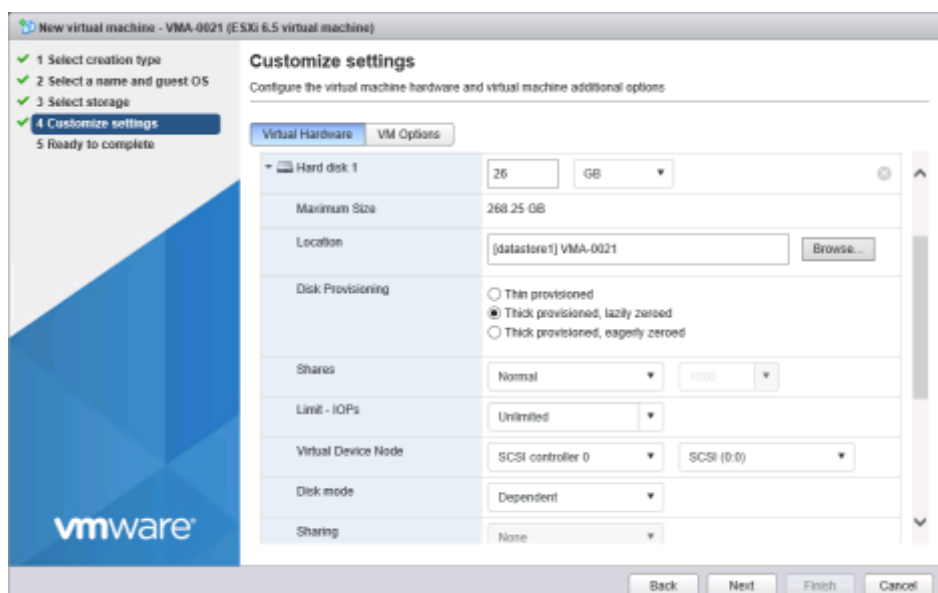


To specify the SCSI controller to be assigned to the virtual machine, select **SCSI controller 0**. For **SCSI controller**, select the SCSI controller type **LSI logic SAS** as shown in Table 2-3.



After changing the SCSI controller type to LSI Logic SAS, specify **Hard disk 1** as the hard disk to be allocated as the OS LU of the virtual machine, and then specify information such as the capacity of the virtual disk, as follows:

Hard disk 1[#]	Specify 26 or more GB (26624 MB).
Disk Provisioning	Select Thick provision (Lazy Zeroed) .
Virtual Device Node	Select SCSI controller 0 and SCSI (0:0) . Note: Specify SCSI (0:0) for an OS LU.
Other options	Do not change the default settings.

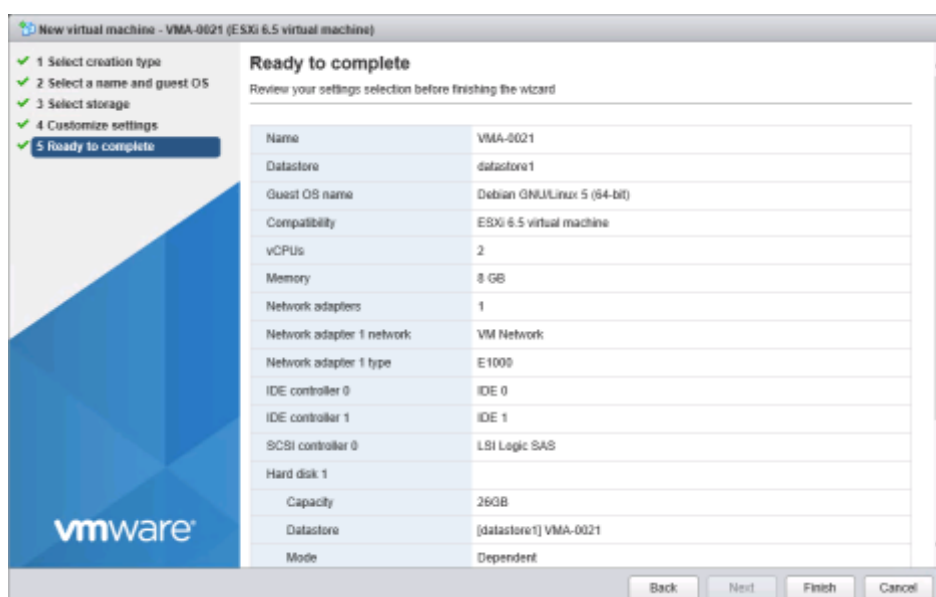


Note: As shown in the screenshot above, the fields to the right of **Hard disk 1** are used to specify the capacity.

After specifying these settings, click **Next**.

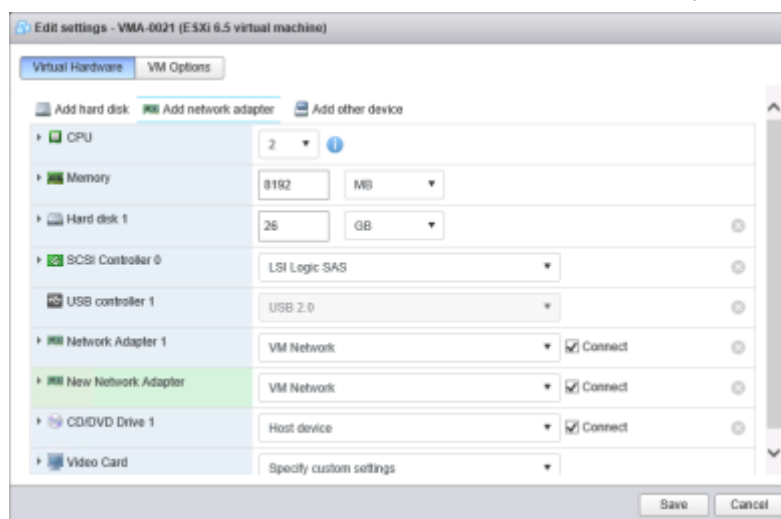
- 7) The **Ready to complete** page is displayed.

Verify the settings that were specified. If all the settings are correct, click **Finish**.

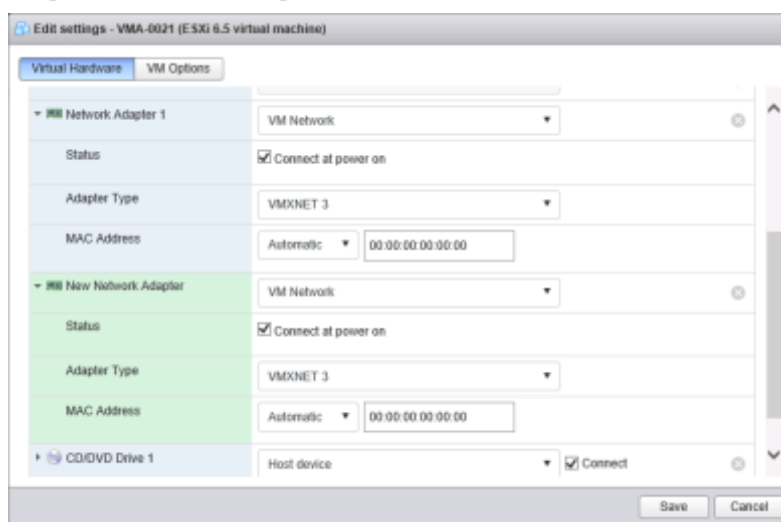


- 8) Select the virtual machine that was created, and then select **Actions** and **Edit settings** to display a window.

Select **Add network adapter**, and then add new network adapters. Make sure that the number of the network adapters is 2, which is the same as the number of NICs explained in Table 2-3.



For each of the network adapters, in **Adapter Type**, specify **E1000** or **VMXNET 3** as the NIC type as explained in Table 2-3. Specify the same network adapter type for the two network adapters. In the following example **VMXNET 3** is specified.



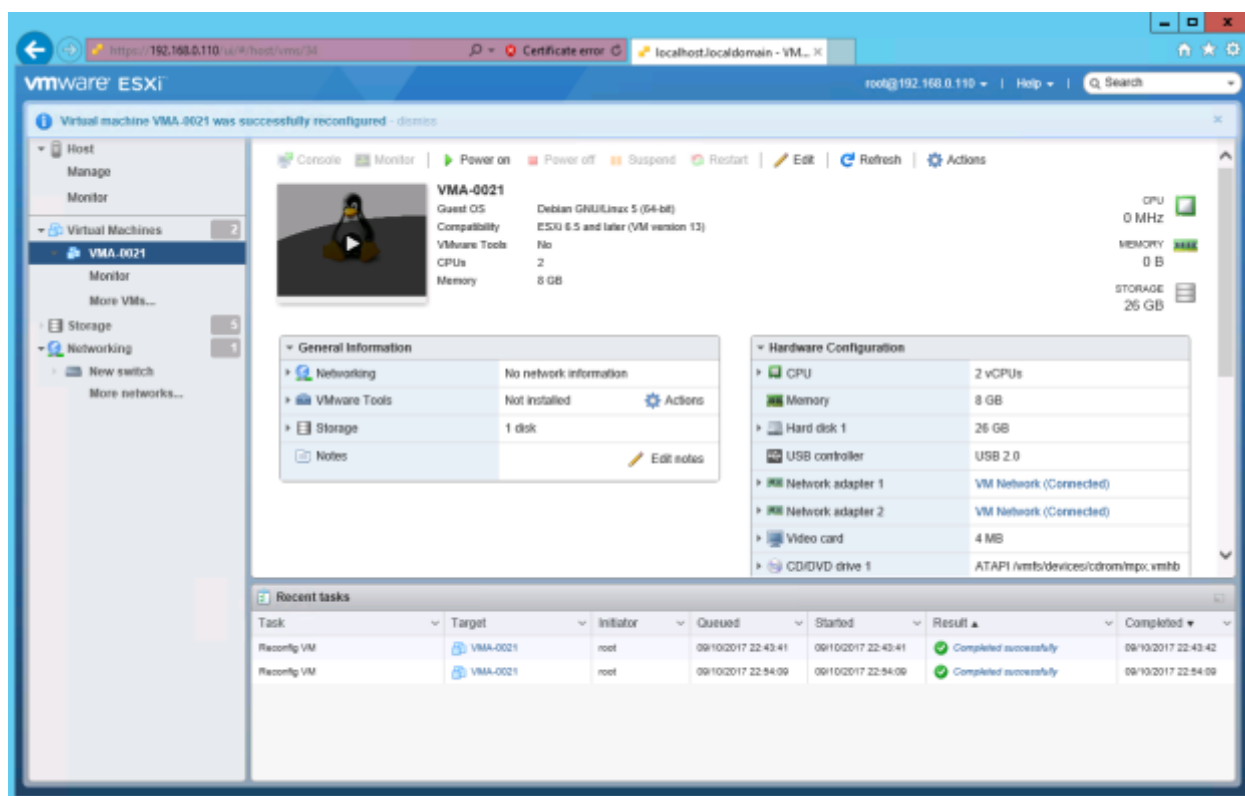
- 9) Verify the information in the **Edit settings** window.

Check whether the settings in step 8) are correct. If the settings are correct, click **Save**.

If the settings are incorrect, correct the settings.

- 10) Click **Save**. The following window appears again.

In the navigator, the virtual machine that was created is displayed below **Virtual Machines**. The pane on the right side displays the status of the virtual machine.



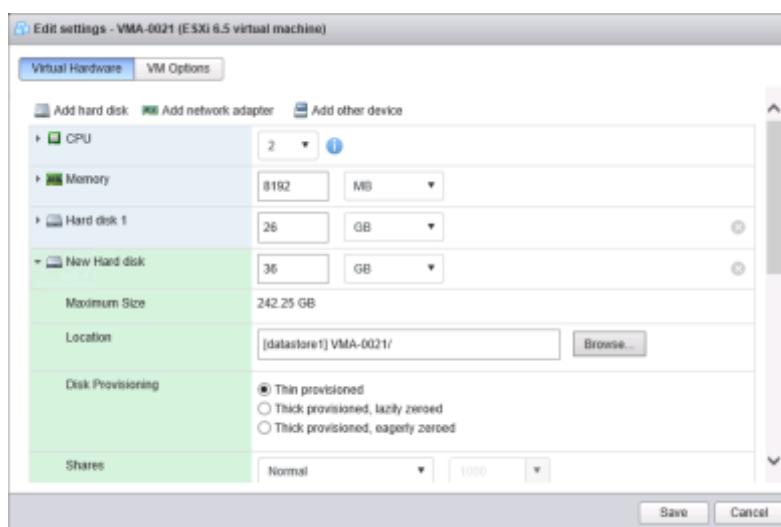
5.8. Allocating cluster management LUs and user LUs

The following procedure to allocate LUs will be performed multiple times. The procedure for allocating cluster management LUs is almost the same as the procedure for allocating user LUs. The different is that the disk capacity and virtual device node allocated to cluster management LUs is different from those allocated to user LUs.

First, allocate cluster management LUs.

- 1) Select the created virtual machine, and then click **Edit**.
- 2) The **Edit settings** window is displayed.

Select **Add hard disk** and then **New Hard disk**.



- 3) Specify the capacity of the new hard disk and other information as follows.

Note that the cluster management LU capacity is different from the user LU capacity. For each of these capacities, specify the value explained in Table 2-3.

New Hard disk[#]

For cluster management LUs, specify 36 or more GB.

For user LUs, specify 2 or more GB.

Disk Provisioning

Select **Thick provision (Lazy Zeroed)**.

Virtual Device Node

For cluster management LUs, select **SCSI controller 0** and **SCSI (0:1)**.

For user LUs, select **SCSI controller 0** and one of the values within the range of **SCSI (0:2)** to **SCSI (0:4)**.

Other options

Do not change the default settings.

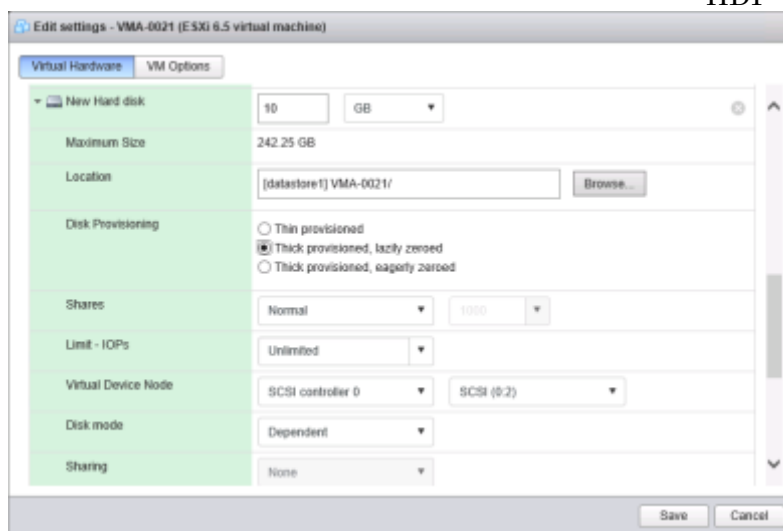
After specifying these settings, click **Save**.

Note: As shown in *Example of cluster management LU allocation* and *Example of user LU allocation*, the fields to the right of **New Hard disk** are used to specify the capacity.

Example of cluster management LU allocation (In this example, 36 GB is allocated.)

The screenshot shows the 'Edit settings' window for a virtual machine named 'VMA-0021'. The 'Virtual Hardware' tab is active. Under the 'New Hard disk' section, the capacity is set to 36 GB. The 'Maximum Size' is 242.25 GB. The 'Location' is '[datastore1] VMA-0021/'. The 'Disk Provisioning' section has three options: 'Thin provisioned', 'Thick provisioned, lazily zeroed' (which is selected), and 'Thick provisioned, eagerly zeroed'. The 'Shares' section is set to 'Normal' with a value of 1000. The 'Limit - IOPs' is set to 'Unlimited'. The 'Virtual Device Node' section shows 'SCSI controller 0' and 'SCSI (0:1)' selected. The 'Disk mode' is set to 'Dependent' and 'Sharing' is set to 'None'. At the bottom right, there are 'Save' and 'Cancel' buttons.

Example of User LU allocation (In this example, 10 GB is allocated.)



Notes on using these windows:

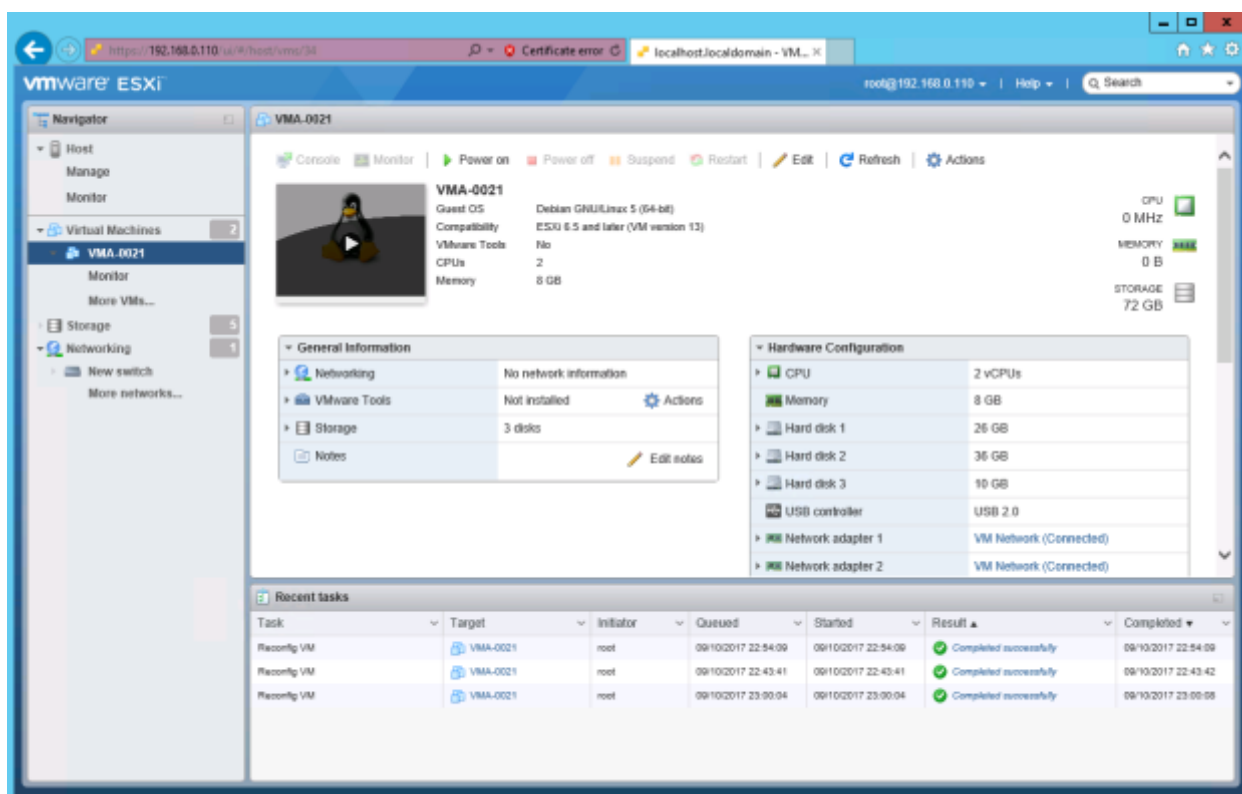
- If you click **Cancel**, allocation of cluster management LUs or user LUs is canceled.
- If you click **Add hard disk** without clicking **Save**, the window for specifying the capacity of the new hard disk is displayed. If you continue the operation as explained earlier, you will be able to continue to allocate user LUs. A maximum of three virtual disks can be allocated as user LUs.

- 4) The LU allocation is finished when the settings for cluster management LUs and user LUs are set.

5.9. Setting a boot delay to be used when the virtual machine is powered on

In this operation specifies a boot delay so that the **F2** key can be pressed to enter system BIOS setup when the virtual machine is powered on, as explained in 5.10-2).

- 1) In the navigator, from **Virtual Machines**, select the virtual machine for which the setting will be specified. In the pane on the right, click **Actions** and then **Edit settings**.

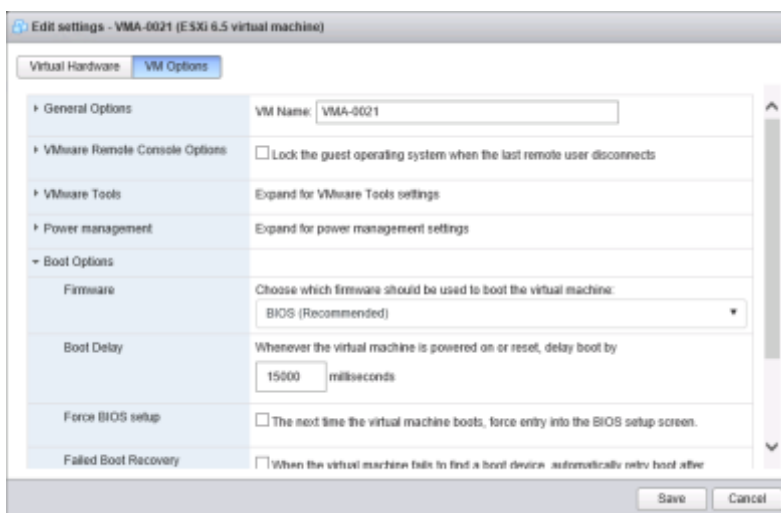


2) The **Edit settings** window is displayed.

Click **VM Options**.

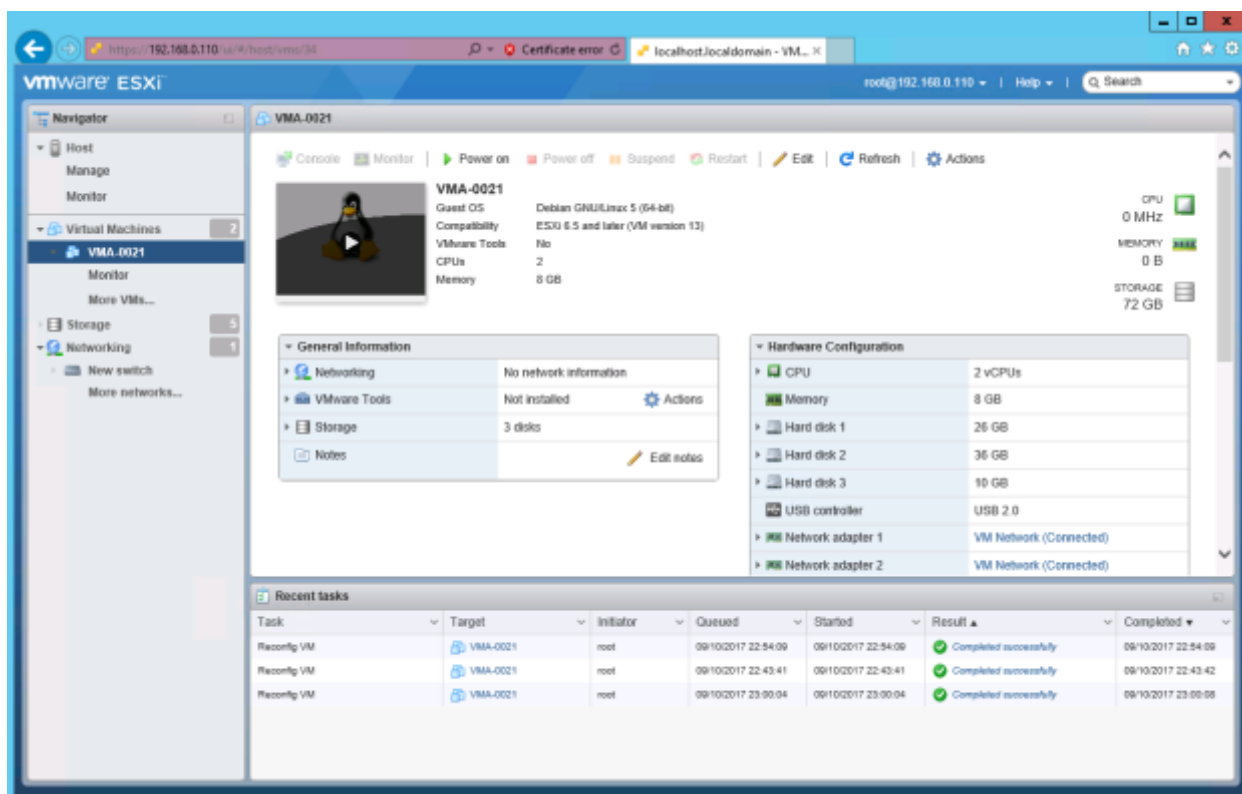


3) When the following window is displayed, specify a value for **Boot Delay** in **Boot Options**. In **Boot Delay**, specify the time between when the machine is powered on and when the **F2** key is pressed to allow changes to be made to BIOS settings. The recommended time is 15,000 or more milliseconds. In the following example, 15000 is specified. After specifying the time, click **Save**.

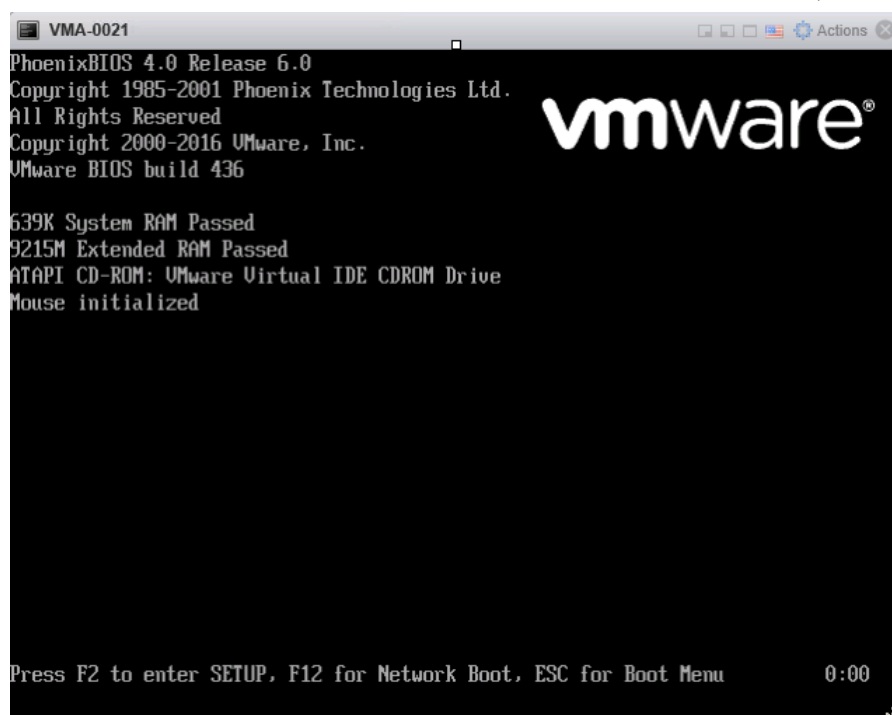


5.10. Installing a vMA

- 1) In the navigator, from **Virtual Machines**, select the virtual machine on which the vMA (guest OS) will be installed.



- 2) To enable installation from the browser console, power on the virtual machine.
Select **Actions**, **Power**, and then **Power on**.
- 3) After the machine is powered on in step 2), select **Actions**, **Console**, and then **Open browser console** to open the console window.

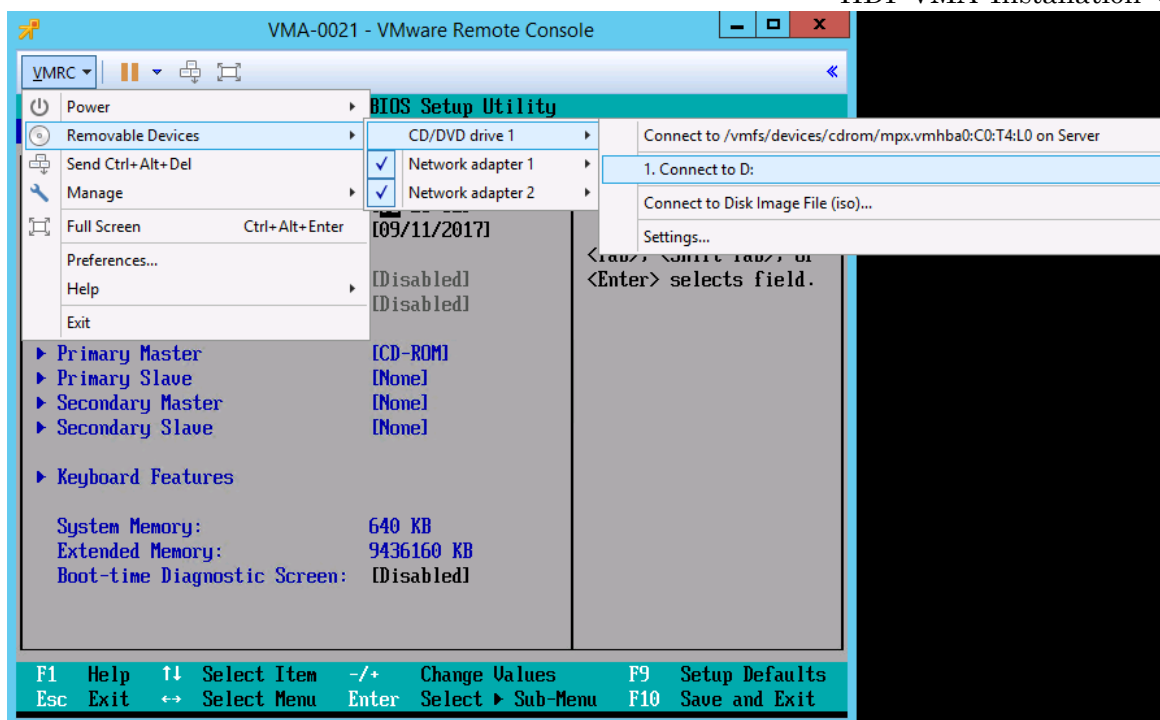


- 4) If the window displays the message **Press F2 to enter SETUP**, click in the console window and then press the **F2** key. If the BIOS window does not appear after pressing **F2**, shut down the virtual machine, select the check box **The next time the virtual machine boots, force entry into the BIOS setup screen** in the window shown in 5.9-3), and then reboot the virtual machine. Note that this option will be automatically canceled after the boot is finished.
- 5) Insert the installation media in the DVD drive of the host.

If you use the browser console, you cannot perform the installation by using the DVD drive of the management PC. If you are using VMware ESXi version 6.5 or later and want to use the DVD drive of the management PC, you must use the standalone VMware Remote Console (VMRC). The standalone VMRC can be downloaded from the VMware website. For details, see the following knowledge base provided by VMware:

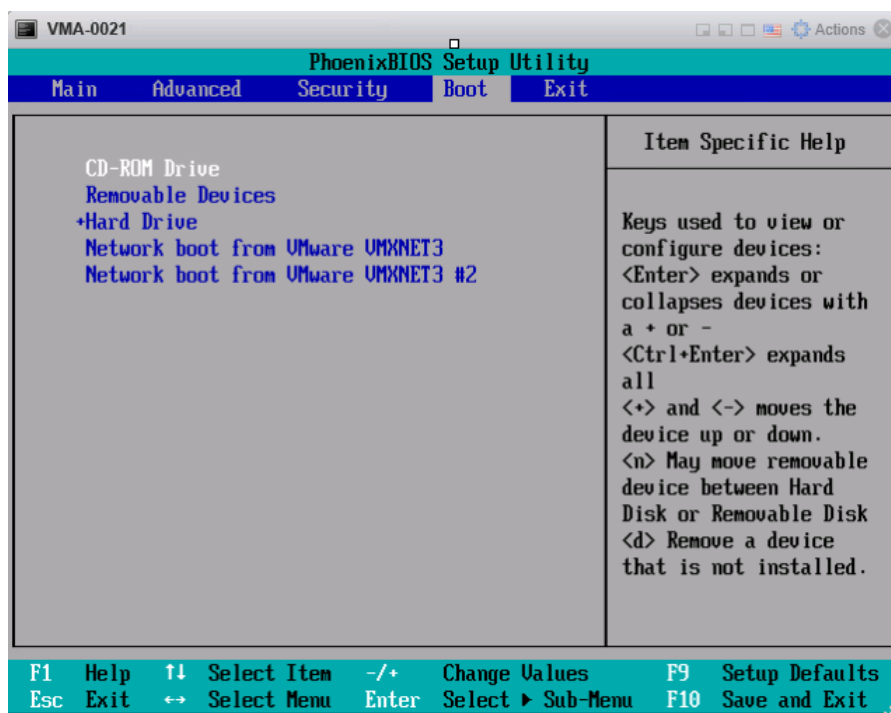
https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2119076

To mount a DVD by using the VMRC, open the console and then click **VMRC, Removable Devices, CD/DVD drive 1**, and then **1. Connect to D:**. Note that the drive letter sometimes varies depending on the management PC. Change it as necessary to fit your environment. Procedures that are not related to the CD and DVD drive are the same as the procedure that uses the browser console of the web browser. Note, however, that you must press **Ctrl+Alt** to enable the mouse to transit from the VMRC to another window.

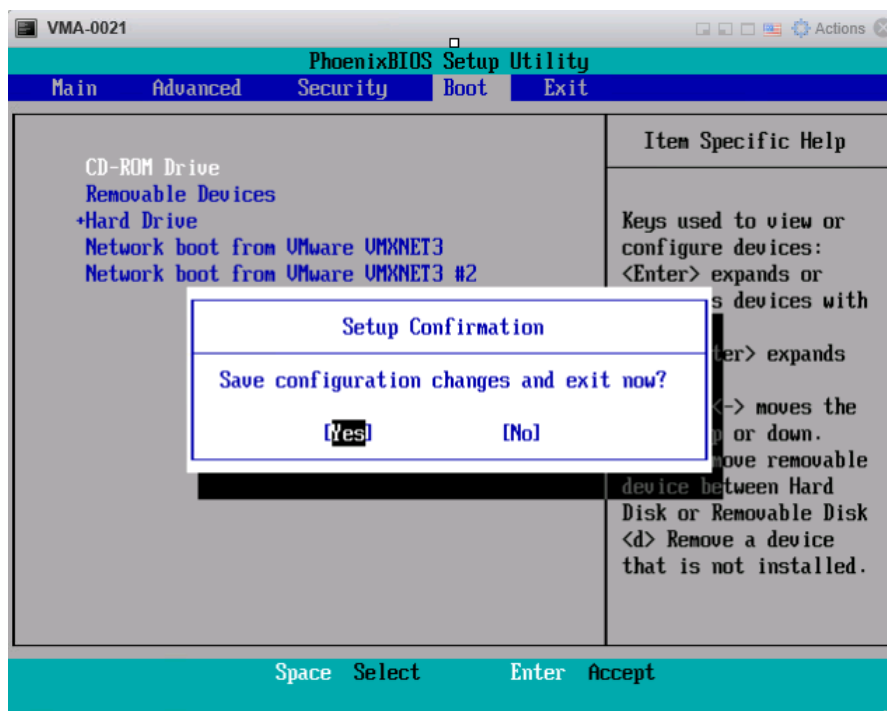


- 6) The boot setup window is displayed. Specify the order in which devices boot.

Use arrow keys to move to **Boot**, and then use the + and - keys to give the highest priority to the CD-ROM drive so that it will boot first. After specifying this setting, press **F10**.

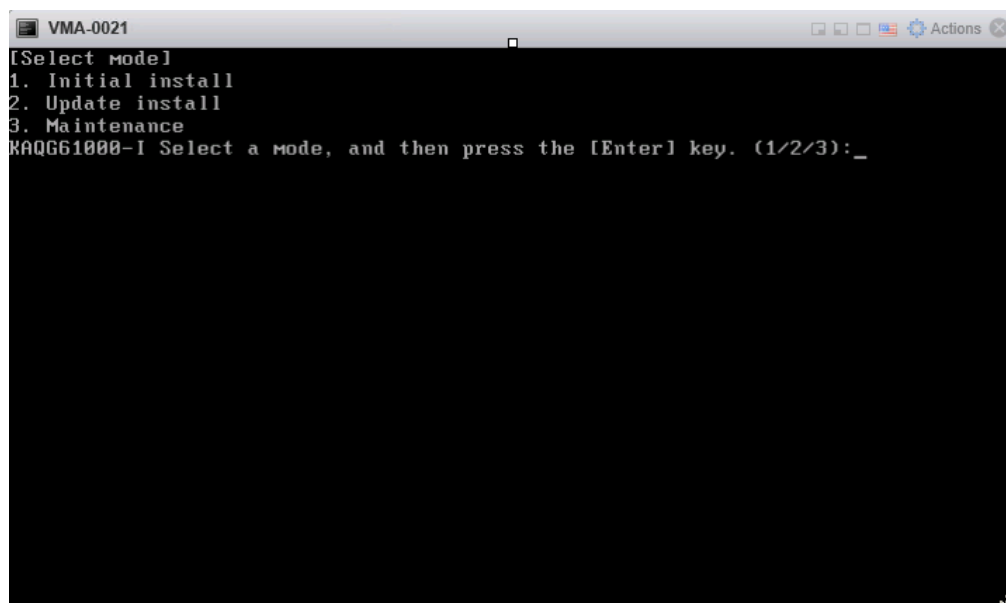


- 7) After pressing **F10**, select **Yes** and then press **Enter** in the following window.



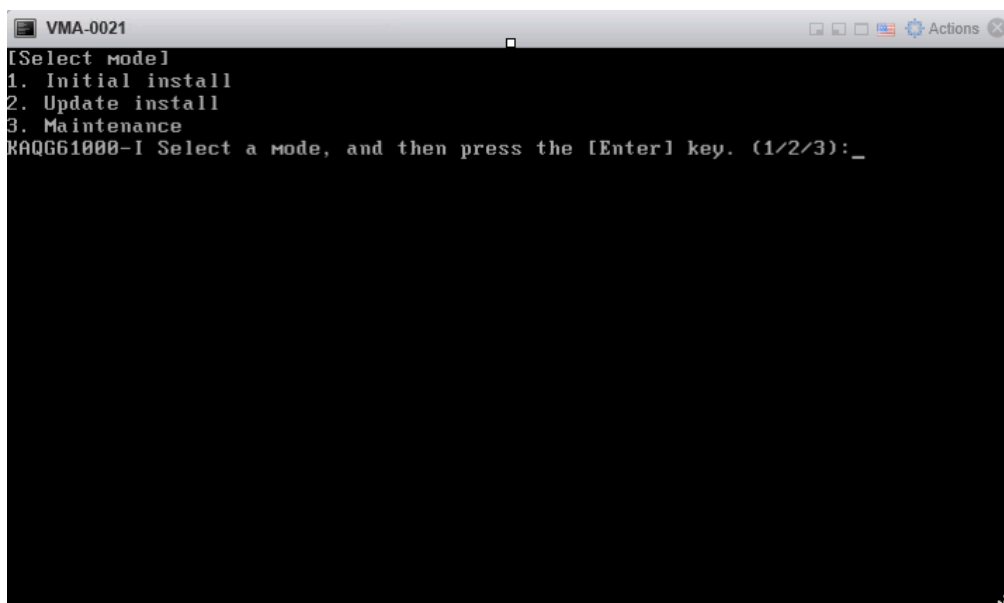
8) A window such as the following will be displayed.

Enter **1** to select **1. Initial install**, and then press **Enter**.



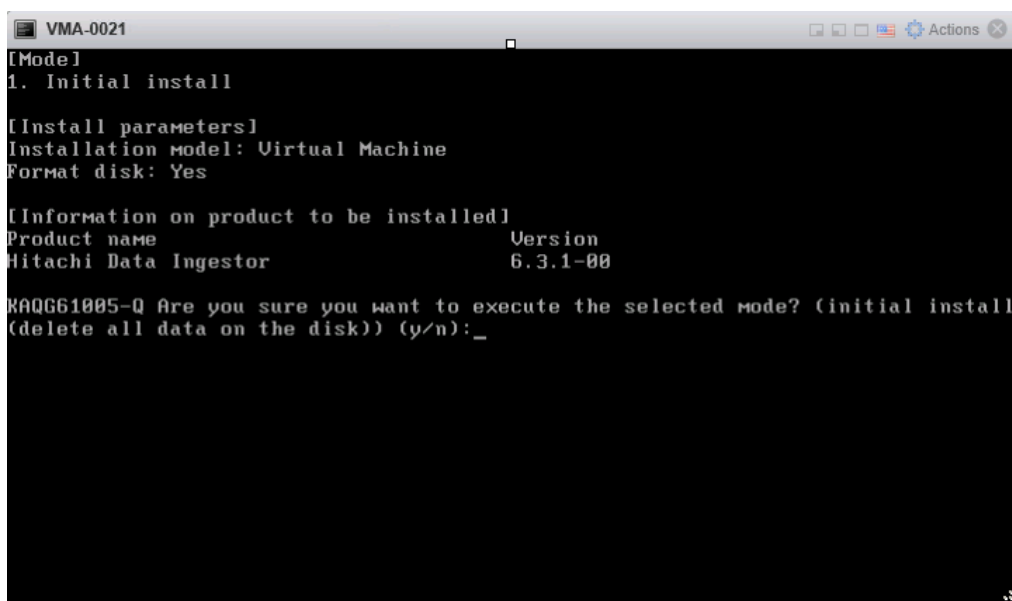
9) A window such as the following will be displayed.

Enter **y**, and then press **Enter**.



- 10) A window such as the following will be displayed.

This window prompts you to confirm whether your settings are correct. If the settings are correct, enter **y**, and then press **Enter**.



The installation takes about 15 minutes. The installation finishes when the window appears as follows.

- 11) After the installation finishes, the following message appears in the window: **KAQG61001-I Eject the installation media, and then press the Enter key.**

```

VMA-0021
Installation model: Virtual Machine
Format disk: Yes

[Information on product to be installed]
Product name      Version
Hitachi Data Ingestor 6.3.1-00

KAQG61005-Q Are you sure you want to execute the selected mode? (initial install
(delete all data on the disk)) (y/n):y

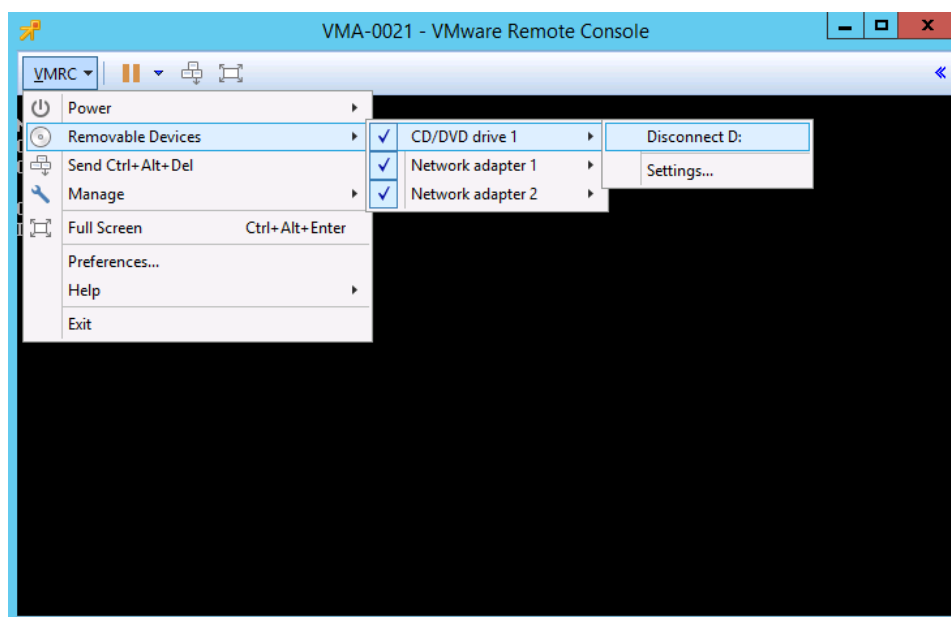
[Information on product to be installed]
Product name      Version
Hitachi Data Ingestor 6.3.1-00

[Status]
Status:  0% (Time elapsed:  0 min. Estimated time remaining: calculating...)
Status: 10% (Time elapsed:  0 min. Estimated time remaining: calculating...)
Status: 30% (Time elapsed:  1 min. Estimated time remaining:  5 min.)
Status: 55% (Time elapsed:  2 min. Estimated time remaining:  5 min.)
Status: 65% (Time elapsed:  3 min. Estimated time remaining:  4 min.)
Status: 70% (Time elapsed:  4 min. Estimated time remaining:  3 min.)
Status: 74% (Time elapsed:  5 min. Estimated time remaining:  2 min.)
Status: 78% (Time elapsed:  6 min. Estimated time remaining:  2 min.)
Status: Completed
KAQG61001-I Eject the installation media, and then press the [Enter] key.

```

- 12) Remove the installation media from the DVD drive of the host.

To disconnect the CD/DVD drive when a VMRC is used, press **Ctrl+Alt** to enable the mouse, and then select **VMRC, Removable Devices, CD/DVD drive 1**, and then **Disconnect D:** from the menu. Note that the drive letter sometimes varies depending on the management PC. Change it as necessary to fit your environment.



- 13) Return to the console, and press the **Enter** key.

The OS has been installed.

5.11. Resetting the boot delay to be used when the virtual machine is powered on

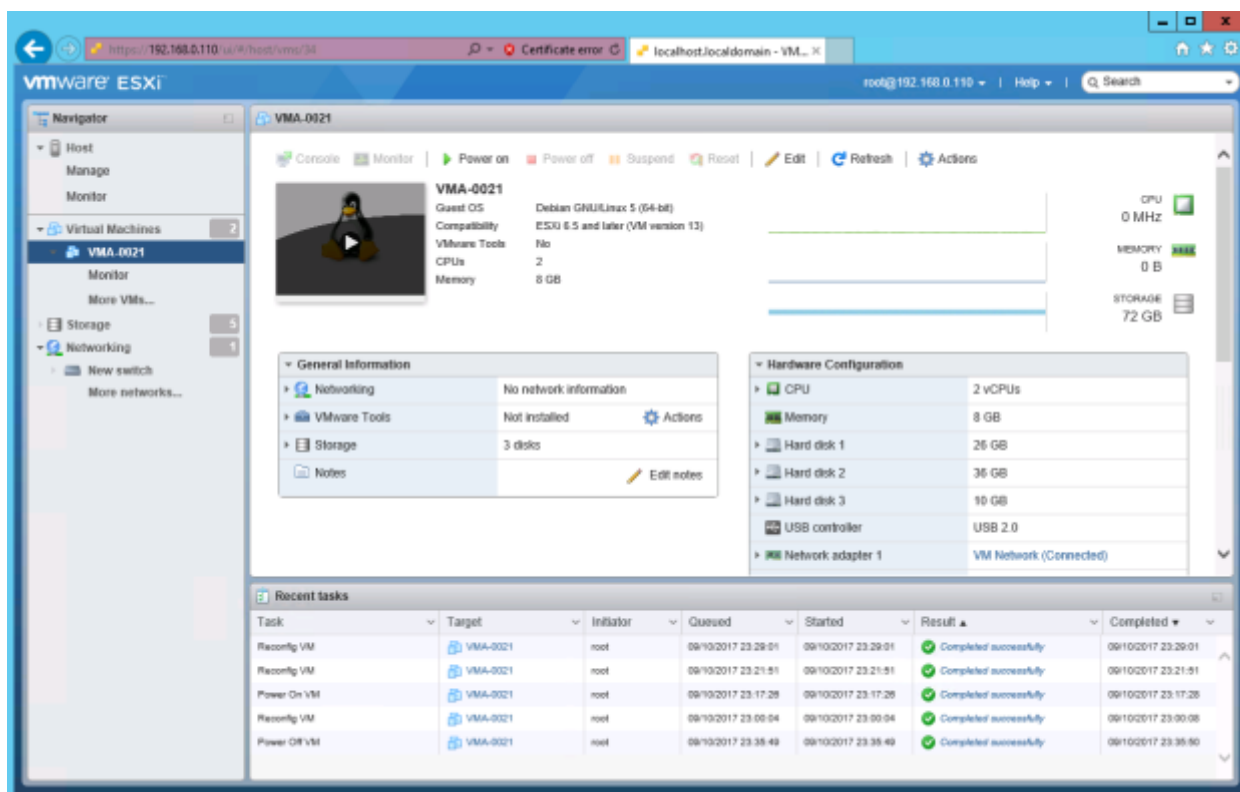
Reset the boot delay if the OS boot delay needs to be shortened. For details, see 5.9 and set **Boot Delay** to **0**.

5.12. Creating an OVF template

5.12.1. Selecting a virtual machine

In the navigator, from **Virtual Machines**, select a virtual machine.

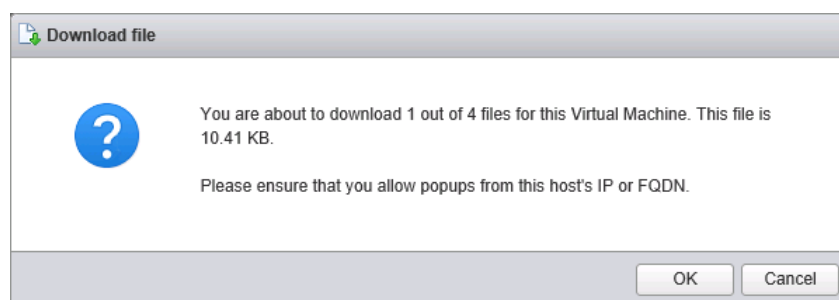
A window such as the following will be displayed. If the virtual machine is powered on, shut down the machine.



5.12.2. Creating an OVF template

Select **Actions** and then **Export**.

5.12.3. The following dialog box will be displayed repeatedly. Click **OK** whenever this dialog box appears. One **.ovf** file and multiple **.vmdk** files will be downloaded. The number of **.vmdk** files to be downloaded is the same as the number of hard disks from which files are exported. If you create a folder and then put these files in that folder, you will be able to easily manage the exported OVF template.



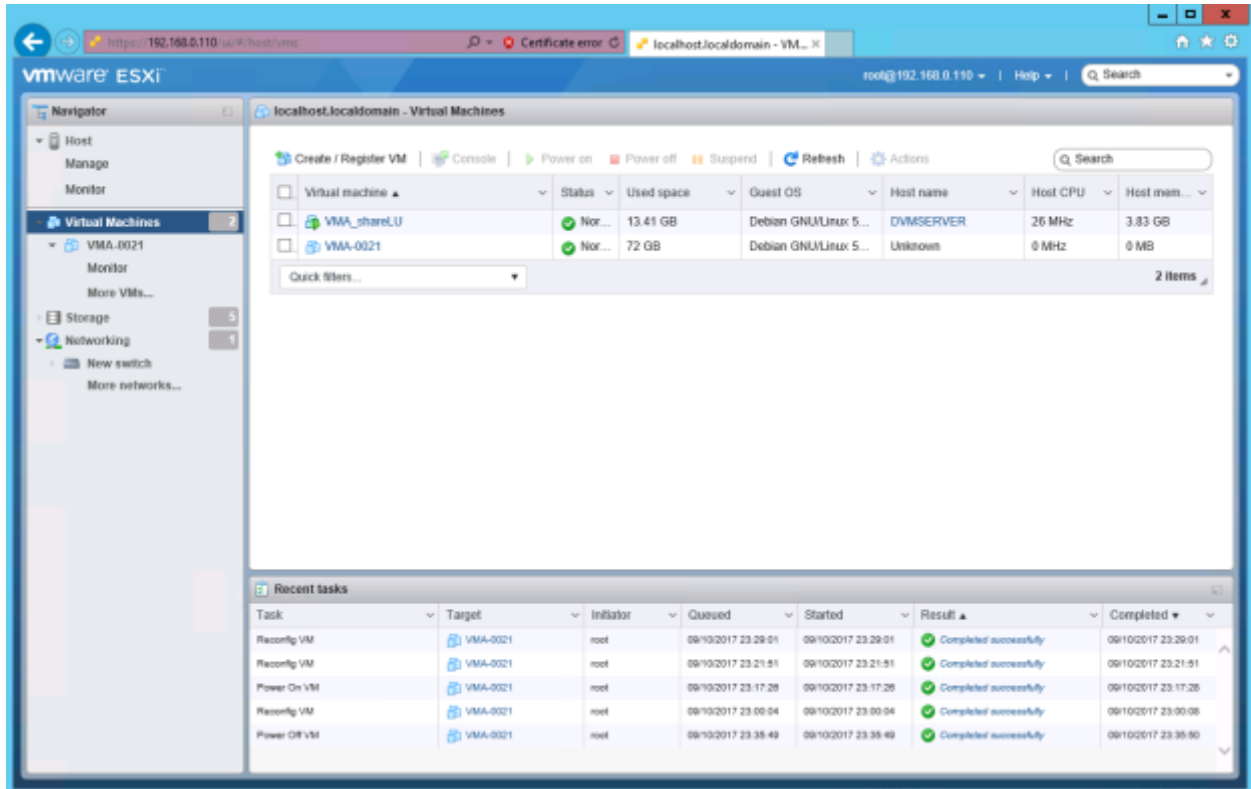
6. Installing a vMA (VMware ESXi version 6.5 and Later)

This chapter explains the procedure for installing a vMA that uses an OVF template.

6.1. Deploying an OVF template

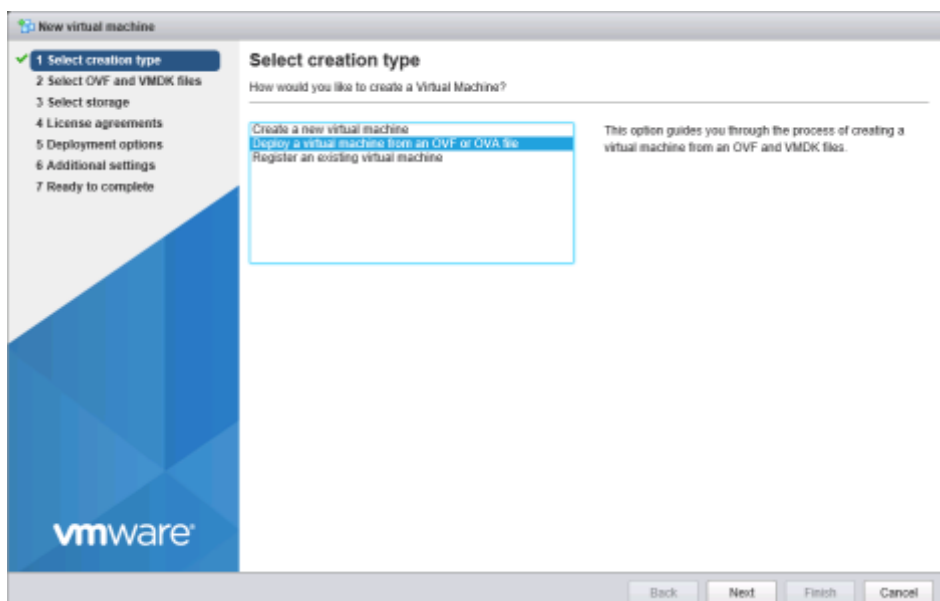
1) Deploying an OVF template

Select a virtual machine from the navigator. Click **Create / Register VM**.



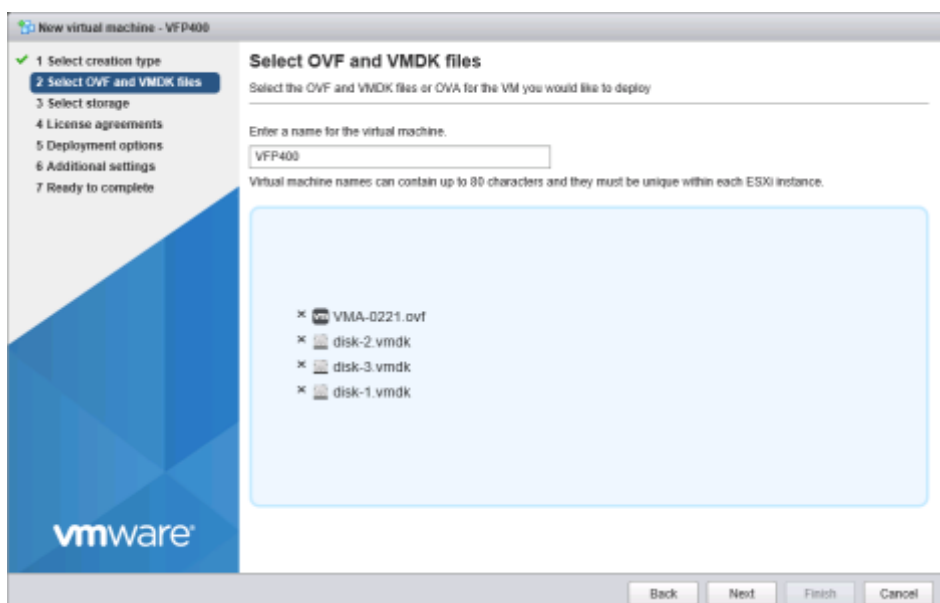
2) A window such as the following will be displayed.

Select **Deploy a virtual machine from an OVF or OVA file**, and then click **Next**.



3) A window such as the following will be displayed. Specify the name of the virtual machine, and then select

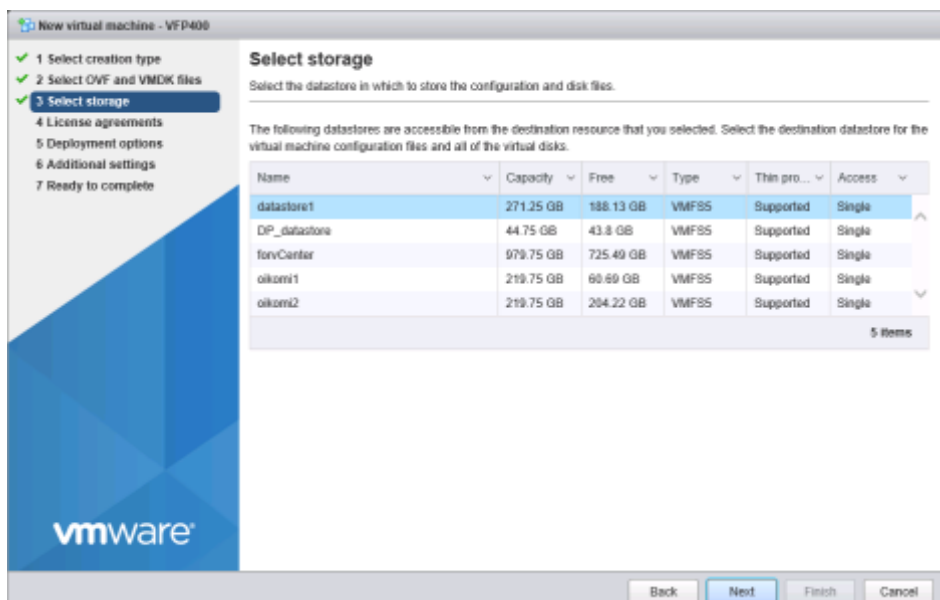
the OVF file and VMDK files to import. In the following example, the virtual machine name is VFP400, and the exported files vMA-0021.ovf, disk-1.vmdk, disk-2.vmdk, and disk-0.vmdk are selected.



Click **Next**.

4) A window such as the following will be displayed.

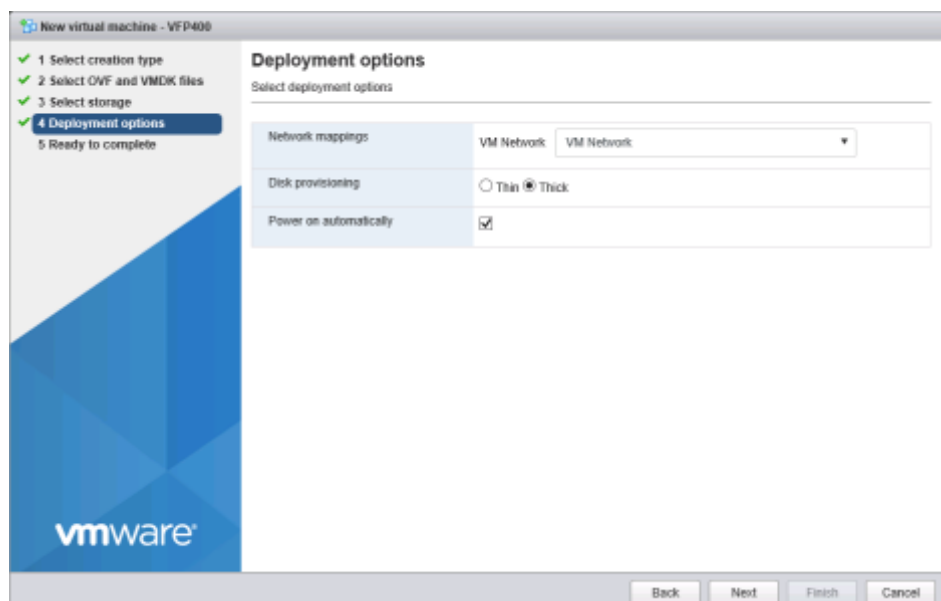
Select the datastore for the virtual machine. In the following example, datastore1 is selected.



Click **Next**.

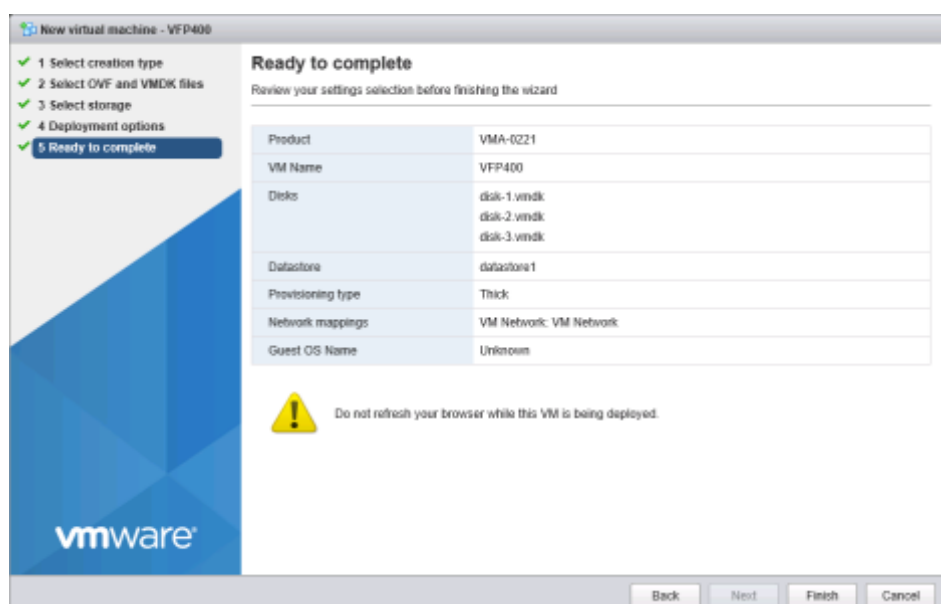
5) A window such as the following will be displayed.

Select **Thick** for disk provisioning.



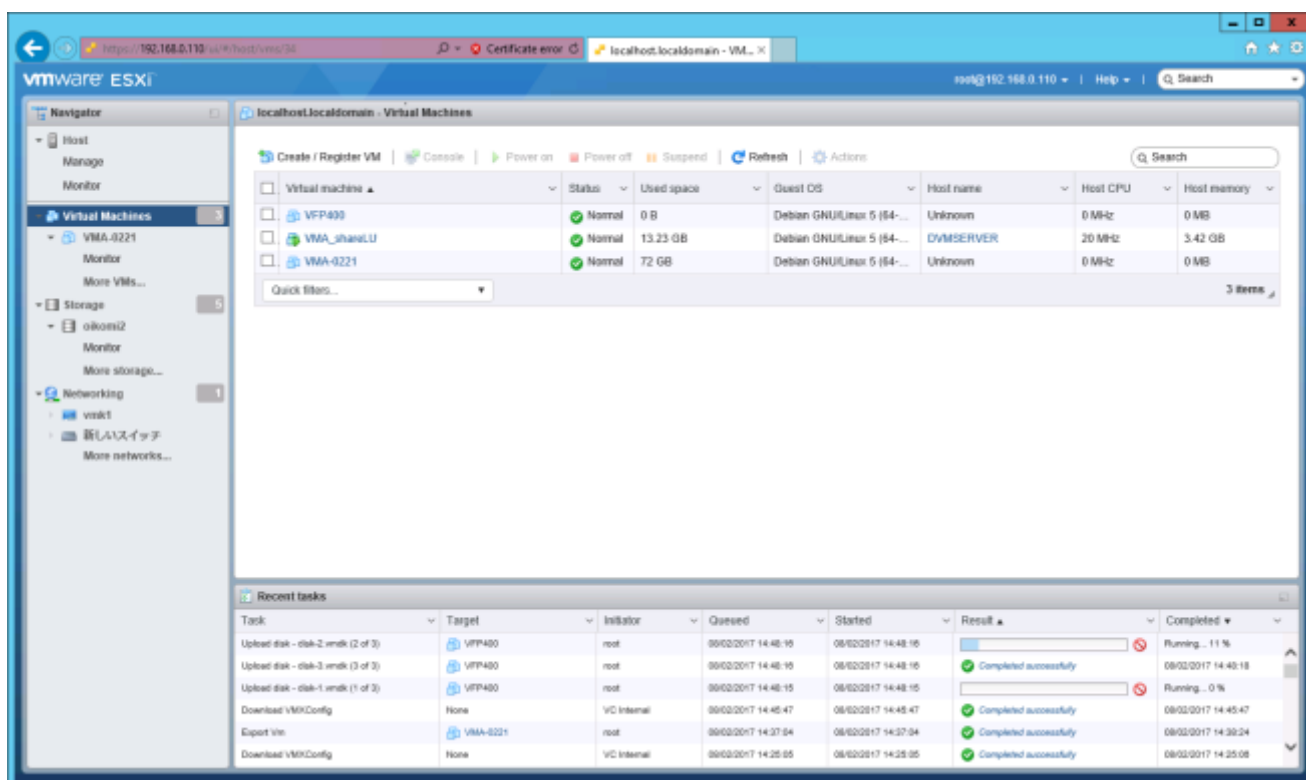
Click **Next**.

6) A window such as the following will be displayed.



Click **Finish**.

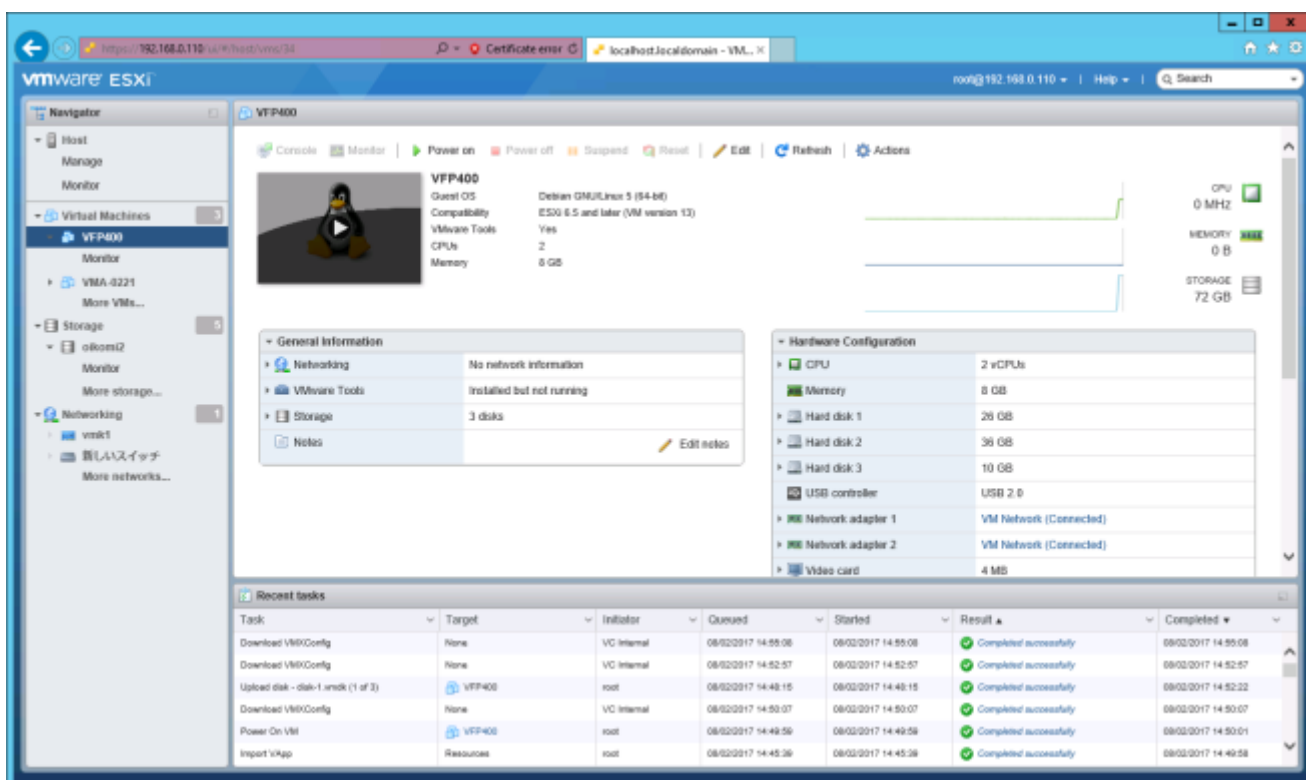
7) The deployment starts, as shown in the following example.



8) When the deployment of the OVF template is finished, a window such as the following will be displayed.

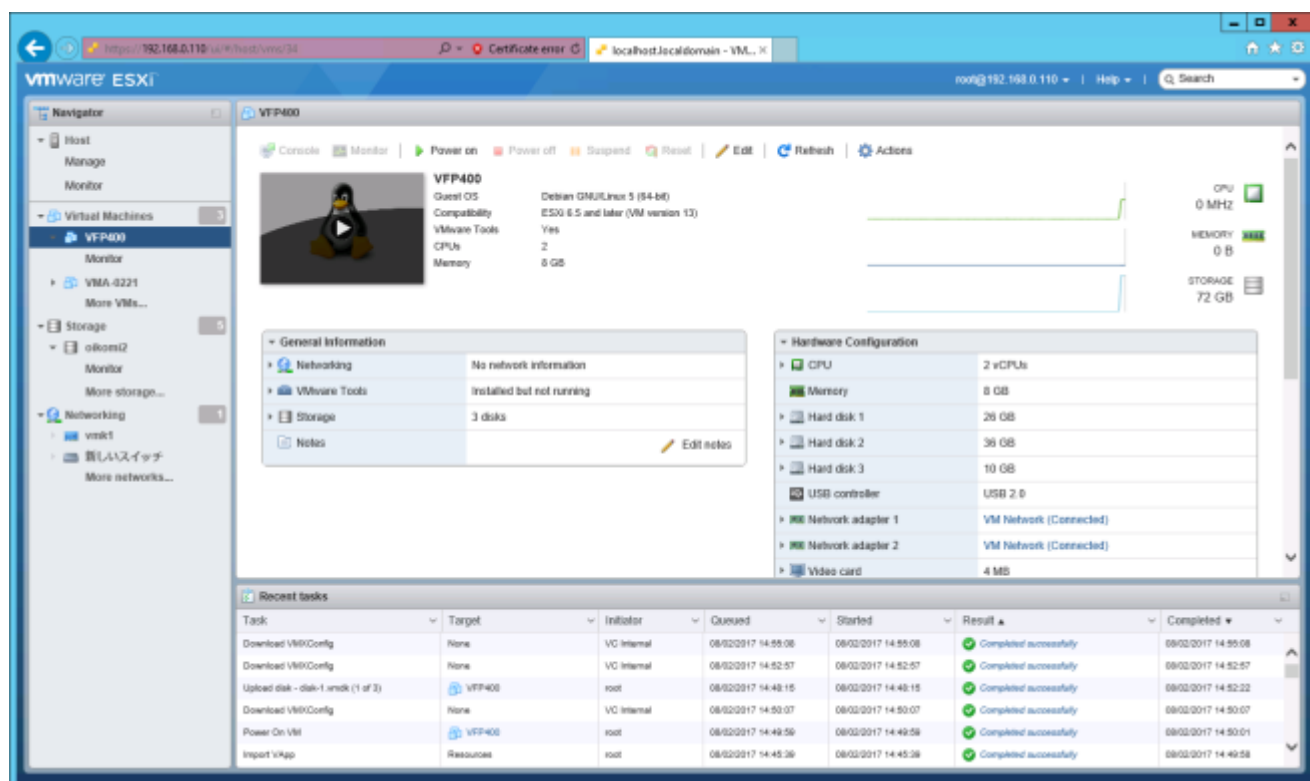
The vMA installation is finished.

In this window, click **Close**.



9) Check the virtual machine.

In the navigator, select **Virtual Machines**, and then confirm that the virtual machine was created.



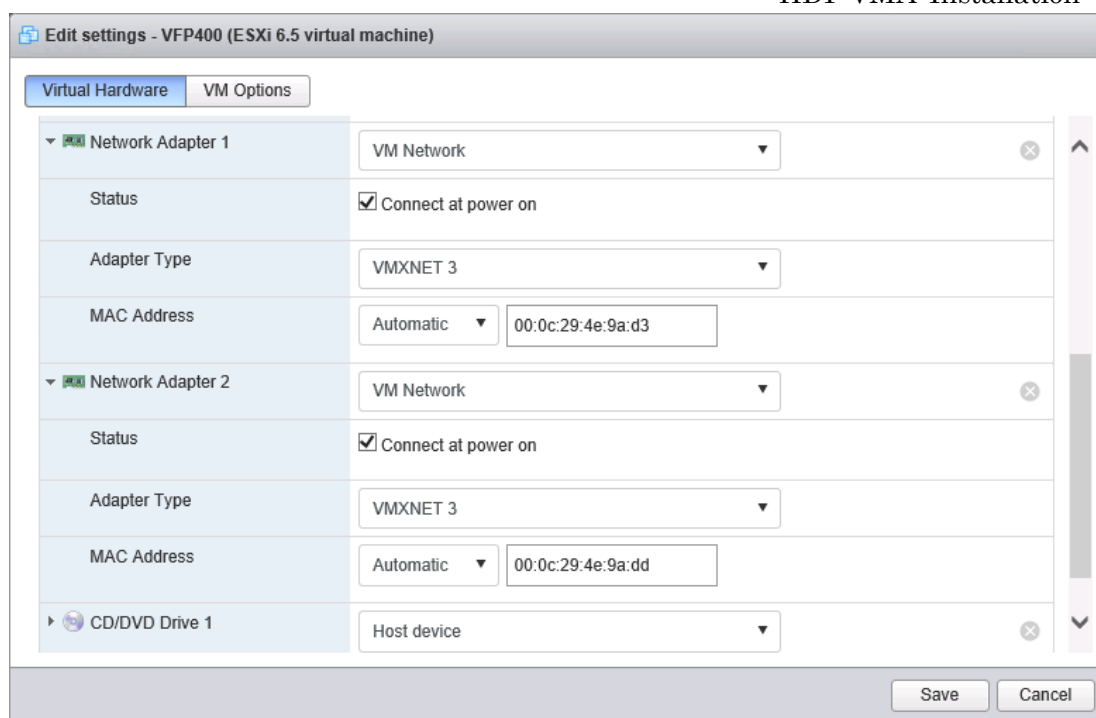
10) Powering off the virtual machine

The virtual machine must be powered off before the procedures explained in and after 6.2 are performed. To do this, select the desired virtual machine from **Virtual Machines** in the navigator, and then click **Actions, Power**, and then **Power off**. Confirm that the virtual machine is powered off before performing the procedures in and after 6.2.

6.2. Configuring the network

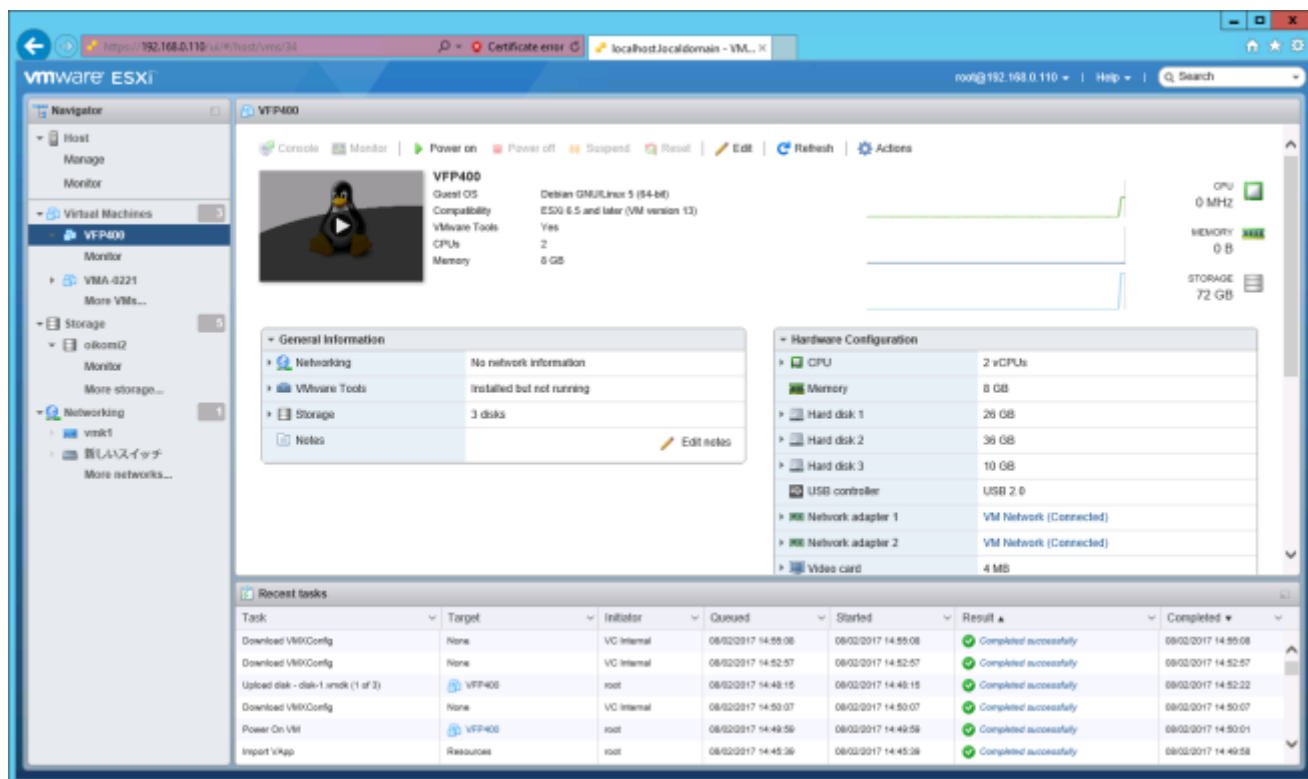
There are two network adapters for the vMA virtual machine: one for users and one for maintenance. Confirm that the adapter for users is connected to the appropriate network. The adapter for maintenance is used to connect the virtual machine directly to the maintenance PC. The following screenshot shows an example configuration of the network adapters.

- 1) Select the network adapters, and then click **Actions** and then **Edit settings**.
- 2) Select **Network Adapter 1**, which is the adapter for users. Confirm that the adapter shown to the right of **Network Adapter 1**, which is **VM Network**, is properly connected to the user network.
If the setting is incorrect, correct the network adapter setting so that a connection to the user network will be established.
- 3) Select **Network Adapter 2**, which is the adapter for maintenance. Similar to step 2) above, confirm that the adapter is configured to be connected to the maintenance network.

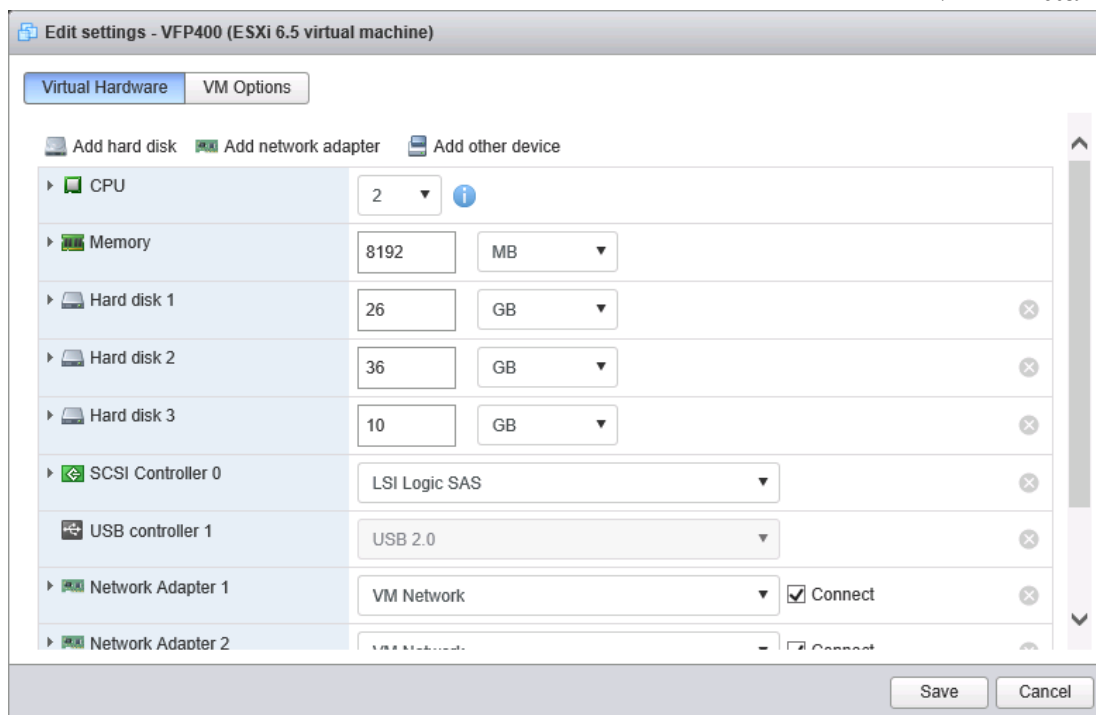


6.3. Adding a serial port

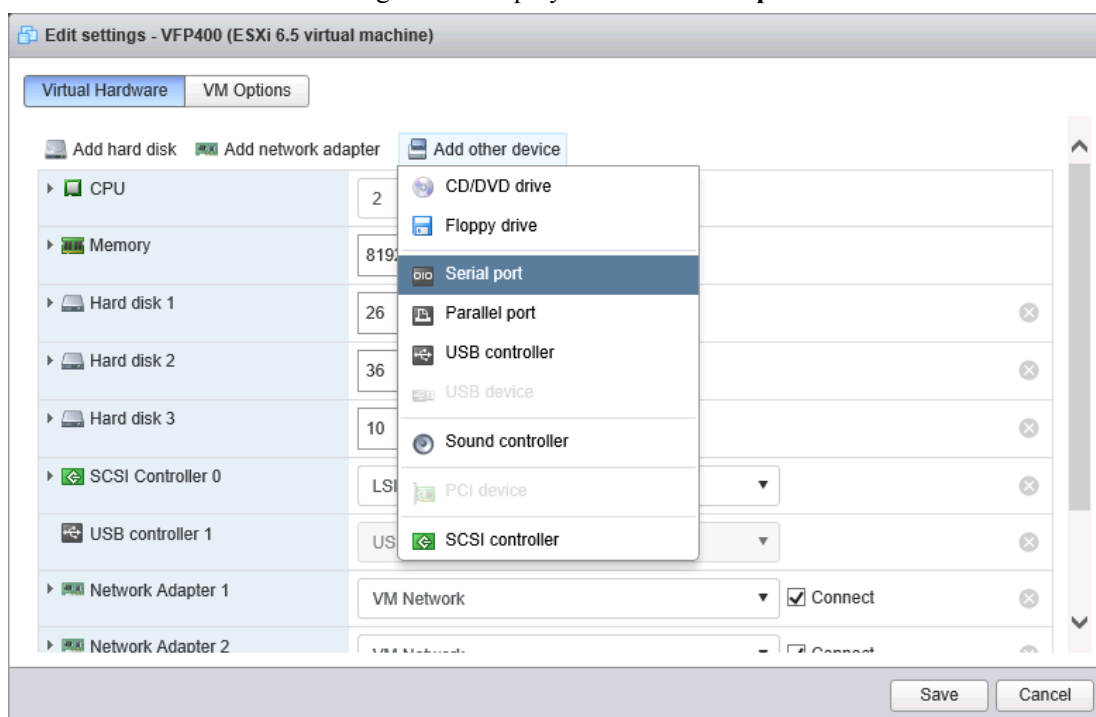
- 1) In the navigator, select the desired virtual machine from **Virtual Machines**. In the pane on the right, click **Actions** and then **Edit settings**.



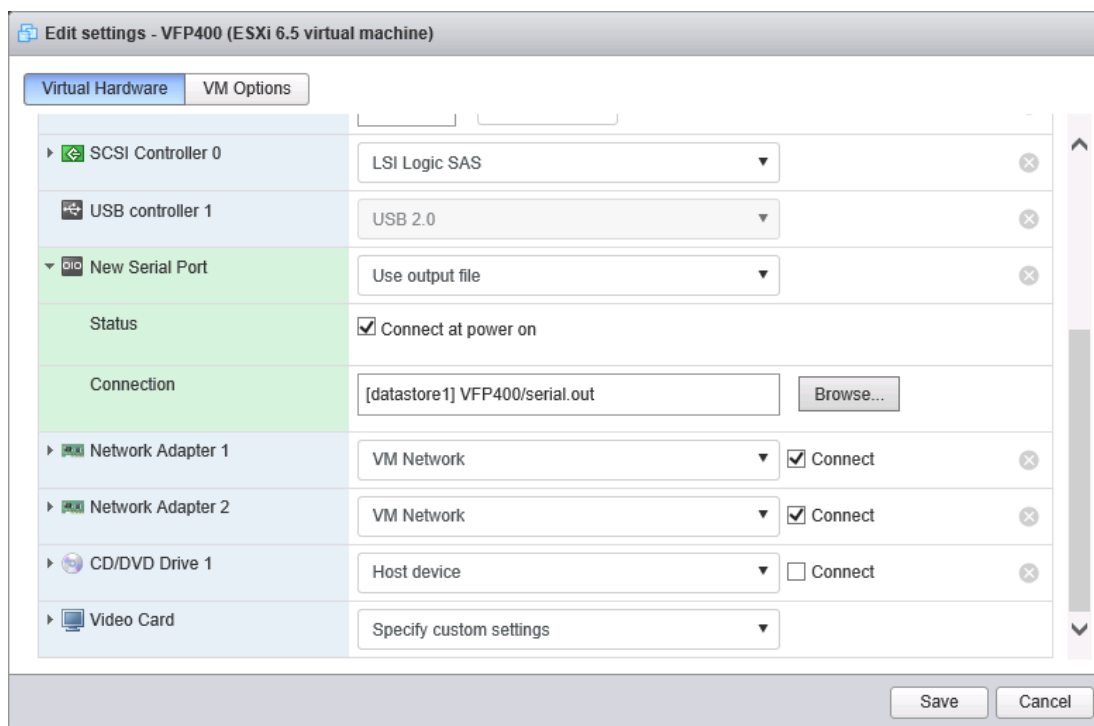
- 2) A window such as the following will be displayed. Click **Add other device**.



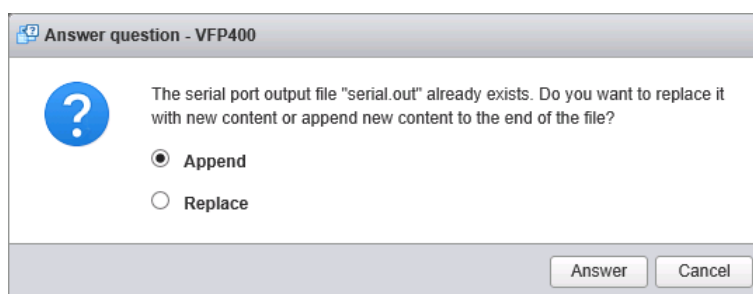
- 3) A window such as the following will be displayed. Select **Serial port**.



- 4) A window such as the following will be displayed. Select **Use output file**. In **Connection**, select the output destination. Specify the datastore containing the guest OS. In the example, **datastore1** is selected. After you finish entering the information, click **Save**.

**Notes:**

- You can add a serial port only when the virtual machine is powered off.
- After you add a serial port and power on the virtual machine, the following message might be displayed. If this message is displayed, select **Append**, and then click **Answer**.

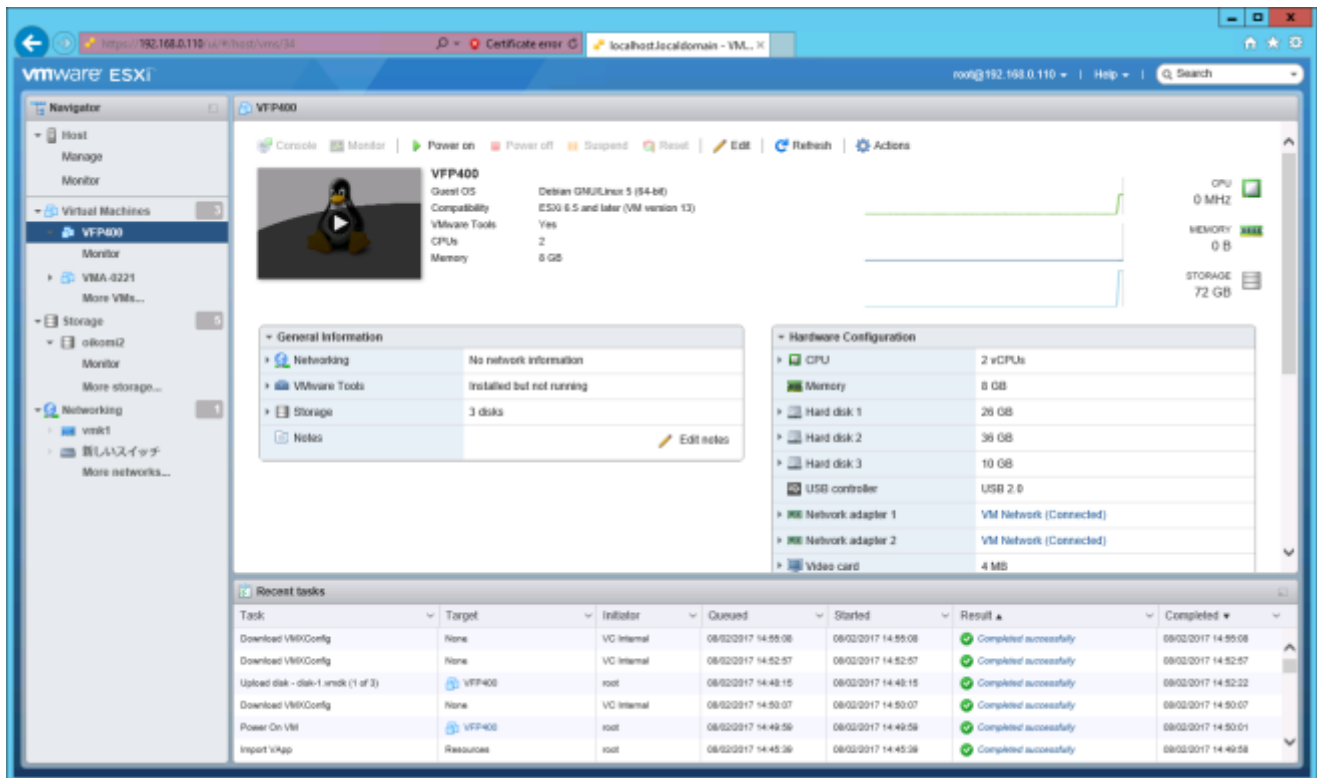


- The size of the output file might be large.

6.4. Synchronizing the guest machine's time

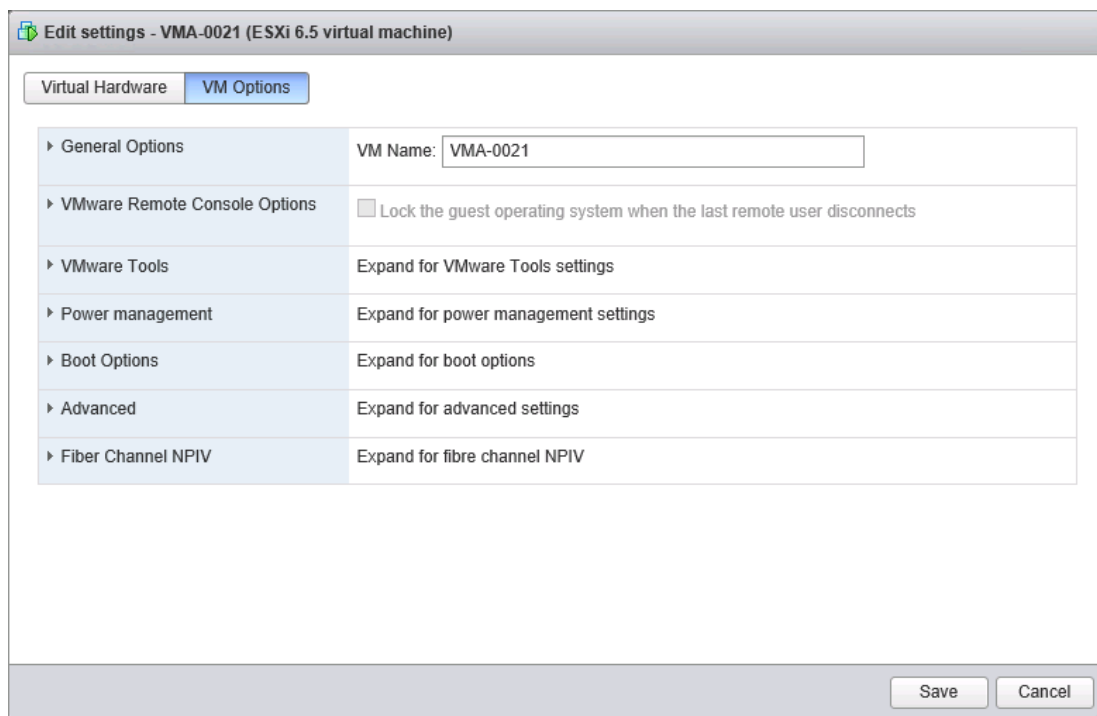
To synchronize the guest machine's time with the host machine's time, perform the following procedure.

- 1) In the navigator, select the desired virtual machine from **Virtual Machines**.



2) Select **Actions** and then **Edit settings**.

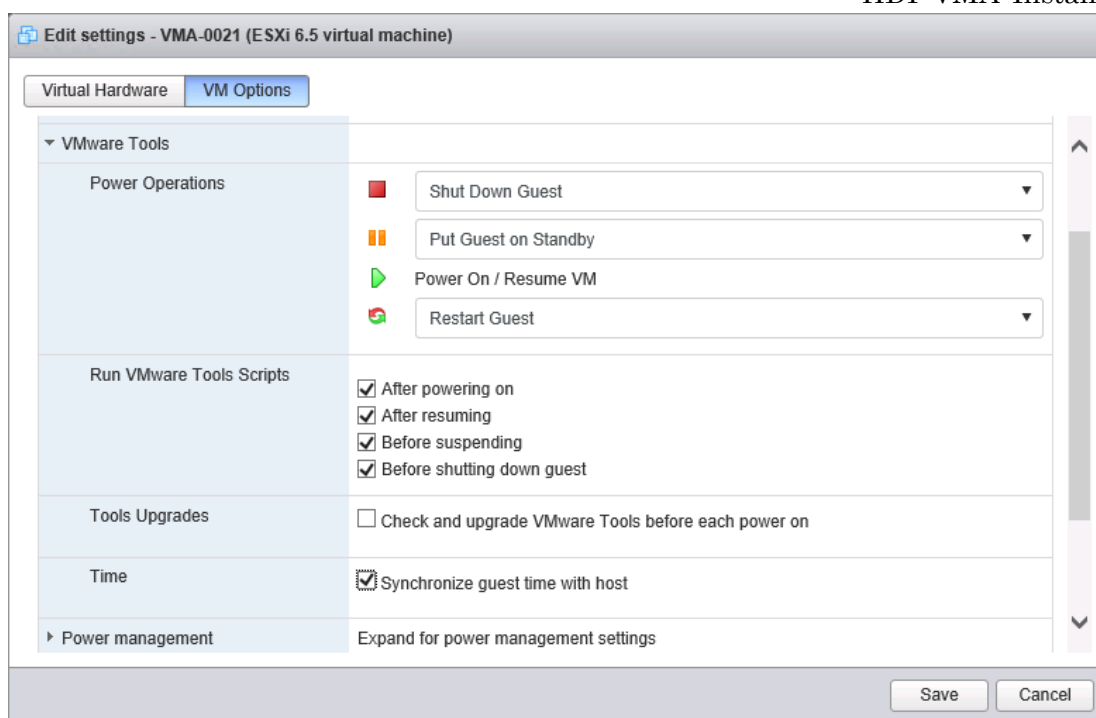
Click **VM Options**.



3) A window such as the following will be displayed.

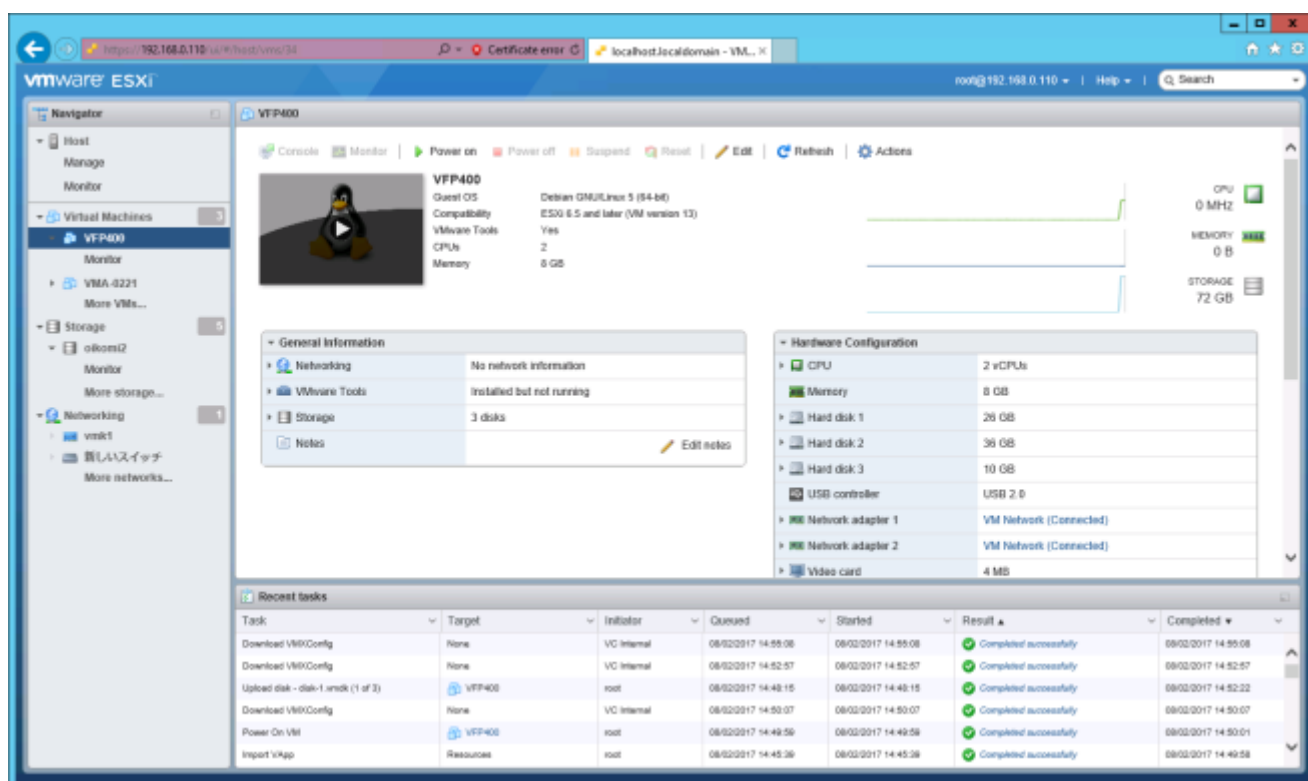
Select **VMware Tools**.

In **Time**, select **Synchronize guest time with host**, and then click **Save**.



6.5. Powering on the virtual machine

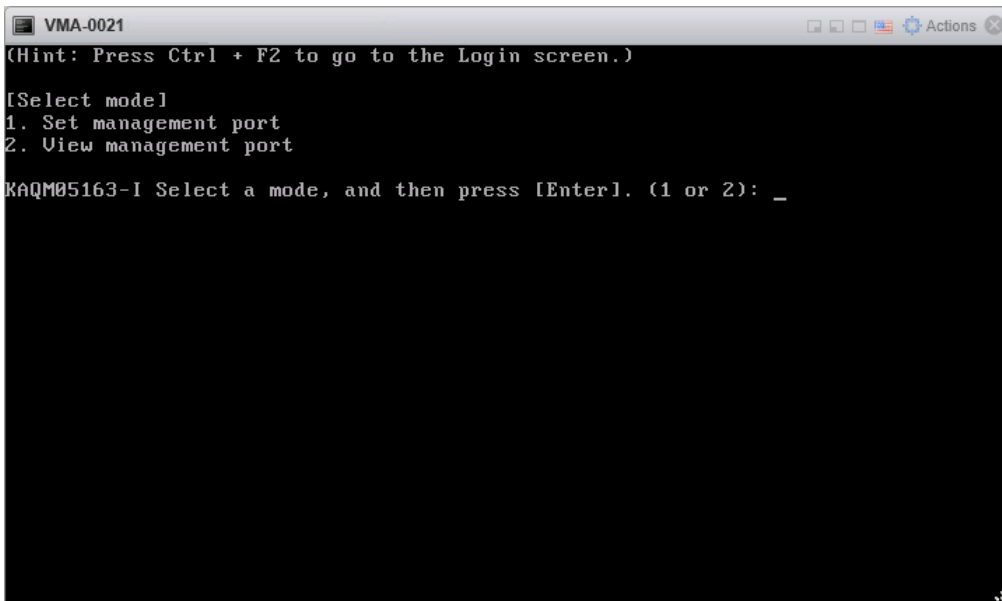
To power on the virtual machine, select **Actions**, **Power**, and then **Power on**.



6.6. Setting the management IP address

- 1) A window such as the following will be displayed.

To set a management port, type **1**, and then press **Enter**.

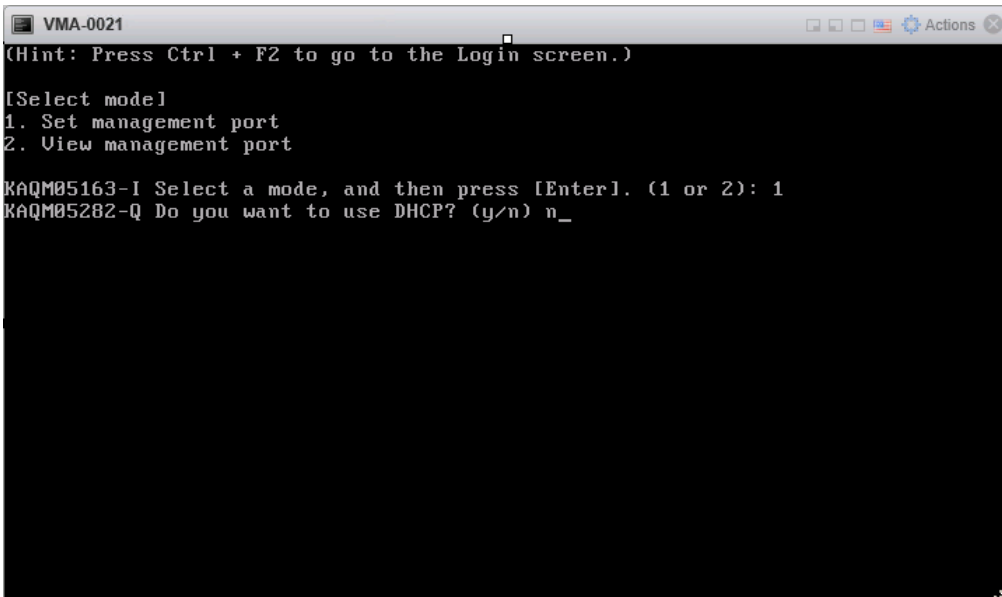


```
VMA-0021
(Hint: Press Ctrl + F2 to go to the Login screen.)

[Select mode]
1. Set management port
2. View management port

KAQM05163-I Select a mode, and then press [Enter]. (1 or 2): _
```

- 2) Type **n**, and then press **Enter**.



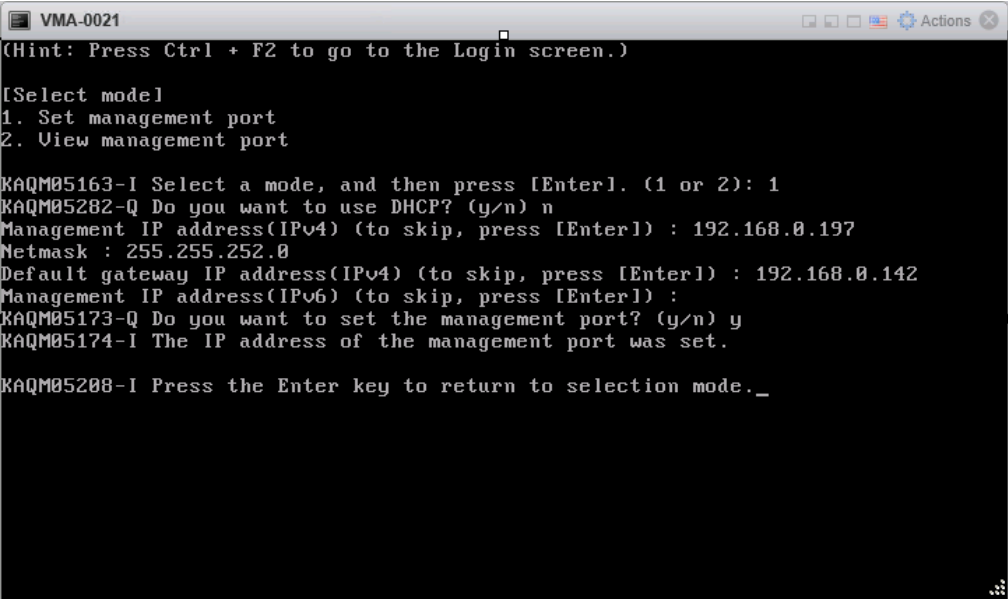
```
VMA-0021
(Hint: Press Ctrl + F2 to go to the Login screen.)

[Select mode]
1. Set management port
2. View management port

KAQM05163-I Select a mode, and then press [Enter]. (1 or 2): 1
KAQM05282-Q Do you want to use DHCP? (y/n) n_
```

- 3) Follow the instructions from the network configuration wizard and enter the required information.

After the network configuration information is entered, type **y**, and then press **Enter**.



```

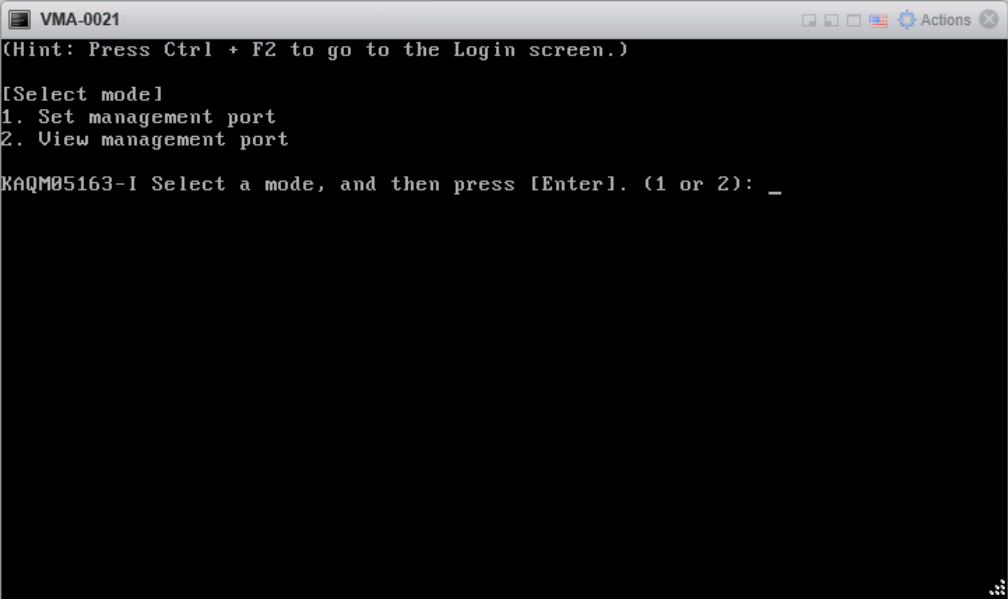
VMA-0021
(Hint: Press Ctrl + F2 to go to the Login screen.)

[Select mode]
1. Set management port
2. View management port

KAQM05163-I Select a mode, and then press [Enter]. (1 or 2): 1
KAQM05282-Q Do you want to use DHCP? (y/n) n
Management IP address(IPv4) (to skip, press [Enter]) : 192.168.0.197
Netmask : 255.255.252.0
Default gateway IP address(IPv4) (to skip, press [Enter]) : 192.168.0.142
Management IP address(IPv6) (to skip, press [Enter]) :
KAQM05173-Q Do you want to set the management port? (y/n) y
KAQM05174-I The IP address of the management port was set.
KAQM05208-I Press the Enter key to return to selection mode._

```

- 4) When the configuration finishes, a window such as the following will be displayed.



```

VMA-0021
(Hint: Press Ctrl + F2 to go to the Login screen.)

[Select mode]
1. Set management port
2. View management port

KAQM05163-I Select a mode, and then press [Enter]. (1 or 2): _

```


7. Trouble shooting

See the accompanying sheet.

Check and solve the host problem before dealing with troubles on the guest.

8. Create an iso image for update.

This chapter explains how to minimize the size of iso image which is for distribution.

The iso image for updating will be created from installation media of HDI.

1) Login to your UNIX (Linux) PC.

2) Switch to the root (superuser) account.

```
$ su -
```

```
$ su -
```

3) Insert the installation media into the UNIX (Linux) PC, and mount it.

```
# mount -t iso9660 -r device directory1
```

```
# mount -t iso9660 -r /dev/hdc /media/cdrom0
```

4) Make temporary directory (ex. HDI0321_OVF_iso) for creating iso image.

```
# mkdir directory2
```

```
# mkdir HDI0321_OVF_iso
```

5) Copy all files and directories in the installation media to temporary directory.

```
# cp -a directory1/* direcory2/
```

```
# cp -a /media/cdrom0/* HDI0321_OVF_iso/.
```

6) Confirm that data is copied.

```
# ls -lh directory2
```

```
# ls -lh HDI0321_OVF_iso/
total 998M
dr-xr-sr-x  3 root root   17 2009-10-15 11:34 etc/
dr-xr-sr-x  2 root root   30 2011-10-20 16:56 HSPA/
-r--r--r--  1 root root 998M 2012-04-13 08:57 install_files.tar.gz
dr-xr-sr-x  2 root root  4.0K 2012-04-12 21:49 isolinux/
dr-xr-sr-x  2 root root  4.0K 2012-04-12 21:49 MP/
dr-xr-sr-x  2 root root   37 2012-04-12 21:49 PuTTY/
dr-xr-sr-x  3 root root   16 2012-04-12 21:49 system/
dr-xr-sr-x  6 root root   69 2012-04-12 21:49 tool/
-r--r--r--  1 root root   26 2012-04-13 08:53 version.txt
-r--r--r--  1 root root  354 2012-04-13 08:51 version.xml
```

7) Unmount the installation media.

```
# umount directory1
```

```
# umount /media/cdrom0
```

8) Remove the install_files.tar.gz file in temporary directory.

```
# rm directory2/install_files.tar.gz
```

```
# rm HDI0321_OVF_iso/install_files.tar.gz
```

9) Confirm that install_files.tar.gz is deleted.

```
# ls -lh directory2
```

```
# ls -lh HDI0321_OVF_iso/
total 16K
dr-xr-sr-x  3 root root   17 2009-10-15 11:34 etc/
dr-xr-sr-x  2 root root   30 2011-10-20 16:56 HSPA/
dr-xr-sr-x  2 root root  4.0K 2012-04-12 21:49 isolinux/
dr-xr-sr-x  2 root root  4.0K 2012-04-12 21:49 MP/
dr-xr-sr-x  2 root root   37 2012-04-12 21:49 PuTTY/
dr-xr-sr-x  3 root root   16 2012-04-12 21:49 system/
dr-xr-sr-x  6 root root   69 2012-04-12 21:49 tool/
-r--r--r--  1 root root   26 2012-04-13 08:53 version.txt
-r--r--r--  1 root root  354 2012-04-13 08:51 version.xml
```

10) Move to temporary directory.

```
# cd directory2
```

```
# cd HDI0321_OVF_iso/
```

11) Create an ISO image.

```
# mkisofs -v -r -J -o ./isofilename -b isolinux/isolinux.bin -c isolinux/boot.cat -no-emul-boot -boot-load-size 4  
-boot-info-table .
```

```
# mkisofs -v -r -J -o ./STAR_03-02-01-00_SI0321K010_HDI_20120403_1015_OVF.iso -b isolinux/isolinux.bin  
-c isolinux/boot.cat -no-emul-boot -boot-load-size 4 -boot-info-table .  
mkisofs 2.01-unofficial-iconv (x86_64-unknown-linux-gnu)  
Scanning .  
Scanning ./HSPA  
. . .  
98.99% done, estimate finish Mon Apr 9 12:04:35 2012  
99.96% done, estimate finish Mon Apr 9 12:04:36 2012  
Total translation table size: 2048  
Total rockridge attributes bytes: 8468  
Total directory bytes: 34816  
Path table size(bytes): 198  
Done with: The File(s)                               Block(s)      514983  
Writing:   Ending Padbloc                               Start Block 515047  
Done with: Ending Padbloc                               Block(s)      150  
Max brk space used 0  
515197 extents written (1006 MB)
```

12) Move up one directory.

```
# cd ..
```

```
# cd ..
```

13) Confirm that the size of the created iso image is about 1GB.

```
# ls -lah isofilename
```

```
# ls -lah STAR_03-02-01-00_SI0321K010_HDI_20120403_1015_OVF.iso  
-rw-r--r-- 1 root dump 1007M Apr 9 11:20 STAR_03-02-01-00_SI0321K010_HDI_20120403_1015_OVF.iso
```

9. Update Installation

If you are using VMware ESXi version 6.0 or earlier, see 3.9, 3.10, and 3.11 and perform an update installation. In **Error! Reference source not found.**-9), enter **2**, select **2. Update install**, and then press **Enter**.

If you are using VMware ESXi version 6.5 or later, see 5.9, 5.10, and 5.11 and perform an update installation. In 5.10-8), enter **2**, select **2. Update install**, and then press **Enter**.

<NOTE>

- 1) It is necessary to terminate the node before executing installation. Check the virtual machine is turned off.
- 2) If the version confirmed in the Installation Confirmation Window as in Figure 3.10-11) differs from the version to be installed, press the [Ctrl] + [C] keys and abort the installation. “KAQG61006-Q Are you sure you want to cancel the installation? (y/n):” is displayed. Enter “y”, and then press the [Enter] key. KAQG61001-I is displayed. Remove the installation media, and then press the [Enter] key. Shutdown of the node OS is executed. Prepare the installation media of the correct version, and execute step 3.9, 3.10 and 3.12 again.

10. Maintenance Mode

If you are using VMware ESXi version 6.0 or earlier, see section 3.9, 3.10, 3.11 and HDI maintenance guide ([Set Up] 6.3 Maintenance Mode).

In section 3.10 step 9), enter “3” to select [3. Maintenance], and press [Enter].

If you are using VMware ESXi version 6.5 or later, see section 5.9, 5.10, and 5.11 and HDI maintenance guide ([Set Up] 6.3 Maintenance Mode).

In section 5.10 step 9), enter “3” to select [3. Maintenance], and press [Enter].

11. Appendix

11.1. Setting the I/O scheduler type

The I/O scheduler for VMA is set to cfq (Completely Fair Queuing) by default. If the user performs a large number of read access or write access attempts at the same time, cfq arranges the schedule and gives priority to the read processing, and makes the write processing wait. You can improve the performance by changing the I/O scheduler type for VMA from cfq to noop (No Optimization) when write access attempts are slow.

11.1.1 Changing the I/O scheduler type (sysioscheductl)

You can change the I/O scheduler type by logging into VMA and executing a command. This section describes the command for changing the I/O scheduler type. Execute the command by performing the procedure described in 11.1.2 Procedure for changing the I/O scheduler type.

Synopsis

```
sysioscheductl
sysioscheductl -s {cfq | noop}
sysioscheductl -h
```

Description

This command changes the I/O scheduler type. This command can also be used to check the current settings.

To apply the changed settings, you must restart the OS.

Option and arguments

```
-s {cfq | noop}
```

Specifies the type of the I/O scheduler to be set.

cfq

Specifies cfq (Completely Fair Queuing) for the I/O scheduler type. The default is cfq.

noop

Specifies noop (No Optimization) for the I/O scheduler type

Note that if you omit the option, the current setting is displayed.

Displayed information

The following table shows the information displayed when this command is executed.

Item	Description
Configuration	<p>The I/O scheduler type specified by the system administrator is displayed.</p> <p>cfq Displayed when cfq (Completely Fair Queuing) is set</p> <p>noop Displayed when noop (No Optimization) is set</p>

Active	<p>The I/O scheduler type applied to the system is displayed.</p> <p>cfq</p> <p>Displayed when cfq (Completely Fair Queuing) is set</p> <p>noop</p> <p>Displayed when noop (No Optimization) is set</p>
--------	---

Return values

Return value	Description
0	Normal termination
1	The command is specified in an incorrect format. Review and, if necessary, correct the format, and then retry the operation.
3	The system might be busy, or a temporary error might have occurred. Wait a while, and then retry the operation. If this error occurs repeatedly, contact the maintenance personnel.
99	This error cannot be handled by the system administrator. Contact the maintenance personnel.

Example

When changing the I/O scheduler type to noop:

```
$ sudo sysioschedulectl -s noop
```

11.1.2 Procedure for changing the I/O scheduler type

The following describes how to change the I/O scheduler type. Perform the procedure after logging into VMA. Note that the example script in the procedure is an example of changing the I/O scheduler type from cfq to noop.

1. Execute the sysioschedulectl command with the -s option specified, and specify noop or cfq for the I/O scheduler type.

```
$ sudo sysioschedulectl -s noop
KAQG41012-I The I/O scheduler setting was changed to noop.
KAQG41013-I Restart the OS to apply the changed settings.
```

2. Execute the sysioschedulectl command to confirm that the I/O scheduler type displayed in Configuration matches the type specified in step 1.

```
$ sudo sysioschedulectl
Configuration : noop
Active       : cfq
KAQG41013-I Restart the OS to apply the changed settings.
```

3. Execute the nasreboot command, and then restart the OS.

```
$ sudo nasreboot
KAQM25414-Q Do you want to restart the OS? (y/n) y
```

4. After the OS is restarted, execute the sysioschedulectl command to confirm that the I/O scheduler type displayed in Active matches the type specified in step 1.

```
$ sudo sysioschedulectl
Configuration : noop
Active       : noop
```

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