VMware vSphere 6 Software Description

Before you read this document

This document is the software manual of VMware vSphere 6.

This document was translated from the corresponding Japanese document.

While the original document addresses PRIMEQUEST and PRIMERGY, this translated document addresses only PRIMEQUEST.

You will find the information provided in it to be necessary and useful when using VMware vSphere 6.

■Applicable software

This document applies to the following software:

- VMware vSphere 6

■Notation of components

The notation in this document uses the following abbreviations in the text.

●Notation of components

The following table lists the abbreviations for VMware vSphere 6.0 components in this document.

Component name	Form of notation in text
VMware ESXi	ESXi
VMware vCenter Server for Essentials	vCenter Server
VMware vCenter Server Foundation	
VMware vCenter Server Standard	
VMware vCenter Server Appliance	vCenter Server Appliance
VMware vSphere Big Data Extensions	Big Data Extensions
VMware vSphere Client	vSphere Client
VMware vSphere Auto Deploy	vSphere Auto Deploy
VMware vSphere Command-Line Interface	vSphere CLI
VMware vSphere Data Protection	Data Protection
VMware vSphere Distributed Power Management	vSphere DPM
VMware vSphere Distributed Resource Scheduler	vSphere DRS
VMware vSphere DirectPath I/O	DirectPath I/O
VMware vSphere ESXi Shell	ESXi Shell
VMware vSphere Fault Tolerance	vSphere FT
VMware vSphere High Availability	vSphere HA
VMware vSphere PowerCLI	vSphere PowerCLI
VMware vSphere Replication	vSphere Replication
VMware vSphere Storage DRS	Storage DRS
VMware vSphere Update Manager	Update Manager
VMware vSphere VMFS	VMFS
VMware vSphere vMotion	vMotion
VMware vSphere Web Client	Web Client
VMware vRealize Orchestrator	vRealize Orchestrator
VMware Integrated Openstack	Integrated Openstack

- The description of a component may be accompanied by the description of a component version.

  If so, the description applies only to the stated version.

● Use of "miscellaneous components" in the notation

The notation in this document uses "miscellaneous components" to describe a non-ESXi component.

● Use of "High Reliability Tool" in the notation

The notation in this document uses "High Reliability Tool," as shown in "Notation" in the following table, to describe a particular tool.

High reliability tool name	Role of tool	Notation
Raid management tool (ServerView RAID Manager)	Management of internal Disk	Raid management tool
Server administrative tool (ServerView ESXi CIM Provider)	Notification of server information	CIM Provider

●Use of "PRIMEQUEST" in the notation

"PRIMEQUEST" in this document is an abbreviation that refers collectively to all models in the PRIMEQUEST 2000 series.

■Warning in the text

This document uses the following warning.

IMPORTANT	*The descriptions after this warning concern situations requiring your careful attention. Be sure to read them carefully.*

■References

●Referenced URL

- VMware   Inc." VMware vSphere 6 Documentation"

VMware vSphere 6 Documentation includes information related to VMware vSphere installation, operation, maintenance, and other VMware products, published by VMware Inc.

https://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-6-pubs.html

- VMware.inc "Knowledge Base"

Knowledge Base includes information expertise and troubleshooting, published by VMware Inc.

http://kb.vmware.com/

●Update information and latest driver information

・PRIMEQUEST "Drivers & Downloads"

You can download drivers/BIOS/firmware used in a PRIMEQUEST environment.

http://support.ts.fujitsu.com/download/Index.asp

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Structure of this document

1. Introduction

This chapter helps you understand the entire picture of this document and helps you find technical
knowledges about VMware vSphere 6 provided by VMware, Inc., including release notes.

Reading this chapter helps you obtain exact knowledge for VMware vSphere 6.

2. Preparation for Installation

This chapter describes what you should do before installing VMware vSphere 6.

Please read this chapter before installing VMware vSphere6.

3. Installation

This chapter describes precautions for installation of VMware vSphere 6.

Please read this chapter before installing VMware vSphere6.

4. Upgrade

This chapter describes precautions for upgrade to VMware vSphere 6.

Please read this chapter before upgrade to VMware vSphere6.

5. Operation and Maintenance

This chapter describes precautions for operation and maintenance of systems with VMware vpShere6.

Please read this chapter before installation VMware vSphere6.

6. Restrictions

This chapter describes restrictions placed by Fujitsu for systems with VMware features.

Please read this chapter before design of systems with VMware vSphere 6.

- Index -

1. Introduction

VMware vSphere 6 is a package product designed to deliver efficient and flexible operation and management in a virtual environment.

It consists of components centered on ESXi6 and vCenter Server as the core.

This document provides information on the prerequisites to using VMware vSphere 6 on PRIMEQUEST servers, and describes methods and notes for installation of.

1.1　VMware vSphere 6 documents

You can find the documents published by VMware as shown below.

● **VMware document list** (**For details, refer to** http://pubs.vmware.com/vsphere-6/index.jsp**)**

For details, please refer to [ESXi and vCenter Server Documentation] in [vSphere 6 Documentation Center].

Documents	Outline
vSphere Installation and Setup	Explains methods to install and setup ESXi and vCenter Server.
vSphere Upgrade	Explains methods to upgrade VMware products such as ESXi and vCenter Server.
vCenter Server and Host Management	Explains methods to administer VMware VSphere 6.
vCenter Server Appliance Configuration	Explains methods to configure vCenter Server Appliance.
vSphere Virtual Machine Administration	Explains methods to create and setup virtual machines and to manage them.
vSphere Host Profile	Explains methods to manage Host Profile.
vSphere Network	Explains network setups for VMware vSphere 6 including standard virtual switch and distributed virtual switch.
vSphere Storage	Explains storage setups for VMware vSphere6 if Fiber Channel or iSCSI is used.
vSphere Security	Explains security functions for ESXi and vCenter Server.
vSphere Resource Management	Explains resource management for ESXi and vCenter Server.
vSphere Availability	Explains setups for vSphere HA and vSphere FT.
vSphere Monitoring and Performance	Explains methods to monitor virtual environment including performance.
vSphere Administration with the vSphere Client	Explains methods to manage ESXi and vCenter Server from the vSphere Client.
vSphere Troubleshooting	Explains trouble shooting issues and procedures to implement vCenter Server.

Other documents for vSphere 6 Documentation Center are listed here.

Documents	Outline
vSphere Replication Documentation	Explains installation, configuration, administration, and troubleshooting for vSphere Replication.
vSphere 6.0 Command-Line Documentation	Explains overview, setup, and command reference for vSphere CLI.
vSphere Update Manager 6.0 Documentation	Explains concept, setup, and tasks to administrate ESXi, VMs, Virtual Appliances, vSphere patches for vSphere Update Manager.
vRealize Orchestrator 6 Documentation	Explains concept, setup, and tasks to automate administrative operation for vRealize Orchestrator.

1.2　Referential Documents Classified by Purpose

Documents are classified by purpose below.

Table Referential Documents Classified by purpose (1/2)

Purpose	Documents provided by VMware
Design Consider implementing and designing the vSphere 6 environment	[VMware vSphere 6.0 Documentation Center] ・vSphere Installation and Setup ・vCenter Server and Host Management ・vCenter Server Appliance Configuration ・vSphere Virtual Machine Administration ・vSphere Host Profile ・vSphere Network ・vSphere Storage ・vSphere Security ・vSphere Resource Management ・vSphere Availability ・vSphere Monitoring and Performance ・vSphere Replication Documentation ・vSphere 6.0 Command-Line Documentation ・vSphere Update Manager 6.0 Documentation ・vRealize Orchestrator 6.0 Documentation
	[miscellaneous information] ・Release notes and new features for vSphere 6 https://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-6-pubs.html ・Configuration Maximums for vSphere 6 Explains maximum hardware configuration supported by vSphere 6. https://www.vmware.com/pdf/vsphere6/r60/vsphere-60-configuration-maximums.pdf ・VMware vSphere with Operations Management and VMware vSphere Licensing, Pricing and Packaging (white paper) http://www.vmware.com/files/pdf/products/vsphere/VMware-vSphere-Pricing-Whitepaper.pdf ・VMware Product Interoperability Matrixes https://www.vmware.com/resources/compatibility/sim/interop_matrix.php

Table Referential Documents Classified by purpose (2/2)

Purpose	Documents provided by Fujitsu	Documents Provided by VMware
Build Build the vSphere 6 environment	[PRIMEQUEST (VMware)]	[VMware vSphere 6.0 Documentation Center]
	・vSphere 6 Software Description(this document)	・vSphere Installation and Setup ・vCenter Server and Host Management ・vCenter Server Appliance Configuration ・vSphere Virtual Machine Administration ・vSphere Host Profile ・vSphere Network ・vSphere Storage ・vSphere Security ・vSphere Resource Management ・vSphere Availability ・vSphere Monitoring and Performance ・vSphere Replication Documentation ・vSphere 6.0 Command-Line Documentation ・vSphere Update Manager 6.0 Documentation ・vRealize Orchestrator 6.0 Documentation
		[miscellaneous information]
		・Download VMware vSphere Download various VMware components https://my.vmware.com/web/vmware/info/slug/datacenter_cloud_infrastructure/vmware_vsphere/6_0
Upgrade Upgrading to vSphere 6 environment	[PRIMEQUEST (VMware)]	[VMware vSphere 6.0 Documentation Center]
	・vSphere 6 Software Description(this document)	・vSphere Upgrade ・vSphere Replication Documentation ・vSphere 6.0 Command-Line Documentation ・vSphere Update Manager 6.0 Documentation ・vRealize Orchestrator 6 Documentation
		[miscellaneous information]
		・VMware Product Interoperability Matrixes https://www.vmware.com/resources/compatibility/sim/interop_matrix.php ・Download VMware vSphere Download various VMware components https://my.vmware.com/web/vmware/info/slug/datacenter_cloud_infrastructure/vmware_vsphere/6_0
Operation VM and Resource Administration	[PRIMEQUEST (VMware)]	[VMware vSphere 6.0 Documentation Center]
	・vSphere 6 Software Description(this document)	・vSphere Virtual Machine Administration ・vSphere Resource Management ・vSphere Monitoring and Performance ・vSphere Troubleshooting
Maintenance Applying patches etc.	[PRIMEQUEST (VMware)]	[VMware vSphere 6.0 Documentation Center]
	・vSphere 6 Software Description(this document)	・vSphere 6.0 Command-Line Documentation ・vSphere Update Manager 6.0 Documentation
		[miscellaneous information]
		・Download Patches https://www.vmware.com/patchmgr/findPatchByReleaseName.portalhttps://www.vmware.com/patchmgr/findPatch.portal

2. Preparation for Installation

This chapter explains preparations you should do to install vSphere 6.

2.1 Installation Media

Please obtain installation media for VMware vSphere 6 as explained below.

https://my.vmware.com/web/vmware/downloads

IMPORTANT

■ About the ESXi installation media

In order to use ESXi with PRIMEQUEST, it is required to use the Fujitsu exclusive installation image, which includes patches and drivers needed to run ESXi on PRIMEQUEST.

Please refer to the below URL in order to obtain the ESXi 6.0 installation image (iso file). Write the image into the media to create the installation media.

Select the installation image version of ESXi 6.0 you want to use.

● ESXi 6.0 Update 1
Download the [Fujitsu Custom Image for VMware ESXi 6.0U1a Install CD] from the URL bellow.
https://my.vmware.com/group/vmware/details?downloadGroup=OEM-ESXI6U1A-FUJITSU&productId=491

2.2 High Reliability Tool

Shown below are High reliability tools supported in ESXi 6.0 contained in ServerView Suite DVD bundled with PRIMEQUEST.

・ CIM Provider
・ RAID Management tool

You can also download the DVD image from below.

http://support.ts.fujitsu.com/Download/

3. Installation

This section explains restrictions and precautions to install and setup VMware vSphere 6.

3.1 Installation and Setup of ESXi 6.0

This section explains restrictions and precautions to install and setup ESXi 6.0.

3.1.1 Restrictions and Precautions Prior to Installation

This section explains restrictions and precautions prior to installation of ESXi 6.0.

■ **Application of BIOS/Firmware**

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Apply the newest version of BIOS/Firmware to PRIMEQUEST.

Proceed with greatest caution when changing the BIOS/Firmware configuration.

● **Details**

Access the below website and check find PRIMEQUEST firmware for relevant models If you find the update of firmware, download and apply the corresponding firmware.

http://support.ts.fujitsu.com/Download/

Please take steps for the firmware update according to Fujitsu manuals to avoid any risk that ESXi may not work properly. Please use the factory default settings for configuration parameters not described in the Fujitsu manual or document.

■ **Using Legacy mode in PCI Segment Mode**

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

When PCI Address Mode is set to PCI Segment Mode, Legacy Mode is unsupported.

● **Details**

When PCI Address Mode is set to PCI Segment Mode, use UEFI Mode.

■ **Date and time configuration in ESXi 6.0**

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

This section explains the date and time configuration in ESXi 6.0

● **Details**

ESXi 6.0 presumes the time zone is set to UTC. You can set the date and time of ESXi 6.0 by following the procedure below.

    (1) Boot ESXi, and then establish connection using the vSphere Client.

    (2) In the vSphere Client, select target ESXi, then select the [Configuration] tab.

    (3) Select [Time Configuration] from the [Software] pane.
        From here, you are able to see the currently configured date and time of ESXi.

    (4) If the date and time of ESXi needs to be changed, select [Properties…].
        You are able to configure date and time from the newly displayed Time Configuration window.
        The date and time configured from here does not have to be based on UTC.

■ SAN Boot

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

In order to use SAN Boot, a Fibre Channel expansion card that supports SAN Boot is required.

● **Details**

In order to use SAN Boot, it is required to choose A Fibre Channel expansion card from the list below.

SAN Boot supported Models	Required Fibre Channel expansion card
2800E2, 2400E2, 2800E, 2400E	MC-0JFC31,MC-0JFC41, MC-0JFC71, MC-0JFC81,MC-0JFC91,MC-0JFCA1

■ Internal storage in PRIMEQUEST server

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

From the performance perspective, Fujitsu recommends use SAS type HDD or SAS type SSD for PRIMEQUEST Servers that runs ESXi.

●.

■ HDD in PRIMEQUEST server

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

ESXi does not support Sector size: 512e HDD.

● **Details**

Use Sector size: 512n HDD with ESXi.

Please see the following Knowledge Base article for further details.

http://kb.vmware.com/kb/2091600

■Number of RAID cards mountable on PRIMEQUEST server

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

The maximum number of RAID cards mountable on PRIMEQUEST when using ESXi, is two.

● **Details**

Either two internal cards, or one internal card and one external card are mountable.

3.1.2　Restrictions and Precautions During Installation

This section explains restrictions and precautions during installation of ESXi 6.0.

■ Connection of Disk array devices

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

If you are installing ESXi 6.0 in the server's internal disk, do not connect disk array devices (ETERNUS, storage blades, hard disk cabinets, etc.).

● **Details**

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In order to prevent the ESXi from being installed on the disk array device by mistake, do not connect the disk array device to the server until installation completes.

3.1.3   Restrictions and Precautions After Installation
This section explains restrictions and precautions for procedures after installation of ESXi 6.0.

■ **Path redundancy regarding connection of disk array devices**

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Multipath connection is recommended when establishing a system that consists of a disk array device.

● **Details**

When all connections to the disk array device are disconnected, the functionality of ESXi becomes unstable. Therefore, Fujitsu recommends multipath configuration.

■ **Link speed between Emulex Fibre Channel card and Disk array device**

vSphere	Target model		
6.0 Update 1	PRIMEQUEST which mounts the Emulex Fibre Channel card shown below		
	Device name	**Device ID**	**Corresponding PRIMEQUEST Models**
	Single channel 8GbpsFibre Channel card	MC-0JFC31 MC-0JFC91	2400E2, 2800E2, 2400S, 2400E, 2800E
	Dual channel 8GbpsFibre Channel card	MC-0JFC41 MC-0JFCA1	2400E2, 2800E2, 2400E, 2800E
	Single channel 16GbpsFibre Channel card	MC-0JFC71	2400E2, 2800E2, 2400E, 2800E
	dual channel 16GbpsFibre Channel card	MC-0JFC81	2400E2, 2800E2, 2400E, 2800E

● **Summary**

When connecting the Emulex Fibre Channel card with the Disk array device, set both devices to the same link speed.

● **Details**

To connect Fibre channel cards and disk array devices such as ETERNUS, you are required to match configured link speed set on both ends. Otherwise, the Fibre Channel card might not link up, and ESXi would not recognize the disk array device.

In order to have ESXi recognized the disk array device, choose one of the link speeds from below and set the same link speed for the Fibre Channel card and the Disk array device.

・Autonegotiation
・Fixed speed(1/2/4/8/16Gbps)

To set the Fibre Channel card link speed, it is required to configure the target ESXi.
Set the link speed by running the following vSphere CLI commands.

(1)   From the start menu, navigate to [VMware] -> [VMware vSphere CLI] -> [Command Prompt], and launch command prompt.

(2)   Run the following command to move to the bin folder.

> cd bin

(3)　Run the following command to confirm the status of link speed configuration.

> esxcli.exe --server [target ESXi management network IP address] --username [admin username]
--password [admin password] system module parameters list -m lpfc | find "_link_speed"
Execution example (result output included):
The target ESXi management network IP address and admin password are masked as XXXXXXXX.
Other execution examples follow the same rule.

```
C:¥Program Files¥VMware¥VMware vSphere CLI¥bin> esxcli.exe --server XXXXXXXX
--username root --password XXXXXXXX system module parameters list -m lpfc | find "_link_speed"
lpfc0_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc10_link_speed   int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc11_link_speed   int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc12_link_speed   int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc13_link_speed   int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc14_link_speed   int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc15_link_speed   int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc1_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc2_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc3_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc4_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc5_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc6_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc7_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc8_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc9_link_speed    int              Select link speed: valid values are 1, 2, 4, 8, 16
lpfc_link_speed     int         8    Select link speed: valid values are 1, 2, 4, 8, 16        *
```

*Link speed configuration can be monitored from the lpfc_link_speed value.

The execution example above shows that the output value (the underlined portion) of the
lpfc_link_speed is 8, which means the link speed, is set to a fixed speed (8Gbps).
If the underlined value shows a different value, it means the link speed is fixed to that value. If the
underlined value was 0 or empty, it shows that the link speed is set to autonegotiation.
The lpfc"X"_link_speed ("X" stands for a number) shows a specific value, it shows that a fixed speed
with that value is set on the target HBA.
If the value is set to the target HBA as intended, you can leave the value as it is.
If the value is not set as intended, execute the following procedure to set a fixed speed to HBA.

(4)　Run the following command to configure the link speed.

If link speed is not intended value, you should or must be erased with the following steps.

・　Configure link speed to fixed (8Gbps) speed (set "lpfc_link_speed=8")

> esxcli.exe --server [target ESXi management network IP address] --username [admin
username] --password [admin password] system module parameters set -p "lpfc_link_speed=8"
-m lpfc

*If you are configuring the speed to any of the 1/2/4/16Gbps instead, insert a value of your choice to the
parameter "lpfc_link_speed=".

・　Configure link speed to autonegotiation (set "lpfc_link_speed=0")

> esxcli.exe --server [target ESXi management network IP address] --username [admin username] --password [admin password] system module parameters set -p "lpfc_link_speed=0" -m lpfc

All the parameters including link speed must be set before running the command. See the following Execution example for details.

Execution example:

Adding an autonegotiation setting ("lpfc_link_speed=0") to the ESXi, which already has "lpfc0_lun_queue_depth=20 lpfc1_lun_queue_depth=20" configuration set.

C:¥Program Files¥VMware¥VMware vSphere CLI¥bin> esxcli.exe --server XXXXXXXX --username root --password XXXXXXXX system module parameters set -p "lpfc0_lun_queue_depth=20 lpfc1_lun_queue_depth=20
 lpfc_link_speed=0" -m lpfc

(5) You can monitor the link speed with steps below
Confirm that the link speed is configured as you intended.

> esxcli.exe --server [target ESXi management network IP address] --username [admin username] --password [admin password]
system module parameters list -m lpfc | find "lpfc_link_speed"

Execution example (result output included):

・If the link speed was set to 8Gbps:
C:¥Program Files¥VMware¥VMware vSphere CLI¥bin> esxcli.exe --server XXXXXXXX --username root --password XXXXXXXX system module parameters list –m lpfc | find "lpfc_link_speed"
lpfc_link_speed int 8 Select link speed: valid values are 1, 2, 4, 8, 16
*If you set the link speed to other than 8Gbps, the underlined value would change accordingly.

・If the link speed was set to autonegotiation
C:¥Program Files¥VMware¥VMware vSphere CLI¥bin> esxcli.exe --server XXXXXXXX --username root --password XXXXXXXX system module parameters list –m lpfc | find "lpfc_link_speed"
lpfc_link_speed int 0 Select link speed: valid values are 1, 2, 4, 8, 16

(6) Reboot the ESXi.
The configured link speed will be available after rebooting ESXi.

For configuring the link speed of disk array devices such as ETERNUS, refer to the manual attached to the disk array device.

■ Configure a temporary location

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Configure a temporary location.

● **Details**

ESXi uses a scratch partition as a temporary location. This location is also used as syslog storage. The following procedure helps you confirm whether a scratch partition is configured or not, and if not, a new scratch partition can be configured.

・Configuration via Web Client

(1) Create a Connect to the vCenter Server that manages ESXi 6.0 via Web Client. After logging in, select [Hosts and Clusters].

(2) Select the target ESXi, then select [Manage] -> [Settings] -> [Advanced System Settings]. In the search field, Input [ScratchConfig.ConfiguredScratchLocation]. Confirm that a value is set in the [ScratchConfig.ConfiguredScratchLocation] field.

If there is a value set, the scratch partition is configured. Step (3) and later is not required.

If there is no value set, the scratch partition is not configured. Proceed to step (3) to configure the scratch partition.

(3) Create a directory on the datastore for configuring a temporary location.

To make shared disks available, you must create a datastore on the shared disk. Note you must configure directory for each of ESXi hypervisor. Otherwise he temporary location conflicts, leading to ESXi stopping on boot, or not functioning correctly.

In this case, the temporary location directory is set to "scratch" in datastore1.

Open the datastore browser of datastore1, from [Home] -> [Storage]. Create the "scratch" directory by clicking the [Create a new folder].

(4) Find [ScratchConfig.ConfiguredScratchLocation] by following step (1)(2).

Select [ScratchConfig.ConfiguredScratchLocation], and then select [Edit] to input the path of the directory to use for the temporary location. The value to input in the [ScratchConfig.ConfiguredScratchLocation] field follows the format below:

"/vmfs/volumes/<datastore name>/<directory name>"

In this case, the input value would be /vmfs/volumes/datastore1/scratch.

After the input, select [OK] and close the window.

(5) Reboot the ESXi.

・Configuration via vSphere Client

(1) Connect to the server with ESXi 6.0 installed via vSphere Client. After logging in, select [Configuration] -> [Advanced Settings].

(2) Select [ScratchConfig] in the [Advanced Settings]. Confirm that a value is set in the [ScratchConfig.ConfiguredScratchLocation] field.

If there is a value set, the scratch partition is configured. Step (3) and later is not required.

If there is no value set, the scratch partition is not configured. Proceed to step (3) to configure the scratch partition.

(3) Create a directory on the datastore for configuring a temporary location.

Please note that you should create different directories for different version of ESXi if you create a datastore on shared disk. This is because creation of multiple ESXis on the same directory in the same-shared disk causes conflicts, leading to ESXi stopping on boot, or malfunction of ESXi.

In this case, the temporary location directory is set as "scratch" in datastore1.

Open the datastore browser of datastore1, from [Configuration] -> [Storage]. Create the "scratch" directory by clicking the [Create a new folder].

(4)　　Select [ScratchConfig] in the [Advanced Settings]. Input the path of the directory to use for the temporary location. The value to input in the [ScratchConfig.ConfiguredScratchLocation] field follows the format below:

”/vmfs/volumes/<datastore name>/<directory name>”

In this case, the input value would be /vmfs/volumes/datastore1/scratch.

After the input, select [OK] and close the window.

(5)　　Reboot the ESXi.

3.2　Installation and Setup for High Availability Tool

For installation, configurations, and precautions of High Availability Tool, refer to the documents attached to each of the High Availability Tools.

3.3　Installation and Setup for Miscellaneous Components

This section explains the installation and setup of miscellaneous components.

3.3.1　vCenter Server 6 Database

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Restrictions of Oracle with versions 11.2.0.3 or 12.1.0.1

● **Details**

There is an issue when using Oracle with versions 11.2.0.3 or 12.1.0.1 for the vCenter Server 6 database, VM operations (VM creation, VM power on, etc.) does not function correctly.

Therefore, do not use Oracle with versions from 11.2.0.3 or 12.1.0.1 for the vCenter Server 6 database.

When using Oracle, please use the supported patches shown below.

Oracle	Unsupported patches	Supported patches
Oracle 11.2.0.3	Oracle 11.2.0.3 Patch　11.2.0.3.10 to 11.2.0.3.18	Oracle 11.2.0.3 Patch 19 or later
Oracle 12.1.0.1	Oracle 12.1.0.1(unpatched) to Oracle Bundle Patch 12.1.0.1.11	Oracle Bundle Patch 12.1.0.1.12 or later

This is a known issue explained in VMware Knowledge Base (KB): 2039874. For details, refer to the VMware Knowledge Base (KB) from the below URL.

http://kb.vmware.com/kb/2039874

4.　Upgrade and Update

This chapter explains the prerequisites and precautions for the upgrade or update of VMware vSphere 6.

Refer to the precautions according to the objective of the upgrade.

4.1　VMware Product Upgrade

This section explains the VMware product upgrade and the edition upgrade.

4.1.1　ESXi 6.0 Upgrade

This section explains how to upgrade to ESXi 6.0.

■ **How to obtain ESXi 6.0 installation software**

Obtain the ESXi6.0 installation media by referring to [2.1 Installation Media].

■ **How to upgrade ESXi 6.0**

To upgrade to ESXi 6.0, refer to the release note of the upgrade target and the [vSphere Upgrade] section of [VMware vSphere 6.0 Documentation Center].

■ **Prerequisites for upgrading from ESXi 5.X to ESXi 6.0**

Before upgrading from ESXi 5.x to ESXi 6.0, execute the following procedure from the vSphere CLI.

(1) Execute the following command from the vSphere CLI.
    （a） Run command prompt from [Start menu] -> [VMware] -> [VMware vSphere CLI] ->
        [Command Prompt].
    （b） Run the following command to move to the bin folder.
        > cd bin
    （c） Check the status of the currently applied lsiprovider by running the following command.
        > esxcli.exe --server [Management network IP address] --username [username] --password [password]
          software vib list
        Check the command output. Confirm either LSIProvider (includes uppercase letters) or lsiprovider (includes
        only lowercase letters) is applied.
        If lsiprovider (includes only lowercase letters) was applied, the following procedures are not required.
    （d） Run the following command to remove LSIprovider.
        Run the command if the result of (c) was LSIProvider (includes uppercase letters).
        > esxcli.exe --server [Management network IP address] --username [username] --password [password]
          software vib remove -n LSIProvider
(2) Reboot the ESXi.

4.1.2 Edition Upgrade

This section explains the precautions for upgrade of VMware vSphere edition and vCenter Server edition.

VMware editions are upgraded by replacing existing license keys with new license keys. Since the features become available simply by replacing with new license keys, you do not need to newly install ESXi or vCenter Server.

Existing keys become unusable after the upgrade. If the keys were administrated from vCenter, delete the existing license keys.

4.2 High Availability tool Upgrade

For details on High Availability Tool upgrades, refer to documents attached to each of the High Availability Tools.

4.3 Guest OS Upgrade

For details on guest OS upgrades, refer to documents attached to each OS.

4.4 Upgrading Miscellaneous Components

This section explains how to upgrade miscellaneous components.

4.4.1 How to Obtain Miscellaneous Product Components Upgrade

VMware products become available for download once you obtain the license.

Download miscellaneous components from the VMware download site below.

https://my.vmware.com/web/vmware/downloads

4.4.2 How to Upgrade Miscellaneous Components

To upgrade miscellaneous components, refer to the release note of the upgrade target, the [vSphere Upgrade] section of [VMware vSphere 6.0 Documentation Center], and the manual attached to each of the components.
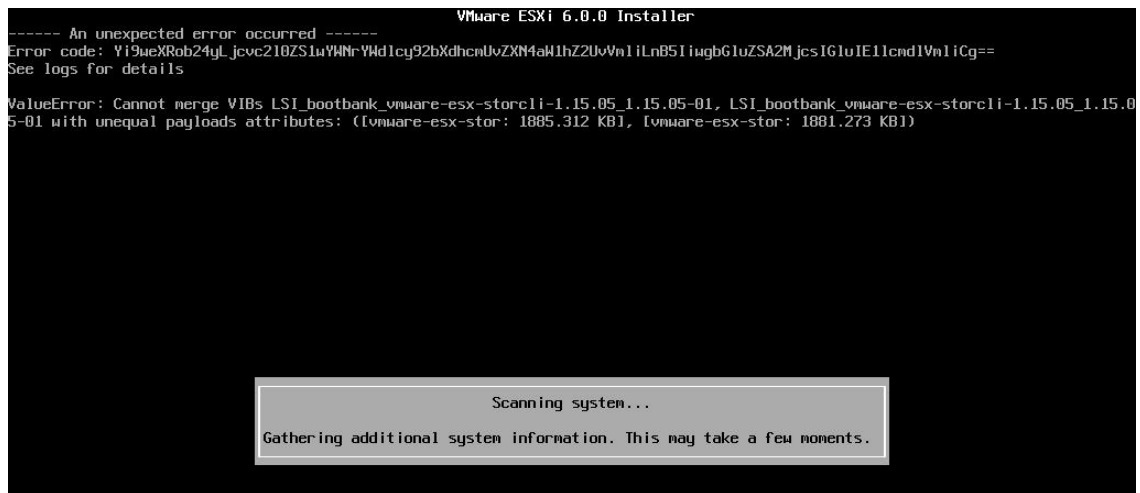
4.5 VMware Product Update

This section explains how to update VMware products.

4.5.1 ESXi 6 Update

This section explains how to update to ESXi 6.

■ Considerations when updating to ESXi 6 Update 1

When updating to ESXi 6 Update 1 using an installation image, the update might fail with the following error.

```
                              VMware ESXi 6.0.0 Installer
------ An unexpected error occurred ------
Error code: Yi9weXRob24yLjcvc2I0ZS1wYWNrYWd1cy92bXdhcmUvZXN4aW1hZ2UvVm1iLnB5IiwgbG1uZSA2MjcsIG1uIE1lcmdlVm1iCg==
See logs for details

ValueError: Cannot merge VIBs LSI_bootbank_vmware-esx-storcli-1.15.05_1.15.05-01, LSI_bootbank_vmware-esx-storcli-1.15.05_1.15.0
5-01 with unequal payloads attributes: ([vmware-esx-stor: 1885.312 KB], [vmware-esx-stor: 1881.273 KB])




                            ┌──────────────────────────────────────────────────────┐
                            │                  Scanning system...                    │
                            │                                                        │
                            │ Gathering additional system information. This may take a few moments. │
                            └──────────────────────────────────────────────────────┘
```

Execute the following procedure in case of failure.

(1) Force shutdown the update target server. Boot the ESXi without using the installation image.

(2) Run the following command from the vSphere CLI.

　(a) Run command prompt from [Start menu] -> [VMware] -> [VMware vSphere CLI] -> [Command Prompt].

　(b) Run the following command to move to the bin folder.
　　　> cd bin

　(c) Run the following command to remove vmware-esx-storcli-1.15.05.
　　　> esxcli.exe --server [Management network IP address] --username [username] --password [password]
　　　　software vib remove -n vmware-esx-storcli-1.15.05

(3) Reboot the ESXi.

5. Operation and Maintenance

This chapter explains precautions of VMware vSphere 6 operation and maintenance.

5.1 ESXi 6 Operation and Maintenance

This section explains precautions of ESXi 6.0 operation and maintenance.

5.1.1 Applying Patches

Apply the latest patch to ensure the stable operation of ESXi 6.0.

The patches shown below are included in Fujitsu exclusive installation image. Please confirm if applying patches to installation image is required or not.

■ Patches included in each install image

patch	Title	Version
ESXi60-201510001	Fujitsu Custom Image for VMware ESXi 6.0U1a Install CD	361.1.3073146

5.1.2 Applying the Offline Bundle

An Offline Bundle is a set of patches, drivers, and CIM Providers for Fujitsu servers.
By applying the Offline Bundle, the environment could be updated to the same state as the latest installation image installed.
Either the Update Manager or the vSphere CLI is used to apply the Offline Bundle.
Applying the Offline bundle is mandatory when commencing an update.

Based on your ESXi 6.0 version, choose the corresponding Offline Bundle from the URL below.
- ESXi 6.0 Update 1
  Download [Fujitsu Custom Image for VMware ESXi 6.0U1a Offline Bundle] from the URL below.
  https://my.vmware.com/group/vmware/details?downloadGroup=OEM-ESXI60U1A-FUJITSU&productId=491

The Fujitsu Exclusive Offline Bundle has the patches included on the following list.
Depending on the Offline Bundle you are using, applying patches may not be required.
■ Patches included in each offline bundle

ESXi version	Title	Version	Patch included
ESXi 6.0Update 1	Fujitsu Custom Image for VMware ESXi 6.0U1a Offline Bundle	361.1.3073146	ESXi60-201510001

To apply the Offline Bundle, refer to [5.1.3 Applying Patches or Drivers via vSphere CLI] or the following section in [VMware vSphere 6.0 Documentation Center].
[vSphere Upgrade]
[vSphere 6 Command-Line Documentation]

5.1.3 Applying Patches or Drivers via vSphere CLI

The procedures for application of patches and drivers using vSphere CLI 6.x is explained below.

IMPORTANT

Installation of the VMware Client Integration Plugin is required for this operation.

(1) Follow the below procedure via Web Client.
  (a) Select the ESXi to apply the patch or driver via Web Client. Change the state of the ESXi to maintenance mode.
  (b) Select Storage from the home view and open the datastore browser.
  (c) Upload the patch or driver to the datastore using the datastore browser.

(2) Apply the patch or driver via vSphere CLI.
  (a) Run command prompt from [Start menu] -> [VMware] -> [VMware vSphere CLI] -> [Command Prompt].
  (b) Run the following command to move to the bin folder.
     > cd bin
  (c) Run the following command to apply the patch or driver.

   Applying patches (esxcli.exe update)
      > esxcli.exe --server [Management network IP address] --username [username] --password [password]
         software vib update -d [uploaded file directory]/[uploaded filename]

   Applying Offline Bundles or drivers (esxcli.exe install)
      > esxcli.exe --server [Management network IP address] --username [username] --password [password]
         software vib install -d [uploaded file directory]/[uploaded filename]

   [Caution]
   If the vSphere CLI installed terminal does not have the vCenter Server certificate registered, a thumbprint error might be displayed on running the esxcli command.
   If the error is displayed, refer to the following Knowledge Base article to resolve the issue.

     http://kb.vmware.com/kb/2108416

   For details of the esxcli command update and esxcli command install, refer to the [Upgrade or Update a Host with Image Profiles] section in the [vSphere Upgrade] document.

   IMPORTANT
     Please proceed with caution when designating the [install] or [update] option during applying patches. Incorrect designation of the [install] or [update] option may lead to unintentional updates, which could result in a PSOD after reboot.

(3) Follow the below procedure via Web Client.
  (a) Reboot the host with the patch applied.
  (b) Change the state of the ESXi to quit maintenance mode.
  (c) Open the datastore browser and remove the uploaded patch or driver.
     IMPORTANT
       Please proceed with caution when removing the uploaded patch or driver. Do not remove the virtual machine or vCenter Server related files.

The application status of the patch or driver can be confirmed from the vSphere CLI.

(a) Run command prompt from [Start menu] -> [VMware] -> [VMware vSphere CLI] -> [Command Prompt].

(b) Run the following command to move to the bin folder.
> cd bin

(c) Run the following vSphere CLI command to confirm whether the patch or driver is applied or not.
Run the following command to confirm the applied VIB version.
> esxcli.exe --server [Management network IP address] --username [username] --password [password]
software vib list

For details, refer to the [vSphere 6.0 Command-Line Documentation] section in the [VMware vSphere 6.0 Documentation Center].

5.1.4 Isolating Issues

If an issue occurs on ESXi 6.0 with tools and such that is not provided by VMware by default is enabled, during the investigation of the issue, in order to isolate the issue, we may ask to replicate the issue with the installed tool at a disabled state.

5.1.5 Applying Fibre Channel Multipath Configuration

Please note ESXi 6.0 at the boot cannot detect single path error of Fibre Channel multipath. Although ESXi6.0 does boot normally even with a single path configuration, the incorrect multipath configuration does not get recognized. Check the path consistency by following the below procedure via vSphere Client. If the path has any issues, confirm the storage status and configuration.

As a side note, if a path error occurs after the ESXi boots up, the error detection operates normally.

(1) Log in to ESXi or vCenter Server via vSphere Client. After logging in, select the ESXi host from the inventory view.

(2) In the vSphere Client, select the target device from the [Configuration] -> [Storage Adapters] view. Select the target disk from the details view in the lower part of the screen. Right-click the disk to select [Manage Paths…] and a path management screen appears.

(3) If the multipath configuration is not functioning, the displayed multipath management screen would display only a single path.

5.1.6 Server monitoring

Use the High Availability Tool for server monitoring. For details on the High Availability Tool, refer to documents attached to each of the High Availability Tools.

5.1.7 How to verify PCI bus id in ESXi6.0

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

This section explains how to set PCI bus IDs in PRIMEQUEST from the alias of ESXi (vmhba, vmnic).

This technique can be used in a situation when the hardware does not detect any errors, but the statistics or the middleware detects some kind of error, and you need to detect where the PCI card resides.

The following procedure uses the ESXi Shell. The ESXi Shell is dedicated for troubleshooting.
Never enable the ESXi Shell under normal circumstances.

● **Details**

The following procedure shows how to specify PCI bus ids in PRIMEQUEST from the alias of ESXi
(vmhba, vmnic).

(1) Confirm the alias information from statistics and errors detected from the middleware.
   *An alias is the name for vmnic<X>, vmhba<X>.
        Ex.) This procedure presumes the target alias as vmnic3.

(2) Login to the ESXi as root via direct console or SSH.
   *For procedures of ESXi Shell enablement and SSH connection, refer to the following VMware
   Knowledge Base.
        Using ESXi Shell in ESXi 5.x and 6 (2004746)
        http://kb.vmware.com/kb/2004746

(3) Run the following command.
   esxcli   hardware   pci   list | grep   <Alias confirmed in step (1)>   -C   10
        ex.)esxcli   hardware   pci   list | grep   vmnic3   -C   10

(4) Confirm the PCI location of the alias confirmed in step (1).
   The log below is the excerpt of the command result related to vmnic3.

```
0000:0c:00.0
     Address: 0000:0c:00.0
     Segment: 0x0000
     Bus: 0x0c
     Slot: 0x00
     Function: 0x0
     VMkernel Name: vmnic3
     Vendor Name: Intel Corporation
     Device Name: 82571EB Gigabit Ethernet Controller
     Configured Owner: Unknown
```

   Confirm that the "VMkernel Name" has the alias name you want to specify (In this case vmnic3).
   Check the values of "Segment", "Bus", and "Slot", which comes right before "VMkernel Name".

(5) The values of "Segment", "Bus", and "Slot" found in step (4) will be the PCI Bus number.
   Since the values are hexadecimal, convert the value to decimal if needed.
   For this instance, convert the values from step (4) as below.

Parameter	Command result (hexadecimal)	Decimal
Segment	0x0000	0
Bus	0x0c	12
Slot	0x00	0

5.2 Guest OS operation

This section explains the precautions for operation of ESXi6.0 Guest OS.

5.2.1 Using Red Hat Enterprise Linux

To use the Red Hat Enterprise Linux 5 as a guest OS on ESXi 6.0, the NX/XD flag needs to be hidden from the VM. Configure the below settings from the Web Client.

(1) Power off the VM.
(2) Select the [Virtual Hardware] tab from the [Edit Settings] screen.
(3) Expand the [CPU] and change the option to [Hide the NX/XDflag from guest] from the [CPUID Mask] dropdown menu. After changing the configuration, select [OK] and close the screen.

5.2.2 Using Windows OS media attached to PRIMEQUEST

When installing Windows OS to a VM from the Windows OS media attached to PRIMEQUEST, the following error might appear, preventing the installation.

"This installer is designed to load only in a virtual environments supported by Fujitsu and/or the virtual machine provider.

Please verify with Fujitsu that this virtual environment can be configured for this software."

In this case, configure the below settings from the Web Client before the installation.

(1) Power off the VM.
(2) Select the [VM Options] tab from the [Edit Settings] screen.
(3) Expand the [Advanced] to open the [Edit Configuration…] in the [Configuration Parameters].
(4) The [Configuration Parameters] screen is displayed. Select [Add Row] and configure the parameters. Add two rows to configure the parameters below.

Name	Value
smbios.reflectHost	TRUE
smbios.noOEMStrings	TRUE

(5) After adding the parameters, select [OK] and close the [Configuration Parameters] screen. Select [OK] again to close the [Edit Settings] screen.
(6) After completing the configuration shown above, install the guest OS.

5.2.3 Dump collection in Guest OS

For the below guest OS, there are some operations which is not available for dump collection.

Guest OS	Operations not available for dump collection
Red Hat Enterprise Linux	Dump collection from NMI switch operation
	Dump collection from Netdump
Windows	Dump collection from NMI switch operation

5.3 Miscellaneous Components Operation

5.3.1 vSphere FT

In order to use the vSphere FT feature with PRIMEQUEST, the following conditions should be met.
- Target model supports vSphere FT.
- BIOS version supports vSphere FT.

For details on supported models and BIOS versions of vSphere FT, refer to the following document provided by VMware.

https://www.vmware.com/resources/compatibility/search.php

6. Restrictions

This chapter explains the contents restricted by Fujitsu.

6.1   ESXi 6.0

This section explains the restrictions of ESXi 6.0

6.1.1   Restriction of ESXi 6.0

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Some features of ESXi 6.0 cannot be used.

● **Details**

The below list explains the feature restrictions of ESXi 6.0.

Feature	Restrictions
iSCSI	In ESXi 6.0, iSCSI connection via IPv6 is not supported
	The iSCSI boot feature is not supported.
DirectPath I/O	In ESXi 6.0, the DirectPath I/O feature is not supported.
SR-IOV	In ESXi 6.0, the SR-IOV feature is not supported.
Health status	The hardware health status feature is not supported. If the vSphere Client or Web Client triggers a health status alarm, confirm the hardware status from the High Availability Tool. If there was no issue detected in the High Availability Tool, ignore the alarm.
ESXi Shell	Operations other than installing or configuring Fujitsu supported products, is not supported.
Software FCoE Boot	The Software FCoE Boot of ESXi 6.0 is not supported.
SNMP	SNMP is not supported. It is confirmed that sfcbd and hostd terminates abnormally when using the SNMP feature. It is marked as restricted since this issue is not resolved currently.
Hotplug	PCIe SSD hotplug feature is not supported.

6.1.2   USB device

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Restrictions of using the USB device

● **Details**

Using the USB device from ESXi 6 or the guest OS running on PRIMEQUEST is not supported.

6.1.3 Using the N-Port ID Virtualization (NPIV) feature

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Restriction of using the NPIV feature

● Details

Use of the NPIV feature on PRIMEQUEST is not supported.

6.1.4 PRIMEQUEST LAN port limitation

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Limitations of selecting LAN cards and converged network adapters for use on PRIMEQUEST

● **Details**

There is a limit to the number of 1GB/10GB ports configurable on PRIMEQUEST.

When installing LAN cards or converged network adapters on PRIMEQUEST, it is required to be configured without exceeding the configuration limit.

Due to the device configuration of PRIMEQUEST, the following LAN ports should be taken into account.

- ・ Allocate one 1Gbps port for communication between partition and MMB.
- ・ If IOU-1GbE is installed as onboard LAN, allocate two 1Gbps ports per IOU (IO Unit).
- ・ If IOU-10GbE is installed as onboard LAN, allocate two 10Gbps ports per IOU (IO Unit).

*The onboard LAN and the port for communication between partition and MMB could be configured as disabled from the MMB.

For models 2400E2/2800E2, disablement is supported from firmware version BB15074.

For models 2400E/2800E, disablement is supported from firmware version BB15072.

When splitting a physical port into multiple logical ports by using a driver or hardware based virtualization feature, allocate the ports based on logical ports. For instance, when splitting into multiple logical ports using the converged network adapter's UMC (Universal Multi-Channel) feature, allocate each split logical port as one 10Gbps port.

When installing LAN cards or converged network adapters, make sure the total number of LAN ports does not exceed the following limit.

1GB LAN only	10GB LAN only	1GB / 10GB LAN mixed
32	16	4 (1GB) / 16 (10GB)

For details on the number of network interface ports, refer to the following document provided by VMware.

- ● VMware vSphere document
  Configuration Maximums for VMware vSphere 6
  https://www.vmware.com/pdf/vsphere6/r6/vsphere-6-configuration-maximums.pdf

　　　　　　　　Copyright FUJITSU LIMITED 2016

6.2   High Availability Tool

For details on High Availability Tool restrictions, refer to documents attached to each of the High Availability Tools.

6.3   Guest OS

This section explains restrictions of running guest OS on ESXi 6.0.

6.3.1   Using Serial Port / Parallel Port from the Guest OS

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Restrictions of using the serial port / parallel port from the guest OS

● **Details**

Using the serial port / parallel port from guest OS is not supported.

6.3.2   Using EFI for the VM

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Restrictions of using EFI for the VM

● **Details**

When selecting EFI as the VM firmware, only the EFI boot is supported.

6.3.3   Using WSFC for the guest OS

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Restrictions of using WSFC for the guest OS

● **Details**

Using Windows Server Failover Clustering for the guest OS is not supported.

6.4   Miscellaneous Components

This section explains restrictions of miscellaneous components.

6.4.1   Restrictions of Each Component

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

Fujitsu restricts the use of some components.

● **Details**

The following table explains each of the VMware vSphere 6 components that consist of a specific feature restricted by Fujitsu.

Component	Feature	Restrictions
vCenter Server	vRealize Orchestrator	Support is restricted to the operation of vRealize Orchestrator features. Debugging, performance tuning, and consulting of customer made workflows is not supported.
	vCenter Host Gateway	vCenter Host Gateway is not supported.
vSphere Management Assistant	All features	Any operation outside of installation and configuration of Fujitsu supported products is not supported.
vSphere CLI	All features	Any operation outside of installation and configuration of Fujitsu supported products is not supported.
Ruby vSphere Console	All features	Only the configuration and usage described in the manual is supported.
vSphere PowerCLI	All features	Any operation outside of installation and configuration of Fujitsu supported products is not supported.
vCenter Server Appliance	All features	Only the configuration and usage described in the manual is supported.
vSphere Flash Read Cache	All features	vSphere Flash Read Cache is not supported.
Big Data Extensions	All features	Support is restricted to operation via Big Data Extensions Plug-in for vSphere Web Client. Operations via Big Data Extensions Command-Line Interface or Hadoop operations such as MapReduce job execution are not supported.
		Using Japanese is not supported in the following operation. ・ Input via Big Data Extensions Plug-in for vSphere Web Client.
Integrated Openstack	All features	Integrated Openstack is not supported.

6.4.2　vSphere DPM

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

　Restriction of vSphere DPM

● **Details**

　The vSphere DPM feature is not supported in PRIMEQUEST.

6.4.3　vSphere Auto Deploy

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

　Restriction of vSphere Auto Deploy

● **Details**

　The vSphere Auto Deploy feature is not supported in PRIMEQUEST.

6.4.4　Sharing Physical Compatibility RDM

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

　In environments other than Windows Server Failover Clustering (Microsoft Failover Cluster) or
　PRIMECLUSTER, sharing physical compatibility RDM between VMs is not supported.

　For the support status of products which includes a feature to share physical compatibility RDM between VMs,
　make an inquiry to the product support.

6.4.5　Storage Products which supports VVOL

vSphere	Target model
6.0 Update 1	All supported models of PRIMEQUEST

● **Summary**

　For storage products that supports VVOL in combination with Fujitsu PRIMEQUEST, refer to the following
　URL.
　http://www.fujitsu.com/us/products/computing/storage/disk/eternus-dx/eternusdx-vvol/index.html