

Fujitsu Software PRIMECLUSTER HA Server 4.7A00

Installation Guide

Linux

J2UL-2814-02ENZ0(00)
July 2023

Preface

Purpose

This manual explains how to install PRIMECLUSTER HA Server.

Target Readers

This manual is written for people who will install this product.

It is strongly recommended that you read the Software Release Guide from the product media before using this manual.

When setting up systems, it is assumed that readers have the basic knowledge required to configure the servers, storage and network devices to be installed.

Organization

This manual consists of four chapters, and appendices. The contents of these chapters, the appendices are listed below.

Title	Description
Chapter 1 Program components	Explains the packages of which this product is composed.
Chapter 2 Operation Environment	Explains the operational environment of this product.
Chapter 3 Installation	Explains how to install this product.
Chapter 4 Uninstallation	Explains how to uninstall this product.
Appendix A Troubleshooting	Explains how to address problems that occur.
Appendix B Upgrading from old versions	Explains how to upgrade from old versions.
Appendix C Necessary OS packages to be installed.	Explains about the necessary OS packages to be installed.

Notational Conventions

The notation in this manual conforms to the following conventions.

- References and character strings or values requiring emphasis are indicated using double quotes (").
- Text to be entered by the user is indicated using bold text.
- Variables are indicated using italic text.

The following abbreviations are used in this manual:

- Microsoft(R) Windows(R) 10 is abbreviated as Windows(R) 10.
- Microsoft(R) Windows(R) 11 is abbreviated as Windows(R) 11.
- Microsoft(R) Windows Server(R) 2012 is abbreviated as Windows Server(R) 2012.
- Microsoft(R) Windows Server(R) 2012 R2 is abbreviated as Windows Server(R) 2012 R2.
- Microsoft(R) Windows Server(R) 2016 is abbreviated as Windows Server(R) 2016.
- Microsoft(R) Windows Server(R) 2019 is abbreviated as Windows Server(R) 2019.
- Microsoft(R) Windows Server(R) 2022 is abbreviated as Windows Server(R) 2022.
- Cluster Foundation is abbreviated as CF.
- Reliant Monitor Services is abbreviated as RMS.
- Global Disk Services is abbreviated as GDS.
- Global File Services is abbreviated as GFS.
- Global Link Services is abbreviated as GLS.

- PRIMEQUEST 3000 Series is abbreviated as PRIMEQUEST.

Export Controls

Exportation/release of this document may require necessary procedures in accordance with the regulations of your resident country and/or US export control laws.

Trademark Information

- Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.
- Microsoft, Azure, Internet Explorer, and Windows are trademarks of the Microsoft group of companies.
- Red Hat and Red Hat Enterprise Linux are registered trademarks of Red Hat, Inc. in the U.S. and other countries.
- VMware is registered trademarks or trademarks of VMware, Inc. in the United States and/or other jurisdictions.
- All other trademarks are the property of their respective owners.

Information in this manual is subject to change without notice.



The latest manuals are available at

<http://www.fujitsu.com/global/support/software/manual/>

Date of publication and edition

Date of publication and edition	Manual code
Feb 2023, First edition	J2UL-2814-01ENZ0(00) / J2UL-2814-01ENZ2(00)
Jul 2023, Second edition	J2UL-2814-02ENZ0(00) / J2UL-2814-02ENZ2(00)

Copyright notice

Copyright Fujitsu Limited 2023

Revision History

Changes	Section	Manual code
Fixed Required disk space.	2.1.3.1	J2UL-2814-02ENZ0(00) / J2UL-2814-02ENZ2(00)
Added a description of the system requirements for Web-Based Admin View client.	2.3	

Contents

Chapter 1 Program components.....	1
1.1 Red Hat Enterprise Linux 8 (for Intel64).....	1
1.2 Red Hat Enterprise Linux 9 (for Intel64).....	2
Chapter 2 Operation Environment.....	4
2.1 Cluster node operating environment.....	4
2.1.1 Software environment.....	4
2.1.2 Hardware environment.....	6
2.1.3 Static disk resources.....	7
2.1.3.1 Required disk space.....	7
2.1.3.2 Required work area.....	7
2.1.4 Dynamic disk resources.....	7
2.1.4.1 Required disk space.....	7
2.1.5 Required memory.....	8
2.1.5.1 Required memory for resources.....	8
2.1.5.1.1 Red Hat Enterprise Linux 8 (for Intel64).....	8
2.1.5.1.2 Red Hat Enterprise Linux 9 (for Intel64).....	9
2.2 Cluster management server operating environment.....	9
2.2.1 Software environment.....	9
2.2.2 Hardware environment.....	10
2.2.3 Static disk resources.....	10
2.2.3.1 Required disk space.....	10
2.2.3.2 Required work area.....	10
2.2.4 Dynamic disk resources.....	10
2.2.4.1 Required disk space.....	10
2.2.5 Required memory.....	11
2.3 Web-Based Admin View Client operating environment.....	11
2.3.1 Software environment.....	11
2.3.2 Hardware environment.....	12
2.3.3 Static disk resources.....	12
2.3.3.1 Required disk space.....	12
2.3.3.2 Required work area.....	12
2.3.4 Dynamic disk resources.....	12
2.3.4.1 Required disk space.....	12
2.3.5 Required memory.....	12
Chapter 3 Installation.....	14
3.1 Installation on cluster nodes.....	14
3.1.1 Preparations.....	14
3.1.2 Installation.....	16
3.1.3 Environment configuration.....	18
3.2 Installation on Cluster nodes (cloud environment).....	18
3.3 Installation on cluster management server.....	20
3.3.1 Preparations.....	20
3.3.2 Installation.....	21
3.3.3 Environment configuration.....	22
Chapter 4 Uninstallation.....	23
4.1 Uninstallation on cluster nodes.....	23
4.1.1 Preparations.....	23
4.1.2 Uninstallation.....	23
4.2 Uninstallation from Cluster nodes (cloud environment).....	25
4.3 Uninstallation on cluster management server.....	28
4.3.1 Preparation.....	28
4.3.2 Uninstallation.....	28

Appendix A Troubleshooting.....	30
A.1 CLI installer.....	30
A.1.1 Log file.....	30
A.1.2 Information messages.....	30
A.1.3 Error messages.....	30
A.1.4 When segmentation violation causes an installation failure.....	34
A.2 CLI uninstaller.....	34
A.2.1 Log file.....	34
A.2.2 Information messages.....	34
A.2.3 Error messages.....	34
A.2.4 When "there exists GDS object(s)" appears and uninstallation fails.....	37
Appendix B Upgrading from old versions.....	38
B.1 Upgrading cluster nodes.....	38
B.1.1 Upgrading from PRIMECLUSTER HA Server 4.6A20 or earlier.....	38
B.2 Upgrading cluster nodes (cloud environment).....	42
B.2.1 Upgrading from PRIMECLUSTER HA Server 4.6A20 or earlier.....	42
B.3 Cluster management server upgrading.....	47
B.3.1 Upgrading from PRIMECLUSTER HA Server 4.6A20 or earlier.....	47
Appendix C Necessary OS packages to be installed.....	50
C.1 For Red Hat Enterprise Linux 8 (for Intel64).....	50
C.2 For Red Hat Enterprise Linux 9 (for Intel64).....	51

Chapter 1 Program components

The unit of the program that composes the system is called a package.

This chapter explains about the packages of which this software is composed.

- Red Hat Enterprise Linux 8 (for Intel64)
- Red Hat Enterprise Linux 9 (for Intel64)

1.1 Red Hat Enterprise Linux 8 (for Intel64)

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.7.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.8.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.7.0	
		FJSVwvmpc	4.7.0	
		SMAWrcadm	4.7A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.7.0	Basic cluster Services
		SMAWskel	4.7A00	
		SMAWhvksh	4.6A00	
		kmod-SMAWcf	4.7A00	
		SMAWcf	4.7A00	
		SMAWsf	4.7A00	
		FJSVclapi	4.7.0	
		FJSVcldbm	4.7.0	
		FJSVcldev	4.7.0	
		FJSVclotr	4.7.0	
4	Cluster Configuration Backup/Restore(CCBR)	SMAWccbr	4.7A00	Configuration file backup and restoration
5	Reliant Monitor Services(RMS)	SMAWRrms	4.7A00	Application takeover for operational continuity
		SMAWRdfw	4.6A00	
6	Wizard Tools(WT)	SMAWRhvhv-to	4.7A00	Tool for defining RMS configuration
		SMAWRhvhv-ba	4.7A00	
		SMAWRhvhv-do	4.7A00	
		SMAWRhvhv-de	4.7A00	
		FJSVhvgl	2.30	
		FJSVhvgd	4.7.0	
7	Global Disk Services	kmod-FJSVsdxc-drvcore	4.7.0	High-availability volume manager
		FJSVsdxc-cmd	4.7.0	
		FJSVsdxc-drv	4.7.0	
		FJSVsdxc-bas	4.7.0	
		FJSVsdxcma-ja	4.7.0	
		FJSVsdxcma-en	4.7.0	

No.	Component	Package	Version	Function
		FJSVsdxwv	4.7.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.7.0	
8	Global File Services	kmod-FJSVsfdfs-knl	4.7.0	High-availability file system
		FJSVsfdfs-cmd	4.7.0	
		FJSVsfcwv	4.7.0	
		FJSVsfcm-a-en	4.7.0	
		FJSVsfcm-a-ja	4.7.0	
9	Global Link Services	kmod-FJSVhanet-drv	2.30	High-availability network
		FJSVhanet	2.30	
10	CF Add-On(CAO)	FJSVclapm	4.7.0	CF add-on package
11	RMS Add-On(RAO)	FJSVclrms	4.7.0	RMS add-on package
		FJSVclrwz	4.7.0	
		FJSVclsfw	4.7.0	
12	SA_LKCD	FJSVcllkcd	4.7.0	LKCD shutdown agent
13	GUIs	FJSVwvfrm	4.7.0	CRM view

1.2 Red Hat Enterprise Linux 9 (for Intel64)

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.7.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.8.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.7.0	
		FJSVwvmpc	4.7.0	
		SMAWrcadm	4.7A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.7.0	Basic cluster Services
		SMAWskel	4.7A00	
		SMAWhvksh	4.7A00	
		kmod-SMAWcf	4.7A00	
		SMAWcf	4.7A00	
		SMAWsf	4.7A00	
		FJSVclapi	4.7.0	
		FJSVcldbm	4.7.0	
		FJSVcldev	4.7.0	
		FJSVclotr	4.7.0	
4	Cluster Configuration Backup/Restore(CCBR)	SMAWccbr	4.7A00	Configuration file backup and restoration
5	Reliant Monitor Services(RMS)	SMAWRrms	4.7A00	Application takeover for operational continuity
		SMAWRdfw	4.7A00	

No.	Component	Package	Version	Function
6	Wizard Tools(WT)	SMAWRhv-to	4.7A00	Tool for defining RMS configuration
		SMAWRhv-ba	4.7A00	
		SMAWRhv-do	4.7A00	
		SMAWRhv-de	4.7A00	
		FJSVhvgl	2.30	
		FJSVhvgd	4.7.0	
7	Global Disk Services	kmod-FJSVsdx-drvcore	4.7.0	High-availability volume manager
		FJSVsdx-cmd	4.7.0	
		FJSVsdx-drv	4.7.0	
		FJSVsdx-bas	4.7.0	
		FJSVsdxma-ja	4.7.0	
		FJSVsdxma-en	4.7.0	
		FJSVsdxwv	4.7.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.7.0	
8	Global File Services	kmod-FJSVsfefs-knl	4.7.0	High-availability file system
		FJSVsfefs-cmd	4.7.0	
		FJSVsfewv	4.7.0	
		FJSVsfema-en	4.7.0	
		FJSVsfema-ja	4.7.0	
9	Global Link Services	kmod-FJSVhanet-drv	2.30	High-availability network
		FJSVhanet	2.30	
10	CF Add-On(CAO)	FJSVclapm	4.7.0	CF add-on package
11	RMS Add-On(RAO)	FJSVclrms	4.7.0	RMS add-on package
		FJSVclrwz	4.7.0	
		FJSVclsfw	4.7.0	
12	SA_LKCD	FJSVllkcd	4.7.0	LKCD shutdown agent
13	GUIs	FJSVwvfrm	4.7.0	CRM view

Chapter 2 Operation Environment

This chapter explains the operation environment of this software.

The following three types of operating environment are required to set up a cluster system using this software.

1. Cluster Node

This software must be installed and a cluster system is configured on a cluster node.

2. Cluster Management Server

A server that manages the operations of software that has the WWW server function. It can also be on a cluster node.

3. Web-Based Admin View Client

A Windows environment on which the GUI (operation management view) of this software is displayed and the user operates it.

For information about the Web-Based Admin View topologies, see "2.4 Determining the Web-based Admin View Operation Mode" of the "PRIMECLUSTER Installation and Administration Guide".

2.1 Cluster node operating environment

This section explains operating environment of cluster node.

2.1.1 Software environment

1. Basic software prerequisites

Install the following software product on a cluster node:

No.	Basic Software	Kernel	Remarks
1	Red Hat Enterprise Linux 8.2 (for Intel64)	Supports kernel-4.18.0-193.el8 or later	
2	Red Hat Enterprise Linux 8.4 (for Intel64)	Supports kernel-4.18.0-305.el8 or later	
3	Red Hat Enterprise Linux 8.6 (for Intel64)	Supports kernel-4.18.0-372.9.1.el8 or later	
4	Red Hat Enterprise Linux 9.0 (for Intel64)	Supports kernel-5.14.0-70.13.1.el9_0 or later	

This software, when operating on the above software, requires additional packages to be added besides the packages which are installed with a minimum OS option installation. Please refer to "[Appendix C Necessary OS packages to be installed](#)" for the necessary additional packages.

 **Note**

- System disk mirroring using GDS requires installation of the operating system in UEFI mode.
- For the following software environment, contact your Fujitsu service representative. Applying fixes of PRIMECLUSTER may be required.
 - Errata kernel
 - Newer minor versions of the basic software listed in the above table

2. Required software

To operate this software, the following software products are required:

[To use the GDS mirroring function among servers]

No.	Software	Package	Version and/or level	Remarks
1	Storage Target Management Shell	targetcli		
2	Packet Filtering Function	iptables		Required for Red Hat Enterprise Linux 8
		nftables		Required for Red Hat Enterprise Linux 9

[PRIMEQUEST 3000 Series physical environment]

No.	Software	Package	Version and/or level	Remarks
1	HBA Blockage Function	FJSVfefpcl		It is necessary to install to use iRMC asynchronous monitoring function.

[PRIMEQUEST 3000 Series KVM environment]

No.	Software	Package	Version and/or level	Remarks
1	HBA Blockage Function	FJSVfefpcl		Required to use Host OS failover function. It is necessary to install on the host OS.

[PRIMERGY (without RX4770M3, RX1330M3, TX1320M3, TX1330M3) environment]

No.	Software	Package	Version and/or level	Remarks
1	OS Status Notification	FJSVossn		It is necessary to install to use iRMC asynchronous monitoring function.

[VMware environment]

No.	Software	Package	Version and/or level	Remarks
1	VMware vSphere		7.0	
2	VMware vCenter Server		7.0	Required to use the VMware vCenter Server functional cooperation.

[Red Hat OpenStack Platform environment]

No.	Software	Package	Version and/or level	Remarks
1	Red Hat OpenStack Platform		13 or later	

[FUJITSU Hybrid IT Service for AWS environment and Amazon Web Services environment]

No.	Software	Package	Version and/or level	Remarks
1	AWS Command Line Interface		version 1 (1.16 or later)	Install the AWS Command Line Interface for the root user (/root/.local/bin), not in /usr/local/aws, /usr/local/bin. After the installation, verify the path to the AWS Command Line Interface.

[FUJITSU Hybrid IT Service for Microsoft Azure environment and Microsoft Azure environment]

No.	Software	Package	Version and/or level	Remarks
1	Azure Command-Line Interface		2.0.72 or later	Install it on all nodes that configure the cluster so that it can be executed by the root user. After the installation, verify the path to the Azure CLI.

3. Exclusive software

None.

4. Required patches

None.

2.1.2 Hardware environment

The following hardware requirements must be satisfied to operate this software.

1. Memory

1024MB or more of memory is required.

2. Required hardware

[PRIMEQUEST 3000 Series environment]

No.	firmware	Remark
1	PA18011 or later	Required to use the Extended Partition.

3. Related hardware

None.

2.1.3 Static disk resources

The disk space requirements for this software are shown below.

2.1.3.1 Required disk space

The following table lists the disk space requirements for installing this software. If necessary, expand the size of the relevant file systems.

No.	Directory	Disk space (in MB)
1	/	206.8
2	/usr	2.5
3	/var	3.3
4	/var/opt	0.9
5	/etc/opt	281.3
6	/opt	376.9

2.1.3.2 Required work area

None.

2.1.4 Dynamic disk resources

The dynamic disk space requirements for this software are shown below.

2.1.4.1 Required disk space

When this software is operated in the following environment, the additional disk space shown below is required for each directory as well as the disk space required for installing this software as described in "2.1.3 Static disk resources". If free space is insufficient, expand the size of the relevant file system.

No.	Directory	Disk space (in MB)	Operation
1	/var	135.1	A cluster system is operated under the following conditions: <ul style="list-style-type: none">- One cluster application is registered in a cluster system. Note that 1.5 MB is required for each additional cluster application. <ul style="list-style-type: none">- Web-Based Admin View is operated in two-tier model.- GDS shared class operation.- GLS takeover IP address service registration.
2	/var	216.0	A clustered system is operated and start the node.
3	/var	60.0	When GFS shared file systems are activated regardless of the number of GFS shared file systems.
4	/var	70.0	When one GFS shared file system is activated. If multiple file systems are activated, 70.0 MB is required for each file system.
5	/var/opt	60.0	When a cluster application with following resources and the GDS Management View have been started:

No.	Directory	Disk space (in MB)	Operation
			<ul style="list-style-type: none"> - A GDS shared class including a netmirror volume. - A filesystem on a netmirror volume.
6	/var/tmp	500.0	When FJQSS (Information Collection Tool) of PRIMECLUSTER is executed for collecting information.

2.1.5 Required memory

The following table shows the memory required when this software is operated in the following environment:

No.	Memory (in MB)	Operation
1	392.1	<p>A cluster system is operated under the following conditions:</p> <ul style="list-style-type: none"> - One cluster application is registered in a cluster system. Note that 11.5 MB is required for each additional cluster application. - Web-Based Admin View is operated in two-tier model. - GDS shared class operation. - GLS takeover IP address service registration. <p>In addition to the aforementioned user memory, 2.0 MB of kernel memory will be allocated per CPU by vmalloc.</p>
2	38.0	After a GFS shared file system is set up.
3	145.0	When one GFS shared file system is activated. If multiple file systems are activated, 145.0 MB is required for each file system. 2.0 MB out of 145.0 MB is allocated in virtual address space by vmalloc. Overestimate the amount of memory because memory usage may vary according to the file system load and cache tuning.
4	200.0	<p>When a cluster application with following resources and the GDS Management View have been started:</p> <ul style="list-style-type: none"> - A GDS shared class including a netmirror volume. - A filesystem on a netmirror volume.
5	Required memory for resources	Estimate the memory requirement according to the resources to be registered in the cluster application. For details, see " 2.1.5.1 Required memory for resources "

2.1.5.1 Required memory for resources

2.1.5.1.1 Red Hat Enterprise Linux 8 (for Intel64)

No.	Resources	Memory
1	Cmdline resources	23 MB x ((number of resources + 1) / 2 (*))
2	Fsystem resources	24 MB x (number of resources / 5 (*))
3	RemoteFileSystems resources	24 MB x (number of resources / 3 (*))
4	Gds resources	45 MB + (12 MB x number of resources)
5	Gls resources	40 MB + (10 MB x number of resources)
6	Takeover network resources	25 MB x (number of resources / 10 (*))

No.	Resources	Memory
7	Procedure resources	40 MB x number of resources
8	NFS resources	23 MB x (number of resources / 10 (*))

(*) Round up

2.1.5.1.2 Red Hat Enterprise Linux 9 (for Intel64)

No.	Resources	Memory
1	Cmdline resources	30 MB x ((number of resources + 1) / 2 (*))
2	Fsystem resources	30 MB x (number of resources / 5 (*))
3	RemoteFileSystems resources	30 MB x (number of resources / 3 (*))
4	Gds resources	49 MB + (12 MB x number of resources)
5	Gls resources	40 MB + (10 MB x number of resources)
6	Takeover network resources	31 MB x (number of resources / 10 (*))
7	Procedure resources	40 MB x number of resources
8	NFS resources	30 MB x (number of resources / 10 (*))

(*) Round up

2.2 Cluster management server operating environment

This section explains operating environment of cluster management server.

2.2.1 Software environment

1. Basic software prerequisites

Install the following software product on a cluster management server:

No.	Basic Software	Kernel	Remarks
1	Red Hat Enterprise Linux 8.2 (for Intel64)	Supports kernel-4.18.0-193.el8 or later	
2	Red Hat Enterprise Linux 8.4 (for Intel64)	Supports kernel-4.18.0-305.el8 or later	
3	Red Hat Enterprise Linux 8.6 (for Intel64)	Supports kernel-4.18.0-372.9.1.el8 or later	
4	Red Hat Enterprise Linux 9.0 (for Intel64)	Supports kernel-5.14.0-70.13.1.el9_0 or later	

For the supported versions of the kernel, please contact your local Fujitsu sales representative.

This software, when operating on the above software, requires additional packages to be added besides the packages which are installed with a minimum OS option installation. Please refer to "[Appendix C Necessary OS packages to be installed](#)" for the necessary additional packages.

2. Required software

None.

3. Exclusive software

None.

4. Required patches

None.

2.2.2 Hardware environment

The following hardware requirements must be satisfied to operate this software.

1. Memory

1024MB or more of memory is required.

2. Required hardware

None.

3. Related hardware

None.

2.2.3 Static disk resources

The disk space requirements for this software are shown below.

2.2.3.1 Required disk space

The following table lists the disk space requirements for installing this software. If necessary, expand the size of the relevant file systems.

No.	Directory	Disk space (in MB)
1	/	0.1
2	/var/opt	0.1
3	/etc/opt	27.1
4	/opt	184.3

2.2.3.2 Required work area

None.

2.2.4 Dynamic disk resources

The dynamic disk space requirements for this software are shown below.

2.2.4.1 Required disk space

When this software is operated in the following environment, the additional disk space shown below is required for each directory as well as the disk space required for installing this software as described in "[2.2.3 Static disk resources](#)". If free space is insufficient, expand the size of the relevant file system.

No.	Directory	Disk space (in MB)	Operation
1	/var	14.0	Required to operate Web-Based Admin View. Connected from one client PC that use the GDS management view (1MB disk space is required for each client).
2	/var/tmp	500.0	When FJQSS (Information Collection Tool) of PRIMECLUSTER is executed for collecting information.

2.2.5 Required memory

The following table shows the memory required when this software is operated in the following environment:

No.	Memory (in MB)	Operation
1	145.0	When the management server is operated.
2	167.2	When the management server is operated, and a single instance of Internet Explorer is started on the server.

2.3 Web-Based Admin View Client operating environment

This section explains operating environment of Web-Based Admin View Client.

2.3.1 Software environment

1. Basic software prerequisites

The following Software products are required to use Web-Based Admin View client.

No.	OS	Browser	Remarks
1	Windows(R) 11	Microsoft Edge	One of them is required.
2	Windows(R) 10		
3	Windows Server(R) 2022	Internet Explorer 11 Microsoft Edge	
4	Windows Server(R) 2019		
5	Windows Server(R) 2016		
6	Windows Server(R) 2012 R2		
7	Windows Server(R) 2012		

For Fujitsu Hybrid IT Service FJcloud-O environments, use the following software instead of the above.

No.	OS	Browser	Remarks
1	Windows Server(R) 2022	Internet Explorer 11 Microsoft Edge	One of them is required.
2	Windows Server(R) 2019		
3	Windows Server(R) 2016		
4	Windows Server(R) 2012 R2		

2. Required software

None.

3. Exclusive software

None.

4. Required patches

None.

2.3.2 Hardware environment

The following hardware requirements must be satisfied to operate this software.

1. Memory

100MB or more of memory is required.

2. Required hardware

No.	Machine	Model	Remark
1	Personal Computer	FM-V, etc	Required to use as a client of Web-Based Admin View.

3. Related hardware

None.

2.3.3 Static disk resources

The disk space requirements for this software are shown below.

2.3.3.1 Required disk space

The following table lists the disk space requirements for installing this software. If necessary, expand the size of the relevant file systems.

No.	Directory	Disk space (in MB)
1	The Java application folder for Windows logged-in users. (e.g. "C:\Users\[username]\AppData\Local\Programs PRIMECLUSTER Web-Based Admin View Startup ")	200 MB required for each user

2.3.3.2 Required work area

None.

2.3.4 Dynamic disk resources

The dynamic disk space requirements for this software are shown below.

2.3.4.1 Required disk space

When this software is operated in the following environment, the additional disk space shown below is required for each directory as well as the disk space required for installing this software as described in "2.3.3 Static disk resources". If free space is insufficient, expand the size of the relevant file system.

No.	Directory	Disk space (in MB)
1	The Java application folder for Windows logged-in users. (e.g. "C:\Users\[username]\AppData\Local\Programs PRIMECLUSTER Web-Based Admin View Startup ")	100 MB required for each user

2.3.5 Required memory

The following table shows the memory required when this software is operated in the following environment:

No.	Memory (in MB)	Operation
1	53.0	Web-Based Admin View client is operated under the following conditions: <ul style="list-style-type: none">•When Web-Based Admin View client startup (at login)•When using Cluster admin•When Global Disk Services is operated•When Global File Services is operated•When using the tool log display function•When System Preferences Tools startup

Chapter 3 Installation

This chapter explains the installation of this software.

You can install this software on each node where basic and required software is installed. For details about error messages during installation, see "[Appendix A Troubleshooting](#)".

This software can be also upgraded on a system where the old version is already installed. For details, see "[Appendix B Upgrading from old versions](#)".

See "[3.2 Installation on Cluster nodes \(cloud environment\)](#)" when installing in the cloud environment. However, see "[3.1 Installation on cluster nodes](#)" when installing in the FUJITSU Hybrid IT Service FJcloud-Baremetal environment. In this manual, the following environments are abbreviated to as cloud environments.

- FUJITSU Hybrid IT Service FJcloud-O environment
- FUJITSU Hybrid IT Service FJcloud-V environment and NIFCLOUD environment
- FUJITSU Hybrid IT Service for Microsoft Azure environment and Microsoft Azure environment
- FUJITSU Hybrid IT Service for AWS environment and Amazon Web Services environment

3.1 Installation on cluster nodes

This section explains installation on cluster nodes with CLI installer.

3.1.1 Preparations

1. Time required

It takes approximately 15 minutes to install this software.

2. Kernel header

Before installing this software, it is necessary to install the kernel header that supports OS of the system. Check if the kernel header is installed on the system by executing the following command:

```
# rpm -qi kernel-devel <Return>
```

If the command encounters an error, or the kernel source version different than the system OS, install the kernel source according to the OS document.

3. System environment check

1. When installing this software on PRIMEQUEST, it is necessary that the installation of software prerequisites is completed.

For setup instructions, refer to the following manuals:

- PRIMEQUEST 3000 Series Installation Manual

2. To install Web-Based Admin View, it is necessary to modify the IP address for Web-Based Admin View and its corresponding host name(node name output in `uname -n`), and the host name(node name output in `uname -n`) corresponding to "127.0.0.1"(for IPv4) and "::1"(for IPv6).

1. Login to the system and become the root user.

```
$ su <Return>
Password: password <Return>
```

2. Delete the host name allocated to "127.0.0.1"(for IPv4) and "::1"(for IPv6) using a text editor and allocate it to the IP address for Web-Based Admin View.

[Before change]

```
# cat /etc/hosts <Return>
127.0.0.1    host-name localhost localhost.localdomain localhost4
localhost4.localdomain4
::1        host-name localhost localhost.localdomain localhost6 localhost6.localdomain6
```

[After change]

```
# cat /etc/hosts <Return>
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1        localhost localhost.localdomain localhost6 localhost6.localdomain6
IP-Address  host-name
```

3. Check the NetworkManager service.

Check to enable the auto startup of the NetworkManager service.

Check that the setting of auto startup of the NetworkManager service is "enabled" using the following command.

```
# /usr/bin/systemctl is-enabled NetworkManager.service <Return>
enabled
```

If the setting is "disabled", enable the NetworkManager service using the following command.

```
# /usr/bin/systemctl start NetworkManager.service <Return>
# /usr/bin/systemctl enable NetworkManager.service <Return>
```

4. Check the auto startup of the snmptrapd service. (For the PRIMEQUEST 3000 Series physical environment or KVM environment's host OS)

For the PRIMEQUEST 3000 Series, the setting of the auto start of the snmptrapd service is enabled.

Check that the setting of auto startup of the snmptrapd service is "enabled" using the following command.

```
# /usr/bin/systemctl is-enabled snmptrapd.service <Return>
enabled
```

If the setting is "disabled", enable the snmptrapd service using the following command.

```
# /usr/bin/systemctl enable snmptrapd.service <Return>
```

5. Check the definition of snmptrapd.conf. (For the PRIMEQUEST 3000 Series physical environment or KVM environment's host OS)

For the PRIMEQUEST 3000 Series, add the definition to snmptrapd.conf.

When "net public" has not been described to the definition of authCommunity entry of /etc/snmp/snmptrapd.conf, edit the authCommunity entry of the /etc/snmp/snmptrapd.conf file using a text editor.

If the IP address of the administrative LAN is IPv6 address, add the definition of "snmpTrapdAddr udp:162,udp6:162" to /etc/snmp/snmptrapd.conf. When "snmpTrapdAddr" entry has been described without "udp6:162" in /etc/snmp/snmptrapd.conf, add "udp6:162" to "snmpTrapdAddr" entry.

[Before Modification]

```
# Example configuration file for snmptrapd
#
# No traps are handled by default, you must edit this file!
#
# authCommunity    log,execute,net public
# traphandle SNMPv2-MIB::coldStart    /usr/bin/bin/my_great_script cold
```

[After Modification]

```
# Example configuration file for snmptrapd
#
# No traps are handled by default, you must edit this file!
#
```

```
# authCommunity log,execute,net public
# traphandle SNMPv2-MIB::coldStart /usr/bin/bin/my_great_script cold
authCommunity net public
snmpTrapdAddr udp:162,udp6:162
```

6. Update of the firmware (For the PRIMEQUEST 3000 Series physical environment)

Apply the version of firmware PA18011 or later, when configuring a cluster system in a PRIMEQUEST 3000 Series using a Extended Partition.

7. Check the "OS Status Notification"

When installing this software on PRIMERGY(without RX4770M3, RX1330M3, TX1320M3, TX1330M3), it is necessary that the installation of software prerequisites is completed.

- "OS Status Notification"

Follow these steps to download.

1. Open <https://support.ts.fujitsu.com/Index.asp?lng=COM> by a web browser.
2. Enter "OS Status Notification" to the search form, and search.
3. Download from "PRIMERGY Tools" - "PRIMERGY Specific Software".

8. To enable Secure Boot in an environment other than physical environments (PRIMERGY or PRIMEQUEST), public key of PRIMECLUSTER must be registered in the system. Refer to the OS manual or your platform's manual to register the following public key in the system.

```
<DVD-ROM mount point>/Tool/etc/certs/fjmw_pubkey.der
```

4. Package check

1. Before installing this software, check if the necessary OS packages listed in "[Appendix C Necessary OS packages to be installed](#)" are installed on the system.

```
# rpm -qi <Package>.<Architecture> <Return>
```

If the command encounters an error, install the OS packages according to the OS document.

2. Check if the packages are installed on the system by executing the following command:

Check if the following package is installed on the system by executing below command:

```
# rpm -qi ruby <Return>
```

In case of when using GDS on a system with firmware in UEFI mode, check if the following package is installed on the system by executing below command:

```
# rpm -qi grub2-efi-x64-modules <Return>
```

If the command encounters an error, install the packages from CD-ROM(DVD) of the OS.

3.1.2 Installation

1. Login to the system and become the root user.

```
$ su <Return>
Password:password <Return>
```

2. The system is changed to the single user mode.

Check the default target.



Note

- The default target before upgrading ([multi-user.target] in the following example) varies depending on the system.

- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

```
# systemctl get-default <Return>
multi-user.target
```

The default target changes in single-user mode.

```
# systemctl set-default rescue.target <Return>
```

Start the system again in single-user mode.

```
# shutdown -r now <Return>
```

3. Insert the DVD in the DVD drive.

```
# mount -t iso9660 -r /dev/<device file name> <DVD-ROM mount point> <Return>
```

<DVDROM_DIR> will be used as the mount point.

4. Execute the CLI installer.

[PRIMERGY physical environment]

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_install -e HA-PG <Return>

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

Installing package <FJSVpclsnap> ... finished.
.
.

The installation finished successfully.
```

[PRIMEQUEST physical environment]

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_install -e HA-PQ <Return>

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

Installing package <FJSVpclsnap>... finished.
.
.

The installation finished successfully.
```

[Virtual environment, Red Hat OpenStack Platform environment]

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_install -e HA-OT <Return>

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

Installing package <FJSVpclsnap> ... finished.
.
.
```

```
The installation finished successfully.
```

5. Eject the DVD.

```
# cd / <Return>
# umount <DVDROM_DIR> <Return>
# eject <Return>
```

6. Reboot the system by executing the shutdown(8) command.

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
```

Start the system again.

```
# shutdown -r now <Return>
```

7. Download patch(es)

Download the latest PRIMECLUSTER patch(es) and update information file from Updatesite.

8. Apply the patch(es) for this software.

For installation instructions and pints of concern, etc., refer to the update information file of each patch.



The following messages maybe output to the console and system log during system starts, but there is no influence in operation.

```
kernel: clonltrc: loading out-of-tree module taints kernel.
kernel: clonltrc: module license 'Proprietary' taints kernel.
kernel: Disabling lock debugging due to kernel taint
kernel: clonltrc: module verification failed: signature and/or required key missing - tainting
kernel
```

3.1.3 Environment configuration

Configure the system environment according to "3.3 PRIMECLUSTER Installation", "4.3 Preparations for Starting the Web-Based Admin View Screen", "Chapter 5 Building a cluster", and "Chapter 6 Building cluster application" of the "PRIMECLUSTER Installation and Administration Guide".

3.2 Installation on Cluster nodes (cloud environment)

This section explains cluster node installation using the CLI installer in the cloud environment.



Before installing PRIMECLUSTER, take a snapshot of the system disk.

1. Kernel header

Before installing this software, it is necessary to install the kernel header that supports OS of the system. Check if the kernel header is installed on the system by executing the following command:

```
# rpm -qi kernel-devel <Return>
```

If the command encounters an error, or the kernel source version different than the system OS, install the kernel source according to the OS document.

Note

When using the yum command, check that the security groups and firewall rules have been set properly.

2. Package check

Before installing this software, check if the necessary OS packages listed in "[Appendix C Necessary OS packages to be installed](#)" are installed on the system.

```
# rpm -qi <Package>.<Architecture> <Return>
```

If the command encounters an error, install the OS packages according to the OS document.

Note

- Before installing packages in FUJITSU Hybrid IT Service FJcloud-O environment, it is necessary to do the settings for Red Hat Update Infrastructure. For details, refer to "FUJITSU Hybrid IT Service FJcloud-O IaaS Features Handbook."
- The following error message might be output and yum installation fails.

```
Protected multilib versions: *****.x86_64 != *****.i686
```

Follow the procedure below and install the x86_64 package after first updating the i686 package.

Example) If the libXp.x86_64 installation fails

```
# yum update libXp.i686 <Return>
# yum install libXp.x86_64 <Return>
```

Specify the same version as the i686 package and install the x86_64 package.

3. Correcting the /etc/hosts file

To install the Web-Based Admin View, it is necessary to edit the IP address as well as its host name (node name output in `uname -n`), as well as the host name (node name output in `uname -n`) for "127.0.0.1" (for IPv4), "::1" (for IPv6), used by the Web-Based Admin View in the `/etc/hosts` file.

1. Login to the system and become the root user.

```
$ sudo su - <Return>
Password:password <Return>
```

2. Delete the host name allocated to "127.0.0.1" (for IPv4) and "::1" (for IPv6) using a text editor and allocate it to the IP address for Web-Based Admin View.

[Before change]

```
# cat /etc/hosts <Return>
127.0.0.1 host-name localhost localhost.localdomain localhost4 localhost4.localdomain4
::1      host-name localhost localhost.localdomain localhost6 localhost6.localdomain6
```

[After change]

```
# cat /etc/hosts <Return>
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1      localhost localhost.localdomain localhost6 localhost6.localdomain6
IP-Address host-name
```

4. Check the NetworkManager service.

Check to enable the auto startup of the NetworkManager service.

Check that the setting of auto startup of the NetworkManager service is "enabled" using the following command.


```
# /usr/bin/systemctl is-enabled NetworkManager.service <Return>
enabled
```

If the setting is "disabled", enable the NetworkManager service using the following command.

```
# /usr/bin/systemctl start NetworkManager.service <Return>
# /usr/bin/systemctl enable NetworkManager.service <Return>
```

5. Copy the data from the DVD and deploy it in the environment where the installation is done.

Prepare separate environments where the DVD can be set and mounted and mount the DVD.

```
Copy source system # mount -t iso9660 -r /dev/<Device file name> <DVD-ROM mountpoint> <Return>
```

Copy the entire directory under *<DVD-ROM mountpoint>* to all the target systems copied to. Set the directory copied to as *<Directory copied to>*.

Note

When you copy to the target system, use the tar command to archive and make sure that the symbolic link is not made into an actual file.

6. Execute the CLI installer.

Prepare separate environments where the DVD can be set and mounted and mount the DVD.

```
# cd <Directory copied to>/Tool <Return>
# ./cluster_install -e HA-OT <Return>
Installation of PRIMECLUSTER started.
PRODUCT : PCLsnap
Installing package <FJSVpclsnap> ... finished.
.
.
The installation finished successfully.
```

7. Reboot the system by executing the shutdown(8) command.

```
# shutdown -r now <Return>
```

8. Download the latest PRIMECLUSTER patch(es) and update information file from Updatesite.

9. Apply the corrections to PRIMECLUSTER.

For how to apply changes, refer to "Software Maintenance" in "PRIMECLUSTER Installation and Administration Guide Cloud Services", and see the points of concern in the correction information file of each correction.

3.3 Installation on cluster management server

This section explains installation on cluster management server with CLI installer.

If you want to operate Web-Based Admin View in the three tier model, install a cluster management server using the procedure described below. For information on how to operate Web-Based Admin View, see "2.4 Determining the Web-Based Admin View Operation Mode" of the "PRIMECLUSTER Installation and Administration Guide".

3.3.1 Preparations

1. Time required

It takes approximately 10 minutes to install this software.

2. Package check

Before installing this software, check if the necessary OS packages listed in "[Appendix C Necessary OS packages to be installed](#)" are installed on the system.

```
# rpm -qi <Package>.<Architecture> <Return>
```

If the command encounters an error, install the OS packages according to the OS document.

3. System environment check

To install Web-Based Admin View, it is necessary to modify the IP address for Web-Based Admin View and its corresponding host name, and the host name corresponding to "127.0.0.1"(for IPv4) and "::1"(for IPv6).

1. Login to the system and become the root user.

```
$ su <Return>
Password:password <Return>
```

2. Delete the host name allocated to "127.0.0.1"(for IPv4) and "::1"(for IPv6) using a text editor and allocate it to the IP address for Web-Based Admin View.

[Before change]

```
# cat /etc/hosts <Return>
127.0.0.1    host-name localhost localhost.localdomain localhost4 localhost4.localdomain4
::1        host-name localhost localhost.localdomain localhost6 localhost6.localdomain6
```

[After change]

```
# cat /etc/hosts <Return>
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
IP-Address  host-name
```

3.3.2 Installation

1. Login to the system and become the root user.

```
$ su <Return>
Password:password <Return>
```

2. The system is changed to the single user mode.

Check the default target.



- The default target before upgrading ([multi-user.target] in the following example) varies depending on the system.
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

```
# systemctl get-default <Return>
multi-user.target
```

The default target changes in single-user mode.

```
# systemctl set-default rescue.target <Return>
```

Start the system again in single-user mode.

```
# shutdown -r now <Return>
```

3. Insert the DVD in the DVD drive.

```
# mount -t iso9660 -r /dev/<device file name> <DVD-ROM mount point> <Return>
```

<DVDROM_DIR> will be used as the mount point.

4. Execute the CLI installer.

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_install -e HA-M <Return>

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

Installing package <FJSVpclsnap> ... finished.
.
.

The installation finished successfully.
```

5. Eject the DVD.

```
# cd / <Return>
# umount <DVDROM_DIR> <Return>
# eject <Return>
```

6. Reboot the system by executing the shutdown(8) command.

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
```

Start the system again.

```
# shutdown -r now <Return>
```

7. Download patch(es)

Download the latest PRIMECLUSTER patch(es) and update information file from Updatesite.

8. Apply the patch(es) for this software.

For installation instructions and pints of concern, etc., refer to the update information file of each patch.

3.3.3 Environment configuration

Configure the system environment according to "4.3 Preparations for Starting the Web-Based Admin View Screen" of the "PRIMECLUSTER Installation and Administration Guide".

Chapter 4 Uninstallation

This chapter explains the uninstallation of this software.

Refer to "4.2 Uninstallation from Cluster nodes (cloud environment)" when uninstalling this software from the cloud environment.

Refer to "4.1 Uninstallation on cluster nodes" when uninstalling this software from the FUJITSU Hybrid IT Service FJcloud- Baremetal environment.

4.1 Uninstallation on cluster nodes

This section explains uninstallation on cluster nodes with CLI uninstaller.

4.1.1 Preparations

1. Before uninstalling PRIMECLUSTER from the host OS where the migration function is used in KVM environment, cancel the prerequisites for using the migration function.

For details, see "G.4.1 Canceling Prerequisites" in "PRIMECLUSTER Installation and Administration Guide."

2. Uninstall GDS Snapshot and GDS I/O Monitor Option if one or all of them are installed on the system. For information on how to uninstall these products, refer to the installation guide of each product.
3. Before uninstalling, if you are applying patch for PRIMECLUSTER by UpdateSite format, remove them by UpdateAdvisor (middleware).

For details, see help information on UpdateAdvisor(middleware) and the update information file of the patch.



However, if you remove the patch with uam remove, you do not need to reboot the operating system in multi-user mode.

4. Before uninstalling this software, check the following:

1. Check if the server function of Symfoware Server(Native) is installed using the following command:

```
# rpm -qi FJSVrddb <Return>
```

2. Take corrective action as instructed below if the Server function of Symfoware Server(Native) is installed.

[When Symfoware Server(Native) is installed]

1. Uninstall the middleware products that use the Server function of Symfoware Server(Native). See the manual of each middleware product.
2. Uninstall Symfoware Server(Native). See the installation guide of Symfoware Server(Native).

[When Symfoware Server(Native) is not installed]

1. Uninstall the middleware products that use the Server function of Symfoware Server(Native). See the manual of each middleware product.
2. Uninstall the Server function of Symfoware Server(Native). See the installation guide of Server function of Symfoware Server(Native).

4.1.2 Uninstallation

1. Login to the system as the root user.

```
$ su <Return>  
Password: password <Return>
```

2. If you are using RMS, stop RMS.

```
# hvshut -a <Return>
```

3. If you are using GFS, unmount all the GFS shared file systems and stop GFS.

```
# sfcumount GFS_MOUNTPOINT <Return>
# systemctl stop fjsvgfsfstrm2.service <Return>
# systemctl stop fjsvgfsfstrm.service <Return>
```

4. If you are using GDS, cancel the GDS settings. For details see the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide".

5. Boot the system in single user mode.

Check the default target.



- The default target before upgrading ([multi-user.target] in the following example) varies depending on the system.
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

```
# systemctl get-default <Return>
multi-user.target
```

The default target changes in single-user mode.

```
# systemctl set-default rescue.target <Return>
```

Start the system again in single-user mode.

```
# shutdown -r now <Return>
```

6. If you are using GDS, check the file in the /dev/sfdsk directory. If there are other files than _adm, _diag, _sysadm, and _sysdiag, delete them.

7. Insert the DVD and mount the DVD device.

```
# mount -t iso9660 -r /dev/<device file name> <DVD-ROM mount point> <Return>
```

<DVDROM_DIR> will be used as the mount point.

8. Execute the CLI uninstaller.

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_uninstall <Return>
Are you sure to remove PRIMECLUSTER from your system (y or n) ? y <Return>
.
.

The uninstallation finished successfully.
```

9. Eject the DVD, then reboot the system by executing the "shutdown(8)" command.

```
# cd / <Return>
# umount <DVDROM_DIR> <Return>
# eject <Return>
```

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
```

Start the system again.

```
# shutdown -r now <Return>
```

Note

- In PRIMECLUSTER Global Link Services:

Redundant Line Control Function, when using the user command execution function and script files remains, the directory under /etc/opt/FJSVhanet/script is not deleted. Delete this directory after saving or deleting script files.

```
# cd /etc/opt <Return>
# rm -rf FJSVhanet <Return>
```

4.2 Uninstallation from Cluster nodes (cloud environment)

This section explains cluster node uninstallation using the CLI installer in the cloud environment.

Note

If the following settings were set erroneously it might not be possible to access the system. Before doing the following settings, take a snapshot of the system storage.

1. Login to the system as the root user.

```
$ sudo su - <Return>
Password: password <Return>
```

2. If RMS is running, stop RMS.

```
# hvshut -a <Return>
```

3. If you are using GDS, cancel the GDS settings. For details see the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide".

4. If you are using GLS, reset the IP address etc. set in the GLS virtual interface to the standard NIC of the OS.

If GLS is set as follows, set sha0 to eth0. If there are multiple virtual GLS interfaces, redo the setting for all of them.

```
# /opt/FJSVhanet/usr/sbin/hanetconfig print <Return>
[IPv4,Patrol / Virtual NIC]

Name          Hostname          Mode Physical ipaddr  Interface List
+-----+-----+-----+-----+-----+
sha0                v                eth0
[IPv6]

Name          Hostname/prefix          Mode Interface List
+-----+-----+-----+-----+-----+-----+-----+
```

[Red Hat Enterprise Linux 8]

```
# cat /etc/sysconfig/network-scripts/ifcfg-eth0 <Return>
DEVICE=eth0
TYPE=Ethernet
BOOTPROTO=static
DEFROUTE=no
UUID=<Fixed value of the environment (not necessary to change)>
HOTPLUG=no
```

```
ONBOOT=yes
PEERDNS=no
```

```
# cat /etc/sysconfig/network-scripts/ifcfg-sha0 <Return>
DEVICE=sha0
#IPADDR=
#PREFIX=
BOOTPROTO=dhcp
DEFROUTE=yes
ONBOOT=yes
TYPE=Ethernet
PEERDNS=yes
DNS1=<IP address of primary DNS server>
DNS2=<IP address of secondary DNS server>
```

Edit the ifcfg-eth0 file and the ifcfg-sha0 as follows.

- In the /etc/sysconfig/network-scripts/ifcfg-eth0 file, comment out PEERDNS. Set BOOTPROTO=dhcp and DEFROUTE=yes.

```
DEVICE=eth0
TYPE=Ethernet
BOOTPROTO=dhcp
DEFROUTE=yes
UUID=<Fixed value of the environment (not necessary to change)>
HOTPLUG=no
ONBOOT=yes
#PEERDNS=no
```

- Set the ONBOOT of /etc/sysconfig/network-scripts/ifcfg-sha0 to no.

```
DEVICE=sha0
#IPADDR=
#PREFIX=
BOOTPROTO=dhcp
DEFROUTE=yes
ONBOOT=no
TYPE=Ethernet
PEERDNS=yes
DNS1=<IP address of primary DNS server>
DNS2=<IP address of secondary DNS server>
```

[Red Hat Enterprise Linux 9]

Set the following parameters of eth0 in the "nmcli connection modify" command.

```
ipv4.method "auto"
ipv4.ignore-auto-dns "no"
ipv4.never-default "no"
```

Set the connection.autoconnect of sha0 to "no" in the "nmcli connection modify" command.

5. Execute the following command to stop automatic start of the PRIMECLUSTER services.

```
# /opt/FJSPclinst/bin/pclservice off <Return>
```

6. Restart the system.

```
# /sbin/shutdown -r now <Return>
```

7. If you are using GDS, check the file in the /dev/sfdsk directory. If there are other files than _adm, _diag, _sysadm, and _sysdiag, delete them.

- If you are using GLS, delete the GLS settings.

```
# /opt/FJSVhanet/usr/sbin/hanethvrsc print <Return>
ifname      takeover-ipv4      takeover-ipv6      vlan-id/logical ip address list
+-----+-----+-----+-----+
sha0:65     172.16.0.100      -                  -
```

```
# /opt/FJSVhanet/usr/sbin/hanetconfig print <Return>
[IPv4,Patrol / Virtual NIC]

Name        Hostname      Mode Physical ipaddr      Interface List
+-----+-----+-----+-----+-----+
sha0                v                  eth0

[IPv6]

Name        Hostname/prefix      Mode Interface List
+-----+-----+-----+-----+-----+
```

```
# /opt/FJSVhanet/usr/sbin/hanethvrsc delete -n sha0:65 <Return>
hanet: 00000: information: normal end.
```

```
# /opt/FJSVhanet/usr/sbin/hanetconfig delete -n sha0 <Return>
hanet: 00000: information: normal end.
```

```
# /opt/FJSVhanet/usr/sbin/hanetconfig print <Return>
[IPv4,Patrol / Virtual NIC]

Name        Hostname      Mode Physical ipaddr      Interface List
+-----+-----+-----+-----+-----+

[IPv6]

Name        Hostname/prefix      Mode Interface List
+-----+-----+-----+-----+-----+
#
```

- Check PEERDNS, DNS1, DNS2 of /etc/sysconfig/network-scripts/ifcfg-ethX (X is 0, 1) and /etc/sysconfig/network of GATEWAYDEV and change the DNS client settings as necessary.
- If an UpdateSite format PRIMECLUSTER correction is applied, delete this correction.
For details, see help in UpdateAdvisor (middleware) and refer to the correction information file.

 **Note**

However, if you remove the patch with uam remove, you do not need to execute pclservise on or reboot the operating system.

- Copy the data from the DVD and deploy it in the environment where the installation is done.
Prepare separate environments where the DVD can be set and mounted and mount the DVD.

```
Copy source system # mount -t iso9660 -r /dev/<Device file name> <DVD-ROM mountpoint> <Return>
```

Copy the entire directory under <DVD-ROM mountpoint> to all the target systems copied to. Set the directory copied to as <Directory copied to>.

 **Note**

When you copy to the target system, use the tar command to archive and make sure that the symbolic link is not made into an actual file.

12. Execute the CLI uninstaller.

```
# cd <Directory copied to>/Tool <Return>
# ./cluster_uninstall <Return>
Are you sure to remove PRIMECLUSTER from your system (y or n) ? y
.
.
The uninstallation finished successfully.
```

13. Restart the system.

```
# /sbin/shutdown -r now <Return>
```



If you use GLS, the script file in the /etc/opt/FJSVhanet/script directory used by the user command execution function might not be deleted and may remain after this software has been uninstalled. This directory and file remaining will not affect the operations of the system, but if you want to delete them, use the following commands and delete them.

For the script file, remove the directory after removing or deleting the file.

```
# cd /etc/opt <Return>
# rm -rf FJSVhanet <Return>
```

4.3 Uninstallation on cluster management server

This section explains uninstallation on cluster management server with CLI uninstaller.

4.3.1 Preparation

Before uninstalling, if you are applying patch for PRIMECLUSTER by UpdateSite format, remove them by UpdateAdvisor (middleware).

For details, see help information on UpdateAdvisor(middleware) and the update information file of the patch.

4.3.2 Uninstallation

1. Login to the system and become the root user.

```
$ su <Return>
Password:password <Return>
```

2. Start the system in single user mode.

Check the default target.



- The default target before upgrading ([multi-user.target] in the following example) varies depending on the system.
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

```
# systemctl get-default <Return>
multi-user.target
```

The default target changes in single-user mode.

```
# systemctl set-default rescue.target <Return>
```

Start the system again in single-user mode.

```
# shutdown -r now <Return>
```

3. Insert the DVD in the DVD drive.

```
# mount -t iso9660 -r /dev/<device file name> <DVD-ROM mount point> <Return>
```

<DVDROM_DIR> will be used as the mount point.

4. Execute the CLI uninstaller.

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_uninstall <Return>
Are you sure to remove PRIMECLUSTER from your system (y or n) ? y <Return>
.
.
The uninstallation finished successfully.
```

5. Eject the DVD, then reboot the system by executing the shutdown(8) command.

```
# cd / <Return>
# umount <DVDROM_DIR> <Return>
# eject <Return>
```

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
```

Start the system again.

```
# shutdown -r now <Return>
```

Appendix A Troubleshooting

This chapter explains how to address problems that occur.

A.1 CLI installer

This section explains CLI installer.

A.1.1 Log file

The CLI installer log including the rpm(8) command output will be saved in the following log file:

- /var/log/install/cluster_install

A.1.2 Information messages

INFO: no package to update

Description

Since the package same as that in DVD or newer than that in DVD is installed, the package in DVD cannot be installed.

Workaround

According to the procedure of "[4.1.2 Uninstallation](#)", execute the command again after removing PRIMECLUSTER from the system.

INFO: The installation process stopped by user request

Description

Installation process was stopped according at user's request.

Workaround

Execute the command again.

A.1.3 Error messages

ERROR: /etc/sysconfig/kdump was invalid

Description

Installation failed because blacklist could not be configured due to an error in /etc/sysconfig/kdump.

Example: KDUMP_COMMANDLINE_APPEND setting is not enclosed in quotation marks (' or "). There is a newline on the line where KDUMP_COMMANDLINE_APPEND is written.

Workaround

Refer to the OS error messages and the manual, etc., and run cluster_install again after correcting the error in /etc/sysconfig/kdump.

If the above action fails to solve the problem, put down the message and gather information for investigation then contact your Fujitsu system engineers.

ERROR: /etc/sysconfig/kdump is not writable

Description

Failed to edit /etc/sysconfig/kdump and installation aborted.

Workaround

Clear the cause of the edit failure and run cluster_install again.

If the above action fails to solve the problem, put down the message and gather information for investigation then contact your Fujitsu system engineers.

ERROR: /tmp needs *TMP_LEAST* KB at least**Description**

There is not enough free space on the /tmp file system.

Workaround

Reserve at least *TMP_LEAST*KB on the /tmp file system then execute the command again.

ERROR: /tmp not writable**Description**

Creation of a temporary file in /temp failed.

Workaround

After /temp is made writable, execute the command again.

Example: If the file system including /temp is mounted as a read-only file system, make /temp writable by executing "mount -o remount <mount point of the file system including /tmp>".

ERROR: /var needs *VAR_LEAST* KB at least**Description**

There is not enough free space on the /var file system.

Workaround

Reserve at least *VAR_LEAST*KB on the /var file system then execute the command again.

ERROR: </usr/sbin/dmidecode> command not found**Description**

The command </usr/sbin/dmidecode> not installed on the system.

Workaround

Check if the OS is installed with a right procedure.

ERROR: CF driver is loaded**Description**

The CF driver is loaded.

Workaround

Unload the CF driver then execute the command again. For details, see "PRIMECLUSTER Cluster Foundation Configuration and Administration Guide".

ERROR: Failed to install FJQSS<Information Collection Tool>**Description**

Installation of FJQSS failed.

Workaround

Collect the following information then contact your Fujitsu system engineers.

- /tmp/fjqssinstaller.log

ERROR: failed: rpm *

Description

The rpm command failed. ("*" indicates the error details.)

Workaround

Remove the cause of the error referring to the log file then execute the command again.

ERROR: internal error: *

Description

An internal error occurred. ("*" indicates the error details.)

Workaround

Put down the message then contact your Fujitsu system engineers.

ERROR: platform <PLAT> not supported

Description

This software is not supported.

Workaround

Check if the environment meets operating conditions as prescribed in "[Chapter 2 Operation Environment](#)". If there is nothing wrong with the environment, put down the message then contact your Fujitsu system engineers.

ERROR: product <PROD> on platform <PLAT> not supported

Description

Installation of the product set <PROD> is not supported for this software.

Workaround

Check if the command option is correct. If it is, then check if the environment meets operating conditions as prescribed in "[Chapter 2 Operation Environment](#)". If there is nothing wrong with the environment, put down the message then contact your Fujitsu system engineers.

ERROR: product <PROD1> and <PROD2> contains the same package <PKG>

Description

The products <PROD1> and <PROD2> are included in the same package <PKG>, so they cannot be installed at the same time.

Workaround

An option cannot be specified for the products <PROD1> and <PROD2>.

ERROR: syntax error

Description

An incorrect option was specified.

Workaround

Correct the option then execute the command again.

ERROR: syntax error (<PSET> <PLAT>)

Description

An incorrect option was specified.
Installation of the product set <PSET> is not supported for this software.

Workaround

Check if the command option is correct. If it is, check whether the environment meets operating conditions as prescribed in "[Chapter 2 Operation Environment](#)".

ERROR: The installation of following package(s) failed. **<PackageName>**

Description

The installation of <PackageName> failed. You may have tried to install in the kernel version of OS not supported.

Workaround

Please confirm whether there is required patch of PRIMECLUSTER corresponding to the kernel version of OS. If the patch is existing, please apply the patch and execute "rpm -V --nodigest --nofiles --noscripts --nosignature <PackageName>" afterwards. When nothing is output, it means the execution of the CLI installer succeeded. Please perform the subsequent procedure.

If the above action fails to solve the problem, put down the message then contact your Fujitsu system engineers.

ERROR: the installation process is running now

Description

The other installation process is running.

Workaround

Wait until the other installation process is completed then execute the command again.

Note

If this message appears although the other installation process is not being executed, delete the "/tmp/cluster_install" and "/tmp/cluster_uninstall" flag files then execute the command again.

ERROR: to use this installer you will need to be the root user.

Description

The command was executed by a non-root user.

Workaround

Execute the command using root user access privileges.

Installation failed

Description

Installation failed.

Workaround

Remove the cause of the problem referring to the error message and log file then execute the command again.

Please see the following log file. **/var/log/install/cluster_install**

Description

See the /var/log/install/cluster_install log file.

Workaround

Remove the cause of the error referring to the log file then execute the command again.

A.1.4 When segmentation violation causes an installation failure

If segmentation violation is due to the rpm(8) command, take the following corrective steps. If the problem still remains unresolved, contact Fujitsu customer support engineers.

1. Reboot the system by executing the shutdown(8) command.

```
# shutdown -r now <Return>
```

2. Delete PRIMECLUSTER from the system according to "4.1.2 Uninstallation" or "4.3.2 Uninstallation".
3. Execute the following command.

```
# rpm --rebuilddb <Return>
```

4. Install PRIMECLUSTER again.

A.2 CLI uninstaller

This section explains CLI uninstaller.

A.2.1 Log file

Logs of the CLI uninstaller including the output of the rpm(8) command will be saved into the log file below:

- /var/log/install/cluster_uninstall

A.2.2 Information messages

INFO: no package to uninstall

Description

Currently, no packages that need to be uninstalled are installed on the system.

Workaround

None.

INFO: The uninstallation process stopped by user request

Description

The uninstallation process has been stopped at user's request.

Workaround

If you want to continue the uninstallation process, execute the command again.

A.2.3 Error messages

ERROR: /etc/sysconfig/kdump was invalid

Description

Uninstallation failed because blacklist could not be configured due to an error in /etc/sysconfig/kdump.

Example: KDUMP_COMMANDLINE_APPEND setting is not enclosed in quotation marks (' or "). There is a newline on the line where KDUMP_COMMANDLINE_APPEND is written.

Workaround

Refer to the OS error messages and the manual, etc., and run cluster_uninstall again after correcting the error in /etc/sysconfig/kdump.

If the above action fails to solve the problem, put down the message and gather information for investigation then contact your Fujitsu system engineers.

ERROR: /etc/sysconfig/kdump is not writable**Description**

Failed to edit /etc/sysconfig/kdump and uninstallation aborted.

Workaround

Clear the cause of the edit failure and run cluster_uninstall again.

If the above action fails to solve the problem, put down the message and gather information for investigation then contact your Fujitsu system engineers.

ERROR: /tmp needs TMP_LEASTKB at least**Description**

There is not enough free space on the /tmp file system.

Workaround

Reserve at least *TMP_LEASTKB* on the /tmp file system then execute the command again.

ERROR: /tmp not writable**Description**

Creation of a temporary file in /temp failed.

Workaround

After /temp is made writable, execute the command again.

Example: If the file system including /temp is mounted as a read-only file system, make /temp writable by executing "mount -o remount <mount point of the file system including /tmp>".

ERROR: /var needs VAR_LEASTKB at least**Description**

There is not enough free space on the /var file system.

Workaround

Reserve at least *VAR_LEASTKB* on the /var file system then execute the command again.

ERROR: CF driver is loaded**Description**

The CF driver is loaded.

Workaround

Unload the CF driver then execute the command again. For details see the "PRIMECLUSTER Cluster Foundation Configuration and Administration Guide".

ERROR: failed: rpm ***Description**

The rpm command failed. ("*" indicates the error details.)

Workaround

Remove the cause of the error referring to the log file then execute the command again.

ERROR: internal error: ***Description**

An internal error occurred. ("*" indicates the error details.)

Workaround

Put down the message then contact your Fujitsu system engineers.

ERROR: product <PROD> on platform <PLAT> not supported**Description**

The product set <PROD> package is invalid.

Workaround

Specify a correct command option then execute the command again.

ERROR: syntax error**Description**

The incorrect option was specified.

Workaround

Correct the option and execute the command again.

ERROR: syntax error (<PSET> <PLAT>)**Description**

An incorrect option was specified.
The product set <PSET> package is invalid.

Workaround

Run the command with the right option.

ERROR: the installation process is running now**Description**

The other installation process is being executed.

Workaround

Wait until the other installation process is completed then execute the command again.

Note

If this message appears although the other installation process is not being executed, delete the "/tmp/cluster_install" and "/tmp/cluster_uninstall" flag files then execute the command again.

ERROR: there exists GDS object(s)**Description**

Some GDS objects are not deleted.

Workaround

Delete all the GDS objects then execute the command again.

ERROR: to use this uninstaller you will need to be the root user

Description

The command was executed by a non-root user.

Workaround

Execute the command with root user access privileges.

Please see the following log file.
[/var/log/install/cluster_uninstall](#)

Description

See the `/var/log/install/cluster_uninstall` log file.

Workaround

Remove the cause of the error referring to the log file then execute the command again.

Uninstallation failed.

Description

Uninstallation failed.

Workaround

Remove the cause of the error referring to the log file or error message then execute the command again.

A.2.4 When "there exists GDS object(s)" appears and uninstallation fails

If the following message appears and uninstallation fails, take the corrective steps described as the resolution below.

Message

```
ERROR: there exists GDS object(s)
Uninstallation failed.
```

Resolution

1. Check whether there are GDS classes using the `sdxinfo` command. If any, delete the classes. For the class deletion method, see the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide".
2. Check the file in the `/etc/opt/FJVSdx/sysdb.d` directory using the `ls(1)` command. If there are other files than `class.db`, delete the files by executing the `rm(1)` command.
3. Check the file in the `/dev/sfdsk` directory using the `ls(1)` command. If there are other files or directories than `_adm`, `_diag`, `_sysadm`, and `_sysdiag`, delete the files and the directories.
4. Perform the procedure of "4.1.2 Uninstallation" from step 7 or "4.3.2 Uninstallation" from step 3 again.

Appendix B Upgrading from old versions

Before upgrading, back up the entire system using the `dd(1)` command on all the nodes. Proceed this steps on the console of each system. Refer to "B.2 Upgrading cluster nodes (cloud environment)" when upgrading this software on the cloud environment.

B.1 Upgrading cluster nodes

This section explains upgrading cluster nodes.



- If you are using Host OS failover function in your environment, upgrade both host and guest OSes. You can upgrade either the host OS or the guest OSes first.
- Before upgrading the host OS, stop the guest OSes.
- When you upgrade PRIMECLUSTER to this version on the system where GDS netmirror volumes exist, at the first system startup after the upgrading, resynchronization copying of entire area of the netmirror volumes may be performed instead of just resynchronization copying of the volumes.
- When upgrading in a system where `/etc/modprobe.d/gds.conf` file exists and "options sfdsksys sfdsksys_major = <major>" is specified, perform the following operation.

[pre-upgrade]

- Delete the `/etc/modprobe.d/gds.conf` file.
- Cancel the mirroring of the system disk.

[after-upgrade]

If the mirroring of the system disk has been canceled in the pre-upgrade operation, upgrade the cluster node and then set mirroring again.

B.1.1 Upgrading from PRIMECLUSTER HA Server 4.6A20 or earlier

1. Download patch(es)

Download the latest PRIMECLUSTER 4.7A00 patch(es) and update information file from Updatesite.

2. If you are using Cluster Applications, check the configuration name of RMS by executing the following command on any one of the cluster nodes. Put down the name as you can use it later.

```
# hvdisp -a | grep Configuration <Return>
Configuration: /opt/SMAW/SMAWRrms/build/<configuration_name>.us
```

3. Stop RMS if you are using Cluster Applications.

```
# hvshut -a <Return>
```

4. Boot each cluster node in single user mode.

Check the default target.



- The default target before upgrading ([multi-user.target] in the following example) varies depending on the system.
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

```
# systemctl get-default <Return>
multi-user.target
```

The default target changes in single-user mode.

```
# systemctl set-default rescue.target <Return>
```

Start the system again in single-user mode.

```
# shutdown -r now <Return>
```

5. When update the basic software from existing environment, updating basic software, see the following document Operating Update manual.
6. Proceed the following steps on each cluster node.

1. Create a backup directory.

```
# mkdir /<mydir> <Return>
```

2. Back up the PRIMECLUSTER operating environment.

```
# cp -p /usr/opt/reliant/etc/hvipalias /<mydir> <Return>
# cp -p /var/opt/FJSVclapm/etc/Tuning_Param /<mydir> <Return>
# cp -p /etc/services /<mydir> <Return>
# crontab -u root -l > /<mydir>/crontab.bak <Return>
# cp -p /opt/FJSVwvbs/etc/webview.cnf /<mydir> <Return>
# cp -p /opt/FJSVwvbs/etc/.policy /<mydir> <Return>
# cp -p /opt/FJSVwvbs/etc/wvlocal.cnf /<mydir> <Return>
```

Check if the Plugin.html file has not been changed.

Open the /opt/FJSVwvbs/etc/Plugin.html file using a text editor then check the default value(60) is set for the following entry:

```
<PARAM NAME = Initial_wait VALUE = "60">
```

If it is different from the default value, take a note of the value.

This value will be used to restore it later.

3. Back up the GLS operating environment.

```
# /opt/FJSVhanet/usr/sbin/hanetbackup -d /<mydir> <Return>
```

The backup file name is "hanetYYYYMMDD.bk". YYYYYMMDD shows information of the command execution date. (YYYY: year, MM: month, DD: day)

4. Back up the GDS operating environment.

```
# cp -p /etc/sysconfig/devlabel /<mydir> <Return>
# cp -p /etc/sysconfig/devlabel.d/devname_conf /<mydir> <Return>
```

5. Insert the DVD and mount the DVD device.

```
# mount -t iso9660 -r /dev/<device file name> <DVD-ROM mount point> <Return>
```

<DVDROM_DIR> will be used as the mount point.

6. Execute the following script then delete a part of the PRIMECLUSTER package.

```
# cd <DVDROM_DIR>/Tool <Return>
# ./upgrade_uninstall <Return>
Are you sure to remove a part of PRIMECLUSTER from your system (y or n) ? y <Return>
:
```

```
:  
The uninstallation finished successfully.
```

7. Execute the following cluster_install script, and install the package or overwrite it.

[PRIMERGY physical environment]

```
# cd <DVDROM_DIR>/Tool <Return>  
# ./cluster_install -e HA-PG <Return>  
:  
:  
The installation finished successfully.
```

[PRIMEQUEST physical environment]

```
# cd <DVDROM_DIR>/Tool <Return>  
# ./cluster_install -e HA-PQ <Return>  
:  
:  
The installation finished successfully.
```

[Virtual environment, Red Hat OpenStack Platform environment]

```
# cd <DVDROM_DIR>/Tool <Return>  
# ./cluster_install -e HA-OT <Return>  
:  
:  
The installation finished successfully.
```



- The following message might be output:

```
# ./cluster_install -x xx <Return>  
INFO: no package to update
```

This message indicates that the newer version of all the packages is installed, so it is not necessary to upgrade.

- While executing the cluster_install script, the following message might be output

```
# ./cluster_install -x xx <Return>  
Installing package <XXXXXXXXXXXX> ... skipped.
```

This message indicates that the same version of all the packages is installed, so it is not necessary to upgrade.

8. Eject the DVD.

```
# cd / <Return>  
# umount <DVDROM_DIR> <Return>  
# eject cdrom <Return>
```

9. Apply the patch(es) for this software.

For installation instructions and points of concern, etc., refer to the update information file of each patch.

10. Restore the PRIMECLUSTER operating environment that was backed up at step 2.

```
# cp -p /<mydir>/Tuning_Param /var/opt/FJSVclapm/etc <Return>  
# cp -p /<mydir>/hvipalias /usr/opt/reliant/etc <Return>  
# cp -p /<mydir>/services /etc <Return>  
# crontab -u root /<mydir>/crontab.bak <Return>  
# cp -p /<mydir>/webview.cnf /opt/FJSVwvbs/etc/webview.cnf <Return>
```

```
# cp -p /<mydir>/policy /opt/FJSVwvbs/etc/policy <Return>
# cp -p /<mydir>/wvlocal.cnf /opt/FJSVwvbs/etc/wvlocal.cnf <Return>
```

If you find the Plugin.html file has been changed at step 2, restore the value.

There is no need to do this step if it has not been changed.

Edit the /opt/FJSVwvbs/etc/Plugin.html file using a text editor then write the value noted at step 2 back to the file (in the example "xx"):

```
(Example)
[Before Modification]
  <PARAM NAME = Initial_wait VALUE = "60">
[After Modification]
  <PARAM NAME = Initial_wait VALUE = "xx">
```

11. Restore the GLS operating environment that was backed up at step 3.

```
# /opt/FJSVhanet/usr/sbin/hanetrestore -f /<mydir>/hanetYYYYMMDD.bk <Return>
```

12. Restore the GDS operating environment that was backed up at step 4.

```
# cp -p /<mydir>/devlabel /etc/sysconfig/devlabel <Return>
# cp -p /<mydir>/devname_conf /etc/sysconfig/devlabel.d/devname_conf <Return>
```

13. Set the java_home environment variable of Web-Based Admin View.

```
# /etc/opt/FJSVwvbs/etc/bin/wvSetparam java_home /opt/FJSVwvbs/jre <Return>
```

14. Check the settings of the current automatic startup of RMS and execute the following command according to the settings.

```
# hvsetenv HV_RCSTART
1 <- Check this value.
```

If "0" is set, the automatic startup of RMS has been restricted. Go to Step 7.

If "1" is set, execute the following command to restrict the automatic startup of RMS.

```
# hvsetenv HV_RCSTART 0
# hvsetenv HV_RCSTART
0 <- Check "0" is output.
```

7. After completing step 6 on all the cluster nodes, reboot all the cluster nodes.

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
```

Start the system again.

```
# shutdown -r now <Return>
```

8. Check if they are all active then go to the following steps. If you are using Cluster Applications, enable the RMS setting on any one of the cluster nodes.

1. Start RMS Wizard using the following command. The configuration name is the same as that of step 2.

```
# hvw -n <configuration name> <Return>
```

2. Select "Configuration-Activate" from "Main configuration menu" then execute Activate of the RMS setting.
3. Exit RMS Wizard.

9. Change HV_RCSTART variable from "0" to "1" on all the nodes as follows:

1. If you change the settings that restrict the automatic startup of RMS in step 6-14, return the settings back to its previous settings.

```
# hvsetenv HV_RCSTART 1
# hvsetenv HV_RCSTART
1 <- Check "1" is output.
```

2. Start RMS.

```
# hvcm <Return>
```

B.2 Upgrading cluster nodes (cloud environment)

This section explains upgrading cluster nodes in the cloud environment.



- When you upgrade PRIMECLUSTER to this version on the system where GDS netmirror volumes exist, at the first system startup after the upgrading, resynchronization copying of entire area of the netmirror volumes may be performed instead of just resynchronization copying of the volumes.
 - If the following settings were set erroneously it might not be possible to access the system. Before doing the following settings, take a snapshot of the system storage.
-

B.2.1 Upgrading from PRIMECLUSTER HA Server 4.6A20 or earlier

1. Download patch(es)

Download the latest PRIMECLUSTER 4.7A00 patch(es) and update information file from Updatesite.

2. If you are using Cluster Applications, check the configuration name of RMS by executing the following command on any one of the cluster nodes. Put down the name as you can use it later.

```
# hvdisp -a | grep Configuration <Return>
Configuration: /opt/SMAW/SMAWRrms/build/<configuration_name>.us
```

3. Stop RMS if you are using Cluster Applications.

```
# hvshut -a <Return>
```

4. Execute the following command to stop automatic start of the PRIMECLUSTER services on each cluster node.

```
# /opt/FJSVpclinst/bin/pclservice off <Return>
```

5. If you are using GLS, execute the following procedure on each cluster node.

1. Back up the GLS operating environment.

```
# /opt/FJSVhanet/usr/sbin/hanetbackup -d /<mydir> <Return>
```

The backup file name is "hanetYYYYMMDD.bk". YYYYYMMDD shows information of the command execution date. (YYYY: year, MM: month, DD: day)

2. When GLS is set to the network used for the public LAN (used also for the administrative LAN), set to the standard NIC of the OS. If GLS is set as follows, set sha0 to eth0.

```
# /opt/FJSVhanet/usr/sbin/hanetconfig print <Return>
[IPv4,Patrol / Virtual NIC]

Name           Hostname           Mode Physical ipaddr  Interface List
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

sha0	v	eth0
[IPv6]		
Name	Hostname/prefix	Mode Interface List
+-----+-----+-----+-----+-----+-----+		

```
# cat /etc/sysconfig/network-scripts/ifcfg-eth0 <Return>
DEVICE=eth0
#TYPE=Ethernet
BOOTPROTO=static
DEFROUTE=no
UUID=<Fixed value of the environment (not necessary to change)>
HOTPLUG=no
ONBOOT=yes
DEVICETYPE=hanet
PEERDNS=no
```

```
# cat /etc/sysconfig/network-scripts/ifcfg-sha0 <Return>
DEVICE=sha0
#IPADDR=
#NETMASK=
BOOTPROTO=dhcp
DEFROUTE=yes
ONBOOT=yes
DEVICETYPE=sha
HOTPLUG=no
PEERDNS=yes
DNS1=<IP address of primary DNS server>
DNS2=<IP address of secondary DNS server>
```

Edit the ifcfg-eth0 file and the ifcfg-sha0 as follows.

- In the /etc/sysconfig/network-scripts/ifcfg-eth0 file, comment out DEVICETYPE and PEERDNS. Set BOOTPROTO=dhcp and DEFROUTE=yes.

```
DEVICE=eth0
#TYPE=Ethernet
BOOTPROTO=dhcp
DEFROUTE=yes
UUID=<Fixed value of the environment (not necessary to change)>
HOTPLUG=no
ONBOOT=yes
#DEVICETYPE=hanet
#PEERDNS=no
```

- Set the ONBOOT of /etc/sysconfig/network-scripts/ifcfg-sha0 to no.

```
DEVICE=sha0
#IPADDR=
#NETMASK=
BOOTPROTO=dhcp
DEFROUTE=yes
ONBOOT=no
DEVICETYPE=sha
HOTPLUG=no
PEERDNS=yes
DNS1=<IP address of primary DNS server>
DNS2=<IP address of secondary DNS server>
```

6. Restart the system on each cluster node.

```
# shutdown -r now <Return>
```


7. Copy the data from the DVD and deploy it in the environment where the installation is done.

1. Mount the DVD in an other Linux environment that can read data from the DVD.

```
# mount -t iso9660 -r/dev/<Device File Name> <DVD-ROM mount point> <Return>
```

2. Archive the directory under the <DVD-ROM mount point> with the tar command.

```
# tar czf <Archive Filename> -C <DVD-ROM mount point> . <Return>
```



Note

- The last dot (.) is required.

3. Place the archived files from step 2 into the environment to be upgraded.
4. In the environment to be upgraded, create a destination directory.

```
# mkdir <Directory copied to> <Return>
```

5. Extract the archive to the destination directory.

```
# tar xzf <Archive Filename> -C <Directory copied to> <Return>
```

8. Proceed the following steps on each cluster node.

1. Create a backup directory.

```
# mkdir /<mydir> <Return>
```

2. Back up the PRIMECLUSTER operating environment.

```
# cp -p /usr/opt/reliant/etc/hvipalias /<mydir> <Return>
# cp -p /var/opt/FJSVwvbs/etc/Tuning_Param /<mydir> <Return>
# cp -p /etc/services /<mydir> <Return>
# crontab -u root -l > /<mydir>/crontab.bak <Return>
# cp -p /opt/FJSVwvbs/etc/webview.cnf /<mydir> <Return>
# cp -p /opt/FJSVwvbs/etc/.policy /<mydir> <Return>
# cp -p /opt/FJSVwvbs/etc/wvlocal.cnf /<mydir> <Return>
```

Check if the Plugin.html file has not been changed.

Open the /opt/FJSVwvbs/etc/Plugin.html file using a text editor then check the default value(60) is set for the following entry:

```
<PARAM NAME = Initial_wait VALUE ="60">
```

If it is different from the default value, take a note of the value.

This value will be used to restore it later.

3. If you are using GDS, back up the GDS operating environment.

```
# cp -p /etc/sysconfig/devlabel /<mydir> <Return>
# cp -p /etc/sysconfig/devlabel.d/devname_conf /<mydir> <Return>
```

4. Execute the following script then delete a part of the PRIMECLUSTER package.

```
# cd <Directory copied to>/Tool <Return>
# ./upgrade_uninstall <Return>
Are you sure to remove a part of PRIMECLUSTER from your system (y or n) ? y <Return>
:
:
The uninstallation finished successfully.
```

Note

- After removing the PRIMECLUSTER package, do not reboot the system until the package has been installed or overwritten. It might not be possible to access the system.

5. Execute the following cluster_install script, and install the package or overwrite it.

```
# cd <Directory copied to>/Tool <Return>
# ./cluster_install -e HA-OT <Return>
Installation of PRIMECLUSTER started.
PRODUCT : PCLsnap
Installing package <FJSVpclsnap> ... finished.
:
:
The installation finished successfully.
```

Note

- The following message might be output:

```
# ./cluster_install -x xx <Return>
INFO: no package to update
```

This message indicates that the newer version of all the packages is installed, so it is not necessary to upgrade.

- While executing the cluster_install script, the following message might be output

```
# ./cluster_install -x xx <Return>
Installing package <XXXXXXXXXXXX> ... skipped.
```

This message indicates that the same version of all the packages is installed, so it is not necessary to upgrade.

6. Apply the patch(es) for this software.

For installation instructions and points of concern, etc., refer to the update information file of each patch.

7. Restore the PRIMECLUSTER operating environment that was backed up at step 2.

```
# cp -p /<mydir>/Tuning_Param /var/opt/FJSVclapm/etc <Return>
# cp -p /<mydir>/hvipalias /usr/opt/reliant/etc <Return>
# cp -p /<mydir>/services /etc <Return>
# crontab -u root /<mydir>/crontab.bak <Return>
# cp -p /<mydir>/webview.cnf /opt/FJSVwvbs/etc/webview.cnf <Return>
# cp -p /<mydir>/policy /opt/FJSVwvbs/etc/policy <Return>
# cp -p /<mydir>/wvlocal.cnf /opt/FJSVwvbs/etc/wvlocal.cnf <Return>
```

If you find the Plugin.html file has been changed at step 2, restore the value.

There is no need to do this step if it has not been changed.

Edit the /opt/FJSVwvbs/etc/Plugin.html file using a text editor then write the value noted at step 2 back to the file (in the example "xx"):

```
(Example)
[Before Modification]
  <PARAM NAME = Initial_wait VALUE = "60">
[After Modification]
  <PARAM NAME = Initial_wait VALUE = "xx">
```

8. If you are using GLS, execute the following procedure to restore the GLS operating environment.

1. Restore the GLS operating environment that was backed up.

```
# /opt/FJSVhanet/usr/sbin/hanetrestore -f /<mydir>/hanetYYYYMMDD.bk <Return>
```

2. When GLS is set to the network used for the public LAN (used also for the administrative LAN), restore the settings.

Edit the ifcfg-eth0 file and the ifcfg-sha0 as follows.

In the /etc/sysconfig/network-scripts/ifcfg-eth0 file, uncomment DEVICETYPE and PEERDNS. Set BOOTPROTO=static and DEFROUTE=no.

```
DEVICE=eth0
#TYPE=Ethernet
BOOTPROTO=static
DEFROUTE=no
UUID=<Fixed value of the environment (not necessary to change)>
HOTPLUG=no
ONBOOT=yes
DEVICETYPE=hanet
PEERDNS=no
```

Verify that set the ONBOOT of /etc/sysconfig/network-scripts/ifcfg-sha0 to yes.

```
# cat /etc/sysconfig/network-scripts/ifcfg-sha0 <Return>
DEVICE=sha0
#IPADDR=
#NETMASK=
BOOTPROTO=dhcp
DEFROUTE=yes
ONBOOT=yes
DEVICETYPE=sha
HOTPLUG=no
PEERDNS=yes
DNS1=<IP address of primary DNS server>
DNS2=<IP address of secondary DNS server>
```

9. If you are using GDS, restore the GDS operating environment that was backed up at step 3.

```
# cp -p /<mydir>/devlabel /etc/sysconfig/devlabel <Return>
# cp -p /<mydir>/devname_conf /etc/sysconfig/devlabel.d/devname_conf <Return>
```

10. Set the java_home environment variable of Web-Based Admin View.

```
# /etc/opt/FJSVwvbs/etc/bin/wvSetparam java_home /opt/FJSVwvbs/jre <Return>
```

11. Check the settings of the current automatic startup of RMS and execute the following command according to the settings.

```
# hvsetenv HV_RCSTART
1 <- Check this value.
```

If "0" is set, the automatic startup of RMS has been restricted. Go to Step 9.

If "1" is set, execute the following command to restrict the automatic startup of RMS.

```
# hvsetenv HV_RCSTART 0
# hvsetenv HV_RCSTART
0 <- Check "0" is output.
```

9. After completing step 8 on all the cluster nodes, enable automatic start of the PRIMECLUSTER services on each cluster node.

```
# /opt/FJSVpclinst/bin/pclservice on <Return>
```

- Restart the system on each cluster node.

```
# shutdown -r now <Return>
```

- Check if they are all active then go to the following steps. If you are using Cluster Applications, enable the RMS setting on any one of the cluster nodes.

- Start RMS Wizard using the following command. The configuration name is the same as that of step 2.

```
# hvw -n <configuration name> <Return>
```

- Select "Configuration-Activate" from "Main configuration menu" then execute Activate of the RMS setting.
- Exit RMS Wizard.

- Change HV_RCSTART variable from "0" to "1" on all the nodes as follows:

- If you change the settings that restrict the automatic startup of RMS in step 8-11, return the settings back to its previous settings.

```
# hvsetenv HV_RCSTART 1
# hvsetenv HV_RCSTART
1 <- Check "1" is output.
```

- Start RMS.

```
# hvcm <Return>
```

- Delete the destination directory if it is not required.

B.3 Cluster management server upgrading

This section explains upgrading cluster management server.

B.3.1 Upgrading from PRIMECLUSTER HA Server 4.6A20 or earlier

- Download patch(es)

Download the latest PRIMECLUSTER 4.7A00 patch(es) and update information file from Updatesite.

- Boot all the cluster management servers in single user mode.

Check the default target.



- The default target before upgrading ([multi-user.target] in the following example) varies depending on the system.
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

```
# systemctl get-default <Return>
multi-user.target
```

The default target changes in single-user mode.

```
# systemctl set-default rescue.target <Return>
```

Start the system again in single-user mode.

```
# shutdown -r now <Return>
```

- When update the basic software from existing environment, Updating basic software, see the following document Operating Update manual.

4. Proceed the following steps on each cluster management server.

1. Create a backup directory.

```
# mkdir /<mydir> <Return>
```

2. Back up the PRIMECLUSTER operating environment.

```
# cp -p /opt/FJSVwvbs/etc/webview.cnf /<mydir> <Return>
# cp -p /opt/FJSVwvbs/etc/.policy /<mydir> <Return>
# cp -p /opt/FJSVwvbs/etc/wvlocal.cnf /<mydir> <Return>
```

Check if the Plugin.html file has not been changed.

Open the /opt/FJSVwvbs/etc/Plugin.html file using a text editor then check the default value(60) is set for the following entry:

```
<PARAM NAME = Initial_wait VALUE ="60">
```

If it is different from the default value, take a note of the value.

This value will be used to restore it later.

3. Insert the DVD and mount the DVD device.

```
# mount -t iso9660 -r /dev/<device file name> <DVD-ROM mount point> <Return>
```

<DVDROM_DIR> will be used as the mount point.

4. Execute the following script then delete part of the PRIMECLUSTER package.

```
# cd <DVDROM_DIR>/Tool <Return>
# ./upgrade_uninstall <Return>
Are you sure to remove a part of PRIMECLUSTER from your system (y or n) ? y <Return>
:
:
The uninstallation finished successfully.
```

5. Execute the following cluster_install script, and install the package or override it.

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_install -e HA-M <Return>
:
:
The installation finished successfully.
```



Note

- The following message might be output:

```
# ./cluster_install -x xx <Return>
INFO: no package to update
```

This message indicates that the newer version of all the packages is installed, so it is not necessary to upgrade.

- While executing the cluster_install script, the following message might be output

```
# ./cluster_install -x xx <Return>
Installing package <XXXXXXXXXXXX> ... skipped.
```

This message indicates that the same version of all the packages is installed, so it is not necessary to upgrade.

6. Eject the DVD.

```
# cd / <Return>
# umount <DVDROM_DIR> <Return>
# eject cdrom <Return>
```

7. Apply the patch(es) for this software.

For installation instructions and points of concern, etc., refer to the update information file of each patch.

8. Restore the PRIMECLUSTER operating environment that was backed up at step 2.

```
# cp -p /<mydir>/webview.cnf /opt/FJSVwvbs/etc/webview.cnf <Return>
# cp -p /<mydir>/policy /opt/FJSVwvbs/etc/policy <Return>
# cp -p /<mydir>/wvlocal.cnf /opt/FJSVwvbs/etc/wvlocal.cnf <Return>
```

If you find the Plugin.html file has been changed at step 2, restore the value.

There is no need to do this step if it has not been changed.

Edit the /opt/FJSVwvbs/etc/Plugin.html file using a text editor then write the value noted at step 2 back to the file (in the example "xx"):

```
(Example)
[Before Modification]
<PARAM NAME = Initial_wait VALUE = "60">
[After Modification]
<PARAM NAME = Initial_wait VALUE = "xx">
```

9. Set the java_home environment variable of Web-Based Admin View.

```
# /etc/opt/FJSVwvbs/etc/bin/wvSetparam java_home /opt/FJSVwvbs/jre <Return>
```

5. After completing step 4 on all the cluster management servers, reboot all the cluster management servers.

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
```

Start the system again.

```
# shutdown -r now <Return>
```

Appendix C Necessary OS packages to be installed

When operating this software on Red Hat Enterprise Linux, in addition to the packages that are installed with a minimum OS option installation, the following packages are used.

C.1 For Red Hat Enterprise Linux 8 (for Intel64)

Package	Architecture
binutils	x86_64
chrony	x86_64
crash	x86_64
efibootmgr	x86_64
gdb	x86_64
glibc	i686
grub2-efi-x64-modules (*1)	noarch
ipmitool (*2)	x86_64
iptables (*3)	x86_64
iscsi-initiator-utils (*3)	x86_64
libICE	x86_64
libvirt-client (*4)	x86_64
lsof	x86_64
make	x86_64
man-db	x86_64
net-snmp (*5)	x86_64
net-snmp-utils	x86_64
nfs-utils	x86_64
OpenIPMI (*6)	x86_64
OpenIPMI-libs (*6)	x86_64
pam-devel	x86_64
policycoreutils-python-utils	noarch
psacct	x86_64
psmisc	x86_64
python2 (*7)	x86_64
ruby	x86_64
rubygems	noarch
strace	x86_64
sysstat	x86_64
tar	x86_64
targetcli (*3)	noarch

(*1) When using GDS on a system with firmware in UEFI mode.

(*2) When using SA_ipmi, or iRMC asynchronous monitoring function.

(*3) When using the mirroring among the servers of GDS.

(*4) In the case of KVM environment.

(*5) When using iRMC asynchronous monitoring function.

(*6) When using SA_ipmi.

(*7) When using VMware vCenter Server functional cooperation.

C.2 For Red Hat Enterprise Linux 9 (for Intel64)

Package	Architecture
binutils	x86_64
chkconfig	x86_64
crash	x86_64
efibootmgr	x86_64
gdb	x86_64
glibc	i686
hdparm	x86_64
initscripts	x86_64
ipcalc	x86_64
ipmitool (*1)	x86_64
iscsi-initiator-utils (*2)	x86_64
libICE	x86_64
libtirpc	x86_64
libvirt-client (*3)	x86_64
lsof	x86_64
make	x86_64
net-snmp (*4)	x86_64
net-snmp-utils	x86_64
nfs-utils	x86_64
OpenIPMI (*5)	i686
OpenIPMI-libs (*5)	x86_64
pam-devel	x86_64
policycoreutils-python-utils	noarch
psacct	x86_64
ruby	x86_64
rubygems	noarch
strace	x86_64
sysstat	x86_64
tar	x86_64
targetcli (*2)	noarch

(*1) When using SA_ipmi, or iRMC asynchronous monitoring function.

(*2) When using the mirroring among the servers of GDS.

(*3) In the case of KVM environment.

(*4) When using iRMC asynchronous monitoring function.

(*5) When using SA_ipmi.