FUJITSU

FUJITSU Software PRIMECLUSTER Enterprise Edition 4.4A00

Installation Guide

Linux

J2UL-2095-03ENZ0(02)
December 2017

Preface

Purpose

This manual explains how to install PRIMECLUSTER Enterprise Edition.

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) Vista operating system is abbreviated as Windows(R) Vista.
- Microsoft(R) Windows(R) 7 operating system is abbreviated as Windows(R) 7.
- Microsoft(R) Windows(R) 8.1 operating system is abbreviated as Windows(R) 8.1.
- Microsoft(R) Windows(R) 10 operating system is abbreviated as Windows(R) 10.
- 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 2000/1000 Series is abbreviated as PRIMEQUEST.

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Editing record

Changes	Section	Manual code
Added the descriptions of FUJITSU Cloud Service K5 environment.	2.1.1,2.2.1,3.2,4.2, Appendix C	J2UL-2095-03ENZ0(01) J2UL-2095-03ENZ2(01)
"Appendix C Necessary OS packages to be installed" has been modified.	C.3	J2UL-2095-03ENZ0(02) J2UL-2095-03ENZ2(02)

Contents

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.

PRIMERGY

- Red Hat Enterprise Linux 6 (for x86)
- Red Hat Enterprise Linux 6 (for Intel64)
- Red Hat Enterprise Linux 7 (for Intel64)

PRIMEQUEST

- Red Hat Enterprise Linux 6 (for x86)
- Red Hat Enterprise Linux 6 (for Intel64)
- Red Hat Enterprise Linux 7 (for Intel64)

1.1 Red Hat Enterprise Linux 6 (for x86) for PRIMERGY

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.4.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.7.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.4.0	
		FJSVwvmpc	4.4.0	
		SMAWrcadm	4.4A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.3.3	Basic cluster Services
		SMAWskel	4.4A00	
		SMAWhvksh	4.3A00	
		kmod-SMAWcf	4.4A00	
		SMAWcf	4.4A00	
		SMAWsf	4.4A00	
		FJSVclapi	4.4.0	
		FJSVcldbm	4.4.0	
		FJSVcldev	4.4.0	
		FJSVclotr	4.3.3	
4	Cluster Configuration Backup/ Restore(CCBR)	SMAWccbr	4.3A40	Configuration file backup and restoration
5	Parallel Application Services(PAS)	SMAWpas	4.3A00	Foundation for parallel database
6	Reliant Monitor Services(RMS)	SMAWRrms	4.4A00	Application takeover for operational continuity
		SMAWRdfw	4.3A20	
7	Wizard Tools(WT)	SMAWRhv-to	4.3A30	Tool for defining RMS configuration

No.	Component	Package	Version	Function
		SMAWRhv-ba	4.3A30	
		SMAWRhv-do	4.3A30	
		SMAWRhv-de	4.3A30	
		FJSVhvgl	2.15	
		FJSVhvgd	4.3.4	
8	Global Disk Services(GDS)	kmod-FJSVsdx-drvcore	4.4.0	High-availability volume manager
		FJSVsdx-cmd	4.3.1	
		FJSVsdx-drv	4.4.0	
		FJSVsdx-bas	4.4.0	
		FJSVsdxma-ja	4.4.0	
		FJSVsdxma-en	4.4.0	
		FJSVsdxwv	4.4.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.4.0	
9	Global File Services(GFS)	kmod-FJSVsfcfs-knl	4.4.0	High-availability file system
		FJSVsfcfs-cmd	4.4.0	
		FJSVsfcwv	4.4.0	
		FJSVsfcma-en	4.4.0	
		FJSVsfcma-ja	4.4.0	
10	Global Link Services(GLS)	kmod-FJSVhanet-drv	2.16-x	High-availability network
		FJSVhanet	2.16-1	
11	CF Add-On(CAO)	FJSVclapm	4.4.0	CF add-on package
12	RMS Add-On(RAO)	FJSVclrms	4.4.0	RMS add-on package
		FJSVclrwz	4.4.0	
		FJSVclsfw	4.4.0	
13	SA_LKCD	FJSVcllkcd	4.4.0	LKCD shutdown agent
14	GUIs	FJSVwvfrm	4.4.0	CRM view
15	Kdump Tool	kmod-kdump-poffinhibit	2.0.1	Kdump Cluster Tool (For physical environment)
		kdump-poffinhibit	2.0.1	

1.2 Red Hat Enterprise Linux 6 (for x86) for PRIMEQUEST

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.4.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.7.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.4.0	

No.	Component	Package	Version	Function
		FJSVwvmpc	4.4.0	
		SMAWrcadm	4.4A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.3.3	Basic cluster Services
		SMAWskel	4.4A00	
		SMAWhvksh	4.3A00	
		kmod-SMAWcf	4.4A00	
		SMAWcf	4.4A00	
		SMAWsf	4.4A00	
		FJSVclapi	4.4.0	
		FJSVcldbm	4.4.0	
		FJSVcldev	4.4.0	
		FJSVclotr	4.3.3	
4	Cluster Configuration Backup/ Restore(CCBR)	SMAWccbr	4.3A40	Configuration file backup and restoration
5	Parallel Application Services(PAS)	SMAWpas	4.3A00	Foundation for parallel database
6	Reliant Monitor Services(RMS)	SMAWRrms	4.4A00	Application takeover for operational continuity
		SMAWRdfw	4.3A20	
7	Wizard Tools(WT)	SMAWRhv-to	4.3A30	Tool for defining RMS configuration
		SMAWRhv-ba	4.3A30	
		SMAWRhv-do	4.3A30	
		SMAWRhv-de	4.3A30	
		FJSVhvgl	2.15	
		FJSVhvgd	4.3.4	
8	Global Disk Services(GDS)	kmod-FJSVsdx-drvcore	4.4.0	High-availability volume manager
		FJSVsdx-cmd	4.3.1	
		FJSVsdx-drv	4.4.0	
		FJSVsdx-bas	4.4.0	
		FJSVsdxma-ja	4.4.0	
		FJSVsdxma-en	4.4.0	
		FJSVsdxwv	4.4.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.4.0	
9	Global File Services(GFS)	kmod-FJSVsfcfs-knl	4.4.0	High-availability file system
		FJSVsfcfs-cmd	4.4.0	
		FJSVsfcwv	4.4.0	
		FJSVsfcma-en	4.4.0	

No.	Component	Package	Version	Function
		FJSVsfcma-ja	4.4.0	
10	Global Link Services(GLS)	kmod-FJSVhanet-drv	2.16-x	High-availability network
		FJSVhanet	2.16-1	
11	CF Add-On(CAO)	FJSVclapm	4.4.0	CF add-on package
12	RMS Add-On(RAO)	FJSVclrms	4.4.0	RMS add-on package
		FJSVclrwz	4.4.0	
		FJSVclsfw	4.4.0	
13	SA_LKCD	FJSVcllkcd	4.4.0	LKCD shutdown agent
14	GUIs	FJSVwvfrm	4.4.0	CRM view

1.3 Red Hat Enterprise Linux 6 (for Intel64) for PRIMERGY

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.4.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.7.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.4.0	
		FJSVwvmpc	4.4.0	
		SMAWrcadm	4.4A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.3.3	Basic cluster Services
		SMAWskel	4.4A00	
		SMAWhvksh	4.3A00	
		kmod-SMAWcf	4.4A00	
		SMAWcf	4.4A00	
		SMAWsf	4.4A00	
		FJSVclapi	4.4.0	
		FJSVcldbm	4.4.0	
		FJSVcldev	4.4.0	
		FJSVclotr	4.3.3	
4	Cluster Configuration Backup/ Restore(CCBR)	SMAWccbr	4.3A40	Configuration file backup and restoration
5	Parallel Application Services(PAS)	SMAWpas	4.3A00	Foundation for parallel database
6	Reliant Monitor Services(RMS)	SMAWRrms	4.4A00	Application takeover for operational continuity
		SMAWRdfw	4.3A20	
7	Wizard Tools(WT)	SMAWRhv-to	4.3A30	Tool for defining RMS configuration
		SMAWRhv-ba	4.3A30	

No.	Component	Package	Version	Function
		SMAWRhv-do	4.3A30	
		SMAWRhv-de	4.3A30	
		FJSVhvgl	2.15	
		FJSVhvgd	4.3.4	
8	Global Disk Services(GDS)	kmod-FJSVsdx-drvcore	4.4.0	High-availability volume manager
		FJSVsdx-cmd	4.3.1	
		FJSVsdx-drv	4.4.0	
		FJSVsdx-bas	4.4.0	
		FJSVsdxma-ja	4.4.0	
		FJSVsdxma-en	4.4.0	
		FJSVsdxwv	4.4.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.4.0	
9	Global File Services(GFS)	kmod-FJSVsfcfs-knl	4.4.0	High-availability file system
		FJSVsfcfs-cmd	4.4.0	
		FJSVsfcwv	4.4.0	
		FJSVsfcma-en	4.4.0	
		FJSVsfcma-ja	4.4.0	
10	Global Link Services(GLS)	kmod-FJSVhanet-drv	2.16-x	High-availability network
		FJSVhanet	2.16-1	
11	CF Add-On(CAO)	FJSVclapm	4.4.0	CF add-on package
12	RMS Add-On(RAO)	FJSVclrms	4.4.0	RMS add-on package
		FJSVclrwz	4.4.0	
		FJSVclsfw	4.4.0	
13	SA_LKCD	FJSVcllkcd	4.4.0	LKCD shutdown agent
14	GUIs	FJSVwvfrm	4.4.0	CRM view
15	Kdump Tool	kmod-kdump-poffinhibit	2.0.1	Kdump Cluster Tool (For physical environment)
		kdump-poffinhibit	2.0.1	

1.4 Red Hat Enterprise Linux 6 (for Intel64) for PRIMEQUEST

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.4.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.7.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.4.0	
		FJSVwvmpc	4.4.0	

No.	Component	Package	Version	Function
		SMAWrcadm	4.4A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.3.3	Basic cluster Services
		SMAWskel	4.4A00	
		SMAWhvksh	4.3A00	
		kmod-SMAWcf	4.4A00	
		SMAWcf	4.4A00	
		SMAWsf	4.4A00	
		FJSVclapi	4.4.0	
		FJSVcldbm	4.4.0	
		FJSVcldev	4.4.0	
		FJSVclotr	4.3.3	
4	Cluster Configuration Backup/ Restore(CCBR)	SMAWccbr	4.3A40	Configuration file backup and restoration
5	Parallel Application Services(PAS)	SMAWpas	4.3A00	Foundation for parallel database
6	Reliant Monitor Services(RMS)	SMAWRrms	4.4A00	Application takeover for operational continuity
		SMAWRdfw	4.3A20	
7	Wizard Tools(WT)	SMAWRhv-to	4.3A30	Tool for defining RMS configuration
		SMAWRhv-ba	4.3A30	
		SMAWRhv-do	4.3A30	
		SMAWRhv-de	4.3A30	
		FJSVhvgl	2.15	
		FJSVhvgd	4.3.4	
8	Global Disk Services(GDS)	kmod-FJSVsdx-drvcore	4.4.0	High-availability volume manager
		FJSVsdx-cmd	4.3.1	
		FJSVsdx-drv	4.4.0	
		FJSVsdx-bas	4.4.0	
		FJSVsdxma-ja	4.4.0	
		FJSVsdxma-en	4.4.0	
		FJSVsdxwv	4.4.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.4.0	
9	Global File Services(GFS)	kmod-FJSVsfcfs-knl	4.4.0	High-availability file system
		FJSVsfcfs-cmd	4.4.0	
		FJSVsfcwv	4.4.0	
		FJSVsfcma-en	4.4.0	
		FJSVsfcma-ja	4.4.0	

No.	Component	Package	Version	Function
10	Global Link Services(GLS)	kmod-FJSVhanet-drv	2.16-x	High-availability network
		FJSVhanet	2.16-1	
11	CF Add-On(CAO)	FJSVclapm	4.4.0	CF add-on package
12	RMS Add-On(RAO)	FJSVclrms	4.4.0	RMS add-on package
		FJSVclrwz	4.4.0	
		FJSVclsfw	4.4.0	
13	SA_LKCD	FJSVcllkcd	4.4.0	LKCD shutdown agent
14	GUIs	FJSVwvfrm	4.4.0	CRM view

1.5 Red Hat Enterprise Linux 7 (for Intel64) for PRIMERGY

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.4.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.7.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.4.0	
		FJSVwvmpc	4.4.0	
		SMAWrcadm	4.4A00	
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.3.4	Basic cluster Services
		SMAWskel	4.4A00	
		SMAWhvksh	4.3A40	
		kmod-SMAWcf	4.4A00	
		SMAWcf	4.4A00	
		SMAWsf	4.4A00	
		FJSVclapi	4.4.0	
		FJSVcldbm	4.4.0	
		FJSVcldev	4.4.0	
		FJSVclotr	4.3.4	
4	Cluster Configuration Backup/ Restore(CCBR)	SMAWccbr	4.3A40	Configuration file backup and restoration
5	Parallel Application Services(PAS)	SMAWpas	4.3A40	Foundation for parallel database
6	Reliant Monitor Services(RMS)	SMAWRrms	4.4A00	Application takeover for operational continuity
		SMAWRdfw	4.3A40	
7	Wizard Tools(WT)	SMAWRhv-to	4.3A40	Tool for defining RMS configuration
		SMAWRhv-ba	4.3A40	
		SMAWRhv-do	4.3A40	

No.	Component	Package	Version	Function
		SMAWRhv-de	4.3A40	
		FJSVhvgl	2.15	
		FJSVhvgd	4.3.4	
8	Global Disk Services(GDS)	kmod-FJSVsdx-drvcore	4.4.0	High-availability volume manager
		FJSVsdx-cmd	4.3.4	
		FJSVsdx-drv	4.4.0	
		FJSVsdx-bas	4.4.0	
		FJSVsdxma-ja	4.4.0	
		FJSVsdxma-en	4.4.0	
		FJSVsdxwv	4.4.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.4.0	
9	Global File Services(GFS)	kmod-FJSVsfcfs-knl	4.4.0	High-availability file system
		FJSVsfcfs-cmd	4.4.0	
		FJSVsfcwv	4.4.0	
		FJSVsfcma-en	4.4.0	
		FJSVsfcma-ja	4.4.0	
10	Global Link Services(GLS)	kmod-FJSVhanet-drv	2.16-x	High-availability network
		FJSVhanet	2.16-1	
11	CF Add-On(CAO)	FJSVclapm	4.4.0	CF add-on package
12	RMS Add-On(RAO)	FJSVclrms	4.4.0	RMS add-on package
		FJSVclrwz	4.4.0	
		FJSVclsfw	4.4.0	
13	SA_LKCD	FJSVcllkcd	4.4.0	LKCD shutdown agent
14	GUIs	FJSVwvfrm	4.4.0	CRM view
15	Kdump Tool	kmod-kdump-poffinhibit	3.0.0	Kdump Cluster Tool (For physical environment)
		kdump-poffinhibit	3.0.0	

1.6 Red Hat Enterprise Linux 7 (for Intel64) for PRIMEQUEST

No.	Component	Package	Version	Function
1	PCLsnap	FJSVpclsnap	4.4.0	Tool for collecting troubleshooting information
2	Web-Based Admin View	SMAWcj2re	1.7.0	GUI common framework, Cluster management GUI
		FJSVwvbs	4.4.0	
		FJSVwvmpc	4.4.0	
		SMAWrcadm	4.4A00	

No.	Component	Package	Version	Function
3	Cluster Foundation(CF)	kmod-FJSVclotr-drv	4.3.4	Basic cluster Services
		SMAWskel	4.4A00	
		SMAWhvksh	4.3A40	
		kmod-SMAWcf	4.4A00	
		SMAWcf	4.4A00	
		SMAWsf	4.4A00	
		FJSVclapi	4.4.0	
		FJSVcldbm	4.4.0	
		FJSVcldev	4.4.0	
		FJSVclotr	4.3.4	
4	Cluster Configuration Backup/ Restore(CCBR)	SMAWccbr	4.3A40	Configuration file backup and restoration
5	Parallel Application Services(PAS)	SMAWpas	4.3A40	Foundation for parallel database
6	Reliant Monitor Services(RMS)	SMAWRrms	4.4A00	Application takeover for operational continuity
		SMAWRdfw	4.3A40	
7	Wizard Tools(WT)	SMAWRhv-to	4.3A40	Tool for defining RMS configuration
		SMAWRhv-ba	4.3A40	
		SMAWRhv-do	4.3A40	
		SMAWRhv-de	4.3A40	
		FJSVhvgl	2.15	
		FJSVhvgd	4.3.4	
8	Global Disk Services(GDS)	kmod-FJSVsdx-drvcore	4.4.0	High-availability volume manager
		FJSVsdx-cmd	4.3.4	
		FJSVsdx-drv	4.4.0	
		FJSVsdx-bas	4.4.0	
		FJSVsdxma-ja	4.4.0	
		FJSVsdxma-en	4.4.0	
		FJSVsdxwv	4.4.0	
		devlabel	0.48.03	
		FJSVsdx-nm	4.4.0	
9	Global File Services(GFS)	kmod-FJSVsfcfs-knl	4.4.0	High-availability file system
		FJSVsfcfs-cmd	4.4.0	
		FJSVsfcwv	4.4.0	
		FJSVsfcma-en	4.4.0	
		FJSVsfcma-ja	4.4.0	
10	Global Link Services(GLS)	kmod-FJSVhanet-drv	2.16-x	High-availability network

No.	Component	Package	Version	Function
		FJSVhanet	2.16-1	
11	CF Add-On(CAO)	FJSVclapm	4.4.0	CF add-on package
12	RMS Add-On(RAO)	FJSVclrms	4.4.0	RMS add-on package
		FJSVclrwz	4.4.0	
		FJSVclsfw	4.4.0	
13	SA_LKCD	FJSVcllkcd	4.4.0	LKCD shutdown agent
14	GUIs	FJSVwvfrm	4.4.0	CRM view

Chapter 2 Operation Environment

This chapter explains the operation environment of this software.

Before you install this software, your system must meet the following prerequisites.

- PRIMERGY

  1. Cluster node

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

  2. Cluster management server

     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".

- PRIMEQUEST

  1. Cluster node

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

2.1 Cluster node operating environment

This section explains operating environment of cluster node.

2.1.1 Software environment

1. Basic software prerequisites

   Set the operating system to Red Hat Enterprise Linux6 (for Intel64) when configuring a cluster system in a FUJITSU Cloud Service K5 environment.

   Install the following software product on a cluster node:

   - PRIMERGY

No.	Basic Software	Kernel	Errata
1	Red Hat Enterprise Linux 6.2 (for x86)	Supports kernel-2.6.32-220.4.2.el6 or later	RHBA-2012:0124-1 or later (*1)(*2)
			RHBA-2012:0419-1 or later (*3)
2	Red Hat Enterprise Linux 6.3 (for x86)	Supports kernel-2.6.32-279.41.1.el6 or later	RHBA-2014:0099-1 or later (*1)
			RHSA-2012:1202-1 or later (*3)
3	Red Hat Enterprise Linux 6.4 (for x86)	Supports kernel-2.6.32-358.6.1.el6 or later	RHSA-2013:0744-1 or later (*1)
4	Red Hat Enterprise Linux 6.5 (for x86)	Supports kernel-2.6.32-431.17.1.el6 or later	RHSA-2014:0475 or later (*1)
5	Red Hat Enterprise Linux 6.6 (for x86)	Supports kernel-2.6.32-504.1.3.el6 or later	RHSA-2014:1843-1 or later (*1)
6	Red Hat Enterprise Linux 6.7 (for x86)	Supports kernel-2.6.32-573.el6 or later	RHBA-2015:1827-1 or later (*4)

No.	Basic Software	Kernel	Errata
7	Red Hat Enterprise Linux 6.8 (for x86)	Supports kernel-2.6.32-642.el6 or later	
8	Red Hat Enterprise Linux 6.2 (for Intel64)	Supports kernel-2.6.32-220.4.2.el6 or later	RHBA-2012:0124-1 or later (*1)(*2)
			RHBA-2012:0419-1 or later (*3)
9	Red Hat Enterprise Linux 6.3 (for Intel64)	Supports kernel-2.6.32-279.41.1.el6 or later	RHBA-2014:0099-1 or later (*1)
			RHSA-2012:1202-1 or later (*3)
10	Red Hat Enterprise Linux 6.4 (for Intel64)	Supports kernel-2.6.32-358.6.1.el6 or later	RHSA-2013:0744-1 or later (*1)
11	Red Hat Enterprise Linux 6.5 (for Intel64)	Supports kernel-2.6.32-431.17.1.el6 or later	RHSA-2014:0475 or later (*1)
12	Red Hat Enterprise Linux 6.6 (for Intel64)	Supports kernel-2.6.32-504.1.3.el6 or later	RHSA-2014:1843-1 or later (*1)
13	Red Hat Enterprise Linux 6.7 (for Intel64)	Supports kernel-2.6.32-573.el6 or later	RHBA-2015:1827-1 or later (*4)
14	Red Hat Enterprise Linux 6.8 (for Intel64)	Supports kernel-2.6.32-642.el6 or later	
15	Red Hat Enterprise Linux 7 (for Intel64)	Supports kernel-3.10.0-123.el7 or later	
16	Red Hat Enterprise Linux 7.1 (for Intel64)	Supports kernel-3.10.0-229.el7 or later	RHBA-2015:0738-1 or later (*5)
17	Red Hat Enterprise Linux 7.2 (for Intel64)	Supports kernel-3.10.0-327.el7 or later	
18	Red Hat Enterprise Linux 7.3 (for Intel64)	Supports kernel-3.10.0-514.el7 or later	

(*1) Please apply to all the OS's where this software is installed.

(*2) In the KVM environment, whether this software is installed or not on the host OS, be sure to apply this patch to the host OS.

(*3) In the case of a KVM environment, please apply to the host OS.

(*4) When bundling the bonding interface with Virtual NIC mode of GLS, please apply to the OS.

(*5) Please apply to all the OS's where this software is installed and PRIMECLUSTER GDS is used.

- PRIMEQUEST

No.	Basic Software	Kernel	Errata
1	Red Hat Enterprise Linux 6.2 (for x86)	Supports kernel-2.6.32-220.4.2.el6 or later	RHBA-2012:0124-1 or later (*1)(*2)
			RHBA-2012:0419-1 or later (*3)
2	Red Hat Enterprise Linux 6.3 (for x86)	Supports kernel-2.6.32-279.41.1.el6 or later	RHBA-2014:0099-1 or later (*1)
			RHSA-2012:1202-1 or later (*3)
3	Red Hat Enterprise Linux 6.4 (for x86)	Supports kernel-2.6.32-358.6.1.el6 or later	RHSA-2013:0744-1 or later (*1)
4	Red Hat Enterprise Linux 6.5 (for x86)	Supports kernel-2.6.32-431.17.1.el6 or later	RHSA-2014:0475 or later (*1)
5	Red Hat Enterprise Linux 6.6 (for x86)	Supports kernel-2.6.32-504.el6 or later	
6	Red Hat Enterprise Linux 6.7 (for x86)	Supports kernel-2.6.32-573.el6 or later	RHBA-2015:1827-1 or later (*4)
7	Red Hat Enterprise Linux 6.8 (for Intel64)	Supports kernel-2.6.32-642.el6 or later	
8	Red Hat Enterprise Linux 6.2 (for Intel64)	Supports kernel-2.6.32-220.4.2.el6 or later	RHBA-2012:0124-1 or later (*1)(*2)
			RHBA-2012:0419-1 or later (*3)
9	Red Hat Enterprise Linux 6.3 (for Intel64)	Supports kernel-2.6.32-279.41.1.el6 or later	RHBA-2014:0099-1 or later (*1)
			RHSA-2012:1202-1 or later (*3)
10	Red Hat Enterprise Linux 6.4 (for Intel64)	Supports kernel-2.6.32-358.6.1.el6 or later	RHSA-2013:0744-1 or later (*1)
11	Red Hat Enterprise Linux 6.5 (for Intel64)	Supports kernel-2.6.32-431.17.1.el6 or later	RHSA-2014:0475 or later (*1)
12	Red Hat Enterprise Linux 6.6 (for Intel64)	Supports kernel-2.6.32-504.el6 or later	
13	Red Hat Enterprise Linux 6.7 (for Intel64)	Supports kernel-2.6.32-573.el6 or later	RHBA-2015:1827-1 or later (*4)
14	Red Hat Enterprise Linux 6.8 (for Intel64)	Supports kernel-2.6.32-642.el6 or later	

No.	Basic Software	Kernel	Errata
15	Red Hat Enterprise Linux 7 (for Intel64)	Supports kernel-3.10.0-123.el7 or later	
16	Red Hat Enterprise Linux 7.1 (for Intel64)	Supports kernel-3.10.0-229.el7 or later	RHBA-2015:0738-1 or later (*5)
17	Red Hat Enterprise Linux 7.2 (for Intel64)	Supports kernel-3.10.0-327.el7 or later	
18	Red Hat Enterprise Linux 7.3 (for Intel64)	Supports kernel-3.10.0-514.el7 or later	

(*1) Please apply to all the OS's where this software is installed.

(*2) In the KVM environment, whether this software is installed or not on the host OS, be sure to apply this patch to the host OS.

(*3) In the case of a KVM environment, please apply to the host OS.

(*4) When bundling the bonding interface with Virtual NIC mode of GLS, please apply to the OS.

(*5) Please apply to all the OS's where this software is installed and PRIMECLUSTER GDS is used.

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.

Note

System disk mirroring using GDS requires installation of the operating system in UEFI mode. Please use ServerView Installation Manager (SVIM) for installing the operating system. In case of installing it in UEFI mode, please use the version of SVIM V10.11.07 or later and supported in the environment to be used.

Set the operating system to Red Hat Enterprise Linux6 (for Intel64) when configuring a cluster system in a FUJITSU Cloud Service K5 environment.

2. Required software

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

No.	Software	Package	Version and/ or level	Remarks
1	The SCSI target daemon and utility programs	scsi-target-utils		Required to use the GDS mirroring function among servers on Red Hat Enterprise Linux 6.
2	Utilities for devices that use SCSI command sets	sg3_utils		Required to use the GDS mirroring function among servers on Red Hat Enterprise Linux 6.
3	The administration shell for storage targets	targetcli		Required to use the GDS mirroring function among servers on Red Hat Enterprise Linux 7.

GDS:Global Disk Services

- PRIMEQUEST physical environment

No.	Software	Package	Version and/or level	Remarks
1	ServerView Mission Critical Option	SVmco		Required to coordinate with Management Board.
2	HBA Blockage Function	FJSVfefpcl		For PRIMEQUEST 1400S2 Lite/ 1400S2/1400E2/1400L 2/1800E2/1800L2 and PRIMEQUEST 2000 Series.

- KVM environment

No.	Software	Package	Version and/or level	Remarks
1	ServerView Mission Critical Option	SVmco		Required to use Host OS failover function. It is necessary to install on the host OS.
2	HBA Blockage Function	FJSVfefpcl		For PRIMEQUEST 1400S2 Lite/ 1400S2/1400E2/1400L 2/1800E2/1800L2 and PRIMEQUEST 2000 Series.

- VMware environment

No.	Software	Package	Version and/or level	Remarks
1	VMware vSphere		5.5 or later	

- PC

It is used as a client of Web-Based Admin View.(*)
For details, see "3. Related hardware" of the "2.1.2 Hardware environment".

No.	Software	Package	Version and/or level	Remarks
1	Windows(R) Vista, Windows(R) 7, Windows(R) 8.1, Windows(R) 10			One of them is required.
2	J2SE(TM) Runtime Environment		8	The use of the latest version is recommended.
3	Microsoft Internet Explorer		9 11	One of them is required. You can download from the site of the software company.

- (*) To use Web-Based Admin View in FUJITSU Cloud Service K5 environment, use the following software instead of the software mentioned above.

No.	OS	Version of Internet Explorer	Version of Java	Remarks
1	Windows Server 2012 R2 64bit	11	Java(TM) SE Runtime Environment 8 Update 66 32bit or later (The use of the latest version is recommended.)	One of them is required.
2	Windows Server 2012 64bit	10		
3	Windows Server 2008 R2 SP1 64bit	11		

1. Exclusive software

   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

   None.

3. Related hardware

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

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)	Remarks
1	/	111.9	
2	/usr	9.8	
3	/var	6.0	
4	/var/opt	1.1	
5	/etc/opt	15.3	
6	/opt	265.0	

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	84.9	A cluster system is operated under the following conditions: - One cluster application is registered in a cluster system. Note that 1.5 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.
2	/var	60.0	When GFS shared file systems are activated regardless of the number of GFS shared file systems.
3	/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.
4	/var/opt	2.1	When a cluster application with following resources and the GDS Management View have been started: - A GDS shared class including a netmirror volume. - A filesystem on a netmirror volume.
5	/var/tmp	500.0	When FJQSS (Information Collection Tool) of PRIMECLUSTER is executed for collecting information.

GDS: Global Disk Services
GLS: Global Link Services
GFS: Global File Services

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	329.6	A cluster system is operated under the following conditions: - One cluster application is registered in a cluster system. Note that 11.4 MB is required for each additional cluster application. - Web-Based Admin View is operated in two-tier model.

No.	Memory (in MB)	Operation
		- GDS shared class operation. - GLS takeover IP address service registration. In addition to the aforementioned user memory, 2.0 MB of kernel memory will be allocated per CPU by vmalloc.
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	157.0	When a cluster application with following resources and the GDS Management View have been started: - A GDS shared class including a netmirror volume. - A filesystem on a netmirror volume.

GDS: Global Disk Services
GLS: Global Link Services
GFS: Global File Services

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:

   - PRIMERGY

No.	Basic Software	Kernel	Remarks
1	Red Hat Enterprise Linux 6.2 (for x86)	Supports kernel-2.6.32-220.el6 or later	
2	Red Hat Enterprise Linux 6.3 (for x86)	Supports kernel-2.6.32-279.el6 or later	
3	Red Hat Enterprise Linux 6.4 (for x86)	Supports kernel-2.6.32-358.el6 or later	
4	Red Hat Enterprise Linux 6.5 (for x86)	Supports kernel-2.6.32-431.el6 or later	
5	Red Hat Enterprise Linux 6.6 (for x86)	Supports kernel-2.6.32-504.el6 or later	
6	Red Hat Enterprise Linux 6.7 (for x86)	Supports kernel-2.6.32-573.el6 or later	
7	Red Hat Enterprise Linux 6.8 (for x86)	Supports kernel-2.6.32-642.el6 or later	
8	Red Hat Enterprise Linux 6.2 (for Intel64)	Supports kernel-2.6.32-220.el6 or later	

No.	Basic Software	Kernel	Remarks
9	Red Hat Enterprise Linux 6.3 (for Intel64)	Supports kernel-2.6.32-279.el6 or later	
10	Red Hat Enterprise Linux 6.4 (for Intel64)	Supports kernel-2.6.32-358.el6 or later	
11	Red Hat Enterprise Linux 6.5 (for Intel64)	Supports kernel-2.6.32-431.el6 or later	
12	Red Hat Enterprise Linux 6.6 (for Intel64)	Supports kernel-2.6.32-504.el6 or later	
13	Red Hat Enterprise Linux 6.7 (for Intel64)	Supports kernel-2.6.32-573.el6 or later	
14	Red Hat Enterprise Linux 6.8 (for Intel64)	Supports kernel-2.6.32-642.el6 or later	
15	Red Hat Enterprise Linux 7 (for Intel64)	Supports kernel-3.10.0-123.el7 or later	
16	Red Hat Enterprise Linux 7.1 (for Intel64)	Supports kernel-3.10.0-229.el7 or later	
17	Red Hat Enterprise Linux 7.2 (for Intel64)	Supports kernel-3.10.0-327.el7 or later	
18	Red Hat Enterprise Linux 7.3 (for Intel64)	Supports kernel-3.10.0-514.el7 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

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

- PC

It is used as a client of Web-Based Admin View.(*)
For details, see "3. Related hardware" of the "2.2.2 Hardware environment".

No.	Software	Package	Version and/or level	Remarks
1	Windows(R) Vista, Windows(R) 7, Windows(R) 8.1, Windows(R) 10			Required to use as a client of Web-Based Admin View.
2	J2SE(TM) Runtime Environment		8	Required to use Web-Based Admin View. The use of the latest version is recommended.
3	Microsoft Internet Explorer		9 11	To use Web-Based Admin View, one of them is required. You can download from the

No.	Software	Package	Version and/or level	Remarks
				site of the software company.

- (*) To use Web-Based Admin View in FUJITSU Cloud Service K5 environment, use the following software instead of the software mentioned above.

No.	OS	Version of Internet Explorer	Version of Java	Remarks
1	Windows Server 2012 R2 64bit	11	Java(TM) SE Runtime Environment 8 Update 66 32bit or later (The use of the latest version is recommended.)	One of them is required.
2	Windows Server 2012 64bit	10		
3	Windows Server 2008 R2 SP1 64bit	11		

1. Exclusive software

   None.

2. 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

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

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)	Remarks
1	/	1.2	
2	/usr	0.0	
3	/var	0.0	
4	/var/opt	0.1	
5	/etc/opt	1.0	

No.	Directory	Disk space (in MB)	Remarks
6	/opt	203.1	

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	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	When FJQSS (Information Collection Tool) of PRIMECLUSTER is executed for collecting information.

GDS: Global Disk Services

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	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.

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 (FUJITSU Cloud Service K5 environment)" when installing in a FUJITSU Cloud Service K5 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 setting of SVmco is completed.
      For setup instructions, refer to the following manuals:

      PRIMEQUEST 1000 Series

      - PRIMEQUEST 1000 Series Installation Manual
      - PRIMEQUEST 1000 Series ServerView Mission Critical Option User Manual

      PRIMEQUEST 2000 Series

      - PRIMEQUEST 2000 Series Installation Manual
      - PRIMEQUEST 2000 Series ServerView Mission Critical Option User Manual

   2. To install Web-Based Admin View, it is necessary to modify the IP address of the admin LAN 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 vi(1) and allocate it to the IP address of the admin LAN.

         ```
         Before change)
         ```

```
# cat /etc/hosts <Return>
# Do not remove the following line, or various programs
# that require network functionality will fail.
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>
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
IP-Address  host-name
```

3. Check the auto startup of the NetworkManager service.

   PRIMECLUSTER does not support the NetworkManager service.
   Check the auto startup of the NetworkManager service setting.

   Red Hat Enterprise Linux 6

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

```
# /sbin/chkconfig --list NetworkManager
NetworkManager  0:off   1:off   2:off   3:off   4:off   5:off   6:off
```

   If there is runlevel that is in "on", disable the NetworkManager service using the following command.

```
# /sbin/service NetworkManager stop
# /sbin/chkconfig NetworkManager off
```

   Red Hat Enterprise Linux 7

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

```
# /usr/bin/systemctl is-enabled NetworkManager.service
disabled
```

   If the setting is "enabled", disable the NetworkManager service using the following command.

```
# /usr/bin/systemctl stop NetworkManager.service
# /usr/bin/systemctl disable NetworkManager.service
```

4. Package check

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

      In case of Red Hat Enterprise Linux 6 (for Intel64) or later, also check if the following package is installed on the system by executing below command:

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

      If the command encounters an error, install the package 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.

[Red Hat Enterprise Linux 6]

Edit the contents of the id entry of the /etc/inittab file using vi(1) etc. as shown below to start the system in single-user mode.

Note

- The default runlevel varies depending on the environment when the patch is applied (3 in the example below).
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

[Before Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

[After Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

Start the system again in single-user mode.

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

[Red Hat Enterprise Linux 7]

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>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/rescue.target' '/etc/systemd/system/default.target'
```

Start the system again in single-user mode.

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

3. Insert 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

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

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

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

The installation finished successfully.
```

PRIMEQUEST

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

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

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

The installation finished successfully.
```

5. Eject DVD.

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

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

[Red Hat Enterprise Linux 6]

Edit the contents of the id entry of the /etc/inittab file, which has been changed in Step 2, to the original contents to start the system in multi-user mode.

[Before Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

[After Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

Start the system again.

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

[Red Hat Enterprise Linux 7]

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/multi-user.target' '/etc/systemd/system/default.target'
```

Start the system again.

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

7. Patch download

   Download the latest PRIMECLUSTER patch by UpdateSite format and update information file from Updatesite.

   

   - Please do not apply the following patches.

     [Red Hat Enterprise Linux 7 (for Intel64)]
     T012734LP-01
     T012747LP-01
     T013098LP-01

8. Please apply the patch for PRIMECLUSTER.

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

Note

- After the uninstallation of this software, the /etc/opt/FJSVsdx/sysdb.d.tmp directory may remain undeleted. Even if this directory remains, there will be no effect on the system operation. If you want to delete it, use the following command.

  Red Hat Enterprise Linux 6

```
kernel: symsrv: module license 'Proprietary' taints kernel.
kernel: Disabling lock debugging due to kernel taint
kernel: clonltrc: module license 'Proprietary' taints kernel.
kernel: Disabling lock debugging due to kernel taint
```

  Red Hat Enterprise Linux 7-7.2

```
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
```

  Red Hat Enterprise Linux 7.3

```
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 "4.3 Preparations for Starting the Web-Based Admin View Screen" and "Chapter 5 Building a cluster", and "Chapter 6 Building cluster application" of the "PRIMECLUSTER Installation and Administration Guide".

3.2 Installation on Cluster nodes (FUJITSU Cloud Service K5 environment)

This section explains cluster node installation using the CLI installer in a FUJITSU Cloud Service K5 environment.

Note

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 this command returns an error, or if a kernel source different from the version of the system OS is installed, use the following command to install the kernel source.

```
# yum install kernel-devel <Return>
```

Note

When using the yum command, refer to "2.1.2.6 Creating the Security Group for the Virtual Server Access" in "PRIMECLUSTER Installation and Administration Guide FUJITSU Cloud Service K5", or "2.1.2.7 Creating the Firewall Rule" in "PRIMECLUSTER

Installation and Administration Guide FUJITSU Cloud Service K5" and check that the security groups and firewall rules have been set properly.

2. Installation of necessary OS packages

   Use the following commands to check if the necessary OS packages are installed on the system.

```
# rpm -qi PyQt4-devel.x86_64 <Return>
# rpm -qi compat-libstdc++-33.x86_64 <Return>
# rpm -qi device-mapper-multipath.x86_64 <Return>
# rpm -qi ebtables.x86_64 <Return>
# rpm -qi libXp.x86_64 <Return>
# rpm -qi openmotif.x86_64 <Return>
# rpm -qi openmotif22.x86_64 <Return>
# rpm -qi pam-devel.x86_64 <Return>
# rpm -qi rsh.x86_64 <Return>
# rpm -qi subversion.x86_64 <Return>
# rpm -qi iscsi-initiator-utils.x86_64 <Return>
# rpm -qi openssl098e.x86_64 <Return>
# rpm -qi scsi-target-utils.x86_64 <Return>
# rpm -qi sg3_utils.x86_64 <Return>
```

   If these commands return an error, use the yum command to install the package that returned an error.
   Example) If PyQt4-devel.x86_64 returned an error.

```
# yum install PyQt4-devel.x86_64 <Return>
```

Note

- Before installing packages it is necessary to do the settings for Red Hat Update Infrastructure. For details, refer to "FUJITSU Cloud Service K5 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 of the public LAN (and administrative LAN) 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
```

   2. Delete the host name allocated to "127.0.0.1"(for IPv4) and "::1"(for IPv6) using vi(1) and allocate it to the IP address of the admin LAN.

      Before change)

```
# cat /etc/hosts <Return>
# Do not remove the following line, or various programs
```

```
# that require network functionality will fail.
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>
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1       localhost localhost.localdomain localhost6 localhost6.localdomain6
IP-Address host-name
```

4. Check the auto startup of the NetworkManager service.

   PRIMECLUSTER does not support the NetworkManager service.
   Check that automatic startup of the NetworkManager service is disabled.
   Check that the setting of auto startup of the NetworkManager service is "off" using the following command.

```
# /sbin/chkconfig --list NetworkManager <Return>
NetworkManager    0:off    1:off    2:off    3:off    4:off    5:off    6:off
```

   If there are runlevels that are "on", execute the following commands to stop the services.

```
# /sbin/service NetworkManager stop <Return>
# /sbin/chkconfig NetworkManager off <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 EE-PG <Return>
Installation of PRIMECLUSTER started.
PRODUCT : PCLsnap
Installing package <FJSVpclsnap> ... finished.
       .
       .
The installation finished successfully.
```

7. Download the latest PRIMECLUSTER patch by UpdateSite format and update information file from Updatesite.

8. Apply the corrections to PRIMECLUSTER.

   For how to apply changes, refer to "Software Maintenance" in "PRIMECLUSTER Installation and Administration Guide FUJITSU Cloud Service K5", 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. System environment check

   To install Web-Based Admin View, it is necessary to modify the IP address of the admin LAN 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 vi(1) and allocate it to the IP address of the admin LAN.

      Before change)

      ```
      # cat /etc/hosts <Return>
      # Do not remove the following line, or various programs
      # that require network functionality will fail.
      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>
      # Do not remove the following line, or various programs
      # that require network functionality will fail.
      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.

   [Red Hat Enterprise Linux 6]

   Edit the contents of the id entry of the /etc/inittab file using vi(1) etc. as shown below to start the system in single-user mode.

   Note

   - The default runlevel varies depending on the environment when the patch is applied (3 in the example below).

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

[Before Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

[After Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

Start the system again in single-user mode.

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

[Red Hat Enterprise Linux 7]

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>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/rescue.target' '/etc/systemd/system/default.target'
```

Start the system again in single-user mode.

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

3. Insert 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 EE-M <Return>

Installation of PRIMECLUSTER started.

PRODUCT : PCLsnap

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

The installation finished successfully.
```

5. Eject DVD.

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

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

   [Red Hat Enterprise Linux 6]

   Edit the contents of the id entry of the /etc/inittab file, which has been changed in Step 2, to the original contents to start the system in multi-user mode.

   [Before Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

   [After Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

   Start the system again.

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

   [Red Hat Enterprise Linux 7]

   The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/multi-user.target' '/etc/systemd/system/default.target'
```

Start the system again.

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

7. Patch download

   Download the latest PRIMECLUSTER patch by UpdateSite format and update information file from Updatesite.

8. Please apply the patch for PRIMECLUSTER.

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

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 (FUJITSU Cloud Service K5 environment)" when uninstalling this software from a FUJITSU Cloud Service K5 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 if it is installed on the system. For information on how to uninstall GDS Snapshot, refer to the "Installation Guide for PRIMECLUSTER(TM) GDS Snapshot".
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.
4. Before uninstalling this software, check the following:
   1. Check if the server function of Symfoware Server (*) is installed using the following command:

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

      (*) Symfoware Server is divided into the following three products:

      - Symfoware Server Enterprise Edition
      - Symfoware Server Enterprise Extended Edition
      - Symfoware Server Standard Edition

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

      When Symfoware Server is installed:

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

      When Symfoware Server is not installed:

      1. Uninstall the middleware products that use the Server function of Symfoware Server.
      2. Uninstall the Server function of Symfoware Server. See the manual of each middleware product.

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.

   Red Hat Enterprise Linux 6

   ```
   # sfcumount GFS_MOUNTPOINT <Return>
   # /etc/init.d/sfcfsrm stop <Return>
   ```

   Red Hat Enterprise Linux 7

   ```
   # sfcumount GFS_MOUNTPOINT <Return>
   # systemctl stop fjsvgfsfsrm2.service <Return>
   # systemctl stop fjsvgfsfsrm.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.

   [Red Hat Enterprise Linux 6]

   Edit the contents of the id entry of the /etc/inittab file using vi(1) etc. as shown below to start the system in single-user mode.

   Note

   - The default runlevel varies depending on the environment when the patch is applied (3 in the example below).
   - Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

   [Before Modification]

   ```
   # Default runlevel. The runlevels used by RHS are:
   #   0 - halt (Do NOT set initdefault to this)
   #   1 - Single user mode
   #   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
   #   3 - Full multiuser mode
   #   4 - unused
   #   5 - X11
   #   6 - reboot (Do NOT set initdefault to this)
   #
   id:3:initdefault:
   ```

   [After Modification]

   ```
   # Default runlevel. The runlevels used by RHS are:
   #   0 - halt (Do NOT set initdefault to this)
   #   1 - Single user mode
   #   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
   #   3 - Full multiuser mode
   #   4 - unused
   #   5 - X11
   #   6 - reboot (Do NOT set initdefault to this)
   #
   id:1:initdefault:
   ```

   Start the system again in single-user mode.

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

   [Red Hat Enterprise Linux 7]

   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>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/rescue.target' '/etc/systemd/system/default.target'
```

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

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

[Red Hat Enterprise Linux 6]

Edit the contents of the id entry of the /etc/inittab file, which has been changed in Step 5, to the original contents to start the system in multi-user mode.

[Before Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

[After Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

Start the system again.

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

[Red Hat Enterprise Linux 7]

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/multi-user.target' '/etc/systemd/system/default.target'
```

Start the system again.

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

- 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 (FUJITSU Cloud Service K5 environment)

This section explains cluster node uninstallation using the CLI installer in a FUJITSU Cloud Service K5 environment.

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. 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
+-----------+---------------------------------+-----+--------------------------+
```

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

```
# cat /etc/sysconfig/network-scripts/ifcfg-sha0 <Return>
DEVICE=sha0
#IPADDR=
#NETMASK=
BOOTPROTO=dhcp
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.

   - Comment out DEVICETYPE from /etc/sysconfig/network-scripts/ifcfg-eth0 and change BOOTPROTO to dhcp.

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

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

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

5. Execute the following command and stop automatic start of the RC script.

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

6. Restart the system.

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

7. Stop the SF and GDS daemons.

```
# initctl stop sf <Return>
# initctl stop sdxm <Return>
```

8. 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.

9. 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
+-----------+---------------------------------+-----+--------------------------+
#
```

10. 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.

11. 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.

12. 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.

13. 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.
```

14. Restart the system.

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

Note

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.

   [Red Hat Enterprise Linux 6]

   Edit the contents of the id entry of the /etc/inittab file using vi(1) etc. as shown below to start the system in single-user mode.

Note

- The default runlevel varies depending on the environment when the patch is applied (3 in the example below).
- Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

[Before Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

[After Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

Start the system again in single-user mode.

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

[Red Hat Enterprise Linux 7]

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>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/rescue.target' '/etc/systemd/system/default.target'
```

Start the system again in single-user mode.

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

3. Insert 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 DVD, then reboot the system by executing the shutdown(8) command.

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

[Red Hat Enterprise Linux 6]

Edit the contents of the id entry of the /etc/inittab file, which has been changed in Step 2, to the original contents to start the system in multi-user mode.

[Before Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

[After Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

Start the system again.

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

[Red Hat Enterprise Linux 7]

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/multi-user.target' '/etc/systemd/system/default.target'
```

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: The installation process stopped by user request

Description

Installation process was stopped according at user's request.

Workaround

Execute the command again.

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.

A.1.3 Error messages

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.

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: </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: 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.

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: /var needs *VAR_LEAST* KB at least

Description

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

Workaround

Reserve at least V*AR_LEAST*KB on the /var 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: 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: 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: 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: failed: rpm *

Description

The rpm command failed.

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.

Workaround

Put down the message then contact your Fujitsu system engineers.

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.

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: 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.

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

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.

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: 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.

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: 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: there exists GDS object(s)

Description

Some GDS objects are not deleted.

Workaround

Delete all the GDS objects then execute the command again.

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: 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: failed: rpm *

Description

The rpm command failed.

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.

Workaround

Put down the message then contact your Fujitsu system engineers.

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.

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/FJSVsdx/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.

B.1 Upgrading cluster nodes

This section explains upgrading cluster nodes.

Note

- 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 from 4.3A40 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.

B.1.1 Upgrading from PRIMECLUSTER Enterprise Edition 4.3A40

1. 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
```

2. Stop RMS if you are using Cluster Applications.

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

3. Boot each cluster node in single user mode.

   [Red Hat Enterprise Linux 6]

   Edit the contents of the id entry of the /etc/inittab file using vi(1) etc. as shown below to start the system in single-user mode.

   Note

   - The default runlevel varies depending on the environment when the patch is applied (3 in the example below).
   - Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

   [Before Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

   [After Modification]

```
# Default runlevel. The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

Start the system again in single-user mode.

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

[Red Hat Enterprise Linux 7]

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>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/rescue.target' '/etc/systemd/system/default.target'
```

Start the system again in single-user mode.

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

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

5. 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>
      ```

      In case of Red Hat Enterprise Linux 6 (for Intel64) ,
      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 vi(1) etc. then check the default value(60) is set for the following entry:Back up the GLS operating environment.

```
<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 "hanet*YYYYMMDD*.bk". *YYYYMMDD* 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 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]

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

[PRIMEQUEST]

```
# cd <DVDROM_DIR>/Tool <Return>
# ./cluster_install -e EE-PQ <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 <XXXXXXXXXXX> ... skipped.
```

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

8. Eject DVD.

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

9. 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>
```

In case of Red Hat Enterprise Linux 6 (for Intel64) ,
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 vi(1) etc. 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">
```

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

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

11. 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>
```

12. 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 6.
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.
```

6. After completing step 5 on all the cluster nodes, reboot all the cluster nodes.

[Red Hat Enterprise Linux 6]

Edit the contents of the id entry of the /etc/inittab file, which has been changed in Step 3, to the original contents to start the system in multi-user mode.

[Before Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

[After Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

Start the system again.

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

[Red Hat Enterprise Linux 7]

The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/multi-user.target' '/etc/systemd/system/default.target'
```

Start the system again.

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

7. Patch download

   Download the latest PRIMECLUSTER patch by UpdateSite format and update information file from Updatesite.

   Note

   - Please do not apply the following patches.

     [Red Hat Enterprise Linux 7 (for Intel64)]
     T012734LP-01
     T012747LP-01
     T013098LP-01

8. Please apply the patch for PRIMECLUSTER.

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

9. 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 1.

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

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

    3. Exit RMS Wizard.

10. 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 5-12, 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 Cluster management server upgrading

This section explains upgrading cluster management server.

B.2.1 Upgrading from PRIMECLUSTER Enterprise Edition 4.3A40

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

    [Red Hat Enterprise Linux 6]

    Edit the contents of the id entry of the /etc/inittab file using vi(1) etc. as shown below to start the system in single-user mode.

    Note

    - The default runlevel varies depending on the environment when the patch is applied (3 in the example below).
    - Put down the default target before upgrading as you can restore the system to the state prior to upgrading later.

    [Before Modification]

    ```
    # Default runlevel, The runlevels used by RHS are:
    #   0 - halt (Do NOT set initdefault to this)
    #   1 - Single user mode
    #   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
    #   3 - Full multiuser mode
    #   4 - unused
    #   5 - X11
    #   6 - reboot (Do NOT set initdefault to this)
    #
    id:3:initdefault:
    ```

    [After Modification]

    ```
    # Default runlevel, The runlevels used by RHS are:
    #   0 - halt (Do NOT set initdefault to this)
    #   1 - Single user mode
    #   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
    #   3 - Full multiuser mode
    #   4 - unused
    ```

```
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

Start the system again in single-user mode.

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

[Red Hat Enterprise Linux 7]

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>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/rescue.target' '/etc/systemd/system/default.target'
```

Start the system again in single-user mode.

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

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

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

   1. Create a backup directory.

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

   2. Back up the PRIMECLUSTER operating environment.

      In case of or Red Hat Enterprise Linux 6 (for Intel64) ,
      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 vi(1) etc. then check the default value(60) is set for the following entry:Back up the GLS operating environment.

      ```
      <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 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 EE-M <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 <XXXXXXXXXXX> ... skipped.
```

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

6. Eject DVD.

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

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

   In case of Red Hat Enterprise Linux 6 (for Intel64) ,
   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 vi(1) etc. 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">
```

4. After completing step 3 on all the cluster management servers, reboot all the cluster management servers.

   [Red Hat Enterprise Linux 6]

   Edit the contents of the id entry of the /etc/inittab file, which has been changed in Step 1, to the original contents to start the system in multi-user mode.

   [Before Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:1:initdefault:
```

   [After Modification]

```
# Default runlevel, The runlevels used by RHS are:
#   0 - halt (Do NOT set initdefault to this)
#   1 - Single user mode
#   2 - Multiuser, without NFS (The same as 3, if you do not have networking)
#   3 - Full multiuser mode
#   4 - unused
#   5 - X11
#   6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

   Start the system again.

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

   [Red Hat Enterprise Linux 7]

   The default target changes in multi-user mode.

```
# systemctl set-default multi-user.target <Return>
rm '/etc/systemd/system/default.target'
ln -s '/usr/lib/systemd/system/multi-user.target' '/etc/systemd/system/default.target'
```

   Start the system again.

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

5. Patch download

   Download the latest PRIMECLUSTER patch by UpdateSite format and update information file from Updatesite.

6. Please apply the patch for PRIMECLUSTER.

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

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 6 (for x86)

Package	Architecture
OpenIPMI	i686
OpenIPMI-libs	i686
alsa-lib	i686
at	i686
autoconf	noarch
bc	i686
bind	i686
bind-utils	i686
compat-libstdc++-33	i686
cpp	i686
crash	i686
cvs	i686
device-mapper	i686
device-mapper-multipath	i686
dhcp	i686
docbook-utils	noarch
dump	i686
ebtables	i686
ed	i686
eject	i686
fontconfig	i686
freetype	i686
ftp	i686
gcc	i686
gdb	i686
ghostscript	i686
graphviz	i686
hdparm	i686
httpd	i686
httpd-tools	i686
indent	i686
ipmitool	i686
iscsi-initiator-utils	i686

Package	Architecture
iw	i686
kernel-devel	i686
kernel-headers	i686
kexec-tools	i686
libICE	i686
libSM	i686
libX11	i686
libXau	i686
libXext	i686
libXft	i686
libXi	i686
libXmu	i686
libXp	i686
libXrender	i686
libXt	i686
libXtst	i686
libjpeg/libjpeg-turbo(*1)	i686
libpng	i686
libproxy-bin	i686
libreport	i686
libvirt-client	i686
libxcb	i686
lsof	i686
lvm2	i686
make	i686
man	i686
mlocate	i686
mod_wsgi	i686
mt-st	i686
mtools	i686
mtr	i686
mysql-server	i686
nc	i686
net-snmp	i686
net-snmp-libs	i686
net-snmp-utils	i686
nfs-utils	i686
ntp	i686
openmotif	i686

Package	Architecture
openmotif22	i686
opensp	i686
openssh-clients	i686
openssl098e	i686
pam-devel	i686
parted	i686
patch	i686
pciutils	i686
perl	i686
perl-libwww-perl	noarch
pinfo	i686
prelink	i686
procmail	i686
psacct	i686
quota	i686
rpcbind	i686
rsh	i686
samba-common	i686
scsi-target-utils	i686
setuptool	i686
sg3_utils	i686
strace	i686
subversion	i686
sysstat	i686
tcpdump	i686
telnet	i686
time	i686
tree	i686
vconfig	i686
vim-common	i686
xinetd	i686
xorg-x11-apps	i686
xorg-x11-server-Xorg	i686
xorg-x11-server-utils	i686
xterm	i686
xz	i686
zip	i686

(*1) For Red Hat Enterprise Linux 6.3 or earlier, use the libjpeg package.
For Red Hat Enterprise Linux 6.4 or later, use the libjpeg-turbo package.

C.2 For Red Hat Enterprise Linux 6 (for Intel64)

Package	Architecture
OpenIPMI	x86_64
OpenIPMI-libs	x86_64
PyQt4	x86_64
PyQt4-devel	i686
PyQt4-devel	x86_64
alsa-lib	i686
alsa-lib	x86_64
at	x86_64
audit-libs	i686
autoconf	noarch
bc	x86_64
bind	x86_64
bind-utils	x86_64
compat-libstdc++-33	i686
compat-libstdc++-33	x86_64
cpp	x86_64
crash	x86_64
cvs	x86_64
device-mapper	x86_64
device-mapper-multipath	x86_64
dhcp	x86_64
docbook-utils	noarch
dump	x86_64
ebtables	x86_64
ed	x86_64
eject	x86_64
fontconfig	i686
fontconfig	x86_64
freetype	x86_64
gcc	x86_64
gdb	x86_64
ghostscript	x86_64
glibc	i686
hdparm	x86_64
httpd	x86_64
indent	x86_64
ipmitool	x86_64
iscsi-initiator-utils	x86_64

Package	Architecture
kernel-devel	x86_64
kernel-headers	x86_64
kexec-tools	x86_64
libICE	x86_64
libSM	x86_64
libX11	i686
libX11	x86_64
libXau	i686
libXau	x86_64
libXext	i686
libXext	x86_64
libXft	x86_64
libXi	i686
libXi	x86_64
libXmu	x86_64
libXp	x86_64
libXrender	x86_64
libXt	x86_64
libXtst	i686
libXtst	x86_64
libgcc	i686
libjpeg/libjpeg-turbo(*1)	x86_64
libpng	x86_64
libstdc++	i686
libvirt-client(*2)	x86_64
libxcb	x86_64
lsof	x86_64
lvm2	x86_64
make	x86_64
man	x86_64
mlocate	x86_64
mt-st	x86_64
mtools	x86_64
mtr	x86_64
nc	x86_64
net-snmp	x86_64
net-snmp-libs	i686
net-snmp-utils	x86_64
nfs-utils	x86_64

Package	Architecture
ntp	x86_64
openmotif	x86_64
openmotif22	x86_64
opensp	i686
openssh-clients	x86_64
openssl	i686
openssl098e	x86_64
pam-devel	x86_64
parted	x86_64
patch	x86_64
pciutils	x86_64
perl	x86_64
perl-libwww-perl	noarch
pinfo	x86_64
prelink	x86_64
psacct	x86_64
quota	x86_64
rpcbind	x86_64
rsh	x86_64
ruby(*2)	x86_64
samba-common	x86_64
scsi-target-utils	x86_64
setuptool	x86_64
sg3_utils	x86_64
strace	x86_64
subversion	x86_64
sysstat	x86_64
tcpdump	x86_64
time	x86_64
tree	x86_64
vconfig	x86_64
xinetd	x86_64
xorg-x11-apps	x86_64
xorg-x11-server-utils	x86_64
xterm	x86_64
zip	x86_64

(*1) For Red Hat Enterprise Linux 6.3 or earlier, use the libjpeg package.
For Red Hat Enterprise Linux 6.4 or later, use the libjpeg-turbo package.
(*2) In a FUJITSU Cloud Service K5 environment this is not necessary.

C.3 For Red Hat Enterprise Linux 7 (for Intel64)

Package	Architecture
ImageMagick	x86_64
OpenIPMI	x86_64
OpenIPMI-libs	x86_64
PyQt4-devel	x86_64
alsa-lib	i686
at	x86_64
audit-libs	i686
autoconf	noarch
bc	x86_64
bind	x86_64
bind-utils	x86_64
cpp	x86_64
crash	x86_64
device-mapper-multipath	x86_64
dialog	x86_64
docbook-utils	noarch
ed	x86_64
efibootmgr	x86_64
fontconfig	i686
fontconfig	x86_64
gcc	x86_64
gdb	x86_64
ghostscript	x86_64
glibc	i686
graphviz	x86_64
httpd	x86_64
httpd-tools	x86_64
indent	x86_64
ipmitool	x86_64
iscsi-initiator-utils	x86_64
iw	x86_64
kernel-devel	x86_64
kernel-headers	x86_64
libICE	x86_64
libSM	x86_64
libX11	i686
libX11	x86_64
libXau	i686

Package	Architecture
libXau	x86_64
libXext	i686
libXext	x86_64
libXft	x86_64
libXi	i686
libXi	x86_64
libXmu	x86_64
libXp	x86_64
libXrender	x86_64
libXt	x86_64
libXtst	i686
libXtst	x86_64
libgcc	i686
libjpeg-turbo	x86_64
libpng	x86_64
libreport	x86_64
libstdc++	i686
libvirt-client	x86_64
libxcb	x86_64
lsof	x86_64
m4	x86_64
mlocate	x86_64
motif	x86_64
motif-devel	x86_64
mt-st	x86_64
mtools	x86_64
mtr	x86_64
net-snmp	x86_64
net-snmp-utils	x86_64
nfs-utils	x86_64
ntp	x86_64
opensp	i686
openssl-libs	i686
pam-devel	x86_64
patch	x86_64
pciutils	x86_64
perl	x86_64
perl-libwww-perl	noarch
pinfo	x86_64

Package	Architecture
prelink	x86_64
psacct	x86_64
psmisc	x86_64
quota	x86_64
rpcbind	x86_64
ruby	x86_64
samba-common	x86_64/noarch(*1)
setuptool	x86_64
strace	x86_64
subversion	x86_64
sysstat	x86_64
targetcli	noarch
tcpdump	x86_64
time	x86_64
xorg-x11-server-utils	x86_64
xterm	x86_64

(*1) For Red Hat Enterprise Linux 7.1 or earlier, use x86_64.
For Red Hat Enterprise Linux 7.2 or later, use noarch.