EXPRESSCLUSTER® X SingleServerSafe 3.3 *for Linux*

Installation Guide

07/26/2018
8th Edition

Revision History

Edition	Revised Date	Description
1st	02/09/2015	New manual.
2nd	06/30/2015	Corresponds to the internal version 3.3.1-1.
3rd	07/03/2015	Updated supported kernel versions.
4th	01/29/2016	Corresponds to the internal version 3.3.2-1.
5th	10/03/2016	Corresponds to the internal version 3.3.3-1.
6th	04/10/2017	Corresponds to the internal version 3.3.4-1.
7th	10/02/2017	Corresponds to the internal version 3.3.5-1.
8th	07/26/2018	Corrected typographical errors.

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Preface

Who Should Use This Guide

The *EXPRESSCLUSTER X SingleServerSafe for Linux Installation Guide* is intended for system engineers who intend to introduce a system using EXPRESSCLUSTER X SingleServerSafe and system administrators who will operate and maintain the introduced system. This guide describes how to install EXPRESSCLUSTER X SingleServerSafe.

How This Guide Is Organized

Chapter 1 "About EXPRESSCLUSTER X SingleServerSafe": Explains the functions and requirements of EXPRESSCLUSTER X SingleServerSafe.

Chapter 2 "Installing EXPRESSCLUSTER X SingleServerSafe": Describes how to install EXPRESSCLUSTER X SingleServerSafe.

Chapter 3 "Upgrading, uninstalling or reinstalling": Describes how to upgrade EXPRESSCLUSTER X SingleServerSafe, uninstall and reinstall EXPRESSCLUSTER X SingleServerSafe, and upgrade to EXPRESSCLUSTER X.

Chapter 4 "Latest version information": Provides the latest information about EXPRESSCLUSTER X SingleServerSafe.

Chapter 5 "Additional information": Provides tips on installing EXPRESSCLUSTER X SingleServerSafe.

Chapter 6 "Notes and Restrictions": Provides notes and restrictions you need to know before starting the actual operation of EXPRESSCLUSTER X SingleServerSafe.

Appendix

Appendix A "Troubleshooting": Describes problems you might experience when installing or setting up EXPRESSCLUSTER X SingleServerSafe and how to resolve them.

Appendix B "Index"

Terms Used in This Guide

EXPRESSCLUSTER X SingleServerSafe, which is described in this guide, uses windows and commands common to those of the clustering software EXPRESSCLUSTER X SingleServerSafe to ensure high compatibility with EXPRESSCLUSTER X SingleServerSafe in terms of operation and other aspects. Therefore, cluster-related terms are used in parts of the guide.
The terms used in this guide are defined below.

Term	Explanation
Cluster, cluster system	A single server system using EXPRESSCLUSTER X SingleServerSafe
Cluster shutdown, reboot	Shutdown or reboot of a system using EXPRESSCLUSTER X SingleServerSafe
Cluster resource	A resource used in EXPRESSCLUSTER X SingleServerSafe
Cluster object	A resource object used in EXPRESSCLUSTER X SingleServerSafe
Failover group	A group of group resources (such as applications and services) used in EXPRESSCLUSTER X SingleServerSafe

EXPRESSCLUSTER X SingleServerSafe Documentation Set

The EXPRESSCLUSTER X SingleServerSafe documentation consists of the five guides below. The title and purpose of each guide is described below:

EXPRESSCLUSTER X SingleServerSafe Installation Guide

This guide is intended for system engineers who intend to introduce a system using EXPRESSCLUSTER X SingleServerSafe and describes how to install EXPRESSCLUSTER X SingleServerSafe.

EXPRESSCLUSTER X SingleServerSafe Configuration Guide

This guide is intended for system engineers who intend to introduce a system using EXPRESSCLUSTER X SingleServerSafe and system administrators who will operate and maintain the introduced system. It describes how to set up EXPRESSCLUSTER X SingleServerSafe.

EXPRESSCLUSTER X SingleServerSafe Operation Guide

This guide is intended for system administrators who will operate and maintain an introduced system that uses EXPRESSCLUSTER X SingleServerSafe. It describes how to operate EXPRESSCLUSTER X SingleServerSafe.

EXPRESSCLUSTER X Integrated WebManager Administrator's Guide

This guide is intended for system administrators who manage a cluster system using EXPRESSCLUSTER with EXPRESSCLUSTER Integrated WebManager and for system engineers who are introducing the Integrated WebManager. Details about items required when introducing a cluster system are described in accordance with actual procedures.

EXPRESSCLUSTER X WebManager Mobile Administrator's Guide

This guide is intended for system administrators who manage cluster system using EXPRESSCLUSTER with EXPRESSCLUSTER WebManager Mobile and for system engineers who introduce the WebManager Mobile. In this guide, details on those items required for introducing the cluster system using the WebManager Mobile are explained in accordance with the actual procedures.

Conventions

In this guide, **Note**, **Important**, **Related Information** are used as follows:

Note:
Used when the information given is important, but not related to the data loss and damage to the system and machine.

Important:
Used when the information given is necessary to avoid the data loss and damage to the system and machine.

Related Information:
Used to describe the location of the information given at the reference destination.

The following conventions are used in this guide.

Convention	Usage	Example
Bold	Indicates graphical objects, such as fields, list boxes, menu selections, buttons, labels, icons, etc.	In **User Name**, type your name. On the **File** menu, click **Open Database**.
Angled bracket within the command line	Indicates that the value specified inside of the angled bracket can be omitted.	`clpstat –s [-h host_name]`
#	Prompt to indicate that a Linux user has logged in as root user.	`# clpcl -s -a`
Monospace (courier)	Indicates path names, commands, system output (message, prompt, etc), directory, file names, functions and parameters.	`/Linux/3.3/en/server/`
Monospace bold (courier)	Indicates the value that a user actually enters from a command line.	Enter the following: **`clpcl -s -a`**
Monospace italic (courier)	Indicates that users should replace italicized part with values that they are actually working with.	`rpm –i expressclssss -<version_number>-<release_number>.i686.rpm`

Contacting NEC

For the latest product information, visit our website below:

http://www.nec.com/global/prod/expresscluster/

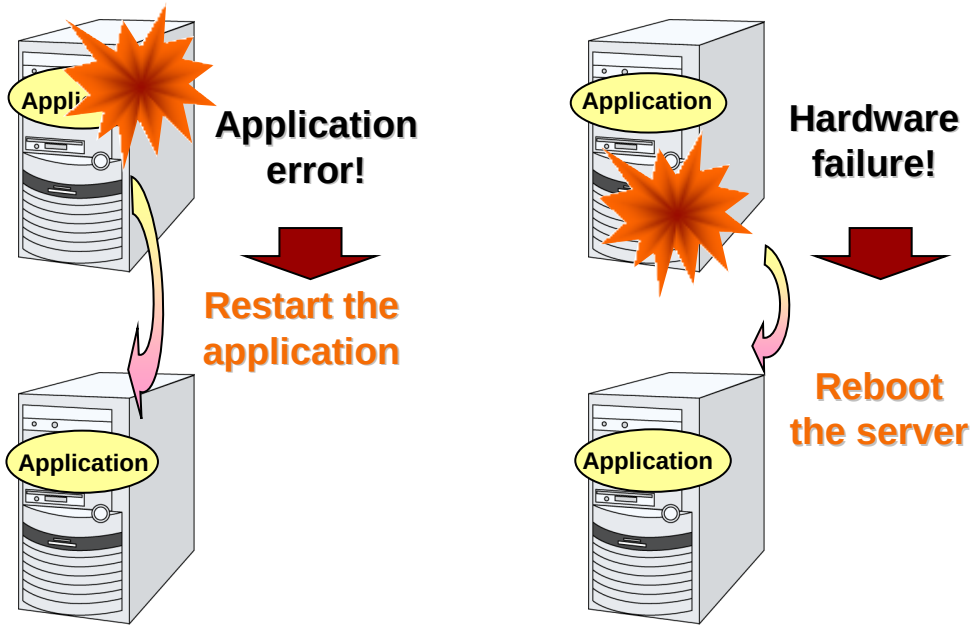
Chapter 1 About EXPRESSCLUSTER X SingleServerSafe

This chapter describes the functions and requirements of EXPRESSCLUSTER X SingleServerSafe.

This chapter covers:

What is EXPRESSCLUSTER X SingleServerSafe?

EXPRESSCLUSTER X SingleServerSafe is set up on a server. It monitors for application errors and hardware failures on the server and, upon detecting an error or failure, restarts the failed application or reboots the server so as to ensure greater server availability.



Related Information:
For details about EXPRESSCLUSTER X SingleServerSafe, refer to Section I "Overview of EXPRESSCLUSTER X SingleServerSafe" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.

EXPRESSCLUSTER X SingleServerSafe software configuration

EXPRESSCLUSTER X SingleServerSafe consists of following three software applications:

- EXPRESSCLUSTER SingleServerSafe

  The main module of EXPRESSCLUSTER X SingleServerSafe. Install it on the server.

- WebManager

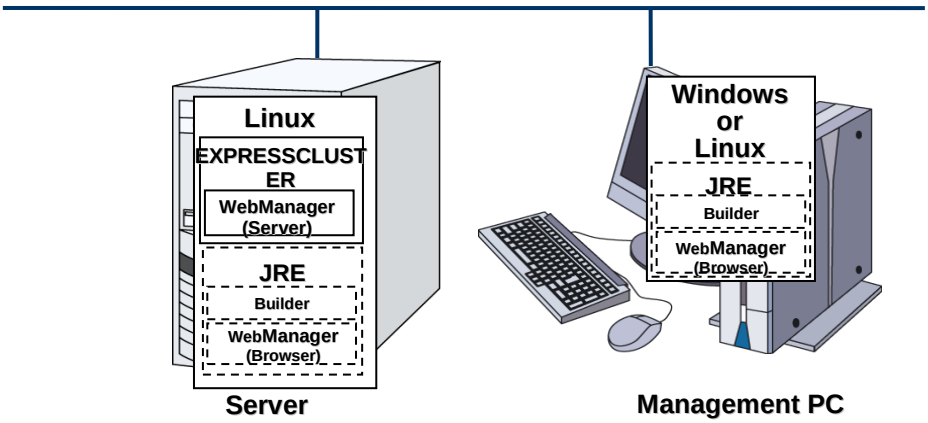
  A tool to manage EXPRESSCLUSTER X SingleServerSafe operations.

  It uses a Web browser as a user interface.

  The WebManager is incorporated into the EXPRESSCLUSTER SingleServerSafe and therefore does not have to be installed.

- Builder

  A tool for creating the configuration data of EXPRESSCLUSTER X SingleServerSafe. There are two versions. The online version of the Builder runs in the configuration mode of the WebManager, and the offline version of the Builder is installed individually in a management terminal. The online version of the Builder is incorporated in the WebManager. The Builder also uses a Web browser as a user interface the same way as the WebManager.



The WebManager and the Builder are Java applets that run on Java VMs. They can run on any machine in which the Java Runtime Environment (JRE) is installed. The WebManager and the Builder can run on Windows and Linux.
In other words, once you install the JRE on a server on which EXPRESSCLUSTER X SingleServerSafe is installed, you can use the WebManager and Builder on that server.

Checking system requirements for EXPRESSCLUSTER X SingleServerSafe

Hardware

EXPRESSCLUSTER X SingleServerSafe runs on a server that has either of the following architectures:

- IA-32
- x86_64

Required specifications

Required specifications for EXPRESSCLUSTER SingleServerSafe are the following:

- Ethernet port:
- CD-ROM drive

When using the off-line Builder upon constructing and changing the existing configuration, one of the following is required for communication between the off-line Builder and servers:

- Removable media (for example, floppy disk drive or USB flash drive)
- A machine to operate the offline version of the Builder and a way to share files

Servers supporting BMC-related functions

The table below lists the supported servers that can use the forced stop function. These are typical examples, and also some other servers can use these functions.

Server	Remarks
Express5800/120Rg-1	
Express5800/120Rf-1	
Express5800/120Rg-2	

Software

EXPRESSCLUSTER X SingleServerSafe consists of three modules: EXPRESSCLUSTER SingleServerSafe, EXPRESSCLUSTER WebManager, and EXPRESSCLUSTER Builder. Check configuration and operation requirements of each machine where these modules will be installed. The following describes the basic system requirements for EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux.

- Details on operating system supporting EXPRESSCLUSTER SingleServerSafe.

The following provides the system requirements for each module:

EXPRESSCLUSTER X SingleServerSafe	
Machine on which the EXPRESSCLUSTER X SingleServerSafe can be installed	PC that supports one of the following operating systems.
Supported operating systems	**IA-32 version** **x86_64 version** Refer to "Supported distributions and kernel versions" below
Memory size	**IA-32 version** User mode 96 MB(*1) Kernel mode 8 MB **x86_64 version** User mode 96 MB(*1) Kernel mode 8 MB
Disk Size:	**IA-32 version** Initial size at installation 140 MB Maximum size during operation 2.0 GB **x86_64 version** Initial size at installation 140 MB Maximum size during operation 2.0 GB

(*1) excepting for optional products.

WebManager, Builder (online version)	
Machine on which the WebManager and Builder can be installed	PC that supports one of the following operating systems.
Supported operating systems	Linux Microsoft Windows® XP Service Pack 3 (Only for IA32) Microsoft Windows Vista® Service Pack 2 (Only for IA32) Microsoft Windows® 7 Microsoft Windows® 7 Service Pack 1 Microsoft Windows® 8 Microsoft Windows® 8.1 Microsoft Windows® 10 Microsoft Windows Server® 2003 Service Pack 1 or later Microsoft Windows Server® 2008 Microsoft Windows Server® 2008 R2 Microsoft Windows Server® 2012 Microsoft Windows Server® 2012 R2
Supported browsers	Browsers supporting Java 2: Firefox (1.0.6 or later) Konqueror (3.3.1 or later) Internet Explorer 7 Internet Explorer 8 Internet Explorer 9 Internet Explorer 10 Internet Explorer 11

Java Runtime Environment	Java® Runtime Environment Version 6.0 Update 21 (1.6.0_21) or later Java® Runtime Environment Version 7.0 Update 2 (1.7.0_2) or later Java® Runtime Environment Version 8.0 Update 5 (1.8.0_5) or later *Java Runtime Environment is necessary to use the WebManager.
Memory size	User mode 40 MB

Builder (offline version)		
Machine on which the Builder can be installed	PC that supports one of the following operating systems.	
Supported operating systems	Microsoft Windows® XP Service Pack 3 (Only for IA32) Microsoft Windows Vista® Service Pack 2 (Only for IA32) Microsoft Windows® 7 Microsoft Windows® 7 Service Pack 1 Microsoft Windows® 8 Microsoft Windows® 8.1 Microsoft Windows® 10 Microsoft Windows Server® 2003 Service Pack 1 or later Microsoft Windows Server® 2008 Microsoft Windows Server® 2008 R2 Microsoft Windows Server® 2012 Microsoft Windows Server® 2012 R2	
Supported browsers	Browsers supporting Java 2: Firefox (1.0.6 or later) Internet Explorer 7 Internet Explorer 8 Internet Explorer 9 Internet Explorer 10 Internet Explorer 11	
Java Runtime Environment	Java® Runtime Environment Version 6.0 Update 21 (1.6.0_21) or later Java® Runtime Environment Version 7.0 Update 2 (1.7.0_2) or later Java® Runtime Environment Version 8.0 Update 5 (1.8.0_5) or later *Java Runtime Environment is necessary to use the Builder.	
Memory size	User mode 32 MB	
Disk size (excluding the size required for the Java runtime environment)	7 MB	
Supported version	Builder version	EXPRESSCLUSTER X SingleServerSafe internal version
	3.0.0-1	3.0.0-1
	3.0.2-1	3.0.2-1
	3.0.3-1	3.0.3-1
	3.0.4-1	3.0.4-1
	3.1.0-1	3.1.0-1

3.1.1-1	3.1.1-1
3.1.3-1	3.1.3-1
3.1.4-1	3.1.4-1
3.1.5-1	3.1.5-1
3.1.7-1	3.1.7-1
3.1.8-1	3.1.8-1
3.1.10-1	3.1.10-1
3.2.0-1	3.2.0-1
3.2.1-1	3.2.1-1
	3.2.3-1
3.3.0-1	3.3.0-1
3.3.1-1	3.3.1-1
3.3.2-1	3.3.2-1
3.3.3-1	3.3.3-1
3.3.4-1	3.3.4-1
	3.3.4-2
3.3.5-1	3.3.5-1

Note:
The 32-bit Java Runtime is necessary to run the Builder on x86_64 machines.

Note:
The offline Builder 3.1.8-1 or earlier does not run on Java Runtime Environment Version 7 Update 25.

Note:
The offline Builder does not run on Java Runtime Environment Version 7 Update 45.

Note:
The WebManager does not run on a browser of a x86_64 machine. Use a browser supporting IA32 to run the EXPRESSCLUSTER X WebManager .

Supported distributions and kernel versions

The environments where EXPRESSCLUSTER X SingleServerSafe can run depend on the kernel module versions because there are kernel modules specific to EXPRESSCLUSTER X SingleServerSafe.

Kernel versions which has been verified are listed below.

About newest information, see the web site as follows:

EXPRESSCLUSTER website
→System Requirements
→Linux Kernel
→EXPRESSCLUSTER X 3.3 for Linux

Note: For the kernel version of Cent OS supported by EXPRESSCLUSTER, see the supported kernel version of Red Hat Enterprise Linux.

Applications supported by the monitoring options

Version information of the applications to be monitored by the monitor resources is described below.

IA-32

Monitor resource	Application to be monitored	EXPRESSCLUSTER X SingleServerSafe version	Remarks
Oracle monitor	Oracle Database 10g Release 2 (10.2)	3.0.0-1 or later	
	Oracle Database 11g Release 1 (11.1)	3.0.0-1 or later	
	Oracle Database 11g Release 2 (11.2)	3.0.0-1 or later	
DB2 monitor	DB2 V9.5	3.0.0-1 or later	
	DB2 V9.7	3.0.0-1 or later	
	DB2 V10.1	3.1.3-1 or later	
	DB2 V10.5	3.1.8-1 or later	
PostgreSQL monitor	PostgreSQL 8.1	3.0.0-1 or later	
	PostgreSQL 8.2	3.0.0-1 or later	
	PostgreSQL 8.3	3.0.0-1 or later	
	PostgreSQL 8.4	3.0.0-1 or later	
	PostgreSQL 9.0	3.0.3-1 or later	
	PostgreSQL 9.1	3.1.0-1 or later	
	PostgreSQL 9.2	3.1.7-1 or later	
	PostgreSQL 9.3	3.1.8-1 or later	
	PostgreSQL 9.4	3.3.1-1 or later	
	PostgreSQL 9.5	3.3.3-1 or later	
	PostgreSQL 9.6	3.3.4-1 or later	

	PowerGres on Linux 6.0	3.0.0-1 or later	
	PowerGres on Linux 7.0	3.0.0-1 or later	
	PowerGres on Linux 7.1	3.0.0-1 or later	
	PowerGres on Linux 9.0	3.0.3-1 or later	
	PowerGres on Linux 9.4	3.3.1-1 or later	
MySQL monitor	MySQL 5.0	3.0.0-1 or later	
	MySQL 5.1	3.0.0-1 or later	
	MySQL 5.5	3.0.3-1 or later	
	MySQL 5.6	3.1.8-1 or later	
	MySQL 5.7	3.3.2-1 or later	
	MariaDB 5.5	3.3.3-1 or later	
	MariaDB 10.0	3.3.3-1 or later	
	MariaDB 10.1	3.3.3-1 or later	
	MariaDB 10.2	3.3.5-1 or later	
Sybase monitor	Sybase ASE 15.0	3.0.0-1 or later	
	Sybase ASE 15.5	3.1.0-1 or later	
Samba monitor	Samba 3.0	3.0.0-1 or later	
	Samba 3.2	3.0.0-1 or later	
	Samba 3.3	3.0.0-1 or later	
	Samba 3.4	3.0.0-1 or later	
	Samba 3.5	3.1.5-1 or later	
	Samba 3.6	3.3.2-1 or later	
	Samba 4.0	3.1.8-1 or later	
	Samba 4.1	3.2.1-1 or later	
	Samba 4.2	3.3.2-1 or later	
nfs monitor	nfsd 2 (udp)	3.0.0-1 or later	
	nfsd 3 (udp)	3.1.5-1 or later	
	nfsd 4 (tcp)	3.1.5-1 or later	
	mountd 1 (tcp)	3.0.0-1 or later	
	mountd 2 (tcp)	3.1.5-1 or later	
	mountd 3 (tcp)	3.1.5-1 or later	
HTTP monitor	No specified version	3.0.0-1 or later	
SMTP monitor	No specified version	3.0.0-1 or later	
pop3 monitor	No specified version	3.0.0-1 or later	
imap4 monitor	No specified version	3.0.0-1 or later	
ftp monitor	No specified version	3.0.0-1 or later	
Tuxedo monitor	Tuxedo 10g Release 3	3.0.0-1 or later	

	Tuxedo 11g Release 1	3.0.0-1 or later	
	Tuxedo 12c Release 2 (12.1.3)	3.3.1-1 or later	
OracleAS monitor	Oracle Application Server 10g Release 3 (10.1.3.4)	3.0.0-1 or later	
Weblogic monitor	WebLogic Server 10g R3	3.0.0-1 or later	
	WebLogic Server 11g R1	3.0.0-1 or later	
	WebLogic Server 12c Release 1 (12.1.1)	3.1.3-1 or later	
	WebLogic Server 12c Release 2 (12.1.2)	3.1.3-1 or later	
	WebLogic Server 12c Release 3 (12.1.3)	3.1.3-1 or later	
	WebLogic Server 12c R2 (12.2.1)	3.3.3-1 or later	
Websphere monitor	WebSphere Application Server 6.1	3.0.0-1 or later	
	WebSphere Application Server 7.0	3.0.0-1 or later	
	WebSphere Application Server 8.0	3.1.5-1 or later	
	WebSphere Application Server 8.5	3.1.8-1 or later	
	WebSphere Application Server 8.5.5	3.3.4-1 or later	
	WebSphere Application Server 9.0	3.3.4-1 or later	
WebOTX monitor	WebOTX V7.1	3.0.0-1 or later	
	WebOTX V8.0	3.0.0-1 or later	
	WebOTX V8.1	3.0.0-1 or later	
	WebOTX V8.2	3.0.0-1 or later	
	WebOTX V8.3	3.1.0-1 or later	
	WebOTX V8.4	3.1.0-1 or later	
	WebOTX V9.1	3.1.10-1 or later	
	WebOTX V9.2	3.2.1-1 or later	
	WebOTX V9.3	3.3.2-1 or later	
	WebOTX V9.4	3.3.4-1 or later	
JVM monitor	WebLogic Server 11g R1	3.1.0-1 or later	
	WebLogic Server 12c Release 1 (12.1.1)	3.1.3-1 or later	
	WebLogic Server 12c Release 2 (12.1.2)	3.1.3-1 or later	
	WebLogic Server 12c Release 3 (12.1.3)	3.1.3-1 or later	
	WebLogic Server 12c R2 (12.2.1)	3.3.3-1 or later	
	WebOTX V8.2	3.1.0-1 or later	
	WebOTX V8.3	3.1.0-1 or later	
	WebOTX V8.4	3.1.0-1 or later	
	WebOTX V9.1	3.1.10-1 or later	

	WebOTX V9.2	3.2.1-1 or later	WebOTX update is required to monitor process groups
	WebOTX V9.3	3.3.2-1 or later	
	WebOTX V9.4	3.3.4-1 or later	
	WebOTX Enterprise Service Bus V8.4	3.1.3-1 or later	
	WebOTX Enterprise Service Bus V8.5	3.1.5-1 or later	
	JBoss Application Server 4.2.3.GA/5.1.0.GA	3.1.0-1 or later	
	JBoss Enterprise Application Platform 4.3.0.GA_CP06	3.1.0-1 or later	
	JBoss Enterprise Application Platform 5	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6.1.1	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6.2	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6.3	3.3.1-1 or later	
	JBoss Enterprise Application Platform 6.4	3.3.2-1 or later	
	JBoss Enterprise Application Platform 7.0	3.3.4-1 or later	
	Apache Tomcat 6.0	3.1.0-1 or later	
	Apache Tomcat 7.0	3.1.3-1 or later	
	Apache Tomcat 8.0	3.3.1-1 or later	
	Apache Tomcat 8.5	3.3.4-1 or later	
	WebSAM SVF for PDF 9.0	3.1.3-1 or later	
	WebSAM SVF for PDF 9.1	3.1.4-1 or later	
	WebSAM SVF for PDF 9.2	3.3.1-1 or later	
	WebSAM Report Director Enterprise 9.0	3.1.3-1 or later	
	WebSAM Report Director Enterprise 9.1	3.1.5-1 or later	
	WebSAM Report Director Enterprise 9.2	3.3.1-1 or later	
	WebSAM Universal Connect/X 9.0	3.1.3-1 or later	
	WebSAM Universal Connect/X 9.1	3.1.5-1 or later	
	WebSAM Universal Connect/X 9.2	3.3.1-1 or later	
	Oracle iPlanet Web Server 7.0	3.1.3-1 or later	
System monitor	No specified version	3.1.0-1 or later	

x86_64

Monitor resource	Application to be monitored	EXPRESSCLUSTER SingleServerSafe version	Remarks
Oracle monitor	Oracle Database 10g Release 2 (10.2)	3.0.0-1 or later	
	Oracle Database 11g Release 1 (11.1)	3.0.0-1 or later	
	Oracle Database 11g Release 2 (11.2)	3.0.0-1 or later	
	Oracle Database 12c Release 1 (12.1)	3.1.8-1 or later	
	Oracle Database 12c Release 2 (12.2)	3.3.5-1 or later	
DB2 monitor	DB2 V9.5	3.0.0-1 or later	
	DB2 V9.7	3.0.0-1 or later	
	DB2 V10.1	3.1.3-1 or later	
	DB2 V10.5	3.1.8-1 or later	
	DB2 V11.1	3.3.4-1 or later	
PostgreSQL monitor	PostgreSQL 8.1	3.0.0-1 or later	
	PostgreSQL 8.2	3.0.0-1 or later	
	PostgreSQL 8.3	3.0.0-1 or later	
	PostgreSQL 8.4	3.0.0-1 or later	
	PostgreSQL 9.0	3.0.3-1 or later	
	PostgreSQL 9.1	3.1.0-1 or later	
	PostgreSQL 9.2	3.1.7-1 or later	
	PostgreSQL 9.3	3.1.8-1 or later	
	PostgreSQL 9.4	3.3.1-1 or later	
	PostgreSQL 9.5	3.3.3-1 or later	
	PostgreSQL 9.6	3.3.4-1 or later	
	PowerGres on Linux 6.0	3.0.0-1 or later	
	PowerGres on Linux 7.0	3.0.0-1 or later	
	PowerGres on Linux 7.1	3.0.0-1 or later	
	PowerGres on Linux 9.0	3.0.3-1 or later	
	PowerGres on Linux 9.1	3.1.8-1 or later	
	PowerGres on Linux 9.4	3.3.1-1 or later	
	PowerGres Plus V5.0	3.0.0-1 or later	
MySQL monitor	MySQL 5.0	3.0.0-1 or later	
	MySQL 5.1	3.0.0-1 or later	
	MySQL 5.5	3.0.3-1 or later	
	MySQL 5.6	3.1.8-1 or later	
	MySQL 5.7	3.3.2-1 or later	
	MariaDB 5.5	3.3.3-1 or later	
	MariaDB 10.0	3.3.3-1 or later	

	MariaDB 10.1	3.3.3-1 or later	
	MariaDB 10.2	3.3.5-1 or later	
Sybase monitor	Sybase ASE 15.0	3.0.0-1 or later	
	Sybase ASE 15.5	3.1.0-1 or later	
	Sybase ASE 15.7	3.1.0-1 or later	
	SAP ASE 16.0	3.1.0-1 or later	
Samba monitor	Samba 3.0	3.0.0-1 or later	
	Samba 3.2	3.0.0-1 or later	
	Samba 3.3	3.0.0-1 or later	
	Samba 3.4	3.0.0-1 or later	
	Samba 3.5	3.1.5-1 or later	
	Samba 3.6	3.3.2-1 or later	
	Samba 4.0	3.1.8-1 or later	
	Samba 4.1	3.2.1-1 or later	
	Samba 4.2	3.3.2-1 or later	
	Samba 4.4	3.3.4-1 or later	
	Samba 4.6	3.3.5-1 or later	
nfs monitor	nfsd 2 (udp)	3.0.0-1 or later	
	nfsd 3 (udp)	3.1.5-1 or later	
	nfsd 4 (tcp)	3.1.5-1 or later	
	mountd 1 (tcp)	3.0.0-1 or later	
	mountd 2 (tcp)	3.1.5-1 or later	
	mountd 3 (tcp)	3.1.5-1 or later	
HTTP monitor	No Specified version	3.0.0-1 or later	
SMTP monitor	No Specified version	3.0.0-1 or later	
pop3 monitor	No Specified version	3.0.0-1 or later	
imap4 monitor	No Specified version	3.0.0-1 or later	
ftp monitor	No Specified version	3.0.0-1 or later	
Tuxedo monitor	Tuxedo 10g Release 3	3.0.0-1 or later	
	Tuxedo 11g Release 1	3.0.0-1 or later	
	Tuxedo 12c Release 2 (12.1.3)	3.3.1-1 or later	
OracleAS monitor	Oracle Application Server 10g Release 3 (10.1.3.4)	3.0.0-1 or later	
Weblogic monitor	WebLogic Server 10g R3	3.0.0-1 or later	
	WebLogic Server 11g R1	3.0.0-1 or later	
	WebLogic Server 12c Release 1 (12.1.1)	3.1.3-1 or later	
	WebLogic Server 12c Release 2 (12.1.2)	3.1.3-1 or later	

	WebLogic Server 12c Release 3 (12.1.3)	3.1.3-1 or later	
	WebLogic Server 12c R2 (12.2.1)	3.3.3-1 or later	
Websphere monitor	WebSphere Application Server 6.1	3.0.0-1 or later	
	WebSphere Application Server 7.0	3.0.0-1 or later	
	WebSphere Application Server 8.0	3.1.5-1 or later	
	WebSphere Application Server 8.5	3.1.8-1 or later	
	WebSphere Application Server 8.5.5	3.3.4-1 or later	
	WebSphere Application Server 9.0	3.3.4-1 or later	
WebOTX monitor	WebOTX V7.1	3.0.0-1 or later	
	WebOTX V8.0	3.0.0-1 or later	
	WebOTX V8.1	3.0.0-1 or later	
	WebOTX V8.2	3.0.0-1 or later	
	WebOTX V8.3	3.1.0-1 or later	
	WebOTX V8.4	3.1.0-1 or later	
	WebOTX V8.5	3.1.5-1 or later	
	WebOTX V9.1	3.1.10-1 or later	
	WebOTX V9.2	3.2.1-1 or later	
	WebOTX V9.3	3.3.2-1 or later	
	WebOTX V9.4	3.3.4-1 or later	
JVM monitor	WebLogic Server 11g R1	3.1.0-1 or later	
	WebLogic Server 12c Release 1 (12.1.1)	3.1.3-1 or later	
	WebLogic Server 12c Release 2 (12.1.2)	3.1.3-1 or later	
	WebLogic Server 12c Release 3 (12.1.3)	3.1.3-1 or later	
	WebLogic Server 12c R2 (12.2.1)	3.3.3-1 or later	
	WebOTX V8.2	3.1.0-1 or later	
	WebOTX V8.3	3.1.0-1 or later	
	WebOTX V8.4	3.1.0-1 or later	
	WebOTX V8.5	3.1.5-1 or later	
	WebOTX V9.1	3.1.10-1 or later	
	WebOTX V9.2	3.2.1-1 or later	WebOTX update is required to monitor process groups
	WebOTX V9.3	3.3.2-1 or later	
	WebOTX V9.4	3.3.4-1 or later	
	WebOTX Enterprise Service Bus V8.4	3.1.3-1 or later	
	WebOTX Enterprise Service Bus V8.5	3.1.5-1 or later	

	JBoss Application Server 4.2.3.GA/5.1.0.GA	3.1.0-1 or later	
	JBoss Enterprise Application Platform 4.3.0.GA_CP06	3.1.0-1 or later	
	JBoss Enterprise Application Platform 5	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6.1.1	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6.2	3.2.1-1 or later	
	JBoss Enterprise Application Platform 6.3	3.3.1-1 or later	
	JBoss Enterprise Application Platform 6.4	3.3.2-1 or later	
	JBoss Enterprise Application Platform 7.0	3.3.4-1 or later	
	Apache Tomcat 6.0	3.1.0-1 or later	
	Apache Tomcat 7.0	3.1.3-1 or later	
	Apache Tomcat 8.0	3.3.1-1 or later	
	Apache Tomcat 8.5	3.3.4-1 or later	
	WebSAM SVF for PDF 9.0	3.1.3-1 or later	
	WebSAM SVF for PDF 9.1	3.1.4-1 or later	
	WebSAM SVF for PDF 9.2	3.3.1-1 or later	
	WebSAM Report Director Enterprise 9.0	3.1.3-1 or later	
	WebSAM Report Director Enterprise 9.1	3.1.5-1 or later	
	WebSAM Report Director Enterprise 9.2	3.3.1-1 or later	
	WebSAM Universal Connect/X 9.0	3.1.3-1 or later	
	WebSAM Universal Connect/X 9.1	3.1.5-1 or later	
	WebSAM Universal Connect/X 9.2	3.3.1-1 or later	
	Oracle iPlanet Web Server 7.0	3.1.3-1 or later	
System monitor	No specified version	3.1.0-1 or later	

Note: To use monitoring options in x86_64 environments, applications to be monitored must be x86_64 version.

Operation environment for SNMP linkage functions

The tables below list the SNMP agents on which the operation of the SNMP linkage functions was verified.

IA32

Distribution	SNMP agent	EXPRESSCLUSTER version	Corresponding file	Remarks
Red Hat Enterprise Linux 5.4	Net-SNMP 5.3.2.2	3.1.0-1 or later	libclpmgtmib.so	
Red Hat Enterprise Linux 5.6	Net-SNMP 5.3.2.2	3.1.0-1 or later	libclpmgtmib.so	
Red Hat Enterprise Linux 6.1	Net-SNMP 5.5	3.1.0-1 or later	libclpmgtmib.so	
Novell SUSE LINUX Enterprise Server 11 (SP1)	Net-SNMP 5.4.2.1	3.1.0-1 or later	libclpmgtmib.so	

x86_64

Distribution	SNMP agent	EXPRESSCLUSTER version	Corresponding file	Remarks
Red Hat Enterprise Linux 5.4	Net-SNMP 5.3.2.2	3.1.0-1 or later	libclpmgtmib.so	
Red Hat Enterprise Linux 5.6	Net-SNMP 5.3.2.2	3.1.0-1 or later	libclpmgtmib.so	
Red Hat Enterprise Linux 6.1	Net-SNMP 5.5	3.1.0-1 or later	libclpmgtmib.so	
Red Hat Enterprise Linux 7.0	Net-SNMP 5.7.2	3.3.2-1 or later	libclpmgtmib2.so	
Novell SUSE LINUX Enterprise Server 11 (SP1)	Net-SNMP 5.4.2.1	3.1.0-1 or later	libclpmgtmib.so	
Oracle Enterprise Linux 5 (5.5)	Net-SNMP 5.3.2.2	3.1.0-1 or later	libclpmgtmib.so	

Note: Use Novell SUSE LINUX Enterprise Server 11 (SP1) or later to obtain SNMP information on a Novell SUSE LINUX Enterprise Server.

Operation environment for JVM monitor

The use of the JVM monitor requires a Java runtime environment. Also, monitoring a domain mode of JBoss Enterprise Application Platform 6 or later requires Java® SE Development Kit.

Java® Runtime Environment
Version6.0 Update 21 (1.6.0_21) or later

Java® SE Development Kit
Version 6.0 Update 21(1.6.0_21) or later

Java® Runtime Environment
Version7.0 Update 6 (1.7.0_6) or later

Java® SE Development Kit
Version 7.0 Update 1 (1.7.0_1) or later

Java(TM) Runtime Environment

Version8.0 Update 11 (1.8.0_11) or later

Java(TM) SE Development Kit
Version 8.0 Update 11 (1.8.0_11) or later

Java(TM) Runtime Environment

Version9.0 (1.9.0) or later

Java(TM) SE Development Kit
Version 9.0 (1.9.0) or later

Open JDK

Version 6.0 (1.6.0) or later

Version 7.0 Update 45 (1.7.0_45) or later

Version 8.0 (1.8.0) or later

Version 9.0 (1.9.0) or later

The tables below list the load balancers that were verified for the linkage with the JVM monitor.

IA32

Load balancer	EXPRESSCLUSTER version	Remarks
Express5800/LB400h or later	3.1.0-1 or later	
InterSec/LB400i or later	3.1.0-1 or later	
InterSecVM/LB V1.0 or later * When Rel1.0 or later is applied	3.1.0-1 or later	
BIG-IP v11	3.1.3-1 or later	
MIRACLE LoadBalancer	3.1.3-1 or later	
CoyotePoint Equalizer	3.1.3-1 or later	

x86_64

Load balancer	EXPRESSCLUSTER version	Remarks
Express5800/LB400h or later	3.1.0-1 or later	
InterSec/LB400i or later	3.1.0-1 or later	
InterSecVM/LB V1.0 or later * When Rel1.0 or later is applied	3.1.0-1 or later	
BIG-IP v11	3.1.3-1 or later	
MIRACLE LoadBalancer	3.1.3-1 or later	
CoyotePoint Equalizer	3.1.3-1 or later	

Preparing and verifying the server environment before installation

After installing the hardware, verify the following:

1. Network settings (Required)
2. Root file system (Required)
3. Firewall settings (Required)

1. Verifying the network settings (Required)

Check the following network settings by using the `ifconfig` and `ping` commands.

- IP Address
- Host name

2. Verifying the root file system (Required)

It is recommended to use a file system which is capable of journaling for the root file system in the operating system. Linux (version 2.6 or later) supports journaling file systems such as ext3, JFS, ReiserFS, and XFS.

Important:
If a file system that is not capable of journaling is used, you must run an interactive command (`fsck` for the root file system) when rebooting the server after server or OS stop (when normal shutdown could not be done).

3. Verifying the firewall settings (Required)

By default, EXPRESSCLUSTER X SingleServerSafe uses the port numbers below. You can change these port numbers by using the Builder. Do not access any of these port numbers from a program other than EXPRESSCLUSTER X SingleServerSafe. When setting up a firewall, set up EXPRESSCLUSTER X SingleServerSafe so that it can access the port numbers below.

Internal processing in the local server					
From			To		Remarks
Server	Automatic allocation	→	Server	29001/TCP	Internal communication
Server	Automatic allocation	→	Server	29002/TCP	Data transfer
Server	Automatic allocation	→	Server	29003/UDP	Alert synchronization
Server	Automatic allocation	→	Server	XXXX/UDP	Internal communication for log

From the WebManager to the server					
From			To		Remarks
WebManager	Automatic allocation	→	Server	29003/TCP	http communication

From the server connected to the Integrated WebManager to the target server					
From			**To**		**Remarks**
Server connected to the Integrated WebManager	Automatic allocation	→	Server	29003/TCP	http communication
Server to be managed by the Integrated WebManager	29003	→	Client	29010/UDP	UDP communication

From the server connected to the Integrated WebManager to the target server					
From			**To**		**Remarks**
Server	Automatic allocation	→	Monitoring target	Management port number set by the Builder	JVM monitor
Server	Automatic allocation	→	Monitoring target	Connection port number set by the Builder	JVM monitor
Server	Automatic allocation	→	Monitoring target	Load balancer linkage management port number set by the Builder	JVM monitor
Server	Automatic allocation	→	Monitoring target	Communication port number set by the Builder	JVM monitor

Note 1:
An available port number at the time is automatically assigned.

Note 2:
On the **Port Number** tab in **Cluster Properties**, select **UDP** for log communication, and use the port number specified for **Port Number**. The default log communication method, **UNIX Domain**, does not use a communication port.

Chapter 2 Installing EXPRESSCLUSTER X SingleServerSafe

This chapter describes how to install EXPRESSCLUSTER X SingleServerSafe. To install EXPRESSCLUSTER X SingleServerSafe, install the EXPRESSCLUSTER X SingleServerSafe, which is the main module of EXPRESSCLUSTER SingleServerSafe. If you have a separate machine for setting up SingleServerSafe, install the Builder on that machine.

This chapter covers:

Steps from installing EXPRESSCLUSTER X SingleServerSafe to setting up the server

The following summarizes the steps of EXPRESSCLUSTER X SingleServerSafe installation, system creation, license registration, and confirmation of the installed system described in this chapter.

Before proceeding to the steps, make sure to read Chapter 1, "About EXPRESSCLUSTER X SingleServerSafe" to confirm the system requirements and configuration.

1. Installing the EXPRESSCLUSTER X SingleServerSafe

Install the EXPRESSCLUSTER X SingleServerSafe, which is the core EXPRESSCLUSTER X SingleServerSafe module, on each target server.

2. Registering the license

Register the license by running the clplcnsc command.

3. Creating the configuration data by using the EXPRESSCLUSTER Builder

Create the configuration data by using the EXPRESSCLUSTER Builder.
Refer to Chapter 2, "Creating configuration data" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.

4. Setting up a server

Apply the configuration data created using the Builder to set up a server.
When using the online version of the EXPRESSCLUSTER Builder, Apply the configulation date by using it or clpcfctrl command.
When using the offline version of the EXPRESSCLUSTER Builder, Apply the configulation date by using clpcfctrl command.
Refer to Chapter 2, "Creating configuration data" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.

5. Verifying the cluster status using the WebManager

Check the status of the server by using the EXPRESSCLUSTER WebManager.
Refer to Chapter 3, "Checking the cluster system" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.

Related Information:
Refer to the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide* as you proceed in accordance with the procedures in this guide. For the latest information on the system requirements and release information, see Chapter 1, "About EXPRESSCLUSTER X SingleServerSafe" and Chapter 4, "Latest version information" in this guide.

Installing the EXPRESSCLUSTER X SingleServerSafe

Install the EXPRESSCLUSTER X SingleServerSafe, which is the main module of EXPRESSCLUSTER X SingleServerSafe, into the target server machine.

License registration is required in installing the EXPRESSCLUSTER X SingleServerSafe. Make sure to have the required license file or license sheet.

Installing EXPRESSCLUSTER X SingleServerSafe for the first time

To install EXPRESSCLUSTER X SingleServerSafe, follow the procedure below.

Note:
Log in as a root user when installing the EXPRESSCLUSTER X SingleServerSafe RPM / deb package.

1. Mount (`mount`) the installation CD-ROM.
2. Run the rpm / dpkg command to install the package file.
   The installation RPM / deb package varies depending on the products.

   Navigate to the folder, `/Linux/3.3/en/server`, in the CD-ROM and run the following:

   `rpm –i expressclssss-`*`version`*`.`*`architecture`*`.rpm`

   For Ubuntu, run the following

   `dpkg –i expressclssss-`*`version`*`.`*`architecture`*`.deb`

   The architecture is i686 or x86_64(For Ubuntu, x86_64 only). Select one of them according to the environment where the server RPM / deb package is installed. Verify the architecture by running the arch command.

   The installation starts.

   Note:EXPRESSCLUSTER X SingleServerSafe will be installed in the following directory. You will not be able to uninstall the EXPRESSCLUSTER if you change this directory.
   Installation directory: `/opt/nec/clusterpro`
3. When the installation is completed, unmount (`umount`) the installation CD-ROM.
4. Remove the installation CD-ROM.

Related Information:
The use of the SNMP linkage function requires additional settings.
For how to set up the SNMP linkage function, see "Setting up the SNMP linkage function"

Setting up the SNMP linkage function

To handle information acquisition requests on SNMP, Net-SNMP must be installed separately and the SNMP linkage function must be registered separately.

Follow the procedure below to set up the SNMP linkage function.

Note 1:
To set up the SNMP linkage function, you must log in as the root user.

Note 2:
The description related to Net-SNMP in the installation procedure may vary depending on the distribution.

1. Install Net-SNMP.
2. Check the snmpd version.

   Run the following command:

   ```
   snmpd -v
   ```

3. Stop the snmpd daemon.

   Note: The daemon can usually be stopped by the following command:
   ```
   /etc/init.d/snmpd stop
   ```

4. Register the SNMP linkage function of EXPRESSCLUSTER in the configuration file for the snmpd daemon.

   Open the configuration file with a text editor.
   Add the following description to the end of the file according to the snmpd version.
   When the snmpd version is earlier than 5.7:

   dlmod clusterManagementMIB /opt/nec/clusterpro/lib/libclpmgtmib.so

   When the snmpd version is 5.7 or later:

   dlmod clusterManagementMIB /opt/nec/clusterpro/lib/libclpmgtmib2.so

   Note 1:
   The configuration file for the Net-SNMP snmpd daemon is usually located in the following directory:

   /etc/snmp/snmpd.conf

   Note 2:
   Add the OID of EXPRESSCLUSTER in the MIB view (view definition by snmpd.conf) permitted by the snmpd daemon.
   The OID of EXPRESSCLUSTER is ".1.3.6.1.4.1.119.2.3.207".

5. Create symbolic links to libraries needed by the SNMP linkage function.
The following three symbolic links are needed.
libnetsnmp.so
libnetsnmpagent.so
libnetsnmphelpers.so
Follow the procedure below to create the symbolic links.

5 - 1. Confirm the presence of the symbolic links.
Change to following directory.
If those symbolic links exist in the following directory, proceed to step 6.
IA-32 : /usr/lib
x86_64, ppc64 : /usr/lib64

5 - 2. Create symbolic links.
Run the following commands.

```
ln -s libnetsnmp.so.X libnetsnmp.so
ln -s libnetsnmpagent.so.X libnetsnmpagent.so
ln -s libnetsnmphelpers.so.X libnetsnmphelpers.so
```

Substitute a numeric value for X according to the environment.

6. Start the snmpd daemon.

Note: The daemon can usually be started by the following command:
`/etc/init.d/snmpd start`

Related Information:
You must cancel the settings of the SNMP function when uninstalling the EXPRESSCLUSTER Server. For how to cancel the settings of the SNMP linkage function, see "Canceling the SNMP linkage function settings".

Note:
The settings required for SNMP communication are to be made on the SNMP agent.

Registering the license

Registering the CPU license

You must register the CPU license to run the system you create.

Related Information: When the virtual server exists in the cluster system to be constructed, VM node license can be used not CPU license for the virtual server.
CPU license and VM node license cannot be mixed.
For the details about registration of VM node license, see “Registering the VM node license".

There are two ways of license registration; using the information on the license sheet and specifying the license file. These two ways are described for both the product and trial versions.

Product version

- Specify the license file as the parameter of the license management command.
  (Refer to “Registering the license by specifying the license file (for both the product version and trial version)”.)
- Register the license by running the license management command and interactively entering the license information that comes with the licensed product.
  (Refer to “Registering the license interactively from the command line (product version)”.)

Trial version

- Specify the license file as the parameter of the license management command.
  (Refer to “Registering the license by specifying the license file (for both the product version and trial version)”.)

Registering the license by specifying the license file (for both the product version and trial version)

The following describes how you register the license by specifying the license file when you have a license for the product version or trial version.

Check the following before executing these steps.

- You can log on as a root user to the server on which you are going to set up a system.

1. Log on to the server you are going to set up as a root user, and then run the following command:

```
# clplcnsc -i filepath -p PRODUCT-ID
```

Specify the path to the license file for *filepath* specified by the `-i` option.

Specify the following product ID for *PRODUCT-ID* specified by the `-p` option. Enter the product ID of the product which you are using.

License product name	Product ID
EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux	XSSS33

When the command is successfully executed, the message "`Command succeeded.`" is displayed in the console. If another message is displayed, refer to Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

2. Run the following command to verify the licenses registered. In *PRODUCT-ID*, enter the product ID specified in step 1.

```
# clplcnsc -l -p PRODUCT-ID
```

3. When an optional product is not used, proceed to "Registering the node license".

4. When not using any optional products, restart the server by using the OS shutdown command to validate the license registration and run the server.
After restarting, proceed to Chapter 2, "Creating configuration data" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*, and follow the procedure.

Registering the license interactively from the command line (product version)

The following describes how you register the license for the product version interactively from the command line.

Before you register the license, make sure that:

- You have the license sheet you officially obtained from the sales agent. The license sheet is sent to you when you purchase the product. The values on this license sheet are used for registration.
- You can log on to the server on which you are going to set up a system as a root user.

Related Information:
The `clplcnsc` command is used in the following procedures. For details about how to use the `clplcnsc` command, refer to Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

1. Have the license sheet.

The instruction here is given using the values in the following license sheet as an example. When actually entering the values, modify them according to the information on your license sheet.

Product	**EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux**
License information:	
Type	Product version
License Key	A1234567- B1234567- C1234567- D1234567
Serial Number	AAA0000000
Number of Licensed CPUs	2

2. Log on to the server you are going to set up as a root user, and then run the following command:

`# clplcnsc -i -p PRODUCT-ID`

Specify the following product ID for *`PRODUCT-ID`* specified by the `-p` option. Enter the product ID of the product which you are using.

License product name	Product ID
EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux	XSSS33

3. The text that prompts you to enter the license version is displayed. Enter **`1`** when using a product version:

```
Selection of License Version.
  1   Product version
  2   Trial version
Select License Version [1 or 2]...1
```

4. The text that prompts you to enter the number of licenses is displayed. The default value 2 is set for the number of licenses. If the number written in your license sheet is 2, simply press ENTER without entering any value. When the value written in your license sheet is other than 2, enter the correct value and press ENTER.

   ```
   Enter the number of license [0(Virtual OS) or 1 to 99
   (default:2)]... 2
   ```

5. The text that prompts you to enter the serial number is displayed. Enter the serial number written in your license sheet. Note this is case sensitive.

   ```
   Enter serial number [Ex. XXX0000000]... AAA0000000
   ```

6. The text that prompts you to enter the license key is displayed. Enter the license key written in your license sheet. Note this is case sensitive.

   ```
   Enter license key
    [XXXXXXXX- XXXXXXXX- XXXXXXXX- XXXXXXXX]...
   A1234567-B1234567-C1234567-D1234567
   ```

   When the command is successfully executed, the message "`Command succeeded.`" is displayed in the console. If another message is displayed, refer to Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

7. Run the following command to verify the licenses registered. In *PRODUCT-ID*, enter the product ID specified in step 2.

   ```
   # clplcnsc -l -p PRODUCT-ID
   ```

8. When an optional product is used, proceed to "Registering the node license".

9. If no optional product is used, run the OS shutdown command to reboot the server.
   After rebooting the server, proceed to Chapter 3, "Checking the cluster system" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*, and follow the procedure.

Registering the VM node license

When the virtual server exists in the cluster system to be constructed, VM node license can be used not CPU license for the virtual server.

CPU license and VM node license cannot be mixed.

There are two ways of license registration; using the information on the license sheet and specifying the license file.

Product version

- Specify the license file as the parameter of the license management command. Refer to, Page45, "Registering the VM node license by specifying the license file (Product version)."
- Register the license by running the license management command and interactively entering the license information that comes with the licensed product. Refer to, Page46, "Registering the VM node license interactively from the command line (Product version)."

Registering the VM node license by specifying the license file (Product version).

The following describes how you register the license by specifying the license file when you have a license for the product version.

1. A virtual server of which you intend to construct a cluster, log on to the server as root user and run the following command.

   # **clplcnsc -i *filepath* -p *PRODUCT-ID***

   Specify the path to the license file for filepath specified by the –i option.

   Specify the product ID for PRODUCT-ID specified by the -p option. The following is the product ID list.

License Product Name	Product ID
EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux VM	XSSS33

   When the command is successfully executed, the message "Command succeeded" is displayed on the console. When a message other than this is displayed, see Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

2. Run the following command to verify the licenses registered. In PRODUCT-ID, enter the product ID specified in Step 1 of this procedure.

   # **clplcnsc -l -p *PRODUCT-ID***

3. When using option products, see "Registering the node license".
4. When not using option products, run the OS shutdown command to reboot the server. By doing this, the license registration becomes effective and you can start using the cluster.
   After rebooting the server, proceed to Chapter 3, "Checking the cluster system" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.

Registering the VM node license interactively from the command line (Product version)

The following describes how you register the license for the product version interactively from the command line.

Before you register the license, make sure to:

- Have the official license sheet that comes with the product. The license sheet is sent to you when you purchase the product. You will enter the values on the license sheet.
- Be allowed to logon as root user to the virtual servers of servers constituting the cluster system.

Related Information: The clplcnsc command is used in the following procedures. For more information on how to use the clplcnsc command, see Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

1. Have the license sheet.

The instruction here is given using the values in the following license sheet as an example. When actually entering the values, modify them according to the information on your license sheet.

Product name:	**EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux VM**
License information:	
Type	Product Version
License Key	A1234567- B1234567- C1234567- D1234567
Serial Number	AAA0000000
Number of License Server	1

2. A virtual server of which you intend to construct a cluster, log on to the server as root user and run the following command.

```
# clplcnsc -i -p PRODUCT-ID
```

Specify the product ID for PRODUCT-ID specified by the -p option. The following is the product ID list. Enter the product ID corresponding to the edition you are using.

Licensed Product Name	Product ID
EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux VM	XSSS33

3. The text that prompts you to enter the license version is displayed. Enter 1 since it is a product version:

```
Selection of License Version.
  1   Product version
  2   Trial version
Select License Version. [1 or 2]...1
```

4. The text that prompts you to enter the number of licenses is displayed. The default value 2 is being displayed. For VM license, enter 0 and press Enter.

```
Enter the number of license [0(Virtual OS) or 1 to 99
(default:2)]... 0
```

5. The text that prompts you to enter the serial number is displayed. Enter the serial number written in your license sheet. Note this is case sensitive.

```
Enter serial number [Ex. XXX0000000]... AAA0000000
```

6. The text that prompts you to enter the license key is displayed. Enter the license key written in your license sheet. Note this is case sensitive.

```
Enter license key
 [XXXXXXXX- XXXXXXXX- XXXXXXXX- XXXXXXXX]...
A1234567-B1234567-C1234567-D1234567
```

When the command is successfully executed, the message "Command succeeded" is displayed on the console. When a message other than this is displayed, see Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

7. Run the following command to verify the licenses registered. In PRODUCT-ID, enter the product ID specified in the Step 2.

```
# clplcnsc -l -p PRODUCT-ID
```

8. When using option products, see "Registering the node license".
9. When not using option products, run the OS shutdown command to reboot the server.
After rebooting the server, proceed to next Chapter 3, "Checking the cluster system" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.

Registering the node license

It is required to register a node license for X 3.3 Agent products and X 3.3 Alert Service (hereafter referred to as “optional products”) to operate them on the system.

Register the node license for the set up server on which to use optional products. There are two ways of license registration; using the information on the license sheet and specifying the license file. These two ways are described for both the product and trial versions.

Product version

- Specify the license file as the parameter of the license management command.
  (Refer to “Registering the license by specifying the license file (for both the product version and trial version)”.)
- Register the license by running the license management command and interactively entering the license information that comes with the licensed product.
  (Refer to “Registering the node license interactively from the command line (product version)”.)

Trial version

- Specify the license file as the parameter of the license management command.
  (Refer to “Registering the license by specifying the license file (for both the product version and trial version)”.)

Registering the license by specifying the license file (for both the product version and trial version)

The following describes how you register the license by specifying the license file when you have a license for the product version or trial version.

Check the following before executing these steps.

- You can log on as a root user to the server on which you are going to use an optional product.

1. Of the servers you are going to set up, log on to the server on which the optional product is to be used as a root user, and then run the following command:

```
# clplcnsc -i filepath -p PRODUCT-ID
```

Specify the path to the license file for *filepath* specified by the -i option.

Specify the product ID for *PRODUCT-ID* specified by the -p option. The product IDs are listed below. Enter the product ID that corresponds to the optional product you are using.

License product name	Product ID
EXPRESSCLUSTER X Database Agent 3.3 for Linux	DBAG33
EXPRESSCLUSTER X Internet Server Agent 3.3 for Linux	ISAG33
EXPRESSCLUSTER X File Server Agent 3.3 for Linux	FSAG33
EXPRESSCLUSTER X Application Server Agent 3.3 for Linux	ASAG33
EXPRESSCLUSTER X Alert Service 3.3 for Linux	ALRT33
EXPRESSCLUSTER X Java Resource Agent 3.3 for Linux	JRAG33
EXPRESSCLUSTER X System Resource Agent 3.3 for Linux	SRAG33

When the command is successfully executed, the message "Command succeeded." is displayed in the console. If another message is displayed, see Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

2. Run the following command to verify the licenses registered. In *PRODUCT-ID*, enter the product ID specified in step 1.

```
# clplcnsc -l -p PRODUCT-ID
```

3. Restart the server by using the OS shutdown command to validate the license registration and run the server.
After restarting, proceed to Chapter 2, "Creating configuration data" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*, and follow the procedure.

Registering the node license interactively from the command line (product version)

The following describes how you register the license for the product version interactively from the command line.

Before you register the license, make sure that:

- You have the license sheet you officially obtained from the sales agent. The license sheet is sent to you when you purchase the product. The number of license sheets you need is as many as the number of servers on which the option product will be used. The values on this license sheet are used for registration.
- Of the servers you are going to set up, you can log on to the server on which the optional product is to be used as a root user.

Related Information:
The `clplcnsc` command is used in the following procedures. For details about how to use the `clplcnsc` command, refer to Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

1. Have the license sheet.

The instruction here is given using the values in the following license sheet (Database Agent) as an example. When actually entering the values, modify them according to the information on your license sheet.

Product	**EXPRESSCLUSTER X Database Agent 3.3 for Linux**
License information:	
Type	Product version
License Key	A1234567- B1234567- C1234567- D1234567
Serial Number	AAA0000000
Number of nodes	1

2. Of the servers you are going to set up, log on to the server on which the optional product is to be used as the root user, and then run the following command:

```
# clplcnsc -i -p PRODUCT-ID
```

Specify the product ID for *PRODUCT-ID* specified by the `-p` option. The product IDs are listed below. Enter the product ID that corresponds to the optional product you are using.

License product name	Product ID
EXPRESSCLUSTER X Database Agent 3.3 for Linux	DBAG33
EXPRESSCLUSTER X Internet Server Agent 3.3 for Linux	ISAG33
EXPRESSCLUSTER X File Server Agent 3.3 for Linux	FSAG33
EXPRESSCLUSTER X Application Server Agent 3.3 for Linux	ASAG33
EXPRESSCLUSTER X Alert Service 3.3 for Linux	ALRT33
EXPRESSCLUSTER X Java Resource Agent 3.3 for Linux	JRAG33
EXPRESSCLUSTER X System Resource Agent 3.3 for Linux	SRAG33

3. The text that prompts you to enter the license version is displayed. Enter **1** since it is a product version:

```
Selection of License Version.
  1   Product Version
  2   Trial Version
Select License Version [1 or 2]...1
```

4. The text that prompts you to enter the serial number is displayed. Enter the serial number written in your license sheet. Note this is case sensitive.

```
Enter serial number [Ex. XXX0000000]... AAA0000000
```

5. The text that prompts you to enter the license key is displayed. Enter the license key written in your license sheet. Note this is case sensitive.

```
Enter license key
 [XXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXXXX]...
A1234567-B1234567-C1234567-D1234567
```

When the command is successfully executed, the message "`Command succeeded.`" is displayed in the console. If another message is displayed, refer to Chapter 2, "EXPRESSCLUSTER X SingleServerSafe command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

6. Run the following command to verify the licenses registered. In `PRODUCT-ID`, enter the product ID specified in the step 2.

```
# clplcnsc -l -p PRODUCT-ID
```

7. Restart the server by using the OS shutdown command to validate the license registration and run the server.
After restarting, proceed to Chapter 2, "Creating configuration data" in the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*, and follow the procedure.

Installing the offline version of the EXPRESSCLUSTER Builder

It is not necessary to install the offline version of the EXPRESSCLUSTER Builder on the server on which EXPRESSCLUSTER X SingleServerSafe is installed. If you will create or modify the configuration data of EXPRESSCLUSTER X SingleServerSafe by using a machine that cannot access EXPRESSCLUSTER X SingleServerSafe through a Web browser, you need to install the offline version of the EXPRESSCLUSTER Builder on that machine.

Installing the EXPRESSCLUSTER Builder into a Windows machine (offline version)

Follow the procedures below to install the offline version of the EXPRESSCLUSTER Builder .

Note:
Install the EXPRESSCLUSTER Builder with the administrator privileges. In case the EXPRESSCLUSTER Builder has already been installed, first uninstall and install again, or install by specify another install destination.

1. Insert the Installation CD-ROM to the CD-ROM drive.
2. The menu screen for installation is displayed.

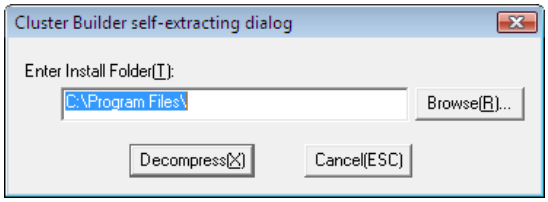
Note:
If the menu screen does not open automatically, double-click menu.exe in the root folder of the CD-ROM.

3. Select **EXPRESSCLUSTER(R) SingleServerSafe for Linux**.

4. Select **EXPRESSCLUSTER(R) SingleServerSafe Builder**.

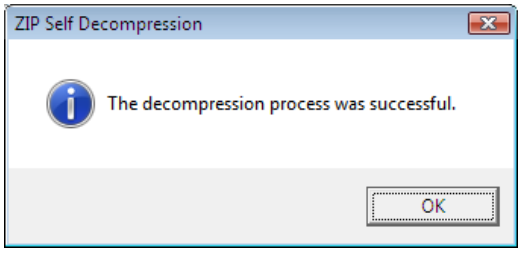
5. Select **EXPRESSCLUSTER(R) SingleServerSafe Builder**.

6. Select where to install in the **Cluster Builder self-extracting dialog** and click **Extract**.



Note:
The folder `\EXPRESSCLUSTER SSS \clpbuilder-l` is created in the specified installation folder, and the HTML file `clptrek.htm`, which is for Builder window display, and various configuration data files are installed in this folder.

7. Click **OK** in the **ZIP self-extract** dialog box. Installation is completed.



Starting the Builder

The *online version of the Builder* runs on a machine (including the local server) capable of connecting to the server that uses EXPRESSCLUSTER X SingleServerSafe over the network. The Builder that you start without a network connection is called the *offline version of the Builder*. While what you see and specify on the screen are the same for both versions, the way you start the Builder and how the settings are applied differ.

The procedure for each version is described below.

Starting the online version of the Builder

To start the online version of the EXPRESSCLUSTER Builder, follow the procedure below.

1. Start the WebManager. Start your browser, and then enter the IP address and port number of the server where EXPRESSCLUSTER X SingleServerSafe is installed in the Address bar.

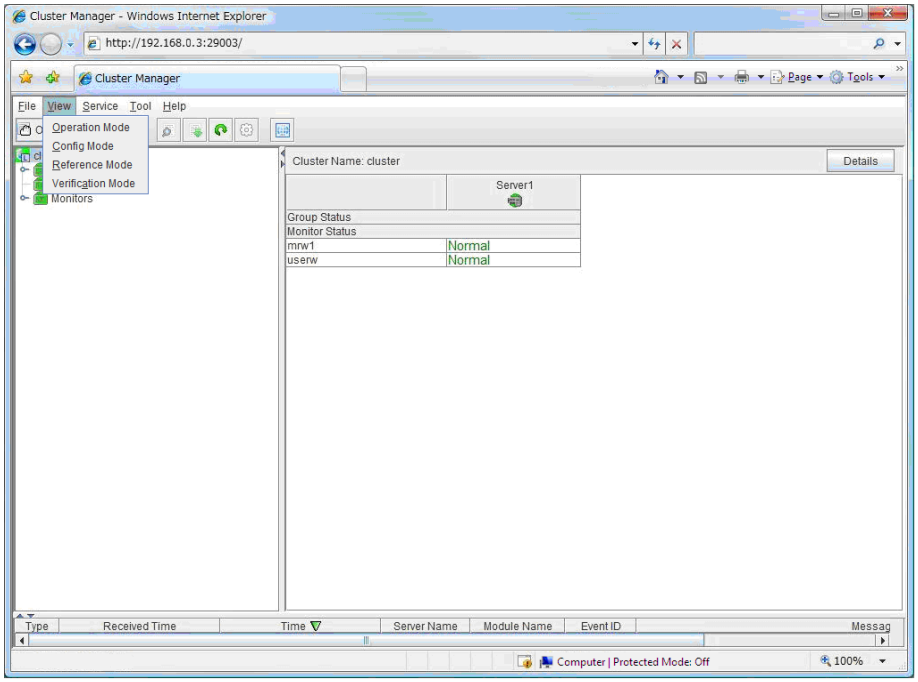
```
http://192.168.0.3:29003/
```

The port number for the WebManager specified at installation. (Default value 29003)

Specify the IP address of the server on which EXPRESSCLUSTER X SingleServerSafe is installed. For the local server, the IP address may be specified as `localhost`.

Note 1:
You cannot start the WebManager unless you restart the server after installing EXPRESSCLUSTER X SingleServerSafe. Be sure to restart the server.
Note 2:
Starting the WebManager requires the JRE. Be sure to install the JRE in advance.

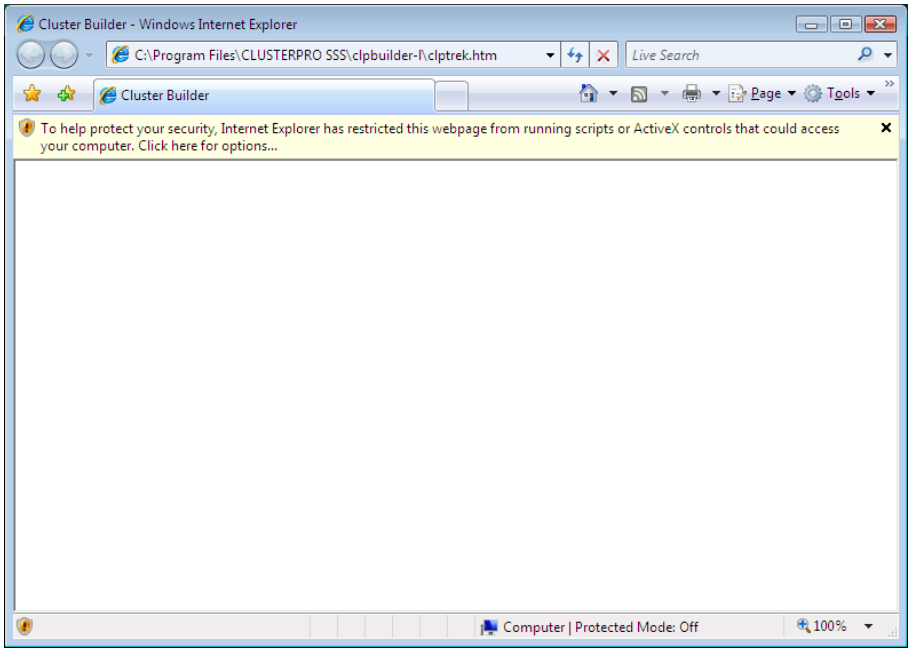
2. Click **Config Mode** on the **View** menu to switch to the setup mode (Builder (online version)).



Starting the offline version of the Builder

To start the offline version of the EXPRESSCLUSTER Builder, follow the procedure below.

1. Double-click the HTML file `clptrek.htm`, which is for the Builder window display and is in the installation folder.
2. The browser opens.
3. If a security warning is displayed, click **OK**.



Note:
Starting the Builder requires the JRE. Be sure to install the JRE in advance.

Chapter 3 Upgrading, uninstalling or reinstalling

This chapter describes how to upgrade EXPRESSCLUSTER X SingleServerSafe, uninstall and reinstall EXPRESSCLUSTER X SingleServerSafe, and upgrade to EXPRESSCLUSTER X.

This chapter covers:

Linkage Information:
For the update from X3.0/X3.1/X3.2 to X3.3, see ”Update Guide”.

Updating EXPRESSCLUSTER X SingleServerSafe

An older version of EXPRESSCLUSTER X SingleServerSafe can be updated to the latest version.

Updating the EXPRESSCLUSTER X SingleServerSafe RPM

Before starting the upgrade, read the following notes.

- EXPRESSCLUSTER X SingleServerSafe 2.1 for Linux can be upgraded to EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux. Upgrading from other versions is not possible.
- To upgrade from EXPRESSCLUSTER X SingleServerSafe 2.1 for Linux to EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux, the license for EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux (including the licenses for any used optional products) is required.

To update server rpm version 2.1.0-1 or later to 3.0.0-1 or later, perform the following procedure.

Note:
To upgrade, use an account that has root privileges.

1. Run `chkconfig --del` *`name`* and follow the procedures below to disable services. For *`name`*, specify one of the following:
   - `clusterpro_alertsync`
   - `clusterpro_webmgr`
   - `clusterpro`
   - `clusterpro_trn`
   - `clusterpro_evt`
2. Shut down the server by using the WebManager or `clpstdn` command, and then reboot it.
3. Mount the installation CD-ROM.
4. Make sure that the EXPRESSCLUSTER services are not running, and then execute the `rpm` command to install the package file.
   The installation RPM varies depending on the architecture.

   Navigate to the folder, `/Linux/3.3/en/server`, in the CD-ROM and run the following:

   `rpm –U expressclssss-`*`version`*`.`*`architecture`*`.rpm`

   The architecture is i686 or x86_64. Select one of them according to the environment where the server RPM is installed. Verify the architecture by running the `arch` command.

   EXPRESSCLUSTER X SingleServerSafe is installed in the directory below. You will not be able to uninstall the EXPRESSCLUSTER if you change this directory.

   Installation directory: `/opt/nec/clusterpro`
5. After installation, unmount (`umount`) and remove the installation CD-ROM.

6. Run **chkconfig --add *name*** and follow the procedures below to enable the service. For *name*, specify one of the names below. For SuSE Linux, execute the command with the *--force* option.
   - clusterpro_evt
   - clusterpro_trn
   - clusterpro_webmgr
   - clusterpro_alertsync
7. Restart the server.
8. Register the license. For details on registering license, see "Registering the license" in this guide.
9. Connect the WebManager to one of the server of the cluster.
10. Start the Builder from the connected WebManager. For details on how to start the online Builder, see "Starting the online version of the Builder".
11. Confirm that the server of the cluster is started, and then upload the configuration data from the online Builder. For details on how to operate the online Builder, see the *EXPRESSCLUSTER X SingleServerSafe Configuration Guide*.
12. Enable the services in the following order by running the **chkconfig --add *name*** command. Specify the following services on *name*.
    - clusterpro
13. Run **Restart Manager** on the WebManager.
14. Restart the browser connecting the WebManager.
15. Run **Start Cluster** on the WebManager.

Uninstalling EXPRESSCLUSTER X SingleServerSafe

Uninstalling EXPRESSCLUSTER X SingleServerSafe

Note:
You must log on as a root user to uninstall EXPRESSCLUSTER X SingleServerSafe.

To uninstall EXPRESSCLUSTER X SingleServerSafe, follow the procedure below.

1. If the SNMP linkage function has been used, you must cancel the linkage before uninstalling EXPRESSCLUSTER Server. For how to cancel the settings of the SNMP linkage function, see "Canceling the SNMP linkage function settings".
2. Run the **`chkconfig --del name`** to disable the following services in this order.
   For Ubuntu, run the `update-rc.d -f name remove` to disable the following service in this order.
   - `clusterpro_alertsync`
   - `clusterpro_webmgr`
   - `clusterpro`
   - `clusterpro_trn`
   - `clusterpro_evt`
3. Shut down the server by using the WebManager or `clpstdn` command, and then restart it.
4. Run the **`rpm -e expressclssss`** command.
   For Ubuntu, run the `dpkg -r` **`expressclssss`** command.

Note:
Do not specify other options than the one stated above.

Uninstalling the offline version of the EXPRESSCLUSTER Builder

For Windows

To uninstall the EXPRESSCLUSTER Builder, follow the procedures below:

1. Close all Web browsers (and then confirm that the JavaVM icon is no longer in the task tray).
2. Delete the EXPRESSCLUSTER Builder installation folder from Windows Explorer.

Canceling the SNMP linkage function settings

You must cancel the SNMP function settings before uninstalling the EXPRESSCLUSTER Server.

Follow the procedure below to cancel the SNMP linkage function settings.

Note 1:
To cancel the SNMP linkage function settings, you must log in as the root user.

Note 2:
The description related to Net-SNMP in the uninstallation procedure may vary depending on the distribution.

1. Stop the snmpd daemon.

   Note: The daemon can usually be stopped by the following command:
   `/etc/init.d/snmpd stop`

2. Cancel registration of the SNMP linkage function in the configuration file for the snmpd daemon.

   Open the configuration file with a text editor.
   Delete the following line from the file.

   dlmod clusterManagementMIB /opt/nec/clusterpro/lib/libclpmgtmib.so
   dlmod clusterManagementMIB /opt/nec/clusterpro/lib/libclpmgtmib2.so

   Note 1:
   The configuration file for the snmpd daemon is usually located in the following directory:
   /etc/snmp/snmpd.conf
   Note 2:
   Delete the OID of EXPRESSCLUSTER from the MIB view (view definition by snmpd.conf) permitted by the snmpd daemon.
   The OID of EXPRESSCLUSTER is ".1.3.6.1.4.1.119.2.3.207".

3. If you created symbolic links at “Setting up the SNMP linkage function”, delete them.

4. Start the snmpd daemon.

   Note: The daemon can usually be started by the following command:
   `/etc/init.d/snmpd start`

Reinstalling EXPRESSCLUSTER X SingleServerSafe

Reinstalling the EXPRESSCLUSTER SingleServerSafe

To reinstall the EXPRESSCLUSTER X SingleServerSafe, you have to prepare the cluster configuration data floppy disk created by the Builder (or the latest data floppy disk if you reconfigured the cluster).

If you do not have the cluster configuration data floppy disk created by the Builder (or the latest data floppy disk if you reconfigured the cluster) at hand, you can back up the data with the `clpcfctrl` command. Refer to "Backing up the configuration data" in Chapter 2, "*EXPRESSCLUSTER X SingleServerSafe* Command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

To reinstall the EXPRESSCLUSTER X, follow the procedures below:

1. Uninstall the EXPRESSCLUSTER X SingleServerSafe.
   For details about the uninstallation procedure, see "Uninstalling EXPRESSCLUSTER X SingleServerSafe" in this chapter.
2. Install the EXPRESSCLUSTER X SingleServerSafe and re-create the servers.
   For details about the installation procedure, see Chapter 2, "Installing EXPRESSCLUSTER X SingleServerSafe" in this guide.

Upgrading to EXPRESSCLUSTER X

When upgrading EXPRESSCLUSTER X SingleServerSafe to EXPRESSCLUSTER X, you can migrate the configuration data created using the Builder (or the latest data if you changed the configuration).

In this case, save the latest configuration data before starting the upgrade. In addition to saving it to the Builder after creation, you can back up the configuration data by using the `clpcfctrl` command. Refer to "Backing up the configuration data" in Chapter 2, "*EXPRESSCLUSTER X SingleServerSafe* Command reference" in the *EXPRESSCLUSTER X SingleServerSafe Operation Guide*.

To upgrade EXPRESSCLUSTER X SingleServerSafe to EXPRESSCLUSTER X, follow the procedure below.

1. Back up the configuration data.
2. Uninstall EXPRESSCLUSTER X SingleServerSafe from the server for which to perform the upgrade. For details about the uninstallation procedure, see "Uninstalling EXPRESSCLUSTER X SingleServerSafe" in this chapter.
3. Shut down the OS when uninstalling the EXPRESSCLUSTER X SingleServerSafe is completed.
4. Install EXPRESSCLUSTER X, and set up its environment. You can use the backup configuration data for this process. For details about how to set up EXPRESSCLUSTER X, see the EXPRESSCLUSTER X manual.

Note:
For EXPRESSCLUSTER X, register the following licenses:
* EXPRESSCLUSTER X SingleServerSafe (two-CPU license)
* EXPRESSCLUSTER X SingleServerSafe upgrade license
These licenses can be used for EXPRESSCLUSTER X (two-CPU license).

Chapter 4 Latest version information

The latest information on the upgraded and improved functions is described in details. The latest information on the upgraded and improved functions is described in details.

This chapter covers:

Latest version information

The latest internal version of EXPRESSCLUSTER X SingleServerSafe 3.3 for Linux, as of October 2017, is 3.3.5-1.
For the latest information, refer to the latest manual on EXPRESSCLUSTER website.

Check the internal version of EXPRESSCLUSTER X SingleServerSafe by using the WebManager.
You can display the internal version of a server by selecting the icon for the server in the tree view of the WebManager.

EXPRESSCLUSTER X SingleServerSafe version and corresponding manual editions

This guide assumes the version of EXPRESSCLUSTER X SingleServerSafe below for its descriptions. Note the version of EXPRESSCLUSTER X SingleServerSafe and corresponding manual edition.

EXPRESSCLUSTER X SingleServerSafe internal version	Manual	Edition	Remarks
3.3.5-1	Installation Guide	8th Edition	
	Configuration Guide	6th Edition	
	Operation Guide	7th Edition	
	Integrated WebManager Administrator's Guide	12th Edition	
	WebManager Mobile Administrator's Guide	3rd Edition	

Enhanced function information

The following functions have been enhanced for each minor versions.

Number	Version	Enhanced function
1	3.0.0-1	It is now possible to operate both the WebManager and Builder from the same browser window.
2	3.0.0-1	The configuration wizard has been updated.
3	3.0.0-1	The configuration wizard can now automatically obtain some settings.
4	3.0.0-1	The Integrated WebManager can now be operated from a browser.
5	3.0.0-1	The settings can now be checked when uploading configuration data.
6	3.0.0-1	EXPRESSCLUSTER can now be used to manage external failures.
7	3.0.0-1	Dump data can now be obtained if a monitored application times out.
8	3.0.0-1	Detailed Oracle information can now be obtained if an error is detected during Oracle monitoring.
9	3.0.0-1	Guest operating systems of vSphere/XenServer/kvm can now be handled as resources.
10	3.0.0-1	A guest operating system on a virtual platform is now automatically followed even if it is moved by an operation not from EXPRESSCLUSTER.
11	3.0.0-1	The number of supported operating systems has been increased.
12	3.0.0-1	The number of supported applications has been increased.
13	3.0.2-1	The newly released kernel is now supported.
14	3.0.3-1	The newly released kernel is now supported.
15	3.0.4-1	The newly released kernel is now supported.
16	3.1.0-1	The number of group and resource has been doubled.
17	3.1.0-1	Waiting for startup or stopping a faiover group has been enabled.
18	3.1.0-1	A function whereby the WebManager and the clpmonctrl command can be used to trigger a Dummy Failure for a monitor resource has been implemented.
19	3.1.0-1	WebManager that can be connected from an Android terminal has been implemented.
20	3.1.0-1	The MIB of EXPRESSCLUSTER has been defined.
21	3.1.0-1	An SNMP trap transmission function has been added.
22	3.1.0-1	Information acquisition requests on SNMP are now supported.
23	3.1.0-1	A function has been implemented to execute a specified script to recover a monitor resource. In addition, script execution has been enabled prior to reactivation or failover.
24	3.1.0-1	A function has been implemented to disable recovery action caused by monitor resource error.
25	3.1.0-1	Database monitoring functions have been enhanced.
26	3.1.0-1	Some environment variables have been added for use in scripts.
27	3.1.0-1	Script setting has been simplified by the use of script templates.

28	3.1.0-1	The display of the configuration mode screen has been corrected for the 800*600 screen size.
29	3.1.0-1	Logs can be downloaded even if the browser is set to block popups.
30	3.1.0-1	Functions for which licenses have not been installed are no longer displayed during setup.
31	3.1.0-1	The number of monitor resources that are automatically registered has been increased.
32	3.1.0-1	The default command timeout value for the clprexec command has been changed from 30 seconds to 180 seconds.
33	3.1.0-1	Process name monitor resource (psw) has been added.
34	3.1.0-1	JVM monitor resource (jraw) has been added.
35	3.1.0-1	System monitor resource (sraw) has been added.
36	3.1.0-1	A function has been added to prevent the startup of the EXPRESSCLUSTER services when the operating system has been shut down abnormally.
37	3.1.0-1	Conditions for triggering the function that stalls shutdown can now be specified.
38	3.1.0-1	Rotating log (internal log) can now be selected as the script execution log for EXEC resources and custom monitor resources (genw).
39	3.1.0-1	A list of registered licenses can now be displayed by using the clplcns command.
40	3.1.0-1	A function for using the clplcns command to delete only the trial license has been added.
41	3.1.0-1	The newly released kernel is now supported.(RHEL5.7, AXS3SP4)
42	3.1.0-1	In linkage with vSphere5, the cluster on the guest operating system has been enabled to control startup and stopping of another guest operating system.
43	3.1.0-1	Timeout decision processing has been improved when an invalid OS time is returned from while running for 447 or 497 continuous days.
44	3.1.1-1	The newly released kernel is now supported. (XenServer6)
45	3.1.1-1	The conditions to wait for the group stop can now be specified. (Cluster stop, server stop)
46	3.1.1-1	The view of the recovery action control function popup window that is displayed at the end of the Cluster Generation Wizard is improved.
47	3.1.1-1	The number of disks of which size is to be monitored by System Resource Agent has been changed from 10 to 64.
48	3.1.3-1	The newly released kernel is now supported.
49	3.1.3-1	A function for displaying time information has been added to WebManager.
50	3.1.3-1	A function for automatically starting or resuming the cluster after reflecting the configuration data has been added.
51	3.1.3-1	A function has been added to prevent a Web browser from being terminated or reloaded when the configuration data is edited in WebManager Config Mode.
52	3.1.3-1	WebManager can now set and display physical machines and virtual machines separately.
53	3.1.3-1	The setting that assumes that a diskfull detection is not an error has been added to the disk monitor resource.
54	3.1.3-1	A function for monitoring the number of processes has been added to the process name monitor resource.

55	3.1.3-1	The Oracle monitor resource has been improved so that a specific error (ORA-1033) which occurs when Oracle is being started is regarded as being the normal state.
56	3.1.3-1	The conditions to determine whether a timeout occurs in Database Agent, Java Resource Agent, and System Resource Agent has been enhanced.
57	3.1.3-1	The process to deactivate a resource has been improved so that the process can be executed as far as possible in case of emergency shutdown.
58	3.1.3-1	A message queue has been added as an internal log communication method.
59	3.1.3-1	The JVM monitor resource now supports OpenJDK.
60	3.1.4-1	The newly released kernel is now supported.
61	3.1.4-1	WebManager now supports Java SE Runtime Environment 7.
62	3.1.4-1	The load imposed by the WebLogic monitoring processing by the WebLogic monitor resource has been reduced.
63	3.1.5-1	The newly released kernel is now supported.
64	3.1.5-1	The license information list can be now viewed from WebManager.
65	3.1.5-1	The start/stop linkage processing between the monitor resources and the group resources when the monitoring time is “Active” has been reviewed and accelerated.
66	3.1.5-1	The NFS monitor resource now supports NFS v3 and v4.
67	3.1.5-1	The samba monitor resource now supports samba 3.5.
68	3.1.5-1	The Websphere monitor resource now supports WebSphere 8.0.
69	3.1.5-1	The load balancer link function for the JVM monitor resource now supports BIG-IP LTM.
70	3.1.5-1	The JVM monitor resource now supports WebOTX 8.5 (x86_64 only), WebOTX ESB 8.5, MasterScope/NEC Storage SVF for PDF 9.1, MasterScope/NEC Storage Report Director Enterprise 9.1, and MasterScope/NEC Storage Universal Connect/X 9.1.
71	3.1.5-1	The WebOTX monitor resource now supports WebOTX 8.5 (x86_64 only).
72	3.1.5-1	A command that can be used for capacity planning (clpprer) has been added. This command can estimate future values based on time-series data indicating system resource usage.
73	3.1.5-1	A function to collect system resource information that can be used to easily determine the cause of a failure resulting from a shortage of system resources has been added.
74	3.1.5-1	The stack size of applications started from the EXEC resources now matches the OS setting value.
75	3.1.7-1	The newly released kernel is now supported.
76	3.1.7-1	PostgreSQL monitor now supports PostgreSQL9.2.
77	3.1.8-1	The newly released kernel is now supported.
78	3.1.8-1	The log collection types have been added. (By default, the logs of Java Resource Agent and System Resource Agent are not collected.)
79	3.1.8-1	The operation at generation of group resource activation/deactivation stall has been made selectable.
80	3.1.8-1	The samba monitor resource now supports samba 4.0.
81	3.1.8-1	The Websphere monitor resource now supports WebSphere 8.5.

82	3.1.10-1	The newly released kernel is now supported.
83	3.1.10-1	The model of script of exec resource was changed.
84	3.1.10-1	The offline Builder now supports JRE7 update25.
85	3.1.10-1	The WebOTX monitor resource now supports WebOTX 9.1.
86	3.1.10-1	The JVM monitor resource now supports WebOTX 9.1.
87	3.2.0-1	The newly released kernel is now supported.
88	3.1.4-1	The --ID option to display the product ID list has been added to the clplcnsc command.
89	3.2.1-1	The Weblogic monitor resource is now able to specify options transferring to the webLogic.WLST command to be used to monitor WebLogic.
90	3.2.1-1	The Samba monitor resource now supports Samba 4.1.
91	3.2.1-1	The WebOTX monitor resource now supports WebOTX V9.2.
92	3.2.1-1	The JVM monitor resource now supports WebOTX V9.2.
93	3.2.1-1	The JVM monitor resource now supports JBoss Enterprise Application Platform 6.0, 6.1, and 6.2.
94	3.2.1-1	The JVM monitor resource can now execute commands based on the error cause upon the detection of an error.
95	3.2.1-1	The JVM monitor resource is now able to specify options for starting Java VM.
96	3.2.1-1	The offline version of Builder now supports Java Runtime Environment Version 7 Update 40 and Java Runtime Environment Version 7 Update 51.
97	3.2.1-1	The WebManager and Builder now support Java Runtime Environment Version 7 Update 51.
98	3.2.1-1	The --apito option used to specify a timeout value has been added to the clpgrp command.
99	3.2.1-1	The --apito option used to specify a timeout value has been added to the clprsc command.
100	3.2.1-1	The --apito option used to specify a timeout value has been added to the clpcl command.
101	3.2.1-1	The function to check whether the command is duplicatedly started has been added to the clpstat command.
102	3.2.1-1	For the Database Agent products, library path choices that can be set on the [Monitor (special)] tab have been increased.
103	3.2.1-1	The function to check whether the command is duplicatedly started has been added to the clpstat command.
104	3.2.3-1	The shared disk cluster now supports 4K native disks.
105	3.2.3-1	Delay in log output processing during high load has been reduced.
106	3.2.3-1	Now supports 4K native disks.
107	3.2.3-1	Delay in log output processing during high load has been reduced.
108	3.3.0-1	The newly released kernel is supported.
109	3.3.0-1	Red Hat Enterprise Linux 7 and Ubuntu 14.04 LTS are now supported.
110	3.3.0-1	The JVM monitor resource now supports Java 8.
111	3.3.0-1	The JVM monitor resource now supports an environment in which G1 GC is specified as the GC method of the monitoring target Java VM.
112	3.3.0-1	A function has been added that prevents the retry processing from being executed if a monitor timeout occurs for a monitor resource.

113	3.3.0-1	A function has been added that prevents the recovery action from being executed if a monitor timeout occurs for a monitor resource.
114	3.3.0-1	The license information is now acquired automatically when the online version Builder is started.
115	3.3.1-1	The newly released kernel is supported.
116	3.3.1-1	Red Hat Enterprise Linux 7.1 is now supported.
117	3.3.1-1	The PostgreSQL monitor now supports PostgreSQL 9.4/ PowerGres on Linux 9.4.
118	3.3.1-1	The Tuxedo monitor now supports Oracle Tuxedo 12c (12.1.3).
119	3.3.1-1	The JVM monitor resource now supports the following applications. - OpenJDK 8 - JBoss Enterprise Application Platform 6.3 - Apache Tomcat 8.0 - MasterScope/NEC Storage SVF for PDF 9.2 - MasterScope/NEC Storage Report Director Enterprise 9.2 - MasterScope/NEC Storage Universal Connect/X 9.2
120	3.3.1-1	The default monitoring level value has been changed to level 2(monitoring by update/select) from level 3(create/drop table each time) in the following monitor resources. - Oracle monitor resource - MySQL monitor resource - PostgreSQL monitor resource - Sybase monitor resource - DB2 monitor resource
121	3.3.1-1	The load of process name monitor resource has been decreased.
122	3.3.2-1	The newly released kernel is now supported.
123	3.3.2-1	Red Hat Enterprise Linux 6.7 is now supported.
124	3.3.2-1	Asianux 4 Update5 and Asianux 7 are now supported.
125	3.3.2-1	The MySQL monitor resource now supports MySQL 5.7.
126	3.3.2-1	The Samba monitor resource now supports the following: - Samba 3.6 - Samba 4.2
127	3.3.2-1	The WebOTX monitor resource now supports WebOTX V9.3.
128	3.3.2-1	The JVM monitor resource now supports the following: - WebOTX V9.3 - JBoss Enterprise Application Platform 6.4
129	3.3.2-1	Information acquisition by SNMP now supports Red Hat Enterprise Linux 7.
130	3.3.2-1	The function to check the health of the EXPRESCLUSTER processes has been added.
131	3.3.2-1	The vulnerability when an invalid request was issued to WebManager has been fixed.
132	3.3.2-1	The processing to stop a monitor resource when the cluster is stopped or suspended has been improved.

133	3.3.2-1	The cluster setting information that can be displayed by using the `clpstat` command has been expanded.
134	3.3.3-1	The newly released kernel is supported.
135	3.3.3-1	Red Hat Enterprise Linux 6.8 and Red Hat Enterprise Linux 7.2 are now supported.
136	3.3.3-1	Asianux 7 Update1 is now supported.
137	3.3.3-1	SUSE Linux Enterprise Server 11 SP4 is now supported.
138	3.3.3-1	PostgreSQL monitor resource now supports PostgreSQL 9.5.
139	3.3.3-1	MySQL monitor resource now supports MariaDB 5.5 / MariaDB 10.0 / MariaDB 10.1.
140	3.3.3-1	Weblogic monitor resource now supports Oracle WebLogic Server 12c R2 (12.2.1).
141	3.3.3-1	JVM monitor resource now supports Oracle WebLogic Server 12c R2 (12.2.1).
142	3.3.3-1	The default monitoring method employed by the disk monitor resource has been changed from READ to READ(O_DIRECT).
143	3.3.3-1	The default value of Additional Command Option in Weblogic monitor resource has been changed from "-Dwlst.offline.log=disable" to "-Dwlst.offline.log=disable -Duser.language=en_US".
144	3.3.3-1	Weblogic monitor resource and WebOTX monitor resource have been enhanced to support the port number ranging from 1 to 65535.
145	3.3.4-1	The newly released kernel is now supported.
146	3.3.4-1	Red Hat Enterprise Linux 7.3 is now supported.
147	3.3.4-1	Asianux 4 Update 6 is now supported.
148	3.3.4-1	SUSE Linux Enterprise Server 12 SP1 is now supported.
149	3.3.4-1	The PostgreSQL monitor resource now supports PostgreSQL 9.6.
150	3.3.4-1	The DB2 monitor resource now supports DB2 v11.1.
151	3.3.4-1	The WebOTX monitor resource now supports WebOTX V9.4.
152	3.3.4-1	The WebSphere monitor resource now supports the following: - WebSphere Application Server 8.5.5 - WebSphere Application Server 9.0
153	3.3.4-1	The JVM monitor resource now supports the following applications: - Apache Tomcat 8.5 - JBoss Enterprise Application Platform 7.0 - WebOTX V9.4
154	3.3.4-1	The Wait Time to Start Monitoring parameter now can be set for a user-mode monitor resource.
155	3.3.5-1	Red Hat Enterprise Linux 6.9 is now supported.
156	3.3.5-1	Asianux 4 Update7 is now supported.
157	3.3.5-1	The newly released kernel is now supported.

158	3.3.5-1	Red Hat Enterprise Linux 7.4 is now supported.
159	3.3.5-1	Oracle monitor resource now supports Oracle Database 12c Release2 (12.2).
160	3.3.5-1	MySQL monitor resource now supports MariaDB 10.2.
161	3.3.5-1	HTTP monitor resource now supports OpenSSL 1.1.
162	3.3.5-1	JVM monitor resource now supports Java 9.
163	3.3.5-1	A cluster between management operating systems provided by VMware vSphere 6.5 is now supported.
164	3.3.5-1	The default value of **Enable SIGTERM Handler** of **Shutdown Monitor** has been changed from **On** to **Off**.
165	3.3.5-1	The default value of **Retry Count** of **Monitor** of the volume manager monitor resource has been changed from 0 times to 1 time.
166	3.3.5-1	The `-l` or `-w` option of the `clpcfctrl` command is now required to specify.
167	3.3.5-1	The operation to stop a resource has been added to the final actions to be taken upon detection of a monitor resource error.

Corrected information

Modification has been performed on the following minor versions.

Number	Version (in detail)	Upgraded section	Cause
1	3.0.1-1 /3.0.0-1	A problem that a cluster cannot start up with VM license has been fixed.	Error in the license management table.
2	3.0.2-1 /3.0.0-1 to 3.0.1-1	The final action upon group resource or monitor resource failure was displayed as a final action upon cluster service failure for Builder, and a final action upon cluster daemon failure for WebManager.	The terms have not been unified among the functions.
3	3.0.2-1 /3.0.0-1 to 3.0.1-1	In Builder, an exclusive attribute could be specified from the virtual machine properties.	Specifying exclusive attributes from the properties was not prohibited. (In the case of the wizard, this has been prohibited.)
4	3.0.2-1 /3.0.0-1 to 3.0.1-1	In an environment where XenServer could not be used, the VM monitor abnormally terminated (core dump) when the XenServer VM monitor was set up.	A NULL pointer was issued in the VM monitor initialization.
5	3.0.2-1 /3.0.0-1 to 3.0.1-1	When using the `clprexec` command, `Unknown request` was output to syslog and the alert log.	Script execution and group failover were not taken into consideration for the process to create a character string output to syslog and the alert log.
6	3.0.2-1 /3.0.0-1 to 3.0.1-1	When changing the settings on the monitor resource properties dialog box, **Apply** could not be clicked.	There was no consideration for the decision process.
7	3.0.2-1 /3.0.0-1 to 3.0.1-1	On the Builder Interconnect Setting window, when attempting to delete inter connect settings by selecting all settings, only some settings were deleted.	There was no consideration for selecting multiple interconnects.
8	3.0.2-1 /3.0.0-1 to 3.0.1-1	The system abnormally terminated when the WebManager service was stopped.	The timing to release the Mutex resource, which was used by the realtime update thread, was not correct.
9	3.0.2-1 /3.0.0-1 to 3.0.1-1	The alert synchronization service abnormally terminated when restarting the server after changing its name.	There was an error in the process to obtain the server list.
10	3.0.2-1 /3.0.0-1 to 3.0.1-1	When a cluster name was changed in the Cluster Generation Wizard, the name was reset to a default name.	This occurred when returning to the cluster name change screen after the cluster name was changed in the Cluster Generation Wizard and the next step was selected.
11	3.0.2-1 /3.0.0-1 to 3.0.1-1	When a keyword over 256 characters was specified, linkage with external monitoring was not started even if the mnw monitor was set.	The size of the buffer to save the keyword was insufficient.
12	3.0.2-1 /3.0.0-1 to 3.0.1-1	When disabling shutdown monitoring, user space monitoring could not be started.	The check process of shutdown monitoring was executed by the initialization process of user space monitoring.
13	3.0.2-1 /3.0.0-1 to 3.0.1-1	The timeout for shutdown monitoring could not be changed.	The heartbeat timeout was specified to use at any time.

14	3.0.2-1/ 3.0.0-1 to 3.0.1-1	A VM license isn't normally counted.	There was lack in the ID information to recognize a VM license.
15	3.0.3-1 /3.0.0-1 to 3.0.2-1	In config mode, non-numeric data (alphabetic characters and symbols) could be incorrectly entered for **Wait Time When External Migration Occurs** for VM monitor resources.	There was an error in the design of the Builder input control.
16	3.0.3-1 /3.0.0-1 to 3.0.2-1	When "0" was specified as the timeout period for EXEC resources, the activation of EXEC resources failed and emergency shutdown was performed.	There was an error in the design of the Builder input control.
17	3.0.3-1 / 3.0.0-1 to 3.0.2-1	In Chinese environment, Staring Cluster Generation Wizard of the Builder cased an application error.	There was an illegal memory access in some cases.
18	3.0.3-1 /3.0.0-1 to 3.0.2-1	In a specific environment, pressing the **Add Server** button in the Cluster Generation Wizard of the Builder caused an application error.	The error was caused by a problem with JRE.
19	3.0.3-1 /3.0.0-1 to 3.0.2-1	The units of the time values to be displayed in the alert (syslog) for delay warning in the user space monitor resources were incorrect, and the values to be displayed in units of tick count were displayed in units of seconds.	The output conversion method was incorrect.
20	3.0.3-1 /3.0.0-1 to 3.0.2-1	When the size of an alert message exceeded 512 bytes, the alert daemon terminated abnormally.	The size of the alert message buffer was insufficient.
21	3.0.3-1 / 3.0.2-1	When selecting **Exit** in File menu of WebManager, WebManager did not terminate normally.	Processing of config mode termination was incorrect.
22	3.1.0-1 / 3.0.0-1 to 3.0.4-1	Uploading is unavailable if the cluster has been suspended and a temporary suspension of a monitored resource modified a necessary configuration.	When checking processes while uploading, a cluster configuration file only judged whether the status of monitor resources was suspended.
23	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When waiting to start monitoring a resident monitor resource, the timeout time rather than the start wait time is referenced.	The processing for the monitor start wait time was invalid.
24	3.1.0-1 / 3.0.0-1 to 3.0.4-1	An error occurred when collecting logs, delivering settings information, or during other activities, but the process appears to have terminated normally.	There were faults in the processing that determines whether the action was successful or nor.
25	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When the IP address for integrated WebManager was not specified, error messages output due to failures to connect to clusters were invalid.	The names of previous setting items were not updated.
26	3.1.0-1 / 3.0.0-1 to 3.0.4-1	Sometimes core dump occurred while stopping a cluster service when max reboot count limitation was set.	Illegal memory access occurred when a log was output after log library termination processing during termination processing.
27	3.1.0-1 / 3.0.0-1 to 3.0.4-1	A minor memory leak occurred when performing a group or resource operation.	Thread information was not discarded after the thread terminated.

28	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When a script execution process times out before the final operation runs and is force killed, sometimes a zombie process was generated.	Sometimes waitpid() was executed before a process was terminated by SIGKILL.
29	3.1.0-1 / 3.0.0-1 to 3.0.4-1	Recovery action counts were not reset by the clpmonctrl command when the monitor error recovery action was fully executed.	Shared memory values were reset, but values saved in the memory of monitor resource processes are not reset.
30	3.1.0-1 / 3.0.0-1 to 3.0.4-1	The name of a server cannot be fully displayed in the list of available servers in the server tab of group properties.	A horizontal scroll bar was not displayed.
31	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When stopping a monitor resource which is being continuously monitored, Application Server Agent sometimes terminated other processes when it was stopped.	There was a flaw in the processing that terminates the child processes of the Application Server Agent.
32	3.1.0-1 / 3.0.0-1 to 3.0.4-1	Monitor status changed to a status other than “suspend” after suspending the monitor resource.	Sometimes the status was overwritten after it was set to suspend.
33	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When a monitor resource is suspended, it sometimes remained as a zombie process.	Depending on timing, waitpid() was not executed when child processes were terminated.
34	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When using diverse resources or monitors, if the number of EXPRESSCLUSTER module types that output logs exceeds 128, sometimes internal logs are not output.	The initialized area that manages the types is only for use with 128 types.
35	3.1.0-1 / 3.0.0-1 to 3.0.4-1	MA memory leak occurred when suspending a cluster failed because a group was moving.	Internal information was not discarded at the time of the failure to suspend the cluster.
36	3.1.0-1 / 3.0.0-1 to 3.0.4-1	A memory leak occurred when stopping a cluster failed because a group was moving.	Internal information was not discarded at the time of the failure to stop the cluster.
37	3.1.0-1 / 3.0.0-1 to 3.0.4-1	Child processes remained when a genw monitor timeout occurred while the enw settings were set to synchronous and the dump collection function was enabled.	The custom monitor terminated before the child process.
38	3.1.0-1 / 3.0.0-1 to 3.0.4-1	When the host name was FQDN, requests from the clprexec command failed.	If the host name which was obtained from the OS was FQDN, the server cannot find items from a cluster configuration file.
39	3.1.0-1 / 3.0.0-1 to 3.0.4-1	If there are many objects will be displayed on WebManager, WebManager server process may be terminated abnormally.	There was a problem in the source code to allocate memory to display objects.
40	3.1.1-1 / 3.0.0-1 to 3.1.0-1	If initializing XenServer virtual machine resources failed in an environment where XenServer could not be used, WebManager server process might be terminated abnormally.	Environments where XenServer could not be used were not considered.
41	3.1.1-1 / 3.0.0-1 to 3.1.0-1	If initializing XenServer virtual machine monitor resources failed in an environment where XenServer could not be used, WebManager server process might be terminated abnormally.	Environments where XenServer could not be used were not considered.

42	3.1.1-1 / 3.0.0-1 to 3.1.0-1	After collecting logs, some OS resources of the log collection function might remain.	After initializing threads is complete, if the process to wait for the initialization completion is executed on the parent thread, the command waits for the initialization completion endlessly.
43	3.1.1-1 / 3.0.0-1 to 3.1.0-1	After collecting logs, the files that must be deleted might remain.	For SuSE Linux, the tar command options were not considered.
44	3.1.1-1 / 3.0.0-1 to 3.1.0-1	If the VM license is used, an unnecessary alert might be output when starting the cluster.	The message that was not necessary to output when using the VM license has been output.
45	3.1.1-1 / 3.0.0-1 to 3.1.0-1	If the configuration data is uploaded with clearing the default resource dependency and without specifying any dependencies, only the cluster suspend is requested even if it is necessary to stop a group.	The file that defines the method to reflect changes is inadequate.
46	3.1.1-1 / 3.0.0-1 to 3.1.0-1	WebManager might abnormally terminate if there is a lot of information to be displayed for WebManager because there are a lot of servers.	Since the size of the temporary buffer is fixed to 4096 bytes, an illegal memory access occurs if there is information exceeding 4096 bytes.
47	3.1.1-1 / 3.1.0-1	The description (in English) of rc message ID=26 was not correct.	In the current description, “has started” was used, but, “has been completed” is correct.
48	3.1.1-1 / 3.1.0-1	The correct method to reflect the added group resource is “stopping/suspending the group”, but “stopping the cluster” was performed.	The file that defines the method to reflect changes was inadequate.
49	3.1.1-1 / 3.1.0-1	If the Oracle monitor resource is selected, WebManager can not display information.	Internal information file of Oracle monitor resource was not correct.
50	3.1.1-1 / 3.0.0-1 to 3.1.0-1	The file descriptor used by the clprc process might leak if WebManager was frequently updated or clpstat was frequently executed.	The process to close the file descriptor might not be performed.
51	3.1.1-1 / 3.1.0-1	A monitor resource name was not correctly output in the alert of rm ID=170 or 171.	The process to output ID=170 and 171 was not correct.
52	3.1.1-1 / 3.0.0-1 to 3.1.0-1	If an error was detected when multiple resources were being activated, the final action was performed for the abnormal resource that was found at first in the alphabetical order. Therefore, if the resource to which **No Operation** was set, the operation such as shutdown was not performed.	Only the final action for the abnormal resource that was found at first was performed.
53	3.1.1-1 / 3.1.0-1	Multiple confirmation dialog boxes might be displayed when continuously pressing the operation button in WebManager Mobile.	An exclusive processing when pressing the operation button was inadequate.
54	3.1.1-1 / 3.1.0-1	The ulimit setting of the default script was deleted in WebManager config mode.	The default script was not correct in config mode.

55	3.1.1-1 / 3.0.0-1 to 3.1.0-1	When deleting a virtual machine resource, a related virtual machine resource could not be deleted automatically.	The delete condition decision process of the automatic monitor resource delete process was inadequate.
56	3.1.1-1 / 3.0.0-1 to 3.1.0-1	When linkage with a server management infrastructure was available, the status might remain OFFLINE if monitoring the message receive monitor was started before starting the infrastructure module.	The process to update the message receive monitor status was inadequate.
57	3.1.1-1 / 3.0.3-1 to 3.1.0-1	The NFS monitor resource could not detect that only nfsd was disappeared.	It was determined normal that the unmount process was normally performed.
58	3.1.1-1 / 3.0.3-1 to 3.1.0-1	If multiple targets were registered to a JVM monitor resource, monitoring might fail and a warning might be issued when starting to monitor the JVM monitor resource.	Java API was not thread-safe.
59	3.1.1-1 / 3.1.0-1	If a process of which name length was 1024 bytes or more existed, a process name monitor resource might abnormally terminate.	An environment that included a process of which name length was 1024 bytes or more was not considered.
60	3.1.1-1 / 3.1.0-1	If the monitoring level is level 2 and no records were created at creation of a table for monitoring, the PostgreSQL monitor resource might abnormally terminate.	The action to be taken when there is no record when reading data from a database by select during level 2 monitoring was not defined.
61	3.1.1-1 / 3.1.0-1	When Database Agent detected a timeout, monitoring was immediately retried without waiting for the monitoring interval.	The retry process after a monitoring timeout was not considered.
62	3.1.0-1/ 3.0.0-1 to 3.0.4-1	It might fail to start a specific monitor resource for the first time, causing a monitor error. In a specific machine environment, this might occur for message receive monitor resource resource.	There was a variable that had not been initialized.
63	3.1.3-1/ 3.1.0-1 to 3.1.1-1	When the cluster was resumed from WebManager, **Failed to resume** was mistakenly displayed instead of **The request to resume the cluster failed on some servers**. This occurred when the cluster was forcibly suspended and then resumed with some servers stopped.	The message text was not correct.
64	3.1.3-1/ 3.0.0-1 to 3.1.1-1	After the EXPRESSCLUSTER Web Alert service might abnormally terminate, this service might start. When the EXPRESSCLUSTER Web Alert service was killed for some reason, this infrequently occurred at the next service startup. Also, this might infrequently occur in normal operation.	The buffer area used to read /proc/pid/cmdline was insufficient, or strerr(), which was not thread-safe, was sometimes used by multiple threads.

65	3.1.3-1/ 3.0.0-1 to 3.1.1-1	In SuSE11 environments, an internal log was not output when UDP was set to a log communication method. This occurred when UDP was set to a log communication method in SuSE11 environments.	The method to create a socket was inadequate.
66	3.1.3-1/ 3.1.1-1	In an environment where a specific monitor resource existed, suspending and resuming the monitor resource might fail. This might occur in an environment that included any of the following monitor resources: - User mode monitor resource - Message receive monitor resource - Virtual machine monitor resource	The monitor resource name save area was not initialized.
67	3.1.3-1/ 3.0.0-1 to 3.1.1-1	Executing a script by the clprexec command might fail. This occurred when a script to be executed by the clprexec command was stored in the path described in the guide.	The path to store a clptrnreq command script was used.
68	3.1.3-1/ 3.0.0-1 to 3.1.1-1	It took extra five seconds to perform a final retry upon a group resource activation/deactivation error. This occurred upon a group resource activation/deactivation error when it was set to retry acrivate or deactivate the group resource.	A final retry entered in unnecessary sleep state (five seconds) when an activation or deactivation retry was performed upon a group resource activation/deactivation error.
69	3.1.3-1/ 3.0.0-1 to 3.1.1-1	A message receive monitor error might be detected when the cluster was being stopped. This might occur when a message receive monitor was monitored when the cluster was being stopped.	A monitor process was not generated when the cluster was being stopped, and the stopping process was always assumed to be completed successfully. In such a case, it was checked whether a monitor process existed or not.
70	3.1.3-1/ 3.0.2-1 to 3.1.1-1	When collecting logs, a rotated syslog file might not be collected. This occurred when logs were collected in RHEL6 or later environments.	The name of the rotated messages file did not comply with the changed naming rule.
71	3.1.3-1/ 3.0.0-1 to 3.1.1-1	Stopping the cluster might not be completed. This might infrequently occur when a message receive monitor resource was set.	A termination process was missing in the process to check a thread termination request.
72	3.1.3-1/ 3.1.0-1 to 3.1.1-1	33 or more destinations to which a SNMP trap was sent could be set. This occurred when the SNMP trap sending destination settings screen was started again after 32 destinations had been set.	The control processing of the **Add** button on the SNMP trap sending destination settings screen was inadequate.
73	3.1.3-1/ 3.0.0-1 to 3.1.1-1	When **READ** was selected as **Method** to monitor a disk resource, **I/O Size** might return to the default value. This occurred when **Method** was changed from **READ** to **TUR**, and then returned to **READ**.	A process to store the value specified for **I/O Size** was missing when changing **Method**.

74	3.1.3-1/ 3.0.0-1 to 3.1.1-1	A monitor resource might mistakenly detect an error when uploading the configuration data. This occurred on very rare occasions when uploading the configuration data.	Reading the configuration data file failed if a monitor resource tried to refer to the configuration data when the file was being replaced.
75	3.1.3-1/ 3.0.0-1 to 3.1.1-1	An FTP monitor resource might mistakenly detect a monitoring timeout. This occurred when an FTP server returned an intermediate response and final response together.	The process to be performed when an intermediate response and final response were returned together was not correct.
76	3.1.3-1/ 3.0.0-1 to 3.1.1-1	When a monitoring timeout occurred in a PostgreSQL monitor resource, the next monitoring might fail because a PostgreSQL session remained. This occurred when a monitoring timeout occurred and the specified timeout interval was short.	The process to cancel monitoring a PostgreSQL monitor resource when a timeout occurred was inadequate.
77	3.1.3-1/ 3.0.0-1 to 3.1.1-1	It might take 10 seconds or more to display the execution results of the clpstat command. This occurred on very rare occasions when executing the clpstat command.	Waiting for the completion of the thread initialization might fail depending on the timing, and the clpstat command might wait for a timeout.
78	3.1.4-1/ 3.1.3-1	The time information icon might not blink on WebManager even when the time information was updated. This occurred when a server was stopped and started after WebManager connection.	It was determined that the server had not been connected before when it was started.
79	3.1.4-1/ 3.0.0-1 to 3.1.3-1	Restart of the alert synchronization service might occur. This occurred on very rare occasions during normal operation.	A system call, which was not thread-safe, was sometimes used by multiple threads.
80	3.1.4-1/ 3.0.0-1 to 3.1.3-1	nformation on WebManager, clpstat command, SNMP manager linkage, etc., could fail to display. This occurred when internal communication timed out for some reason such as interconnect disconnection or overload, after which control returned to the state existing before interconnect switchover.	Information acquisition requests between servers were made in an irregular order.
81	3.1.4-1/ 3.0.0-1 to 3.1.3-1	The clplogcf command execution results may not be displayed. This occurred when the event service updated a temporary file for storing display information upon execution of the clplogcf command.	When the event service updated the file of display information, it emptied the file once for writing.
82	3.1.4-1/ 3.1.0-1 to 3.1.3-1	When the clpstat command was used to display property information for a disk monitor resource, “Disk full Action” was not displayed. This occurred when the following command was executed: clpstat --mon disk_monitor_name --detail	There was an error in the parameter display settings.

83	3.1.4-1/ 3.0.0-1 to 3.1.3-1	Stopping a monitor resource sometimes caused other processes to be killed. This might occur when stopping a monitor resource if the pid of a monitor resource managed by EXPRESSCLUSTER is used for other processes.	Whether the process was alive, and the process name, were not checked before SIGKILL was issued.
84	3.1.4-1/ 3.0.0-1 to 3.1.3-1	The configuration information may not be reflected. This might occur when the OS language setting was other than Japanese, English, or Chinese.	The setting of environment variable LANG was missing when obtaining system information.
85	3.1.4-1/ 3.0.0-1 to 3.1.3-1	The user mode monitor resource might mistakenly detect a delay warning. In a 32-bit OS environment, this might occur when the OS was running for 198 or more consecutive days with the user mode monitor resources set up.	Difference calculation was performed on the number of clock ticks using a sign.
86	3.1.4-1/ 3.1.3-1	Some monitor resources might mistakenly detect monitor errors. In a 32-bit OS environment, this might occur when the OS was running for 198 or more consecutive days with any of the following monitor resources set up. [Relevant monitor resources] - db2w - ddnsw - genw - jraw - mysqlw - oraclew - psqlw - psw - sraw - sybasew - vipw	Difference calculation was performed on the number of clock ticks using a sign.
87	3.1.4-1/ 3.1.0-1 to 3.1.3-1	The process name monitor resource might end abnormally. This might occur when the cluster was suspended/stopped in an environment in which the process name monitor resource was set up.	The reception of a suspension/stop request was not properly handled in the internal operation.
88	3.1.4-1/ 3.0.0-1 to 3.1.3-1	Monitoring by the HTTP monitor resource might fail. This occurred in an environment in which renegotiate was requested upon reception via SSL due to monitoring on https.	The HTTP monitor resource did not properly deal with a renegotiate request.
89	3.1.4-1/ 3.1.1-1 to 3.1.3-1	Some core files might not be collected during log collection. This might occur when multiple core files existed during log collection.	When compressing log files, the first core file was compressed, but the subsequent core files were deleted.
90	3.1.5-1/ 3.0.0-1 to 3.1.4-1	The clpmonctrl command displays the recovery action execution count in an invalid order. This problem always occurs when you execute clpmonctrl -v.	The restart count and the failover count are displayed in the reverse order.

91	3.1.5-1/ 3.1.0-1 to 3.1.4-1	The comment field will be blank when you click Get License Info on the resource addition wizard in Config Mode in WebManager. This problem always occurs when you click the Get License Info button.	The entry field was not properly initialized after Get License Info was executed.
92	3.1.5-1/ 3.1.0-1 to 3.1.4-1	When you click the Get License Info button in the monitor addition wizard in Config Mode in WebManager, the initial value is not set to the Name field. This problem always occurs when you click the Get License Info button.	The entry field was not properly initialized after Get License Info was executed.
93	3.1.5-1/ 3.0.0-1 to 3.1.4-1	Monitor resources may be created more than the upper limit in the setup mode in WebManager. This problem occurs if you add resources that trigger the automatic addition of monitor resources when the upper limit of monitor resources has been reached.	The automatic monitor resource addition process did not include an upper limit check.
94	3.1.5-1/ 3.0.0-1 to 3.1.4-1	An application error may occur causing an emergency shutdown in the group resource management process. This problem occurs if internal communication is established when the maximum number of file descriptors that can be used in the OS is exceeded.	When the maximum number of file descriptors that can be used in the OS is exceeded, the currently used socket is improperly operated.
95	3.1.5-1/ 3.1.0-1 to 3.1.4-1	exec resources may fail to activate. This problem may occur if you simultaneously execute multiple exec resources for which the setting to rotate logs has been specified and it is the first startup for the server.	If directory creation processes for temporary files are executed at the same time, the directory creation process started later fails.
96	3.1.5-1/ 3.0.0-1 to 3.1.4-1	For some monitor resources, an abnormal alert may be continuously logged at each interval. This problem occurs when an initialization error (such as an invalid library path) occurs in the following monitor resources. Relevant monitor resources - db2w - ddnsw - genw - jraw - mysqlw - oraclew - psqlw - psw - sraw - sybasew - vipw	A setting to log an alart every time an initialization error occurs had been specified.
97	3.1.5-1/ 3.0.0-1 to 3.1.4-1	The FTP monitor resource may mistakenly detect a monitor error. This problem occurs if the banner message registered in the FTP server or the message at the time of connection is a long character string or spans multiple lines.	The FTP monitor executes the next command before receiving all responses from the FTP server.

98	3.1.5-1/ 3.1.0-1 to 3.1.4-1	An unnecessary message about a System Resource Agent background process may be output in when a cluster stops. This problem occurs if the cluster stops in an environment in which System Resource Agent is used.	A case in which resources are released in a multi-thread process was not taken into consideration.
99	3.1.5-1/ 3.0.0-1 to 3.1.4-1	The mail report function might fail to send a mail. This problem occurs when a domain name is not included in the greeting message of the destination SMTP server.	The domain name of the greeing message retured by the SMTP server is used as the domain of the HELO or EHLO command.
100	3.1.7-1/ 3.0.0-1 to 3.1.6-1	When the configuration information is uploaded using the clpcfctrl command, an OS memory shortage error might occur although this is not the case.	This occurred when the configuration information including interconnect settings having IPs not existing on the sever is uploaded.
101	3.1.7-1/ 3.0.0-1 to 3.1.6-1	The result of virtual machine resource activation processing was reflected on the environment variable CLP_DISK to be used for EXEC resources.	This occurred while virtual machine resources were used.
102	3.1.7-1/ 3.1.5-1 to 3.1.6-1	Sometimes recovery action upon monitor error could not be executed.	This occurred when recovery action by another monitor resource on the same server was tried for the group and resource for which group stop had been executed as the final action upon monitor error.
103	3.1.7-1/ 3.0.0-1 to 3.1.6-1	In executing the clplogcc command, a log file might not be saved in a directory specified by the -o option.	This occurred when a directory in a file system other than the EXPRESSCLUSTER installation path was specified by the -o option in executing clplogcc -l.
104	3.1.7-1/ 3.0.0-1 to 3.1.6-1	In Config Mode of the WebManager, Executing failover could be selected on the recovery action setting in message receive monitor resource properties.	This occurred when message receive monitor resources were used.
105	3.1.7-1/ 3.0.0-1 to 3.1.6-1	In Config Mode of the WebManager, the final action setting might be changed at an unintended timing.	This occurred when the recovery target was changed on the recovery action tab of monitor resource properties.
106	3.1.7-1/ 3.0.0-1 to 3.1.6-1	The same monitor resource might be started redundantly, resulting in unnecessary recovery action being executed.	This occurred on very rare occasions when a monitor resource set to Always monitors and a monitor resource set to Monitors while activated were started simultaneously when the cluster started.
107	3.1.7-1/ 3.1.5-1	The following alerts might be output to the WebManager. TYPE:rm, ID:9 Detected an error in monitoring <monitor_resource_name>. (<error_number> :<error_message>) TYPE:rm, ID:25 Recovery will not be executed since the recovery target <group_name_or_group_resource_name> is not active.	This occurred when it took time to stop a failover group in stopping the cluster.

108	3.1.7-1/ 3.0.0-1 to 3.1.6-1	The following alert might not be output to the WebManager. TYPE:rm, ID:100 Restart count exceeded the maximum of <count>. Final action of monitoring <monitor_resource_name> will not be executed.	This occurred when the monitor resource returned to normal once after the alert was output, and upon detecting an error again within 24 hours, and the final action was ignored.
109	3.1.7-1/ 3.0.3-1 to 3.1.6-1	In Config Mode of the WebManager, Nursery Space and Old Space might not become monitor targets when a JVM monitor resource is created.	This occurred when a new JVM monitor resource was created by selecting Oracle JRockit for JVM Type and not opening Tuning Properties.
110	3.1.7-1/ 3.0.0-1 to 3.1.6-1	In Config Mode of the WebManager, executing Apply the Configuration File caused a memory leak to occur in the WebManager server process. A leak of 80 + 256 * number of monitor types in use + 256 * number of monitor resources occurred per execution.	This occurred when Apply the Configuration File was executed.
111	3.1.7-1/ 3.0.0-1 to 3.1.6-1	When an IP address or the like is changed in Server Properties - BMC Tab in Config Mode of the WebManager, the execution of Suspend and Resume might not apply the change.	This occurred when the Chassis Identify function was used.
112	3.1.7-1/ 3.1.3-1 to 3.1.6-1	There might be a delay in executing recovery action upon detection of a monitoring error.	This occurred when the time information display function was enabled and a monitor resource detected an error at disconnection of the primary interconnect.
113	3.1.7-1/ 3.0.0-1 to 3.1.6-1	A VMW monitor resource might make erroneous detection of an error.	This occurred when the monitor interval of the VMW monitor resource was set to 15 seconds or more.
114	3.1.8-1/ 3.1.0-1 to 3.1.7-1	The WebManager service process may terminate abnormally.	This problem may occur when an invalid packet has been received.
115	3.1.8-1/ 3.1.7-1	Only part of an alert message or syslog may be output.	This problem occurs when the alert notification setting for customizing the alert destination has been enabled.
116	3.1.8-1/ 3.1.0-1 to 3.1.7-1	A monitor timeout may be mistakenly detected for the process name monitor resource.	This problem may occur when the configured monitor interval is equal to or greater than the monitor timeout.
117	3.1.8-1/ 3.1.0-1 to 3.1.7-1	When the activation monitor resource stops with group stop, it may stop temporarily.	This problem may occur when monitor by the clpmonctrl command has been temporarily stopped during group stop processing.
118	3.1.8-1/ 3.1.7-1	Deactivation of a virtual machine resource may fail.	This problem occurs when UUID is set for the virtual machine resource (XenServer).
119	3.1.10-1/ 3.0.0-1 to 3.1.8-1	An invalid error message may be displayed when the clprsc command is executed. [Internal error. Check if memory or OS resources are sufficient]	This failure occurs if a resource stop is executed with the clprsc command but stopping of the resource fails.
120	3.1.10-1/ 3.0.0-1 to 3.1.8-1	The clpcfctrl command may terminate abnormally.	A core dump is performed if a timeout occurs in the internal processing of the clpcfctrl command.

121	3.1.10-1/ 3.1.0-1 to 3.1.8-1	A log may not be output if the exec resource log output function is set.	This failure occurs if the log file name exceeds 32 bytes.
122	3.1.10-1/ 3.1.0-1 to 3.1.8-1	When the browser connected to WebManager is to be terminated, a security warning dialog box may be displayed.	This failure always occurs when the browser connected to WebManager is to be terminated in an environment in which the JRE version is JRE7 update 21 or later.
123	3.2.0-1/ 3.1.5-1 to 3.1.10-1	A file of 0byte as wlst_xxxx.log and wlst_xxxx.out is output by a [Middleware_Home] /logs follower every interval in a WebLogic monitor resource.	WebLogic monitor resource is executes WLST every interval and is executes a watch of life and death of WebLogic Server. WebLogic Server Because it started to output a logfile every WLST execution by a change of specifications after 10.3.4.
124	3.2.0-1/ 3.1.3-1 to 3.1.10-1	In a monitor resource of database, when a monitoring timeout occurred, recovery action will be carried out. A monitororing error occur independently of the retry number of times.	After a monitoring timeout occurred, a renewal of inside information is leaking by processing before a performed watch retry, because a resource monitor process judged the state of the watch resource to be abnormal.
125	3.1.4-1/ 3.1.0-1 to 3.1.10-1	Even if starting the iptables service is disabled, the iptables service is started after collecting logs.	The iptables service is started if the iptables command is excecuted when collecting logs. However, after collecting logs, the iptables service is not returned to its original state.
126	3.2.1-1/ 3.0.0-1 to 3.2.0-1	When a monitor resource for which Monitor Timing is set to Active detects an error while the group is starting or stopping, its recovery action may fail.	The recovery action was performed at an unrecoverable timing.
127	3.2.1-1/ 3.1.5-1 to 3.2.0-1	When the cluster service is stopped, the monitor resource may detect an error and the recovery action may be performed.	Stop processing for the monitor resource with Monitor Timing set to Active and the group resource was executed in parallel while the cluster service was stopped.
128	3.2.1-1/ 3.1.3-1 to 3.2.0-1	For some Database Agent products, when a monitoring timeout occurs, it is assumed that a monitoring error occurs and a recovery action is executed regardless of the monitoring retry count setting.	The resource monitor process determines that the monitor resource is abnormal because internal information has not been updated in the process before the monitoring retry that is executed when a monitoring timeout occurs.
129	3.2.1-1/ 3.0.0-1 to 3.2.0-1	When 80 is set to the WebManager port number, connection cannot be established from the client.	The default port of HTTP is not considered.
130	3.2.1-1/ 3.0.0-1 to 3.2.0-1	When the WebManager is used on Linux, display of he WebManager and Integrated WebManager screens may be illegal.	The behavior of the method that automatically adjusts the component size is different between Linux Java and Windows.
131	3.2.1-1/ 3.0.0-1 to 3.2.0-1	It takes time greater than the specified timeout value to detect a timeout of the script started by the EXEC resource.	The timeout decision process is not appropriate.

132	3.2.1-1/ 3.1.5-1 to 3.2.0-1	When NFSv4 is being monitored by using the NFS monitor resource and if UDP is disabled, a monitoring error occurs and a recovery action is performed.	UDP is used for reception even when the NFS listen protocol is v4.
133	3.2.1-1/ 3.1.3-1 to 3.2.0-1	In the case of Novell SUSE LINUX Enterprise Server 10, the JVM monitor resource cannot start and the status became abnormal.	A wrong library is linked.
134	3.2.3-1/ 3.1.0-1 to 3.2.1-1	Starting a JVM monitor resource fails.	There was an error in the processing for preventing multiple JVM monitor resources from starting.
135	3.2.3-1/ 3.1.1-1 to 3.2.1-1	A process of a Database Agent product may terminate abnormally (core dump).	There was a defect in the thread synchronization processing at the end of a process.
136	3.3.0-1/ 3.0.0-1 to 3.2.3-1	The cluster is sometimes suspended at the wrong timing.	A cluster suspension request is accepted during resource reactivation by the recovery action of the monitor.
137	3.3.0-1/ 3.0.0-1 to 3.2.3-1	A POP3 monitor resource sometimes does not detect error even when connection to POP3 server failed.	There is an error with APOP authentication process.
138	3.3.0-1/ 3.0.0-1 to 3.2.3-1	The maximum restart count is reset although the monitor resource has detected an error.	The restart count is reset if the monitor remains in the error status after the server is restarted.
139	3.3.0-1/ 3.0.3-1 to 3.2.3-1	If "TUR", "TUR (generic)", or "TUR (legacy)" is set in [Method] of the [Monitor(special)] tab for a disk monitor resource, the value of [I/O Size], which is an invalid setting item, sometimes changes from 0 bytes to 2000000 bytes.	The correction processing is performed to make even the value of an invalid setting item valid.
140	3.3.0-1/ 3.0.0-1 to 3.2.3-1	Sometimes the cluster fails to be started or a server shutdown occurs when the cluster is resumed.	The initialization processing performed at the start of the cluster service is flawed.
141	3.3.0-1/ 3.0.0-1 to 3.2.3-1	The maximum restart count is reset regardless of whether a resource is activated or deactivated.	The conditions for judging whether to reset the maximum restart count are wrong.
142	3.3.0-1/ 3.0.0-1 to 3.2.3-1	A resource sometimes fails to be deactivated.	The judging conditions for changing servers that can be started are inappropriate.
143	3.3.0-1/ 3.0.0-1 to 3.2.3-1	Suspending or resuming is sometimes requested when the configuration information can be reflected only by uploading.	The process of checking the changes in the configuration information is invalid.
144	3.3.0-1/ 3.0.0-1 to 3.2.3-1	The clpaltd process sometimes ends abnormally when the default gateway is not set.	The use of the memory area for communication messages is improper.
145	3.3.0-1/ 3.0.0-1 to 3.2.3-1	Server status may not be displayed properly if the contents are reloaded on the browser connecting to the Integrated WebManager.	There is a problem in the initialization processing of the status management object.

146	3.3.0-1/ 3.0.0-1 to 3.2.3-1	The clpwebmc process sometimes ends abnormally when the cluster is stopped.	The error processing to be performed when the cluster is stopped has not been considered fully.
147	3.3.1-1/ 3.2.0-1 to 3.3.0-1	OS shutdown is performed even though other than "OS shutdown" or "OS restart" is set as "Action When the Cluster Service Process Is Abnormal".	There was a problem in the processing after error detected in the cluster service process.
148	3.3.1-1/ 3.0.0-1 to 3.3.0-1	The dialog box may pop up indicating cluster stop or cluster suspend failed even though the operation has been successful.	There was a problem in the processing of waiting for the cluster stop and cluster suspend.
149	3.3.1-1/ 3.0.0-1 to 3.3.0-1	Time-out ratio cannot be extended by the clptoratio command for the following monitor resources. - Volume manager monitor resource - Process name monitor resource	Time-out ratio was not considered in time-out checking process.
150	3.3.1-1/ 3.0.0-1 to 3.3.0-1	User-mode monitor resource with softdog does not work.	There was a problem in driver's load processing in the IBM POWER environment.
151	3.3.1-1/ 3.1.0-1 to 3.3.0-1	Process name monitor resource and system monitor resource may misdetect errors.	There was a problem in check processing of time-out when an invalid system uptime was returned.
152	3.3.1-1/ 3.3.0-1	When G1 GC is specified as the GC method of monitoring target Java VM (e.g. WebLogic Server), JVM monitor resource does not detect error of [Monitor the time in Full GC] and [Monitor the count of Full GC execution].	There was a problem in check processing of GC.
153	3.3.1-1/ 3.1.0-1 to 3.2.3-1	Database Agent may generate core dump file.	There was a problem in stop processing of monitor resources.
154	3.2.0-1/ 3.0.0-1 to 3.1.10-1	A monitor resource whose monitoring timing is set to **Active** does not start or stop.	There was a problem in the process to start/stop a monitor resource whose monitoring timing was **Active**.
155	3.3.1-1/ 3.1.0-1 to 3.3.0-1	A JVM statistics log of a JVM monitor resource may not be output.	There was a problem in the exclusive process of the JVM statistics log.
156	3.3.2-1/ 3.3.1-1	Starting a cluster fails.	There was a problem in the kernel version judgement process.
157	3.3.2-1/ 1.0.0-1 to 3.3.1-1	Starting a cluster by using WebManager or the `clpcl` command fails.	The cluster startup wait time that was internally used was not long enough.
158	3.3.2-1/ 3.1.2-1 to 3.3.1-1	WebManager or the `clpstat` command cannot display the setting of **Cluster Properties** – **Port No.(Log)** – **Communication Method for Internal Logs**.	There was a problem in the display process of **Communication Method for Internal Logs**.

159	3.3.2-1/ 3.0.0-1 to 3.3.1-1	The WebManager client does not respond.	There was a problem in the display process of **Version Information**.
160	3.3.2-1/ 3.0.0-1 to 3.3.1-1	The monitoring start wait time set to a message receive monitor resource does not work properly.	There was a problem in the monitoring start process of the message receive monitor resource.
161	3.3.2-1/ 1.0.0-1 to 3.3.1-1	When multiple IPv6 addresses are specified for an IP monitor resource, it is assumed that a monitor error occurred if only some of the specified IP addresses are erroneous. (A monitor error should be detected when all the specified IPv6 addresses are erroneous.)	There was a problem in the processing when an error was detected in the IPv6 address specification.
162	3.3.2-1/ 3.1.0-1 to 3.3.1-1	When starting a process name monitor resource or retrying monitoring a process, the process name monitor resource cannot find the process that matches the monitoring conditions, resulting in an error being mistakenly detected.	There was a problem in the processing to acquire the process to be monitored.
163	3.3.2-1/ 3.2.3-1 to 3.3.1-1	A disk monitor resource (monitoring method: READ(O_DIRECT)) mistakenly detects an error when monitoring a file on a 4K native disk.	There was a problem in the read processing when a file on a 4k native disk was specified to be monitored.
164	3.3.3-1/ 1.0.0-1 to 3.3.2-1	It takes long time to start or stop the group.	An inefficient process occurred when cluster configuration data were obtained.
165	3.3.3-1/ 3.1.5-1 to 3.3.2-1	The suppression of the final action which accompanies the OS stop is set, but the final action is performed.	The process for suppressing the final action of monitor resource was inadequate.
166	3.3.3-1/ 3.1.1-1 to 3.3.2-1	The cluster service stop sequence is not executed at the OS shutdown.	The process for controlling the cluster services was inadequate.
167	3.3.3-1/ 3.1.0-1 to 3.3.2-1	A recovery action when an error is detected by monitor resource is sometimes not taken.	The process for stopping the monitor resource was inadequate.
168	3.3.3-1/ 3.1.0-1 to 3.3.2-1	Sometimes process name monitor resource mistakenly detects a monitoring timeout.	The internal process was inadequate when the monitoring was executed for the first time.
169	3.3.4-1/ 1.0.0-1 to 3.3.3-1	It takes long time to start the cluster.	An inefficient waiting process occurred when the cluster was started.
170	3.3.4-1/ 1.0.0-1 to 3.3.3-1	A group resource stopped but the processing to stop the group resource was not executed.	There was a problem in the processing for changing the group resource name.

171	3.3.4-1/ 1.0.0-1 to 3.3.3-1	The clprc process terminated abnormally (core dump) and the action upon process failure was executed.	There was no consideration for the maximum length of a resource name.
172	3.3.4-1/ 1.0.0-1 to 3.3.3-1	A cluster fails to start up.	There was a problem in the processing for checking the server name executed when uploading the cluster configuration information.
173	3.3.4-1/ 1.0.0-1 to 3.3.3-1	The clptrnsv process may terminate abnormally (core dump).	There was a problem in the exclusive control in the process.
174	3.3.4-1/ 3.3.0-1 to 3.3.3-1	The group status is not displayed correctly by the clpstat command.	There was a problem in the processing for acquiring the group status when --local option is used.
175	3.3.4-1/ 3.3.3-1	When adding a disk monitor resource and the monitoring method is “READ(O_DIRECT)" (default), the wrong value is shown for the I/O size.	There was a problem in the initialization processing run from the **Disk Monitor Resource Properties** dialog box.
176	3.3.4-1/ 1.0.0-1 to 3.3.3-1	The **Apply** button is disabled when the monitor level is changed on the **Monitor (special)** tab in the **Sybase Monitor Resource Properties** dialog box.	There was a problem in the initialization processing run from the **Sybase Monitor Resource Properties** dialog box.
177	3.3.4-1/ 1.0.0-1 to 3.3.3-1	The PID monitor resource sometimes does not detect an error.	There was a problem in the processing for monitoring the PID monitor resource.
178	3.3.5-1/ 2.0.0-1 to 3.3.4-2	Even if the final action of the resource has not been executed, the script before final action is executed.	There was a problem in the process to check whether to execute the script before final action.
179	3.3.5-1/ 2.0.0-1 to 3.3.4-2	Even if the final action of the monitor resource has not been executed, the script before final action is executed.	There was a problem in the process to check whether to execute the script before final action.
180	3.3.5-1/ 3.1.10-1 to 3.3.4-2	The `clpstat` command outputs unnecessary information.	There was a problem in the process to display the setting information by specifying the `-i` option.
181	3.3.5-1/ 1.0.0-1 to 3.3.4-2	The `clpstat` command outputs an improper error message.	There was a problem in the process to output an error message.
182	3.3.5-1/ 1.0.0-1 to 3.3.4-2	Even if PANIC is set as the action to be taken when the user space monitor resource timeout occurs, RESET is executed.	There was a problem in the process to obtain the operation when a timeout occurred.
183	3.3.5-1/ 1.0.0-1 to 3.3.4-2	When creating a new EXEC resource, clicking **Cancel** on the **Resource Tuning Properties** dialog box resets the specified settings to the default.	There was a problem in the process to save the setting values when creating a new EXEC resource.
184	3.3.5-1/ 3.1.0-1 to 3.3.4-2	When monitoring by the DB2 monitor resource times out, the monitoring might not be retried.	There was a lack of processing in the thread stop process of the DB2 monitor resource.

185	3.3.5-1/ 3.0.0-1 to 3.3.4-2	An error message that the process name monitor resource outputs when the process to be monitored disappears may be garbled.	The process to output an error message was not fully considered.
186	3.3.5-1/ 3.0.0-1 to 3.3.4-2	clprexec command with -k option fails.	Message receive monitor resource has a problem with getting [Category] parameter.

Chapter 5 Additional information

This chapter provides tips on installing EXPRESSCLUSTER X SingleServerSafe.

This chapter covers:

EXPRESSCLUSTER X SingleServerSafe services

EXPRESSCLUSTER X SingleServerSafe consists of the system services listed below.

System Service Name	Explanation
`clusterpro`	EXPRESSCLUSTER daemon: Main EXPRESSCLUSTER service
`clusterpro_evt`	EXPRESSCLUSTER event: Service for controlling `syslog` and logs output by EXPRESSCLUSTER
`clusterpro_trn`	EXPRESSCLUSTER data transfer: Service for controlling license synchronization and configuration data transfers
`clusterpro_alertsync`	EXPRESSCLUSTER alert synchronization: Service for alert synchronization
`clusterpro_webmgr`	EXPRESSCLUSTER WebManager: WebManager service

Migration from the trial license to the official license

When registering the official license to a server running with the trial license, you can add the official license without deleting the trial license. When you list the registered licenses, both the official and trial licenses are shown, but there is no problem.
For details about adding a license, see Chapter 2, “Installing EXPRESSCLUSTER X SingleServerSafe” in this guide.

Chapter 6 Notes and Restrictions

This chapter provides information on known problems and how to troubleshoot the problems.

This chapter covers:

Before and at the time of installing operating system

Notes on parameters to be determined when installing an operating system, allocating resources, and naming rules are described in this section.

/opt/nec/clusterpro file system

It is recommended to use a file system that is capable of journaling to avoid system failure. Linux (kernel version 2.6 or later) supports file systems such as ext3, ext4, JFS, ReiserFS, and XFS as a journaling file system. If a file system that is not capable of journaling is used, you must run an interactive command (`fsck` for the root file system) when rebooting the server after server or OS stop (when normal shutdown could not be done).

Dependent library

`libxml2`

Install `libxml2` when installing the operating system.

Dependent driver

`softdog`

- This driver is necessary when `softdog` is used to monitor user mode monitor resource.
- Configure a loadable module. Static driver cannot be used.

SELinux settings

- Configure **permissive** or **disabled** for the SELinux settings.
- If you set `enforcing`, communication required in EXPRESSCLUSTER X SingleServerSafe may not be achieved.

EXPRESSCLUSTER X Alert Service

The license for the EXPRESSCLUSTER X Alert Service allows you to use the mail report function, but not the warning light function.

Before installing EXPRESSCLUSTER X SingleServerSafe

Notes after installing an operating system, when configuring OS and disks are described in this section.

Directories and files in the location pointed to by the EXPRESSCLUSTER X SingleServerSafe installation path

The directories and files in the location pointed to by the EXPRESSCLUSTER X SingleServerSafe installation path must not be handled (edited, created, added, or deleted) by using any application or tool other than EXPRESSCLUSTER X SingleServerSafe.
Any effect on the operation of a directory or file caused by using an application or tool other than EXPRESSCLUSTER X SingleServerSafe will be outside the scope of NEC technical support.

Communication port number

EXPRESSCLUSTER X SingleServerSafe employs the following port numbers by default. You can change the port number by using the Builder.

Do not allow other programs to access any port with the following port numbers.

Configure to be able to access the port number below when setting a firewall on a server.

Server

From			To		Remarks
Server	Automatic allocation [1]	-	Server	29001/TCP	Internal communication
Server	Automatic allocation	-	Server	29002/TCP	Data transfer
Server	Automatic allocation	-	Server	29002/UDP	Heartbeat
Server	Automatic allocation	-	Server	29003/UDP	Alert synchronization
Server	Automatic allocation	-	Server	XXXX [2]/UDP	Internal communication for log

Server – WebManager

From			To		Remarks
WebManager	Automatic allocation	-	Server	29003/TCP	http communication

Integrated WebManager connected server - Server to be managed

					Remarks
Integrated WebManager connected server	Automatic allocation	-	Server	29003/TCP	http communication

Others

From			To		Remarks
Server	snmp trap	→	Monitoring target	162/UDP	Monitoring target of the external linkage monitor configured for BMC linkage
Server	icmp	→	Monitoring target	icmp	IP monitor
Server	Automatic allocation	→	Monitoring target	Management port number set by the Builder[4]	JVM monitor
Server	Automatic allocation	→	Monitoring target	Connection port number set by the Builder[4]	JVM monitor
Server	Automatic allocation	→	Monitoring target	Load balancer linkage management port number set by the Builder[4]	JVM monitor
Server	Automatic allocation	→	Monitoring targe	Communication port number set by the Builder[4]	JVM monitor

1. An available port number at the time is automatically assigned.

2. In the **Port Number** (log) tab in **Cluster Properties**, select **UDP** for log communication, and use the port number configured at **Port Number**. The default log communication method, **UNIX Domain**, does not use a communication port.

3. The JVM monitor resource uses the following four port numbers.

- A management port number is used for the JVM monitor resource to communicate with the Java VM on which it runs. To set this number, use the **Connection Setting** dialog box opened from the **JVM monitor** tab in **Cluster Property** of the Builder. For details, refer to Chapter 7, "Details of other settings" in the *Configuration Guide*.
- A connection port number is used to establish a connection to the target Java VM (WebLogic Server or WebOTX). To set this number, use the **Monitor (special)** tab in **Properties** of the Builder for the corresponding JVM monitor resource. For details, refer to Chapter 5 "Monitor resource details" in the *Configuration Guide*.
- A load balancer linkage management port number is used for load balancer linkage. When load balancer linkage is not used, this number does not need to be set. To set the number, use opened from the **JVM monitor** tab in **Cluster Property** of the Builder. For details, refer to Chapter 7, "Details of other settings" in the *Configuration Guide*.
- A communication port number is used to accomplish load balancer linkage with BIG-IP LTM. When load balancer linkage is not used, this number does not need to be set. To set the number, use the **Load Balancer Linkage Settings** dialog box opened from the **JVM monitor** tab in **Cluster Property** of the Builder. For details, refer to Chapter 7, "Details of other settings" in the *Configuration Guide*.

Changing the range of automatic allocation for the communication port numbers

- The range of automatic allocation for the communication port numbers managed by the OS might overlap the communication port numbers used by EXPRESSCLUSTER X SingleServerSafe.
- Change the OS settings to avoid duplication when the range of automatic allocation for the communication numbers managed by OS and the communication numbers used by EXPRESSCLUSTER X SingleServerSafe are duplicated.

Examples of checking and displaying OS setting conditions.

The range of automatic allocation for the communication port numbers depends on the distribution.

```
# cat /proc/sys/net/ipv4/ip_local_port_range
1024   65000
```

This is the condition to be assigned for the range from 1024 to 65000 when the application requests automatic allocation for the communication port numbers to the OS.

```
# cat /proc/sys/net/ipv4/ip_local_port_range
32768   61000
```

This is the condition to be assigned for the range from 32768 to 61000 when the application requests automatic allocation for the communication port numbers to the OS.

Examples of OS settings change

Add the line below to `/etc/sysctl.conf`. (When changing to the range from 30000 to 65000)

```
net.ipv4.ip_local_port_range = 30000  65000
```

Checking the network settings

- Check the network settings by using the ifconfig and ping commands.
  - Public LAN (used for communication with all the other machines)
  - Host name

Ipmiutil and OpenIPMI

- The following functions use ipmiutil or OpenIPMI:
  - Final Action at Activation Failure / Deactivation Failure
  - Monitor resource action upon failure
  - User mode monitor resource
  - Shutdown monitoring
- When the monitor method is ipmi, ipmiutil or OpenIPMI is used.
- EXPRESSCLUSTER X SingleServerSafe does not come with ipmiutil. The user is required to install the rpm file for ipmiutil or OpenIPMI separately.
- We do not handle ipmiutil or OpenIPMI matters. NEC does not support or assume any responsibilities for:
  - Inquiries about ipmiutil or OpenIPMI
  - Guarantee of the operation of ipmiutil or OpenIPMI
  - Errors of or failures caused by ipmiutil or OpenIPMI
  - Inquiries about whether ipmiutil or OpenIPMI is supported by servers
- Check whether your servers (hardware) support ipmiutil or OpenIPMI in advance.
- Note that hardware conforming to the IPMI specifications might not be able to run ipmiutil or OpenIPMI.
- When server monitoring software provided by another server vendor is used, do not select IPMI for the monitoring method of user-mode monitor resources and shutdown monitoring. Such server monitoring software and ipmiutil both use BMC (Baseboard Management Controller) on the server, which causes a conflict and makes monitoring impossible.

User mode monitor resource, shutdown monitoring (monitoring method: softdog)

- When softdog is selected as a monitoring method, use the soft dog driver.
  Make sure not to start the features that use the softdog driver except EXPRESSCLUSTER. Examples of such features are as follows:
  - Heartbeat feature that comes with OS
  - i8xx_tco driver
  - iTCO_WDT driver
  - watchdog feature and shutdown monitoring feature of systemd
- When softdog is set up as the monitoring method, disable the heartbeat function of the operating system.
- For SUSE LINUX 10/11, the softdog monitoring method cannot be set up when the i8xx_tco driver is in use. If you do not intend to use the i8xx_tco driver, set up the system so that the driver is not loaded.

Collecting logs

- For SUSE LINUX 10/11, when the log collection function of EXPRESSCLUSTER X SingleServerSafe is used for OS syslog acquisition, the suffixes of syslog (message) files are rotated and changed, so the function for specifying syslog generation does not operate.
  To make the syslog generation specifiable for the log collection function, change the syslog rotation setting as described below.
  - Comment out compress and dateext in the /etc/logrotate.d/syslog file

nsupdate and nslookup

- The following functions use `nsupdate` and `nslookup`.
  - Dynamic DNS monitor resource of monitor resource (ddnsw)
- EXPRESSCLUSTER X SingleServerSafe does not include `nsupdate` and `nslookup`. Therefore, install the rmp files of `nsupdate` and `nslookup`, in addition to the EXPRESSCLUSTER X SingleServerSafe installation.
- NEC does not support the items below regarding `nsupdate` and `nslookup`. Use `nsupdate` and `nslookup` at your own risk.
  - Inquiries about `nsupdate` and `nslookup`
  - Guaranteed operations of `nsupdate` and `nslookup`
  - Malfunction of `nsupdate` or `nslookup` or failure caused by such a malfunction
  - Inquiries about support of `nsupdate` and `nslookup` on each server

FTP monitor resources

- If a banner message to be registered to the FTP server or a message to be displayed at connection is long or consists of multiple lines, a monitor error may occur. When monitoring by the FTP monitor resource, do not register a banner message or connection message.

Notes on using Red Hat Enterprise Linux 7

- The shutdown monitor function cannot be used.
- In mail reporting function takes advantage of the [mail] command of OS provides. Because the minimum composition is [mail] command is not installed, please execute one of the following.
  - Select the [**SMTP**] by the **Mail Method** on the **Alert Service** tab of **Cluster Properties**.
  - Installing mailx.

Notes on using Ubuntu

- To execute EXPRESSCLUSTER X SingleServerSafe -related commands, execute them as the root user.
- Only a Websphere monitor resource is supported in Application Server Agent. This is because other Application Server isn't supporting Ubuntu.
- In mail reporting function takes advantage of the [mail] command of OS provides. Because the minimum composition is [mail] command is not installed, please execute one of the following.
  - Select the [**SMTP**] by the **Mail Method** on the **Alert Service** tab of **Cluster Properties**.
  - Installing mailutils.
- Information acquisition by SNMP cannot be used.

Samba monitor resources

- Samba monitor resources use SMB protocol version 1.0 for monitoring. If the SMB protocol version accepted by a Samba server is limited to SMB2.0 or later (for example, when 'server min protocol' is set to 'SMB2' in smb.conf), a monitoring error will occur. Therefore, enable SMB protocol version 1.0 when using the Samba monitor resource.
- When the SMB signature is enabled in the Samba server (for example, when 'client signing' is set to 'mandatory' in smb.conf), a monitoring error will occur. Therefore, disable the SMB signature.
- The Samba monitor resource uses NTLMv1 authentication for monitoring. Therefore, a monitoring error occurs if NTLMv1 authentication is disabled on the Samba server (for example, `lanman auth = no` and `ntlm auth = no` are set in `smb.conf`). To use the Samba monitor resource, enable NTLMv1 authentication. Note that NTLMv1 authentication is disabled by default for Samba 4.5.0 or later.

Updating EXPRESSCLUSTER X SingleServerSafe

This section describes notes on updating EXPRESSCLUSTER X SingleServerSafe after starting cluster operation.

Changes in the default values with update

The default values will be changed for some parameters after updating EXPRESSCLUSTER X SingleServerSafe.

- The default value of the following parameters will be changed after updating EXPRESSCLUSTER X SingleServerSafe from the previous version to the target version or later.
- If you want to keep using the "Default value before update", you have to change these parameters to this value after updating EXPRESSCLUSTER X SingleServerSafe.
- If you have changed the parameters from "Default value before update", the setting values of these parameters will not be changed. Therefore you do not have to change these parameters.

Parameter	Target Version	Default value before update	Default value after update
[Disk monitor resource] - [Retry Count]	X3.1.3-1	0	1
[DB2 monitor resource] - [Monitor Level] [MySQL monitor resource] - [Monitor Level] [Oracle monitor resource] - [Monitor Level] [PostgreSQL monitor resource] - [Monitor Level] [Sybase monitor resource] - [Monitor Level]	X3.3.1-1	Level 3	Level 2 (*1)
[Weblogic monitor resource] - [Add command option]	X3.3.3-1	-Dwlst.offline.log=disable	-Dwlst.offline.log=disable -Duser.language=en_US
[Disk monitor resource] - [Method]	X3.3.3-1	READ	READ(O_DIRECT)
[Cluster Properties] - [Monitor] - [Enable SIGTERM handler]	X3.3.5-1	On	Off
[Volume manager monitor resource] - [Retry Count]	X3.3.5-1	0	1

(*1) The warning message indicating the monitoring table does not exist may be displayed on the WebManager at first monitoring time. It does not affect the monitoring process.

Changes in the command options with update

The options will be changed for some commands after updating EXPRESSCLUSTER.

- The options of the following commands will be changed after updating EXPRESSCLUSTER from the version earlier than the following target version to the target version or later.
- For details, refer to Chapter 2 "EXPRESSCLUSTER X SingleServerSafe command reference" in the Operation Guide.

Command	Target Version	Description
clpcfctrl	X3.3.5-1	The `-l` or `-w` option is now required to specify. If neither of them is specified, this command fails.

Appendix A Troubleshooting

Error messages when installing the EXPRESSCLUSTER X SingleServerSafe

	Error Message	Cause	Solution
1	`failed to open //var/lib/rpm/packages.rpm error: cannot open //var/lib/rpm/packages.rpm`	The user logged on is not a root user.	Log on as a root user.
2	`error: package expressclssss-* is already installed`	The EXPRESSCLUSTER X SingleServerSafe is already installed.	Uninstall the EXPRESSCLUSTER X SingleServerSafe and reinstall it.

Error messages when uninstalling the EXPRESSCLUSTER X SingleServerSafe

	Error Message	Cause	Solution
1	`failed to open //var/lib/rpm/packages.rpm` `error: cannot open //var/lib/rpm/packages.rpm`	The user logged on is not a root user.	Log on as a root user.
2	`error: expressclssss is running`	The EXPRESSCLUSTER X SingleServerSafe is active.	Disable services by using the `chkconfig` command, restart the server, and uninstall the EXPRESSCLUSTER SingleServerSafe again.

Troubleshooting for licensing

Behavior and Message	Cause	Solution
When the command was executed, the following message appeared in the console: `Log in as root.`	The command was executed by a general user.	Log on as root user or log on again after changing to root user with `su -`.
When the command was executed at the license registration, the following message appeared in the console: `Command succeeded. But the license was not applied to all the servers in the cluster because there are one or more servers that are not started up.`	The data transfer service might not be running or the configuration data might not have been distributed.	Double check whether the transaction server is running and the configuration data has been distributed. If either of them is not done yet, complete the task and register the license again.
When the configuration data created by the Builder was distributed to all servers and then the server was shut down and rebooted, the WebManager showed the following message on the alert view and the server stopped: `The license is not registered. (%1)` `%1`: Product ID	The server was shut down and rebooted without registering a license.	Register the license from the server.
After the configuration data created by the Builder was distributed to all servers and the server is shut down and rebooted, the Web Manager showed the following message on the alert view but the server is operating normally: `The license is insufficient. The number of insufficient is %1. (%2)` `%1`: The number of licenses in short of supply `%2`: Product ID	Licenses are insufficient.	Obtain a license and register it.
While the servers were operated using the trial license, the following message was displayed and the servers stopped: `The license of trial expired by %1. (%2)` `%1`: Trial end date `%2`: Product ID	The license has already expired.	Ask your sales agent for extension of the trial version license, or obtain and register the product version license.

Appendix B Index