EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux Installation Guide

Release 6

NEC Corporation

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CHAPTER

ONE

PREFACE

1.1 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.*

1.2 How This Guide Is Organized

- 2. *About EXPRESSCLUSTER X SingleServerSafe*: Explains the functions and requirements of EXPRESSCLUSTER X SingleServerSafe.
- 3. *Installing EXPRESSCLUSTER X SingleServerSafe*: Describes how to install EXPRESSCLUSTER X SingleServerSafe.
- 4. *Updating, uninstalling, reinstalling or upgrading*: Describes how to install EXPRESSCLUSTER X SingleServerSafe.
- 5. *Latest version information*: Provides the latest information about EXPRESSCLUSTER X SingleServerSafe.
- 6. *Additional information*: Provides tips on installing EXPRESSCLUSTER X SingleServerSafe.
- 7. *Notes and Restrictions*: Provides notes and restrictions you need to know before starting the actual operation of EXPRESSCLUSTER X SingleServerSafe.
- 8. *Troubleshooting*: Describes problems you might experience when installing or setting up EXPRESSCLUSTER X SingleServerSafe and how to resolve them.

1.3 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.

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

1.4 EXPRESSCLUSTER X SingleServerSafe Documentation Set

The EXPRESSCLUSTER X SingleServerSafe documentation consists of the four 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 SingleServerSafe Legacy Feature Guide

> This guide is intended for system engineers who want to introduce systems using EXPRESSCLUSTER X SingleServerSafe and describes EXPRESSCLUSTER X SingleServerSafe 4.0 WebManager and Builder.

1.5 Conventions

In this guide, **Note**, **Important**, **See also** 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.

See also:

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	Indicates path names, commands, system output (message, prompt, etc), directory, file names, functions and parameters.	`/Linux/4.3/en/server/`
bold	Indicates the value that a user actually enters from a command line.	Enter the following: **clpcl -s -a**
italic	Indicates that users should replace italicized part with values that they are actually working with.	`rpm -i expressclssss-<version_number>-<release_number>.x86_64.rpm`


In the figures of this guide, this icon represents EXPRESSCLUSTER X SingleServerSafe.

1.6 Contacting NEC

For the latest product information, visit our website below:

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

CHAPTER

TWO

ABOUT EXPRESSCLUSTER X SINGLESERVERSAFE

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

2.1 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.

1. Occurrence of application failure

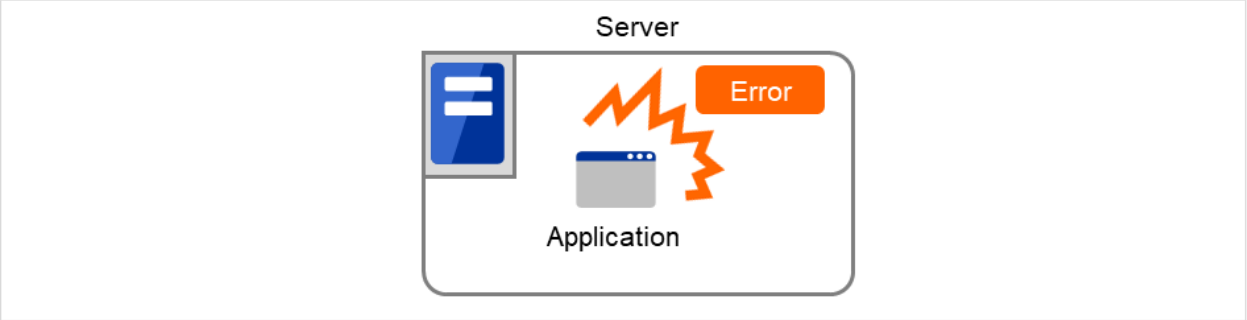

Fig. 2.1: Occurrence of failure

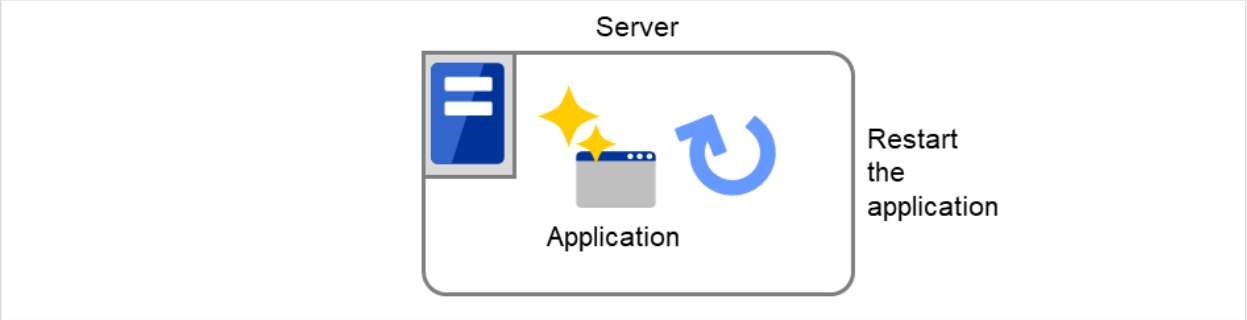

Fig. 2.2: Recovery from failure (Application restart)

2. Occurrence of hardware failure

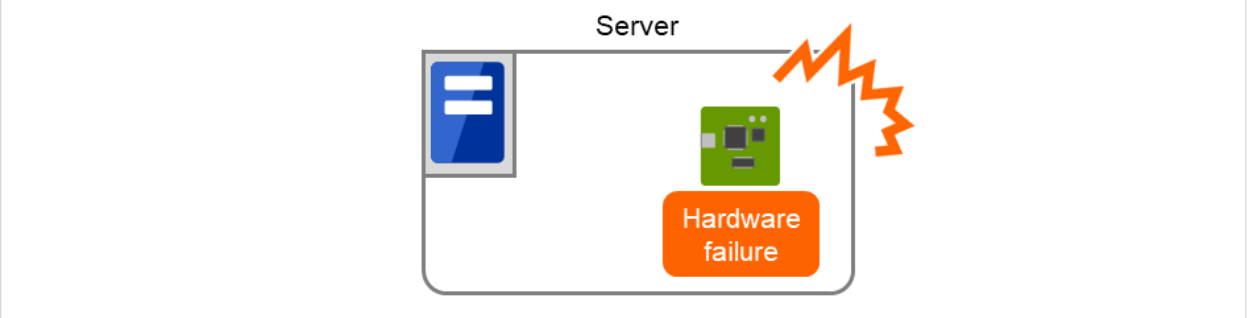

Fig. 2.3: Occurrence of failure

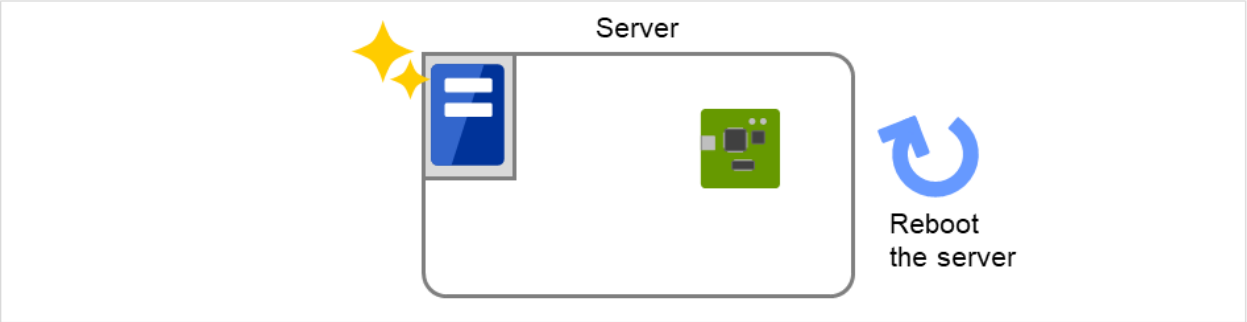

Fig. 2.4: Recovery from failure (Server restart)

See also:

For details about EXPRESSCLUSTER X SingleServerSafe, refer to "EXPRESSCLUSTER X SingleServerSafe" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

2.1.1 EXPRESSCLUSTER X SingleServerSafe software configuration

EXPRESSCLUSTER X SingleServerSafe consists of following two software applications:

a) EXPRESSCLUSTER SingleServerSafe (Main module)
The main module of EXPRESSCLUSTER X SingleServerSafe. Install it on the server.

b) Cluster WebUI
A tool to manage EXPRESSCLUSTER X SingleServerSafe operations.
It uses a Web browser as a user interface.

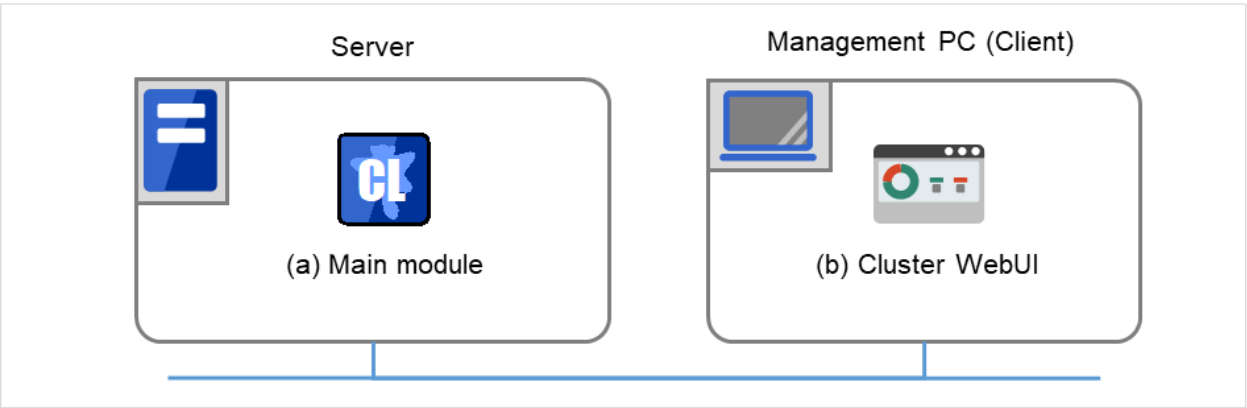

Fig. 2.5: Software configuration

2.2 Checking system requirements for EXPRESSCLUSTER X SingleServerSafe

2.2.1 Hardware

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

- x86_64

2.2.2 Required specifications

Required specifications for EXPRESSCLUSTER SingleServerSafe are the following:

- Ethernet port:
- CD-ROM drive

2.2.3 Software

EXPRESSCLUSTER X SingleServerSafe consists of twomodules: EXPRESSCLUSTER SingleServerSafe and Cluster WebUI. 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 4.3 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	Refer to "Supported distributions and kernel versions" below

Required memory size	User mode	200MB[1]
	Kernel mode	When the keepalive driver is used: 8MB
Required disk size	Right after installation	300MB
	during operation	2.0GB

  - **Cluster WebUI**

[1] excepting for optional products.

Supported browsers	Internet Explorer 11 Internet Explorer 10 Firefox Google Chrome Microsoft Edge (Chromium)
Memory size	User mode 500 MB

Note:

When accessing Cluster WebUI with Internet Explorer 11, the Internet Explorer may stop with an error. In order to avoid it, please upgrade the Internet Explorer into KB4052978 or later.
Additionally, in order to apply KB4052978 or later to Windows 8.1/Windows Server 2012R2, apply KB2919355 in advance. For details, see the information released by Microsoft.

Note: No mobile devices, such as tablets and smartphones, are supported.

2.2.4 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
->EXPRESSCLUSTER X SingleServerSafe for Linux

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

2.2.5 Applications supported by the monitoring options

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

x86_64

Monitor resource	Application to be monitored	EXPRESSCLUSTER SingleServerSafe version	Remarks
Oracle monitor	Oracle Database 12c Release 1 (12.1)	4.0.0-1 or later	
	Oracle Database 12c Release 2 (12.2)	4.0.0-1 or later	
	Oracle Database 18c (18.3)	4.1.0-1 or later	
	Oracle Database 19c (19.3)	4.1.0-1 or later	
DB2 monitor	DB2 V10.5	4.0.0-1 or later	
	DB2 V11.1	4.0.0-1 or later	
	DB2 V11.5	4.2.0-1 or later	
PostgreSQL monitor	PostgreSQL 9.3	4.0.0-1 or later	
	PostgreSQL 9.4	4.0.0-1 or later	
	PostgreSQL 9.5	4.0.0-1 or later	
	PostgreSQL 9.6	4.0.0-1 or later	
	PostgreSQL 10	4.0.0-1 or later	
	PostgreSQL 11	4.1.0-1 or later	
	PostgreSQL 12	4.2.2-1 or later	
	PostgreSQL 13	4.3.0-1 or later	
	PowerGres on Linux 9.1	4.0.0-1 or later	
	PowerGres on Linux 9.4	4.0.0-1 or later	
	PowerGres on Linux 9.6	4.0.0-1 or later	
	PowerGres on Linux 11	4.1.0-1 or later	
MySQL monitor	MySQL 5.5	4.0.0-1 or later	
	MySQL 5.6	4.0.0-1 or later	
	MySQL 5.7	4.0.0-1 or later	
	MariaDB 5.5	4.0.0-1 or later	
	MySQL 8.0	4.1.0-1 or later	
	MariaDB 10.0	4.0.0-1 or later	
	MariaDB 10.1	4.0.0-1 or later	
	MariaDB 10.2	4.0.0-1 or later	
	MariaDB 10.3	4.1.0-1 or later	
	MariaDB 10.4	4.2.0-1 or later	
Sybase monitor	Sybase ASE 15.5	4.0.0-1 or later	
	Sybase ASE 15.7	4.0.0-1 or later	
	Sybase ASE 16.0	4.0.0-1 or later	
SQL Server monitor	SQL Server2017	4.0.0-1 or later	
	SQL Server2019	4.2.0-1 or later	
Samba monitor	Samba 3.3	4.0.0-1 or later	
	Samba 3.6	4.0.0-1 or later	
	Samba 4.0	4.0.0-1 or later	

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Monitor resource	Application to be monitored	EXPRESSCLUSTER SingleServerSafe version	Remarks
	Samba 4.1	4.0.0-1 or later	
	Samba 4.2	4.0.0-1 or later	
	Samba 4.4	4.0.0-1 or later	
	Samba 4.6	4.0.0-1 or later	
	Samba 4.7	4.1.0-1 or later	
	Samba 4.8	4.1.0-1 or later	
	Samba 4.13	4.3.0-1 or later	
NFS monitor	nfsd 2 (udp)	4.0.0-1 or later	
	nfsd 3 (udp)	4.0.0-1 or later	
	nfsd 4 (tcp)	4.0.0-1 or later	
	mountd 1 (tcp)	4.0.0-1 or later	
	mountd 2 (tcp)	4.0.0-1 or later	
	mountd 3 (tcp)	4.0.0-1 or later	
HTTP monitor	No Specified version	4.0.0-1 or later	
SMTP monitor	No Specified version	4.0.0-1 or later	
pop3 monitor	No Specified version	4.0.0-1 or later	
imap4 monitor	No Specified version	4.0.0-1 or later	
ftp monitor	No Specified version	4.0.0-1 or later	
Tuxedo monitor	Tuxedo 12c Release 2 (12.1.3)	4.0.0-1 or later	
WebLogic monitor	WebLogic Server 11g R1	4.0.0-1 or later	
	WebLogic Server 11g R2	4.0.0-1 or later	
	WebLogic Server 12c R2 (12.2.1)	4.0.0-1 or later	
	WebLogic Server 14c (14.1.1)	4.2.0-1 or later	
WebSphere monitor	WebSphere Application Server 8.5	4.0.0-1 or later	
	WebSphere Application Server 8.5.5	4.0.0-1 or later	
	WebSphere Application Server 9.0	4.0.0-1 or later	
WebOTX monitor	WebOTX Application Server V9.1	4.0.0-1 or later	
	WebOTX Application Server V9.2	4.0.0-1 or later	
	WebOTX Application Server V9.3	4.0.0-1 or later	
	WebOTX Application Server V9.4	4.0.0-1 or later	
	WebOTX Application Server V10.1	4.0.0-1 or later	

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Table 2.4 – continued from previous page

Monitor resource	Application to be monitored	EXPRESSCLUSTER SingleServerSafe version	Remarks
	WebOTX Application Server V10.3	4.3.0-1 or later	
JVM monitor	WebLogic Server 11g R1	4.0.0-1 or later	
	WebLogic Server 11g R2	4.0.0-1 or later	
	WebLogic Server 12c	4.0.0-1 or later	
	WebLogic Server 12c R2 (12.2.1)	4.0.0-1 or later	
	WebLogic Server 14c (14.1.1)	4.2.0-1 or later	
	WebOTX Application Server V9.1	4.0.0-1 or later	
	WebOTX Application Server V9.2	4.0.0-1 or later	WebOTX update is required to monitor process groups
	WebOTX Application Server V9.3	4.0.0-1 or later	
	WebOTX Application Server V9.4	4.0.0-1 or later	
	WebOTX Application Server V10.1	4.0.0-1 or later	
	WebOTX Application Server V10.3	4.3.0-1 or later	
	WebOTX Enterprise Service Bus V8.4	4.0.0-1 or later	
	WebOTX Enterprise Service Bus V8.5	4.0.0-1 or later	
	WebOTX Enterprise Service Bus V10.3	4.3.0-1 or later	
	JBoss Enterprise Application Platform 7.0	4.0.0-1 or later	
	JBoss Enterprise Application Platform 7.3	4.3.2-1 or later	
	Apache Tomcat 8.0	4.0.0-1 or later	
	Apache Tomcat 8.5	4.0.0-1 or later	
	Apache Tomcat 9.0	4.0.0-1 or later	
	WebSAM SVF for PDF 9.0	4.0.0-1 or later	
	WebSAM SVF for PDF 9.1	4.0.0-1 or later	
	WebSAM SVF for PDF 9.2	4.0.0-1 or later	
	WebSAM Report Director Enterprise 9.0	4.0.0-1 or later	

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Monitor resource	Application to be monitored	EXPRESSCLUSTER SingleServerSafe version	Remarks
	WebSAM Report Director Enterprise 9.1	4.0.0-1 or later	
	WebSAM Report Director Enterprise 9.2	4.0.0-1 or later	
	WebSAM Universal Connect/X 9.0	4.0.0-1 or later	
	WebSAM Universal Connect/X 9.1	4.0.0-1 or later	
	WebSAM Universal Connect/X 9.2	4.0.0-1 or later	
System monitor	No specified version	4.0.0-1 or later	
Process resource monitor	No specified version	4.0.0-1 or later	

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

2.2.6 Operation environment for JVM monitor resource

The use of the JVM monitor requires a Java runtime environment. Also, monitoring a domain mode of JBoss Enterprise Application Platform requires Java(TM) SE Development Kit.

Java(TM) Runtime Environment	Version 7.0 Update 6 (1.7.0_6) or later
Java(TM) SE Development Kit	Version 7.0 Update 1 (1.7.0_1) or later
Java(TM) Runtime Environment	Version 8.0 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	Version 9.0 (9.0.1) or later
Java(TM) SE Development Kit	Version 9.0 (9.0.1) or later
Java(TM) SE Development Kit	Version 11.0 (11.0.5) or later
Open JDK	Version 7.0 Update 45 (1.7.0_45) or later Version 8.0 (1.8.0) or later Version 9.0 (9.0.1) or later

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

x86_64

Load balancer	EXPRESSCLUSTER version	Remarks
Express5800/LB400h or later	4.0.0-1 or later	
InterSec/LB400i or later	4.0.0-1 or later	
BIG-IP v11	4.0.0-1 or later	
CoyotePoint Equalizer	4.0.0-1 or later	

2.3 Preparing and verifying the server environment before installation

After installing the hardware, verify the following:

2.3.1 Verifying the network settings (Required)

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

- IP Address
- Host name

2.3.2 Verifying the firewall settings (Required)

By default, EXPRESSCLUSTER X SingleServerSafe uses the port numbers below. You can change these port numbers by using the Cluster WebUI. 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[2]	Server	29001/TCP	Internal communication
Server	Automatic allocation[2]	Server	29002/TCP	Data transfer
Server	Automatic allocation[2]	Server	29003/UDP	Alert synchronization
Server	Automatic allocation[2]	Server	29008/TCP	Cluster information management
Server	Automatic allocation[2]	Server	29010/TCP	Restful API internal communication
Server	Automatic allocation[2]	Server	XXXX[3]/UDP	Internal communication for log

- **From the client to the server**

From		To		Remarks
Restful API client	Automatic allocation[2]	Server	29009/TCP	HTTP communication

[2] An available port number at the time is automatically assigned.
[3] On the **Port No. Log** 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.

- **From the Cluster WebUI to the server**

From		To		Remarks
Cluster WebUI	Automatic allocation[2]	Server	29003/TCP	http communication

- **Others**

From		To		Remarks
Server	Automatic allocation[2]	Server	Management port number set by the Cluster WebUI	JVM monitor
Server	Automatic allocation[2]	Monitoring target	Connection port number set by the Cluster WebUI	JVM monitor
Server	Automatic allocation[2]	Server	Management port number set by Cluster WebUI for load balancer linkage	JVM monitor
Server	Automatic allocation[2]	BIG-IP LTM	Communication port number set by the Cluster WebUI	JVM monitor

CHAPTER

THREE

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.

This chapter covers:

3.1 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 "2. *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 Cluster WebUI
   Create the configuration data by using the Cluster WebUI.
   Refer to "Creating configuration data" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".
4. Setting up a server
   Apply the configuration data created using the Cluster WebUI to set up a server.
   When using the Cluster WebUI, Apply the configulation date by using it or clpcfctrl command.
   Refer to "Creating configuration data" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".
5. Verifying the cluster status using the Cluster WebUI
   Check the status of the server by using the Cluster WebUI.
   Refer to "Checking the cluster system" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

See also:

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 "2. *About EXPRESSCLUSTER X SingleServerSafe*" and "5. *Latest version information*" in this guide.

3.2 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.

3.2.1 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/4.3/en/server, in the CD-ROM and run the following:

   `rpm -i expressclssss-version.x86_64.rpm`

   For Ubuntu, run the following

   `dpkg -i expressclssss-version.amd64.deb`

   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.

See also:

The use of the SNMP linkage function requires additional settings.
For how to set up the SNMP linkage function, see "3.2.2. *Setting up the SNMP linkage function*"

3.2.2 Setting up the SNMP linkage function

Note: If you only use the SNMP trap transmission function, this procedure is not required.

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:

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

   - For an init.d environment:

```
/etc/init.d/snmpd stop
```

   - For a systemd environment:

```
systemctl stop snmpd
```

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.

   If the snmpd version is earlier than 5.7:

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

   If the snmpd version is 5.7 or later:

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

   Note:

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

```
/etc/snmp/snmpd.conf
```

   - 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.
   /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:

- For an init.d environment:

```
/etc/init.d/snmpd start
```

- For a systemd environment:

```
systemctl start snmpd
```

See also:

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 "4.2.2. *Canceling the SNMP linkage function settings*".

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

3.3 Registering the license

3.3.1 Registering the CPU license

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

See also:

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.
For the details about registration of VM node license, see "3.3.4. *Registering the VM node license*".

The names of the products to which the CPU license applies are listed below.

License product name	Product ID
EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux	XSSS43

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 "3.3.2. *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 "3.3.3. *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 "3.3.8. *Registering the license by specifying the license file (for both the product version and trial version)*".)

3.3.2 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
   ```

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

When the command is successfully executed, the message "License registration succeeded." is displayed in the console. If another message is displayed, refer to "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

2. Run the following command to verify the licenses registered.

   ```
   # clplcnsc -l -a
   ```

3. When an optional product is not used, proceed to "3.3.7. *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 "Creating configuration data" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide", and follow the procedure.

3.3.3 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.

See also:

The clplcnsc command is used in the following procedures. For details about how to use the clplcnsc command, refer to "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 4.3 for Linux
   License information:
   Type Product version
   License Key A1234567-B1234567-C1234567-D1234567
   Serial Number AAAAAAAA000000
   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
   ```

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
   e Exit
   Select License Version [1, 2, e (default:1)]... 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. XXXXXXXX000000]... AAAAAAAA000000
   ```

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 "License registration succeeded." is displayed in the console. If another message is displayed, refer to "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

6. Run the following command to verify the licenses registered.

   ```
   # clplcnsc -l -a
   ```

7. When an optional product is used, proceed to "Registering the node license" in this chapter.
8. If no optional product is used, run the OS shutdown command to reboot the server.
   After rebooting the server, proceed to "Checking the cluster system" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide", and follow the procedure.

3.3.4 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.

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

The names of the products to which the VM node license applies are listed below.

License Product Name	Product ID
EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux VM	XSSS43

Product version

- Specify the license file as the parameter of the license management command. Refer to "3.3.5. *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 "3.3.6. *Registering the VM node license interactively from the command line (Product version)*".

3.3.5 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.
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. Among the servers that you intend to use to build a cluster, log on to the virtual server as root user and run the following command.

```
# clplcnsc -i filepath
```

Specify the path to the license file for filepath specified by the -i option.
When the command is successfully executed, the message "License registration succeeded." is displayed on the console. When a message other than this is displayed, see "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

2. Run the following command to verify the licenses registered.

   ```
   # clplcnsc -l -a
   ```

3. When using option products, see "3.3.7. *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 "Checking the cluster system" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

3.3.6 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 system.

See also:

The clplcnsc command is used in the following procedures. For more information on how to use the clplcnsc command, see "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 4.3 for Linux VM
   License information:
   Type Product Version
   License Key A1234567-B1234567-C1234567-D1234567
   Serial Number AAAAAAAA000000
   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
   ```

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
   ```

```
e Exit
Select License Version. [1, 2, or e (default:1)]... 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. XXXXXXXX000000]... **AAAAAAAA000000**

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 "License registration succeeded." is displayed on the console. When a message other than this is displayed, see "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

6. Run the following command to verify the licenses registered.

   ```
   # clplcnsc -l -a
   ```

7. When using option products, see "3.3.7. *Registering the node license*".

8. When not using option products, run the OS shutdown command to reboot the server.
   After rebooting the server, proceed to next "Checking the cluster system" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

3.3.7 Registering the node license

It is required to register a node license for X 4.3 Agent products and X 4.3 Alert Service (hereafter referred to as "optional products") to operate them on the system.
The names of the optional products to which the node license applies are listed below.

License product name	Product ID
EXPRESSCLUSTER X Database Agent 4.3 for Linux	DBAG43
EXPRESSCLUSTER X Internet Server Agent 4.3 for Linux	ISAG43
EXPRESSCLUSTER X File Server Agent 4.3 for Linux	FSAG43
EXPRESSCLUSTER X Application Server Agent 4.3 for Linux	ASAG43
EXPRESSCLUSTER X Alert Service 4.3 for Linux	ALRT43
EXPRESSCLUSTER X Java Resource Agent 4.3 for Linux	JRAG43
EXPRESSCLUSTER X System Resource Agent 4.3 for Linux	SRAG43

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 "3.3.8. *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 "3.3.9. *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 "3.3.8. *Registering the license by specifying the license file (for both the product version and trial version)*".)

3.3.8 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
   ```

   Specify the path to the license file for *filepath* specified by the -i option.
   When the command is successfully executed, the message "License registration succeeded." is displayed in the console. If another message is displayed, see "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

2. Run the following command to verify the licenses registered.

   ```
   # clplcnsc -l -a
   ```

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

3.3.9 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.

See also:

The clplcnsc command is used in the following procedures. For details about how to use the clplcnsc command, refer to "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 4.3 for Linux
   License information:
   Type Product version
   License Key A1234567- B1234567- C1234567- D1234567
   Serial Number AAAAAAAA000000
   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
   ```

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
   e Exit
   Select License Version [1, 2, or e (default:1)]... 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. XXXXXXXX000000]... AAAAAAAA000000
   ```

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 "License registration succeeded." is displayed in the console. If another message is displayed, refer to "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

6. Run the following command to verify the licenses registered.

   ```
   # clplcnsc -l -a
   ```

7. Restart the server by using the OS shutdown command to validate the license registration and run the server.

   After restarting, proceed to "Creating configuration data" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide", and follow the procedure.

3.3.10 Registering the fixed term license

Use the fixed term license to operate the cluster system which you intend to construct for a limited period of time.
This license becomes effective on the date when the license is registered and then will be effective for a certain period of time.
In preparation for the expiration, the license for the same product can be registered multiple times. Extra licenses are saved and a new license will take effect when the current license expires.

The names of the products to which the fixed term license applies are listed below.

License product name	Product ID
Main product	
EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux	XSSS43
Optional Products	
EXPRESSCLUSTER X Database Agent 4.3 for Linux	DBAG43
EXPRESSCLUSTER X Internet Server Agent 4.3 for Linux	ISAG43
EXPRESSCLUSTER X File Server Agent 4.3 for Linux	FSAG43
EXPRESSCLUSTER X Application Server Agent 4.3 for Linux	ASAG43
EXPRESSCLUSTER X Alert Service 4.3 for Linux	ALRT43
EXPRESSCLUSTER X Java Resource Agent 4.3 for Linux	JRAG43
EXPRESSCLUSTER X System Resource Agent 4.3 for Linux	SRAG43

A License is registered by specifying the license file.

3.3.11 Registering the fixed term license by specifying the license file

The following describes how you register a fixed term license.
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.

Follow the following steps to register all the license files for the products to be used.

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
   ```

   Specify the path to the license file for **filepath** specified by the -i option.
   When the command is successfully executed, the message "License registration succeeded." is displayed in the console. If another message is displayed, refer to "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

   If you have two or more license files for the same product in preparation for the expiration, execute the command to register the extra license files in the same way as above.

2. If there are other products you intend to use, repeat the step 1.
3. Run the following command to verify the licenses registered.

```
# clplcnsc -l -a
```

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

CHAPTER

FOUR

UPDATING, UNINSTALLING, REINSTALLING OR UPGRADING

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

This chapter covers:

4.1 Updating EXPRESSCLUSTER X SingleServerSafe

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

4.1.1 Updating the EXPRESSCLUSTER X SingleServerSafe RPM

Before starting the update, read the following notes.

- EXPRESSCLUSTER X SingleServerSafe 3.0 / 3.1 / 3.2 / 3.3 for Linux can be updated to EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux. Updating from other versions is not possible.
- To update from EXPRESSCLUSTER X SingleServerSafe 3.0 / 3.1 / 3.2 / 3.3 for Linux to EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux, the license for EXPRESSCLUSTER X SingleServerSafe 4.3 for Linux (including the licenses for any used optional products) is required.
- To update, use an account that has root privileges.

To update server rpm version 3.0.0-1 or later to 4.0.0-1 or later, perform the following procedure.

1. Make sure that the server and all the resources are in the normal status by using the WebManager or clpstat command.
2. Back up the configuration data.
3. Uninstall EXPRESSCLUSTER X SingleServerSafe from the server. For details about the uninstallation procedure, refer to "4.2. *Uninstalling EXPRESSCLUSTER X SingleServerSafe*" in this chapter.
4. Install the EXPRESSCLUSTER X 4.3 SingleServerSafe on the server. For details about the installation procedure, refer to "3.2. *Installing the EXPRESSCLUSTER X SingleServerSafe*" and "3.3. *Registering the license*" in this guide.
5. Access the below URL to start the WebManager.

   `http://actual IP address of an installed server :29003/main.htm`

   Change to Config Mode and import the cluster configuration file which was saved in the step 2.

6. Start the Cluster WebUI , start the cluster, and confirm that each resource starts normally.
7. Updating completes. Check that the server is operating normally by the clpstat command or Cluster WebUI.

4.2 Uninstalling EXPRESSCLUSTER X SingleServerSafe

4.2.1 Uninstalling EXPRESSCLUSTER Server

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

To uninstall EXPRESSCLUSTER Server, 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. Disable the services by running the following command.

```
clpsvcctrl.sh --disable -a
```

3. Shut down the server by using the Cluster WebUI 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.

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

Note: 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:

   - For an init.d environment:

   ```
   /etc/init.d/snmpd stop
   ```

   - For a systemd environment:

   ```
   systemctl stop snmpd
   ```

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: The configuration file for the snmpd daemon is usually located in the following directory:

```
/etc/snmp/snmpd.conf
```

Note:

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 "3.2.2. *Setting up the SNMP linkage function* ", delete them.
4. Start the snmpd daemon.

Note: The daemon can usually be started by the following command:

- For an init.d environment:

```
/etc/init.d/snmpd start
```

- For a systemd environment:

```
systemctl start snmpd
```

4.3 Reinstalling EXPRESSCLUSTER X SingleServerSafe

4.3.1 Reinstalling the EXPRESSCLUSTER SingleServerSafe

To re-install the EXPRESSCLUSTER X SingleServerSafe, you have to prepare the cluster configuration data created by the Cluster WebUI.

If you do not have the cluster configuration data created by the Cluster WebUI at hand, you can back up the data with the clpcfctrl command. Refer to "Applying and backing up configuration data (clpcfctrl command)" in " Backing up the configuration data (clpcfctrl --pull)" - "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 "4.2.1. *Uninstalling EXPRESSCLUSTER Server*" in this chapter.
2. Install the EXPRESSCLUSTER X SingleServerSafe and re-create the servers.
   For details about the installation procedure, see "3. *Installing EXPRESSCLUSTER X SingleServerSafe*" in this guide.

4.4 Upgrading to EXPRESSCLUSTER X

When upgrading EXPRESSCLUSTER X SingleServerSafe to EXPRESSCLUSTER X, you can migrate the configuration data created using the Cluster WebUI (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 Cluster WebUI after creation, you can back up the configuration data by using the clpcfctrl command. Refer to "Applying and backing up configuration data (clpcfctrl command)" in "Backing up the configuration data (clpcfctrl --pull)" - "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 "4.2.1. *Uninstalling EXPRESSCLUSTER Server*" 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

FIVE

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:

5.1 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
4.3.4-1	Installation Guide	6th Edition	
	Configuration Guide	2nd Edition	
	Operation Guide	3rd Edition	
	Legacy Feature Guide	2nd Edition	

5.2 New features and improvements

The following features and improvements have been released.

No.	Internal Version	Contents
1	4.0.0-1	Management GUI has been upgraded to Cluster WebUI.
2	4.0.0-1	HTTPS is supported for Cluster WebUI and WebManager.
3	4.0.0-1	The fixed term license is released.
4	4.0.0-1	The supported operating systems have been expanded.
5	4.0.0-1	"systemd" is supported.
6	4.0.0-1	Oracle monitor resource supports Oracle Database 12c R2.
7	4.0.0-1	MySQL monitor resource supports MariaDB 10.2.
8	4.0.0-1	PostgreSQL monitor resource supports PowerGres on Linux 9.6.
9	4.0.0-1	SQL Server monitor resource has been added.
10	4.0.0-1	ODBC monitor resource has been added.
11	4.0.0-1	WebOTX monitor resource now supports WebOTX V10.1.
12	4.0.0-1	JVM monitor resource now supports Apache Tomcat 9.0.
13	4.0.0-1	JVM monitor resource now supports WebOTX V10.1.
14	4.0.0-1	The following monitor targets have been added to JVM monitor resource. • CodeHeap non-nmethods • CodeHeap profiled nmethods • CodeHeap non-profiled nmethods • Compressed Class Space
15	4.0.0-1	Monitoring behavior to detect error or timeout has been improved.
16	4.0.0-1	The function to execute a script before or after group resource activation or deactivation has been added.
17	4.0.0-1	Internal communication has been improved to save TCP port usage.
18	4.0.0-1	The list of files for log collection has been revised.
19	4.0.1-1	The newly released kernel is now supported.
20	4.0.1-1	When HTTPS is unavailable in WebManager due to incorrect settings, messages are output to syslog and alert log.
21	4.1.0-1	The newly released kernel is now supported.
22	4.1.0-1	Red Hat Enterprise Linux 7.6 is now supported.
23	4.1.0-1	SUSE Linux Enterprise Server 12 SP2 is now supported.
24	4.1.0-1	Amazon Linux 2 is now supported.
25	4.1.0-1	Oracle Linux 7.5 is now supported.
26	4.1.0-1	Oracle monitor resource supports Oracle Database 18c.
27	4.1.0-1	Oracle monitor resource supports Oracle Database 19c.
28	4.1.0-1	PostgreSQL monitor resource supports PostgreSQL 11.
29	4.1.0-1	PostgreSQL monitor resource supports PowerGres V11.
30	4.1.0-1	MySQL monitor resource supports MySQL8.0.
31	4.1.0-1	MySQL monitor resource supports MariaDB10.3.
32	4.1.0-1	Cluster WebUI supports cluster construction and reconfiguration.
33	4.1.0-1	The number of settings has been increased that can apply a changed cluster configuration without the suspension of business.
34	4.1.0-1	The Process resource monitor resource has been added to integrate the process resource monitor functions of the System monitor resource.
35	4.1.0-1	System resource statistics information collection function is added.
36	4.1.0-1	A function has been added to save as cluster statistical information the operation statuses of failover groups, group resources and monitor resources.

Continued on next page

Table 5.2 – continued from previous page

No.	Internal Version	Contents
37	4.1.0-1	The function to wait for the asynchronous script monitoring to start is added to custom monitor resource.
38	4.1.0-1	A setting has been added to wait for stopping the custom monitor resource before stopping group resources when the cluster is stopped.
39	4.1.0-1	SSL and TLS 1.0 are disabled for HTTPS connections to the WebManager server.
40	4.1.0-1	The default value of shutdown monitoring has been changed from Always execute to Execute when the group deactivation has been failed.
41	4.1.1-1	Asianux Server 7 SP3 is now supported.
42	4.1.1-1	Legibility and operability of Cluster WebUI have been improved.
43	4.1.2-1	The newly released kernel is now supported.
44	4.1.2-1	OpenSSL 1.1.1 is supported for Cluster WebUI and HTTP monitor resource.
45	4.2.0-1	A RESTful API has been added which allows the operation and status collection of the cluster.
46	4.2.0-1	The process of collecting cluster information has been improved in Cluster WebUI and commands.
47	4.2.0-1	A function has been added for checking cluster configuration data.
48	4.2.0-1	A function has been added for disabling the automatic group start and the restoration during the activation/deactivation failure of a group resource.
49	4.2.0-1	The license management command has allowed reconstructing a fixed-term license in deleting a cluster node.
50	4.2.0-1	The Cluster WebUI can now be logged in as the user of the OS.
51	4.2.0-1	The conditions for setting a wait for stopping a group have been expanded.
52	4.2.0-1	A function has been added to Cluster WebUI for displaying estimated time to start/stop a group.
53	4.2.0-1	A newly released kernel has been supported.
54	4.2.0-1	Red Hat Enterprise Linux 7.7 has been supported.
55	4.2.0-1	SUSE LINUX Enterprise Server 15 has been supported.
56	4.2.0-1	SUSE LINUX Enterprise Server 15 SP1 has been supported.
57	4.2.0-1	SUSE LINUX Enterprise Server 12 SP4 has been supported.
58	4.2.0-1	Oracle Linux 7.7 has been supported.
59	4.2.0-1	Ubuntu 18.04.3 LTS has been supported.
60	4.2.0-1	For Cluster WebUI and the clpstat command, the display in the state of a stopped/suspended cluster has been improved.
61	4.2.0-1	A log collection pattern of system statistics has been added.
62	4.2.0-1	Commands have been added for displaying estimated time to start/stop a group and time the monitor resource takes for monitoring.
63	4.2.0-1	The output destination of system resource statistics has been changed.
64	4.2.0-1	The data on collecting system resource statistics has been expanded.
65	4.2.0-1	The HTTP monitor resource has supported basic authentication.
66	4.2.0-1	The DB2 monitor resource has supported DB2 v11.5.
67	4.2.0-1	The MySQL monitor resource has supported MariaDB 10.4.
68	4.2.0-1	The SQL Server monitor resource has supported SQL Server 2019.
69	4.2.0-1	The alert log data to be outputted for the time-out of a disk monitor resource has been improved.
70	4.2.2-1	The newly released kernel is now supported.
71	4.2.2-1	Red Hat Enterprise Linux 7.8 is now supported.
72	4.2.2-1	Red Hat Enterprise Linux 8.1 is now supported.
73	4.2.2-1	MIRACLE LINUX 8 Asianux Inside is now supported.
74	4.2.2-1	RESTful API now supports new values for group resource status information.

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Table 5.2 – continued from previous page

No.	Internal Version	Contents
75	4.2.2-1	PostgreSQL monitor resource supports PostgreSQL 12.
76	4.3.0-1	A newly released kernel has been supported.
77	4.3.0-1	Red Hat Enterprise Linux 7.9 has been supported.
78	4.3.0-1	Red Hat Enterprise Linux 8.2 has been supported.
79	4.3.0-1	Ubuntu 20.04.1 LTS has been supported.
80	4.3.0-1	SUSE LINUX Enterprise Server 12 SP5 has been supported.
81	4.3.0-1	SUSE LINUX Enterprise Server 15 SP2 has been supported.
82	4.3.0-1	RESTful APIs now allow adjusting/seeing the timeout extension rate for monitor resources and heartbeats.
83	4.3.0-1	RESTful APIs enhanced the functionality equivalent to the clprexec command.
84	4.3.0-1	RESTful APIs now allow setting the permission (for operation/reference) for each user group/IP address.
85	4.3.0-1	Improved Cluster WebUI to display only resource types compatible with the system environment in adding a resource.
86	4.3.0-1	Added a function to Cluster WebUI for automatically acquiring AWS-relevant resource settings.
87	4.3.0-1	Changed the cluster action in response to the expiration of a fixed-term license.
88	4.3.0-1	Added a function for preventing group resources from being automatically started in starting the failover group.
89	4.3.0-1	Increased the default value of the internal communication timeout for the clpgrp/clprsc/clpdown/clpstdn/clpcl command.
90	4.3.0-1	Added a function to the alert service for sending messages to Amazon SNS.
91	4.3.0-1	Added a function for sending metrics (i.e. data on the monitoring process time taken by the monitor resource) to Amazon CloudWatch.
92	4.3.0-1	Log data collectors (e.g. fluentd) are now supported.
93	4.3.0-1	Added a function for sending metrics (i.e. data on the monitoring process time taken by the monitor resource) to StatsD.
94	4.3.0-1	Added a function for outputting the Cluster WebUI operation log to the server.
95	4.3.0-1	Added a function for acquiring a memory dump in response to a detected monitoring timeout.
96	4.3.0-1	Cluster WebUI now allows checking the details of alert logs (e.g. measures).
97	4.3.0-1	The config mode of Cluster WebUI now allows seeing the group resource list from [Group Properties].
98	4.3.0-1	The config mode of Cluster WebUI now allows seeing the monitor resource list from [Monitor Common Properties].
99	4.3.0-1	Cluster WebUI now supports Microsoft Edge (Chromium-based).
100	4.3.0-1	Improved Cluster WebUI to include messages as a target for the advanced filtering of alert logs.
101	4.3.0-1	Improved the delay warning message of monitor resources.
102	4.3.0-1	Improved the message in response to a failure detected during the process of starting a group targeted for monitoring at activation.
103	4.3.0-1	Improved Cluster WebUI for the layout of operation icons in the [Status] screen.
104	4.3.0-1	Cluster WebUI now maintains user-customized settings in [Dashboard], even through a restart of the browser.
105	4.3.0-1	Improved the functionality to register multiple system monitor resources.
106	4.3.0-1	Improved the functionality to register multiple process resource monitor resources.
107	4.3.0-1	Added a function to process resource monitor resources for targeting particular processes.
108	4.3.0-1	HTTP monitor resources now support GET-request monitoring.

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Table 5.2 – continued from previous page

No.	Internal Version	Contents
109	4.3.0-1	Added REST API as a monitoring method of Weblogic monitor resources.
110	4.3.0-1	Added a function for outputting a warning message in response to a shortage of zip/unzip packages for collecting system resource information.
111	4.3.0-1	Changed the default NFS version of NFS monitor resources to v4.
112	4.3.0-1	WebOTX monitor resources now support WebOTX V10.3.
113	4.3.0-1	JVM monitor resources now support WebOTX V10.3.
114	4.2.0-1	Weblogic monitor resources now support Oracle WebLogic Server 14c (14.1.1).
115	4.2.0-1	JVM monitor resources now support Oracle WebLogic Server 14c (14.1.1).
116	4.3.0-1	Samba monitor resources now support Samba 4.13.
117	4.3.0-1	JVM monitor resources now support Java 11.
118	4.3.2-1	MIRACLE LINUX 8.4 has been supported.
119	4.3.2-1	Red Hat Enterprise Linux 8.4 has been supported.

5.3 Corrected information

Modification has been performed on the following minor versions.

Critical level:

L

Operation may stop. Data destruction or mirror inconsistency may occur.
Setup may not be executable.

M

Operation stop should be planned for recovery.
The system may stop if duplicated with another fault.

S

A matter of displaying messages.
Recovery can be made without stopping the system.

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
1	4.0.1-1 /4.0.0-1	Two fixed-term licenses of the same product may be enabled.	S	This problem occurs on rare occasions if the following two operations are performed simultaneously. - An unused license in stock is automatically enabled when the license expires. - A new license is registered by the command for registering a license.
2	4.0.1-1 / 4.0.0-1	When using the JVM monitor resources, memory leak may occur in the Java VM to be monitored.	M	This problem may occur under the following condition: - [Monitor the number of Active Threads] on [Thread] tab in [Tuning] properties on [Monitor (special)] tab is set to on.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
3	4.0.1-1 / 4.0.0-1	Memory leak may occur In Java process of JVM monitor resources.	M	If all the following conditions are met, this problem may occur: - All the settings in the [Tuning] properties on the [Monitor (special)] tab are set to OFF. - More than one JVM monitor resource are created.
4	4.0.1-1 / 4.0.0-1	The JVM statistics log (jramemory.stat) is output, even if the following parameters are set to OFF in JVM monitor resources. - [Monitor (special)] tab - [Tuning] properties - [Memory] tab - [Memory Heap Memory Rate] - [Memory (special)] tab - [Tuning] properties - [Memory] tab - [Monitor Non-Heap Memory Rate]	S	If all the following conditions are met, this problem inevitably occurs: - [Oracle Java (usage monitoring)] is selected for [JVM type] on the [Monitor (special)] tab. - [Monitor Heap Memory Rate] on the [Memory] tab in the [Tuning] properties on the [Monitor (special)] tab is set to OFF. - [Monitor Non-Heap Memory Rate] on the [Memory] tab in the [Tuning] properties on the [Monitor (special)] tab is set to OFF.
5	4.1.0-1 / 4.0.0-1	In SQL Server monitor, SQL statement is left in the DB cache, which may cause a performance problem.	S	This problem occurs if Level 2 is selected as a monitor level.
6	4.1.0-1 / 4.0.0-1	In SQL Server monitor, the status is indicated as "Error" while it is supposed to be "Warning" instead, such as when the monitor user name is invalid.	S	This problem occurs when there is a flaw in a monitoring parameter setting.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
7	4.1.0-1 / 4.0.0-1	In ODBC monitor, the status is indicated as "Error" while it is supposed to be "Warning" instead, such as when the monitor user name is invalid.	S	This problem occurs when there is a flaw in setting a monitoring parameter.
8	4.1.0-1 / 4.0.0-1	In Database Agent, the recovery action for error detection is executed 30 seconds after it is set to.	S	This problem inevitably occurs when recovery action is executed.
9	4.1.0-1 / 4.0.0-1	In Database Agent, the time-out ratio cannot be set by the clptoratio command.	S	This problem inevitably occurs.
10	4.1.0-1 / 4.0.0-1	Suspending a cluster may time out.	M	This problem occurs on rare occasions when the cluster is suspended during its resume.
11	4.1.0-1 / 4.0.0-1	The clpstat command displays an inappropriate status of a cluster being processed for stopping.	S	This problem occurs when the clpstat command is executed between the start and the end of the process for stopping the cluster.
12	4.1.0-1 / 4.0.0-1	Although a group resource is still being processed for stopping, its status may be shown as stopped.	M	This problem occurs when either of the following is performed for a group resource whose process for stopping has failed: - Start-up - Stop

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
13	4.1.0-1 / 4.0.0-1	Failover may start earlier than the server is reset by shutdown monitoring.	L	When a delay occurs in shutdown monitoring due to high load on the system, this problem occurs on rare occasions.
14	4.1.0-1 / 4.0.0-1	The setting changes in Communication method for Internal Logs of cluster properties may not be applied properly.	S	This problem occurs if Communication method for Internal Logs is changed into other than UNIX Domain at the first time when the cluster is configured.
15	4.1.0-1 / 4.0.0-1	The following problems occur in the the script log of EXEC resource and custom monitor resource. - All the log output times of the asynchronous script are indicated as the process end time. - Temporarily saved files of log may be left.	S	This problem occurs if the log rotate function of a script is enabled.
16	4.1.0-1 / 4.0.0-1	Even if a timeout is detected in disk monitor resource, "Warning" is given instead of "Error".	M	This problem may occur when detecting timeout in disk monitor resource.
17	4.1.1-1 / 4.1.0-1	Switching operation to Config Mode fails in Cluster WebUI.	S	This problem occurs when accessing Cluster WebUI via HTTPS with a specific web browser.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
18	4.2.0-1 / 4.0.0-1 to 4.1.2-1	Executing the clpstat command may display the following error message: Could not connect to the server. Internal error.Check if memory or OS resources are sufficient.	S	This problem rarely occurs when running the clpstat command comes immediately after starting up the cluster.
19	4.2.0-1 / 4.0.0-1 to 4.1.2-1	Applying configuration data may request the user to take an unnecessary step of restarting the WebManager server.	S	This problem occurs when the following two different modifications were simultaneously made: a modification requiring a shutdown and restart of the cluster and a modification requiring a restart of the WebManager server.
20	4.2.0-1 / 4.0.0-1 to 4.1.2-1	Applying configuration data may request the user to take an unnecessary step of suspending/resuming..	S	This problem may occur when the properties of an automatically registered monitor resource are referenced.
21	4.2.0-1 / 4.0.0-1 to 4.1.2-1	A multi-target monitor resource may not work as configured with the abnormality and warning thresholds.	S	• This problem occurs when multiple multi-target monitor resources were set and their default abnormality and warning thresholds were changed. • This problem also occurs when the abnormality threshold of a single multi-target monitor resource was configured as follows: – Changed to **Specify Number** – Changed to **Same as Number of Members**

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
22	4.2.0-1 / 4.0.0-1 to 4.1.2-1	EXPRESSCLUSTER X SingleServerSafe may not be started.	M	This problem occurs when the host name is 32 bytes or more.
23	4.2.0-1 / 4.0.0-1 to 4.1.2-1	Activating a dynamic DNS resource may fail.	M	This problem rarely occurs when the total size of the resource and host names is 124 bytes or more.
24	4.2.0-1 / 4.0.0-1 to 4.1.2-1	The rpcbind service may be accidentally started.	S	This problem may occur during log collection.
25	4.2.0-1 / 4.0.0-1 to 4.1.2-1	The clusterpro_evt service may be started before nfs.	S	This problem occurs in an init.d environment.
26	4.2.0-1 / 4.0.0-1 to 4.1.2-1	The EXPRESSCLUSTER Web Alert service may abend.	S	This problem occurs very rarely regardless of conditions.
27	4.2.0-1 / 4.0.0-1 to 4.1.2-1	Even if deactivating a group or resource fails, the user may receive a notification that the deactivation has succeeded.	S	This problem may occur during an emergency shutdown.
28	4.2.0-1 / 4.0.0-1 to 4.1.2-1	The PID monitor resource may fail in error detection when a target process disappears.	S	This problem occurs when a new process was started with the same process ID as the lost process during a monitoring interval.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
29	4.2.0-1 / 4.0.0-1 to 4.1.2-1	Error detection does not work as configured in **Monitoring number of opening files(kernel limit)** of the process resource monitor resource.	S	This problem always occurs with **Monitoring number of opening files(kernel limit)** enabled.
30	4.2.0-1 / 4.0.0-1 to 4.1.2-1	A stopping EXEC resource may forcibly terminate another process.	M	This problem occurs when an EXEC resource meets all of the following conditions: • A user application is set. • Nothing is set as the stop path. • The start script is set as an asynchronous script. • A new process was started with the same process ID as the target process.
31	4.2.0-1 / 4.0.0-1 to 4.1.2-1	When an LVM mirror is a target of the volume manager monitor resource, the degeneration status of the LVM mirror is indicated as an error.	S	This problem occurs when the LVM mirror becomes degenerate.
32	4.2.2-1 / 4.2.0-1	Checking the port number range displays an invalid result in the cluster configuration data checking function.	S	The problem occurs when the checked port number is within the following range: maximum number of ephemeral ports < a number of the checked port <= maximum number of the ports(65535)
33	4.2.2-1 / 4.0.0-1 to 4.2.1-1	Some minor problems in Cluster WebUI.	S	These problems occur when using Cluster WebUI.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
34	4.3.0-1 / 4.0.0-1 to 4.2.2-1	Of the alert destination settings, the [Alert Extension] function cannot be used.	S	This problem always occurs when [Alert Extension] is selected as an alert destination.
35	4.3.0-1 / 4.1.0-1 to 4.2.2-1	During a server shutdown, an unnecessary reset may be done through shutdown stall monitoring.	S	This problem may occur when a server is shut down through NP resolution or a failure in stopping the group resource.
36	4.3.0-1 / 4.2.0-1 to 4.2.2-1	The EXPRESSCLUSTER Information Base service may abend.	S	This problem very rarely occurs with a shortage of the OS resource.
37	4.3.0-1 / 4.1.0-1 to 4.2.2-1	An unnecessary packet is sent to an interconnect for which an unused server is set.	S	This problem always occurs when an unused server is set for an interconnect.
38	4.3.0-1 / 4.2.0-1 to 4.2.2-1	Cluster WebUI does not allow moving to the config mode.	S	This problem occurs when a password is set by the OS authentication method and the setting is applied with only a group without the operation right.
39	4.3.0-1 / 4.2.0-1 to 4.2.2-1	In the [Status] screen of Cluster WebUI, the [Start server service] button is disabled.	S	This problem occurs with a stop of the service of a server that is connected with Cluster WebUI.
40	4.3.0-1 / 4.1.0-1 to 4.2.2-1	For the config mode of Cluster WebUI, when a dependent resource is removed from the [Dependency] tab of [Resource Properties], the display may become wrong.	S	This problem occurs when a dependent resource is removed.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
41	4.3.0-1 / 4.1.0-1 to 4.2.2-1	Cluster WebUI does not allow saving a script file (edited in adding a group resource and a monitor resource) through the right path.	S	This problem occurs in the following case: The user edits a script file in the screen for adding a group resource and a monitor resource, returns to the previous screen, and then changes the names of the added resources.
42	4.3.0-1 / 4.1.0-1 to 4.2.2-1	Cluster WebUI does not allow clicking the [Browse] button of [Target Resource] in [Monitor Timing], in the [Monitor(common)] tab of [Monitor Resource Properties].	S	This problem occurs when the user opens [Monitor Resource Properties] of a monitor resource in which [Monitor Timing] was changed from [Always] to [Active] and then registered.
43	4.3.0-1 / 4.1.0-1 to 4.2.2-1	In the config mode of Cluster WebUI, an untimely message appears reading that the current cluster configuration will be discarded.	S	This problem occurs when the user executes any of the following with the configuration data unchanged, and then clicks the button to import or acquire the setting: - Exporting the setting - Canceling the application of the setting - Checking the cluster configuration data
44	4.3.0-1 / 4.1.0-1 to 4.2.2-1	System monitor resources do not detect failure if the user specifies a monitor resource name of nine or more letters.	S	This problem always occurs when the user specifies the monitor resource name of nine or more letters.
45	4.3.0-1 / 4.1.0-1 to 4.2.2-1	Process resource monitor resources do not detect failure if the user specifies a monitor resource name of nine or more letters.	S	This problem always occurs when the user specifies the monitor resource name of nine or more letters.
46	4.3.0-1 / 2.1.0-1 to 4.2.2-1	In the [Status] screen of Cluster WebUI, the [Protocol] data, which is shown in the detailed properties of an HTTP monitor resource, is incorrectly displayed.	S	This problem always occurs.

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Table 5.3 – continued from previous page

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency
47	4.3.2-1 / 3.0.0-1 to 4.3.0-1	TUR, a monitoring method of disk monitor resources, fails to detect the monitoring error of target device disappearance.	S	This problem occurs when the target device of a disk monitor resource, specifying TUR as the monitoring method, disappears from the OS.
48	4.3.2-1 / 4.3.0-1	For RHEL8-based OSs, the following settings on a WebLogic monitor resource cause a failure of monitoring: - [Monitor Type]: [REST API] - [Protocol]: [HTTPS]	S	This problem always occurs in RHEL8-based OSs with the following settings: - [Monitor Type]: [REST API] - [Protocol]: [HTTPS]
49	4.3.2-1 / 4.2.0-1 to 4.3.0-1	A PID monitor resource detects a monitoring error by mistake.	M	This problem occurs when, on a server with the OS started 240 days ago, an EXEC resource is started and the PID monitor resource begins monitoring.
50	4.3.3-1 / 4.3.2-1	For Oracle monitor resources: When the monitoring times out, the retrying process may not work normally.	M	This problem occurs with an Oracle monitor resource when the monitoring process times out.
51	4.3.4-1 / 1.0.0-1 to 4.3.3-1	Performing the keepalive reset and keepalive panic may fail.	S	This problem occurs when the major number (10) and the minor number (241), both of which should be used by the keepalive driver, are used by another driver.
52	4.3.4-1 / 4.3.0-1 to 4.3.3-1	The monitoring process of a Tuxedo monitor resource may abend, leading to a monitoring error.	M	The occurrence of this problem depends on the timing.
53	4.3.4-1 / 4.3.0-1 to 4.3.3-1	The clpwebmc process may abend.	S	This problem occurs on very rare occasions during cluster operation.

CHAPTER

SIX

ADDITIONAL INFORMATION

This chapter provides tips on installing EXPRESSCLUSTER X SingleServerSafe.
This chapter covers:

6.1 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_ib	EXPRESSCLUSTER Information Base: Service for managing EXPRESSCLUSTER information.
clusterpro_api	EXPRESSCLUSTER API: Service for controlling the EXPRESSCLUSTER Restful API features.
clusterpro_alertsync	EXPRESSCLUSTER alert synchronization: Service for alert synchronization
clusterpro_webmgr	EXPRESSCLUSTER WebManager: WebManager Server service

6.2 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 "3. *Installing EXPRESSCLUSTER X SingleServerSafe*" in this guide.

CHAPTER

SEVEN

NOTES AND RESTRICTIONS

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

7.1 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.

7.1.1 /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).

7.1.2 Dependent library

libxml2

Install libxml2 when installing the operating system.

7.1.3 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.

7.1.4 Required package

tar

- When installing the OS, install tar command at the same time.

7.1.5 SELinux settings

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

7.1.6 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.

7.2 Before installing EXPRESSCLUSTER X SingleServerSafe

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

7.2.1 Communication port number

EXPRESSCLUSTER X SingleServerSafe employs the following port numbers by default. You can change the port number by using the Cluster WebUI.
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[4]	Server	29001/TCP	Internal communication
Server	Automatic allocation[4]	Server	29002/TCP	Data transfer
Server	Automatic allocation[4]	Server	29002/UDP	Heartbeat
Server	Automatic allocation[4]	Server	29003/UDP	Alert synchronization
Server	Automatic allocation[4]	Server	29008/TCP	Cluster information management
Server	Automatic allocation[4]	Server	29010/TCP	Restful API internal communication
Server	Automatic allocation[4]	Server	XXXX[5]/UDP	Internal communication for log

- Server - Client

From		To		Remarks
Restful API client	Automatic allocation[4]	Server	29009/TCP	HTTP communication

- Server - Cluster WebUI

From		To		Remarks
Cluster WebUI	Automatic allocation[4]	Server	29003/TCP	http communication

- Others

[4] An available port number at the time is automatically assigned.
[5] 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.

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[4]	Server	Management port number set by the Cluster WebUI[6]	JVM monitor
Server	Automatic allocation[4]	Monitoring target	Connection port number set by the Cluster WebUI[6]	JVM monitor
Server	Automatic allocation[4]	Server	Management port number set by Cluster WebUI for load balancer linkage[6]	JVM monitor
Server	Automatic allocation[4]	BIG-IP LTM	Communication port number set by the Cluster WebUI[6]	JVM monitor

7.2.2 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.

[6] The JVM monitor resource uses the following four port numbers.
- A management port number is a port number that the JVM monitor resource internally uses. To set this number, use the **Connection Setting** dialog box opened from the **JVM monitor** tab in **Cluster Properties** of the Cluster WebUI. For details, refer to "Details of other settings" in the "EXPRESSCLUSTER X SingleServerSafe 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 Cluster WebUI for the corresponding JVM monitor resource. For details, refer to "Monitor resource details" in the "EXPRESSCLUSTER X SingleServerSafe 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 Properties** of the Cluster WebUI. For details, refer to "Details of other settings" in the "EXPRESSCLUSTER X SingleServerSafe 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 Properties** of the Cluster WebUI. For details, refer to "Details of other settings" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

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
```

7.2.3 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

7.2.4 OpenIPMI

- The following functions use 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, OpenIPMI is used.
- EXPRESSCLUSTER X SingleServerSafe does not come with ipmiutil. The user is required to install the rpm file for OpenIPMI separately.
- Check whether your servers (hardware) support OpenIPMI in advance.
- Note that hardware conforming to the IPMI specifications might not be able to run 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 OpenIPMI both use BMC (Baseboard Management Controller) on the server, which causes a conflict and makes monitoring impossible.

7.2.5 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 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.

7.2.6 Collecting logs

- For SUSE LINUX 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

7.2.7 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

7.2.8 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.

7.2.9 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.

7.2.10 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.

7.2.11 Samba monitor resources

- In order to support SMB protocol version 2.0 or later, NTLM authentication, and SMB signature, Samba monitor resources use a shared library 'libsmbclient.so.0' for the internal version 4.1.0-1 or later. Confirm that it is installed since libsmbclient.so.0 is included in libsmbclient package.
- If the version of libsmbclient is 3 or earlier (for example, libsmbclient included in RHEL 6), .you can specify only either 139 or 445 for **Port Number**. Specify the port number included in smb ports of smb.conf.
- The version of SMB protocol supported by Samba monitor resource depends on the installed libsmbclient. You can confirm whether to receive supports from libsmbclient by testing a connection to shared area of the monitoring target by using the smbclient command which each distributer provides.

7.3 Version up EXPRESSCLUSTER X SingleServerSafe

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

7.3.1 Changed functions

The following describes the functions changed for each of the versions:

Internal Version 4.0.0-1

- Management tool
  The default management tool has been changed to Cluster WebUI. If you want to use the conventional WebManager as the management tool, specify "http://management IP address of management group or actual IP address:port number of the server in which EXPRESSCLUSTER Server is installed/main.htm" in the address bar of a web browser.

Internal Version 4.1.0-1

- Configuration tool
  The default configuration tool has been changed to Cluster WebUI, which allows you to manage and configure clusters with Cluster WebUI.
- Cluster statistical information collection function
  By default, the cluster statistical information collection function saves statistics information files under the installation path. To avoid saving the files for such reasons as insufficient disk capacity, disable the cluster statistical information collection function. For more information on settings for this function, refer to "Details of other settings" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".
- System monitor resource
  The **System Resource Agent process settings** part of the system monitor resource has been separated to become a new monitor resource. Therefore, the conventional monitor settings of the **System Resource Agent process settings** are no longer valid. To continue the conventional monitoring, configure it by registering a new process resource monitor resource after upgrading EXPRESSCLUSTER. For more information on monitor settings for Process resource monitor resources, refer to "Setting up Process resource monitor resources" - "Monitor resource details" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

Internal Version 4.3.0-1

- Weblogic monitor resource
  REST API has been added as a new monitoring method. From this version, REST API is the default value for the monitoring method. At the version upgrade, reconfigure the monitoring method.
  The default value of the password has been changed. If you use weblogic that is the previous default value, reset the password default value.

7.3.2 Removed Functions

The following describes the functions removed for each of the versions:

Internal Version 4.0.0-1

- WebManager Mobile
- OracleAS monitor resource

7.3.3 Removed Parameters

The following tables show the parameters configurable with Cluster WebUI but removed for each of the versions:

Internal Version 4.0.0-1

Cluster

Parameters	Default
Cluster Properties	
Alert Service Tab	
• Use Alert Extension	Off
WebManager Tab	
• Enable WebManager Mobile Connection	Off
Web Manager Mobile Password	
• Password for Operation	-
• Password for Reference	-

JVM monitor resource

Parameters	Default
JVM Monitor Resource Properties	
Monitor(special) Tab	
Memory Tab (when Oracle Java is selected for JVM Type)	
• Monitor Virtual Memory Usage	2048 MB
Memory Tab (when Oracle JRockit is selected for JVM Type)	
• Monitor Virtual Memory Usage	2048 MB
Memory Tab(when Oracle Java(usage monitoring) is selected for JVM Type)	
• Monitor Virtual Memory Usage	2048 MB

Internal Version 4.1.0-1

Cluster

Parameters	Default
Cluster Properties	
WebManager Tab	
WebManager Tuning Properties	
Behavior Tab	
• Max. Number of Alert Records on Viewer	300
• Client Data Update Method	Real Time

7.3.4 Changed Default Values

The following tables show the parameters which are configurable with Cluster WebUI but whose defaults have been changed for each of the versions:

- To continue using a "Default value before update" after the upgrade, change the corresponding "Default value after update" to the desired one.
- Any setting other than a "Default value before update" is inherited to the upgraded version and therefore does not need to be restored.

Internal Version 4.0.0-1

Cluster

Parameters	Default value before update	Default value after update
Cluster Properties		
Monitor Tab		
• Method	softdog	keepalive
JVM monitor Tab		
• Maximum Java Heap Size	7 MB	16 MB

PID monitor resource

Parameters	Default value before update	Default value after update
PID Monitor Resource Properties		
Monitor(common)Tab		
• Wait Time to Start Monitoring	0 sec	3 sec
• Do Not Retry at Timeout Occurrence	Off	On
• Do not Execute Recovery Action at Timeout Occurrence	Off	On

User mode monitor resource

Parameters	Default value before update	Default value before update
User mode Monitor Resource Properties		
Monitor(special) Tab		
• Method	softdog	keepalive

NIC Link Up/Down monitor resource

Parameters	Default value before update	Default value before update
NIC Link Up/Down Monitor Resource Properties		
Monitor(common) Tab		
• Timeout	60 sec	180 sec
• Do Not Retry at Timeout Occurrence	Off	On
• Do not Execute Recovery Action at Timeout Occurrence	Off	On

Process name monitor resource

Parameters	Default value before update	Default value before update
Process Monitor Resource Properties		
Monitor(common) tab		
• Wait Time to Start Monitoring	0 sec	3 sec
• Do Not Retry at Timeout Occurrence	Off	On
• Do not Execute Recovery Action at Timeout Occurrence	Off	On

DB2 monitor resource

Parameters	Default value before update	Default value before update
DB2 Monitor Resource Properties		
Monitor(special) Tab		
• Password	ibmdb2	-
• Library Path	`/opt/IBM/db2/V8.2/lib/libdb2.so`	`/opt/ibm/db2/V11.1/lib64/libdb2.so`

MySQL monitor resource

Parameters	Default value before update	Default value before update
MySQL Monitor Resource Properties		
Monitor(special) Tab		
• Storage Engine	MyISAM	InnoDB
• Library Path	`/usr/lib/mysql/libmysqlclient.so.15`	`/usr/lib64/mysql/libmysqlclient.so.20`

Oracle monitor resource

Parameters	Default value before update	Default value before update
Oracle Monitor Resource Properties		
Monitor(special) Tab		
• Password	change_on_install	-
• Library Path	`/opt/app/oracle/product/10.2.0/db_1/lib/libclntsh.so.10.1`	`/u01/app/oracle/product/12.2.0/dbhome_1/lib/libclntsh.so.12.1`

PostgreSQL monitor resource

Parameters	Default value before update	Default value before update
PostgreSQL Monitor Resource Properties		
Monitor(special) Tab		
• Library Path	`/usr/lib/libpq.so.3.0`	`/opt/PostgreSQL/10/lib/libpq.so.5.10`

Sybase monitor resource

Parameters	Default value before update	Default value before update
Sybase Monitor Resource Properties		
Monitor(special) Tab		
• Library Path	`/opt/sybase/OCS-12_5/lib/libsybdb.so`	`/opt/sap/OCS-16_0/lib/libsybdb64.so`

Tuxedo monitor resource

Parameters	Default value before update	Default value before update
Tuxedo Monitor Resource Properties		
Monitor(special) Tab		
• Library Path	`/opt/bea/tuxedo8.1/lib/libtux.so`	`/home/Oracle/tuxedo/tuxedo12.1.3.0.0/lib/libtux.so`

Weblogic monitor resource

Parameters	Default value before update	Default value before update
Weblogic Monitor Resource Properties		
Monitor(special) Tab		
• Domain Environment File	`/opt/bea/weblogic81/samples/domains/examples/setExamplesEnv.sh`	`/home/Oracle/product/Oracle_Home/user_projects/domains/base_domain/bin/setDomainEnv.sh`

JVM monitor resource

Parameters	Default value before update	Default value before update
JVM Monitor Resource Properties		
Monitor(common) Tab		
• Timeout	120 sec	180 sec

Internal Version 4.3.0-1

NFS monitor resource

Parameters	Default value before update	Default value before update
NFS Monitor Resource Properties		
Monitor(special) Tab		
• NFS Version	v2	v4

Weblogic monitor resource

Parameters	Default value before update	Default value after update
Weblogic Monitor Resource Properties		
Monitor(special) Tab		
• Password	weblogic	None

7.3.5 Moved Parameters

The following table shows the parameters which are configurable with Cluster WebUI but whose controls have been moved for each of the versions:

Internal Version 4.0.0-1

Before the change	After the change
[Cluster Properties] - [Recovery Tab] - [Max Reboot Count]	[Cluster Properties] - [Extension Tab] - [Max Reboot Count]
[Cluster Properties] - [Recovery Tab] - [Max Reboot Count Reset Time]	[Cluster Properties] - [Extension Tab] - [Max Reboot Count Reset Time]
[Cluster Properties] - [Recovery Tab] - [Use Forced Stop]	[Cluster Properties] - [Extension Tab] - [Use Forced Stop]
[Cluster Properties] - [Recovery Tab] - [Forced Stop Action]	[Cluster Properties] - [Extension Tab] - [Forced Stop Action]
[Cluster Properties] - [Recovery Tab] - [Forced Stop Timeout]	[Cluster Properties] - [Extension Tab] - [Forced Stop Timeout]
[Cluster Properties] - [Recovery Tab] - [Virtual Machine Forced Stop Setting]	[Cluster Properties] - [Extension Tab] - [Virtual Machine Forced Stop Setting]
[Cluster Properties] - [Recovery Tab] - [Execute Script for Forced Stop]	[Cluster Properties] - [Extension Tab] - [Execute Script for Forced Stop]
[Cluster Properties] - [Power Saving Tab] - [Use CPU Frequency Control]	[Cluster Properties] - [Extension Tab] - [Use CPU Frequency Control]
[Cluster Properties] - [Recovery Tab] - [Start Automatically After System Down]	[Cluster Properties] - [Extension Tab] - [Start Automatically After System Down]
[Cluster Properties] - [Exclusion Tab] - [Mount/Unmount Exclusion]	[Cluster Properties] - [Extension Tab] - [Exclude Mount/Unmount Commands]
[Cluster Properties]-[Recovery Tab]-[Disable Recovery Action Caused by Monitor Resource Error]	[Cluster Properties]-[Extension Tab]-[Disable cluster operation]-[Recovery Action when Monitor Resource Failure Detected]

CHAPTER

EIGHT

TROUBLESHOOTING

8.1 Error messages when installing the EXPRESSCLUSTER X SingleServerSafe

Behavior and Message	Cause	Solution
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.
error: package expressclssss-* is already installed	The EXPRESSCLUSTER X SingleServerSafe is already installed.	Uninstall the EXPRESSCLUSTER X SingleServerSafe and reinstall it.

8.2 Error messages when uninstalling the EXPRESSCLUSTER X SingleServerSafe

Behavior and Message	Cause	Solution
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.
error: expressclssss is running	The EXPRESSCLUSTER X SingleServerSafe is active.	Disable Auto Startup of services, restart the server, and uninstall the EXPRESSCLUSTER SingleServerSafe again.

8.3 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 configuration data created by the Cluster WebUI was distributed to all servers and then the server was shut down and rebooted, the Cluster WebUI showed the following message on the alert log and the server stopped: The license is not registered. (Product name:%1) %1: Product name	The server was shut down and rebooted without registering a license.	Register the license from the server.
After the configuration data created by the Cluster WebUI was distributed to all servers and the server is shut down and rebooted, the Cluster WebUI showed the following message on the alert log but the server is operating normally: The number of licenses is insufficient. The number of insufficient licenses is %1. (Product name:%2) %1: The number of licenses in short of supply %2: Product name	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 trial license has expired in %1. (Product name:%2) %1: Trial end date %2: Product name	The license has already expired.	Ask your sales agent for extension of the trial version license, or obtain and register the product version license.

Continued on next page

Table 8.3 – continued from previous page

Behavior and Message	Cause	Solution
While the cluster was operated on the fixed term license, the following message appeared. The fixed term license has expired in %1. (Product name:%2) %1: Fixed term end date %2: Product name	The license has already expired.	Obtain the license for the product version from the vendor, and then register the license.

CHAPTER

NINE

LEGAL NOTICE

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CHAPTER

TEN

REVISION HISTORY

Edition	Revised Date	Description
1st	Apr 09, 2021	New manual
2nd	Oct 15, 2021	Corrected typographical errors.
3rd	Oct 29, 2021	Corrected typographical errors.
4th	Feb 25, 2022	Corrected typographical errors.
5th	Apr 12, 2022	Updated Corrected information.
6th	Nov 04, 2022	Corresponds to the internal version 4.3.4-1.