



**EXPRESSCLUSTER X SingleServerSafe 5.1 for Windows
Installation Guide**

Release 4

NEC Corporation

Nov 17, 2023

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1.1 Who Should Use This Guide

The *EXPRESSCLUSTER X SingleServerSafe for Windows 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. It 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 upgrade EXPRESSCLUSTER X SingleServerSafe, uninstall and reinstall EXPRESSCLUSTER X SingleServerSafe, and upgrade to EXPRESSCLUSTER X.
- *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 manuals consists of the three 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.

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.	<code>clpstat -s [-h <i>host_name</i>]</code>
Monospace	Indicates path names, commands, system output (message, prompt, etc), directory, file names, functions and parameters.	<code>c:\Program files\EXPRESSCLUSTER</code>
bold	Indicates the value that a user actually enters from a command line.	Enter the following: clpcl -s -a
<i>italic</i>	Indicates that users should replace italicized part with values that they are actually working with.	<code>clpstat -s [-h <i>host_name</i>]</code>



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/>

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?*
- *2.2. Checking system requirements for EXPRESSCLUSTER X SingleServerSafe*
- *2.3. Preparing and verifying the server environment before installation*

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

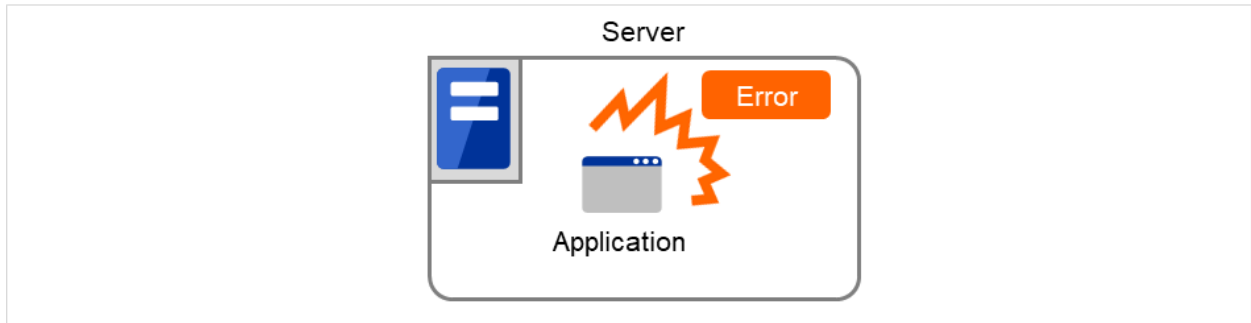


Fig. 2.1: Occurrence of failure

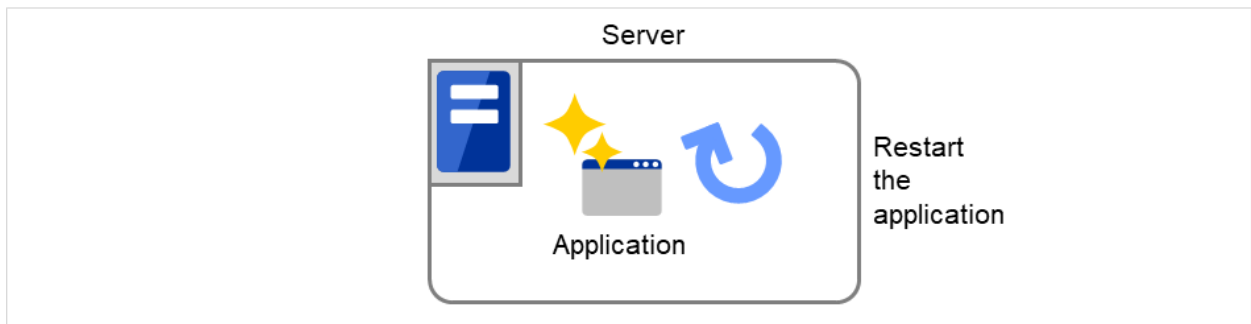


Fig. 2.2: Recovery from failure (Application restart)

2. Occurrence of hardware failure

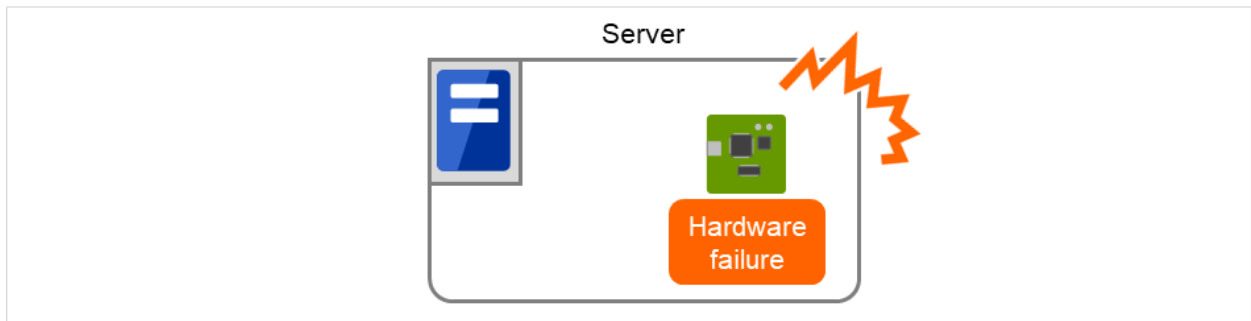


Fig. 2.3: Occurrence of failure

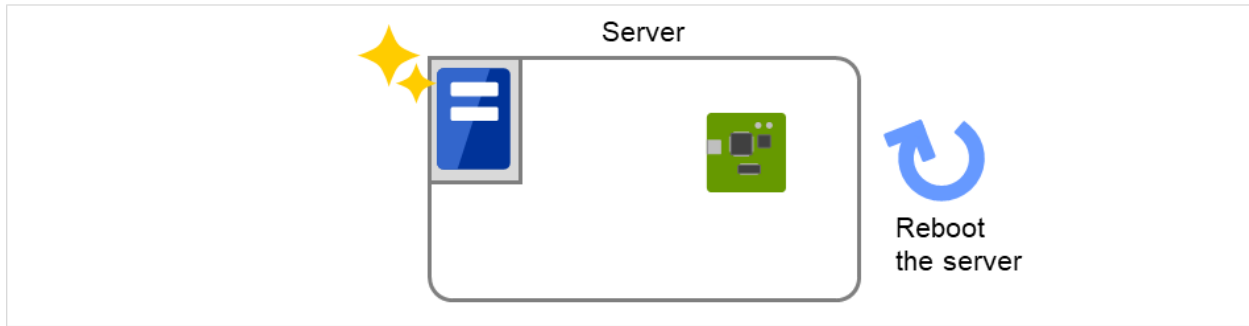


Fig. 2.4: Recovery from failure (Server restart)

2.1.1 EXPRESSCLUSTER X SingleServerSafe software configuration

EXPRESSCLUSTER X SingleServerSafe consists of following two software applications:

- a) EXPRESSCLUSTER Server (Main module)

This is a main module of EXPRESSCLUSTER X SingleServerSafe. Install it on the server.

- b) EXPRESSCLUSTER Cluster WebUI

This is a tool to create the configuration data of EXPRESSCLUSTER X SingleServerSafe and to manage EXPRESSCLUSTER X SingleServerSafe operations.

It uses a Web browser as a user interface.

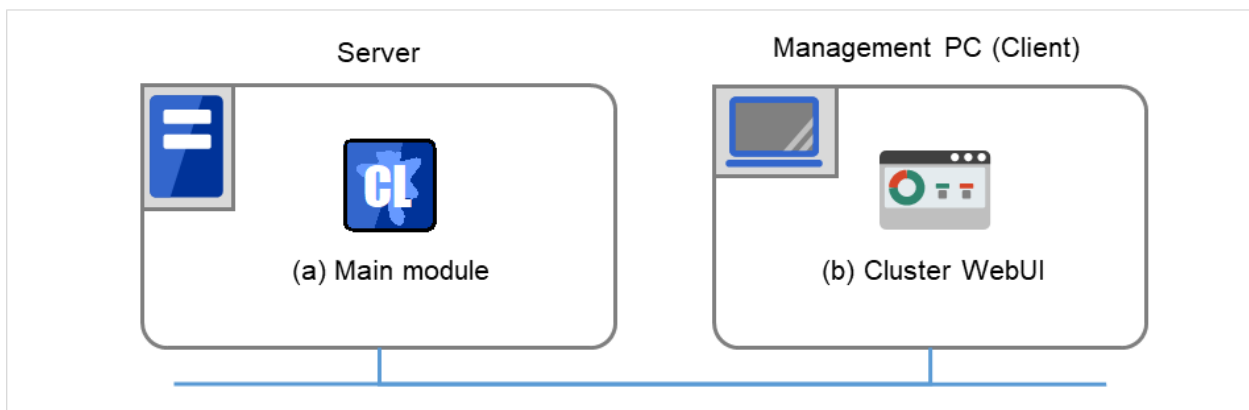


Fig. 2.5: Software configuration

2.2 Checking system requirements for EXPRESSCLUSTER X Single-ServerSafe

Check the configuration and operation requirements below for each machine to be used.

- EXPRESSCLUSTER X SingleServerSafe

Machine on which the EXPRESSCLUSTER X SingleServerSafe can be installed	PC that supports one of the following operating systems.
Supported operation systems	Windows Server 2016 Standard Windows Server 2016 Datacenter Windows Server 2019 Standard Windows Server 2019 Datacenter Windows Server 2022 Standard Windows Server 2022 Datacenter
Memory size	User mode: 384 MB ¹ Kernel mode: 32MB
Disk Size	Initial size at installation: 100 MB During operation: 5.0 GB

- Cluster WebUI

Supported browsers	Internet Explorer 11 Internet Explorer 10 Firefox Google Chrome Microsoft Edge (Chromium)
Memory size	User mode 500 MB
Disk size	200 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.

¹ excepting for optional products.

Note:

Internet Explorer causes display errors (e.g., some graphs are not displayed).

However, this does not affect operation in Cluster WebUI (such as operating cluster servers, displaying their statuses, and editing cluster configuration data in the config mode).

2.2.1 Operation environment for SNMP linkage functions

EXPRESSCLUSTER with SNMP Service of Windows is validated on following OS.

x86_64 version

OS	Remarks
Windows Server 2016	

2.2.2 Operation environment for JVM monitor

The use of the JVM monitor requires a Java runtime environment.

Java(TM) Runtime Environment	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 11.0 (11.0.5) or later
Java(TM) SE Development Kit	Version 17.0 (17.0.2) or later

2.2.3 Operation environment for system monitor or function of collecting system resource information

The use of the System Resource Agent requires the Microsoft .NET Framework environment.

Microsoft .NET Framework 4.5 or later

Microsoft .NET Framework 4.5 Japanese Language Pack or later

Note: On the OS of Windows Server 2012 or later, NET Framework 4.5 version or later is pre-installed (The version of the pre-installed one varies depending on the OS).

2.2.4 Operation environment for enabling encryption

For EXPRESSCLUSTER components, enabling communication encryption requires the following software:

Software	Version	Remarks
OpenSSL	1.1.1 or later 3.0.0 or later	

The following components support communication encryption using the above software:

- Cluster WebUI
- RESTful API
- FTP monitor resource
- Mail reporting function

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)*
- 2.3.2. *Verifying the firewall settings (Required)*
- 2.3.3. *Turning off the power saving function (Required)*
- 2.3.4. *Setup of OpenSSL (Optional)*

2.3.1 Verifying the network settings (Required)

Check the network settings by using the ipconfig 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.

After installing EXPRESSCLUSTER X SingleServerSafe, you can use the clpfwctrl command to configure a firewall. For more information, see "EXPRESSCLUSTER X SingleServerSafe Operation Guide" -> "EXPRESSCLUSTER X SingleServerSafe command reference" -> "Adding a firewall rule (clpfwctrl command)". Ports to be set with the clpfwctrl command are marked with ✓ in the clpfwctrl column of the table below. The applicable protocols are ICMPv4 and ICMPv6.

- Internal processing in the local server

From		To		Remarks	clpfwctrl
Server	Automatic allocation	Server	29001/TCP	Internal communication	✓
Server	Automatic allocation	Server	29002/TCP	Data transfer	✓
Server	Automatic allocation	Server	29003/UDP	Alert synchronization	✓
Server	Automatic allocation	Server	29008/TCP	Cluster information management	✓
Server	Automatic allocation	Server	29010/TCP	Restful API internal communication	✓
Server	29106/UDP	Server	29106/UDP	Heartbeat (kernel mode)	✓

- From the client to the server

From		To		Remarks	clpfwctrl
Restful API client	Automatic allocation	Server	29009/TCP	http communication	✓

- From the Cluster WebUI to the server

From		To		Remarks	clpfwctrl
Cluster WebUI	Automatic allocation	Server	29003/TCP	http communication	✓

- Others

From		To		Remarks	clpfwctrl
Server	Automatic allocation	Server	Management port number set by the Cluster WebUI	JVM monitor	✓
Server	Automatic allocation	Monitoring target	Connection port number set by the Cluster WebUI	JVM monitor	

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

The automatic allocation range for the communication port number controlled by OS may overlap with the communication port number used by EXPRESSCLUSTER X SingleServerSafe.

If so, change the port number used by EXPRESSCLUSTER X SingleServerSafe or the automatic allocation range for the communication port number controlled by OS.

For details on how to check or change the automatic allocation range for the communication port number controlled by OS, refer to "Getting Started Guide" for EXPRESSCLUSTER X.

2.3.3 Turning off the power saving function (Required)

In EXPRESSCLUSTER X SingleServerSafe, the power saving function (for example, standby or hibernation) cannot be used. Make sure to turn off the power saving function.

2.3.4 Setup of OpenSSL (Optional)

Encrypted communication using OpenSSL can be performed for the following functions:

- Cluster WebUI
- Witness heartbeat
- HTTP network partition resolution resource
- Mail reporting

To use OpenSSL for Cluster WebUI, prepare a certificate file and a private key file.

The prepared files will be used for configuring the settings in the config mode of Cluster WebUI: the "Encryption tab" of "Cluster properties" in "Other setting details" in the "EXPRESSCLUSTER X SingleServerSafe Configuration Guide".

INSTALLING EXPRESSCLUSTER X SINGLESERVERSAFE

This chapter describes how to install EXPRESSCLUSTER X SingleServerSafe. To install EXPRESSCLUSTER X SingleServerSafe, install the EXPRESSCLUSTER Server, which is the main module of EXPRESSCLUSTER SingleServerSafe.

This chapter covers:

- 3.1. *Installing the EXPRESSCLUSTER Server*

3.1 Installing the EXPRESSCLUSTER Server

Install the EXPRESSCLUSTER Server, which is the main module of EXPRESSCLUSTER X SingleServerSafe, on the server machine in the system.

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

3.1.1 Installing EXPRESSCLUSTER X SingleServerSafe for the first time

To install EXPRESSCLUSTER X SingleServerSafe, follow the procedure below.

Note: To install EXPRESSCLUSTER X SingleServerSafe, use an account that has administrator privileges.

Note: Installing EXPRESSCLUSTER X SingleServerSafe disables the Windows media sense function that deactivates an IP address if a link failure occurs due to disconnecting the LAN cable or some other reason.

Note:

If the Windows SNMP Service has already been installed, the SNMP linkage function will be automatically set up when the EXPRESSCLUSTER Server is installed. If, however, the Windows SNMP Service has not yet been installed, the SNMP linkage function will not be set up.

When setting up the SNMP linkage function after installing the EXPRESSCLUSTER Server, refer to "3.1.3. *Setting up the SNMP linkage function manually*".

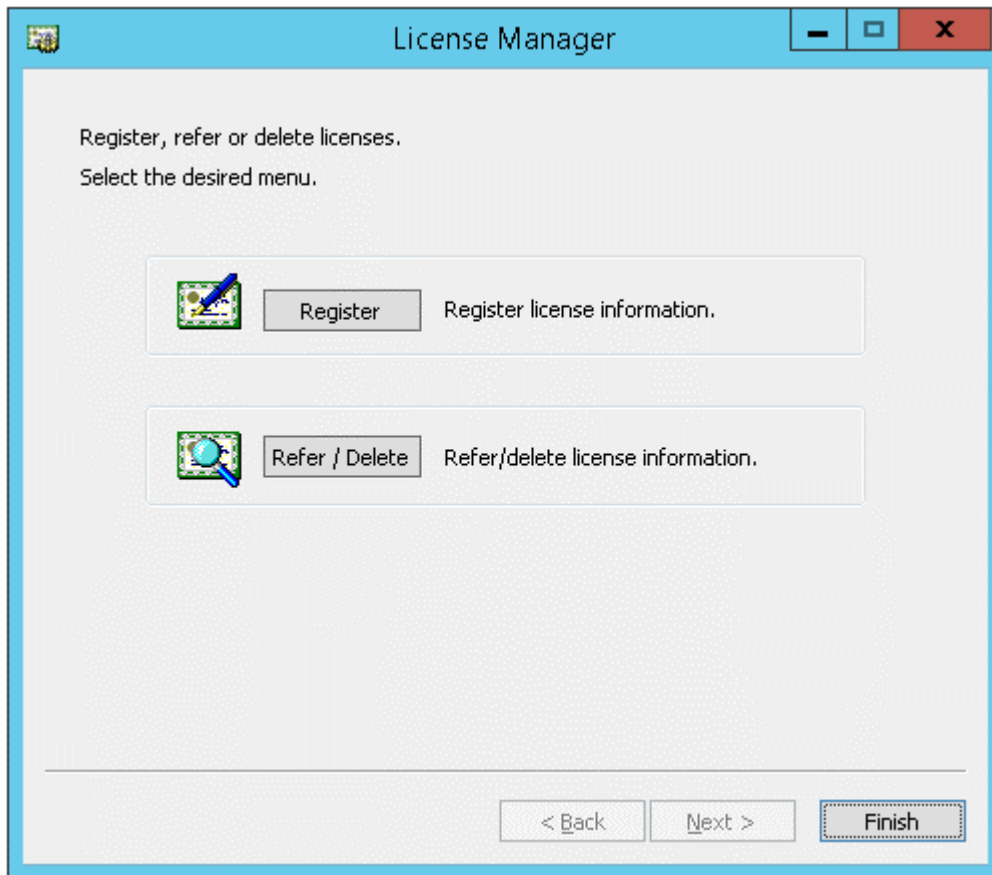
1. Insert the Installation DVD-ROM to the DVD-ROM drive.
2. Select **NEC EXPRESSCLUSTER® SingleServerSafe for Windows**.

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

3. Select **NEC EXPRESSCLUSTER® X SingleServerSafe 5.1 for Windows**.
4. [Welcome to the InstallShield Wizard for NEC EXPRESSCLUSTER SingleServerSafe] is displayed. Click **Next**.
5. The **Choose Destination Location** dialog box is displayed. When changing the install destination, click **Browse** to select a directory. Click **Next**.
6. The **Ready to Install the Program** dialog box is displayed. Click **Install** to start the installation.
7. When the installation successfully finishes, the **Port Number** dialog box is displayed. Normally, click **Next** without changing the default setting.

Note: The port number configured here needs to be configured again when creating the configuration data. For details on port number, refer to "Cluster properties" in "Other setting details" in the "Configuration Guide".

8. **License Manager** is displayed. Click **Register** to register the license. For detailed information on the registration procedure, refer to "6.2.1. *Registering a license by specifying a license file*" in "6. *Additional information*" in this guide.



9. Click **Finish** to close the **License Manager** dialog box.
10. [InstallShield Wizard Complete] is displayed. Select [Yes, I want to restart my computer now.] and click **Finish** to restart the server. If you want to restart the server later, select [No, I will restart my computer later.] and click **Finish**.

3.1.2 Installing EXPRESSCLUSTER X SingleServerSafe in Silent Mode

In silent mode, the EXPRESSCLUSTER X SingleServerSafe is installed automatically without displaying any dialog box to prompt a user to response while the installer is running. This installation function is useful when the installation folder and installation options for all server machines are the same. This function not only eliminates the user's effort but also prevents wrong installation due to wrong specifications.

Install the EXPRESSCLUSTER X SingleServerSafe in all servers configuring the cluster by following the procedure below.

Note: To install EXPRESSCLUSTER X SingleServerSafe, use an account that has administrator privileges.

Note: Installing EXPRESSCLUSTER X SingleServerSafe disables the Windows media sense function that deactivates an IP address if a link failure occurs due to disconnecting the LAN cable or some other reason.

Note:

If the Windows SNMP Service has already been installed, the SNMP linkage function will be automatically set up when the EXPRESSCLUSTER Server is installed. If, however, the Windows SNMP Service has not yet been installed, the SNMP linkage function will not be set up.

When setting up the SNMP linkage function after installing the EXPRESSCLUSTER Server, refer to "3.1.3. *Setting up the SNMP linkage function manually*".

Preparation

If you want to change the installation folder (default: C:\Program Files\EXPRESSCLUSTER SSS), create a response file in advance following the procedure below.

1. Copy the response file from the installation DVD-ROM to any accessible location in the server.
Copy the following file in the installation DVD-ROM.
Windows\5.1\common\server\x64\response\setup_sss_inst_en.iss
2. Open the response file (setup_inst_jp.iss) with a text editor, and change the folder written in the szDir line into the above accessible location.

```
Count=4
Dlg1={8493CDB6-144B-4330-B945-1F2123FADD3A}-SdAskDestPath-0
Dlg2={8493CDB6-144B-4330-B945-1F2123FADD3A}-SdStartCopy2-0
Dlg3={8493CDB6-144B-4330-B945-1F2123FADD3A}-SdFinishReboot-0
[ {8493CDB6-144B-4330-B945-1F2123FADD3A}-SdWelcome-0 ]
Result=1
[ {8493CDB6-144B-4330-B945-1F2123FADD3A}-SdAskDestPath-0 ]
szDir=C:\Program Files\EXPRESSCLUSTER SSS
Result=1
```

Installation procedure

1. Execute the following command from the command prompt to start setup.

```
# "<Path of silent-install.bat>\silent-install.bat" <Path of response_
↳file>
```

* <Path of silent-install.bat>:

Windows\5.1\common\server\x64\silent-install.bat in the installation DVD-ROM

* When installing the EXPRESSCLUSTER X SingleServerSafe in the default directory (C:\Program Files\EXPRESSCLUSTER SSS), omit <Path of response file>.

2. Restart the server.
3. Execute the following command from the command prompt to register the license.

```
# "<Installation folder>\bin\clplcncs.exe" -i <Path of license file>
```

3.1.3 Setting up the SNMP linkage function manually

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

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

If the Windows SNMP Service has already been installed, the SNMP linkage function will be automatically registered when the EXPRESSCLUSTER Server is installed. If, however, the Windows SNMP Service has not been installed, the SNMP linkage function will not be registered.

When the Windows SNMP Service has not been installed, follow the procedure below to manually register the SNMP linkage function.

Note: Use an Administrator account to perform the registration.

1. Install the Windows SNMP Service.
2. Stop the Windows SNMP Service.
3. Register the SNMP linkage function of EXPRESSCLUSTER with the Windows SNMP Service.

3-1. Start the registry editor.

3-2. Open the following key:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SNMP\Parameters\  
→ExtensionAgents
```

3-3. Specify the following to create a string value in the opened key:

Value name :mgtmib

Value type :REG_SZ

Value data :

```
SOFTWARE\NEC\EXPRESSCLUSTER\SnpAgent\mgtmib\CurrentVersion
```

3-4. Exit the registry editor.

4. If a cluster is being started up, suspend and resume the cluster on Cluster WebUI or with the clpcl command.
5. Start the Windows SNMP Service.

Note: Configure the settings required for SNMP communication on Windows SNMP Service.

UPDATING, UNINSTALLING, REINSTALLING OR UPGRADING

This chapter describes how to update to the latest version of EXPRESSCLUSTER X SingleServerSafe and uninstall or reinstall EXPRESSCLUSTER X SingleServerSafe. Also, this chapter describes how to upgrade EXPRESSCLUSTER X SingleServerSafe to EXPRESSCLUSTER X.

This chapter covers:

- 4.1. *Updating EXPRESSCLUSTER X SingleServerSafe*
- 4.2. *Uninstalling EXPRESSCLUSTER X SingleServerSafe*
- 4.3. *Reinstalling EXPRESSCLUSTER X SingleServerSafe*
- 4.4. *Upgrading to EXPRESSCLUSTER X*

4.1 Updating EXPRESSCLUSTER X SingleServerSafe

This section describes how to update from the old version of EXPRESSCLUSTER X SingleServerSafe to the latest version of it.

4.1.1 Updating from the old EXPRESSCLUSTER X SingleServerSafe version

Before starting the update, read the following notes.

- The upgrade procedure described in this section is valid for EXPRESSCLUSTER X SingleServerSafe 3.3 for Windows (internal version 11.35) or later.
- In EXPRESSCLUSTER X SingleServerSafe 4.2 for Windows or later, port numbers for EXPRESSCLUSTER have been added. If you upgrade from EXPRESSCLUSTER X SingleServerSafe 4.1 for Windows or earlier, make necessary ports accessible beforehand.
For information on port numbers for EXPRESSCLUSTER, refer to "2.3.2. *Verifying the firewall settings (Required)*".
- EXPRESSCLUSTER X SingleServerSafe must be updated with the account having the Administrator's privilege.

See also:

For the procedure of updating between the different versions of the same major version, refer to the "Update Procedure Manual".

The following procedure describes how to update from EXPRESSCLUSTER X SingleServerSafe 3.3 or 4.x for Windows to EXPRESSCLUSTER X SingleServerSafe 5.1 for Windows.

1. Make sure that the server and all the resources are in the normal status by using the Cluster WebUI, WebManager or **clpstat** command.
2. Save the current configuration file with the Cluster WebUI, Builder or **clpcfctrl** command. For details about saving the configuration file with **clpcfctrl** command, refer to "Applying and backing up configuration data (clpcfctrl command)" -> "Backing up configuration data (clpcfctrl --pull)" in "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".
3. Uninstall EXPRESSCLUSTER X SingleServerSafe from the server. For details about the uninstallation procedure, refer to "4.2.1. *Uninstalling EXPRESSCLUSTER X SingleServerSafe*".
4. Install the EXPRESSCLUSTER X 5.1 SingleServerSafe on the server. For details about the installation procedure, refer to "3.1. *Installing the EXPRESSCLUSTER Server*" in "3. *Installing EXPRESSCLUSTER X SingleServerSafe*".
5. On the server with EXPRESSCLUSTER X SingleServerSafe installed as above, execute the command for converting configuration data.
 - a. Move to the work directory (such as C:\tmp) in which the conversion command is to be executed.
 - b. To the moved work directory, copy and deploy the cluster configuration data backed up in step 2. Deploy **clp.conf** and the scripts directory.

Note:

If backed up on Cluster WebUI, the cluster configuration data is zipped.
Unzip the file, and **clp.conf** and the scripts directory will be extracted.

- c. Execute the following command to convert the cluster configuration data:

```
# clpcfconv.bat -i .
```

- d. Under the work directory, zip the cluster configuration data (clp.conf) and the scripts directory.

Note: Create the zip file so that when unzipped, the clp.conf file and scripts directory are created.

6. Open the config mode of Cluster WebUI, and click **Import**.
Import the cluster configuration data zipped in step 5.
7. Of the cluster configuration data, manually update its items if necessary.
See "Removed Functions" of "Notes on upgrading EXPRESSCLUSTER" in "Notes and Restrictions" in the "Getting Started Guide". Then, if you have used any of the functions with its corresponding action described in the Action column of the table, change the cluster configuration data according to the described action.
8. Click **Apply the Configuration File** of the Cluster WebUI to apply the configuration data.
9. Open the operation mode of Cluster WebUI, and start the cluster.
10. 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 X SingleServerSafe

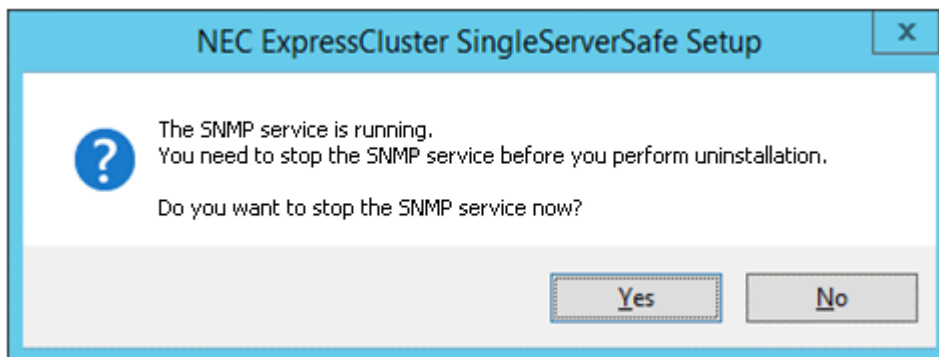
Note: You must log on as an Administrator to uninstall EXPRESSCLUSTER X SingleServerSafe.

To uninstall EXPRESSCLUSTER X SingleServerSafe, follow the procedure below.

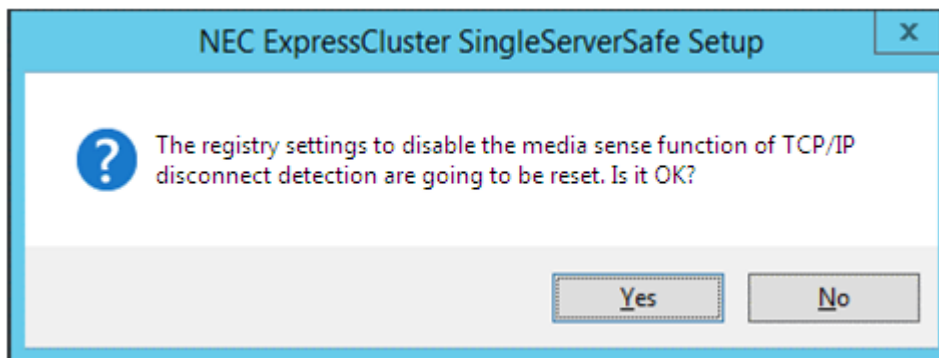
1. Change the service startup type to the manual startup.

```
clpsscctrl.bat --disable -a
```

2. Reboot the server.
3. Click **Program and Features** in **Control Panel**.
4. Select NEC EXPRESSCLUSTER SingleServerSafe, and then click **Uninstall**.
5. Click **Yes** in the uninstallation confirmation dialog box. If you click No, uninstallation will be canceled.
6. If the SNMP service is started, the message to confirm to stop the SNMP service is displayed. Click Yes. If you click No, uninstallation will be canceled.



7. A message is displayed asking whether to return the media sense function (TCP/IP disconnection detection) to the state it was in before installing the EXPRESSCLUSTER Server. Click **Yes** to return to the state it was in before installing the EXPRESSCLUSTER Server. If you click **No**, the EXPRESSCLUSTER Server will be uninstalled with the media sense function disabled.



8. **NEC EXPRESSCLUSTER SingleServerSafe Setup** is displayed. Click **Finish**.
9. The confirmation message whether to restart the computer is displayed. Select **Yes, I want to restart my computer** or **No, I will restart my computer later**. And click **Finish**. Uninstallation of the EXPRESSCLUSTER Server is completed.

4.3 Reinstalling EXPRESSCLUSTER X SingleServerSafe

4.3.1 Reinstalling the EXPRESSCLUSTER X SingleServerSafe

To reinstall the EXPRESSCLUSTER X SingleServerSafe, prepare the configuration data created using the Cluster WebUI (or the latest data if you changed the configuration).

After changing the configuration, make sure to save the latest configuration data. In addition to saving it to the Cluster WebUI after creation, you can back up the configuration data by using the `clpcfctrl` command. For details, see "Applying and backing up configuration data (`clpcfctrl` command)" in "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

For details, see "Applying and backing up configuration data (`clpcfctrl` command)" -> "Backing up configuration data (`clpcfctrl --pull`)" in "EXPRESSCLUSTER X SingleServerSafe command reference" in the "EXPRESSCLUSTER X SingleServerSafe Operation Guide".

To reinstall the EXPRESSCLUSTER X SingleServerSafe, follow the procedures below:

1. Back up the configuration data.
2. Uninstall the EXPRESSCLUSTER X SingleServerSafe.
If reinstalling the OS, it is not necessary to uninstall the EXPRESSCLUSTER X SingleServerSafe. However, when reinstalling in the folder in which the EXPRESSCLUSTER X SingleServerSafe was formerly installed, the files in the installation folder must be deleted.
3. Shut down the OS when uninstalling the EXPRESSCLUSTER X SingleServerSafe is completed.
4. Install the EXPRESSCLUSTER X SingleServerSafe and register the license as necessary. Shut down the OS when installing EXPRESSCLUSTER X SingleServerSafe completed.
5. Apply the configuration data to the server.
To apply the configuration data, load the backup data by using the Cluster WebUI, and then upload it. For details, see "Applying configuration data" in "Creating configuration data" in the "EXPRESSCLUSTER X SingleServerSafe Configuration 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. For details, see "Applying and backing up configuration data (clpcfctrl command)" in "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 X SingleServerSafe*".
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).

LATEST VERSION INFORMATION

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 edition*
- 5.2. *New features and improvements*
- 5.3. *Corrected information*

5.1 EXPRESSCLUSTER X SingleServerSafe version and corresponding manual edition

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 SingleServer-Safe Internal Version	Manual	Edition	Remarks
13.12	Installation Guide	4th Edition	
	Configuration Guide	2nd Edition	
	Operation Guide	3rd Edition	

5.2 New features and improvements

The following features and improvements have been released.

No.	Internal Version	Contents
1	13.00	Windows Server 2022 is now supported.
2	13.00	Along with the major upgrade, some functions have been removed. For details, refer to the list of removed functions.
3	13.00	Added a function to give a notice in an alert log that the server restart count was reset as the final action against the detected activation error or deactivation error of a group resource or against the detected error of a monitor resource.
4	13.00	Added the clpfcwctrl command for adding a firewall rule.
5	13.00	Added a function to collectively change actions (followed by OS shutdowns such as a recovery action following an error detected by a monitor resource) into OS reboots.
6	13.00	Improved the alert message regarding the wait process for start/stop between groups.
7	13.00	The display option for the clpstat configuration information has allowed displaying the setting value of the resource start attribute.
8	13.00	The clpcl/clpstdn command has allowed specifying the -h option even when the cluster service on the local server is stopped.
9	13.00	A warning message is now displayed when Cluster WebUI is connected via a non-actual IP address and is switched to config mode.
10	13.00	In the config mode of Cluster WebUI, a group can now be deleted with the group resource registered.
11	13.00	Changed the content of the error message that a communication timeout occurred in Cluster WebUI.
12	13.00	Added a function to copy a group, group resource, or monitor resource registered in the config mode of Cluster WebUI.
13	13.00	Added a function to move a group resource registered in the config mode of Cluster WebUI, to another group.
14	13.00	The settings can now be changed at the group resource list of [Group Properties] in the config mode of Cluster WebUI.
15	13.00	The settings can now be changed at the monitor resource list of [Monitor Common Properties] in the config mode of Cluster WebUI.
16	13.00	The dependency during group resource deactivation is now displayed in the config mode of Cluster WebUI.
17	13.00	Added a function to display a dependency diagram at the time of group resource activation/deactivation in the config mode of Cluster WebUI.
18	13.00	Added a function to narrow down a range of display by type or resource name of a group resource or monitor resource on the status screen of Cluster WebUI.
19	13.00	The online manual of Cluster WebUI now supports EXPRESSCLUSTER X SingleServerSafe.
20	13.00	An intermediate certificate can now be used as a certificate file when HTTPS is used for communication in the WebManager service.
21	13.00	Added the clpfcconv command, which changes the cluster configuration data file from the old version to the current one.
22	13.00	Added a function to delay the start of the cluster service for starting the OS.

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Table 5.2 – continued from previous page

No.	Internal Version	Contents
23	13.00	Details such as measures can now be displayed for error results of checking cluster configuration data in Cluster WebUI.
24	13.00	The OS type can be specified for specifying the create option of the clpcfset command.
25	13.00	Added a function to delete a resource or parameter from cluster configuration data, which is enabled by adding the del option to the clpcfset command.
26	13.00	Added the clpcfadm.py command, which enhances the interface for the clpcfset command.
27	13.00	The start completion timing of an AWS DNS resource has been changed to the timing before which the following is confirmed: The record set was propagated to AWS Route 53.
28	13.00	Changed the default value for [Wait Time to Start Monitoring] of AWS DNS monitor resources to 300 seconds.
29	13.00	The clpstat command can now be run duplicately.
30	13.00	Added the Node Manager service.
31	13.00	Added a function for statistical information on heartbeat.
32	13.00	HTTP monitor resources now support digest authentication.
33	13.00	The FTP server that uses FTPS for the FTP monitor resource can now be monitored.
34	13.00	Multiple system monitor resources can now be registered.
35	13.00	Multiple process resource monitor resources can now be registered.
36	13.00	Added a function to target only specific processes for a process resource monitor resource.
37	13.00	A single service monitor resource alone can now monitor any service.
38	13.02	JVM monitor resource supports Apache Tomcat 10.0.
39	13.10	Added protection against vulnerabilities (CVE-2022-34824 and CVE-2022-34825): a feature for appropriately giving permission to the installation folder during installation.
40	13.10	Added SMTPS and STARTTLS support for the mail reporting function.
41	13.10	Allowed specifying a log-file storage period.
42	13.10	Expanded the check items of cluster configuration data.
43	13.10	Added a feature for setting as a warning a value returned from the specified script, to custom monitor resources.
44	13.10	Added support for SQL Server 2022 for SQL Server monitor resources.
45	13.10	Added support for PostgreSQL 15.1 for PostgreSQL monitor resources.
46	13.10	Allowed using Cluster WebUI to specify environment variables for AWS-related features to access instance metadata and the AWS CLI.
47	13.10	Added a feature for specifying command line options for the AWS CLI accessed by AWS-related features.
48	13.10	Added support for WebSAM SVF PDF Enterprise 10.1 for JVM monitor resources.
49	13.10	Added support for WebSAM RDE SUITE 10.1 for JVM monitor resources.
50	13.10	Added support for WebSAM SVF Connect SUITE Standard 10.1 for JVM monitor resources.
51	13.10	Added a feature for outputting process resource statistics.
52	13.10	Added support for client authentication for HTTP monitor resources.
53	13.10	Added support for OpenSSL 3.0 for FTP monitor resources.

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Table 5.2 – continued from previous page

No.	Internal Version	Contents
54	13.10	Added a feature for JVM monitor resources to output retry count information to the operation log.
55	13.10	Added support for Java 17 for JVM monitor resources.
56	13.10	Subtracted support for Java 7 for JVM monitor resources.
57	13.10	Added an option in the clpcfadm.py command to create a backup file of existing cluster configuration data.
58	13.10	Allowed Cluster WebUI to display its operation log.
59	13.10	Added support for OpenSSL 3.0 for Cluster WebUI.
60	13.10	Disabled TLS 1.1 for the HTTPS connection of Cluster WebUI.
61	13.10	Added a feature for the status screen of Cluster WebUI to list settings with which cluster operation is disabled.
62	13.10	<p>Added features for the config mode of Cluster WebUI to display or hide and to sort the following:</p> <ul style="list-style-type: none"> - Group resource list in [Group Properties] - Monitor resource list in [Monitor Resources Common Properties]
63	13.10	Made the following changes for [Accessible number of clients] of cluster properties: its name to [Number of sessions which can be established simultaneously], and its lower limit value.
64	13.10	Hid [Received time] by default in the Alert logs of Cluster WebUI.
65	13.10	Changed the description of the [Restart the manager] button on the status screen of Cluster WebUI to "Restart WebManager service".
66	13.10	Allowed [Copy the group] in the config mode of Cluster WebUI to copy group resources' dependency on a case-by-case basis as well.
67	13.10	Implemented safeguards in Cluster WebUI to prevent configuration errors with [Monitor Type] of custom monitor resources set to [Asynchronous].
68	13.11	Added support for OpenSSL 3.0 for RESTful API.
69	13.12	<p>Added support for OpenSSL 3.1 for the following functions:</p> <ul style="list-style-type: none"> - Cluster WebUI - RESTful API - Mirror disk resources - Hybrid disk resources - FTP monitor resources - Mail report

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	13.00 / 12.10 to 12.32	In the config mode of Cluster WebUI, modifying a comment on a group resource may not be applied.	S	This problem occurs in the following case: A comment on a group resource is modified, the [Apply] button is clicked, the change is undone, and then the [OK] button is clicked.
2	13.00 / 12.10 to 12.32	In the config mode of Cluster WebUI, modifying a comment on a monitor resource may not be applied.	S	This problem occurs in the following case: A comment on a monitor resource is modified, the [Apply] button is clicked, the change is undone, and then the [OK] button is clicked.
3	13.00 / 12.10 to 12.32	In the config mode of Cluster WebUI, the [Install Path] item is not required to be entered in the [Monitor (special)] tab of a WebLogic monitor resource.	S	This problem always occurs.
4	13.00 / 12.00 to 12.32	In the status screen of Cluster WebUI, a communication timeout during the operation of a cluster causes a request to be repeatedly issued.	M	This problem always occurs when a communication timeout occurs between Cluster WebUI and a cluster server.

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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
5	13.00 / 12.30 to 12.32	An error of update failure may occur when [Update Server Info] is executed in the config mode of Cluster WebUI.	S	This problem occurs when [Device Info] in [Update Server Info] is obtained.
6	13.00 / 11.10 to 12.32	In the alert log for a delay warning of a monitor resource, the response time may read zero (0).	S	This problem may occur when the alert log for a delay warning of a monitor resource is outputted.
7	13.00 / 12.00 to 12.32	A monitor resource may mistakenly detect a monitoring timeout.	M	This problem very rarely occurs when a monitoring process is executed by a monitor resource.
8	13.00 / 12.20 to 12.32	The OS start time is targeted for checking a cluster configuration.	S	This problem always occurs in checking a cluster configuration.
9	13.00 / 12.00 to 12.32	In [Monitoring usage of memory] for process resource monitor resources, [Duration time (min)] has been replaced with [Maximum Refresh Count (time)].	S	This problem occurs when the properties are displayed with Cluster WebUI or the clpstat command.
10	13.00 / 12.00 to 12.32	In an HTTP monitor resource, a warning instead of an error is issued in the following case: The status code of a response to an issued HEAD request is in the 400s or 500s, and a non-default URI is specified as the monitor URI.	S	This problem occurs in the following case: The status code of a response to an issued HEAD request is in the 400s or 500s, and a non-default URI is specified as the monitor URI.
11	13.00 / 12.10 to 12.32	In a custom monitor resource, when the process of a script to be monitored is cleared, the corresponding monitor resource name is not outputted to the alert message.	S	This problem occurs when the process of a script to be monitored is cleared in a custom monitor resource.

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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
12	13.00 / 12.20 to 12.32	The EXPRESSCLUSTER Information Base service may abend.	S	This problem very rarely occurs when one of the following is performed: - Cluster startup - Cluster stop - Cluster suspension - Cluster resumption
13	13.01 / 9.00 to 12.32,13.00	The vulnerabilities of CVE-2021-20700 to 20707 may cause the following acts by third parties: - Execution of an arbitrary code - Upload of an arbitrary file - Reading of an arbitrary file	L	These problems occur when a specific process in EXPRESSCLUSTER receives a packet crafted by a malicious third party against the internal protocol of EXPRESSCLUSTER.
14	13.01 / 13.00	For the clprexec command, the --script option does not work.	S	This problem occurs when the clprexec command is executed with the --script option specified.
15	13.02 / 13.00 to 13.01	The EXPRESSCLUSTER Node Manager service starts without waiting for a service startup delay time.	S	This problem occurs with [Service Startup Delay Time] set to a value larger than zero seconds.
16	13.02 / 13.01	Update installation registers the EXPRESSCLUSTER Old API Support service.	S	This problem occurs with the internal version 13.00 updated to 13.01.
17	13.02 / 13.00 to 13.01	The STOP error may occur during the application of cluster configuration data including a mirror/hybrid disk resource.	M	This problem occurs with the mirror/hybrid disk resource named with eight or more characters.
18	13.02 / 13.00 to 13.01	A monitor resource may detect a monitoring timeout by mistake.	S	This problem occurs on very rare occasions during a monitoring process by the monitor resource.

Continued on next page

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
19	13.02 / 13.00 to 13.01	When [Recovery Action tab] for a monitor resource is set with [Generate an intentional stop error], the recovery action may not be performed.	S	This problem occurs on rare occasions when the recovery action is tried.
20	13.02 / 13.00 to 13.01	An initialization error may occur in a kernel mode LAN heartbeat resource during a cluster service start.	M	This problem occurs when the kernel mode LAN heartbeat resource starts up with the network device yet to become available.
21	13.02 / 12.00 to 13.01	A cluster service stop as an action at NP occurrence is not completed.	M	This problem occurs with [Action at NP Occurrence] set to [Stop the cluster service].
22	13.02 / 9.00 to 13.01	An application error may occur with the clpstat command.	S	This problem occurs in an environment where a failover group is set with no group resources registered.
23	13.02 / 13.00 to 13.01	With a cluster suspended, Cluster WebUI or the clpstat command may show the server status as stopped.	S	This problem occurs when both of the following services are restarted with the cluster suspended: - EXPRESSCLUSTER Node Manager - EXPRESSCLUSTER Information Base
24	13.02 / 13.00 to 13.01	A group/monitor resource status may be incorrectly shown.	S	This problem occurs with something wrong in the internal processing of cluster services during OS startup.
25	13.02 / 9.00 to 13.01	A STOP error may occur during OS startup or OS shutdown.	M	This problem occurs on very rare occasions during OS startup or OS shutdown.

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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
26	13.02 / 9.00 to 13.01	The vulnerabilities of CVE-2022-34822 to 34823 may cause the following acts by third parties: - Reading of an arbitrary file - Execution of an arbitrary code	L	These problems occur when a specific process in EXPRESSCLUSTER receives a packet crafted by a malicious third party against the internal protocol of EXPRESSCLUSTER.
27	13.10 / 13.00 to 13.02	The clpnm.exe process may abend, leading to an OS restart.	M	This problem occurs on very rare occasions.
28	13.10 / 13.00 to 13.02	After a cluster service is started up, an alert may be put out due to abnormal heartbeat.	S	This problem occurs on rare occasions after a cluster service is started up.
29	13.10 / 12.00 to 13.02	A cluster may not be started up, due to a corrupted license file.	S	This problem occurs on rare occasions in the following case: While a cluster is being started up, its server is de-energized.
30	13.10 / 12.00 to 13.02	Instead of a product version license, a fixed-term license may become active despite its expiration.	S	This problem occurs with both an unused fixed-term license and a product version license registered, when the former expires.
31	13.10 / 9.00 to 13.02	Failure in resuming a cluster may lead to its abend.	M	This problem occurs when a cluster is repeatedly suspended and resumed in the following environment: Two or more monitor resources are registered and each of their names consists of only one letter.
32	13.10 / 12.10 to 13.02	A recovery script for a monitor resource may not be run.	S	This problem occurs in the following case: With [Execute Script before Recovery Action] on in Cluster WebUI, the user does not edit the script or simultaneously changes the script and something else.

Continued on next page

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
33	13.10 / 9.00 to 13.02	A monitor resource, configured to perform continuous monitoring, may not work.	S	This problem occurs in a monitor resource with the setting of [Monitor Timing] changed from [Active] to [Always].
34	13.10 / 9.00 to 13.02	With [Service Name] of a service resource or service monitor resource set to the service display name of the service, the monitoring process may fail.	M	This problem occurs with a failure in obtaining the service name from the service display name.
35	13.10 / 12.10 to 13.02	[JVM Monitor Resource Tuning Properties] does not allow specifying a usage threshold for [Metaspace].	S	This problem always occurs.
36	13.10 / 9.00 to 13.02	Hostname resolution may fail if the host is accessible from HTTP monitor resources.	S	This problem may occur when the hostname (not the IP address) is specified as a connection destination.
37	13.10 / 12.30 to 13.02	After the clpcfset command is executed to create cluster configuration data, its XML attribute value may be wrong.	S	This problem occurs when an ID attribute node is added by executing the clpcfset command.
38	13.10 / 13.00 to 13.02	After the clpcfset command is executed to create cluster configuration data, its object count may be wrong.	S	This problem occurs when, by executing the clpcfset command, the object count is added to or deleted from the cluster configuration data including a forced stop resource.
39	13.10 / 13.00 to 13.02	The clpcfadm.py command may not be correctly executed.	S	This problem occurs in the following case: Cluster WebUI executes the clpcfadm.py command on cluster configuration data from which all failover groups were deleted.
40	13.10 / 13.00 to 13.02	The clpcfadm.py command may allow an invalid monitor resource to be configured.	S	This problem occurs in the following case: When the clpcfadm.py command is used to add a monitor resource, jra is specified as the type of monitor resource.
41	13.10 / 13.00 to 13.02	After the clpcfadm.py command is executed to create cluster configuration data, its resource activation/deactivation timeout value may be wrong.	S	This problem occurs when executing the clpcfadm.py command changes the parameter requiring the calculation of the resource activation/deactivation timeout value.

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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
42	13.10 / 12.20 to 13.02	For a cluster with a RESTful API, obtaining its status may fail.	S	This problem may occur with the EXPRESSCLUSTER Information Base service restarted.
43	13.10 / 12.20 to 13.02	A RESTful API may fail to collect information.	S	This problem occurs on rare occasions in the following case: An API for collecting information is executed just after an API for operation is executed.
44	13.10 / 12.22 to 13.02	In group information retrieval with a RESTful API, an incorrect response to an exception may occur.	S	This problem may occur when a cluster server encounters an internal error.
45	13.10 / 12.30 to 13.02	Cluster WebUI may fail to obtain cloud environment information.	S	This problem occurs with Cluster WebUI connected via a proxy server.
46	13.10 / 12.00 to 13.02	After [TTL] is changed for an Azure DNS resource in the config mode of Cluster WebUI, the change is not applied to the record.	S	This problem always occurs.
47	13.10 / 12.10 to 13.02	When configuring strings like a resource name on the Cluster WebUI, consecutive spaces of two or more bytes are reduced to a single byte.	S	This problem occurs when the setting of cluster configuration data is changed while two or more bytes of spaces are input consecutively.
48	13.11 / 12.20 to 13.10	Applying cluster configuration data may fail.	S	This problem may occur when applying cluster configuration data repeatedly in the config mode of the Cluster WebUI.
49	13.11 / 11.10 to 13.10	A SQL Server monitor resource may not detect an error.	S	This problem occurs when [Monitor Level] is 0.
50	13.11 / 13.10	Mail reporting function may not work.	S	This problem occurs when the version is upgraded from X 5.0.2 or earlier to X 5.1.0 while mail reporting function is configured.

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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
51	13.11 / 13.00 to 13.10	When a cluster is configured with ESM/PRO/ARC, the process of waiting for a shared disk to power on does not work.	S	This problem occurs when a cluster is started.
52	13.11 / 9.00 to 13.10	EXPRESSCLUSTER system services may not be started, due to a failure of applying cluster configuration data.	S	This problem very rarely occurs when applying cluster configuration data.
53	13.11 / 13.00	In the config mode of the Cluster WebUI, a service monitor resource may not be registered.	S	This problem occurs in the following case: A service monitor resource is registered while there are no group resources registered.
54	13.12 / 13.11	A cluster may not start due to an incorrect cluster server status.	M	This problem may occur after a cluster service is stopped.
55	13.12 / 13.00 to 13.11	An alert that a restart count has been reset may appear when a monitor resource executes the recovery action.	S	This problem occurs when a monitor resource executes one of the following recovery actions. - Stop the cluster service and shutdown OS - Stop the cluster service and reboot OS - Generate an intentional stop error
56	13.12 / 13.10 to 13.11	The screen may not display when connecting to Cluster WebUI via HTTPS.	S	This problem occurs rarely with OpenSSL 3.0 or later.
57	13.12 / 9.00 to 13.11	It takes long time to apply a cluster configuration data file on Cluster WebUI.	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
58	13.12 / 9.00 to 13.11	The vulnerabilities of CVE-2023-39544 to 39548 may cause the following acts by third parties: - Execution of an arbitrary code - Uploading of an arbitrary file - Skimming a cluster configuration data file	L	These problems occur when a specific process in EXPRESSCLUSTER receives a packet crafted by a malicious third party against the internal protocol of EXPRESSCLUSTER.

ADDITIONAL INFORMATION

This chapter provides tips on installing EXPRESSCLUSTER X SingleServerSafe.

This chapter covers:

- 6.1. *EXPRESSCLUSTER X SingleServerSafe services*
- 6.2. *Using the License Manager*

6.1 EXPRESSCLUSTER X SingleServerSafe services

EXPRESSCLUSTER X SingleServerSafe consists of the system services listed below.

System Service Name	Explanation
EXPRESSCLUSTER	EXPRESSCLUSTER
EXPRESSCLUSTER Disk Agent	Not used for EXPRESSCLUSTER X SingleServerSafe
EXPRESSCLUSTER API	EXPRESSCLUSTER Restful API control
EXPRESSCLUSTER Event	Event log output
EXPRESSCLUSTER Information Base	Cluster information management
EXPRESSCLUSTER Java Resource Agent	Java Resource Agent
EXPRESSCLUSTER Manager	WebManager Server
EXPRESSCLUSTER Node Manager	Control of heartbeat and network partition resolution
EXPRESSCLUSTER X Server	EXPRESSCLUSTER Server
EXPRESSCLUSTER SingleServerSafe	SingleServerSafe process
EXPRESSCLUSTER System Resource Agent	System Resource Agent
EXPRESSCLUSTER Transaction	Communication process
EXPRESSCLUSTER Web Alert	Alert synchronization

6.2 Using the License Manager

The **Start** menu contains the menu for EXPRESSCLUSTER SingleServerSafe. You can start the License Manager from this menu.

6.2.1 Registering a license by specifying a license file

When using a trial license, obtain a license file instead of a license sheet. The following procedure describes how to register a license by specifying a license file.

Note: To register a license, use an account that has administrator privileges.

1. On the **Start** menu, click **License Manager of NEC EXPRESSCLUSTER SingleServerSafe**.
2. The **License Manager** dialog box is displayed. Click **Register**.
3. A dialog box is displayed for selecting the license registration method. Click **Register with License File**.
4. The **License File Specification** dialog box is displayed. In the **License File Specification** dialog box, select the license file to be registered and then click **Open**.
5. The message confirming registration of the license is displayed. Click **OK**.
6. Click **Finish** to close the license manager.

6.2.2 Referencing or deleting a registered license

The following procedure describes how to refer to and delete the registered license.

1. On the **Start** menu, click **License Manager of NEC EXPRESSCLUSTER SingleServerSafe**.
2. The **License Manager** dialog box is displayed. Click **Refer/Delete**.
3. The registered licenses are listed.
4. Select the license to delete and click **Delete**.
5. The confirmation message to delete the license is displayed. Click **OK**.

6.2.3 Switching from the trial license to the product 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.

NOTES AND RESTRICTIONS

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

This chapter covers:

- *7.1. Before installing EXPRESSCLUSTER X SingleServerSafe*
- *7.2. Upgrading EXPRESSCLUSTER X SingleServerSafe*

7.1 Before installing EXPRESSCLUSTER X SingleServerSafe

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

7.1.1 File system

Use NTFS as the file system for the partition on which to install the OS.

7.2 Upgrading EXPRESSCLUSTER X SingleServerSafe

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

7.2.1 Changed functions

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

Internal Version 12.00

- 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 12.10

- 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 "Other setting details" 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".

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- 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.

7.2.2 Removed Functions

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

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

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- WebManager Mobile
- OfficeScan CL monitor resource
- OfficeScan SV monitor resource
- OracleAS monitor resource

Important:

Upgrading EXPRESSCLUSTER X SingleServerSafe from its old version requires manually updating the cluster configuration data for functions with corresponding actions described in the table below.

For information on how to upgrade EXPRESSCLUSTER X SingleServerSafe, see "4.1.1. *Updating from the old EXPRESSCLUSTER X SingleServerSafe version*". Then, at the timing described in the guide, follow each of the procedures described in the Action column.

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Function	Action
WebManager/Builder	
BMC linkage	1. Delete relevant message reception monitor resources.
Compatible commands	1. <ul style="list-style-type: none"> • Script resources • Custom monitor resources • Scripts before final action • Scripts before and after activation/deactivation • Recovery scripts • Pre-recovery action scripts • Forced-stop scripts • Other scripts configured with EXPRESSCLUSTER If any of these scripts includes a compatible command, modify the script by excluding the command. Example To start or stop services controlled with the armload command, use the sc command instead. To monitor services, use service monitor resources instead.

7.2.3 Removed Parameters

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

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Cluster

Parameters	Default
Cluster Properties	
WebManager Tab	
<ul style="list-style-type: none"> • Enable WebManager Mobile Connection 	Off
WebManager Mobile Password	
<ul style="list-style-type: none"> • Password for Operation 	-
<ul style="list-style-type: none"> • 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)	
<ul style="list-style-type: none"> • Monitor Virtual Memory Usage 	2048 MB
Memory Tab (when Oracle Java(usage monitoring) is selected for JVM Type)	
<ul style="list-style-type: none"> • Monitor Virtual Memory Usage 	2048 MB

User mode monitor resource

Parameters	Default
User mode Monitor Resource Properties	
Monitor (special) Tab	
<ul style="list-style-type: none"> • Use Heartbeat Interval/Timeout 	On

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Cluster

Parameters	Default
Cluster Properties	
WebManager Tab	
WebManager Tuning Properties	
Behavior Tab	
<ul style="list-style-type: none"> • Max. Number of Alert Records on the Viewer 	300
<ul style="list-style-type: none"> • Client Data Update Method 	Real Time

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Cluster

Parameters	default values
Server Properties	
Info Tab	
<ul style="list-style-type: none"> • Virtual Machine 	Off
<ul style="list-style-type: none"> • Type 	vSphere

7.2.4 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 12.00

Cluster

Parameters	Default value before update	Default value after update	Remarks
Cluster Properties			
JVM monitor Tab			
<ul style="list-style-type: none"> • Maximum Java Heap Size 	7 MB	16 MB	

Application monitor resource

Parameters	Default value before update	Default value after update	Remarks
Application Monitor Resource Properties			
Monitor (common) Tab			
<ul style="list-style-type: none"> • Wait Time to Start Monitoring 	0 sec	3 sec	
<ul style="list-style-type: none"> • Do Not Retry at Timeout Occurrence 	Off	On	
<ul style="list-style-type: none"> • Do not Execute Recovery Action at Timeout Occurrence 	Off	On	

NIC Link Up/Down monitor resource

Parameters	Default value before update	Default value after update	Remarks
NIC Link Up/Down Monitor Resource Properties			
Monitor (common) Tab			
<ul style="list-style-type: none"> • Timeout 	60 sec	180 sec	
<ul style="list-style-type: none"> • Do Not Retry at Timeout Occurrence 	Off	On	
<ul style="list-style-type: none"> • Do not Execute Recovery Action at Timeout Occurrence 	Off	On	

Service monitor resource

Parameters	Default value before update	Default value after update	Remarks
Service Monitor Resource Properties			
Monitor (common) Tab			
<ul style="list-style-type: none"> • Wait Time to Start Monitoring 	0 sec	3 sec	

Continued on next page

Table 7.10 – continued from previous page

Parameters	Default value before update	Default value after update	Remarks
<ul style="list-style-type: none"> Do Not Retry at Timeout Occurrence 	Off	On	
<ul style="list-style-type: none"> Do not Execute Recovery Action at Timeout Occurrence 	Off	On	

Custom monitor resource

Parameters	Default value before update	Default value after update	Remarks
Custom Monitor Resource Properties			
Monitor (common) Tab			
<ul style="list-style-type: none"> Wait Time to Start Monitoring 	0 sec	3 sec	

Process Name monitor resource

Parameters	Default value before update	Default value after update	Remarks
Process Name Monitor Properties			
Monitor (common) Tab			
<ul style="list-style-type: none"> Wait Time to Start Monitoring 	0 sec	3 sec	
<ul style="list-style-type: none"> Do Not Retry at Timeout Occurrence 	Off	On	
<ul style="list-style-type: none"> Do not Execute Recovery Action at Timeout Occurrence 	Off	On	

SQL Server monitor resource

Parameters	Default value before update	Default value after update	Remarks
SQL Server Monitor Resource Properties			
Monitor (special) Tab			

Continued on next page

Table 7.13 – continued from previous page

Parameters	Default value before update	Default value after update	Remarks
<ul style="list-style-type: none"> • ODBC Driver Name 	SQL Native Client	ODBC Driver 13 for SQL Server	

WebLogic monitor resource

Parameters	Default value before update	Default value after update	Remarks
WebLogic Monitor Resource Properties			
Monitor (special) Tab			
<ul style="list-style-type: none"> • Install Path 	C:\bea\weblogic92	C:\Oracle\Middleware\Oracle_Home\wlserver	

JVM monitor resource

Parameters	Default value before update	Default value after update	Remarks
JVM Monitor Resource Properties			
Monitor (common) Tab			
<ul style="list-style-type: none"> • Timeout 	120 sec	180 sec	

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Script resource

Parameters	Default value before update	Default value after update	Remarks
Script Resource Properties			
Details Tab			
Script Resource Tuning Properties			
Parameter Tab			
<ul style="list-style-type: none"> • Allow to Interact with Desktop 	On	Off	The settings cannot be changed for the internal version 12.00 or earlier. The settings can be changed for 12.10 or later.

Internal Version 12.20

Service resource

Parameters	Default value before update	Default value after update	Remarks
Service Resource Properties			
Recovery Operation tab			
<ul style="list-style-type: none"> • Retry Count 	0 times	1 time	

Internal Version 12.30

Cluster

Parameters	Default value before update	Default value after update	Remarks
Cluster Properties			
API tab			
<ul style="list-style-type: none"> • Communication Method 	HTTP	HTTPS	

Internal Version 13.10

Cluster

Parameters	Default value before update	Default value after update	Remarks
Cluster Properties			
WebManager Tab			
<ul style="list-style-type: none"> • Output Cluster WebUI Operation Log 	Off	On	

7.2.5 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 12.00

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] - [Auto Recovery Tab] - [Auto Return]	[Cluster Properties] - [Extension Tab] - [Auto Return]
[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]

Internal Version 13.10

Before the change	After the change
[Cluster Properties]-[Monitor Tab]	[Cluster Properties]-[Statistics Tab]
[Cluster Properties]-[Extension Tab]-[Cluster Statistics]	[Cluster Properties]-[Statistics Tab]-[Cluster Statistics]

TROUBLESHOOTING

When installing EXPRESSCLUSTER X SingleServerSafe

Behavior and Message	Cause	Solution
Setup has failed. Error code : %x %x: error code	Refer to the given error code.	Refer to the action for the error code.
Less than 9.0 has been installed. After uninstalling, reinstall it again.	The old version of the EXPRESSCLUSTER has been installed.	Uninstall the old version of the EXPRESSCLUSTER and install the current version.
Failed to set up (%d) Error code : %x Please reboot the system, and then try again. %d: Internal code %x: Error code	Refer to the explanation of the given error code.	Refer to the action for the given error code.

Licensing

Behavior and Message	Cause	Solution
<p>When the cluster was shut down and rebooted after distribution of the configuration data created by the Cluster WebUI to the server, the following message was displayed on the alert log, and the cluster stopped.</p> <p>"The license is not registered. (Product name:%1)"</p> <p>%1:Product name</p>	<p>The cluster has been shut down and rebooted without its license being registered.</p>	<p>Register the license from the server.</p>
<p>When the cluster was shut down and rebooted after distribution of the configuration data created by the Cluster WebUI to the server, the following message appeared on the alert log, but the cluster is working properly.</p> <p>"The number of licenses is insufficient. The number of insufficient licenses is %1. (Product name:%2)"</p> <p>%1: The number of licenses in short of supply</p> <p>%2: Product name</p>	<p>Licenses are insufficient.</p>	<p>Obtain a license and register it.</p>
<p>While the cluster was operated on the trial license, the following message is displayed and the cluster stopped.</p> <p>"The trial license has expired in %1. (Product name:%2)"</p> <p>%1: Trial end date</p> <p>%2: Product name</p>	<p>The license has already expired.</p>	<p>Ask your sales agent for extension of the trial version license, or obtain and register the product version license.</p>
<p>While the cluster was operated on the fixed term license, the following message appeared.</p> <p>"The fixed term license has expired in %1. (Product name:%2) "</p> <p>%1: Fixed term end date</p> <p>%2: Product name</p>	<p>The license has already expired.</p>	<p>Obtain the license for the product version from the vendor, and then register the license.</p>

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REVISION HISTORY

Edition	Revised Date	Description
1st	Apr 10, 2023	New manual
2nd	Jun 30, 2023	Corresponds to the internal version 13.11.
3rd	Sep 29, 2023	Corrected typographical errors.
4th	Nov 17, 2023	Corresponds to the internal version 13.12.

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