

EXPRESSCLUSTER® X SingleServerSafe
4.0 for Windows

Installation Guide

September 14, 2018

2nd Edition



Revision History

Edition	Revised Date	Description
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Preface

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.

How This Guide Is Organized

- Chapter 1** “About EXPRESSCLUSTER X SingleServerSafe”: Explains the functions and requirements of EXPRESSCLUSTER X SingleServerSafe.
- Chapter 2** “Installing EXPRESSCLUSTER X SingleServerSafe”: Describes how to install EXPRESSCLUSTER X SingleServerSafe.
- Chapter 3** “Updating, uninstalling, reinstalling or upgrading”: Describes how to upgrade EXPRESSCLUSTER X SingleServerSafe, uninstall and reinstall EXPRESSCLUSTER X SingleServerSafe, and upgrade to EXPRESSCLUSTER X.
- Chapter 4** “Latest version information”: Provides the latest information about EXPRESSCLUSTER X SingleServerSafe.
- Chapter 5** “Additional information”: Provides tips on installing EXPRESSCLUSTER X SingleServerSafe.
- Chapter 6** “Notes and Restrictions”: Provides notes and restrictions you need to know before starting the actual operation of EXPRESSCLUSTER X SingleServerSafe.

- Appendix**
- Appendix A** “Troubleshooting”: Describes problems you might experience when installing or setting up EXPRESSCLUSTER X SingleServerSafe and how to resolve them.
- Appendix B** “Index”

Terms Used in This Guide

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

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

EXPRESSCLUSTER X SingleServerSafe Documentation Set

The EXPRESSCLUSTER X SingleServerSafe manuals 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 Integrated WebManager Administrator's Guide

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

Conventions

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

Note:

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

Important:

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

Related Information:

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

The following conventions are used in this guide.

Convention	Usage	Example
Bold	Indicates graphical objects, such as fields, list boxes, menu selections, buttons, labels, icons, etc.	In User Name , type your name. On the File menu, click Open Database .
Angled bracket within the command line	Indicates that the value specified inside of the angled bracket can be omitted.	<code>clpstat -s[-h <i>host_name</i>]</code>
Monospace (courier)	Indicates path names, commands, system output (message, prompt, etc), directory, file names, functions and parameters.	<code>c:\Program files\EXPRESSCLUSTER</code>
Monospace bold (courier)	Indicates the value that a user actually enters from a command line.	Enter the following: <code>clpcl -s -a</code>
<i>Monospace italic (courier)</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>

Contacting NEC

For the latest product information, visit our website below:

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

Chapter 1 **About EXPRESSCLUSTER X SingleServerSafe**

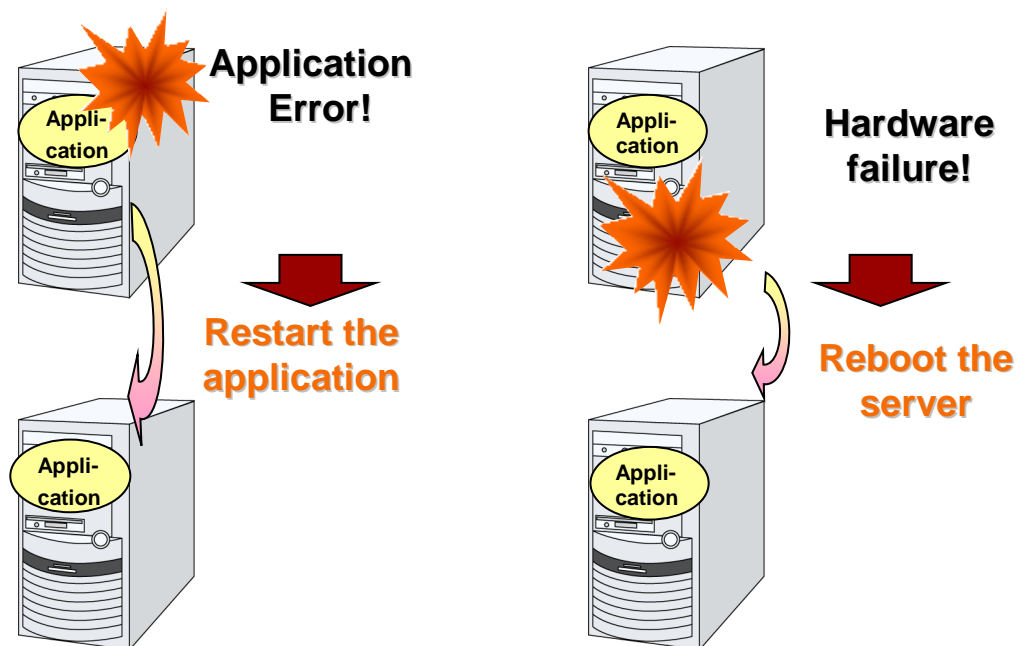
This chapter describes the functions and requirements of EXPRESSCLUSTER X SingleServerSafe.

This chapter covers:

- What is EXPRESSCLUSTER X SingleServerSafe? 14
- Checking system requirements for EXPRESSCLUSTER X SingleServerSafe 16
- Preparing and verifying the server environment before installation..... 25

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.



EXPRESSCLUSTER X SingleServerSafe software configuration

EXPRESSCLUSTER X SingleServerSafe consists of following three software applications:

- ◆ EXPRESSCLUSTER Server

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

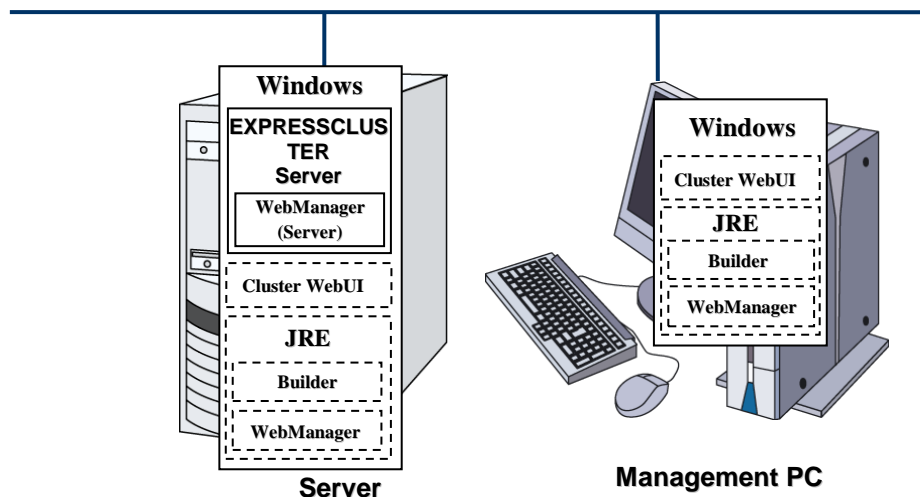
- ◆ EXPRESSCLUSTER Cluster WebUI / WebManager

This is a tool to manage EXPRESSCLUSTER X SingleServerSafe operations.

It uses a Web browser as a user interface. The WebManager is incorporated into the EXPRESSCLUSTER Server and therefore does not have to be installed.

- ◆ EXPRESSCLUSTER Builder (Builder)

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



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

Checking system requirements for EXPRESSCLUSTER X SingleServerSafe

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

EXPRESSCLUSTER X Server	
Machine on which the WebManager can be installed	PC that supports one of the following operating systems.
Supported operation systems	Windows Server 2012 Standard Windows Server 2012 Datacenter Windows Server 2012 R2 Standard Windows Server 2012 R2 Datacenter Windows Server 2016 Standard Windows Server 2016 Datacenter Windows Server, version 1709 Standard Windows Server, version 1709 Datacenter
Memory size	User mode: 256 MB (*1) Kernel mode: 32MB
Disk Size	Initial size at installation: 80 MB During operation: 2.0 GB

(*1) excepting for optional products.

Cluster WebUI	
Machine on which the WebManager can be installed	PC that supports one of the following operating systems.
Supported operating systems	Windows 7 Service Pack 1 Windows 8 Windows 8.1 Windows 10 Windows Server 2012 Windows Server 2012 R2 Windows Server 2016
Supported browsers	Windows 7 Service Pack 1 : Internet Explorer 11 Windows 8 : Internet Explorer 10 Windows 8.1 : Internet Explorer 11 Windows 10 : Internet Explorer 11 Windows Server 2012 : Internet Explorer 10 Windows Server 2012 R2 : Internet Explorer 11 Windows Server 2016 : Internet Explorer 11
Memory size	User mode 200 MB
Disk size	50 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.

WebManager, Builder (online version)	
Machine on which the WebManager can be installed	PC that supports one of the following operating systems.
Supported operating systems	Windows 7 Service Pack 1 Windows 8 Windows 8.1 Windows 10 Windows Server 2012 Windows Server 2012 R2 Windows Server 2016
Supported browsers	Windows 7 Service Pack 1 : Internet Explorer 11 Windows 8 : Internet Explorer 10 Windows 8.1 : Internet Explorer 11 Windows 10 : Internet Explorer 11 Windows Server 2012 : Internet Explorer 10 Windows Server 2012 R2 : Internet Explorer 11 Windows Server 2016 : Internet Explorer 11
Java Runtime Environment	To use the WebManager, a Java runtime environment is required. Java™ Runtime Environment Version 8 Update 162 (1.8.0_162) or later. Java™ Runtime Environment Version 9.0 (9.0.4) or later.
Memory size	User mode 50 MB
Disk size (excluding the size required for Java runtime environment)	10 MB

Note:

When you access to IP address, you should add the IP address to Local intranet site.

Note:

The Java applet version of WebManager does not run on Java™ Runtime Environment version 9.0.

Builder (offline version)		
Machine on which the WebManager can be installed	PC that supports one of the following operating systems.	
Supported operating systems	Windows 7 Service Pack 1 Windows 8 Windows 8.1 Windows 10 Windows Server 2012 Windows Server 2012 R2 Windows Server 2016	
Supported browsers	Windows 7 Windows 7 Service Pack 1 : Internet Explorer 11 Windows 8 : Internet Explorer 10 Windows 8.1 : Internet Explorer 11 Windows 10 : Internet Explorer 11 Windows Server 2012 : Internet Explorer 10 Windows Server 2012 R2 : Internet Explorer 11 Windows Server 2016 : Internet Explorer 11	
Java Runtime Environment	Java Runtime Environment is required for the Builder. Java™ Runtime Environment Version 8 Update 162 (1.8.0_162) or later. Java™ Runtime Environment Version 9.0 (9.0.4) or later.	
Memory size	User mode: 50 MB	
Disk size (excluding the size required for the Java runtime environment)	10 MB	
Supported version	Builder version	EXPRESSCLUSTER Server internal version
	4.0.0-1	12.00
		12.01

Note:

When you access to IP address, you should add the IP address to Local intranet site.

Note:

The Java applet version of WebManager does not run on Java™ Runtime Environment version 9.0.

Operation environment for SNMP linkage functions

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

x86_64 version

OS	EXPRESSCLUSTER version	Remarks
Windows Server 2012	12.00 or later	
Windows Server 2012 R2	12.00 or later	
Windows Server 2016	12.00 or later	
Windows Server, version 1709	12.00 or later	

Operation environment for JVM monitor

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

Java™ Runtime Environment
Version 7.0 (1.7.0_6) or later

Java™ Runtime Environment
Version 8.0 Update 11 (1.8.0_11) or later

Java™ Runtime Environment
Version 9.0 (9.0.1) or later

The use of the JVM monitor load balancer linkage function (when using BIG-IP Local Traffic Manager) requires a Microsoft .NET Framework runtime environment.

Microsoft .NET Framework 3.5 Service Pack 1

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

x86_64 version

Load balancer	EXPRESSCLUSTER version	Remarks
Express5800/LB400h or later	12.00 or later	
InterSec/LB400i or later	12.00 or later	
BIG-IP v11	12.00 or later	
MIRACLE LoadBalancer	12.00 or later	
CoyotePoint Equalizer	12.00 or later	

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 3.5 Service Pack 1

Note:

The version of Microsoft .NET Framework must be 3.5.

Installation procedure

If the server is not connectable to the Internet, prepare the OS installation medium. If connectable, the installation medium is not required.

Start **Server Manager**, and select **QUICK START** in the **Dashboard** window.

Select **2 Add roles and features** from the displayed menu to open the **Add Roles and Features Wizard**.

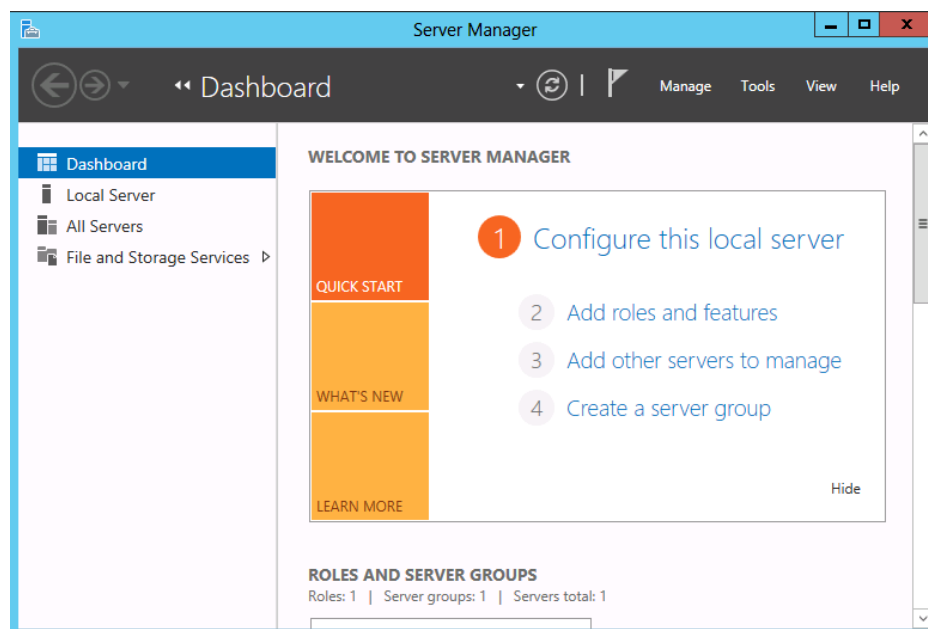


Figure 1: Server Manager

If the **Before You Begin** window appears, click **Next**.

In the **Installation Type** window, select **Role-based or feature-based installation** and click **Next**.

In the **Select Server** window, check **Select server from server pool**, select the target server from the list, and then click **Next**.

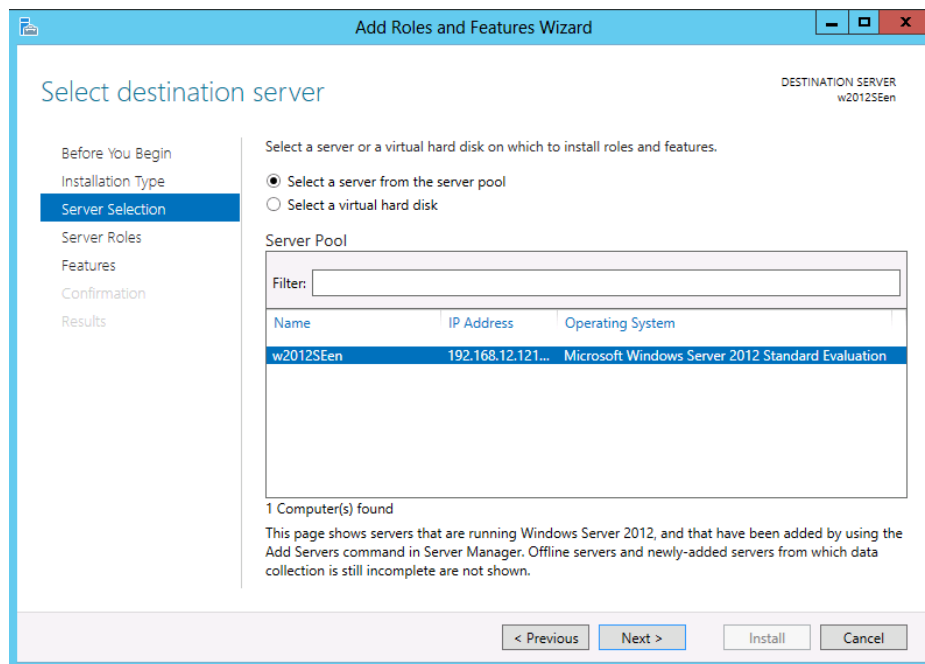


Figure 2: Select Server

Click **Next** in the **Server Roles** window.

In the **Features** window, select **.Net Framework 3.5 Features** and click **Next**.

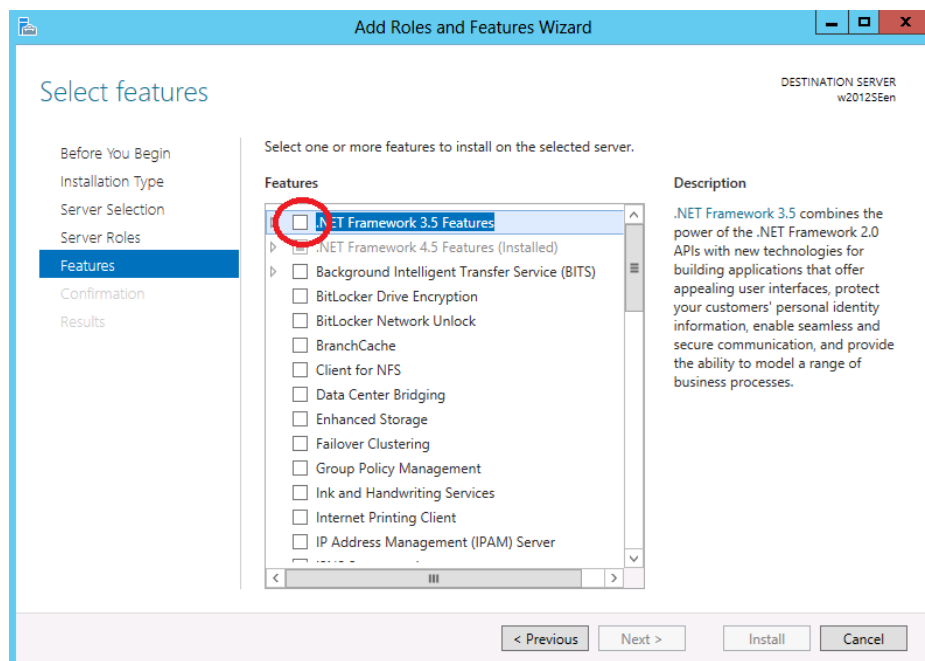


Figure 3: Select Features

If the server is connected to the Internet, click **Install** in the **Confirm installation selections** window to install .Net Framework 3.5.

If the server is not connectable to the Internet, select **Specify an alternative source path** in the **Confirm installation selections** window.

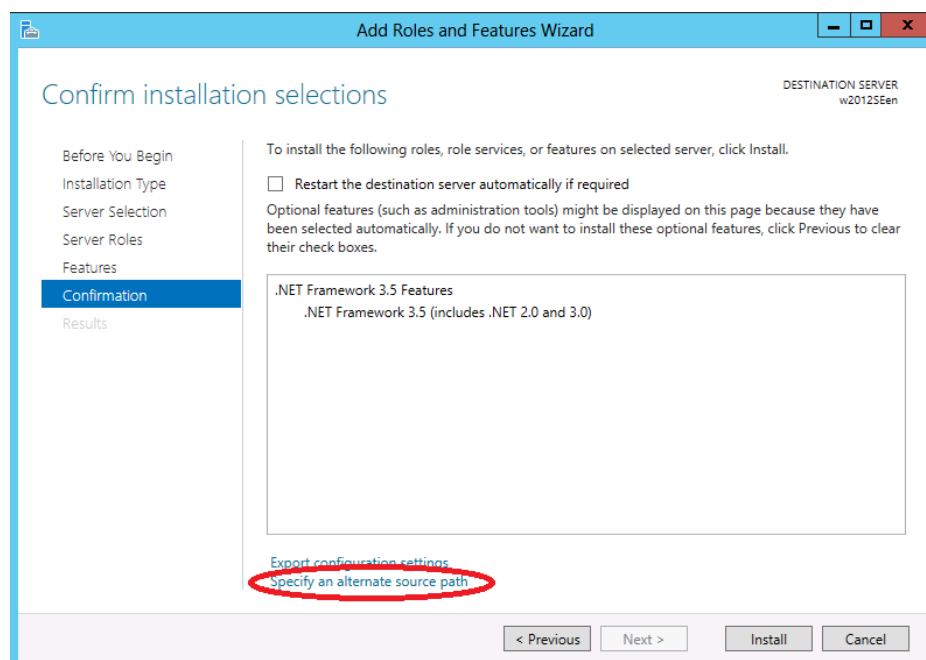


Figure 4: Confirm Installation Options

Specify the path to the OS installation medium in the **Path** field while referring to the explanation displayed in the window, and then click **OK**. After this, click **Install** to install .Net Framework 3.5.

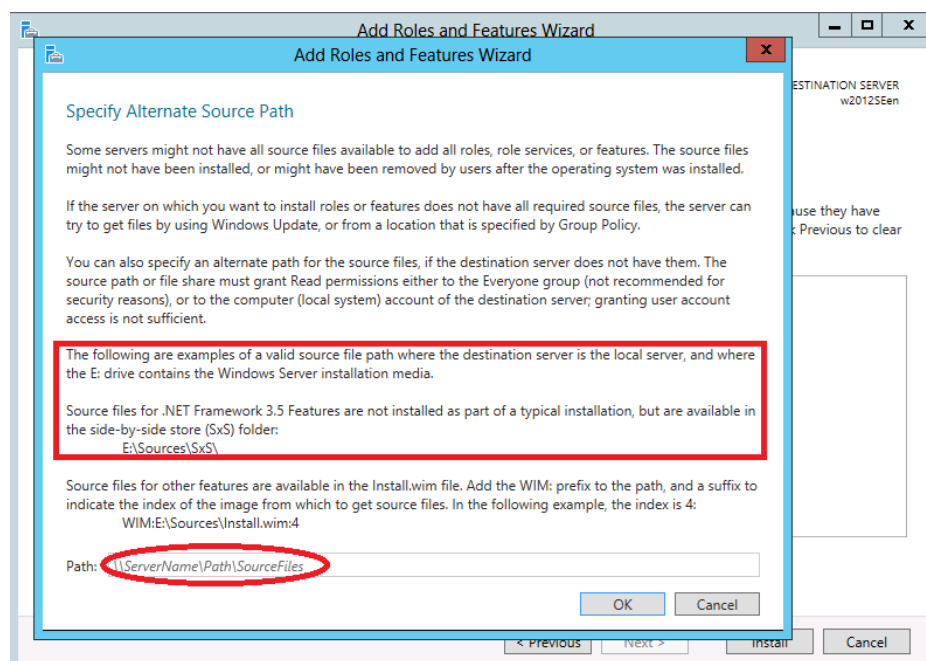


Figure 5: Specify Alternative Source Path

Preparing and verifying the server environment before installation

After installing the hardware, verify the following:

1. Verification of the network settings (Required)
2. Verification of the firewall settings (Required)
3. Power saving function - OFF (Required)

1. Verifying the network settings (Required)

Check the network settings by using the ipconfig and ping commands.

- ◆ IP Address
- ◆ Host name

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

Internal processing in the local server					
From			To		Remarks
Server	Automatic allocation	→	Server	29001/TCP	Internal communication
Server	Automatic allocation	→	Server	29002/TCP	Data transfer
Server	Automatic allocation	→	Server	29003/UDP	Alert synchronization
Server	29106/UDP	→	Server	29106/UDP	Heartbeat (kernel mode)

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

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

Others					
From			To		Remarks
Server	Automatic allocation	→	Server	Management port number set by the Builder	JVM monitor
Server	Automatic allocation	→	Monitoring target	Connection port number set by the Builder	JVM monitor
Server	Automatic allocation	→	Server	Management port number for Load Balancer Linkage set by the Builder	JVM monitor
Server	Automatic allocation	→	BIG-IP LTM	Communication port number set by the Builder	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.

3. Turning off the power saving function (Required)

For EXPRESSCLUSTER X SingleServerSafe, the power saving function (for example, standby or hibernation) cannot be used with the OnNow, ACPI, or APM function. Do not use any power saving functions.

Chapter 2 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. If you have a separate machine for setting up SingleServerSafe, install the Builder on that machine.

This chapter covers:

- Installing the EXPRESSCLUSTER Server 30
- Installing the offline version of the Builder 39

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.

Installing EXPRESSCLUSTER X SingleServerSafe for the first time

To install EXPRESSCLUSTER X SingleServerSafe, follow the procedure below.

Note 1:

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

Note 2:

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 3:

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 "Setting up the SNMP linkage function manually".

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



Note:

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

3. Select NEC EXPRESSCLUSTER® SingleServerSafe for Windows.



Note:

If you click the **Exit** button without selecting either, the menu screen is closed.

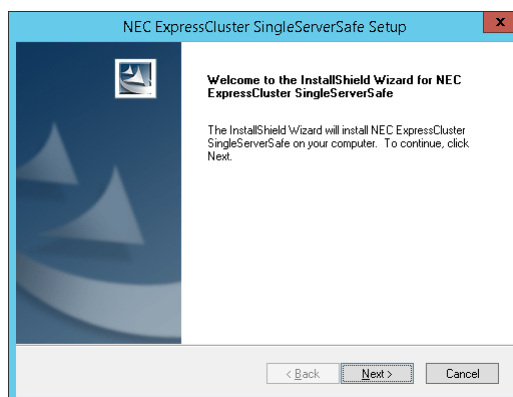
4. Select NEC EXPRESSCLUSTER® X SingleServerSafe 4.0 for Windows.



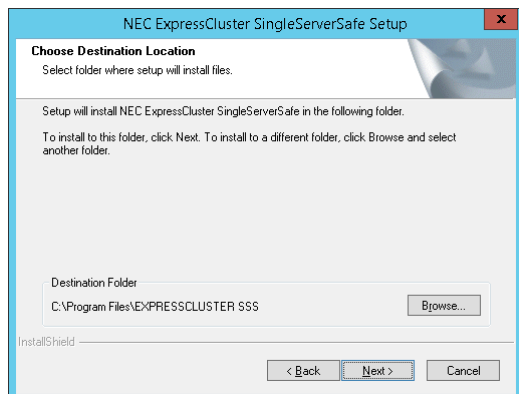
Note:

If you click the **Exit** button without selecting either, the previous menu screen is displayed.

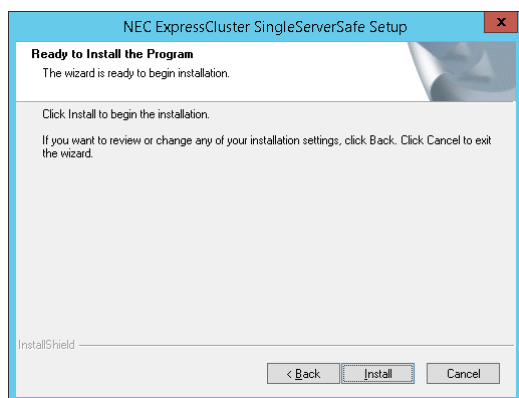
5. [Welcome to the InstallShield Wizard for NEC EXPRESSCLUSTER SingleServerSafe] is displayed. Click **Next**.



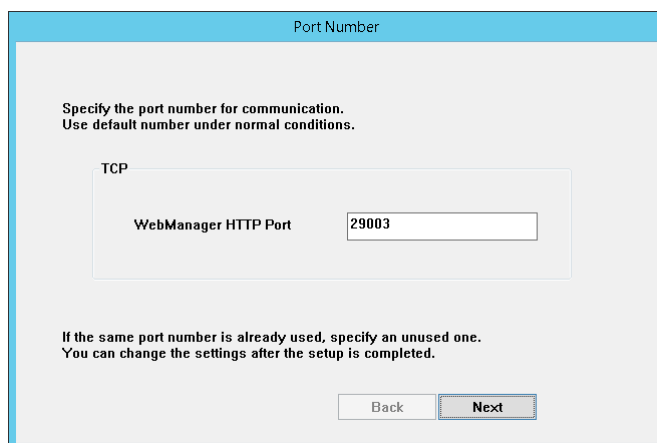
- The **Choose Destination Location** dialog box is displayed. When changing the install destination, click **Browse** to select a directory. Click **Next**.



- The **Ready to Install the Program** dialog box is displayed. Click **Install** to start the installation.



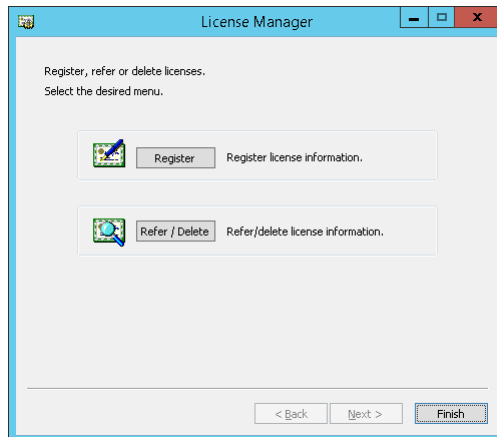
- When the installation successfully finishes, the **Port Number** dialog box is displayed. Normally, click **Next** without changing the default setting.



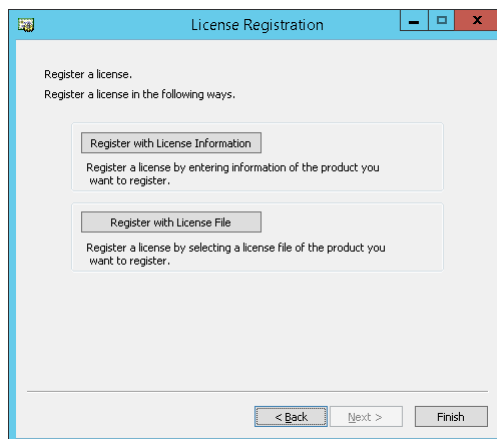
Note:

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 Chapter 5 “Other setting details” in the *Configuration Guide*.

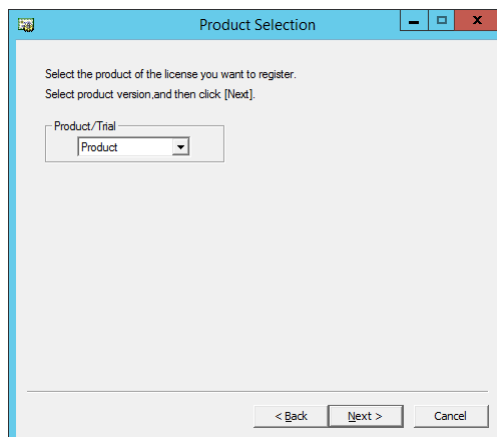
9. **License Manager** is displayed. Click **Register**.



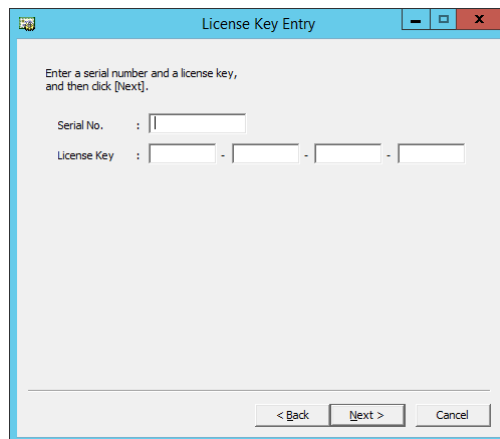
10. Click **Register with License Information** to register the license.
When registering the license with **Register with License File**, refer to "Registering a license by specifying a license file" in Chapter 5.



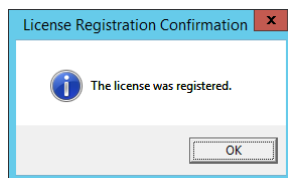
11. Based on the license sheet, select appropriate items for **Product/Trial** and then click **Next**.



12. Based on the license sheet, enter the serial number and license key, and then click **Next**.



13. When the **License Registration Confirmation** dialog box is displayed, check its content, and then click **Next**. A confirmation message is displayed.

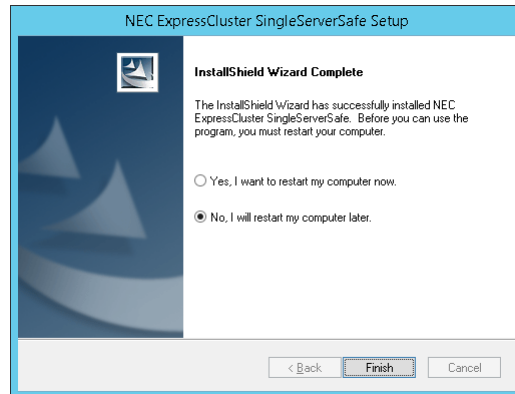


14. The initial **License Manager** dialog box is displayed again, as in step 9. Register the licenses of optional products in the same way. After registering all the required licenses, click **Finish** to close the **License Manager** dialog box.

Note:

When using the fixed term license, the license for the same product can be registered multiple times for preventing license expiration. Extra licenses are saved and a new license will take effect when the current license expires.

15. [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**.



Note:

By default, **No, I will restart my computer later** is selected.

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 1:

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

Note 2:

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 3:

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 "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 CD-ROM to any accessible location in the server.

Copy the following file in the installation CD-ROM.

Windows\4.0\common\server\x64\response\setup_sss_inst_en.iss

2. Open the response file (setup_sss_inst_en.iss) by using a text editor and change the folder indicated by (*).

```
. . .
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

EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows Installation Guide

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\4.0\common\server\x64\silent-install.bat in the installation
CD-ROM

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

2. Execute the following command from the command prompt to register the license.

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

3. Restart the server.

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\ SnmAgent\mgtmib\CurrentVersion

3-4. Exit the registry editor.

4. Start the Windows SNMP Service.

Note:

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

Installing the offline version of the Builder

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

Installing the offline version of the Builder

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

Note:

Install the Builder with the administrator privilege.

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



Note:

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

3. Select NEC EXPRESSCLUSTER® SingleServerSafe for Windows.



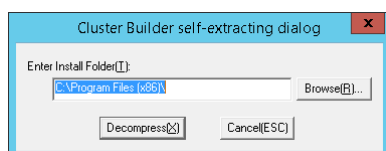
4. Select **NEC EXPRESSCLUSTER® SingleServerSafe Accessories**.



5. Select **NEC EXPRESSCLUSTER® SingleServerSafe Builder**.



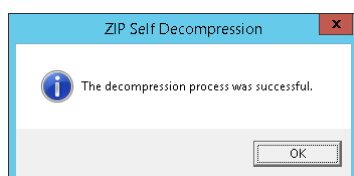
6. Select where to install in the **Cluster Builder self-extracting dialog** and click **Decompress**.



Note:

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

7. Click **OK** in the ZIP Self Decompression dialog box. Installation is completed.



Chapter 3 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:

- Updating EXPRESSCLUSTER X SingleServerSafe 42
- Uninstalling EXPRESSCLUSTER X SingleServerSafe..... 43
- Reinstalling EXPRESSCLUSTER X SingleServerSafe..... 46
- Upgrading to EXPRESSCLUSTER X..... 47

Updating EXPRESSCLUSTER X SingleServerSafe

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

Updating from the old EXPRESSCLUSTER X SingleServerSafe version

Before starting the update, read the following notes.

- ◆ You can update from EXPRESSCLUSTER X SingleServerSafe 1.0, 2.0, 2.1, 3.0, 3.1, 3.2 or 3.3 for Windows to EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows. Updating from other versions is not possible.
- ◆ To update from EXPRESSCLUSTER X SingleServerSafe 1.0, 2.0, 2.1, 3.0, 3.1, 3.2 or 3.3 for Windows to EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows, you need the license of EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows (including the licenses of optional products, if used).
- ◆ You cannot use the cluster configuration data that was created by using EXPRESSCLUSTER X higher than EXPRESSCLUSTER X in use.
- ◆ The cluster configuration data that was created by using EXPRESSCLUSTER X 1.0, 2.0, 2.1, 3.0, 3.1, 3.2, 3.3 or 4.0 for Windows is available for EXPRESSCLUSTER X in use.
- ◆ EXPRESSCLUSTER X SingleServerSafe must be updated with the account having the Administrator's privilege.

The following procedure describes how to update from EXPRESSCLUSTER X SingleServerSafe 1.0, 2.0, 2.1, 3.0, 3.1, 3.2 or 3.3 for Windows to EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows.

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 "Uninstalling EXPRESSCLUSTER X SingleServerSafe " in this chapter.
4. Install the EXPRESSCLUSTER X 4.0 SingleServerSafe on the server. For details about the installation procedure, refer to "Installing the EXPRESSCLUSTER Server " in Chapter 2.
5. Apply the configuration data to the server.
To apply the configuration data, load the backup data by using the Builder, and then upload it. For details, see "Applying configuration data" in Chapter 2, "Creating configuration data" in the EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows Configuration Guide.
6. 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 / WebManager.

Uninstalling EXPRESSCLUSTER X SingleServerSafe

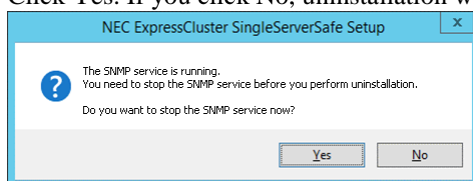
Uninstalling EXPRESSCLUSTER X SingleServerSafe

Note:

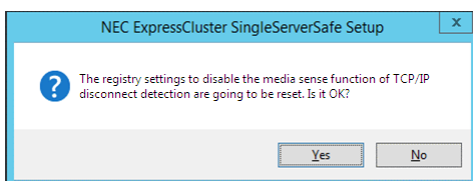
You must log on as an Administrator to uninstall EXPRESSCLUSTER X SingleServerSafe.

To uninstall EXPRESSCLUSTER X SingleServerSafe, follow the procedure below.

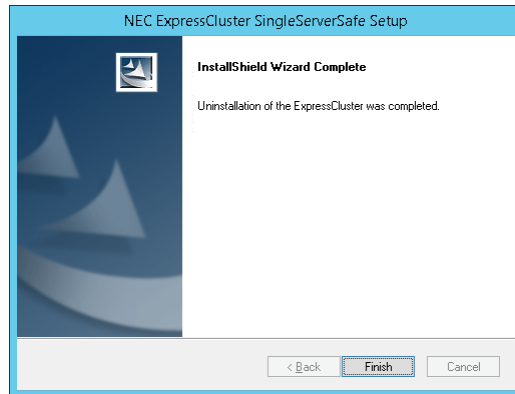
1. Select **Service** in **Administrative Tool** in OS, and set following service **Startup Type** to **Manual**.
 - EXPRESSCLUSTER
 - EXPRESSCLUSTER Event
 - EXPRESSCLUSTER Manager
 - EXPRESSCLUSTER Old API Support
 - EXPRESSCLUSTER Server
 - EXPRESSCLUSTER SingleServerSafe
 - EXPRESSCLUSTER Transaction
 - EXPRESSCLUSTER Web Alert
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.



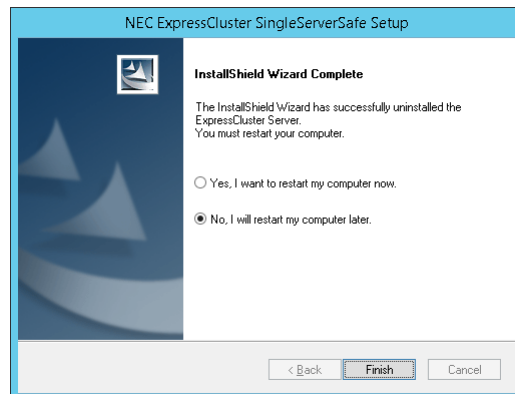
7. A message is displayed asking whether to return the media sense function (TCP/IP disconnection detection) to the state it was in before installing the EXPRESSCLUSTER Server. Click **Yes** to return to the state it was in before installing the EXPRESSCLUSTER Server. If you click **No**, the EXPRESSCLUSTER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



8. [InstallShield Wizard Complete] 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.



Note:

If you uninstall EXPRESSCLUSTER with CPU frequency changed by using CPU Frequency Control of EXPRESSCLUSTER, the CPU frequency does not return to the state before changing. In this case, return the CPU frequency to the defined value by the following way.

Select **Balanced** in **Power Options** -> **Choose or customize a power plan** in **Control Panel**.

Uninstalling the offline version of the Builder

To uninstall the Builder, follow the procedures below:

1. Exit from all Web browsers (confirm that the JavaVM icon is no longer in the task tray).
2. Delete the Builder installation folder from Windows Explorer. The default installation folder is "C:\Program Files\EXPRESSCLUSTER SSS".

Reinstalling EXPRESSCLUSTER X SingleServerSafe

Reinstalling the EXPRESSCLUSTER X SingleServerSafe

To reinstall the EXPRESSCLUSTER X SingleServerSafe, prepare the configuration data created using the Builder (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 Builder after creation, you can back up the configuration data by using the `clpcfctrl` command. For details, see “Backing up configuration data” in Chapter 2, “EXPRESSCLUSTER X SingleServerSafe command reference” in the *EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows 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 Builder, and then upload it. For details, see "Applying configuration data" in Chapter 2, “Creating configuration data” in the *EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows Configuration Guide*.

Upgrading to EXPRESSCLUSTER X

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

In this case, save the latest configuration data before starting the upgrade. In addition to saving it to the Builder after creation, you can back up the configuration data by using the `clpcfctrl` command. For details, see “Backing up configuration data” in Chapter 2, “EXPRESSCLUSTER X SingleServerSafe command reference” in the *EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows Operation Guide*.

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

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

Note:

For EXPRESSCLUSTER X, register the following licenses:

* EXPRESSCLUSTER X SingleServerSafe (two-CPU license)

* EXPRESSCLUSTER X SingleServerSafe upgrade license

These licenses can be used for EXPRESSCLUSTER X (two-CPU license).

Chapter 4 Latest version information

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

This chapter covers:

- EXPRESSCLUSTER X SingleServerSafe version and corresponding manual editions 50
- New features and improvements..... 51
- Corrected information..... 52

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
12.01	Installation Guide	2nd Edition	
	Configuration Guide	2nd Edition	
	Operation Guide	2nd Edition	
	Integrated WebManager Administrator's Guide	13th Edition	

New features and improvements

The following features and improvements have been released.

No.	Internal Version	Contents
1	12.00	Management GUI has been upgraded to Cluster WebUI.
2	12.00	HTTPS is supported for Cluster WebUI and WebManager.
3	12.00	The fixed term license is released.
4	12.00	Windows Server, version 1709 is supported.
5	12.00	SQL Server monitor resource supports SQL Server 2017.
6	12.00	Oracle monitor resource supports Oracle Database 12c R2.
7	12.00	PostgreSQL monitor resource supports PowerGres on Windows 9.6.
8	12.00	WebOTX monitor resource supports WebOTX V10.1.
9	12.00	JVM monitor resource supports Apache Tomcat 9.0.
10	12.00	JVM monitor resource supports WebOTX V10.1.
11	12.00	The following monitor targets have been added to JVM monitor resource. <ul style="list-style-type: none"> - CodeHeap non-nmethods - CodeHeap profiled nmethods - CodeHeap non-profiled nmethods - Compressed Class Space
12	12.00	The clpstdncnf command to edit cluster termination behavior when OS shutdown initiated by other than cluster has been added.
13	12.00	Monitoring behavior to detect error or timeout has been improved.
14	12.00	The function to execute a script before or after group resource activation or deactivation has been added.
15	12.00	Internal communication has been improved to save TCP port usage.
16	12.00	The list of files for log collection has been revised.
17	12.01	When HTTPS is unavailable in WebManager due to inadequate settings, a message is sent to event and alert logs.

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	Cause
1	12.01/ 12.00	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. <ul style="list-style-type: none"> ● An unused license in stock is automatically enabled when the license expires. ● A new license is registered by the command for registering a license. 	There was a flaw in performing exclusive control when operating license information.
2	12.01/ 12.00	A monitoring timeout of the monitor resource may not be detected.	M	This problem occurs depending on the timing, when the time required for monitoring exceeds the setting value for timeout.	There was a flaw in the timeout judgment.
3	12.01/ 12.00	When an error is detected in ODBC monitoring, it is erroneously judged to be normal.	M	This problem occurs when there is a monitor error in ODBC monitoring.	There was a flaw in returning the status of the ODBC monitor resource.
4	12.01/ 12.00	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: <ul style="list-style-type: none"> ● [Monitor the number of Active Threads] on [Thread] tab in [Tuning] properties on [Monitor (special)] tab is set to on. 	When extending Java API being used, classes which are not released in Scavenge GC may be accumulated.

No.	Version in which the problem has been solved / Version in which the problem occurred	Phenomenon	Level	Occurrence condition/ Occurrence frequency	Cause
5	12.01/ 12.00	Memory leak may occur In Java process of JVM monitor resources.	M	<p>If all the following conditions are met, this problem may occur:</p> <ul style="list-style-type: none"> • All the settings in the [Tuning] properties on the [Monitor (special)] tab are set to OFF. • More than one JVM monitor resource are created. 	There was a flaw in disconnecting Java VM to be monitored.
6	12.01/ 12.00	<p>The JVM statistics log (jramemory.stat) is output, even if the following parameters are set to OFF in JVM monitor resources.</p> <ul style="list-style-type: none"> • [Monitor (special)] tab – [Tuning] properties – [Memory] tab – [Memory Heap Memory Rate] • [Memory (special)] tab – [Tuning] properties – [Memory] tab – [Monitor Non-Heap Memory Rate] 	S	<p>If all the following conditions are met, this problem inevitably occurs:</p> <ul style="list-style-type: none"> • [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. 	There was a flaw in deciding whether or not to output the JVM statistics log.
7	12.01/ 12.00	The load balancer linkage function and BIG-IP linkage function do not run in JVM monitor resources.	M	Never fail to occur.	Since there are differences among binary signatures, the command of the function fails to run due to a security error.
8	12.01/ 12.00	In the application using compatibility with EXPRESSCLUSTER Ver8.0 or earlier, some of cluster events cannot be properly collected.	M	This problem occurs when cluster events are monitored using compatible API.	There was a flaw in the process of notifying some of cluster events.

Chapter 5 Additional information

This chapter provides tips on installing EXPRESSCLUSTER X SingleServerSafe.

This chapter covers:

- EXPRESSCLUSTER X SingleServerSafe services..... 56
- Using the License Manager 57

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 Event	Event log output
EXPRESSCLUSTER Java Resource Agent	Java Resource Agent
EXPRESSCLUSTER Manager	WebManager Server
EXPRESSCLUSTER Old API Support	Compatible API process
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

Using the License Manager

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

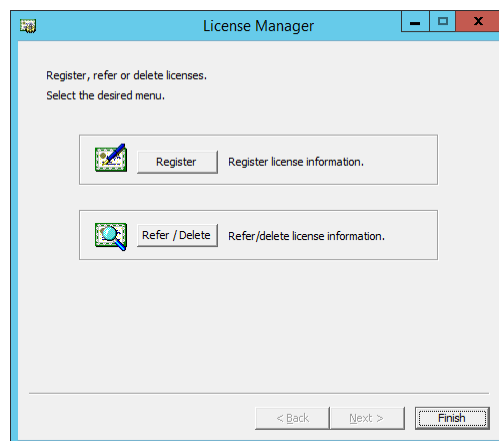
Registering a license by specifying a license file

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.

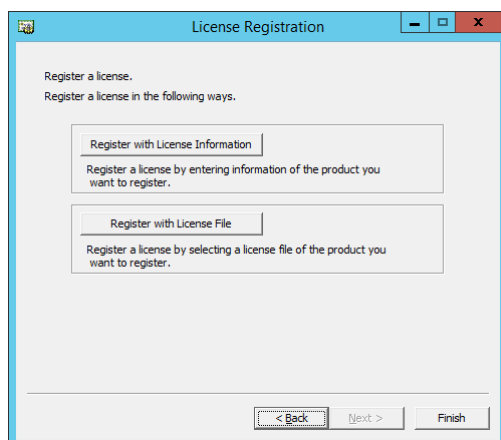
Note:

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

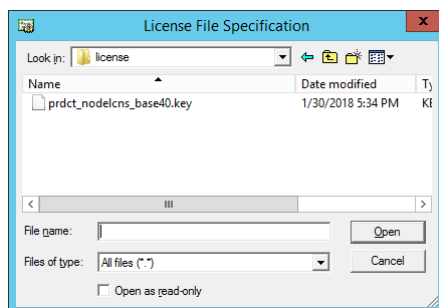
1. On the **Start** menu, click **License Manager of NEC EXPRESSCLUSTER SingleServerSafe**.
2. The **License Manager** dialog box is displayed. Click **Register**.



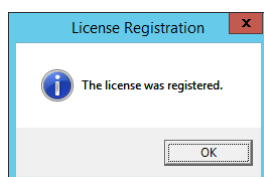
3. A dialog box is displayed for selecting the license registration method. Click **Register with License File**.



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**.



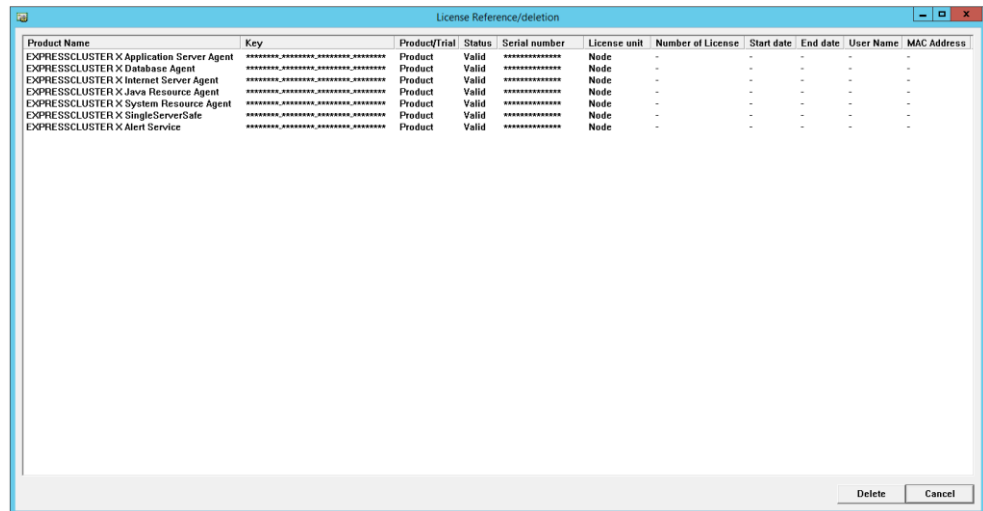
6. Click **Finish** to close the license manager.

For the license registration to take effect, shut down the server by using the shutdown command of your OS and reboot it.

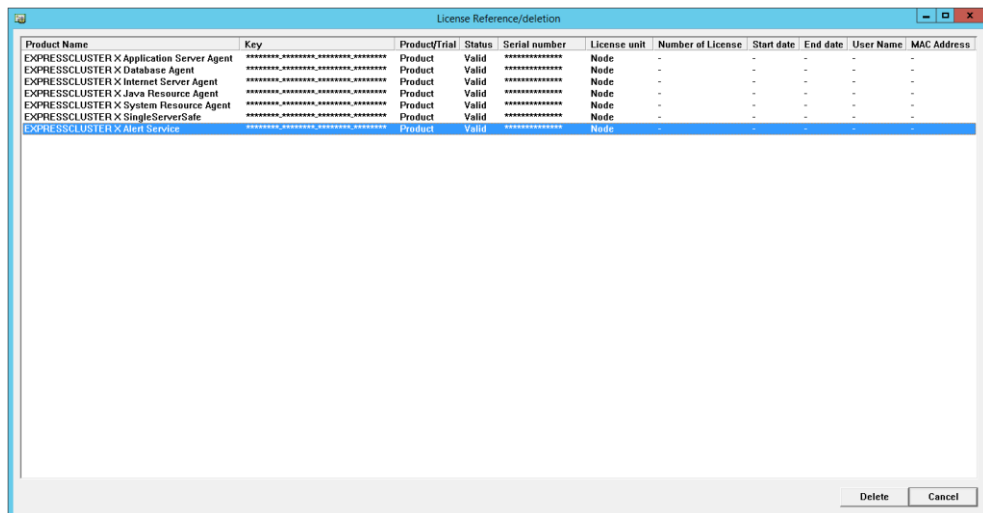
Referencing or deleting a registered license

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

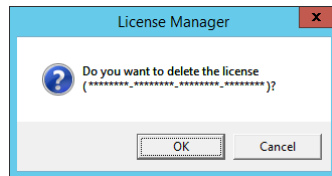
1. On the **Start** menu, click **License Manager** of NEC **EXPRESSCLUSTER SingleServerSafe**.
2. The **License Manager** dialog box is displayed. Click **Refer/Delete**.
3. The registered licenses are listed.



4. Select the license to delete and click **Delete**.



5. The confirmation message to delete the license is displayed. Click OK.



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.

Chapter 6 Notes and Restrictions

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

This chapter covers:

- Information about installing EXPRESSCLUSTER X SingleServerSafe 62

Information about installing EXPRESSCLUSTER X SingleServerSafe

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

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

The folders and files in the location pointed to by the EXPRESSCLUSTER X SingleServerSafe installation path must not be handled (edited, created, added, or deleted) by using any application or tool other than EXPRESSCLUSTER X SingleServerSafe.

Any effect on the operation of a folder or file caused by using an application or tool other than EXPRESSCLUSTER X SingleServerSafe will be outside the scope of NEC technical support.

File system

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

WebManager

After updating EXPRESSCLUSTER X SingleServerSafe, close the Web browser, clear the Java cache, and then open the browser again.

EXPRESSCLUSTER Disk Agent Service

The EXPRESSCLUSTER Disk Agent service is not used for EXPRESSCLUSTER X SingleServerSafe. Do not start this service.

Appendix

- Appendix A Troubleshooting
- Appendix B Index

Appendix A 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.

Troubleshooting for licensing

Behavior and Message	Cause	Solution
<p>When the cluster was shut down and rebooted after distribution of the configuration data created by the Builder to all servers, 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>	The cluster has been shut down and rebooted without its license being registered.	Register the license from the server.
<p>When the cluster was shut down and rebooted after distribution of the configuration data created by the Builder to all servers, 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 %2: Product name</p>	Licenses are insufficient.	Obtain a license and register it.
<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 %2: Product name</p>	The license has already expired.	Ask your sales agent for extension of the trial version license, or obtain and register the product version license.
<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 %2: Product name</p>	The license has already expired.	Obtain the license for the product version from the vendor, and then register the license.

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