EXPRESSCLUSTER X SingleServerSafe for Windows
Legacy Feature Guide

Release 2

NEC Corporation

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PREFACE

1.1 Who Should Use This Guide

The EXPRESSCLUSTER X SingleServerSafe Legacy Feature Guide describes EXPRESSCLUSTER X SingleServer-Safe 4.0 WebManager and Builder.

1.2 How This Guide Is Organized

- *2. Functions of the WebManager*: Provides information on function of the EXPRESSCLUSTER WebManager.

- *3. Function of the Builder*: Provides information on function of the EXPRESSCLUSTER Builder.

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 to ensure high compatibility with EXPRESSCLUSTER X 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 consist of the four guides below. The title and purpose of each guide is described below:

EXPRESSCLUSTER X SingleServerSafe Installation Guide

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

EXPRESSCLUSTER X SingleServerSafe Configuration Guide

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

EXPRESSCLUSTER X SingleServerSafe Operation Guide

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

EXPRESSCLUSTER X SingleServerSafe Legacy Feature Guide

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

1.5 Conventions

In this guide, **Note**, **Important**, **See also** are used as follows:

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

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

See also:

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

The following conventions are used in this guide.

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

1.6 Contacting NEC

For the latest product information, visit our website below:

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

TWO

FUNCTIONS OF THE WEBMANAGER

This chapter describes the functions of the WebManager.

EXPRESSCLUSTER X SingleServerSafe uses windows common to those of the clustering software EXPRESSCLUSTER X to ensure high compatibility with EXPRESSCLUSTER X in terms of operation and other aspects.

This chapter covers:

2.1 Starting the WebManager

Some of the windows and terms used to describe the WebManager in this chapter are the same as those for EXPRESS-CLUSTER X WebManager. Therefore, cluster-related terms are used in parts of the chapter.

Read the guide, assuming that EXPRESSCLUSTER X SingleServerSafe is in a one-node cluster.


Note: You cannot configure or display functions that have been added to or changed in versions later than *EXPRESS-CLUSTER* X 4.0.

See also:

For the system requirements of the WebManager, see the corresponding web page.

2.1.1 What is the WebManager?

The WebManager is a function for setting up EXPRESSCLUSTER, monitoring its status, starting and stopping servers and groups, and collecting operation logs through a Web browser. The overview of the WebManager is shown in the following figures.
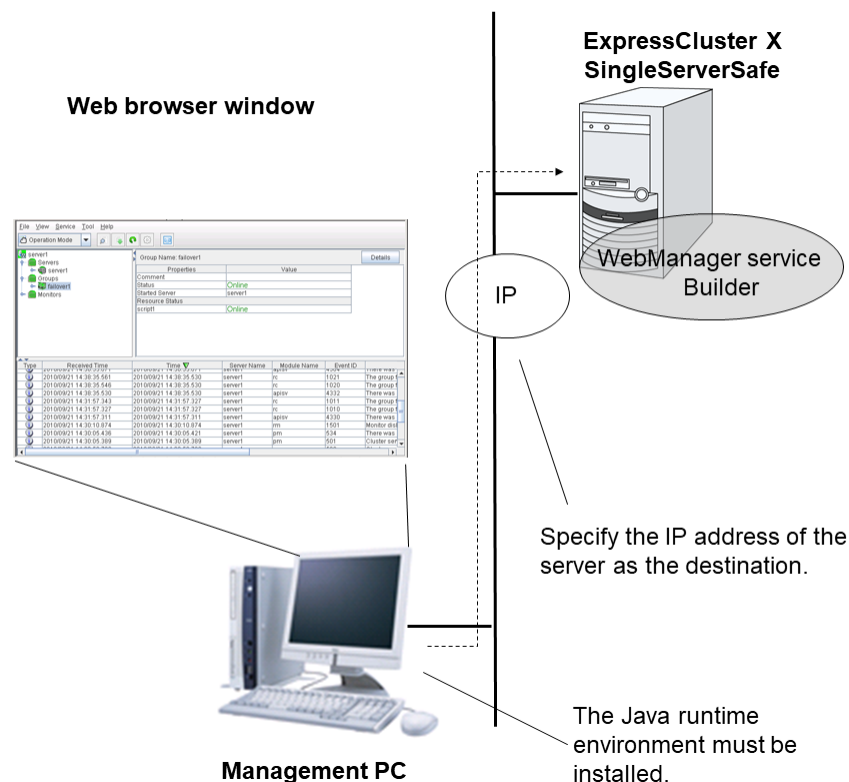
The WebManager service on the EXPRESSCLUSTER X SingleServerSafe Server is set up to start up when the operating system starts up.

2.1.2 Setting up JAVA runtime environment to a management PC

To connect to the Java applet version of WebManager, a Java Plug-in (Java™ Runtime Environment Version 8.0 Update 162 (1.8.0_162)) must be installed in a browser on a management PC.

When the version of Java Plug-in is older than the version written above, the browser might prompt you to install Java. In this case, install the Java Plug-in of the version of which the operation is verified on EXPRESSCLUSTER WebManager.

To install Java Plug-in on a browser, refer to the browser's help and the JavaVM installation guide.

You have to add the Exception Site for Java on the machine connected to the WebManager. From **Control Panel**, open **Java** and add "URLs used to connect to the WebManager."

2.1.3 Starting the WebManager

The procedure for starting the WebManager is described below.

1. Start your Web browser.

2. Enter the IP address and port number of the server where EXPRESSCLUSTER X SingleServerSafe is installed in the browser address bar.

   http://192.168.0.1:29003/main.htm

   The port number for the WebManager specified at installation. (Default value: 29003)
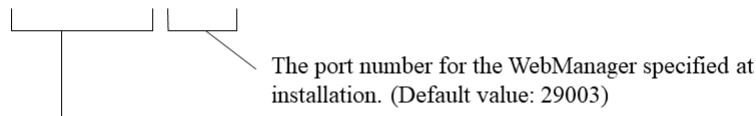
   It is the IP address of the server where EXPRESSCLUSTER X SingleServerSafe is installed.
   If the local server is used, **localhost** can be specified.

Note: In Java Runtime Enviroment Version 9.0 or later, WebManager can be launched by using Java Web Start. When starting the Java WebManager, change "main.htm" of the URL above to "main.jnlp" and then enter the modified URL in the Address bar.

Example: http://10.0.0.1:29003/main.jnlp

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3. The WebManager starts.
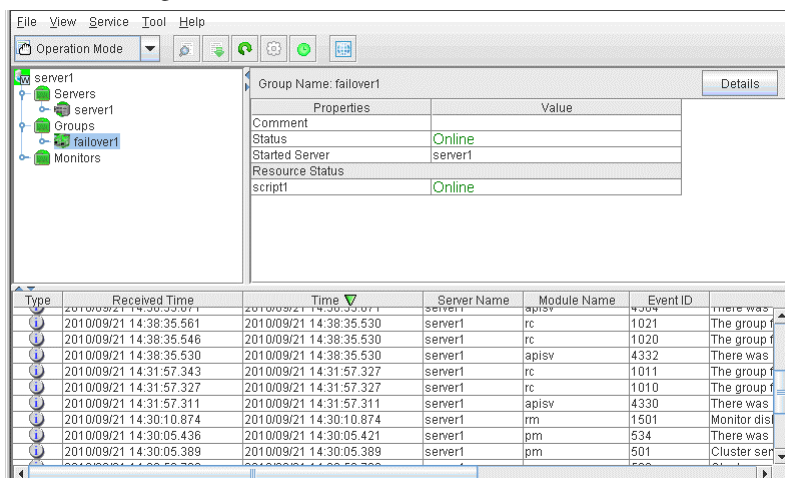
See also:

The Cluster WebManager supports encrypted communication (by using HTTPS). For details of encrypted communication, see "3.2.6. *WebManager tab*" in "3.2. *Cluster properties*" in 3. *Function of the Builder*" in this guide. Enter the following to perform encrypted communication.
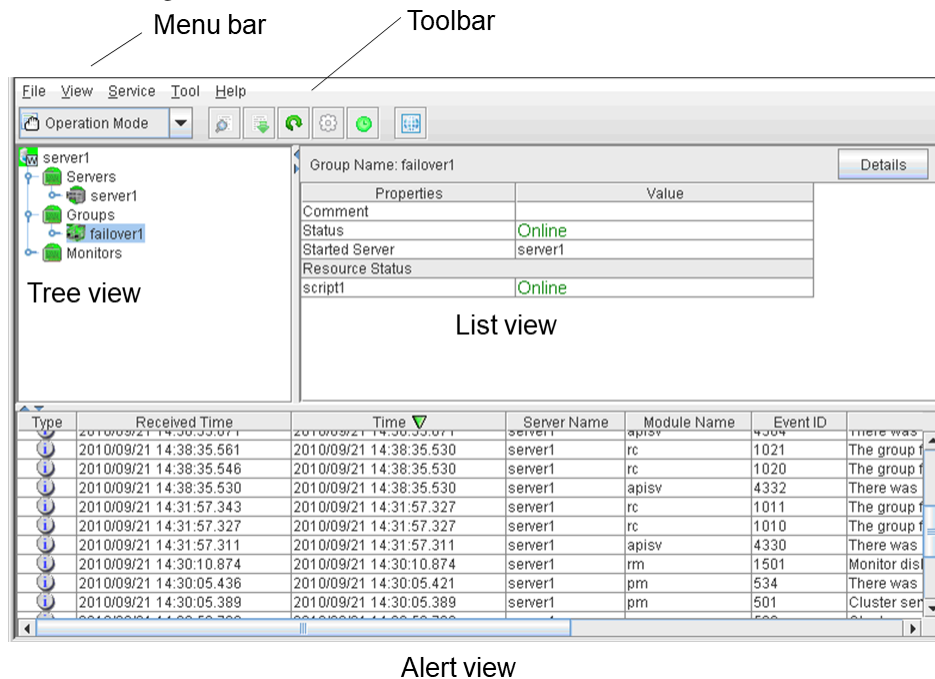
https://192.168.0.1:29003/main.htm

2.2 Window of the WebManager

This chapter provides information about the WebManager window.

Note: For the language used on the WebManager screen, see "3.2.1. *Info tab*" in "3.2. *Cluster properties*" in "3. *Function of the Builder*" in this guide.

2.2.1 Main window of the WebManager window

The WebManager window consists of two bars and three views.

Menu bar

The menu bar has the five menus described below. The contents of these menus differ depending on the config mode and operation/reference mode. The menu items displayed in the operation/reference mode are described later in this chapter.

- **File** menu
- **View** menu
- **Service** menu
- **Tool** menu
- **Help** menu

Toolbar

If you click one of the six icons on the toolbar, you can perform the same operation as when selecting the corresponding item on the menu bar.

Icon/menu	Function	Refer to
Operation Mode	Changes the WebManager to the operation mode. This is the same as clicking View on the menu bar and then selecting Operation Mode.	2.2.2. *Changing the WebManager operation mode*
Config Mode	Changes the WebManager to the config mode (online version of the Builder). This is the same as clicking View on the menu bar and then selecting Config Mode.	2.2.2. *Changing the WebManager operation mode*
Reference Mode	Changes the WebManager to the reference mode. This is the same as clicking View on the menu bar and then selecting Reference Mode.	2.2.2. *Changing the WebManager operation mode*
Verification Mode	Changes the WebManager to the verification mode. This is the same as clicking View on the menu bar and then selecting Verification mode.	2.2.2. *Changing the WebManager operation mode*
	Searches for an alert. This is the same as clicking Tool on the menu bar and then selecting Filter Alerts.	2.2.3. *Searching for an alert by using the WebManager*
	Collects logs. This is the same as clicking Tool on the menu bar and then selecting Collecting Cluster Logs.	2.2.4. *Collecting logs by using the WebManager*
	Performs reloading. This is the same as clicking Tool on the menu bar and then selecting Reload.	2.2.5. *Updating the WebManager information*
	Displays options. This is the same as clicking Tool on the menu bar and then selecting Option.	2.2.6. *Changing the screen layout on the WebManager*
	Displays the time information. This is the same as clicking Tool on the menu bar and then selecting TimeInfo When the time information has been updated, the icon changes accordingly. The icon reverts to its original form when the time information dialog is displayed.	2.2.7. *Checking the time information from the WebManager*

Table 2.1 – continued from previous page

Icon/menu	Function	Refer to
	Displays Integrated WebManager. This is the same as clicking Tool on the menu bar and then selecting Integrated WebManager.	2.2.8. *Executing Integrated WebManager from the WebManager*

Tree view

The statuses of servers and group resources can be confirmed. For further information, see "2.3. *Checking the status of each object in the tree view of WebManager*".

List view

The upper part of the view provides information on the server or other resource selected in the tree view. The lower part lists the start/stop statuses and comments of each server, group resource, and monitor resource. If you click the **Details** button located on the upper right of the view, further information will be displayed in a dialog box. For further information, see " 2.4. *Checking the status by the WebManager list view* ".

Alert view

The operation status of EXPRESSCLUSTER X SingleServerSafe is indicated by a message. For further information, see "2.5. *Checking alerts using the WebManager*".

2.2.2 Changing the WebManager operation mode

The WebManager has the following four operation modes.

- **Operation mode**

  This mode allows the user to see the status of and operate the server.

  Select **Operate Mode** on the **View** menu or click the operation mode icon [ ] on the toolbar to switch to the operation mode. However, if you used the reference mode password for login when starting the WebManager or connected to the WebManager from a client that is not allowed to perform operations, it is not possible to switch to the operation mode.

- **Reference Mode**

  This mode allows the user to see the cluster status, but not to operate the server.

  Select **Reference Mode** on the **View** menu or click the operation mode icon [ ] on the toolbar to switch to the reference mode.

- **Config Mode**

  This mode allows the user to set up the server and change the settings. The WebManager in the config mode is called Builder (online version). For details about operations in the config mode, see the "3. *Function of the Builder*" in this Guide.

  Select **Config Mode** on the **View** menu or click the operation mode icon [ ] on the toolbar to switch to the config mode. However, if you connected to the WebManager from a client that is not allowed to perform operations, it is not possible switch to the config mode.

- **Verification Mode**

  This mode allows the user to generate a simulated fault in specified monitor resources.

  Select **Verification mode** [ ] on the **View** menu or the toolbar to switch to the **Verification mode**. However, if you connected to the WebManager from a client that is not allowed to perform operations, it is not possible to switch to verification mode.

If you switch from the verification mode to another mode, a dialog box asks if you want to cancel the simulated fault status of all the monitor resources. Select **Yes** to place all the monitor resources in the simulated fault status back in the normal monitored status. Select **No** to switch to another mode while keeping the monitor resources in the simulated fault status.
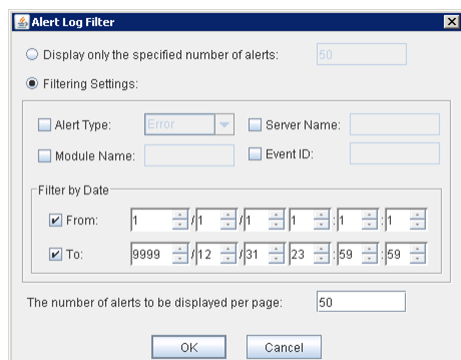
Note:

When the pop-up window is displayed for **Operation Mode**, **Reference Mode**, or **Verification Mode** in the WebManager, and if switching to **Config Mode** is performed, the open pop-up window closes.
The operation performed on the pop-up window continues.

2.2.3 Searching for an alert by using the WebManager

You can search for an alert by using the WebManager. Searching in this method is useful to view only a specific type alert.

Note: For information about alert logs, see "2.5. *Checking alerts using the WebManager* ".

To search for an alert, click **Filter Alerts** on the **Tool** menu or click the alert search icon [ ] on the toolbar. The window for specifying alert log search conditions is displayed.

To search only the specified number of past alert logs:

1. Select **Display only the specified number of alerts**.

2. Enter the number of past alert logs to search, and then click **OK**. Past alert logs are displayed as many as you have specified.

Note: The maximum value to enter is the number specified for **Max Number to Save Alert Records**. To configure **Max Number to Save Alert Records**, right-click the cluster icon in the Builder, and then click **Properties** on the shortcut menu. In the properties dialog box, click the **Alert Log** tab.

To search by specifying search conditions:

1. Click **Filtering Settings**.

2. Enter the search conditions in each field and start searching.

   - **Alert Type**: Select the type of alerts.

   - **Module Name**: Enter the module type.

Server Name: Type in the name of a server whose alerts you want to see.

- **Event ID**: Type in an event ID whose alerts you want to see.
  For event IDs, see "Error messages" in the "Operation Guide".

- **From, To**: Select this to search by the time of the event occurrence. Enter the values in **From** and **To** field.

3. Enter the number of alerts to display on one page in **The number of alerts to be displayed per page**, and then click **OK**. Research results are displayed based on the time an alert occurred.

4. If the results of research are displayed on more than one page, move the page by clicking **Back**, **Next**, and **Jump** buttons.

2.2.4 Collecting logs by using the WebManager

Clicking **Collect Cluster Logs** on the **Tool** menu or clicking the **Collect Cluster Logs** icon [⬇] on the toolbar opens the log collection dialog box.
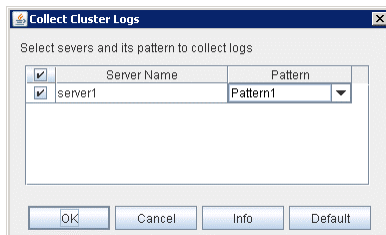
Check box

Select the check boxes of the servers that have the logs you want to collect.

Pattern

Select the information to be collected. Specify one of Type 1 to Type 4 as the log collection pattern.

	Type 1	Type 2	Type 3	Type 4
(1) Default collection information	✓	✓	✓	--
(2) Event log	✓	✓	✓	✓
(3) Windows Error Report	✓	✓	✓	✓
(4) User dump	✓	✓	--	--

Continued on next page

Table 2.2 – continued from previous page

	Type 1	Type 2	Type 3	Type 4
(5) Diagnosis program report	✓	✓	--	--
(6) Registry	✓	✓	✓	--
(7) Script	✓	✓	✓	--
(8) Logs of ESM-PRO/AC and ESM-PRO/UPSC	✓	✓	✓	--
(9) Logs of HA	--	✓	--	--

For detailed information of (1) to (9), see "Collecting logs (clplogcc command)" in "EXPRESSCLUSTER X SingleServerSafe command reference" in the "Operation Guide".

OK

Start log collection and displays the dialog box of log collection progress.
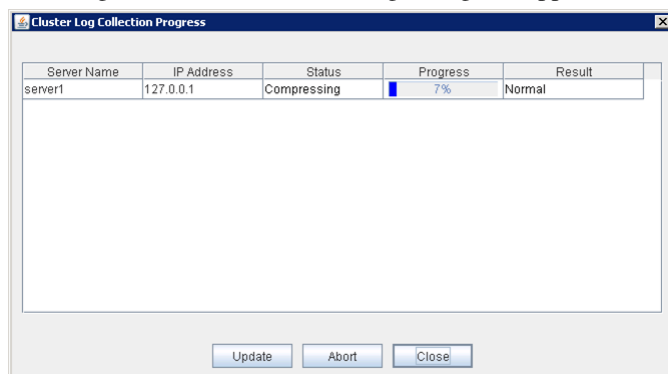
Cancel

Close this dialog box.

Info

Display the information for each pattern.

Default

Reset the selections of servers and collect patterns to default values.

When log collection starts, following dialog box appears.

Update

Update the dialog box of the log collection progress.

Abort

Abort the log collection.

Close

Close the dialog box. But, log collection still continues.
At this time, the display of **Collect Logs** in title view has changed to **Progress**.
To display the log collection dialog box again, click **Progress** in **Tool** menu.

Collect Logs Results

Result	Explanation
Normal	Log collection succeeded.
Abort	Log collection was canceled by user.
Invalid parameter	Internal error may have occurred.
Communication Error	Connecting error occurred.
Timeout:	Timeout occurred.
Busy	The server is busy.
Compression Error	Error occurred when compressing a file.
File I/O Error	File I/O failed.
Not Enough Free Space	No free space on the disk.
Unknown Error	Failure caused by other errors

When the log collection completes, the browser displays following dialog box that asks where you want to save the logs. Save the logs to any location.
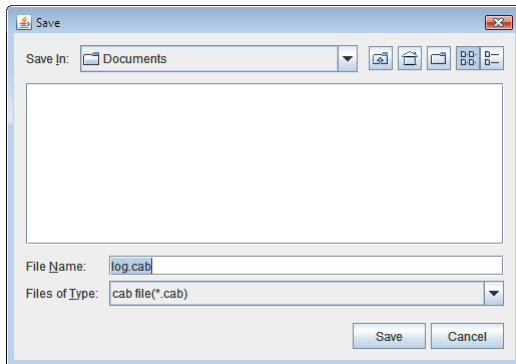
(*: This image shows the case when using Internet Explorer 8.0.)

Note: Please save logs in 10 minutes after above dialog box appeared. Or, you may not save logs correctly.

Note: If other modal dialog box is displayed while collecting logs, the file saving dialog box for the log collection will not be displayed. To display the file saving dialog box, close the modal dialog box.

Note: If the log file size exceeds 2GB, log collection may fail depending on the compression format. Adjust the log to be collected or change the log collection pattern.

2.2.5 Updating the WebManager information

Click **Reload** on the **Tool** menu or click the reload icon [] on the toolbar to update the information displayed in the WebManager.

Note:

If the client data update method of the WebManager is set to **Polling**, the information displayed on the WebManager is periodically updated and the latest status is not immediately displayed even if the status has changed. To display the latest information, click the **Reload** icon [] or **Reload** in the **Tool** menu after performing an operation.

To configure the automatic **reload interval of the WebManager**, Open **Cluster Properties** dialog - **WebManager** tab. Click **Tuning** button and configure the **Reload Interval**.

Some objects may be displayed in gray when communications to the connecting destination is disabled or EXPRESSCLUSTER X SingleServerSafe is not working at the access destination.

2.2.6 Changing the screen layout on the WebManager

The WebManager screen layout can be changed by clicking the buttons of the split bars that divide the screen or by dragging the bars. This is useful to display only a specific view.
The split bars divide the views in the WebManager.

On the bar, click ▲ to maximize the view. Click ▼ to minimize it.

| To change the display items on the tree view, click **Option** on the **Tool** menu or option icon [] on the tool bar.
| The following dialog is displayed. Check items you want to display.
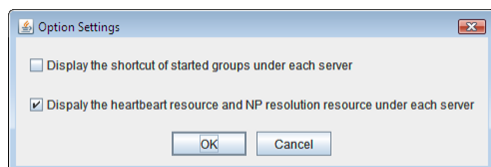
2.2.7 Checking the time information from the WebManager

Check the time information from the WebManager by clicking **Time info** on the **Tool** menu or by clicking the time information icon [] on the toolbar.

Time information displayed on the Server tab

- Cluster joined

    Displays the most recent time at which each server joined the cluster.

Time information displayed on the Group tab
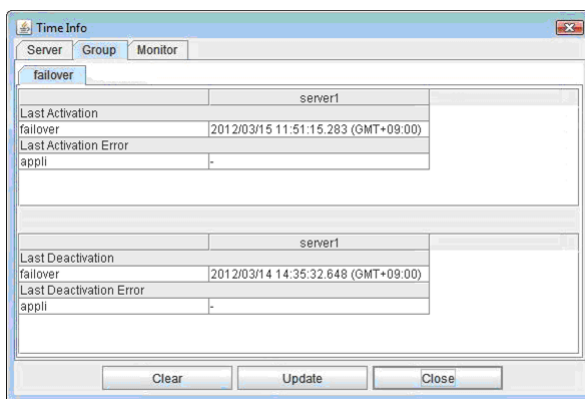
- Last activation

    Displays the time at which the failover group was last activated on each server.

- Last activation error

    Displays the time at which an activation failure of a group resource was last detected on each server.

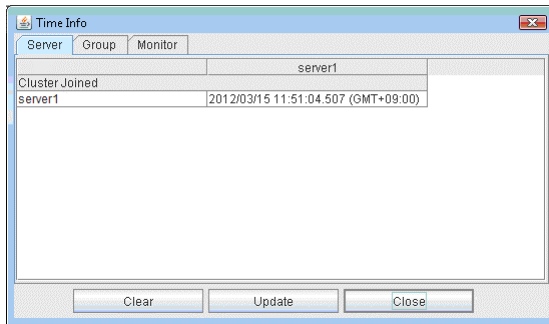- Last deactivation

    Displays the time at which the failover group was last deactivated on each server.

- Last deactivation error

    Displays the time at which a deactivation failure of a group resource was last detected on each server.

Time information displayed on the Monitor tab
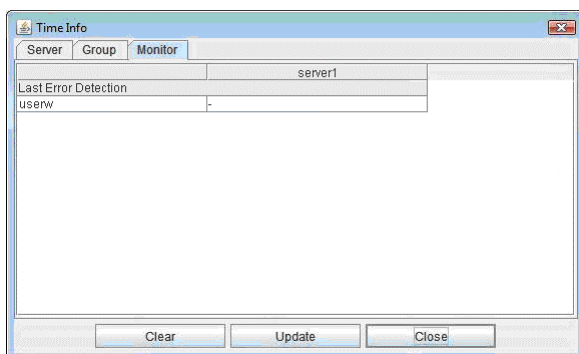
- Last error detection

Displays the time at which each monitor resource last transitioned from normal status to abnormal status on each server.

Note: Message receive monitor resources isn't dealing.

Clear

Deletes the time information displayed on the current tab.

Update

Acquires the time information for all the tabs.

Close

Closes the time information dialog box.

Note: If the Client Data Update Method of the WebManager is set to Polling, when clear button was pushed , Lighting up Time info on the Tool menu. But it's no problem as cluster..

2.2.8 Executing Integrated WebManager from the WebManager

To execute Integrated WebManager from the WebManager, click **Integrated WebManager** on the **Tool** menu or Integrated WebManager icon [ ] on the tool bar.

2.2.9 Operating services on the WebManager

To operate services on the WebManager, select the relevant items shown below from the service menu.

- **Suspend Cluster**

  Suspend EXPRESSCLUSTER Server service. This menu can be selected only when EXPRESSCLUSTER Server service is running.

- **Resume Cluster**

  Resume EXPRESSCLUSTER Server service. This menu can be selected only when EXPRESSCLUSTER Server service is suspended.

- **Start Cluster**

  Start EXPRESSCLUSTER Server service. This menu can be selected only when EXPRESSCLUSTER Server service is stopped.

- **Stop Cluster**

  Stop EXPRESSCLUSTER Server service. This menu can be selected only when EXPRESSCLUSTER Server service is running.

- **Restart Manager**

  Restart WebManager.

2.2.10 Confirming the license from the WebManager

To confirm the license from the WebManager, click **License Information** on the **Help** menu.
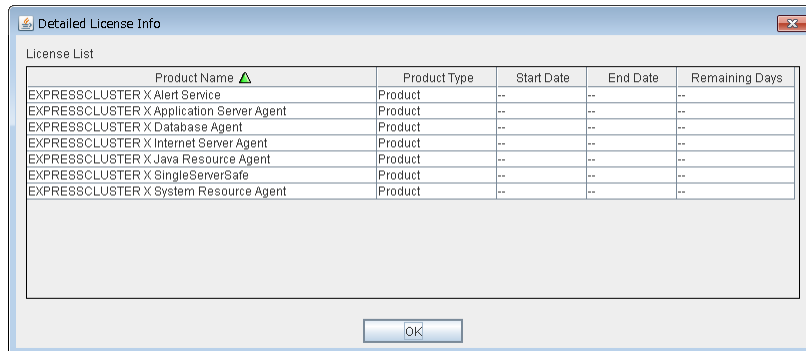
License List

> Displays the licenses registered on the connection destination server.
>
> You can change the display order by selecting a specific field name on the title bar of the list.
>
> By default, the licenses are sorted in ascending order of **Product Name**.

Note: In case of license which includes multiple licenses, all included licenses information are displayed.

OK button

> Closes the **Detailed License Info** dialog box.

2.3 Checking the status of each object in the tree view of WebManager

You can visually check the status of each object in the WebManager window.

On the left pane of the window, a tree is displayed. Check the status by looking at each icon and object color. For meaning of each icon and object color, see "Functions of the WebManager" in "Legacy Feature Guide" for EXPRESS-CLUSTER X.


Note: The tree configuration depends on the version of and optional products used with EXPRESSCLUSTER X SingleServerSafe.

2.3.1 Operations that can be executed from the WebManager

You can operate a cluster by right-clicking **Cluster**, **Individual server**, **Individual group**, or **Individual resource**.

Cluster object

When you right-click a monitor resource object, the following shortcut menu is displayed.
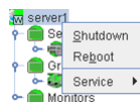
- **Shut down**

  Shut down the server. When you select this operation, the following dialog box is displayed for confirmation.

- **Reboot**

  Reboot the server. When you select this operation, the following dialog box is displayed for confirmation.

- **Service**

  If you select **Service**, the items **Suspend Cluster**, **Resume Cluster**, **Start Cluster**, **Stop Cluster** and **Restart Manager** are displayed on the shortcut menu.

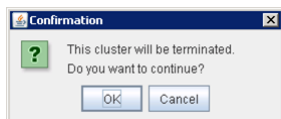**Server object**

When you right-click a monitor resource object, the following shortcut menu is displayed.
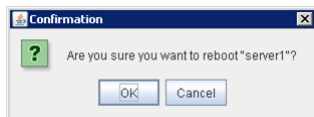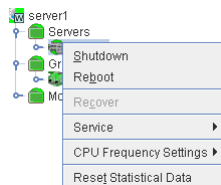

  - **Shut down**

Shut down the selected server. When you select this operation, the following dialog box is
displayed for confirmation.
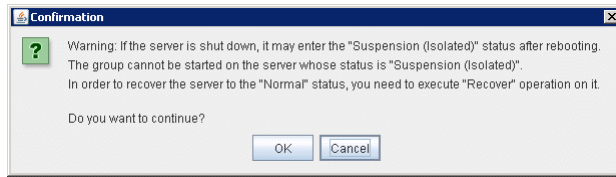
* **Reboot**

  Reboot the selected server. When you select this operation, the following dialog box is displayed
  for confirmation.
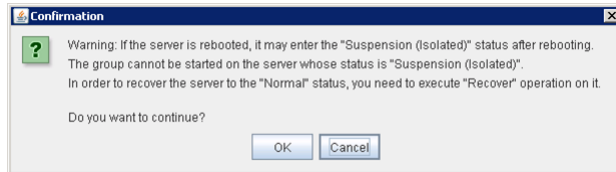
* **Recover**

  Recover the selected server. When you select this operation, the following dialog box is displayed
  for confirmation.
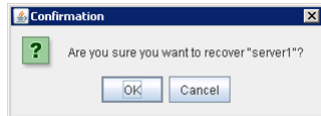
* **Service**

  Start and stop the selected service. When you select **Stop**, the following dialog box is displayed for
  confirmation.
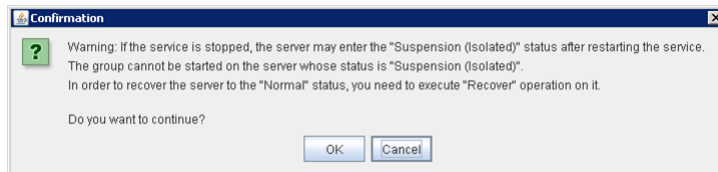
  For SingleServerSafe, you can not select **Start**.

* **Reset Statistical Data**

  Reset the statistical data of selected server. When you select this operation, the following dialog
  box is displayed for confirmation.
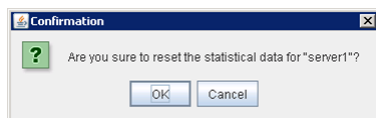
* **CPU Frequency Settings**

  Change CPU frequency control setting for the selected server. This function can be used when **Use
  CPU Frequency Control** check box is selected in the **Extension** tab of **Cluster Properties**.

  – **Highest Frequency**

    Set the CPU frequency to the highest (High performance).
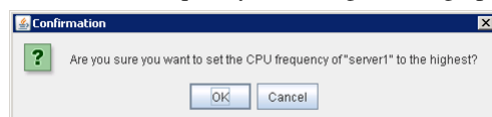
– **Lowest Frequency**

Set the CPU frequency to the lowest (Power saver).
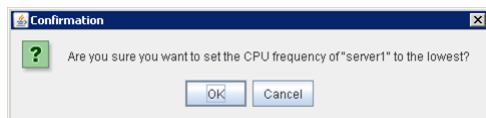
– **Auto**

Set the CPU frequency controlled automatically depends on server or group status.
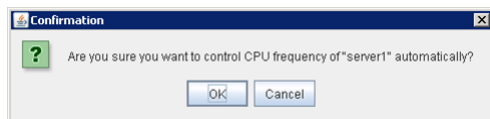
Group object

When you right-click a group object, the following shortcut menu is displayed.

Group type is **failover**.
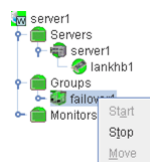
Group type is **virtualmachine**.
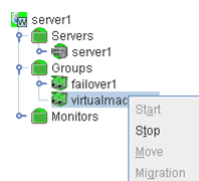
- **Start** (enabled only when the group is stopped)

  Start up the selected group. The dialog box for choosing a server on which to start up the selected group is displayed.
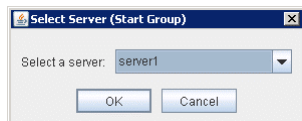
- **Stop** (enabled only when the group has been started up or when it has an error)

  Stop the selected group resource. When you select this operation, the following dialog box is displayed for confirmation.
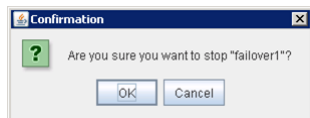
- **Move** (enabled only when the group has been started up)

  Not used.

- **Migration** (Only selectable when group type is virtualmachine and it is running.)

  Not used.

Group resource object

When you right-click a monitor resource object, the following shortcut menu is displayed.
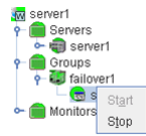
- **Start** (enabled only when the group resource is stopped)

  Start up the selected group resource. The dialog box for choosing a server on which to start up the selected group is displayed.
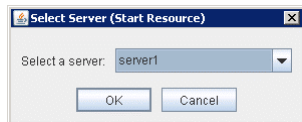
- **Stop** (enabled only when the group resource has been started up or when it has an error)

  Stop the selected group resource. When you select this operation, the following dialog box is displayed for confirmation.
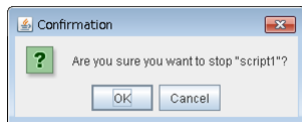
Monitor resource object

When you right-click a monitor resource object, the following shortcut menu is displayed.

When operation mode is selected
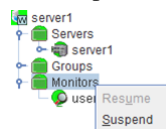
When verification mode is selected
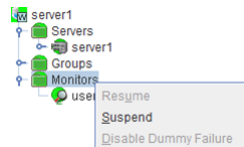
- **Resume** (enabled when the resources are stopped temporarily)

  Resumes all the currently configured monitor resources. This operation is not performed for those monitor resources for which the suspending/resuming of monitoring is not possible. A dialog box for selecting the server on which the monitor resources will be resumed is displayed.
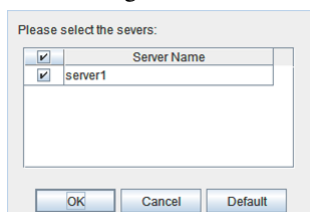
- **Suspend** (enabled when the resources are monitoring)

2.3. Checking the status of each object in the tree view of WebManager   **25**

Suspends all the currently configured monitor resources. This operation is not performed for those monitor resources for which the suspending/resuming of monitoring is not possible. A dialog box for selecting the server on which the monitor resources will be stopped temporarily is displayed.
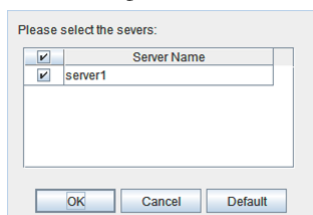
- **Stop Dummy Failure** (enabled only when dummy failure is started)

  Stops the dummy failure that has been set for all monitor resources. The following dialog box for selecting the server on which dummy failure in the monitor resources is to be stopped is displayed.
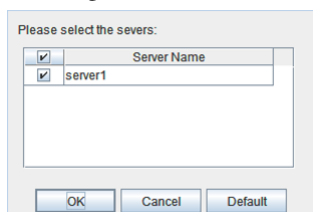
Individual monitor resource objects

When you right-click an individual monitor resource object, the following shortcut menu is displayed.

When operation mode is selected
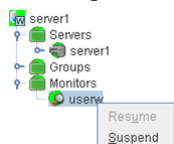
When verification mode is selected
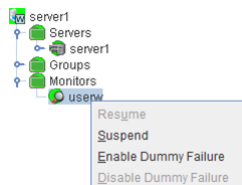
- Resume (enabled when the resource is stopped temporarily)

  Resumes a selected monitor resource. The dialog box for choosing the server on which the selected monitor resource is resumed.
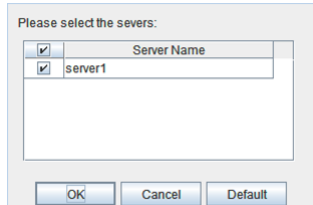
- Suspend (enabled when the resource is monitoring)

Resumes the selected monitor resource. The dialog box for choosing the server on which the selected monitor resource is stopped temporarily.
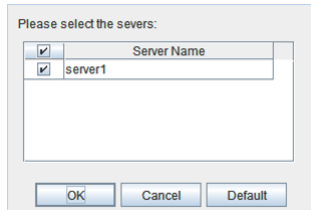
- Start Dummy Failure (enabled when verification mode is not executed)

  Generates a simulated fault in a selected monitor resource. A simulated fault can be generated only on a server on which **Resource Status on Each Server** of the relevant monitor resource is other than **Error** or **Dummy Failure**.

  Note, however, that the following monitor resources cannot be selected:

  - Message receive monitor resource

  - VM monitor resource

  The following dialog box for selecting the server on which a dummy failure is generated for a selected monitor resource is displayed.
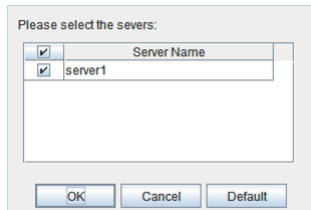
- Stop Dummy Failure (enabled when verification mode is executed)

  Stops the dummy failure generated in a selected monitor resource. The following dialog box for selecting the server on which the dummy failure is to be stopped for a selected monitor resource is displayed.
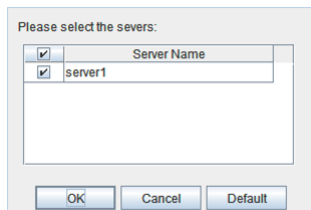
2.4 Checking the status by the WebManager list view

Details about the object selected in the WebManager tree view can be displayed in the list view.

2.4.1 To display information on the whole cluster

1. Start the WebManager.

2. In this tree view, click the object icon [🖼] for the cluster. In the list view in the right pane of the window, the **Group Status** and **Monitor Status** are displayed.
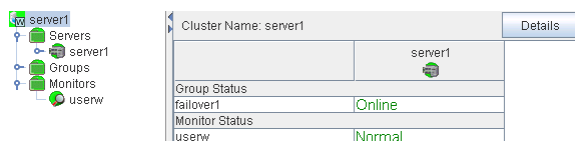
3. In the following dialog box, click the **Details** button to display the following information. A dialog box is displayed with the content shown below.

   Info

   Name: Cluster name

   Comment: Comment for the cluster

   Status: Status of the cluster

   Heartbeat I/F

   Server Down Notification: Not in use

   Cast Method: This is the setting for the method to send a heartbeat (unicast/broadcast). When the IP address of the heartbeat I/F is IPv6, the broadcast cannot be used.

   NP Resolution

   Action at NP Occurrence: Action to be taken when a network partition occurs

   Timeout

   Server Sync Wait Time: Not in use

Heartbeat Timeout: Heartbeat timeout (in milliseconds)

Heartbeat Interval: The interval for sending heartbeats (milliseconds)

Server Internal Timeout: Internal communication timeout (in seconds)

Timeout Ratio: Current timeout ratio

Port Number

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution		Timeout	Port Number	Monitor
Properties					Value		
Server Internal Port Number					29001		
Data Transfer Port Number					29002		
Kernel Mode Heartbeat Port Number					29106		
Client Service Port Number					29007		
WebManager HTTP Port Number					29003		
Alert Sync Port Number					29003		
Disk Agent Port Number					29004		
Mirror Driver Port Number					29005		

Server Internal Port Number: Port number for internal communication

Data Transfer Port Number: Port number for data transfer

Kernel Mode Heartbeat Port Number: Port number for kernel mode heartbeat

Client Service Port Number: Port number for client service

WebManager HTTP Port Number: Port number for WebManager

Alert Sync Port Number: Port number for alert synchronization

Disk Agent Port Number: Not in use

Mirror Driver Port Number: Not in use

Monitor

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution		Timeout	Port Number	Monitor
Properties					Value		
Collect System Resource Information					Off		

Collect System Resource Information: Whether or not to collect System Resource Information

Recovery

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution		Timeout	Port Number	Monitor
Properties						Value	
Action When the Cluster Service Process Is Failure						Shut down the OS	
Recovery Action for HA Agents:Max Restart Count						3	
Recovery Action for HA Agents:Recovery Action over Max Restart Count						No operation	
Disable Recovery Action Caused by Monitor Resource Failure						Off	
Action at Group Resource Activation or Deactivation Stall						Emergency shutdown	
Restrain the shutdown action if only one server is alive (when active group resource abnormality detected)						Off	
Restrain the shutdown action if only one server is alive (when deactive group resource abnormality detected)						Off	
Restrain the shutdown action if only one server is alive (when monitoring resource abnormality detected)						Off	

Action When the Cluster Service Process Is Failure: Action When the Cluster Service Process Is Failure
Action to be taken when a cluster service process fails

Recovery Action for HA Agents: Max Restart Count: Maximum count to restart an HA process
if the process fails

Recovery Action for HA Agents: Recovery Action over Max Restart Count: Action to be taken
when the HA process fails and the process cannot be restarted even after retrying restart of the
process for the maximum number of retries

Disable Recovery Action Caused by Monitor Resource Failure: Whether or not to disable the re-
covery action when the monitor resource fails

Action at Group Resource Activation or Deactivation Stall: Action to be taken when group re-
source activation/ deactivation is stalled

Restrain the shutdown action if only one server is alive (when active group resource abnormality detected):
Whether to disable shutdown at activation failure in the case of the last one server

Restrain the shutdown action if only one server is alive (when deactive group resource abnormality detected):
Whether to disable shutdown at deactivation failure in the case of the last one server

Restrain the shutdown action if only one server is alive (when monitoring resource abnormality detected):
Whether to disable shutdown at monitoring failure in the case of the last one server

Alert Service

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution	Timeout		Port Number	Monitor

Properties	Value
E-mail Address	
Use Network Warning Light	Off
Use Chassis Identify	Off
Enable Alert Setting	Off

E-mail Address: Alert mail address

Use Network Warning Light: Not in use

Use Chassis Identify: Not in use

Enable Alert Setting: Whether or not to enable setting

Delay Warning

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution	Timeout		Port Number	Monitor

Properties	Value
Heartbeat Delay Warning	80
Monitor Delay Warning	80
COM Delay Warning	80

Heartbeat Delay Warning: Heartbeat delay warning (%)

Monitor Delay Warning: Monitor delay warning (%)

COM Delay Warning: Not in use

Disk

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution	Timeout		Port Number	Monitor

Properties	Value
Shared Disk Disconnection Retry Threshold	10
Shared Disk Disconnection Timeout	1800
Shared Disk Disconnection Retry Interval	3
Shared Disk Disconnection Final Action	Disconnect forcefully

Shared Disk Disconnection Retry Threshold: Not in use

Shared Disk Disconnection Timeout: Not in use

Shared Disk Disconnection Retry Interval: Not in use

Shared Disk Disconnection Final Action: Not in use

Mirror Disk

Recovery	Alert Service	Delay Warning	Disk	Mirror Disk	JVM Monitor	Extension	
Info	Heartbeat I/F		NP Resolution	Timeout		Port Number	Monitor

Properties	Value
Auto First Mirror Construction	On
Auto Mirror Recovery	On
Collect Mirror Statistics	On
Difference Bitmap Size (MB)	1
History Recording Area Size in Asynchronous Mode (MB)	1
Mirror Disk Disconnection Retry Threshold	10
Mirror Disk Disconnection Timeout	1800
Mirror Disk Disconnection Retry Interval	3
Mirror Disk Disconnection Final Action	Disconnect forcefully

Auto First Mirror Construction: Not in use

Auto Mirror Recovery: Not in use

Collect Mirror Statistics: Not in use

Mirror Disk Disconnection Retry Threshold: Not in use

Mirror Disk Disconnection Timeout: Not in use

Mirror Disk Disconnection Retry Interval: Not in use

Mirror Disk Disconnection Final Action: Not in use

JVM Monitor

Properties	Value
Java Install Path	
Maximum Java Heap Size (MB)	16
Load Balancer Connection Setting	Off
Log Level	INFO
Generation Count for Stored Log Files	10
Log Rotation Type	File Size
Log File Maximum Size (KB)	3072
Time of First Log Rotation	00:00
Log Rotation Interval (Hours)	24
Resource Measurement: Retry Count	10
Resource Measurement: Threshold for Abnormal Judgment	5
Resource Measurement: Default Interval	60
Resource Measurement: Interval for Full GC	120
WebLogic Monitoring: Retry Count	3
WebLogic Monitoring: Threshold for Abnormal Judgment	5
WebLogic Monitoring: Request Count Measurement Interval	60
WebLogic Monitoring: Interval for Average measurement	300
Management Port	25500
Connection Retry Count	3
Time until Reconnect	60
Management Port for Load Balancer Linkage	25550
Health Check Linkage Function	Off
Directory containing HTML files	
HTML File Name	
HTML Renamed File Name	
Retry count for renaming	3
Wait time for retry	3
Management IP Address	
Connection Port	443

Java Installation Path: Java installation path

Maximum Java Heap Size (MB): Maximum Java heap size (MB)

Load Balancer Connection Setting: Load balancer linkage settings

Log Level: Log level

Generation Count for Stored Log Files: Number of generations of log files to be stored

Log Rotation Type: Log rotation type

Log File Maximum Size (KB): Maximum log file size (KB)

Time of First Log Rotation: Time of the first log rotation

Log Rotation Interval (Hours): Log rotation interval (hours)

Resource Measurement: Retry Count: Measurement retry count

Resource Measurement: Threshold for Abnormal Judgment: Threshold for abnormal judgment

Resource Measurement: Default Interval: Interval for memory and thread measurement (sec)

Resource Measurement: Interval for Full GC: Interval for Full GC measurement (sec)

WebLogic Monitoring: Retry Count: Measurement retry count

WebLogic Monitoring: Threshold for Abnormal Judgment: Threshold for abnormal judgment

WebLogic Monitoring: Request Count Measurement Interval: Interval for measuring the number of requests (sec)

WebLogic Monitoring: Interval for Average measurement: Interval for measuring the average (sec)

Management Port: Management port number

Connection Retry Count: Connection retry count

Time until Reconnect: Time to wait for reconnection (sec)

Management Port for Load Balancer Linkage: Management port number for load balancer linkage

Health Check Linkage Function: Whether or not to use the health check linkage function

Directory containing HTML files: HTML storage directory

HTML File Name: HTML file name

HTML Renamed File Name: Renamed HTML file name

Retry Count for renaming: Retry count if renaming fails

Wait time for retry: Time to wait for a renaming retry (sec)

Management IP Address: BIG-IP LTM management IP address

Connection Port: Communication port number for BIG-IP LTM

Extension

Max Reboot Count: Maximum number of reboot

Max Reboot Count Reset Time: Time to reset current number of reboot (in seconds)

Use Forced Stop: Not in use

Forced Stop Action: Not in use

Forced Stop Timeout (sec): Not in use

Execute Script for Forced Stop: Not in use

Use CPU Frequency Control: Whether or not to use CPU frequency control function

Auto Recovery: The setting whether a cluster server is automatically returned to the cluster after the server is rebooted as "Suspension (Isolated)" state.

Failover Count Method: Not in use

2.4.2 Checking the whole status of the server in the WebManager list view

1. Start the WebManager.

2. In the tree view, select **Servers** object icon []. In the upper part of the list view in the right pane of the window, **Server Name**, **Type** (master or not), and **Status** are displayed. In the lower part, **Server Group Name** and **Server Name** are displayed.
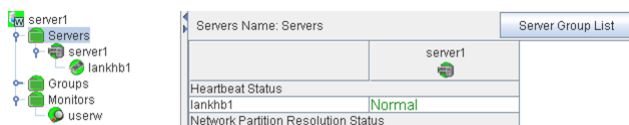
2.4.3 Checking the status of individual server in the WebManager list view

1. Start the WebManager.

2. If the object [🖥] of a server is selected in the tree view, **Comment**, **Version, Product, Internal Version, Install Path** and **Status** of the server are displayed.
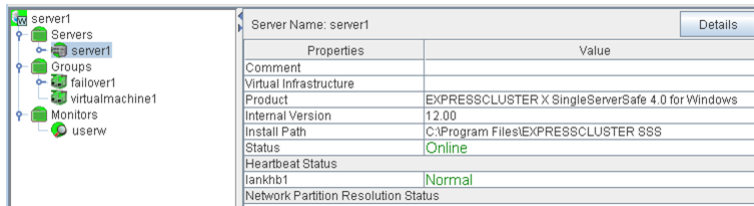
Comment: Comment for the server

Virtual Infrastructure: Virtual infrastructure name

Product: Product name

Internal Version: Internal version of EXPRESSCLUSTER X SingleServerSafe

Install Path: Install path of EXPRESSCLUSTER X SingleServerSafe

Status: Status of the server

3. Click **Details** to display the following in the dialog box.

Name: Computer name

Mirror Disk Connect IP Address: Not in use

Network Warning Light IP Address(Type): Not in use

BMC IP Address: Not in use

CPU Frequency Status: Current status of CPU frequency

No shutdown when double activation detected: Not in use

2.4.4 Checking the status of the whole monitor in the WebManager list view

1. Start the WebManager.

2. If you select the object icon [🟩] for the cluster in the tree view, **Monitor Name** and the server status list are displayed in the list view.
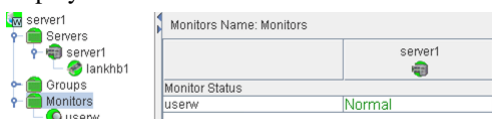
2.5 Checking alerts using the WebManager

You can view alerts in the bottom part of the WebManager.

Each field of the alert view is configured as follows.

For the meanings of the individual alert messages, see in the "Operation Guide". For details about searching alert messages, see "*2.2.3. Searching for an alert by using the WebManager*" in this chapter.

2.5.1 Alert view fields

The meanings of each of the fields in the alert view of the WebManager are as follows.

(1) **Alert type icon**

Alert type	Meaning
ⓘ	Informational message
⚠	Warning message
✱	Error message

(2) **Alert received time**

The time the alert was received. The time on the server to which the WebManager connects is applied.

(3) **Alert sent time**

The time the alert was sent from a server. The time in the alert sender server is used.

(4) **Alert sender server**

The name of a server that sent the alert.

(5) **Alert sender module**

The name of a module that sent the alert.

(6) **Event ID**

The event ID number set to each alert.

(7) **Alert message**

The alert messages.

2.5.2 Alert view operations

By clicking an item on the bar showing the name of each field, you can change the order of alerts.

| Type | Received Time | Time ▽ | Server Name | Module Name | Event ID | Message |

When you select an item, the ▲ or ▽ mark is displayed in the selected field.

Mark	Meaning
▲	Sorts alerts in the ascending order of the selected field.
▽	Sorts alerts in the descending order of the selected field.

By default, alerts are displayed in the **Time** descending order.

By dragging a field name left or right, you can change the order in which the items are displayed.

When you right-click this bar, the pop-up window below is displayed so you can select the items to display. All items are selected by default.

When you double-click the displayed alert, the following window is displayed where you can check the detail of the alert.

When you right-click the alert, the following pop-up window is displayed where you can select the type of the alert to be displayed. All items are selected by default.

2.6 Manually stopping and starting the WebManager

After EXPRESSCLUSTER X SingleServerSafe is installed, the WebManager on the servers is set up to start up or stop as the OS starts up or stops.

If you wish to stop and start the WebManager specifically, just stop or start **EXPRESSCLUSTER Manager** service from the Service Control Manager console of **Administrative Tools**.

2.7 When you do not want to use the WebManager

If you do not want to use the WebManager for some security reasons, change the settings of **Services** of **Administrative Tools** of your OS or that of the Builder not to start the WebManager.

When setting in **Services** of **Administrative Tools**, change the **Startup Type** of the **EXPRESSCLUSTER Manager** service to **Manual**.

In **Cluster Properties**, you can specify the settings for using the WebManager. For details about these settings, see "3.2.6. *WebManager tab*" in "3.2. *Cluster properties*" in "3. *Function of the Builder*" in this guide.

2.8 Setting limitations on the connection and operation of the Web-Manager

The limitation in connection and operation of the WebManager can be configured in **Cluster Properties** in the Builder. For details about these settings, see "*3.2.6. WebManager tab*" in "*3.2. Cluster properties*" in "*3. Function of the Builder*" in this guide.

2.8.1 Types of usage limitations

There are two ways to set usage limitations:

- Limiting the access by using client IP addresses
- Limiting the operation by using a password

Limsiting the access by using client IP addresses

> This function limits clients who can access the WebManager and operations on the WebManager by using client IP addresses.
>
> Add IP addresses to **IP Addresses of the Accessible Clients** on the **WebManager** tab in the **Cluster Properties** of the Builder.
>
> When setting the limitation of the connection of the WebManager, if you attempt to access to the WebManager from the IP address that is not added to **IP Addresses of the Accessible Clients**, the following error messages are displayed.

> Example: when using the Internet Explorer
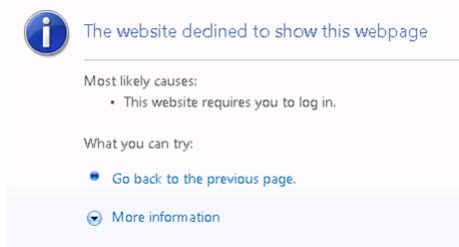
> When connecting to the WebManager from the client that is restricted operations for cluster, you can select only **Reference Mode.**
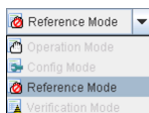
> The following operations are disabled from the WebManager when operations are limited.

> - Shutting down or shutting down and then rebooting servers
> - Starting or stopping groups
> - Switching to Operation Mode
> - Switching to Config Mode
> - Switching to Verification Mode

The limitation by using a password

This function limits viewing and operations on the WebManager by using a password.

To configure this limitation: in **Cluster Properties** of the Builder, click the **WebManager** tab, and then **Control connection by using password**.

Once password limitation of the WebManager is specified, the following authorization dialog box is displayed when trying to access the WebManager by setting a password.
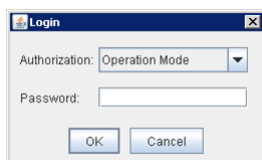
You can log on to the WebManager by selecting **Operate Mode** or **Reference Only** in **Authorization** and entering a correct password.

- The authorization dialog box is not displayed when the password limitation is not configured (you can log on to the WebManager without authorization).

- You cannot log on to the WebManager if you enter a wrong password three consecutive times.

When you login with **Reference Only** selected for **Permission**, the WebManager is placed in reference mode. When you attempt to switch to operation mode, config mode, or verification mode in this status, the above authorization dialog is displayed, and you are requested to enter a password for **Operation Mode**.

Combination of the IP address and password

The operational limitations when using both IP addresses and passwords are the following:

	Password limitation (Operable mode)	Password limitation (Reference only)	Password limitation (Unable to operate/view (authorization failed))
Client IP address limitation (Operable Mode)	Operable mode	Reference only	Unavailable
Client IP address limitation (Reference Only)	Reference only[1]	Reference only	Unavailable
Client IP address limitation (Cannot Access)	Cannot access	Cannot access	Cannot access

---

[1] Authorization cannot be selected.

2.9 Limitations of the WebManager

- Information displayed by the WebManager does not always reflect the latest status. To acquire the latest information, click the **Reload** icon on the toolbar or **Reload** in the **Tool** menu.

- If a server fails while the WebManager is acquiring information, the information acquisition fails, which may result in the failure to show some objects.

  Wait for the next automatic update, or click the **Reload** icon on the toolbar or **Reload** in the **Tool** menu to reacquire the latest information.

- The EXPRESSCLUSTER logs cannot be collected from two or more WebManager instances simultaneously.

- If you work on the WebManager when no connectivity is established, it may take a while to regain control.

- While the mouse pointer is the hourglass which indicates that the OS is processing something, moving the cursor outside the browser may return to the arrow icon even if the process is still underway.

- If a proxy server is used, configure the proxy server so that the port number of the WebManager can be relayed.

- When a reverse proxy server is used, the WebManager does not run normally.

- When updating EXPRESSCLUSTER X SingleServerSafe , close all running browsers. Clear the Java cache (not browser cache) and open browsers.

- When updating Java, close all running browsers. Clear the Java cache (not browser cache) and open browsers

- If the client PC to connect to WebManager uses Java(TM) Runtime Environment Version 8.0 Update 162 or later, and cannot be connected to the Internet, it may take time to start WebManager. This can be avoided by setting Execute Certificate Revocation Check to Not Check on Detailed Settings on the Java Control Panel. For details of how to set it, check the Java website.

- Do not set the "Reload Interval" on the WebManager tab or less than 30 seconds. If you set it for less than 30 seconds, it may affect the performance of EXPRESSCLUSTER X SingleServerSafe.

FUNCTION OF THE BUILDER

This chapter provides information on functions of the EXPRESSCLUSTER X Builder.

This chapter covers:

3.1 Overview of the Builder

The Builder is a tool for creating and changing the cluster configuration data (config and scripts).

Note: You cannot configure or display functions that have been added to or changed in versions later than *EXPRESS-CLUSTER* X SingleServerSafe 4.0.

There are two versions of the Builder; online version and offline version.

- Online version
  Click **Config Mode** on the **View** menu or select the config mode icon [⬛] from the dropdown menu on the toolbar.
  With the online version Builder, you can connect to the server directly to create a cluster, change its configuration and distribute the cluster configuration data.

- Offline version
  With the offline version Builder, you can create or change the cluster configuration data on the machine which cannot connect to a server.
  To distribute the cluster configuration data, you need to use the clpcfctrl command.

See also:

For the system requirements of the Builder, see the corresponding web page.

Note:

In this guide, Builder refers to the online version of Builder, which runs in the WebManager config mode, and the offline version of Builder, which runs on the management PC.

"Host name" in this guide represents the short name that excludes the domain name from a frequently qualified domain name (FQDN).

3.2 Cluster properties

In the **Cluster Properties** window, you can view and change the detailed data of EXPRESSCLUSTER X Single-ServerSafe.

3.2.1 Info tab

You can display the server name, and register and make a change to a comment on this tab.
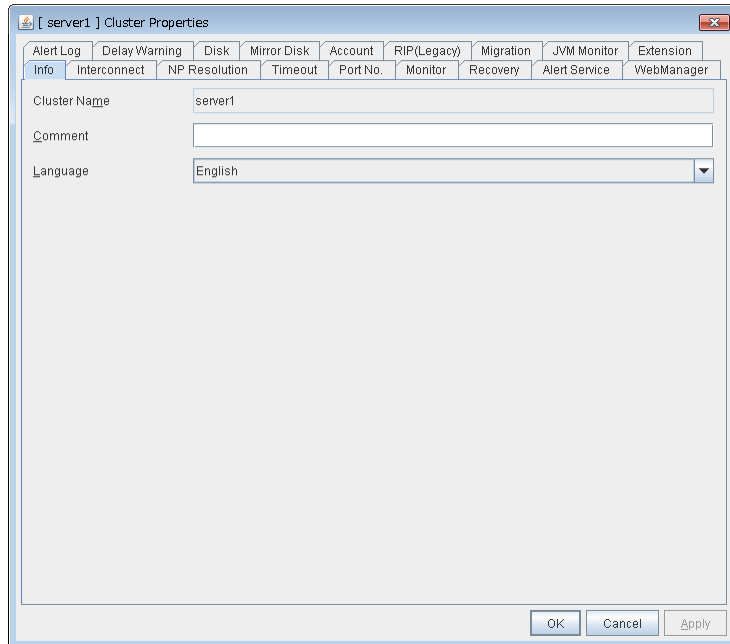
Cluster Name

>   Displays the server name. You cannot change the name here.

Comment (within 127 bytes)

>   Enter a new comment. You can only enter one byte English characters.

Language

>   Choose one of the display languages below. Specify the language (locale) of OS on which the WebManager runs.
>
>   - English
>
>   - Japanese
>
>   - Chinese

3.2.2 Port No. tab

Specify TCP port numbers and UDP port numbers.
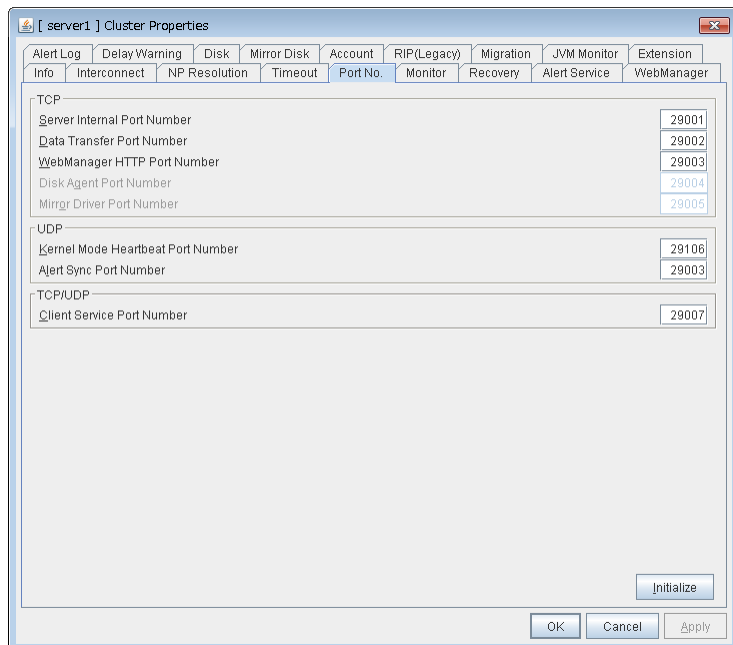
TCP

No TCP port numbers can be overlapped.

- Server Internal Port Number (1 to 65,535[2])

  This port number is used for internal communication.

- Data Transfer Port Number (1 to 65,535[2])

  This port number is used for transactions such as applying and backing up the configuration data, sending and receiving the license data, and running commands.

- WebManager HTTP Port Number (1 to 65,535[2])

  This port number is used for a browser to communicate with the EXPRESSCLUSTER Server.

- Disk Agent Port Number (1 to 65,535[2])

  Not used.

- Mirror Driver Port Number (1 to 65,535[2])

  Not used.

UDP

No UDP port numbers can be overlapped.

- Kernel Mode Heartbeat Port Number (1 to 65,535[2])

  This port number is used for the kernel mode heartbeat.

- Alert Sync Port Number (1 to 65,535[2])

  This port number is used to synchronize alert messages.

TCP/UDP

---

[2] It is strongly recommended not to use well-known ports, especially reserved ports from 1 to 1,023.

- Client Service Port Number (1 to 65,535[2])

    This port number is used for the client service.

Initialize

This operation is used to return the value to the default value. By selecting **Initialize**, initial values are configured for all items.

3.2.3 Monitor tab

Specify the settings for monitoring.
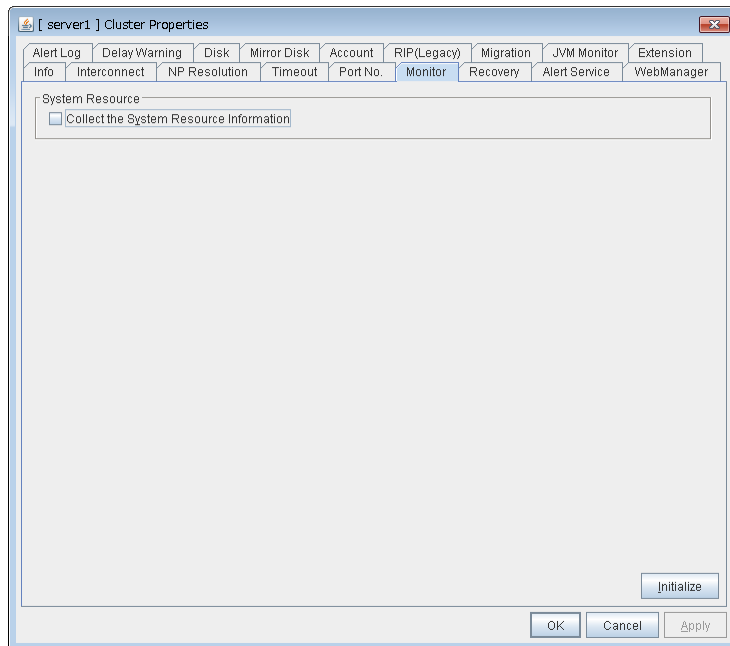
System Resource

Select whether to collect system resource information.

System resource information is collected regularly so as to improve system operability. System resource information is useful for investigating the operation status of EXPRESSCLUSTER, and makes it easy to determine the cause of a failure attributable to a shortage of system resources.

- When the check box is selected

    System resource information related to the CPU, memory, processes, and others is collected regularly while the cluster is running.

    The collected system resource information is collected when the clplogcc command or WebManager collects logs.

    Specify type 2 to collect the log by the clplogcc command; specify Pattern 2 to collect the log by the WebManager. For details on log collection, see "Collecting logs (clplogcc command)"in "EXPRESSCLUSTER X SingleServerSafe command reference" and "Collecting logs by using the WebManager" in "2. *Functions of the WebManager*" in this Guide.

    A disk area of 450 MB or more is required to store the resource information, depending on the system operating conditions such as the number of processes that are running.

- When the check box is not selected

    No system resource information is collected.

3.2.4 Recovery tab

Specify the settings for recovery.
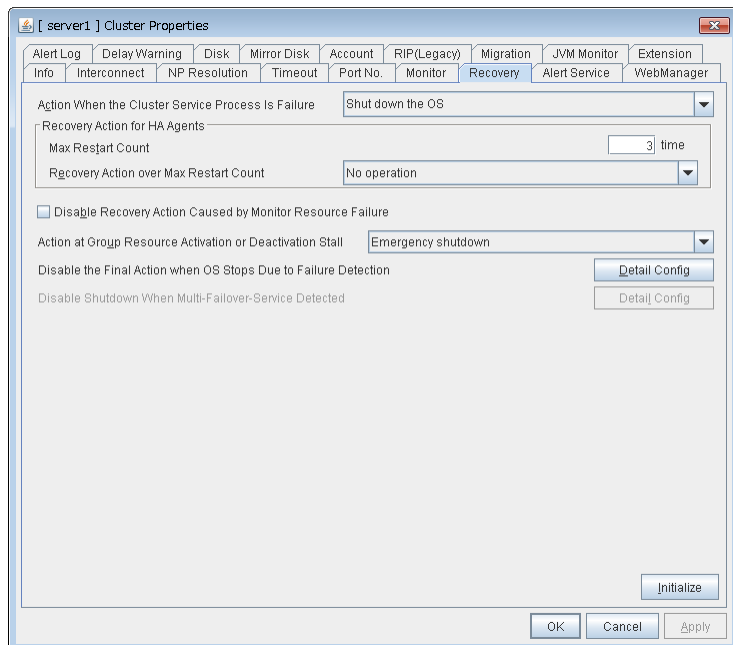
Action When the Cluster Service Process Is Failure

Specify an action at process abnormity of the cluster service.

- Shut down the OS
  Shut down the OS.

- Generate an intentional stop error
  Generate a stop error (Panic) intentionally and restart the server.

- Reset the hardware
  Restart the server by HW reset.

Recovery Action for HA Agents

- Max Restart Count (0 to 99)
  Specify the max restart count when an HA Agent error has occurred.

- Recovery Action over Max Restart Count
  Specify the action when an HA Agent error has occurred.

  - No operation

  - Stop the cluster service
    Stops the cluster service of the server that detected an error.

  - Stop the cluster service and shutdown OS
    Stops the cluster service of the server that detected an error, and then shuts down the OS.

  - Stop the cluster service and reboot OS
    Stops the cluster service of the server that detected an error, and then reboots the OS.

> **Note:** The HA process is used with the system monitor resource, JVM monitor resource, and system
> resource information collection function.

Disable Recovery Action Caused by Monitor Resource Failure

- When the checkbox is selected
  The recovery action is disabled when the monitor resource is error.

- When the checkbox is cleared
  The recovery action is enabled when the monitor resource is error.

Note:

When recovery action was disabled, recovery action triggered by monitor resource error is not performed. Even if
this function is enabled, recovery from a group resource activation failure will still be performed.
This function is not enabled by the stall detection function of the disk RW monitor or user mode monitor resource.
This option is not available for the message receive monitor resource.

Action at Group Resource Activation or Deactivation Stall

Specify the action to apply in the event of an activation/deactivation stall of a group resource.

- Emergency shutdown
  Shutdown the server on which a stall occurred.

- Intentionally causing a stop error
  Intentionally cause a stop error (Panic) on the server on which a stall occurred.

- Nothing (handle a stall as an activation/deactivation failure)
  Use this to perform recovery upon the detection of an activation/deactivation failure of a group
  resource. For details on the recovery operation, see "Displaying and changing the operation settings
  when a group resource error is detected (Common to group resources)" in "Displaying and
  changing the settings of group resources" in "Group resource details" in this guide.

Note: If a stall occurs with "Nothing (handle a stall as an activation/deactivation failure)" specified, the effect on
the group resources is undefined, so we do not recommend changing the setting to "Nothing (handle a stall as an
activation/deactivation If you do specify "Nothing (handle a stall as an activation/deactivation failure)", set the recovery
operation upon the detection of an activation/deactivation failure of a group resource as described below.

- Activation/deactivation retry threshold: 0 (times)

- Failover threshold: 0 (times)

- Final action: Intentionally causing a stop error

If **Stop the cluster service and shut down OS** or **Stop the cluster service and reboot OS** is specified as the final
action, it takes a considerable amount of time for the cluster service to stop.

Disable the Final Action when OS Stops Due to Failure Detection

Click **Detail Config** to set suppression of the final action which accompanies the OS stop caused by error
detection.
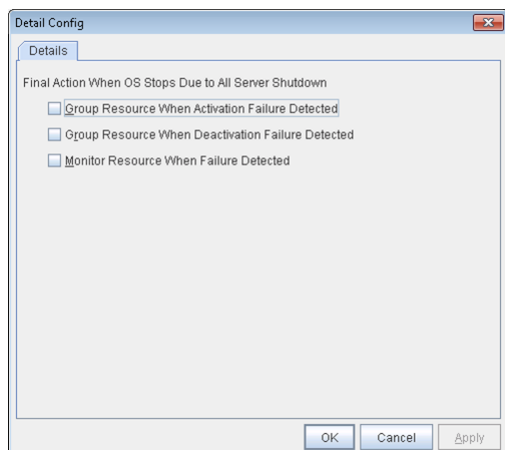
- Group Resource When Activation Failure Detected

  If the final action caused by an activation error detection in a group resource accompanies the OS stop, the final action is suppressed.

- Group Resource When Deactivation Failure Detected

  If the final action caused by a deactivation error detection in a group resource accompanies the OS stop, the final action is suppressed.

- Monitor Resource When Failure Detected

  If the final action caused by an error detection in a monitor resource accompanies the OS stop, the final action is suppressed.

Note:

- The message receive monitor resource does not become the target for which the final action caused by error detection is suppressed.

- The following situations lead to an OS stop during the final action when an activation/deactivation error is detected in a group resource and during the final action when a monitor resource error is detected.

  - Cluster service stop and OS shutdown

  - Cluster service stop and OS restart

  - Generation of an intentional stop error

3.2.5 Alert Service tab

Specify the alert service, chassis identify, and network warning light.

Note: To use the mail alert function, obtain EXPRESSCLUSTER X Alert Service 4.0 for Windows, and register the license.
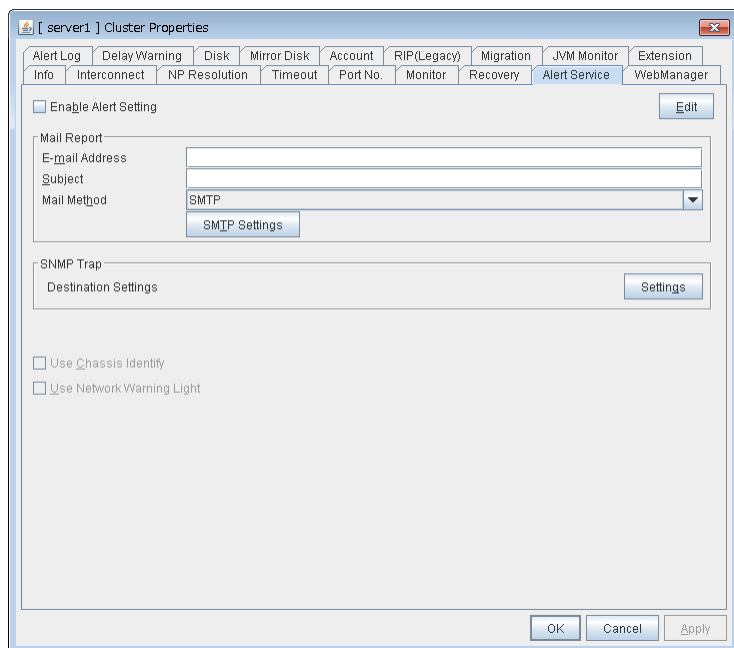
Enable Alert Setting

Configures whether or not to modify the default value of the alert settings. To modify the settings, click **Edit** to configure the destination address.

If you clear the checkbox, the destination address you have modified returns to the default settings temporarily.

For the default settings of the destination address, see "Messages reported by event log and alert" in "Error messages" in the "Operation Guide".

E-mail Address (within **255 bytes**)

Enter the mail address of alert destination. To specify multiple mail addresses, separate each of them by semi-colon ";".

Subject (within **127 bytes**)

Enter the mail subject.

Mail Method

Configure the mail method. In this version, SMTP is the only option in this.

- SMTP
  Sends the alert by directly communicating with the SMTP server.

Destination Settings

Configure the SNMP trap transmission function. Click **Setting** to configure the SNMP trap transmission destination.

Use Chassis Identify

Not used.

Use Network Warning Light

Not used.

Change Alert Destination

Select **Edit** to display the dialog box where you can change alert destination.
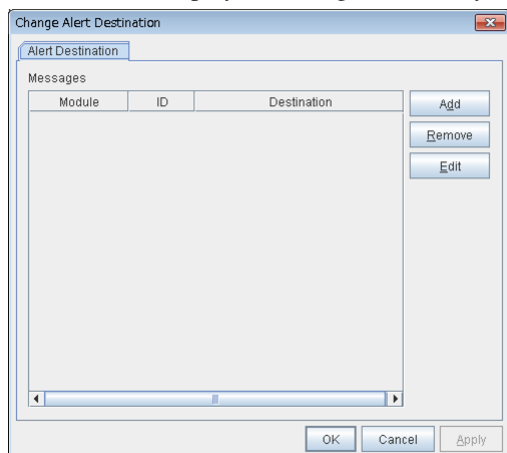
Add

Add the alert ID of the destination which you want to customize. Click **Add** to open the dialog box for entering the message.
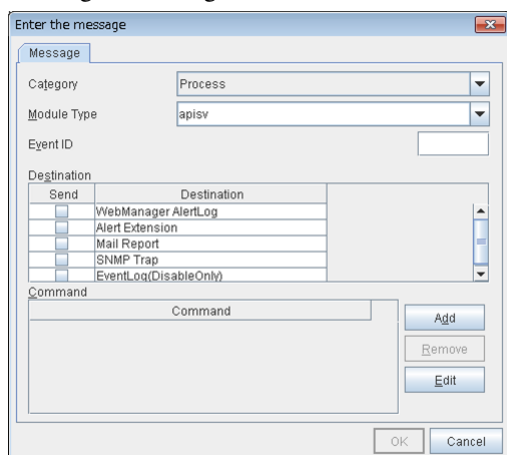
Category

Select a main category of module types.

Module Type (within 31 bytes)

Select the name of the module type for which you want to change the destination address.

Event ID

Enter the message ID of the module type for which you want to change the destination. For the message ID, see "Messages reported by event log and alert" in "Error messages" in the "Operation Guide".

Destination

Select a message destination from the following options.

- WebManager AlertLog
  This sends messages to the alert view of the WebManager.

  This executes the specified function by using the alert extension function. Modify the extension settings by using the **Add** button and/or the **Edit** button. (The command must be specified within

four lines.)

- Mail Report

  Uses the mail report function.

- EventLog (DisableOnly)

  Disables the settings for the OS to report logs to the event log. You cannot configure the settings to report messages that are not reported to event logs.)

- SNMP Trap

  Uses the SNMP trap transmission function to send messages.

Add

Add a command of the alert extension function. Click **Add** button to display the dialog box for entering a command.
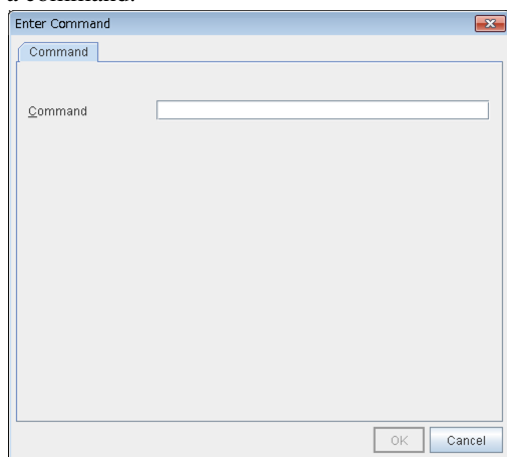
Command (within 511 bytes)

Enter any command you want to use.

- Keyword

  If you specify %%MSG%%, the message of the target event ID is inserted.

  You cannot specify multiple %%MSG%% for one command.

  Configure the command within 511 bytes including the description of %%MSG%%.

  The string %%MSG%% may include a space. If you specify it as an argument for a command, add backslashes () and double quotation marks ("), as in \"%%MSG%%".

Remove

Click this to remove a command of the alert extension function. Select the command, and then, click **Remove**.

Edit

Click this to modify a command of the alert extension function. Select the command, and then, click **Edit**.

SMTP Settings

Click this to display the **SMTP Settings** dialog box which is used for the mail alert.
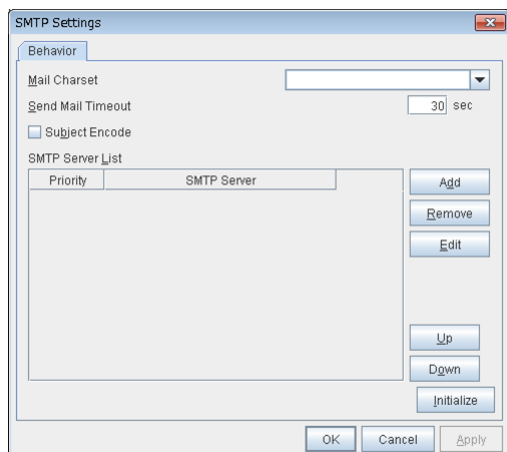
Mail Charset (within 127 bytes)

Configure the character set of the e-mails sent for mail report.

Send Mail Timeout (1 to 999)

Configure the timeout value for the communication with SMTP server.

Subject Encode

Configure whether or not to encode the subject of e-mails.

SMTP Server List

Use this button to display a SMTP server that has been configured. Only one SMTP server can be configured in this version.

Add

Use this button to add a SMTP server. Click **Add** to open the **Enter the SMTP Server** dialog box.

Remove

Select this to remove the SMTP server.

Edit

Use this button to modify the settings of SMTP server.
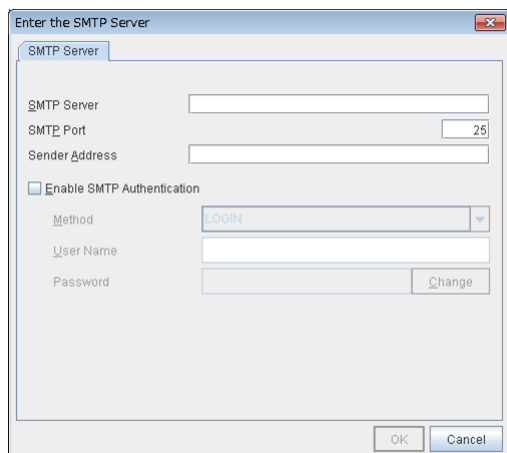
SMTP Server (within 255 bytes)

Configure the IP address or host name of the SMTP server.

SMTP Port (1 to 65,535)

> Configure the port number of the SMTP server.

Sender Address (within 255 bytes)

> Configure the address from which mail report is sent.

Enable SMTP Authentication

> Configure whether or not to enable SMTP authentication.

Method

> Select a method of SMTP authentication.

User Name (within 255 bytes)

> Configure the user name used for SMTP authentication.

Password (within 255 bytes)

> Configure the password used for SMTP authentication.

SNMP Settings

> Click this to display the **Destination Settings** dialog box which is used for the SNMP trap.
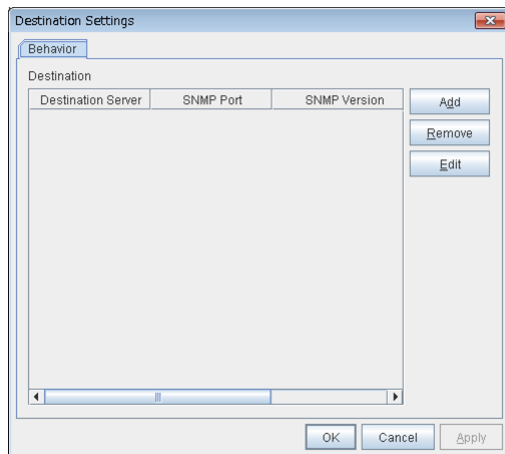
Destination

> Displays the set SNMP trap transmission destinations. With this version, up to 32 SNMP trap transmission destinations can be set.

Add

> Adds an SNMP trap transmission destination. Click **Add** to display the **Change SNMP Destination** dialog box.

Remove

> Use **Remove** to remove the SNMP trap transmission destination settings.

Edit

> Use **Edit** to modify the SNMP trap transmission destination settings.
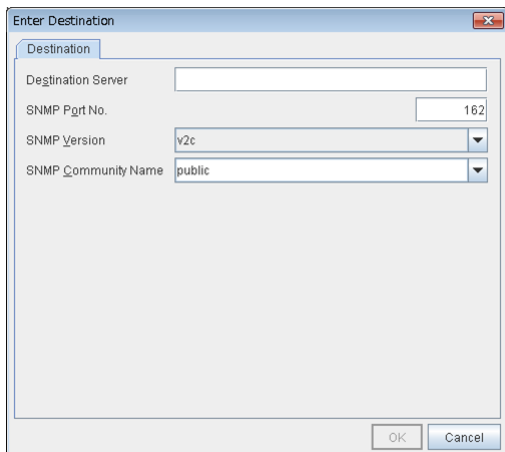
Destination Server (up to 255 bytes)

Configure the name of the SNMP trap transmission destination server.

SNMP Port No. (1-65535)

Configure the port number of the SNMP trap transmission destination.

SNMP Version

Configure the SNMP version of the SNMP trap transmission destination.

SNMP Community Name (up to 255 bytes)

Configure the SNMP community name of the SNMP trap transmission destination.

3.2.6 WebManager tab

Specify the settings for the WebManager.
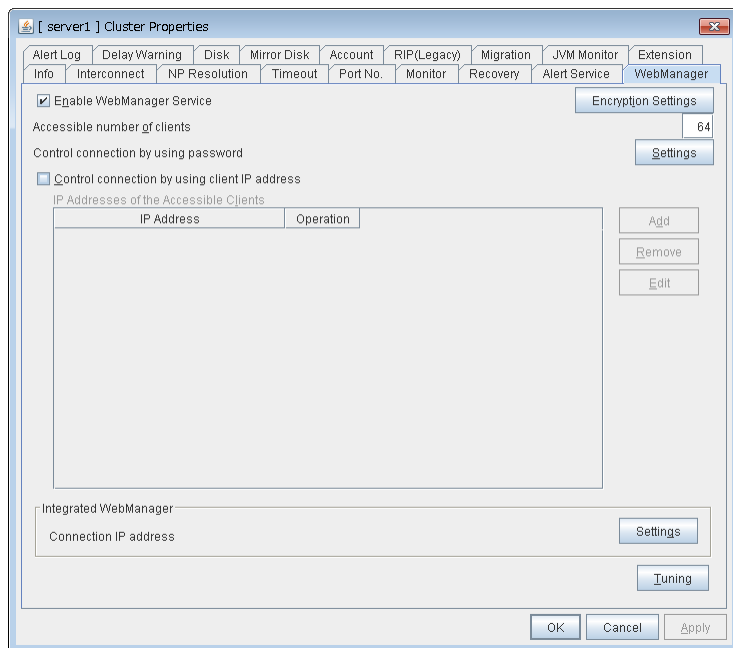
Enable WebManager Service

The WebManager service is enabled.

- When selected:
    The WebManager service is enabled.

- When cleared:
    The WebManager service is disabled.

Encryption Settings

Make settings to encrypt the WebManager service.

Click [Encryption Setting] to display the [Encryption Setting] dialog box.
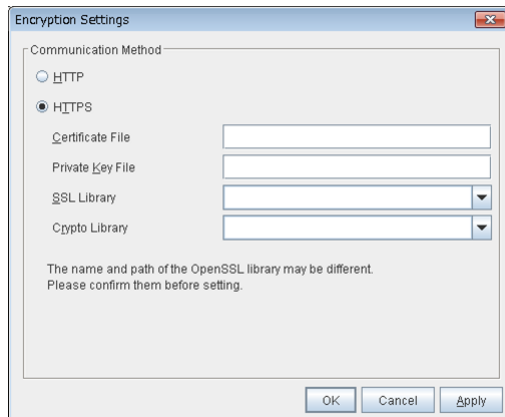
Communication Method

- HTTP

No encryption is used for communicating with a client.

- HTTPS

Encryption is used for communicating with a client.

Certificate File

Sets the server credential file used for connecting to a client. Users need to prepare the server credential file.

Private Key File

Sets the private key file used for connecting to a client. Users need to prepare the private key file.

SSL Library

Sets the SSL library file used for encryption and selects the SSL library file included in OpenSSL. Users need to change it based on the environment, such as an installation folder.

Crypto Library

Sets the Crypto library file used for encryption and selects the Crypto library file included in OpenSSL. Users need to change it based on the environment, such as an installation folder.

Note: OpenSSL library is necessary to use HTTPS.

Accessible number of clients (1 to 999)

Specify the number of client machines that can be connected.

Control connection by using password

Click the **Settings** button to open the **WebManager Password** dialog box.
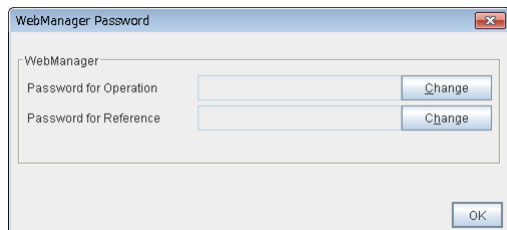
WebManager

- Password for Operation
  Set a password to connect to the WebManager in the operation mode.
  Click **Change** to display the **Change Password** dialog box.

- Password for Reference
  Set a password to connect to the WebManager in the reference mode.
  Click **Change** to display the **Change Password** dialog box.
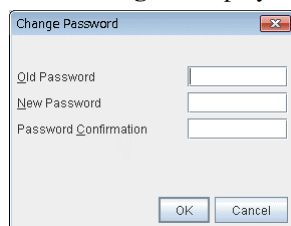
- **Old Password** (within 255 bytes)
    Enter the current password.
    If the password is not set, leave it blank.

- **New Password** (within 255 bytes):
    Enter a new password.
    When deleting the old password, leave it blank.

- **Password Confirmation** (within 255 bytes)
    Enter the password again which you entered in **New Password**.

Control connection by using client IP address

If selected, accesses are controlled by client IP addresses.

- When selected:
  Add, **Remove** and **Edit** buttons are enabled.

- When cleared:
  Add, **Remove** and **Edit** buttons are disabled.

Add

Use **Add** to add an IP address in **IP Addresses of the Accessible Clients**. By clicking **Add**, the **IP Address Settings** dialog box is displayed to enter an IP address. Newly added IP addresses have the rights for the operation.
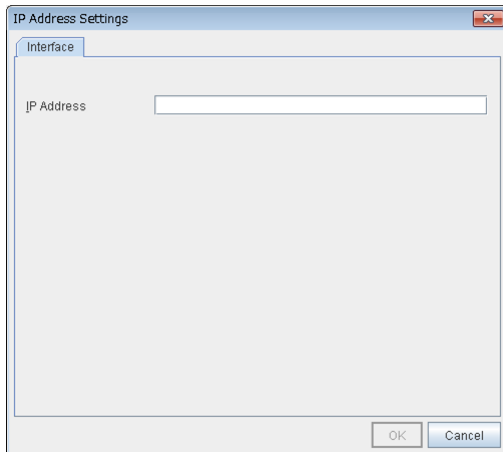
- **IP Address** (within 80 bytes)

    Specify a client IP address that can be connected.

    – IP address: 10.0.0.21

    – Network address: 10.0.1.0/24

Remove

Use **Remove** to remove an IP address from **IP Addresses of the Accessible Clients**. Select an IP address you want to remove in **IP Addresses of the Accessible Clients** and click **Remove**.

Edit

Use **Edit** to change an IP address. Select an IP address you want to edit in **IP Addresses of the Accessible Clients** and click **Edit**. A dialog box where the specified IP address is preset is displayed. The rights for operating the edited IP addresses remain the same.

Operation

Specify the operation rights for IP addresses that are registered in **IP Addresses of the Accessible Clients**.

- When selected:

    A client can operate EXPRESSCLUSTER X SingleServerSafe and display its status.

- When cleared:

    The client can only display the status of EXPRESSCLUSTER X SingleServerSafe.

IP address for Integrated WebManager

Click the **Settings** button to open the IP address dialog box for the Integrated WebManager.
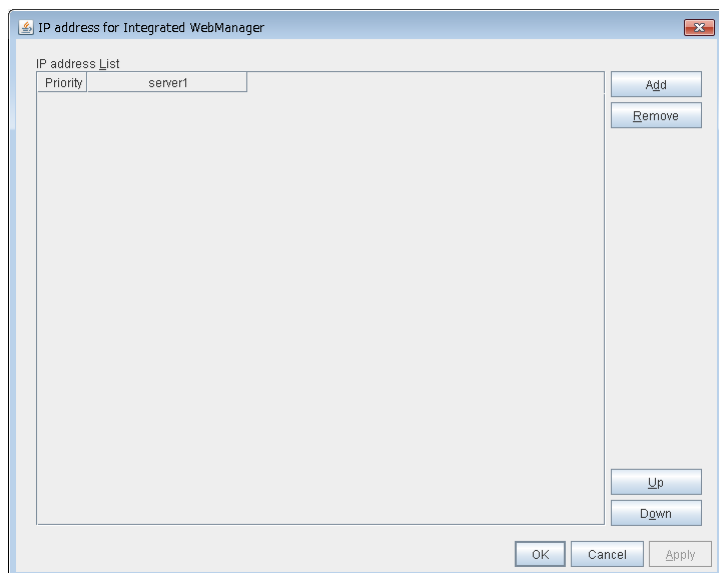
- **Add**

    Add IP addresses for the Integrated WebManager. Click the column cell of server and select or enter IP address for the IP address of server.

- **Remove**

    Remove the communication path. Select the communication path to be removed and click **Remove**, then the selected path is removed.

- **Up, Down**

    When multiple IP addresses for Integrated WebManager are configured, the communication path with the smallest number in the **Priority** column is used preferentially for the internal communication among cluster servers.

Tuning

Use **Tuning** to tune the WebManager. Click **Tuning** to open the **WebManager Tuning Properties** dialog box.
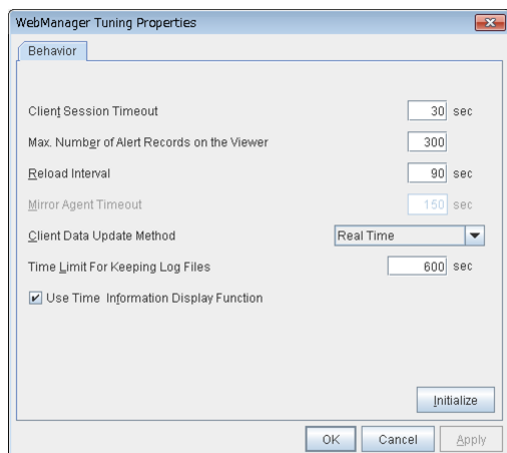
- **Client Session Timeout** (1 to 999)

    A timeout is determined if the time specified here elapses after the last communication between the WebManager Server and the WebManager.

- **Max. Number of Alert Records on the Viewer** (1 to 999)

Specify the maximum number of alert viewer records to display on the Alert Viewer of the
WebManager.

- **Reload Interval** (0 to 999)

   At this time interval, the WebManager screen is refreshed.

- **Mirror Agent Timeout** (1 to 999)

   Not used.

- **Client Data Update Method**

   You can select the method to update the screen data of the WebManager from the following.

   - **Polling**

      The screen data is updated regularly.

   - **Real Time**

      The screen data is updated on the real time.

- Time Limit For Keeping Log Files (60 to 43,200)

   Time limit determines when the log collection information temporarily saved on the server will be
   deleted. When the time specified here has elapsed, the log collection information will be deleted
   unless you save the file when the dialog box asking you if you save the log collection information is
   displayed.

- **Use Time Info**

   Specify whether the time information display function is enabled or disabled.

   - **When the check box is selected**

      The time information display function is enabled.

   - **When the check box is not selected**

      The time information display function is disabled.

- Initialize

   This operation is used to return the value to the default value. By selecting **Initialize**, initial values
   are configured for all items.

3.2.7 Alert Log tab

Specify the settings for the alert log.
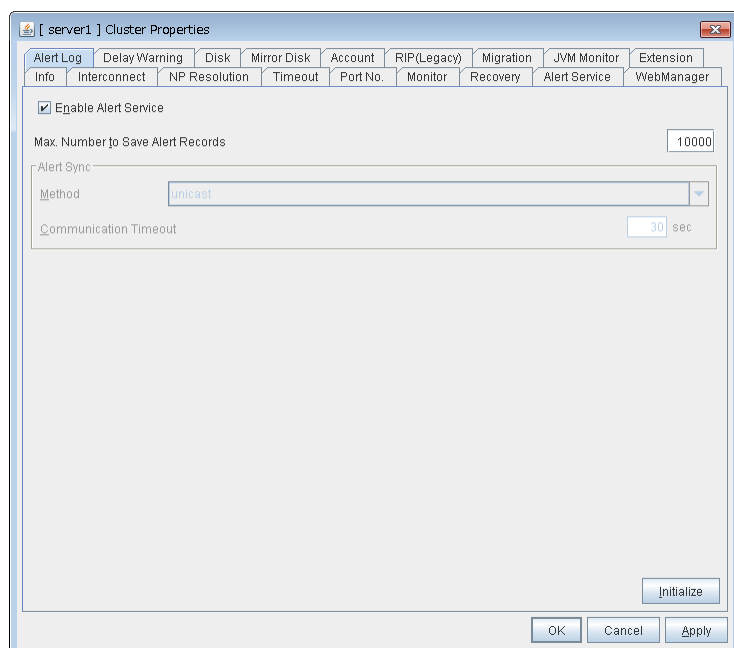
Enable Alert Service

    Select this to start EXPRESSCLUSTER Web Alert service for the server.

- When selected:
  EXPRESSCLUSTER Web Alert service is enabled.

- When cleared:
  EXPRESSCLUSTER Web Alert service is disabled.

Max. Number to Save Alert Records (1 to 99,999)

    Specify the maximum number of alert records that can be retained. EXPRESSCLUSTER Web Alert service for server can retain alert messages up to this number.

Alert Sync: Method

    Not used.

Alert Sync: Communication Timeout (1 to 300)

    Not used.

Initialize

    This operation is used to return the value to the default value. By selecting **Initialize**, initial values are configured for all items.

3.2.8 Delay Warning tab

Specify the settings for **Delay Warning** on this tab. For details about **Delay Warning**, see"Monitoring details" in the "Configuration Guide".
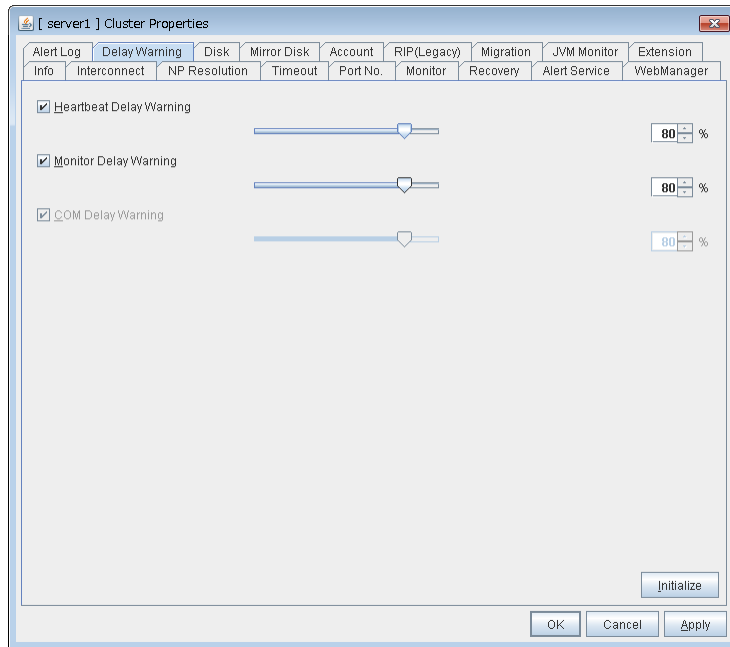
Heartbeat Delay Warning (1 to 99)

> Set a percentage of heartbeat timeout at which the heartbeat delay warning is issued. If the time for the percentage passes without any heartbeat response, the warning will be produced in an alert log.

Monitor Delay Warning (1 to 99)

> Set a percentage of monitor timeout at which the monitor delay warning is issued. If the time for the percentage passes without any monitor response, the warning will be produced in an alert log.

COM Delay Warning (1 to 99)

> Not used.

Initialize

> Click **Initialize** to reset all settings on this tab to default. Click **Initialize** to set all items to their default values.

3.2.9 JVM monitor tab

Configure detailed parameters for the JVM monitor.

Note: To display the **JVM monitor** tab on the online version Builder, you need to execute **Update Server Info** from the **File** menu after the license for Java Resource Agent is registered.
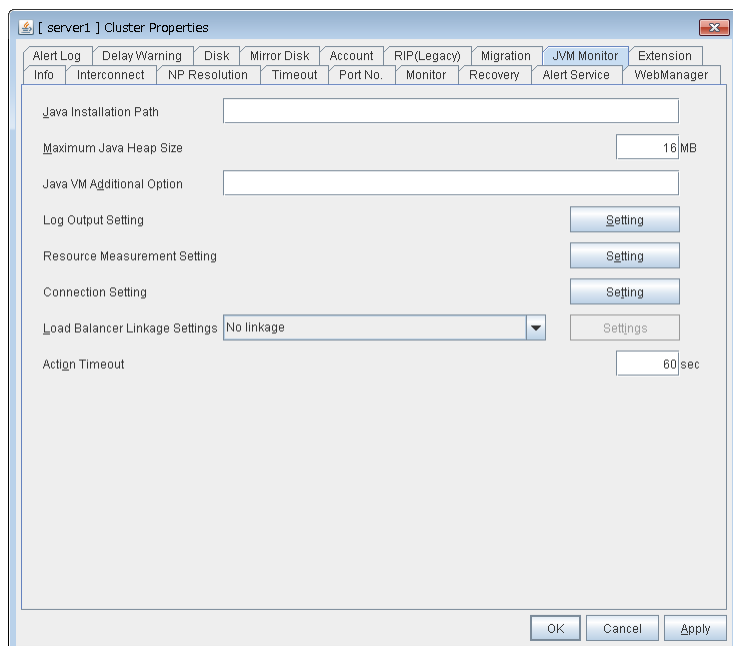
Java Installation Path(up to 255 bytes)

the Java VM install path used by the JVM monitor. Specify an absolute path using ASCII characters. Do not add "\" to the end of the path. This setting becomes common for all servers in the cluster. Specification example: `C:\Program Files\Java\jdk1.8.0_102`

Maximum Java Heap Size(7 to 4096)

Set, in megabytes, the maximum Java VM heap size used by the JVM monitor (equivalent to -Xmx of the Java VM startup option). This setting becomes common for all servers in the cluster.

Java VM Additional Option (up to 1024 bytes)

Set the Java VM startup option used by the JVM monitor. However, specify -Xmx for **Maximum Java Heap Size**. This setting becomes common for all the servers in the cluster. Specification example: -XX:+UseSerialGC

Log Output Setting

Click the **Setting** button to open the **Log Output Setting** dialog box.

Resource measurement Setting

Click the **Setting** button to open the **Resource Measurement Setting** dialog box.

Connection Setting

Click the **Setting** button to open the **Connection Setting** dialog box.

Load Balancer Linkage Settings

Click the **Setting** button to open the **Load Balancer Linkage Settings** dialog box.

Action Timeout (30 to 300)

Set a timeout value for the [Command] that has been specified on each window of the JVM monitor. This setting becomes common for all of the [Commands].

Log Output Setting

Clicking **Setting** displays the **Log Output Setting** dialog box.
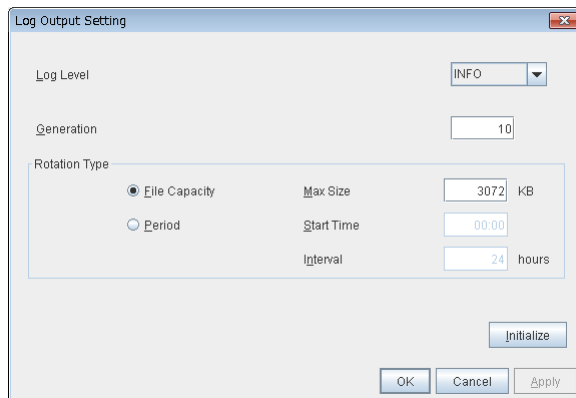
Log Level

Select the log level of the log output by the JVM monitor.

Generation (2 to 100)

Set the number of generations to be retained for the log output by the JVM monitor. When **Period** is selected for **Rotation Type**, the rotation count is reset when cluster is suspended. Therefore, note that log files under the `<EXPRESSCLUSTER_install_path>`log\ha\jra increase per cluster suspend.

Rotation Type

Select a rotation type for the log output by the JVM monitor. If you select **File Capacity** as the rotation type, set the maximum size (200 to 2097151), in kilobytes, for each log file such as the JVM operation log. If you select **Period** as the rotation type, set the log rotation start time in "hh:mm" format (hh: 0 to 23, mm: 0 to 59) and the rotation interval (1 to 8784) in hours.

Initialize

Clicking **Initialize** returns the log level, generation, and rotation type items to their default values.

Resource Measurement Setting [Common]

Clicking **Setting** displays the **Resource Measurement Setting** dialog box. For details on the scheme for error judgment by the JVM monitor, see , "Monitor resource details" in the "Configuration Guide".
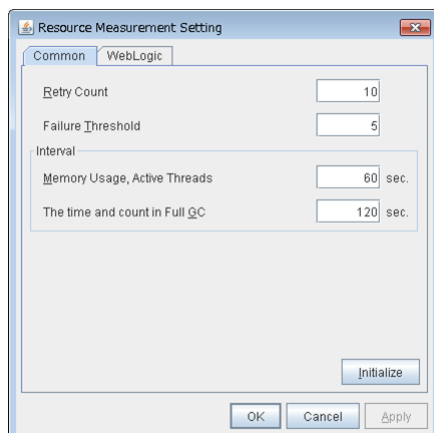
Retry Count (1 to 1440)

Set the resource measurement retry count to be applied if the JVM monitor fails in resource measurement.

Error Threshold (1 to 10)

Set the number of times abnormal judgment is performed when the usage of the Java VM or the application server resources collected by the JVM monitor via resource measurement continuously exceed the customer-defined threshold.

Memory Usage, Active Threads (15 to 600)

Set the interval at which the JVM monitor measures the memory usage and active thread count.

The time and count in Full GC (15 to 600)

Set the interval at which the JVM monitor measures the time and count in Full GC execution.

Initialize

Clicking **Initialize** returns the retry count, error threshold, and interval items to their default values.

Resource Measurement Setting [WebLogic]

Clicking **Setting** displays the **Resource Measurement Setting** dialog box. For details on the scheme for error judgment by the JVM monitor, see ,"Monitor resource details" in the "Configuration Guide".
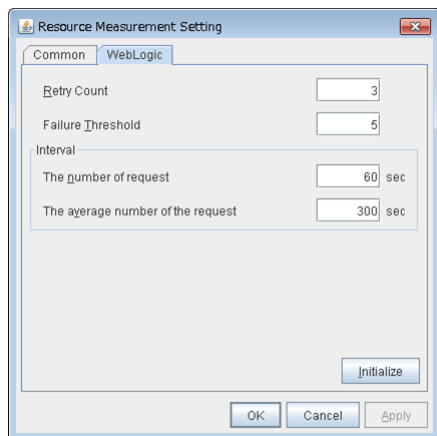
Retry Count (1 to 5)

Set the resource measurement retry count to be applied if the JVM monitor fails in resource measurement.

Error Threshold (1 to 10)

Set the number of times abnormal judgment is performed when the usage of the Java VM or the application server resources collected by the JVM monitor via resource measurement continuously exceed the customer-defined threshold.

The number of request (15 to 600)

Set the interval at which the JVM monitor measures the number of work manager or thread pool requests during WebLogic monitor.

The average number of the request (15 to 600)

Set the interval at which the JVM monitor measures the average number of work manager or thread pool requests during WebLogic monitor. Set a value that is an integer multiple of the value set in **Interval: The number of request**.

Initialize

Clicking **Initialize** returns the retry count, error threshold, and interval items to their default values.

Connection Setting

Clicking **Setting** displays the **Connection Settings** dialog box.
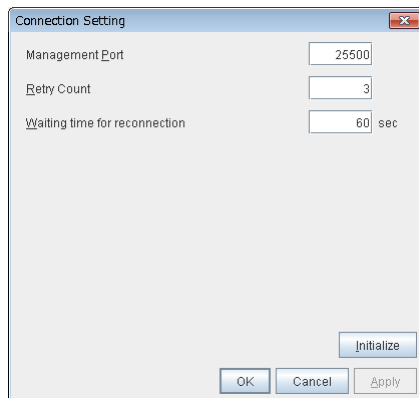
Management Port (10000 to 65535)

Sets the port number internally used by the JVM monitor resource. Make sure not to set the port number that has been used by other functions or programs.Set the number of the port connected to the monitor target Java VM. This setting becomes common for all the servers in the cluster. Do not set 42424 to 61000.

Retry Count for (1 to 5)

Set the retry count to be applied if connection to the monitor target Java VM fails.

Waiting time for reconnection (15 to 60)

Set the interval at which the JVM monitor retries connection if it fails in Java VM connection.

Initialize

Clicking **Initialize** sets the management port, retry count, and waiting time for reconnection items to their default values.

Load Balancer Linkage Settings

Clicking **Setting** displays the **Load Balancer Linkage Settings** dialog box.
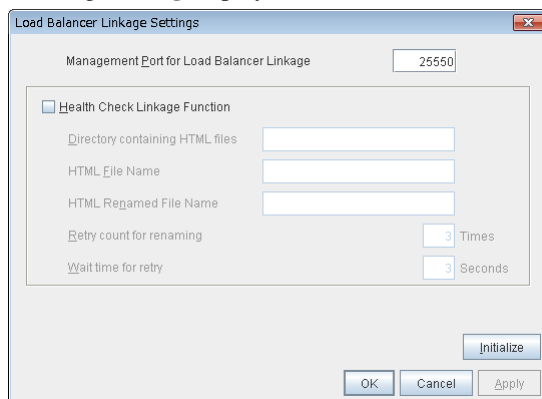
Management Port for Load Balancer Linkage (10000 to 65535)

Set the port number used by the load balancer linkage function. This setting becomes common to all the servers in the cluster. Do not set 42424 to 61000.

Health Check Linkage Function

Set whether to use the load balancer health check function if the monitor target Java VM detects a failure.

Directory containing HTML files(up to 255 bytes)

Set the directory in which the HTML file used by the load balancer health check function is stored.

HTML File Name(up to 255 bytes)

Set the HTML file name used by the load balancer health check function.

HTML Renamed File Name(up to 255 bytes)

Set the HTML renamed file name used by the load balancer health check function.

Retry count for renaming (0 to 5)

Set the number of times HTML file renaming is retried if it fails.

Wait time for retry (1 to 60)

Set the interval at which HTML file renaming is retried if it fails.

Initialize

Clicking **Initialize** returns the management port for load balancer linkage, health check linkage function, directory containing HTML files, HTML file name, HTML renamed file name, retry count for renaming, and wait time for retry retry interval items to their default values.

Load Balancer Linkage Settings

Select **BIG-IP LTM** as the load balancer type and then click the **Settings** button. The **Load Balancer Linkage Settings** dialog box appears.

Management Port for Load Balancer Linkage (10000 to 65535)

Set the port number used by the load balancer linkage function. This setting becomes common to all the servers in the cluster. Do not set 42424 to 61000.

mgmt IP address

Set the BIG-IP LTM IP address.

User Name (up to 255 bytes)

Set the BIG-IP LTM management user name.

Password (up to 255 bytes)

Set the BIG-IP LTM management user password.

Communications Port(10000 to 65535)

Set the communication port number for BIG-IP LTM.

Add

Add the server name and IP address for the distributed node. For the server name, specify the computer name. For the IP address, specify the value set to **Members** in **LocalTrafic** - **Pools:PoolList** - **Relevant pool** - **Members** of BIG-IP Configuration Utility.

To change the value, select the line and directly edit the description.

Remove

Remove the server name and IP address for the distributed node. Select the line to be removed and then click **Remove**. The selected server is removed.

Initialize

Clicking Initialize returns the management port for load balancer linkage, management user name, and communication port number to the default settings.

3.2.10 Extension tab

Configure other cluster settings.
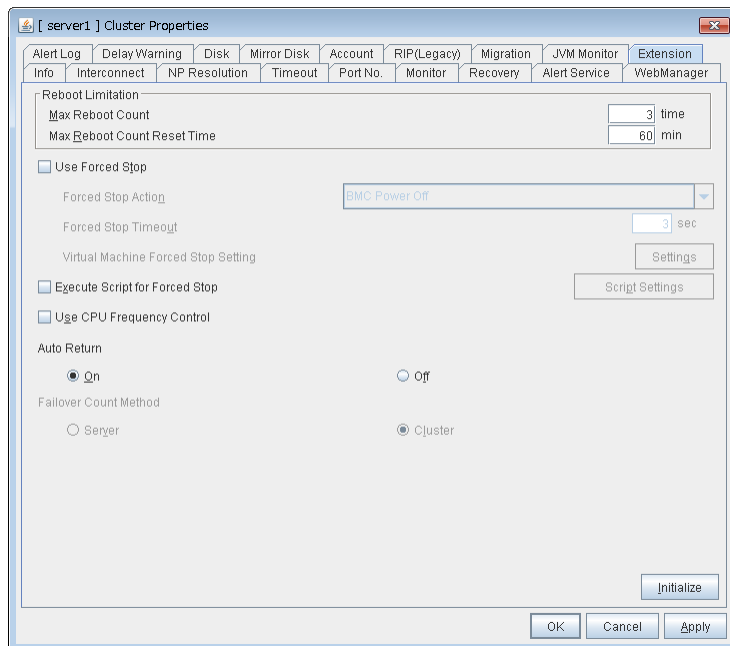
Reboot Limitation

You can specify the **Reboot OS** or **Shut down OS** as the final action at abnormality detection for group resources and monitor resources. If either of them is selected, reboot may be repeated infinitely. By setting the reboot limit, you can prevent repeated reboots.

- Max Reboot Count (0 to 99)

  Specify how many times the operating system can reboot. The number specified here is separately counted for group resource and monitor resource.

- Max Reboot Count Reset Time (0 to 999)

  When the max reboot count is specified, if the operation from the cluster startup keeps running normally for the time specified here, the reboot count is reset. The time specified here is separately counted for group resource and monitor resource.

> **Note:** If **Max Reboot Count** is set to 1 or greater, set **Max Reboot Count Reset Time** also to 1 or greater. If the time to reset the maximum reboot count is set to zero (0), the number of reboot will be unavailable, thus, shutdown/reboot are executed every time at failure detection regardless of the maximum reboot count.

Use Forced Stop

> Not used.

Forced Stop Action

> Not used.

Forced Stop Timeout (0 to 99)

> Not used.

Virtual Machine Forced Stop Setting

> Not used.

Execute Script for Forced Stop

> Not used.

Script Settings

> Not used.

Use CPU Frequency Control

> Select the checkbox when you use CPU frequency control. If you uncheck the checkbox, CPU frequency control is disabled.

See also:

When CPU frequency control is used, the CPU frequency of the server where a group is active is set to high, and that of the server where the group is stopped is set to low.

When CPU frequency control is performed by using a command or the WebManager, the settings changed by the command or WebManager are given higher priority regardless of whether the group is started or stopped. Note that the settings changed by using the command or the WebManager are discarded after stop/start or suspend/resume and that the CPU frequency is controlled by EXPRESSCLUSTER X SingleServerSafe.

> **Note:** For using CPU frequency control, it is required that the frequency is changeable in BIOS settings and the CPU supports the frequency control by Windows OS power management function.

> **Note:** If you disable CPU frequency control function with CPU frequency changed, 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.

Windows Server 2012:

Select [Balanced] in [Power Options] -> [Select a power plan] in [Control Panel].

Windows Server 2016:

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

Auto Return

- On

  Select this to perform the auto recovery.

- Off

  Select this not to perform the auto recovery.

Failover Count Method

  Not used.

Initialize

  This operation is used to return the value to the default value.

3.3 Server properties

In the **Server Properties** window, you can add, remove, and edit interfaces, such as IP addresses and devices, that are used by the server. From the aspect of network environment, IP addresses have the following restrictions:

One server cannot have two or more IP addresses that belong to the same network address. Likewise, containment is not allowed as follows.

- IP address: 10.1.1.10, Subnet mask: 255.255.0.0

- IP address: 10.1.2.10, Subnet mask: 255.255.255.0

3.3.1 Info tab

You can display the server name, and register and make a change to a comment on this tab.
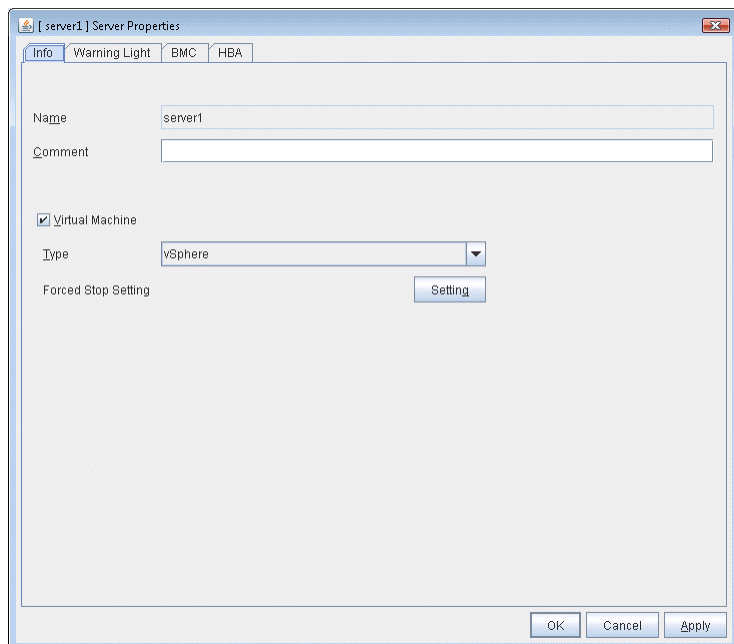
Name:

> The selected server name is displayed. You cannot change the name here.

Comment (within 127 bytes)

> You can specify a comment for the server. You can only enter one byte English characters.

Virtual Machine

> Specify whether this server is a virtual machine (guest OS).

> - On
>   If selected, the server is a virtual machine (guest OS). You can configure this virtual machine.

> - Off
>   If selected, the server is a physical machine. You cannot configure a virtual machine.

Type

Specify the type of virtual infrastructure.

- vSphere

  Virtual infrastructure provided by VMware, Inc.

- KVM

  Linux kernel virtual infrastructure.

- XenServer

  Virtual infrastructure provided by Citrix Systems, Inc.

- Container

  Virtual infrastructure provided by Oracle, Inc.

- Hyper-V

  Virtual infrastructure provided by Microsoft Corporation.

- other

  Specify this option to use any other virtual infrastructure.

Forced Stop Setting

Not used.

3.3.2 Warning Light tab

Not used.

3.3.3 BMC tab

Not used.

3.3.4 HBA tab

Not used.

3.4 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.

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. 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 CD-ROM.

---

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

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

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

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

Load the following file with a Web browser to start up the offline version of the Builder:

<installation path>/clptrek.htm

3.5 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.

3.6 Limitations of the Builder

- The configuration data of the following products is not compatible.

    - A Builder other than that for EXPRESSCLUSTER X SingleServerSafe 4.0 for Windows

    - The Builder of EXPRESSCLUSTER for Linux

    - The Builder of EXPRESSCLUSTER for Windows Value Edition

- Cluster configuration data created using a later version of this product cannot be used with this product.

- Cluster configuration data of EXPRESSCLUSTER X SingleServerSafe 1.0/2.0/2.1/3.0/3.1/3.2/3.3/4.0 for Windows can be used with this product.
  You can use such data by clicking **Import** from the **File** menu in the Builder.

- Closing the Web browser (by clicking **Exit** from the menu), the dialog box to confirm to save is displayed.
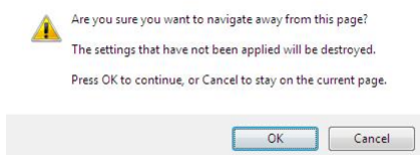
When you continue to edit, click the **Cancel** button.

Note: This dialog box is not displayed if JavaScript is disabled.

- Reloading the Web browser (by selecting **Refresh from the menu** or tool bar) , the dialog box to confirm to save is displayed.
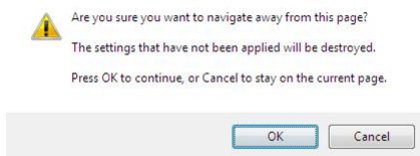
When you continue to edit, click the **Cancel** button.

Note: This dialog box is not displayed if JavaScript is disabled.

- If you change the screen resolution while the Builder is running, the Java VM stack trace (example: NullPointerException) may be logged on the Java console. The Builder can keep running.

- If you press Esc while a pull-down menu of your browser is displayed, the Java VM stack trace (example: NullPointerException) may be logged on the Java console. The Builder can keep running.

- In some cases, you cannot use the keyboard because the keyboard focus of the Builder becomes disabled (the focus changes to the Web browser). Click the Builder window and get the focus back to the Builder.

- When you are using the multi-display function, do not run the Builder on the secondary display. Otherwise, it may not work properly. For example, the screen is not displayed. Use the Builder on the primary display.

- If you specify a number smaller than the current one for **Max. Number to Save Alert Records** on the **Alert Log** tab (see "*3.2.7. Alert Log tab*"), all alert logs are deleted. Take into account the available disk space, and specify the number before you start the operation.

- In the environment where Internet Explorer is used, disable Protected Mode on the security setting of Internet Explorer.

- The JIS 2004-unique characters are not supported. Thus, you cannot enter or view the characters added by JIS 2004.

- When going through the reverse proxy server, the Builder will not operate properly.

- When you use the Offline Builder and the EXPRESSCLUSTER, a combination of their versions should be the one shown below. The Builder may not operate properly if they are used in a different combination.

Offline Builder version	EXPRESSCLUSTER internal version
4.0.0-1	12 12.01

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FIVE

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