ExpressCluster® X Alert Service 1.0
for Linux

Administrator's Guide

12/12/2006
Second Edition

Revision History

Edition	Revised Date	Description
First	2006/09/08	New manual
Second	2006/12/12	EXPRESSCLUSTER logo has been changed.

Disclaimer

Trademark Information

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Preface

Who Should Use This Guide

This guide is intended for system engineers who are installing ExpressCluster Alert Service on a cluster system employing ExpressCluster and system administrators who are responsible for operation and maintenance of ExpressCluster systems. This guide provides detailed information on steps required in introducing a cluster system with ExpressCluster X Alert Service.

How This Guide is Organized

Chapter 1 **Alert Service overview**
An introduction to Alert Service and how to register the product.

Chapter 2 **Configuring report settings**
Provides detailed information on configuring the report settings for Alert Service.

Chapter 3 **Report details**
Provides information on how alerts are reported and how events are logged.

Appendix A **Glossary**

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ExpressCluster X Documentation Set

The ExpressCluster X manuals consist of the following four guides. The title and purpose of each guide is described below:

Getting Started Guide
This guide is intended for all users. The guide covers topics such as product overview, system requirements, and known problems.

Installation and Configuration Guide
This guide is intended for system engineers and administrators who want to build, operate, and maintain a cluster system. Instructions for designing, installing, and configuring a cluster system with ExpressCluster are covered in this guide.

Reference Guide
This guide is intended for system administrators. The guide covers topics such as how to operate ExpressCluster, function of each module, maintenance-related information, and troubleshooting. The guide is supplement to the *Installation and Configuration Guide.*

Administrator's Guide (Add-on product)
This guide is intended for system administrators. The detailed information on each product package is described in this guide. There are five guides for each optional product and topics such as product overview, instruction for setting up are covered:

Alert Service Administrator's Guide
Application Server Agent Administrator's Guide
Database Agent Administrator's Guide
File Server Agent Administrator's Guide
Internet Server Agent Administrator's Guide

Conventions

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

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

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

The following conventions are used in this guide.

Convention	Usage	Example
Bold	Indicates graphical objects, such as fields, list boxes, menu selections, buttons, labels, icons, etc.	In **User Name**, type your name. On the **File** menu, click **Open Database**.
Angled bracket within the command line	Indicates that the value specified inside of the angled bracket can be omitted.	`clpstat –s[-h host_name]`
#	Prompt to indicate that a Linux user has logged on as root user.	`clpcl -s -a`
Monospace (courier)	Indicates path names, commands, system output (message, prompt, etc), directory, file names, functions and parameters.	`/Linux/1.0/eng/server/`
Monospace bold (courier)	Indicates the value that a user actually enters from a command line.	Enter the following: **`clpcl -s -a`**
Monospace italic (courier)	Indicates that users should replace italicized part with values that they are actually working with.	`rpm –i expressclsbuilder -<version_number>-<release_number>.i686.rpm`

Contacting NEC

For the latest product information, visit our website below:

http://www.ace.comp.nec.co.jp/CLUSTERPRO/global-link.html

Chapter 1 Alert Service overview

This chapter provides an overview of the ExpressCluster X Alert Service.

This chapter covers:

What is ExpressCluster X Alert Service?

ExpressCluster X Alert Service (hereafter Alert Service) is an optional product that provides functions to report failures found in ExpressCluster-installed cluster systems to system administrators in remote locations.

Failures are reported in two ways, each serving a different purpose.

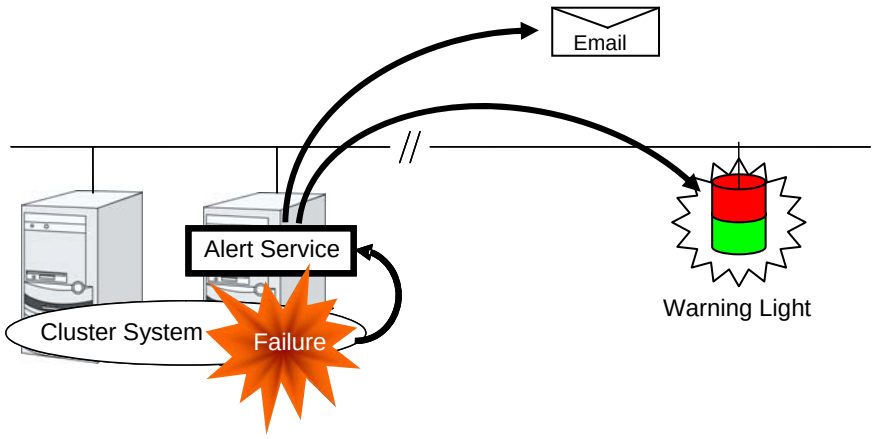
(1) E-mail report

Alert messages in the WebManager are sent by e-mail to administrators.

(2) Warning light

The warning light is a visual display of the status of the server. When the server shuts down successfully, the warning light goes off.

The e-mail report and the warning light function work independently of each other.



Alert Service allows you to:

- Receive information about failures while not physically located in the same place as the management PC. This is achieved via e-mail reporting function.
- Receive e-mail messages on your mobile phone.
- Visually be alerted of failures by viewing a light.

The task of Alert Service is to send the first report of failure but not to examine or find the cause of failure. When a failure occurs, instead of using the Alert Service, try other methods, such as viewing Express Cluster logs or syslog, to find out the cause of the error.

Caution:
This guide does not describe how to use a warning light. See the document that comes with a device for how to use it with Alert Service.

Preparing to use Alert Service

Alert Service system requirements

Hardware	IA-32 server and x86-64 server
OS	The same as ExpressCluster servers
ExpressCluster	ExpressCluster X 1.0 or later
Memory	1.0 MB or more

Note:
In addition to the requirements listed above, the network environment should allow for e-mail communication.
Visit our web site, *http://www.ace.comp.nec.co.jp/CLUSTERPRO/global-link.html*, for information on Warning Light supporting the warning light report.

Steps to take before using Alert Service

Software modules for Alert Service are part of Express Cluster. There is no separate install required for Alert Service. Follow the steps below to start using Alert Service:

Step 1 Check for the latest updates

Go to *http://www.ace.comp.nec.co.jp/CLUSTERPRO/global-link.html*, and install any newly released ExpressCluster updates. If there is any, obtain the latest one and apply it by following the instruction comes with the update module.

Step 2 Register the Alert Service license

Follow the instructions listed below for registering the Alert Service License. The instructions for registering the license is provided in the following topic, “Registering the Alert Service license.”

Step 3 Apply configuration data

Configure the report settings. For details, see “Registering the Alert Service license” on the next page.

Registering the Alert Service license

After applying the latest update of Alert Service to the ExpressCluster-installed system, register the software license for Alert Service. There are two ways to register the license; license file or license key.

Note:
Each server in a cluster must have a different Alert Service license key. If you register the same license key on multiple servers, a problem may occur.

Registering the license by specifying the license file

Registering the license with a single server in the cluster covers licensing for the entire cluster.

Before registering, verify the following:

- Run the cluster generation command. For details, see "Creating a cluster" in Chapter 4, "Installing ExpressCluster" in the *Installation and Configuration Guide*.
- Log on to the server to be used as a master server among cluster system servers as root user.
- License file is located in the server intended to be used as master of the cluster.

1. Log in the server intended to be used as master as root and run the following command:

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

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

   Specify the product ID in the following chart for *PRODUCT-ID*, which is specified by the -p option.

License product name	Product ID
ExpressCluster X Alert Service 1.0 for Linux	ALRT10

   When the command is executed successfully, "Command succeeded" is displayed on the console. If any message other than this is displayed, see the descriptions for the clplcnsc command in Chapter 4, "ExpressCluster command reference" in the Reference Guide.

2. Verify the license you have registered by running the command listed below. Enter the product ID specified in Step 1 for *PRODUCT-ID*.

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

Registering the license by entering a license key

Before registering, verify the following:

- You have the license sheet officially obtained from the distributor on hand: When you purchase Alert Service, the license sheet is available. You need to enter the value quoted on the license sheet.
- Run the cluster generation command. For details, see "Creating a cluster" in Chapter 4, "Installing ExpressCluster" in the *Installation and Configuration Guide*.
- Log on to the server as a master server among cluster system servers as root user.

Note:
The clplcnsc command is used for license registration. For more information, see Chapter 4, "ExpressCluster command reference" in the *Reference Guide*.

Complete Steps 1-6 below on all servers that you install the license:

1. Have the license sheet on hand.

   This procedure uses the information shown below as an example of license sheet. When you actually enter a license key, you need to enter values on your license sheet.

Product name	**ExpressCluster X Alert Service 1.0 for Linux**	
License information		
	License version	Product version
	License key	A1234567- B1234567- C1234567- D1234567
	Serial number	AAA0000000
	The number of server license	1

2. Log on to the server to register the license as root, and run the following command:

   # clplcnsc –i –p *<PRODUCT-ID>*

   Specify the product ID in the following chart for *PRODUCT-ID*, which is specified by the –p option.

License product	Product ID
ExpressCluster X Alert Service 1.0 for Linux	ALRT10

3. The following is displayed. Enter 1 for the product version:

```
Software license
  1  Product version
  2  Trial version
Select the license version [1 or 2]…1
```

4. You are prompted to enter the serial number that is on the license sheet. Serial number is case-sensitive. Make sure to type characters correctly.

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

5. You are prompted to enter the license key that is on the license sheet. License key is also case sensitive.

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

   After running the command, the message "Command succeeded" is displayed in the console to indicate that the command is successfully completed. If other completion messages are displayed, refer to Chapter 4, "ExpressCluster command reference" in the *Reference Guide*.

6. Verify the license you have registered by running the following command. Enter the product ID you have specified in Step 2 for *PRODUCT-ID*.

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

   This completes the steps for license registration. Information on how to use Alert Service is described in the following chapters.

Related Information:
For the details on the command completion messages, see the explanation of "clplcnsc" in Chapter 4, "ExpressCluster command reference" in the *Reference Guide*.

Chapter 2 Configuring report settings

This chapter provides information on settings of the ExpressCluster X Alert Service.

This chapter covers:

Report settings

Configure report settings at the following two locations: the Cluster Properties window and the Server Properties window.

Configuring report settings on the Cluster Properties window

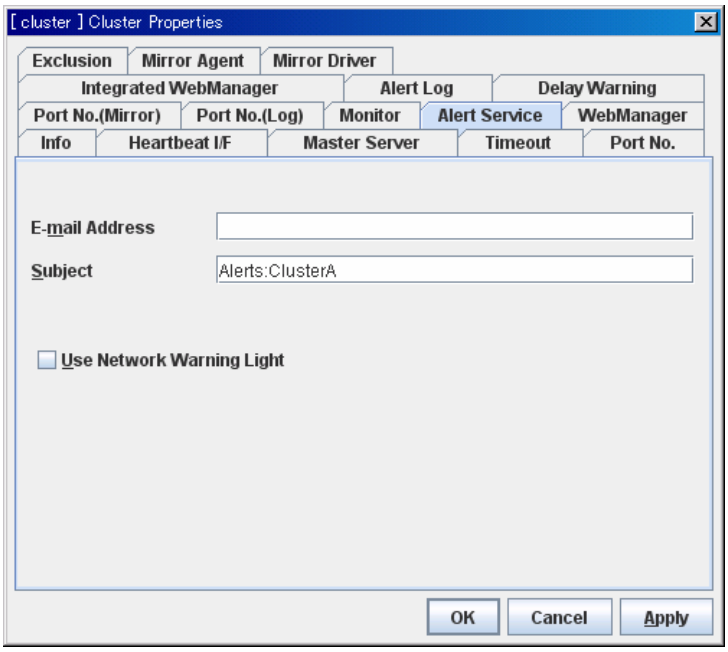
To specify an email address for alerts and enable the warning light feature:

1. Start the Builder. The default path:

   C:\Program Files\CLUSTERPRO\clpbuilder-l\clptrek.html

2. Right click **Cluster** on the tree view and then click **Properties**.
3. Click the **Alert Service** tab.

Settings on the Cluster Properties window (Alert Service tab)



E-mail Address

Enter the e-mail address for e-mail reports.

If blank, no reports will be sent.

Example: user1@mail.domain.com

Subject

Enter the e-mail subject.

Including a cluster name in the subject is recommended to be able to quickly identify which cluster the e-mail is related to.

Use Network Warning Light

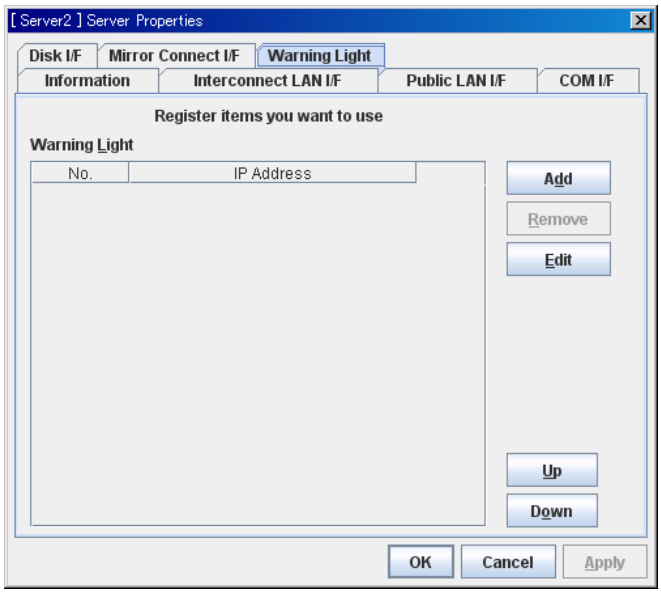
To enable the warning light feature, click the **Use Network Warning Light** check box.

Configuring report settings on the Server Properties window

To configure the warning light settings:

1. To expand the server icons on the Builder's tree view, click **Servers**. Right-click the icon of your target server and then click **Properties**.
2. Click the **Warning Light** tab.

Settings on the Server Properties window (Warning Light tab)



IP address

Enter the e-mail address of the server that has the Warning Light feature enabled. Although it is possible to specify the same IP address for two or more servers, it is recommended to allocate a warning light device on a server basis.

Saving the settings on the servers

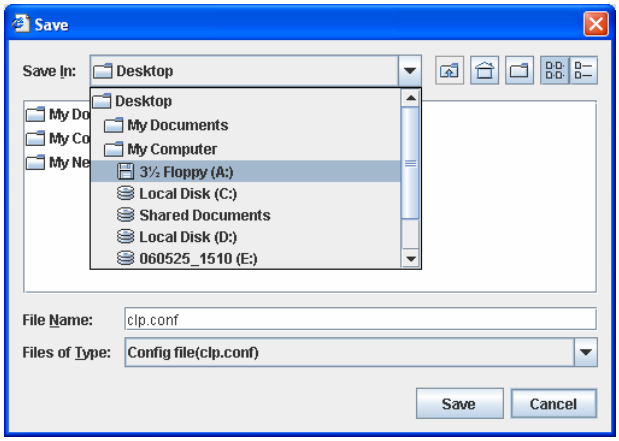
The following is an example of saving the settings made by the Builder on a Windows machine and saving it in a floppy disk.

Related Information:
If you are using the Builder installed on a Linux machine or intending to save configuration data on a file system, see “Saving the cluster configuration data” in Chapter 3, “Creating the cluster configuration data” in the *Installation and Configuration Guide*.

Saving the cluster configuration data on a floppy disk

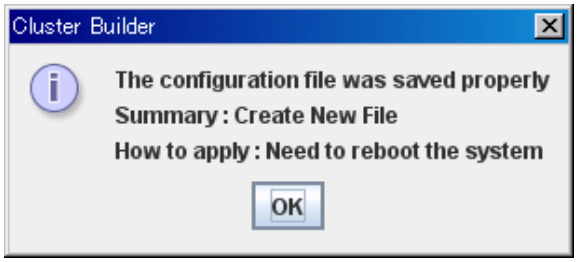
Follow the procedures below to save the cluster configuration data created by the Builder on a floppy disk on a Windows machine:

1. Insert a floppy disk into the floppy disk drive and then click **Save** on the **File** menu of the Builder. By default, the cluster configuration files are saved directly under the floppy disk drive.
2. In the **Save** dialog box, click the **floppy disk drive** in the **Save In:** pull-down box.



Note:
Two files (clp.conf and clp.conf.rep) and one directory (scripts) are saved. Unless you save all three, you may not be able to run the cluster generation command. When you move all three, you must move them as a set of three. When updating newly created configuration data, in addition to the three, clp.conf.bak is also created.

When the cluster configuration data is successfully saved, the following message is displayed. Click **OK**.



3. Verify the contents on the floppy disk to see if there are two files (clp.conf、clp.conf.rep) and one directory (scripts) directly under the floppy disk. If you have saved them in a directory in the floppy disk, specify the directory when running the cluster generation command.

Using the cluster configuration data on a floppy disk to generate a cluster

Follow the steps below to create a cluster by using the cluster configuration data stored on a floppy disk.

1. Insert the floppy disk having the cluster configuration data created into the server specified as master server.

Note:
By default, the clpcfctrl command uses `/dev/fd0` as a floppy disk device and `/mnt/floppy` as a mount point. If your environment is different from these, specify device and/or mount point optionally. For details on option of this command, see Chapter 4, "ExpressCluster command reference" in the *Reference Guide*.

2. Distribute the configuration data saved in the floppy disk to the servers.

   - If you are using the floppy disk with the configuration data saved by running the Builder on Windows (1.44MB format) or with the configuration data by running the Builder on Linux and saved for Windows, run the following command:

     `# clpcfctrl --push –w`

   - If you are using the floppy disk with the data saved by running the Builder on Linux, run the following command:

     `# clpcfctrl --push –l`

Note:

- If you are using the floppy disk with the configuration data saved by running the Builder on Windows (1.44MB format) or with the configuration data by running the Builder on Linux and saved for Windows, specify –w option as above, and if you are using the floppy disk with the data saved by running the Builder on Linux, you must specify –l option as follows:

  # clpcfctrl --push –l

- If required files (two files clp.conf and clp.conf.rep and one directory, scripts) are not located directly in the floppy disk, you need to specify the directory.

The following message appears:

```
Need to shutdown system and reboot
please shutdown system after push. (hit return) :
```

3. Press **Enter**. When a cluster is successfully generated, the following message appears:

```
command succeeded.(code:0)
```

Chapter 3 Report details

This chapter describes report e-mail, messages, and logs from Alert Service.

This chapter covers:

Mail report actions

Alert Service sends the same messages as the WebManager. See “Messages reported by syslog, alert and/or mail” in Chapter 10, “Error messages” in the *Reference Guide* for information on which messages to be sent.

You can change the alerts that are reported by e-mail. Fore more information, see “How to start and stop receiving mail report” in Chapter 10, “Error messages” in the *Reference Guide*.

Warning Light status

A warning light changes its status when:

(1) the server is started

When the server starts up successfully, warning light changes to green.

(2) when the server shuts down

When the server shuts down successfully, warning light goes off.

(3) when the server fails

When the server fails, its warning light flashes in red. If all servers in the cluster fail, the warning light of the server that failed last will not work because the warning light is controlled by a normal server that monitors other servers.

Once a lamp is lit or starts flashing, it will not go off until the cluster shuts down. Run the command introduced in the following section to put the light out.

Warning light command

clpdn1000s: Put the light out the warning light

Command line:

clpdn1000s	-h *server name*

Description	Lights out the warning light of the specified server.

Option	-h *server name*	Specify a server whose warning light you want to light out. You must specify a server.

Alert Service messages

Listed below are Alert Service-related messages in the WebManager alert view and syslog.

Message for successful operation

#	Message	Description	Additional Information
5 Info	The warning light report has executed successfully.	Warning light reporting has successfully been done.	—

Message for invalid settings

#	Message	Description	Solution
1 Error	The license is not registered. (xxx)	No license is registered.	Register the license.
2 Error	The trial license has expired on yy/mm/dd. (xxx)	The trial license has expired.	Register a valid license.
3 Error	The registered license is invalid. (xxx)	The registered license is invalid.	Register a valid license.
4 Error	The registered license is unknown. (xxx)	The registered license is unknown.	Register a valid license.

Messages for warning light report failure

#	Message	Description	Solution
6 Error	The execution result of warning light command was abnormal.(nn)	A failure occurred in the warning light command.	Take actions according to the error code.
7 Error	Failed to execute warning light command.(nn)	Running the warning light report command failed.	Take actions according to the error code.

Log output for failures

Logs that report failures of Alert Service are located in the same folder where ExpressCluster server error logs are saved. Alert Service logs are collected the same way as ExpressCluster:

When you use the WebManager to collect logs:

Click **Collect Logs** in the title view of the WebManager. For details, see “Collecting logs by using the WebManager” in Chapter 1, “Functions of the WebManager” in the *Reference Guide*.

When you use command to collect logs:

Run the clplogcc and/or clplogcf command. For details, see “Collecting logs (clplogcc command)” in Chapter 4, “ExpressCluster command reference” in the *Reference Guide*.

Appendix A Glossary

Cluster partition	A partition on a mirror disk. Used for managing mirror disks. (Related term: Disk heartbeat partition)
Interconnect	A dedicated communication path for server-to-server communication in a cluster. (Related terms: Private LAN, Public LAN)
Virtual IP address[1]	IP address used to configure a remote cluster.
Management client	Any machine that uses the WebManager to access and manage a cluster system.
Startup attribute	A failover group attribute that determines whether a failover group should be started up automatically or manually when a cluster is started.
Shared disk	A disk that multiple servers can access.
Shared disk type cluster	A cluster system that uses one or more shared disks.
Switchable partition	A disk partition connected to multiple computers and is switchable among computers. (Related terms: Disk heartbeat partition)
Cluster system	Multiple computers are connected via a LAN (or other network) and behave as if it were a single system.
Cluster shutdown	To shut down an entire cluster system (all servers that configure a cluster system).
Active server	A server that is running for an application set. (Related term: Standby server)
Secondary server	A destination server where a failover group fails over to during normal operations. (Related term: Primary server)
Standby server	A server that is not an active server. (Related term: Active server)
Disk heartbeat partition	A partition used for heartbeat communication in a shared disk type cluster.
Data partition	A local disk that can be used as a shared disk for switchable partition. Data partition for mirror disks. (Related term: Cluster partition)

[1] This applies only for Windows version.

Network partition	All heartbeat is lost and the network between servers is partitioned. (Related terms: Interconnect, Heartbeat)
Node	A server that is part of a cluster in a cluster system. In networking terminology, it refers to devices, including computers and routers, that can transmit, receive, or process signals.
Heartbeat	Signals that servers in a cluster send to each other to detect a failure in a cluster. (Related terms: Interconnect, Network partition)
Public LAN	A communication channel between clients and servers. (Related terms: Interconnect, Private LAN)
Failover	The process of a standby server taking over the group of resources that the active server previously was handling due to error detection.
Failback	A process of returning an application back to an active server after an application fails over to another server.
Failover group	A group of cluster resources and attributes required to execute an application.
Moving failover group	Moving an application from an active server to a standby server by a user.
Failover policy	A priority list of servers that a group can fail over to.
Private LAN	LAN in which only servers configured in a clustered system are connected. (Related terms: Interconnect, Public LAN)
Primary (server)	A server that is the main server for a failover group. (Related term: Secondary server)
Floating IP address	Clients can transparently switch one server from another when a failover occurs. Any unassigned IP address that has the same network address that a cluster server belongs to can be used as a floating address.
Master server	The server displayed on top of the **Master Server** in **Cluster Properties** in the Builder.
Mirror connect	LAN used for data mirroring in a data mirror type cluster. Mirror connect can be used with primary interconnect.
Mirror disk type cluster	A cluster system that does not use a shared disk. Local disks of the servers are mirrored.

Appendix B Index