ExpressCluster for Linux Ver3.0

Command

2004.10.22
2nd Revision

Revision History

Revision	Revision date	Descriptions
1	2004/06/30	New manual
2	2004/10/22	1.1.5, 6 New resources were added - RAW resource - VxVM disk group resource - VxVM volume resource - RAW monitor resource - VxVM daemon monitor resource - VxVM volume monitor resource 2 Notes were added

The latest information on system confirmation, system configuration guide, update, and tracking tool is provided in the following URL.
Please obtain the latest version before configuring the system.

Usage on the NEC Internet:
http://soreike.wsd.mt.nec.co.jp/

Usage out of the NEC Internet:
http://www.ace.comp.nec.co.jp/CLUSTERPRO/

1 STATUS DISPLAY COMMAND

clpstat	Displays cluster status and configuration information.

Command Line
clpstat -s [-h *host_name*]
clpstat -g [-h *host_name*]
clpstat -m [-h *host_name*]
clpstat -n [-h *host_name*]
clpstat -i [--detail] [-h *host_name*]
clpstat --cl [--detail] [-h *host_name*]
clpstat --sv [*server_name*] [-h *host_name*]
clpstat --hb [*hb_name*] [--detail] [-h *host_name*]
clpstat --grp [*group_name*] [--detail] [-h *host_name*]
clpstat --rsc [*resource_name*] [--detail] [-h *host_name*]
clpstat --mon [*monitor_name*] [--detail] [-h *host_name*]

Explanation Displays cluster status and configuration information.

Option	-s No option	Displays cluster status.
	-g	Displays a cluster group map.
	-m	Displays each monitor resource status on each server.
	-n	Displays each heartbeat resource status on each server.
	-i	Displays entire cluster configuration information
	--cl	Displays cluster configuration information. Displays mirror agent information as well for LE.
	--sv [*server_name*]	Displays server configuration information. By specifying the name of a server, you can display information of the specified server only.
	--hb [*hb_name*]	Displays heartbeat resource configuration information. By specifying the name of a heartbeat resource, you can display the specified heartbeat information only.
	--grp [*group_name*]	Displays group configuration information. By specifying the name of a group, you can display information of the specified group only.

	--rsc [*resource_name*]	Displays group resource configuration information. By specifying the name of a group resource, you can display information of the specified group resource only.
	--mon [*monitor_name*]	Displays monitor resource configuration information. By specifying the name of a monitor resource, you can display information of the specified resource only.
	--detail	By applying this option, more detailed setting option may be displayed.
	-h *host_name*	Acquires information from server specified with *host_name*. Acquires information from the command running server (local server) when the -h option is omitted.

Return Value	0	Success
	Other than 0	Failure

Remarks: According to the combination of options, configuration information shows information in various forms.

Notes: Run this command as a root user.

The ExpressCluster daemon must be active on the server to run this command.

Specify server name in cluster for -h option server name.

Example of Display: See the next section for examples of display.

Error Message

Message	Causes/Actions to Take
not super user.	Log in as a root user.
invalid configuration file.	Create valid cluster configuration information using Trekking Tool.
invalid option.	Specify a valid option.
could not connect server.	Check if the ExpressCluster daemon is activated.
invalid server status.	Check if the ExpressCluster daemon is activated.
specified server is not active.	Check if the ExpressCluster daemon is activated.
invalid server name.	Specify the valid name of a sever in the cluster.
invalid heartbeat resource name.	Specify a valid resource name in the cluster.
invalid group name.	Specify a valid group name in the cluster.
invalid group resource name.	Specify a valid group resource name in the cluster.
invalid monitor resource name.	Specify a valid monitor resource name in the cluster.
connection was lost.	Check if there is any server on the cluster with ExpressCluster stopped.
invalid parameter.	The value specified as a command parameter may be invalid.
connection timeout.	Timeout occurred in internal communication of ExpressCluster. If timeout keeps occurring, set a longer internal communication timeout.
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

1.1 Example of a Display When Running the Status Display Command

1.1.1 Status display

You will see the following when the -s option is specified, or no option is specified.

Example of display

```
 =======================  CLUSTER STATUS  ===========================
  Cluster : cluster                          See (1)
  <server>
   *server1 .........: Online           server1                        See (2)
     lanhb1          : Normal           LAN Heartbeat
     lanhb2          : Normal           LAN Heartbeat                  See (3)
     diskhb1         : Normal           DISK Heartbeat
     comhb1          : Normal           COM Heartbeat
    server2 .........: Online           server2
     lanhb1          : Normal           LAN Heartbeat
     lanhb2          : Normal           LAN Heartbeat
     diskhb1         : Normal           DISK Heartbeat
     comhb1          : Normal           COM Heartbeat
  <group>
    failover1 .......: Online           failover group1
     current         : server1                                         See (4)
     disk1           : Online           /dev/sdb5
     exec1           : Online           exec resource1                 See (5)
     fip1            : Online           10.0.0.11
    failover2 .......: Online           failover group2
     current         : server2
     disk2           : Online           /dev/sdb6
     exec2           : Online           exec resource2
     fip2            : Online           10.0.0.12
  <monitor>
    diskw1           : Normal           disk monitor1
    diskw2           : Normal           disk monitor2
    ipw1             : Normal           ip monitor1                    See (6)
    pidw1            : Normal           pidw1
    userw            : Normal           usermode monitor
 ====================================================================
```

Explanation of each item

(1) Cluster : Cluster name

(2) Server name .... : Status Server comment
"*" indicates the server that executed this command.

(3) Heartbeat resource name : Status Heartbeat resource comment

(4) Group name .... : Status Group comment
current : Server name
Shows the server the group belongs now.

(5) Group Resource Name : Status Group resource comment

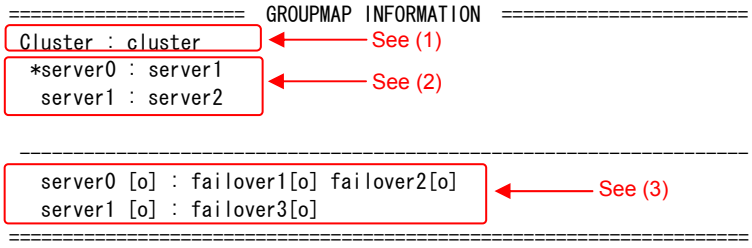
(6) Monitor Resource Name : Status Monitor resource comment

* Explanation of each status is provided in “1.2 Status .”

1.1.2 Group map display

You will see the following when the -g option is specified.

Example of display



Explanation of each item

(1) Cluster : Cluster name

(2) server n : Server name (n is the index number of server)
"*" indicates the server that executed this command.

(3) server n [*server_status*] : Group Name [*status*] Group Name [*status*] ...
Displays status of the group which is in the n-th server.

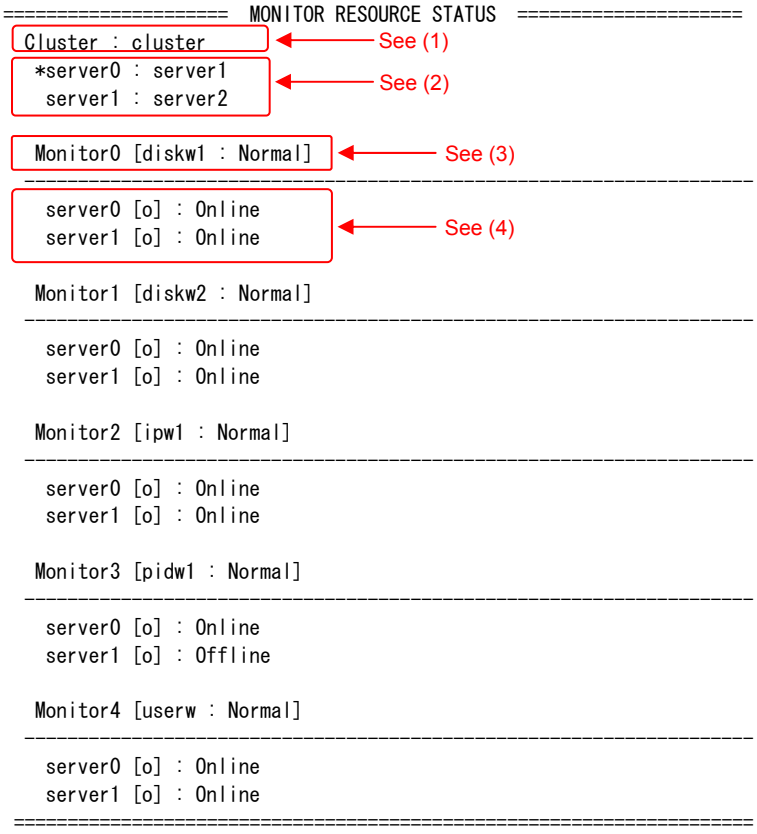
- On the example shown above, the groups failover1 and failover2 are in server0, and the group failover 3 is in server 3,

* Groups that are not running are not shown.
* Explanation of each status is provided in "1.2 Status."

1.1.3 Monitor resource status display

You will see the following when the -m option is specified.

Example of display



Explanation of each item

(1) Cluster : Cluster name

(2) server n : Server name (n is index number of server)
"*" indicates the server that executed this command.

(3) Monitor n [*monitor_resource_name*: *status*]
(n is the identification number of monitor resource)
The status of a monitor resource gathering status information per server is displayed here.

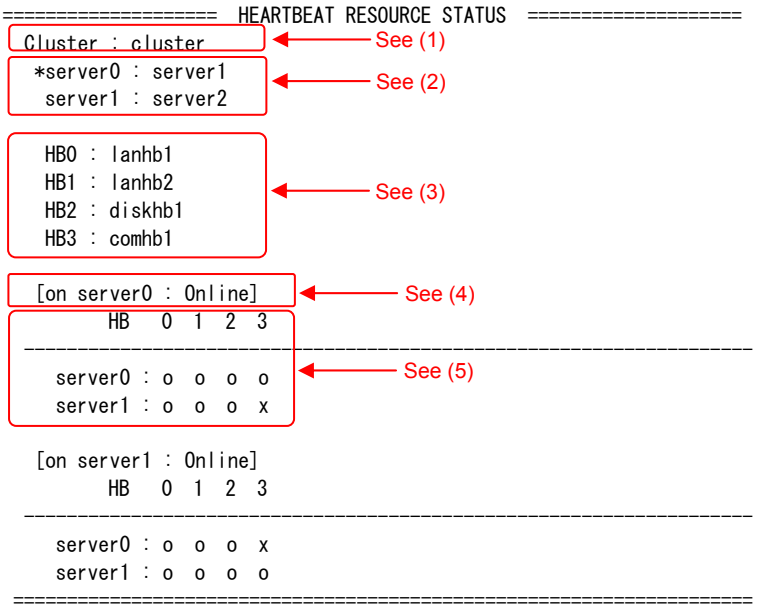
(4) server n [*server_status*] : status
Displays the status of each monitor resource per server.

* Explanation of each status is provided in "1.2 Status ."

1.1.4 Heartbeat resource status display

You will see the following when the -n option is specified.

Example of display



Explanation of each item

(1) Cluster : Cluster name

(2) server n : Server name (n is index number of server)
"*" indicates the server which executed this command.

(3) HB n : Heartbeat resource name
(n is the identification number of the heartbeat resource)

(4) [on server n : *status*]
Displays the status of the server whose index number is n.

(5) HB 0 1 2 ...
server n : status status status
Displays the heartbeat resource status on each server.
The number following HB indicates heartbeat resource identification number described in (3).

* Explanation of each status is provided in "1.2 Status ."

Explanation of example of display status

The example shown above displays the statuses of all heartbeat resources seen from server0 and server1 when COM heartbeat resource was disrupted.

Because comhb1, a COM heartbeat resource, is in incommunicable status in both servers, it is incommunicable to server1 on server0, and incommunicable to server0 on server1.The rest of heartbeat resources on both servers are in the status allowing communications.

1.1.5 Cluster configuration information display

You will see the following when specifying the -i option, or --cl, --sv, --hb, --grp, --rsc, or --mon. Detailed information is displayed when specifying the --detail option.

* See a separate guide, “Trekking Tool” for details of each item.

(1) --cl option

~ For SE and XE ~

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [Cluster : cluster]                                                (1)
    Comment                        : failover cluster                (2)
    Synchronize Wait Time          : 300                             (3)
    Heartbeat Timeout              : 90000                           (4)
    Heartbeat Interval             : 3000                            (5)
    Heartbeat Port Number          : 29002                           (6)
    Server Internal Port Number    : 29001                           (7)
    Data Transfer Port Number      : 29002                           (8)
    Timeout Ratio                  : 1                               (9)
    Shutdown Monitor               : On                              (10)
=======================================================================
```

* The items enclosed in a dotted line section are displayed when the --detail option is used.

Explanation of each item

(1) [Cluster : *cluster_name*]

(2) Comment : Comment

(3) Synchronize Wait Time : Start-up wait time (in seconds)

(4) Heartbeat Timeout : Heartbeat timeout (in milliseconds)

(5) Heartbeat Interval : Heartbeat send interval (in milliseconds)

(6) Heartbeat Port Number : Heartbeat port number

(7) Server Internal Port Number : Internal communication port number

(8) Data Transfer Port Number : Data transfer port number

(9) Timeout Ratio : Current timeout ratio

(10) Shutdown Monitor : With or without shutdown stall manager
- On Shutdown stall manager is enabled
- Off Shutdown stall manager is disabled

~ For LE ~

Example of display

```
=====================  CLUSTER INFORMATION  ======================
  [Cluster : cluster]                                              (1)
    Comment                        : failover cluster              (2)
    Synchronize Wait Time          : 300                           (3)
    Heartbeat Timeout              : 90000                         (4)
    Heartbeat Interval             : 3000                          (5)
    Heartbeat Port Number          : 29002                         (6)
    Server Internal Port Number    : 29001                         (7)
    Data Transfer Port Number      : 29002                         (8)
    Timeout Ratio                  : 1                             (9)
    Shutdown Monitor               : On                            (10)
    Mirror Agent Port Number       : 29004                         (11)
    Mirror Driver Port Number      : 29005                         (12)
    Auto Mirror Recovery           : On                            (13)
    Request Queue Maximum Number   : 4096                          (14)
================================================================
```

* For LE, mirror agent information in the solid line is additionally displayed.
* The items enclosed in a dotted line are displayed when the --detail option is used.

Explanation of each item

For Items 1) to 10), see the description for SE, and XE in the previous page.

(11) Mirror Agent Port Number : Mirror agent port number

(12) Mirror Driver Port Number : Mirror driver port number

(13) Auto Mirror Recovery : Automatic mirror recovery

(14) Request Queue Maximum Number : Maximum number of request queues

(2) --sv option

By specifying the name of a server after the --sv option, you can display only the information of the specified server.

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [Server0 : server1]                                              (1)
    Comment                    : server1                           (2)
    Version                    : 3.0-1                             (3)
    Edition                    : SE                                (4)
    IP Address                 : 10.0.0.1                          (5)
  [Server1 : server2]
    Comment                    : server2
    Version                    : 3.0-1
    Edition                    : SE
    IP Address                 : 10.0.0.2
================================================================
```

Explanation of each item

(1)	[Server n: s*erver_name*]	(n is index number of server)
(2)	Comment	: Comment
(3)	Version	: Version
(4)	Edition	: Edition
(5)	IP Address	: Public LAN address

(3) --hb option

By a specifying the name of a heartbeat resource after the --hb option, you can display only the information of the specified heartbeat resource.

LAN heartbeat resource

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [HB0 : lanhb1]                                                    (1)
    Type                        : lanhb                             (2)
    Comment                     : LAN Heartbeat                     (3)
    IP Address                  : 192.168.0.1 /on server1           (4)
    IP Address                  : 192.168.0.2 /on server2
================================================================
```

* The items enclosed in a solid line are common to any resource.
* The items enclosed in a dotted line are displayed when the --detail option is used.

Explanation of items common to any heartbeat resource

(1) [HB n : *heartbeat_resource_name*]
(n is the identification number of the heartbeat resource)

(2) Type : Heartbeat resource type

(3) Comment : Comment

Explanation of Each Item

(4) IP Address : Interconnect address /on *server_name*

DISK heartbeat resource ~ For SE and XE ~

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [HB2 : diskhb1]
    Type                        : diskhb
    Comment                     : DISK Heartbeat
    Device Name                 : /dev/sdb1 /on server1             (5)
    Device Name                 : /dev/sdb1 /on server2
================================================================
```

Explanation of each item

(5) Device Name : DISK heartbeat Device /on *server_name*

COM heartbeat resource ~ For SE and LE ~

Example of display

```
=======================  CLUSTER INFORMATION  ========================
  [HB3 : comhb1]
    Type                        : comhb
    Comment                     : COM Heartbeat
    Device Name                 : /dev/ttyS0 /on server1          (6)
    Device Name                 : /dev/ttyS0 /on server2
=====================================================================
```

Explanation of each item

(6) Device Name : COM heartbeat device/on *server_name*

* **Tips**

By using the --sv option and the --hb option together, you can see the information as follows.

Command Line # clpstat --sv --hb --detail

```
==========  CLUSTER INFORMATION  ==========
  [Server0 : server1]
    Comment                    : server1
    Version                    : 3.0-1
    Edition                    : SE
    IP Address                 : 10.0.0.1
    [HB0 : lanhb1]
      Type                     : lanhb
      Comment                  : LAN Heartbeat
      IP Address               : 192.168.0.1
    [HB1 : lanhb2]
      Type                     : lanhb
      Comment                  : LAN Heartbeat
      IP Address               : 10.0.0.1
    [HB2 : diskhb1]
      Type                     : diskhb
      Comment                  : DISK Heartbeat
      Device Name              : /dev/sdb1
    [HB3 : comhb1]
      Type                     : comhb
      Comment                  : COM Heartbeat
      Device Name              : /dev/ttyS0
  [Server1 : server2]
    Comment                    : server2
    Version                    : 3.0-1
    Edition                    : SE
    IP Address                 : 10.0.0.2
    [HB0 : lanhb1]
      Type                     : lanhb
      Comment                  : LAN Heartbeat
      IP Address               : 192.168.0.2
    [HB1 : lanhb2]
      Type                     : lanhb
      Comment                  : LAN Heartbeat
      IP Address               : 10.0.0.2
    [HB2 : diskhb1]
      Type                     : diskhb
      Comment                  : DISK Heartbeat
      Device Name              : /dev/sdb1
    [HB3 : comhb1]
      Type                     : comhb
      Comment                  : COM Heartbeat
      Device Name              : /dev/ttyS0
 ================================================================
```

(4) --grp option

By specifying the name of a group after the --grp option, you can display only the information of the specified group.

Example of display

```
=====================  CLUSTER INFORMATION  =====================
  [Group0 : failover1]                                          (1)
   Type                          : failover                     (2)
   Comment                       : failover group1              (3)
   Startup Attribute             : Auto Startup                 (4)
   Failover Exclusive Attribute  : Off                          (5)
   Auto Failback Attribute       : Manual Failback              (6)
   Servers Which Can Be Started  : 0  server1                   (7)
                                 : 1  server2
  [Group1 : failover2]
   Type                          : failover
   Comment                       : failover group2
   Startup Attribute             : Auto Startup
   Failover Exclusive Attribute  : Off
   Auto Failback Attribute       : Auto Failback
   Servers Which Can Be Started  : 0  server2
                                 : 1  server1
 ================================================================
```

* The items enclosed in a dotted line are displayed when the --detail option is used.

Explanation of each item

(1) [Group n : group name] (n is the identification number of group)

(2) Type : Group type

(3) Comment : Comment

(4) Startup Attribute : Startup type
- Manual Startup Manual startup
- Auto Startup Automatic startup

(5) Failover Exclusive Attribute : Startup exclusive attributes
- Off No exclusion
- Normal Normal exclusion
- High Complete exclusion

(6) Auto Failback Attribute : Failback attribute
- Manual Failback Manual failback
- Auto Failback Automatic failback

(7) Servers Which Can Be Started : Failover order
Displays servers which can be started up are shown in the failover policy sequence.

(5) --rsc option

By specifying the name of a group resource after the --rsc option, you can display only the information of the specified group resource.

Disk resource ~ For SE and XE ~

Example of display

```
========================  CLUSTER INFORMATION  ========================
[Resource0 : disk1]                                                    (1)
  Type                        : disk                                   (2)
  Comment                     : /dev/sdb5                              (3)
  Failover Threshold          : 1                                      (4)
  Activity Retry Threshold    : 0                                      (5)
  Activity Final Action       : No Operation(Next Resources Are Not Activated)  (6)
  Deactivity Retry Threshold  : 0                                      (7)
  Deactivity Final Action     : No Operation(Next Resources Are Deactivated)    (8)
  Depended Resouces           : fip1                                   (9)
  Device Name                 : /dev/sdb5                              (10)
  File System                 : ext3                                   (11)
  Disk Type                   : disk                                   (12)
  Mount Point                 : /mnt/sdb5                              (13)
  Mount Option                : rw                                     (14)
  Mount Timeout               : 60                                     (15)
  Mount Retry Count           : 3                                      (16)
  Unmount Timeout             : 60                                     (17)
  Unmount Retry Count         : 3                                      (18)
  Force Operation
   When Detecting Failure     : kill                                   (19)
  Fsck Option                 : -y                                     (20)
  Fsck Timeout                : 10                                     (21)
=====================================================================
```

* The items enclosed in a solid line are common to any resource.
* The items enclosed in a dotted line are displayed when the --detail option is used.

Explanation of items common to any group resources

(1) [Resource n : *group_resource_name*]
(n is the identification number of group resource)

(2) Type : Group resource type

(3) Comment : Comment

(4) Failover Threshold : Failover count

(5) Activity Retry Threshold : Activity retry count

(6) Activity Final Action :Last action at activity failures
- No Operation (Next Resources Are Activated)
  No action is taken (Activate next resources)
- No Operation (Next Resources Are Not Activated)
  No action is taken (Do not activate next resource)
- Stop Group
  Stop the group
- Stop Cluster Daemon
  Stop the ExpressCluster daemon

- Stop Cluster Daemon And OS Shutdown
  Stop the ExpressCluster daemon and shutdown the OS
- Stop Cluster Daemon And OS Reboot
  Stop the ExpressCluster daemon and restart the OS

(7) Deactivity Retry Threshold : Deactivity retry count

(8) Deactivity Final Action : Final action at deactivity failures
- No Operation (Next Resources Are Deactivated)
  No Action (Deactivate the next resource)
- No Operation (Next Resources Are Not Deactivated)
  No Action (Do not deactivate next resource)
- Stop Cluster Daemon And OS Shutdown
  Stop the ExpressCluster daemon and shut down the OS
- Stop Cluster Daemon And OS Reboot
  Stop the ExpressCluster daemon and restart the OS

(9) Depended Resources : Depended resource

Explanation of each item

(10) Device Name : Device name

(11) File System : File system

(12) Disk Type : Disk type

(13) Mount Point : Mount point

(14) Mount Option : Mount option

(15) Mount Timeout : Mount timeout

(16) Mount Retry Count : Mount retry count

(17) Unmount Timeout : Unmount timeout (in seconds)

(18) Unmount Retry Count : Unmount retry count

(19) Force Operation
When Detecting Failure : Operation at unmount abnormality
- kill Force termination
- none No action is taken

(20) Fsck Option : fsck option

(21) Fsck Timeout : fsck time-out (in seconds)

Mirror disk resource ~ For LE ~

Example of display

```
=====================  CLUSTER INFORMATION  =====================
 [Resource0 : md1]
   Type
   Comment                     : /dev/NMP1
   Failover Threshold          : 1
   Activity Retry Threshold    : 0
   Activity Final Action       : No Operation(Next Resources Are Not Activated)
   Deactivity Retry Threshold  : 0
   Deactivity Final Action     : Stop Cluster Daemon And OS Shutdown
   Depended Resouces           : fip1
   Mirror Data Port Number     : 29051                                  (22)
   File System                 : ext3                                   (23)
   Disk Device                 : /dev/sdb                               (24)
   Cluster Partition Device    : /dev/sdb1                              (25)
   Data Partition Device       : /dev/sdb5                              (26)
   Mirror Connect              : 192.168.0.1|192.168.0.2                (27)
   Mirror Partition Device     : /dev/NMP1                              (28)
   Mount Point                 : /mnt/sdb5                              (29)
   Mount Option                : rw                                     (30)
   Mount Timeout               : 60                                     (31)
   Mount Retry Count           : 3                                      (32)
   Unmount Timeout             : 60                                     (33)
   Unmount Retry Count         : 3                                      (34)
   Force Operation
    When Detecting Failure     : kill                                   (35)
   Fsck Option                 : -y                                     (36)
   Fsck Timeout                : 1800                                   (37)
=================================================================
```

Explanation of each item

(22) Mirror Data Port Number : Mirror data port number

(23) File System : File system

(24) Disk Device : Disk device name

(25) Cluster Partition Device : Cluster partition device name

(26) Data Partition Device : Data partition device name

(27) Mirror Disk Connect : Mirror disk connect

(28) Mirror Partition Device : Mirror partition device name

(29) Mount Point : Mount point

(30) Mount Option : Mount option

(31) Mount Timeout : Mount timeout

(32) Mount Retry Count : Mount Retry Count

(33) Unmount Timeout : Unmount timeout (in seconds)

(34) Unmount Retry Count : Unmount retry count

(35) Force Operation
When Detecting Failure : Operation at unmount failures
- kill Force termination
- none No Action

(36) Fsck Option : fsck option

(37) Fsck Timeout : fsck time-out (seconds)

FIP resource

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [Resource2 : fip1]
    Type                        : fip
    Comment                     : 10.0.0.11
    Failover Threshold          : 1
    Activity Retry Threshold    : 5
    Activity Final Action       : No Operation(Next Resources Are Not Activated)
    Deactivity Retry Threshold  : 0
    Deactivity Final Action     : Stop Cluster Daemon And OS Shutdown
    Depended Resouces           :
    IP Address                  : 10.0.0.11                                  (38)
    Ping Timeout                : 1                                          (39)
==================================================================
```

Explanation of each item

(38) IP Address : FIP address

(39) Ping Timeout : Timeout of ping to confirm redundancy (in seconds)

Exec resource

Example of display

```
=======================  CLUSTER INFORMATION  ========================
  [Resource1 : exec1]
    Type                        : exec
    Comment                     : exec resource1
    Failover Threshold          : 1
    Activity Retry Threshold    : 0
    Activity Final Action       : No Operation(Next Resources Are Not Activated)
    Deactivity Retry Threshold  : 0
    Deactivity Final Action     : Stop Cluster Daemon And OS Shutdown
    Depended Resouces           : disk1,fip1
    Start Script
      Path                      : /opt/userpp/start1.sh                    (40)
      Type                      : Asynchronous                             (41)
      Timeout                   : 1800                                     (42)
    Stop Script
      Path                      : /opt/userpp/stop1.sh                     (43)
      Type                      : Synchronous                              (44)
      Timeout                   : 1800                                     (45)
    Log Output Path             :                                          (46)
=====================================================================
```

Explanation of each item

Start Script

(40) Path : Path to the start script

(41) Type : Synchronized/asynchronous start script
- Synchronous Wait for the end of Start Script
- Asynchronous Not wait for the end of Start Script

(42) Timeout : Start script timeout (in seconds)

Stop Script

(43) Path : Path to the stop script

(44) Type : Synchronous/asynchronous stop script
- Synchronous Wait for the end of Stop Script
- Asynchronous Not wait for the end of Stop Script

(45) Timeout : Stop script timeout (in seconds)

(46) Log Output Path : Destination for message output when running the script

RAW resource ~ For SE ~

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [Resource3 : raw1]
    Type                        : raw
    Comment                     : /dev/sde6
    Failover Threshold          : 1
    Activity Retry Threshold    : 0
    Activity Final Action       : No Operation(Next Resources Are Not Activated)
    Deactivity Retry Threshold  : 0
    Deactivity Final Action     : Stop Cluster Daemon And OS Shutdown
    Depended Resouces           : fip1
    Device Name                 : /dev/sde6                              (47)
    RAW Device Name             : /dev/raw/raw10                         (48)
    Disk Type                   : disk                                   (49)
==================================================================
```

Explanation of each item

(47) Device Name : Device name

(48) RAW Device Name : RAW device name

(49) Disk Type : Disk type

VxVM disk group resource ~ For SE ~

Example of display

```
======================  CLUSTER INFORMATION  ======================
  [Resource4 : vxdg1]
    Type                        : vxdg
    Comment                     : dg1
    Failover Threshold          : 1
    Activity Retry Threshold    : 0
    Activity Final Action       : No Operation(Next Resources Are Not Activated)
    Deactivity Retry Threshold  : 0
    Deactivity Final Action     : Stop Cluster Daemon And OS Shutdown
    Depended Resouces           : fip1
    Disk Group Name             : dg1                                   (50)
    Clear Host ID               : On                                    (51)
    Force                       : Off                                   (52)
==================================================================
```

Explanation of each item

(50) Disk Group Name : VxVM disk group name

(51) Clear Host ID : Clear host ID option at import

(52) Force : Force option at import

VxVM volume resource ~ For SE ~

Example of display

```
======================  CLUSTER INFORMATION  ======================
 [Resource5 : vxvol1]
   Type                        : vxvol
   Comment                     : vol1
   Failover Threshold          : 1
   Activity Retry Threshold    : 0
   Activity Final Action       : No Operation(Next Resources Are Not Activated)
   Deactivity Retry Threshold  : 0
   Deactivity Final Action     : Stop Cluster Daemon And OS Shutdown
   Depended Resouces           : fip1,vxdg1
   Volume Device Name          : /dev/vx/dsk/dg1/vol1                (53)
   Volume RAW Device Name      : /dev/vx/rdsk/dg1/vol1               (54)
   File System                 : vxfs                                (55)
   Mount Point                 : /mnt/vol1                           (56)
   Mount Option                : rw                                  (57)
   Mount Timeout               : 60                                  (58)
   Mount Retry Count           : 3                                   (59)
   Unmount Timeout             : 60                                  (60)
   Unmount Retry Count         : 3                                   (61)
   Force Operation
    When Detecting Failure     : kill                                (62)
   Fsck Option                 : -y                                  (63)
   Fsck Timeout                : 1800                                (64)
======================================================================
```

Explanation of each item

(53) Volume Device Name : VxVM volume device name

(54) Volume RAW Device Name : VxVM volume RAW device name

(55) File System : File system

(56) Mount Point : Mount point

(57) Mount Option : Mount option

(58) Mount Timeout : Mount timeout

(59) Mount Retry Count : Mount retry count

(60) Unmount Timeout : Unmount timeout (in seconds)

(61) Unmount Retry Count : Unmount retry count

(62) Force Operation
When Detecting Failure : Operation at unmount abnormality
- kill Force termination
- none No action is taken

(63) Fsck Option : fsck option

(64) Fsck Timeout : fsck time-out (in seconds)

* **Tips**

By using the –grp option and the --rsc option together, you can display the information as follows.

Command Line # clpstat --grp --rsc

```
==========  CLUSTER INFORMATION  ==========
  [Group0 : failover1]
    Comment                    : failover group1
    [Resource0 : disk1]
      Type                     : disk
      Comment                  : /dev/sdb5
      Device Name              : /dev/sdb5
      File System              : ext2
      Mount Point              : /mnt/sdb5
    [Resource1 : exec1]
      Type                     : exec
      Comment                  : exec resource1
      Start Script
        Path                   : /opt/userpp/start1.sh
      Stop Script
        Path                   : /opt/userpp/stop1.sh
    [Resource2 : fip1]
      Type                     : fip
      Comment                  : 10.0.0.11
      IP Address               : 10.0.0.11
  [Group1 : failover2]
    Comment                    : failover group2
    [Resource0 : disk2]
      Type                     : disk
      Comment                  : /dev/sdb6
      Device Name              : /dev/sdb6
      File System              : ext2
      Mount Point              : /mnt/sdb6
    [Resource1 : exec2]
      Type                     : exec
      Comment                  : exec resource2
      Start Script
        Path                   : /opt/userpp/start2.sh
      Stop Script
        Path                   : /opt/userpp/stop2.sh
    [Resource2 : fip2]
      Type                     : fip
      Comment                  : 10.0.0.12
      IP Address               : 10.0.0.12
 ================================================================
```

(6) --mon option

By specifying the name of a monitor resource after the --mon option, you can display only information of the specified monitor resource.

Disk monitor resource

Example of display

```
======================  CLUSTER INFORMATION  ======================
[Monitor0 : diskw1]                                              (1)
  Type                          : diskw                          (2)
  Comment                       : disk monitor1                  (3)
  Monitor Timing                : Always                         (4)
  Target Resource               :                                (5)
  Interval                      : 60                             (6)
  Timeout                       : 120                            (7)
  Retry Count                   : 0                              (8)
  Final Action                  : No Operation                   (9)
  Recover Object                : disk1                          (10)
  Recover Object Type           : Resource                       (11)
  Re-activation Threshold       : 3                              (12)
  Failover Threshold            : 1                              (13)
  DISK/NAS                      : disk                           (14)
  Target                        : /dev/sdb5                      (15)
  Method                        : Dummy Read                     (16)
  I/O size                      : 2000000                        (17)
================================================================
```

* The items enclosed in a solid line are common to any resource.
* The items enclosed in a dotted line are displayed when the --detail option is used.

Explanation of items common of any monitor resources

(1) [MONITOR n: *monitor_resource_name*]
(n is the identification number of the group)

(2) Type : Monitor resource type

(3) Comment : Comment

(4) Monitor Timing : Timing to start monitoring
- Always Always
- Activating While Active

(5) Target Resource : Monitoring target resource

(6) Interval : Monitoring interval

(7) Timeout : Monitoring timeout (in seconds)

(8) Retry Count : Monitoring retry count

(9) Final Action : Last action
- No Operation
  No Action
- Stop Group
  Stop group

- Stop Cluster Daemon
  Stop the ExpressCluster daemon
- Stop Cluster Daemon And OS Shutdown
  Stop the ExpressCluster daemon and shut down the OS
- Stop Cluster Daemon And OS Reboot
  Stop the ExpressCluster daemon and restart the OS

(10) Recover Object : Target to be recovered when a problem is detected

(11) Recover Object Type : Type of target to be recovered when a problem is detected

(12) Re-activation Threshold : Restart count

(13) Failover Threshold : Failover count

Explanation of each item

(14) DISK/NAS : Monitoring target disk type

(15) Target : Monitoring target device name

(16) Method : Monitoring method

(17) I/O size : Monitoring I/O size

* Monitoring I/O size becomes effective when the monitoring method is “Dummy Read.”

IP monitor resource

Example of display

```
=====================  CLUSTER INFORMATION  =====================
[Monitor2 : ipw1]
  Type                          : ipw
  Comment                       : ip monitor1
  Monitor Timing                : Always
  Target Resource               :
  Interval                      : 30
  Timeout                       : 10
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : cluster
  Recover Object Type           : Myself
  Re-activation Threshold       : 0
  Failover Threshold            : 0
  IP Address List               : 192.168.15.254                (18)
================================================================
```

Explanation of each item

(18) IP Address List : Monitoring target IP address

PID monitor resource

Example of display

```
=====================  CLUSTER INFORMATION  =====================
[Monitor3 : pidw1]
  Type                          : pidw
  Comment                       : pidw1
  Monitor Timing                : Activating
  Target Resource               : exec1
  Interval                      : 5
  Timeout                       : 60
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : exec1
  Recover Object Type           : Resource
  Re-activation Threshold       : 3
  Failover Threshold            : 1
  Target PID                    : 1197                          (19)
================================================================
```

Explanation of each item

(19) Target PID : Monitoring target PID

Mirror disk monitor resource ~ For LE ~

Example of display

```
=======================  CLUSTER INFORMATION  =======================
[Monitor4 : mdw1]
  Type                          : mdw
  Comment                       : mirror disk monitor
  Monitor Timing                : Always
  Target Resource               :
  Interval                      : 10
  Timeout                       : 30
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : 3738LE
  Recover Object Type           : Myself
  Re-activation Threshold       : 0
  Failover Threshold            : 0
  Target                        : md1                              (20)
=================================================================
```

Explanation of each item

(20) Target : Monitoring target resource

Mirror disk connect monitor resource ~ For LE ~

Example of display

```
=======================  CLUSTER INFORMATION  =======================
[Monitor5 : mdnw1]
  Type                          : mdnw
  Comment                       : mirror disk connect monitor
  Monitor Timing                : Always
  Target Resource               :
  Interval                      : 60
  Timeout                       : 120
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : 3738LE
  Recover Object Type           : Myself
  Re-activation Threshold       : 0
  Failover Threshold            : 0
  Target                        : 192.168.11.37|192.168.11.38   (21)
=================================================================
```

Explanation of display

(21) Target : Target mirror disk connect

User space monitor resource

Example of display

```
=====================  CLUSTER INFORMATION  =====================
[Monitor6 : userw]
  Type                          : userw
  Comment                       : usermode monitor
  Monitor Timing                : Always
  Target Resource               :
  Interval                      : 0
  Timeout                       : 0
  Retry Count                   : 0
  Final Action                  :
  Recover Object                : cluster
  Recover Object Type           : Myself
  Re-activation Threshold       : 0
  Failover Threshold            : 0
================================================================
```

Explanation of each item

There is no item specific to user space monitor resource.

RAW monitor resource ~ For SE and LE ~

Example of display

```
========================  CLUSTER INFORMATION  ========================
[Monitor7 : raww1]
  Type                          : raww
  Comment                       : raw monitor1
  Monitor Timing                : Always
  Target Resource               :
  Interval                      : 60
  Timeout                       : 120
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : cluster
  Recover Object Type           : Myself
  Re-activation Threshold       : 0
  Failover Threshold            : 0
  Target RAW Device Name        : /dev/raw/raw30          (22)
  Device Name                   : /dev/sdb                (23)
  Method                        : Dummy Read              (24)
  I/O size                      : 1024                    (25)
======================================================================
```

Explanation of each item

(22) Target RAW Device Name : Monitoring target RAW device name

(23) Device Name : Device name

(24) Method : Monitoring method

(25) I/O size : Monitoring I/O size

VxVM daemon monitor resource ~ For SE ~

Example of display

```
=====================  CLUSTER INFORMATION  =====================
[Monitor8 : vxdw]
  Type                          : vxdw
  Comment                       : VxVM daemon monitor
  Monitor Timing                : Always
  Target Resource               :
  Interval                      : 60
  Timeout                       : 120
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : cluster
  Recover Object Type           : Myself
  Re-activation Threshold       : 0
  Failover Threshold            : 0
================================================================
```

Explanation of each item

There is no item specific to VxVM daemon monitor resource.

VxVM volume monitor resource ~ For SE ~

Example of display

```
=====================  CLUSTER INFORMATION  =====================
[Monitor9 : vxvolw1]
  Type                          : vxvolw
  Comment                       : vxvol monitor1
  Monitor Timing                : Activating
  Target Resource               : vxvol1
  Interval                      : 60
  Timeout                       : 120
  Retry Count                   : 0
  Final Action                  : No Operation
  Recover Object                : vxvol1
  Recover Object Type           : Resource
  Re-activation Threshold       : 3
  Failover Threshold            : 1
  Target                        : /dev/vx/rdsk/dg1/vol1        (26)
  Method                        : Dummy Read                   (27)
  I/O size                      : 1024                         (28)
================================================================
```

Explanation of each item

(26) Target : Monitoring target VxVM volume device name

(27) Method : Monitoring method

(28) I/O size : Monitoring I/O size

(7) -i option

By specifying the -i, you can display the configuration information with all --cl, --sv, --hb, --grp, --rsc, and --mon options specified.

If you execute the -i option and the --detail option together, all the detailed cluster configuration information appears.

Since this option displays large amount of information at a time, if you run the option and see the information, use command, such as the less command, using pipe, or redirect the output in a file.

* **Tips**

Specifying the -i option displays all the information on a console. If you wish to see a part of the information, it is useful to combine the --cl, --sv, --hb, --grp, --rsc, and/or --mon option. For example, you can use these options as follows.

Example:

In case you want to see the detail of the information of the server whose name is "server0," the group whose name is "failover1," and the entire group resources of the specified group:

```
# clpstat --sv server0 --grp failover1 --rsc --detail
```

1.2 Status

See a separate guide, “Web Manager” for details of each status.

Server		
Function	Status	Description
Status display Heartbeat resource status display	Online	Activated
	Offline	Stopped
	Caution	Heartbeat resource failure
	Unknown	Status unknown
Group map display Monitor resource status display	o	Active
	x	Stopped
	-	Status unknown

Heartbeat Resource		
Function	Status	Description
Status display	Normal	Normal
	Caution	Failure (Partial)
	Error	Failure (All)
	Unknown	Status unknown
Heartbeat resource status display	o	Possible to communicate
	x	Impossible to communicate
	-	Unused or status unknown

Group		
Function	Status	Description
Status display	Online	Activated
	Offline	Stopped
	Online Pending	Now being activated
	Offline Pending	Now being stopped
	Error	Error
	Unknown	Status unknown
Group map display	o	Activated
	e	Error
	p	Now being activated/stopped

Group Resource		
Function	Status	Description
Status display	Online	Activated
	Offline	Stopped
	Online Pending	Now being activated
	Offline Pending	Now being stopped
	Online Failure	Activation failed
	Offline Failure	Stopping failed
	Unknown	Status unknown

Monitor Resource		
Function	Status	Description
Status Display	Normal	Normal
	Caution	Error (Partial)
	Error	Error (All)
	Unused	Unused
	Unknown	Status Unknown
Monitor Resource Status Display	Online	Activated
	Offline	Stopped
	Caution	Warning
	Online Failure	Activation failed
	Offline Failure	Stopping failed
	Unused	Used
	Unknown	Status unknown

2 OPERATION COMMAND

* Notes if the group resource is set as the recovery target of a monitor resource

If the group resource (disk resource, exec resource...) is set as the recovery target at the setting when a failure of monitor resource is detected and monitor resource detected a failure during the recovery operation transition (reactivation -> failover -> final action), do not perform the following command, and control the cluster and group from Web manager.

+ termination/suspension of cluster
+ start/terminate/migrate group

If you perform the control written above during the recovery operation transmission due to a monitor resource failure, the group resource of other group may not terminate.
In addition, if after final action has been done, the control written above may be performed even when the monitor resource is in a failure status.

2.1 Cluster Operation Command

clpcl	Operates a cluster

Command Line
clpcl -s [-a] [-h *host_name*]
clpcl -t [-a] [-h *host_name*]
clpcl -r [-a] [-h *host_name*]
clpcl --suspend [--force]
clpcl --resume

Description: Starts, stops, suspends, and resumes the ExpressCluster daemon.

Option

-s	Starts the ExpressCluster daemon.
-t	Stops the ExpressCluster daemon.
-r	Restarts ExpressCluster daemon.
--suspend	Suspends the entire cluster
--resume	Resumes the entire cluster
-a	Executed on all servers
-h *host_name*	Makes a processing request to the server specified in *host_name*. Makes a processing request to the command-running server (local server) if the -h option is skipped.
--force	When used with the --suspend option, forcefully performs suspend regardless of the status of the server in the cluster.

Return Value

0	Success
Other than 0	Failure

Remarks

Notes: Run this command as a root user.

For the name of a server for the -h option, specify the name of a server in the cluster that allows name resolution.

When executing suspend, the ExpressCluster daemon should be activated in all servers in the cluster. When the --force option is used, suspend is forcefully executed even if there is any stopped server in the cluster.

When execute resume, check if there is any active server in the cluster using the clpstat command.

Example of Execution

Example 1: Activating the ExpressCluster daemon of local server

```
# clpcl -s
```

Example 2: Activating the ExpressCluster daemon of server1 from server0

```
# clpcl -s -h server1
Start server1 : Success
```

If a server name is specified, you will see the display as shown above.
Start *server_name* : Execution result
(If execution is unsuccessful, cause of the failure)

Example 3: Activating the ExpressCluster daemon in all servers

```
# clpcl -s -a
Start server0 : Success
Start server1 : Failed cluster daemon already started.
```

When all the servers are activated, you will see the display as shown above.
Start *server_name* : Execution result
(If execution is unsuccessful, cause of the failure)

Example 4: Stopping the ExpressCluster daemon in all servers

```
# clpcl -t -a
```

If the ExpressCluster daemon in all servers is stopped, the execution result of each server is not displayed.
In case an error occurs, an error message is displayed.

* **Suspend and Resume**

For updating cluster configuration information or updating ExpressCluster, you can stop the ExpressCluster daemon while continuing the operation. This status is called "**suspend**." Returning from suspend status to normal status is called "**resume**."

Suspend and resume require process to all servers in the cluster. Execute suspend when the ExpressCluster daemon in all servers in the cluster is activated.

Error Message

Message	Cause/Action to Take
not super user.	Log in as a root user.
invalid configuration file.	Create valid cluster configuration information using Trekking Tool.
invalid option.	Specify a valid option
cluster daemon is not started.	Executed stopping process on the stopped ExpressCluster daemon.
cluster daemon already started.	Executed the startup process on the activated ExpressCluster daemon.
could not connect server.	Check if the ExpressCluster daemon is activated.
get nodelist failed.	Specify a valid name of the server in the cluster.
invalid server status.	Check if the ExpressCluster daemon is activated.
specified server is not active.	Check if the ExpressCluster daemon is activated.
some server in cluster is active.	When executing resume, check if there is any server in the cluster with the activated ExpressCluster daemon.
all server must be active.	When executing suspend, the ExpressCluster daemon must be activated in all servers in the cluster.
some server in cluster is suspend.	Execute resume because some server(s) in the cluster is the suspend status.
invalid server name.	Specify the valid name of a sever in the cluster.
connection was lost.	Check if there is any server in the cluster with the ExpressCluster daemon stopped.
invalid parameter.	The value specified as a command parameter may be invalid.
connection timeout.	Timeout occurred in internal communication of ExpressCluster. If timeout keeps occurring, set a longer internal communication timeout.
error occurred on some server.	If stopping process has been executed with servers specified, there is a server with the failed process. Check the status of the server with the failed process.
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

2.2 Server Shutdown Command

clpdown	Shuts down a server.

Command Line
clpdown [-r] [-h *host_name*]

Description: Stops the ExpressCluster daemon and shuts down a server.

Option:

No Option	Shuts down a server.
-r	Restarts the server.
-h *host_name*	Makes a processing request to the server specified in *host_name*. Makes a processing request to the command-running server (local server) if the -h option is skipped.

Return Value:

0	Success
Other than 0	Failure

Remarks: This command runs the following command internally after stopping the ExpressCluster daemon.
Without any option specification shutdown
With the -r option specification reboot

Notes: Run this command as a root user.

For the name of a server for the -h option, specify the name of a server in the cluster.

Example of Execution:

Example 1: Stopping and shutting down ExpressCluster daemon in a local server

```
# clpdown
```

Example 2: Shutting down and rebooting server1 from server0

```
# clpdown -r -h server1
```

Error Message: See “2.1 Cluster Operation Command ”.

2.3 Cluster Shutdown Command

clpstdn	Shuts down cluster

Command Line
clpstdn [-r] [-h *host_name*]

Description: Stops the ExpressCluster daemon in the entire cluster and shuts down all servers.

Option:

No Option	Executes cluster shutdown.
-r	Executes cluster shutdown reboot.
-h *host_name*	Makes a processing request to the server specified in *host_name*. Makes a processing request to the command-running server (local server) if the -h option is skipped.

Return Value:

0	Success
Other than 0	Failure

Remarks

Notes: Run this command as a root user.

For the name of a server for the -h option, specify the name of a server in the cluster.

A server that cannot be communicated from the server that run the command (a server with all LAN heartbeat resource off) will not be shutdown.

Example of Execution:

Example 1: Performing cluster shutdown
```
# clpstdn
```

Example 2: Performing cluster shutdown reboot
```
# clpstdn -r
```

Error Message: See “2.1 Cluster Operation Command ”.

2.4 Group Operation Command

clpgrp	Operates group

Command Line
clpgrp -s [*group_name*] [-h *host_name*] [-f]
clpgrp -t [*group_name*] [-h *host_name*] [-f]
clpgrp -m *group_name* [-h *host_name*] [-a *host_name*]

Description: Executes starting, deactivation, and migration of a group.

Option

-s [*group_name*]	Starts up a group. When you specify the name of a group, only the specified group starts up. If no group name is specified, all groups start up.
-t [*group_name*]	Stops group. When you specify the name of a group, only the specified group stops. If no group name is specified, all groups stop.
-m *group_name*	Moves a specified group.
-h *host_name*	Makes a processing request to the server specified in *host_name*. Makes a processing request to the command-running server (local server) if the -h option is skipped.
-a *host_name*	Defines the server which was specified by *host_name* as a destination to which a group will be migrated. When the -a option is skipped, the group will migrated according to the failover policy
-f	If you use the -s option to the group which is active on remote server, it will forcefully start up on the server which requested the process. If used with -t option, it will stop forcefully.

Return Value

0	Success
Other than 0	Failure

Remarks

Notes: Run this command as a root user.

The ExpressCluster daemon must be activated on the server which runs this command

Specify a server in the cluster as server name for the -h and -a options.

Specify the group name for -m option.

Example of Execution

The following shows simple example of status transition when groups are operated.

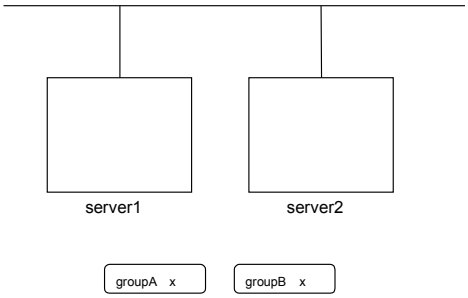
Example: if there are two servers in the configuration and two groups.

Failover policy of group

groupA server1 -> server2

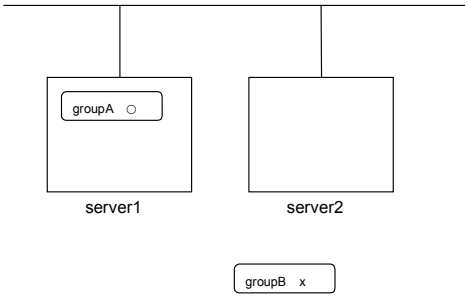
groupB server2 -> server1

(1) Both groups are in stopped.



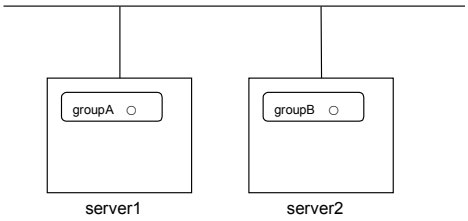
(2) Run the following command on server1.

clpgrp -s groupA



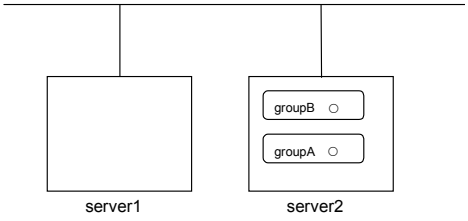
GroupA starts in server1.

(3) Run the following command in server2.
clpgrp -s



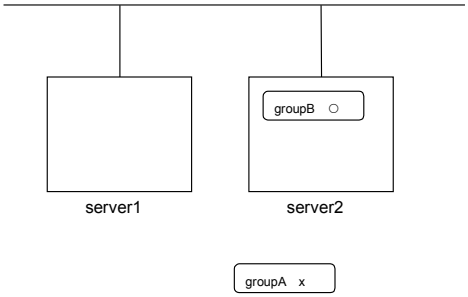
All groups that are currently stopped but can be started up start up in server2.

(4) Run the following command in server1
clpgrp -m groupA



GroupA migrates to server2.

(5) Run the following command in server1
clpgrp -t groupA -h server2

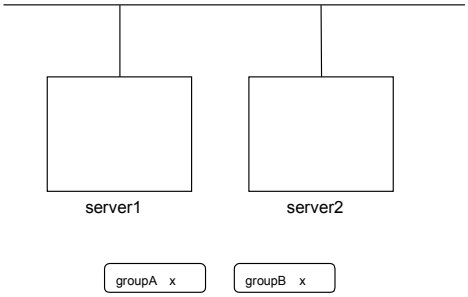


groupA stops.

(6) Run the following command in server1.
clpgrp -t
operable group does not exist.

When the command is run, the error message “operable group does not exist.” is displayed since server1 does not have a group which can be stopped.

(7) On server1, run the command you have run in (6) adding -f.
clpgrp -t -f



Groups which were started up in server2 can be forcefully deactivated from server1.

Error message

Message	Cause/Action to Take
not super user.	Log in as a root user.
invalid configuration file.	Create valid cluster configuration information using Trekking Tool
invalid option.	Specify a valid option
could not connect server.	Check if the ExpressCluster daemon is activated.
invalid server status.	Check if the ExpressCluster daemon is activated.
specified server is not active.	Check if the ExpressCluster daemon is activated.
invalid server name.	Specify the valid name of a sever in the cluster.
connection was lost.	Check if there is any server in the cluster with the ExpressCluster daemon stopped.
invalid parameter.	The value specified as a command parameter may be invalid.
connection timeout.	Timeout occurred in internal communication of ExpressCluster. If timeout keeps occurring, set a longer internal communication timeout.
in case of -m option (move), must be specified group name.	Specify a group name for the -m option

Message	Cause/Action to Take
specified server is invalid.	Server which starts, stops, and or to which the group is moved is invalid. Specify a valid server.
group can not be started because of waiting synchronization.	Start up the group after waiting for the remote server to start up, or waiting for start-up wait time to time out.
operable group does not exist.	Check if there is any group which is operable in the server which requested the process.
group already started on local server.	Check the status of group using Web Manager or the clpstat command.
group already started on other server.	Check the status of group using Web Manager or the clpstat command. If you would like to start up the group which was started in the remote server from the local server, perform the group migration or run the command by adding the -f option.
group already stopped.	Check the status of group using Web Manager or the clpstat command.
could not start some resource.	Check the status of group using Web Manager or the clpstat command.
could not stop some resource.	Check the status of group using Web Manager or the clpstat command.
group is busy.	Since group is now being started up or stopped, wait a little and retry.
error occurred on some group.	Check the status of group using Web Manager or the clpstat command.
invalid group name.	Specify the valid name of a group in the cluster.
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

3 LOG COLLECTION COMMAND

clplogcc	Collects Log

Command Lines
clplogcc [[-h *host_name*] | [-n *targetnode1* -n *targetnode2* .....]]
[-t *collect_type*] [-r *syslog_rotate_number*] [-o *path*]

Description: Collects logs and OS information and etc. by connecting to the data transfer server in the cluster.

Option:

None	Collects log in the cluster.
-h *host_name*	Specifies a name of the server to connect for collection of cluster node information
-t *collect_type*	Specifies a log collecting pattern. When this option is skipped, a log collecting pattern will be type1. Information on log collecting types is provided in the next section.
-r *syslog_rotate _number*	Specifies how many generations of syslog will be collected. When this option is skipped, only one generation will be collected.
-o *path*	Specifies the output destination of collector files. When this option is skipped, logs are outputted under tmp of the install path.
-n *targetnode*	Specifies the name of a log collecting server. With this specification, logs of the specified server, rather than the entire cluster, will be collected.

Return Value:

0	Success
Other than 0	Failure

Remarks: Since log files are compressed by tar.gz, add the xzf option to the tar command to decompress them.

Notes: Run this command as a root user.

All servers in the cluster should make sure to check the data transfer server is active.

For the name of a server for the -h option, specify the name of a server in the cluster that allows name resolution.

For the name of a server for the -n option, specify the name of a server that allows name resolution. If name resolution is not

possible, specify interconnect or a public LAN.

Example of Execution

Example 1: Collecting logs from all servers in the cluster

```
# clplogcc
Collect Log server1 : Success
Collect Log server2 : Success
```

Result of log collection for the server (server status) that executed the log collection is displayed.
Process *server_name*: Execution result (server status)

Execution Result

For this command, the following processes appear.

Steps in Process	Explanation
Connect	Displayed when connection fails.
Get Filesize	Displayed when file size acquisition fails.
Collect Log	Displays a result of acquiring file

The following results (server status) are shown

Result (server status)	Explanation
Success	Success
Timeout	Timeout occurred.
Busy	The server is in busy.
Not Exist File	File does not exist.
No Freespace	No free space on the disk.
Failed	Failure caused by other errors.

Error Message

Message	Cause/Action to Take
not super user.	Log in as a root user.
invalid configuration file.	Create correct cluster configuration information using Trekking Tool
invalid option.	Specify a valid option.
specified number is over max num.	Specify a number within a valid range.
specified number is not numeric.	Specify a valid number.
syslog's rotation number must be specified as follows. (0-99)	Specify a valid number for the syslog generation.
collect type must be specified 'type1' or 'type2' or 'type3'.	Invalid collection type has been specified.
specified path is invalid.	Use a full path to specify file collection output destination.
over max server number.	The number of servers you can specify is within the maximum number of servers for cluster configuration.
could not connect server.	Check if the ExpressCluster daemon is activated.
get nodelist failed.	Specify a valid name of the server in the cluster.
invalid server status.	Check if the ExpressCluster daemon is activated.
server is busy.	This command may be already activated. Check to see the activation status.
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

3.1 Log Collecting Option

3.1.1 Collecting type (-t option)

Choose one from type 1 to 3 for a log collection type.

	type1	type2	type3
(1) Default Collector Information	○	○	○
(2) syslog	○	○	×
(3) core	○	×	○
(4) OS information	○	○	○
(5) script	○	×	×
(6) ESMPRO/AC	○	×	×

Run as follows from the command line.
Example: When collecting logs using type2

```
# clplogcc -t type2
```

* When non option is specified, a log type will be, by default, type 1.

(1) Default collection information

+ Logs of each module in an ExpressCluster server
+ Attribute information of each module (ls -l) in an ExpressCluster server
  = In bin, lib
  = In alert/bin, webmgr/bin
  = In drivers
+ ExpressCluster version information
+ distribution information (/etc/*-release)
+ update log
+ CPU license and node license
+ Configuration file
+ Policy file
+ Shared memory dump
+ Output result of kernel parameter (sysctl -a)
+ glibc version

(2) syslog

+ syslog (/var/log/messages)
+ Specified number of generations syslog (/var/log/messages.*x*)

(3) core file

+ core file of ExpressCluster module

(4) OS information

+ mirror information (LE only)
  = /proc/liscalstat
  = /proc/liscalinner
+ /proc/devices
+ /proc/mdstat
+ /proc/modules
+ /proc/lvm

+ /proc/mounts
+ /proc/meminfo
+ /proc/cpuinfo
+ /proc/version
+ all files of /proc/scsi/ all files in the directory
+ all files of /proc/ide/ all files in the directory
+ ifconfig (ifconfig execution result)
+ iptables (iptables -L execution result)
+ ipchains (ipchains -L execution result)
+ df (df execution result)
+ raw device information (raw -qa execution result)
+ kernel module load information (lsmod execution result)
+ host name, domain name information (hostname, domainname execution result)

When collecting logs, the following message may be displayed. However, this does not mean failure. Logs are collected normally.

```
hd#: bad special flag: 0x03
ip_tables: (C) 2000-2002 Netfilter core team
```

(Where hd# is the name of the IDE device that exist on the server)

(5) Script

+ Statupu/stop script for a group that exist the cluster.

(6) ESMPRO/AC Related log

+ File run by “acupslog output path”

3.1.2 Generation of syslog (-r option)

To collect syslogs for the number of generations specified, run the command as follows.

Example: Collecting logs for the 3 generations

```
# clplogcc -r 3
```

The following syslog are included in collected logs.
/var/log/messages
/var/log/messages.1
/var/log/messages.2

* When no option is specified, only /var/log/messages is collected.
* You can collect logs for 0 to 99 generations.
* When 0 is specified, all syslogs are collected.

Number of Generation	Number of generations to acquire
0	All Generations
1	Current
2	Current + Generation 1
3	Current + Generation 1 to 2
: :	
x	Current + Generation 1 to (x-1)

3.1.3 Log file output path file name (-o option)

* A file Name will be saved as “server name-log.tar.gz”
* If IP address is specified for the -n option, a file name is save as “IP address-log.tar.gz”
* Since logs files are compressed by tar.gz, decompress them by adding the xzf option to the tar command.

(1) If not specifying -o option

Logs are output in tmp of install path.

```
# clplogcc
Collect Log server_name    : Success
# ls /opt/nec/clusterpro/tmp
  server_name-log.tar.gz
```

(2) If specifying -o option

If you run the command as follows, logs are output in a specified directory /home/log

```
# clplogcc -o /home/log
Collect Log server_name    : Success
# ls /home/log
  server_name-log.tar.gz
```

3.1.4 Specifying log collector server (-n option)

By using the -n option, you can collect logsfrom only the specified server.
Example: When collecting logs from Server1 and Server3 in the cluster.

```
# clplogcc -n Server1 -n Server3
```

* Specify a server in the same cluster.
* The number of servers you can specify is within the maximum number of servers in the cluster configuration.

4 CLUSTER GENERATION, CLUSTER CONFIGURATION INFORMATION BACKUP COMMAND

4.1 Cluster Generation Command

clpcfctrl --push	Delivers cluster configuration information to servers

Command Line
clpcfctrl --push -[l|w] [-c <hostname>|<IP>] [-h <hostname>|<IP>] [-p <portnumber>]
[-d <device>] [-m <mountpoint>]
[-x <directory>]

Description: Delivers configuration information which was created by Trekking Tool to servers.

Option

--push	This option is specified when delivering information. You cannot skip this option.
-l	Specify this option when using an FD which was saved using Trekking Tool on Linux. To use an FD which was saved in Windows format using Trekking Tool on Linux, specify -w. You cannot specify both -l and -w at the same time. Specify either -l or -w.
-w	Specify this option when using an FD which was saved using Trekking Tool on Windows. Also, specify when using an FD which was saved as Windows using Trekking Tool on Linux. You cannot specify both -l and -w at the same time. Specify either -l or -w.
-c	Specifies a server to access to acquire a list of servers. Specify a host name or IP address. When this option is skipped, configuration information in the FD will be used.
-h	Specifies servers to which configuration information is delivered. Specify host name or IP address. If this option is skipped, configuration information is delivered to all servers.

	-p	Specify a port number of data transfer port. When this option is skipped, the default will be used. It is generally not necessary to specify this option.
	-d	Specifies a FD device file Specify when different from /dev/fd0. When this option is skipped, /dev/fd0 is used.
	-m	Specifies a FD mount point. Use with -w. When this option is skipped, /mnt/floppy is used.
	-x	Used only in an environment where FDs cannot be used. Specify this option when delivering configuration information in specified the directory. This option is used with -l or -w. When -l is specified, configuration information which was saved on the file system using Trekking Tool on Linux is used. When -w is specified, configuration information which was saved using Trekking Tool on Windows is used.
Return Value	0	Success
	Other than 0	Failure

Remarks

Notes Run this command as a root user.

Example of Execution **Example 1:** Generating a cluster from the FD which was saved using Trekking Tool on Linux

```
# clpcfctrl --push -l
   file delivery to server 10.0.0.11 success.
   file delivery to srever 10.0.0.12 success.

   success.(code:0)
```

Example 2: Delivering configuration information from the FD which was saved using Trekking Tool on Windows to a specified server

```
# clpcfctrl --push -w -h 10.0.0.11
   success.(code:0)
```

Example 3: Delivering configuration information which was saved using Trekking Tool on Linux

```
# clpcfctrl --push -l -x /mnt/config
  file delivery to server 10.0.0.11 success.
  file delivery to srever 10.0.0.12 success.

  success.(code:0)
```

Error Message

Message	Cause/Action to Take
not super user.	Log in as a root user.
already started.	This command is already running.
invalid option.	The option is invalid. Check the option.
invalid mode.	Check if --push is specified.
invalid host.	Server which was specified with -h is not included in configuration information. Check if specified server name or IP address is correct.
canceled.	Displayed when anything other than ”y” is entered for command inquiry.
initialize xml library failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
load configuration file failed.	
change configuration file failed.	
load all policy file failed.	Reinstall ExpressCluster server RPM.
load cfctrl policy file failed.	Reinstall ExpressCluster server RPM.
get create flag failed.	This is not the FD created using Trekking Tool.
get restart flag failed.	This is not the FD created using Trekking Tool.
get install path failed.	Reinstall ExpressCluster server RPM.
get cfctrl path failed.	Reinstall ExpressCluster server RPM.
invalid create flag.	This is not the FD created using Trekking Tool.
invalid restart flag.	This is not the FD created using Trekking Tool
initialize trncl library failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
connect to server %s failed.(please retry later)	Connecting to the server has failed. Check to see if other server is started up. Run the command again after the server has started up.
connect to trnsv failed.	Connecting to the server has failed. Check to see if other server is started up.
get node list failed.	Check if the server which was specified by -c is a cluster member.
file delivery failed.	Delivering configuration information has failed. Check to see if other server is started up. Run the command again after the server has started up.
multi file delivery failed.	Delivering configuration information has failed. Check to see if other server is started up. Run the command again after the server has started up.

Message	Cause/Action to Take
complete file delivery failed.	Delivering configuration information has failed. Check to see if other server is started up Run the command again after the server has started up
not exist work directory.	Reinstall ExpressCluster server RPM.
make work directory failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
not exist directory.	
not directory.	
not exist source file.	
source file is directory.	
not exist source directory.	
source file is not directory.	
change code(EUC to SJIS) failed.	
change code(SJIS to EUC) failed.	
command error.	
mount floppy failed.	Mounting the FD has failed. Check if the FD is inserted. Also, if Trekking Tool is used on Linux, check if it was saved in a Windows format.
umount floppy failed.	Unmounting the FD has failed. Check to see if FD is inserted.
command(tar -cf) failed.	Backing up the FD has failed. Check to see if FD is inserted
command(tar -xf) failed.	Loading from the FD has failed. Check to see if FD is inserted. Also, if using Trekking Tool on Linux, check if it was saved as Linux format.
memory allocation failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
change directory failed.	
command execution failed.	
make directory failed.	
remove directory failed.	
remove file failed.	
open file failed.	
read file failed.	
write file failed.	

4.2 Cluster Configuration Information Backup Command

clpcfctrl --pull	Backups cluster configuration information.

Command Line
clpcfctrl --pull -[l|w] [-h <hostname>|<IP>] [-p <portnumber>]
[-d <device>] [-m <mountpoint>]
[-x <directory>]

Description: Backs up cluster configuration information to be used for Trekking Tool.

Option:

--pull	This option is specified when performing backup. You cannot skip this option.
-l	This option is specified when backing up to the FD which is used for Trekking Tool on Linux. You cannot specify both -l and -w at the same time. You cannot skip both -l and -w.
-w	This option is specified when backing up to the FD which is used for Trekking Tool on Windows. FD must be formatted by 1.44MB (VFAT). You cannot specify both -l and -w at the same time. You cannot skip both -l and -w.
-h	Specifies the source server for backup. Specify host name or IP address. When this option is skipped, the configuration information of command running server is used.
-p	Specifies a port number of data transfer port. When this option is skipped, the default value is used. It is generally not necessary to specify this option.
-d	Specifies a FD device file. Specify when differ from /dev/fd0 When abbreviated, use /dev/fd0
-m	Specifies mount point of FD. Use with -w When this option is skipped, /mnt/floppy is used.

	-x	Used only in an environment where FDs cannot be used. Backs up the configuration information in the specified directory. Use with either -l or -w. When -l is specified, configuration information in is backed up in a format which can be loaded by Trekking Tool on Linux. When -w is specified, configuration information is saved in a format which can be loaded by Trekking Tool on Windows.
Return Value	0	Success
	Other than 0	Failure

Remarks

Notes Run this command as a root user.

Example of Execution **Example 1:** Backing up on the FD which is used by Trekking Tool on Linux

```
# clpcfctrl --pull -l
   success.(code:0)
```

Example 2: Backing up configuration information about the specified server to the FD which is used on Trekking Tool on Windows

```
   success.(code:0)
```

Example 3: Backing up configuration information to be loaded by Trekking Tool on Linux to the specified directory

```
# clpcfctrl --pull -l -x /mnt/config
   success.(code:0)
```

Error Message

Message	Cause/Action to take
not super user.	Log in as a root user.
already started.	Already active.
invalid option.	The option is invalid. Check the option.
invalid mode.	Check if --pull is specified.
canceled.	Displayed when anything other than ”y” is entered for command inquiry.
initialize xml library failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
load configuration file failed.	
change configuration file failed.	
load all policy file failed.	Reinstall ExpressCluster server RPM.
load cfctrl policy file failed.	Reinstall ExpressCluster server RPM.
get install path failed.	Reinstall ExpressCluster server RPM.
get cfctrl path failed.	Reinstall ExpressCluster server RPM.
initialize trncl library failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

Message	Cause/Action to take
connect to server %s failed.(please retry later)	Connecting to the server has failed. Check if other server is started. Run the command again after the server has started up.
connect to trnsv failed.	Connecting to the server has failed. Check if other server is started.
get collect size failed.	Acquiring configuration information has failed. Check if other server is started.
file collect failed.	Acquiring configuration information has failed. Check if other server is started.
not exist work directory.	Reinstall ExpressCluster server RPM.
make work directory failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
not exist directory.	
not directory.	
not exist source file.	
source file is directory.	
not exist source directory.	
source file is not directory.	
change code(EUC to SJIS) failed.	
change code(SJIS to EUC) failed.	
command error.	
mount floppy failed.	Mounting the FD has failed. Check if the FD is inserted. Also, if Trekking Tool is used on Linux, check if it was saved in a Windows format.
umount floppy failed.	Unmounting the FD has failed. Check to see if the FD is inserted.
command(tar -cf) failed.	Backing up to the FD has failed. Check if the FD is inserted.
command(tar -xf) failed.	Loading from the FD has failed. Check if the FD is inserted. If Trekking Tool on Linux is used, check if the FD has been saved in a Linux format.
memory allocation failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
change directory failed.	
command execution failed.	
make directory failed.	
remove directory failed.	
remove file failed.	
open file failed.	
read file failed.	
write file failed.	

5 TIMEOUT TEMPORARY ADJUSTMENT COMMAND

clptoratio	Extends and displays current timeout ratio.

Command Line
clptoratio -r *ratio* -t *time*
clptoratio -i
clptoratio -s

Description: Temporarily extends various timeout values of monitor resources and heartbeat resources in the cluster.
Displays current timeout ratio.

Option

-r *ratio*	Specifies timeout ratio. Use 1 or larger integer. The maxim timeout ratio is 10,000. If you specify “1”, you can turn the modified timeout ratio back to the original just as using the -i option.
-t *time*	Specifies extension period. You can specify minutes for m, hours for h, and days for d. The longest period is 30 days. Example: 2m, 3m, 4d
-i	Sets back the modified timeout ratio.
-s	Refers to the current timeout ratio.

Return Value

0	Success
Other than 0	Failure

Remarks

When the cluster is shutdown, the timeout ratio you have set will become ineffective. If any server in the cluster is not shutdown, the timeout you will be maintained.

With the -s option, you can only refer to the current timeout ratio. You cannot see other information such as remaining time of extended period.

You can see the original timeout value by using the status display command.
Heartbeat timeout # clpstat --cl --detail
Monitor resource timeout # clpstat --mon monitor resource name --detail

Notes

Run this command as a root user.

Make sure the ExpressCluster daemon is activated in all servers in the cluster.
When setting a timeout ratio, make sure to specify extension period. However, if you set “1” for the timeout ratio, you cannot specify the extension period.

You cannot specify a combination such as “2m3h,” for extension period.

Example of Execution

Example 1: Doubling the timeout ratio for three days

```
# clptoratio -r 2 -t 3d
```

Example 2: Setting back the ratio of timeout to original

```
# clptoratio -i
```

Example 3: Referring to the current timeout ratio

```
# clptoratio -s
present toratio : 2
```

As you can see, the current time-out ratio is set to 2.

Error Message

Message	Cause/Action to take
not super user.	Log in as a root user.
invalid configuration file.	Create valid cluster configuration using Trekking Tool.
invalid option.	Specify a valid option.
specified number is over max num.	Specify a number within a valid range.
specified number is not numeric.	Specify a valid number.
ratio must be specified as follows. (1-max)	Specify 1 or larger integer for ratio.
over max ratio.	Specify a ratio that is not larger than the maximum ratio.
time must be specified as follows. ex) 2m, 3h, 4d	Set a valid extension period.
over max time.	Set the extension period which does not go over the maximum.
could not connect server.	Check if the ExpressCluster daemon is activated.
specified server is not active.	Check if the ExpressCluster daemon is activated.
connection was lost.	Check if there is any server in the cluster with the ExpressCluster daemon stopped.
invalid parameter.	The value specified as a command parameter may be invalid.
connection timeout.	Timeout occurred in internal communication of ExpressCluster. If timeout keeps occurring, set a longer internal communication timeout.

Message	Cause/Action to take
error occurred on some server.	There is a server in which the processing has failed. Check the status of servers in the cluster. Run the command with all servers in the cluster activated.
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

6 LOG LEVEL/SIZE MODIFICATION COMMAND

clplogcf	Modifies and displays log levels and log output file size

Command Line
clplogcf -t <type> -l <level> -s <size>
clplogcf -t <type>
clplogcf

Description
Modifies log level and log output file size.
Displays the value currently configured.

Option

-t	Specifies a module type whose settings will be changed. If both -l and -s are skipped, the information which is set to the specified module will be shown. See the list of ”Types which can be specified to the -t option” for types which may be specified.
-l	Specifies a log level. You can specify one of the following for a log level. 1, 2, 4, 8, 16, 32 More detailed information is produced as the log level increases. See the list of “Default Value of Log Level and Log File Sizes” for default values of each module type.
-s	Specifies the size of a file to output logs. The unit is byte.
None	Displays entire current configuration information.

Return Value

0	Success
Other than 0	Failure

Remarks
Logs that ExpressCluster outputs use four log files for each type. Therefore, it is necessary to have the disk space which is four times larger than what is specified by -s.

Notes
Run this command as a root user.
To run this command, the ExpressCluster event service must be active.

Example of Execution

Example 1: modifying a pm log level

```
# clplogcf -t pm -l 8
```

Example 2: Seeing the pm log level and log file

```
# clplogcf -t pm
   TYPE, LEVEL, SIZE
   pm, 8, 1000000
```

Example 3: Displaying the values currently configured

```
# clplogcf
   TYPE, LEVEL, SIZE
   trnsv, 4, 1000000
   xml, 4, 1000000
   logcf, 4, 1000000
```

Error Message

Message	Cause/Action to take
not super user.	Log in as a root user.
invalid option.	Option is invalid. Check the option.
change configuration failed.(Perhaps clpevent is not running.)	clpevent may not be activated.
invalid level	The specified level is invalid.
invalid size	The specified size is invalid.
load config file failed.	Non-clustered server
initialize xml library failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
print current configuration failed.	clpevent may not be active

Types which can be specified for the -t option

Type	Module	Description
apicl	libclpapicl.so.1.0	API client library
apisv	libclpapisv.so.1.0	API server
cl	clpcl	Cluster startup and stop command
cfctrl	clpcfctrl	Cluster generation, cluster information backup command
down	clpdown	Server stopping command
grp	clpgrp	Group startup, stop and move command
haltp	clpuserw	Shut down install monitoring
lcns	libclplcns.so.1.0	License library
lcnsc	clplcnsc	License registration command
logcc	clplogcc	Log collection command
logcf	clplogcf	Log level, size modification command
mail	clpmail	Mail report
nm	clpnm	Node map management
pm	clppm	Process management
rc	clprc	Group and group resource management
rm	clprm	Monitor management
roset	clproset	Disk control
sem	libclpsem.so.1.0	Semaphore library
shmcm	libclpshmcm.so.1.0	Shared memory library
shmnm	libclpshmnm.so.1.0	Shared memory library
shmrm	libclpshmrm.so.1.0	Shared memory library
stat	clpstat	Status display command
stdn	clpstdn	Cluster shutdown command
toratio	clptoratio	Timeout ratio modification command
trncl	libclptrncl.so.1.0	Transaction library
trnsv	clptrnsv	Transaction server
xml	libclpxml.so.1.0	Configuration information access library
alert	clpaltinsert	Alert
webmgr	clpwebmc	Web manager
webalert	clpaltd	Alert Synchronization
disk	clpdisk	Disk resource [1]
exec	clpexec	EXEC resource
fip	clpfip	FIP resource
raw	clpraw	RAW resource [2]
vxdg	clpvxdg	VxVM disk group resource [2]
vxvol	clpvxvol	VxVM volume resource [2]
diskw	clpdiskw	Disk monitoring
ipw	clpipw	IP monitoring
pidw	clppidw	PID monitoring
raww	clpraww	RAW monitoring [3]
userw	clpuserw	User space monitoring
vxdw	clpvxdw	VxVM daemon monitoring [2]
vxvolw	clpvxvolw	VxVM volume monitoring [2]

[1] Can be specified only for SE and XE
[2] Can be specified only for SE
[3] Can be specified only for SE and LE

comhb	clpcomhb	COM heartbeat [3]
diskhb	clpdiskhb	Disk heartbeat [1]
lanhb	clplanhb	LAN heartbeat
mdagent	clpmdagent	Mirror Agent [4]
mdadmn	libclpmdadmn.so.1.0	Mirror disk admin library

[4] Can be specified only for LE

Default Value of Log Level/Log File Size

Type	Level	Size (byte) SE	Size (byte) XE	Size (byte) LE
apicl	4	5000000	5000000	5000000
apisv	4	5000000	5000000	5000000
cl	4	1000000	1000000	1000000
cfctrl	4	1000000	1000000	1000000
down	4	1000000	1000000	1000000
grp	4	1000000	1000000	1000000
haltp	4	1000000	1000000	1000000
lcns	4	1000000	1000000	1000000
lcnsc	4	1000000	1000000	1000000
logcc	4	1000000	1000000	1000000
logcf	4	1000000	1000000	1000000
mail	4	1000000	1000000	1000000
nm	4	2000000	2000000	2000000
pm	4	1000000	1000000	1000000
rc	4	2000000	2000000	2000000
rm	4	2000000	2000000	2000000
roset	4	1000000	1000000	1000000
sem	4	1000000	1000000	1000000
shmcm	4	1000000	1000000	1000000
shmnm	4	1000000	1000000	1000000
shmrm	4	1000000	1000000	1000000
stat	4	1000000	1000000	1000000
stdn	4	1000000	1000000	1000000
toratio	4	1000000	1000000	1000000
trncl	4	2000000	2000000	2000000
trnsv	4	2000000	2000000	2000000
xml	4	1000000	1000000	1000000
alert	4	4000000	4000000	4000000
webmgr	4	4000000	4000000	4000000
webalert	4	4000000	4000000	4000000
disk	4	1000000	1000000	-
exec	4	1000000	1000000	1000000
fip	4	1000000	1000000	1000000
raw	4	1000000	-	-
vxdg	4	1000000	-	-
vxvol	4	1000000	-	-
diskw	4	1000000	1000000	1000000
ipw	4	1000000	1000000	1000000
pidw	4	1000000	1000000	1000000
raww	4	1000000	-	1000000
userw	4	1000000	1000000	1000000
vxdw	4	1000000	-	-
vxvolw	4	1000000	-	-
comhb	4	1000000	-	1000000
diskhb	4	1000000	1000000	-
lanhb	4	1000000	1000000	1000000
mdagent	4	-	-	10000000

mdadmn	4	-	-	10000000
mddriver *1	-	-	-	-
	Total	68000000 * 4	61000000 * 4	81000000 * 4

*1 Logs are output to syslog.

Monitoring Agent Types which can be specified for the -t option

Type	Module	Description
ora9mon	clp_ora9mon	Database Agent (Oracle9i)
ora10mon	clp_ora10mon	Database Agent (Oracle10g)
db28mon	clp_db28mon	Database Agent (DB2 V8)
psql73mon	clp_psql73mon	Database Agent (PostgreSQL7.3/7.4)
psql72mon	clp_psql72mon	Database Agent (PostgreSQL7.2)
mysql323mon	clp_mysql323mon	Database Agent (MySQL3.23)
mysql40mon	clp_mysql40mon	Database Agent (MySQL4.0)
nfsmon	clp_nfsmon	File Server Agent (NFS)
sambamon	clp_sambamon	File Server Agent (samba)
httpm	clphttpm	Internet Server Agent R2.0-1 (http)
httpmon	clp_httpmon	Internet Server Agent R2.0-2 (http)
smtpm	clpsmtpm	Internet Server Agent R2.0-1 (smtp)
smtpmon	clp_smtpmon	Internet Server Agent R2.0-2 (smtp)

Monitoring Agent Default Value of Log Level/Log File Size

Type	Level	Size (byte) SE	Size (byte) LE
ora9mon	4	1000000	1000000
ora10mon	4	1000000	1000000
db28mon	4	1000000	1000000
psql73mon	4	1000000	1000000
psql72mon	4	1000000	1000000
mysql323mon	4	1000000	1000000
mysql40mon	4	1000000	1000000
nfsmon	4	1000000	1000000
sambamon	4	1000000	1000000
httpm	4	1000000	1000000
httpmon	4	1000000	1000000
smtpm	4	1000000	1000000
smtpmon	4	1000000	1000000
	Total	13000000 * 4	13000000 * 4

7 LICENSE MANAGEMENT COMMAND

clplcnsc	Manages licenses.

Command Line
clplcnsc -i [*licensefile*] -p *productid*
clplcnsc -l -p *productid*
clplcnsc -d -p *productid*

Description: Registers and refers the licenses of the product version and trial version of this product.

Option:

-i [*licensefile*] — Registers licenses.
When a license file is specified, license information is acquired from the file for registration. If nothing is specified, license information is entered interactively.

-l — Refers to the license.

-d — Deletes the license.

-p *productid* — Specifies the product ID of a license product.

Cluster product	
Product ID	License product name
SE30	ExpressCluster SE for Linux Ver3.0
LE30	ExpressCluster LE for Linux Ver3.0
XE30	ExpressCluster XE for Linux Ver3.0
DBMON20	Database Agent for Linux R2.0
ISMON20	Internet Server Agent for Linux R2.0
FSMON20	File Server Agent for Linux R2.0

Return Value:

0 — Normal Termination
1 — Normal Termination (license asynchronous status)
*This means license synchronization failed in the cluster at the time of license registration.
See the Trouble shooting section of “License Registration” in a separate guide “Cluster Installation and Configuration Guide” for actions to take in this situation.
2 — Initialization error
4 — Option invalid
7 — Other internal error

Example of Execution

Registration

1. Interactively

```
# clplcnsc -i -p SE30
```

1.1 Product Version

1.1.1 Select a product division.

```
Selection of product division
  1. Product
  2. Trial
Select product division ...
```

1.1.2 Enter a license number.

```
Enter number of license [ 1 to 99 (default:99) ] ...
```

1.1.3 Enter a serial No.

```
Enter serial number [ Ex. XX000000 ] ...
```

1.1.4 Enter a license key.

```
Enter license key
  [ Ex. XXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXXXX] ...
```

1.2 Trial Version

1.2.1 Selection a product division.

```
Selection of product division
  1. Product
  2. Trial
Select product division ...
```

1.2.2 Enter a user name.

```
Enter user name [ 1 to 64byte ] ...
```

1.2.3 Enter a trial start date.

```
Enter trial start date [ Ex. yyyy/mm/dd ] ...
```

1.2.4 Enter a trial end date.

```
Enter trial end date [ Ex. yyyy/mm/dd ] ...
```

1.2.5 Enter a license key.

```
Enter license key
  [ Ex. XXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXXXX] ...
```

2. Specifying a license file

```
# clplcnsc -i /tmp/cpulcns.key -p SE30
```

Reference

```
# clplcnsc -l -p SE30
```

1. Product Version

```
< Cluster CPU License SE 3.0 <PRODUCT> >

Seq... 1
  Key..... A1234567-B1234567-C1234567-D1234567
  The number of license... 2
  Status... valid
```

2. Trial Version

```
< Cluster CPU License SE 3.0 <TRIAL> >

Seq... 1
  Key..... A1234567-B1234567-C1234567-D1234567
  User name... NEC
  Start date..... 2003/01/01
  End date..... 2003/12/31
  Status..... valid
```

Remarks

Notes

Run this command as a root user.

When you register a license, make sure the data transfer server is started up and a cluster has been generated.

When deleting a license, only license information on the server this command was run is deleted. License information on other servers is not deleted. To delete entire license information in the cluster, run this command in all servers.
Also, if there is more than one piece of license information of the product ID specified to be deleted, all information of the product ID will be deleted.

Message List

Message	Cause/Action to Take
command was success.	The command was successful.
command failed.	The command was unsuccessful.
command success, but not sync license in cluster.	There is a server which is not running in the cluster. Perform the cluster generation steps in all servers in the cluster. See a separate guide, “Cluster Installation and Configuration Guide” for information on cluster generation.
not super user.	You are not authorized to run this command. Log in as a root user.
invalid configuration file.	Cluster configuration information is invalid. Check the cluster configuration information using Trekking Tool.
initialize error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
command was already started.	The command is already running. Check the running status using a command such as the ps command.
license is unregistered.	The license is not registered. Register the license.
unable open license file.	I/O cannot be done to the license file. Check if the license file exists in the specified path.
unable read license file.	
invalid field in license file.	The field format of the license file is invalid. The license file may be corrupted. Check it with the file sender.
initialization of library failed.	Memory or OS resource may be insufficient. Check memory and/or OS resource.
termination of library failed.	
unable register license.	Check if the optional product ID or entered license information is correct.
unable refer license.	
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

8 DISK I/O LOCK-OUT COMMAND

clproset	Modifies and displays I/O permission of partition device.

Command Line
clproset -o [-d *device_name* | -r *resource_name* -t *resource_type* | -a]
clproset -w [-d *device_name* | -r *resource_name* -t *resource_type* | -a]
clproset -s [-d *device_name* | -r *resource_name* -t *resource_type* | -a]

Description
Configures partition device I/O permission of a shared disk to ReadOnly / ReadWrite possible.
Displays a configured I/O permission status of partition device.

Option

-o	Sets partition device I/O to ReadOnly. When ReadOnly is set, you cannot write into the partition device in which you made such settings.
-w	Sets partition device I/O to ReadWrite possible. When ReadWrite is set, you may read from and write into the partition device in which you made such settings.
-s	Displays the I/O permission status of a partition device.
-d *device_name*	Specifies a partition device.
-r *resource_name*	Specifies a disk resource name.
-t *resource_type*	Specifies a group resource type. For the current version, always specify “disk” as group resource type.
-a	Runs against all disk resource.

Return Value

0	Success
Other than 0	Failed

Remarks

Notes
Run this command as a root user.

This command can only be used on a shared disk resource. It cannot be used for a mirror disk resource.

Be sure to specify a group resource type when specifying a resource name.

Example of Execution

Example 1: When making I/O which has disk resource name disk1 into RW

```
# clproset -w -r disk1 -t disk
/dev/sdb5 : success
```

Example 2: When acquiring all resource I/O information

```
# clproset -s -a
/dev/sdb5 : rw
/dev/sdb6 : ro
```

Error message

Message	Cause/Action to Take
not super user.	Log in as a root user.
invalid configuration file.	Create valid cluster configuration information using Trekking Tool.
invalid option.	Specify a valid option.
in case of -r option (resource), must be specified -t (resource type).	Be sure to specify the -t option when using the -r option.
resource type must be specified 'disk'.	Specify ”disk” when specifying a group resource type.
invalid group resource name.	Specify a valid group resource name.
invalid device name.	Specify a valid device name.
command timeout.	Check if OS is heavily loaded.
internal error.	Memory or OS resource may be insufficient. Check memory and/or OS resource.

Do not use this command for the purposes other than mentioned in a separate guide “Maintenance.”
If you run this command while the ExpressCluster daemon is active, you may corrupt the file system.

9 MIRROR RELATED COMMAND

9.1 Mirror Status Display Command

clpmdstat	Displays status related mirroring and configuration information.

Command Line
clpmdstat --connect
clpmdstat --mirror *mirrordisk-alias*
clpmdstat --active *mirrordisk-alias*
clpmdstat --detail *mirrordisk-alias*
clpmdstat --list
clpmdstat --driver
clpmdstat --agent

Description	Displays various statuses related to mirroring. Displays mirror disk resources configuration information.	
Option	--connect	Displays mirror disk connect status
	--mirror	Displays mirror disk resource status.
	--active	Displays mirror disk resource active status.
	--detail	Displays mirror disk resources configuration information.
	--list	Displays a list of mirror disk resources. Displays whether or not FastSync Option is set.
	--driver	Displays mirror disk driver status.
	--agent	Displays mirror agent status.
Parameter	*mirrordisk-alias*	Specifies a mirror disk resource name.
Return Value	0 Other than 0	Success Failure

Remarks

Precautions Run this command as a root user.

Example of Display　Examples of display are shown in the next section.

Error Message

Message	Cause/Action to Take
Error: not super user	Log in as a root user.
Error: reading config file error	Reading a configuration file has failed. Check if a configuration file exists and if it is configured correctly.
Error: get mirror disk name error	Acquiring a mirror disk resource name has failed. Check if mirror agent is operating normally.
Error: mirror disk not exist	The specified mirror disk resource was not found. Specify a valid mirror disk resource name.
Error: invalid mirror-alias	Specify a valid mirror disk resource name.
Error: failed to get server name	Acquiring a server name has failed. Check if configuration file is valid and the mirror agent is operating normally.
Error: communication error	Communicating to the remote server has failed. Check if the mirror agent in the remote server is operating normally, and the mirror disk connect is connected.
Error: remote mirror down	Communicating to the remote server has failed. Check if the mirror agent in the remote server is operating normally, and the mirror disk connect is connected.
Error: get mirror status error	Acquiring mirror disk status has failed. Check if the mirror agent in the local server is operating normally.
Error: get mirror index error	Check if mirror agent is operating normally.
Error: mirror agent is not running	The mirror agent is not started up. Check if mirror agent is running.
Error: get local agent status error	Acquiring mirror agent status of the local server has failed. Shutdown the cluster and restart the both servers.
Error: get remote agent status error	Acquiring mirror agent status of the remote server has failed. Shutdown the cluster and restart the both servers.
Error: get local and remote agent status error	Acquiring mirror agent status of both servers has failed. Shutdown the cluster and restart both servers.
Error: get local mirror active status error	Acquiring active status of the mirror disk resource of the local server has failed. Shutdown the cluster and restart both servers.
Error: get remote mirror active status error	Acquiring active status of the mirror disk resource of the remote server has failed. Shutdown the cluster and restart the both servers.

Message	Cause/Action to Take
Error: get local and remote mirror active status error	Acquiring active status of the mirror disk resources of both servers has failed. Shutdown cluster and restart the both servers.
Error: mirror recovery status unknown	Acquiring mirror recovery status has failed. Restart the local server.
Error: failed to get network information	Check if mirror agent is operating normally.
Error: get mirror list info error	Acquiring a list of mirror disks has failed. Restart the local server.
Error: get mirror information error	Acquiring mirror configuration information has failed. Check if the mirror agent is operating normally.
Error: failed to get mirror-disk information	Acquiring mirror disk configuration information has failed. Restart the local server.
Error: get local and remote mirror-disk information error	Acquiring mirror disk configuration information of both servers has failed. Shutdown the cluster and restart both servers.
Error: local driver status abnormal	Acquiring mirror driver status of the local server has failed. Restart the local server.
Error: get remote driver status error	Acquiring mirror driver status of the remote server has failed. Check the current network load. If it fails again, restart the remote server.
Error: remote driver status abnormal	Acquiring mirror driver status of the remote server has failed. Check the current network load. If it fails again, restart the remote server.
Error: both drivers status abnormal	Acquiring mirror driver status of both servers has failed. Shutdown the cluster and restart the both servers.
Error: blocksize synchronize error	Acquiring mirror difference information in cluster partition has failed. Check if the mirror disk connect is properly connected, and mirror agents in both servers are operating normally.
Error: get bitmap bit number failed!	Acquiring mirror difference information in cluster partition has failed. Shutdown the cluster. If this error happens again, replace the disk. See a separate guide, “Maintenance” for information on replacing disks.
Error: bitmap bit number is invalid!	Mirror difference information in cluster partition is invalid. Shutdown the cluster. If this error happens again, replace the disk. See a separate guide, “Maintenance” for information on replacing disks.

Message	Cause/Action to Take
Error: get local bitmap information failed	Acquiring mirror difference information of the local server has failed. Restart the local server.
Error: read local bitmap error	Reading mirror difference information of the local server has failed. Restart the local server.
Error: get remote device size error	Acquiring disk space size of the remote server has failed. Shut down the cluster and restart the server.
Error: get semaphore error	Acquiring semaphore has failed. Restart the local server.
Error: malloc error	Reserving memory space has failed. Restart the local server.
Error: local driver was not loaded	The mirror driver in local server is not loaded. See a separate guide, “Maintenance” for reference.
Error: internal error(errorcode: 0xxxx)	Shut down the cluster, and restart the server.

9.1.1 Example of a display when running the mirror status display command

(1) Mirror disk connect status display

When the --connect option is specified, the status of mirror disk connect is displayed.

```
Server Name       IP Address        Status
-------------------------------------------------
server1           192.168.0.1       Using

server2           192.168.0.2       Using
```

* Item description

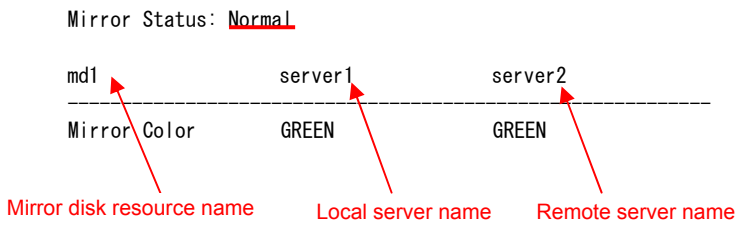
Item name	Description
Server Name	Server name
IP Address	IP address specified for mirror disk connect
Status	Status of mirror disk connect Status: Description Using: Being used Free: Not used Error: Error --: Status unknown

(2) Mirror disk resource status display

When the --mirror option is specified, the status of the specified mirror disk resource is displayed.

The status of a mirror disk resource is displayed in one of three ways depending on the status.

A. When the mirror disk resource is normal:



* Item Description

Item name	Description
Mirror Status	Status of the mirror disk resource Status: Using — Description: Normal Status: Normal — Description: Mirroring being recovered Status: Recovering — Description: Error Status: Abnormal — Description: Abnormal Status: No Construction — Description: Mirroring is not constructed initially
Mirror Color	Status of a mirror disk in each server Status: GREEN — Description: Normal Status: YELLOW — Description: Mirroring being recovered Status: RED — Description: Error Status: GRAY — Description: Stopped, status unknown Status: BLACK — Description: Cluster partition not yet initialized, cluster partition data error etc. Status: BLUE — Description: Both system active

B. When the mirror disk resource has a trouble:

```
Mirror Status: Abnormal
Total Difference: 1%

md1                server1             server2
-------------------------------------------------------------
Mirror Color       GREEN               RED
Lastupdate Time    2004/02/24 15:41:07 --
Break Time         2004/02/24 15:40:38 --
Disk Error         OK                  OK
Difference Percent 1%                  0%
```

* Item Description

Item name	Explanation
Mirror Status	Status mirror disk resource *1
Total Difference	Data difference that was merged among servers in percentage
Mirror Color	Status of a mirror disk in each server *1
Lastupdate Time	Time when data was last updated on server
Break Time	Time when mirror break occurred
Disk Error	Status of Disk I/O Status: OK — Description: Normal Status: ERROR — Description: Abnormal (I/O not possible) Status: -- — Description: Status unknown
Difference Percent	Data difference among each server in percentage.

*1 Refer to “A. When the mirror disk resource is normal:”

C. When mirroring is being recovered:

```
Mirror Status: Recovering

md1                server1             server2
-------------------------------------------------------------
Mirror Color       YELLOW              YELLOW

Recovery Status    Value
-----------------------------------------
Status:            Recovering
Direction:         server1 -> server2
Percent:           15%
Used Time:         00:00:21
Remain Time:       00:01:59
```

The items enclosed in a solid line are displayed by running ”clpmdctrl --view mirror disk resource name.”

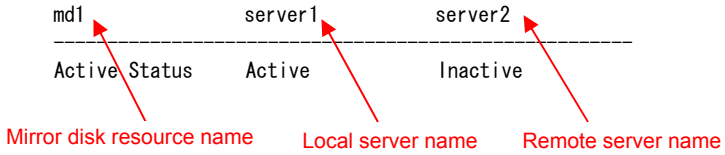
* Item description

Item name	Description
Mirror Status	Status of the mirror disk resource*1
Mirror Color	Status of a mirror disk each server*1
Status	Mirror recovery status Status: Preparing — Description: Preparing before copying. When the resource is started up during a recovery, and when I/O load is high, this status may continue for a long time. Status: Recovering — Description: Copying Status: Completing — Description: In the process after copy Status: Nothing — Description: Recovery being stopped
Direction	Mirror recovery copying direction Displayed by [Copy source server] -> [Copy destination server] Or [Copy destination server] <- [Copy source server]
Percent	The rate how much copy has completed against the amount of data copy is needed.
Used Time	Lapsed time since copying has started
Remain Time	The estimated time to complete copying the remain. Because the estimate is based on the copying speed of what has already been copied, the value may vary according to how heavily the server is loaded.

*1 Refer to “A. When the mirror disk resource is normal:”

(3) Mirror disk resource active status display

When the --active option is specified, active status of the specified mirror disk is displayed.



* Status of mirror partition device

Active Status	Explanation
Active	Active
Inactive	Inactive
--	Unknown status

(4) Mirror disk resource information display

When the --detail option is specified, configuration information of the specified mirror disk resource is displayed.

```
Mirror Name       : md1
Mount Option      : rw
File System Type  : ext3

Server Name       Mount Point       Disk Size(KB)     Device
------------------------------------------------------------------------
server1           /mnt/sdb5         513008            /dev/sdb5
server2           /mnt/sdb5         513008            /dev/sdb5
```

* Item description

Item name	Description
Mirror Name	Mirror disk resource name
Mount Option	Mount option
File System Type	File system type
Server Name	Server name
Mount Point	Mount point
Disk Size(KB)	Disk size
Device	Data partition device name

(5) Mirror disk resource list display

When the --list option is specified, a list of mirror disk resources is displayed. Whether or not the FastSync Option is installed is displayed as well.

```
FastSync Option : Installed

Mirror Name       Server Name       Mount Point
------------------------------------------------------
md1               server1           /mnt/sdb5
                  server2           /mnt/sdb5
md2               server1           /mnt/sdc5
                  server2           /mnt/sdc5
```

* Item Description

Item name	Description
FastSync Option	Usage of the FastSync Option Status: Installed — Product version or trial version is effective. Status: not installed — License is not registered or the trial version has expired. Status: unknown — Acquiring license information has failed. Check the expiration date of trial version and other information by using the clplcnsc command.
Mirror Name	Mirror disk resource name
Server Name	Server name
Mount Point	Mount point

(6) Mirror driver status display

When the --driver option is specified, the status of mirror driver is displayed.

```
Driver            server1           server2
------------------------------------------------------
Active Status     Active            Active
```

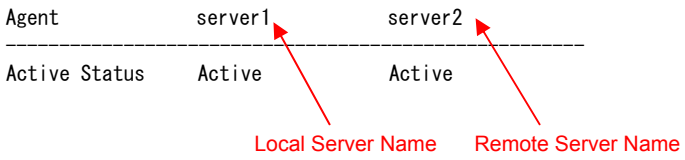
Local Server Name — Remote Server Name

* Driver Status

Active Status	Explanation
Active	Active
Inactive	Inactive
--	Status unknown

(7) Mirror agent status display

When the --agent option is specified, mirror agent status is displayed.



* Driver Status

Active Status	Explanation
Active	Active
Inactive	Inactive
--	Status unknown

9.2 Mirror Disk Resource Operation Command

clpmdctrl	Operates mirror disk resource.

Command Line
clpmdctrl --active *mirrordisk-alias*
clpmdctrl --active -nomount *mirrordisk-alias*
clpmdctrl --deactive *mirrordisk-alias*
clpmdctrl --force *recovery-source-servername mirrordisk-alias*
clpmdctrl --recovery *mirrordis -alias*
clpmdctrl --view *mirrordisk-alias*
clpmdctrl --cancel *mirrordisk-alias*
clpmdctrl --getreq
clpmdctrl --setreq *request-count*

Do not use the --active, and --deactive options when the ExpressCluster daemon is started up. Otherwise it may corrupt file system data.
Do not use this option for the purposes other than mentioned in a separate guide “Maintenance.”

Description Performs activation/deactivation of a mirror disk resource and mirror recovery.
Displays and modifies the settings of maximum number of request queues.

Option

--active	Activates the mirror disk resource on the local server. If mirror disk resource status is normal, mirroring is performed. If mirror disk resource status is not normal, mirroring will not be performed.
--deactive	Deactivates the active mirror disk resource on the local server.
--force	Forcefully performs mirror recovery of the specified mirror disk resource.
--recovery	Performs either full mirror recovery or differential mirror recovery for the specified mirror disk resource. Whether to perform full mirror recovery or differential mirror recovery is determined automatically.
--view	Displays recovery status of a mirror disk resource.

	--cancel	Cancels mirror recovery.
	--getreq	Displays the current maximum number of request queue.
	--setreq	Configures the maximum number of request queue. What you configure here returns to the value set in the cluster configuration information when server shuts down. To modify the cluster configuration information, use Trekking Tool. See a separate guide, “Trekking Tool” for details. It is only effective to the server for which command is run.
	-nomount	This option is used with the --active option. Allows access to mirror partition device without mounting the file system.
parameter	*recovery-source-servername*	Specify a copy source.
	mirrordiisk-alias	Specify a mirror disk resource name.
	request-count	Specify a maximum number of request queue. You can specify a number between 256 and 65535.

Return Value	0	Success
	Other than 0	Failure

Remarks

When the FastSync Option is not installed, the --recovery option performs full mirror recovery.

For information on the recovery status of the mirror disk resource, which is displayed by specifying the --view option, see information on the mirror recovery of the --mirror option in the clpmdstat command

Request-count which is displayed by specifying the --getreq option is the same as “Request Queue Maximum Number” which is displayed by the clpstat command.
clpstat --cl --detail

Notes

Run this command as a root user.

When performing forced mirror recovery only for the local server while the remote server is not running, specify the server that is forcefully mirror recovered as a copy source.

When performing mirror recovery again after mirror recovery failed, specify the same server for a copy source.

Examples of Execution

Example 1: When activating the mirror disk resource md1

```
# clpmdctrl --active md1
<md1@server1>: active successfully
```

Example 2: When deactivating the mirror disk resource md1

```
# clpmdctrl --deactive md1
<md1@server1>: deactive successfully
```

Example 3: When mirror recovering the mirror disk resource md1

```
# clpmdctrl --recovery md1
```

Example 4: When setting the maximum number of request queue to 2048

```
# clpmdctrl --setreq 2048
current I/O request count <2048>
```

Error Message

Message	Cause/Action to Take
Error: not super user	Log in as a root user.
Error: reading config file error	Reading the configuration file has failed. Check if the configuration file exists and it is configured correctly.
Error: mirror disk not exist	Finding the specified mirror disk resource has failed. Specify a valid mirror disk resource name.
Error: invalid mirror-alias	Specify a valid mirror disk resource name.
Error: failed to get server name	Acquiring the server name has failed. Check if configuration file is correct and the mirror agent is operating normally.
Error: server name not exist	Finding the specified server name has failed. Check if the entered server name exists in the configuration file.
Error: invalid server name	Specify a valid sever name.
Error: communication error	Communicating to the remote server has failed. Check if the mirror agent of the remote server is operating and the mirror disk connect is connected.
Error: remote mirror down	Communicating to the remote server has failed. Check if the mirror agent of the remote server is operating and the mirror disk connect is connected.
Error: get mirror status error	Acquiring mirror disk status has failed. Check if the mirror agent of the local server is operating normally.

Message	Cause/Action to Take
Error: get mirror index error	Check if the mirror agent is operating normally.
Error: the status of local mirror is abnormal	Status of the mirror disk resource of the local server is abnormal.
Error: this device is already active	The specified mirror disk resource is already active. Check the active status of the mirror disk resource using the following command. clpmdstat --active <alias>
Error: disk error	A hardware error occurred in the disk. Check the disk.
Error: disk size unmach	Data partition sizes of both servers do not match.
Error: device not mounted	The specified mirror disk resource is not active. Check the active status of mirror disk resource.
Error: mirror is not recovering	There is no mirror disk under mirror recovery.
Error: mirror(s) is recovering, please try again later	The mirror disk resource is under mirror recovery. Wait until mirror recovery is completed
Error: cancel-recovery is not be accepted	Canceling mirror recovery has failed. They system may be highly loaded. Wait for a while and retry.
Error: mirror need not recovery. please use option '--force' to force recovery	Mirror recovery has been performed on the mirror disk resource which is in normal status and not requiring mirror recovery. To perform forced mirror recovery, use “clpmdctrl --force.”
Error: last recovery failed, please change recovery direction and try again	The server you specified for a copy source is not valid. When performing the mirror recovery again after having failed mirror recovery, specify the same server that you specified last time for the failed mirror recovery for a copy source.
Error: the direction of recovery is not confirmed,please use "clpmdctrl –force" to try again	Forced mirror recovery is necessary. Use “clpmdctrl --force” and perform forced mirror recovery.
Error: recovery direction error	The server with older data is specified as a copy source. Specify correct recovery direction.
Error: mirror recovery status unknown	Acquiring mirror recovery status has failed. Restart the local server.
Error: local mirror and remote mirror both are not constructed	Initial mirror construction of mirror disk is necessary. Construct an initial mirror configuration using “clpmdctrl --force.”
Error: local mirror not constructed	Initial mirror construction is necessary for the mirror disk of the local server. Specify remote server as a copy source and construct initial mirror using “clpmdctrl --force.”

Message	Cause/Action to Take
Error: remote mirror not constructed	Initial mirror construction is necessary for the mirror disk of the remote server. Specify the local server as a copy source and construct initial mirror using “clpmdctrl --force.”
Error: mirror flag is error, please use "clpmdinit" to construct the mirror first	Cluster partition of the mirror disk resource is abnormal. When the server with error has the newest data, see a separate guide ”Maintenance,” and back up data, initialize cluster partition, and follow the same “disk replacement” steps using the same disk. If this occurs again, replace the disk having errors with a new disk.
Error: local mirror and remote mirror both active. Please shutdown one mirror first, and try again	Both systems are active. Perform cluster shutdown and after server reactivation, perform minor recovery.
Error: mirror agent is not running	Mirror agent is is not active. Check to see if mirror agent is active.
Error: system call error	Executing active/inactive system command has failed. Check if a search path is set as environmental variable.
Error: failed to create mount point	Creating a mount point has failed. Disk space may be insufficient. Check to see disk space.
Error: fsck timeout	Timeout occurred on active fsck. In case it is not the journaling file system, fsck may take time if data partition of the mirror disk is large. Set the longer timer for the fsck timeout using Trekking Tool.
Error: mount timeout	Timeout occurred on active mount. Set the longer timer for the mount timeout using Trekking Tool.
Error: umount timeout	Timeout occurred on inactive unmount. Set the longer timer for the unmount timeout using Trekking Tool.
Error: fsck failed	fsck has failed. The cause may be: unmatch of data partition file system time and configuration file, invalid fsck option or destroyed partition. Check.
Error: mount failed	Mount during activation has failed. The cause may be unmatch of data partition file system type and configuration in the configuration file or destroyed partition. Check.
Error: umount failed	Unmount during inactive has failed. Check to see if the file system on data partition is busy.
Error: activation is in process	The mirror disk is in the process of activation. Try after activation is completed.

Message	Cause/Action to Take
Error: set cluster partition flags failed	Forced recovery or activation of a standalone server has failed. Check to see if hardware error has occurred on disk.
Error: invalid request count	An invalid request queue maximum number has been entered. Check the range of numbers which can be specified.
Error: failed to set request count	Setting a request queue maximum number has failed. Restart the local server.
Error: failed to get request count	Acquiring a request queue maximum number has failed. Restart the local server.
Error: failed to get NMP path	Check if mirror agent is operating normally. Restart the local server.
Error: get mirror information error	Acquiring mirror configuration information has failed. Check if mirror agent is operating normally.
Error: failed to get mirror-disk information	Acquiring mirror disk configuration information has failed. Restart the local server.
Error: get local and remote mirror-disk information error	Acquiring mirroring disk configuration information of both servers has failed. Perform cluster shutdown and restart the both servers.
Error: get bitmap bit number failed!	Acquiring information on mirror difference on the cluster partition has failed. Perform cluster shutdown. If the error occurs again, replace the disk. See a separate guide, “Maintenance” for information on how to replace disks.
Error: bitmap bit number is invalid!	Mirror difference information in the cluster partition is invalid. Perform cluster shutdown. If the error occurs again, replace the disk. See a separate guide, “Maintenance” for information on how to replace disks.
Error: read local bitmap error	Reading mirror difference information of the local server has failed. Restart the local server.
Error: read remote bitmap error	Reading mirror difference information of the remote server has failed. Restart the remote server.
Error: get local bitmap information failed	Acquiring mirror difference of the local server has failed. Restart the local server.
Error: get device size error	Acquiring the disk space has failed. Perform cluster shutdown and restart the server.
Error: get remote device size error	Acquiring the disk space of the remote server has failed. Perform cluster shutdown and restart the server.
Error: operation on port error	Configuring cluster partition has failed. Restart the local server.
Error: set information error	Error occurred in the mirror disk resource status settings. Restart the local server.

Message	Cause/Action to Take
Error: create thread error	Creating thread has failed. Restart the local server.
Error: internal error(create process failed)	Creating the process has failed. Restart the local server.
Error: get semaphore error	Acquiring semaphore has failed. Restart the local server.
Error: malloc error	Reserving memory has failed. Restart the local server.
Error: local driver was not loaded	Mirror driver of the local sever is not loaded. See a separate guide, “Maintenance” and check the status
Error: internal error(errorcode: 0xxx)	Perform the cluster shutdown.

9.3 Mirror Disk Initialization Command

clpmdinit	Initializes a mirror disk.

Command Line
clpmdinit --create normal [mirrordiisk-alias]
clpmdinit --create quick [mirrordisk-alias]
clpmdinit --create force [mirrordissk-alias]

Generally you do not need to run this command when constructing or operating a cluster. Be cautious to run this command because it initializes the partition used for data.

Description
Performs initialization on the cluster partition of a mirror disk resource.
Creates a file system on the data partition of a mirror disk resource.

Option

--create normal	Initializes cluster partition and creates a file system of the data partition, if necessary. Whether or not necessary is determined according to the magic number, which ExpressCluster sets on cluster partition. Execution of the command with this option is generally not necessary.
--create quick	Initializes the cluster partition, if necessary. Whether or not necessary is determined according to the magic number, which ExpressCluster sets on cluster partition. Execution of the command with this option is generally not necessary.
--create force	Forcefully initializes cluster partition and creates a file system of the data partition. This option is used when using the disk which was already used as a mirror disk of ExpressCluster again.

Parameter

mirrordisk-alias	Specifies a mirror disk resource name. If this parameter is not specified, the process is performed on all mirror disk resources.

Return Value

0	Success
Other than 0	Failure

Remarks

Notes

If you run this command, the mirror disk will be initialized. Be cautious when using it.

Run this command as a root user.

Until this command returns control, do not run other command.

When running this command, make sure mirror agent in all servers in the cluster is deactivated.
* How to check
# /etc/init.d/clusterpro_md status

Example of Execution

Example 1: Forcefully initializing cluster partition because the disk used for the mirror disk resource md1 was used as a mirror disk of ExpressCluster

```
# clpmdinit --create force md1
mirror info will be set as default
the main handle on initializing mirror dsik <md1> success
initializing mirror disk complete
```

Error Message

Message	Causes/Action to Take
not super user	Log in as a root user.
agent running	Stop the mirror agent.
clpmdinit running!	This command is running. Run after the command is completed.
clpmdchng running!	The clpmdchng command is running. Run after the command is completed.
invalid mirror-alias	Specify a valid mirror disk resource name.
non- mirror-disk exists in config file	The mirror disk resource was not found. Configure a valid mirror disk resource.
Mirror-disk <%1> not exist	The specified mirror disk resource was not found. Specify a valid mirror disk resource name.
cluster partition not exist(<%1>)	Check to see if the cluster partition of the specified mirror disk resource exists.
cluster partition size is too small <mirror alias>	Check if the cluster partition size of the specified mirror disk resource is 10 Mbyte or larger.
internal error(open error <%1/%2>)	Cluster partition of the specified mirror disk resource does not exist or OS resource may be insufficient. Check.
internal error(<%1> cluster partition: unknownerror)	Initializing cluster partition has failed. Check to see if there is any hardware error on the disk.
internal error(<%1> cluster partition: flag)	Setting cluster partition has failed. Check to see if the cluster partition space is sufficient or a hardware error has not occurred on the disk.

Message	Causes/Action to Take
data partition not exist(<%1>) file: dppath	Check if the data partition of the specified mirror disk resource exists.
format device failed<%1> mirror<%2>: fstype<%3>	Initializing the data partition has failed. Check if the data partition of the specified mirror disk resource exists, hardware error has not occurred on the disk, and you have specified a file system supported by OS.
unknown error occur during formatting mirror-disk<%1>	Initializing the data partition has failed. Check if the data partition of the specified mirror disk resource exists or a hardware error has not occurred on the disk.
internal error(data partition can't open:<%1>) file:dppath	Initializing the data partition has failed. Check if the data partition of the specified mirror disk resource exists and OS resource is sufficient.
internal error(data partition check error---<%1>)	Initializing the data partition has failed. Check to see a hardware error has not occurred on the disk.
get mirror list info error	Acquiring the mirroring disk list has failed. Restart the local server.
internal error(write PID failed)	Memory or OS resource may be insufficient. Check memory and/or OS resource.
internal error(initialize failed)	Reading the configuration file or initializing the shared memory and semaphore has failed. Check to see if configuration file is correct and restart the local server.
internal error(terminate failed)	Releasing the shared memory has failed. Check if a system error has occurred while executing the program.
malloc error	Reserving memory has failed. Restart the local server.

9.4 Mirror Disk Change Command

clpmdchng	Initializes a replaced mirror disk.

Command Line
clpmdchng --execute *diskname*

Generally you do not need to run this command when constructing or operating a cluster.
Do not use the command for purposes other than mentioned in a separate guide “Maintenance.”
Be cautious to run this command because it initializes the partition used for data.

Description
Performs the initialization of a replaced mirror disk.
This command is used when the disk used for a mirror disk in the clustered system has a problem and is replaced by another disk.

Option

--execute	Performs the initialization of a replaced mirror disk.

Parameter

diskname	Specify a disk device name.

Return Value

0	Success
Other than 0	Failure

Remarks
See a separate guide, “Maintenance” for disk replacement procedures.

Notes
Run this command as a root user.

Until this command returns the control, please do not run other commands.

Make sure mirror agent is deactivated in all servers in the cluster when running this command.
* How to check
# /etc/init.d/clusterpro_md status

Example of Execution
Example 1: When having replaced a disk in failed disk device /dev/sdb

```
#clpmdchng   --execute /dev/sdb
mirror info will be set as default
the main handle on change disk success
```

Error Message

Message	Causes/Action to Take
not super user	Log in as a root user.
agent running	Stop the mirror agent.
clpmdchng running!	This command is running. Run after the command is completed.
clpmdinit running!	The clpmdinit command is running. Run after the command is completed.
non- mirror-disk exists in config file	The mirror disk resource was not found. Configure a valid mirror disk resource.
the disk number get from config file is invalid.	Mirror disk resource configuration information is invalid. Configure a valid mirror disk resource.
invalid device name	Specify a valid disk device name.
no mirror-disk on this disk	Specify a valid disk device name.
get disk info failed	Acquiring the disk information has failed. Check the configuration file.
unknown error occur during checking disk	Checking the disk device has failed. Check to see if the replaced disk is properly connected.
cluster partition not exist(<%1>)	Check if the cluster partition of the mirror disk resource exists in the replaced disk.
cluster partition size is too small <%1 >	Check if the cluster partition size of the mirror disk resource is 10 Mbyte or larger.
internal error(open error <%1/%2>)	Check cluster partition of the mirror disk resource exists and OS resource is enough.
internal error(<%1> cluster partition: unknownerror)	Initializing the cluster partition has failed. Check if there is any hardware error on the disk.
internal error(<%1> cluster partition: flag)	Setting cluster partition has failed. Check to see if the cluster partition space is sufficient or a hardware error has not occurred on the disk.
data partition not exist(<%1>) file: dppath	Check if the data partition of the mirror disk exists.
format device failed<%1> mirror<%2>: fstype<%3>	Initializing the data partition has failed. Check if the data partition of the specified mirror disk resource exists, hardware error has not occurred on the disk, and you have specified a file system supported by OS.
unknown error occur during formatting mirror-disk<%1>	Initializing the data partition has failed. Check if the data partition of the specified mirror disk resource exists or a hardware error has not occurred on the disk.
internal error(data partition cann't open:<%1>) file:dppath	Initializing the data partition has failed. Check if the data partition of the specified mirror disk resource exists and OS resource is sufficient.
internal error(data partition check error---<%1>)	Initializing the data partition has failed. Check to see a hardware error has not occurred on the disk.
get mirror list info error	Acquiring the mirroring disk list has failed. Restart the local server.

Message	Causes/Action to Take
internal error(write PID failed)	Memory or OS resource may be insufficient. Check memory and/or OS resource.
internal error(initialize failed)	Reading the configuration file or initializing the shared memory and semaphore has failed. Check to see if configuration file is correct and restart the local server.
internal error(terminate failed)	Releasing the shared memory has failed. Check if a system error has occurred while executing the program.
malloc error	Reserving memory has failed. Restart the local server.