Caching Services Module Commands

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cluster name

To perform operations on a previously-configured cluster, use the **cluster name** command in SVC configuration mode.

cluster name *cluster-name* **flash-copy** *fc-grp-name* [**prepare** | **start** | **stop**]
cluster name *cluster-name* **remote-copy** *rc-grp-name* {**failover** | **start** [**aux** | **clean** | **force**] | **stop** **aux-enable**}
cluster name *cluster-name* **shutdown** [**node** *node-name*]
cluster name *cluster-name* **start discovery**
cluster name *cluster-name* **upgrade svc-system force**

Syntax Description

cluster	Provides access to cluster commands
name *cluster-name*	Identifies a previously created cluster to perform an operation.
flash-copy *fc-grp-name*	Specifies a previously-configured FlashCopy relationship.
prepare	Prepares the FlashCopy consistency group.
start	Starts the FlashCopy for the specified cluster. Starts the background copy for the specified remote copy group
stop	Stops the FlashCopy for the specified cluster. Stops the remote copy relationships for the specified remote copy group.
remote-copy *rc-grp-name*	Specifies the remote copy consistency group name.
failover	Reverses to using the auxiliary VDisks for the specified relationship.
shutdown	Shuts down the entire cluster (gracefully).
node *node-name*	Specifies a particular node for a graceful shutdown.
start discovery	Starts the background copy for the specified remote copy group.
aux	Makes the auxiliary VDisks as primary.
clean	Marks the intended secondary VDisks as clean.
upgrade svc-system	Upgrades the specified cluster. The new version of the software image is specified to the FTP:, SCP:, SFTP:, TFTP:, bootflash:, or slot0: directories
force	Permits the remote copy operation to start—even if it leads to the loss of data consistency between the primary and secondary.
aux-enable	Enables write access o the secondary (or auxiliary) VDisks.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example enters the SVC configuration mode and displays all options under the **cluster name** command.

```
switch# svc-config
switch(svc)# cluster name SampleCluster ?
  flash-copy   Flash-copy
  remote-copy  Remote copy
  shutdown     Shutdown
  start        Start discovery
  upgrade      Upgrade uri
switch(svc)# cluster name SampleCluster flash-copy f1 prepare
switch(svc)# cluster name SampleCluster flash-copy f1 start
switch(svc)# cluster name SampleCluster flash-copy f1 stop

switch(svc)# cluster name SampleCluster remote-copy f1 failover
switch(svc)# cluster name SampleCluster remote-copy f1 start
switch(svc)# cluster name SampleCluster remote-copy f1 stop

switch(svc)# cluster name SampleCluster shutdownn
switch(svc)# cluster name SampleCluster shutdown node svc2/1
switch(svc)# cluster name SampleCluster start discovery
switch(svc)# cluster name SampleCluster upgrade svc-system
bootflash:m9000-ek9-csm-svc_mz.1.3.1.bin
```

cluster config

To manage cluster configurations on a specified cluster, use the **cluster config** configuration submode.

cluster config *cluster-name*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode (switch(svc-cluster)#).

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example enters the SVC configuration mode and adds a cluster called SampleCluster.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)#
```

Related Commands

Command	Description
show cluster	Displays configured cluster information.

cluster add

To create a cluster with a specified SVC node, use the **cluster add** command in SVC configuration mode.

cluster add *cluster-name* **ip** *ip-address* **node svc** *slot-number/node-number*

Syntax Description

cluster	Provides access to cluster commands
add *cluster-name*	Specifies a new cluster addition. The cluster name must start with an alphabet and is restricted to 15 alphanumeric characters, including dash (-) and underscore (_). The cluster name cannot be Cluster*X*, where *X* is a number.
ip *ip-address*	Specifies the IP address of the specified cluster. The IP address must be in the same subnet as the switch management IP address.
node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Enter this command while connected to the switch management IP address of a node at which the cluster is being created.

Examples

The following example enters the SVC configuration mode, verifies the status of previously-configured clusters, and adds a cluster called SampleCluster.

```
switch# svc-config
switch(svc)# show nodes local
--------------------------------------------------------------------------------
Node             cluster          config   cluster      node            sw
                                  node     status       status          version
--------------------------------------------------------------------------------
svc2/1                            No       unconfigured free            1.3(1)
svc2/2                            No       unconfigured free            1.3(1)
switch(svc)# cluster add SampleCluster ip 10.10.0.1 node svc 2/1
cluster creation going on. Please wait....
```

The status of the newly-added cluster can be verified using the **show nodes local** command.

```
switch(svc)# show nodes local
--------------------------------------------------------------------------------
Node    cluster     config  cluster    node    sw
        node  status    status    version
```

```
--------------------------------------------------------------------------------
svc2/1    SampleCluster      Yes  active    active   1.3(1)
svc2/2         No  unconfigured    free   1.3(1)
```

Related Commands

Command	Description
show nodes local	Displays the cluster name and status for all nodes in the switch.

feature enable

To enable a specified feature in a cluster, use the **feature enable** command in the cluster configuration submode.

cluster config *cluster-name*
feature enable {**capacity** *number* | **flash-copy** | **remote-copy**}

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
feature enable	Enables a specified feature on this cluster. Three features can be enabled: **capacity**, flash-copy, or remote-copy
capacity	Configures the virtualization capacity of this cluster.
number	Provides a range from 1- 1677215 Gigabytes.
flash-copy	Enables the flash-copy feature for this cluster.
remote-copy	Enables the remote-copy feature for this cluster.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

By default, flash-copy and remote-copy are disabled and 0 (zero) GB of virtualization capacity is enabled.

Examples

The following example enters the cluster configuration submode for the SampleCluster cluster and assigns a size of 4000 Gigabytes. The next two commands enables the flash-copy and remote-copy features for this cluster.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# feature enable ?
  capacity     Cluster enable feature capacity
  flash-copy   Cluster enable feature flash-copy
  remote-copy  Cluster enable feature remote-copy
switch(svc-cluster)# feature enable capacity ?
  <0-2147483647>  Enter the capacity
switch(svc-cluster)# feature enable capacity 4000
switch(svc-cluster)# feature enable flash-copy
switch(svc-cluster)# feature enable remote-copy
```

Related Commands

Command	Description
show cluster *name* **flash-copy**	Displays configured flash-copy information for a specified cluster.
show cluster *name* **remote-copy**	Displays configured remote copy information for a specified cluster.

flash-copy

To create a snapshot (or point-in-time copy) of a specified VDisk or group of VDisks, use the **flash-copy** command in the cluster configuration submode.

cluster config *cluster-name*
flash-copy add *fcopy-name*
{**flash-copy name** *fcopy-name* **map src-vdisk** *vdisk-name* **dst-vdisk** *vdisk-name* | [**mode copy-on-write** | **full rate** *rate*]}
flash-copy rename *old-name* **newname** *new-name*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
flash-copy add *fcopy-name*	Creates a FlashCopy instance.
flash-copy *fcopy-name*	Enters the FlashCopy submode for an existing copy name.
map	Creating a mapping between the source and destination VDisks.
src-vdisk *vdisk-name*	Specifies the source VDisk for the flash copy.
dst-vdisk *vdisk-name*	Specifies the destination VDisk for the flash copy.
mode	Controls the FlashCopy mode.
copy-on-write	Copies to the source VDisk only if new information in written to it after FlashCopy is initiated (default).
full rate *rate*	Specifies the background copy rate (ranges from 1 to 100) at which the source VDisk is copied to the destination VDisk even if no new information is written to the source.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#.

The flash-copy submode prompt is switch(svc-cluster-flash-copy)#.

Examples

The following example enters the enters the cluster configuration mode for the SampleCluster 1 cluster.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# flash-copy f2
switch(svc-cluster-flash-copy)# ?
```

```
Submode Commands:
  exit  Exit from this mode
  map   Flash-copy map
  mode  Flash-copy mode
  no    Negate a command or set its defaults
switch(svc-cluster-flash-copy)# map src-vdisk VDISK1 dst-vdisk DDISK1
switch(svc-cluster-flash-copy)# mode copy-on-write
switch(svc-cluster-flash-copy)# exit
switch(svc-cluster)# flash-copy add FlashC2
switch(svc-cluster)# exit
switch(svc)# show SampleCluster flash-copy
------------------------------------------------------------------------------
name             status
------------------------------------------------------------------------------
fccstgrp0        idle_or_copied
f2               idle_or_copied
switch(svc)# show SampleCluster flash-copy f2
Flash-copy mapping 1:
    src vdisk is v2
    dest vdisk is v3
    state is idle_or_copied
    copy rate is 50
    progress 0% done
```

Related Commands

Command	Description
show SampleCluster *name* **flash-copy**	Displays configured flash-copy information for a specified SampleCluster.

host

To create or configure hosts, use the **host** command in the cluster configuration submode.

cluster config *cluster-name*
host add *host-name* **hostport** *port-wwn*
{**host name** *host-name* **hostport** *port-wwn* | **map vdisk** *vdisk-name* [**SCSI-lun** *lun-number*]}

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
host add *host-name*	Creates a host with one port and assigns the host name.
hostport *port-wwn*	Specifies a port using the port WWN
host name *host-name*	Enters the host submode for an existing host name.
map	Maps a previously configured disk to this host.
vdisk *vdisk-name*	Specifies the VDisk to be mapped to the host.
SCSI-lun *lun-number*	Specifies a LUN to map the host port. If the LUN number is not specified, the next available number is assigned automatically.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The host submode prompt is switch (svc-cluster-host)#

Examples

The following example enters the cluster configuration mode for SampleCluster and creates a host called Host 1with one port, adds a second port, and maps the VDisk for Host1, and verifies the configured information for Host1.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# host add Host1 hostport 11:22:33:44:aa:bb:cc:dd
switch(svc-cluster)# host Host1
switch(svc-cluster-host)# ?
Submode Commands:
  exit      Exit from this mode
  hostport  Add pWWN to host
  map       Map vdisk to host
  no        Negate a command or set its defaults
switch(svc-cluster-host)# hostport 22:11:33:55:11:aa:bb:cc
switch(svc-cluster)# host add Host1 hostport 35:66:11:22:aa:bb:22:cc
switch(svc-cluster)# host Host1
```

```
switch(svc-cluster-host)# hostport 35:66:11:22:aa:bb:22:11
switch(svc-cluster-host)# map vdisk Vdisk1
switch(svc-cluster-host)# map vdisk Vdisk1 ssci-lun 10
```

Related Commands

Command	Description
show cluster *name* **host**	Displays configured host information for a specified cluster.

install module node

To install the SVC node image, use the **install module node** command.

install module *module-number* **node** *node-number* **image svc-system** [**bootflash: | slot0: | ftp: | sftp: | scp: |** *svc-image*]

Syntax Description

install module	Installs the specified image for the CSM.
module-number	Switching modules:From slot 1 to 4 and 7 to 9 in a Cisco MDS 9500 Series switch.For slot 2 in a Cisco MDS 9200 Series switch. Supervisor modules:Slot 5 or 6—only on the active supervisor module in a Cisco MDS 9500 Series switch.Slot 1—upgrades both the supervisor and switching parts of the module in a Cisco MDS 9200 Series switch.
node	Selects the SVC node to install the image.
node-number	Specifies the node number.
image svc-system	Specifies the file name of an SVC image.
bootflash:	Source location for internal bootflash memory
ftp	URI containing SVC Image.
scp	URI containing SVC Image.
sftp	URI containing SVC Image.
tftp	URI containing SVC Image.
slot0:	Source location for the CompactFlash memory or PCMCIA card.
svc-image	The name of the SAN Volume Controller (SVC) image.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(3).

Usage Guidelines

The **install module** *module-number* **node** command installs the new image in the specified node on the CSM module. All previous data in that node is lost.

Examples

The following example shows how to install a new image on an SVC node.

```
switch# install module 2 node 1 image svc-system
scp://root@172.22.93.174/auto/isan-src/MAIN_1_3_0_17t/VegasSW/build/gdb.sb-svc/isan/targetfs/sb-svc.bin
SVC reimage going on. Please wait
```

```
root@172.22.93.174's password:
sb-svc.bin        100% |****************************| 45408 KB    00:53
svc 2/1 software reimage succeeded
```

Related Commands

Command	Description
show version compatibility	Shows the system software that is currently running on the switch

interface svc

To configure a SAN Volume Controller (SVC) interface on the Cisco MDS 9000 Family of switches, use the **interface svc** command.

interface svc *slot_number/node-number*
interface svc *slot_number/node-number* **initiator | mgmt | nwwn** *nwwn-id* **target vsan** *vsan-id*
interface svc *slot_number/node-number* **[switchport description | shutdown]**

Syntax Description

interface	Configures a new interface.
svc	Specifies the new interface to be a SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
initiator	Configures the initiator or port in the specified VSAN.
mgmt	Configures the management or port in the specified VSAN.
target	Configures the target or port in the specified VSAN.
vsan *vsan-id*	Specifies the VSAN ID ranging from 1 to 4093.
shutdown	Enables or disables an interface.
nwwn *nwwn-id*	Configured a non-system allocated nWWN for SVC Node.
switchport description	Assigns a description to the switchport. Restricted to 80 alphanumeric characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

By default, all three N-port types (initiator, mgmt, and target) are in VSAN 1. Explicitly remove it from VSAN 1 if this is not required by your network.

The VSAN number can be any number from 1 to 4096. Only 64 VSANs for all initiator/mgmt/target are allowed (meaning, you can have initiator in VSANs 1-30, target in VSANs 31-60, and mgmt in VSANs 61-64). If the target, initiator, and mgmt overlap in VSANs, each overlap is also included in the total VSAN count.

A mgmt N-port can only exist in 4 of these 64 VSANs.

You can specify a range of interfaces by issuing a command with the following example format:

interface **svc 1/1** *space* **,** *space* **svc 2/1-2**

This command configures Slot 1 Node 1 as an SVC interface and simultaneously configures Slot 2, Nodes 1and 2 as SVC interfaces.

Place the disk, host, and other SVC nodes in the appropriate VSAN for any configuration to be completely established

Examples

The following example configures the initiator N-port on VSAN 1, the target N-port on VSAN 2, and the management N-port on VSAN 3.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface svc 2/1
switch(config-if)# ?
Interface configuration commands:
 do          EXEC command
 exit        Exit from this submode
 initiator   Configure Initiator traffic for SVC Node
 mgmt        Configure traffic for communication with other SVC Nodes
 no          Negate a command or set its defaults
 nwwn        Configured a non-system allocated nWWN for SVC Node
 shutdown    Enable/disable an interface
 switchport  Configure switchport parameters
  target      Configure Target traffic for SVC Node
switch(config-if)# initiator vsan 1
switch(config-if)# target vsan 2
switch(config-if)# mgmt vsan 3
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

iogroup

To assign a name to I/O groups, use the **iogroup** command in the cluster configuration submode. Use the **no** form of this command to delete the configured I/O group alias.

cluster config *cluster-name*
iogroup *group-id* **alias** *alias-name*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
iogroup *group-id*	Identifies one of four I/O groups in the specified cluster. The ID ranges from 1 to 4.
alias *alias-name*	Assigns a name to the selected I/O group. The name is restricted to 15 alphanumeric characters.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The **no iogroup** command deletes the alias name, not the I/O group itself.

The cluster configuration submode prompt is (switch(svc-cluster)#).

Examples

The following example enters the cluster configuration mode for SampleCluster and configures a new I/O group. The created group is verified using the **show cluster** *name* **iogroup** command

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# iogroup 1 alias SampleIOgroup
switch(svc-cluster)# exit
```

Related Commands

Command	Description
show cluster *name* **iogroup**	Displays configured I/O group information for a specified cluster.

ip

To modify the IP address for a cluster, use the **ip** command in the cluster configuration submode.

cluster config *cluster-name*
ip *ip-address*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submodes.
ip *ip-address*	Specifies the IP address of the cluster.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The IP address of the cluster can be changed, but not deleted. If you connect using the current cluster IP address, that session is lost when the command completes. You must then reconnect using the new IP address.

The **no** form of this command is not allowed.

The cluster configuration submode prompt is (switch(svc-cluster)#).

Examples

The following example enters the cluster configuration mode for SampleCluster, configures the IP address, and verifies by displaying this information

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# ip 209.165.200.226
switch(svc)# show cluster SampleCluster ip
cluster ip address is 209.165.200.226
```

Related Commands

Command	Description
show cluster *name* **ip**	Displays configured -- information for a specified cluster.

mdisk-grp

To create and configure a mdsik group, use the **mdisk-grp** command in the cluster configuration submode.

cluster config *cluster-name*
mdisk-grp add *grp-name* **extent** *size*
mdisk-grp name *grp-name* **--> mdisk id** *mdisk-id*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
mdisk-grp add*grp-name*	Adds a mdisk group.
extent *size*	Assigns the extent size of the storage allocation for MDisks in this cluster. The extent size can be 16, 32, 64, 128, 256, or 512 MB.
mdisk-grp name *grp-name*	Enters the mdisk submode of an existing MDisk group.
mdisk id *mdisk-id*	Assigns the disk ID ranging from 1 to 4096 to the mdisk in the MDisk group submode.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The submode prompt for the MDisk group is switch (svc-cluster-mdisk-grp)#

Examples

The following example enters the cluster configuration mode for SampleCluster, creates an MDisk group, and adds an MDisk to the group.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# mdisk-grp add Mdisk1 extent 512
switch(svc-cluster)# mdisk-grp name Mdisk1
switch(svc-cluster-mdisk-grp)# mdisk id 3
switch(svc)# show cluster SampleCluster mdisk-grp
--------------------------------------------------------------------------------
name             Capacity      free     extent   number    number    status
                                        size(MB) of mdisks of vdisks
--------------------------------------------------------------------------------
finance          7.56 GB       7.56 GB  16       5
        0         online
marketing        6.48 GB       6.48 GB  16       5
         0         online
```

Related Commands

Command	Description
show cluster *name* **mdisk**	Displays configured MDisk group information for a specified cluster.

migrate vdisk

To configure data migration from a VDisk, use the **migrate vdisk** command in the cluster configuration submode.

cluster config *cluster-name*
migrate vdisk *vdisk-name* **new-mdisk-grp** *grp-name*
migrate vdisk *vdisk-name* **src-mdisk id** *mdisk-id* **num-extents** *number* **tgt-mdisk id** *mdisk-id*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
migrate vdisk *vdisk-name*	Migrates data from the specified VDisk to a MDisk or MDisk group.
new-mdisk-grp *grp-name*	Migrates data to a newly specified MDisk group.
src-mdisk id *mdisk-id*	Specifies the source MDisk for data migration.
num-extents *number*	Specifies the extents of a VDisk for data migration.
tgt-mdisk id *mdisk-id*	Specifies the target MDisk for data migration.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

Examples

The following example enters the cluster configuration mode for SampleCluster, migrates a VDisk to a new MDisk group.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# migrate vdisk Vdisk2 new-mdisk-grp Group5
switch(svc-cluster)# migrate vdisk Vdisk2 src-mdisk id 3 num-extents 2 tgt-mdisk id 4
```

Related Commands

Command	Description
show cluster *name* **status migrate**	Displays configured MDisk migration status information for a specified cluster.

node

To add a node to a cluster or to assign a name to a preconfigured node, use the **node** command in the cluster configuration submode.

cluster config *cluster-name*
node name *node-name*
node nwwn *node-wwn*
node iogroup *group-id* [**alias** *alias-name*]

Syntax Description

cluster config	Provides access to cluster commands
node	Adds a specified node to the cluster being configured.
name *node-name*	Specifies the node using a 15 alphanumeric characters.
nwwn *node-wwn*	Specifies the node using the nWWN with the format hh:hh:hh:hh:hh:hh:hh:hh.
iogroup *group-id*	Identifies one of four I/O groups in the specified cluster. The ID ranges from 1 to 4.
alias *alias-name*	Assigns a name to the selected node. The name is restricted to 156 alphanumeric characters.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The node must first be added before assigning an alias name.

The no form of the command deletes the node from the cluster.

Examples

The following example enters the cluster configuration mode for SampleCluster, adds a node by assigning the nWWN, and associates the node with an alias.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# node nwwn 20:00:00:04:cf:e6:e4:df iogroup 1
switch(svc-cluster)# node nwwn 20:00:00:04:cf:e6:e4:df alias NodeAlias
```

Related Commands

Command	Description
show cluster *name* **nodes**	Displays configured node information for a specified cluster.

node svc delete

To delete all cluster configurations from a specific node, use the **node svc delete** command in SVC configuration mode.

node svc *slot-number/node-number* **delete**

Syntax Description

node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
delete	Deletes a cluster information from the specified node.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Use this command if the node has lost communication with a configured cluster.

Examples

The following example enters the SVC configuration mode and adds a cluster called SampleCluster.

```
switch# svc-config
switch(svc)# node svc 2/1 delete
```

Related Commands

Command	Description
show nodes local	Displays configured node information.

node svc recover

To initiate cluster recovery on a specified SVC node, use the **recover cluster** command in SVC configuration mode.

node svc *slot-number/node-number* **recover**

Syntax Description

node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
recover	Initiates recovery for a specified node.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Use this command to initiate cluster recovery after a failure. If the output of the **show nodes local** command displays recovery pause in the node status column.

Examples

The following example initiates recovery for the SVC node 1 in slot 2.

```
switch# svc-config
switch(svc)# node svc 2/1 recover
```

Related Commands

Command	Description
show nodes local	Displays configured node information.

node svc servicemode

To place a node in service mode, use the **servicemode node svc** command in SVC configuration mode. Use the **no** form of the command to remove a node from service mode.

node svc *slot-number/node-number* **servicemode**

Syntax Description

node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
servicemode	Places a node in service mode.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example enters the SVC configuration mode and places the specified node in service mode.

```
switch# svc-config
switch(svc)# node svc 2/2 servicemode
```

Related Commands

Command	Description
show nodes local	Displays configured node information.

node svc upgrade

To upgrade the software on a specified SVC node, use the upgrade node svc command in SVC configuration mode.

node svc *slot-number/node-number url* **upgrade svc-system** *url*

Syntax Description

node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
upgrade	Upgrades the image on the specified node.
svc-system *url*	Specifies the SVC image to be used. The new version of the software image is specified to the FTP:, SCP:, SFTP:, TFTP:, bootflash:, or slot0: directories

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

This command is valid only if the node is in service mode or the node has been shutdown.

Examples

The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc-config
switch(svc)# node svc 2/1 upgrade svc-system ?
  bootflash:  URI containing the system image for SVC
  ftp:        URI containing the system image for SVC
  scp:        URI containing the system image for SVC
  sftp:       URI containing the system image for SVC
  slot0:      URI containing the system image for SVC
  tftp:       URI containing the system image for SVC
```

quorum

To set the quorum disk for a cluster, use the **quorum** command in the cluster configuration submode.

cluster config *cluster-name*
quorum disk [**1** | **2** | **3**] **mdisk** *disk-id*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
quorum disk *id*	Configures one of three quorum disks for the specified cluster. The quorum ID ranges from 1 to 3.
mdisk *mdisk-id*	Specifies the MDisk ID (ranges form 1 to 4096).

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

You can assign one of 3 possible quorum IDs in any desired order.

Examples

The following example enters the cluster configuration mode for SampleCluster and sets the quorum disk ID.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# quorum disk 2 mdisk 1
```

remote-copy

To create a synchronous copy of a specified VDisk or group of VDisks, use the **remote-copy** command in the cluster configuration submode.

cluster config *cluster-name*
remote-copy add *rcopy-name* [**cluster** *rcluster-name*]
remote-copy *rcopy-name* **map src-vdisk** *vdisk-name* **aux-vdisk** *vdisk-name*

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
remote-copy add *rcopy-name*	Creates a remote copy instance and assigns a name.
remote-copy cluster *rcluster-name*	Specifies the remote cluster name for the consistency group.
remote-copy *rcopy-name*	Enters the remote-copy submode for an existing copy object.
map	Establishes a relationship between the source and destination VDisks.
src-vdisk *vdisk-name*	Specifies the source VDisk for the copy creation.
aux-vdisk *vdisk-name*	Specifies a VDisk in the remote copy cluster.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The remote-copy submode prompt is switch(svc-cluster-remote-copy)#

Examples

The following example enters the cluster configuration mode for SampleCluster and creates a synchronous copy of a specified disk.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# remote-copy add Rcopy1
switch(svc-cluster)# remote-copy r1
switch(svc-cluster-remote-copy)# ?
Submode Commands:
  exit  Exit from this mode
  map   Remote-copy map
  no    Negate a command or set its defaults
switch(svc-cluster-remote-copy)# map src-vdisk SrcVdisk1 aux-vdisk AuxVdisk1
switch(svc-cluster)# remote-copy add Rcopy1 cluster remote-cluster
switch(svc-cluster)# remote-copy name Rcopy1
```

Related Commands

Command	Description
show cluster *name* **remote-copy**	Displays configured remote-copy information for a specified cluster.

show cluster flash-copy

To display configured FlashCopy information for a specified cluster, use the **show cluster** *cluster-name* **flash-copy** command.

show cluster *cluster-name* **flash-copy** [*fcopy-name*]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
flash-copy *fcopy-name*	Displays FlashCopy relationships configured for the specified FlashCopy object.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster information.

```
switch(svc)# show cluster SampleCluster flash-copy
--------------------------------------------------------------------------------
name             status
--------------------------------------------------------------------------------
fccstgrp0        idle_or_copied
f2               idle_or_copied
switch(svc)# show cluster SampleCluster flash-copy f2
Flash-copy mapping 1:
    src vdisk is v2
    dest vdisk is v3
    state is idle_or_copied
    copy rate is 50
    progress 0% done
```

show cluster host

To display configured host information for a specific cluster, use the **show cluster** *cluster-name* **host** command.

show cluster *cluster-name* **host** [*host-name* | **candidate**]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
host	Displays information about hosts and host ports.
candidate	Lists all candidates that are not part of this entity but are visible to the cluster.
host-name	Displays information about the specified host.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster host information.

```
switch(svc)# show SampleCluster host
-------------------------------------------------------------------------------
name             number of ports
-------------------------------------------------------------------------------
oasis15          1
Host1            2
switch(svc)# show SampleCluster host Host1
host Host1:
    Number of port is 2
    Port WWN is 11:22:33:44:aa:bb:cc:dd
    Port WWN is 22:11:33:55:11:aa:bb:cc
 LUN 0:   vdisk V1
 LUN 10: vdisk V2
switch(svc)# show cluster SampleCluster host candidate
-------------------------------------------------------------------------------
id       pwwn
-------------------------------------------------------------------------------
1        21:00:00:e0:8b:09:e7:04
```

show cluster iogroup

To display configured I/O group information for a specified cluster, use the **show cluster** *cluster-name* **iogroup** command.

show cluster *cluster-name* **iogroup** [*group-id*]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
iogroup	Identifies one of four I/O groups in the specified cluster.
group-id	Specifies the iogroup ID (ranges from 1 to 4).

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster iogroup information.

```
switch(svc)# show SampleCluster iogroup
-------------------------------------------------------------------------------
ID   NAME                             NODE-COUNT       VLUN_COUNT
-------------------------------------------------------------------------------
1    Sampleio1                        2                3
2    io_grp1                          0                0
3    io_grp2                          0                0
4    io_grp3                          0                0
5    recovery_io_grp                  0                0
```

Note Only four IDs can be used, the fifth I/O group is internally created and is only used for cluster recovery.

```
switch(svc)# show SampleCluster iogroup id 2
Io group id 2:
    Node count is 0
    Host LUN count is 0
    Contains no nodes
```

show cluster ip

To displays configured ip information for a specified cluster, use the **show** *cluster-name* **ip** command.

show cluster *cluster-name* **ip**

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
ip	Displays the IP address of the specified cluster.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays configured cluster ip information.

```
switch(svc)# show SampleCluster ip
cluster ip address is 209.165.200.226
```

show cluster mdisk

To display configured MDisk information for a specified cluster, use the **show cluster** *cluster-name* **mdisk** command.

show cluster *cluster-name* **mdisk** {**candidate** | **id** *mdisk-id* [**extent**]}

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
mdisk	Displays MDisk specific information.
candidate	Displays all MDisks that are not assigned to a group.
id *mdisk-id*	Displays details of the specified MDisk ID.
extent	Displays information about the specified MDisk's extent.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster MDisk information.

```
switch(svc)# show SampleCluster mdisk
-------------------------------------------------------------------------------
id       nwwn                   mdisk-grp       capacity      status
-------------------------------------------------------------------------------
1        20:00:00:04:cf:e6:1b:5b mg1             68.37 GB      online
2        20:00:00:04:cf:e6:e5:32 mg1             68.37 GB      online
3        20:00:00:04:cf:e6:21:a2 mg1             68.37 GB      online
4        20:00:00:04:cf:e6:e1:81 mg1             68.37 GB      online
5        20:00:00:04:cf:e6:e4:df                 68.37 GB      online
6        20:00:00:04:cf:e6:1c:fb                 68.37 GB      online
7        20:00:00:04:cf:e6:1a:4c                 68.37 GB      online
8        20:00:00:04:cf:e6:e4:6b                 68.37 GB      online
switch(svc)# show SampleCluster mdisk candidate
-------------------------------------------------------------------------------
id       nwwn                   capacity
-------------------------------------------------------------------------------
5        20:00:00:04:cf:e6:e4:df 68.37 GB
6        20:00:00:04:cf:e6:1c:fb 68.37 GB
7        20:00:00:04:cf:e6:1a:4c 68.37 GB
8        20:00:00:04:cf:e6:e4:6b 68.37 GB
switch(svc)# show cluster SampleCluster mdisk id 1
mdisk id 1 is online
   Is member of mdisk-grp mg1
   Controller node WWN is 20:00:00:04:cf:e6:e4:6b
   Controller port WWN is 22:00:00:04:cf:e6:e4:6b, LUN 00:00:00:00:00:00:00:00
   Controller serial number is 3HZ0KZ8W
```

```
   Capacity is 68.37 GB
   Number of free extents is 2231
switch(svc)# show cluster SampleCluster mdisk id 1 extent
--------------------------------------------------------------------------------
vdisk            number of extents
--------------------------------------------------------------------------------
v1              2144
```

show cluster mdsik-grp

To display configured MDisk group information for a specified cluster, use the **show cluster** *cluster-name* **mdisk-grp** command.

show cluster *cluster-name* **mdisk-grp** [*grp-name*]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
mdisk-grp *grp-name*	Displays information about a specified MDisk group.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster information for a MDisk group.

```
switch(svc)# show cluster SampleCluster mdisk-grp
-------------------------------------------------------------------------------------
name    Capacity    free   extent      number       number       status
                                                   size(MB)    of mdisks    of vdisks
-------------------------------------------------------------------------------------
mg1     410.16 GB    309.16 GB   16   6   1    online
switch(svc)# show cluster SampleCluster mdisk-grp mg1
mdisk-grp mg1 is online
   Total capacity is 410.16 GB
   Free capacity is 309.16 GB
   Extent size is 16 MB
   Number of mdisks is 6
   Number of vdisks using this group is 1
```

show cluster nodes

To display configured node information for a specified cluster, use the **show cluster** *cluster-name* **nodes** command.

show cluster *cluster-name* **nodes** [**candidate**]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
nodes	Displays information about nodes in this cluster.
candidate	Lists all candidates that are not part of this entity but are visible to the cluster.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays configured cluster information for a specified node.

```
switch(svc)# show cluster SampleCluster nodes
Node node1 is online(3)
    Node WWN is 20:06:00:0b:be:57:73:42
    Serial number is JAB072705JH
    Unique id is 01:00:07:27:30:35:4a:48
    Node is in config mode
    Node is part of iogroup id 1 name io_grp0
Node node2 is online(3)
    Node WWN is 20:08:00:0b:be:57:73:42
    Serial number is JAB076605JH
    Unique id is 01:00:07:66:30:35:4a:48
    Node is in non config mode
    Node is part of iogroup id 1 name io_grp0
switch1(svc)# show cluster SampleCluster nodes candidate
--------------------------------------------------------------------------------
NODE                              NWWN
--------------------------------------------------------------------------------
switch1.2.1                  20:06:00:05:30:00:8d:e0
```

show cluster remote-copy

To display configured remote-copy information for a specified cluster, use the **show cluster** *cluster-name* **remote-copy** command.

show cluster *cluster-name* **remote-copy** [*rcopy-name*]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
remote-copy	Displays remote copy relationships configured for a specified cluster.
rcopy-name	Displays the specified remote copy object.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays configured cluster information for the specified copy instance.

```
switch(svc)# show cluster SampleCluster remote-copy r1
Remote-copy mapping 1:
    master cluster is SampleCluster
    master vdisk is v6
    aux cluster is c1
    aux vdisk is v7
    status is inconsistent_stopped
    progress 0% done
Remote-copy mapping 2:
    master cluster is SampleCluster
    master vdisk is v8
    aux cluster is c1
    aux vdisk is v9
    status is inconsistent_stopped
    progress 0% done
```

show cluster remote-copy-cluster

To display configured remote-copy partnership information for a specified cluster, use the **show cluster** *cluster-name* **remote-copy-cluster** command.

show cluster *cluster-name* **remote-copy-cluster** [*rcopy-name*]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
remote-copy-cluster	Displays remote copy relationships configured for a specified cluster.
rcopy-name	Displays the specified remote copy object.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays configured cluster information for the specified copy instance.

```
switch(svc)# show cluster SampleCluster remote-copy-cluster
-------------------------------------------------
Cluster          Local/remote     Bandwidth
-------------------------------------------------
local-cluster    local             10
remote-cluster   remote            50
```

show cluster status

To displays progress information for a specified cluster, use the **show cluster** *cluster-name* **status** command.

show cluster *cluster-name* **status** [**flash-copy** *fcopy-name* | **remote-copy** *rcopy-name*]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
status	Displays the status of a upgrade or copy process.
flash-copy	Displays FlashCopy relationships configured for the specified cluster.
fcopy-name	Displays the specified FlashCopy object.
remote-copy	Displays remote copy relationships configured for a specified cluster.
rcopy-name	Displays the specified remote copy object.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster information.

```
switch(svc)# show cluster SampleCluster status flash-copy fc1
--------------------------------------------------------------------------------
src vdisk        dest vdisk       progress
--------------------------------------------------------------------------------
v1               v2               100% done
v3               v4               100% done
switch(svc)# show cluster SampleCluster status remote-copy rc1
--------------------------------------------------------------------------------
src vdisk        aux vdisk        progress
--------------------------------------------------------------------------------
v5               v6               100% done
v7               v8               100% done
```

show cluster vdisk

To display configured VDisk information for a specified cluster, use the **show cluster** *cluster-name* **vdisk** command.

show cluster *cluster-name* **vdisk** *vdisk-id* [**extent** | **mapped_hosts**]

Syntax Description

show cluster *cluster-name*	Specifies a previously created cluster name.
vdisk	Displays configured VDisks in the cluster
vdisk-id	Displays details of the specified VDisk ID.
extent	Displays information about the specified MDisk's extent.
mapped_hosts	Displays information about which hosts are mapped to the specified VDisk.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster information for VDisks.

```
switch(svc)# show cluster SampleCluster vdisk v1 extent
--------------------------------------------------------------------------------
mdisk id  number of extents
--------------------------------------------------------------------------------
1         2144
2         2144
3         2144
5         11
6         11
7         10
switch(svc)# show cluster SampleCluster vdisk v1 mapped_hosts
--------------------------------------------------------------------------------
host             LUN
--------------------------------------------------------------------------------
oasis15          0
```

show environment battery

To display status of a battery module for the Caching Services Module (CSM), use the **show environment battery** command.

show environment battery module *slot-number* [**detail**]

Syntax Description

show environment	Displays the hardware environment in any Cisco MDS 9000 Family switch.
battery	Displays the status of the battery in a CSM.
module *slot-number*	Specifies the slot number of the CSM.
detail	Provides detailed information about the CSM battery status.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was modified in Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays the current contents of the boot variable.

```
switch# show environment battery module 2
Battery 1:
----------
Voltage             : 10.343 V
Current             : 0.000 A
Temperature         : 23.7 C
Current Capacity    : 1571 mAHr
Full Capacity       : 2057 mAHr
CySampleClustere Count         : 3
Last conditioned in : Week 22 2003
Serial Num          : AMB0722009C
Battery 2:
----------
Voltage             : 10.596 V
Current             : 0.000 A
Temperature         : 26.6 C
Current Capacity    : 1701 mAHr
Full Capacity       : 2032 mAHr
CySampleClustere Count         : 6
Last conditioned in : Week 22 2003
Serial Num          : AMB0722009R
switch## show environment battery module 2 detail
Battery 1:
----------
Voltage             : 10.338 V
Current             : 0.000 A
Temperature         : 23.7 C
Current Capacity    : 1571 mAHr
```

```
Full Capacity       : 2057 mAHr
Caching Capacity    : 6463 MB
CySampleClustere Count         : 3
Last conditioned in : Week 22 2003
Serial Num          : AMB0722009C
EEPROM version      : 1
Manufacturer Access            : 0x0
Remaining Capacity Alarm       : 0xc8
Remaining Time Alarm           : 0xa
Battery Mode                   : 0x6000
AtRate                         : 0x0
AtRate Time To Full            : 0xffff
AtRate Time To Empty           : 0xffff
AtRate OK                      : 0x1
Temperature                    : 0xb97
Voltage                        : 0x2862
Current                        : 0xd
Average Current                : 0x6
Max Error                      : 0x2
Relative State of Charge       : 0x4c
Absolute State of Charge       : 0x4f
Remaining Capacity             : 0x623
Full Charge Capacity           : 0x809
Run Time To Empty              : 0xffff
Average Time To Empty          : 0xffff
Average Time To Full           : 0x13f2
Charging Current               : 0x44c
Charging Voltage               : 0x3840
Battery Status                 : 0xc0
CySampleClustere Count                    : 0x3
Design Capacity                : 0x7d0
Design Voltage                 : 0x2580
Specification Info             : 0x21
Manufacture Date               : 0x3037
Serial Number                  : 0x0
Manufacturer Name              : 0x430a
Device Name                    : 0x4207
Device Chemistry               : 0x4e04
Manufacturer Data              : 0x7507
Pack Status & Configuration    : 0x2020
VCELL4                         : 0x0
VCELL3                         : 0x0
VCELL2                         : 0x0
VCELL1                         : 0x0
...
```

show interface svc

You can check the status of a SVC interface at any time by using the show interface svc command.

show interface svc *slot-number/node-number* [**brief | counters | description**]

Syntax Description

interface range	Displays the interfaces in the specified range.
brief	Displays brief info of interface.
counters	Displays the interface counter information.
description	Displays a description of interface.
svc	Displays the SAN Volume Controller (SVC) interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.

Command Default

None

Command Modes

EXEC

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured SVC interface information.

```
switch# show interface svc 2/1
svc2/1 is up
    Node WWN is 10:00:00:00:00:00:00:00
    Fabric WWN is 20:41:00:05:30:00:33:1e
    Target N-port WWN is 27:39:00:05:30:00:33:2a, vsan is 1, FCID is 0x010006
    Initiator N-port WWN is 27:3a:00:05:30:00:33:2a, vsan is 1, FCID is 0x010007
    Mgmt N-port WWN is 27:3b:00:05:30:00:33:2a, vsan is 1, FCID is 0x010008
    5 minutes input rate 16 bits/sec, 2 bytes/sec, 0 frames/sec
    5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
      7 frames input, 736 bytes
        0 discards, 0 errors
      3 frames output, 276 bytes
        0 discards, 0 errors
switch# show interface svc 8/1-2
svc8/1 is down (Administratively down)
    Node WWN is 23:34:00:05:30:00:00:02
    Fabric WWN is 21:c1:00:05:30:00:00:00
    Target N-port WWN is 23:2e:00:05:30:00:00:02, vsan is 1, FCID is 0x000000
    Initiator N-port WWN is 23:2f:00:05:30:00:00:02, vsan is 1, FCID is 0x000000
    Mgmt N-port WWN is 23:30:00:05:30:00:00:02, vsan is 1, FCID is 0x000000
```

```
    5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
    5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
      0 frames input, 0 bytes
        0 discards, 0 errors
      0 frames output, 0 bytes
        0 discards, 0 errors
svc8/2 is up
    Node WWN is 23:35:00:05:30:00:00:02
    Fabric WWN is 21:c2:00:05:30:00:00:00
    Target N-port WWN is 23:31:00:05:30:00:00:02, vsan is 1, FCID is 0x650003
    Initiator N-port WWN is 23:32:00:05:30:00:00:02, vsan is 1, FCID is 0x650004
    Mgmt N-port WWN is 23:33:00:05:30:00:00:02, vsan is 1, FCID is 0x650005
    5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
    5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
      3268061 frames input, 6602103068 bytes
        0 discards, 2 errors
      3208131 frames output, 6598470800 bytes
        0 discards, 0 errors
switch# show interface brief
--------------------------------------------------------------------------------
Interface  Vsan   Admin  Admin   Status          FCOT   Oper  Oper   Port
                  Mode   Trunk                         Mode  Speed  Channel
                         Mode                                (Gbps)
--------------------------------------------------------------------------------
fc8/1      1      FX     --      fcotAbsent       --     --           --
...
fc8/32     1      FX     --      fcotAbsent       --     --           --
--------------------------------------------------------------------------------
Interface          Status                          Speed
                                                   (Gbps)
--------------------------------------------------------------------------------
sup-fc0            up                              1
--------------------------------------------------------------------------------
Interface               Status     IP Address        Speed        MTU
--------------------------------------------------------------------------------
mgmt0                   up         172.22.90.21/24   100 Mbps     1500
--------------------------------------------------------------------------------
Interface          Status
--------------------------------------------------------------------------------
svc2/1             down
svc2/2             up
svc4/1             up
svc4/2             up
switch# show interface svc 2/1 counters
svc2/1
    5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
    5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
    272 frames input, 89764 bytes
      39 input session management frames
        19 plogi, 1 plogi_acc, 13 prli, 1 prli_acc
        2 logo, 0 logo_acc, 0 prlo, 0 prlo_acc
        3 abts, 0 ba_acc, 0 ls_rjt
      28 input I/Os, 28 cmd complete, 0 cmd fail
        24 reads, 4 writes
        0 input errors
        0 input discards
          FCP cmd errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
          FCP Xrdy errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
```

```
          FCP status errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
          FCP Data errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
          0 Incoming Aborts
    232 frames output, 84176 bytes
      35 output session management frames
        6 plogi, 13 plogi_acc, 1 prli, 12 prli_acc
        0 logo, 0 logo_acc, 0 prlo, 0 prlo_acc
        1 abts, 2 ba_acc, 0 ls_rjt
      103 out I/Os, 103 cmd complete, 0 cmd fail
        63 reads, 4 writes
      0 output errors
      0 output discards
        0 out ls aborts
           LS requests while sess not up
             0 cmds 0 data xfers 0 status xfers 0 ds xfers
switch# show interface svc 4/2 description
--------------------------------------------------------------------------------
Interface          Description
--------------------------------------------------------------------------------
svc4/2             SampleInt1
```

show nodes

To displays configured information for the CSM, use the **show svc** command.

show nodes {**local [detail]** | **svc** *slot_number/node-number* | **version**}

Syntax Description

nodes show nodes	Displays information about the specified nodes.
local	Displays SVC nodes in the switch.
detail	Displays detailed node information.
svc	Displays node information specific to the SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
version	Displays software version information for each node.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example display configured SVC information and statistics.

```
switch(svc)# show nodes local detail
svc2/1:
  Is a config node for cluster SampleCluster
  cluster Status is active
  Node Status is active
svc2/2:
  Is member of cluster SampleCluster
  cluster Status is active
  Node Status is active
switch(svc)# show nodes ?
  local    Show nodes in the switch
  svc      SVC Interface
  version  Show node sw versions in the switch
  <cr>     Carriage Return
switch(svc)# show nodes svc 2/2
svc2/2:
  Is not a member of any cluster
  Cluster Status is unconfigured
  Node Status is free
switch(svc)# show nodes version
-------------------------------------------------------
```

```
Node             sw version       state
------------------------------------------------------
svc2/1           1.3(1)       Runtime code    (5)
svc2/2           1.3(1)       Runtime code    (5)
```

Related Commands

Command	Description
svc config	Configures SVC nodes.

show svc

To displays configured information for the CSM, use the **show svc** command.

show svc port svc *slot_number/node-number* [**detail | initiator | mgmt | target** [**detail | vsan** *vsan-id*]] **| session** [**detail | initiator | mgmt | peer-wwn** *pwwn-id* **| target** [**detail | vsan** *vsan-id*]] **| stats xipc**[**interface svc** *slot_number/node-number*]| [**module** *slot-number*]

Syntax Description

show svc	Displays configured SVC information.
port	Displays N-port specific SVC information.
svc	Specifies the new interface to be a SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
detail	Displays detailed information for all N ports
initiator	Displays a SVC node as an initiator in the specified VSAN.
mgmt	Displays a SVC node as a management node in the specified VSAN.
target	Displays a SVC node as a target in the specified VSAN.
vsan*vsan-id*	Specifies the VSAN ID ranging from 1 to 4093.
session	Displays information specific to the SVC session.
peer-pwwn pwwn-id	Specifies the port WWN of the target or host, with the format hh:hh:hh:hh:hh:hh:hh:hh.
stats	Displays SVC statistical information generally used for debugging.
module *slot-number*	Specifies the slot number containing the CSM.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured SVC information and statistics.

```
switch# show svc session svc 2/1
svc2/1:
   Target N-port WWN is 21:00:00:05:30:00:8d:e0, vsan is 2, FCID is 0x610100
```

```
    pWWN 21:00:00:e0:8b:09:f0:04, nWWN 20:00:00:e0:8b:09:f0:04, FCID 0x610000
  Initiator N-port WWN is 20:01:00:05:30:00:8d:e0, vsan is 1, FCID is 0xec0100
    pWWN 22:00:00:04:cf:e6:e4:6b, nWWN 20:00:00:04:cf:e6:e4:6b, FCID 0xec00d4
    pWWN 22:00:00:04:cf:e6:1a:4c, nWWN 20:00:00:04:cf:e6:1a:4c, FCID 0xec00d5
    pWWN 22:00:00:04:cf:e6:1c:fb, nWWN 20:00:00:04:cf:e6:1c:fb, FCID 0xec00d6
    pWWN 22:00:00:04:cf:e6:e1:81, nWWN 20:00:00:04:cf:e6:e1:81, FCID 0xec00d9
    pWWN 22:00:00:04:cf:e6:e4:df, nWWN 20:00:00:04:cf:e6:e4:df, FCID 0xec00da
    pWWN 22:00:00:04:cf:e6:21:a2, nWWN 20:00:00:04:cf:e6:21:a2, FCID 0xec00dc
    pWWN 22:00:00:04:cf:e6:e5:32, nWWN 20:00:00:04:cf:e6:e5:32, FCID 0xec00e0
    pWWN 22:00:00:04:cf:e6:1b:5b, nWWN 20:00:00:04:cf:e6:1b:5b, FCID 0xec00e1
  Mgmt N-port WWN is 21:02:00:05:30:00:8d:e0, vsan is 3, FCID is 0x7a0000
    pWWN 21:03:00:05:30:00:8d:e0, nWWN 20:07:00:05:30:00:8d:e0, FCID 0x7a0001
switch# show svc session svc 2/1 peer-pwwn 22:00:00:04:cf:e6:e4:6b detail
svc2/1:
   Initiator N-port WWN is 20:01:00:05:30:00:8d:e0, vsan is 1, FCID is 0xec0102
     pWWN 22:00:00:04:cf:e6:e4:6b, nWWN 20:00:00:04:cf:e6:e4:6b, FCID 0xec00d4
       47 frames input, 920 data bytes
         2 ELS pkts, 0 BLS pkts
         0 FCP commands, 0 FCP xfer ready
         20 FCP data frames, 25 FCP status
         0 FCP overrun, 15 FCP underrun
         0 aborts, 0 bad FC2 drops
         0 data excess
       27 frames output, 0 data bytes
         2 ELS pkts, 0 BLS pkts
         25 FCP commands, 0 FCP xfer ready
         0 FCP data frames, 0 FCP status
         0 aborts
       0 open exchanges
switch#  show svc port svc 2/1
svc2/1:
   Target N-port in vsan 2 is up
     Port WWN is 21:00:00:05:30:00:8d:e0, FCID is 0x610101
   Initiator N-port in vsan 1 is up
     Port WWN is 20:01:00:05:30:00:8d:e0, FCID is 0xec0102
   Mgmt N-port in vsan 1 is up
     Port WWN is 20:02:00:05:30:00:8d:e0, FCID is 0xec0103
switch# show svc port svc 2/1 target detail
svc2/1:
   Target N-port in vsan 1 is up
     Port WWN is 27:39:00:05:30:00:33:2a, FCID is 0x010006
     0 sessions, 0 closed, 0 in transition
       5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
       5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
     9 frames input, 1064 bytes
       0 input session management frames
         0 plogi, 0 prli
         0 logo, 0 logo_acc
         0 prlo, 0 prlo_acc
         0 abts, 0 ls_rjt
       0 input I/Os, 0 cmd complete, 0 cmd fail
         0 reads, 0 writes
       0 input errors
       0 input discards
     5 frames output, 388 bytes
       0 output session management frames
         0 plogi_acc, 0 prli_acc
         0 logo, 0 logo_acc
         0 prlo, 0 prlo_acc
         0 ba_acc, 0 ls_rjt
       0 output I/Os, 0 cmd complete, 0 cmd fail
       0 output errors
       0 output discards
switch# show svc session svc 2/1 peer-pwwn 27:46:00:05:30:00:33:2a detail
```

```
svc2/1:
    Mgmt N-port WWN is 27:3b:00:05:30:00:33:2a, vsan is 1, FCID is 0x010008
      pWWN 27:46:00:05:30:00:33:2a, nWWN 27:48:00:05:30:00:33:2a, FCID 0x010011
        19 frames input, 16517 data bytes
          2 ELS pkts, 0 BLS pkts
          3 FCP commands, 1 FCP xfer ready
          10 FCP data frames, 3 FCP status
          0 FCP overrun, 2 FCP underrun
          0 aborts, 0 bad FC2 drops
          0 data excess
        19 frames output, 16520 data bytes
          2 ELS pkts, 0 BLS pkts
          3 FCP commands, 1 FCP xfer ready
          10 FCP data frames, 3 FCP status
          0 aborts
        0 open exchanges
        FCP Error Stats
          FCP cmd errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
          FCP Xfer Rdy errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
          FCP Status errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
          FCP Data errors
            0 sess not up, 0 no resources, 0 bad frames
            0 up layer rjt, 0 out of order, 0 proc unexp exch st
            0 drop unexp exch st, 0 no exch match
```

svc-config

To perform SAN Volume Controller (SVC) configurations, use the **svc-config** command.

svc-config

Syntax Description

svc-config	Enters the SVC configuration mode.
cluster	Provides access to cluster commands.
node	Provides access to node commands.
show	Displays configured SVC information for the specified node.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc-config
switch-sw6(svc)# ?
Submode Commands:
  cluster  Cluster commands
  exit     Exit from this mode
  no       Negate a command or set its defaults
  node     Node commands
  show     Show
```

svc-ibmcli

To perform SAN Volume Controller (SVC) configurations by using IBM's CLI, use the **svc-ibmcli** command.

svc-ibmcli {**cluster-name** *cluster-name* [*IBM-CLI-command*] | **node svc** *slot-number/node-number* [*IBM-CLI-command*] }

Syntax Description

svc-ibmcli	Enters the IBM CLI configuration mode.
cluster-name	Specifies a new cluster.
cluster-name	Specifies a cluster name.
node svc	Specifies a node in the SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
IBM-CLI-command	Specifies the IBM TotalStorage command to be executed

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

When you enter the IBM TotalStorage shell, all future commands are interpreted directly by this shell. Type **exit** to return to the Cisco MDS switch prompt.

Examples

The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc-ibmcli cluster-name SampleCluster
Attaching to config node for cluster SampleCluster
To exit type 'exit', to abort type '$.'
IBM_svc:admin>
switch# svc-ibmcli node svc 2/1
Attaching to node 2/1
To exit type 'exit', to abort type '$.'
IBM_svc:admin>
```

svc-purge-wwn module

To remove all configured WWNs for the CSM from the running configuration, use the **svc-purge-wwn module** command.

svc-purge-wwn module *module-number*

Syntax Description

svc-purge-wwn	Purges the WWN for the CSM.
module *module-number*	Specifies the slot number for the CSM.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

This command also purges all system allocated pWWNs and nWWNs from the system and will never be used again (by the system or by SVC interfaces). New system values will be allocated for all pWWN/nWWNs for the module.

Examples

The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc purge-wwn module 2
!!!WARNING!  This command will purge all SVC system allocated
    WWNs for the specified module.  These WWNs will be lost.
    All user configured WWNs will be removed from the
    running-config, but not from the startup-config.
This operation can take a long time.  Other CLI commands
    on the system may be stopped while this operation is
    in progress.
Are you sure you want to do this? [Y/N] [N] y
switch#
```

vdisk

To create a new VDisk or access a new VDisk, use the **vdisk** command in the cluster configuration submode.

cluster config *cluster-name*
{**vdisk add** *vdisk-name* **iogroup** *group-id* **mdisk-grp** *grp-name* **capacity** *number* | **import** [**clean** | **mdisk-list** | **preferred-node** | **sequential**]}
vdisk name *vdisk-name* **-> expand** [**capacity | extent mdisk** *disk-id* **offset** *number*] **| io-throttle** *number* [**MB**] **| iogroup | shrink**

Syntax Description

cluster	Provides access to cluster commands
config *cluster-name*	Places a previously created cluster in the cluster configuration submode.
vdisk add *vdisk-name*	Creates a VDisk of the specified name.
iogroup *group-id*	Identifies one of four I/O groups in the specified cluster. The ID ranges from 1 to 4. The I/O for the VDisk is serviced by node belonging to that I/O group.
mdisk-grp*grp-name*	Specifies an existing MDisk group from which the VDisk storage originates.
capacity	Configures the size of this VDisk.
number	Provides a range from 0- 1677215 Gigabytes.
import	Imports a previously unmanaged disk that contains SVC virtualization data.
clean	Clears all data in the VDisk.
mdisk-list	Specifies a list of MDisks. All disks in this list must be part of the MDisk group
preferred-node	specifies the preferred node within the two nodes in this group to send I/Os for this VDisk
sequential	Specifies a sequential virtualization policy. If this option is not specified, the striped (default) virtualization policy is used.
vdisk *vdisk-name*	Enters the VDisk submode of an existing VDisk.
expand capacity	Expands the MDisk capacity.
extent	Expands the MDisk by a single extent.
offset*number*	Offsets the extent.
io-throttle	Limits the amount of I/Os allowed for this VDisk. If MB is not specified, the unit is calculated in I/Os per second.
MB	Specifies the I/O throttling in Megabytes.
shrink	Shrinks the capacity of the VDisk as specified.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The VDisk submode prompt is switch (svc-cluster-vdisk)#

Extents are allowed from all MDisks in the list

Examples

The following example enters the cluster configuration mode for SampleCluster and ---

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 ?
  capacity  Vdisk add name iogroup mdisk-grp
  import    Vdisk add import
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 capacity ?
  <0-2147483647>  Enter the capacity
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 capacity 5000 ?
  gb  Vdisk add name iogroup mdisk-grp capacity
  mb  Vdisk add name iogroup mdisk-grp capacity
  pb  Vdisk add name iogroup mdisk-grp capacity
  tb  Vdisk add name iogroup mdisk-grp capacity
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 capacity 5000 gb ?
  clean           Vdisk add clean
  mdisk-list      Vdisk add mdisk-list
  preferred-node  Vdisk add sequential mdisk
  sequential      Vdisk add sequential
  <cr>            Carriage Return
switch(svc-cluster)# vdisk add VDISK1 iogroup 1 mdisk-grp Mdisk1 capacity 0 gb
switch(svc-cluster)# vdisk VDISK1
switch(svc-cluster-vdisk)# ?
Submode Commands:
  exit         Exit from this mode
  expand       Expand
  io-throttle  Io throttle
  iogroup      Move vdisk to iogroup
  no           Negate a command or set its defaults
  shrink       Shrink capacity
switch(svc-cluster-vdisk)# expand ?
  capacity  Expand capacity
  extent    Expand extent
switch(svc-cluster-vdisk)# io-throttle 0
switch(svc-cluster-vdisk)# shrink capacity 1 ?
  gb  Expand capacity
  mb  Expand capacity
  pb  Expand capacity
  tb  Expand capacity
switch(svc-cluster-vdisk)# exit
switch(svc)# show cluster SampleCluster vdisk
--------------------------------------------------------------------------------
name             capacity     iogroup mdisk-grp name    policy      status
--------------------------------------------------------------------------------
Vdisk1           100.00 GB    1       Group1            striped     online
Vdisk2           50.00 GB     1       Group2            striped     online
switch(svc)# show cluster SampleCluster vdisk Vdisk1
vdisk Vdisk1 is online
```

```
    Capacity is 100.00 GB
    Using storage from mdisk-grp Group1
    Processed by io group 1
    Virtualization policy is striped
    Preferred node is 2
switch(svc)# show cluster SampleCluster vdisk Vdisk1 extent
------------------------------------------------------------------------------
mdisk id  number of extents
------------------------------------------------------------------------------
1         2134
2         2133
3         2133
switch(svc)# show cluster SampleCluster vdisk Vdisk1 mapped_hosts
------------------------------------------------------------------------------
host             LUN
------------------------------------------------------------------------------
Host1            0
```

Related Commands

Command	Description
show cluster *name* **vdisk**	Displays configured vdisk information for a specified cluster.