CLIQ
The SAN/iQ Command-Line Interface
User Manual

Overview

The SAN/iQ command-line interface (CLI) is built upon the SAN/iQ API released with version 8.x. Develop your own automation, scripting and management using the CLI.

- For instructions about using the CLI, see the Syntax section, immediately following this introduction.
- The section on Global Parameters describes functionality that applies to the entire CLI and includes commands to customize global operations.

System Requirements

Windows Server 2003 SP1

Windows Server 2003 R2

Windows Server 2008 R2

Windows XP SP2

Windows Vista

10 MB available space

Installing the CLI

Install the CLI from the HP LeftHand Management DVD. The installation wizard automatically installs the command-line software to the following default location in Windows:

C:\Program Files\ LeftHand Networks\CLI

and sets the environment variable.

Sample Scripts

You can obtain sample scripts from the HP LeftHand Networks web site at

http://www.lefthandnetworks.com/home.aspx

On-Node CLI

The CLI is installed on storage nodes and can be accessed by SSH.

- Log in to the on-node CLI using the node IP address and the designated port 16022.
- If logging in from a command line, you must type the following command:

  ssh –p 16022 -l <user> <NSM-IP>

Commands

Syntax *5*
Parameter ordering **5**
Case sensitivity **5**
True/False **5**
Command abbreviation **5**
OS error code integration **5**
Composite commands **6**
Size specification **6**
Password prompt **6**
Key file **7**
DNS names **7**
Storage Node CLI **7**
Integrated command shell **7**
Global parameters *9*
timeToWait=<milliseconds> **9**
prompt=<true | false> **9**
output=<XML | Normal> **9**
separator=<c> **9**
inputFile=<file> **9**
Commands *10*
addVirtualManager **11**
assignVolume **12**
assignVolumeChap **14**
cacheCredentials **16**
cancelRemoteSnapshot **17**
clearCredentials **18**
cloneSnapshot **19**
configureRaid **20**
connectVolume **21**
convertSnapshotTempSpace **22**
createAdminGroup **23**
createAdminUser **25**
createCluster **26**
createGroup **27**

createKey **28**
createRemoteAssociation **29**
createRemoteSnapshot **31**
createSite **33**
createSnapshot **34**
createVolume **35**
deleteAdminGroup **37**
deleteAdminUser **38**
deleteCluster **39**
deleteGroup **40**
deleteRemoteAssociation **41**
deleteSite **42**
deleteSnapshot **43**
deleteSnapshotTempSpace **44**
deleteVirtualManager **45**
deleteVolume **46**
disconnectLocalVolume **47**
discoverTcp **48**
discoverUdp **49**
getClusterInfo **50**
getGroupInfo **51**
getLocalVolumes **52**
getNsmInfo **53**
getPerformanceStats **54**
getRemoteSnapshotInfo **55**
getScsiInfo **56**
getSiteInfo **57**
getSnapshotInfo **58**
getSystemInfo **59**
getVolumeInfo **60**
help **61**
makePrimary **62**
makeRemote **63**
modifyAdminGroup **64**
modifyAdminUser **66**
modifyCluster **67**

modifyGroup **69**
modifyRemoteAssociation **71**
modifySite **73**
modifySnapshot **74**
modifyVolume **75**
provisionVolume **77**
rebalanceVip **79**
removeVolume **80**
resetSession **81**
rollbackSnapshot **82**
runDiagnostic **83**
setGossipList **84**
shutdownGroup **85**
shutdownNsm **86**
startManager **87**
startVirtualManager **88**
stopManager **89**
stopVirtualManager **90**
testCredentials **91**
unassignVolume **92**
vssSnapshot **94**
waitForAlert **96**
waitForUpdate **97**
Return Codes ***98***

Syntax

CLIQ is the command-line interface (CLI) for the HP LeftHand Storage Solution. The CLI specifies parameters in the form parameter=<parameter> (specification), rather than dictating a particular order (positional) notation.

Parameter ordering

Ordering of parameters is not specified. Any order will do. For example:

```
cliq deleteVolume volumeName=theVolume userName=user passWord=secret
login=10.1.2.3
```

is equivalent to

```
cliq deleteVolume login=10.1.2.3 passWord=secret userName=user
volumeName=theVolume
```

The method parameter may be optionally specified as "method=<command>":

```
cliq userName=user passWord=secret login=10.1.2.3 volumeName=theVolume
method=deleteVolume
```

Case sensitivity

All commands and parameter names are case-insensitive. "createVolume" is the same as "CreateVolume" is the same as "CREATEVOLUME". In some cases, parameter values, while not sensitive, are case significant as the system will preserve the case specified. For example, the description parameter value in the createVolume command will preserve the case specified by the caller, and impose this on the newly created volume.

True/False

Any parameter that indicates true/false, may be specified as "0|1" or "true|false".

Command abbreviation

There is no command or parameter abbreviation in the CLI when scripted. All commands and parameter names must be fully specified. This is to prevent ambiguity in legacy scripts if new commands or parameters are added.

OS error code integration

The CLI will map error codes to reasonable OS status codes (status in Linux, ERRORLEVEL in DOS). Since these are limited to 0..255, some of the OS errors may have less granularity than the API error codes.

Composite commands

Some commands take multiple elements for the parameter value. In this case, the parameter is interpreted as an delimiter-separated ordered list. For example:

```
volumeName=volume1;volume2
login=10.0.1.2;10.1.2.3;10.2.3.4
```

If a parameter contains fewer elements in the list than needed for the composite command, the last one in the list will be repeated. There must be at least one element in the list, if it's required.

Size specification

When volume sizes or thresholds are specified, the format is <size><units>, where units are:

- MB - megabytes (2^20)
- GB - gigabytes (2^30)
- TB - terabytes (2^40)

There is no default for size units - the units must be specified.

These are defined as International System of Units (SI) for file storage (popular use).

See: http://en.wikipedia.org/wiki/Megabyte

Some values may be specified as either a size or percentage, for example, reserveQuota. The units will determine how this is interpreted. For example:

- 10MB=1,048,576 bytes
- 10GB=10,737,418,240 bytes
- 10%=1/10 of the current volume size

Password prompt

When credentials are required in the CLI, you may not want to display the password by typing the "password=" parameter. If the username parameter is specified without the password parameter,

you will be prompted interactively for the password. This password will not be displayed.

```
cliq getGroupInfo login=10.0.1.2 username=admin
password: *******
```

Key file

Instead of specifying username/password parameters, you may choose to specify an encrypted key file which contains the credentials.

This file can be kept in a secure location, or otherwise access-controlled. To create this file, use the createKey command.

```
cliq createKey login=10.0.1.2 username=admin password=secret keyfile=key.dat
cliq getGroupInfo login=10.0.1.2 keyfile=key.dat
```

DNS names

You can also specify managers as a host name, provided they can be resolved by DNS:

```
cliq getGroupInfo login=Exchange-1 username=admin password=secret
```

Storage Node CLI

When commands are executed on the storage nodes (via SSH), no authentication parameters are required:

```
getGroupInfo
```

Integrated command shell

The CLIQ command line has an integrated shell that's executed by default when connecting directly to a storage node, or running cliq.exe without any parameters:

```
>cliq
SAN/iQ Command Line Interface, v8.1 (type exit to quit)
(C) Copyright 2007-2009 Hewlett-Packard Development Company, L.P.

CLIQ>
```

The integrated shell supports rich command line editing features specific to the HP LeftHand API. The following editing keys are supported:

```
Key       Meaning
LEFT      Moves the cursor one space to the left.
RIGHT     Moves the cursor one space to the right.
BACKSPACE Deletes the character under the cursor and moves it to the left.
DELETE    Deletes the character under the cursor.
UP        Recalls the previous command entered.
DOWN      Recalls the first command entered.
HOME      Moves the cursor to the beginning of the line.
END       Moves the cursor to the end of the line.
ESCAPE    Clears the current command line.
```

INSERT	Toggles between insert mode (the default) and overwrite mode.
TAB	Completes the command.

Global parameters

timeToWait=<milliseconds>

Some commands may take a long time to complete. The default is to wait until the command completes or fails. This parameter allows you to specify a maximum wait time for completion. If this time is exceeded, the CLI returns CliqOperationTimedOut.

prompt=<true | false>

Some potentially destructive commands prompt before proceeding. This default behavior can be turned off by specifying prompt=false.

output=<XML | Normal>

In the default case, the CLI returns information to standard output, formatted in a way that's easy to read rather than easy to parse. The XML setting returns all output information as an XML document, allowing easier parsing of the result. There is no guarantee that newer versions of the API will preserve the same formatting in the default case. It is strongly discouraged to use this form of the CLI programmatically. If the output needs to be parsed, the XML variant is preferred.

separator=<c>

Some CLI parameters comprise parameters for multiple operations. For example, the snapshotVolumes command allows the caller to specify simultaneous snapshotting of multiple volumes. In this scenario, some parameters specify an ordered list that apply to each snapshot in succession. For example:

description="This applies to snapshot1;This applies to snapshot2"

The default separator character is a semicolon (';'). This can be overridden with the separator parameter in the event that the default separator is in the body of a parameter.

```
description="This applies to snapshot1;This applies to snapshot2"
```

inputFile=<file>

This takes all command input from a file containing XML input.

Commands

The following section lists the commands supported

addVirtualManager

This command adds a virtual manager to a group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq addVirtualManager login=10.0.1.2 userName=admin passWord=secret
```

assignVolume

This command assigns a volume to a server. This assignment sets the access to a volume, based on host iqn(s).

Availability: Windows, SAN/iQ

Required Parameters:

login

The IP address or DNS-resolvable names of one or more storage nodes

userName

The authentication user name for the group

passWord

The password for the group

keyFile

The encrypted key file (this is specified instead of the username and password parameters)

volumeName

The name of the volume

Optional Parameters:

namePrefix

A prefix string for newly created objects. A unique number value will be concatenated to this prefix to guarantee name uniqueness.

accessRights

The access rights to the volume

- r - read-only
- w - write-only
- rw - read-write (default)

initiator

A semicolon delimited string of host IQN's. If this is not specified, the IQN of the local server is used (this parameter is required if run on a storage node).

vipLoadBalance

Use VIP load balancing for this host. This can be one of:

- 0
- 1 - default

exclusiveAccess

Remove any previous server access rights to this volume. This can be one of:

- 0
- 1 - default

Example Command:

```
cliq assignVolume volumeName=TheVolume initiator=iqn.1991-05.com.microsoft:w-
gregorio.corp.lefthandnetworks.com login=10.0.1.2 userName=admin
passWord=secret
```

assignVolumeChap

This command assigns a volume to a server. This assignment sets the access to a volume, using CHAP authentication.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

targetSecret
The CHAP target secret for the volume.

Optional Parameters:

namePrefix
A prefix string for newly created objects. A unique number value will be concatenated to this prefix to guarantee name uniqueness.

accessRights
The access rights to the volume

- r - read-only
- w - write-only
- rw - read-write (default)

chapName
The CHAP name for the volume. If this is not specified, the IQN of the local server is used (this parameter is required if run on a storage node).

initiatorSecret
The CHAP initiator secret for the volume.

vipLoadBalance

Use VIP load balancing for this host. This can be one of:

- 0
- 1 - default

exclusiveAccess

Remove any previous server access rights to this volume. This can be one of:

- 0
- 1 - default

Example Command:

```
cliq assignVolumeChap volumeName=TheVolume targetSecret=HolyHandGrenade
login=10.0.1.2 userName=admin passWord=secret
```

cacheCredentials

This command caches the management group credentials and IP addresses in the registry.

Availability: Windows

Required Parameters:

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

groupName
The name of the group

Optional Parameters:

none

Example Command:

```
cliq cacheCredentials groupName=TheGroup userName=admin passWord=secret
```

cancelRemoteSnapshot

This command cancels a remote snapshot.

Availability: Windows, SAN/iQ

Required Parameters:

login

The IP address or DNS-resolvable names of one or more storage nodes. This is the login information for the remote group containing the specified snapshot.

userName

The authentication user name for the group

passWord

The password for the group

keyFile

The encrypted key file (this is specified instead of the username and password parameters)

snapshotName

The name of the remote snapshot

Optional Parameters:

none

Example Command:

```
cliq cancelRemoteSnapshot snapshotName=snapshot0 login=10.0.1.2
userName=admin passWord=secret
```

clearCredentials

This command removes the management group credentials from the cache.

Availability: Windows

Required Parameters:

groupName
The name of the group

Optional Parameters:

none

Example Command:

```
cliq cacheCredentials groupName=TheGroup
```

cloneSnapshot

This command creates one or more SmartClone volumes from a SAN/iQ snapshot. These SmartClone volumes have all the functionality of normal volumes.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

snapshotName
The name of a snapshot for the SmartClone volumes.

volumeName
The name of the SmartClone volume, or volumes to create from the snapshot

Optional Parameters:

none

Example Command:

```
cliq cloneSnapshot snapshotName=Snapshot1 volumeName=MyClone1;MyClone2
login=10.0.1.2 userName=admin passWord=secret
```

configureRaid

This command reconfigures the RAID setting on a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable name of a storage node

userName
The authentication user name for the node

passWord
The password for the node

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

configuration
The RAID type to set. The possible RAID levels are reported in the getNsmInfo call.

Optional Parameters:

none

Example Command:

```
cliq configureRaid configuration="RAID10" login=10.0.1.2 userName=admin
passWord=secret
```

connectVolume

This command connects an already present array volume to an application server host.

Availability: Windows

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

none

Example Command:

```
cliq connectVolume volumeName=MyVolume login=10.1.2.3 userName=admin
passWord=secret
```

convertSnapshotTempSpace

This command converts snapshot temporary space to a volume.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume created from the conversion

snapshotName
The name of the snapshot

Example Command:

```
cliq convertSnapshotTempSpace snapshotName=MySnapshot volumeName=NewVolume
login=10.1.2.3 userName=admin passWord=secret
```

createAdminGroup

This command creates an administrative group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

adminGroupName
The administrative group name

Optional Parameters:

description
Optional description for the administrative group

adminUserName
Specifies the users that this group comprises

permissions
Permissions for the group. This is a character sequence specifying the allowable permissions in the following order: Password,Group,Network,Node,Report

For each group, the allowable permissions are:

- r, read-only
- w, read-write
- f, full-access

For example:

- permissions=ffffr specifies full access for password, group, network and node, and read-only access for reports
- permissions=rrrfr specifies read-only access for password, group, network and reports, and full access for node

Note: if this is not specified, the permissions are set to rrrrr

Example Command:

```
cliq createAdminGroup login=10.0.1.3 userName=admin passWord=secret
description="My shiny new group" adminGroupName=PowerUsers
adminUserName=user1;user2 permissions=ffffr
```

createAdminUser

This command creates an administrative user.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

adminUserName
The administrative user name

adminPassWord
The password for the administrative user

Optional Parameters:

description
Optional description for the administrative user

adminGroupName
Specifies a group that comprises this user

Example Command:

```
cliq createAdminUser login=10.0.1.3 userName=admin passWord=secret
description="My shiny new user" adminUserName=user adminPassWord=secret
```

createCluster

This command creates a cluster in a management group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

clusterName
The name of the cluster

node
The host names of the nodes the cluster comprises

Optional Parameters:

description
Optional description for the cluster

useVip
Should virtual IP (VIP) addressing be used? This can be one of:

- 0
- 1 - default, if one or more VIPs are specified

vip
A delimited list of virtual IP address and subnet mask

Note: since each VIP contains two parameters, IP address and subnet mask, both must be specified in order, even if empty

Example Command:

```
cliq createCluster login=10.0.1.3 clusterName=TheCluster userName=admin
passWord=secret description="My shiny new cluster" useVip=1 node=10.1.2.4
vip=10.1.2.99;255.255.0.0;;150.215.017.009;255.255.240.0;
```

createGroup

This command creates a new management group. This command may take several minutes to complete.

Availability: Windows, SAN/iQ

Required Parameters:

node
The IP address or DNS-resolvable name of one or more storage nodes

groupName
The name of the group

userName
The authentication user name for the new management group

passWord
The password for the new management group

Optional Parameters:

none

Example Command:

```
cliq createGroup groupName=TheGroup node=10.1.2.3;10.1.2.4 userName=admin
passWord=secret
```

createKey

This command creates an encrypted key file that can be used to specify credentials instead of username/password.

Availability: Windows

Required Parameters:

keyFile
The name for the key file to be created

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

Optional Parameters:

none

Example Command:

```
cliq createKey login=10.0.1.2 userName=admin passWord=secret keyFile=c:.key
```

createRemoteAssociation

This command creates a remote group-to-primary group association. This association is done automatically when a remote snapshot is created, so this command is not usually needed.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

remote
The IP address or DNS-resolvable names of one or more remote node

remoteUserName
The authentication user name for the remote group

remotePassWord
The password for the remote group

remoteKeyFile
The encrypted key file for the remote group (this is specified instead of the remoteusername and remotepassword parameters)

primaryBandwidth
The remote copy bandwidth to the primary group (this is at the group level)

- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

remoteBandwidth
The remote copy bandwidth to the remote group (this is at the group level)

- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

Optional Parameters:

none

Example Command:

```
cliq createRemoteAssociation login=10.0.1.2 userName=admin passWord=secret
remote=10.0.1.3 remoteUserName=admin remotePassWord=secret
primaryBandwidth=10Mb remoteBandwidth=10Mb
```

createRemoteSnapshot

This command creates a remote snapshot of one or more SAN/iQ volumes.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

remote
The IP address or DNS-resolvable names of one or more remote node

remoteUserName
The authentication user name for the remote group

remotePassWord
The password for the remote group

remoteKeyFile
The encrypted key file for the remote group (this is specified instead of the remoteusername and remotepassword parameters)

primarySnapshot
The name of the local snapshot to remote copy

remoteCluster
The name of the remote cluster to host the remote volume

"This is not required if the remoteVolume already exists

remoteVolume
The name of the remote volume to host the snapshot

"If this does not exist it is created automatically; if it does exist it must be a remote volume (MakeRemote)

remoteSnapshot

The name of the remote snapshot to create

Optional Parameters:

description

The description of the remote snapshot

primaryBandwidth

The remote copy bandwidth to the primary group (this is at the group level)

- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

remoteBandwidth

The remote copy bandwidth to the remote group (this is at the group level)

- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

Example Command:

```
cliq createRemoteSnapshot primarySnapshot=Snapshot0 remoteSnapshot=Snapshot0
remoteVolume=Volume0 description="Exchange DB-1" login=10.1.2.3
userName=admin passWord=secret remote=10.1.2.4 remoteUserName=admin
remotePassWord=secret
```

createSite

This command creates a site in a multi-site SAN.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

siteName
The name of the site

Optional Parameters:

description
Description for the site

primary
This site is the primary site. This can be one of:

- 0
- 1 - default

Example Command:

```
cliq createSite siteName=Headquarters login=10.0.1.2 userName=admin
passWord=secret
```

createSnapshot

This command creates a snapshot of one or more SAN/iQ volumes.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
A delimited list of volumes to snapshot

snapshotName
A delimited list of snapshot names

Optional Parameters:

description
A delimted list of snapshot descriptions

inheritAccess

- 0 - the snapshot(s) will not inherit the volume list, authentication group, ACL relationships of the original volume (default)
- 1 - the snapshot(s) will inherit the volume list, authentication group, ACL relationships of the original volume

Example Command:

```
cliq createSnapshot volumeName=volume0;volume1
snapshotName=snapshot0;snapshot1 login=10.0.1.2 userName=admin
passWord=secret
```

createVolume

This command creates a SAN volume without connecting to a host.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

clusterName
The name of the cluster to contain the volume

size
The size of the volume, with units specified:

- <n>MB, n Megabytes (1024 Kilobytes)
- <n>GB, n Gigabytes (1024 Megabytes)
- <n>TB, n Terabytes (1024 Gigabytes)

Optional Parameters:

description
A description for the volume created

replication
The replication level for the volume (1|2|3|4)

minReplication
The minimum replication allowed for the volume before it goes offline (1|2|3|4). Note: the minReplication value must be equal to or less than the replication value on the volume.

checkSum

- 0 - the volume does not use checksums

- 1 - the volume uses checksums

thinProvision

- 0 - the volume does not use thin-provisioning
- 1 - The volume is thin-provisioned (in a thinly provisioned volume, reserve may be < length)

initialQuota

The initial quota for the volume, as a percentage or size - the volume resets to this initial size when a snapshot is taken

reserveQuota

The reserve quota for the volume, as a percentage or size - this is the size guaranteed to be available for this volume, regardless of space allocated to other objects in the system

scratchQuota

The scratch quota for the volume, as a percentage or size - this is the size guaranteed to be available for snapshots of this volume, regardless of space allocated to other objects in the system

stridePages

This is the initial stride setting for the volume - this must be a power of 2 (1,2,4,8)

WARNING: Enabling checksums or using an initialQuota or stridePages value other the the default may impact application server performance. minReplication values of 3 and 4 are experimental and have not been fully regression tested. Use at your own risk.

Example Command:

```
cliq createVolume volumeName=MyVolume clusterName=TheCluster size=100GB
description="Exchange DB-1" login=10.0.1.2;10.0.1.3 username=admin
password=secret
```

deleteAdminGroup

This command deletes an administrative group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

adminGroupName
The administrative group name

Optional Parameters:

none

Example Command:

```
cliq deleteAdminGroup login=10.0.1.3 userName=admin passWord=secret
adminGroupName=PowerUsers
```

deleteAdminUser

This command deletes an administrative user.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

adminUserName
The administrative user name

Optional Parameters:

none

Example Command:

```
cliq deleteAdminUser login=10.0.1.3 userName=admin passWord=secret
adminUserName=user
```

deleteCluster

This command deletes a cluster, removing all storage nodes.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

clusterName
The name of the cluster

Optional Parameters:

none

Example Command:

```
cliq deleteCluster clusterName=TheCluster login=10.1.2.3 userName=admin
passWord=secret
```

deleteGroup

This command deletes a management group, removing all storage nodes.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

groupName
The name of the group

Optional Parameters:

none

Example Command:

```
cliq deleteGroup groupName=TheGroup login=10.1.2.3 userName=admin
passWord=secret
```

deleteRemoteAssociation

This command deletes a remote group-to-primary group association.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

remote
The IP address or DNS-resolvable names of one or more remote node

remoteUserName
The authentication user name for the remote group

remotePassWord
The password for the remote group

remoteKeyFile
The encrypted key file for the remote group (this is specified instead of the remoteusername and remotepassword parameters)

Optional Parameters:

none

Example Command:

```
cliq deleteRemoteAssociation login=10.0.1.2 userName=admin passWord=secret
remote=10.0.1.3 remoteUserName=admin remotePassWord=secret
```

deleteSite

This command deletes a site in a multi-site SAN.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

siteName
The name of the site

Optional Parameters:

none

Example Command:

```
cliq deleteSite siteName=Headquarters login=10.1.2.3 userName=admin
passWord=secret
```

deleteSnapshot

This command deletes a snapshot.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

snapshotName
The name of the snapshot

Optional Parameters:

none

Example Command:

```
cliq deleteSnapshot snapshotName=Snapshot0 login=10.1.2.3 userName=admin
passWord=secret
```

deleteSnapshotTempSpace

This command deletes the snapshot temporary space.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

snapshotName
The name of the snapshot

Example Command:

```
cliq deleteSnapshotTempSpace snapshotName=TheSnapshot login=10.1.2.3
userName=admin passWord=secret
```

deleteVirtualManager

This command deletes a virtual manager from a group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq deleteVirtualManager login=10.1.2.3 userName=admin passWord=secret
```

deleteVolume

This command forcibly deletes a SAN volume without disconnecting from the host.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

none

Example Command:

```
cliq deleteVolume volumeName=MyVolume login=10.1.2.3 userName=admin
passWord=secret
```

disconnectLocalVolume

This command disconnects a SAN volume from the host.

Availability: Windows

Required Parameters:

volumeName
The name of the volume from the host perspective

Optional Parameters:

none

Example Command:

```
cliq disconnectLocalVolume volumeName=z:
```

discoverTcp

This command discovers storage nodes and management groups on the network, using TCP.

Availability: Windows, SAN/iQ

Required Parameters:

node
One or more IP addresses or DNS-resolvable names to attempt to find

Optional Parameters:

groupOrder
Return storage nodes ordered by group membership. This can be one of:
- 0 - default
- 1

receivePort
The TCP port to receive the discovery packets (defaults to an unused port if unspecified)

waitForData
The number of milliseconds to wait for the discovery info (defaults to 3000 if unspecified)

Example Command:

```
cliq discoverTCP groupOrder=1 node=10.1.2.3;10.1.2.4
```

discoverUdp

This command discovers storage nodes and management groups on the network, using UDP.

Availability: Windows, SAN/iQ

Required Parameters:

ipMask
An IP address mask for UDP discovery

ipSubnet
An IP address subnet for UDP discovery

Optional Parameters:

groupOrder
Return storage nodes ordered by group membership. This can be one of:
- 0 - default
- 1

receivePort
The UDP port to receive the discovery packets (defaults to an unused port if unspecified)

waitForData
The number of milliseconds to wait for the discovery info (defaults to 3000 if unspecified)

Example Command:

```
cliq discoverUdp ipMask=255.255.240.0 ipSubnet=10.0.0.0
```

getClusterInfo

This command returns information about a cluster.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

clusterName
The name of the cluster. If this is not specified, all clusters in the group are returned

searchDepth
Which objects to inspect

- 1 - Clusters only
- 2 - Clusters and volumes
- 3 - Clusters, volumes and snapshots
- 4 - Clusters, volumes, snapshots and remote snapshots (default)

verbose
How much information to return

- 0 - Get summary information only (better performance)
- 1 - Get all information (better information - default)

Example Command:

```
cliq getClusterInfo clusterName=Cluster0 login=10.1.2.3 userName=admin
passWord=secret
```

getGroupInfo

This command returns information about a management group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

searchDepth
Which objects to inspect

- 1 - Groups only
- 2 - Groups and clusters
- 3 - Groups, clusters and volumes
- 4 - Groups, clusters, volumes and snapshots
- 5 - Groups, clusters, volumes, snapshots and remote snapshots (default)

verbose
How much information to return

- 0 - Get summary information only (better performance)
- 1 - Get all information (better information - default)

Example Command:

```
cliq getGroupInfo login=10.1.2.3 userName=admin passWord=secret
```

getLocalVolumes

This command returns information about connected volumes hosted by the SAN/iQ array.

Availability: Windows

Required Parameters:

none

Optional Parameters:

none

Example Command:

```
cliq getLocalVolumes
```

getNsmInfo

This command returns information about a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable name of a storage node

userName
The authentication user name for the node

passWord
The password for the node

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq getNsmInfo login=10.1.2.3 userName=admin passWord=secret
```

getPerformanceStats

This command returns performance monitoring statistics.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable name of a storage node

userName
The authentication user name for the node

passWord
The password for the node

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

interval
The interval in between counter sampling in milliseconds. Defaults to 6000.

Note: because the internal sampling frequency is 6 seconds, it's not recommended to set this value less than 6000

Example Command:

```
cliq getPerformanceStats login=10.1.2.3 userName=admin passWord=secret
```

getRemoteSnapshotInfo

This command returns information about remote snapshots.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

snapshotName
The name of the snapshot. If this is not specified, all remote snapshots in the group are returned

Optional Parameters:

snapshotName
The name of the snapshot. If this is not specified, all remote snapshots in the group are returned

verbose
How much information to return

- 0 - Get summary information only (better performance)
- 1 - Get all information (better information - default)

Example Command:

```
cliq getRemoteSnapshotInfo snapshotName=snapshot0 login=10.1.2.3
userName=admin passWord=secret
```

getScsiInfo

This command returns SCSI inquiry information about a locally connected volume.

Availability: Windows

Required Parameters:

volumeName
The name of the volume as mounted on the host.

Optional Parameters:

none

Example Command:

```
cliq getScsiInfo volumeName=z:
```

getSiteInfo

This command returns site information on multi-site SANs.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

siteName
The name of the site. If this is not specified, all sites in this group are returned.

Example Command:

```
cliq getSiteInfo siteName=TheSite login=10.1.2.3 userName=admin
passWord=secret
```

getSnapshotInfo

This command returns information about a snapshot.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

snapshotName
The name of the snapshot. If this is not specified, all snapshots in the group are returned

searchDepth
Which objects to inspect

- 1 - Snapshots only
- 2 - Snapshots and remote snapshots (default)

verbose
How much information to return

- 0 - Get summary information only (better performance)
- 1 - Get all information (better information - default)

Example Command:

```
cliq getSnapshotInfo snapshotName=snapshot0 login=10.1.2.3 userName=admin
passWord=secret
```

getSystemInfo

This command returns version information about the API, and other dependent libraries.

Availability: Windows, SAN/iQ

Required Parameters:

none

Optional Parameters:

none

Example Command:

```
cliq getSystemInfo
```

getVolumeInfo

This command returns information about a volume.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

volumeName
The name of the volume. If this is not specified, all volumes in the group are returned

searchDepth
Which objects to inspect

- 1 - Volumes only
- 2 - Volumes and snapshots
- 3 - Volumes, snapshots and remote snapshots (default)

verbose
How much information to return

- 0 - Get summary information only (better performance)
- 1 - Get all information (better information - default)

Example Command:

```
cliq getVolumeInfo volumeName=volume0 login=10.1.2.3 userName=admin
passWord=secret
```

help

This command returns information about the currently supported API command set.

Availability: Windows, SAN/iQ

Required Parameters:

none

Optional Parameters:

command

A specific command for more detailed help information

Note: if help is specified with no parameters, a list of possible return codes is returned

Example Command:

```
cliq help command=getSystemInfo
```

makePrimary

This command promotes a remote volume to a primary production volume.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

none

Example Command:

```
cliq makePrimary login=10.1.2.3 userName=admin passWord=secret
volumeName="TheVolume"
```

makeRemote

This command demotes a primary volume to a remote snapshot target.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

snapshotName
The name of the snapshot to be taken when the volume is converted

Optional Parameters:

none

Example Command:

```
cliq makePrimary login=10.1.2.3 userName=admin passWord=secret
volumeName="TheVolume" snapshotName="TheSnapshot"
```

modifyAdminGroup

This command modifies an administrative group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

adminGroupName
The administrative group name

Optional Parameters:

adminUserName
A list of one or more administrative users this group comprises

description
Optional description for the administrative group

permissions
Permissions for the group. This is a character sequence specifying the allowable permissions in the following order: Password,Group,Network,Node,Report

For each group, the allowable permissions are:

- r, read-only
- w, read-write
- f, full-access

For example:

- permissions=ffffr specifies full access for password, group, network and node, and read-only access for reports
- permissions=rrrfr specifies read-only access for password, group, network and reports, and full access for node

Note: if this is not specified, the permissions are set to rrrrr

Example Command:

```
cliq modifyAdminGroup login=10.0.1.3 userName=admin passWord=secret
description="My shiny new group" adminGroupName=PowerUsers
adminUserName=user1;user2 permissions=ffffr
```

modifyAdminUser

This command modifies an administrative user.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

adminUserName
The administrative user name

Optional Parameters:

description
Optional description for the administrative user

adminPassWord
The password for the administrative user

Example Command:

```
cliq modifyAdminUser login=10.0.1.3 userName=admin passWord=secret
description="My shiny new user" adminUserName=user adminPassWord=secret
```

modifyCluster

This command changes settings on a cluster.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

clusterName
The name of the cluster

Optional Parameters:

newName
The new name for the cluster

description
Optional description for the cluster

useVip
Should virtual IP (VIP) addressing be used? This can be one of:

- 0
- 1 - default, if one or more VIPs are specified

node
The host names of the nodes the cluster comprises

vip
A delimited list of virtual IP address and subnet mask

Note: since each VIP contains two parameters, IP address and subnet mask, both must be specified in order, even if empty

Example Command:

```
cliq modifyCluster clusterName=TheCluster login=10.0.1.3 userName=admin
passWord=secret description="My shiny new cluster" useVip=1 node=10.1.2.4
vip=10.1.2.99;255.255.0.0;;150.215.017.009;255.255.240.0;
```

modifyGroup

This command changes settings on a management group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

node
Specify the storage nodes that the group comprises

bandwidthPriority
The manager bandwidth
- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

customerName
Customer name

supportId
Support ID provided by HP LeftHand Networks

contactName
Contact name

postalAddress
Postal address

cityName
Postal city

stateName

Postal state

countryName

Postal country

postalCode

Postal code

telephoneNumber

Contact telephone number

emailAddress

Contact email address

Example Command:

```
cliq modifyGroup login=10.0.1.2 userName=admin passWord=secret
node=10.0.1.2;10.0.1.3
```

modifyRemoteAssociation

This command modifies a previously created remote volume association.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

remote
The IP address or DNS-resolvable names of one or more remote node

remoteUserName
The authentication user name for the remote group

remotePassWord
The password for the remote group

remoteKeyFile
The encrypted key file for the remote group (this is specified instead of the remoteusername and remotepassword parameters)

Optional Parameters:

primaryBandwidth
The remote copy bandwidth to the primary group (this is at the group level)

- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

remoteBandwidth
The remote copy bandwidth to the remote group (this is at the group level)

- <n>Kb, n Kilobits/sec (1000 Bits/second)
- <n>Mb, n Megabits/sec (1000 Kilobits/second)
- <n>Gb, n Gigabits/sec (1000 Megabits/second)

Example Command:

```
cliq modifyRemoteAssociation login=10.0.1.2 userName=admin passWord=secret
remote=10.0.1.3 remoteUserName=admin remotePassWord=secret
remoteBandwidth=10Mb
```

modifySite

This command modifies a site in a multi-site SAN.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

siteName
The name of the site

Optional Parameters:

node
Specify the nodes that this site comprises

description
Description for the site

primary

- 0 - this is not the primary site
- 1 - this is the primary site

Example Command:

```
cliq modifySite siteName=TheSite description="My Site" login=10.0.1.2
userName=admin passWord=secret
```

modifySnapshot

This command modifies snapshot settings.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

snapshotName
The name of the snapshot to modify

Optional Parameters:

description
A description for the volume created

scratchQuota
The scratch quota for the snapshot, as a percentage or size - this is the size guaranteed to be available this snapshot, regardless of space allocated to other objects in the system

autogrowPages
The amount to grow the volume when it is thin-provisioned and new pages must be added

WARNING: Using an autogrowPages value other than the default may have unanticipated impacts on application performance.

Example Command:

```
cliq modifySnapshot description="New Description" login=10.0.1.2
userName=admin passWord=secret snapshotName=TheSnapshot
```

modifyVolume

This command modifies volume settings.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume to modify

Optional Parameters:

description
A description for the volume created

replication
The replication level for the volume (1|2|3|4)

minReplication
The minimum replication allowed for the volume before it goes offline (1|2|3|4). Note: the minReplication value must be equal to or less than the replication value on the volume.

checkSum
- 0 - the volume does not use checksums
- 1 - the volume uses checksums

thinProvision
- 0 - The volume is not thin-provisioned
- 1 - The volume is thin-provisioned (in a thinly provisioned volume, reserve may be < length)

initialQuota

The initial quota for the volume, as a percentage or size - the volume resets to this initial size when a snapshot is taken

reserveQuota

The reserve quota for the volume, as a percentage or size - this is the size guaranteed to be available for this volume, regardless of space allocated to other objects in the system

scratchQuota

The scratch quota for the volume, as a percentage or size - this is the size guaranteed to be available for snapshots of this volume, regardless of space allocated to other objects in the system

stridePages

This is the initial stride setting for the volume - this must be a power of 2 (1,2,4,8)

autogrowPages

The amount to grow the volume when it is thin-provisioned and new pages must be added

clusterName

The name of the cluster - changing this migrates the volume to another cluster

size

The size of the volume

friendlyName

This is an optional field used internally

WARNING: Enabling checksums or using an initialQuota, stridePages or autogrowPages value other the the default may impact application server performance. minReplication values of 3 and 4 are experimental and have not been fully regression tested. Use at your own risk.

Example Command:

```
cliq modifyVolume description="New Description" login=10.0.1.2 userName=admin
passWord=secret volumeName=TheVolume
```

provisionVolume

This command creates a volume and connects it to the host.

Availability: Windows

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

clusterName
The name of the cluster for the volume

volumeName
The name of the volume

size
The size of the volume, with units specified:

- <n>MB, n Megabytes (1024 Kilobytes)
- <n>GB, n Gigabytes (1024 Megabytes)
- <n>TB, n Terabytes (1024 Gigabytes)

Optional Parameters:

description
A description for the volume created

replication
The replication level for the volume (1|2|3|4)

minReplication
The minimum replication allowed for the volume before it goes offline (1|2|3|4). Note: the minReplication value must be equal to or less than the replication value on the volume.

checkSum

- 0 - the volume does not use checksums

- 1 - the volume uses checksums

thinProvision

- 0 - The volume is not thin-provisioned
- 1 - The volume is thin-provisioned (in a thinly provisioned volume, reserve may be < length)

initialQuota

The initial quota for the volume, as a percentage or size - the volume resets to this initial size when a snapshot is taken

reserveQuota

The reserve quota for the volume, as a percentage or size - this is the size guaranteed to be available for this volume, regardless of space allocated to other objects in the system

scratchQuota

The scratch quota for the volume, as a percentage or size - this is the size guaranteed to be available for snapshots of this volume, regardless of space allocated to other objects in the system

mountPoint

The drive letter or mount point on the host for the volume (LUN will be uninitialized if not specified)

stridePages

This is the initial stride setting for the volume - this must be a power of 2 (1,2,4,8…)

namePrefix

A prefix string for newly created objects. A unique number value will be concatenated to this prefix to guarantee name uniqueness.

vipLoadBalance

Use VIP load balancing for this host. This can be one of:

- 0
- 1 - default

WARNING: Enabling checksums or using an initialQuota or stridePages value other the the default may impact application server performance. minReplication values of 3 and 4 are experimental and have not been fully regression tested. Use at your own risk.

Example Command:

```
cliq provisionVolume clusterName=TheCluster volumeName=TheVolume
description=NewVolume size=100GB mountPoint=z: login=10.0.1.2 userName=admin
passWord=secret
```

rebalanceVip

This command rebalances the connections to a volume when using a virtual IP address.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

none

Example Command:

```
cliq rebalanceVip volumeName=MyVolume login=10.1.2.3 userName=admin
passWord=secret
```

removeVolume

This command disconnects a SAN volume from the host, then deletes it. If the volume cannot be disconnected (because it's in use, or for any other reason), it will not be deleted.

Availability: Windows

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

none

Example Command:

```
cliq removeVolume volumeName=z: login=10.0.1.2 userName=admin passWord=secret
```

resetSession

This command resets the iSCSI session associated with a volume. Some initiators will attempt to reconnect after the reset.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

initiator
A semicolon delimited string of host IQN's. If this is not specified, all sessions for all connected hosts will be reset.

Example Command:

```
cliq resetSession volumeName=MyVolume login=10.1.2.3 userName=admin
passWord=secret
```

rollbackSnapshot

This command rolls back a snapshot. WARNING: The rollbackSnapshot command will replace the original volume with a new one based on the contents of the snapshot and delete any snapshots created prior to snapshot which is being rolled back.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the new volume

snapshotName
The name of the snapshot

Optional Parameters:

description
A description for the volume created

Example Command:

```
cliq rollbackSnapshot volumeName=TheVolume snapshotName=TheSnapshot
login=10.0.1.2 userName=admin passWord=secret
```

runDiagnostic

This command runs one or all storage node diagnostics.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable name of a storage node

userName
The authentication user name for the node

passWord
The password for the node

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

diagnosticName
The name of the diagnostic to run (if unspecified, all diagnostics are listed; if "*" is specified, all are run)

Example Command:

```
cliq runDiagnostic login=10.0.1.2 userName=admin passWord=secret
diagnosticName=healthCheck
```

setGossipList

This command sets the gossip list on a storage node. In the normal case, the gossip list is managed by the SAN/iQ agent. This is a backup mechanism that the API provides for imposing this if it's set incorrectly.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

node
A list of IP addresses for the managers in the group

Example Command:

```
cliq setGossipList login=10.0.1.2 userName=admin passWord=secret
node=10.0.1.3;10.0.1.4
```

shutdownGroup

This command forces a soft shutdown of a management group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq shutdownGroup login=10.0.1.2 userName=admin passWord=secret
```

shutdownNsm

This command shuts down a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable name of a storage node

userName
The authentication user name for the node

passWord
The password for the node

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

action
The operation to perform. This can be one of:

- "Shutdown" - powers off the storage node
- "Restart" - reboots the storage node
- "Cancel" - cancels a restart or shutdown if pending

Optional Parameters:

delay
The number of minutes to delay prior to shutdown or restart (defaults to 0)

Example Command:

```
cliq shutdownNsm action=Restart delay=10 login=10.0.1.2 userName=admin
passWord=secret
```

startManager

This command starts the manager on a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq startManager login=10.0.1.2 userName=admin passWord=secret
```

startVirtualManager

This command starts a virtual manager on a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq startVirtualManager login=10.0.1.2 userName=admin passWord=secret
```

stopManager

This command stops the manager on a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq stopManager login=10.0.1.2 userName=admin passWord=secret
```

stopVirtualManager

This command stops a virtual manager on a storage node.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq stopVirtualManager login=10.0.1.2 userName=admin passWord=secret
```

testCredentials

This command tests the login credentials for a management group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

groupName
The name of the group (this is specified instead of the username, password and keyfile parameters if credentials are cached)

Optional Parameters:

none

Example Command:

```
cliq testCredentials login=10.0.1.2 userName=admin passWord=secret
```

unassignVolume

This command disassociates a volume from all servers.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

volumeName
The name of the volume

Optional Parameters:

none

Example Command:

```
cliq unassignVolume volumeName=TheVolume login=10.0.1.2 userName=admin
passWord=secret
Required Parameters:
```

login
The IP address or DNS-resolvable name of a storage node

userName
The authentication user name for the node

passWord
The password for the node

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

```
Optional Parameters:
```

run

The utility and parameters to execute on the storage node - if this parameter is missing, a list of possible commands is returned

Example Command:

```
cliq utility run=ping -c 10 10.3.2.1" login=10.1.2.3 userName=admin
passWord=secret
```

vssSnapshot

This command snapshots volumes using the VSS requestor client (Windows only).

Availability: Windows (2003, 2008 only)

Required Parameters:

none

Optional Parameters:

volumeName
The list of volumes to snapshot

persistent
Is the snapshot persistent? This can be one of:
- 0 - default
- 1

transportable
Is the snapshot transportable? This can be one of:
- 0 - default
- 1

backupDoc
The name of the backup document file

writerInfo
Display information about VSS writers. This can be one of:
- status - writer status
- metadataSummary - summary of the VSS writers
- metadataDetail - detailed information on the VSS writers

shadowInfo
Display information about VSS shadow copies. This can be one of:
- all - show information on all shadow copies
- <shadow Set GUID> - show information on shadow copies belonging to this shadow set
- <shadow Copy GUID> - show information on this shadow copy

deleteShadowCopies
Delete VSS shadow copies. This can be one of:
- all - delete all shadow copies
- <volume> - delete the oldest shadow copy of this volume
- <shadow Set GUID> - delete all shadow copies in this shadow set

- <shadow Copy GUID> - delete the shadow copy with this id

excludeWriters

List of writer GUIDs to exclude from the shadow copy

includeWriters

List of writer GUIDs to include in the shadow copy - if the writer is found to not participate in the snapshot, no snapshot will be taken

runCommand

Custom command executed after shadow creation, import or between break and make-it-write

importShadow

Transportable VSS snapshot import

mountShadow

Expose the shadow copy as a mount point or drive letter - the format of this is mountShadow="<GUID>;<mountOrDrive>"

breakShadowCopies

Break the shadow copy set

Example Command:

```
cliq vssSnapshot volumeName=y:;z:
cliq vssSnapshot volumeName=c:f: includeWriters=afbab4a2-367d-4d15-a586-
71dbb18f8485
```

Note: in the second example, we are validating that the registry writer participates in the snapshot. If it does not, the command will return CliqNothingDone. You can discover the GUIDs for writers by runnig "cliq vssSnapshot writerInfo=status".

waitForAlert

This command waits for an alert message.

Availability: Windows, SAN/iQ

Required Parameters:

node
The IP address or DNS-resolvable name of a storage node

Optional Parameters:

receivePort
The UDP port to receive the discovery packets (defaults to an unused port if unspecified)

waitForData
The number of milliseconds to wait for an alert (defaults to 60000 if unspecified)

Example Command:

```
cliq waitForAlert node=10.1.2.3
```

waitForUpdate

This command will block on a change to the state in the management group.

Availability: Windows, SAN/iQ

Required Parameters:

login
The IP address or DNS-resolvable names of one or more storage nodes

userName
The authentication user name for the group

passWord
The password for the group

keyFile
The encrypted key file (this is specified instead of the username and password parameters)

Optional Parameters:

none

Example Command:

```
cliq waitForUpdate login=10.1.2.3 userName=admin passWord=secret
```

Return Codes

0 CliqSuccess

Everything succeeded normally.

1 CliqNothingDone

Operation has succeeded, but nothing was done (the system was already in the requested state).

2 CliqOperationPending

Operation has not failed, but is not yet complete. The "handle" parameter contains a value that can be used to query and cancel the operation.

3 CliqOperationAbandoned

Operation was intentionally cancelled or abandoned.

4 CliqNothingFound

Nothing was found.

128 CliqUnexpected

An unexpected error has occurred.

129 CliqXmlError

The XML given is not well-formed.

130 CliqParameterFormat

The parameter is not specified correctly.

131 CliqParameterRepeat

A parameter is repeated.

132 CliqMissingMethod

The command method is missing.

133 CliqMissingParameter

One or more expected parameters are missing.

134 CliqUnrecognizedCommand

This command is unrecognized.

135 CliqUnrecognizedParameter
This parameter is unrecognized.

136 CliqIncompatibleParameters
Two or more parameters supplied are incompatible with each other.

137 CliqNotYetImplemented
This is a legal command - we just haven't done it yet.

138 CliqNoMemory
Out of memory.

139 CliqVolumeNotFound
Could not find the requested volume.

140 CliqVolumeInUse
The requested volume is in use.

141 CliqVolumeInitFailure
Volume initialization failed.

142 CliqUnrecognizedVolume
The volume is an unrecognized type.

143 CliqOperationFailed
General SAN/iQ error - the operation failed.

144 CliqCredentialsFailed
The supplied credentials are incorrect.

145 CliqInvalidParameter
Invalid parameter.

146 CliqObjectNotFound
Object not found.

147 CliqConnectionFailure
Failed to connect to the API server.

148 CliqNotEnoughSpace

Not enough space to complete the command.

149 CliqNoManager

Could not find a manager.

150 CliqSocketError

Network socket error.

151 CliqOperationTimedOut

Operation exceeded the specified timeout.

152 CliqNoPlatformSupport

This operating system type does not support the operation.

153 CliqIncorrectOsVersion

This operating system version does not support the operation.

154 CliqUtilityNotFound

The utility command requested was not found.

155 CliqUtilityNotAllowed

The utility command requested is not in the allowed list.

156 CliqUtilityIllegalParameter

The utility command contains unsupported parameters or redirection.

157 CliqUtilityFailed

The utility command executed, but returned a non-zero status code.

158 CliqNodeNotFound

The specified storage node can't be found.

159 CliqIllegalUsername

The username must be 3..40 characters, starting with a letter.

160 CliqIllegalPassword

The password must be 5..40 characters, not / or :.

161 CliqFileError

General file error.

162 CliqMissingInitiator

No iSCSI initiator found.

163 CliqInitiatorStopped

The iSCSI initiator is not running.

164 CliqSanIqTooOld

The version of SAN/iQ software must be upgraded.

165 CliqDefaultAdmin

You cannot delete, modify permissions, or remove the last user from the default administration group.

166 CliqVssProviderNotInstalled

The HP LeftHand VSS Provider is not installed.

167 CliqVssProviderNotRunning

The HP LeftHand VSS Provider is not running.