

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

Windows Server 2008 R2

Windows XP SP2

Windows Vista

Windows 7

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 path.

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>
```

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Syntax

CLIQ is the command-line interface (CLI) for the HP LeftHand Networks SAN. 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 "1|0" 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 the SI units (Système International d'Unité) 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 (R) Command Line Interface, v8.0.0.1 (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
```

Example Response:

```
RESPONSE
result          0
processingTime 123
name            CliqSuccess
description     Operation succeeded
```

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
```

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 clearCredentials groupName=TheGroup
```

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
```

clearVssVolumeFlags

This command resets snapshot flags in the vss volume.

Availability: Windows

Required Parameters:

volumeName

The name of the volume

Optional Parameters:

none

Example Command:

```
cliq clearVssVolumeFlags volumeName=x:
```

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 (Report does not support this)
- f, full-access (Report does not support this)

For example:

- permissions=ffff 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 delimited 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

managed

- 0 - the snapshot(s) will not attempt to use VSS on the host connected to the volume (default)
- 1 - the snapshot(s) will attempt to use VSS on the host connected to the 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.

parity

The number of parity nodes for the data on this volume. This enables parity network RAID on the volume. Replication and parity are supported in the following combinations:

- replication:0, parity:0 (Network RAID-0)
- replication:1, parity:0 (Network RAID-10)
- replication:2, parity:0 (Network RAID-10+1)
- replication:3, parity:0 (Network RAID-10+2)
- replication:2, parity:1 (Network RAID-5)
- replication:3, parity:2 (Network RAID-6)

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: Using an initialQuota or stridePages value other than 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
```

getAlertLog

This command returns Alerts.log information.

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)

Optional Parameters:

logFile

The name of the local file for the log archive

Example Command:

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

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 HP LeftHand 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:
```

getServerCapabilities

This will interrogate a remote server for its HP LeftHand integration capabilities. If this call succeeds, the actual capabilities will be returned. The only acceptable result here is VSS Snapshot Integration. For anticipated future releases, this may also include information about virtual machine hosting (Vmware, Citrix, Hyper-V), and Server information.

Availability: Windows, SAN/iQ

Required Parameters:

login

The IP address or DNS-resolvable name of the application server

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 getServerCapabilities login=10.0.1.2 userName=admin passWord=secret
```

getServerVolumeInfo

This command returns the features of a volume by interrogating a remote server. This will return VSS associated volumes.

Availability: Windows, SAN/iQ

Required Parameters:

login

Contains authentication information about an application server

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 getServerVolumeInfo login=10.0.1.2 userName=admin passWord=secret
```

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
```


getSupportInfo

This command gathers all support log files from a management group and all its member storage nodes. If the specified storage node does not belong to any management group, then only logs from the storage node will be collected. This command stores the archive locally.

Availability: Windows

<center><sub>"API"----

Required Elements:

login

Contains authentication information about a storage node

Optional Parameters:

filepath

The path to hold the final archive, if not specified, the current directory will be used.

Element "login" Required Parameters:

nsm

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)

Example Command:

```
<gauche version="1.0">
<command method="getSupportInfo" />
<login nsm="10.0.1.2" userName="admin" passWord="secret"/>
</command>
</gauche>
```

Example Response:

```
<gauche version="1.0">
<response description="Operation succeeded" name="CliqSuccess"
processingTime="10078" result="0">
```

```
<info fileName="2009-10-19T21_00_30Z( ee2e9df077f58bb36364d183f49d32e6.zip"/>
</response>
</gauche>
```

<center><sub>"CLI"-----

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:

filepath

The path to hold the final archive, if not specified, the current directory will be used.

Example Command:

```
cliq getSupportInfo login=10.1.2.3 userName=admin passWord=secret filepath=c:
```

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

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:

none

Example Command:

```
cliq makePrimary login=10.1.2.3 userName=admin passWord=secret  
volumeName="TheVolume" size=1GB
```

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 (Report does not support this)
- f, full-access (Report does not support this)

For example:

- permissions=ffff 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

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.

parity

The number of parity nodes for the data on this volume. This enables parity network RAID on the volume. Replication and parity are supported in the following combinations:

- replication:0, parity:0 (Network RAID-0)
- replication:1, parity:0 (Network RAID-10)
- replication:2, parity:0 (Network RAID-10+1)
- replication:3, parity:0 (Network RAID-10+2)
- replication:2, parity:1 (Network RAID-5)
- replication:3, parity:2 (Network RAID-6)

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)

autogrowSeconds

The amount to grow the volume when it is thin-provisioned and new pages must be added, based on the current growth rate - a value of 0 means no autogrow

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: Using an initialQuota, stridePages or autogrowSeconds value other than 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.

parity

The number of parity nodes for the data on this volume. This enables parity network RAID on the volume. Replication and parity are supported in the following combinations:

- replication:0, parity:0 (Network RAID-0)
- replication:1, parity:0 (Network RAID-10)
- replication:2, parity:0 (Network RAID-10+1)
- replication:3, parity:0 (Network RAID-10+2)
- replication:2, parity:1 (Network RAID-5)
- replication:3, parity:2 (Network RAID-6)

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: Using an initialQuota or stridePages value other than 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
```


removeSnapshot

This command disconnects a SAN snapshot from the host, then deletes it. If the snapshot 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)

snapshotName

The name of the snapshot

Optional Parameters:

none

Example Command:

```
cliq removeSnapshot snapshotName=z: login=10.0.1.2 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)

snapshotName

The name of the snapshot

Optional Parameters:

description

A description for the volume created

Example Command:

```
cliq rollbackSnapshot 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

setLicenseKey

This command sets the license key on a storage node.

Availability: Windows, SAN/iQ

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
- 1 - default

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

""snapshotname

The list of snapshot names

""username

The authentication user name for the group

""password

The authentication user password for the group

""description

A description of the vss snapshot

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 running "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.
- 5** CliqSnapshotSet
This snapshot was a part of the snapshot set.
- 6** CliqVssSnapshotWarning
Warning: The writer operation failed.
- 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 Networks VSS Provider is not installed.
- 167** CliqVssProviderNotRunning
The HP LeftHand Networks VSS Provider is not running.
- 168** CliqVolumeNoSessions
Cannot create an application-managed snapshot because there are no iSCSI connections associated with this volume. To create application-managed snapshots, there must be at least one application server associated with the volume via an iSCSI connection. The volume must be connected to a VSS-enabled server.
- 169** CliqVolumeMultipleSessions

Cannot create an application-managed snapshot because there is more than one IQN (iSCSI Qualified Name) associated with this volume. To create application-managed snapshots, there must be only one application server associated with the volume or the servers must be in a server cluster. (Note: ensure all servers have VSS installed and running.)

170 CliqNoVssCapabilities

Cannot create an application-managed snapshot because the server does not support this capability.

171 CliqServerUnresponsive

Cannot create an application-managed snapshot because the system could not communicate to the necessary software component on the application server.

172 CliqVssSnapshotFailed

The system could not quiesce the application associated with this volume. Point in time snapshot is created.

173 CliqVssLunInfoFailed

Cannot create an application-managed snapshot because the system failed to get LUN data.

174 CliqVssWriterUnavailable

One or more VSS writers or their components are unavailable.

175 CliqVssSnapshotInProgress

The creation of a shadow copy is in progress, and only one shadow copy creation operation can be in progress at one time.

176 CliqWindowsServerIsBusy

The application server is busy.

177 CliqUpdateVssProvider

This version of VSS provider must be upgraded.

178 CliqVssOperationTimedOut

VSS operation timed out.

