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>
## Commands

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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:

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

is equivalent to

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

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

```bash
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](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:

<table>
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<tr>
<th>Key</th>
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<tr>
<td>LEFT</td>
<td>Moves the cursor one space to the left.</td>
</tr>
<tr>
<td>RIGHT</td>
<td>Moves the cursor one space to the right.</td>
</tr>
<tr>
<td>BACKSPACE</td>
<td>Deletes the character under the cursor and moves it to the left.</td>
</tr>
<tr>
<td>DELETE</td>
<td>Deletes the character under the cursor.</td>
</tr>
<tr>
<td>UP</td>
<td>Recalls the previous command entered.</td>
</tr>
<tr>
<td>DOWN</td>
<td>Recalls the first command entered.</td>
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</table>
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:

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

Example Response:

```plaintext
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=fffr specifies full access for password, group, network and node, and read-only access for reports
  - permissions=rrfr 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 rrrr
Example Command:

cliq createAdminGroup login=10.0.1.3 userName=admin passWord=secret
description="My shiny new group" adminGroupName=PowerUsers
adminUserName=user1;user2 permissions=ffffff
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)
- \(<n>\text{Kb}, n\text{ Kilobits/sec (1000 Bits/second)}\)
- \(<n>\text{Mb}, n\text{ Megabits/sec (1000 Kilobits/second)}\)
- \(<n>\text{Gb}, n\text{ Gigabits/sec (1000 Megabits/second)}\)

**remoteBandwidth**
The remote copy bandwidth to the remote group (this is at the group level)
- \(<n>\text{Kb}, n\text{ Kilobits/sec (1000 Bits/second)}\)
- \(<n>\text{Mb}, n\text{ Megabits/sec (1000 Kilobits/second)}\)
- \(<n>\text{Gb}, n\text{ Gigabits/sec (1000 Megabits/second)}\)
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:

```bash
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:

```bash
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:
CLIQL 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

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">
```


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:

```bash
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=fffr specifies full access for password, group, network and node, and read-only access for reports
- permissions=rrfr 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=fffr
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:

```bash
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:

```bash
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

**WARNc**

Using an initialQuota, stridePages or autogrowSeconds 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.

- **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:

ccliq 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:**

```bash
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

```sh
"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:**
```sh
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 CiqNothingDone. 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.