



Command Reference

Version 2.3

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About the Nimble Command Line Interface (CLI)

Topics:

- ?

Run Nimble administrative commands from the command line interface (CLI) to configure and monitor a Nimble Storage array.

Use a secure shell (SSH) utility to log in to the management IP of a Nimble array to run administrative commands. Your role determines your permission level, which in turn determines the command options you can run.

After you log in, you see a security message for array usage. You do not have to acknowledge the security message. Type `?` to display a list of administrative commands. Then use any or all of the following options to get more information about the commands:

- To display available options for a specific command, type `command_name --help`.

The output lists each option and suboption, and provides brief descriptions of each.

- To display a man page that introduces all the commands, type `man intro`.

The output lists each command, and provides brief descriptions of each. Press the spacebar to page through the list. Type `q` to quit when you get to the end of the introduction.

- To display detailed information for a specific command, type `man command_name`.

The output lists the command name and brief description, synopsis of each option and suboption, and detailed descriptions of each option and suboption, including valid values. Press the spacebar to page through the list. Type `q` to quit when you get to the end of the man page.

?

?

Lists the Nimble administrative commands or all commands.

Note The ? and help commands are similar. The major difference is that help command has a man page; the ? command does not.

Synopsis

?

? --help

? --all

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--all	N/A	Show all available commands, not just the Nimble-specific administrative commands.	Guest

Examples

This example lists the administrative commands to manage a Nimble array.

```
Nimble OS $ ?
?          fc          pool          subnet
alert     group         prottpl      timezone
array     halt          reboot       useradmin
auditlog  help          route        usersession
cert      initiatorgrp  setup        version
chapuser  ip            shelf        vmwplugin
ctrlr     migration    snap         vol
date      netconfig    snapcoll    volcoll
disk      nic          software
encryptkey partner      sshkey
failover  perfpolicy  stats
```

This example shows partial output from ? --all. The output is truncated to save space.

```
Nimble OS $ ? --all
?          expr          nohup        subnet
[          failover     nslookup    sum
[[         false        od           sync
alert     fc           partner      tac
arp       fgrep        patch        tail
array     find         perfpolicy   tee
...
...
encryptkey mv           stats        zcat
env       netconfig   strings
expand   nic         stty
```

Nimble Administrative Commands

Topics:

- [alert](#)
- [array](#)
- [auditlog](#)
- [cert](#)
- [chapuser](#)
- [ctrlr](#)
- [date](#)
- [disk](#)
- [encryptkey](#)
- [failover](#)
- [fc](#)
- [group](#)
- [halt](#)
- [initiatorgrp](#)
- [ip](#)
- [migration](#)
- [netconfig](#)
- [nic](#)
- [partner](#)
- [perfpolicy](#)
- [pool](#)
- [prottmpl](#)
- [reboot](#)
- [route](#)
- [setup](#)
- [shelf](#)
- [snap](#)
- [snapcoll](#)
- [software](#)
- [sshkey](#)
- [stats](#)
- [subnet](#)
- [timezone](#)
- [useradmin](#)
- [usersession](#)
- [version](#)
- [vmwplugin](#)
- [vol](#)
- [volcoll](#)

A wide variety of administrative commands are provided to configure, manage, and monitor Nimble arrays.

Use either the Nimble OS graphical user interface (GUI) or the command line interface (CLI) to perform administrative operations on a Nimble array or group of arrays. These interfaces provide comparable management capabilities. The GUI has tooltips, embedded user assistance, and help to guide you through administrative operations interactively. The CLI is useful to script frequently performed operations.

alert

The `alert` command options manage array alerts and events. Alerts and events can use both email and SMTP notification methods.

Alerts provide a valuable diagnostic and preventative tool. By default, all alerts are displayed when listing alerts. You can filter based on severity levels, categories, and time spans to display only the alerts that you are interested in. For example, you can filter for the most recent alerts, and periodically list all of them to look for potential errors.

You can also send a test alert to verify that the system is configured properly to send alerts.

Synopsis

```
alert --help
```

```
alert --list
[--array array_name]
[--from [[yyyy-]mm-dd,]hh:mm[:ss]]
[--to [[yyyy-]mm-dd,]hh:mm[:ss]]
[--severity {info|warning|critical}]
[--category {hardware|service|replication|
volume|update|config}]
```

```
alert --info id
```

```
alert --test
[--severity {info|warning|critical}]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest

Option	Arguments and Suboptions	Description	Role
--list	<code>--array <i>array_name</i></code>	List alerts and events for the specified array.	Guest
	<code>--from [[yyyy-]mm-dd,]hh:mm[:ss]</code>	List alerts that start from the specified time. Use only the time, or use the date and time. For example, <code>alert --list --from 08-14,12:10:00</code> or <code>alert --list --from 12:10:00</code> . Use this option with or without the --to option. If used alone, --to is assumed to be now.	
	<code>--to [[yyyy-]mm-dd,]hh:mm[:ss]</code>	List alerts until the specified time. Use only the time, or use the date and time. For example, <code>alert --list --to 08-14,12:10:00</code> or <code>alert --list --to 12:10:00</code> . Use this option with or without the --from option.	
	<code>--severity {<i>info</i> <i>warning</i> <i>critical</i>}</code>	List alerts and events of the specified severity level. Alert levels are not cumulative. For example, selecting <i>critical</i> does not show the <i>info</i> or <i>warning</i> severity levels.	
	<code>--category {<i>service</i> <i>replication</i> <i>volume</i> <i>update</i> <i>config</i>}</code>	List alerts and events of the specified category.	
--info	<i>id</i>	List detailed information about the specified alert ID. To determine valid alert IDs, use <code>alert --list</code> .	Guest
--test	<code>--severity {<i>info</i> <i>warning</i> <i>critical</i>}</code>	Generate a test alert with the specified severity level.	Power User

Examples

This example lists all alert messages on the array where you run the command. The output is truncated to save space.

```
Nimble OS $ alert --list
-----+-----+-----+-----+-----+-----+-----+-----
ID          Severity Time                Type  Category  Array      Detail
-----+-----+-----+-----+-----+-----+-----+-----
           8 INFO      Jun 27 2014 11:13:40  2101 service  AA-102081 System
services started...
           9 INFO      Jun 27 2014 11:14:02  12714 hardware AA-102081 A new
shelf is detected...
...
```

This example lists information about the alert with the ID 23.

```
Nimble OS $ alert --info 23
ID: 23
```

Nimble Administrative Commands

```
Active: yes
Priority: INFO
Category: hardware
Type: 12201
Time: Feb 24 2014 17:10:00
Cleared: N/A
Array: AC-102266
Target type: NIC
Target: 192.168.1.3
Detail: IP interface 192.168.1.3 up on controller A NIC port eth1
```

This example sends an alert test email with the warning severity level.

```
Nimble OS $ alert --test --severity warning
```

```
From: Admin
Sent: Wednesday, August 14, 2013 12:12 PM
To: eng-sol
Subject: Nimble Alert on sol / mars (AC-109828) - WARNING: Test alert
Time: Wed Aug 14 15:11:40 2013
```

```
Type: 5005
Id: 31645
Message: Test message at warn level
```

```
Group Name: Admin
Group ID: 2070866469188534807
Array name: mars
Serial: AC-109828
Version: 2.0.3.8-46920-opt
```

Arrays in the group:

Name	Serial	Model	Version	Status
moon	AC-103234	CS460G-X2	2.0.3.8-46920-opt	reachable
saturn	AC-103236	CS460G-X2	2.0.3.8-46920-opt	reachable
jupiter	AC-103242	CS460G-X2	2.0.3.8-46920-opt	reachable
mercury	AC-103235	CS460G-X2	2.0.3.8-46920-opt	reachable

array

array

The `array` command options manage a Nimble array.

Note Minimize the amount of time between running `array --resetup` and the `setup` command. On a Fibre Channel array, there is no I/O between running `array --resetup` and `setup`. On an iSCSI array, existing connections may be unaffected, but new connections are refused.

Synopsis

```
array --help
```

```
array --list
```

```
array --discover
```

```
array --info {name|serial_number}
```

```
array --edit name  
[--name new_name]
```

```
array --resetup  
[--non_interactive]
```

```
array --add serial_number  
[--name name]  
[--subnet_label subnet_label]  
[--data_ipaddr ipaddr]  
[--nic nic]  
[--tagged tag]  
[--support_ipaddr ipaddr]  
[--pool pool]  
[--create_pool]  
[--pool_description pool_description]
```

```
array --remove name  
[--force]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	N/A	List all discovered and group member arrays.	Guest
<code>--discover</code>	N/A	Discover non-member arrays on the same management subnet.	Power User
<code>--info</code>	{ <i>name</i> <i>serial_number</i> }	Provide detailed information about the specified group-member array.	Guest

Option	Arguments and Suboptions	Description	Role
--edit	[--name <i>new_name</i>]	Modify the name of the array. The name must conform to iSCSI naming conventions. It can be any combination of up to 63 alphanumeric characters and hyphen, but cannot begin with a hyphen, or contain spaces or other punctuation.	Power User
--resetup	N/A	Set a standalone array in a state where you can run the <code>setup</code> command again. This reenables the zeroconf process and lets you reset the array password, IP address, and most other configuration settings. No data will be lost. After running this command, any computer on the same subnet as the array can be used to reset the array password and then control the array. Use this command with caution. Minimize the time between resetting the array with this command and running <code>setup</code> again to limit I/O disruption. On a Fibre Channel array, there is no I/O between running <code>array --resetup</code> and <code>setup</code> . On an iSCSI array, existing connections may be unaffected, but new connections are refused.	Administrator
	[--non_interactive]	Override the default behavior of having to type "yes" to complete the command. Use this suboption with care to avoid unexpectedly setting up the array.	

Option	Arguments and Suboptions	Description	Role
--add	<i>serial_number</i>	Serial number of an array to add to a group.	Power User
	--name <i>name</i>	Name of an array to add to a group. The group must exist.	
	--subnet_label <i>subnet_label</i>	Subnet label on the NIC.	
	--data_ipaddr <i>ipaddr</i>	Network IP address(es) manage data traffic. Repeat this option to set multiple IP addresses for multiple NICs. Then the first IP address is assigned to the first NIC, such as eth1, and the second to the second NIC, such as eth2, and so on. To skip a NIC, type a blank argument.	
	--nic <i>nic</i>	NIC setting.	
	--support_ipaddr <i>ipaddr</i>	Include this argument twice. Then the first IP address entered is assigned to Controller A and the second to Controller B. You must assign static IP addresses to allow array access if the management IP address is not accessible.	
	[--pool <i>pool_name</i>]	Pool to assign the array to. If you specify this suboption, then the pool must exist. If you do not specify this suboption or the --create_pool suboption, then the array is assigned to the default pool.	
	[--create_pool]	Create a new storage pool and automatically assign the array to it. If you do not specify this suboption along with the --pool suboption, then the array is assigned to the default pool.	
[--pool_description <i>pool_description</i>]	If you create a new pool for an array, type a description for the pool. If there are spaces in the description, enclose the text in quotation marks.		
--remove	<i>name</i>	Name of the array to remove from a group. Use the pool command to remove the array from any pools.	Power User
	--force	Forcibly remove the specified array from a group even if it is unreachable. This may lead to loss of data if a volume is currently striped across disks on the array.	

Examples

This example displays a list of member arrays.

```
Nimble OS $ array --list
-----+-----+-----+-----+-----
Name          Serial      Model      Version      Status
-----+-----+-----+-----+-----
c12-array3    AC-100159   CS210      2.0.4.1-44556-opt reachable
c12-array6    AC-100209   CS220      2.0.4.1-44556-opt reachable
```

This example discovers non-member arrays.

```
Nimble OS $ array --discover
-----+-----+-----+-----+-----
Serial Number Model      Version      Link-Local IP Addresses
-----+-----+-----+-----+-----
AC-100159    CS210      2.0.3.8-44640-opt 169.254.8.98, 169.254.8.93...
```

This example shows information for the array named *c20-array1*.

```
Nimble OS $ array --info c20-array1
Model: CS220
...
Array name: c20-array1
...
Member of pool: default
Status: reachable
```

This example shows information for the array with the serial number *AC-102566*.

```
Nimble OS $ array --info AC-102566
Model: CS220
Serial: AC-102566
...
Array name: c20-array1
...
Member of pool: default
Status: reachable
```

This example renames the *MKTG* array to *Marketing*.

```
Nimble OS $ array --edit MKTG --name Marketing
```

This example resets a standalone array so the `setup` command can be run.

Note Use this command option with caution.

```
Nimble OS $ array --resetup
WARNING: This operation will reset the array configuration. Minimize the time
before
running setup again to limit I/O disruption. Existing iSCSI connections may
be
unaffected, but new iSCSI connections will be refused.
Type yes to continue, no to cancel: yes
Successfully initiated array reset.
Minimize the time before running setup again to limit I/O disruption. Existing
iSCSI
connections may be unaffected, but new iSCSI connections will be refused.
WARNING: While the volume data and some of the configuration data are preserved,
a
```

Nimble Administrative Commands

```
future setup of the array could change the group name and the network
configuration.
This will invalidate the replication partner and the host configuration, which
may
disrupt replication and iSCSI connections to this array.
```

This example adds the serial number of an uninitialized array and assigns a new name to the array during this process.

Although only one set of name, subnet_label, data_ipaddr, and pool options is required, you can use multiple sets of these options to specify values for more than one NIC on an array, such as eth1, eth2, tg1, tg2.

```
Nimble OS $ array --add AC-100159 --name c12-array3
\
--data_ipaddr '' --subnet_label management \
--data_ipaddr '' --subnet_label management \
--data_ipaddr 198.51.100.61 --subnet_label data \
--data_ipaddr 198.51.100.62 --subnet_label data \
--support_ipaddr 10.19.0.57 --support_ipaddr 10.19.0.58
```

This example removes an existing member array named *greydient* from a group.

Note The array to remove must not be assigned to a pool. If needed, run `pool --unassign` to remove the array from a pool before you run this command.

```
Nimble OS $ array --remove greydient
```

auditlog

The `auditlog` command options manage array audit log entries.

The Nimble OS audit log keeps records of all non-read operations performed on the array, and which user performed the operation. You can search the audit log by activity and object type/name. You can also filter the audit log by time range, username, userid, activity category, and access type. Administrators can view the audit log in a summary table with faceted browsing by time, activity category, and across access type.

Synopsis

```
auditlog --help
```

```
auditlog --list
[--from [[yyyy-]mm-dd,]hh:mm[:ss]]
[--to [[yyyy-]mm-dd,]hh:mm[:ss]]
[--username username]
[--userid userid]
[--category {provision|protection|dataaccess|
useraccess|sysconfig|swupdate}]
[--access_type {gui|cli|api}]
```

```
auditlog --info id
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest

Option	Arguments and Suboptions	Description	Role
--list	<code>--from [[yyyy-]mm-dd,]hh:mm[:ss]]</code>	List audit logs that start from the specified time. Use only the time, or use the date and time. For example, <code>auditlog --list --from 08-14,12:10:00</code> or <code>auditlog --list --from 12:10:00</code> . Use this option with or without the --to option. If used alone, --to is assumed to be now.	Administrator
	<code>--to [[yyyy-]mm-dd,]hh:mm[:ss]]</code>	List audit logs until the specified time. Use only the time, or use the date and time. For example, <code>auditlog --list --to 08-14,12:10:00</code> or <code>auditlog --list --to 12:10:00</code> . Use this option with or without the --from option.	
	<code>--username {username}</code>	List audit logs by username.	
	<code>--userid {userid}</code>	List audit logs by userid.	
	<code>--category {provision protection dataaccess useraccess sysconfig swupdate}</code>	List audit logs of the specified category.	
	<code>--access_type {gui cli api}</code>	List audit logs using the specified access type.	
--info	<i>id</i>	List detailed information about the specified audit log ID. To determine valid audit log IDs, use <code>auditlog --list</code> .	Administrator

Examples

This example lists all alert messages on the array where you run the command. The output is truncated to save space.

```
Nimble OS $ auditlog --list
-----+-----+-----+-----+-----
ID      Time                User              Status            Activity
-----+-----+-----+-----+-----
1       Mar 25 2015 09:10:52 admin             Succeeded Login attempt
2       Mar 25 2015 09:10:53 admin             Succeeded Complete setup on ...
3       Mar 25 2015 09:45:52 admin             Succeeded User admin session ...
4       Mar 26 2015 13:22:41                               Succeeded Logout user
5       Mar 26 2015 13:43:21                               Succeeded Logout user
6       Mar 27 2015 13:17:22                               Succeeded Logout user
7       Mar 27 2015 14:24:22                               Succeeded Logout user
```

This example lists all alert messages on the array where you run the command, filtered by username. The output is truncated to save space.

cert

The `cert` command options manage the certificates needed by the Nimble arrays for HTTPS communication.

After setting up a group-leader array or upgrading to 2.1.x, the array automatically generates two public key pairs and certificates to use for securing HTTPS connections. The first is a self-signed Certificate Authority (CA) key pair and certificate. The CA key is used to sign the second certificate, which contains information about the identity of the host, such as the DNS name for the array, the group DNS name, and management IP addresses. The CA certificate, host certificate, and host private key are installed as the web server's credentials, and are subsequently used to authenticate the web GUI connection.

The host certificate for the web server is automatically regenerated if the group name, array name, or IP address assignments change, so you do not have to run this command under these conditions. The CA certificate remains the same so that browsers with the CA certificate installed do not raise a security exception. Other services recognize the changes on a restart. If needed, you can force a restart by initiating a non-disruptive controller failover.

Synopsis

```
cert --help
```

```
cert --regen {ca|host}
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--regen</code>	<code>{ca host}</code>	Force a regeneration of the host certificate if "host" is specified, or both the host and Certificate Authority (CA) certificates if "ca" is specified. This is used primarily to regenerate the associated keys.	Administrator

Examples

This example regenerates the certificates for both the host and CA for the current array.

```
Nimble OS $ cert --regen ca
```

chapuser

The `chapuser` command options manage Challenge-Response Handshake Authentication Protocol (CHAP) user accounts for Nimble arrays that use the iSCSI protocol. Arrays that use the Fibre Channel protocol do not require CHAP user accounts. CHAP users represent a method of access control for iSCSI initiators. Each CHAP user has a CHAP password, which is also called a CHAP secret. The CHAP passwords must be the same on the array and the iSCSI initiator before the array can authenticate the iSCSI initiator and permit access. The CHAP user information must exist on both the array and the iSCSI initiator. Target authentication provides security only for a specific iSCSI target. Multiple iSCSI initiators can use the same CHAP secret when connecting or each iSCSI initiator can have its own. The CHAP user name cannot include certain special characters.

Synopsis

```
chapuser --help
```

```
chapuser --list
```

```
chapuser --info user_name
```

```
chapuser --create user_name
[--description text]
--password password
```

```
chapuser --delete user_name
[--force]
```

```
chapuser --edit user_name
[--name new_name]
[--description text]
[--password password]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List all existing CHAP users in an array.	Operator
--info	<i>user_name</i>	Show detailed information about a specified CHAP user.	Operator

Option	Arguments and Suboptions	Description	Role
--create	<i>user_name</i> --password <i>password</i>	User name and shared password for the CHAP user, who then gets assigned to an access control list (ACL)-associated volume. CHAP user authentication requires a CHAP secret that agrees with the challenge response. This value must be between 12 and 16 alphanumeric characters, with no spaces or special characters, including ' " ` ~ ! @ # \$ ^ & () + [] { } * ; : ' " . , < > ? / \ = %	Operator
	[--description <i>textf</i>]	Plain-text description of the CHAP user. If there are spaces in the description, enclose the text in quotation marks.	
--delete	<i>user_name</i>	Delete the specified CHAP user. It deletes the CHAP user connection from the iSCSI initiator. The CHAP user cannot be deleted if there are any active CHAP connections unless the --force option is used.	Operator
	[--force]	Forcibly delete the specified CHAP user even if that user has active connections. It disregards any ACL records that have been applied.	
--edit	<i>user_name</i> [--name <i>new_name</i>]	Modify the name of the specified CHAP user.	Operator
	<i>user_name</i> [--description <i>textf</i>]	Modify the description of the specified CHAP user. If there are spaces in the description, enclose the text in quotation marks.	
	<i>user_name</i> [--password <i>password</i>]	Modify the shared password used by the specified CHAP. This value must be between 12 and 16 alphanumeric characters, with no spaces or special characters, including ' " ` ~ ! @ # \$ ^ & () + [] { } * ; : ' " . , < > ? / \ = %	

Examples

This example lists CHAP users in the array. In this example, two CHAP users exist.

```
Nimble OS $ chapuser --list
-----+-----
CHAP User Name          Password
-----+-----
nimblechap              nimblechapuser
guestchap               minimalaccess
```

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This example shows information about a CHAP user named "nimblechap".

```
Nimble OS $ chapuser --info nimblechap
Name: nimblechap
Description: generic chap user for the nimble array
Password: nimblechapuser
Created: Dec 17 2010 12:50:25
Last configuration change: Dec 17 2010 12:50:25
```

This example creates a CHAP user with the name "nimblestorage" and a valid password.

```
Nimble OS $ chapuser --create nimblestorage
--description "nimble storage user" --password n1mblechapu5er
```

This example forcibly deletes a CHAP user named "storageuser".

```
Nimble OS $ chapuser --delete storageuser --force
```

This example modifies the name, description, and password for the CHAP user previously named "nimblechap".

Note If you change the name or password of a CHAP user, it invalidates logins. Update the hosts with the change.

```
Nimble OS $ chapuser --edit nimblechap --name nimchap
--description "nimble user" --password nimchapusr
```

ctrlr

ctrlr

The `ctrlr` command options display information about a controller on a Nimble array. Each array has an A and B controller (case-sensitive identifiers). One controller is always active and the other always takes the standby role. Controllers share IP addresses except for the support IP address. Each controller is also configured with the same set of NICs to provide redundancy in case of a failure. This configuration ensures that there is never a conflict during a failover. The IP addresses that are assigned to each NIC and interface remain the same. If a failover is triggered, then the new active controller has the same number of links to the switch as was the case before a failover occurred.

Synopsis

```
ctrlr --help
```

```
ctrlr --list  
[--array array_name]
```

```
ctrlr --info controller_name  
[--array array_name]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List basic information about the controllers on the array where you are logged in.	Guest
	<code>--array <i>array_name</i></code>	List basic information about all controllers on the specified array.	
--info	<i>controller_name</i>	List detailed information about the specified controller. Valid controller names are A and B, which are case sensitive.	Guest
	<code>--array <i>array_name</i></code>	List detailed information about the specified controller on the specified array.	

Examples

This example lists basic information about the controllers on an array named *greyhound*.

```
Nimble OS $ ctrlr --list --array greyhound  
-----+-----+-----+-----+-----+-----+-----  
Name State      Hostname          Support IP        Power   Fans   Temper-  
                               Supplies Status  -ature  
                               Status   Status  
-----+-----+-----+-----+-----+-----+-----  
A   standby    greyhound-A      192.0.2.54       alerted OK     OK  
B   active     greyhound-B      192.0.2.55       alerted OK     OK
```

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This example shows information about controller B on an array named *greyhound*.

```
Nimble OS $ ctrlr --info B --array greyhound
Name: B
Serial number: AC-102724-C2
State: active
Hostname: greyhound-B
Support IP address: 192.0.2.55
Support IP netmask: 255.255.255.0
Support IP nic: eth1
Hostname:
Power supply: alerted
    power-supply1 at left rear: ok
    power-supply2 at right rear: missing
Cooling fans: OK
    fan1 at lower front of controller B: ok, speed: 10608rpm
    fan2 at lower left rear of controller B: ok, speed: 10608rpm
    fan3 at lower right rear of controller B: ok, speed: 10608rpm
    fan4 at upper right front of controller B: ok, speed: 8295rpm
    fan5 at upper left front of controller B: ok, speed: 8910rpm
    fan6 at upper left rear of controller B: ok, speed: 8520rpm
Temperature sensors: OK
    motherboard at motherboard: ok, temperature: 22C
    bp-temp2 at right-side backplane: ok, temperature: 34C
System partition status: OK
Last AutoSupport contact: N/A
```


date

date

The `date` command options display or modify the date and time of the array. If the array is connected to a valid NTP server IP address, then the time settings on the array synchronize with the time settings on the NTP server. In this case, do not modify the date locally. However, if the array is connected to an invalid NTP server IP address, then the time settings on the array do not synchronize with the time settings on the NTP server.

Synopsis

```
date --help
```

```
date  
[--utc]  
[--edit {hh:mm[:ss]}|'YYYY-MM-DD hh:mm[:ss]']
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--utc	N/A	List the Coordinated Universal Time on an array.	Guest
--edit	{hh:mm[:ss]} 'YYYY-MM-DD hh:mm[:ss]'	Use --edit with care. Modify the date and time on an array and disable the connection between the array and a previously specified NTP server. If specified with --utc, modify Coordinated Universal Time to the supplied argument.	Power User

Examples

This example lists the date and time on an array as Pacific Daylight Time.

```
Nimble OS $ date  
Wed Jul 9 15:29:59 PDT 2014
```

This example lists the date and time on an array as Coordinated Universal Time.

```
Nimble OS $ date --utc  
Wed Jul 9 22:29:37 UTC 2014
```

This example modifies the date and time on an array.

```
Nimble OS $ date --edit '2013-07-08 15:33:27'  
WARNING: Setting date manually disables the NTP server setting
```

disk

The `disk` command options manage disks on an array. An array supports hard disk drives (HDDs) and solid state drives (SSDs). The size of the disk depends on the array model. Some HDDs are used to build the RAID and others can be spares that are used to replace failing drives. SSDs can only be active, and they are not part of the RAID configuration.

When you remove a hard disk drive (HDD) from an array, it is either removed from the existing RAID or replaced as a spare, depending on the state of the RAID. If you remove a solid state disk (SSD), it is removed from the existing cache capacity.

Synopsis

```
disk --help
```

```
disk --list
[--array array_name]
[--shelf_location shelf_location]
```

```
disk --info slot
[--array array_name]
[--shelf_location shelf_location]
```

```
disk --add slot
[--array array_name]
--shelf_location shelf_location
[--force]
```

```
disk --remove slot
[--array name]
--shelf_location shelf_location
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List basic information about the disks on an array, showing the type, slot, serial number, size, disk state, RAID status, shelf serial number, and shelf location for each.	Guest
	--array <i>array_name</i>]	List basic information about the disks on the specified array. Specify this option in a multi-array configuration. It is optional in a single-array configuration.	
	--shelf_location <i>shelf_location</i>]	List basic information about the disks on the specified shelf. If this option is not specified, then all disks on all shelves are listed.	

Option	Arguments and Suboptions	Description	Role
--info	<i>slot</i>	List detailed information about the disk at a specified slot number in a single-array configuration.	Guest
	[--array <i>array_name</i>]	List detailed information about all disks for a specified array in a multi- array configuration. Include this option in a multi-array configuration. It is optional in a single-array configuration.	
	[--shelf_location <i>shelf_location</i>]	List detailed information about the disk at the specified shelf location. If this option is not specified, then only disks for the head shelf A (A.0) or B (B.0) are listed.	
--add	<i>slot</i>	Add a disk at the specified slot on a single-array configuration.	Power User
	[--array <i>array_name</i>]	Add a disk at the specified slot on a multi-array configuration. Include this option in a multi-array configuration. It is optional in a single-array configuration.	
	--shelf_location <i>shelf_location</i>	Add a disk at the specified shelf location on a specified array. This option is mandatory.	
	[--force]	Forcibly add the specified disk. This option is mandatory if the disk to add is in a foreign state.	
--remove	<i>slot</i>	Remove a disk from the specified slot in a single-array configuration.	Power User
	[--array <i>array_name</i>]	Remove a disk from the specified slot on a specified array in a multi-array configuration. Include this option in a multi-array configuration. It is optional in a single-array configuration.	
	--shelf_location <i>shelf_location</i>	Remove a disk from the specified slot on the specified shelf location. This option is mandatory.	

Examples

This example lists all disks on a standalone (single) array.

```
Nimble OS $ disk --list
-----+-----+-----+-----+-----+-----+-----+-----
Slot # Serial #           Type Disk Size  Disk  RAID   Shelf   Shelf
              (GB)      State  Status  Serial Location
-----+-----+-----+-----+-----+-----+-----+-----
```

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```

1 WD-WCAW32373319      HDD      1000.20 in use  spare  AA-100257 A.0
2 WD-WCAW30555873      HDD      1000.20 in use  okay   AA-100257 A.0
3 WD-WMAW30010098      HDD      1000.20 in use  okay   AA-100257 A.0
4 WD-WCAW30549295      HDD      1000.20 in use  okay   AA-100257 A.0
5 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
6 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
7 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
8 CVPO040402ZP080JGN  SSD       80.03 in use  N/A    AA-100257 A.0
9 CVPO04030150080JGN  SSD       80.03 in use  N/A    AA-100257 A.0
10 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
11 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
12 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
13 WD-WCAW30597086      HDD      1000.20 in use  okay   AA-100257 A.0
14 WD-WCAW30606284      HDD      1000.20 in use  okay   AA-100257 A.0
15 WD-WCAW30606703      HDD      1000.20 in use  okay   AA-100257 A.0
16 WD-WCAW30527176      HDD      1000.20 in use  okay   AA-100257 A.0
1 CVPR208103WZ600FGN   SSD       600.13 in use  N/A    AC-100182 A.1
2 Z29036W600009136H45Q HDD      3000.59 in use  okay   AC-100182 A.1
3 Z290LRCK00009136H440 HDD      3000.59 in use  spare  AC-100182 A.1
4 9XK0H5N600009135E6GN HDD      3000.59 in use  okay   AC-100182 A.1
5 9XK06BFJ0000S111K944 HDD      3000.59 in use  okay   AC-100182 A.1
6 Z290LAW80000S110DX86 HDD      3000.59 in use  okay   AC-100182 A.1
7 Z290372V0000914024J2 HDD      3000.59 in use  okay   AC-100182 A.1
8 9XK0KBZ400009131N1NV HDD      3000.59 in use  okay   AC-100182 A.1
9 Z2909KED00009133BHZ5 HDD      3000.59 in use  okay   AC-100182 A.1
10 Z290KYG600009138MTYB HDD      3000.59 in use  okay   AC-100182 A.1
11 Z290LNP9000091380XUM HDD      3000.59 in use  okay   AC-100182 A.1
12 9XK06NF0000S111K9X6 HDD      3000.59 in use  okay   AC-100182 A.1
13 9XK07TQN0000S112MQAQ HDD      3000.59 in use  okay   AC-100182 A.1
14 9XK06B6G0000S111K9MH HDD      3000.59 in use  okay   AC-100182 A.1
15 9XK06AYR0000S110UGRY HDD      3000.59 in use  okay   AC-100182 A.1
16 9XK06NEP0000S110UGCD HDD      3000.59 in use  okay   AC-100182 A.1

```

This example lists only the disks on the specified shelf.

```

Nimble OS $ disk --list --shelf_location A.0
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
Slot # Serial #                               Type Disk Size  Disk  RAID   Shelf   Shelf
              (GB)      State  Status Serial  Loca-
              (GB)      State  Status Serial  tion
-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 WD-WCAW32373319      HDD      1000.20 in use  spare  AA-100257 A.0
2 WD-WCAW30555873      HDD      1000.20 in use  okay   AA-100257 A.0
3 WD-WMAW30010098      HDD      1000.20 in use  okay   AA-100257 A.0
4 WD-WCAW30549295      HDD      1000.20 in use  okay   AA-100257 A.0
5 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
6 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
7 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
8 CVPO040402ZP080JGN  SSD       80.03 in use  N/A    AA-100257 A.0
9 CVPO04030150080JGN  SSD       80.03 in use  N/A    AA-100257 A.0
10 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
11 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
12 N/A                  N/A      N/A      void   N/A     AA-100257 A.0
13 WD-WCAW30597086      HDD      1000.20 in use  okay   AA-100257 A.0
14 WD-WCAW30606284      HDD      1000.20 in use  okay   AA-100257 A.0
15 WD-WCAW30606703      HDD      1000.20 in use  okay   AA-100257 A.0
16 WD-WCAW30527176      HDD      1000.20 in use  okay   AA-100257 A.0

```

This example shows information about the hard disk drive in slot 1 in a single-array configuration. The output is truncated to avoid line wrapping.

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```
Nimble OS $ disk --info 1
Shelf location #: A.0
Slot #: 1
HBA: 0
Port: 15
Serial: WD-WCAW32373319
Type: HDD
Disk size: 1000.2 GB
Disk state: in use
Raid state: spare
Percent resynchronized: N/A
Current resync speed: N/A
Average resync speed: N/A
Model: WDC WD1003FBYX-0
Vendor: Nimble
Firmware version: 1V01
Smart Data Attributes:
Raw read error rate(value/trough/threshold/raw/updated): 200/200/51/5/Ju...
Spin up time(value/trough/threshold/raw/updated): 174/172/21/4291/Jul 15...
Start stop count(value/trough/threshold/raw/updated): 100/100/0/393/Jul ...
Reallocated sector count(value/trough/threshold/raw/updated): 200/200/1 ...
Seek error rate(value/trough/threshold/raw/updated): 200/200/0/0/Jul 15 ...
Power on hours(value/trough/threshold/raw/updated): 91/91/0/6890/Jul 15 ...
Power cycle count(value/trough/threshold/raw/updated): 100/100/0/392/Jul...
Power off retract count(value/trough/threshold/raw/updated): 200/200/0/3...
Temperature C(value/trough/threshold/raw/updated): 116/99/0/31/Jul 15 20...
Current pending sector(value/trough/threshold/raw/updated): 200/200/0/0/...
Offline uncorrectable(value/trough/threshold/raw/updated): 200/200/0/0/ ...
UDMA CRC error count(value/trough/threshold/raw/updated): 200/200/0/0/Ju...
```

This example shows information about the disk in slot 1. Because the `--shelf_location` option is specified in this example, only the disks that are located in slot 1 at the specified shelf location are listed. The output is truncated to avoid line wrapping.

```
Nimble OS $ disk --info 1 --shelf_location A.1
Shelf location #: A.1
Slot #: 1
HBA: 0
Port: 15
Serial: CVPR208103WZ600FGN
Type: SSD
Disk size: 600.127 GB
Disk state: in use
Raid state: N/A
Percent resynchronized: N/A
Current resync speed: N/A
Average resync speed: N/A
Model: INTEL SSDSA2CW60
Vendor: Nimble
Firmware version: 0362
Smart Data Attributes:
Spin up time(value/trough/threshold/raw/updated): 100/100/0/0/Jul 15 201...
Start stop count(value/trough/threshold/raw/updated): 100/100/0/0/Jul 15...
Reallocated sector count(value/trough/threshold/raw/updated): 100/100/0/...
Power on hours(value/trough/threshold/raw/updated): 100/100/0/10495/Jul ...
Power cycle count(value/trough/threshold/raw/updated): 100/100/0/27/Jul ...
Power off retract count(value/trough/threshold/raw/updated): 100/100/0/2...
Host write count(value/trough/threshold/raw/updated): 100/100/0/344912/J...
Available reserved space(value/trough/threshold/raw/updated): 100/100/10...
Media wearout indicator(value/trough/threshold/raw/updated): 99/99/0/0/J...
```

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This example adds a disk to slot 13 at the specified shelf location A.0 and verifies the change in a single-array configuration. The disk resynchronizes with the rest of the array. The `--shelf_location` option is mandatory in this example.

```
Nimble OS $ disk --add 13 --shelf_locationA.0
Nimble OS $ disk --list
```

Slot #	Serial #	Type	Disk Size (GB)	Disk State	RAID Status	Shelf Serial	Shelf Location
1	WD-WCAW32373319	HDD	1000.20	in use	okay	AA-100257	A.0
2	WD-WCAW30555873	HDD	1000.20	in use	okay	AA-100257	A.0
3	WD-WMAW30010098	HDD	1000.20	in use	okay	AA-100257	A.0
4	WD-WCAW30549295	HDD	1000.20	in use	okay	AA-100257	A.0
5	N/A	N/A	N/A	void	N/A	AA-100257	A.0
6	N/A	N/A	N/A	void	N/A	AA-100257	A.0
7	N/A	N/A	N/A	void	N/A	AA-100257	A.0
8	CVPO040402ZP080JGN	SSD	80.03	in use	N/A	AA-100257	A.0
9	CVPO04030150080JGN	SSD	80.03	in use	N/A	AA-100257	A.0
10	N/A	N/A	N/A	void	N/A	AA-100257	A.0
11	N/A	N/A	N/A	void	N/A	AA-100257	A.0
12	N/A	N/A	N/A	void	N/A	AA-100257	A.0
13	WD-WCAW30597086	HDD	1000.20	in use	spare	AA-100257	A.0
14	WD-WCAW30606284	HDD	1000.20	in use	okay	AA-100257	A.0
15	WD-WCAW30606703	HDD	1000.20	in use	okay	AA-100257	A.0
16	WD-WCAW30527176	HDD	1000.20	in use	okay	AA-100257	A.0

This example removes a disk from slot 13 at the specified shelf location A.0 and verifies the change in a single-array configuration. The `--shelf_location` option is mandatory in this example.

```
Nimble OS $ disk --remove 13 --shelf_locationA.0
Nimble OS $ disk --list
```

Slot #	Serial #	Type	Disk Size (GB)	Disk State	RAID Status	Shelf Serial	Shelf Location
1	WD-WCAW32373319	HDD	1000.20	in use	resynch	AA-100257	A.0
2	WD-WCAW30555873	HDD	1000.20	in use	okay	AA-100257	A.0
3	WD-WMAW30010098	HDD	1000.20	in use	okay	AA-100257	A.0
4	WD-WCAW30549295	HDD	1000.20	in use	okay	AA-100257	A.0
5	N/A	N/A	N/A	void	N/A	AA-100257	A.0
6	N/A	N/A	N/A	void	N/A	AA-100257	A.0
7	N/A	N/A	N/A	void	N/A	AA-100257	A.0
8	CVPO040402ZP080JGN	SSD	80.03	in use	N/A	AA-100257	A.0
9	CVPO04030150080JGN	SSD	80.03	in use	N/A	AA-100257	A.0
10	N/A	N/A	N/A	void	N/A	AA-100257	A.0
11	N/A	N/A	N/A	void	N/A	AA-100257	A.0
12	N/A	N/A	N/A	void	N/A	AA-100257	A.0
13	WD-WCAW30597086	HDD	1000.20	removed	N/A	AA-100257	A.0
14	WD-WCAW30606284	HDD	1000.20	in use	okay	AA-100257	A.0
15	WD-WCAW30606703	HDD	1000.20	in use	okay	AA-100257	A.0
16	WD-WCAW30527176	HDD	1000.20	in use	okay	AA-100257	A.0
1	CVPR208103WZ600FGN	SSD	600.13	in use	N/A	AC-100182	A.1
2	Z29036W600009136H45Q	HDD	3000.59	in use	okay	AC-100182	A.1
3	Z290LRCK00009136H440	HDD	3000.59	in use	spare	AC-100182	A.1
4	9XK0H5N600009135E6GN	HDD	3000.59	in use	okay	AC-100182	A.1
5	9XK06BFJ0000S111K944	HDD	3000.59	in use	okay	AC-100182	A.1
6	Z290LAW80000S110DX86	HDD	3000.59	in use	okay	AC-100182	A.1
7	Z290372V0000914024J2	HDD	3000.59	in use	okay	AC-100182	A.1
8	9XK0KBZ400009131N1NV	HDD	3000.59	in use	okay	AC-100182	A.1

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```
 9 Z2909KED000009133BHZ5 HDD      3000.59 in use okay      AC-100182 A.1
10 Z290KYG6000009138MTYB HDD      3000.59 in use okay      AC-100182 A.1
11 Z290LNP90000091380XUM HDD      3000.59 in use okay      AC-100182 A.1
12 9XK06NF000000S111K9X6 HDD      3000.59 in use okay      AC-100182 A.1
13 9XK07TQN00000S112MQAQ HDD      3000.59 in use okay      AC-100182 A.1
14 9XK06B6G00000S111K9MH HDD      3000.59 in use okay      AC-100182 A.1
15 9XK06AYR00000S110UGRY HDD      3000.59 in use okay      AC-100182 A.1
16 9XK06NEP00000S110UGCD HDD      3000.59 in use okay      AC-100182 A.1
```

encryptkey

The `encryptkey` command options manage the encryption master key and its associated passphrase.

The master key is protected by a passphrase and is used to encrypt the keys that are used to encrypt volume data. This command provides options to create, enable, disable, and delete the master key, and to change the passphrase that is used to protect the master key.

After creating the master key, it can be in two possible states: active and inactive. In the active state, the master key is available to unlock the keys that are used to encrypt volume data. When inactive, the master key is not available, and access to encrypted data is not possible. To change the state of the master key from inactive to active, use `--enable_master` and enter the passphrase.

Note No characters appear on the screen as you type the passphrase for any of the `encryptkey` command options. Not even asterisks show an obfuscated value.

Synopsis

```
encryptkey --help
encryptkey --info
encryptkey --create_master
encryptkey --enable_master
encryptkey --disable_master
encryptkey --delete_master
encryptkey --change_passphrase
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--info</code>	N/A	Display the status of the master key. Initialized is true only if the master key has been created. Active is true only if the master key has been unlocked using the passphrase and is available for use.	Operator
<code>--create_master</code>	N/A	Create the passphrase-encrypted master key. You must interactively specify and confirm the passphrase. The passphrase value can be any printable characters, and its length must be between 8 and 64 characters, inclusive. The group <code>encryption_scope</code> is set to <code>group</code> and the group <code>encryption_cipher</code> is set to <code>aes-256-xts</code> .	Administrator

Option	Arguments and Suboptions	Description	Role
--enable_master	N/A	Activate, or enable, the master key. You must interactively specify the passphrase.	Operator
--disable_master	N/A	Force the master key into the inactive state. You must interactively specify the passphrase. Note You can still take snapshots of encrypted volumes after disabling the master key.	Administrator
--delete_master	N/A	Delete the master key. You can do this only if no encrypted volumes exist. Deleting the master key is the only way to turn off the encryption feature if, for example, the passphrase is lost.	Administrator
--change_passphrase	N/A	Change the master key passphrase. You must interactively specify the old passphrase and then specify and confirm the new passphrase.	Administrator

Examples

This example identifies that encryption is uninitialized and inactive on the Nimble Storage group.

```
Nimble OS $ encryptkey --info
Initialized: No
Active: No
```

This example shows detailed information about a Nimble Storage group where encryption is enabled (initialized and active).

```
Nimble OS $ encryptkey --info
Initialized: Yes
Active: Yes
```

Note If you disable the master key by using the --disable_master option, then encryption is inactive in the --info output.

This example creates the master key and specifies its passphrase interactively. This command also enables the master key.

```
Nimble OS $ encryptkey --create_master
Enter new passphrase:
Retype new passphrase:
```

This example reenables the master key after the --disable_master option is used.

```
Nimble OS $ encryptkey --enable_master
Enter passphrase:
```

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This example disables the master key after creating it. Encrypted volumes go offline and are inoperative until you enable the master key. If you have volumes that are not encrypted, then those volumes are still accessible. The `--disable_master` capability is provided only through the CLI, not the GUI.

```
Nimble OS $ encryptkey --disable_master  
Enter passphrase:
```

This example deletes the master key. This allows recovering a system where the passphrase has been lost. If this happens, any encrypted volumes are permanently inaccessible, and they must be deleted before this operation will succeed. The `--delete_master` capability is provided only through the CLI, not the GUI.

```
Nimble OS $ encryptkey --delete_master
```

This example changes the passphrase for the master key interactively. There is no indication of successful completion. If you type an incorrect value for the current passphrase, or if you type and confirm values that do not match for the new passphrase, then an error identifies the issue.

```
Nimble OS $ encryptkey --change_passphrase  
Enter passphrase:  
Enter new passphrase:  
Retype new passphrase:
```

failover

The `failover` command options perform a controller failover on an array. The active controller restarts and assigns the active role to the standby controller.

Synopsis

```
failover --help
```

```
failover
[--array array_name]
[--force]
[--non_interactive]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--array</code>	<i>array_name</i>	Perform a controller failover on the specified array, which must be running in redundant controller mode (active/standby). You must specify the <code>--array <i>array_name</i></code> option in a multi-array configuration. Specifying this option is not required in a single-array configuration.	Power User
<code>[--force]</code>	N/A	Forcibly fail over the controllers on an array even if the validation checks that the system runs before initiating the failover fail.	
<code>[--non_interactive]</code>	N/A	Override the default behavior of having to type "yes" to complete the command. Use this suboption with care to avoid unexpectedly taking the array offline.	

Examples

This example forces a failover of a controller in a single-array configuration.

```
Nimble OS $ failover
WARNING: This operation will fail over the array.
Type yes to continue, no to cancel: yes
INFO: Initiated controller failover.
```

This example forces a failover of a controller named `greyhound` in a multi-array configuration.

```
Nimble OS $ failover --array greyhound
WARNING: This operation will fail over the array.
Type yes to continue, no to cancel: yes
INFO: Initiated controller failover.
```

fc

fc

The `fc` command options manage Fibre Channel interfaces on a Nimble CS300, CS500, or CS700 array. The Nimble CS200 and CS400 series arrays do not support Fibre Channel host bus adapters (HBAs).

Synopsis

```
fc --help
```

```
fc --list  
[--array {name|serial_number}]
```

```
fc --info interface_name  
[--array {name|serial_number}]  
[--ctrlr {A|B}]
```

```
fc --edit interface_name  
[--array {name|serial_number}]  
[--ctrlr {A|B}]  
--admin_state {online|offline}  
[--force]
```

```
fc --update_config
```

```
fc --regenerate_wwn wwnn_base  
[--non_interactive]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List all discovered Fibre Channel interfaces for arrays in the group.	Guest
	--array {name serial_number}	List all discovered Fibre Channel interfaces on the specified array.	
--info	interface_name	Show detailed information about the specified Fibre Channel interface.	Guest
	--array {name serial_number}	Show detailed information about a Fibre Channel interface on a specified array. Provide the array name or serial number.	
	--ctrlr {A B}	Show detailed information about a Fibre Channel interface on a specified controller. Valid controller names are A and B, which are case sensitive.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>interface_name</i>	Modify the specified Fibre Channel interface.	Power User
	[--array { <i>name serial_number</i> }	Modify a Fibre Channel interface on the specified array.	
	[--ctrlr { <i>A B</i> }]	Modify a Fibre Channel interface on the specified controller. Valid controller names are A and B, which are case sensitive.	
	--admin_state { <i>online offline</i> }	Set the specified Fibre Channel interface to be online or offline. If you specify <i>offline</i> and initiators are connected to the interface, then you must also use the --force option.	
	[--force]	Forcibly set the administrative state of the specified Fiber Channel interface.	
--update_config	N/A	Run <code>fc --update_config</code> only if instructed to do so by Nimble Storage Support. Update the Fibre Channel configuration based on the current hardware configuration after a hardware upgrade or downgrade on both controllers of a Nimble array.	Power User
--regenerate_wwn	<i>wwnn_base</i>	Regenerate the World Wide Node Name (WWNN) and all World Wide Port Names (WWPNs) of Fibre Channel interfaces in the group to set the non-fixed bits of the WWNN to the specified <i>wwnn_base</i> . The value is six hex digits between 00:00:01 and FF:FF:FF, inclusive.	Power User
	[--non_interactive]	Override the default behavior of having to type "yes" to complete the command.	

Examples

This example lists the Fibre Channel Interfaces on a CS300 array named *greyhound*. The output is truncated to avoid line wraps.

```

Nimble OS $ fc --list --array
greyhound
Array: greyhound
-----+-----+-----+-----+-----+-----+-----+-----+-----+
Name  Ctrlr Admin Fabric Link WWNN                                     WWPN
      Status
-----+-----+-----+-----+-----+-----+-----+-----+-----+
fc5.1  A    online yes   16G  56:c9:ce:90:ad:d6:3a:00  56:c9:ce:90:ad:d6:3a:01
fc6.1  A    online yes   16G  56:c9:ce:90:ad:d6:3a:00  56:c9:ce:90:ad:d6:3a:02
    
```

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```
fc5.1 B online yes 16G 56:c9:ce:90:ad:d6:3a:00 56:c9:ce:90:ad:d6:3a:03
fc6.1 B online yes 16G 56:c9:ce:90:ad:d6:3a:00 56:c9:ce:90:ad:d6:3a:04
```

This example shows information about the fc5.1 Fibre Channel interface on controller A of an array named *greyhound*.

```
Nimble OS $ fc --info fc5.1
--controller A
Name: fc5.1
Array: greyhound
Controller: A
Admin Status: online
Link Status: up
Operational Status: operational
Fabric Logged In: yes
Link Speed: 16G
Max Link Speed: 16G
WWNN: 56:c9:ce:90:ad:d6:3a:00
WWPN: 56:c9:ce:90:ad:d6:3a:01
FC-ID: 0x012800
PCI bus ID: 0000:84:00.0
HBA port: 0
HBA slot: 2
Firmware version: 1.1.65.5
Fabric switch name: MY-FC1
Fabric switch port: 40
Fabric switch WWNN: 10:00:50:eb:1a:01:09:00
Fabric switch WWPNN: 20:28:50:eb:1a:01:09:00
Fabric WWN: 10:00:50:eb:1a:01:09:00
Connected Initiators:
-----+-----+-----
Alias                WWNN                WWPNN
-----+-----+-----
c22_esx1_hba1       20:00:00:90:fa:53:a0:a0 10:00:00:90:fa:53:a0:a0
c22_esx1_hba2       20:00:00:90:fa:53:a0:a1 10:00:00:90:fa:53:a0:a1
c22_win7_port0      20:00:00:90:fa:53:9f:08 10:00:00:90:fa:53:9f:08
c22_win7_port1      20:00:00:90:fa:53:9f:09 10:00:00:90:fa:53:9f:09
c22win8hba1         20:00:00:90:fa:53:43:8c 10:00:00:90:fa:53:43:8c
c22win8hba2         20:00:00:90:fa:53:43:8d 10:00:00:90:fa:53:43:8d
c23_esx2_hba1       20:00:00:90:fa:53:a2:80 10:00:00:90:fa:53:a2:80
c23_esx2_hba2       20:00:00:90:fa:53:a2:81 10:00:00:90:fa:53:a2:81
c23_esx3_hba2       20:00:00:0e:1e:19:5e:a0 21:00:00:0e:1e:19:5e:a0
c23_esx3_hba3       20:00:00:0e:1e:19:5e:a1 21:00:00:0e:1e:19:5e:a1
```

This example sets the fc5.1 Fibre Channel interface on controller A to be offline.

```
Nimble OS $ fc --edit fc5.1
--controller A --admin_state
offline --force
```

This example updates the Fibre Channel configuration upon the advice of Nimble Storage Support after performing a hardware upgrade or downgrade (adding or removing Fibre Channel HBAs) on both controllers of a Nimble array.

```
Nimble OS $ fc --update_config
```

This example allows Fibre Channel zoning to be configured before the Nimble array you purchased arrives on site. Follow these steps:

- 1 Read this `fc` command section to review the process to follow.

group

group

The `group` command options manage groups.

Synopsis

```
group --help
```

```
group --list
```

```
group --info
```

```
group --edit  
[--name name]  
[--dnsserver server]  
[--ntpserver server]  
[--domainname domain_name]  
[--autosupport {yes|no}]  
[--support_tunnel {yes|no}]  
[--smtp_server smtp_server]  
[--smtp_port smtp_port]  
[--smtp_auth {yes|no}]  
[--smtp_username username]  
[--smtp_encrypt_type {none|starttls|ssl}]  
[--smtp_from_addr email_addr]  
[--smtp_to_addr email_addr]  
[--send_event_data {yes|no}]  
[--alert_level {info|warning|critical}]  
[--proxyserver server]  
[--proxyport port]  
[--proxyuser username]  
[--proxypasswd password]  
[--default_vol_reserve percent]  
[--default_vol_quota percent]  
[--default_vol_warn {percent|mb}]  
[--default_snap_reserve percent]  
[--default_snap_quota percent]  
[--default_snap_warn {percent|mb}]  
[--isns_enable {yes|no}]  
[--isns_server isns_server]  
[--isns_port isns_port]  
[--snmp_trap_enabled {yes|no}]  
[--snmp_trap_host snmp_trap_hostname]  
[--snmp_trap_port snmp_trap_port]  
[--snmp_get_enabled {yes|no}]  
[--snmp_community snmp_community]  
[--snmp_get_port snmp_get_port]  
[--snmp_sys_location snmp_sys_location]  
[--snmp_sys_contact snmp_sys_contact]  
[--syslog_enabled {yes|no}]  
[--syslog_server syslog_server]  
[--syslog_port syslog_port]  
[--encryption_cipher {aes-256-xts|none}]  
[--encryption_scope {group|volume}]
```


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```
[--encryption_mode {available|secure}]
```

```
[--inactivity_timeout minutes]
```

```
group --create_throttle
```

```
[--description text]
```

```
[--days days]
```

```
[--at time]
```

```
[--until time]
```

```
[--bandwidth megabits]
```

```
group --delete_throttle id
```

```
group --edit_throttle id
```

```
[--description text]
```

```
[--days days]
```

```
[--at time]
```

```
[--until time]
```

```
[--bandwidth megabits]
```

```
group --autosupport_validate
```

```
group --autosupport_initiate
```

```
group --merge_validate group_name
```

```
[--username user_name]
```

```
--password password
```

```
[--passphrase]
```

```
group --merge group_name
```

```
[--username user_name]
```

```
--password password
```

```
[--passphrase]
```

```
group --unset_http_proxy
```

```
group --list_limits
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List groups that share the same subnet with the current group.	Guest
--info	N/A	Provide detailed information about the current group.	Guest

Option	Arguments and Suboptions	Description	Role
--edit	[--name <i>name</i>]	Modify the name of a group. You must include this option in a multi-array configuration. If you include this option in a single-array configuration, you modify the group name to the specified <i>name</i> value.	Power User
	[--dnsserver <i>server</i>]	Modify the IP address of the DNS server that is in use. Repeat this option to specify IP addresses for multiple DNS servers.	
	[--ntpserver <i>server</i>]	Modify the hostname or IP address for the NTP server that is used by a group.	
	[--domainname <i>server</i>]	Modify the DNS domain name that is used by a group.	
	[--autosupport { <i>yes/no</i> }]	Enable or disable automatically sending AutoSupport data to the Nimble Storage Support team.	
	[--support_tunnel { <i>yes/no</i> }]	Enable or disable Nimble Storage Support to establish a secure connection to the group to gather diagnostic data.	
	[smtp_server <i>smtp_server</i>]	Modify the hostname or IP address of an SMTP server that the group uses to send email alerts and event data to specified recipients.	
	[--smtp_port <i>smtp_port</i>]	Modify the SMTP port number to use. Default: 25. You must also include the --smtp_server option when you modify the port number.	
	[--smtp_auth { <i>yes/no</i> }]	Enable or disable SMTP authentication. Default: no (disable). If you enable SMPT encryption, then you must also enable SMTP authentication.	
	[--smtp_username <i>username</i>]	Modify the SMTP authentication username and password. The <i>username</i> value must start with an alphabetic character and can be up to 64 alphanumeric characters. When prompted, interactively specify a password for the SMTP account. The <i>password</i> value can be blank or it can be up to 255 printable characters. You can repeat the prior <i>password</i> value.	
[--smtp_encrypt_type { <i>none starttls/ssl</i> }]			

Option	Arguments and Suboptions	Description	Role
		<p>Modify the level of encryption for SMTP. Default: none. Requires using SMTP authentication when encryption is enabled by specifying a value of <i>starttls</i> (start transport layer security) or <i>ssl</i> (secure sockets layer). The <i>starttls</i> type can be an appropriate choice if you implemented cloud-based email. The <i>ssl</i> type can be an appropriate choice if you have a secure SMTP server installed on your network.</p>	
	<p><code>--smtp_from_addr <i>email_addr</i></code></p>	<p>Modify the email address from which the group sends alerts and event data. It does not have to be a valid email address, but it must have a valid email address format. Include the group name for easy identification and filtering.</p>	
	<p><code>--smtp_to_addr <i>email_addr</i></code></p>	<p>Modify one or more email addresses for alert and event recipients. Repeat this option to specify as many TO email addresses as needed.</p>	
	<p><code>--send_event_data {<i>yes/no</i>}</code></p>	<p>Enable or disable sending event data to the Nimble Storage Support team. Default: yes (enabled). When enabled, you do not need to provide contact details for Nimble Storage Support.</p>	
	<p><code>--alert_level {<i>info/warning/critical</i>}</code></p>	<p>Specify the minimum level at which alerts are triggered.</p>	
	<p><code>--proxyserver <i>server</i></code></p>	<p>Modify the hostname or IP address of the HTTP proxy server. If no proxy server is specified, a direct HTTP connection is established. The array uses the HTTP protocol to download software updates and post event data.</p>	
	<p><code>--proxyport <i>port</i></code></p>	<p>Modify the port number that the HTTP server uses.</p>	
	<p><code>--proxyuser <i>username</i></code></p>	<p>Modify the username of the HTTP proxy server.</p>	
	<p><code>--proxypasswd <i>password</i></code></p>	<p>Modify the password that the HTTP proxy server uses.</p>	
	<p><code>--default_vol_reserve <i>percent</i></code></p>	<p>Modify the percentage that is used as the default value for reserve space when you create a volume for a group.</p>	

Option	Arguments and Suboptions	Description	Role
	<code>--default_vol_quota <i>percent</i></code>	Modify the percentage that is used as the default value for the volume quota when you create a volume for a group.	
	<code>--default_vol_warn <i>{percent mb}</i></code>	Modify the default value that triggers sending an alert when the available space of a volume reserve reaches this threshold. This value is used to set the default value on a newly created volume.	
	<code>--default_snap_reserve <i>percent</i></code>	Modify the percentage that is used as the default value for any reserve space when you create a snapshot on a volume.	
	<code>--default_snap_quota <i>percent</i></code>	Modify the percentage that is used as the default value for snapshot reserve space when you create a volume.	
	<code>--default_snap_warn <i>{percent mb}</i></code>	Modify the default value at which an alert is sent when the available space of the snapshot reserve reaches this threshold. This value is used to set the default value on a newly created volume.	
	<code>--isns_enable <i>{yes/no}</i></code>	Enable or disable the Internet Storage Name Service (iSNS) management services for the group. The iSNS settings do not apply to Fibre Channel arrays.	
	<code>--isns_server <i>isns_server</i></code>	Specify the iSNS server that is used to publish iSCSI endpoints.	
	<code>--isns_port <i>isns_port</i></code>	Modify the iSNS server port number.	
	<code>--snmp_trap_enabled <i>{yes/no}</i></code>	Enable or disable SNMP traps.	
	<code>--snmp_trap_host <i>snmp_trap_hostname</i></code>	Modify the hostname of the SNMP trap destination. Only one SNMP trap is currently available.	
	<code>--snmp_trap_port <i>snmp_trap_port</i></code>	Modify the port number of the SNMP trap destination. The default destination port is 162.	
	<code>--snmp_get_enabled <i>{yes/no}</i></code>	Enable or disable SNMP Gets.	
	<code>--snmp_community <i>snmp_community</i></code>		

Option	Arguments and Suboptions	Description	Role
		Modify the name of the SNMP community. The default community is public. You can use alphanumeric characters and the - (hyphen), : (colon), and . (period) special characters. The name must start with an alphanumeric character and can be up to 64 characters.	
	[--snmp_get_port <i>snmp_get_port</i>]	Modify the SNMP responder port number. The default get port number is 161.	
	[--snmp_sys_location <i>snmp_sys_location</i>]	Modify the SNMP system location that is used to respond to SNMPv2-MIB::sysLocation.	
	[--snmp_sys_contact <i>snmp_sys_contact</i>]	Modify the SNMP system contact that is used to respond to SNMPv2-MIB::sysContact.	
	[--syslog_enabled { <i>yes no</i> }]	Enable or disable sending syslog messages from the Nimble group to a remote syslog server. Default: no (syslog is disabled).	
	[--syslog_server <i>syslog_server</i>]	Specify the remote syslog server that receives syslog messages from the Nimble group.	
	[--syslog_port <i>syslog_port</i>]	Modify the remote syslog server port number. Default: 514. Valid values: 1 through 65535, inclusive.	
	[--encryption_cipher { <i>aes-256-xts none</i> }]	Specify the default cipher to use during encryption. A value of "none" indicates no encryption. A value of "aes-256-xts" indicates the use of the AES-256-XTS cipher.	
	[--encryption_scope { <i>group volume</i> }]	Specify whether the default encryption_cipher setting can be overridden when creating a new volume, or is forced to be used. A value of "group" indicates that the value is applied across the entire group and cannot be changed. A value of "volume" means that the setting can be overridden at volume creation time.	
	[--encryption_mode { <i>available secure</i> }]	Specify whether the master key passphrase must be entered on array startup ("secure" mode) to access encrypted volumes, or whether the array remembers the master key across a restart ("available" mode).	

Option	Arguments and Suboptions	Description	Role
	<code>[--inactivity_timeout <i>minutes</i>]</code>	Set the number of minutes that must pass without any user activity before a timeout occurs and users are logged out.	
<code>--create_throttle</code>	Specify at least one suboption.	Create a group-wide bandwidth throttle for replication. Throttles at the group level limit the total replication bandwidth across all downstream partners. The system automatically assigns an ID to the throttle schedule.	Power User
	<code>[--description <i>text</i>]</code>	Describe the bandwidth throttle. If the description includes spaces, enclose the description text in quotation marks.	
	<code>[--days {<i>all</i> <i>days</i>}]</code>	Specify the days of the week for which the bandwidth throttle is effective. Separate the values with commas. For example: <code>Mon, Tue, Thu</code> Specify the value <i>all</i> to indicate all days of the week (the default).	
	<code>[--at <i>time</i>]</code>	Specify the time of day at which the bandwidth throttle is activated.	
	<code>[--until <i>time</i>]</code>	Specify the time of day at which the bandwidth throttle is deactivated.	
	<code>[--bandwidth <i>megabits</i>]</code>	Specify the maximum bandwidth to use for replication, expressed in megabits per second. Use 0 (zero) to stop replication traffic or unlimited to turn off throttling.	
<code>--delete_throttle</code>	<i>id</i>	Delete the specified bandwidth throttle for replication. The ID is assigned by the system. Use <code>group --info</code> to view all throttles with their IDs.	Power User

Option	Arguments and Suboptions	Description	Role
--edit_throttle	<i>id</i>	Modify the specified bandwidth throttle for replication. Use <code>group --info</code> to determine the throttle ID. Specify at least one suboption.	Power User
	[--description <i>text</i>]	Modify the description of the bandwidth throttle. If the description includes spaces, enclose the description text in quotation marks.	
	[--days { <i>all</i> <i>days</i> }]	Modify the days of the week for which the bandwidth throttle is effective. Separate the values with commas. For example: <code>Mon, Tue, Thu</code> Specify the value <i>all</i> to indicate all days of the week (the default).	
	[--at <i>time</i>]	Modify the time of day at which the bandwidth throttle is activated.	
	[--until <i>time</i>]	Modify the time of day at which the bandwidth throttle is deactivated.	
	[--bandwidth <i>megabits</i>]	Modify the maximum bandwidth to use for replication, expressed in megabits per second. Use 0 (zero) to stop replication traffic or unlimited to turn off throttling.	
--autosupport_validate	N/A	Validate the AutoSupport configuration for a group.	Power User
--autosupport_initiate	N/A	Immediately send event information from the group to the Nimble Storage Support team. You can use this option in addition to configuring periodic AutoSupport messages by using the <code>--edit --autosupport yes</code> option.	Power User

Option	Arguments and Suboptions	Description	Role
--merge_validate	<i>group_name</i>	Validate the configuration of the specified group to merge it with the current group. This operation checks group objects for conflicts. If conflicts occur, then the information is listed so that you can resolve the conflicts before merging the groups.	Administrator
	[--username <i>user_name</i>]	Specify the administrative username associated with the group to validate before merging with this group. The default value is <i>admin</i> .	
	--password <i>password</i>	Specify the administrative password associated with the group to validate before merging with this group.	
	[--passphrase]	If encryption is enabled on the group that is the source of the merge being validated, specify the encryption passphrase for the source group.	
--merge	<i>group_name</i>	Merge the specified group of iSCSI arrays into the current group of iSCSI arrays. Use <i>group</i> --merge_validate to check for conflicts before merging two groups. After the groups are merged, all arrays from the merged group are placed in a new pool in the current group. Administer the arrays and volumes from this group. Merging groups of Fibre Channel arrays is currently not supported.	Administrator
	[--username <i>user_name</i>]	Specify the administrative username associated with the group to merge with this group. The default value is <i>admin</i> .	
	--password <i>password</i>	Specify the administrative password associated with the group to merge with this group.	
	[--passphrase]	If encryption is enabled on the group that is the source of the merge, specify the encryption passphrase for the source group.	
--unset_http_proxy	N/A	Remove HTTP proxy server settings from the current group. Afterwards, the group no longer uses an HTTP proxy to connect to the Nimble Storage Support team.	Power User

Option	Arguments and Suboptions	Description	Role
--list_limits	N/A	List the current count, maximum limit, and warning threshold for several group criteria, as well as scope, if applicable.	Guest

Examples

This example lists the groups on a shared subnet.

```
Nimble OS $ group --list
-----+-----+-----
Name                Mgmt IP Address  Version
-----+-----+-----
group-array7        192.0.2.83       2.3.1.0-234720-opt
group-array8        192.0.2.86       2.3.1.0-234720-opt
group-array3        192.0.2.59       2.3.1.0-234619-opt
group-array5        192.0.2.77       2.2.3.0-155034-opt
spark               192.0.2.80       2.2.6.0-229590-opt
INFO: Only groups that share a subnet with this group (group-array2) are
discovered.
```

This example shows detailed information about the group that the array where you are logged in to the CLI is a member. The output is truncated to save space.

```
Nimble OS $ group --info
Group name: group-array2
Group Management IP: 192.0.2.51/255.255.255.0
Group Discovery IP: 172.18.120.55/255.255.255.0
Group leader array: array2
Member array(s): array2
Unreachable member array(s):
Version: 2.3.1.0-234720-opt
NTP server: time.nimblestorage.com
Timezone: America/Los_Angeles
SMTP server:
SMTP port: 25
SMTP authentication: No
SMTP username:
SMTP password: (on file if set)
SMTP encryption type: NONE
Minimum alert email severity level: WARNING
Alert email recipient address(es):
Alert email from address:
Send event data to Nimble Storage Support: Yes
Send AutoSupport data to Nimble Storage Support: Yes
Allow Nimble Storage Support to establish secure connection to array: Yes
...
...
User inactivity timeout: 90 minute(s)
Encryption master key set: No
Encryption default settings scope: none
Encryption default cipher: none
Encryption security mode: none
Encryption activated: No
```

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This example shows detailed information about the same group after encryption is configured. The output is truncated to save space.

```
Nimble OS $ group --info
Group name: group-array2
Group Management IP: 192.0.2.51/255.255.255.0
Group Discovery IP: 172.18.120.55/255.255.255.0
Group leader array: array2
Member array(s): array2
Unreachable member array(s):
Version: 2.3.1.0-234720-opt
...
...
User inactivity timeout: 90 minute(s)
Encryption master key set: Yes
Encryption default settings scope: group
Encryption default cipher: aes-256-xts
Encryption security mode: secure
Encryption activated: Yes
```

This example modifies the group name and AutoSupport configuration.

```
Nimble OS $ group --edit --name greyhound2
--autosupport yes
```

This example configures secure SMTP for the group.

```
Nimble OS $ group --edit
--smtp_server mail.companyname.com --smtp_port 25
--smtp_auth yes --smtp_username smtp.user1
--smtp_encrypt_type ssl --smtp_from_addr group_name@companyname.com
--smtp_to_addr nimble.admin@companyname.com --send_event_data yes
Enter password:
Nimble OS $
```

This example creates a bandwidth throttle that limits replication bandwidth to 10 Mbps on Tuesdays from 6:00 AM until 7:00 AM.

```
Nimble OS $ group --create_throttle --description morning --days Tue
--at 06:00AM --until 07:00AM --bandwidth 10
```

This example modifies the bandwidth throttle with the ID of 8 to permit 20 mbps during the permitted replication time.

```
Nimble OS $ group --edit_throttle 8 --bandwidth 20
```

This example deletes the bandwidth throttle for replication with the ID of 8.

```
Nimble OS $ group --delete_throttle 8
```

This example validates the AutoSupport configuration for a group with two arrays.

Note If the validation fails, an error message reports a potential reason. In some cases, an INFO message might suggest commands to use to diagnose the issue.

```
Nimble OS $ group --autosupport_validate
INFO: Successfully validated autosupport configuration on array array5
INFO: Successfully validated autosupport configuration on array array7
INFO: Successfully validated autosupport configuration.
```

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This example sends AutoSupport information from the group to Nimble Storage Support.

```
Nimble OS $ group --autosupport_initiate
```

This example validates two groups before using the --merge option to merge the groups.

```
Nimble OS $ group --merge_validate group21 --user admin
--password dsfgH456
```

This example merges the group named *Seattle* into the current group.

```
Nimble OS $ group --merge Seattle --user admin
--password dsfgH456
```

This example clears the HTTP proxy server settings for the current group.

```
Nimble OS $ group --unset_http_proxy
```

This example lists limits for the group. The output is truncated to save space.

```
Nimble OS $ group --list_limits
```

Object	Scope	Type	Scope Name	Count	Warning	Maximum
array	group			1	4	4
array	pool			-	4	4
array	pool		default	1	4	4
chapuser	group			0	960	1024
initiator	group			0	9500	10000
initiator	initiatorgrp			-	240	256
initiatorgrp	group			1	960	1024
partner	group			0	8	10
partner	pool			-	8	10
perfpolicy	group			15	45	50
pool	group			1	4	4
protsched	group			6	950	1000
...						
...						
snapshot	group			0	36000	40000
snapshot	pool		default	0	9000	10000
snapshot	vol			-	900	1000
snapcoll	volcoll			-	900	1000

NOTE: Snapshot counts for pool/group scope are for high retention volumes only.

halt

halt

The `halt` command options halt an entire group, an array, or both controllers on a specified array. If you halt an array, it stops both controllers and turns off the array. To restart the array or controller, you have to press the Power button on the front of the array.

Synopsis

```
halt --help
```

```
halt  
[--array array_name]  
[--controller {A | B}]  
[--group {group_name}]  
[--force]  
[--non_interactive]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--array	<i>array_name</i>	Halt the specified array. If you halt an array, it stops both controllers and turns off the array. To restart the array, press the Power button on the front of the array.	Power User
	[--controller { <i>A</i> <i>B</i> }]	Halt the specified controller on the specified array. Valid controller names are <i>A</i> or <i>B</i> , which are case sensitive.. You can omit the --controller option if there is a single array in a group, an uninitialized array, or if entered on a member array in a group.	
	--non_interactive	Override the default behavior of having to type "yes" to complete the command. Use this suboption with care to avoid unexpectedly taking the array or controller offline.	

Option	Arguments and Suboptions	Description	Role
--group	<i>group_name</i>	Halt the entire group when you run this command on the group leader. Both controllers of all arrays in a group are then halted and power is automatically turned off. If any array fails to respond to the halt request, then the group leader array remains operational. To restart the arrays in the group, press the Power button on the front of each array.	Power User
	--non_interactive	Override the default behavior of having to type "yes" to complete the command. Use this suboption with care to avoid unexpectedly taking the group or controller off-line.	
	[--force]	Halt the remaining arrays in a group when one or more arrays cannot be reached. For example, an array can be unreachable if it is already halted.	

Examples

This example halts an array named *NM127f*.

```
Nimble OS $ halt --array NM127f
WARNING: This operation will halt the array. Restarting the array will
require physically powering it back on. Type yes to continue, no to
cancel: yes
INFO: The controller shelf is being turned off. Therefore you can no longer
manage the group.
INFO: After the controller shelf has been turned off, you can turn off any
expansion shelves that are attached to the array.
INFO: Power on the expansion shelves first. Then power on the controller
shelf and log in to start managing the group again.
```

This example halts all controllers on all arrays in a group named *Acme_cluster*. You do not need to specify the group name. When you issue this command option on the group leader, it runs on the group that you are logged in to.

```
Nimble OS $ halt --group
WARNING: This operation will halt all arrays in the group.
Restarting the group will require physically powering on
all arrays in the group. Type yes to continue, no to cancel: yes
INFO: The controller shelf is being turned off. Therefore you can no longer
manage the group.
INFO: After the controller shelf has been turned off, you can turn off any
expansion shelves that are attached to the array.
INFO: Power on the expansion shelves first. Then power on the controller
shelf and log in to start managing the group again.
```

initiatorgrp

The `initiatorgrp` command options control array access by grouping initiators that share a set of common characteristics.

A given Nimble array supports access through the iSCSI or Fibre Channel (FC) protocol, not both.

- An iSCSI initiator group is a set of initiators that are allowed to access a specific volume. After the initiator group is created, add iSCSI initiators to the group. All initiators in the group are granted access to the assigned volume(s).

For example, to create an initiator group named *exchange* and assign an iSCSI initiator to it, you need to run two commands: one to create the group and one to add the iSCSI initiators.

- A Fibre Channel initiator group is a set of initiators that are allowed to access specific volumes, or LUNs. The World Wide Port Names (WWPNs) for the host bus adapters (HBAs) on a host machine are used to create an initiator group. If a given WWPN is not in an initiator group that has an ACL to a volume (LUN), that host cannot access the volume.

Synopsis

```
initiatorgrp --help
```

```
initiatorgrp --list
```

```
initiatorgrp --info initiatorgrp_name
```

```
initiatorgrp --create initiatorgrp_name
[--description text]
```

```
initiatorgrp --delete initiatorgrp_name
```

```
initiatorgrp --edit initiatorgrp_name
[--name new_name]
[--description text]
```

```
initiatorgrp --add_initiators initiatorgrp_name
[--label label]
[--initiator_name iqn]
[--ipaddr ip_address]
[--initiator_alias alias]
[--wwpn wwpn]
[--force]
```

```
initiatorgrp --remove_initiator initiatorgrp_name
[--label label]
[--initiator_alias alias]
[--wwpn wwpn]
```

```
initiatorgrp --add_subnets initiatorgrp_name
--label subnet_label
```

```
initiatorgrp --remove_subnet initiatorgrp_name
--label subnet_label
[--force]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List all configured initiator groups.	Operator
--info	<i>initiatorgrp_name</i>	Show detailed information about the specified initiator group.	Operator
--create	<i>initiatorgrp_name</i>	Create a new iSCSI or Fibre Channel initiator group with the specified name. After creation, use <code>initiatorgrp --add_initiators</code> to add members to the group.	Operator
	[--description <i>textf</i>]	Add a description for the new initiator group. If there are spaces in the description, enclose the text in quotation marks.	
--delete	<i>initiatorgrp_name</i>	Delete the specified initiator group. If any volumes include this initiator group in access control records, run <code>initiatorgrp --remove_initiators</code> to remove the group from those records first.	Operator
--edit	<i>initiatorgrp_name</i>	Modify attributes of the specified initiator group. Specify one or both of the --name and --description suboptions.	Operator
	[--name <i>new_name</i>]	Modify the name of the specified initiator group.	
	[--description <i>textf</i>]	Modify the description of the specified initiator group. If there are spaces in the description, enclose the text in quotation marks.	

Option	Arguments and Suboptions	Description	Role
--add_initiators	<i>initiatorgrp_name</i>	Add one or more members to the specified iSCSI or Fibre Channel initiator group.	Operator
	[--label <i>label</i>]	Add an iSCSI initiator with this unique label of at least two characters to the specified initiator group. The label describes a set of attributes made up of the initiator name, IP address, and subnet combination (also called an access control list, or ACL).	
	[--initiator_name <i>iqn</i>]	Add an iSCSI initiator with this iSCSI Qualified Name (IQN) to the specified initiator group. Repeat this option to specify more than one initiator name. Each initiator name must have an associated IP address that you can view by typing the --ipaddr option. Leave the IP address blank for the initiator if you prefer not to authenticate using both the name and IP address.	
	[--ipaddr <i>ip_address</i>]	Add an iSCSI initiator with this IP address to the specified initiator group. Repeat this option to specify more than one initiator IP address, or specify * to match all IP addresses. Each initiator IP address must have an associated name specified using the --initiator_name option. Leave the name blank if you prefer not to authenticate using both name and IP address.	
	[--initiator_alias <i>alias</i>]	Add a Fibre Channel initiator with this alias of up to 32 characters to the specified initiator group. Repeat this option to specify more than one initiator alias. Each initiator alias must have an associated World Wide Port Name (WWPN) specified using the --wwpn option. Leave the WWPN blank when using a previously saved initiator alias.	
	[--wwpn <i>wwpn</i>]		

Option	Arguments and Suboptions	Description	Role
		Add a Fibre Channel initiator with this WWPN to the specified initiator group. Repeat this option to specify more than one initiator WWPN. Each initiator WWPN can have an associated alias specified using the <code>--initiator_alias</code> option. Leave the alias blank if you prefer not to assign an initiator alias. Even if the alias is blank, if the specified WWPN and alias pair are used in another initiator group, the system will apply the alias when searching for, and finding, the same mapped values used elsewhere. The alias and WWPN have system-level scope.	
	<code>--force</code>	Update or remove conflicting Fibre Channel initiator aliases and forcibly adds the Fibre Channel initiator to the specified initiator group.	
<code>--remove_initiator</code>	<i>initiatorgrp_name</i>	Remove an initiator from the specified initiator group. Specify an iSCSI or Fibre Channel suboption as appropriate for the initiator group.	Operator
	<code>--label label</code>	Remove an iSCSI initiator with this unique label from the specified initiator group. The label describes a set of attributes made up of the initiator name, IP address, and subnet combination (also called an access control list, or ACL).	
	<code>--initiator_alias alias</code>	Remove a Fibre Channel initiator with this alias from the specified initiator group. If both <code>initiator_alias</code> and <code>wwpn</code> are provided, they must be synchronized. If they are not synchronized, the initiator will not be removed from the initiator group.	
	<code>--wwpn wwpn</code>	Remove a Fibre Channel initiator with this WWPN from the specified initiator group.	

Option	Arguments and Suboptions	Description	Role
--add_subnets	<i>initiatorgrp_name</i>	Add target subnets for the specified iSCSI initiator group to discover and access volumes. This option has no meaning for Fibre Channel initiator groups.	Operator
	--label <i>subnet_label</i>	Add a subnet with this label to the specified initiator group. Use <code>subnet --list</code> to get a list of subnets. Repeat this option to specify more than one subnet.	
--remove_subnets	<i>initiatorgrp_name</i>	Remove a target subnet from the specified iSCSI initiator group. This option has no meaning for Fibre Channel initiator groups.	Operator
	--label <i>subnet_label</i>	Remove a subnet with this label from the specified initiator group. Use <code>initiatorgrp --list</code> to see which initiator groups have associated subnets. Then use <code>initiatorgrp --info initiatorgrp_name</code> to get a list of potential subnets to remove.	
	[--force]	Forcibly remove a target subnet from the specified initiator group.	

Examples

This example shows a list of current initiator groups on an iSCSI Nimble array. A value of All in the Number of Subnets column means that no subnets are associated with the initiator group.

```
Nimble OS $ initiatorgrp --list
-----+-----+-----
Initiator Group Name      Number of Initiators      Number of Subnets
-----+-----+-----
initiatorgroup1           2                          1
initiatorgroup2           7                          All
```

This example shows a list of current initiator groups on a Fibre Channel Nimble array.

```
Nimble OS $ initiatorgrp --list
-----+-----+-----
Initiator Group Name      Number of Initiators      Number of Subnets
-----+-----+-----
a11-a14                   2
a11-a14-5                 4
a11-a15                   2
a12-a16                   2
a12-a17                   2
C22Win5                   2
C22win4                   2
a11-a12-RHEL              2
a11-a13-OL                2
esxcluster                6
```

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This example shows detailed information about the iSCSI initiator group named *initiatorgroup1*.

```
Nimble OS $ initiatorgrp --info initiatorgroup1
Name: initiatorgroup1
Description:
Access Protocol: iscsi
Created: Apr 10 2014 14:56:45
Last configuration change: Apr 30 2014 14:00:03
Number of Subnets: 1
    Subnet Label: Subnet-1.141.0.0
Number of Initiators: 2
    Initiator Label: volumetwo-v38270
        Initiator Name: iqn.2012-11.com.nimblestorage:volumetwo-v38270
        Initiator IP Address: *
    Initiator Label: volumeone-v40dc27
        Initiator Name: iqn.2012.com.nimblestorage:volumeone-v40dc27
        Initiator IP Address: *
```

This example shows detailed information about the Fibre Channel initiator group named *esxcluster*.

```
Nimble OS $ initiatorgrp --info esxcluster
Name: esxcluster
Description:
Access Protocol: fc
Created: Jul 23 2014 17:48:18
Last configuration change: Jul 23 2014 17:55:07
Number of Initiators: 6
    Initiator: All_hba2 (21:00:00:0e:1e:19:60:90)
    Initiator: All_hba3 (21:00:00:0e:1e:19:60:91)
    Initiator: Esx2_hba1 (21:00:00:0e:1e:19:60:40)
    Initiator: Esx2_hba2 (21:00:00:0e:1e:19:60:41)
    Initiator: Esx1_hba1 (10:00:00:90:fa:53:a0:a0)
    Initiator: Esx1_hba2 (10:00:00:90:fa:53:a0:a1)
```

This example creates an iSCSI initiator group named *grouplevel2* and then verifies that the group exists.

```
Nimble OS $ initiatorgrp --create grouplevel2 --description
"group level two iSCSI initiators"

Nimble OS $ initiatorgrp --list
-----+-----+-----
Initiator Group Name      Number of Initiators      Number of Subnets
-----+-----+-----
grouplevel2                0                          All
initiatorgroup1            2                          1
initiatorgroup2            7                          All

Nimble OS $ initiatorgrp --info grouplevel2
Name: grouplevel2
Description: group level two iSCSI initiators
Access Protocol: iscsi
Created: Jul 10 2014 11:06:47
Last configuration change: Jul 10 2014 11:06:47
Number of Subnets: All
Number of Initiators: 0
```

This example shows that there are no access control records for the iSCSI initiator group named *grouplevel2* and then deletes the group.

```
Nimble OS $ initiatorgrp --list
-----+-----+-----
```

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```
Initiator Group Name      Number of Initiators      Number of Subnets
-----+-----+-----
grouplevel2                0                          All
initiatorgroup1           2                          1
initiatorgroup2           7                          All

Nimble OS $ initiatorgrp --delete grouplevel2
```

This example modifies the name and description of the iSCSI initiator group named *grouplevel2* and then shows the changes.

```
Nimble OS $ initiatorgrp --list
-----+-----+-----
Initiator Group Name      Number of Initiators      Number of Subnets
-----+-----+-----
grouplevel2                0                          All
initiatorgroup1           2                          1
initiatorgroup2           7                          All

Nimble OS $ initiatorgrp --edit grouplevel2 --name group-level-2
--description "second-level group"

Nimble OS $ initiatorgrp --list
-----+-----+-----
Initiator Group Name      Number of Initiators      Number of Subnets
-----+-----+-----
group-level-2              0                          All
initiatorgroup1           2                          1
initiatorgroup2           7                          All

Nimble OS $ initiatorgrp --info group-level-2
Name: group-level-2
Description: second-level group
Access Protocol: iscsi
Created: Jul 10 2014 11:06:47
Last configuration change: Jul 10 2014 11:47:07
Number of Subnets: All
Number of Initiators: 0
```

This example adds one initiator member to the iSCSI initiator group named *group-level-2*.

```
Nimble OS $ initiatorgrp --add_initiators group-level-2
--initiator_name iqn.2012-11.com-company
--ipaddr 10.12.130.211
```

This example removes an initiator from the iSCSI initiator group named *group-level-2*.

```
Nimble OS $ initiatorgrp group-level-2 --remove_initiator
--label iqn2
```

This example adds one subnet to the iSCSI initiator group named *group-level-2*.

```
Nimble OS $ initiatorgrp --add_subnets group-level-2
--label data1
```

This example removes the *data1* subnet from the iSCSI initiator group named *group-level-2*.

```
Nimble OS $ initiatorgrp --remove_subnet group-level-2
--label data1
```

ip

ip

The `ip` command options manage IP configuration settings.

The array management IP address is a floating address. It is assigned to a physical port by the system. This IP address is used to access the GUI and CLI on the array. The controller uses this IP address to have an active role. The discovery IP address is also a floating address. It is assigned to a physical port by the system. SCSI initiators use this IP address to discover targets. This array management IP address and the management IP address can share the same IP address or have unique IP addresses.

Each controller on the Nimble array has multiple port pairs that are used as data ports. You can configure these ports as part of the network configuration. Data ports are paired to ensure high availability (HA). The number of port pairs depends on your model.

Each controller is also assigned a static IP address to have direct access to a controller.

Synopsis

```
ip --help

ip --list
[--netconfig netconfig_name]
[--array array_name]

ip --info ipaddr
[--netconfig netconfig_name]
[--array array_name]

ip --add ipaddr
[--netconfig netconfig_name]
[--array array_name]
--type {data|management|support}
[--nic nic_name]
[--ctrlr {A|B}]

ip --edit ipaddr
[--netconfig netconfig_name]
[--array array_name]
[--type {data|discovery|management|support}]
[--nic nic_name]
[--newaddr ipaddr]
[--ctrlr {A|B}]
[--force_ip_update]

ip --delete ipaddr
[--netconfig netconfig_name]
[--array array_name]
[--type {data|discovery|management|support}]
[--ctrlr {A|B}]
[--force_ip_update]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List all configured data, management, and diagnostic (support) IP addresses.	Guest
	[--netconfig <i>netconfig_name</i>]	List the data, management, and diagnostic (support) IP addresses for the specified network configuration. Use <code>netconfig --list</code> to get the names of network configurations. Typical names are <i>{active backup draft}</i> .	
	[--array <i>array_name</i>]	List the data, management, and diagnostic (support) IP addresses for the specified array. Use <code>array --list</code> to get the names of arrays.	
--info	<i>ipaddr</i>	Show detailed information about the specified IP address.	Guest
	[--netconfig <i>netconfig_name</i>]	Show detailed information about the specified IP address in the specified network configuration. Use <code>netconfig --list</code> to get the names of configurations.	
	[--array <i>array_name</i>]	Show detailed information about the specified IP address on the specified array. Use <code>array --list</code> to get the names of arrays.	

Option	Arguments and Suboptions	Description	Role
--add	<i>ipaddr</i>	Add an IP address to the network configuration for an array.	Power User
	[--netconfig <i>netconfig_name</i>]	Add the specified data, management, or support (diagnostic) IP address to the specified network configuration.	
	[--array <i>array_name</i>]	Add the specified data, management, or support (diagnostic) IP address to the specified array.	
	--type { <i>data</i> <i>management</i> <i>support</i> }	Specify the type of IP address being added.	
	[nic <i>nic_name</i>]	Add a data IP address to the specified NIC. Values depend on the hardware configuration, and can include eth1 through eth6 for the CS-Series or eth1, eth2, tg1, and tg2 for the CS-Series "G" configuration (for CS200 and CS400 models).	
	[--ctrlr { <i>A</i> / <i>B</i> }]	Add a support IP address to the specified controller.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>ipaddr</i>	Modify the specified IP address on the network configuration for an array.	Power User
	[--netconfig <i>netconfig_name</i>]	Modify the specified data, discovery, management, or support (diagnostic) IP address for the specified network configuration.	
	[--array <i>array_name</i>]	Modify the specified data, discovery, management, or support (diagnostic) IP address for the specified array.	
	[--type { <i>data</i> / <i>discovery</i> / <i>management</i> / <i>support</i> }]	Modify the type for the specified IP address. Valid values are <i>data</i> , <i>discovery</i> (although this type has no effect on a Fibre Channel array), <i>management</i> , or <i>support</i> .	
	[--nic <i>nic_name</i>]	Modify a data IP address for this NIC. Values depend on the hardware configuration, and can include eth1 through eth6 for the CS-Series or eth1, eth2, tg1, and tg2 for the CS-Series "G" configuration (for CS200 and CS400 models).	
	[--newaddr <i>ipaddr</i>]	Modify a previously configured IP address.	
	[--ctrlr { <i>A/B</i> }]	Modify a support IP address for the specified controller.	
	[--force_ip_update]	Forcibly modify a data or discovery IP address in an active network configuration. The command fails unless this option is used.	

Option	Arguments and Suboptions	Description	Role
--delete	<i>ipaddr</i>	Delete the specified IP address from a network configuration on an array.	Power User
	[--netconfig <i>netconfig_name</i>]	Delete the specified data, discovery, management, or support (diagnostic) IP address from the specified network configuration.	
	[--array <i>array_name</i>]	Delete the specified data, discovery, management, or support (diagnostic) IP address from the specified array.	
	[--type { <i>data</i> / <i>discovery</i> / <i>management</i> / <i>support</i> }]	Delete an IP address configuration. Valid values are <i>data</i> , <i>discovery</i> , <i>management</i> , or <i>support</i> .	
	[--ctrlr { <i>A/B</i> }]	Delete a support IP address from the specified controller.	
	[--force_ip_update]	Forcibly delete a data or discovery IP address in an active network configuration. The command fails unless this option is used.	

Examples

This example shows information about the array IP configuration.

```
Nimble OS $ ip --list
-----+-----+-----+-----+-----
IP Address      NIC      Status Type      Controller
-----+-----+-----+-----+-----
192.0.2.209     eth1     up    management A
192.0.2.209     eth1     up    discovery  A
198.51.100.209  eth1     up    data       A
198.51.100.210  eth2     up    data       A
198.51.100.211  eth3     up    data       A
198.51.100.212  eth4     up    data       A
192.0.2.209     eth1     up    support    A
192.0.2.210     eth1     up    support    B
```

This example shows detailed information about an IP address in the active network configuration.

```
Nimble OS $ ip --info 192.0.2.209 --netconfig active
IP address: 192.0.2.209
NIC: eth1
Link status: up
Array: c20-array2
Controller: B
Type: management, discovery
```

This example adds a support IP address to controller B.

```
Nimble OS $ ip --add 10.12.148.209 --type support --ctrlr B
```

This example modifies a data IP address and lists the change to verify the modification.

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```
Nimble OS $ ip --edit 198.51.100.209 --type data --newaddr 198.51.100.109

Nimble OS $ ip --list
-----+-----+-----+-----+-----
IP Address      NIC           Status Type      Controller
-----+-----+-----+-----+-----
192.0.2.209     eth1          up        management A
192.0.2.209     eth1          up        discovery  A
198.51.100.109  eth1          up        data       A
198.51.100.210  eth2          up        data       A
198.51.100.211  eth3          up        data       A
198.51.100.212  eth4          up        data       A
192.0.2.209     eth1          up        support    A
192.0.2.210     eth1          up        support    B
```

This example deletes the support IP address for controller B and then lists the IP addresses to verify the deletion.

```
Nimble OS $ ip --delete 192.0.2.210 --type support --ctrlr B

ip --list
-----+-----+-----+-----+-----
IP Address      NIC           Status Type      Controller
-----+-----+-----+-----+-----
192.0.2.209     eth1          up        management A
192.0.2.209     eth1          up        discovery  A
198.51.100.109  eth1          up        data       A
198.51.100.210  eth2          up        data       A
198.51.100.211  eth3          up        data       A
198.51.100.212  eth4          up        data       A
192.0.2.209     eth1          up        support    A
```

migration

The `migration` command options provide information about data migration activity.

Synopsis

```
migration --help
```

```
migration --list
[--array_unassign]
[--pool_rebal]
[--vf_reloc]
```

```
migration --info {array|pool|volume}
[--array_unassign]
[--pool_rebal]
[--vf_reloc]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	{ <code>--array_unassign</code> <code>--pool_rebal</code> <code>--vf_reloc</code> }	List data-migration activity that is related to unassigning arrays from pools, rebalancing array usage in pools, or relocating a volume family to a different pool. Specify one of the suboptions each time you run <code>migration --list</code> .	Guest
<code>--info</code>	{ <code>array_name --array_unassign</code> <code>pool_name --pool_rebal</code> <code>volume_name --vf_reloc</code> }	Show information about data-migration activity that is related to the specified array being unassigned from its pool, the specified pool being rebalanced, or the specified volume family being relocated to a different pool. A volume family is a collection of volumes with a single root volume. A root volume is a volume that has no parent. Specify one of the argument/suboption pairs each time you run <code>migration --info</code> .	Guest

Examples

This example shows that no migration of array unassignment is currently active.

```
Nimble OS $ migration --list --array_unassign
None.
```

This example shows information about unassigning an array from its pool.

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```
Nimble OS $ migration --info c20-array2 --array_unassign  
Array Unassign:
```

```
-----+-----+-----  
Array          Data          Estimated  
                Remaining (MB)  Completion  
-----+-----+-----  
c20-array2                932    2 min
```

netconfig

The `netconfig` command options manage a network configuration.

Synopsis

```
netconfig --help
```

```
netconfig --list
```

```
netconfig --info {active|backup|draft}
```

```
netconfig --create_draft_from {active|backup}
[--force]
```

```
netconfig --validate {active | backup | draft}
[--force_repl]
[--force_initiator_groups]
```

```
netconfig --activate {active|backup}
[--force_repl]
[--force_ip_update]
[--force_initiator_groups]
```

```
netconfig --edit {active|backup|draft}
[--iscsi_automatic_connection_method {yes|no}]
[--iscsi_connection_rebalancing {yes|no}]
[--force_ip_update]
```

```
netconfig --delete {backup|draft}
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	N/A	List network configurations.	Guest
<code>--info</code>	<i>{active backup draft}</i>	Provide detailed information about the specified network configuration.	Guest
<code>--create_draft_from</code>	<i>{active backup}</i>	Create a draft network configuration from the specified active or backup network configuration.	Power User
	<code>--force</code>	Forcibly create a draft network configuration if a draft already exists.	

Option	Arguments and Suboptions	Description	Role
--validate	<i>{active backup draft}</i>	Validate the specified network configuration.	Power User
	[--force_repl]	Ignore inconsistent network configurations for replication partners when validating the specified network configuration.	
	[--force_initiator_groups]	Ignore initiators assigned to subnets when validating the specified network configuration.	
--activate	<i>backup</i>	Activate the specified network configuration and makes it the newly <i>active</i> network configuration.	Power User
	[--force_repl]	Ignore inconsistent network configurations for replication partners when activating the specified network configuration.	
	[--force_ip_update]	Allow activating the specified network configuration and updating the discovery or data IP addresses for the active configuration.	
	[--force_initiator_groups]	Ignore initiators assigned to subnets when activating the specified network configuration.	
--edit	<i>{active backup draft}</i>	Modify the specified network configuration. Specify at least one suboption.	Power User
	[--iscsi_automatic_connection_method <i>{yes no}</i>]	Redirect connections from a specified iSCSI target IP to the best data IP that is based on connection counts. This option has no effect on a Fibre Channel array.	
	[--iscsi_connection_rebalancing <i>{yes no}</i>]	Rebalance iSCSI connections by periodically breaking existing connections that are out of balance to allow the host to reconnect to another data IP address. This option has no effect on a Fibre Channel array.	
	[--force_ip_update]	Allow updating the discovery or data IP addresses for the <i>active</i> network configuration.	
--delete	<i>{backup draft}</i>	Delete the specified network configuration. You cannot delete the active network configuration.	Power User

Examples

This example lists the network configurations for an array.

Nimble Administrative Commands

```
Nimble OS $ netconfig --list
-----+-----+-----+-----
Name      Last Modified      Active Since      Last Active
-----+-----+-----+-----
backup    Jun 27 2014 11:22:45  N/A              Jun 27 2014 11:22:55
active    Jun 27 2014 11:22:55  Jun 27 2014 11:22:45  N/A
```

This example shows information about the active network configuration on a Fibre Channel array.

```
Nimble OS $ netconfig --info active
Group Management IP: 192.0.2.19
Group leader array: array7
Member array(s): array7
ISCSI Automatic connection method: Yes
ISCSI Connection rebalancing      : Yes

Routes:
-----+-----+-----
Destination      Netmask      Gateway
-----+-----+-----
0.0.0.0          0.0.0.0      203.0.113.1

Subnets:
-----+-----+-----+-----+-----
Label            Network      Type      Discovery IP  VLAN  MTU
-----+-----+-----+-----+-----
datal           192.0.2.0/23  Data     192.0.2.61   0     9000
mgmt-only       192.0.2.0/21  Mgmt     192.0.2.19   0     1500
Subnet-1.101.0.0 1.101.0.0/16  Data     N/A          2101 1500
Subnet-1.102.0.0 1.102.0.0/16  Data     N/A          2102 1500
Subnet-1.103.0.0 1.103.0.0/16  Data     N/A          2103 1500
Subnet-1.104.0.0 1.104.0.0/16  Data     N/A          2104 1500
Subnet-1.105.0.0 1.105.0.0/16  Data     N/A          2105 1500
Subnet-1.106.0.0 1.106.0.0/16  Data     N/A          2106 1500
Subnet-1.107.0.0 1.107.0.0/16  Data     N/A          2107 1500
Subnet-1.108.0.0 1.108.0.0/16  Data     N/A          2108 1500
Subnet-1.109.0.0 1.109.0.0/16  Data     N/A          2109 1500
Subnet-1.110.0.0 1.110.0.0/16  Data     N/A          2110 1500

Array Network Configuration: array7
Controller A IP: 192.0.2.11
Controller B IP: 192.0.2.18
-----+-----+-----+-----+-----
NIC      Subnet Label      Data IP Address Tagged
-----+-----+-----+-----+-----
eth1     mgmt-only          N/A             No
eth2     mgmt-only          N/A             No
eth3     datal              192.0.2.62     No
eth3.2101 Subnet-1.101.0.0  1.101.3.35     Yes
eth3.2102 Subnet-1.102.0.0  1.102.3.35     Yes
eth3.2103 Subnet-1.103.0.0  1.103.3.35     Yes
eth3.2104 Subnet-1.104.0.0  1.104.3.35     Yes
eth3.2105 Subnet-1.105.0.0  1.105.3.35     Yes
eth3.2106 Subnet-1.106.0.0  1.106.3.35     Yes
eth3.2107 Subnet-1.107.0.0  1.107.3.35     Yes
eth3.2108 Subnet-1.108.0.0  1.108.3.35     Yes
eth3.2109 Subnet-1.109.0.0  1.109.3.35     Yes
eth3.2110 Subnet-1.110.0.0  1.110.3.35     Yes
eth4     datal              192.0.2.91     No
eth4.2101 Subnet-1.101.0.0  1.101.194.35   Yes
eth4.2102 Subnet-1.102.0.0  1.102.194.35   Yes
```

Nimble Administrative Commands

```
eth4.2103 Subnet-1.103.0.0      1.103.194.35  Yes
eth4.2104 Subnet-1.104.0.0      1.104.194.35  Yes
eth4.2105 Subnet-1.105.0.0      1.105.194.35  Yes
eth4.2106 Subnet-1.106.0.0      1.106.194.35  Yes
eth4.2107 Subnet-1.107.0.0      1.107.194.35  Yes
eth4.2108 Subnet-1.108.0.0      1.108.194.35  Yes
eth4.2109 Subnet-1.109.0.0      1.109.194.35  Yes
eth4.2110 Subnet-1.110.0.0      1.110.194.35  Yes
```

This example creates a draft from the active network configuration and then lists the results.

```
Nimble OS $ netconfig --create_draft_from active

Nimble OS $ netconfig --list
-----+-----+-----+-----+
Name          Last Modified          Active Since          Last Active
-----+-----+-----+-----+
backup        Jun 27 2014 11:22:45   N/A                   Jun 27 2014 11:22:55
active        Jun 27 2014 11:22:55   Jun 27 2014 11:22:45 N/A
draft         Jul 17 2014 15:14:34   N/A                   N/A
```

This example validates a *draft* network configuration.

```
Nimble OS $ netconfig --validate draft
INFO: Configuration is valid.
```

If the validation fails, an INFO message identifies what issues to resolve. For example, on an iSCSI array:

```
Nimble OS $ netconfig --validate backup
ERROR: Failed to validate netconfig. Invalid argument.
INFO: Must configure at least one iSCSI and at least one group enabled subnet.
```

This example activates the *draft* network configuration.

```
Nimble OS $ netconfig --activate draft
```

This example edits the *draft* network configuration on an iSCSI array to enable iSCSI connection rebalancing.

```
Nimble OS $ netconfig --edit draft --iscsi_connection_rebalancing yes
```

This example deletes the *draft* network configuration.

Note If you delete the *backup* network configuration, you have to modify the *active* configuration and activate the modified version.

```
Nimble OS $ netconfig --delete draft
```


nic

nic

The `nic` command options manage Network Interface Cards (NICs) on a Nimble array.

NICs are the hardware that manages any physical ports on an array. You can manage settings, such as frame size, on the NIC.

Note Do not enable jumbo frames on switches unless jumbo frames are also configured on the NICs.

Synopsis

```
nic --help
```

```
nic --list  
[--netconfig {active|backup|draft}]  
[--array {array_name|serial_number}]
```

```
nic --info nic_name  
[--netconfig {active|backup|draft}]  
[--array {array_name|serial_number}]
```

```
nic --assign nic_name  
[--netconfig {active|backup|draft}]  
[--array {array_name|serial_number}]  
[--subnet subnet_label]  
[--tagged {yes|no}]  
[--data_ip ip_address]
```

```
nic --unassign nic_name  
[--netconfig {active|backup|draft}]  
[--array {array_name|serial_number}]  
[--subnet subnet_label]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List all NICs, or the NICs associated with the specified network configuration or the NICs on the specified array.	Guest
	--netconfig {active backup draft}	List the NICs for a specified network configuration.	
	--array {array_name serial_number}	List the NICs on the specified array.	

Option	Arguments and Suboptions	Description	Role
--info	<i>nic_name</i>	Show detailed information about the specified NIC.	Guest
	[--netconfig { <i>active backup draft</i> }]	Show detailed information about the specified NIC on the specified network configuration.	
	[--array { <i>array_name serial_number</i> }]	Show detailed information about the specified NIC on the specified array.	
--assign	<i>nic_name</i>	Assign a subnet on the specified NIC.	Power User
	[--netconfig { <i>active backup draft</i> }]	Assign a subnet on the specified NIC on the specified network configuration.	
	[--array { <i>array_name serial_number</i> }]	Assign a subnet on the specified NIC on the specified array.	
	[--subnet <i>subnet_label</i>]	Specify the subnet to assign. Run <code>subnet --list</code> to get currently unassigned values for <i>subnet_label</i> .	
	[--tagged { <i>yes no</i> }]	Specify whether the NIC uses a tagged assignment on the specified subnet. A tagged assignment means that traffic for the subnet on this NIC will carry the 802.1Q frame with the VLAN ID for the subnet. A NIC can have at most one untagged assignment and zero or many tagged assignments.	
	[--data_ip <i>ip_address</i>]	Specify the data IP address.	
--unassign	<i>nic_name</i>	Unassign a subnet from the specified NIC.	Power User
	[--netconfig { <i>active backup draft</i> }]	Unassign a subnet from the specified NIC on the specified network configuration.	
	[--subnet <i>subnet_label</i>]	Unassign a subnet from the specified NIC on the specified array.	

Examples

This example lists the NICs on an iSCSI array. The output is truncated to avoid line wrapping.

```

nic --list
-----+-----+-----+-----+-----+-----
Name      Link   Link  MAC          Subnet          IP Addresses
      Status Speed
      A/B
-----+-----+-----+-----+-----+-----
eth1     up/up   1G  00:25:90:75:18:90  mgmt-data      192.0.2.51,...
eth2     up/up   1G  00:25:90:75:18:91  mgmt-data
    
```

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```
eth3    up/up    1G 00:E0:ED:18:25:06 data1    198.51.100.56
eth4    up/up    1G 00:E0:ED:18:25:07 data1    198.51.100.57
eth5    up/up    1G 00:E0:ED:1C:FF:66 data1    198.51.100.55,...
eth6    up/up    1G 00:E0:ED:1C:FF:67 data1    198.51.100.59
```

This example lists the NICs on a Fibre Channel array. The output is truncated to avoid line wrapping and to save space.

```
nic --list
-----+-----+-----+-----+-----+-----
Name      Link      Link  MAC              Subnet          IP Addresses
      Status Speed
      A/B
-----+-----+-----+-----+-----+-----
eth1      up/up          1G 00:25:90:8C:F2:3A mgmt-only      192.0.2.18,...
eth2      up/up          1G 00:25:90:8C:F2:3B N/A
eth3      up/up          10G 00:25:90:E0:A5:71 data1          192.0.2.61,...
eth3.2101 up/up          10G 00:25:90:E0:A5:71 Subnet-1.101.0.0 1.101.3.35
eth3.2102 up/up          10G 00:25:90:E0:A5:71 Subnet-1.102.0.0 1.102.3.35
eth3.2103 up/up          10G 00:25:90:E0:A5:71 Subnet-1.103.0.0 1.103.3.35
eth3.2104 up/up          10G 00:25:90:E0:A5:71 Subnet-1.104.0.0 1.104.3.35
eth3.2105 up/up          10G 00:25:90:E0:A5:71 Subnet-1.105.0.0 1.105.3.35
eth3.2106 up/up          10G 00:25:90:E0:A5:71 Subnet-1.106.0.0 1.106.3.35
eth3.2107 up/up          10G 00:25:90:E0:A5:71 Subnet-1.107.0.0 1.107.3.35
eth3.2108 up/up          10G 00:25:90:E0:A5:71 Subnet-1.108.0.0 1.108.3.35
eth3.2109 up/up          10G 00:25:90:E0:A5:71 Subnet-1.109.0.0 1.109.3.35
eth3.2110 up/up          10G 00:25:90:E0:A5:71 Subnet-1.110.0.0 1.110.3.35
eth4      up/up          10G 00:25:90:E0:A5:70 data1          10.18.122.91
eth4.2101 up/up          10G 00:25:90:E0:A5:70 Subnet-1.101.0.0 1.101.194.35
eth4.2102 up/up          10G 00:25:90:E0:A5:70 Subnet-1.102.0.0 1.102.194.35
```

This example shows detailed information for the *eth2* NIC on an iSCSI array.

```
Nimble OS $ nic --info eth2
Name: eth2
Location on Controller A: 0,1
Location on Controller B: 0,1
Present on Controller A: Yes
Present on Controller B: Yes
Link Status on Controller A: up
Link Status on Controller B: up
Max Supported Link Speed: 1G
Interface Type: TP
Negotiated Link Speed on Controller A: 1G
Negotiated Link Speed on Controller B: 1G
MAC Address on Controller A: 00:25:90:75:18:9D
MAC Address on Controller B: 00:25:90:75:18:91
Subnet: mgmt-data (192.0.2.0/255.255.255.0)
Type: Mgmt
VLAN Id: 0
MTU: 1500
IP Address:
```

This example shows detailed information for the *eth3.2101* NIC on a Fibre Channel array.

```
Nimble OS $ nic --info eth3.2101
Name: eth3.2101
Location on Controller A: 1,0
Location on Controller B: 1,0
Present on Controller A: Yes
Present on Controller B: Yes
```

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```
Link Status on Controller A: up
Link Status on Controller B: up
Max Supported Link Speed: 10G
Interface Type: TP
Negotiated Link Speed on Controller A: 10G
Negotiated Link Speed on Controller B: 10G
MAC Address on Controller A: 00:25:90:CA:D5:29
MAC Address on Controller B: 00:25:90:E0:A5:71
Subnet: Subnet-1.101.0.0 (1.101.0.0/255.255.0.0)
Type: Data
VLAN Id: 2101
MTU: 1500
IP Address: 1.101.3.35
```

partner

The `partner` command options manage replication partners and per-partner bandwidth throttles.

When you create a replication partner, you enable one Nimble array to replicate its data to another. The two arrays must be able to communicate over a network by using ports 4213 and 4214. Replication partners have the same name as the remote array.

Replication partners can be reciprocal, upstream (the source of replicas), or downstream (the receiver of replicas) partners. The replication partners must be configured on both arrays to successfully replicate.

Synopsis

```
partner --help
```

```
partner --list
```

```
partner --info partner_name
```

```
partner --create partner_name
--hostname {ipaddr|hostname}
[--control_port port]
[--data_port port]
[--description text]
--secret shared_secret
[--pool pool_name]
--subnet subnet_label
```

```
partner --edit partner_name
[--hostname {ipaddr|hostname}]
[--control_port port]
[--data_port port]
[--description text]
[--secret shared_secret]
[--pool pool_name]
[--new_name partner_name]
[--subnet subnet_label]
```

```
partner --delete partner_name
```

```
partner --create_throttle partner_name
[--description text]
[--days days]
[--at time]
[--until time]
[--bandwidth megabits]
```

```
partner --edit_throttle partner_name
[--description text]
--id number
[--days days]
[--at time]
[--until time]
[--bandwidth megabits]
```

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```
partner --delete_throttle partner_name  
--id number
```

```
partner --pause partner_name
```

```
partner --resume partner_name
```

```
partner --test partner_name
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List all configured replication partners for the array.	Guest
--info	<i>partner_name</i>	Provide detailed information about the specified replication partner.	Guest

Option	Arguments and Suboptions	Description	Role
--create	<i>partner_name</i>	Create a replication partner. The partner name must be the array name. After creating a replication partner on one array, create a reciprocal, upstream, or downstream partner on the array configured as the replication partner.	Power User
	--hostname <i>{ipaddr hostname}</i>	Specify the IP address or hostname of the management IP address for the replication partner.	
	[--control_port <i>port</i>]	Specify the port number of the control interface. If you do not specify this option, the default port 4213 is used.	
	[--data_port <i>port</i>]	Specify the port number of the data interface. If you do not specify this option, the default port 4214 is used.	
	[--description <i>text</i>]	Specify a description of the replication partner. If there are spaces in the description, enclose the text in quotation marks.	
	--secret <i>shared_secret</i>	Specify the shared secret that ensures secure communication between the replication partners. Both replication partners must use the same shared secret.	
	[--pool <i>pool_name</i>]	Specify the storage pool in which to create volumes. Any volumes replicated from this partner are created in the specified pool. Replica volumes created as clones ignore this parameter and are always created in the same pool as their parent volume. If you do not specify this option, the default storage pool is used.	
	--subnet <i>subnet_label</i>	Specify the local subnet to use for communication with this partner. For example, 10.17.0.0/255.255.0.0.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>partner_name</i>	Modify the configuration of the specified replication partner. Specify at least one suboption.	Power User
	[--hostname { <i>ipaddr</i> / <i>hostname</i> }]	Modify the IP address or hostname of the management IP address for the replication partner.	
	[--control_port <i>port</i>]	Modify the port number of the control interface. The default port number is 4213.	
	[--data_port <i>port</i>]	Modify the port number of the data interface. The default port number is 4214.	
	[--description <i>text</i>]	Modify the description of the replication partner.	
	[--secret <i>shared_secret</i>]	Modify the shared secret that ensures secure communication between the replication partners. Both replication partners must use the same shared secret.	
	[--pool <i>pool_name</i>]	Modify the storage pool in which to create volumes. Any volumes replicated from this partner are created in the specified pool. Replica volumes created as clones ignore this parameter and are always created in the same pool as their parent volume. Modifying the <i>pool_name</i> does not affect existing replica volumes.	
	[--new_name <i>partner_name</i>]	Modify the name of the replication partner. The name must match the group name of the replication partner	
	[--subnet <i>subnet_label</i>]	Modify the local subnet to use for communication with this partner. For example, 10.17.0.0/255.255.0.0.	
--delete	<i>partner_name</i>	Delete the specified replication partner. If a volume collection is being replicated to a replication partner, then subsequent replication based on that collection fails.	Power User

Option	Arguments and Suboptions	Description	Role
--create_throttle	<i>partner_name</i>	Create a per-partner bandwidth throttle. You can create per-partner replication throttles only if there is no array-wide bandwidth throttle. You can create multiple per-partner throttles, but the throttles cannot overlap.	Operator
	[--description <i>text</i>]	Describes the throttle. The system automatically assigns an ID to the throttle schedule. If the description includes spaces, enclose the description text in quotation marks.	
	[--days <i>days</i>]	<p>Specifies the days of the week on which the throttle is effective, separated by commas. For example,</p> <p style="text-align: center;">Tue, Thur</p> <p>You can specify the value <i>all</i> to indicate all days of the week, which is the default if you do not specify this option.</p>	
	--at <i>time</i>	Specify the time of day at which the throttle is activated.	
	--until <i>time</i>	Specify the time of day at which the throttle is deactivated. This value must be later than the --at <i>time</i> value.	
	--bandwidth <i>megabits</i>	Specify the maximum bandwidth to use for replication in megabits per second. Use 0 (zero) to stop replication traffic, or unlimited to turn off throttling.	

Option	Arguments and Suboptions	Description	Role
--edit_throttle	<i>partner_name</i>	Modify the specified per-partner bandwidth throttle.	Operator
	[--description <i>text</i>]	Modify the description of the throttle.	
	--id <i>number</i>	Specify the ID of the throttle to modify. Use the --info option to determine the throttle ID.	
	[--days <i>days</i>]	Modify the days of the week on which the throttle is effective, separated by commas.	
	--at <i>time</i>	Modify the time of day at which the throttle is activated.	
	--until <i>time</i>	Modify the time of day at which the throttle is deactivated.	
	--bandwidth <i>megabits</i>	Modify the maximum bandwidth to use for replication, specified in megabits per second. Use 0 (zero) to stop replication traffic, or unlimited to turn off throttling.	
--delete_throttle	<i>partner_name</i>	Delete the specified per-partner bandwidth throttle.	Operator
	--id <i>number</i>	Specify the ID of the bandwidth throttle to delete. The ID is assigned by the system. Use <code>partner --info</code> to view all throttles and get the <i>number</i> you need.	
--pause	<i>partner_name</i>	Pause replication to or from the specified replication partner. In-progress replications are stopped until resumed. This state is stored persistently and remains in force across system restarts.	Operator
--resume	<i>partner_name</i>	Resume the paused replication to or from the specified replication partner.	Operator
--test	<i>partner_name</i>	Test the network connection to the specified replication partner. Both partners must be configured for the test to succeed.	Operator

Examples

This example lists configured replication partners.

```
Nimble OS $ partner --list
-----+-----+-----+-----
Partner          Hostname          Status          Throttled
                  Bandwidth
```

Nimble Administrative Commands

```
-----+-----+-----+-----  
array7          array7          disconnected    unlimited  
array1          192.0.2.93      connected      unlimited  
array2          192.0.2.57      connected      unlimited
```

This example shows details about a replication partner named *array1*.

```
Nimble OS $ partner --info array1  
Name: array1  
Description:  
Hostname: 192.0.2.93  
Control port: 4213  
Data port: 4214  
Pool: default  
Paused: No  
Connected: No  
Connection error: N/A  
Configuration synchronized: No  
Synchronization error:  
Throttled bandwidth: unlimited  
Throttles: N/A  
Subnet type: Data  
Subnet: Subnet-1.101.0.0 (1.101.0.0/255.255.0.0)  
Array serial: AC-109019  
Replication version: 63  
Created: Jul 24 2014 23:41:26  
Last configuration change: Sep 5 2014 11:53:31
```

This example creates a replication partner with a secret of *nimblereplica* and a description of *San Jose array*. Because values for the control and data ports are not provided, the defaults of 4213 and 4214 are used.

```
Nimble OS $ partner --create array1 --description "San Jose array"  
--secret nimblereplica --subnet 1.101.0.0/255.255.0.0
```

This example modifies the shared secret for a replication partner. In this case, the shared secret has to be changed on the replication partner, too.

```
Nimble OS $ partner --edit array1 --secret mycoreplication
```

This example deletes the replication partner named *array7*.

```
Nimble OS $ partner --delete array7
```

This example creates a per-partner bandwidth throttle for the replication partner *array2* that allows replication traffic Monday through Wednesday from 2 PM until 5 PM.

```
Nimble OS $ partner --create_throttle array2 --description "afternoon limit"  
--days Mon,Tue,Wed --at 14:00 --until 17:00 --bandwidth 10
```

This example modifies a per-partner bandwidth throttle with the ID of 26 for the replication partner *array2*. The modification allows replication traffic Monday through Wednesday from 3 PM until 5 PM and changes the bandwidth.

```
Nimble OS $ partner --edit_throttle array2 --id 26  
--days Mon,Tue,Wed --at 15:00 --until 17:00  
--bandwidth 20 --description "afternoon replication limit"
```

This example deletes the throttle with the ID of 26.

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```
Nimble OS $ partner --delete_throttle array1 --id 26
```

This example pauses all replication to the replication partner named *array2*.

```
Nimble OS $ partner --pause array2
```

This example resumes replication to the replication partner named *array2*.

```
Nimble OS $ partner --resume array2
```

This example tests connectivity to the replication partner named *array1*.

```
Nimble OS $ partner --test array1  
Successfully contacted partner.
```

perfpolicy

The `perfpolicy` command options manage performance policies.

You can use performance policies as a set of optimizations that includes block size, compression, as well as caching. It ensure that the volume performance represents the best configuration for its intended use. By default, a volume uses the default performance policy, which is for 4096 byte blocks with full compression and caching enabled.

For replication volumes, the same performance policy must exist on each replication partner.

Block size should be set to match the application block size. If the application block size is not known, it should be set to the largest common denominator of the majority of I/O requests. If in doubt, set low (minimum 4KB), because setting it too high can reduce performance severely, while setting it too low reduces performance by a small amount.

Caching should generally be enabled. It helps most with non-sequential (random) access. Caching should be left on unless the volume is known to be either not read much or read sequentially (for example, a volume holding log files). If caching is turned off, the array will not cache any data for the volume but it continues to cache internal metadata.

Compression can, and should, be left on unless the volume is known to hold mostly incompressible data. In this case, turning off compression will improve performance by a small amount.

Synopsis

```
perfpolicy --help
```

```
perfpolicy --list
```

```
perfpolicy --info policy_name
```

```
perfpolicy --create policy_name
[--description text]
[--blocksize bytes]
[--compress {yes|no}]
[--cache {yes|no}]
[--cache_policy {normal|aggressive}]
[--space_policy {offline|non_writable}]
```

```
perfpolicy --edit policy_name
[--newname policy_name]
[--description text]
[--compress {yes|no}]
[--cache {yes|no}]
[--cache_policy {normal|aggressive}]
[--space_policy {offline|non_writable}]
```

```
perfpolicy --delete policy_name
[--force]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest

Nimble Administrative Commands

Option	Arguments and Suboptions	Description	Role
--list	N/A	List all configured performance policies. Several predefined performance policies are provided, which are based on common application best practices.	Guest
--info	<i>policy_name</i>	Provide detailed information about the specified performance policy.	Guest

Option	Arguments and Suboptions	Description	Role
--create	<i>policy_name</i>	Create the specified performance policy. The block size of a performance policy cannot be changed once it has been created.	Operator
	[--description <i>text</i>]	Specify a description of the performance policy. If there are spaces in the description, enclose the text in quotation marks.	
	[--blocksize <i>bytes</i>]	Specify a block size to be used for volumes created with the specified performance policy. Supported block sizes are 4096 bytes (4 KB), 8192 bytes (8 KB), 16384 bytes (16 KB), and 32768 bytes (32 KB). If you do not specify this option, the default block size of 4096 bytes (4 KB) is used. You cannot change the after you create the performance policy.	
	[--compress { <i>yes/no</i> }]	Specify whether data in associated volumes should be compressed. If you do not specify this option, the default of yes is used, and data is compressed.	
	[--cache { <i>yes/no</i> }]	Specify whether data in associated volumes should be cached. If you do not specify this option, the default of yes is used, and data is cached.	
	[--cache_policy { <i>normal/aggressive</i> }]		

Option	Arguments and Suboptions	Description	Role
		<p>Specify how data of an associated volume must be cached if data caching is enabled. The normal policy caches data but skips under certain conditions, such as sequential I/O. The aggressive policy accelerates caching of all data that is associated with this volume, regardless of sequentiality. You want to use the aggressive policy during the initial copy of a dataset for a new volume. However, it may cause the data that is associated with other volumes to be evicted from cache sooner. It may also cause greater wear on the flash-based cache over an extended period of time. Therefore, you may want to revert to normal caching after the data load has been completed. If you do not specify this option, the default of normal is used.</p>	
	<p><code>[--space_policy {<i>offline</i> <i>non_writable</i>}]</code></p>	<p>Specify the state of the volume upon a space-constraint violation such as volume quota violation, snapshot quota violation, volumes above their volume reserve or snapshot reserve if the pool free space is exhausted. The "offline" space policy takes the volume offline. The "non_writable" space policy disallows write operations on the volume, but allows unmap and read operations. If you do not specify this option, the default of offline is used.</p>	

Option	Arguments and Suboptions	Description	Role
--edit	<i>policy_name</i>	Modify the specified performance policy. If there are spaces in the <i>policy_name</i> , enclose the value in quotation marks. Specify at least one suboption.	Operator
	[--newname <i>policy_name</i>]	Modify the name of the performance policy	
	[--description <i>text</i>]	Modify the description of the performance policy.	
	[--compress { <i>yes/no</i> }]	Modify whether data in associated volumes should be compressed.	
	[--cache { <i>yes/no</i> }]	Modify whether data in associated volumes should be cached.	
	[--cache_policy { <i>normal/aggressive</i> }]	Modify the cache policy used when data in associated volumes is cached.	
	[--space_policy { <i>offline/non_writable</i> }]	Modify the space policy used.	
--delete	<i>policy_name</i>	Delete the specified performance policy. You cannot delete a performance policy that is associated with a volume. Remove the association before you delete the performance policy.	Power User
	[--force]	Forcibly delete the specified performance policy even if there are volumes associated with it.	

Examples

This example lists the configured performance policies, including predefined policies.

```
Nimble OS $ perfpolicy --list
-----+-----+-----+-----+
Performance Policy      Block Size Compress Cache Cache Policy
Name                    (bytes)
-----+-----+-----+-----+
default                  4096 Yes      Yes  normal
Exchange 2003 data store 4096 Yes      Yes  normal
Exchange 2007 data store 8192 Yes      Yes  normal
Exchange 2010 data store 32768 Yes     Yes  normal
Exchange log             16384 Yes     No   normal
Hyper-V CSV              4096 Yes     Yes  normal
Oracle OLTP              8192 Yes     Yes  normal
SharePoint               8192 Yes     Yes  normal
SQL Server               8192 Yes     Yes  normal
SQL Server 2012          8192 Yes     Yes  normal
SQL Server Logs          4096 Yes     No   normal
VMware ESX               4096 Yes     Yes  normal
VMware ESX 5             4096 Yes     Yes  normal
```

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VMware VDI	4096	Yes	Yes	normal
Windows File Server	4096	Yes	Yes	normal

This example shows details about the predefined performance policy named *default*.

```
Nimble OS $ perfpolicy --info default
Name: default
Description: Default performance policy
Block size: 4096 bytes
Compress: Yes
Cache: Yes
Cache Policy: normal
Space Policy: offline
Created: N/A
Last configuration change: N/A
```

This example creates a performance policy that specifies a block size of 16384 bytes and includes compression, but does not use cache.

```
Nimble OS $ perfpolicy --create bigblock
--description "big block, no cache" --blocksize 16384 --cache no
```

This example modifies the performance policy named *bigblock* so that it uses cache.

```
Nimble OS $ perfpolicy --edit bigblock --cache yes
```

This example deletes performance policy after unassociating any associated volumes so that the `--force` option is not needed.

```
Nimble OS $ perfpolicy --delete bigblock
```

pool

pool

The `pool` command options manage storage pools.

Synopsis

```
pool --help
```

```
pool --list
```

```
pool --info pool_name
```

```
pool --create pool_name  
--array array_name  
[--description text]
```

```
pool --edit pool_name  
[--description text]  
[--name new_name]
```

```
pool --delete pool_name  
[--force]
```

```
pool --assign pool_name  
--array array_name
```

```
pool --unassign pool_name  
--array array_name  
[--force]
```

```
pool --merge pool_name  
--target target_pool
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List all storage pools in the group.	Guest
--info	<i>pool_name</i>	Show detailed information about the specified storage pool.	Guest
--create	<i>pool_name</i>	Create a storage pool.	Power User
	--array <i>array_name</i>	Specify which array to add to the storage pool. To add multiple arrays, repeat this option as many times as needed.	
	[--description <i>text</i>]	Specify a plain-text description of the storage pool. If there are spaces in the description, enclose the text in quotation marks.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>pool_name</i>	Modify the specified storage pool. Specify at least one suboption.	Power User
	[--description <i>text</i>]	Modify the plain-text description of the specified storage pool.	
	[--name <i>new_name</i>]	Modify the name of the specified storage pool.	
--delete	<i>pool_name</i>	Delete the specified storage pool. You cannot delete the default pool. Before you start to delete a pool, make sure that there are no volumes assigned to the pool. Use <code>vol --list --pool <i>pool_name</i></code> to see if the pool you plan to delete has any volumes assigned to it. If any volumes are assigned, use <code>vol --move</code> to move those volumes to another storage pool.	Power User
	[--force]	Forcibly delete the specified storage pool, even if it contains volumes that were deleted but whose space is still being reclaimed.	
--assign	<i>pool_name</i>	Assign arrays to the specified storage pool.	Power User
	--array <i>array_name</i>	Specify an array to add to the pool. To assign multiple arrays to the pool, repeat this option as many times as needed.	
--unassign	<i>pool_name</i>	Unassign, or remove, arrays from the specified storage pool.	Power User
	--array <i>array_name</i>	Specify an array to remove from the pool. To unassign multiple arrays from the pool, repeat this option as many times as needed.	
	[--force]	Forcibly unassign the specified array or arrays from the pool even if the specified arrays are unreachable.	

Option	Arguments and Suboptions	Description	Role
--merge	<i>pool_name</i>	Merge the specified storage pool into the specified target pool. All volumes on the specified pool are moved to the target pool and the specified pool is then deleted. Likewise, all arrays in the pool are assigned to the target pool. The name of the newly merged pool is automatically truncated to a maximum of 255 characters.	Power User
	--target <i>target_pool</i>	Specify the target, or destination, pool into which the storage pool is merged.	

Examples

This example lists all configured storage pools. In this example, only the default storage pool appears.

```
Nimble OS $ pool --list
-----+-----+-----+-----
Pool          Capacity(MB) Usage(MB) Arrays
-----+-----+-----+-----
default          15738305    2719551 array7
```

This example shows detailed information about the default group.

```
Nimble OS $ pool --info default
Pool Name: default
Pool Description: Default pool
Created: N/A
Last configuration change: N/A
Arrays in the pool:
Array mktg, Capacity (MB): 185502916, Usage (MB): 11468728
Array sales, Capacity (MB): 65394722, Usage (MB): 8399605
Arrays being unassigned from the pool:
Pool capacity (MB): 250897638
Pool cache capacity (MB): 305152
Pinnable cache capacity (MB): 662
Pinned cache capacity (MB): 0
Pinned volumes :
Pool usage (MB): 19868333
Pool unused reserve (MB): 20482561
Pool free space (MB): 210546744
Volumes in the pool: vol10,vol11,SQL-2012-Server,SQL-2012-Server-Data,
SQL-2012-Server-Log
Snapshot collection count: 1200
Snapshot count: 7092
```

This example creates a storage pool named *marketing* that includes the array named *array7*.

```
Nimble OS $ pool --create marketing --array array7
```

This example changes the name of the *marketing* storage pool to *marketingteam*.

```
Nimble OS $ pool --edit marketing --name marketingteam
```

This example deletes a storage pool named *marketingteam*.

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```
Nimble OS $ pool --delete marketingteam
```

This example assigns an array named *MKT2* to the storage pool named *marketingteam*.

```
Nimble OS $ pool --assign marketingteam --array MKT2
```

This example unassigns an array named *MKT2* from the storage pool named *marketingteam*.

```
Nimble OS $ pool --unassign marketingteam --array MKT2
```

This example merges the storage pool named *marketingteam* into the storage pool named *corporatepool*.

```
Nimble OS $ pool --merge marketingteam --target corporatepool
```

prottmpl

The `prottmpl` command options manage protection templates, on which volume collection schedules and retention are based. You cannot edit or delete the protection templates provided by Nimble Storage.

Protection templates provide a way to create a set of data protection policies that meet specific goals, and apply them as volumes and collections are created. Protection templates consist of sets of snapshots schedules, replication schedules, and retention limits. They prefill the protection information when creating volume collections. You can create protection templates as needed, but you cannot edit or delete the predefined protection templates.

All the volumes assigned to a collection use the same settings for schedules and retention, so the snapshots and replications trigger for all volumes in the collection simultaneously.

After a volume collection is created, changes to it do not affect the template. Changes to the template do not affect previously created volume collections.

Synopsis

```
prottmpl --help
```

```
prottmpl --list
```

```
prottmpl --info template_name
```

```
prottmpl --create template_name
[--description text]
--app_sync {none|vss|vmware}
[--app_server server]
[--app_id {exchange|sql2005|sql2008|sql2012|exchange_dag|sql2014}]
[--app_cluster_name cluster_name]
[--app_service_name service_name]
[--vcenter_hostname server]
[--vcenter_username user_name]
[--vcenter_password password]
--schedule name
--repeat period
--repeat_unit {minutes|hours|days|weeks}
[--at time]
[--until time]
[--days {all|day1,day2,...}]
[--retain number]
[--replicate_to partner]
[--replicate_every number]
[--num_retain_replica number]
[--alert_threshold hh:mm]
[--snap_verify {yes|no}]
[--skip_db_consistency_check {yes|no}]
[--disable_appsnc {yes|no}]
[--external_trigger {yes|no}
```

```
prottmpl --edit template_name
[--newname template_name]
[--description text]
[--app_sync {none|vss|vmware}]
```

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```
[--app_server server]
[--app_id {exchange|sql2005|sql2008|sql2012|exchange_dag|sql2014}]
[--app_cluster_name cluster_name]
[--app_service_name service_name]
[--vcenter_hostname server]
[--vcenter_username user_name]
[--vcenter_password password]
```

```
prottpl --delete template_name
```

```
prottpl --addsched template_name
--schedule name
--repeat period
--repeat_unit {minutes | hours | days | weeks}
[--at time]
[--until time]
[--days {all | day1,day2,...}]
[--retain number]
[--replicate_to partner]
[--replicate_every number]
[--num_retain_replica number]
[--alert_threshold hh:mm]
[--snap_verify {yes|no}]
[--skip_db_consistency_check {yes|no}]
[--disable_appsnc {yes|no}]
[--external_trigger {yes|no}]
```

```
prottpl --editsched template_name
--schedule name
[--newname name]
[--repeat period]
[--repeat_unit {minutes|hours|days|weeks}]
[--at time]
[--until time]
[--days {all|day1,day2,...}]
[--retain number]
[--replicate_to partner]
[--replicate_every number]
[--num_retain_replica number]
[--alert_threshold hh:mm]
[--snap_verify {yes|no}]
[--skip_db_consistency_check {yes|no}]
[--disable_appsnc {yes|no}]
[--external_trigger {yes|no}]
```

```
prottpl --deletesched template_name
--schedule schedule_name
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest

Nimble Administrative Commands

Option	Arguments and Suboptions	Description	Role
--list	N/A	List protection templates.	Guest
--info	<i>template_name</i>	Provide detailed information about the specified protection template and its schedules.	Guest

Option	Arguments and Suboptions	Description	Role
--create	<i>template_name</i>	Create the specified protection template.	Operator
	[--description <i>text</i>]	Specify a plain-language description of the protection template. This is useful to specify what the protection template was designed to optimize. If there are spaces in the description, enclose the text in quotation marks.	
	--app_sync { <i>none</i> <i>vss</i> <i>vmware</i> }	Define the application synchronization to apply. If you specify <i>vss</i> synchronization, supply the --app_* credentials. If you specify <i>vmware</i> synchronization, supply the --vcenter_* credentials.	
	[--app_server <i>server</i>]	Specify the application server when <i>vss</i> synchronization is enabled.	
	[--app_id { <i>exchange</i> <i>sql2005</i> <i>sql2008</i> <i>sql2012</i> <i>exchange_dag</i> <i>sql2014</i> }]	Define the application running on the server when <i>vss</i> synchronization is enabled.	
	[--app_cluster_name <i>cluster_name</i>]	Specify the cluster name if the application that uses <i>vss</i> synchronization is running within a Windows clustering environment.	
	[--app_service_name <i>service_name</i>]	Specify the instance name of the service if the application that uses <i>vss</i> synchronization is running within a Windows clustering environment.	
	[--vcenter_hostname <i>server</i>]	Specify the host name of the vCenter server with which the Nimble array will communicate when <i>vmware</i> synchronization is enabled.	
	[--vcenter_username <i>user_name</i>]	Specify the Windows user name to use to create a Nimble account on the vCenter server when <i>vmware</i> synchronization is enabled.	
	[--vcenter_password <i>password</i>]	Specify the password associated with the user name when <i>vmware</i> synchronization is enabled.	
	--schedule <i>name</i>	Specify the snapshot schedule to associate with this protection template. Use --addsched to add more schedules to the protection template after creating it.	
--repeat <i>period</i>			

Option	Arguments and Suboptions	Description	Role
		Specify the frequency of snapshots every <code>--repeat_unit</code> . If you do not specify this option, the default value of <code>1</code> is used.	
	<code>--repeat_unit</code> { <i>minutes hours days weeks</i> }	Specify the unit of time for <code>--repeat</code> to define the frequency of snapshots. If you do not specify this option, the default value of <code>days</code> is used.	
	[<code>--at time</code>]	Specify the time of day to start taking snapshots. If you do not specify this option, the default value of <code>12:00</code> (midnight) is used.	
	[<code>--until time</code>]	Specify the time of day to stop taking snapshots. If you do not specify this option, the default value of <code>11:59</code> (PM) is used if a stop time is appropriate for the repeat unit. For example, if you take snapshots once daily, you do not need this option.	
	[<code>--days {all day1,day2,...}</code>]	Specify on which days to take snapshots unless the repeat unit is <code>weeks</code> . You can enter a comma-separated list of days, such as <code>Mon,Wed,Fri</code> . If you do not specify this option, the default value of <code>all</code> is used.	
	[<code>--retain number</code>]	Specify the maximum number of snapshots to keep. After this number is reached, older snapshots can be deleted to make room for new ones if the space is needed. If replication is enabled on this schedule, the array always retains the latest replicated snapshot.	
	[<code>--replicate_to partner</code>]	Specify the replication partner for replicated snapshots. Use <code>partner --create</code> on both arrays to configure replication partners.	
	[<code>--replicate_every number</code>]	Specify that a certain number of snapshots assigned to the schedule should be replicated. For example, setting this to <code>5</code> replicates every fifth snapshot. If snapshots are replicated and you do not specify this option, all snapshots are replicated.	
	[<code>--num_retain_replica number</code>]	Specify the number of snapshots to retain on the replication partner.	

Option	Arguments and Suboptions	Description	Role
	[--alert_threshold <i>hh:mm</i>]	If replicating a snapshot takes more than this amount of time to complete, an alert will be generated. If you do not specify this option, the default of 24 hours is used. Enter 00:00 to disable this alert.	
	[--snap_verify { <i>yes/no</i> }]	Specify whether to run a verification tool on snapshots created by this schedule. Use this option with snapshot schedules of a volume collection that has application synchronization. The tool used to verify snapshots depends on the type of application. For example, if the application synchronization is <i>vss</i> and the application ID is <i>exchange</i> , the <code>eseutil</code> tool is run on the snapshots. If verification fails, the logs are not truncated.	
	[--skip_db_consistency_check { <i>yes/no</i> }]	Specify whether to skip consistency checks for database files on snapshots created by this schedule. Use this option with snapshot schedules of a volume collection that has application synchronization of <i>vss</i> , the application ID is <i>exchange_dag</i> . (MS Exchange 2010 or later using Database Available Group), <code>--snap_verify</code> is set to <i>yes</i> , and <code>--disable_appsync</code> is set to <i>no</i> .	
	[--disable_appsync { <i>yes/no</i> }]	Specify whether to disable application-synchronized snapshots and create crash-consistent snapshots instead.	
	[--external_trigger { <i>yes/no</i> }]	Specify whether to use an externally driven schedule with no internal timers to create manual snapshots.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>template_name</i>	Modify the specified protection template. New volume collections based on the template are affected by the modifications, but existing volume collections are not. Specify at least one suboption.	Operator
	[--newname <i>template_name</i>]	Modify the name of the protection template.	
	[--description <i>text</i>]	Modify the plain-language description of the protection template.	
	--app_sync { <i>none</i> <i>vss</i> <i>vmware</i> }	Modify the application synchronization to apply.	
	[--app_server <i>server</i>]	Modify the application server for vss synchronization.	
	[--app_id { <i>exchange</i> <i>sql2005</i> <i>sql2008</i> <i>sql2012</i> <i>exchange_dag</i> <i>sql2014</i> }]	Modify the application running on the server for vss synchronization.	
	[--app_cluster_name <i>cluster_name</i>]	Modify the cluster name if the application that uses vss synchronization is running within a Windows clustering environment.	
	[--app_service_name <i>service_name</i>]	Modify the instance name of the service if the application that uses vss synchronization is running within a Windows clustering environment.	
	[--vcenter_hostname <i>server</i>]	Modify the host name of the vCenter server with which the Nimble array communicates for <i>vmware</i> synchronization.	
	[--vcenter_username <i>user_name</i>]	Modify the Windows user name for <i>vmware</i> synchronization.	
[--vcenter_password <i>password</i>]	Modify the password associated with the user name for <i>vmware</i> synchronization.		
--delete	<i>template_name</i>	Delete the specified protection template.	Operator

Option	Arguments and Suboptions	Description	Role
--addsched	<i>template_name</i>	Add a schedule to the specified protection template.	Operator
	--schedule <i>name</i>	Specify the name of the snapshot schedule to associate with this protection template.	
	--repeat <i>period</i>	Specify the frequency of snapshots. If you do not specify this option, the default value of <i>1</i> is used.	
	--repeat_unit { <i>minutes hours days weeks</i> }	Specify the unit of time for --repeat to define the frequency of snapshots. If you do not specify this option, the default value of <i>days</i> is used.	
	[--at <i>time</i>]	Specify the time of day to start taking snapshots. If you do not specify this option, the default value of <i>12:00</i> (midnight) is used.	
	[--until <i>time</i>]	Specify the time of day to stop taking snapshots. If you do not specify this option, the default value of <i>11:59</i> (PM) is used if a stop time is appropriate for the repeat unit. For example, if you take snapshots once daily, you do not need this option.	
	[--days { <i>all day1,day2,...</i> }]	Specify the days on which to take snapshots unless the repeat unit is <i>weeks</i> . You can enter a comma-separated list of days, such as <i>Mon,Wed,Fri</i> . If you do not specify this option, the default value of <i>all</i> is used.	
	[--retain <i>number</i>]	Specify the maximum number of snapshots to keep. After this number is reached, older snapshots can be deleted to make room for new ones if the space is needed. If replication is enabled on this schedule, the array always retains the latest replicated snapshot.	
	[--replicate_to <i>partner</i>]	Specify the replication partner for replicated snapshots. Use <code>partner --create</code> on both arrays to configure replication partners.	
[--replicate_every <i>number</i>]			

Option	Arguments and Suboptions	Description	Role
		Specify that a certain number of snapshots assigned to the schedule should be replicated. For example, setting this to 5 replicates every fifth snapshot. If snapshots are replicated and you do not specify this option, all snapshots are replicated.	
	[--num_retain_replica <i>number</i>]	Specify the number of snapshots to retain on the replication partner.	
	[--alert_threshold <i>hh:mm</i>]	If replicating a snapshot takes more than this amount of time to complete, an alert will be generated. If you do not specify this option, the default of 24 hours is used. Enter 00:00 to disable this alert.	
	[--snap_verify { <i>yes/no</i> }]	Specify whether to run a verification tool on snapshots created by this schedule. Use this option with snapshot schedules of a volume collection that has application synchronization. The tool used to verify snapshots depends on the type of application. For example, if the application synchronization is <i>vss</i> and the application ID is <i>exchange</i> , the <i>eseutil</i> tool is run on the snapshots. If verification fails, the logs are not truncated.	
	[--skip_db_consistency_check { <i>yes/no</i> }]	Specify whether to skip consistency checks for database files on snapshots created by this schedule. Use this option with snapshot schedules of a volume collection that has application synchronization of <i>vss</i> , the application ID is <i>exchange_dag</i> . (MS Exchange 2010 or later using Database Available Group), --snap_verify is set to <i>yes</i> , and --disable_appsnc is set to <i>no</i> .	
	[--disable_appsnc { <i>yes/no</i> }]	Specify whether to disable application-synchronized snapshots and create crash-consistent snapshots instead.	
	[--external_trigger { <i>yes/no</i> }]	Specify whether to use an externally driven schedule with no internal timers to create manual snapshots.	

Option	Arguments and Suboptions	Description	Role
--editsched	<i>template_name</i>	Modify the specified schedule on the specified protection template. Specify at least one suboption in addition to --schedule <i>name</i> .	Operator
	--schedule <i>name</i>	Specify the name of the snapshot schedule to modify.	
	[--newname <i>name</i>]	Modify the name of the snapshot schedule.	
	[--repeat <i>period</i>]	Modify the frequency of snapshots within each --repeat_unit.	
	[--repeat_unit { <i>minutes hours days weeks</i> }]	Modify the unit of time for --repeat to define the frequency of snapshots.	
	[--at <i>time</i>]	Modify the time of day to start taking snapshots.	
	[--until <i>time</i>]	Modify the time of day to stop taking snapshots.	
	[--days]	Modify the days on which to take snapshots unless the repeat unit is <i>weeks</i> .	
	[--retain <i>number</i>]	Modify the maximum number of snapshots to keep.	
	[--replicate_to <i>partner</i>]	Modify the replication partner for replicated snapshots.	
	[--replicate_every <i>number</i>]	Modify that a certain number of snapshots assigned to the schedule should be replicated.	
	[--num_retain_replica <i>number</i>]	Modify the number of snapshots to retain on the replication partner.	
	[--alert_threshold <i>hh:mm</i>]	Modify whether to generate an alert if replicating a snapshot takes more than this amount of time to complete.	
	[--snap_verify { <i>yes no</i> }]	Modify whether to run a verification tool on snapshots created by this schedule.	
	[--skip_db_consistency_check { <i>yes no</i> }]	Modify whether to skip consistency checks for database files on snapshots created by this schedule.	
[--disable_appsnc { <i>yes no</i> }]	Modify whether to disable application-synchronized snapshots and create crash-consistent snapshots instead.		
[--external_trigger { <i>yes no</i> }]			

Option	Arguments and Suboptions	Description	Role
		Modify whether to use an externally driven schedule with no internal timers to create manual snapshots.	
--deletesched	<i>template_name</i>	Delete the specified schedule from the specified protection template.	Operator
	--schedule <i>schedule_name</i>	Specify the schedule to delete.	

Examples

This example lists available protection templates. In this example, only the predefined templates exist.

```
Nimble OS $ prottpl --list
-----+-----
Protection Template      Application
Name                    Synchronization
-----+-----
Retain-30Daily           none
Retain-48Hourly-30Daily-52Weekly  none
Retain-90Daily           none
```

This example shows detailed information about the *Retain-30Daily* protection template.

Note This protection template is one of the predefined templates, so you cannot modify or delete it.

```
Nimble OS $ prottpl --info Retain-30Daily
Name: Retain-30Daily
Description: Provides daily snapshots retained for 30 days
Application synchronization: none
Application server: N/A
Application ID: N/A
Cluster name: N/A
Service name: N/A
VMware vCenter hostname: N/A
VMware vCenter username: N/A
VMware vCenter password: N/A
Created: N/A
Last configuration change: N/A
Schedule Name: daily
  Description:
  Type: Nimble Schedule
  Repeats: 1 day(s)
  At: 0:00:00 a.m.
  Until: N/A
  Days: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
  Number of snapshots to retain: 30
  Snapshot verification: N/A
  Skip database consistency check: N/A
  Disable appsync: No
  Number of snapshots to retain on replica: 0
  Replicate every: N/A
  Replicate to:
  Alert threshold: 24:00
  Created: N/A
  Last configuration change: N/A
  Last timing configuration change: N/A
```

This example creates a new protection template named *highrepl*.

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```
Nimble OS $ prottmpl --create highrepl
--description "use when high replication is needed"
--app_sync none --schedule replicated --repeat 1 --repeat_unit day
--days Monday,Tuesday,Thursday --retain 8 --replicate_to array7
--replicate_every 1 --num_retain_replica 40 --snap_verify no
```

This example modifies the protection template named *highrepl* to replicate once a week, and to retain 31 snapshots and 52 replicas.

```
Nimble OS $ prottmpl --edit highrepl --schedule replicated
--repeat 1 --repeat_unit weeks --retain 31 --replicate_to array7
--replicate_every 1 --num_retain_replica 52 --snap_verify no
```

This example deletes a protection template named *highrepl*.

```
Nimble OS $ prottmpl --delete highrepl
```

This example adds an *hourly* schedule to the protection template named *highrepl*.

```
Nimble OS $ prottmpl --addsched highrepl
--schedule hourly --repeat 1 --repeat_unit hours
--retain 25 --snap_verify no
```

This example modifies the *hourly* schedule that is associated with the protection template named *highrepl*.

```
Nimble OS $ prottmpl --editsched highrep --schedule hourly
--repeat 2 --repeat_unit hours
```

This example removes a schedule named *hourly* from the protection template named *highrepl*.

```
Nimble OS $ prottmpl --deletesched highrepl --schedule hourly
```

reboot

reboot

This command reboots an entire group of arrays, an array, or a controller. If you want to stop I/O traffic without rebooting, you must use the `halt` command. The `reboot` command causes a reboot without a power cycle.

Synopsis

```
reboot --help
```

```
reboot --array array_name  
[--controller {A|B}]  
[--non_interactive]
```

```
reboot --group  
[--non_interactive]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--array	<i>array_name</i>	Reboot the specified array.	Power User
	--controller {A B}	Reboot the specified controller on an array. Valid controller names are <i>A</i> and <i>B</i> , which are case sensitive. If you do not specify this option, both controllers on the specified array are rebooted.	
	--non_interactive	Override the default behavior of having to type "yes" to complete the command. Use this suboption with care to avoid unexpectedly taking the array or controller offline for a short time and disrupting client connections.	
--group	N/A	Reboot the entire group when you run this command on the group leader. If any array fails to respond to the reboot request, then the group leader array remains operational.	Power User
	--non_interactive	Override the default behavior of having to type "yes" to complete the command. Use this suboption with care to avoid unexpectedly taking the group offline for a short time and disrupting client connections.	

Examples

This example cancels rebooting the array where you are logged in.

```
Nimble OS $ reboot  
WARNING: This operation will reboot the array.  
Type yes to continue, no to cancel: no  
INFO: Canceling reboot
```

This example reboots the group without prompting for confirmation. You must run this command on the group leader array.

```
Nimble OS $ reboot --group --non_interactive
```

route

The `route` command options manage network routes. Specify a network route either in "network/netmask" (dotted quad) format (for example, 10.12.0.100/255.255.0.0) or "network/mask_bits" (slash) format (for example, 10.12.0.100/16). When the system must connect to a remote array or host, it checks the routing table to determine if a known path exists. If the remote system is in a subnet to which the system has access, it tries to connect along that interface.

Synopsis

```
route --help
```

```
route --list
[--netconfig {active|backup|draft}]
```

```
route --info network_route
[--netconfig {active|backup|draft}]
```

```
route --add network_route
--netconfig {active|backup|draft}
--gateway gateway
```

```
route --edit network_route
[--netconfig {active|backup|draft}]
[--network network_route]
[--gateway gateway]
```

```
route --delete network_route
[--netconfig {active|backup|draft}]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List all configured routes.	Guest
	--netconfig {active backup draft}	List all configured routes on the specified network configuration.	
--info	network_route	Provide detailed information about the specified network route. The route is Destination/Netmask from the --list output.	Guest
	--netconfig {active backup draft}	Provide detailed information about the specified network route on the specified network configuration.	
--add	network_route	Add the specified network route.	Power User
	--netconfig {active backup draft}	Add the specified network route on the specified network configuration.	
	--gateway gateway	Add the specified network route for the specified gateway.	

Option	Arguments and Suboptions	Description	Role
<code>--edit</code>	<code>network_route</code>	Modify the specified network route. Specify at least one suboption.	Power User
	<code>[--netconfig {active backup draft}]</code>	Modify the specified network route on the specified network configuration.	
	<code>[--network network_route]</code>	Modify the specified network route for a new destination network.	
	<code>[--gateway gateway]</code>	Modify the specified network route for the specified gateway.	
<code>--delete</code>	<code>network_route</code>	Delete the specified network route.	Power User
	<code>[--netconfig {active backup draft}]</code>	Specify the network configuration from which to delete the specified network route.	

Examples

This example lists the routes in the *active* network configuration.

```
Nimble OS $ route --list --netconfig active
-----+-----+-----
Destination      Netmask          Gateway
-----+-----+-----
0.0.0.0          0.0.0.0         10.12.12.1
10.1.0.0         255.255.255.0   10.11.0.2
```

This example provides detailed information about one route. Notice how the *network_route* value is Destination/Netmask from the `--list` output.

```
Nimble OS $ route --info 10.1.0.0/255.255.255.0
Destination: 10.1.0.0
Netmask: 255.255.255.0
Gateway: 10.11.0.2
```

This example adds a network route to the *draft* network configuration.

```
route --add 10.12.134.209/255.255.0.0 --gateway 0.12.0.0
--netconfig draft
```

This example edits a network route.

```
route --edit 0.12.134.209/255.255.0.0 --network 10.12.136.209/255.255.0.0
--gateway 10.12.0.0
```

This example deletes the route at 0.0.0.0/0.0.0.0.

```
Nimble OS $ route --delete 0.0.0.0/0.0.0.0
```

setup

The `setup` command options configure an array.

You can set up an array with the interactive setup wizard on the command line. To learn more about using the interactive setup wizard, see the *Nimble OS Installation and Configuration Guide*. Alternatively, you can specify the options on the command line as described here. If you use the non-interactive command line, then you must specify all mandatory settings as command line options.

Note Some options do not appear to be mandatory in the `--help` output and man page to accommodate running the same `setup` command on both iSCSI and Fibre Channel arrays. Read the option descriptions to see whether a specific option is mandatory for the access protocol you are using.

Synopsis

```
setup --help
```

```
setup
[--group_name group_name]
--name array_name
[--domainname domain_name]
[--dnsserver server]
[--ntpserver server]
[--timezone zone]
--mgmt_ipaddr ip_addr
--subnet_label label
--subnet_addr network/netmask
[--subnet_type {mgmt|data|mgmt,data}]
[--subnet_mtu mtu]
--default_gateway ip_addr
[--data_ipaddr ip_addr]
[--discovery_ipaddr ip_addr]
[--support_ipaddr ip_addr]
[--iscsi_automatic_connection_method {yes|no}]
[--iscsi_connection_rebalancing {yes|no}]
--accept_license
[--view_license]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest

Option	Arguments and Suboptions	Description	Role
	<code>--group_name group_name</code>	Specify the name of a group. A single-array group is by default named the <i>default</i> group.	Administrator
	<code>--name array_name</code>	Specify the name of this array.	
	<code>--domainname domain_name</code>	Specify a DNS domain name.	
	<code>--dnsserver server</code>	Specify the IP address of the DNS server to use. Repeat this option to specify IP addresses for multiple DNS servers.	
	<code>--ntpserver server</code>	Specify a host name or an IP address for the NTP server to use.	
	<code>--timezone zone</code>	Specify a time zone for this array.	
	<code>--mgmt_ipaddr ip_addr</code>	Specify a management IP address.	
	<code>--subnet_label</code>	Specify a subnet on a NIC.	
	<code>--subnet_addr</code>	Specify the subnet IP address.	
	<code>--subnet_type {mgmt data mgmt,data}</code>	Specify the subnet type. Configure at least one data subnet on iSCSI arrays. You can configure more than one. On iSCSI arrays, data subnets are used extensively. On Fibre Channel arrays, data subnets are optimal for handling replication traffic and are required for intra-group communication in multi-array groups. In a single-array Fibre Channel group, a data subnet is optional. Use the management subnet for replication.	
	<code>--subnet_mtu mtu</code>	Specify the subnet maximum transmission unit (MTU). If you do not specify this option, the default of 1500 is used.	
	<code>--default_gateway ip_addr</code>	Specify the default gateway IP address.	
	<code>--data_ipaddr ip_addr</code>	Specify the data IP address. Configure at least one data IP on iSCSI arrays. On Fibre Channel arrays, you can specify an IP address, or leave the value empty (<code>--data_ipaddr ''</code>), to bypass this option. If IP addresses are specified on Fibre Channel arrays, the data IPs are used for handling replication traffic and intra-group communication.	
	<code>--discovery_ipaddr ip_addr</code>		

Option	Arguments and Suboptions	Description	Role
		Specify the discovery IP address. If you do not specify this option, the management IP address is used.	
	<code>--support_ipaddr <i>ip_addr</i></code>	Specify the support IP address. Include this argument twice. Then the first IP address entered is assigned to Controller A and the second to Controller B. You must assign static IP addresses to allow array access if the management IP address is not accessible.	
	<code>--iscsi_automatic_connection_method {<i>yes/no</i>}</code>	Redirect connections to the best data IP address based on connection counts. If you do not specify this option on an iSCSI array, the default of <i>yes</i> is used. This option has no effect in a Fibre Channel array.	
	<code>--iscsi_connection_rebalancing {<i>yes/no</i>}</code>	Rebalance the iSCSI connection by periodically breaking existing connections that are out of balance. If you do not specify this option on an iSCSI array, the default of <i>yes</i> is used. This option has no effect in a Fibre Channel array.	
	<code>--accept_license</code>	Accept the terms and conditions of use, the end user license agreement (EULA), and third-party software notices.	
	<code>--view_license</code>	List the terms and conditions of use, the EULA, and third-party software notices.	

Examples

This example non-interactively sets up an iSCSI array. To learn more about using the interactive setup, see the *Nimble Storage Installation and Configuration Guide*.

```
Nimble OS $ setup --group_name default \
--name array7 \
--domainname admin.nimblestorage.com \
--dnsserver 8.8.8.8 \
--ntpserver time.nimblestorage.com \
--timezone America/Los Angeles \
--subnet_addr 10.12.147.253/255.255.0.0 --subnet_type management,data \
--subnet_addr 10.12.155.253/16 --subnet_type management,data \
--subnet_addr 10.12.0.0/255.255.0.0 --subnet_type management,data \
--subnet_addr 10.12.0.0/16 --subnet_type management,data \
--mgmt_ipaddr 10.12.147.253 \
--discovery_ipaddr 10.12.145.253 \
--support_ipaddr 10.12.149.253 \
--support_ipaddr 10.12.151.253 \
--data_ipaddr 10.12.153.253 \
```

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```
--data_ipaddr 10.12.155.253 \  
--data_ipaddr 10.12.157.253 \  
--data_ipaddr 10.12.159.253 \  
--default_gateway 10.12.255.254 \  
--accept_license
```

shelf

The shelf command options manage expansion shelves on an array.

Synopsis

```
shelf --help
```

```
shelf --list
--array array_name
[--ctrlr {A|B}]
```

```
shelf --info serial_number
--array array_name
[--verbose]
```

```
shelf --show_topology
--array array_name
[--ctrlr {A|B}]
```

```
shelf --add serial_number
--array array_name
[--force]
```

```
shelf --activate serial_number
--array array_name
[--force]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	--array <i>array_name</i>	List expansion shelves on the specified array.	Guest
	[--ctrlr {A B}]	List expansion shelves on the specified controller on the specified array.	
--info	<i>serial_number</i> --array <i>array_name</i>	Provide detailed information about the specified expansion shelf on the specified array. Get the <i>serial_number</i> from --list output.	Guest
	[--verbose]	Show additional information about the specified expansion shelf.	
--show_topology	--array <i>array_name</i>	Show the topology that all shelves on the specified array are connected on.	Guest
	[--ctrlr {A B}]	Show the topology that all shelves on the specified controller on the specified array are connected on.	

Option	Arguments and Suboptions	Description	Role
--add	<i>serial_number</i> --array <i>array_name</i>	Add the specified expansion shelf to the specified array. Get the <i>serial_number</i> from the label on the shelf. Once you add an expansion shelf to an array, you cannot remove it.	Power User
	[--force]	Forcibly add the specified expansion shelf to the specified array.	
--activate	<i>serial_number</i> --array <i>array_name</i>	Activate the specified expansion shelf on the specified array. Activating an expansion shelf prepares and formats it to store user data.	Power User
	[--force]	Forcibly activate the specified expansion shelf on the specified array.	

Examples

This example lists the expansion shelves on an array named *array7*.

```
Nimble OS $ shelf --list --array array7
-----+-----+-----+-----+-----+-----+-----+-----
Serial #   Model      State   Location Power   Fans   Temp   Is Flash
           Model      State   Location Supply Fans   Status Status Shelf
           Model      State   Location Status Status Status
-----+-----+-----+-----+-----+-----+-----+-----
AC-109019  CS700    online  A.0     OK     OK     OK     No
AC-103333  ES1-H65  online  A.P1.1  OK     OK     OK     No
AC-103322  ES1-H65  online  A.P2.1  OK     OK     OK     No
AC-109019  CS700    online  B.0     OK     OK     OK     No
AC-103333  ES1-H65  online  B.P1.1  OK     OK     OK     No
AC-103322  ES1-H65  online  B.P2.1  OK     OK     OK     No
```

This example shows detailed information about one expansion shelf on an array named *array7*. The output is truncated to save space.

```
Nimble OS $ shelf --info AC-109019 --array array7
Serial #: AC-109019
Model: CS700
25922 2014-09-05,18:56:52.882370-07 ERROR: plat:_plat_get_hw_nvram_card_type:
Failed to open /proc/bus/pci/devices (errno 2)
Extended Model: CS700-2T4F-48T-3200FS
Is Flash Shelf: No
Location: A.0 B.0
State: online
Usable capacity (MB): 32001478
Raw capacity (MB): 45785374
Usable cache capacity (MB): 3052288
Raw cache capacity (MB): 3052391
Power supply: OK
    power-supply1 at left rear: OK
    power-supply2 at right rear: OK
Cooling fans: OK
    fan1-A at lower front of controller A: 11772 rpm
    fan2-A at lower left rear of controller A: 11908 rpm
    fan3-A at lower right rear of controller A: 12223 rpm
```

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```
fan4-A at upper right front of controller A: 11670 rpm
fan5-A at upper left front of controller A: 12053 rpm
fan6-A at upper left rear of controller A: 12061 rpm
fan1-B at lower front of controller B: 9486 rpm
fan2-B at lower left rear of controller B: 10242 rpm
fan3-B at lower right rear of controller B: 10072 rpm
fan4-B at upper right front of controller B: 9758 rpm
fan5-B at upper left front of controller B: 9851 rpm
fan6-B at upper left rear of controller B: 9928 rpm
Temperature sensors: OK
  motherboard-A at motherboard: 38 degree C
  bp-temp1-A at left-side backplane: 24 degree C
  motherboard-B at motherboard: 38 degree C
  bp-temp2-B at right-side backplane: 20 degree C
Location on A: 0
Location on B: 0
Hardware state of A: ready
Hardware state of B: ready
Shelf sw type of A: Head Shelf
Shelf sw type of B: Head Shelf
Last known disk set:
  Number of disks: 16
  ...
  ...
```

This example shows the topology of expansion shelves on controller A of an array named *array7*.

```
Nimble OS $ shelf --show_topology --array array7 --ctrlr A
[AC-109019].A.SAS PORT1 --> [AC-103333].A.IN
[AC-109019].A.SAS PORT2 --> [AC-103322].A.IN
```

This example adds an expansion shelf to an array named *array7*.

```
Nimble OS $ shelf --add AA-102081 --array array7
```

This example activates an expansion shelf on an array named *array7*.

```
Nimble OS $ shelf --activate AA-102081 --array array7
```

snap

The `snap` command options manage snapshots.

Snapshots are point-in-time copies of volumes that can be brought online and used immediately, cloned, and replicated. The initial snapshot shares its original data with the volume from which it was created. Each successive snapshot consumes some space when it captures the changes that occurred on the volume. The changed blocks remain compressed, so snapshot capacity consumption is efficient.

Stagger snapshot schedules to ensure that application synchronization, I/O quiescing, database verification, and similar actions have time to complete before the next schedule starts.

Synopsis

```
snap --help
```

```
snap --list
[--vol volume_name]
[--all]
```

```
snap --info snap_name
--vol volume_name
```

```
snap --edit snap_name
--vol volume_name
[--name new_name]
[--description text]
```

```
snap --online snap_name
--vol volume_name
```

```
snap --offline snap_name
--vol volume_name
[--force]
```

```
snap --cksum snap_name
--vol volume_name
```

```
snap --delete snap_name
--vol volume_name
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	<code> [--vol volume_name]</code>	List snapshots for the specified volume. Specify this suboption or <code>--all</code> , not both.	Guest
	<code> [--all]</code>	List snapshots for all volumes. Specify this suboption or <code>--vol volume_name</code> , not both.	

Option	Arguments and Suboptions	Description	Role
--info	<i>snap_name</i> --vol <i>volume_name</i>	Provide detailed information about the specified snapshot in the specified volume.	Guest
--edit	<i>snap_name</i> --vol <i>volume_name</i>	Modify the specified snapshot. Specify at least one suboption.	Operator
	[--name <i>new_name</i>]	Modify the name of the specified snapshot.	
	[--description <i>text</i>]	Modify the description of the specified snapshot or adds a description to it. If there are spaces in the description, enclose the text in quotation marks.	
--online	<i>snap_name</i> --vol <i>volume_name</i>	Bring the specified snapshot online.	Operator
--offline	<i>snap_name</i> --vol <i>volume_name</i>	Take the specified snapshot offline. Initiators cannot connect to a snapshot that is offline. Taking a snapshot offline fails if there are open connections from initiators unless --force is used.	Operator
	[--force]	Forcibly take the specified snapshot offline even if it has open connections.	
--cksum	<i>snap_name</i> --vol <i>volume_name</i>	Compute the checksum of the specified snapshot to verify data integrity.	Operator
--delete	<i>snap_name</i> --vol <i>volume_name</i>	Delete the specified snapshot. Snapshots must be offline to be deleted.	Power User

Examples

This example lists snapshots for the volume named *vdi*. The output is truncated to avoid line wrapping.

```
Nimble OS $ snap --list --vol vdi
-----+-----+-----+-----+-----
Volume   Snapshot          Size      Online Status  New Data
Name     Name              (MB)
-----+-----+-----+-----+-----
vdi      vdi-volcoll-vdi-volcoll-2014-09-05::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-09-04::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-09-02::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-09-01::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-08-31::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-08-30::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-08-29::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-08-28::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-08-27::00:00:00.000  4194304...
vdi      vdi-volcoll-vdi-volcoll-2014-08-22::00:00:00.000  4194304...
```

This example provides detailed information about the specified snapshot.

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```
Nimble OS $ snap --info 9lives-vc1-daily-2014-09-05::00:00:00.000 --vol 9lives
Name: 9lives-vc1-daily-2014-09-05::00:00:00.000
Volume name: 9lives
Serial number: cdf437b74e248c706c9ce9003e217f89
iSCSI target:
Description: Replicated by protection policy 9lives-vc1 schedule daily
Size (MB): 994304
Status: Okay
Allow writes: No
Online: No
Offline reason: User
New data (MB): 0
New data compression: N/A
Number of connections: 0
    iSCSI: 0
    FC: 0
Schedule: daily
Origination group name/ID: 9lives
Is replica: Yes
Replication status: N/A
Created: Sep  5 2014 00:01:13
Last configuration change: Sep  5 2014 00:05:28
Access Control List:
Initiators connected:
```

This example modifies a snapshot to add a description and give it a simpler name.

```
Nimble OS $ snap --edit
9lives-vc1-daily-2014-09-05::00:00:00.000 --vol 9lives
--newname snapforreplica05
--description "snapshot taken on the 5th, for replication"
```

This example brings a snapshot online.

```
Nimble OS $ snap --online
9lives-vc1-daily-2014-09-05::00:00:00.000 --vol 9lives
```

This example takes a snapshot offline.

```
Nimble OS $ snap --offline
9lives-vc1-daily-2014-09-05::00:00:00.000 --vol 9lives
```

This example verifies data integrity of the snapshot named *9lives-vc1-daily-2014-09-05::00:00:00.000*.

```
Nimble OS $ snap --cksum 9lives-vc1-daily-2014-09-05::00:00:00.000
--vol 9lives
INFO: Computing checksum for snapshot
9lives-vc1-daily-2014-09-05::00:00:00.000 of volume 9lives...
Checksum(v1.4): 0xffffffff
```

This example deletes the snapshot named *9lives-vc1-daily-2014-09-05::00:00:00.000*.

```
Nimble OS $ snap --delete 9lives-vc1-daily-2014-09-05::00:00:00.000
--vol 9lives
```


snapcoll

The `snapcoll` command options manage snapshot collections. Snapshot collections are associated with volume collections.

Snapshot collections are replicated in the order that the collections were taken. If a snapshot cannot be replicated, the system indefinitely attempts to complete the replication. These pending snapshot collections are not deleted by the system, but they can be manually deleted after pausing the replication partner.

Except when initiated manually, snapshot collections are not created by the admin user; the system creates them after successful snapshot schedules complete. These snapshot collections are named with the volume collection name, schedule, and timestamp.

Synopsis

```
snapcoll --help
```

```
snapcoll --list
[--volcoll volcoll_name]
```

```
snapcoll --info snapcoll_name
[--volcoll volcoll_name]
```

```
snapcoll --edit snapcoll_name
[--volcoll volcoll_name]
[--name new_name]
[--description text]
[--replicate {yes|no}]
```

```
snapcoll --delete snapcoll_name
[--volcoll volcoll_name]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	N/A	List all snapshot collections.	Guest
	<code>--volcoll <i>volcoll_name</i></code>	List all snapshot collections associated with the specified volume collection. Use <code>volcoll --list</code> to get values for <code>volcoll_name</code> .	
<code>--info</code>	<i>snapcoll_name</i>	Provide detailed information about the specified snapshot collection.	Guest
	<code>--volcoll <i>volcoll_name</i></code>	Provide detailed information about the specified snapshot collection associated with the specified volume collection.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>snapcoll_name</i>	Modify the specified snapshot collection.	Operator
	[--volcoll <i>volcoll_name</i>]	Modify the specified snapshot collection associated with the specified volume collection..	
	[--name <i>new_name</i>]	Modify the name of the specified snapshot collection.	
	[--description <i>textf</i>]	Modify the plain-language description of the specified snapshot collection. This is useful to identify what the snapshot collection was designed to optimize. If there are spaces in the description, enclose the text in quotation marks.	
	[--replicate { <i>yes/no</i> }]	Enable or disable replication for the specified snapshot collection.	
--delete	<i>snapcoll_name</i>	Delete the specified snapshot collection.	Power User
	[--volcoll <i>volcoll_name</i>]	Delete the specified snapshot collection associated with the specified volume collection.	

Examples

This example lists the snapshot collections for the volume collection named *TestRep*.

```
Nimble OS $ snapcoll --list --volcoll TestRep
-----+-----+-----+-----
Volume Collection Snapshot Collection          Num      Replication
Name           Name                               Snaps     Status
-----+-----+-----+-----
TestRep        TestRep-FiveMinutes-2010-12-28::11:50:00.000 1 Pending
TestRep        TestRep-FiveMinutes-2010-12-28::11:45:00.000 1 Pending
TestRep        TestRep-FiveMinutes-2010-12-28::11:40:00.000 1 In-progress
TestRep        TestRep-FiveMinutes-2010-12-28::11:35:00.000 1 Complete
```

This example shows information about a collection of daily snapshots on a volume collection named *volume1--1754979654*.

```
Nimble OS $ snapcoll --info volume1--1754979654-daily-2014-07-16::00:00:00.000
--volcoll volume1--1754979654
Name: volumel--175497654-daily-2014-07-16::00:00:00.000
Description: Created by protection policy volumel--175497654 schedule daily
Volume collection name: volumel--1754979654
Origination group name/ID: group-c20-array2
Is replica: No
Is complete: Yes
Is manual: No
Is externally triggered: No
Replication status: N/A
Replication started: N/A
Replication completed: N/A
```

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```
Created: Jul 16 2014 00:00:00
Snapshots:
  Volume: volume1
    Snapshot: volume1--1754979654-daily-2014-07-16::00:00:00.000
```

This example changes the name and replication setting for a snapshot collection named *XCHG*.

```
Nimble OS $ snapcoll --edit XCHG --name EXCHANGE
--volcoll volume1--1754979654 --replicate no
```

This example deletes the snapshot collection named *TestRep* on the volume collection *Rep1*.

Note Snapshot collections cannot be deleted if they are in use by replication. If needed, pause or unconfigure replication to delete a snapshot collection.

```
Nimble OS $ snapcoll --delete TestRep --volcoll Rep1
```

software

The `software` command options manage the Nimble software that is installed on an array.

You can download, upload, cancel an upload, and monitor software update status in real time.

You can have the currently installed version and one update version downloaded and ready for installation. Only one newer version can be stored at a time.

If your array does not have Internet access, you must download the software from the Nimble Storage Support site.

Synopsis

```
software --help
```

```
software --list
```

```
software --info version
[--view_license]
```

```
software --download version
[--force]
```

```
software --download_status
[--interval seconds]
```

```
software --cancel_download
```

```
software --precheck
[--force]
```

```
software --update
[--force]
[--accept_license]
```

```
software --update_status
[--verbose]
```

```
software --resume_update
[--accept_license]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List all available software images.	Guest

Option	Arguments and Suboptions	Description	Role
--info	<i>version</i>	Provide detailed information about the specified software version.	Guest
	[--view_license]	Show the terms and conditions of use, the end user license agreement (EULA), and third-party software notices for the specified software version.	
--download	<i>version</i>	Start to download the specified software version.	Power User
	[--force]	Forcibly download the currently running software version.	
--download_status		Show the status of a software download.	Power User
	[--interval <i>seconds</i>]	Specify the number of seconds after which to refresh the status. Set this to 0 (zero) to disable the status refresh messages.	
--cancel_download	N/A	Cancel a software download.	Power User
--precheck		Perform verification checks on the array to verify that a software update can succeed.	Power User
	[--force]	Perform most verification checks, but skip the checks that can be overridden during the update by using the --force option then.	
--update		Start to update the array to the downloaded software version.	Power User
	[--force]	Forcibly start the software update, even if it might cause I/O errors on active volumes by restarting the active controller.	
	[--accept_license]	Accept the terms and conditions of use, the EULA, and third-party software notices.	
--update_status		Show the status of a software update.	Power User
	[--verbose]	Show the status of a software update on each array being updated.	
--resume_update		Resume a software update that timed out or failed before all member arrays were updated.	Power User
	[--accept_license]	Accept the terms and conditions of use, the EULA, and third-party software notices.	

Examples

This example lists available software versions on the array.

```
Nimble OS $ software --list
-----+-----+-----
Version          Status          Size (MB)
-----+-----+-----
2.1.5.0-118394-opt installed         808
2.1.5.0-117582-opt rollback         808
2.1.5.0-122684-opt downloaded    unknown
```

This example provides detailed information about software version *2.1.5.0-118394-opt*.

```
Nimble OS $ software --info 2.1.5.0-118394-opt
Version: 2.1.5.0-118394-opt
Status: installed
Size: 808 MB
Release Date: 2014-08-21
Release Notes: None
Fixes bugs:
```

This example forcibly downloads software version *2.1.5.0-118394-opt*, which is currently installed on the array.

```
Nimble OS $ software --download 2.1.5.0-118394-opt --force
```

This example shows the current status of a software download, refreshed every 10 seconds.

```
Nimble OS $ software --download_status --interval 10
```

This example cancels an in-progress software download.

```
Nimble OS $ software --cancel_download
Success
```

This example performs verification checks on a software download before installing the software version.

```
Nimble OS $ software --precheck
INFO: Software Update precheck passed.
```

This example begins a software update.

```
Nimble OS $ software --update
```

This example shows the status of an in-progress software update.

```
Nimble OS $ software --update_status
Updating group to version: 2.1.5.0-122684-opt
Group update start time Oct 5 2013 19:54:57
Group update end time N/A
  Updating array: array7
    Array update status: 1 of 7: Controller B is unpacking update package
```

sshkey

The `sshkey` command options manage secure shell (SSH) authorized keys.

SSH uses public keys and cryptography to authenticate users. When there is a public key on one end of a network connection and the matching private key on another, a user does not have to manually type the password. SSH keys make it possible to create scripts that perform certain tasks without having to manually log in to the array. You can use RSA and DSA algorithms. RSA is used both for encryption and signing. DSA is used only for signing.

Synopsis

```
sshkey --help
```

```
sshkey --list
[--user user_name]
```

```
sshkey --info key_name
[--user user_name]
```

```
sshkey --add key_name
--type {dsa|rsa}
--key keystring
[--user user_name]
```

```
sshkey --edit key_name
[--type {dsa|rsa}]
[--key keystring]
[--user user_name]
```

```
sshkey --delete key_name
[--user user_name]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	<code>[--user user_name]</code>	List all currently stored SSH keys or the SSH key for the specified user. For each key, you will see the key name and type, but not the keystring. To see the keystring, use the <code>--info</code> option.	Adminis- trator
<code>--info</code>	<code>key_name</code>	Show detailed information about the specified SSH key.	Adminis- trator
	<code>[user_name]</code>	Show detailed information about the specified user's ssh key.	

Option	Arguments and Suboptions	Description	Role
--add	<i>key_name</i>	Specify the name of the SSH key. The key must exist before you add it.	Administrator
	--type { <i>dsa</i> / <i>rsa</i> }	Specify the type of SSH key authentication used.	
	--key <i>keystring</i>	Specify the DSA or RSA string that constitutes the SSH key. When you add the key, specify only the encrypted portion of the key. Do not include the <i>ssh_dss</i> or <i>ssh_rsa</i> at the start of the string or the <i>username@hostname</i> at the end. Important Do not include spaces at the start or end of the key. Include only the key string itself.	
	[--user <i>user_name</i>]	Add the SSH key for the specified user.	
--edit	<i>key_name</i>	Modify the specified SSH key. You can change the type (<i>dsa</i> or <i>rsa</i>) and the keystring, but you cannot change the key name.	Administrator
	[--type { <i>dsa</i> / <i>rsa</i> }]	Modify the type of SSH key authentication used.	
	[--key <i>keystring</i>]	Modify the DSA or RSA string that constitutes the SSH key.	
	[--user <i>user_name</i>]	Modify the SSH key for the specified user.	
--delete	<i>key_name</i>	Delete the specified SSH key.	Administrator
	[--user <i>user_name</i>]	Delete the SSH key for the specified user.	

Examples

This example lists the current SSH keys.

```
Nimble OS $ sshkey --list
-----+-----+-----
User          Name                Type
-----+-----+-----
cgrey         greybit             rsa
guest         login               rsa
```

This example lists only the guest user.

```
Nimble OS $ sshkey --list --user guest
-----+-----+-----
User          Name                Type
-----+-----+-----
guest         login               rsa
```


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This example shows detailed information about the SSH key named *greybit*.

```
Nimble OS $ sshkey --info greybit
User: cgrey
Name: greybit
Type: rsa
Key: AAAAB3NzaC1yc2EAAAABIwAAAQEA1w+9D0j4w49/
xltKPbMKnwUEq7vlOntXx5vtaS3UGgeT+beCo2ERfRJCv
GIZZAUuA0COAwu3Y9J4wvviHuv7rilUzR1U
```

This example adds an RSA SSH key to the system for the power user.

```
Nimble OS $ sshkey --add power --type rsa
--key AAAAB3NzaC1yc2EAAAABIwAAAQEA1w+9D0j4w49/
xltKPbMKnwUEq7vlOntXx5vtaS3UGgeT+beCo2ERfRJCvG
IZZAUuA0COAwu3Y9J4wvviHuv7rilUzR1U --user poweruser
```

This example edits the keystring for the RSA SSH key named *power*. The output is truncated to avoid line wrapping.

```
Nimble OS $ sshkey --edit power --type rsa
--key AAAAB3NzaC1yc2EAAAADAQABAAQADrt7osLN4w7CoibK58f9GYn/
l2JKqfs8Y0wy9BPecGdOfNEv5TxSZBYNwMANZx2fC5yHzs7JJY85DsEce/65dUjRFDOhHoil...
uLyL8vfrxeVtPGjXWPPcKv64hTQRoyIxmW9Mb27nF2fJYy69WZNqvlJ/VAvjsnRuh/J42BVB...
+5gLzJlj4GEnjBFm8IWnZ2PanhiAwIGZKwEXzU4iQfdujuPY5bOC... --user "power user"
```

This example deletes the RSA SSH key named *power*.

```
Nimble OS $ sshkey --delete power --user poweruser
```

stats

The `stats` command options display array statistics. You can specify the period of interest, items of interest, and display options. The default output includes a set of system utilization statistics.

Synopsis

```
stats --help
```

```
stats
[--from [[yyyy-]mm-dd,]hh:mm[:ss]]
[--to [[yyyy-]mm-dd,]hh:mm[:ss]]
[--duration [+]hh:mm[:ss]]
[--array array_name]
[--disk {all|1,2,...}]
[--shelf_location slot]
[--net {all|nic1,nic2,...}]
[--fc {all|fc1,fc2,...}]
[--perf {composite|vol}]
[--latency]
[--iosize]
[--replication]
[--partner {all|composite|partner1,partner2...}]
[--vol {all|composite|vol1,vol2,...}]
[--interval seconds]
[--range]
[--show_time]
[--diff]
[--mb]
[--gb]
[--hdr {0|intervals}]
[--csv]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest

Option	Arguments and Suboptions	Description	Role
	<code>--from [[yyyy-]mm-dd,]hh:mm[:ss]</code>	Specify the beginning time for which statistics are to be displayed. When used alone, the value defaults to 'now'.	Guest
	<code>--to [[yyyy-]mm-dd,]hh:mm[:ss]</code>	Specify the ending time for which statistics are to be displayed. When used alone, the value defaults to 'now', creating a live statistics stream.	
	<code>--duration [+]hh:mm[:ss]</code>	Specify the length of time for which statistics are to be displayed. When used with --from, it specifies the duration starting at the --from time. When used with --to, it specifies the duration ending at the --to time. When used alone, it is equivalent to specifying --from "now minus duration", or if the specified duration begins with a '+', it is equivalent to specifying --to "now plus duration".	
	<code>--array array_name</code>	Display statistics from the specified array. For disk and network statistics, this option is required when multiple arrays exist in the group. For volume statistics, this option is not required, and if not specified, group-wide aggregate values are displayed.	
	<code>--disk {all 1,2,...} [--shelf_location slot]</code>	Display statistics for disk utilization from the disk in the specified slot.	
	<code>--net {all nic1,nic2,...}</code>	Display statistics for network utilization of all NICs or the specified NICs.	
	<code>--fc {all fc1,fc2,...}</code>	Display statistics for all Fibre Channel ports or the specified ports.	
	<code>--perf {composite vol}</code>	Display statistics for system or volume performance.	
	<code>--latency</code>	Display additional latency details with the --perf output.	
	<code>--iosize</code>	Display additional I/O details with the --perf output.	
	<code>--replication</code>		

Option	Arguments and Suboptions	Description	Role
		Display statistics for replications. Specify either the <code>--partner</code> suboption to specify one, all, or some replication partners or the <code>--vol</code> suboption to specify one, all, or some volumes.	
	<code>[--partner {all composite partner1,partner2,...}]</code>	Display statistics for one, all (as a composite or individually), or some replication partners. Use <code>partner</code> <code>--list</code> to get <code>partner1,partner2,...</code> values.	
	<code>[--vol {all composite vol1,vol2,...}]</code>	Display statistics for one, all (as a composite or individually), or some volumes. Use <code>vol</code> <code>--list</code> to get <code>vol1,vol2,...</code> values.	
	<code>[--interval seconds]</code>	Display statistics in the specified intervals in seconds. If not specified, the latest values for the period are displayed.	
	<code>[--range]</code>	Display the minimum, maximum, and average values for the specified statistics.	
	<code>[--show_time]</code>	Display a timestamp for each interval.	
	<code>[--diff]</code>	Display statistics as differences from the previous interval.	
	<code>[--mb]</code>	Display rx and tx statistics in megabytes rather than the default of kilobytes. The column headers in the command output are rxMB and txMB instead of rxKB and txKB.	
	<code>[--gb]</code>	Display rx and tx statistics in gigabytes rather than the default of kilobytes. The column headers in the command output are rxGB and txGB instead of rxKB and txKB.	
	<code>[--hdr {0 intervals}]</code>	Display header lines at the specified interval other than the default of every 20 intervals. Specify 0 (zero) to omit column headers altogether.	
	<code>[--csv]</code>	Display statistics as a comma-separated list instead of as a space-separated list.	

Examples

Note To stop the scrolling display of statistics output when running the command interactively, press the Ctrl+c keys at any time.

These examples show `stats` command output, first without any parameters and then with defined parameters. The output is truncated to save space and prevent line wrapping.

```
Nimble OS $ stats
Stats from 2014-09-02,12:09:43 to 2038-01-18,19:14:07
  reads      writes      seqRead%   nsMemHit%   nsSsdHit%   netRxKB...
12626306004 29069195568      25          17          39          7034286173...
12626313650 29069208611      25          17          39          7034294229...
12626315679 29069210890      25          17          39          7034297705...
12626320142 29069216821      25          17          39          7034312508...
12626324223 29069223926      25          17          39          7034316520...
12626329577 29069231942      25          17          39          7034323314...
...
...

Nimble OS $ stats --interval 5
Will use per-second statistics
Stats from 2014-09-02,13:09:36 to 2038-01-18,19:14:07
  reads      writes      seqRead%   nsMemHit%   nsSsdHit%   netRxKB...
12647799975 29095666635      25          17          39          7057545676...
12647827863 29095708484      25          17          39          7057574592...
12647853954 29095752416      25          17          39          7057603817...
...
...

Nimble OS $ stats --diff --mb
Stats from 2014-09-02,13:16:49 to 2038-01-18,19:14:07
  reads      writes      seqRead%   nsMemHit%   nsSsdHit%   netRxMB...
  6815      6308      39          15          25          4...
  --        --        --        --        --        8...
  --        --        --        --        --        1.17...
  6252      6592      36          17          27          4...
  6152      7729      37          14          30          4...
  5876      6888      38          14          31          9...
  8397      11263     36          11          37          0.41...
  2387      2827      39          16          33          6...
...
...

Nimble OS $ stats --perf greyhound --latency
Stats from 2014-09-02,13:21:51 to 2038-01-18,19:14:07
  io_type      0u-100u   100u-200u  200u-500u  500u-1m   1m-2m...
  reads        --        --        --        --        --...
  nsreads      --        --        --        --        --...
  seqreads     --        --        --        --        --...
  writes       --        --        --        --        --...
  reads        7941     13160     4613     671     433...
  nsreads      7144     12776     4591     661     429...
  seqreads     797      384       22       10      4...
  writes       0        0         0        0       0...
...
...
```

This example sets the start and end time between which to collect statistics. The output is truncated to prevent line wrapping.

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```
Nimble OS $ stats --from 01:10 --to 01:20
Stats from 2014-09-02,01:10:00 to 2014-09-02,01:20:00
      reads      writes      seqRead%      nsMemHit%      nsSsdHit%      netRxKB...
12655037664 29104182305                25                17                39      7085122631...
```

This example shows statistics for the eth3 NIC. The output is truncated to save space.

```
Nimble OS $ stats --net eth3
Stats from 2014-08-12,09:00:28 to 2038-01-18,19:14:07
 dev      rxKB      rxPackets      rxErrors      txKB      txPackets...
eth3     951076338  290812606      3             72776956  148602256...
eth3     951076340  290812630      3             72776956  148602264...
eth3     951076341  290812647      3             72776956  148602270...
eth3     951076342  290812666      3             72776957  148602277...
eth3     951076343  290812683      3             72776957  148602283...
...
...
```

This example shows statistics for the fc5 Fibre Channel port. The output is truncated to save space and prevent line wrapping.

```
Nimble OS $ stats --fc fc5
Stats from 2014-08-12,09:02:30 to 2038-01-18,19:14:07
 dev      rxKB      txKB      rxBBcreds      txBBcreds      Inv tx Word      CRC E...
fc5     147154458457  135485861338      80             8             562             ...
fc5     147154720749  135486151251      80             8             562             ...
fc5     147154946494  135486425219      80             8             562             ...
...
...
```

This example shows statistics for the fc5 Fibre channel port in a comma-separated values (CSV) format showing gigabytes instead of the default of kilobytes. The output is truncated to save space and prevent line wrapping.

```
Nimble OS $ stats --fc fc5 --gb --hdr 30 --csv
Stats from 2014-08-13_11:32:34 to 2038-01-18_19:14:07
dev,rxGB,txGB,rxBBcreds,txBBcreds,Inv tx Word,CRC Errors,loss sync,loss ...
fc5,159457,148035,80,8,684,0,356,0,1
fc5,159457,148035,80,8,684,0,356,0,1
fc5,159457,148036,80,8,684,0,356,0,1
fc5,159458,148036,80,8,684,0,356,0,1
fc5,159458,148036,80,8,684,0,356,0,1
...
...
```

subnet

The `subnet` command options manage subnets.

Synopsis

```

subnet --help

subnet --list
[--netconfig {active|backup|draft}]

subnet --info subnet_label
[--netconfig {active|backup|draft}]

subnet --add subnet_label
--subnet_addr network/netmask
[--discovery_ipaddr ipaddr]
[--type {mgmt|data|mgmt,data}]
[--subtype {iscsi|group|iscsi,group}]
[--netzone_type {evenodd|bisect|single}]
[--netconfig {active|backup|draft}]
[--vlanid id]
[--mtu mtu]

subnet --edit subnet_label
[--new_label subnet_label]
[--subnet_addr network/netmask]
[--discovery_ipaddr ipaddr]
[--type {mgmt|data|mgmt,data}]
[--subtype {iscsi|group|iscsi,group}]
[--netzone_type {evenodd|bisect|single}]
[--netconfig {active|backup|draft}]
[--vlanid id]
[--mtu mtu]
[--force_ip_update]
[--force_repl]
[--force_initiator_groups]

subnet --remove subnet_label
[--netconfig {active|backup|draft}]
[--force_repl]
[--force_ip_update]
[--force_unassign_nics]
[--force_initiator_groups]

```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest

Option	Arguments and Suboptions	Description	Role
--list	N/A	List all configured subnets.	Guest
	[--netconfig { <i>active backup draft</i> }]	List all configured subnets in the specified network configuration.	
--info	<i>subnet_label</i>	Provide detailed information about the specified subnet.	Guest
	[--netconfig { <i>active backup draft</i> }]	Provide detailed information about the specified subnet in the specified network configuration.	
--add	<i>subnet_label</i>	Add the specified subnet. The <i>subnet_label</i> can be up to 64 characters.	Power User
	--subnet_addr <i>network/netmask</i>	Specify the subnet address, expressed in Classless Inter-Domain Routing (CIDR) format.	
	[--discovery_ipaddr <i>ipaddr</i>]	Specify the subnet discovery IP address.	
	[--type { <i>mgmt data mgmt,data</i> }]	Specify whether the subnet is used for data, management, or data+management traffic. You can specify multiple types by using a comma-separated list.	
	[--subtype { <i>iscsi group iscsi,group</i> }]	Specify the subnet subtype for a subnet on an iSCSI array. You can specify multiple subtypes by using a comma-separated list.	
	[--netzone_type { <i>evenodd bi-sect single</i> }]	Specify the Network Affinity Zone type for a subnet on an iSCSI array.	
	[--netconfig { <i>active backup draft</i> }]	Specify the network configuration to which to add the subnet.	
	[--vlanid <i>id</i>]	Specify the VLAN ID for the subnet. Valid values are in the 1-4094 range, inclusive.	
[--mtu <i>mtu</i>]	Specify the maximum transmission unit (MTU) for the subnet. Valid values are in the 512-16000 range, inclusive.		

Option	Arguments and Suboptions	Description	Role
--edit	<i>subnet_label</i>	Modify the specified subnet. Specify at least one suboption.	Power User
	[--new_label <i>new_label</i>]	Modify the label for the specified subnet.	
	[--subnet_addr <i>network/netmask</i>]	Modify the subnet address, expressed in CIDR format.	
	[--discovery_ipaddr <i>ipaddr</i>]	Modify the subnet discovery IP address.	
	[--type { <i>mgmt data mgmt,data</i> }]	Modify the subnet type. You can specify multiple types by using a comma-separated list.	
	[--subtype { <i>iscsi group iscsi,group</i> }]	Modify the subnet subtype for a subnet on an iSCSI array. You can specify multiple subtypes by using a comma-separated list.	
	[--netzone_type { <i>evenodd bisect single</i> }]	Modify the Network Affinity Zone type for a subnet on an iSCSI array.	
	[--netconfig { <i>active backup draft</i> }]	Modify the network configuration with which the subnet is associated.	
	[--vlanid <i>id</i>]	Modify the VLAN ID for the subnet. Valid values are in the 1-4094 range, inclusive.	
	[--mtu <i>mtu</i>]	Modify the MTU for the subnet. Valid values are in the 512-16000 range, inclusive.	
	[--force_ip_update]	Update the discovery IP address for the active network configuration.	
	[--force_repl]	Ignore inconsistent network configurations for replication partners when editing the specified subnet.	
[--force_initiator_groups]	Ignore initiator groups assigned to subnets in the active network configuration when editing the specified subnet.		

Option	Arguments and Suboptions	Description	Role
--remove	<i>subnet_label</i>	Remove the specified subnet.	Power User
	[--netconfig { <i>active backup draft</i> }]	Specify the network configuration from which to remove the subnet.	
	[--force_repl]	Ignore inconsistent network configurations for replication partners when removing the specified subnet.	
	[--force_ip_update]	Remove the specified subnet and update the discovery IP address for the active network configuration.	
	[--force_unassign_nics]	Ignore the NIC assigned to the specified subnet in the active network configuration.	
	[--force_initiator_groups]	Ignore initiator groups assigned to subnets in the active network configuration when removing the specified subnet.	

Examples

This example lists configured subnets on a Fibre Channel array.

```
Nimble OS $ subnet --list
-----+-----+-----+-----+-----+-----
Label          Network          Type    Discovery IP    VLAN  MTU
-----+-----+-----+-----+-----+-----
data1          192.0.2.0/23    Data    192.0.2.67     0     1500
mgmt-data      192.0.4.0/21    Mgmt    192.0.4.15     0     1500
Subnet-1.101.0.0  1.101.0.0/16   Data    N/A            2101  1500
Subnet-1.102.0.0  1.102.0.0/16   Data    N/A            2102  1500
Subnet-1.103.0.0  1.103.0.0/16   Data    N/A            2103  1500
Subnet-1.104.0.0  1.104.0.0/16   Data    N/A            2104  1500
Subnet-1.105.0.0  1.105.0.0/16   Data    N/A            2105  1500
Subnet-1.106.0.0  1.106.0.0/16   Data    N/A            2106  1500
Subnet-1.107.0.0  1.107.0.0/16   Data    N/A            2107  1500
Subnet-1.108.0.0  1.108.0.0/16   Data    N/A            2108  1500
Subnet-1.109.0.0  1.109.0.0/16   Data    N/A            2109  1500
Subnet-1.110.0.0  1.110.0.0/16   Data    N/A            2110  1500
```

This example provides detailed information about a configured subnet.

```
Nimble OS $ subnet --info data1
Label: data1
Network/Masklen: 192.0.2.0/23
Type: Data
Allow iSCSI: No
Allow group: Yes
Network Affinity Zone Type: None
Discovery IP: 192.0.2.67
VLAN Id: 0
MTU: 1500
```

This example adds a subnet to the *draft* network configuration.

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```
Nimble OS $ subnet --add Subnet-1.102.0.0  
--subnet_addr 1.101.0.0/16 --type data --netconfig draft  
--vlanid 2101 --mtu 1500
```

This example modifies a previously added subnet in the *draft* network configuration.

```
Nimble OS $ subnet --edit Subnet-1.102.0.0  
--netconfig draft --mtu 9000
```

This example removes a subnet and ignores the initiator groups assigned to it.

```
Nimble OS $ subnet --remove Subnet-1.102.0.0 --force_initiator_groups
```

timezone

The `timezone` command options manage time zone settings.

Synopsis

```
timezone --help
```

```
timezone --list
```

```
timezone --set zone_zone
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>--list</code>	N/A	List all valid time zones for the Nimble array.	Guest
<code>--set</code>	<i>zone_name</i>	Set the specified time zone on a Nimble array. Use <code>timezone --list</code> to get a list of valid <i>zone_name</i> values.	Power User

Examples

This example lists the valid time zones. The output is truncated to save space.

```
Nimble OS $ timezone --list
Asia/Baghdad
Asia/Bahrain
Asia/Baku
Asia/Bangkok
Asia/Beirut
Asia/Bishkek
Asia/Brunei
Asia/Calcutta
Asia/Choibalsan
...
...
Pacific/Samoa
Pacific/Tahiti
Pacific/Tarawa
Pacific/Tongatapu
Pacific/Truk
Pacific/Wake
Pacific/Wallis
Pacific/Yap
```

This example sets the time zone on the array to the time in Stockholm, Sweden.

```
Nimble OS $ timezone --set Europe/Stockholm
```

useradmin

The `useradmin` command options manage user accounts.

Synopsis

```
useradmin --help
```

```
useradmin --list
[--role {administrator|poweruser|operator|guest}]
```

```
useradmin --info user_name
```

```
useradmin --add user_name
[--description text]
[--full_name text]
[--email_addr email_address]
[--role {administrator|poweruser|operator|guest}]
[--inactivity_timeout minutes]
```

```
useradmin --edit user_name
[--description text]
[--full_name text]
[--email_addr email_address]
[--role {administrator|poweruser|operator|guest}]
[--inactivity_timeout minutes]
```

```
useradmin --disable user_name
```

```
useradmin --enable user_name
```

```
useradmin --remove user_name
```

```
useradmin --passwd
[--user user_name]
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	<code> [--role {administrator poweruser operator guest}]</code>	List either all user accounts or user accounts that are assigned to the specified role.	Administrator
--info	<code> user_name</code>	Show either detailed information about the logged-in user if you specify your own <code>user_name</code> or any specified user if you are logged in as a user who is assigned to the Administrator role.	Guest

Option	Arguments and Suboptions	Description	Role
add	<i>user_name</i>	Add an account for the specified user. The <i>user_name</i> must be alphanumeric and start with a letter, be 1 to 32 characters, and contain no spaces.	Administrator
	[--description <i>text</i>]	Specify a plain-text description of the user account. The <i>text</i> can be blank or can contain up to 255 characters. If there are spaces in the description, enclose the text in quotation marks.	
	[--full_name <i>text</i>]	Specify the full name of the user account. The <i>text</i> can be blank or start with a letter, contain up to 64 alphanumeric characters, dashes, underscores, or apostrophes, no spaces, no periods.	
	[--email_addr <i>email_address</i>]	Specify an email address for the user.	
	[--role { <i>administrator</i> <i>poweruser</i> <i>operator</i> <i>guest</i> }]	Specify the role the user has.	
	[--inactivity_timeout <i>minutes</i>]	Set the number of minutes that must pass without any user activity before a timeout occurs and this user is logged out. If you do not specify this option, the default of 30 minutes is used. The <i>minutes</i> cannot exceed the inactivity timeout set for the group.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>user_name</i>	Modify information about the logged-in user if you specify your own <i>user_name</i> or any specified user if you are logged in as a user who is assigned to the Administrator role. Specify at least one suboption.	Guest
	[--description <i>text</i>]	Modify the description of the specified user account. If there are spaces in the description, enclose the text in quotation marks.	
	[--full_name <i>text</i>]	Modify the full name of the user account.	
	[--email_addr <i>email_address</i>]	Modify the email address of the user account.	
	[--inactivity_timeout <i>minutes</i>]	Modify the number of minutes that must pass without any user activity before a timeout occurs and this user is logged out.	
	[--role { <i>administrator</i> <i>poweruser</i> <i>operator</i> <i>guest</i> }]	Modify the role the user has. Logged-in users cannot change their own role. You must be assigned to the Administrator role to modify a user's role.	Administrator
--disable	<i>user_name</i>	Disable the specified user account.	Administrator
--enable	<i>user_name</i>	Enable the specified user account. This option succeeds even if the account is currently enabled.	Administrator
--remove	<i>user_name</i>	Remove the specified user account.	Administrator
--passwd	[--user <i>user_name</i>]	Modify either your own password if you do not specify the optional --user option or the password of the specified user if you are logged in as a user who is assigned to the Administrator role and you do specify --user. The new password value is case sensitive, must be at least eight characters, must be different from the current password, and cannot include left or right square brackets ([]), ampersands (&), semicolons (;), or back single quotation mark (').	Guest

Examples

This example lists the user accounts on a Nimble array.

Nimble Administrative Commands

```
Nimble OS $ useradmin --list
-----+-----+-----+-----+-----
Name           Role           Status  Logged in Last login
-----+-----+-----+-----+-----
admin          administrator Enabled  Y         Sep  2 2014 13:47:01
chris          operator       Enabled  N         Aug  1 2014 14:45:57
guest         guest         Enabled  N         Aug 22 2014 10:25:45
operator      operator       Enabled  N         Aug 24 2014 13:53:23
pAdmin        administrator Enabled  Y         Sep  2 2014 14:36:53
pGuest        guest         Enabled  N         Aug  7 2014 12:28:50
pOper         operator       Enabled  N         Aug  4 2014 15:07:39
pPower        poweruser     Enabled  N         Sep  2 2014 09:36:46
vcplugin      poweruser     Enabled  N         Aug 22 2014 10:01:26
```

This example shows the current settings for the *admin* user.

```
Nimble OS $ useradmin --info admin
Name: admin
Role: administrator
Status: enabled
Logged in: true
Description: Administrator
Full name: Administrator
Email address:
Inactivity timeout: 30 minute(s)
Last login: Apr 13 2015 09:33:42
Last logout: Apr 13 2015 10:13:59
Creation time: N/A
Last modified: 1
Id: 1
```

This example modifies the description and inactivity timeout for the user account named *chris*.

```
Nimble OS $ useradmin --edit chris --description "Chris Green"
--inactivity_timeout 90
```

This example modifies the password of the logged in user.

```
Nimble OS $ useradmin --passwd
Enter current password:
Enter new password:
Retype new password:
Nimble OS $
```


usersession

The `usersession` command options manage user sessions.

Synopsis

```
usersession --help
```

```
usersession --list
```

```
usersession --info  
[--id session_id]
```

```
usersession --kill session_id
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List either the current user session if you are logged in as a user with any role other than Administrator or all user sessions if you are logged in as a user who is assigned to the Administrator role.	Guest
--info	[--id <i>session_id</i>]	Show either detailed information about the current session for the logged-in user if you do not specify the optional --id option or the specified user session if you do specify --id. If you are logged in as a user who is assigned to the Administrator role, you can specify something other than the current session by including the --id <i>session_id</i> option.	Guest
--kill	<i>session_id</i>	Kill the specified user session. The user is not logged out, but cannot take any more actions in that session. You cannot kill the current user session. If you try to, you see a message saying that the Session cannot commit suicide.	Administrator

Examples

This example lists current user sessions. In this example, only the admin user is logged in to run the command. The admin user is also logged in from multiple separate sessions. The session ID (SID) is a hash (digest) rather than the real SID. The Source IP Addr is the IP address of the computer from which the user logged in to the command line interface (CLI), the graphical user interface (GUI), or both. A single user can have multiple user sessions. The Expiry Time (secs) is the number of seconds until this session ends if no user action is taken. Any user action resets the clock.

Nimble Administrative Commands

```
Nimble OS $ usersession--list
-----+-----+-----+-----
User          Session ID          Source IP Addr. Expires in
-----+-----+-----+-----
              (secs)
admin         6worApuItDHDcC39dJOnTULgfp0= 192.0.2.177    127
admin         9ukXV/OjUA0T/0mIcOxiZ6J53WM= 192.0.2.177    201
admin         Yl9zye/rXZS7z9wSmBWBZmgoimE= 198.51.100.18  727
```

This example shows details about the current session for the logged-in user.

```
Nimble OS $ usersession --info
Session ID: Yl9zye/rXZS7z9wSmBWBZmgoimE=
User name: admin
Source IP: 198.51.100.18
Expiry Time (secs): 727
```

This example shows details about the specified session. The admin user runs this version of the command.

```
Nimble OS $ usersession --info --id 6worApuItDHDcC39dJOnTULgfp0=
Session ID: 6worApuItDHDcC39dJOnTULgfp0=
User name: admin
Source IP: 192.0.2.177
Expiry Time (secs): 127
```

This example kills the GUI session with a SID of `9ukXV/OjUA0T/0mIcOxiZ6J53WM=` for the admin user. Even though this example is somewhat contrived, an administrator user can kill another admin session that is not the command-line interface from which the kill action is initiated.

```
Nimble OS $ usersession--kill 9ukXV/OjUA0T/0mIcOxiZ6J53WM=
```

version

version

The `version` command options display the version of the Nimble OS (NOS) software that is installed on an array or a group of arrays.

Synopsis

```
version --help
```

```
version  
[--array name]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest
<code>[--array]</code>	<i>name</i>	Specify the array for which to show version information. Use <code>array--list</code> to get valid <i>name</i> values. If you do not specify this option, then the version information is for the group.	Guest

Examples

This example displays the current version of the NOS software on a group of arrays.

```
Nimble OS $ version  
INFO: Version information is for the group.  
2.1.4.0-100755-opt
```

This example displays the current version of the NOS software on an array named *greyhound*.

```
Nimble OS $ version --array greyhound  
INFO: Version information is for array greyhound  
2.1.4.0-100755-opt
```

vmwplugin

The `vmwplugin` command options manage the Nimble OS plugin for the VMware vCenter.

Use the plugin to manage datacenter and datastore array-specific functions, such as cloning, creating, and managing datastores that reside on Nimble arrays. To install and use the VMware plugin, provide vCenter host and authentication information.

Note The plugin is not supported for multiple datastores that are located on one LUN, for one datastore that spans multiple LUNs, or if the LUN is located on a non-Nimble array.

Synopsis

```
vmwplugin --help
```

```
vmwplugin --list
--username username
--password password
--server server
[--port_number port]
```

```
vmwplugin --register
--username username
--password password
--server server
[--subnet_label subnet_label_for_registration]
[--port_number port]
[--client {web|thick}]
```

```
vmwplugin --unregister
--username username
--password password
--server server
[--port_number port]
[--client {web|thick}]
[--group_id group_id]
```

Options

Option	Arguments and Suboptions	Description	Role
<code>--help</code>	N/A	Show usage information for the command.	Guest

Option	Arguments and Suboptions	Description	Role
--list	The --username, --password, and --server suboptions are required.	List the VMware vCenter plugins.	Guest
	--username <i>username</i>	Specify the username of an account that can access the plugin.	
	--password <i>password</i>	Specify the VMware vCenter password for the specified username.	
	--server <i>server</i>	Specify the VMware vCenter fully qualified vCenter server name or IP address.	
	[--port_number <i>port</i>]	Specify the VMware vCenter port number. If you do not specify this option, the default port 443 is used.	
--register	The --username, --password, and --server suboptions are required.	Register a VMware vCenter plugin.	Power User
	--username <i>username</i>	Specify the username of an account that can access the plugin.	
	--password <i>password</i>	Specify the VMware vCenter password for the specified username.	
	--server <i>server</i>	Specify the VMware vCenter fully qualified vCenter server name or IP address.	
	[--subnetlabel <i>subnetlabel_for_registration</i>]	Specify a subnet label to use for registration. Example: <i>mgmt-data</i> . If you do not specify this option, no subnet label is used.	
	[--port_number <i>port</i>]	Specify the VMware vCenter port number. If you do not specify this option, the default port 443 is used.	
	[--client { <i>web</i> <i>thick</i> }]	Specify whether to allow access to the VMware vCenter plugin through the web-based or thick (vSphere) client.	

Option	Arguments and Suboptions	Description	Role
--unregister	The --username, --password, and --server suboptions are required.	Unregister a VMware vCenter plugin.	Power User
	--username <i>username</i>	Specify the username of an account that can access the plugin.	
	--password <i>password</i>	Specify the VMware vCenter password for the specified username.	
	--server <i>server</i>	Specify the VMware vCenter fully qualified vCenter server name or IP address.	
	[--port_number <i>port</i>]	Specify the VMware vCenter port number. If you do not specify this option, the default port 443 is used.	
	[--client { <i>web</i> <i>thick</i> }]	Specify whether to remove access to the VMware vCenter plugin through the web-based or thick (vSphere) client.	
	[--group_id <i>group_id</i>]	Specify the Nimble group for which to remove access to the VMware vCenter plugin.	

Examples

This example lists configured VMware vCenter plugins.

```
Nimble OS $ vmwplugin --list --username vcenteradmin --password mypassword
--server 203.0.113.1
```

This example registers the VMware vCenter plugin. Because the --port option is not specified, the default of 443 is used.

```
Nimble OS $ vmwplugin --register --username vcenteradmin
--password mypassword --server 203.0.113.1
```

This example unregisters a VMware vCenter plugin.

```
Nimble OS $ vmwplugin --unregister --username vcenteradmin
--password mypassword --server 203.0.113.1
```

vol

The `vol` command options manage volumes.

Volumes are the basic storage units from which the total capacity of an array is apportioned. The array is sectioned into volumes. The number of volumes per array depends on storage allocation. In the context of the Nimble array, the term volume and LU (logical unit) are synonymous and interchangeable. A number identifies each LU, so you might see the term *LUN* used, too.

Note Keep the following points in mind when you use the encryption feature:

- When you create a volume, either the group configuration or your volume specifications determine whether the volume is encrypted. After volume creation, encryption on that volume cannot be changed.
- If you clone a volume, the clone inherits the encryption status of the parent volume. You cannot change that initial encryption status on the clone.
- If you lose the passphrase for an encrypted volume, the volume is inaccessible and its data is irretrievable.
- Performance on CS2xx arrays is slow when accessing encrypted volumes.

Synopsis

```
vol --help
```

```
vol --list
[--pool pool_name]
[--initiatorgrp initiatorgrp_name]
[--agent_type {smis|none}]
[--moving]
[--cache_pinned {yes|no}]
```

```
vol --info volume_name
```

```
vol --create volume_name
--size megabytes
[--description text]
[--perfpolicy name]
[--cache_pinned {yes|no}]
[--reserve percent]
[--quota percent]
[--warn_level percent]
[--snap_reserve percent]
[--snap_quota percent]
[--snap_warn_level percent]
[--start_offline]
[--apply_acl_to {volume|snapshot|both}]
[--chapuser username]
[--initiatorgrp group_name]
[--lun number]
[--multi_initiator {yes|no}]
[--pool poolname]
[--agent_type {smis|none}]
[--encryption_cipher {aes-256-xts|none}]
```

```
vol --edit volume_name
[--name name]
[--description text]
```

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```
[--size megabytes]  
[--perfpolicy name]  
[--cache_pinned {yes|no}]  
[--readonly {yes|no}]  
[--force]  
[--reserve percent]  
[--quota percent]  
[--warn_level percent]  
[--snap_reserve percent]  
[--snap_quota percent]  
[--snap_warn_level percent]  
[--multi_initiator {yes|no}]  
[--agent_type {smis|none}]  
  
vol --delete volume_name  
  
vol --online volume_name  
  
vol --offline volume_name  
[--force]  
  
vol --snap volume_name  
--snapname snapshot_name  
[--description text]  
[--start_online]  
[--allow_writes]  
  
vol --restore volume_name  
--snapname snapshot_name  
  
vol --clone volume_name  
--snapname snapshot_name  
--clonename clone_name  
[--description text]  
[--readonly {yes|no}]  
[--reserve percent]  
[--quota percent]  
[--warn_level percent]  
[--snap_reserve percent]  
[--snap_quota percent]  
[--snap_warn_level percent]  
[--start_offline]  
[--apply_acl_to {volume|snapshot|both}]  
[--chapuser username]  
[--initiatorgrp initiatorgrp_name]  
[--lun number]  
[--multi_initiator {yes|no}]  
[--cache_pinned {yes|no}]  
  
vol --assoc volume_name  
--volcoll collection_name  
  
vol --dissoc volume_name
```


Nimble Administrative Commands

```
vol --addacl volume_name
--apply_acl_to {volume|snapshot|both}
[--chapuser username]
[--initiatorgrp initiatorgrp_name]
[--lun number]
```

```
vol --removeacl volume_name
[--apply_acl_to {volume|snapshot|both}]
[--chapuser username]
[--initiatorgrp group_name]
```

```
vol --claim volume_name
[--partner partner_name]
```

```
vol --move volume1,volume2,...
--dest_pool destination_pool
```

```
vol --abort_move volume_name
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list		List the volumes on the array where you run the command.	Guest
	[--pool pool_name]	List the volumes in the specified storage pool. On a Fibre Channel array, each array must be in a separate pool.	
	[--agent_type {smis none}]	List the volumes of the specified agent type. The <i>smis</i> external management agent type is a Storage Management Initiative Specification (SMI-S) plugin type that works with the Microsoft System Center Virtual Machine Manager (SCVMM) to manage block storage. The <i>none</i> agent type is the default.	
	--moving	List the volumes that are in the process of moving to a different storage pool.	
	[--cache_pinned {yes/no}]	List the volumes that are (yes) or are not (no) pinned in cache.	
--info	volume_name	Provide detailed information about the specified volume.	Guest

Option	Arguments and Suboptions	Description	Role
--create	<i>volume_name</i>	Create a volume with the specified name.	Operator
	--size <i>megabytes</i>	Create a volume of the specified size in megabytes.	
	[--description <i>text</i>]	Specify a description of the volume. If there are spaces in the description, enclose the text in quotation marks.	
	[--perfpolicy <i>name</i>]	Associate a performance policy with the volume. If no performance policy is specified, the default performance policy is used. After you create a volume, you can only associate another performance policy that has the same block size with this volume.	
	[--cache_pinned { <i>yes/no</i> }]	Specify whether or not to keep all contents of this volume in flash cache. The amount of flash needed to pin the volume in cache is equal to the volume quota. Pinning a volume in cache provides consistent performance guarantees for all types of workloads.	
	[--reserve <i>percent</i>]	Specify the amount of space that is reserved for a volume, which is expressed as a percentage of size. If this option is not specified, the array default volume reserve setting is used to determine the amount of space that is reserved for this volume.	
	[--quota <i>percent</i>]	Apply a quota to a volume as a percentage of the volume size. If this option is not specified, the array default volume quota setting is used to determine the quota for this volume.	
	[--warn_level <i>percent</i>]	Specify the threshold based on the available space from the volume reserve. If the available space drops below the specified threshold, then an alert is triggered. If this option is not specified, the array default volume warn level setting is used to determine the warning level for this volume.	
	[--snap_reserve <i>percent</i>]		

Option	Arguments and Suboptions	Description	Role
		Specify the amount of space to be reserved for snapshots of this volume as a percentage of size. If this option is not specified, then the array default snapshot reserve setting is used for the amount of space to reserve for snapshots of this volume.	
	<code>--snap_quota <i>percent</i></code>	Specify the quota of a volume space as a percentage of volume size. If this option is not specified, the array default snapshot quota setting is used for the quota of snapshots of this volume.	
	<code>--snap_warn_level <i>percent</i></code>	Specify the threshold for available space from the snapshot reserve below which an alert automatically appears. If this option is not specified, then the array default snapshot warn level settings is used to set the warn level for snapshots of this volume.	
	<code>--start_offline</code>	Start with the volume set to offline. If this option is not specified, then the default is to start with the volume online.	
	<code>--apply_acl_to {<i>volume snapshot both</i>}</code>	Apply the access control record being specified to the volume, its snapshots, or both. If this option is not specified, then the default is to apply the ACL to both.	
	<code>--chapuser <i>username</i></code>	Specify the name of a CHAP user who can access a volume on an iSCSI array. CHAP users can be created with the <code>chapuser</code> command. If this option is not specified, then the default is to allow access to any CHAP user. This option does not apply to volumes on a Fibre Channel array.	
	<code>--initiatorgrp <i>initiatorgrp_name</i></code>	Specify the name of the initiator group to which to restrict access. If this option is not specified, then access is allowed to any initiator group.	
	<code>--lun <i>number</i></code>	Specify the logical unit number (LUN) to associate with the volume for access by Fibre Channel initiator groups.	
	<code>--multi_initiator {<i>yes no</i>}</code>		

Option	Arguments and Suboptions	Description	Role
		Set a volume and its snapshots to be multi-initiator accessible. By default on an iSCSI array, a volume and its snapshots can be accessed by a single initiator at any given time. This option does not apply to volumes on a Fibre Channel array.	
	[--pool <i>pool_name</i>]	Specify a storage pool to which to assign a volume. Volume data is distributed across arrays over which a specified pool is defined. If this option is not specified, then the volume is automatically assigned to the default pool.	
	[--agent_type { <i>smis</i> / <i>none</i> }]	Specify the external management agent type. Default: none.	
	[--encryption_cipher { <i>aes-256-xts</i> / <i>none</i> }]	Specify the cipher to use during encryption for this volume. Overriding the default value is allowed only if the encryption_scope suboption for the <code>group --edit</code> command is set to "volume". If overriding the default value is allowed, a value of "none" indicates no encryption. A value of "aes-256-xts" indicates the use of the AES-256-XTS cipher. Note After volume creation, encryption on that volume cannot be changed.	

Option	Arguments and Suboptions	Description	Role
--edit	<i>volume_name</i>	Modify the attributes of the specified volume. Specify at least one suboption.	Operator
	[--name <i>new_name</i>]	Modify the volume name. This will correspondingly change the target name associated with this volume.	
	[--description <i>textf</i>]	Modify the description of the volume.	
	[--size <i>megabytes</i>]	Modify the volume size. The changed size does not automatically modify other space-related settings, such as quota, reserve, and warn levels. You must modify those settings to maintain the same levels based on the modified volume size.	
	[--perfpolicy <i>name</i>]	Modify the performance policy that is associated with the volume. The specified new policy must have a block size that is the same as the block size of the currently associated performance policy.	
	[--cache_pinned { <i>yes/no</i> }]	Pin the volume in flash cache if you specify <i>yes</i> .	
	[--readonly { <i>yes/no</i> }]	Set the volume to read/write if you specify <i>no</i> or to read only if you specify <i>yes</i> .	
	[--force]	Forcibly set the volume to read only when there are connected initiators or when you reduce the size of the volume.	
	[--reserve <i>percentf</i>]	Modify the amount of space that is reserved for the volume as a percentage of the volume size.	
	[--quota <i>percentf</i>]	Modify the volume quota as a percentage of the volume size.	
	[--warn_level <i>percentf</i>]	Modify the threshold based on the available space from the volume reserve. If the available space drops below the specified threshold, then an alert is triggered. If this option is not specified, the array default volume warn level setting is used to determine the warning level for this volume.	
[--snap_reserve <i>percentf</i>]			

Option	Arguments and Suboptions	Description	Role
		Modify the reserved snapshot space for the volume as a percentage of the volume size. An alert is generated as the reserved snapshot space decreases and the specified threshold is reached.	
	<code>--snap_quota <i>percent</i></code>	Modify the reserved snapshot quota for the volume as a percentage of the volume size. An alert message is generated when the snapshot quota is reached.	
	<code>--snap_warn_level <i>percent</i></code>	Modify the available space warning level for snapshots of the specified volume.	
	<code>--multi_initiator {<i>yes/no</i>}</code>	Set a volume and its snapshots to be multi-initiator accessible. By default on an iSCSI array, a volume and its snapshots can be accessed by a single initiator at any given time. This option does not apply to volumes on a Fibre Channel array.	
	<code>--agent_type {<i>smis/none</i>}</code>	Modify the external management agent type.	
<code>--delete</code>	<i>volume_name</i>	Delete the specified volume. Before you can delete any existing volumes, you must take the volume as well as its associated snapshots offline and dissociate any active connections.	Power User
<code>--online</code>	<i>volume_name</i>	Set the specified volume online. Setting a volume online allows initiators to connect to it.	Operator
<code>--offline</code>	<i>volume_name</i>	Set the specified volume offline. Setting a volume offline prevents initiators from connecting to it. Setting the volume offline fails if there are open connections from initiators and <code>--force</code> is not specified.	Operator
	<code>--force</code>	Forcibly set the specified volume offline, even if there are open connections from initiators.	

Option	Arguments and Suboptions	Description	Role
--snap	<i>volume_name</i>	Specify the volume to take a snapshot of.	Operator
	--snapname <i>snapshot_name</i>	Specify the name of the snapshot to create.	
	[--description <i>text</i>]	Specify an optional description of the snapshot. If there are spaces in the description, enclose the text in quotation marks.	
	[--start_online]	Start the snapshot online if you specify this option. By default, snapshots are set offline when they are created.	
	[--allow_writes]	Enable applications to write to a snapshot if you specify this option. By default, snapshots are read only when they are created.	
--restore	<i>volume_name</i>	Restore the specified volume from one of its snapshots. The volume must be taken offline before you can restore it to the snapshot.	Power User
	--snapname <i>snapshot_name</i>	Specify the snapshot from which to restore the volume.	

Option	Arguments and Suboptions	Description	Role
--clone	<i>volume_name</i>	Clone the specified volume from one of its snapshots and then creates a new volume. You can use clones to restore corrupt volumes or to create an environment for testing changes.	Operator
	--snapname <i>snapshot_name</i>	Specify the snapshot from which to create a clone.	
	--clonename <i>clone_name</i>	Specify the name to assign to the new, cloned volume.	
	[--description <i>text</i>]	Provide a description of the cloned volume. If there are spaces in the description, enclose the text in quotation marks.	
	[--readonly { <i>yes/no</i> }]	Set the clone to be a read-only or read/write volume.	
	[--reserve <i>percent</i>]	Specify the amount of space that is reserved for the cloned volume as a percentage of the volume size.	
	[--quota <i>percent</i>]	Specify the quota for the cloned volume as a percentage of the volume size.	
	[--warn_level <i>percent</i>]	Specify the threshold based on the available space from the volume reserve. If the available space drops below the specified threshold, then an alert is triggered. If this option is not specified, the array default volume warn level setting is used to determine the warning level for this cloned volume.	
	[--snap_reserve <i>percent</i>]	Specify the reserved snapshot space for the cloned volume as a percentage of the volume size. An alert is generated as the reserved snapshot space decreases and the specified threshold is reached.	
	[--snap_quota <i>percent</i>]	Specify the reserved snapshot quota for the cloned volume as a percentage of the volume size. An alert message is generated when the snapshot quota is reached.	
[--snap_warn_level <i>percent</i>]	Specify the available space warning level for snapshots of the cloned volume.		
[--start_offline]			

Option	Arguments and Suboptions	Description	Role
		Set the cloned volume offline. By default, volumes are set online when you create them.	
	<code>--apply_acl_to {volume snapshot both}</code>	Apply the access control record being specified to the cloned volume, its snapshots, or both. If this option is not specified, then the default is to apply the ACL to both.	
	<code>--chapuser username</code>	Specify the name of a CHAP user who can access a cloned volume on an iSCSI array. If this option is not specified, then the default is to allow access to any CHAP user. This option does not apply to volumes on a Fibre Channel array.	
	<code>--initiatorgrp initiatorgrp_name</code>	Specify the name of the initiator group to which to restrict access. If this option is not specified, then access is allowed to any initiator group.	
	<code>--lun number</code>	Specify the logical unit number (LUN) to associate with the cloned volume for access by Fibre Channel initiator groups.	
	<code>--multi_initiator {yes/no}</code>	Set a cloned volume and its snapshots to be multi-initiator accessible. By default on an iSCSI array, a volume and its snapshots can be accessed by a single initiator at any given time. This option does not apply to cloned volumes on a Fibre Channel array.	
	<code>--cache_pinned {yes/no}</code>	Pin the cloned volume in cache.	
<code>--assoc</code>	<i>volume_name</i>	Associate the specified volume with a volume collection.	Operator
	<code>--volcoll collection_name</code>	Specify the volume collection to associate the volume with.	
<code>--dissoc</code>	<i>volume_name</i>	Remove the specified volume from a volume collection. When a volume is dissociated from a volume collection, any snapshots on the volume are not deleted when the corresponding snapshot collection is deleted, either manually or per-retention-policy for the protection schedule that they are managed by.	Operator

Option	Arguments and Suboptions	Description	Role
--addacl	<i>volume_name</i>	Add an access control list (ACL) record to the specified volume.	Operator
	--apply_acl_to { <i>volume snapshot both</i> }	Apply the access control record to the volume, its snapshots, or both.	
	[--chapuser <i>username</i>]	Specify the CHAP user to restrict access to. This option does not apply to volumes on a Fibre Channel array.	
	[--initiatorgrp <i>initiatorgrp_name</i>]	Specify the initiator group to restrict access to.	
	[--lun <i>number</i>]	Specify the logical unit number (LUN) to associate with this volume for access by a Fibre Channel initiator group. Valid LUNs are in the 0-2047 range. If not specified, the system generates a number. This option does not apply to volumes on an iSCSI array.	
--removeacl	<i>volume_name</i>	Remove an access control record from the specified volume.	Operator
	--apply_acl_to { <i>volume snapshot both</i> }	Remove the access control record from the volume, its snapshots, or both.	
	[--chapuser <i>username</i>]	Remove the access control record for the specified CHAP user. This option does not apply to volumes on a Fibre Channel array.	
	[--initiatorgrp <i>group_name</i>]	Remove the access control record for the specified initiator group.	
--claim	<i>volume_name</i>	Claim ownership of the specified volume. Claiming ownership of a volume allows the new owner to modify volume attributes. For example, when a replica volume is disassociated on an upstream array, the volume ownership for the replica stays with the upstream array. To modify the volume on the local system, claim ownership.	Power User
	[--partner <i>partner_name</i>]	Specify the name of a partner to whom volume ownership is assigned. By default, ownership is assigned to the local array where you run the command. Specify this option to assign ownership to a different array.	

Option	Arguments and Suboptions	Description	Role
--move	<i>volume1,volume2,...</i>	Move the specified list of volumes, related volumes that share data blocks (such as clones or parents of clones), and snapshots from the current storage pool to another pool. Use <code>vol --info</code> to monitor the move. This option does not apply to volumes on Fibre Channel arrays.	Power User
	<code>--dest_pool destination_pool</code>	Specify the storage pool to which the volumes, related volumes, and snapshots will be moved.	
--abort_move	<i>volume_name</i>	Stop moving the specified volume and its snapshots from one storage pool to another.	Power User

Examples

This example lists all volumes on an array.

```
Nimble OS $ vol --list
-----+-----+-----+-----+-----+-----+-----+
Name      Size      Online Offline  Usage      Reserve % Quota
%
          (MB)                Reason      (MB)
-----+-----+-----+-----+-----+-----+-----+
AppAD01   87041 No      Replica   11179      0.00      100.00
AppE2K7Node2 153600 No      Replica   63550      0.00      100.00
EX03-Exchange 512000 Yes     N/A       63325      0.00      100.00
EX03-ExchangeLog 102400 Yes     N/A       23049      0.00      100.00
itbackup  1048576 Yes     N/A       301628     0.00      100.00
share     2097152 Yes     N/A       781912     0.00      100.00
vcenterbackup 102400 Yes     N/A       41024      0.00      100.00
```

This example shows detailed information about a volume named *public* that is configured on an iSCSI array. The output is truncated to save space.

```
Nimble OS $ vol --info public
Name: public
Serial number: 38c46c34d60faf846c9ce9058d6e41a2
iSCSI target: iqn.2007-11.com.nimblestorage:public-v354fae.0000f.a241
Description: public volume
Owned by: greyful
Size (MB): 2097152
Pool: default
Move to pool: N/A
Move aborting: N/A
Move data migrated: N/A
Move data remaining: N/A
Move start time: N/A
Move estimated completion time: N/A
Performance policy: Windows File Server
Block size (bytes): 4096
Reserve: 0.00%
Warn level: 80.00%
Quota: 100.00%
```

Nimble Administrative Commands

```
Snapshot reserve: 0.00%
Snapshot warn level: N/A
Snapshot quota: unlimited
Snapshot count: 2
...
...
Agent Type: none
Online Snapshots:
Encryption cipher: aes-256-xts
```

This example shows detailed information about a volume named *semiprivate* that is configured on a Fibre Channel array. The output is truncated to save space.

```
Nimble OS $ vol --info semiprivate
Name: semiprivate
Serial number: 4e136d3f091130236c9ce9006547755f
Target name: 56:c9:ce:90:b9:f2:ca:00
Description:
Owned by: corp
Size (MB): 16777216
Pool: default
Move to pool: N/A
Move aborting: N/A
Move data migrated: N/A
Move data remaining: N/A
Move start time: N/A
Move estimated completion time: N/A
Performance policy: default
Block size (bytes): 4096
Reserve: 0.00%
Warn level: 80.00%
Quota: 100.00%
Snapshot reserve: 0.00%
Snapshot warn level: N/A
Snapshot quota: unlimited
Snapshot count: 0
Volume usage (MB): 35331
Volume compression: 2.65X
Volume space saved (MB): 58204
...
...
    Access Protocol: fc
    LUN: 0
Connected Initiators:
Initiator: All_hba3 (21:00:00:0e:1e:19:60:91)
    Target FC Interface: (array7 : B : fc6.1) (56:c9:ce:90:4f:a6:c8:06)
    ALUA: standby
    PR Key: 0
    Target FC Interface: (array7 : B : fc10.1) (56:c9:ce:90:4f:a6:c8:08)
    ALUA: standby
    PR Key: 0
    Target FC Interface: (array7 : A : fc6.1) (56:c9:ce:90:4f:a6:c8:02)
    ALUA: active/optimized
    PR Key: 0
    Target FC Interface: (array7 : A : fc10.1) (56:c9:ce:90:4f:a6:c8:04)
    ALUA: active/optimized
    PR Key: 0
...
...
```

This example creates a volume named *publicvol* with a quota of 80 percent and no reserve. This is in case the volume must be expanded later. No ACLs are included. They are added later.

Nimble Administrative Commands

```
Nimble OS $ vol --create publicvol --size 30
--description "for use by everyone" --quota 80 --warn_level 75
```

This example modifies the size and description of a volume named *publicvol* and sets the volume to read only.

```
Nimble OS $ vol --edit publicvol --size 50 --description "for use by me"
--readonly yes
```

This example deletes the volume named *publicvol*.

```
Nimble OS $ vol --delete publicvol
```

This example brings a volume named *publicvol* online.

```
Nimble OS $ vol --online publicvol
```

This example takes the volume named *publicvol* offline.

```
Nimble OS $ vol --offline publicvol --force
```

This example creates a snapshot of the volume named *publicvol* and makes the new *publicvolsnap* snapshot writable.

```
Nimble OS $ vol --snap publicvol
--snapname publicvolsnap --description "a snapshot of the public volume"
--allow_writes
```

This example takes a volume named *publicvol* offline, restores it from the snapshot named *publicvolsnap*, and brings the restored volume online.

```
Nimble OS $ vol --offline publicvol
Nimble OS $ vol --restore publicvol --snapname publicvolsnap
Nimble OS $ vol --online publicvol
```

This example lists snapshots, clones a volume named *publicvol* from its snapshot named *publicvolsnap*, and then verifies the success of the operation.

```
Nimble OS $ vol --list
-----+-----+-----+-----+-----+-----+-----
Name          Size      Online Offline   Usage      Reserve % Quota
%              (MB)                Reason      (MB)
-----+-----+-----+-----+-----+-----+-----
publicvol          30 Yes     N/A                0          0.00  80.00

Nimble OS $ snap --list
-----+-----+-----+-----+-----+-----+-----
Volume        Snapshot      Size      Online Status  New Data
Name          Name          (MB)
-----+-----+-----+-----+-----+-----+-----
publicvol          publicvolsnap 30 No     Okay    0

Nimble OS $ vol --clone publicvol --snapname publicvolsnap
--clonename publicclone --description "testing version compatibility"
```

Nimble Administrative Commands

```
Nimble OS $ vol --list
-----+-----+-----+-----+-----+-----+-----
Name          Size      Online Offline  Usage      Reserve % Quota
%              (MB)                Reason      (MB)
-----+-----+-----+-----+-----+-----+-----
publicclone   30 Yes    N/A      0          0.00      100.00
publicvol     30 Yes    N/A      0          0.00      80.00
```

This example lists available volume collections and then associates one of the collections with a volume named *publicvol*.

```
Nimble OS $ volcoll --list
-----+-----+-----+-----+-----+-----+-----
Volume Collection  Application      Owned By
Name              Synchronization
-----+-----+-----+-----+-----+-----+-----
volcollone        none             greyhound

Nimble OS $ vol --assoc publicvol --volcoll volcollone
```

This example disassociates a volume named *publicvol* from a volume collection.

```
Nimble OS $ vol --dissoc publicvol
```

This example lists available CHAP users on an iSCSI array, adds an ACL for the CHAP user to a volume named *publicvol*, and then shows the ACL definitions. The `vol --info` output is truncated to save space and prevent line wrapping.

```
Nimble OS $ chapuser --list
-----+-----+-----+-----+-----+-----+-----
CHAP User Name          Password
-----+-----+-----+-----+-----+-----+-----
nimblechap              nimblechapuser

Nimble OS $ vol --addacl publicvol --apply_acl_to volume
--chapuser nimblechap

Nimble OS $ vol --info publicvol
Name: publicvol
Serial number: ff3161997a340eb76c9ce9004ec1399f
iSCSI target: iqn.2007-11.com.nimblestorage:publicvol-v5e0c4565c135842b...
Description: for use by everyone
...
...
Access Control List:
  Apply to: volume & snapshot
  Initiator Group: *
  CHAP user: *
  Apply to: volume
  Initiator Group: *
  CHAP user: nimblechap
Connected Initiators:
...
...
```

This example removes the name of a CHAP user from the access control record on a volume named *publicvol* on an iSCSI array.

Nimble Administrative Commands

```
Nimble OS $ vol --removeacl publicvol --apply_acl_to volume --chapuser  
nimblechap
```

This example claims ownership of a volume named *publicvol* for a replication partner named *greyhound*.

```
Nimble OS $vol --claim publicvol --partner greyhound
```

This example moves a volume named *publicvol* to a storage pool named *secondary*.

```
Nimble OS $vol --move publicvol --dest_pool secondary
```

This example stops the in-process move of a volume named *publicvol*.

```
Nimble OS $vol --abort_move publicvol
```

volcoll

The `volcoll` command options manage volume collections. Volume collections are logical groups of volumes that share protection characteristics, such as snapshot and replication schedules. Volume collection names are case-sensitive. You can create volume collections or base them on predefined protection templates. Snapshots for all volumes in a collection are captured synchronously to ensure that the data across these volumes is mutually consistent. Volumes in a collection share snapshot and replication schedules, as well as the retention policies for those snapshots. Similarly, during disaster recovery all volumes in a volume collection simultaneously fail over to the replica array as a group. You need to create a volume collection for each application.

Volume collections may include multiple schedules. When schedules overlap, snapshots, or replicas are created for every schedule. Schedules affect all volumes that are assigned to the volume collection. Volume collections are limited to one downstream replication partner. If you want to replicate to multiple partners, you must create a volume collection for each replication partner to which you want to assign replication.

Synopsis

```
volcoll --help
```

```
volcoll --list
```

```
volcoll --info volcoll_name
```

```
volcoll --create volcoll_name
--prottmpl name
[--description text]
--app_sync {none|vss|vmware}
[--app_server server]
[--app_id {exchange|sql2005|sql2008|sql2012|exchange_dag|sql2014}]
[--app_cluster_name cluster_name]
[--app_service_name service_name]
[--vcenter_hostname server]
[--vcenter_username user_name]
[--vcenter_password password]
```

```
volcoll --edit volcoll_name
[--newname template_name]
[--description text]
[--app_sync {none|vss|vmware}]
[--app_server server]
[--app_id {exchange|sql2005|sql2008|sql2012|exchange_dag|sql2014}]
[--app_cluster_name cluster_name]
[--app_service_name service_name]
[--vcenter_hostname server]
[--vcenter_username user_name]
[--vcenter_password password]
```

```
volcoll --delete volcoll_name
```

```
volcoll --validate volcoll_name
```

```
volcoll --addsched volcoll_name
--schedule name
```


Nimble Administrative Commands

```
--repeat period
--repeat_unit {minutes|hours|days|weeks}
[--at time]
[--until time]
[--days {all|day1,day2,...}]
[--retain number]
[--replicate_to partner]
[--replicate_every number]
[--num_retain_replica number]
[--alert_threshold hh:mm]
[--snap_verify {yes|no}]
[--skip_db_consistency_check {yes|no}]
[--disable_appsync {yes|no}]
[--external_trigger {yes|no}]

volcoll --editsched volcoll_name
--schedule name
[--newname name]
[--repeat period]
[--repeat_unit {minutes|hours|days|weeks}]
[--at time]
[--until time]
[--days {all|day1,day2,...}]
[--retain number]
[--replicate_to partner]
[--replicate_every number]
[--num_retain_replica number]
[--alert_threshold hh:mm]
[--snap_verify {yes|no}]
[--skip_db_consistency_check {yes|no}]
[--disable_appsync {yes|no}]
[--external_trigger {yes|no}]

volcoll --deletesched volcoll_name
--schedule schedule_name

volcoll --snap volcoll_name
--snapcoll_name name
[--description text]
[--start_online]
[--allow_writes]
[--replicate]
[--disable_appsync {yes|no}]
[--external_trigger {yes|no}]
[--snap_verify {yes|no}]
[--skip_db_consistency_check {yes|no}]

volcoll --promote volcoll_name

volcoll --demote volcoll_name
--partner name

volcoll --handover volcoll_name
--partner name
```

Nimble Administrative Commands

```
[--no_reverse]  
[--abort]
```

```
volcoll --stop_repl volcoll_name  
--schedule name
```

Options

Option	Arguments and Suboptions	Description	Role
--help	N/A	Show usage information for the command.	Guest
--list	N/A	List volume collections.	Guest
--info	<i>volcoll_name</i>	Provide detailed information about the specified volume collection and its schedules. Volume collection names are case sensitive.	Guest

Option	Arguments and Suboptions	Description	Role
--create	<i>volcoll_name</i>	Create the specified volume collection.	Operator
	--prottpl <i>name</i>	Specify a protection template as a basis for defining protection-related attributes of the volume collection. If other options are specified, those options then override attributes that have been derived from a protection template. Any changes to the protection template that occur after the volume collection is created do not affect any protection attributes of this collection.	
	[--description <i>text</i>]	Specify a plain-language description of the volume collection. If there are spaces in the description, enclose the text in quotation marks.	
	--app_sync { <i>none</i> <i>vss</i> <i>vmware</i> }	Define the application synchronization to apply. If you specify <i>vss</i> synchronization, supply the --app_* credentials. If you specify <i>vmware</i> synchronization, supply the --vcenter_* credentials.	
	[--app_server <i>server</i>]	Specify the application server when <i>vss</i> synchronization is enabled.	
	[--app_id { <i>exchange</i> <i>sql2005</i> <i>sql2008</i> <i>sql2012</i> <i>exchange_dag</i> <i>sql2014</i> }]	Define the application running on the server when <i>vss</i> synchronization is enabled. Exchange DAG specifies that it is a Microsoft Exchange Server 2010 or later supporting Database Available Group.	
	[--app_cluster_name <i>cluster_name</i>]	Specify the cluster name if the application that uses <i>vss</i> synchronization is running within a Windows clustering environment.	
	[--app_service_name <i>service_name</i>]	Specify the instance name of the service if the application that uses <i>vss</i> synchronization is running within a Windows clustering environment.	
	[--vcenter_hostname <i>server</i>]	Specify the host name of the vCenter server with which the Nimble array will communicate when <i>vmware</i> synchronization is enabled.	
[--vcenter_username <i>user_name</i>]	Specify the Windows user name to use to create a Nimble account on the vCenter server when <i>vmware</i> synchronization is enabled.		

Option	Arguments and Suboptions	Description	Role
	<code>--vcenter_password password</code>	Specify the password associated with the user name when <i>vmware</i> synchronization is enabled.	
--edit	<i>volcoll_name</i>	Modify the specified volume collection. New volume collections based on the template are affected by the modifications, but existing volume collections are not. Specify at least one suboption.	Operator
	<code>--newname volcoll_name</code>	Modify the name of the volume collection.	
	<code>--description text</code>	Modify the plain-language description of the volume collection.	
	<code>--app_sync {none vss vmware}</code>	Modify the application synchronization to apply.	
	<code>--app_server server</code>	Modify the application server for vss synchronization.	
	<code>--app_id {exchange sql2005 sql2008 sql2012 exchange_dag sql2014}</code>	Modify the application running on the server for vss synchronization.	
	<code>--app_cluster_name cluster_name</code>	Modify the cluster name if the application that uses vss synchronization is running within a Windows clustering environment.	
	<code>--app_service_name service_name</code>	Modify the instance name of the service if the application that uses vss synchronization is running within a Windows clustering environment.	
	<code>--vcenter_hostname server</code>	Modify the host name of the vCenter server with which the Nimble array communicates for <i>vmware</i> synchronization.	
	<code>--vcenter_username user_name</code>	Modify the Windows user name for <i>vmware</i> synchronization.	
	<code>--vcenter_password password</code>	Modify the password associated with the user name for <i>vmware</i> synchronization.	
--delete	<i>volcoll_name</i>	Delete the specified volume collection. Disassociate all volumes from the volume collection by using <code>vol --dissoc</code> before deleting the volume collection.	Power User

Option	Arguments and Suboptions	Description	Role
--validate	<i>volcoll_name</i>	Validate the specified volume collection with the Microsoft VSS application synchronization. You must configure VSS application synchronization before you can validate synchronization. To avoid affecting performance, validate no more than once a day.	

Option	Arguments and Suboptions	Description	Role
--addsched	<i>volcoll_name</i>	Add a schedule to the specified volume collection.	Operator
	--schedule <i>name</i>	Specify the name of the snapshot schedule to associate with this volume collection.	
	--repeat <i>period</i>	Specify the frequency of snapshots. If you do not specify this option, the default value of <i>1</i> is used.	
	--repeat_unit { <i>minutes hours days weeks</i> }	Specify the unit of time for --repeat to define the frequency of snapshots. If you do not specify this option, the default value of <i>days</i> is used.	
	[--at <i>time</i>]	Specify the time of day to start taking snapshots. If you do not specify this option, the default value of <i>12:00</i> (midnight) is used.	
	[--until <i>time</i>]	Specify the time of day to stop taking snapshots. If you do not specify this option, the default value of <i>11:59</i> (PM) is used if a stop time is appropriate for the repeat unit. For example, if you take snapshots once daily, you do not need this option.	
	[--days { <i>all day1,day2,...</i> }]	Specify the days on which to take snapshots unless the repeat unit is <i>weeks</i> . You can enter a comma-separated list of days, such as <i>Mon,Wed,Fri</i> . If you do not specify this option, the default value of <i>all</i> is used.	
	[--retain <i>number</i>]	Specify the maximum number of snapshots to keep. After this number is reached, older snapshots can be deleted to make room for new ones if the space is needed. If replication is enabled on this schedule, the array always retains the latest replicated snapshot.	
	[--replicate_to <i>partner</i>]	Specify the replication partner for replicated snapshots. Use <i>partner --create</i> on both arrays to configure replication partners.	
[--replicate_every <i>number</i>]			

Option	Arguments and Suboptions	Description	Role
		Specify that a certain number of snapshots assigned to the schedule should be replicated. For example, setting this to 5 replicates every fifth snapshot. If snapshots are replicated and you do not specify this option, all snapshots are replicated.	
	[--num_retain_replica <i>number</i>]	Specify the number of snapshots to retain on the replication partner.	
	[--alert_threshold <i>hh:mm</i>]	If replicating a snapshot takes more than this amount of time to complete, an alert will be generated. If you do not specify this option, the default of 24 hours is used. Enter 00:00 to disable this alert.	
	[--snap_verify { <i>yes/no</i> }]	Specify whether to run a verification tool on snapshots created by this schedule. Use this option with snapshot schedules of a volume collection that has application synchronization. The tool used to verify snapshots depends on the type of application. For example, if the application synchronization is <i>vss</i> and the application ID is <i>exchange</i> , the <i>eseutil</i> tool is run on the snapshots. If verification fails, the logs are not truncated.	
	[--skip_db_consistency_check { <i>yes/no</i> }]	Specify whether to skip consistency checks for database files on snapshots created by this schedule. Use this option with snapshot schedules of a volume collection that has application synchronization of <i>vss</i> , the application ID is <i>exchange_dag.</i> , <i>--snap_verify</i> is set to <i>yes</i> , and <i>--disable_appsnc</i> is set to <i>no</i> .	
	[--disable_appsnc { <i>yes/no</i> }]	Specify whether to disable application-synchronized snapshots and create crash-consistent snapshots instead.	
	[--external_trigger { <i>yes/no</i> }]	Specify whether to use an externally driven schedule with no internal timers to create manual snapshots.	

Option	Arguments and Suboptions	Description	Role
--editsched	<i>volcoll_name</i>	Modify the specified schedule on the specified volume collection. Specify at least one suboption in addition to --schedule <i>name</i> .	Operator
	--schedule <i>name</i>	Specify the name of the snapshot schedule to modify.	
	[--newname <i>name</i>]	Modify the name of the snapshot schedule.	
	[--repeat <i>period</i>]	Modify the frequency of snapshots.	
	[--repeat_unit { <i>minutes hours days weeks</i> }]	Modify the unit of time for --repeat to define the frequency of snapshots.	
	[--at <i>time</i>]	Modify the time of day to start taking snapshots.	
	[--until <i>time</i>]	Modify the time of day to stop taking snapshots.	
	[--days { <i>all day1,day2,...</i> }]	Modify the days on which to take snapshots unless the repeat unit is <i>weeks</i> .	
	[--retain <i>number</i>]	Modify the maximum number of snapshots to keep.	
	[--replicate_to <i>partner</i>]	Modify the replication partner for replicated snapshots.	
	[--replicate_every <i>number</i>]	Modify that a certain number of snapshots assigned to the schedule should be replicated.	
	[--num_retain_replica <i>number</i>]	Modify the number of snapshots to retain on the replication partner.	
	[--alert_threshold <i>hh:mm</i>]	Modify whether to generate an alert if replicating a snapshot takes more than this amount of time to complete.	
	[--snap_verify { <i>yes no</i> }]	Modify whether to run a verification tool on snapshots created by this schedule.	
	[--skip_db_consistency_check { <i>yes no</i> }]	Modify whether to skip consistency checks for database files on snapshots created by this schedule.	
[--disable_appsync { <i>yes no</i> }]	Modify whether to disable application-synchronized snapshots and create crash-consistent snapshots instead.		
[--external_trigger { <i>yes no</i> }]	Modify whether to use an externally driven schedule with no internal timers to create manual snapshots.		

Nimble Administrative Commands

Option	Arguments and Suboptions	Description	Role
--deletesched	<i>volcoll_name</i>	Delete the specified schedule from the specified volume collection.	Operator
	--schedule <i>schedule_name</i>	Specify the schedule to delete.	

Option	Arguments and Suboptions	Description	Role
--snap	<i>volcoll_name</i>	Create a snapshot of volumes that are associated with the specified volume collection. Any created snapshots are consistent with each other. If the volume collection is application synchronized (VMware or VSS), the volume snapshots are synchronized with the application as well. If application synchronization is disabled for all protection schedules in the collection, the snapshot is not taken and an error occurs.	Operator
	--snapcoll_name <i>name</i>	Create the specified snapshot collection for the volume collection. The <i>name</i> is used for the snapshot as well as the snapshot collection.	
	[--description <i>textf</i>]	Specify a plain-language description of the snapshot collection. If there are spaces in the description, enclose the text in quotation marks.	
	[--start_online]	Specify whether to start the snapshot collection in an online state. If you do not specify this option, the snapshot collection is started offline.	
	[--allow_writes]	Specify whether to allow applications to write to the snapshot collection. If you do not specify this option, the snapshot collection disallows writes.	
	[--replicate]	Specify whether to replicate the snapshot collection and its members to a replication partner. If you do not specify this option, the snapshot collection is not replicated. If you do specify this option, create the replication partner using <code>partner --create</code> .	
	[--disable_appsnc { <i>yes/no</i> }]	Specify whether to disable application-synchronized snapshots and create crash-consistent snapshots instead.	
	[--external_trigger { <i>yes/no</i> }]	Specify whether to use an externally driven schedule to take the snapshot instead of the Nimble-driven schedule.	
	[--snap_verify { <i>yes/no</i> }]	Specify whether to run a verification tool on this snapshot collection.	

Option	Arguments and Suboptions	Description	Role
	<code>--skip_db_consistency_check {yes no}</code>	Specify whether to skip consistency checks for database files on this snapshot collection.	
<code>--promote</code>	<i>volcoll_name</i>	Take full ownership of the specified volume collection. This option is used on a downstream replication partner. The volumes that are associated with the volume collection are set to online, so they are available for reading and writing. Replication is disabled on the affected schedules and must be reconfigured if needed. Snapshot retention for the affected schedules is set to the greater of the current local or replica retention values.	Power User
<code>--demote</code>	<i>volcoll_name</i>	Release ownership of the specified volume collection to the specified replication partner. The volumes associated with the volume collection are set to offline and a snapshot is created. Full control over the volume collection is then transferred to the new owner. You can use this option following <code>--promote</code> to revert the volume collection to its previously configured state. This operation does not modify the configuration on the new owner array. The new owner array must be running to obtain its identity information.	Power User
	<code>--partner partner_name</code>	Specify the replication partner that is given ownership of the volume collection.	

Option	Arguments and Suboptions	Description	Role
--handover	<i>volcoll_name</i>	Gracefully transfer ownership of the specified volume collection to the specified replication partner. Ownership and full control is given to the replication partner. The volumes that are associated with the volume collection are taken offline before the final snapshot is taken and replicated. Therefore, full data synchronization is ensured as part of the transfer.	Power User
	--partner <i>name</i>	Specify the replication partner to transfer ownership to.	
	[--no_reverse]	Prevent automatically reversing the direction of replication. If you do not specify this option, the new owner begins to replicate to the original array when the handover completes.	
	[--abort]	Cancel an in-progress handover that has not yet completed.	
--stop_repl	<i>volcoll_name</i>	Discontinue replication for a protection schedule of the specified volume collection.	Power User
	--schedule <i>name</i>	Specify the protection schedule to discontinue.	

Examples

This example lists the volume collections on the array.

```
Nimble Storage $ volcoll --list
-----+-----+-----
Volume Collection      Application      Owned By
Name                   Synchronization
-----+-----+-----
volcoll-DB1           VSS              array1
daily                 none             array7
```

This example shows detailed information about a volume collection named *daily*.

```
# volcoll --info daily
Name: daily
Description:
Owned by: array7
Application synchronization: none
Application server: N/A
Application ID: N/A
Cluster name: N/A
Service name: N/A
VMware vCenter hostname: N/A
VMware vCenter username: N/A
VMware vCenter password: N/A
```

Nimble Administrative Commands

```
Associated volumes: na-Vol1, na-Vol5, na-Vol4, na-Vol3
Associated pinned volumes: none
Snapshot collection count: 1
Created: Feb 19 2014 15:30:50
Last configuration change: Feb 19 2014 17:06:25
Schedule Name: daily
  Description:
  Type: Nimble Schedule
  Owned by: array7
  Repeats: 1 day(s)
  At: 10:38:00 a.m.
  Until: N/A
  Days: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
  Last snapshot time: N/A
  Next snapshot time: Sep  4 2014 10:38:00
  Number of replicable snapshot time: N/A
  Number of snapshots to retain: 30
  Snapshot verification: N/A
  Skip database consistency check: N/A
  Disable appsync: No
  Number of snapshots to retain on replica: 10
  Replicate every: 1
  Latest collection replicated: none
  Replicate from: array7
  Replication in-progress: none
  Created: Feb 19 2014 15:30:50
  Last configuration change: Aug 26 2014 13:28:33
  Last timing configuration change: Mar 5 2014 20:03:20
```

This example creates a new volume collection named *forreplication*. You must also add schedules to the volume collection by using `volcoll --addsched`.

```
Nimble OS $ volcoll --create forreplication --description "use with
replication" --app_sync none
```

This example modifies the synchronization for a volume collection named *vmwarevolcoll*.

```
Nimble OS $ volcoll --edit vmwarevolcoll --app_sync vmware
--vcenter_hostname 10.12.128.221 --vcenter_username admin
--vcenter_password admin123
```

This example deletes a volume collection named *forreplication*.

```
Nimble OS $ volcoll --delete forreplication
```

This example validates a volume collection named *volcollone*, which is configured with `app_sync` set to `vss`. You must configure VSS application synchronization before you can validate synchronization using this command.

```
Nimble OS $ volcoll --validate volcollone
```

This example adds a schedule to a volume collection named *forreplication*.

```
Nimble OS $ volcoll --addsched forreplication --schedule hourly
--repeat 1 --repeat_unit hours --retain 25 --snap_verify no
```

This example edits a schedule for a volume collection named *forreplication*.

Nimble Administrative Commands

```
Nimble OS $ volcoll --editsched forreplication  
--schedule hourly --newname everyotherhour  
--repeat 2 --repeat_unit hours
```

This example deletes a schedule named *everyotherhour* from a volume collection named *forreplication*.

```
Nimble OS $ volcoll --deletesched forreplication  
--schedule everyotherhour
```

This example takes a snapshot collection of a volume collection named *forreplication*.

```
Nimble OS $ volcoll --snap forreplication  
--snapcoll_name snap4repl --allow_writes
```

This example promotes the volume collection named *forreplication*.

```
Nimble OS $ volcoll --promote forreplication
```

This example demotes a volume collection named *forreplication*.

```
Nimble OS $ volcoll --demote forreplication  
--partner array2
```

This example hands over a volume collection named *forreplication* to a replication partner named *array2* and sets the configuration not to reverse replication direction.

```
Nimble OS $ volcoll --handover forreplication  
--partner array2 --no_reverse
```

This example stops replication for a schedule named *everyotherhour* on a volume collection named *forreplication*.

```
Nimble OS $ volcoll --stop_repl forreplication --schedule everyotherhour
```

Regulatory Information

Regulatory Warnings

European Community, Australia, New Zealand

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Israel

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

אזהרה

מוצר זה הוא מוצר Class A. בסביבה ביתית, מוצר זה עלול לגרום הפרעות בתדר רדיו, ובמקרה זה, המשתמש עשוי להידרש לנקוט אמצעים מתאימים.

Korea

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

경고:

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Taiwan

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

警告:

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策

USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful

Regulatory Warnings

interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his own expense.



EC Declaration of Conformity

We, the undersigned,

Manufacturer: Nimble Storage
Address: 211 River Oaks Pkwy, San Jose, CA 95134
Phone number: 408-514-3232
Fax number: 408-899-5158
E-mail: aphan@nimblestorage.com

Certify and declare under our sole responsibility that the following apparatus:

Description: Storage Array
Identification Model: CS200, CS400, ES1, CS215, CS300, CS500, CS700
Brand: Nimble Storage

Conforms to the essential requirements of the Directives and Standards below:

Table 1:

Directives	Standards
EMC Directive 2004/108/EC	EN 55022:2010, "Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement" (Class A) EN 55024:2010, "Information technology equipment – Immunity characteristics, Limits and method of measurement." EN 61000-3-2:2006 /A1:2009 /A2:2009 – AC Current Harmonics EN 61000-3-3:2008 – AC Voltage Fluctuations
LVD Directive 2006/95/EC	EN60950-1:2006 + A1:2010 + A11:2009 + A12:2011 - Information technology equipment - Safety -- Part 1: General requirements
ROHS Directive 2011/65/EU	EN50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Name: Alexander Pham
Position: Staff Engineer
Place: San Jose, California, USA
Date: 30 May 2014



Appendix - Declaration of Conformity in Languages of the European Union

- 2004/108/EC (EMC Directive): EN 55022:2010, EN 55024:2010, EN 61000-3-2:2006 /A1:2009 /A2:2009, EN 61000-3-3:2008
- 2006/95/EC (LVD Directive): EN60950-1:2006 + A1:2010 + A11:2009 + A12:2011
- 2011/65/EU (ROHS Directive): EN50581:2012

English	EC Conformity Declaration, in terms of the Guidelines of the European Union: The devices stated below have been developed, constructed and manufactured according to the above mentioned EC directives.
Български (Bulgarian)	EO-Дeклapация за съответствие, по смисъла на Директивите на EO: Пoсoчeнитe пo-дoлу пpодукти сa paзpaбoтeни, кoнстpуирaни и пpoизвeдени в съoтвeтствие с упoмeнатитe пo-гoрe дирeктивa
Čeština (Czech)	ES prohlášení o shodě, ve smyslu směrnice ES: Niže uvedené produkty byly vyvinuty, zkonstruovány a vyrobeny v souladu s výše uvedenými směrnici ES.
Dansk (Danish)	EC overensstemmelseerklæring i hensyn til Den Europæiske Unions retningslinjer: Enhederne er angivet nedenfor er udviklet, konstrueret og produceret i overensstemmelse med ovennævnte EU-direktiver.
Nederlands (Dutch)	CE-markering van overeenstemming, conform de EG-richtlijnen: De hieronder vermelde producten zijn ontwikkeld, geconstrueerd en geproduceerd conform de bovengenoemde EG-richtlijnen.
Eesti (Estonian)	EÜ vastavusdeklaratsioon Euroopa Ühenduse suuniste kohaselt. Allnimetatud seade on välja töötatud, konstrueeritud ja toodetud vastavalt ülalnimetatud EÜ direktiividele.
Suomi (Finnish)	Euroopan yhteisön säädöksiin liittyvä EY-vaatimustenmukaisuusvakuutus: alla kuvatut laitteet on kehitetty, kokoonpantu ja valmistettu edellä mainittujen EY-direktiivien mukaisesti.
Français (French)	Déclaration CE de conformité, aux directives de la Communauté européenne: Les appareils présentés ci-dessous ont été développés, construits et conçus conformément aux directives CE susmentionnées.
Deutsch (German)	EG-Konformitätserklärung, im Sinne der EG-Richtlinien: Die unten aufgeführten Produkte wurden entwickelt, konstruiert und gefertigt in Übereinstimmung mit den o.g. EG-Richtlinien.
Ελληνικά (Greek)	Αήλωση συμμόρφωσης ΕΚ, κατά την έννοια των οδηγιών της ΕΚ: Τα προϊόντα που αναφέρονται παρακάτω σχεδιάστηκαν, αναπτύχθηκαν και κατασκευάστηκαν σύμφωνα με τις προαναφερθείσες οδηγίες της ΕΚ.
Magyar (Hungarian)	EK megfelelőségi nyilatkozat az Európai Közösség iránymutatása értelmében: Az alább felsorolt készülékek fejlesztése, tervezése és gyártása a fent említett EK-irányelveknek megfelelően történt.
Italiano (Italian)	Dichiarazione di conformità CE, ai sensi delle direttive CE: I prodotti sotto elencati sono stati sviluppati, costruiti e fabbricati in conformità con le direttive CE sopra indicate.
Latviešu (Latvian)	EK Atbilstības deklarācija, Eiropas kopienas vadlīniju ziņā: Turpmāk minētās ierīces ir izstrādātas, konstruētas un ražotas saskaņā ar iepriekš minētajām EK direktīvām.
Lietuvių (Lithuanian)	EB atitikties deklaracija, atsižvelgiant į Europos bendrijos gaires: Toliau nurodyti prietaisai buvo sukurti, sudedami ir gaminami pagal minėtas ES direktyvas.
Norsk (Norwegian)	EC samsvarserklæring, i hensyn til den Europeiske unionens retningslinjer: Enhetene i tabellen nedenfor er utviklet, konstruert og produsert i henhold til de ovenfor nevnte EU-direktiver.
Polski (Poland)	Deklaracja zgodności WE, zgodnie z dyrektywami WE: Określone poniżej urządzenia zostały zaprojektowane, skonstruowane i wyprodukowane zgodnie z powyższymi dyrektywami WE.
Português (Portuguese)	Declaração de Conformidade CE, Conforme as diretivas CE: Os produtos mencionados abaixo foram desenvolvidos, construídos e fabricados em conformidade com as diretivas CE acima referidas.
Român (Romanian)	Declarație de conformitate CE, în sensul directivei CE: Produsele următoare au fost proiectate, construite și fabricate în conformitate cu directivele CE menționate mai sus.
Slovenský (Slovak)	ES Vyhlásenie o zhode, v zmysle smerníc Európskeho spoločenstva: Nižšie uvedené prístroje boli vyvinuté, skonštruované a vyrobené v súlade s vyššie uvedenými smernicami ES.
Slovenščina (Slovenian)	Izjava ES o skladnosti, v smislu direktiv ES: Spodaj navedeni izdelki so bili razviti, zasnovani in izdelani v skladu z zgornjimi direktivami ES.
Svensk (Swedish)	EG-försäkran om överensstämmelse avseende Europeiska gemenskapens riktlinjer: Enheterna som redovisas nedan har utvecklats, konstruerats och tillverkats i enlighet med ovan nämnda EG-direktiv.
Español (Spanish)	Declaración de conformidad de la CE, según las directivas de la CE: Los productos listados abajo fueron desarrollados, diseñados y fabricados conforme a las directivas de la CE arriba indicadas.
Türkçe (Turkish)	AT Uygunluk Beyanı, Avrupa Topluluğu Kuralları açısından: Aşağıda belirtilen cihazlar, yukarıda belirtilen AT yönetmeliklerine göre geliştirilmiş, tasarlanmış ve üretilmiştir.

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