

# HP 3PAR Command Line Interface Reference

## HP 3PAR OS 3.1.2

### **Abstract**

This reference describes the HP 3PAR Command Line Interface (CLI) commands that are used to administer and maintain the HP 3PAR storage system.



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# 1 CLI Command Syntax and Conventions

This chapter describes the command syntax for the HP 3PAR OS CLI commands listed in this reference. General control commands that do not follow the syntax rules are also listed as well as glob-style patterns.

## Syntax and Conventions

Most CLI commands use the following syntax.

```
[cmd [subcmd] [options [arg]]... [<spec>...] [<pattern>...]
```

Table 1 (page 11) Lists all syntax elements and provides their meanings:

**Table 1 CLI Command Syntax**

Element	Meaning
cmd	Specifies an operation to be executed, such as create, move, or show .
subcmd	Specifies a subcommand. Subcommands specify actions for commands to be executed.
options	Indicates an optional command line element such as histch -rw .
arg	Indicates a specific variable of an option or subcommand. The argument is often used to identify a specific node, volume, or disk.
spec	Indicates a specifier used with a required command line element such as the command or option.
	Specifies that only one of the command specifiers or options separated by this character can be specified at a time.
{ }	Indicates grouped elements. Do not type the braces; type only the information inside the braces.
[ ]	Indicates optional elements. Do not type the brackets; type only the information inside the brackets.
< >	Indicates user-supplied input.
...	Indicates that a specifier or an option can be used more than once in a command.

## Syntax Rules

The command syntax in the table above obeys the following rules:

- All command line elements are in lowercase letters, except where indicated in this reference.
- Subcommands immediately follow the commands they modify.
- Options, as indicated in this guide, are indicated by one or more letters, are preceded by a hyphen, and are enclosed in brackets (for example: `removealert [-a]`).
- Options follow subcommands on the command line and precede any specifier.

- An argument must directly follow the option or subcommand it is modifying and is required on the command line, unless otherwise specified (for example: `removealert -i <alert_ID>`).
- Multiple options and arguments on a command line are separated with a space.
- Specifiers follow options.
- User supplied input is identified by angled brackets (< >).
- Unless noted otherwise, valid character formats include alphanumeric characters, periods, dashes, and underscores. In general, the following length limits are enforced by the HP 3PAR OS CLI:
  - virtual volume name ≤ 31 characters
  - Thinly Provisioned Virtual Volume (TPVV) name ≤ 31 characters
  - virtual copy names ≤ 31 characters
  - logical disk name ≤ 31 characters
  - host name ≤ 31 characters
  - Common Provisioning Group (CPG) name ≤ 31 characters
  - template name ≤ 31 characters
  - domain name ≤ 31 characters
  - snapshot name ≤ 31 characters
  - user name ≤ 31 characters
  - system name ≤ 31 characters

## Glob-Style Pattern

Several of the commands in this reference allow a pattern to be specified to refine the output of the commands. The patterns are used to match against a string. Strings are typically names such as host or virtual volume names. For example, in the `showhost host_name|pattern...` command, a pattern can be specified to refine the command output for a string of host names matching the specified pattern.

The `pattern` specifier, as used in the CLI commands, is specified in the form of a glob-style pattern. Glob-style matching in the CLI is implemented by Tcl. A glob-style pattern consists of the symbols in the following table.

Symbol	Explanation of Action
*	Matches any sequence of characters in a string, including a null string.
?	Matches any single character in a string.
[chars]	Matches any character in the set given by chars. A range of chars can be specified using a dash (-). For example, [a-z] represents all the ASCII characters from a through z.
\x	Matches the single character x.

The following actions are practical examples of the glob-style pattern in use:

Example	Explanation of Action
*	Shows all names.
[a]*	Matches all names beginning with the letter a.
[a-z]x*	Matches any character a-z in the first character position and "x" in the second position, followed by any character "*" .

**NOTE:** Brackets ( [ ] ) are significant in Tcl and must be escaped using a backslash ( \ ) or enclosed in braces ( { } ). Other characters such as star ( \* ) are significant in most shells and must be escaped or quoted if running CLI commands from the shell.

## Numbering Formats

```
# clihelp sub,number
```

sub,number - explain the use of number format in commands.

Integer values may be specified in following formats in CLI commands:

- decimal - decimal is base-10 number system and uses the digits 0 to 9.
- octal - octal is base-8 number system. It uses the digits 0 to 7. The first character of the operand is 0 (For example: 010).
- hexadecimal - hexadecimal is base-16 number system. It uses 0-9 to represent values zero to nine, and a, A, b, B, c, C, d, D, e, E, f, F to represent values ten to fifteen. The first two characters of the operand are 0x or 0X (For example: 0x100).

## Object Sets

```
# clihelp sub,objectsets
```

sub,objectsets - Using object sets with commands

Object sets provide a convenient method of grouping logically connected objects together. For example all host members of an ESX cluster could be grouped together into an esxhosts host set, while the common VVs exported to them might be in a esxexports VV set.

Sets are referred to in commands with the set: prefix. For example, to export the esxexports VV set to the esxhosts host set you could do: `createvln set:esxexports 1 set:esxhosts` which would export the VVs sequentially from LUN 1 onward to the hosts in the esxhosts set. Any hosts that were later added to the host set would also automatically be able to see these VVs.

As well as support for host and VV sets the system currently supports domain sets. Only a host is able to be a member of a domain set, which allows it to have VVs from all domains that are a member of the domain set exported to it. This allows VVs under separate administrative control to all be centrally backed up, for example.

Set members are ordered according to when they were added. This affects vv set exports and when they are used for `createvvcopy`.

Not all commands support object sets in their parameters; those that do indicate that they will take a set parameter in the command description. Examples of commands with set support are: `createhost`, `createvln`, `createsv`, `createvvcopy`, `movetodomain`, `removevln`.

## Regular Expressions Patterns

Patterns are specified as regular expressions. The `clihelp -sub regexpat` command describes regular expressions in further detail:

`sub, regexpat` - Using regular expression (regex) pattern matching

Regular expression patterns are used to match against strings. In the CLI the strings are usually descriptive text such as help text or event message strings. See the Tcl `re_syntax` documentation for detailed help; this help text is only a summary.

Regular expressions are one or more branches separated by `|`, matching any string that matches any of the branches.

A branch is zero or more quantified atoms concatenated, and it matches a match for the first quantified atom, followed by a match of the second quantified atom and so on. An empty branch matches an empty string.

A quantified atom is an atom followed by an optional quantifier.

Quantifiers are:

`*` 0 or more matches of the atom

`+` 1 or more matches of the atom

`?` exactly one match of the atom

`{m}` exactly `m` matches of the atom

`{m,}` `m` or more matches of the atom

`{m,n}` `m` through `n` (inclusive) matches of the atom

`*? +? ?? {m}? {m,}? {m,n}?`

Match the same possibilities as above but prefer the smallest number instead of the largest number of matches.

`m` and `n` are unsigned decimal integers from 0 through 255 inclusive.

Atoms are:

`(re)` Where `re` is any regexp, matches a match for `re`

`()` Matches an empty string

`[chars]` A bracket expression, usually matches a single character in the list, or if the list begins with `^` matches a single character not in the list. The chars may be a range specified, for example, as `a-z`, or `0-9`.  
See detailed Tcl `re_syntax` help on bracket expressions.

`.` Matches any single character.

`\k` Matches the non-alphanumeric character `k`.

`\c` If `c` is alphanumeric, matches an escape (see Tcl `re_syntax` help)

`{` When followed by a character other than a digit, matches `{`, otherwise it is a quantifier as described above.

`x` Without any other significance, matches the character `x`.

Note that `[` and `]` are significant in Tcl and must be escaped using `\` or enclosed in `{}`. Other characters, such as `*`, are significant in most shells and must be escaped or quoted if running CLI commands from another shell.

## Provisioning

```
# clihelp sub,provisioning
```

`sub,provisioning` - explain how the virtual volume is provisioned

Each virtual volume has the user space and snapshot space. The user space of the volume can be provisioned from a CPG. The snapshot space of the volume can also be allocated from a CPG.

For a virtual volume with user space that is provisioned from a CPG, `"createvv"`, `"growvv"`, and `"tunevv"` commands should be used to create, grow, and tune the volume.

For a virtual volume with user space that is not provisioned from a CPG, "createaldv", "growaldv", and "tunealdv" commands should be used instead.

To determine whether or not the user space of the virtual volume is provisioned from a CPG, use the "showvv -cpgalloc" command.

The following table displays the type of the virtual volume (It is the "Type" column of "showvv" output) and its corresponding CLI commands for creating, growing, and tuning:

Snapshot Space User Space	No	Not from a CPG	From a CPG
Full Provisioned, not from a CPG	Base - createaldv - growaldv - tunealdv	Base - createaldvUser Space - growaldv - tunealdv	Base, cpvv - createaldvUser Space - growaldv - tunealdv
Full Provisioned, from a CPG	Base - creatvv - growvv - tunevv	Base - creatvv - growvv - tunevv	Base, cpvv - creatvv - growvv - tunevv
Thin Provision	N/A	N/A	Base, tppv - creatppv, creatvv - growppv, growvv - tuneppv, tunevv

## VV Name Patterns

```
# clihelp sub,vvnamepat
```

sub,vvnamepat - patterns supported for VV names

Some commands allow the use of VV name patterns to indicate the destination virtual volume name(s) for the command. These patterns are expanded based upon information such as the source virtual volume, allowing a single pattern string to represent a group of different VVs. The following patterns are supported:

- @count@ - The current count of VVs created.
- @vvname@ - The name of the current volume being snapshot.

In addition the following date/time related patterns are supported where it makes sense (not when the destination should already exist, but when we are creating a new volume):

- @a@ - Abbreviated weekday name (Mon, Tue, etc.).
- @A@ - Full weekday name (Monday, Tuesday, etc.).
- @b@ - Abbreviated month name (Jan, Feb, etc.).
- @B@ - Full month name.
- @C@ - First two digits of the four-digit year (19 or 20).
- @d@ - Day of month (01 - 31).
- @e@ - Day of month (1 - 31), no leading zeros.
- @g@ - The ISO8601 year number corresponding to the ISO8601 week (%V), expressed as a two-digit year-of-the-century, with leading zero if necessary.

- @G@ - The ISO8601 year number corresponding to the ISO8601 week (%V), expressed as a four-digit number.
- @h@ - Abbreviated month name.
- @H@ - Hour in 24-hour format (00 - 23).
- @I@ - Hour in 12-hour format (01 - 12).
- @j@ - Day of year (001 - 366).
- @k@ - Hour in 24-hour format, without leading zeros (0 - 23)..
- @l@ - Hour in 12-hour format, without leading zeros (1 - 12).
- @m@ - Month number (01 - 12).
- @M@ - Minute (00 - 59).
- @p@ - AM/PM indicator.
- @s@ - Count of seconds since the epoch, expressed as a decimal integer.
- @S@ - Seconds (00 - 59).
- @u@ - Weekday number (Monday = 1, Sunday = 7).
- @U@ - Week of year (00 - 52), Sunday is the first day of the week.
- @V@ - Week of year according to ISO-8601 rules. Week 1 of a given year is the week containing 4 January.
- @w@ - Weekday number (Sunday = 0, Saturday = 6).
- @W@ - Week of year (00 - 52), Monday is the first day of the week.
- @y@ - Year without century (00 - 99)
- @Y@ - Year with century (e.g. 1990)
- @Z@ - Time zone name.

## Filename Conventions for Windows®

If a filename with an absolute or relative path is typed on the command line, there are no problems with backslashes: `cli -pwf C:\password\system1 ...`

If a filename is entered for a command using the CLI shell, a Tcl application, then each backslash must be doubled:

```
cli% setpassword -saveonly -file C:\\password\\system1\\browse_user1
```

If using the Windows® shell prompt, use:

```
C:\Users\w_user> setpassword -saveonly -file
C:\password\system1\browse_user1
```

## Typical Command Layout in this Book

Typical CLI reference pages are formatted similarly as the examples that follow:

### COMMAND NAME

The section heading includes the name of the CLI command.

### DESCRIPTION

This section describes the use or purpose of the command.



## AUTHORITY

This section defines the user access required within the HP 3PAR Storage System to use the command.

## SUBCOMMANDS

This section indicates any necessary subcommands required to complete the use of the command.

## SYNTAX

See [Section \(page 11\)](#).

## OPTIONS

This section lists the available options you can use in conjunction with the command for varied results. Some options and their specifiers are required, as indicated in the syntax, whereas some are provided to increase the level and functionality of your output.

## SPECIFIERS

Specifies a suggested input required by the user.

## RESTRICTIONS

This section includes any restrictions that must be followed in order to achieve maximum results.

## EXAMPLES

This section lists sample output with results similar to what you should expect when running the command and its available options.

## NOTES

Any pertinent information about the command that might help increase understanding and reliability is often provided in the Notes section.

## Global Options and Environment Variables

Several options and environment variables are available at the global level. For complete information about these, refer to the *HP 3PAR OS CLI Administrator's Manual*.

## Exit Status

Except where noted, the following codes are returned indicating success or failure for each individual command:

- 0 indicates that the command was successful.
- 1 indicates that the command failed.

Note that these exit status codes only indicate the execution status of the command itself. The results of individual CLI commands should be determined from the command output. For example, if you issue the `addsnmpmgr` command with an invalid IP address, the command output returns `Invalid IP address` and an SNMP manager is not added; however, the exit status is 0 (successful) because the command itself was successfully executed, even though the intended result of the command (adding an SNMP manager) was not achieved.

## 2 Commands Quick Reference

The HP 3PAR Command Line Interface provides a host of commands allowing you to administer your HP 3PAR storage system. To facilitate your navigation through this manual, this section provides an overview of the commands grouped by functionality.

### Adaptive Optimization (AO) Commands

Command	Description	Authority	For Details See
createaocfg	Creates an AO configuration.	Super, Edit	"createaocfg" (page 105)
removeaocfg	Removes specified AO configurations from the system.	Super, Edit	"removeaocfg" (page 230)
setaocfg	Updates an AO configuration.	Super, Edit	"setaocfg" (page 272)
showaocfg	Shows AO configurations in the system.	Any role in the system.	"showaocfg" (page 352)

### Control Commands

Command	Description	Authority	For Details See
controlencryption	Controls data encryption.	Super Any role granted to the encryption_control right Super, Service (for status subcommand only) Any role granted to the encryption_status right	"controlencryption" (page 79)

# Disk Enclosure Management Commands

## Drive Cage Management

Command	Description	Authority	For Details See
locatecage	Locates a particular drive cage.	Super, Service <sup>1</sup> Any role granted the cage_locate right.	"locatecage" (page 206)
setcage	Sets parameters for a drive cage.	Super, Service <sup>1</sup> Any role granted the cage_set right.	"setcage" (page 280)
showcage	Displays drive cage information.	Any role in the system.	"showcage" (page 361)

<sup>1</sup> You need access to all domains in order to run this command.

## Physical Disk Management

Command	Description	Authority	For Details See
admitpd	Admits one or all physical disks to enable their use.	Super, Service <sup>1</sup> Any role granted the pd_admit right.	"admitpd" (page 46)
checkpd	Executes surface scans on physical disks.	Super, Service <sup>1</sup> Any role granted the pd_check right.	"checkpd" (page 63)
controlpd	Spins physical disks up or down.	Super, Service <sup>1</sup> Any role granted the pd_control right.	"controlpd" (page 85)
dismisspd	Dismisses one or more physical disks from use.	Super, Service <sup>1</sup> Any role granted the pd_dismiss right.	"dismisspd" (page 164)
setpd	Marks physical disks as allocatable for logical disks.	Super, Service <sup>1</sup>	"setpd" (page 311)
showpd	Displays physical disks in the system.	Any role in the system.	"showpd" (page 420)

<sup>1</sup> You need access to all domains in order to run this command.

## Domain Management Commands

Command	Description	Authority	For Details See
changedomain	Changes the currentdomain CLI environment parameter.	Any role in the system.	"changedomain" (page 56)
createdomain	Shows a list of domains on the system.	Super <sup>1</sup> Any role granted the domain_create right.	"createdomain" (page 115)

Command	Description	Authority	For Details See
createdomainset	Defines a new set of domains and provides the option of assigning one or more domains to that set.	Super Any role granted the domainset_create right.	"createdomainset" (page 116)
movetodomain	Moves objects from one domain to another.	Super, Edit <sup>1</sup> Any role granted the domain_moveto right.	"movetodomain" (page 223)
removedomain	Removes an existing domain from the system.	Super, Edit <sup>1</sup>	"removedomain" (page 233)
removedomainset	Removes a domain set or removes domains from an existing set.	Super, Edit Any role granted the domainset_remove right.	"removedomainset" (page 234)
setdomain	Sets the parameters and modifies the properties of a domain.	Super <sup>1</sup> Any role granted the domain_set right.	"setdomain" (page 293)
setdomainset	Sets the parameters and modifies the properties of a domain set.	Super, Edit Any role granted the domainset_set right.	"setdomainset" (page 295)
showdomain	Displays the list of domains on a system.	Any role in the system.	"showdomain" (page 374)
showdomainset	Displays the domain sets defined on the HP 3PAR Storage System and their members.	Any role in the system.	"showdomainset" (page 376)

<sup>1</sup> You need access to all domains in order to run this command.

## Health and Alert Management Commands

### Alerts

Command	Description	Authority	For Details See
removealert	Removes one or more alerts.	Super, Service <sup>1</sup> Any role granted the alert_remove right.	"removealert" (page 228)
setalert	Sets the status of system alerts.	Super, Service <sup>1</sup> Any role granted the alert_set right.	"setalert" (page 271)
showalert	Displays system alerts.	Any role in the system.	"showalert" (page 350)

<sup>1</sup> You need access to all domains in order to run this command.

### Alert Severity Levels

**Table 2 Alert Severity Levels**

Severity	Description
Fatal	A fatal event has occurred. It is no longer possible to take remedial action.
Critical	The event is critical and requires immediate action.
Major	The event requires immediate action.

**Table 2 Alert Severity Levels** *(continued)*

Severity	Description
Minor	An event has occurred that requires action, but the situation is not yet serious.
Degraded	An aspect of performance or availability may have become degraded. You must decide if action is necessary.
Informational	The event is informational. No action is required other than acknowledging or removing the alert.

## Events

Command	Description	Authority	For Details See
showeventlog	Displays event logs.	Any role in the system.	"showeventlog" (page 381)

## System Health

Command	Description	Authority	For Details See
checkhealth	Displays the status of the system hardware and software components.	Super, Service Any role granted the health_check right.	"checkhealth" (page 57)

## Help and Utility Commands

Command	Description	Authority	For Details See
cli	Provides a means to set up your CLI session or to enter directly into a CLI shell.	Super, Edit, Browse, Service	"CLI Command" (page 72)
clihelp	Lists all commands or details for a specified command.	Super, Edit, Browse, Service	
cmore	Pages the output of commands.	Super, Edit, Browse, Service	
help	Lists all commands or details for a specified command.	Super, Edit, Browse, Service	
setclienv	Sets the CLI environment parameters.	Super, Service, Edit, Browse Any role granted the clienv_set right.	"setclienv" (page 284)
showclienv	Displays the CLI environment parameters.	Any role in the system.	"showclienv" (page 367)

## Task Management Commands

Command	Description	Authority	For Details See
canceltask	Cancels one or more tasks.	Super, Edit Any role granted the task_cancel right.	"canceltask" (page 55)
removetask	Removes information about one or more tasks and their details.	Super, Edit Any role granted the task_remove right.	"removetask" (page 251)

Command	Description	Authority	For Details See
settask	Sets the priority on a specified task.	Super, Edit Any role granted the <code>task_set</code> right.	"settask" (page 338)
showtask	Displays information about tasks.	Any role in the system.	"showtask" (page 490)
starttask	Executes commands with long running times.	Super, Service Edit Any role granted the <code>task_start</code> right.	"starttask" (page 585)
waittask	Asks the CLI to wait for a task to complete before proceeding.	Super, Service, Edit, Browse Any role granted the <code>task_wait</code> right.	"waittask" (page 665)

## LDAP Management Commands

Command	Description	Authority	For Details See
setauthparam	Sets the authentication parameters.	Super Any role granted the <code>authparam_set</code> right.	"setauthparam" (page 274)
showauthparam	Shows authentication parameters and integrates the authentication and authorization features using LDAP.	Any role in the system.	"showauthparam" (page 353)
checkpassword	Supports authentication and authorization using LDAP.	Super, Edit, Browse, Service Any role granted the <code>password_checkany</code> right can check the password of any user. Any role granted the <code>password_checkown</code> right can only check their own password.	"checkpassword" (page 61)

## Licensing Management Commands

Command	Description	Authority	For Details See
setlicense	Sets the license key.	Super, Service <sup>1</sup> Any role granted the <code>license_set</code> right.	"setlicense" (page 300)
showlicense	Displays the installed license info or key.	Any role in the system.	"showlicense" (page 405)

<sup>1</sup> You need access to all domains in order to run this command.

## Node Subsystem Management Commands

### Firmware Versions

Command	Description	Authority	For Details See
showfirmwaredb	Displays a current database of firmware levels.	Any role in the system.	"showfirmwaredb" (page 384)

## Node Date Information

Command	Description	Authority	For Details See
setdate	Sets the system time and date on all nodes.	Super, Service <sup>1</sup> Any role granted the date_set right.	"setdate" (page 291)
showdate	Displays the date and time on all system nodes.	Any role in the system.	"showdate" (page 373)

<sup>1</sup> You need access to all domains in order to run this command.

## Controller Node Properties

Command	Description	Authority	For Details See
setnode	Sets the properties of the node components such as the serial number of the power supply.	Super, Service <sup>1</sup> Any role granted the node_set right.	"setnode" (page 306)
shownode	Displays an overview of the node specific properties.	Any role in the system.	"shownode" (page 409)
shownodeenv	Displays the node's environmental status.	Any role in the system.	"shownodeenv" (page 417)

<sup>1</sup> You need access to all domains in order to run this command.

## Controller Node EEPROM Log

Command	Description	Authority	For Details See
showeeprom	Displays node EEPROM information.	Any role in the system.	"showeeprom" (page 378)

## Array and Controller Node Information

Command	Description	Authority	For Details See
locatenode	Locates a particular node component by blinking LEDs on the node.	Super, Service <sup>1</sup> Any role granted the node_locate right.	"locatenode" (page 208)
locatesys	Locates a system by blinking its LEDs.	Super, Service <sup>1</sup> Any role granted the sys_locate right.	"locatesys" (page 209)
setsys	Enables you to set system-wide parameters such as the raw space alert.	Super, Service <sup>1</sup> Any role granted the sys_set right.	"setsys" (page 333)
showsys	Displays the HP 3PAR Storage System properties, including system name, model, serial number, and system capacity.	Any role in the system.	"showsys" (page 482)

<sup>1</sup> You need access to all domains in order to run this command.

## Network Interface Configuration

Command	Description	Authority	For Details See
setnet	Sets the administration network interface configuration.	Super, Service <sup>1</sup> Any role granted the net_set right.	"setnet" (page 302)
setntp	Sets the NTP server to which the HP 3PAR Storage System synchronizes.	Super, Service <sup>1</sup> Any role granted the ntp_set right.	"setntp" (page 308)
shownet	Displays the network configuration and status.	Any role in the system.	"shownet" (page 407)

<sup>1</sup> You need access to all domains in order to run this command.

## Port Information

Command	Description	Authority	For Details See
checkport	Performs a loopback test on Fibre Channel ports.	Super, Service <sup>1</sup> Any role granted the port_check right.	"checkport" (page 65)
controlport	Controls Fibre Channel or Remote Copy ports.	Super, Service <sup>1</sup> Any role granted the port_control right. port_control	"controlport" (page 87)
controliscsiport	Used to set up the parameters and characteristics of an iSCSI port.	Super, Edit <sup>1</sup> Any role granted the port_control right.	"controliscsiport" (page 81)
showiscsisession	Shows the iSCSI active sessions per port.	Any role in the system.	"showiscsisession" (page 392)
showport	Displays system port information.	Any role in the system.	"showport" (page 440)
showportarp	Shows the ARP table for iSCSI ports in the system.	Any role in the system.	"showportarp" (page 449)
showportdev	Displays detailed information about devices on a Fibre Channel port.	Any role in the system.	"showportdev" (page 450)
showportisns	Show iSNS host information for iSCSI ports in the system.	Any role in the system.	"showportisns" (page 453)
showportlesb	Displays Link Error Status Block information about devices on a Fibre Channel port.	Any role in the system.	"showportlesb" (page 454)
showtarget	Displays unrecognized targets.	Any role in the system.	"showtarget" (page 488)
statfcoe	Shows Fibre Channel over Ethernet information.	Any role in the system.	"statfcoe" (page 596)



Command	Description	Authority	For Details See
statiscsi	Displays the iSCSI statistics.	Any role in the system.	"statiscsi" (page 598)
statiscsisession	Displays the iSCSI session statistics.	Any role in the system.	"statiscsisession" (page 600)

<sup>1</sup> You need access to all domains in order to run this command.

## Battery Management

Command	Description	Authority	For Details See
setbattery	Sets battery properties.	Super, Service <sup>1</sup> Any role granted the battery_set right.	"setbattery" (page 278)
showbattery	Displays battery status information.	Any role in the system.	"showbattery" (page 354)

<sup>1</sup> You need access to all domains in order to run this command.

## System Manager

Command	Description	Authority	For Details See
setsysmgr	Sets the system manager startup state.	Super <sup>1</sup> Any role granted the sysmgr_set right.	"setsysmgr" (page 336)
showsysmgr	Displays the system manager startup state.	Any role in the system.	"showsysmgr" (page 486)
showtoc	Displays the system table of contents summary.	Any role in the system.	"showtoc" (page 495)
showtocgen	Displays the system table of contents generation number.	Any role in the system.	"showtocgen" (page 496)

<sup>1</sup> You need access to all domains in order to run this command.

## Node Rescue

Command	Description	Authority	For Details See
startnoderescue	Initiates a node rescue, which initializes the internal node disk of the specified node to match the contents of the other node disks.	Super, Service	"startnoderescue" (page 581)

## Performance Management Commands

### Chunklet Statistics

Command	Description	Authority	For Details See
histch	Displays histogram data for individual chunklets.	Any role in the system.	"histch" (page 180)
setstatch	Sets statistics collection mode on chunklets.	Super, Edit Any role granted the statch_set right.	"setstatch" (page 331)

Command	Description	Authority	For Details See
setstatpdch	Sets statistics collection mode on physical disk chunklets.	Super, Edit Any role granted the statpdch_set right.	"setstatpdch" (page 332)
statch	Displays statistics for individual chunklets.	Any role in the system.	"statch" (page 588)

## Data Cache Memory Statistics

Command	Description	Authority	For Details See
statcmp	Displays statistics for cache memory pages.	Any role in the system.	"statcmp" (page 592)

## Node CPU Statistics

Command	Description	Authority	For Details See
statcpu	Displays statistics for CPU use.	Any role in the system.	"statcpu" (page 594)

## Logical Disk Statistics

Command	Description	Authority	For Details See
histld	Displays histogram data for logical disks.	Any role in the system.	"histld" (page 183)
statld	Displays statistics for logical disks.	Any role in the system.	"statld" (page 602)

## Link Statistics

Command	Description	Authority	For Details See
statlink	Displays statistics for links.	Any role in the system.	"statlink" (page 606)

## Physical Disk Statistics

Command	Description	Authority	For Details See
histpd	Displays histogram data for physical disks.	Any role in the system.	"histpd" (page 186)
statpd	Displays statistics for physical disks.	Any role in the system.	"statpd" (page 607)

## Port Statistics

Command	Description	Authority	For Details See
histport	Displays histogram data for Fibre Channel ports.	Any role in the system.	"histport" (page 191)
statport	Displays statistics for Fibre Channel ports.	Any role in the system.	"statport" (page 612)

## System Tuner

Command	Description	Authority	For Details See
tunepd	Displays physical disks with high service times and optionally performs load balancing.	Super, Edit Any role granted the pd_tune right.	"tunepd" (page 647)
tunesys	Analyzes disk usage and adjusts resources.	Super, Edit Any role granted the sys_tune right.	"tunesys" (page 651)

## Dynamic Optimization

Command	Description	Authority	For Details See
tunealdvv	Allows the RAID and Availability characteristics of an existing Thin Provisioned Virtual Volume to be dynamically modified. See the <i>HP 3PAR Command Line Interface Administrator's Manual</i> for a complete discussion of HP 3PAR System Tuner Software and the use of the tunealdvv command.	Super, Edit <sup>1</sup> Any role granted the vv_tune right.	"tunealdvv" (page 642)
tunetpvv	Changes the layout of a Thinly Provisioned Virtual Volume (TPVV).	Super, Edit Any role granted the vv_tune right.	"tunetpvv" (page 654)
tunevv	Changes the layout of a virtual volume.	Super, Edit Any role granted the vv_tune right.	"tunevv" (page 656)

<sup>1</sup> You need access to all domains in order to run this command.

## Virtual LUN (Export) Statistics

Command	Description	Authority	For Details See
histvlun	Displays histogram data for VLUNs.	Any role in the system.	"histvlun" (page 197)
statvlun	Displays statistics for VLUNs.	Any role in the system.	"statvlun" (page 625)

## Virtual Volume Statistics

Command	Description	Authority	For Details See
histvv	Displays histogram data for virtual volumes.	Any role in the system.	"histvv" (page 201)
statvv	Displays statistics for virtual volumes.	Any role in the system.	"statvv" (page 629)

## Remote Copy Volume Statistics

Command	Description	Authority	For Details See
histrvcv	Displays histogram data for Remote Copy volumes.	Any role in the system.	"histrvcv" (page 194)
statrcv	Displays statistics for Remote Copy volumes.	Any role in the system.	"statrcv" (page 621)

## Preserved Data Commands

Command	Description	Authority	For Details See
showpdata	Displays preserved data status.	Any role in the system.	"showpdata" (page 431)

## Replication Commands

### Physical Copy

Command	Description	Authority	For Details See
creategroupvvcopy	Creates consistent group physical copies of a list of virtual volumes.	Super, Edit Any role granted the groupvvcopy_create right.	"creategroupvvcopy" (page 119)
createvvcopy	Copies a virtual volume.	Super, Edit Any role granted the vvcopy_create right.	"createvvcopy" (page 158)
promotevvcopy	Promotes a physical copy back to a base volume.	Super, Edit Any role granted the vvcopy_promote right.	"promotevvcopy" (page 227)

### Remote Copy

**NOTE:** Functionality of HP 3PAR Remote Copy requires an HP 3PAR Remote Copy license. See the *HP 3PAR StoreServ Storage Concepts Guide* for additional information.

Command	Description	Authority	For Details See
admitrcopylink	Admits a network link for Remote Copy use.	Super, Edit Any role granted the rcopylink_admit right.	"admitrcopylink" (page 48)
admitrcopytarget	Adds a target to a Remote Copy volume group	Super, Edit Any role granted the rcopytarget_admit right.	"admitrcopytarget" (page 50)
admitrcopyvv	Admits a virtual volume to a Remote Copy volume group.	Super, Edit Any role granted the rcopyvv_admit right.	"admitrcopyvv" (page 51)
checkrclink	Performs a latency and throughput test between two connected HP 3PAR Storage Systems.	Super, Edit Any role granted the rclink_check right.	"checkrclink" (page 67)

Command	Description	Authority	For Details See
creatercopygroup	Creates a group for Remote Copy.	Super, Edit Any role granted the rcopygroup_create right.	"creatercopygroup" (page 127)
creatercopytarget	Creates a target for Remote Copy.	Super, Edit <sup>1</sup> Any role granted the rcopytarget_create right.	"creatercopytarget" (page 129)
dismissrcopylink	Dismisses a network link from Remote Copy use.	Super, Edit <sup>1</sup> Any role granted the rcopylink_dismiss right.	"dismissrcopylink" (page 165)
dismissrcopytarget	Dismisses a Remote Copy target from a Remote Copy volume group.	Super, Edit Any role granted the rcopytarget_dismiss right.	"dismissrcopytarget" (page 167)
dismissrcopyvv	Dismisses a virtual volume from a Remote Copy volume group.	Super, Edit Any role granted the rcopyvv_dismiss right.	"dismissrcopyvv" (page 168)
removercopygroup	Removes a group used for Remote Copy.	Super, Edit Any role granted the rcopygroup_remove right.	"removercopygroup" (page 240)
removercopytarget	Removes a target used for Remote Copy.	Super, Edit <sup>1</sup> Any role granted the rcopytarget_remove right.	"removercopytarget" (page 242)
setrcopygroup	Sets the volume group's policy for dealing with I/O failure and error handling, or switches the direction of a volume group.	Super, Edit Any role granted the rcopygroup_set right.	"setrcopygroup" (page 314)
setrcopytarget	Sets the Remote Copy target state.	Super, Edit <sup>1</sup> Any role granted the rcopytarget_set right.	"setrcopytarget" (page 319)
showrcopy	Displays the details of a Remote Copy configuration.	Any role in the system.	"showrcopy" (page 460)
showrctransport	Shows status and information about end-to-end transport for Remote Copy in the system.	Any role in the system.	"showrctransport" (page 464)
startrcopy	Starts a Remote Copy subsystem.	Super, Edit <sup>1</sup> Any role granted the rcopy_start right.	"startrcopy" (page 582)
startrcopygroup	Starts a Remote Copy volume group.	Super, Edit Any role granted the rcopygroup_start right.	"startrcopygroup" (page 583)
statrcopy	Displays Remote Copy statistics.	Any role in the system.	"statrcopy" (page 619)

Command	Description	Authority	For Details See
stoprcopy	Stops a Remote Copy subsystem.	Super, Edit <sup>1</sup> Any role granted the rcopy_stop right.	"stoprcopy" (page 634)
stoprcopygroup	Stops a Remote Copy volume group.	Super, Edit Any role granted the rcopygroup_stop right.	"stoprcopygroup" (page 636)
syncrcopy	Synchronizes Remote Copy volume groups.	Super, Edit Any role granted the rcopy_sync right.	"syncrcopy" (page 640)

<sup>1</sup> You need access to all domains in order to run this command.

## Virtual Copy

Command	Description	Authority	For Details See
createsv	Creates snapshot volumes.	Super, Edit Any role granted the sv_create right.	"createsv" (page 137)
creategroupsv	Creates consistent group snapshots of a list of virtual volumes.	Super, Edit Any role granted the groupsv_create right.	"creategroupsv" (page 117)
promotesv	Copies the differences of a virtual copy back to its base volume.	Super, Edit Any role granted the sv_promote right.	"promotesv" (page 225)
updatevv	Updates a snapshot virtual volume with a new snapshot.	Super, Edit Any role granted the vv_update right.	"updatevv" (page 660)

## Service Commands

### Disk Enclosure

Command	Description	Authority	For Details See
admithw	Admits new hardware into the system.	Super, Service <sup>1</sup>	"admithw" (page 44)
controlmag	Takes drives or magazines on or off loop.	Super, Service <sup>1</sup> Any role granted the mag_control right.	"controlmag" (page 83)
servicecage	Prepares a drive cage for service.	Super, Service <sup>1</sup> Any role granted the cage_service right.	"servicecage" (page 261)
servicehost	Prepares a port for host attachment.	Super, Service <sup>1</sup> Any role granted the host_service right.	"servicehost" (page 263)
servicemag	Prepares a drive magazine for service.	Super, Service <sup>1</sup>	"servicemag" (page 265)

Command	Description	Authority	For Details See
		Any role granted the mag_service right.	
upgradecage	Upgrades drive cage firmware.	Super, Service <sup>1</sup> Any role granted the cage_upgrade right.	"upgradecage" (page 662)
upgradepd	Upgrades disk firmware.	Super, Service <sup>1</sup> Any role granted the pd_upgrade right.	"upgradepd" (page 664)

<sup>1</sup> You need access to all domains in order to run this command.

## Node

Command	Description	Authority	For Details See
servicenode	Prepares a node for service.	Super, Service <sup>1</sup> Any role granted the node_service right.	"servicenode" (page 269)

<sup>1</sup> You need access to all domains in order to run this command.

## General System Maintenance

Command	Description	Authority	For Details See
shutdownnode	Shuts down an individual system node.	Super, Service <sup>1</sup> Any role granted the node_shutdown right.	"shutdownnode" (page 530)
shutdownsys	Shuts down the entire system.	Super, Service <sup>1</sup> Any role granted the sys_shutdown right.	"shutdownsys" (page 533)

<sup>1</sup> You need access to all domains in order to run this command.

## QoS Commands

Command	Description	Authority	For Details See
setqos	Creates and updates QoS rules in a system.	Super, Edit Any role granted the qos_set right can set QoS configurations.	"setqos" (page 312)
showqos	Lists the QoS rules configured in a system.	Any role in the system.	"showqos" (page 458)
statqos	Displays historical performance data reports for QoS rules	Any role in the system.	"statqos" (page 616)

## System Upgrade

Command	Description	Authority	For Details See
showpatch	Displays patches applied to a system.	Any role in the system.	"showpatch" (page 419)
showversion	Displays software versions.	Any role in the system.	"showversion" (page 502)

## SNMP Agent Commands

Command	Description	Authority	For Details See
addsnmpmgr	Adds an SNMP manager to receive trap notifications.	Super <sup>1</sup> Any role granted the snmpmgr_ad right.	"addsnmpmgr" (page 42)
checksnmp	Allows a user to send an SNMPv2 test trap to the list of managers	Super, Service Any role granted the snmp_check right	"checksnmp" (page 70)
removesnmpmgr	Removes an SNMP trap manager.	Super <sup>1</sup> Any role granted the snmpmgr_remove right.	"removesnmpmgr" (page 244)
removesnmppw	Removes an SNMP password.	Super <sup>1</sup> Any role granted the snmppw_remove right.	"removesnmppw" (page 246)
removesnmpuser	Removes an SNMP user.	Super, Service, Edit, Browse Any role granted the snmpuser_remove right.	"removesnmpuser" (page 247)
setsnmppw	Allows users to update SNMP passwords.	Super <sup>1</sup> Any role granted the snmppw_set right.	"setsnmppw" (page 326)
setsnmpmgr	Changes an SNMP manager's properties.	Super <sup>1</sup> Any role granted the snmpmgr_set right.	"setsnmpmgr" (page 324)
setsnmpuser	Sets the SNMPv3 user secret key used for generating authentication and privacy keys.	Super, Service, Edit, Browse Any role granted the snmpuser_set right.	"setsnmpuser" (page 328)
showsnmpmgr	Displays SNMP trap managers.	Any role in the system.	"showsnmpmgr" (page 473)
showsnmppw	Displays SNMP access passwords.	Any role in the system.	"showsnmppw" (page 474)
showsnmpuser	Displays information about SNMP users.	Any role in the system.	"showsnmpuser" (page 475)



<sup>1</sup> You need access to all domains in order to run this command.

## System Reporter Commands

Command	Description	Authority	For Details See
sraomoves	Shows the space that Adaptive Optimization (AO) has moved between tiers.	Any role in the system.	"sraomoves" (page 535)
srcpgspace	Displays historical space data reports for common provisioning groups (CPGs).	Any role in the system.	"srcpgspace" (page 537)
srhistld	Displays historical histogram performance data reports for logical disks.	Any role in the system.	"srhistld" (page 539)
srhistpd	Displays historical histogram data reports for physical disks.	Any role in the system.	"srhistpd" (page 542)
srhistport	Displays historical histogram performance data reports for ports.	Any role in the system.	"srhistport" (page 545)
srhistvlun	Displays historical histogram performance data reports for VLUNs.	Any role in the system.	"srhistvlun" (page 548)
srlldspace	Displays historical space data reports for logical disks (LDs).	Any role in the system.	"srlldspace" (page 551)
srpdspace	Displays historical space data reports for physical disks (PDs).	Any role in the system.	"srpdspace" (page 554)
srrgiodensity	Shows the distribution of IOP/s intensity for Logical Disk (LD) regions for a common provisioning group (CPG) or Adaptive Optimization (AO) configuration.	Any role in the system.	"srrgiodensity" (page 556)
srstatcmp	Displays historical performance data reports for cache memory.	Any role in the system.	"srstatcmp" (page 558)
srstatcpu	Displays historical performance data reports for CPUs.	Any role in the system.	"srstatcpu" (page 560)
srstatld	Displays historical performance data reports for logical disks.	Any role in the system.	"srstatld" (page 562)
srstatlink	Displays historical performance data reports for links (internode, PCI and cache memory).	Any role in the system.	"srstatlink" (page 564)
srstatpd	Displays historical performance data reports for physical disks.	Any role in the system.	"srstatpd" (page 566)

Command	Description	Authority	For Details See
srstatport	Displays historical performance data reports for ports.	Any role in the system.	"srstatport" (page 568)
srstatqos	Displays historical performance data reports for QoS rules.	Any role in the system.	"srstatqos" (page 570)
srstatvlun	Displays historical performance data reports for VLUNs.	Any role in the system.	"srstatvlun" (page 572)
srvvspace	Displays historical space data reports for virtual volumes (VVs).	Any role in the system.	"srvvspace" (page 574)

## CIM Server Commands

Command	Description	Authority	For Details See
setcim	Sets the properties of the CIM server, including options to enable or disable the SLP, HTTP and HTTPS ports for the CIM server.	Super, Service <sup>1</sup> Any role granted the <code>cim_set</code> right.	"setcim" (page 282)
showcim	Displays the CIM server setting information and status.	Any role in the system.	"showcim" (page 365)
startcim	Starts the CIM server to service CIM requests.	Super, Service <sup>1</sup> Any role granted the <code>cim_start</code> right.	"startcim" (page 579)
stopcim	Stops the CIM server from servicing CIM requests.	Super, Service <sup>1</sup> Any role granted the <code>cim_stop</code> right.	"stopcim" (page 633)

<sup>1</sup> You need access to all domains in order to run this command.

## Sparing Commands

Command	Description	Authority	For Details See
createspare	Creates spare chunklets.	Super, Service <sup>1</sup> Any role granted the <code>spare_create</code> right.	"createspare" (page 135)
movech	Moves specified chunklets.	Super, Service, Edit <sup>1</sup> Any role granted the <code>ch_move</code> right.	"movech" (page 210)
movechtospare	Moves specified chunklets to spare.	Super, Service, Edit <sup>1</sup> Any role granted the <code>ch_movetospare</code> right.	"movechtospare" (page 213)
movepd	Moves data from specified Physical Disks (PDs) to a temporary location selected by the system.	Super, Service, Edit Any role granted the <code>pd_move</code> right.	"movepd" (page 215)

Command	Description	Authority	For Details See
movepdto spare	Moves specified physical disks to spare.	Super, Service, Edit <sup>1</sup> Any role granted the pd_movetospare right.	"movepdto spare" (page 217)
moverelocpd	Moves chunklets relocated from a physical disk to another physical disk.	Super, Service <sup>1</sup> Any role granted the pd_movereloc right.	"moverelocpd" (page 219)
removespare	Removes spare chunklets.	Edit, Service <sup>1</sup> Any role granted the spare_remove right.	"removespare" (page 248)
showspare	Displays information about spare and relocated chunklets.	Any role in the system.	"showspare" (page 479)

<sup>1</sup> You need access to all domains in order to run this command.

## SSH Access Commands

Command	Description	Authority	For Details See
setsshkey	Sets the SSH public key for users enabling login without a password.	Super, Service, Edit, Browse Any role granted the sshkey_set right.	"setsshkey" (page 329)
showsshkey	Displays all SSH public keys that have been set with setsshkey.	Any role in the system.	"showsshkey" (page 481)
removesshkey	Removes a user's SSH public key.	Super, Service, Edit, Browse Any role granted the sshkey_remove right.	"removesshkey" (page 250)

## Task Schedule Commands

Command	Description	Authority	For Details See
createsched	Allows users to schedule tasks that are periodically run by the scheduler.	Super, Service Any role granted the sched_creatoright.	"createsched" (page 131)
removesched	Removes a scheduled task from the system.	Super, Service Any role granted the sched_remove right.	"removesched" (page 243)
setsched	Allows users to suspend, pause, change the schedule, change the parameters, and change the name of currently scheduled tasks.	Super, Service Any role granted the sched_set right.	"setsched" (page 322)
showsched	Displays the state of tasks currently scheduled on the system.	Super, Service Any extended role in the system.	"showsched" (page 471)

# User Management Commands

Command	Description	Authority	For Details See
createuser	Creates user accounts.	Super <sup>1</sup> Any role granted the user_create right.	"createuser" (page 149)
removeuser	Removes user accounts.	Super <sup>1</sup> Any role granted the user_remove right.	"removeuser" (page 254)
removeuserconn	Removes user connections.	Super <sup>1</sup> Any role granted the userconn_remove right.	"removeuserconn" (page 255)
setpassword	Changes your password.	Super, Edit, Service, Browse <sup>2</sup> Any role granted the password_setany right can set any user password. Any role granted the password_setown right can only set their own password.	"setpassword" (page 309)
setuser	Sets your user properties.	Super, Edit, Browse Any role granted the user_setany right can add, remove, and set default domains for any user. Any role granted the user_setown right can only set their own default domain.	"setuser" (page 341)
setuseracl	Sets your Access Control List (ACL).	Super, Edit Any role granted the useracl_set right.	"setuseracl" (page 342)
showuser	Displays user accounts.	Any role in the system.	"showuser" (page 497)
showuseracl	Displays your access control list (ACL).	Any role in the system.	"showuseracl" (page 499)
showuserconn	Displays user connections.	Any role in the system.	"showuserconn" (page 500)
showrole	Displays information about rights assigned to roles in the system.	Any role in the system.	"showrole" (page 467)

<sup>1</sup> You need access to all domains in order to run this command.

<sup>2</sup> Only the Super User can edit other user's passwords.

# Volume Management Commands

## Common Provisioning Group Management

Command	Description	Authority	For Details See
compactcpg	Consolidates logical disk space in a CPG into as few logical disks as possible, allowing unused logical disks to be removed.	Super, Edit Any role granted the cpg_compact right.	"compactcpg" (page 75)
createcpg	Creates a Common Provisioning Group (CPG).	Super, Edit <sup>1</sup> Any role granted the cpg_create right.	"createcpg" (page 110)
removecpg	Removes CPGs.	Super, Edit <sup>1</sup> Any role granted the cpg_remove right.	"removecpg" (page 231)
setcpg	Changes the properties CPGs.	Super, Edit <sup>1</sup> Any role granted the cpg_set right.	"setcpg" (page 286)
showcpg	Displays CPGs.	Any role in the system.	"showcpg" (page 368)

<sup>1</sup> You need access to all domains in order to run this command.

## Host Management

Command	Description	Authority	For Details See
createhost	Creates host and host path definitions.	Super, Edit <sup>1</sup> Any role granted the host_create right.	"createhost" (page 121)
createhostset	Creates a new set of hosts and provides the option of assigning one or more existing hosts to that set.	Super, Edit Any role granted the hostset_create right.	"createhostset" (page 123)
removehost	Removes host definitions from the system.	Super, Edit <sup>1</sup> Any role granted the host_remove right.	"removehost" (page 235)
removehostset	Removes a host set or removes hosts from an existing set.	Super, Edit Any role granted the hostset_remove right.	"removehostset" (page 237)
showhost	Displays defined hosts in the system.	Any role in the system.	"showhost" (page 386)
showhostset	Displays the host sets defined on the HP 3PAR Storage System and their members.	Any role in the system.	"showhostset" (page 389)

Command	Description	Authority	For Details See
sethost	Sets properties on existing system hosts, including options to annotate a host with descriptor information such as physical location, IP address, operating system, model, and so on.	Super, Edit <sup>1</sup> Any role granted the host_set right.	"sethost" (page 296)
sethostset	Sets the parameters and modifies the properties of a host set.	Super, Edit Any role granted the hostset_set right.	"sethostset" (page 299)

<sup>1</sup> You need access to all domains in order to run this command.

## Logical Disk Management

Command	Description	Authority	For Details See
checkld	Performs validity checks of data on logical disks.	Super, Service <sup>1</sup> Any role granted the ld_check right.	"checkld" (page 59)
compactld	Consolidates space on the logical disks.	Super, Edit Any role granted the ld_compact right.	"compactld" (page 77)
createald	Automatically creates logical disks.	Super, Edit <sup>1</sup> Any role granted the ld_create right.	"createald" (page 95)
createld	Creates logical disks.	Super, Edit <sup>1</sup> Any role granted the ld_create right.	"createld" (page 125)
removeld	Removes logical disks.	Super, Service, Edit Any role granted the ld_remove right.	"removeld" (page 238)
showld	Displays logical disks.	Any role in the system.	"showld" (page 394)
startld	Starts logical disks.	Super, Service <sup>1</sup> Any role granted the ld_start right.	"startld" (page 580)

<sup>1</sup> You need access to all domains in order to run this command.

## Space and Storage Management

Command	Description	Authority	For Details See
showblock	Displays block mapping information for virtual volumes, logical disks, and physical disks.	Any role in the system.	"showblock" (page 358)
showldch	Displays logical disk to physical disk chunklet mapping.	Any role in the system.	"showldch" (page 400)
showldmap	Displays logical disk to virtual volume mapping.	Any role in the system.	"showldmap" (page 404)

Command	Description	Authority	For Details See
showpdch	Displays the status of selected chunklets of physical disks.	Any role in the system.	"showpdch" (page 432)
showpdvv	Displays physical disk to virtual volume mapping.	Any role in the system.	"showpdvv" (page 437)
showspace	Displays estimated free space.	Any role in the system.	"showspace" (page 476)
showvmap	Displays virtual volume to logical disk mapping.	Any role in the system.	"showvmap" (page 521)
showvvpd	Displays virtual volume distribution across physical disks.	Any role in the system.	"showvvpd" (page 523)

## Template Management

Command	Description	Authority	For Details See
createtemplate	Creates templates for the creation of logical disks, virtual volumes, thinly provisioned virtual volumes, and common provisioning groups.	Super <sup>1</sup> Any role granted the <code>template_create</code> right.	"createtemplate" (page 139)
removetemplate	Removes one or more templates.	Super <sup>1</sup> Any role granted the <code>template_remove</code> right.	"removetemplate" (page 253)
settemplate	Modifies template properties.	Super <sup>1</sup> Any role granted the <code>template_set</code> right.	"settemplate" (page 339)
showtemplate	Displays existing templates.	Any role in the system.	"showtemplate" (page 494)

<sup>1</sup> You need access to all domains in order to run this command.

## Virtual Volume Management

Command	Description	Authority	For Details See
admitvv	Creates and admits remotely exported virtual volume definitions to enable the migration of these volumes.	Super Any role granted the <code>vv_admit</code> right.	"admitvv" (page 54)
checkvv	Performs validity checks of virtual volume administrative information.	Super, Service, Edit <sup>1</sup> Any role granted the <code>vv_check</code> right.	"checkvv" (page 71)
createaldvv	Automatically creates virtual volumes and their underlying logical disks.	Super, Edit <sup>1</sup> Any role granted the <code>vv_create</code> right.	"createaldvv" (page 99)
createavv	Automatically creates virtual volumes.	Super, Edit <sup>1</sup> Any role granted the <code>vv_create</code> right.	"createavv" (page 107)
createtpvv	Creates a TPVV.	Super, Edit	"createtpvv" (page 145)

Command	Description	Authority	For Details See
		Any role granted the <code>vv_create</code> right.	
<code>createvv</code>	Creates a virtual volume from logical disks.	Super, Edit <sup>1</sup> Any role granted the <code>vv_create</code> right.	" <a href="#">createvv</a> " (page 154)
<code>createvvset</code>	Defines a new set of virtual volumes provides the option of assigning one or more existing virtual volumes to that set.	Super, Edit Any role granted the <code>vvset_create</code> right.	" <a href="#">createvvset</a> " (page 162)
<code>freespace</code>	Frees SA and SD spaces from a virtual volume if they are not in use.	Super, Edit Any role granted the <code>space_free</code> right.	" <a href="#">freespace</a> " (page 170)
<code>growaldvv</code>	Automatically increases the size of a virtual volume and its underlying logical disks.	Super, Edit <sup>1</sup> Any role granted the <code>vv_grow</code> right.	" <a href="#">growaldvv</a> " (page 171)
<code>growavv</code>	Automatically increases the size of a virtual volume.	Super, Edit <sup>1</sup> Any role granted the <code>vv_grow</code> right.	" <a href="#">growavv</a> " (page 176)
<code>growtpvv</code>	Enlarges a thin provisioning virtual volume.	Super, Edit Any role granted the <code>vv_grow</code> right.	" <a href="#">growtpvv</a> " (page 178)
<code>growvv</code>	Increases the size of a virtual volume by adding logical disks.	Super, Edit <sup>1</sup> Any role granted the <code>vv_grow</code> right.	" <a href="#">growvv</a> " (page 179)
<code>importvv</code>	Migrates data from a remote LUN to the local HP 3PAR Storage System.	Super, Service, Edit Any role granted the <code>vv_import</code> right.	" <a href="#">importvv</a> " (page 204)
<code>removevv</code>	Removes virtual volumes or logical disks from common provisioning groups.	Super, Edit Any role granted the <code>basevv_remove</code> right can remove base volumes. Any role granted the <code>vvcopy_remove</code> right can remove physical volumes. Any role granted the <code>sv_remove</code> right can remove virtual copies.	" <a href="#">removevv</a> " (page 258)
<code>removevvset</code>	Removes a virtual volume set or virtual volumes from an existing set.	Super, Edit Any role granted the <code>vvset_remove</code> right.	" <a href="#">removevvset</a> " (page 260)
<code>setvv</code>	Modifies properties associated with a virtual volume.	Super, Edit Any role granted the <code>vv_set</code> right.	" <a href="#">setvv</a> " (page 344)
<code>setvvset</code>	Sets the parameters and modifies the properties of a virtual volume set.	Super, Edit Any role granted the <code>vvset_set</code> right.	" <a href="#">setvvset</a> " (page 348)



Command	Description	Authority	For Details See
showrsv	Displays information about reservation and registration of VLUNs connected on a Fibre Channel port.	Any role in the system.	"showrsv" (page 469)
showvv	Displays virtual volumes in the system.	Any role in the system.	"showvv" (page 506)
showvvcpg	Displays the virtual volume sets defined on the HP 3PAR Storage System and their associated members.	Any role in the system.	"showvvcpg" (page 519)
showvvset	Displays the virtual volume sets defined on the HP 3PAR Storage System and their members.	Any role in the system.	"showvvset" (page 527)
startvv	Starts virtual volumes.	Super, Service <sup>1</sup> Any role granted the <code>vv_start</code> right.	"startvv" (page 586)
updatesnapSPACE	Starts a task to update the actual snapshot space used by a virtual volume.	Super, Edit Any role granted the <code>snapSPACE_update</code> right.	"updatesnapSPACE" (page 658)

<sup>1</sup> You need access to all domains in order to run this command.

## Virtual LUN (Export) Management

Command	Description	Authority	For Details See
createvLUN	Creates a virtual volume as a SCSI LUN.	Super, Edit Any role granted the <code>vLUN_create</code> right.	"createvLUN" (page 151)
removevLUN	Removes VLUNs.	Super, Edit Any role granted the <code>vLUN_remove</code> right.	"removevLUN" (page 256)
showvLUN	Displays VLUNs in the system.	Any role in the system.	"showvLUN" (page 503)

## Web Services API (WSAPI) Commands

Command	Description	Authority	For Details See
setwsapi	Sets properties of the Web Services API server.	Super, Service Any role granted the <code>wsapi_set</code> right.	"setwsapi" (page 349)
showwsapi	Displays the WSAPI server service configuration state.	Any role in the system.	"showwsapi" (page 529)
startwsapi	Starts the WSAPI server.	Super, Service Any role granted the <code>wsapi_start</code> right.	"startwsapi" (page 587)
stopwsapi	Stops the WSAPI server.	Super, Service Any role granted the <code>wsapi_stop</code> right.	"stopwsapi" (page 638)

---

## 3 Add Command

### addsnmpmgr

#### DESCRIPTION

The `addsnmpmgr` command adds an SNMP manager to receive alert (traps) notifications.

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

#### SYNTAX

```
addsnmpmgr [options <arg>] <manager_IP>
```

#### AUTHORITY

- Super
- Any role granted the `snmpmgr_add` right.

**NOTE:** You need access to all domains in order to run this command.

#### OPTIONS

`-p <port_number>`

Specifies the port number where the SNMP manager receives traps. This option is used if the port number differs from the default of 162.

`-pw <password>`

Specifies the SNMP manager's access community string (password), using up to 32 alphanumeric characters. If unspecified, the agents send traps without an access password.

`-r <retry>`

Specifies the number of times to send a trap (`<retry>`) using an integer from 1 through 15 if the SNMP manager is not available. If not specified, the number of times a trap is sent defaults to 2.

`-snmpuser <username>`

Specifies the SNMPv3 user name using up to 31 characters. The user name must be enabled for SNMPv3 with the `createsnmpuser` command.

`-t <timeout>`

Specifies the number of seconds to wait before sending a trap (`timeout`) using an integer from 1 through 300. If not specified, the time defaults to 200 seconds.

`-version`

Integer value that specifies the SNMP version supported by the manager. Use "2" for SNMPv2 or "3" for SNMPv3. The default is "2".

#### SPECIFIERS

`<manager_IP>`

Specifies the IP address of the host where the manager runs. It must be a valid IPv4 or IPv6 address. The IPv6 address is in hexadecimal, is case insensitive, and is separated by colons. For example:

```
5de:2008:0:0abcd:0:0:161a
```

In addition, a double colon (`::`) can be used once in an address to replace multiple fields of zeros. For example:

5def:2008:0:0abcd::161a.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the addition of SNMP manager IPv4 address 123.45.67.89 with the assigned password of `alpha1`:

```
cli% addsnmpmgr -pw alpha1 123.45.67.89
```

The following example displays the addition of SNMP manager IPv6 address 5def:2008:abcd::161a with port number 9162:

```
cli% addsnmpmgr -p 9162 5def:2008:abcd::161a
```

## NOTES

- The HP 3PAR storage system does not support any form of name resolution. You must specify these IP addresses directly.
- Issue the `showsnmpmgr` command to display the list of registered SNMP managers.
- Issue the `setsnmppw` command to change the SNMP passwords.
- Issue the `removesnmppw` command to remove SNMP passwords.
- Issue the `removesnmpmgr` command to remove SNMP managers. See [“removesnmpmgr” \(page 244\)](#) for additional information.

---

## 4 Admit Commands

### admithw

#### DESCRIPTION

The `admithw` command admits new hardware into the system.

#### AUTHORITY

Super, Service

---

**NOTE:** You need access to all domains in order to run this command.

---

#### SYNTAX

`admithw [options]`

#### OPTIONS

`-checkonly`

Only performs passive checks; does not make any changes.

`-f`

If errors are encountered, the `admithw` command ignores them and continues. The messages remain displayed.

#### SPECIFIERS

None.

#### RESTRICTIONS

Access to all domains is required to run this command.

#### EXAMPLES

The following example displays a passive check of the system:

```
cli% admithw -checkonly
Checking nodes...
Checking volumes...
Checking system LDs...
Checking ports...
Checking state of disks...
Checking cabling...
Check complete.
```

#### NOTES

- The `admithw` command handles any nodes, disks, or cages that have been added into the system.
- In addition to verifying that all expected hardware is present, the `admithw` command handles all checks, including valid states, cabling, and firmware revisions.

- The `admithw` command also handles creating system logical disks while adding and rebalancing spare chunklets.
- Spares are allocated according to the algorithm specified by the Sparing Algorithm system parameter.

# admitpd

## DESCRIPTION

The `admitpd` command creates and admits physical disk definitions to enable the use of those disks.

## AUTHORITY

- Super, Service
- Any role granted the `pd_admit` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SYNTAX

```
admitpd [option] [<WWN>...]
```

## OPTIONS

`-nold`

Do not use the physical disk (as identified by the WWN specifier) for logical disk allocation. See “NOTES” for more information about the `-nold` option.

`-f`

Do not prompt for confirmation when attempting to admit disks from other systems.

## SPECIFIERS

[<WWN>...]

Indicates the World-Wide Name (WWN) of the physical disk to be admitted. If WWNs are specified, only the specified physical disk(s) are admitted. Otherwise, all available physical disks are admitted.

## RESTRICTIONS

- Access to all domains is required to run this command.
- If multiple WWNs are specified and not all can be admitted, the `admitpd` command fails.

## EXAMPLES

The following example admits physical disks in a 20-disk system:

```
cli% admitpd
20 disks admitted
```

## NOTES

- Physical disks cannot be used by the HP 3PAR operating system for storage until they are admitted into the system.
- Specify the `-nold` option when adding a physical disk to replace a failed disk, whose chunklets were moved to spare space. Specifying `-nold` prevents the allocation of the newly added physical disk and allows chunklets to be moved back to the new disk. After chunklets have been moved back to the new disk, the administrator can allow logical disks to be allocated again by issuing the `setpd` command.

- Verify the admittance of physical disk definitions by issuing the `showpd` command. See [“showpd” \(page 420\)](#).
- If no WWN is specified or if all the specified WWNs are admitted, the command succeeds. If all the specified WWNs could not be admitted, the command fails.

# admitcopylink

## DESCRIPTION

The `admitcopylink` command adds one or more links (connections) to a Remote Copy target system.

## SYNTAX

- For Remote Copy over IP (RCIP), the syntax for the `admitcopylink` command is as follows:  
`admitcopylink <target_name> <N:S:P:IP_address>...`

- For Remote Copy over Fibre Channel (RCFC), the syntax for the `admitcopylink` command is as follows:  
`admitcopylink <target_name> <N:S:P:WWN>...`

## AUTHORITY

- Super, Edit
- Any role granted the `rcopylink_admit` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

None.

## SPECIFIERS

`<target_name>`

The target name, as specified with the `creatercopytarget` command.

`<node:slot:port:IP_address>...`

Specifies the node, slot, and port of the Ethernet port on the primary system and an IP address on the target system.

`<node:slot:port:WWN>...`

Specifies the node, slot, and port of the Fibre Channel adaptor port on the primary system and a World Wide Name (WWN) address on the target system.

## RESTRICTIONS

Functionality of this command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

## EXAMPLES

The following example adds a link on `System2` (`<target_name>`), using the node, slot, and port information of node 1, slot 1, port 1 of the Ethernet port on the primary system. The IP address `193.1.2.11` specifies the address on the target system:

```
cli% admitcopylink System2 1:2:1:193.1.2.11
```

The following WWN creates an RCFC link to target `System2`, which connects to the local `5:3:2` (N:S:P) in the target system:

```
cli% admitcopylink System2 FC 5:3:2:20010002AC000060
```



## NOTES

- The transport layer (RCIP or RCFC) is set using the `creatercopytarget` command.
- This command concludes by returning a list of one or more links to be admitted.
- For IP targets this list is made up of pairs composed of the node containing the Ethernet port on the local system and an IP address of the peer port on the target system.
- For FC targets this list is made up of sets with the node, slot, and port of the FC port on the local system and WWN of the peer port on the target system.
- The specifier `<node:IP_address>` has been deprecated.

# admitrcopytarget

## DESCRIPTION

The `admitrcopytarget` command adds a target to a Remote Copy volume group.

## SYNTAX

```
admitrcopytarget <target_name> <mode> <group_name>  
[<pri_vv_name>:<sec_vv_name>] ...
```

## AUTHORITY

- Super, Edit
- Any role granted the `rcopytarget_admit` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

None.

## SPECIFIERS

`<target_name>`

Specifies the name of the target that was previously created with the `creatercopytarget` command.

`<mode>`

Specifies the mode of the target as either synchronous (`sync`) or asynchronous periodic (`periodic`).

`<group_name>`

Specifies the name of the existing Remote Copy volume group created with the `creatercopygroup` command to which the target will be added.

`[<pri_vv_name>:<sec_vv_name>] ...`

Specifies the mapping between the names of a volume in the primary group and the corresponding volume on the added target. This specifier must be included for every volume in the primary volume group. This specifier is not required only if the group contains no volumes.

## RESTRICTIONS

Functionality of this command requires the HP 3PAR Remote Copy license. Contact your local service provider for further information.

## EXAMPLES

In the following example, the `admitrcopytarget` command adds the target `target1` in synchronous mode to volume group `Group1`.

```
cli% admitrcopytarget target1 sync Group1
```

## NOTES

None.

# admitcopyvv

## DESCRIPTION

The `admitcopyvv` command adds an existing virtual volume to an existing Remote Copy volume group.

## SYNTAX

```
admitcopyvv [options] <VV_name>[:<snapname>] <group_name>  
<target_name>:<sec_VV_name>...
```

## AUTHORITY

- Super, Edit
- Any role granted the `rcopyvv_admit` right.

## OPTIONS

`-pat`

Specifies that the `<VV_name>` is treated as a glob-style pattern and that all Remote Copy volumes matching the specified pattern are admitted to the Remote Copy group. When this option is used, the `<sec_VV_name>` and `<snapname>` (if specified) are also treated as patterns. It is required that the secondary volume names and snapshot names can be derived from the local volume name by adding a prefix, suffix, or both. `<snapname>` and `<sec_VV_name>` should take the form `prefix@vvname@suffix`, where `@vvname@` resolves to the name of each volume that matches the `<VV_name>` pattern.

`-createvv`

Specifies that the secondary volumes should be created automatically.

`-nosync`

Specifies that the volume should skip the initial sync. This is for the admission of volumes that have been pre-synced with the target volume. This specifier cannot be used when starting snapshots (`<VV_name>:<snapname>`) are specified.

## SPECIFIERS

`<VV_name>`

Specifies the name of the existing virtual volume to be admitted to an existing Remote Copy volume group that was created with the `creatercopygroup` command.

`<snapname>`

An optional read-only snapshot `<snapname>` can be specified along with the virtual volume name `<VV_name>`. This snapshot is a starting snapshot. When the group is started, a full sync is not performed. Instead, for synchronous groups, the volume will synchronize deltas between `<snapname>` and the base volume. For asynchronous periodic groups, the volume will synchronize deltas between `<snapname>` and a snapshot of the base.

`<group_name>`

Specifies the name of the existing Remote Copy volume group created with the `creatercopygroup` command, to which the volume will be added.

`<sec_vv_pattern>`

Specifies the pattern that is used to create the secondary virtual volume on the target system.

`<target_name>:<sec_VV_name>`

The target name associated with this group, as set with the `creatercopygroup` command. The target is created with the `creatercopytarget` command. `<sec_VV_name>` specifies the name of the secondary volume on the target system. One `<target_name>:<sec_VV_name>` must be specified for each target of the group.

`<pattern>`

Specifies a glob-style pattern. If this specifier is not used, the `<VV_name>` specifier must be used. For more information, issue: `clihelp sub,globpat`

## RESTRICTIONS

Functionality of this command requires the HP 3PAR Remote Copy license. Contact your local service provider for more information.

## EXAMPLES

In the following example, the `admitrcopyvv` command adds the volume `vv1` to the primary volume group `Group1`. At the same time, it adds the secondary volume `vv1_remote` on the target system `System2` to the corresponding secondary volume group (`Group1.r<sys_ID>`), which was previously created when the `creatercopygroup` command was issued

```
cli% admitrcopyvv vv1 Group1 System2:vv1_remote
```

In the following example, the `admitrcopyvv` command adds all volumes beginning with `tpvv` to the primary volume group `Group1`. At the same time, it adds the secondary volumes, which are named the same as the primary virtual volumes (as specified by `@vvname@`), on the target system `System2` to the corresponding secondary volume group (`Group1.r<sys_ID>`).

```
cli% admitrcopyvv -pat tpvv* Group1 InServ2:@vvname@
```

In the following example, the `admitrcopyvv` command adds the volume `vv1` to the primary volume group `Group1`. At the same time, it creates and adds the volume `vv1.r` on the target system `InServ1_in` to the corresponding secondary volume group that was previously created when the `creatercopygroup` command was issued:

```
cli% admitrcopyvv -createvv vv1 group1 InServ1_in:vv1.r
```

In the following example, the `admitrcopyvv` command adds the volume `vv1` to the primary volume group `Group1`. At the same time, it adds the volume `vv1.r` on the target system `InServ1_in` to the corresponding secondary volume group that was previously created when the `creatercopygroup` command was issued. It also specifies that the volume should not undergo an initial synchronization when the group is started:

```
cli% admitrcopyvv -nosync vv1 Group1 InServ1_in:vv1.r
```

In the following example, the `admitrcopyvv` command adds the volume `vv1` to the primary volume group `Group1`. At the same time, it adds the volume `vv1.r` on the target system `InServ1_in` to the corresponding secondary volume group that was previously created when the `creatercopygroup` command was issued. It also specifies that the volume should be synced using `rosv_vv1` as the starting snapshot:

```
cli% admitrcopyvv vv1:rosv_vv1 Group1 InServ1_in:vv1.r
```

In the following example, the `admitrcopyvv` command adds all the volumes that start with the name `testvv` to the primary volume group `Group1`. At the same time, it adds all the volume `testvv*.r` on the target system `InServ1_in` to the corresponding secondary volume group that was previously created when the `creatercopygroup` command was issued. It also specifies that each volume should be synchronized using `rosv_testvv*` as the starting snapshot:

```
cli% admitrcopyvv -pat testvv*:rosv_@vvname@ Group1 InServ1_in:@vvname@.r
```

## NOTES

- A secondary volume mapping must be provided for each target in the group.
- The virtual volume and the Remote Copy group must be in the same domain or both in no domain.
- The `-nosync` option will skip the full synchronization of this volume after the Remote Copy group is started. On the primary system, the `showrcopy SyncStatus` will appear as `New-PreSynced`. On the secondary system, the `SyncStatus` will appear as `New`.
- When a starting snapshot is specified, any deltas between the specified snapshot and the point when the group is started will be resynced. This is done instead of a full synchronization. On the primary system the `showrcopy SyncStatus` will appear as `New-SyncFromSnap`. On the secondary system the `SyncStatus` will appear as `New`.
- If the `-nosync` option is not used and a starting snapshot is not specified, the volume will undergo a full synchronization when the group is started. The `showrcopy SyncStatus` will appear as `New` on both primary and secondary systems.
- If a group's target has the `mirror_config` policy set and the group is a primary group, then this command is mirrored to that target and the volume is added to the secondary volume group. If the policy is set and the group is a secondary, this command fails.
- For multiple target Remote Copy groups, in addition to adding the primary/secondary mapping on the target systems, the relevant mapping between the target systems will be added to the backup groups.

# admitvv

## DESCRIPTION

The `admitvv` command creates and admits remotely exported virtual volume definitions to enable the migration of these volumes. The newly created volume will have the WWN of the underlying remote volume.

## SYNTAX

```
admitvv [-domain <domain>] <vvname>:<WWN> [<vvname>:<WWN> ...]  
admitvv [-domain <domain>] <vvname>:<WWN>:<New WWN> [<vvname>:<WWN>:<New WWN>] ...
```

## AUTHORITY

- Super, Edit
- Any role granted the `vv_admit` right.

## OPTIONS

`-domain <domain>`

Creates the admitted volume in the specified domain. The default is to create it in the current domain or no domain if the current domain is not set.

## SPECIFIERS

`<vvname>`

Specifies the local name of the volume to be admitted (up to 31 characters in length).

`<WWN>`

Specifies the World Wide Name (WWN) of the remote volumes to be admitted.

`<New WWN>`

Specifies the World Wide Name (WWN) for the local copy of the remote volume. If the keyword `auto` is specified, the system automatically generates a WWN for the virtual volume.

## RESTRICTIONS

Functionality of this command requires the Peer Motion license. Contact your local service provider for more information.

## EXAMPLES

The following example admits two remote VVs that have been exported to the HP 3PAR storage system in preparation for migration:

```
cli% admitvv migvv.0:50002AC00037001A migvv.1:50002AC00047001A  
2 VVs admitted
```

## NOTES

- You need access to all domains in order to run this command.
- The volume admitted using this command can be exported to hosts but all data access to the volume will be directed to the external LUN.
- The volume admitted using this command can be imported by the HP 3PAR Storage System using the `importvv` command.

---

# 5 Cancel Command

## canceltask

### DESCRIPTION

The `canceltask` command cancels one or more tasks.

### SYNTAX

```
canceltask [option] {all|<task_ID>...}
```

### AUTHORITY

- Service, Super, Edit
- Any role granted the `task_cancel` right.

### OPTIONS

`-f`

Forces the command. The command completes the process without prompting for confirmation.

### SPECIFIERS

`all`

Cancels all active tasks. If not specified, a task ID(s) must be specified.

`<task_ID>...`

Cancels only tasks identified by their task IDs. The `<task_ID>` must be an unsigned integer from 1 through 9999. If not specified, all tasks are cancelled.

### RESTRICTIONS

None.

### EXAMPLES

The following example shows how to cancel a task using the task ID:

```
cli% canceltask 1
Are you sure you want to cancel task 1?
select q=quit y=yes n=no: y
```

### NOTES

- See the *HP 3PAR OS CLI Administrator's Manual* for additional information and examples regarding task management and task management commands.
- The `canceltask` command can return before a cancellation is completed. As a result, resources reserved for a task might not be immediately available. This can prevent actions like restarting the canceled task. Use the `waittask` command to ensure orderly completion of the cancellation before taking other actions. See "[waittask](#)" (page 665) for details.
- The `tunevv restart` command enables you to resume a canceled `tunevv` task. See "[tunevv](#)" (page 656) for more information.
- A Service user is only allowed to cancel tasks started by that specific user.

---

# 6 Change Command

## changedomain

### DESCRIPTION

The `changedomain` command changes the `currentdomain` CLI environment parameter.

### SYNTAX

```
changedomain [<domain>]
```

### AUTHORITY

Any role in the system.

### OPTIONS

None.

### SPECIFIERS

<domain>

Name of the domain to be set as the working domain for the current CLI session. If the <domain> parameter is not present or is equal to `-unset`, then the working domain is set to no current domain.

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example shows how to change the current domain Win:

```
cli% changedomain Win
```

The following examples shows two methods to unset the current domain:

```
cli% changedomain -unset  
cli% changedomain
```

### NOTES

This command is equivalent to the `setclienv currentdomain <domain>` command.



---

# 7 Check Commands

## checkhealth

### DESCRIPTION

The `checkhealth` command checks the status of system hardware and software components, and reports any issues.

---

**NOTE:** For information about system alerts, go to <http://www.hp.com/support/hpgr/3par> and select your server platform.

---

### SYNTAX

```
checkhealth [<options> | <component>]
```

### AUTHORITY

- Super, Service
- Any role granted the `health_check` right.

### OPTIONS

`-lite`

Will perform a minimal health check.

`-list`

Will list all components that will be checked.

`-quiet`

Will not display which component is currently being checked.

`-detail`

Will display detailed information regarding the status of the system.

### SPECIFIERS

`<component>`

Indicates the component to check. Use `-list` option to get the list of components.

### RESTRICTIONS

None.

### EXAMPLES

The following example displays a sample output of the `checkhealth` command:

```
cli% checkhealth
Checking alert
Checking cage
Checking date
Checking ld
Checking license
Checking network
Checking node
Checking pd
Checking pdch
Checking port
```

```

Checking rc
Checking snmp
Checking task
Checking vlun
Checking vv
Component -----Description----- Qty
Alert      New alerts                               6
Cage       Cages not on current firmware           2
Date       Date is not the same on all nodes        1
LD         LDs not mapped to a volume              3
License    Golden License.                         1
PD         PDs that are degraded or failed          2
pdch       LDs with chunklets on a remote disk      5
vlun       Hosts not connected to a port            3
vlun       Paths not reported by host agent        2

```

## NOTES

None.

# checkld

## DESCRIPTION

The `checkld` command executes consistency checks of data on logical disks in the event of an uncontrolled system shutdown and optionally repairs inconsistent logical disks.

## SYNTAX

```
checkld [options] <LD_name>...
```

Any role granted the `ld_check` right

## AUTHORITY

- Super, Service
- Any role granted the `ld_check` right

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-y|-n`

Specifies that if errors are found they are either modified so they are valid (`-y`) or left unmodified (`-n`). If not specified, errors are left unmodified (`-n`).

`-p`

Poll `sysmgr` to get `ldck` results.

`-recover <pdid:pdch>`

Attempt to recover the chunklet specified by giving physical disk (`<pdid>`) and the chunklet's position on that disk (`<pdch>`). If this option is specified, `-y` must be specified as well.

`-rs <raidset_number>`

Check only the specified RAID set.

## SPECIFIERS

`<LD_name>...`

Requests that the integrity of a specified logical disk is checked. This specifier can be repeated to execute validity checks on multiple logical disks.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The `checkld` command should not be issued for logical disks that have been started because it can return incorrect mismatches.

## EXAMPLES

The following example displays a validity check of logical disk `vv63.admn.0`:

```
cli% checkld -n vv63.adm.0
Performing a consistency check only (no repairs)
Working on ld vv63.adm.0 (955)
compare:/dev/tpddev/pd/33 0x2180000 with:/dev/tpddev/pd/11 0x2180000 1 of 1
Logical disk vv63.adm.0 Check completed, logical disk consistent
```

The following example attempts to recover chunklet 1032:10 of logical disk `vv.adm.0`, and there will be output about the progress:

```
cli% checkld -y -p -recover 1032:10 vv.adm.0
```

## NOTES

- Repairing logical disks refers to making logical disks consistent.
- Consistency for RAID-1 means that all mirrors in the set have the same data.
- Consistency for RAID-5 or RAID-6 means that parity is consistent with the data in the set.
- The `checkld -n` command can be issued at any time as it reads only from the logical disk. If this command is issued for a started logical disk, false negative errors can be reported because of the contents of the physical disks changing during I/O and the difference in mirror update time.
- The `checkld -y` command can only be issued when the logical disk is in the `not started` state.

# checkpassword

## DESCRIPTION

The `checkpassword` command prompts for the `<user>`'s password and then displays the steps the system uses to authenticate the user and determine the user's access to the system. The information includes whether the user is local to the system or authenticated and authorized based on the configuration parameters set with `setauthparam` command for use with LDAP.

## SYNTAX

```
checkpassword [<user>]
```

## AUTHORITY

- Super, Edit, Browse, Service
- Any role granted the `password_checkany` right can check the password of any user.
- Any role granted the `password_checkown` right can only check their own password.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

None.

## SPECIFIER

`<user>`

If the `<user>` parameter is not specified, then the current user is used. Only users with Super privileges with access to all domains can specify `<user>` names other than their own.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the authentication and authorization of user User1:

```
cli% checkpassword User1
password:
+ attempting authentication and authorization using system-local data
user User1 is authenticated and authorized
```

- The output of the `checkpassword` command is a series of information statements, each starting with a plus sign (+) that indicates the steps the system is using to authenticate the user and determine the privilege level.
- The last line of output shows the summary of the steps with the user either being unauthenticated or authenticated and authorized.

## NOTES

- The output of the `checkpassword` command is based on current authentication and authorization parameters and might differ from the user's actual authorization level if the

`setauthparam` command has been used to change parameters or data in the LDAP server has changed since the user last logged in.

- The `showuserconn` command can be used to verify the authorization levels assigned at login.

# checkpd

## DESCRIPTION

The `checkpd` command executes surface scans or diagnostics on physical disks.

## SYNTAX

```
checkpd scrub|diag [options <arg>] <pd_ID>...
```

## AUTHORITY

- Super, Service
- Any role granted the `pd_check` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

The following options can only be used with the `scrub` specifier:

`-ch <number>`

To scan a specific chunklet rather than the entire disk.

`-count <number>`

To scan a number of chunklets starting from `-ch`.

The following options can only be used with the `diag` specifier:

`-path <p>`

Specifies a physical disk path as `a`, `b`, `both`, or `system`.

`-test <type>`

Specifies `read`, `write`, or `verify` test diagnostics. If no type is specified, the default is `read`.

`-iosize <size>`

Specifies I/O size, valid ranges are from `1s` to `1m`. If no size is specified, the default is `128k`.

`-threads <num>`

Specifies of I/O threads, valid ranges are from `1` to `4`. If the number of threads is not specified, the default is `1`.

`-time <secs>`

Indicates the number of seconds to run, from `1` to `36000`.

`-total <size>`

Indicates total bytes to transfer per disk. If a size is not specified, the default size is `1g`.

`-retry <number>`

Specifies the total number of retries on an I/O error. If the number of retries is not specified, the default is `4`.

`-range <size>`

Limits diagnostic regions to a specified size, from `2m` to `2g`.

## SPECIFIERS

`scrub`

Scans one or more chunklets for media defects.

`diag`

Performs read, write, or verifies test diagnostics.

<pd\_ID> . . .

The ID of the physical disk to be checked. Only one pd\_ID can be specified for the “scrub” test.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, chunklet 500 on physical disk 1 is scanned for media defects:

```
cli% checkpd scrub -ch 500 1
{Tue Jul 10 17:11:26 PDT 2007} {31391} Open system device...
{Tue Jul 10 17:11:26 PDT 2007} {31391} Attach to system manager...
{Tue Jul 10 17:11:26 PDT 2007} {31391} Waiting for system manager ready...
{Tue Jul 10 17:11:26 PDT 2007} {31391} PD Scrubber 1.5 started
{Tue Jul 10 17:11:26 PDT 2007} {31391} Thread 16386 started for port 0:0:1
{Tue Jul 10 17:11:26 PDT 2007} {31391} Starting scan of pd 1 on port 0:0:1
{Tue Jul 10 17:11:27 PDT 2007} {31393} Scanning pd 1 ch 500
{Tue Jul 10 17:11:39 PDT 2007} {31393} Scan pd 1 ch 500 finished with 0 errors
{Tue Jul 10 17:11:39 PDT 2007} {31391} No media errors detected
```

## NOTES

- The <size> specifier can include a letter to indicate units:
- g = gigabytes (2<sup>30</sup>)
- t = terabytes (2<sup>40</sup>)
- p = petabytes (2<sup>50</sup>)
- m = 1048576 byte
- k = 1024 bytes
- s = 512 bytes
- I/O errors will be reported even if the eventual I/O succeeds due to retries.
- Up to 40 physical disk IDs can be specified for the diag test type.



# checkpoint

## DESCRIPTION

The `checkpoint` command performs a loopback test on Fibre Channel ports.

## SYNTAX

```
checkpoint [options <arg>] <N:S:P>
```

## AUTHORITY

Super, Service

Any role granted the `port_check` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-time <seconds_to_run>`

Specifies the number of seconds the test is to run. Use an integer from 0 to 300.

`-iter <iterations_to_run>`

Specifies the number of times the test is to run. Use an integer from 1 to 1000000.

## SPECIFIERS

`<node:slot:port>`

Specifies the port to be tested.

`node`

Specifies the node using a number from 0 through 7.

`slot`

Specifies the PCI bus slot in the specified node using a number from 0 through 5 for platforms other than the V-Class. For V-Class systems, the PCI slot number ranges from 0 through 9.

`port`

Specifies the Fibre Channel port number of the PCI card in the specified PCI bus slot using 1 through 4.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, the loopback test is performed on port 0:0:1 a total of five times:

```
cli% checkpoint -iter 5 0:0:1
Starting loopback test on port 0:0:1
Port 0:0:1 completed 5 loopback frames in 0 seconds
Passed
```

## NOTES

- When both the `-time` and `-iter` options are specified, the first limit reached terminates the program. If neither are specified, the default is 1,000 iterations. The total run time is always limited to 300 seconds even when not specified.
- The default loopback is an ELS-ECHO sent to the HBA itself.

# checkrclink

## DESCRIPTION

The `checkrclink` command performs a connectivity, latency, and throughput test between two connected HP 3PAR storage systems.

## SYNTAX

- `checkrclink startclient <N:S:P> <dest_addr> <time> [<port>]`
- `checkrclink stopclient <N:S:P>`
- `checkrclink startserver <N:S:P> [<dest_addr>] [<port>]`
- `checkrclink stopserver <N:S:P>`
- `checkrclink portconn <N:S:P>`

## AUTHORITY

- Super, Service
- Any role granted the `rclink_check` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

`startclient`

Starts the link test.

`stopclient`

Stops the link test.

`startserver`

Starts the system.

`stopserver`

Stops the system.

`portconn`

Uses the Cisco Discovery Protocol Reporter to show display information about devices that are connected to network ports. Requires CDP to be enabled on the router.

The `checkrclink` test must be performed in two stages. For more information, see **NOTES**.

## OPTIONS

None.

## SPECIFIERS

`<N:S:P>`

Specifies the interface from which to check the link, expressed as `node:slot:port`.

`<dest_addr>`

Specifies the address of the target system (for example, the IP address).

`<time>`

Specifies the test duration in seconds.

`[<port>]`

Specifies the port on which to run the test. If this specifier is not used, the test automatically runs on port 3492.

## RESTRICTIONS

The Remote Copy ports must be configured via the `controlport` command before this test can be carried out; however, this test can be performed before links are admitted into the Remote Copy target system.

## EXAMPLES

The following example displays a 60-second latency and throughput check of SystemA to SystemB:

```
SystemB# checkrlink startserver 0:6:1 10.100.33.63

SystemA# checkrlink startclient 2:5:1 10.100.10.10 60
.
.
.
=====
TEST SUMMARY from 0:0:1 -> 10.100.18.164
Test Started:      Wed Aug 10 10:34:15 PST 2011
Test Finished:    Wed Aug 10 10:34:26 PST 2011
=====

Latency:                0.104 ms
Lost pings:              0 %
Through-put:            522 Mbits/second
Max MTU:                 1500
Tx TCP Segs:            486675
Rx TCP Segs:            199271
TCP retrans:            0 %
Errored Segs:           0 %

Link 2:5:1 is SUITABLE for Remote Copy Use

SystemB# checkrlink stopserver
```

## NOTES

- Do not check the links if CPU usage is already close to 100%. The link check temporarily increases CPU usage.
- This test must be performed in two stages. To run a test between SystemA and SystemB:
  - a. Start the system on SystemB, specifying the `<N:S:P>` for SystemB and the `<dest_addr>` for SystemA.

```
# checkrlink startserver <N:S:P> <dest_addr>
```

If you are running the `checkrlink` test on RCFC links, note the IP address displayed in the output.

- b. Start the client on the target system (SystemA), specifying the `<N:S:P>` for SystemA; the `<dest_addr>` for SystemB (as an IP address for both RCIP and RCFC links); and the duration of the test in seconds.

```
# checkrlink startclient <N:S:P> <dest_addr> <time>
```

- c. (Optional) To end the test before it completes, on SystemA enter:

```
# checkrlink stopclient
```

- d. After the test is complete, on SystemB enter:

```
# checkrlink stopserver
```

# checksnmp

## DESCRIPTION

The `checksnmp` command allows a user to send an SNMPv2 test trap to the list of managers as specified in `showsnmpmgr`.

## SYNTAX

```
checksnmp
```

## AUTHORITY

Super, Service

Any role granted the `snmp_check` right

## OPTIONS

None

## SPECIFIERS

None

## RESTRICTIONS

None

## EXAMPLES

The following example shows the case when there are SNMP managers configured. The trap destinations are displayed in the format `<ip address>:<port>`.

```
cli% checksnmp
Trap sent to the following managers:
192.168.17.10:162
192.168.17.111:1000
```

The following example shows the case when there are no SNMP managers configured.

```
cli% checksnmp
Cannot send test trap as no manager exists
```

# checkvv

## DESCRIPTION

The `checkvv` command executes validity checks of virtual volume administration information in the event of an uncontrolled system shutdown and optionally repairs corrupted virtual volumes.

## SYNTAX

```
checkvv [options] <VV_name>...
```

## AUTHORITY

- Super, Service
- Any role that is granted the `vv_check` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-y|-n`

Specifies that if errors are found they are either modified so they are valid (`-y`) or left unmodified (`-n`). If not specified, errors are left unmodified (`-n`).

`-offline`

Specifies that virtual volumes specified by `<VV_name>` be offlined before validating the virtual volume administration information. The entire VV tree will be offlined if this option is specified.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<VV_name>...`

Requests that the integrity of the specified virtual volume is checked. This specifier can be repeated to execute validity checks on multiple virtual volumes.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The `checkvv` command cannot be issued for virtual volumes that have been started.

## EXAMPLES

The following example offlines and fixes virtual volume `test1`:

```
cli% checkvv -y -offline test1
```

## NOTES

None.

---

# 8 CLI Command

## cli

### DESCRIPTION

The `cli` command provides a means to set up your CLI session or to enter directly into a CLI shell.

### SYNTAX

```
cli [options] [<commands>]
```

### AUTHORITY

Super, Edit, Browse, Service

### OPTIONS

`-v`

Displays the CLI client version.

`-b`

Displays the CLI client build level.

`-h`

Displays help for the `cli` command.

`-tpdportnum <portnum>`

Specifies the TCP port of the CLI server to which the CLI client connects. The default SSL port number is 5783; the default unsecured port number is 5782.

`-sockssl`

Use SSL for a socket connection. SSL can be used when either this option is used or the `TPDSOCKSSL` environment variable has been set.

`-sys <sysname>`

Connect to system named `<sysname>`. When this option is not used, the CLI uses the value of the `TPDSYSNAME` environment variable. When the `TPDSYSNAME` environment variable is not set, the CLI prompts you for the system name.

`-pwf <passwdfile>`

Specifies the password file that contains the user name and encrypted password. If this option is not used, check the `TPDPWFIL` environment variable for the password filename. If the environment variable is not set, the CLI prompts you for the user name and password.

`-user <user_name>`

Specifies a user name to access the CLI. If used, this option must be issued with the `-password` option and overrides the `-pwf` option.

`-password <encrpw>`

Specifies an encrypted password to access the CLI. If used, this option must be issued with the `-user` option and overrides the `-pwf` option.

`-cmdloop`

Specifies that after commands are issued on the command line, an interactive command loop is entered.

`-hafter <nlines>`

Prints a header after `<nlines>` of data.



`-nohdtot`

Does not print header and totals.

`-csvtable`

Prints table data as Comma Separated Values (CSV).

`-listdom <domain_name>`

Indicates the domain associated with the storage server.

`-clientname <client_name>`

Sets name of the client application.

`-clientver <client_version>`

Sets version of the client application.

`-clienthost <client_host>`

Sets name of the host the client application runs on.

`--conntimeout <seconds>`

The maximum time in seconds to establish the connection to the CLI server. It defaults to 36 seconds if not set.

## SPECIFIERS

[<command>]

Any CLI command. This specifier is not required when issuing the `cli` command. If commands are specified, the CLI exits after executing the commands unless the `-cmdloop` option is specified. If no commands are specified in the command line, CLI enters the command loop.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the CLI client version:

```
$ cli -v
CLI client version: 3.1.2
```

The following example accesses the `system1` storage system:

```
$ cli -sys system1
```

The following example authenticates with `user1` and password `pw2`:

```
$ cli -user user1 -password pw2
```

The following example places the CLI in an interactive command loop:

```
$ cli -cmdloop
```

## NOTES

- If the `cli` command is issued without any arguments, you are placed in a CLI shell. After commands are issued, the CLI exits unless the `-cmdloop` option was specified.
- Multiple commands can be entered by quoting a semicolon separator: `cli showdate ";" showversion`

## ENVIRONMENT VARIABLES

TPDSOCKSSL

If set, use an SSL socket TPDNOSOCKSSL If set, do not use an SSL socket

TPDNOSOCKSSL

If set, do not use an SSL socket

TPDSYSNAME

System to connect to. Overridden by `-sys` option

TPDPWFILE

Password file containing username and password Overridden by `-pwf` option

TPDCACHEDIR

Directory in which to cache the client bytecode

TPDSTARTFILE

File containing code that is executed before any command line commands are executed or the interactive command loop is entered. This file normally contains customization scripts

TPDHAFTER

Number of lines after which the header is printed again. Overridden by the `-hafter` option

TPDNOHDTOT

If set, do not print headers and totals T

PDCSVTABLE

If set, print table data as comma separated values (CSV)

TPDLISTDOM

If set, include domain column where relevant

TPDCLIENTNAME

Client application name. Overridden by `-clientname` option

TPDCLIENTVER

Client application version. Overridden by `-clientver` option.

TPDCLIENTHOST

The host the client application runs on. Overridden by `-clienthost` option.

TPDCONNTIMEOUT

The maximum time in seconds to establish the connection to the CLI server. Overridden by `-conntimeout` option. It defaults to 36 seconds if not set.

TPDFORCE

If set, do not ask for confirmation

---

# 9 Compact Commands

## compactcpg

### DESCRIPTION

The `compactcpg` command consolidates logical disk space in Common Provisioning Groups (CPGs) into as few logical disks as possible, allowing unused logical disks to be removed and their space reclaimed.

### SYNTAX

```
compactcpg [options] <CPG_name>...  
compactcpg -pat [options] <pattern>...
```

### AUTHORITY

- Super, Edit
- Any role granted the `cpg_compact` right.

### OPTIONS

`-pat`

Compacts CPGs that match any of the specified patterns.

`-waittask`

Waits for any created tasks to complete.

`-trimonly`

Removes unused logical disks after consolidating the space. This option will not perform any region moves.

`-dr`

Specifies that the operation is a dry run, and the tasks will not actually be performed.

`-f`

Does not ask for confirmation before compacting the logical disks. Unless the `-f` option is specified, the command asks for confirmation before compacting each CPG.

### SPECIFIERS

`<pattern>...`

Specifies a glob-style pattern. This specifier can be repeated to compact multiple CPGs. If this specifier is not used, the `<CPG_name>` specifier must be used. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

`<CPG_name>...`

Specifies the name of the CPG. Multiple CPGs can be specified.

### RESTRICTIONS

None.

## EXAMPLES

The following example shows how to compact a single CPG named `testcpg` and remove any unused logical disks after consolidating the space:

```
cli% compactcpg -trimonly testcpg
Are you sure you want to compact CPG 'testcpg' ?
select q=quit y=yes n=no: y
Task 612 started
```

## NOTES

- Logical disks that are consolidated must have the same owner and backup nodes.
- If one logical disk exists with a different owner and backup node, that logical disk will be compacted individually.

# compactld

## DESCRIPTION

The `compactld` command consolidates space on the logical disks.

## SYNTAX

```
compactld [options <arg>] <LD_name>...|<pattern>...
```

## AUTHORITY

- Super, Edit
- Any role granted the `ld_compact` right.

## OPTIONS

`-pat`

Compacts the logical disks that match any of the specified patterns.

`-cons`

This option consolidates regions onto the fewest possible logical disks. When this option is not specified, the regions of each logical disk will be compacted within the same logical disk.

`-waittask`

Waits for any created tasks to complete.

`-taskname <taskname>`

Specifies a name for the task. When not specified, a default name is chosen.

`-dr`

Specifies that the operation is a dry run, and the tasks will not actually be performed.

`-f`

Does not ask for confirmation before compacting the logical disks. Unless the `-f` option is specified, the command asks for confirmation before compacting each logical disk.

`-trimonly`

Only unused logical disk space is removed. Regions are not moved.

## SPECIFIERS

`<LD_name>...`

Specifies the name of the logical disk to be compacted. Multiple logical disks can be specified.

`<pattern>...`

Specifies a glob-style pattern. This specifier can be repeated to compact multiple logical disks. If this specifier is not used, the `<LD_name>` specifier must be used. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

## RESTRICTIONS

None.

## EXAMPLES

In the following example, logical disk `pds1d0.0` is compacted:

```
cli% compactld -f pds1d0.0
Compacting LDs:
  pds1d0.0
```

## NOTES

None.

---

# 10 Control Commands

## controlencryption

### DESCRIPTION

The controlencryption provides various commands to control data encryption.

### SYNTAX

The syntax for the controlencryption command can be one of the following examples:

- `controlencryption backup <filename>`
- `controlencryption restore <filename>`
- `controlencryption enable <filename>`
- `controlencryption rekey <filename>`
- `controlencryption status [options]`

### AUTHORITY

- Super
- Any role granted to the `encryption_control` right
- Super, Service (for status subcommand only)
- Any role granted to the `encryption_status` right

---

**NOTE:** You need access to all domains in order to run this command.

---

### SUBCOMMANDS

`backup`

Specifies to backup the keystore.

`restore`

Specifies to restore the keystore.

`enable`

Specifies to enable encryption.

`rekey`

Specifies to rekey the Self Encrypting Drives (SEDs).

`status`

Specifies to list the current encryption status.

### OPTION

`-d`

Provides details on the encryption status.

### SPECIFIERS

`<filename>`

Specifies the name of the file in which to place the backup or the source of the file to restore.

## EXAMPLES

The following example backs up the keystore to file backup1:

```
cli% controlencryption backup backup1
```

The following example restores the keystore from file backup1:

```
cli% controlencryption restore backup1
```

## NOTES

The keystore **MUST** be backed up to prevent total loss of data. A password must be supplied (twice) on backup. The same password must be supplied on restore. For enable and rekey, there must be no failed disks.

Because the backup needs to be stored off the nodes, all subcommands other than status need to be executed using a version of the CLI running on a remote system.

The Data Encryption license is required to use the `enable` subcommand. Also all disks must be SED.

The Data Encryption license is required to use the `enable` subcommand. Also all disks must be SED. If the state shows `recovery_needed`, the `enable` or last `rekey` subcommand failed. Re-issue the operation to fix this state.



# controliscsiport

## DESCRIPTION

The controliscsiport command is used to set properties of an iSCSI port.

## SYNTAX

The syntax for the controliscsiport command can be one of the following examples:

- controliscsiport addr <IP\_address> <netmask> [-f] <node:slot:port>
- controliscsiport gw <gw\_address> [-f] <node:slot:port>
- controliscsiport mtu <mtusz\_bytes> [-f] <node:slot:port>
- controliscsiport dhcp on|off [-f] <node:slot:port>
- controliscsiport isns <isns\_port> [-f] <node:slot:port>
- controliscsiport isnsport <isns\_port> [-f] <node:slot:port>
- controliscsiport delete [-f] <node:slot:port>
- controliscsiport ping [<count>] <ipaddr> <node:slot:port>

## AUTHORITY

- Super, Edit
- Any role granted the port\_control right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

addr

Sets the IP address and netmask of the iSCSI port.

gw

Sets the gateway address of the iSCSI port.

mtu

Sets the maximum transmission unit (MTU) size for the iSCSI port.

dhcp

Sets whether or not (on or off) the iSCSI target should use the DHCP to obtain its IP addresses.

isns

Sets the iSNS server IP address.

isnsport

Sets the TCP port number for the iSNS server. By default, the default iSNS port number is used.

delete

Deletes the iSCSI port configuration.

ping

Pings the specified IP address a specified number of times from the iSCSI port.

## OPTION

-f

Do not ask for confirmation. The default is to ask for confirmation.

## SPECIFIERS

<IP\_address>

Indicates the IP address of the iSCSI target.

<netmask>

Indicates the IP netmask of the iSCSI target.

<gw\_address>

Indicates the IP address of the gateway.

<mtusz\_bytes>

Indicates the MTU size in bytes.

<isns\_primary>

Indicates the IP address of the primary iSNS server.

<isns\_secondary>

Indicates the IP address of the secondary iSNS server.

<isns\_port>

Returns the TCP port number of the iSNS server. The default port number is 3205.

<count>

Indicates the number of ping packets to send. If a value is specified, it should be an integer from 1 through 64. If a value is not specified, the default is one packet.

<node:slot:port>

The physical location of the iSCSI target port.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, iSCSI port configuration is deleted:

```
cli% controliscsiport delete -f 104.64.98.1
```

## NOTES

None.

# controlmag

## DESCRIPTION

The `controlmag` command takes drive magazines, or disk drives within a magazine, either on loop or off loop. Use this command when replacing a drive magazine or disk drive within a drive magazine.

## SYNTAX

```
controlmag offloop|onloop [options] <drive_cage_name> <magazine>
```

## AUTHORITY

- Super, Service
- Any role granted the `mag_control` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

`offloop|onloop`

Specifies that the specified drive magazine or disk drive is either taken off loop or brought back on loop.

## OPTIONS

`-disk <disk_number>`

Specifies that the operation is performed on the disk as determined by its position within the drive magazine. If not specified, the operation is performed on the entire drive magazine.

`-port a|b|both`

Specifies that the operation is performed on port A, port B, or both A and B. If not specified, the operation is performed on both ports A and B.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<drive_cage_name>`

Specifies the name of the drive cage. Drive cage information can be viewed by issuing the `showcage` command.

`<magazine>`

Specifies the drive magazine number within the drive cage. Valid formats are `<drive_cage_number>.<drive_magazine>` or `<drive_magazine>` (for example `1.3` or `3`, respectively).

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example requests that drive magazine 1 in drive cage cage0 be put on loop:

```
cli% controlmag onloop cage0 1
```

## NOTES

Taking a drive magazine off-loop has the following consequences:

- Relocation of chunklets.
- Affected logical disks are put into write-through mode.
- Momentary dip in throughput, but no loss of connectivity.

# controlpd

## DESCRIPTION

The `controlpd` command spins a physical disk up or down. This command is used when replacing a physical disk in a drive magazine.

- △ **CAUTION:** Issuing the `controlpd` command puts the specified disk drive in a not ready state. Furthermore, if this command is issued with the `spindown` subcommand, data on the specified drive becomes inaccessible.

## SYNTAX

```
controlpd spinup|spindown [options] <WWN>...
```

## AUTHORITY

- Super, Service
- Any role granted the `pd_control` right.

**NOTE:** You need access to all domains in order to run this command.

## SUBCOMMANDS

`spinup`

Specifies that the physical disk is to spin up. If this subcommand is not used, then the `spindown` subcommand must be used.

`spindown`

Specifies that the physical disk is to spin down. If this subcommand is not used, then the `spinup` subcommand must be used.

## OPTIONS

`-ovrd`

Specifies that the operation is forced, even if the physical disk is in use.

## SPECIFIERS

`<WWN>...`

Specifies the World Wide Name (WWN) of the physical disk. This specifier can be repeated to identify multiple physical disks.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The spin down operation cannot be performed on a physical disk that is in use unless the `-ovrd` option is used.

## EXAMPLES

The following example instigates the spin-up of a physical disk identified by its WWN of 2000000087002078:

```
cli% controlpd spinup 2000000087002078
```

## NOTES

Issuing the `controlpd` command puts the specified disk drive in a `not ready` state. Furthermore, if this command is issued with the `spindown` subcommand, data on the specified drive becomes inaccessible.

# controlport

## DESCRIPTION

The `controlport` command controls all aspects of a Fibre Channel or Remote Copy port, including the port's connection type and data rate.

## SYNTAX

The syntax for the `controlport` command can be one of the following:

- `controlport config <connmode> [-ct <ctval>] [-unique_nwwn enable|disable] [-f] <node:slot:port>...`
- `controlport rst [-m <mode>|-l|-i] [-f] <node:slot:port>...`
- `controlport offline <node:slot:port>`
- `controlport failover <node:slot:port>`
- `controlport failback <node:slot:port>`
- `controlport lip [-c <cagename>] [-f] <node:slot:port>...`
- `controlport login <portwwn> [-f] <node:slot:port>...`
- `controlport logout <portwwn> [-f] <node:slot:port>...`
- `controlport ct <ctval> [-f] <node:slot:port>...` (deprecated usage)
- `controlport cl2 <cl2val> [-f] <node:slot:port>...` (deprecated usage)
- `controlport rate <rateval> [-f] <node:slot:port>...`
- `controlport label <port_label> [-f] <node:slot:port>...`
- `controlport vcn <vcnval> [-f] <node:slot:port>...`
- `controlport nssync [-f] <node:slot:port>...`
- `controlport intcoal <intcoalval> [-f] <node:slot:port>...`
- `controlport rcip addr [-f] <IP_address> <netmask> <node:slot:port>...`
- `controlport rcip gw [-f] <gateway_address> <node:slot:port>...`
- `controlport rcip delete [-f] <node:slot:port>...`
- `controlport rcip mtu <MTU_size> <node:slot:port>...`
- `controlport rcip state up|down [-f] <node:slot:port>...`
- `controlport rcip speed <value> half|full <node:slot:port>...`
- `controlport rcip speed auto <node:slot:port>...`
- `controlport rcip ping [-c <count>|-w <wait>|-s <size>|-pf] <IP_address> <node:slot:port>...`
- `controlport rcfc init [-f] <node:slot:port>`
- `controlport rcfc delete [-f] <node:slot:port>`

## AUTHORITY

- Super, Service
- Any role granted the `port_control` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

### `config`

Sets the specified connection mode and type on FC ports. Also allows setting the unique node WWN option for the port. When `unique_nwwn` is enabled, the port presents a unique node name on the connection and this is needed by certain initiators such as ONTAP. This command is also used to configure the mode of a CNA port.

### `rst`

Resets a port. This subcommand is not applicable to RCIP ports.

### `offline`

Holds the specified port offline indefinitely. Issue `controlport rst` to bring the port back online.

### `failover`

Fails the specified port over to a failover partner port using the persistent ports mechanism, if a valid partner port is present.

### `failback`

Reverts an port failover using the persistent ports mechanism, if port failover is currently active. The failed-over port should be specified with this command.

### `lip`

Specifies that a Loop Initialization Primitive (LIP) command is issued from the port if there is a private loop topology. If the `-c` option is specified, then the LIP command is issued through the specified drive cage. If there is a point-to-point topology, then the link is reset. If there is a public loop or fabric topology, then a Registered State Change Notification is issued to the fabric controller. If the `-portwwn` option is specified, then a selective LIP or RSCN is issued to the specified attached port.

### `login`

Performs Fibre Channel login to an attached port, identified by port WWN.

### `logout`

Performs Fibre Channel logout from an attached port, identified by port WWN.

### `ct`

Sets the connection type. The specified port will be reset. See ["SPECIFIERS"](#) for parameters required to issue this subcommand. This option has been deprecated and will be removed in a subsequent release.

### `c12`

Specifies the Fibre Channel Class-2 parameter of the port. The specified port will be reset. See ["SPECIFIERS"](#) for parameters required to issue this subcommand. This option is deprecated and will be removed in a subsequent release.

### `rate`

Specifies the data rate of the Fibre Channel port. The specified port will be reset. See ["SPECIFIERS"](#) for parameters required to issue this subcommand.

### `label`

Associates a human-readable label with the port. This subcommand is not supported with RCIP ports.

### `vcn`

Sets the VLUN Change Notification (VCN) generation support (`enable` or `disable`). When VCN generation support is enabled with a public loop or fabric topology, a Registered State Change Notification (RSCN) message is issued to the fabric controller whenever a VLUN is created or removed. In addition, if enabled with a public loop topology, a Loop Initialization Primitive (LIP)



is issued from the port whenever a VLUN is created or removed. See “SPECIFIERS” for additional information on parameters required to issue this subcommand.

`nssync`

Verifies current port database against the Name Server when a fabric is attached. Entries present in the database but missing from the Name Server are removed. Using this command is not required under normal circumstances.

`rcip addr`

Sets the Remote Copy interface to use the specified IP address and netmask. See “SPECIFIERS” for parameters required to issue this subcommand.

`rcip gw`

Sets the gateway for one or more Remote Copy interfaces. Only for RCIP ports. See “SPECIFIERS” for parameters required to issue this subcommand.

`rcip delete`

Deletes the configuration for one or more specified Remote Copy interfaces. See “SPECIFIERS” for parameters required to issue this subcommand.

`rcip mtu`

Sets the Maximum Transfer Unit (MTU) size for the specified Remote Copy interface(s), overriding the default of 1500. The largest supported value is 9000 and the smallest is 100. Only for RCIP ports. See “SPECIFIERS” for parameters required to issue this subcommand.

`rcip state up|down`

Sets the specified Remote Copy interface(s) as either up or down. Only for RCIP ports. See “SPECIFIERS” for parameters required to issue this subcommand.

`rcip speed`

Instructs the specified Remote Copy interface(s) to use the specified speed and duplex, or to auto negotiate speed and duplex. The default is `auto`. Only for RCIP ports. See “SPECIFIERS” for parameters required to issue this subcommand.

`rcip ping`

Performs a ping from the specified interface to the specified address. Only for RCIP ports. See “SPECIFIERS” for parameters required to issue this subcommand. Use with the `-pf` option to prevent fragmentation of packets (see “SPECIFIERS”). Permitted for Super, Service, Browse, and Edit users.

`rcfc init`

Sets the specified Remote Copy interface(s) on the local port. Only for RCFC ports.

`rcfc delete`

Deletes the configuration for the Remote Copy interface on the local port. This will bring the interfaces down.

`intcoal`

Enables or disables interrupt coalescing. The specified port will be reset. See “SPECIFIERS” for parameters required to issue this subcommand.

## OPTIONS

`-ct`

Sets the connection type. The specified port will be reset.

`-unique_nwwn enable|disable`

Enable or disable the use of a unique node WWN on the specified port.

`-m <mode>`

This option can only be used with the `rst` subcommand. Resets the mode of the port. The port can be reset into a `target` or `initiator` mode. If not specified, the port is reset to its current mode. If the port's mode change value is prohibited, this command fails when attempting to reset to a different mode. Use `showport -c` to see whether mode change is allowed or prohibited for a particular port. See notes at the bottom of this section for additional information regarding port pair protection.

This option is deprecated and will soon be removed in a later release. Use `controlport config` to set `target` (host) or `initiator` (disk) modes.

---

△ **CAUTION:** The cable(s) must be disconnected from the port before resetting the mode to `target` or `initiator`.

**CAUTION:** Use caution when changing modes for ports in LSI Fibre Channel adapters. Changing the mode of one port in a pair (for example, from `initiator` to `target`) causes the other port in the pair to also undergo a mode change. In the case where one port in the pair is offline (and therefore a mode change can be allowed), but the partner port is online, changing the mode of the offline port causes the online partner port to undergo mode change as well. This results in loss of use of the partner port because it is no longer online.

---

`-l`

Forces the port to reload firmware. This option can only be used with the `rst` subcommand and cannot be used with the `-i` option.

---

△ **CAUTION:** Issuing the `controlport rst -l` command affects both ports of a port pair. Only use this command when irreversible damage has been done to a port or port pair. For more information about ports in your system, issue the `showport -i` command (see [“showport” \(page 440\)](#)).

---

`-c`

When used with the Loop Initialization Primitive (LIP) subcommand:

`-c <cage_name>`

If using a private loop topology, a Loop Initialization Primitive (LIP) command is issued from the port. If a cage is specified using the `<cage_name>` argument, the LIP is issued through the cage controller.

- If using a point-to-point topology, the link is reset.
- If using a public loop or fabric topology, a Registered State Change Notification (RSCN) message is issued to the fabric controller.

When used with the `rcip ping` subcommand:

`-c <count>`

Specifies the number of replies accepted by the system before terminating the command. The default is 1; the maximum value is 25.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-i`

Forces a mode change for a port even if the port's mode change value is prohibited. The partner port's mode is changed with this option as well. Use with the `controlport rst` or `controlport persona` commands. This option cannot be used with the `-l` option.

`-w <wait>`

Specifies the maximum amount of time to wait for replies. The default is the number of requested replies plus 5. The maximum value is 30. If a number is not specified, the option can only be used with the `rcip ping` subcommand.

`-s <size>`

Specifies the packet size. If no size is specified, the option defaults to 64. This option and argument can only be used with the `rcip ping` subcommand.

`-pf`

Prevents packet fragmentation when issuing the `controlport rcip ping` command. This option can only be used with the `rcip ping` subcommand.

`-portwwn <wwn>`

Specifies the Fibre Channel worldwide port name of an attached device for which selective LIP reset will be performed.

## SPECIFIERS

`<connmode>`

Specifies whether the port is used for a disk, host, peer, Remote Copy over Fibre Channel (`rcfc`), or iSCSI (`iscsi`), or Fibre Channel over Ethernet (`fcoe`) connection. This specifier must be used when issuing the `config` subcommand.

`<ctval>`

Specifies the connection parameter of the port. Parameters can be `loop` or `point`. The `loop` parameter sets the port to arbitrated loop mode, the `point` parameter sets the port to point-to-point mode. This specifier must be provided when issuing the `ct` subcommand.

`<c12val>`

Specifies the Fibre Channel Class-2 parameter of the port. Parameters can be one of `ack0`, `ack1`, or `disable`. This specifier must be provided when issuing the `c12` subcommand.

`<rateval>`

Specifies the data rate of the Fibre Channel port. Rates can be one of `1`, `2`, `4`, or `auto`. `1` sets the data rate to 1 GBps, `2` sets the data rate to 2 GBps, and `4` sets the data rate to 4 GBps. The `auto` parameter sets the port to autodetect the data rate. This specifier must be used when issuing the `rate` subcommand.

`<port_label>`

Specifies the value of the port label. The port label value is a human-readable string used for easy identification of the port.

`<vcnval>`

Specifies the value of the VCN. The VCN value can be set as `enable` or `disable`. This specifier must be used when issuing the `vcn` subcommand.

`<impval>`

Specifies the IMP port attribute. The IMP value can be set as `enable` or `disable`. This specifier must be used when issuing the `imp` subcommand.

`<intcoalval>`

Specifies if interrupt coalescing is enabled or disabled. The value can be set as `enable` or `disable`. This specifier must be used with the `intcoal` subcommand.

`<node:slot:port>`

Specifies the port to be controlled.

`node`

Specifies the node using a number between 0 and 7.

`slot`

Specifies the PCI bus slot in the specified node using a number between 0 and 5.

port

Specifies the Fibre Channel port number of the PCI card in the specified PCI bus slot using 1 through 4.

<IP\_address>

Specifies the IP address for a Remote Copy interface.

<gateway\_address>

Specifies the gateway address for a Remote Copy interface.

<netmask>

Specifies the netmask for a Remote Copy interface.

<MTU\_size>

Specifies the MTU size for a Remote Copy interface using an integer from 100 to 9000. If no integer is specified, the value defaults to 1500.

<speed> half|full

Use only with the `rcipspeed` subcommand. Specifies the speed setting (10, 100, or 1000) and duplex setting (half or full) for a Remote Copy interface. In addition to this specifier, you must also specify an interface using `<node:slot:port>`. If no speed or duplex settings are specified, or if you specify `auto` with the `rcipspeed` subcommand, the system auto-negotiates the speed and duplex.

<portwwn>

Specifies the Fibre Channel worldwide port name of an attached port. This specifier is used with the `login` and `logout` subcommands.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The `-m <mode>` option for the `rst` subcommand cannot be specified if there are active connections already using the port (that is the port online) except as noted in the following section under port pair protection.
- Port pair protection:
  - For dual-port LSI Fibre Channel adapters, both ports in the pair must use the same mode (initiator or target).
  - For quad-port LSI Fibre Channel adapters, each ports pair (ports 1 and 2, ports 3 and 4) must use the same mode.
  - Changing the mode of one port in a pair (for example, from initiator to target) causes the other port in the pair to undergo a mode change as well.

**△ CAUTION:** Use caution when changing modes for ports in LSI Fibre Channel adapters. Changing the mode of one port in a pair (for example, from initiator to target) causes the other port in the pair to undergo a mode change. In the case where one port in the pair is offline (and therefore a mode change can be allowed), but the partner port is online, changing the mode of the offline port causes the online partner port to undergo a mode change as well. This results in loss of use of the partner port because it is no longer online.

- If there are active hosts or physical disks when issuing the `controlport rst` or `offline` commands, a warning is returned and you are prompted for confirmation to complete the execution of the commands.
- When issuing the `controlport ct`, `cl2`, `rate`, `persona`, or `rscn` commands, if there are active disks on the port, an error is returned. If there are active hosts on the port, the `-f`

option is overridden (if specified), a warning is returned, and you are prompted for confirmation to complete the execution of the commands.

- The `controlport rcip addr` command is only allowed for node/slot/port combinations where there is an interface installed.

## EXAMPLES

The following example shows how to increase MTU to 9000 on Gigabit Ethernet port 1 in node 6, slot 3:

```
cli% controlport rcip mtu 9000 6:3:1
Remote Copy change successful.
```

The following example shows how to set Remote Copy interface 172.16.1.11 on a Gigabit Ethernet port 1 in node 6, slot 3 using a netmask of 255.255.255.0:

```
cli% controlport rcip addr 172.16.1.11 255.255.255.0 6:3:1
Are you sure you want to change the address for 6:3:1?
select q=quit y=yes n=no: y
Remote Copy interface change successful.
```

The following example shows how to set the gateway for Gigabit Ethernet port 1 in node 6, slot 3 using a gateway address of 172.16.1.1:

```
cli% controlport rcip gw 172.16.1.1 6:3:1
Are you sure you want to change the gateway for 6:3:1?
select q=quit y=yes n=no: y
Remote Copy interface change successful.
```

The following examples show usage of `controlport config`:

```
controlport config host -ct point 1:3:1
controlport config host -unique_nwn enable 1:2:3
controlport config rcfc 0:0:1
controlport config disk 2:2:2
controlport config iscsi 1:8:1
controlport config peer -ct point 1:5:1
```

## NOTES

- The `ct`, `cl2`, or `rate` subcommands automatically resets the port for the changes to take effect.
- Issue the `showport` command with either the `-i` or `-par` options to verify the success of the `controlport` command. See “[controlport](#)” (page 87).
- Resetting a port causes a momentary dip in throughput, but no loss of connectivity.
- The `-f` option forces the operation. Without the flag, the command prompts for confirmation. In some cases, unless the `TPDFORCE_OVERRIDE` environment variable is set, the command asks for confirmation even when the `-f` option is specified because the operation might disrupt the system operation.
- Use caution when changing modes for ports in LSI Fibre Channel adapters. Changing the mode of one port in a pair (for example, from initiator to target) causes the other port in the pair to also undergo a mode change. In the case where one port in the pair is offline (and therefore a mode change can be allowed), but the partner port is online, changing the mode

of the offline port causes the online partner port to undergo mode change as well. This results in loss of use of the partner port because it is no longer online.

- Issuing the `controlport rst -1` command affects both ports of a port pair. Only use this command when irreversible damage has been done to a port or port pair.
- When issuing the `controlport cl2` or `vcn` commands, if the port is configured as peer connection mode, an error is returned.
- If specified, `<ctval>` will depend on the `<connmode>` value:
- If `<connmode>` is `disk`, then `<ctval>` can only be `loop`
- If `<connmode>` is `rcfc`, then `<ctval>` can only be `point`
- If `<connmode>` is `host`, then `<ctval>` can be either `loop` or `point`
- if `<connmode>` is `peer`, then `<ctval>` can only be `point`.

# 11 Create Commands

## createald

### DESCRIPTION

This command was deprecated in the 2.2.3 release and will be changed or removed in a future release.

The `createald` command creates disks with automatic chunklet allocation for the disks.

### SYNTAX

```
createald [options] <LD_name> <size> [g|G|t|T]
```

### AUTHORITY

- Super, Service, Edit
- Any role that is granted the `ld_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-templ <template_name>`

Use the options defined in `template <tname>`. The template is created using the `createtemplate` command. Options specified in the template are read-only or read/write. The read/write options may be overridden with new options at the time of their creation, but read-only options may not be overridden at creation time. Options not explicitly specified in the template take their default values, and all of these options are either read-only or read/write ( using the `-nro` or `-nrw` options of the `createtemplate` command).

`-t <RAID_type>`

Specifies the RAID type of the logical disk: `r0` for RAID-0, `r1` for RAID-1 or `r5` for RAID-5, or `r6` for RAID-6. If no RAID type is specified, the default is `r1`.

`-ssz <size_number_chunklet>`

Specifies the set size in terms of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row using an integer from 1 through 2147483647. If not specified, no row limit is imposed. The default is no limit.

`-ss <size_KB>`

Specifies the step size from 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. The default value depends on raid type and device type used. If no value is entered and FC or NL drives are used, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. If SSD drives are used, the step size defaults to 32 KB for RAID-0, RAID-1 and RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (`mag`). This option has no meaning for RAID-0.

`-ch first|last`

Specifies the chunklet location preference characteristics, either `first` (attempt to use the lowest numbered available chunklets) or `last` (attempt to use the highest numbered available chunklets). If no argument is specified, the default characteristic is `first`.

`-p <pattern>`

Specifies a pattern for disks. Patterns are used to select disks that are used for creating logical disks. If no pattern is specified, the option defaults to all Fibre Channel (FC) disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks matching the pattern. The `-devtype` pattern cannot be used to mix Near Line (NL), FC, and Solid State Drive (SSD) drives.

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`item`). Multiple nodes are separated with a single comma (`1, 2, 3`). A range of nodes is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified node number(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`item`). Multiple slots are separated with a single comma (`1, 2, 3`). A range of slots is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified PCI slot number(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`item`). Multiple ports are separated with a single comma (`1, 2, 3`). A range of ports is separated with a hyphen (`0-4`). The primary path of the disks must be on the specified port number(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (`item`). Multiple drive cages are separated with a single comma (`1, 2, 3`). A range of drive cages is separated with a hyphen (`0-3`). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The `1.` or `0.` displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (`item`). Multiple drive magazines are separated with a single comma (`1, 2, 3`). A range of drive magazines is separated with a hyphen (`0-7`). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (`item`). Multiple disk positions are separated with a single comma (`1, 2, 3`). A range of disk positions is separated with a hyphen (`0-3`). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (`item`). Multiple disks are separated with a single comma (`1, 2, 3`). A range of disks is separated with a hyphen (`0-3`). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid`, and `-devtype` are used to limit the disks that are used to create LDs based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that PDs with total chunklets greater than the number specified are selected.



`-tc_lt <number>`

Specifies that PDs with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that PDs with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that PDs with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that PDs identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <device_type>`

Specifies that PDs must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

`-domain <domain>`

Specifies the domain. The default is to create logical disk(s) in the current domain, or no domain if the current domain is not set.

`-wait <secs>`

If the `createald` command fails due to the lack of clean space, the `-wait` option specifies the number of seconds to wait for the system to clean the dirty space before returning. If `-wait 0` is issued, the command returns immediately. If this option is not used, the command will keep waiting for dirty chunklets to be cleaned if enough space will be available with the dirty chunklets cleaned.

`-dr`

Specifies that the command is a dry run and that no logical disks or Virtual Volumes are created.

`-verbose on|off`

Specifies that verbose output is either enabled (`on`) or disabled (`off`). If not specified, verbose output is disabled.

`-cpsd <CPG_name>`

Specifies that the logical disk created is added to the specified Common Provisioning Group's (CPG's) snapshot data space.

`-cpsa <CPG_name>`

Specifies that the logical disk created is added to the specified CPG's snapshot administration space.

`-cpusr <CPG_name>`

Specifies that the logical disk being created is added to the specified CPG USR space.

`-force`

Specifies that a new logical disk should be created, even if an existing LD could be grown (to be used in conjunction with the `-cpsa` and `-cpsd` options).

`-listlds`

Specifies that the names of any newly created LDs should be displayed.

## SPECIFIERS

`<LD_name>`

Specifies the logical disk base name (up to 24 characters in length). The name is created by concatenating the name with an integer value - starting at zero, incrementing it by one for each logical disk generated, up to 999999. This field is required.

`<size>`

Specifies the minimum usable space in MB. Size should be an integer. An optional suffix (with no whitespace before the suffix) will modify the units to GB (`g` or `G` suffix) or TB (`t` or `T` suffix). If the size is to be taken from a template, this field should be (-).

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the creation of a 256 MB logical disk named `testld.0`:

```
cli% createald testld 256
```

## NOTES

- Verify the creation of a logical disk by issuing the `showld` command. See “[showld](#)” (page 394) for more information.
- For this command:
- MB = 1048576 bytes
- GB = 1024 MB
- TB = 1024 GB

## DESCRIPTION

This command was deprecated in the 2.2.3 release and will be changed or removed in a future release. Please use the `createvv` command in the future.

The `createaldv` command creates a virtual volume and its underlying logical disks and allows the system to automatically allocate resources to meet specified use requirements. The virtual volume and its logical disks can be created using either the listed options or by using preconfigured templates (created through the `createtemplate` command).

## SYNTAX

```
createaldv [options] <vvname> [.<index>] <size>[g|G|t|T]
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `vv_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-templ <template_name>`

Use the options defined in template `<template_name>`. The template is created using the `createtemplate` command. Options specified in the template are read-only or read/write. The read/write options may be overridden with new options at creation time but read-only options may not be overridden at the time of creation.

Options not explicitly specified in the template take their default values, and all of these options are either read-only or read/write (using the `-nro` or `-nrw` options of the `createtemplate` command). If not included, the `-size` and `-cpg` options are automatically treated as read/write even if the other not included properties are marked read-only.

`-t <RAID_type>`

Specifies the RAID type of the logical disk: `r0` for RAID-0, `r1` for RAID-1, `r5` for RAID-5, or `r6` for RAID-6. If no RAID type is specified, the default is `r1`.

`-ssz <size_number_chunklets>`

Specifies the set size in terms of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row using an integer from 1 to 2147483647. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size from 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. The default value depends on raid type and device type used. If no value is entered and FC or NL drives are used, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. If SSD drives are used, the step size defaults to 32 KB for RAID-0, RAID-1 and RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (`mag`). This option has no meaning for RAID-0.

`-ch first|last`

Specifies the chunklet location preference characteristics: either first (attempt to use the lowest numbered available chunklets) or last (attempt to use the highest numbered available chunklets). If no argument is specified, the default characteristic is `first`.

`-p <pattern>`

Specifies a pattern for disks. Patterns are used to select disks that are used for creating LDs. If no pattern is specified, the option defaults to Fibre Channel (FC) disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern. The `-devtype` pattern cannot be used to mix Near Line (NL), FC, and Solid State Drive (SSD) drives.

The following arguments can be specified as patterns for this option:

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`item`). Multiple nodes are separated with a single comma (`1, 2, 3`). A range of nodes is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified node number(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`item`). Multiple slots are separated with a single comma (`1, 2, 3`). A range of slots is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified PCI slot number(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`item`). Multiple ports are separated with a single comma (`1, 2, 3`). A range of ports is separated with a hyphen (`0-5`). The primary path of the disks must be on the specified port number(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (`item`). Multiple drive cages are separated with a single comma (`1, 2, 3`). A range of drive cages is separated with a hyphen (`0-3`). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The `1.` or `0.` displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (`item`). Multiple drive magazines are separated with a single comma (`1, 2, 3`). A range of drive magazines is separated with a hyphen (`0-7`). Disks must reside in the specified drive magazine(s).

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (`item`). Multiple disk positions are separated with a single comma (`1, 2, 3`). A range of disk positions is separated with a hyphen (`0-3`). Disks must reside in the specified position(s).

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (`item`). Multiple disks are separated with a single comma (`1, 2, 3`). A range of disks is separated with a hyphen (`0-3`). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid`, and `-devtype` are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that PDs with total chunklets greater than the number specified be selected.

`-tc_lt <number>`

Specifies that PDs with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (`FC` for Fibre Channel or `NL` for nearline, or `SSD` for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command. If it is not specified, the default device type is `FC`.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the `RPM` column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (`SSD`). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For `FC` and `NL` drives, the number corresponds to both a performance measure and actual rotational speed. For `SSD` drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example, `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

`-domain <domain>`

Specifies the domain. The default is to create it in the current domain, or no domain if the current domain is not set.

`-f`

Does not ask for confirmation before creating a RAID-0 volume.

`-wait <secs>`

If the command would fail due to the lack of clean space, the `-wait` option specifies the number of seconds to wait for the system to clean the dirty space before returning. If `-wait 0` is issued, the command returns immediately. If this option is not used, the command will keep waiting for dirty chunklets to be cleaned if enough space will be available with the dirty chunklets cleaned.

`-dr`

Specifies that the command is a dry run and that no logical disks or virtual volumes are actually created.

`-verbose on|off`

Specifies that verbose output is either enabled (`on`) or disabled (`off`). If not specified, verbose output is disabled.

`-i <ID>`

Specifies the virtual volume ID. The default will be the next available virtual volume ID.

`-cnt <count>`

Specifies the number of identical virtual volumes to create. This must be an integer from 1 to 999. If `<id>` is specified with `-i` option, it is used as the ID of the first virtual volume and incremented by 1 for each subsequent volume.

`-shared`

Specifies that the system will try to share the logical disks among the virtual volumes. This option can only be used with the `-cnt` option.

`-szs <size>[g|G|t|T]`

Specifies the size of the snapshot volume. Defaults to megabytes. Size can be optionally specified in gigabytes (with `g` or `G` suffix) or terabytes (with `t` or `T` suffix). If not specified, snapshot space is 0. This option cannot be used with the `-pct` option.

`-pct <prc>`

Specifies the size of the snapshot volume as a percentage of the user volume. If not specified, the default value is 0. This option cannot be used with the `-szs` option. If used with the `-cpg <CPG_name>` option, the percentage value is 0.

`-cpg <CPG_name>`

Provision the SD and SA space from the CPG `<CPG_name>`.

`-exp <time>[d|D|h|H]`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-comment <comment>`

Specifies any additional information up to 511 characters for the volume.

`-f`

Do not ask for confirmation before creating a volume with retention time (`-retain`).

`-retain <time>[d|D|h|H]`

Specifies the amount of time, relative to the current time, that the volume will be retained. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

---

**NOTE:** If the volume is not in any domain, then its retention time cannot exceed the value of the system's `VVRetentionTimeMax`. The default value for the system's `VVRetentionTimeMax` is 14 days. If the volume belongs to a domain, then its retention time cannot exceed the value of the domain's `VVRetentionTimeMax`, if set. The retention time cannot be removed or reduced once it is set. If the volume has its retention time set, it cannot be removed within its retention time. If both expiration time and retention time are specified, then the retention time cannot be longer than the expiration time. This option requires the HP 3PAR Virtual Lock License. Contact your local HP 3PAR Authorized Service Provider for more information.

---

`-aw <percent>`

This option was deprecated in the 2.3.1 release and will be changed or removed in a future release.

Specifies the allocation warning threshold of the CPG. When the snapshot data space of the virtual volume exceeds the specified percentage of the virtual volume size, an alert is generated.

`-al <percent>`

Specifies the allocation limit threshold of the CPG. The snapshot data space is prevented from growing beyond the specified percentage of the virtual volume size.

`-spt <sectors_per_track>`

Defines the virtual volume geometry sectors per track value that is reported to the hosts through the SCSI mode pages. The valid range is between 4 to 8192 and the default value is 304.

`-hpc <heads_per_cylinder>`

Defines the virtual volume geometry heads per cylinder value that is reported to the hosts through the SCSI mode pages. The valid range is between 1 to 255 and the default value is 8.

`-pol <pol> [, <pol>...]`

Specifies VV policies.

`stale_ss`

Specifies that invalid snapshot volumes are permitted. Failure to update snapshot data does not affect the write to the base volume, but the snapshot is considered invalid.

`no_stale_ss`

Specifies that invalid snapshot volumes are not permitted. Failure to update a snapshot is considered a failure to write to the base volume.

`one_host`

This constrains the export of a volume to one host or one host cluster (when cluster names can be used as a host name).

`no_one_host`

This policy should only be used when exporting a virtual volume to multiple hosts for use by a cluster-aware application, or when "port presents" VLUNs are used. This is the default policy setting.

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

## SPECIFIERS

`<VV_name> [.<index>]`

Specifies a VV name up to 31 characters in length. If the `-cnt` option is used, the optional decimal number `<index>` specifies the name of the first virtual volume (`<vvname>.<index>`). The `<index>` is incremented by 1 for each subsequent virtual volume. The `<index>` must be an integer from 0 to 999999. All virtual volume names have the same length constraint.

`<size> [g|G|t|T]`

Size for the user volume in MB (maximum of 16 T). The volume size is rounded up to the next multiple of 256 MB. The size should be an integer. An optional suffix (with no whitespace before the suffix) will modify the units to GB (g or G suffix) or TB (t or T suffix). If the size is to be taken from a template, this field should be "-".

## RESTRICTIONS

When creating a logical disk, all physical disks must have the same device type.

## EXAMPLES

The following example creates 3 virtual volumes `vv1.2`, `vv1.3`, `vv1.4`:

```
cli% createaldvv -cnt 3 vv1.2 1g
```

The following example creates a RAID-5 virtual volume using disks in cages 0 and 1:

```
cli% createaldvv -t r5 -p -cg 0,1 vva 1g
```

The following example creates 2 virtual volumes, `vva.0` and `vva.1` which may share logical disks:

```
cli% createaldvv -cnt 2 -shared vva 1g
```

## NOTES

For this command:

- MB = 1048576 bytes
- GB = 1024 MB
- TB = 1024 GB



# createaocfg

## DESCRIPTION

The `createaocfg` command creates an Adaptive Optimization (AO) configuration.

## AUTHORITY

Super, Edit

## SYNTAX

```
createaocfg [options <arg>] <aocfg_name>
```

## OPTIONS

`-t0cpg <cpgname>`

Specifies the Tier 0 CPG for this AO config.

`-t1cpg <cpgname>`

Specifies the Tier 1 CPG for this AO config.

`-t2cpg <cpgname>`

Specifies the Tier 2 CPG for this AO config.

`-mode <mode>`

Specifies the optimization bias for the AO configuration, which can be one of the following:

- Performance — Move more regions towards higher performance.
- Balanced — Balanced between higher performance and lower cost.
- Cost — Move more regions towards lower cost tier.

The default optimization bias mode is `Balanced`.

## SPECIFIERS

`<aocfg_name>`

Specifies an AO configuration name up to 31 characters in length.

## NOTES

- Two or more Tier CPGs must be defined.
- If domains are used, all CPGs must be in the same domain or not in any.
- A CPG can only belong to one AO configuration.
- Active use of Adaptive Optimization requires an Adaptive Optimization license. Contact your HP representative for more information.

## EXAMPLES

The following example creates a new AO configuration called `aocfg1`. The optimization bias (mode) is set to `Cost`. Tier 0 will use CPG `R1SSDcpg`, Tier 1 will use CPG `R5FCcpg` and Tier 2 will use CPG `R6NLcpg`.

```
cli% createaocfg -t0cpg R1SSDcpg -t1cpg R5FCcpg -t2cpg R6NLcpg -mode Cost aocfg1
```

The following example creates a new AO configuration called `aocfg2`. The optimization bias defaults to `Balanced`, and no Tier 1 CPG is specified.

```
cli% createaocfg -t0cpg R1SSDcpg2 -t2cpg R6NLcpg2 aocfg2
```

## DESCRIPTION

This command was deprecated in the 2.2.3 release and will be changed or removed in a future release. Please use the `createvv` command in the future.

The `createavv` command creates a virtual volume where logical disk mapping is determined by the system.

## Syntax

The syntax for the `createavv` command can be one of the following:

- `createavv [options <arg>] <VV_name> <user_LD_ID> <usersize> <adminspace_LD_ID> <adminsize> <snapspace_LD_ID> <snapsize>`
- `createavv [options <arg>] <VV_name> <user_LD_ID> <usersize>`

## AUTHORITY

- Super, Edit
- Any role that is granted the `vv_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-i <VV_ID>`

Specifies the ID of the virtual volume. If not specified, the next available virtual volume ID is assigned by the system.

`-verbose on|off`

Specifies that verbose output is either enabled (`on`) or disabled (`off`). The default is `off`.

`-dr`

Specifies that the command is a dry run and that no virtual volumes are actually created.

`-cpg <CPG_name>`

Specifies that the snapshot data space and snapshot administration space are provisioned from the indicated CPG (`<CPG_name>`). If this option is used, the `<adminspace_LD_ID>`, `<adminsize>`, `<snapspace_LDs>`, and `<snapsize>` specifiers cannot be used.

`-aw <percent>`

Specifies the percentage of used snapshot data space that when reached, results in a warning alert. To disable the warning, enter 0.

`-al <percent>`

Specifies the Virtual Volume's allocation limit. The snapshot data space of the Virtual Volume is prevented from growing beyond the specified percentage of the Virtual Volume size. After reached, new writes to the volume fail.

`-spt <sectors_per_track>`

Allows you to define the Virtual Volume geometry sectors per track value that is reported to the hosts through the SCSI mode pages. The valid range is from 4 to 8192 and the default value is 304.

`-hpc <heads_per_cylinder>`

Allows you to define the Virtual Volume geometry heads per cylinder value that is reported to the hosts through the SCSI mode pages. The valid range is from 1 to 255 and the default value is 8.

`-pol no_stale_ss|stale_ss|one_host|no_one_host`

Specifies the policy (rule) that the created virtual volume follows. If an argument is not specified, the policy defaults to `stale_ss`.

`stale_ss`

Specifies that invalid snapshot volumes are permitted. Failure to update snapshot data does not affect the write to the base volume. However, the snapshot is considered invalid.

`no_stale_ss`

Specifies that invalid snapshot volumes are not permitted. A failure to update a snapshot is considered a failure to write to the base volume.

`one_host`

This constrains the export of a volume to one host or one host cluster (when cluster names can be used as a host name).

`no_one_host`

This policy should only be used when exporting a Virtual Volume to multiple hosts for use by a cluster-aware application, or when port presents VLUNs are used. This is the default policy setting.

## SPECIFIERS

`<VV_name>`

Specifies the virtual volume name, using up to 31 characters. This option and argument are required on the command line.

`<user_LD_ID>`

Specifies the logical disks to be used as user space. The logical disks are identified by one or more integers (*item*). Integers can be provided as single number (1), a comma separated list of numbers (1, 2, 3), or a range of numbers separated with a dash (1-4).

`<usersize>`

Specifies the size of the user space in megabytes.

`<admins LD_ID>`

Specifies the logical disks to be used as snapshot administrator space. The logical disks are identified by one or more integers (*item*). Integers can be provided as single number (1), a comma separated list of numbers (1, 2, 3), or a range of numbers separated with a dash (1-4).

`<admins size>`

Specifies the size of the snapshot administrator space in megabytes.

`<snap LD_ID>`

Specifies the logical disks to be used as snapshot data space. The logical disks are identified by one or more integers (*item*). Integers can be provided as single number (1), a comma separated list of numbers (1, 2, 3), or a range of numbers separated with a dash (1-4).

`<snap size>`

Specifies the size of snapshot data space in megabytes.

`<nb>`

Specifies an integer.

`<item>, <item>`

Specifies the list of items.

`<item>-<item>`

Specifies a range of items.

## RESTRICTIONS

- Logical disks must be available to run the `createavv` command. Issue the `createald` command to create logical disks. See “[createald](#)” (page 95) for more information.
- The `<adminspace_LD_ID>`, `<adminsize>`, `<snapspace_LD_ID>`, and `<snapsize>` specifiers cannot be used if the `createavv -cpg` command is issued.

## EXAMPLES

The following example displays the creation of Virtual Volume `vv0` with its user space set to 256 MB and its administrator space set to 256 MB:

```
cli% createavv vv0 0 256 1 256 2 256
```

## NOTES

- Verify the creation of virtual volumes by issuing the `showvv` command. See “[showvv](#)” (page 506) for more information.
- A newly created logical disk is guaranteed to be clean. Chunklets of logical disks that are removed are cleaned before they are reused. However, regions of a logical disk that were previously used (for example, by another Virtual Volume) can contain data from its previous use. If these regions of the logical disk are mapped to your user space in a Virtual Volume, that data can be visible to the host that the Virtual Volume is exported.  
If this is a concern, remove logical disks when the Virtual Volume is removed and use only newly created logical disks for your user space. Previous data in logical disks used for snapshot data space or snapshot admin space is not visible to you because these spaces are only visible after being written with new data.
- For this command: MB = 1048576 bytes.
- This command was deprecated in the 2.2.3 release and will be changed or removed in a future release.

# createcpg

## DESCRIPTION

The `createcpg` command creates a Common Provisioning Group (CPG).

## AUTHORITY

- Super, Edit
- Any role that is granted the `cpg_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SYNTAX

```
createcpg [options <arg>] CPG_name
```

## OPTIONS

`-templ <template_name>`

Use the options defined in the template `<template_name>`. The template is created using the `createtemplate` command. Options specified in the template are read-only or read/write. The read/write options may be overridden with new options at the time of their creation, but read-only options may not be overridden at creation time.

Options not explicitly specified in the template take their default values, and all of these options are either read-only or read/write (using the `-nro` or `-nrw` options of the `createtemplate` command).

`-f`

Forces the command. The command completes the process without prompting for confirmation.

`-aw <percent>`

Specifies the percentage of used snapshot administration or snapshot data space that results in a warning alert. A percent value of 0 disables the warning alert generation. The default is 0. This option is deprecated and will be removed in a subsequent release.

---

**NOTE:** The following options, `-sdgs`, `-sdgl`, and `-sdgw`, control the auto logical disk creation for the common provisioning group's snapshot data regions. Auto logical disk creation occurs when the amount of free logical disk space falls below the specified grow (enlarge) size setting options (`-sdgs`, `-sdgl`).

---

`-sdgs <size> [g|G|t|T]`

Specifies the growth increment, the amount of logical disk storage that is created on each auto-grow operation. The default and minimum growth increments vary according to the number of controller nodes in the system. If `<size>` is non-zero, it must be 8 G or bigger. The size can be specified in MB (default) or GB (using `g` or `G`) or TB (using `t` or `T`). A size of 0 disables the auto-grow feature. The following table displays the default and minimum growth increments per number of nodes:

Number of Nodes	Default	Minimum
1-2	32 GB	8 GB
3-4	64 GB	16 GB
5-6	96 GB	24 GB
7-8	128 GB	32 GB

`-sdgl <size> [g|G|t|T]`

Specifies that the auto-grow operation is limited to the specified storage amount. The storage amount can be specified in MB (default) or GB (using `g` or `G`) or TB (using `t` or `T`). A size of 0 (default) means no limit is enforced. To disable auto-grow, set the limit to 1.

`-sdgw <size> [g|G|t|T]`

Specifies that the threshold of used logical disk space, when exceeded, results in a warning alert. The size can be specified in MB (default) or GB (using `g` or `G`) or TB (using `t` or `T`). A size of 0 (default) means no warning limit is enforced. To set the warning for any used space, set the limit to 1.

`-sa <LD_name>...`

Specifies that existing logical disks are added to the CPG and are used for snapshot admin (SA) space allocation. The `<LD_name>` argument can be repeated to specify multiple logical disks. This option is deprecated and will be removed in a subsequent release.

`-sd <LD_name>...`

Specifies that existing logical disks are added to the CPG and are used for snapshot data (SD) space allocation. The `<LD_name>` argument can be repeated to specify multiple logical disks. This option is deprecated and will be removed in a subsequent release.

---

**NOTE:** The following options, `-t`, `-szs`, `-rs`, `-ss`, `-ha`, `-ch`, and `-p` are used to control auto logical disk creation (if auto-grow is enabled).

---

`-domain <domain>`

Specifies the name of the domain with which the object will reside. The object must be created by a member of a particular domain with Edit or Super roles. The default is created in the current domain, or no domain if the current domain is not set.

`-t <RAID_type>`

Specifies the RAID type of the logical disk: `r0` for RAID-0, `r1` for RAID-1, or `r5` for RAID-5 or `r6` for RAID-6. If no RAID type is specified, the default is `r1` for FC and SSD device types and `r6` for NL device types.

`-ssz <size_number_chunklets>`

Specifies the set size in the number of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row. The `<size>` is a positive integer. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size from 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. The default value depends on raid type and device type used. If no value is entered and FC or NL drives are used, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. If SSD drives are used, the step size defaults to 32 KB for RAID-0, RAID-1 and RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (`mag`). If no availability level is specified, the default is `cage`. This option has no meaning for RAID-0.

`-ch first|last`

Specifies the chunklet location characteristics, either `first` (lowest numbered available chunklets) or `last` (highest numbered available chunklets). If no argument is specified, the default characteristic is `first`.

`-p <pattern>`

Specifies a pattern for candidate disks. Patterns are used to select disks that are used for creating logical disks. If no pattern is specified, the option defaults to all Fibre Channel (FC) disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern. The `-devtype` pattern cannot be used to mix Near Line (NL), FC, and Solid State Drive (SSD) drives.

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node number(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-7). The primary path of the disks must be on the specified PCI slot number(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port number(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-7). The specified magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified portion(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid` and `-devtype` are used to select the disks that are used to create common provisioning groups based on the characteristics of the disk.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified be selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified be selected.



`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified be selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified be selected.

`-devid <model>`

Specifies that PDs identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command. If it is not specified, the default device type is FC.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example, `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

## SPECIFIERS

`<CPG_name>`

Specifies the name of the common provisioning group being created.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the creation of common provisioning group `cpg1`, whose logical disk storage is set to autogrow at 16 GB, has a growth limit of 32 GB, and receives a growth warning at 24 GB:

```
cli% createcpg -sdgs 16g -sdgl 32g -sdgw 24g cpg1
```

The following example displays disks that satisfy all of the specified characteristics used. The example specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

```
cli% createcpg -p -fc_gt 60 -fc_lt 230 -nd 2
```

The following example specifies that all disks in cages 1 and 2 or magazine 4 of each cage will be used in the CPG.

```
cli% createcpg -p -cg 1-2 -p -mg 4 cpg3
```

## NOTES

- For this command:
  - KB = 1024 bytes
  - MB = 1048576 bytes
  - GB = 1073741824 bytes
- When using the `createcpg` command, the size of the logical disk space created is the first integer multiple of the RAID set size that is large enough to accommodate the requested virtual volume size. For example, with the default RAID-5 layout with a set size of 768 MB, a requested virtual volume size of 8192 MB causes the creation of logical disks with a total size rounded up to an integer multiple of 768 that is 8448 MB. The growth increment of CPGs is similarly rounded up because the growth is done by creating logical disks that must be created in units of the logical disk RAID set size. See the *HP 3PAR StoreServ Storage Concepts Guide* for further details.
- By default, logical disk are created using only physical disks with the same device type. (By default, the Fibre Channel device type is used). Use the `-p devtype NL` or `-p -devtype SSD` option to override this default. Use the `showpd` command to see the device types of physical disks in the system.
- The options `-sdgs`, `-sdgl` and `-sdgw` control the auto logical disk creation for the Common Provisioning Group's (CPG) snapshot data regions. Auto logical disk creation occurs when the amount of free logical disk space falls below the specified grow (enlarge) size setting options (`-sdgs`, `-sdgl`).
- If no device type is specified using the `-p -devtype` option, Fibre Channel is assumed.

# createdomain

## DESCRIPTION

The `createdomain` command creates system domains.

## AUTHORITY

- Super
- Any role that is granted the `domain_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SYNTAX

```
createdomain [option <arg>] <domain_name>
```

## OPTIONS

`-comment <comment>`

Specifies any comments or additional information for the domain. The comment can be up to 511 characters long. Unprintable characters are not allowed. The comment must be placed inside quotation marks.

`-vvretentiontimemax <time> [h|H|d|D]`

Specifies the maximum value that can be set for the retention time of a volume in this domain. `<time>` is a positive integer value in the range of 0 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

To disable setting the volume retention time in the domain, enter 0 for `<time>`.

## SPECIFIERS

`<domain_name>`

Specifies the name of the domain you are creating. The domain name can be no more than 31 characters. The name `all` is reserved.

## RESTRICTIONS

- Access to all domains is required to run this command.
- Use of this command requires a Domain license. Contact your local HP 3PAR representative for information.

## EXAMPLES

The following example displays the creation of domain `Engineering` with an informational comment:

```
cli% createdomain -comment "This is a test domain." Engineering
```

## NOTES

None.

# createdomainset

## description

The `createdomainset` command defines a new set of domains and provides the option of assigning one or more existing domains to that set. The command also allows the addition of domains to an existing set by use of the `-add` option.

## SYNTAX

```
createdomainset [options] <setname> [<domain | pattern>...]
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `domainset_create` right.

## OPTIONS

`-add`

Specifies that the domains listed should be added to an existing set. At least one domain must be specified.

`-comment <comment>`

Specifies a comment relating to the set.

## SPECIFIERS

`<setname>`

Specifies the name of the domain set to create or add to.

`<domain | pattern>...`

Optional list of domains or glob-style patterns matching domains that are to be included in the domain set. If no `<domain>` is specified a domain set with no domains is created.

## RESTRICTIONS

None.

## EXAMPLES

To create a domain set with 2 domains in it:

```
cli% createdomainset domset domain1 domain2
```

To create an empty domain set with a comment:

```
cli% createdomainset -comment "A placeholder set" emptyset
```

## notes

None.

# creategroupsv

## DESCRIPTION

The `creategroupsv` command creates consistent group snapshots of a list of Virtual Volumes. Consistent group snapshots are all created at the same point in time so that related structures on different volumes in the group remain consistent.

## SYNTAX

```
creategroupsv [option] <copy_of_VV>[:<snapshot_VV>[:<ID>]]...
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `groupsv_create` right.

## OPTIONS

`-ro`

Specifies that read-only snapshots are created. The default is read/write snapshots. To create read-only snapshots, all specified Virtual Volumes must be read/write. For read/write snapshots, all specified Virtual Volumes must be read-only.

`-exp <time>[d|D|h|H]`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-comment <comment>`

Specifies any additional information up to 511 characters for the volume.

`-f`

Do not ask for confirmation before creating a volume with retention time (`-retain`).

`-retain <time>[d|D|h|H]`

Specifies the amount of time, relative to the current time, that the volume will be retained. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

---

**NOTE:** If the volume is not in any domain, then its retention time cannot exceed the value of the system's `VVRetentionTimeMax`. The default value for the system's `VVRetentionTimeMax` is 14 days. If the volume belongs to a domain, then its retention time cannot exceed the value of the domain's `VVRetentionTimeMax`, if set. The retention time cannot be removed or reduced once it is set. If the volume has its retention time set, it cannot be removed within its retention time. If both expiration time and retention time are specified, then the retention time cannot be longer than the expiration time. This option requires the HP 3PAR Virtual Lock License. Contact your local HP 3PAR Authorized Service Provider for more information.

---

`-noblock`

When a read-only snapshot is taken, the storage system blocks host I/O to the parent virtual volume while the snapshot is being created. If the `-noblock` option is specified, the storage system will not block host I/O to the parent virtual volume during snapshot creation. This option is only applicable for read-only snapshots.

## SPECIFIERS

<copy\_of\_VV>

Specifies the name of the Virtual Volume being copied (the parent volume).

<snapshot\_VV>

Optional name of the snapshot Virtual Volumes. If <snapshot\_VV> is not specified, the system tries to automatically generate the snapshot name of the form <copy\_of\_VV>.<type><number> where <type> is either *ro* or *rw* and <number> is either empty or the lowest number starting from 0 that does not conflict with an existing volume name. If the generated name is too long (because the <copy\_of\_VV> name is too long) the command will fail, and the user is required to specify <snapshot\_VV> explicitly.

[<ID>]

Optional ID of the <snapshot\_VV>. If the <ID> is not specified, an ID is chosen automatically.

## RESTRICTIONS

Use of this command requires a HP 3PAR Virtual Copy license. Contact your local HP 3PAR representative for information.

## EXAMPLES

In the following example, Virtual Volumes VV1 and VV2, and their underlying logical disks are created using the `createaldvv` command. A read-only snapshot of the volumes is then taken and a list of the volumes is generated using the `creategroupsv` command:

```
cli% createaldvv -pct 10 VV1 4g
cli% createaldvv -pct 10 VV2 4g
cli% creategroupsv -ro VV1 VV2
CopyOfVV SnapshotVV
  VV1    VV1.ro
  VV2    VV2.ro
```

## NOTES

- Consistent group snapshots are all created at the same point in time so that related structures on different volumes in the group remain consistent.
- A maximum of 256 writable virtual copies per volume are allowed.
- A maximum of 2048 virtual copies per volume are allowed.

# creategroupvvcopy

## DESCRIPTION

The `creategroupvvcopy` command creates consistent group physical copies of a list of virtual volumes.

## SYNTAX

The syntax for the `creategroupvvcopy` command can be one of the following:

- `creategroupvvcopy -p [options] <parent_VV>:<destination_VV>...`
- `creategroupvvcopy -r [options] <destination_VV>...`
- `creategroupvvcopy -halt <destination_VV>...`

## AUTHORITY

- Super, Edit
- Any role that is granted the `groupvvcopy_create` right.

## OPTIONS

`-p`

Starts a copy operation from the specified parent volume (as indicated using the `<parent_VV>` specifier) to its destination volume (as indicated using the `<destination_VV>` specifier). First a set of consistent group snapshots of all the `<parent_VV>` specifiers are taken and then each snapshot is copied to the corresponding `<destination_VV>` specifier. After the copies are complete, the snapshots are deleted unless the `-s` option is specified. Each `<parent_VV>` specifier must be a base virtual volume or a read/write snapshot.

`-r`

Resynchronizes the set of destination volumes (as indicated using the `<destination_VV>` specifier) with their respective parents using saved snapshots so that only the changes made since the last copy or resynchronization are copied. The resynchronization operation can only be performed if snapshots of the parents saved using the `-s` option in an earlier instance of the `creategroupvvcopy` command are present. These old snapshots are replaced by a new set of consistent group snapshots for the next resynchronization operation (such as the `-s` option need not be specified with the `-r` option).

`-halt`

Cancels an ongoing physical copy. This causes the destination volume (as indicated using the `<destination_VV>` specifier) to be marked with the 'cpf' status, which can be cleared up when a new copy is started.

`-s`

Saves snapshots of the parent volume (as indicated with the `<parent_VV>` specifier) for quick resynchronization and to retain the parent-copy relationships between each parent and destination volume. The `-s` option is implied and need not be specified when the `-r` option is used. Each `<destination_VV>` specifier remains marked as a physical copy of its `<parent_VV>` specifier until it is promoted to a base virtual volume using the `promotevvcopy` command, which also removes the saved snapshot of the `<parent_VV>` specifier. The saved snapshots should not be removed manually. If the same `<parent_VV>` specifier is copied to different `<destination_VV>` specifiers with the `-s` option, a different snapshot of the `<parent_VV>` specifier is saved for each `<destination_VV>` specifier.

`-b`

Use this specifier to block until all the copies are complete. Without this option, the command completes before the copy operations are completed (use the `showvv` command to check the status of the copy operations).

`-pri <high|med|low>`

Specifies the priority of the copy operation when it is started. This option allows the user to control the overall speed of a particular task. If this option is not specified, the `creategroupvvcopy` operation is started with default priority of medium. High priority indicates that the operation will complete faster. Low priority indicates that the operation will run slower than the default priority task. This option cannot be used with `-halt` option.

## SPECIFIERS

`<destination_vv>`

Indicates the destination virtual volume.

`<parent_vv>`

Indicates the parent virtual volume.

## RESTRICTIONS

None.

## NOTES

- The `creategroupvvcopy` command can be issued multiple times. However, the HP 3PAR Storage System allows only two active physical copy tasks to run concurrently. Any additional physical copy tasks are queued, pending the completion of the active physical copy tasks.
- Consistent group snapshots are all created at the same point in time so that related structures on different volumes in the group remain consistent.



# createhost

## DESCRIPTION

The `createhost` command creates or adds paths to a new system host and provides the option of assigning one or more paths to that host. Paths can be either Fibre Channel WWNs or iSCSI names. The command also provides options to annotate the host with descriptor information such as physical location, IP address, Operating System, Model, and so on.

## SYNTAX

The syntax for the `creathost` command can be one of the following:

- `createhost [options] <host_name> [<WWN>...]`
- `createhost -iscsi [options] <host_name> [<iSCSI_name>...]`

## AUTHORITY

- Super, Edit.
- Any role granted the `host_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-add`

Adds the specified WWN(s) or `iscsi_name`(s) to an existing host (at least one WWN or `iscsi_name`, must be specified. See “NOTES” for additional information about this option.

`-domain <domain | domain_set>`

Creates the host in the specified domain or domain set. The default is to create it in the current domain, or no domain if the current domain is not set. The domain set name must start with `set :`.

`-f`

Forces the tear down and removal of lower priority VLUN exports if necessary. See “NOTES” for additional information about this option.

`-persona <hostpersonaval>`

Sets the host persona that specifies the personality for all ports which are part of the host set. This selects certain variations in SCSI command behavior which certain operating systems expect. The `<hostpersonaval>` is the host persona ID number with the desired capabilities. These can be seen with `showhost -listpersona`.

`-loc <location>`

Specifies the host’s location.

`-ip <IP_address>`

Specifies the host’s IP address.

`-os <OS>`

Specifies the operating system running on the host.

`-model <Model>`

Sets the host’s model.

`-contact <contact>`

Sets the owner of the host and contact information.

`-comment <comment>`

Specifies any additional information for the host.

## SPECIFIERS

<host\_name>

Specifies the name of the host, using up to 31 characters.

<WWN>

Specifies the World Wide Name (WWN) to be assigned or added to an existing host. This specifier can be repeated to specify multiple WWNs. This specifier is optional.

<iSCSI\_name>

Host iSCSI name to be assigned or added to a host. This specifier is optional.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example creates system host `test01`:

```
cli% createhost test01 2000000087041F72
```

The following example creates an iSCSI host `test02`:

```
cli% createhost -iscsi test02 iqn.1991-06.com.microsoft:dt-391-xp.hq.3par.com
```

The following example creates host `ibm520-13` with an 8/AIX-legacy host persona:

```
cli% createhost -persona 3 ibm520-13 10000000C97B142E
```

## NOTES

- If the host is running the HP 3PAR Host Agent then `createhost` may be called with no paths and the `hostname` reported by the agent to create the host with all reported paths. If no agent is running then `createhost` with no paths creates a host without assigning a host path. The `-add` option modifies an existing host by associating a host path with that host. If the `-add` option is not used, the `createhost` command defines a new host.
- If assigning paths to a host you are creating, specify the `-f` option to remove any existing VLUNs associated with those paths to avoid any conflicting VLUNs.
- Verify the creation of a host by issuing the `showhost` command.
- The options that allow for adding descriptive information are for annotation purposes only; the storage server does not actively use the information provided here.
- Although it is optional to specify a host persona, a host must have one. If one is not specified, it will default to 1 (Generic). This will not operate correctly with all types of hosts. The host persona can be changed with `sethost -persona`.
- Host personas cannot be specified with the `-add` argument.
- A port's FC parameters should be set with `controlport config`.

# createhostset

## DESCRIPTION

The `createhostset` command defines a new set of hosts and provides the option of assigning one or more existing hosts to that set. The command also allows the addition of hosts to an existing set by use of the `-add` option.

## SYNTAX

```
createhostset [options] <setname> [<host | pattern>...]
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `hostset_create` right.

## OPTIONS

`-add`

Specifies that the hosts listed should be added to an existing set. At least one host must be specified.

`-comment <comment>`

Specifies any comment or additional information for the set. The comment can be up to 255 characters long. Unprintable characters are not allowed.

`-domain <domain>`

Create the host set in the specified domain. For an empty set the default is to create it in the current domain, or no domain if the current domain is not set. A host set must be in the same domain as its members; if hosts are specified as part of the creation then the set will be created in their domain. The `-domain` option should still be used to specify which domain to use for the set when the hosts are members of domain sets. A domain cannot be specified when adding a host to an existing set with the `-add` option.

## SPECIFIERS

`<setname>`

Name of the host set to create/add to.

`<host | pattern>...`

Optional list of hosts or glob-style patterns matching hosts that are to be included in the host set. If no `<host>` is specified a host set with no hosts is created.

## RESTRICTIONS

None.

## EXAMPLES

To create an empty hostset:

```
cli% createhostset hostset
```

To add a host to the set:

```
cli% createhostset -add hostset hosta
```

To create a host set with a comment and a host in it:

```
cli% createhostset -comment "A host set" oraset ora1
```

## NOTES

None.

# createld

## DESCRIPTION

This command was deprecated in the 2.2.3 release and will be changed or removed in a future release. Please use the `createvv` command in the future.

The `createld` command allows you to create a logical disk. Unlike the `createald` command, issuing the `createld` command requires that you allocate chunklets for the logical disk created.

## SYNTAX

```
createld [options] <LD_name> <RAID_type> <row_size> <PD:ch>...
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `ld_create` role.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-o <owner>`

Owner node for the logical disk.

`-b <backupowner>`

Backup owner node for the logical disk.

`-md <mirrordepth>`

Option `<raid_type>=1` only, the number of mirror copies in the set.

`-ps <parityset>`

Option `<raid_type>=5` or `6` only, the total number of chunklets in RAID set, including parity.

`-ss <stepsize>`

Step size is in KB and can take any value in the range of 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. The default value depends on raid type and device type used. If FC or NL drives are used, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. If SSD drives are used, the step size defaults to 32 KB for RAID-0, RAID-1 and RAID-5. For RAID-6, the default is a function of the set size.

`-cpsd <CPG_name>`

Adds this logical disk to the specified CPG SD space.

`-cpsa <CPG_name>`

Adds this logical disk to the specified CPG SA space. Only RAID-1 logical disks may be used for the SA space.

`-ha port|cage|mag`

Defines the availability of the logical disk. The default is `cage`. The availability setting is used to select the destination chunklets during relocation of failed chunklets.

`-domain <domain>`

Creates the logical disk in the specified domain. The default is to create it in the current domain, or no domain if the current domain is not set.

## SPECIFIERS

`<LD_name>`

Specifies the logical disk name, using up to 31 characters.

<RAID\_type>

Specifies the RAID type: 0 for RAID-0, 1 for RAID-1, 5 for RAID-5, or 6 for RAID-6.

<row\_size>

Specifies the number of sets in a row.

<PD:ch>

Lists PDs and chunklet pairs.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

- Verify the creation of a logical disk by issuing the `showld` command. See [“showld” \(page 394\)](#) for more information.
- To create a RAID-1 volume the mirror depth (`-mdflag`) must be specified. For RAID-5 or RAID-6 volume the parityset (`-psflag`) must be specified. The `owner` and `backup_owner` option should be a number between 0 and 7 and should be the node ID of a valid node in the system. The mirror depth can take any value between 2 and 4, inclusive.

# creatercopygroup

## DESCRIPTION

The `creatercopygroup` command creates a Remote Copy volume group.

## SYNTAX

```
creatercopygroup [options] <group_name> [<target_name>:<mode> ...]
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `rcopygroup_create` right.

## OPTIONS

`-domain <domain>`

Creates the Remote Copy group in the specified domain. The volume group must be created by a member of a particular domain with Super or Edit privileges.

`-usr_cpg <cpg_name> <target_name>:<cpg_name>...`

Specifies the local user CPG and target user CPG that will be used for volumes that are auto-created. The local CPG will only be used after failover and recovery.

`-snap_cpg <cpg_name> <target_name>:<cpg_name>...`

Specifies the local snap CPG and target snap CPG that will be used for volumes that are auto-created. The local CPG will only be used after failover and recovery.

## SPECIFIERS

`<group_name>`

Specifies the name of the volume group, using up to 22 characters if the `mirror_config` policy is set, or up to 31 characters otherwise. This name is assigned with this command.

`[<target_name>:<mode>...]`

In a Synchronous Long Distance Remote Copy setup, this specifier is required for every target of the group. This specifier can be repeated to specify multiple targets.

- `<target_name>` - Specifies the target name associated with this group. This name should have already been assigned using the `creatercopytarget` command.
- `<mode>` - Specifies that the mode of the created group is either kept in synchronization at all times (`sync`) or synchronized only periodically (`periodic`), either on command or by setting an automatic resynchronization period through the `setrcopygroup` command.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

## EXAMPLES

The following example creates an asynchronous periodic mode volume group named `Group1` whose target system is `System2` (target name `System2_out`):

```
cli% creatercopygroup Group1 System2_out:periodic
```

If using domains, the syntax would appear as:

```
cli% creatercopygroup -domain domain2 Group1 System2_out:periodic
```

If using volume auto-create:

```
cli% creatercopygroup -usr_cpg Localcpg target:Targetcpg -snp_cpg Localsnp  
target:Targetsnp groupname target:periodic
```

## NOTES

- If the `mirror_config` policy is set for this group's target system and the group is a primary group, then this command will be mirrored to the target and the corresponding secondary group will also be removed. If the policy is set and the group is a secondary group, then this command will fail.
- The `removercopygroup` command removes all the associations configured in the specified group and removes the group name and any Remote Copy synchronization snapshots affiliated with volumes in the group.



# creatercopytarget

## DESCRIPTION

The `creatercopytarget` command creates a Remote Copy target definition.

## SYNTAX

The syntax for the `creatercopytarget` command can be one of the following:

- Syntax for Remote Copy over IP (RCIP) is as follows:

```
creatercopytarget [options] <target_name> IP  
[<node:slot:port:IP_address>] ...
```

- Syntax for Remote Copy over Fibre Channel (RCFC) is as follows:

```
creatercopytarget [options] <target_name> FC <node_wwn>  
[<node:slot:port:WWN>] ...
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `rcopytarget_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-disabled`

Create the target in disabled mode.

## SPECIFIERS

`<target_name>`

The name of the target definition to be created, specified by using up to 23 characters.

`<node_wwn>`

The node's World Wide Name (WWN) on the target system (Fibre Channel target only).

`[<node:slot:port:IP_address>] ...`

Specifies the node, slot, and port of the Ethernet port on the local system and an IP address of the peer port on the target system. This specifier can be repeated.

`[<node:slot:port:WWN>] ...`

Specifies the node, slot, port of the Fibre Channel adaptor port on the primary system and World Wide Name (WWN) of the peer port on the target system. This specifier can be repeated.

## RESTRICTIONS

Functionality of this command requires the HP 3PAR Remote Copy license. Contact your local service provider for more information.

## EXAMPLES

The following example creates a target definition named `System2` on the primary system, where the node numbers of the primary system's Ethernet ports are located at `0:3:1` and `1:3:1` and the corresponding IP addresses on the backup system are `10.1.1.11` and `10.1.2.11`:

```
# creatercopytarget System2 IP 0:3:1:10.1.1.11 1:3:1:10.1.2.11
```

The following example creates a primary target definition named `System1` on the backup system, where the node numbers of the backup system's Ethernet ports are located at `2:3:1` and `3:3:1` and the corresponding IP addresses on the primary system are `10.1.1.96` and `10.1.2.96`:

```
# creatercopytarget System1 IP 2:3:1:10.1.1.96 3:3:1:10.1.2.96
```

The following example creates a target definition named `System2` on the local system where the node WWN of the target system is `20010002AC000060`:

```
# creatercopytarget System2 FC 20010002AC000060 0:4:1:22410002AC000060  
1:4:1:23410002AC000060
```

## NOTES

- IP targets are made up of pairs composed of the node, slot and port of the Ethernet port on the local system and an IP address of the peer port on the target system.
- FC targets are made up of sets with the node, slot, and port of the FC port on the local system and WWN of the peer port on the target system.

# createsched

## DESCRIPTION

The `createsched` command allows users to schedule tasks that are periodically run by the scheduler.

## SYNTAX

```
createsched [options] <cmd> <taskschedule> <schedname>
```

## AUTHORITY

- Super, Service
- Any role that is granted the `sched_create` right.

## OPTIONS

`-run_once`

The task will only run once at the specified time.

`-no_alert`

Tasks created with the `no_alert` option will not generate alerts if the task fails.

## SPECIFIERS

`<cmd>`

Specifies that it is either a CLI command or script that has been distributed by HP 3PAR. Can be up to 127 characters in length.

`<taskschedule>`

Specifies the use of a crontab-style schedule. Each field can be up to 127 characters in length.

`<schedname>`

Specifies the name given to the schedule. The name can be up to 31 characters in length.

## RESTRICTIONS

- The use of **All** and **Upgrade** as schedule names are reserved.
- Only the following commands can be scheduled: `updatesnapspace`, `createsv`, `removevv`, `createvvcopy`, `creategroupsv`, `creategroupcopy`, `moverlopcpd`, `checkhealth`, `compactcpg`, `compactld`, `setvv`, `startao`, `syncrcopy`, `tunealdvv`, `tunepd`, `tunetpvv`, `tunesys`, `tunevv`, `updatevv`.

## EXAMPLES

The following example creates a snapshot every hour that expires in 2 hours for volume `vvname`:

```
cli% createsched "createsv -ro -exp 2h @vvname@.@s@ vvname" @hourly snp_vv
```

The following example creates a snapshot every hour that expires in 2 hours for volumes in `vvset`:

```
cli% createsched "createsv -ro -exp 2h @vvname@.@s@ set:vvset" @hourly snp_vvset
```

The following example creates a scheduled task that will run every hour on the hour ("`0 * * * *`") and will create a read-only (`-ro`) snapshot of `sample_vv`, that will expire in two hours (`-exp`

2h). The created snapshot will be named `sample_vv_set.HH.MMM` where HH and MM refer to the hour and minute that the snapshot was created (@vvname@.@H@.@M@):

```
cli% createsched "createsv -ro -exp 2h @vvname@.@H@.@M@ vv" "0 * * * *" sv_task
```

The following example creates a scheduled task which will create a consistent group snapshot. The read-only snapshots will be created from the volume set: `dbora` (see CLI Help `-sub objectsets`) that will expire in two hours (`-exp 2h`) and the snapshots will be named using the pattern `@vvname@.@s@` (volume name specified in the set, with the epoch in seconds appended). The task will be named `snap_odbora_set` and run every hour on the hour during the working hours from 8am to 5pm ("0 8-17 \* \* \*"):

```
cli% createsched "createsv -ro -exp 2h @vvname@.@s@ set:dbora" "0 8-17 * * *" sv_dbora_task
```

The following example creates a scheduled task which will create a consistent group snapshot for a single virtual volume:

```
createsched "createsv -ro -exp 2h @vvname@.@s@ vvname" "0 * * * *" snap_large_tpvv_a
```

Add a comment with spaces to `createsv` by surrounding the comment with escaped double quotes:

```
createsched "createsv -ro -exp 2h -comment \"Comment with spaces\" @vvname@.@H@.@M@ vv" "0 * * * *" sv_task
```

## NOTES

- The `<taskschedule>` string has five fixed fields: minute, hour, day-of-month, month, day-of-week.
- Fields are separated by spaces. The allowed values for the fields are:

Field	Allowed Values
Minute	0-59
Hour	* or 0-23
Day-of-Month	* or 1-31
Month	* or 1-12
Day-of-Week	* or 0-6 (0 is Sunday)

- Scheduling on February 29 is not supported.
- Lists are allowed. A list is a set of numbers (or ranges) separated by commas. Examples: "1, 2, 5, 9", "0-4, 8-12".

- Ranges of numbers are allowed. Ranges are two numbers separated with a hyphen. The specified range is inclusive. For example, 8-11 for an hour entry specifies execution at hours 8, 9, 10 and 11. Ranges must be specified from low to high.
- One of six special strings may also appear instead of the specification above:

String	Meaning
@yearly	Run every January 1st, "0 0 1 1 *"
@monthly	Run the first day of every month, "0 0 1 * *"
@weekly	Run every Sunday, "0 0 * * 0"
@daily	Run every midnight, "0 0 * * *"
@hourly	Run every hour, on the hour, "0 * * * *"

- If some form of daylight savings or summer/winter time is in effect, then jobs scheduled during the switchover period could be executed once, twice, or not at all.

## createsnmpuser

### DESCRIPTION

The `createsnmpuser` command creates the SNMPv3 user secret key used for generating authentication and privacy keys. Username must correspond to an existing local user. The user will be prompted to provide a password, which will be converted to a 20 byte secret key.

### SYNTAX

```
createsnmpuser [options <arg> <username>
```

### AUTHORITY

- Super
- Any role granted the `snmpuser_create` right

### OPTIONS

`-p <password>`

Specifies the user's password. The length of `<password>` must be 6 to 8 characters.

### SPECIFIERS

`<username>`

Specifies the SNMPv3 user name. The user name must be an existing HP 3PAR local user.

---

**NOTE:** Issuing the `createsnmpuser` command results in the system prompting for a password. Type in the password for the user and then press ENTER. The password will be used to generate authentication and privacy keys using SHA1. The generated key is 20 bytes in length.

---

### EXAMPLES

The following example displays the setting of an SNMPv3 user:

```
cli% createsnmpuser <joe>
Please enter the password below. The password will be used to generate both
authentication and privacy secret keys for use in SNMPv3.
Password for user <joe>:
```

# createspare

## DESCRIPTION

The `createspare` command allocates chunklet resources as spares. Chunklets marked as spare are not used for logical disk creation and are reserved explicitly for spares, thereby guaranteeing a minimum amount of spare space.

## SYNTAX

```
createspare [options <arg>] <chunklet_specifier>...
```

## AUTHORITY

- Super, Service
- Any role granted the `spare_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

-f

Do not ask for confirmation. The default is to ask for confirmation.

-p

Specifies that partial completion of the command is acceptable. Additionally, specified chunklets are marked as spare only if they are not spare already.

## SPECIFIERS

```
<chunklet_specifier>...
```

The chunklet specifier is one of the following arguments:

```
<PD_ID:chunklet_number>
```

Specifies the identification of the physical disk and the chunklet number on the disk. This specifier can be repeated.

```
<PD_ID:a>
```

Specifies the identification of the physical disk and all chunklets (a) on the disk. This specifier can be repeated.

```
a:<chunklet_num>
```

Specifies a chunklet number on all physical disks. This specifier can be repeated.

```
-pos <cage:mag:disk:chunklet_num>
```

Specifies the position of a specific chunklet identified by its position in a drive cage, drive magazine, physical disk, and chunklet number. This specifier can be repeated.

```
-pos <cage:mag:disk:a>
```

Specifies that all chunklets on a physical disk, identified by drive cage number, drive magazine number, and physical disk number, are marked spare. This specifier can be repeated.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

- The following example marks chunklet 1 as spare for physical disk 15:

```
cli% createspare 15:1
```

- The following example specifies the position in a drive cage, drive magazine, physical disk, and chunklet number. `-pos 1:0.2:3:121`, where 1 is the drive cage, 0.2 is the drive magazine, 3 is the physical disk, and 121 is the chunklet number.

```
cli% createspare -pos 1:0.2:3:121
```

## NOTES

To verify the creation of a spare chunklet, issue the `showspare` command. See [“showspare” \(page 479\)](#) for more information.



## DESCRIPTION

The `createsv` command creates a point-in-time (snapshot) copy of a virtual volume. Create snapshots to perform such tasks as backing up data on the base volume and allowing multiple copies of a base volume to be modified without affecting the original base volume.

## Syntax

```
createsv [options <arg>] <SV_name> <copy_of_VV | VV_set>
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `sv_create` right.

## OPTIONS

`-ro`

Specifies that the copied volume is read-only. If not specified, the volume is read/write.

`-i <VV_ID>`

Specifies the ID of the copied VV. This option cannot be used when VV set is specified.

`-exp <time>[d|D|h|H]`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-comment <comment>`

Specifies any additional information up to 511 characters for the volume.

`-f`

Do not ask for confirmation before creating a volume with retention time (`-retain`).

`-retain <time>[d|D|h|H]`

Specifies the amount of time, relative to the current time, that the volume will be retained. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

---

**NOTE:** If the volume is not in any domain, then its retention time cannot exceed the value of the system's `VVRetentionTimeMax`. The default value for the system's `VVRetentionTimeMax` is 14 days. If the volume belongs to a domain, then its retention time cannot exceed the value of the domain's `VVRetentionTimeMax`, if set. The retention time cannot be removed or reduced once it is set. If the volume has its retention time set, it cannot be removed within its retention time. If both expiration time and retention time are specified, then the retention time cannot be longer than the expiration time. This option requires the HP 3PAR Virtual Lock License. Contact your local HP 3PAR Authorized Service Provider for more information.

---

`-noblock`

When a read-only snapshot is taken, the storage system blocks host I/O to the parent virtual volume while the snapshot is being created. If the `-noblock` option is specified, the storage system will not block host I/O to the parent virtual volume during snapshot creation. This option is only applicable for read-only snapshots.

## SPECIFIERS

<SV\_name>

Specifies the snapshot name, using up to 31 characters in length.

<copy\_of\_VV | VV\_set>

Specifies the parent volume name or volume set name, using up to 31 characters in length. The `VV_set` name must start with `set:.` If `copy_of_VV` is a `VV_set` then `svname` can contain various patterns that are used to form the snapshot volume name. See `Help sub,vvnamepat` for details.

## RESTRICTIONS

- Use of this command requires a HP 3PAR Virtual Copy license. Contact your local HP 3PAR representative for information.
- A read-only snapshot of a read-only source volume is not allowed.
- A read/write snapshot of a read/write snapshot or base is not allowed.

## EXAMPLES

The following example creates a read-only snapshot volume `svro_vv0` from volume `vv0`:

```
cli% createsv -ro svro_vv0 vv0
```

The following example creates snapshot volume `svrw_vv0` from the snapshot `svro_vv0`:

```
cli% createsv svrw_vv0 svro_vv0
```

The following example creates a snapshot volume for each member of the `VV` set `vvcopies`. Each snapshot will be named `svro-<name of parent volume>`:

```
cli% createsv -ro svro-@vvname@ set:vvcopies
```

If `vvcopies` contained `VVs` named `vv.0`, `vv.1` and `vv.2` this would result in snapshots named `svro-vv.0`, `svro-vv.1` and `svro-vv.2`.

## NOTES

- A maximum of 256 writable virtual copies per volume are allowed.
- A maximum of 500 virtual copies per volume are allowed.
- For the `VV_set` option, the `createsv` command creates consistent group snapshots of the `VVs` in the set. Consistent group snapshots are all created at the same point in time so that related structures on different volumes in the set remain consistent.

# createtemplate

## DESCRIPTION

The `createtemplate` command creates Virtual Volume (VV), Logical Disk (LD), and Common Provisioning Group (CPG) templates. Templates are sets of predetermined parameters that are applied to the creation of VVs, LDs, and CPGs.

Use of this command with the `vv` specifier to create a VV is deprecated and will be removed in a subsequent release. The command `createvv` should be used instead to create a VV.

## SYNTAX

```
createtemplate vv|LD|CPG [options <arg>] <template_name>
```

## AUTHORITY

- Super
- Any role that is granted the `template_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

- The following options are valid for VV, LD, and CPG templates:

`-nro`

Indicates that properties not specified in the template are set to read-only.

`-nrw`

Indicates that properties not specified in the template are set to read/write.

`-desc <description>`

Specifies a description for the created template. The description can be up to 255 characters long.

`-rw`

Specifies that the list of property values in the remainder of the command line or until the next `-rw` or `-ro` option are read-write, which means that they can be modified when the template is used.

`-ro`

Specifies that the list of property values in the remainder of the command line or until the next `-rw` or `-ro` option are read-only, which means that they cannot be modified when the template is used. If neither `-ro` nor `-rw` is specified, the default is `-ro`.

`-t <RAID_type>`

Specifies the RAID type of the logical disk: `r0` for RAID-0, `r1` for RAID-1, `r5` for RAID-5, or `r6` for RAID-6. If no RAID type is specified, the default is `r1`.

`-ssz <size_number_chunklets>`

Specifies the set size in terms of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row using a positive integer. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size from 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. If no value is entered, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (mag). This option has no meaning for RAID-0.

`-ch first|last`

Specifies the chunklet characteristics, either `first` (attempt to use the lowest numbered available chunklets) or `last` (attempt to use the highest numbered available chunklets). If no argument is specified, the default characteristic is `first`.

`-p <pattern>`

Specifies a pattern for candidate disks. Patterns are used to select disks that are used for creating logical disks. If no pattern is specified, the option defaults to all Fibre Channel (FC) type disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern. The `-devtype` pattern cannot be used to mix Near Line (NL) FC, and Solid State Drive (SSD) drives.

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`item`). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node number(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`item`). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-7). The primary path of the disks must be on the specified PCI slot number(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`item`). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port number(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (`item`). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using the `-mg` option. Drive magazines are identified by one or more integers (`item`). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-3). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (`item`). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (`item`). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid`, and `-devtype` are used to limit the disks that are used to create LDs based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command. If it is not specified, the default device type is FC.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

- The following options are used only for VV templates:

`-type cpvv|tpvv|none`

Specifies the type of VV for the template is being created. Valid arguments are `cpvv`, `tpvv`, or `none`. Use `cpvv` if the `-cpg <CPG_name>` option is used. If creating a template for creating TPVVs, use `tpvv`. If `cpvv` or `tpvv` are not specified, the default value is `none` meaning the created template is applicable for the creation of any volume type. The `-type cpvv` option is deprecated and will be removed in a subsequent release.

`-cpg <CPG_name>`

Specifies that the snapshot data space and snapshot administration space are provisioned from the indicated CPG (`<CPG_name>`). The template with this option can only be used with `createaldvv` command. This option is deprecated and will be removed in a subsequent release.

`-aw <percent>`

Specifies the *allocation warning* threshold of the CPG. When the snapshot data space of the VV exceeds the specified percentage of the virtual volume size, an alert is generated. The template with this option can only be used with `createaldvv` command. This option is deprecated and will be removed in a subsequent release.

`-al <percent>`

Specifies the *allocation limit* threshold of the CPG. The snapshot data space is prevented from growing beyond the specified percentage of the virtual volume size. The template with this option can only be used with `createaldvv` command. This option is deprecated and will be removed in a subsequent release.

`-size <size>[g|G|t|T]`

Specifies the size of the virtual volume and logical disk in megabytes. Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter and terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space).

`-szs <size>[g|G|t|T]`

By default, specifies the size of the snapshot volume in megabytes using an integer from 0 through 2096128 (2047 GB). Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter and terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space). If not specified, snapshot space is 0. This option cannot be used with the `-pct` option. The template with this option can only be used with the `createaldvv` command. This option is deprecated and will be removed in a subsequent release.

`-pct <prc>`

Specifies the size of the snapshot volume as a percentage of the user volume. If not specified, the default value is 0 percent of your user volume. This option cannot be used with the `-szs` option. If used with the `-cpg <CPG_name>` option, the percentage value is 0. The template with this option can only be used with the `createaldvv` command. This option is deprecated and will be removed in a subsequent release.

`-spt <sectors_per_track>`

Defines the virtual volume geometry sectors per track value that is reported to the hosts through the SCSI mode pages. The valid range is between 4 to 8192 and the default value is 304.

`-hpc <heads_per_cylinder>`

Allows you to define the virtual volume geometry heads per cylinder value that is reported to the hosts through the SCSI mode pages. The valid range is between 1 to 255 and the default value is 8.

`-pol <pol>[,<pol>...]`

Specifies the policy that the created virtual volume follows. If an argument is not specified, the option defaults to `stale_ss`.

`stale_ss`

Specifies that invalid snapshot volumes are permitted. Failure to update snapshot data does not affect the write to the base volume, but the snapshot is considered invalid.

`no_stale_ss`

Specifies that invalid snapshot volumes are not permitted. Failure to update a snapshot is considered a failure to write to the base volume.

`one_host`

This constrains the export of a volume to one host or one host cluster (when cluster names can be used as a host name).

`no_one_host`

This policy should only be used when exporting a virtual volume to multiple hosts for use by a cluster-aware application, or when "port presents" VLUNs are used. This is the default policy setting.

`tp_bzero`

Specifies that if a host write results in the allocation of a new data page that is only partially filled by the host write, then a zero-fill is performed on the unwritten portion of the data page. This ensures that the host cannot read data from deleted volumes or snapshot. The default allocation page size is 16 KB.

`no_tp_bzero`

Specifies that the zero-fill operation is bypassed on the allocation of partially written data pages.

`-usr_cpg <usr_cpg>`

Specifies the name of the CPG from which the user space will be allocated.

`-usr_aw <percent>`

Indicates a user space allocation warning. Generates a warning alert when the user data space of the TPVV exceeds the specified percentage of the virtual volume size.

`-usr_al <percent>`

Indicates the user space allocation limit. The user space of the TPVV is prevented from growing beyond the indicated percentage of the virtual volume size. After this limit is reached, any new writes to the virtual volume will fail.

`-snp_cpg <snp_cpg>`

The name of the CPG from which the snapshot space is allocated.

`-snp_aw <percent>`

Provides a snapshot space allocation warning. Generates a warning alert when the snapshot space of the virtual volume exceeds the specified percentage of the virtual volume size.

`-snp_al <percent>`

Provides a snapshot space allocation limit. The snapshot space of the virtual volume is prevented from growing beyond the indicated percentage of the virtual volume size.

- The following options are only used for CPG templates:

`-aw <percent>`

Specifies the percentage of used snapshot administration or snapshot data space that results in a warning alert. A percent value of 0 disables the warning alert generation. The default is 0. This option is deprecated and will be removed in a subsequent release.

`-sdgs <size>[g|G|t|T]`

Specifies the growth increment, the amount of logical disk storage created on each auto-grow operation. The default and minimum growth increments vary according to the number of controller nodes in the system. If `<size>` is non-zero it must be 8 G or bigger. Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter or terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space). A size of 0 disables the auto-grow feature. The following table displays the default and minimum growth increments per number of nodes:

Number of Nodes	Default	Minimum
1-2	32G	8G
3-4	64G	16G
5-6	96G	24G
7-8	128G	32G

`-sdgl <size>[g|G|t|T]`

Limits the auto-grow from exceeding this storage amount. A size of 0 means no limit is enforced. Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter or

terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space). The default is 0.

```
-sdgw <size>[g|G|t|T]
```

Issues a warning alert when the used logical disk space exceeds this amount. A size of 0 means no warning limit is enforced. Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter or terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space). The default is 0.

## SPECIFIERS

`VV|LD|CPG`

Specifies that the template is for the creation of a Virtual Volume (VV), Logical Disk (LD), or Common Provisioning Group (CPG).

`<template_name>`

Specifies the name of the template, up to 31 characters in length.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example creates a virtual volume template called `vvr1`. The `-ha` and `-pol` option values are fixed. The RAID type can be changed when the virtual volume is created. Note that if patterns are specified, it is not possible to mix read-only and read/write pattern specifications.

```
cli% createtemplate vv -ha mag -rw -t r1 -ro -pol stale_ss vvr1
```

The command rejects the pattern.

```
cli% createtemplate vv -ro -p -nd 0 -rw -p -mg 1,2 vpatt vvr1
```

## NOTES

- By default, logical disk are created using only physical disks with the same device type. (By default, the Fibre Channel device type is used). Use the `-p devtype NL` or `-p -devtype SSD` option to override this default. Use the `showpd` command to see the device types of physical disks in the system.
- The value for `-ssz` and `-rs` can be set to `-`. This can be used in conjunction with the (default) read-only property for options to ensure that their value cannot be changed when a virtual volume or logical disk or CPG is created and the system is used to set the default values for these options.
- The options `-sdgs`, `-sdgl` and `-sdgw` control the auto logical disk creation for the CPG's snapshot data regions. Auto logical disk creation occurs when the amount of free logical disk space falls below the specified grow (enlarge) size setting options (`-sdgs`, `-sdgl`).
- For this command:
  - KB = 1024 bytes
  - MB = 1024 KB
  - GB = 1024 MB



# createtpvv

## DESCRIPTION

This command is deprecated and will be removed in a subsequent release. Please use the `createvv -tpvv` command in the future.

The `createtpvv` command creates a multi-space Thinly Provisioned Virtual Volume (TPVV). When the `-snp_cpg` option is specified, both of the user space and snapshot space of the TPVV are created.

When the `-snp_cpg` option is not specified, only the user space of the TPVV is created and the snapshot space is not created. The user can't create the snapshots of the volume without creating the snapshot space.

## AUTHORITY

- Super, Edit
- Any role that is granted the `vv_create` right.

## SYNTAX

```
createtpvv [options] <usr_cpg> <vvname> [.<index>] <virtsize>[g|G|t|T]
```

## OPTIONS

`-i <ID>`

Specifies the volume ID.

`-cnt <count>`

Specifies the number of identical Virtual Volumes (VVs) to create. This must be an integer from 1 to 999. If `<id>` is specified with `-i` option, it is used as the ID of the first VV and incremented by 1 for each subsequent volume.

- The following option specifies the name of the template used to create a TPVV.

`-templ <template_name>`

Use the options defined in `template <template_name>`. The template is created using the `createtemplate` command. Options specified in the template are read-only or read-write. The read-write options may be overridden with new options at the time of their creation, but read-only options may not be overridden at the time of creation. Options not explicitly specified in the template take their default values, and all of these options are either read-only or read-write (using the `-nro` or `-nrw` options of the `createtemplate` command). If not included, the `-size` and `-cpg` options are automatically treated as read-write even if the other not included properties are marked read-only.

- The following option is used to create the snapshot space of the TPVV:

`-snp_cpg <snp_cpg>`

Specifies the name of the Commonly Provisioned Group (CPG) from which the snapshot space will be allocated.

- The following options are used to set the allocation policies of the TPVV:

`-usr_aw <percent>`

This option enables user space allocation warning. It specifies that a warning alert is generated when the user space of the TPVV exceeds the specified percentage of the VV size.

`-usr_al <percent>`

This option sets the user space allocation limit. The user space of the TPVV is prevented from growing beyond the indicated percentage of the VV size. After this size is reached, any new writes to the VV will fail.

`-snp_aw <percent>`

Enables a snapshot space allocation warning. A warning alert is generated when the snapshot space of the VV exceeds the indicated percentage of the VV size.

`-snp_al <percent>`

Sets a snapshot space allocation limit. The snapshot space of the VV is prevented from growing beyond the indicated percentage of the VV size.

`-spt <sectors_per_track>`

Defines the VV geometry sectors per track value that is reported to the hosts through the SCSI mode pages. The valid range is between 4 to 8192 and the default value is 304.

`-hpc <heads_per_cylinder>`

Defines the VV geometry heads per cylinder value that is reported to the hosts through the SCSI mode pages. The valid range is between 1 to 255 and the default value is 8.

`-exp <time>[d|D|h|H]`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-comment <comment>`

Specifies any additional information up to 511 characters for the volume.

`-f`

Do not ask for confirmation before creating a volume with retention time (`-retain`).

`-retain <time>[d|D|h|H]`

Specifies the amount of time, relative to the current time, that the volume will be retained. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

---

**NOTE:** If the volume is not in any domain, then its retention time cannot exceed the value of the system's `VVRetentionTimeMax`. The default value for the system's `VVRetentionTimeMax` is 14 days. If the volume belongs to a domain, then its retention time cannot exceed the value of the domain's `VVRetentionTimeMax`, if set. The retention time cannot be removed or reduced once it is set. If the volume has its retention time set, it cannot be removed within its retention time. If both expiration time and retention time are specified, then the retention time cannot be longer than the expiration time. This option requires the HP 3PAR Virtual Lock License. Contact your local HP 3PAR Authorized Service Provider for more information.

---

- The following defines the volume policy:

`-pol <pol>[, <pol>...]`

Specifies VV policies.

`stale_ss`

Specifies that invalid snapshot volumes are permitted. Failure to update snapshot data does not affect the write to the base volume, but the snapshot is considered invalid.

`no_stale_ss`

Specifies that invalid snapshot volumes are not permitted. Failure to update a snapshot is considered a failure to write to the base volume.

`one_host`

This constrains the export of a volume to one host or one host cluster (when cluster names can be used as a host name).

`no_one_host`

This policy should only be used when exporting a VV to multiple hosts for use by a cluster-aware application, or when “port presents” VLUNs are used. This is the default policy setting.

`tp_bzero`

Specifies that if a host write results in the allocation of a new data page that is only partially filled by the host write, then a zero-fill is performed on the unwritten portion of the data page. This ensures that the host cannot read data from deleted volumes or snapshot. The allocation page size is 16 KB. This is the default policy setting.

`no_tp_bzero`

Specifies that the zero-fill operation is bypassed on the allocation of partially written data pages.

`zero_detect`

This policy enables the HP 3PAR Storage System to scan for zeros in the incoming write data. This feature when used during physical copy to a TPVV will avoid allocating space for blocks containing zero. This feature when used with a Thin Persistence license will reclaim allocated space when zero blocks are written to the TPVV. This policy is only applicable for the base TPVV.

---

**NOTE:** Thin Persistence can have some performance implications during extremely busy system conditions. HP recommends the `zero_detect` policy only be enabled during Thin Persistence and Thin Conversion operations. The `zero_detect` policy should be disabled during normal operation.

---

`no_zero_detect`

This policy disables the HP 3PAR Storage System to scan for zeros in the incoming write data to reclaim allocated space on the volume. This is the default policy setting.

## SPECIFIERS

`<usr_CPG>`

Specifies the CPG name of the user space of the TPVV. If the CPG name is to be taken from a template, this field should be (-).

`<vvname> [. <index>]`

Specifies the VV name up to 31 characters in length. If the `-cnt` option is used, the optional decimal number `<index>` specifies the name of the first VV (`<vvname>.<index>`). The `<index>` is incremented by 1 for each subsequent VV. The `<index>` must be an integer from 0 to 999999. All VV names have the same length constraint.

`<virtsize> [g|G|t|T]`

Size for the VV in MB (maximum of 16 T, minimum of 256 MB). The volume size is rounded up to the next multiple of 32 MB. The size should be an integer. An optional suffix (with no white space before the suffix) will modify the units to GB (g or G suffix) or TB (t or T suffix). If the size is to be taken from a template, this field should be (-).

## RESTRICTIONS

Use of this command requires a Thin Provisioning license. Contact your local HP 3PAR representative for information.

## EXAMPLES

The following example displays the creation of a TPVV named `tpvv1`:

```
cli% createtpvv -usr_aw 50 -usr_al 75 cpg1 tppv1 1g
```

In the preceding example, a 1 GB TPVV named `tpvv1` is allocated from a CPG named `cpg1` and its allocation warnings and limits are set at 50% and 75%, respectively.

The following example creates 3 VVs `vv1.2`, `vv1.3`, `vv1.4`:

```
cli% createtpvv -cnt 3 cpg1 vv1.2 1g
```

The following example creates a TPVV named `tpvv1` with the template `templ`:

```
cli% createtpvv -templ templ cpg3 tpvv1 2g
```

## NOTES

For this command:

- MB = 1048576 bytes
- GB = 1024 MB
- TB = 1024 GB

## createuser

### DESCRIPTION

The `createuser` command creates a new user with the specified name and role in the specified domain.

### SYNTAX

```
createuser [option <arg>] <user_name> <domain_name> <role>
```

### AUTHORITY

- Super
- Any role granted the `user_create` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

Only one of the following options can be specified:

`-c <clear-text_password>`

Specifies the user's password in the clear-text format. The password must be six to eight characters in length.

`-e <encrypted_password>`

Specifies the user's password in the encrypted format. The password must be less than or equal to 31 characters in length.

### SPECIFIERS

`<user_name>`

Specifies the name of the user, using up to 31 characters in length. Valid characters are alphanumeric (letters and digits), a period (.), a dash (-), or an underscore (\_). The first character must either be alphanumeric or an underscore for non-SSH users. To access the system via SSH, the first character of the `<user_name>` must be alphanumeric.

`<domain_name>`

Specifies the name of the domain in which the created user will belong. The domain name can be up to 31 characters in length.

`<role>`

The user role. Valid values for role are "browse", "edit", "service", "super" and any extended role. Use `showrole` to list extended roles.

### RESTRICTIONS

- Access to all domains is required to run this command.
- Encrypted passwords are generated by the system. Therefore, you can only specify previously generated encrypted passwords. All passwords must be at least six characters long.

## EXAMPLES

The following example displays the successful creation of a new user `user1` with the clear-text password `123456`, with access to all service pools, and with edit level authority:

```
cli% createuser -c 123456 user1 testdomain edit
User created
```

## NOTES

- If no password is specified using the `-c` or `-e` options, then you will be prompted for a clear-text password.
- Verify the creation of a new user by issuing the `showuser` command. See [“showuser” \(page 497\)](#) for more information.

# createvln

## DESCRIPTION

The `createvln` command creates a Virtual Logical Unit Number (VLUN) template that enables export of a Virtual Volume (VV) as a SCSI VLUN to one or more host(s). A SCSI VLUN is created when the current system state matches the rule established by the VLUN template.

There are four types of VLUN templates:

- `port presents` - created when only the `node:slot:port` are specified. The VLUN is visible to any initiator on the specified port.
- `host set` - created when a host set is specified. The VLUN is visible to the initiators of any host that is a member of the set.
- `host sees` - created when the `hostname` is specified. The VLUN is visible to the initiators with any of the host's World Wide Names (WWNs).
- `matched set` - created when both `hostname` and `node:slot:port` are specified. The VLUN is visible to initiators with the host's WWNs only on the specified port.

Conflicts between overlapping VLUN templates are resolved using prioritization, with `port presents` templates having the lowest priority and `matched set` templates having the highest.

## SYNTAX

The syntax for the `createvln` command can be one of the following:

Port presents:

- `createvln [options] <VV_name | VV_set> <LUN> <node:slot:port>`

Host set:

- `createvln [options] <VV_name | VV_set> <LUN> <host_set>`

Host sees:

- `createvln [options] <VV_name | VV_set> <LUN> <host_name>`

Matched set:

- `createvln [options] <VV_name | VV_set> <LUN> <node:slot:port> <host_name>`
- `createvln [options] <VV_name | VV_set> <LUN> <host_name> <node:slot:port>`

## AUTHORITY

- Super, Edit
- Any role that is granted the `vlun_create` right.

## OPTIONS

`-f`

Specifies that the operation is forced and that the VLUN is created even if the specified VV has existing VLUNs. Unless the `-f` option is specified, the command asks for confirmation if a VV is already exported in a VLUN template.

`-cnt <number>`

Specifies that a sequence of VLUNs, as specified by the `number` argument, are exported to the same system port and host that is created. The `number` argument can be specified as any integer.

For each VLUN created, the `.int` suffix of the `VV_name` specifier and LUN are incremented by one.

`-novcn`

Specifies that a VLUN Change Notification (VCN) not be issued after export. For direct connect or loop configurations, a VCN consists of a Fibre Channel Loop Initialization Primitive (LIP). For fabric configurations, a VCN consists of a Registered State Change Notification (RSCN) that is sent to the fabric controller.

`-ovrd`

Specifies that existing lower priority VLUNs will be overridden, if necessary. Can only be used when exporting to a specific host.

## SPECIFIERS

`<VV_name | VV_set>`

Specifies the VV name or VV set name, using up to 31 characters in length. The volume name is provided in the syntax of `basename.int`. The `VV_set` name must start with `set:.`

`<LUN>`

Specifies the LUN as an integer from 0 through 16383. Alternatively `<n>+` can be used to indicate a LUN should be auto assigned, but be a minimum of `n`, or `n-m` to indicate that a LUN should be chosen in the range `n` to `m`. In addition the keyword `auto` may be used and is treated as `0+`.

`<host_name>`

Specifies the host where the LUN is exported, using up to 31 characters.

`<host_set>`

Specifies the host set where the LUN is exported, using up to 31 characters.

`<node:slot:port>`

Specifies the system port of the virtual LUN export.

`node`

Specifies the system port, where the node is a number between 0 and 7.

`slot`

Specifies the PCI bus slot in the node, where the slot is a number between 0 and 5.

`port`

Specifies the port number on the FC card, where the port number between 1 and 4.

## RESTRICTIONS

None.

## EXAMPLES

The following example exports VV `test` on LUN 2:

```
cli% createvln test 2 testhost
```

## NOTES

- If a volume is already exported as a VLUN, you will be prompted for confirmation if a new export of the same volume is attempted.
- The host and port can both be supplied when issuing this command (matched set). This is the most restrictive access as both the host name and port must match before access to the VLUN is granted.



- Verify the creation of VLUNs by issuing the `showv1un` command. See “[showv1un](#)” (page 503) for more information.
- Conflicts between overlapping VLUN templates are resolved by a priority order among templates with matched set being the highest and port presents the lowest.
- Exports from a VV set must be contiguous and, if there is another export already present, the set cannot be extended and generates the following error due to the conflict on the LUN ID:

Error message: Unable to extend vv set VVSETNAME

To add to an exported VV set in the future, leave a gap between the VV set export and any further exports to allow for expansion. The `createv1un vv 100+ host` command can be used, which will use the next free VLUN from 100 onwards; this allows you to take advantage of the auto lun functionality but retains some separation between ranges.

## DESCRIPTION

The `createvv` command creates volumes that are provisioned from one or more Common Provisioning Groups (CPGs). Volumes can be fully provisioned from a CPG or can be thinly provisioned. You can optionally specify a CPG for snapshot space for fully provisioned volumes.

## Syntax

```
createvv [options] <usr_CPG> <VV_name> [.<index>] <size>[g|G|t|T]
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `vv_create` right.

---

**NOTE:** You need access to all domains in order to run this command with logical disks specified.

---

## OPTIONS

`-templ <template_name>`

Use the options defined in template `<tname>`. The template is created using the `createtemplate` command. Options specified in the template are read-only or read/write. The read/write options may be overridden with new options at creation time but read-only options may not be overridden their default values, and all of these options are either read-only or read/write (using the `-nro` or `-nrw` options of the `createtemplate` command). If not included, the `-size` and `-usr_cpg` options are automatically treated as read-write even if the other not included properties are marked read-only.

`-i <ID>`

Specifies the ID of the volume. The default is the next available ID.

`-cnt <count>`

Specifies the number of identical VVs to create. This must be an integer from 1 through 999. If `<id>` is specified with `-i` option, it is used as the ID of the first VV and incremented by 1 for each subsequent volume.

`-shared`

Specifies that the system will try to share the Logical Disks (LDs) among the VVs. This option can only be used with the `-cnt` option. This option cannot be used with the `-tpvv` option.

`-wait <secs>`

If the command would fail due to the lack of clean space, the `-wait` option specifies the number of seconds to wait for the system to clean the dirty space before returning. If `-wait 0` is issued, the command returns immediately. If this option is not used, the command will keep waiting for dirty chunklets to be cleaned if enough space will be available with the dirty chunklets cleaned. This option cannot be used with the `-tpvv` option.

`-exp <time>[d|D|h|H]`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-comment <comment>`

Specifies any additional information up to 511 characters in length for the volume.

`-f`

Do not ask for confirmation before creating a volume with retention time (-retain).

-retain <time>[d|D|h|H]

Specifies the amount of time, relative to the current time, that the volume will be retained. <time> is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either d or D for day and h or H for hours following the entered time value.

---

**NOTE:** If the volume is not in any domain, then its retention time cannot exceed the value of the system's VVRetentionTimeMax . The default value for the system's VVRetentionTimeMax is 14 days. If the volume belongs to a domain, then its retention time cannot exceed the value of the domain's VVRetentionTimeMax , if set. The retention time cannot be removed or reduced once it is set. If the volume has its retention time set, it cannot be removed within its retention time. If both expiration time and retention time are specified, then the retention time cannot be longer than the expiration time. This option requires the HP 3PAR Virtual Lock License. Contact your local HP 3PAR Authorized Service Provider for more information.

---

-spt <sectors\_per\_track>

Defines the VV geometry sectors\_per\_track value that is reported to the hosts through the SCSI mode pages. The valid range is from 4 to 8192 and the default value is 304.

-hpc <heads\_per\_cylinder>

Defines the VV geometry heads\_per\_cylinder value that is reported to the hosts through the SCSI mode pages. The valid range is from 1 to 1024 and the default value is 8.

-pol <pol>[,<pol>...]

Specifies the VV policies.

stale\_ss

Specifies that invalid snapshot volumes are permitted. Failure to update snapshot data does not affect the write to the base volume, but the snapshot is considered invalid.

no\_stale\_ss

Specifies that invalid snapshot volumes are not permitted. Failure to update a snapshot is considered a failure to write to the base volume.

one\_host

This constrains the export of a volume to one host or one host cluster (when cluster names can be used as a host name).

no\_one\_host

This policy should only be used when exporting a VV to multiple hosts for use by a cluster-aware application, or when port presents VLUNs are used. This is the default policy setting.

tp\_bzero

Specifies that if a host write results in the allocation of a new data page that is only partially filled by the host write, then a zero-fill is performed on the unwritten portion of the data page. This ensures that the host cannot read data from deleted volumes or snapshot. The allocation page size is 16 KB. This is the default policy setting.

no\_tp\_bzero

Specifies that the zero-fill operation is bypassed on the allocation of partially written data pages.

zero\_detect

This policy enables the HP 3PAR Storage System to scan for zeros in the incoming write data. This feature when used during physical copy to a TPVV will avoid allocating space for blocks containing zero. This feature when used with a Thin Persistence license will reclaim allocated space when zero blocks are written to the TPVV. This policy is only applicable for the base TPVV.

---

**NOTE:** Thin Persistence can have some performance implications during extremely busy system conditions. HP recommends the `zero_detect` policy only be enabled during Thin Persistence and Thin Conversion operations. The `zero_detect` policy should be disabled during normal operation.

---

`no_zero_detect`

This policy disables the HP 3PAR Storage System to scan for zeros in the incoming write data to reclaim allocated space on the volume. This is the default policy setting.

`-snp_cpg <snp_CPG>`

Specifies the name of the CPG from which the snapshot space is allocated.

`-snp_aw <percent>`

Enables a snapshot space allocation warning. A warning alert is generated when the reserved snapshot space of the VV exceeds the indicated percentage of the VV size.

`-snp_al <percent>`

Sets a snapshot space allocation limit. The snapshot space of the VV is prevented from growing beyond the indicated percentage of the VV size.

The following options can be used when creating Thinly Provisioned Virtual Volumes (TPVVs):

`-tpvv`

Specifies that the volume should be a TPVV.

`-usr_aw <percent>`

This option enables user space allocation warning. It specifies that a warning alert is generated when the reserved user space of the TPVV exceeds the specified percentage of the VV size.

`-usr_al <percent>`

This option sets the user space allocation limit. The user space of the TPVV is prevented from growing beyond the indicated percentage of the VV size. After this size is reached, any new writes to the VV will fail.

## SPECIFIERS

`<usr_CPG>`

Specifies the name of the CPG from which the volume user space will be allocated. If the `-tpvv` option is specified, the volume is thinly provisioned. Otherwise, the volume is fully provisioned from the specified CPG. If the name of the CPG is to be taken from a template, this field should be (-).

`<VV_name> [.<index>]`

Specifies a VV name up to 31 characters in length. If the `-cnt` option is used, the optional decimal number `<index>` specifies the name of the first VV (`<vvname>.<index>`). The `<index>` is incremented by 1 for each subsequent VV. The `<index>` must be an integer from 0 through 999999. All VVs have the same length constraint.

`<size> [g|G|t|T]`

Specifies the size for the volume in MB. The volume size is rounded up to the next multiple of 256 MB. The size should be an integer. An optional suffix (with no whitespace before the suffix) will modify the units to GB (g or G suffix) or TB (t or T suffix). If the size is to be taken from a template, this field should be (-).

## RESTRICTIONS

- Access to all domains is required to run this command with logical disks specified.
- Use of this command with the `-tpvv` option requires a Thin Provisioning license. Contact your local HP 3PAR representative for information.

- The `-templ` option is not valid for volumes that are fully provisioned.
- The `-shared` and `-wait` option cannot be used when creating Thinly Provisioned Virtual Volumes with the `-tpvv` option.

## EXAMPLES

The following example creates a 10 G TPVV named `tpvv1` whose user space is allocated from the common provisioning group `cpg1`:

```
cli% createvv -tpvv -usr_aw 50 -usr_al 75 cpg1 tppv1 10G
```

The following example creates 3 VVs `vv1.2`, `vv1.3`, `vv1.4`:

```
cli% createvv -cnt 3 cpg1 vv1.2 1g
```

The following example creates 2 VVs `vva.0` and `vva.1` which may share LDs:

```
cli% createvv -cnt 3 cpg1 vv1.2 1g
```

The following example creates a TPVV named `tpvv1` with the template, `temp2`:

```
cli% createvv -tpvv -templ temp2 cpg2 tppv1 2g
```

## NOTES

- Using the `-shared` option can be more efficient when creating a large number of small volumes since the system will attempt to share the underlying LDs. However, if volumes are subsequently removed, this can lead to unused space in the LDs that cannot be reclaimed. Using `-cnt` option without the `-shared` option avoids this problem, but can be inefficient when creating small volumes due to the overhead of creating a larger number of unshared LDs for the volumes.
- Verify the creation of VV by issuing the `showvv` command. See [“showvv” \(page 506\)](#) for more information.
- The maximum VV size is 16 Terabytes.
- For this command:
  - MB = 1048576 bytes
  - GB = 1024 MB
  - TB = 1024 GB

# createvvcopy

## DESCRIPTION

The `createvvcopy` command creates a full physical copy of a Virtual Volume (VV) or a read/write virtual copy on another VV. This enables you to create copies of VV to perform tasks such as moving data to a larger VV or creating a copy of data for testing.

## Syntax

The syntax for the `createvvcopy` command can be one of the following:

- `createvvcopy -p <parent_volume | parent_volumeset> [options] <destination_volume | destination_volumeset>`
- `createvvcopy -p <parent_volume> -online [-snp_cpg <snap_cpg>] [-tpvv] <destination_cpg> <destination volume>`
- `createvvcopy -r [options] <destination_volume | destination_volumeset>`
- `createvvcopy -halt <destination_volume | destination_volumeset>`

## AUTHORITY

- Super, Edit
- Any role that is granted the `vvcopy_create` right.

## OPTIONS

`-p <parent_volume | parent_volumeset>`

Specifies that a snapshot of the specified parent volume or volume set is created and copied to a specified destination volume or volume set (as indicated with the `<destination_volume | destination_volumeset>` specifier). The set name must start with `set:`. The parent volume must be a base volume or read/write snapshot. This option cannot be used with the `-r` option.

`-r`

Specifies that the destination volume be resynchronized with its parent volume using a saved snapshot so that only the changes since the last copy or resynchronization need to be copied. A snapshot of the parent saved using the `-s` option in an earlier `createvvcopy` instance is required for the resynchronization operation. This old snapshot is replaced by a new snapshot for the next resynchronization operation (the `-s` option is implied, and need not be specified). This option cannot be used with the `-p` option.

`-halt`

Specifies that an ongoing physical copy to be stopped. This will cause the destination volume to be marked with the 'cpf' status, which will be cleared up when a new copy is started.

`-s`

Saves the snapshot of the source volume after the copy of the volume is completed. This enables a fast copy for the next resynchronization. If not specified, the snapshot is deleted and the association of the destination volume as a copy of the source volume is removed. The `-s` option is implied when the `-r` option is used and need not be explicitly specified.

`-b`

Specifies that this command blocks until the operation is completed. If not specified, the `createvvcopy` command operation is started as a background task.

`-pri <high|med|low>`

Specifies the priority of the copy operation when it is started. This option allows the user to control the overall speed of a particular task. If this option is not specified, the `createvvcopy` operation is started with default priority of medium. High priority indicates that the operation will complete faster. Low priority indicates that the operation will run slower than the default priority task. This option cannot be used with `-halt` option.

`-online`

Specifies that the copy is to be performed online. The destination can be immediately exported and is automatically created by this command, meaning that it cannot exist prior to executing this command. This option requires the specification of a CPG for the destination volume and allows for the `-snp_cpg` and `-tpvv` options. The `-online` option requires the `-p` option and cannot be used with the `-r`, `-halt`, `-s`, `-b`, and `-pri` options.

## SPECIFIERS

`<destination_cpg>`

Specifies the destination CPG to use for the destination volume if the `-online` option is specified.

`<destination_volume | destination_volumeset>`

Specifies the destination volume name or volume set name for the copy operation using up to 31 characters in length. The volume set name must start with `set:`. The destination volume (or each member of the destination volume set) must be a writable base volume (not a snapshot) of equal or greater size than a parent volume (if specified) and it must not be exported as a VLUN.

## RESTRICTIONS

- The source and destination volumes must be writable.
- The destination volume cannot be exported as a VLUN before or during the `createvvcopy` command process.
- The destination volume must be greater than or equal in size to the source volume.
- If both the destination and source are volume sets then they must contain the same number of members.
- If the source is a volume set then the destination name can contain various patterns that are used to form the copy volume name. See `Help sub, vvnamepat` for details. Note that the time/date related patterns are not supported in this command.
- If the `-s` option is specified to save a snapshot for fast resynchronization and the snapshot goes stale, the copy fails.
- A physical copy of a VV fails in any situation that a snapshot copy fails or when there is insufficient snapshot space or I/O errors.
- A Thinly Provisioned Virtual Volume cannot be reverse-copied to a Commonly Provisioned Virtual Volume. That is, you cannot create a reversed copy from a TPVV to a CPVV after creating a copy from a CPVV to a TPVV using the same volumes.

## EXAMPLES

The following example displays the creation of a copy of the VV `vv1`:

```
cli% createvvcopy -p vv1 vv2
Started copy. child=vv2 parent=vv1
```

Create a set of copies for the volumes in set `vvcopyset`, keeping snapshots around for quick resynchronization:

```
cli% createvvcopy -s -p set:vvcopyset set:copys
Child Parent Status TaskID
s1     foo   started   14
s2     bar   started   15
s3     baz   queued    16
```

Resynchronize the volumes in the volume set `copies`:

```
createvvcopy -r set:copies
Child Parent Status TaskID
s1           started    17
s2           started    18
s3           queued     19
```

Create a set of copies for the volumes in set `vvcopyset`, mapping the parent volumes to destination volumes with a pattern:

```
cli% createvvcopy -p set:vvcopyset @vvname@-copy
Child Parent Status TaskID
foo-copy foo   started   20
bar-copy bar   started   21
baz-copy baz   queued    22
```

Create an online copy of `vv1` that is named `vv2` which is fully-provisioned, using `cpg1` as its user space and `cpg2` as its snapshot space:

```
cli% createvvcopy -p vv1 -online -snp_cpg cpg2 cpg1 vv2
```

## NOTES

- The `createvvcopy` command can be issued multiple times. However, the HP 3PAR Storage System allows only two active physical copy tasks to run concurrently. Any additional physical copy tasks are queued, pending the completion of the active physical copy tasks.
- Multiple physical copy operations can occur simultaneously. Host-initiated I/O operations and those operations initiated by issuing the `createvvcopy` command are executed at the same priority level. As a result, noticeable performance degradation from a host perspective can be observed.
- Issuing the `createvvcopy` command results in the creation of a temporary snapshot and, in the case of `-r`, a resynchronization (resync) snapshot.
- The temporary and resynchronization snapshots cannot be deleted while the copy is in progress.
- Upon completion of the copy, the temporary snapshot is automatically deleted if the `-s` option is not specified.
- If the resynchronization snapshot is saved, it can later be manually deleted. If the resynchronization snapshot is deleted, later resynchronization is not possible.
- If the `-s` option is not specified, the relationship between the destination volume and source volume is not retained.
- Issue the `showvv` command to verify that a virtual volume copy has been made.
- Issue the `showvv -d` command to display the number of blocks remaining to be copied.



- If the source or destination are volume sets then the `createvvcopy` command creates consistent group snapshots at the same point in time so that related structures on different volumes in the group remain consistent.
- On systems that support `zero_detect`, if destination volume is a TPVV, `zero_detect` policy is enabled at start of physical copy. After physical copy completes, the policy is changed to `no_zero_detect`, even when the destination TPVV had `zero_detect` policy enabled before the start of physical copy operation.
- When Thin Persistence license is present, `createvvcopy` command will reclaim allocated space when zero blocks are written to the destination TPVV.
- If the `-pri` option is not specified, the physical copy will start at the default priority. If the `tunes` and `host I/O` are running, then it is recommended to start `vvcopy` with the default priority.
- The `-online` option for an online copy automatically creates a destination volume, so unlike other physical copies, the destination volume should not exist. The destination volume requires a CPG to be specified, and optionally it can be either a TPVV or have a snapshot CPG associated with it. The destination volume can be immediately exported. The `-online` option cannot be used with the `-r`, `-halt`, `-s`, `-b`, and `-pri` options.

## createvvset

### DESCRIPTION

The `createvvset` command defines a new set of Virtual Volumes (VV) and provides the option of assigning one or more existing VVs to that set. The command also allows the addition of VVs to an existing set by use of the `-add` option.

### SYNTAX

```
createvvset [options] <setname> [<VV | pattern>...]
```

### AUTHORITY

- Super, Edit
- Any role granted the `vvset_create` right.

### OPTIONS

`-add`

Specifies that the VVs listed should be added to an existing set. At least one VV must be specified.

`-cnt <num>`

Add a sequence of `<num>` VVs starting with `vvname`. The `vvname` should be of the format `<basename>.<int>`. For each VV in the sequence, the `.<int>` suffix of the `vvname` is incremented by 1.

`-comment <comment>`

Specifies any comment or additional information for the set. The comment can be up to 255 characters in length. Unprintable characters are not allowed.

`-domain <domain>`

Create the VV set in the specified domain. For an empty set the default is to create it in the current domain, or no domain if the current domain is not set. A VV set must be in the same domain as its members; if VVs are specified as part of the creation then the set will be created in their domain. A domain cannot be specified when adding a VV to an existing set with the `-add` option.

### SPECIFIERS

`<setname>`

Specifies the name of the VV set to create or add to. The name can be up to 27 characters in length.

`<VV | pattern>...`

Optional lists of VVs or glob-style pattern matching VVs which are to be included in the VV set. If no `<VV>` or `<pattern>` is specified a VV set with no VVs is created. If the `-cnt` option is used then a VV must be specified.

### RESTRICTIONS

None.

### EXAMPLES

To create an empty `vvset`:

```
cli% createvvset
```

To add a VV to the set:

```
cli% createvvset -add vvset vv1
```

To create a VV set with a comment and a collection of VVs in it:

```
cli% createvvset -comment "Our Oracle VVs" -cnt 10 oravv oravv.0
```

## NOTES

None.

---

# 12 Dismiss Commands

## dismisspd

### DESCRIPTION

The `dismisspd` command removes Physical Disk (PD) definitions from system use.

### SYNTAX

```
dismisspd <PD_ID>...
```

### AUTHORITY

- Super, Service
- Any role that is granted the `pd_dismiss` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

None

### SPECIFIERS

```
<PD_ID>...
```

Specifies the PD(s), identified by integers, to be removed from system use.

### RESTRICTIONS

- Access to all domains is required to run this command.
- A PD that is in use cannot be removed.

### EXAMPLES

The following example removes a physical disk with ID 1:

```
cli% dismisspd 1
```

### NOTES

Verify the removal of a physical disk by issuing the `showpd` command. See [“showpd” \(page 420\)](#) for more information.

# dismissrcopylink

## DESCRIPTION

The `dismissrcopylink` command removes one or more links (connections) created with the `admitrcopylink` command to a target system.

## SYNTAX

- Syntax for Remote Copy over IP (RCIP):

```
dismissrcopylink <target_name> <node:slot:port:IP_address>...
```

- Syntax for Remote Copy over Fibre Channel (RCFC):

```
dismissrcopylink <target_name> <node:slot:port:WWN>...
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `rccopylink_dismiss` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

None.

## SPECIFIERS

`<target_name>`

The target name, as specified with the `creatercopytarget` command.

`<node:slot:port:IP_address>...`

Specifies the node, slot, and port of the Ethernet port on the local system and an IP address of the peer port on the target system. This specifier can be repeated.

`<node:slot:port:WWN>...`

Specifies the node, slot, and port of the Fibre Channel port on the local system and a World Wide Name (WWN) of the peer port on the target system. This specifier can be repeated.

## RESTRICTIONS

- This command requires an HP 3PAR Remote Copy Software license. Contact your local service provider for further information.
- This command should only be used to remove sending links.
- This command cannot be used to remove the last link of a target system with started groups.

## EXAMPLES

The following example removes the link from the Ethernet port located at 2:2:2 of System 2:

```
# dismissrcopylink System2 2:2:2:193.1.2.11
```

## NOTES

- This command is finished with a list of one or more links to be dismissed.
- For IP targets, this list is made up of pairs composed of the node containing the Ethernet port on the primary system and an IP address on the backup system.
- For Fibre Channel targets, this list is made up of sets with the node, slot, and port of the Fibre Channel adaptor port on the primary system and a WWN address on the backup system.

# dismissrcopytarget

## DESCRIPTION

The `dismissrcopytarget` command removes a Remote Copy target from a Remote Copy volume group.

## SYNTAX

```
dismissrcopytarget [options] <target_name> <group_name>
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `rcopytarget_dismiss` right.

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<target_name>`

The name of the target to be removed.

`<group_name>`

The name of the group that currently includes the target.

## RESTRICTIONS

- This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for further information.
- The `dismissrcopytarget` command will not allow the removal of a group's last target.

## EXAMPLES

The following example removes target `Target1` from `Group1`:

```
cli% dismissrcopytarget Target1 Group1
```

## NOTES

None.

# dismissrcopyvv

## DESCRIPTION

The `dismissrcopyvv` command removes a virtual volume from a Remote Copy volume group.

## SYNTAX

```
dismissrcopyvv [option] [<pattern>] <VV_name> <group_name>
```

## AUTHORITY

- Super, Edit
- Any role granted the `rcopyvv_dismiss` right.

---

**NOTE:** You need access to the domain of the specified group (<group\_name>) in order to run this command.

---

## OPTIONS

-f

Does not ask for confirmation for the `dismissrcopyvv` command.

-pat

Specifies that specified patterns are treated as glob-style patterns and that all Remote Copy volumes matching the specified pattern will be dismissed from the Remote Copy group. This option must be used if the <pattern> specifier is used.

-keepsnap

Specifies that the local volume's resync snapshot should be retained. The retained snapshot will reflect the state of the secondary volume and may be used as the starting snapshot should the volume be readmitted to a Remote Copy group. The snapshot name will begin with "sv.rcpy".

-removevv

Remove remote sides' volumes.

## SPECIFIERS

<VV\_name>

The name of the volume to be removed. Volumes are added to a group with the `admitrcopyvv` command.

<group\_name>

The name of the group that currently includes the virtual volume.

<pattern>

Specifies a glob-style pattern. This specifier can be repeated to dismiss multiple Remote Copy volumes. If this specifier is not used, the <VV\_name> specifier must be used.

## RESTRICTIONS

- This command requires the HP 3PAR Remote Copy license. Contact your local service provider for more information.
- A volume cannot be removed from a group that is not currently stopped.



## EXAMPLES

The following example dismisses virtual volume `vv1` from `Group1`:

```
cli% dismissrcopyvv vv1 Group1
```

The following example dismisses all virtual volumes that start with the name `testvv` from `Group1`:

```
cli% dismissrcopyvv -pat testvv* Group1
```

The following example dismisses volume `vv1` from `Group1` and removes the corresponding volumes of `vv1` on all the target systems of `Group1`.

```
cli% dismissrcopyvv -removevv vv1 Group1
```

The following example dismisses volume `vv2` from `Group2` and retains the resync snapshot associated with `vv2` for this group.

```
cli% dismissrcopyvv -keepsnap vv2 Group2
```

## NOTES

- The `dismissrcopyvv` command removes any Remote Copy synchronization snapshots affiliated with the removed volume.
- If a group's target has the `mirror_config` policy set and the group is a primary group, then this command is mirrored to that target and the volume is removed from the corresponding secondary group. If the policy is set and the group is a secondary, then this command will fail.

---

# 13 Free Command

## freespace

### DESCRIPTION

The `freespace` command frees snapshot administration and snapshot data spaces from a Virtual Volume (VV) if they are not in use.

### SYNTAX

```
freespace [options] <VV_name>...|<pattern>...
```

### AUTHORITY

- Super, Edit
- Any role that is granted the `space_free` right.

### OPTIONS

`-pat`

Remove the snapshot administration and snapshot data spaces from all the VV that match any of the specified glob-style patterns.

`-f`

Suppresses the prompt for confirmation that appears before removing the snapshot administration and snapshot data space of each volume.

### SPECIFIERS

`<VV_name>...`

Specifies the VV name, using up to 31 characters.

`<pattern>...`

Specifies a glob-style pattern. This specifier can be repeated to compact multiple volumes. If this specifier is not used, the `VV_name` specifier must be used. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

### RESTRICTIONS

None.

### EXAMPLES

The following example demonstrates how to remove SA and SD space from virtual volume `testd`:

```
cli% freespace testd
```

### NOTES

This command fails if the virtual volume is an old-style thin provisioned VV (created on a 2.2.4 release or earlier) or it has snapshots.

---

# 14 Grow Commands

## growaldv

### DESCRIPTION

This command was deprecated in the 2.2.4 release and will be changed or removed in a future release. Please use the `growvv` command in the future. If virtual volumes were created with deprecated commands then only deprecated commands can be used to modify virtual volumes.

The `growaldv` command automatically enlarges (grows) the size of a virtual volume by adding underlying logical disks.

### AUTHORITY

- Super, Edit
- Any role granted the `vv_grow` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SYNTAX

The syntax for the `growaldv` command can be any of the following:

- `growaldv -szu <size> [options <arg>] <VV_name>`
- `growaldv -szs <size> [options <arg>] <VV_name>`
- `growaldv -sza <size> [options <arg>] <VV_name>`
- `growaldv -szu <size> -szs <size> [options <arg>] <VV_name>`
- `growaldv -szu <size> -sza <size> [options <arg>] <VV_name>`
- `growaldv -szu <size> -szs <size> -sza <size> [options <arg>] <VV_name>`

### OPTIONS

`-szu <size>[g|G|t|T]`

Specifies the size of the user volume in megabytes using an integer from 0 through 16777216 (16384 GB). Size can optionally be set in gigabytes or terabytes by providing either the `g` or `G` options (for gigabytes) and `t` or `T` options (for terabytes) following (no whitespace between) the entered size value.

`-szs <size>[g|G|t|T]`

Specifies the size of the snapshot volume in megabytes using an integer between 0 and 67108864 (65536 GB). Size can optionally be specified in gigabytes or terabytes by providing either the `g` or `G` options (for gigabytes) and `t` or `T` options (for terabytes) following (no whitespace between) the entered size value. This option cannot be used with the `-pct` option. This option is deprecated and will be removed in a subsequent release.

`-sza <size>[g|G]`

Specifies the size of the administration volume in megabytes using an integer between 0 and 524288 (512 GB). Size can optionally be specified in gigabytes by providing either the `g` or `G` options following (no whitespace between) the entered size value. This option cannot be used with the `-pct` option. This option is deprecated and will be removed in a subsequent release.

`-f`

Suppresses the requested confirmation before growing a virtual volume with a different RAID type than the last region of the existing virtual volume, or when the virtual volume size grows from under 2 T to over 2 T.

`-t <RAID_type>`

Specifies the RAID type with `r0`, `r1`, `r5` or `r6`. If not specified, the default RAID type is the same as the last region of the existing virtual volume. Specifying a different RAID type than the existing virtual volume results in a warning message and a prompt for confirmation unless the `-f` option is specified.

`-ssz <size_number_chunklet>`

Specifies the set size in terms of chunklets. The default depends on the RAID type specified. If the RAID type is not specified or if the same RAID type as the last region of the existing virtual volume is specified, the default is the same set size as the last region of the existing VV. Otherwise, the default is 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row for each logical disk using an integer between 1 and 2147483647. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size in kilobytes using 32, 64, 128, 256, or 512. The default depends on whether the RAID type is specified. If the RAID type is not specified or is the same RAID type as the last region of the existing virtual volume, the default is the same step size as the last region of the virtual volume. Otherwise, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. For RAID-6 the step size is a function of the set size.

`-ha <port>|<cage>|<mag>`

Specifies that the RAID layout must support a failure of one port pair, one cage, or one mag. The default depends on whether the RAID type is specified. If the RAID type is not specified or if the same RAID type as the last region of the existing virtual volume is specified, the default is the same as the last region of the existing virtual volumes. Otherwise the default is cage. This option has no meaning for RAID-0. Note that snap admin space is always created with cage availability.

`-ch first|last`

Specifies the chunklet location preference characteristics, either `first` (the lowest numbered chunklets) or `last` (the highest numbered chunklets). If no argument is specified, the default characteristic is `first`.

`-pct <prc>`

Specifies the required growth size of the snapshot volume as a percentage of the required growth size of your volume (as specified with the `-szu` option). This option must be used with the `-szu` option, and cannot be used with the `-szs` option. If not specified, the default value is zero percent of your user volume.

`-wait <secs>`

If the `growalddv` command fails due to the lack of clean space, the `-wait` option specifies the number of seconds to wait for the system to clean the dirty space before returning. If `-wait 0` is issued, the command returns immediately. If this option is not used, the command will keep waiting for dirty chunklets to be cleaned if enough space will be available with the dirty chunklets cleaned.

`-dr`

Specifies that the command is a dry run and that no logical disks or virtual volumes are created.

`-verbose on|off`

Specifies that verbose output is either enabled (`on`) or disabled (`off`). If not specified, verbose output is disabled.

`-p <pattern>`

Specifies a pattern for disks. Patterns are used to select disks that are used for creating logical disks. If no pattern is specified, the option defaults to all disks of device type specified at creation time. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern. The following arguments can be specified as patterns for this option:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are each separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-7). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are each separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are each separated with a comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-7). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are each separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (*item*). Multiple disks are each separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments are used to limit the disks that are used to create logical disks depending on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <ID>`

Specifies that physical disks identified by their device IDs be selected for logical disk creation. Device IDs can be specified in a comma-separated list. Device IDs can be displayed by issuing the `showpd -i` command.

`-devtype <model>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

---

**NOTE:** Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

---

## SPECIFIERS

`<VV_name>`

Specifies the name of the virtual volume, using up to 31 characters, that you are enlarging.

## RESTRICTIONS

- Access to all domains is required to run this command.
- Option `-pct` can only be used if option `-szu` is used.
- Options `-pct` and `-szs` cannot be used in the same instance of issuing the `growldvv` command.
- One or more of the `-szu`, `-sza`, and `-szs` options must be specified.
- If enlarging either the administration or snapshot space on the VV and both administration and snapshot space are zero MB, the administration and snapshot space must be enlarged together. Both, the `-sza` and `-szs` options must be specified on the command line. Specifying `-sza` or `-szs` alone is invalid.
- If the volume being enlarged has snapshot data space and snapshot administration space with sizes of 0 bytes, the `-sza` and `-szs` options must be specified together.
- This command cannot be used to grow a volume in such a way that a volume that currently only has logical disks of a particular device type (Fibre Channel, nearline, or solid state drive) will have logical disks of multiple device types after the grow operation. If a virtual volume currently has logical disks of multiple device types, it is possible to grow the volume using logical disks of any device type. Use `showpd` to see the device types of physical disks in the system.

## EXAMPLES

The following example displays the enlarging of a RAID-5 virtual volume with 3+1 parity ratio named `vv01` by 10 GB:

```
cli% growaldvv -szu 10g -t r5 -ssz 4 vv01
```

## NOTES

- A volume can be enlarged while I/O is occurring.
- When issuing the `growaldvv` command, the specified options only apply to the newly enlarged sections of the volume. This can result in a VV that has different characteristics in its base and grown sections.
- If options were used in the creation of the original virtual volume (`createaldvv`) that were not the default option values, and not specified in the same manner when issuing the `growaldvv` command, `growaldvv` uses the `createaldvv` default option values. This can result in a virtual volume that has different characteristics in its base and grown sections.
- By default, LDs are created using only physical disks with the same device type (by default, the Fibre Channel device type is used). Use the `-p devtype NL` option or `-p -devtype SSD` to override this default. Use the `showpd` command to see the device types of PDs in the system.
- If no device type is specified using the `-p -devtype` option, Fibre Channel is assumed.
- This command is only used for a non-provisioned VV. The command `growvv` should be used instead for a virtual volume that has its user space provisioned from a CPG.
- For this command:
  - KB = 1024 bytes
  - MB = 1024 KB
  - GB = 1024 MB

## growavv

### DESCRIPTION

This command was deprecated in the 2.2.4 release and will be changed or removed in a future release. Please use the `growvv` command in the future. If virtual volumes were created with deprecated commands then only deprecated commands can be used to modify virtual volumes.

The `growavv` command enlarges a Virtual Volume (VV) with automatic mapping to the Logical Disks (LDs).

### SYNTAX

```
growavv [options] <VV_name> <user_LD_ID> <LD_size> <sa_LD_ID>  
<admin_size> <sd_LD_ID> <snap_size>
```

### AUTHORITY

- Super, Edit
- Any role that is granted the `vv_grow` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-verbose on|off`

Specifies that verbose output is either enabled (`on`) or disabled (`off`). If not specified, verbose output is disabled.

`-dr`

Specifies that the command is a dry run and that no logical disks or virtual volumes are actually created.

`-f`

Suppresses the requested confirmation before growing a virtual volume size from under 2 T to over 2 T.

### SPECIFIERS

`<VV_name>`

Specifies the virtual volume name, using up to 31 characters.

`<user_LD_ID>`

Specifies the LDs to be used as user space. The LDs are identified by one or more integers (`item`). Integers can be provided as a single number (1), a comma separated list of numbers (1, 2, 3), or a range of numbers separated with a dash (1-4).

`<LD_size>`

Specifies the size of your area in megabytes.

`<sa_LD_ID>`

Specifies the LDs to be used as snapshot administrator space. The LDs are identified by one or more integers (`item`). Integers can be provided as a single number (1), a comma separated list of numbers (1, 2, 3), or a range of numbers separated with a dash (1-4).

`<admin_size>`

Specifies the size of the administrator space in megabytes.

`<sd_LD_ID>`



Specifies the LDs to be used as snapshot data space. The LDs are identified by one or more integers (*item*). Integers can be provided as a single number (1), a comma separated list of numbers (1,2,3), or a range of numbers separated with a dash (1-4).

<snap\_size>

Specifies the size of the snapshot space in megabytes.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

- For this command:
- MB = 1048576 bytes

# growtpvv

## DESCRIPTION

This command was deprecated in the 2.2.3 release and will be changed or removed in a future release. Please use the `growvv` command in the future. If virtual volumes were created with deprecated commands then only deprecated commands can be used to modify virtual volumes.

The `growtpvv` command enlarges a Thinly Provisioned Virtual Volume (TPVV).

## AUTHORITY

- Super, Edit
- Any role granted the `vv_grow` right.

## SYNTAX

```
growtpvv <size_increment> [g|G|t|T] <TPVV_name>
```

## OPTIONS

-f

Suppresses the requested confirmation before growing a virtual volume size from under 2 T to over 2 T.

## SPECIFIERS

```
<size_increment> [g|G|t|T]
```

Specifies the size in MB to be added to the TPVV user size. Should be in the range 1 T to 16 T. The volume size is rounded up to the next multiple of 32 MB. Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter and terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space).

```
<TPVV_name>
```

Specifies the TPVV's name, using up to 31 characters.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

For this command:

- MB = 1048576 bytes
- GB = 1024 MB
- TB = 1024 GB

# growvv

## DESCRIPTION

The `growvv` command increases the size of a virtual volume.

## SYNTAX

```
growvv <VV_name> <size> [g|G|t|T]
```

## AUTHORITY

- Super, Edit
- Any role granted the `vv_grow` right.

---

**NOTE:** You need access to the domain of the specified group (`<group_name>`) in order to run this command.

---

## OPTIONS

`-f`

Suppresses the requested confirmation before growing a virtual volume size from under 2 T to over 2 T.

## SPECIFIERS

`<VV_name>`

The name of the volume to be grown.

`<size> [g|G|t|T]`

The size to be added to the volume's user space. The size is specified in multiples of 256 MB. You can optionally specify the grow size in gigabytes (`g` or `G`) or in terabytes (`t` or `T`).

## RESTRICTIONS

- In order to grow a virtual volume in a Remote Copy group, that group must first be stopped.
- You must grow the corresponding virtual volume on the secondary system by the same amount or the Remote Copy group will not restart.

## EXAMPLES

The following example increases the size of virtual volume `vv1` by two terabytes:

```
# growvv vv1 2t
```

## NOTES

Ensure that there is sufficient space to mirror the grow of the volume on the secondary system before growing the volume on the primary system.

The grow operations of Remote Copy volumes are coordinated between the primary and secondary targets. A coordinated grow can be started from either the primary or secondary target. Volumes on remote targets are grown to the intended size of the local volume. If a target cannot be contacted or Remote Copy is not started, only the local volume will be grown. A check is first made to see if the local and remote volumes can be grown by the requested amount. If this succeeds, all the volumes are grown; however, if other volumes are grown during this process, it is possible that remote volumes are grown and the local volume is not. If this occurs, remote volumes must be grown manually before the group can be started.

---

# 15 Hist Commands

## histch

### DESCRIPTION

The `histch` command displays a histogram of service times in a timed loop for individual chunklets.

### SYNTAX

```
histch [options <arg>]
```

### AUTHORITY

Any role in the system.

### OPTIONS

`-ld <LD_name>`

Specifies the Logical Disk (LD), identified by name, from which chunklet statistics are sampled.

`-ch <chunklet_num>`

Specifies that statistics are limited to only the specified chunklet, identified by number.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` - (Default) Displays both I/O time and I/O size histograms.
- `time` - Displays only the I/O time histogram.
- `size` - Displays only the I/O size histogram.

`-timecols <fcol> <lcol>`

For the I/O time histogram, show the columns from the first column `<fcol>` through last column `<lcol>`. The available columns range from 0 through 31.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 6).
- The last column (`<lcol>`) must be less than or equal to 31 (default value of 15).
- The first column includes all data accumulated for columns less than the first column and the last column includes accumulated data for all columns greater than the last column.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, show the columns from the first column (`<fcol>`) through the last column (`<lcol>`). Available columns range from 0 through 15.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 3).
- The last column (`<lcol>`) must be less than or equal to 15 (default value of 11).

`-pct`

Shows the access count in each bucket as a percentage.

---

**NOTE:** For the following options, by default the histogram shows data from the start of the command.

---

`-prev|-begin`

Specifies that the histogram displays data either from a previous sample (`-prev`) or from when the system was last started (`-begin`). If no option is specified, the histogram shows data from the beginning of the command's execution.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, you can specify the direction of sorting (`<dir>`) as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple can specify multiple columns on the command line by using a colon (:). Rows having the same column(s) are sorted by the values in the latter specified columns.

`-filt <fspec>`

Specifies that histograms below the threshold specified by the `<fspec>` argument are not displayed. The `<fspec>` argument is specified in the syntax of `<op>,<val_ms>,<count>`.

- `<op>`

The `<op>` argument can be specified as one of the following:

- `r` - Specifies read statistics.
- `w` - Specifies write statistics.
- `t` - Specifies total statistics.
- `rw` - Specifies total read and write statistics.

- `<val_ms>`

Specifies the threshold service time in milliseconds.

- `<count>`

Specifies the minimum number of access above the threshold service time. When filtering is done, the `<count>` is compared with the sum of all columns starting with the one which corresponds to the threshold service time. For example, `-t, 8, 100` specifies that only the rows where the 8ms column and all columns to the right adds up to more than 100 are to be displayed.

`-ni`

Specifies that histograms for only nonidle devices are displayed. This option is shorthand for the option `-filt t, 0, 0`.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of a histogram of service times for system chunklets:

```
cli% histch -iter 1
          12:42:57 10/20/04 -----Time (millisec)-----
Ldid      Ldname LdCh Pdid PdCh 0.26 0.53 1.05 2.1 4.2 8.4 17 34 67 135
  2 tp-0-sa-0.0   1  21   0   0   0   0   0   0   0   0   0   0   0   0
  2 tp-0-sa-0.0   0  45   0   0   0   0   0   0   0   0   0   0   0   0
  1 tp-0-sa-0.1   1  20   0   0   0   0   0   0   0   1   0   0   0   0
  1 tp-0-sa-0.1   0  42   0   0   0   0   0   0   0   1   0   0   0   0
  0 admin.usr.0   1  22   3   0   0   0   0   1   0   3   2   0   0   0
  0 admin.usr.0   0  44   3   0   0   0   0   0   1   3   2   0   0   0
-----
          total                0   0   0   1   1   8   4   0   0   0
```

For the previous example, before the `histch` command was issued, the `setstatch start` command was issued for chunklets 0 and 1 on logical disks `admin.usr.0`, `tp-0-sa-0.1`, and `tp-0-sa-0.0`.

## NOTES

- The `setstatch` command must be issued to enable statistics collection on chunklets before issuing the `histch` command. See “[setstatch](#)” (page 331) for additional information.
- Each service time histogram column shows the number of accesses with service times between the point in time shown in the column's heading to the point in time shown in the heading of the column to its right (or infinity for the last column). Unless all columns are shown, the first column shows the number of accesses with service times less than the heading of the second column.
- Each I/O size histogram column shows the number of accesses with I/O size between the size shown in the column's heading to the size shown in the heading of the column to its right (or infinity for the last column).

# histld

## DESCRIPTION

The `histld` command displays a histogram of service times for Logical Disks (LDs) in a timed loop.

## SYNTAX

```
histld [options <arg>] [<LD_name_or_pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-vv <VV_name>...|<pattern>...`

Show only LDs that are mapped to Virtual Volumes (VVs) with names that match any of the names or patterns specified. Multiple volumes or patterns can be repeated using a comma separated list.

`-domain <domain_name>...|<pattern>...`

Shows only LDs that are in domains with names that match any of the names or patterns specified. Multiple volumes or patterns can be repeated using a comma separated list.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` - (Default) Displays both I/O time and I/O size histograms.
- `time` - Displays only the I/O time histogram.
- `size` - Displays only the I/O size histogram.

`-timecols <fcol> <lcol>`

For the I/O time histogram, shows the columns from the first column `<fcol>` through last column `<lcol>`. The available columns range from 0 through 31.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 6).
- The last column (`<lcol>`) must be less than or equal to 31 (default value of 15).
- The first column includes all data accumulated for columns less than the first column and the last column includes accumulated data for all columns greater than the last column.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, show the columns from the first column (`<fcol>`) through the last column (`<lcol>`). Available columns range from 0 through 15.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 3).
- The last column (`<lcol>`) must be less than or equal to 15 (default value of 11).

`-pct`

Shows the access count in each bucket as a percentage. If this option is not specified, the histogram shows the access counts.

---

**NOTE:** For the following options, by default the histogram shows data from the start of the command.

---

`-prev|-begin`

Histogram displays data either from a previous sample (`-prev`) or from when the system was last started (`-begin`). If no option is specified, the histogram shows data from the beginning of the command's execution.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

`-filt <fspec>`

Specifies that histograms below the threshold specified by the `<fspec>` argument are not displayed. The `<fspec>` argument is specified in the syntax of `<op>,<val_ms>,<count>`.

- `<op>`

The `<op>` argument can be specified as one of the following:

- `r` - Specifies read statistics.
- `w` - Specifies write statistics.
- `t` - Specifies total statistics.
- `rw` - Specifies total read and write statistics.

- `<val_ms>`

Specifies the threshold service time in milliseconds.

- `<count>`

Specifies the minimum number of access above the threshold service time. When filtering is done, the `<count>` is compared with the sum of all columns starting with the one which corresponds to the threshold service time. For example, `-t, 8, 100` specifies that only the rows where the 8ms column and all columns to the right adds up to more than 100 are to be displayed.

`-ni`

Specifies that histograms for only nonidle devices are displayed. This option is shorthand for the option `-filt t, 0, 0`.

## SPECIFIERS

[<LD\_name\_or\_pattern>] ...



Specifies the LD(s) or pattern(s) for which the histogram data is collected.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of a histogram of service times for all LDs:

```
cli% histld -iter 1
12:38:49 10/20/04 -----Time (millisec)-----
      Ldame 0.26 0.53 1.05 2.1 4.2 8.4 17 34 67 135
tp-0-sa-0.0 0 0 0 0 0 0 0 0 0 0
tp-0-sd-0.1 0 0 0 0 0 0 0 0 0 0
tp-0-sd-0.0 0 0 0 0 0 0 0 0 0 0
admin.usr.0 0 0 0 0 1 6 6 1 0 0
tp-0-sa-0.1 0 0 0 0 0 0 0 0 0 0
tp-0-sd-0.3 0 0 0 0 0 0 0 0 0 0
tp-0-sd-0.2 0 0 0 0 0 0 0 0 0 0
-----
      total 0 0 0 0 1 6 6 1 0 0
```

## NOTES

- Each service time histogram column shows the number of accesses with service times between the time shown in the column's heading to the time shown in the heading of the column to its right (or infinity for the last column). Unless all columns are shown, the first column shows the number of accesses with service times less than the heading of the second column.
- Each I/O size histogram column shows the number of accesses with I/O size between the size shown in the column's heading to the size shown in the heading of the column to its right (or infinity for the last column).
- If the <LD\_name\_or\_pattern> specifier is used, then logical disks with names that match any of the patterns are listed, otherwise all LDs are listed. These patterns are glob-style patterns (see help on `sub`, `globpat`).
- Patterns are specified as regular expressions. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information. Issuing `histld -n LD_name.*` displays histogram data for all LDs whose name begins with `LD_name`.

# histpd

## DESCRIPTION

The `histpd` command displays a histogram of service times for Physical Disks (PDs).

## SYNTAX

```
histpd [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-w <WWN>`

Specifies the World Wide Name (WWN) of the physical disk for which service times are displayed.

`-nodes <node_list>`

Specifies that the display is limited to specified nodes and physical disks connected to those nodes. The node list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the node list is not specified, all disks on all nodes are displayed.

`-slots <slot_list>`

Specifies that the display is limited to specified PCI slots and physical disks connected to those PCI slots. The slot list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the slot list is not specified, all disks on all slots are displayed.

`-ports <port_list>`

Specifies that the display is limited to specified port slots and physical disks connected to those port slots. The port list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the port list is not specified, all disks on all ports are displayed.

`-devinfo`

Indicates the device disk type and speed.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` - (Default) Displays both I/O time and I/O size histograms.
- `time` - Displays only the I/O time histogram.
- `size` - Displays only the I/O size histogram.

`-timecols <fcol> <lcol>`

For the I/O time histogram, shows the columns from the first column `<fcol>` through last column `<lcol>`. The available columns range from 0 through 31.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`). The default value of `<fcol>` is 6.
- The last column (`<lcol>`) must be less than or equal to 31. The default value of `<lcol>` is 15.
- The first column includes all data accumulated for columns less than the first column and the last column includes accumulated data for all columns greater than the last column.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, show the columns from the first column (`<fcol>`) through the last column (`<lcol>`). Available columns range from 0 through 15.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`). The default value of `<fcol>` is 3.
- The last column (`<lcol>`) must be less than or equal to 15. The default value of `<lcol>` is 15.

`-pct`

Shows the access count in each bucket as a percentage. If this option is not specified, the histogram shows the access counts.

---

**NOTE:** For the following options, by default the histogram shows data from the start of the command.

---

`-prev` | `-begin`

Histogram displays data either from a previous sample (`-prev`) or from when the system was last started (`-begin`). If no option is specified, the histogram shows data from the beginning of the command's execution.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

`-filt <fspec>`

Specifies that histograms below the threshold specified by the `<fspec>` argument are not displayed. The `<fspec>` argument is specified in the syntax of `<op>,<val_ms>,<count>`.

- `<op>`

The `<op>` argument can be specified as one of the following:

- `r` - Specifies read statistics.
- `w` - Specifies write statistics.

- `t` - Specifies total statistics.
- `rw` - Specifies total read and write statistics.
- `<val_ms>`  
Specifies the threshold service time in milliseconds.
- `<count>`  
Specifies the minimum number of access above the threshold service time. When filtering is done, the `<count>` is compared with the sum of all columns starting with the one which corresponds to the threshold service time. For example, `-t, 8, 100` specifies that only the rows where the 8ms column and all columns to the right adds up to more than 100 are to be displayed.

`-ni`

Specifies that histograms for only nonidle devices are displayed. This option is shorthand for the option `-filt t, 0, 0`.

`-p <pattern>`

Specifies the pattern of PDs displayed in the histogram. Patterns are used to filter and select the disks displayed in the histogram. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`<item>`). Multiple nodes are separated with a single comma (`1, 2, 3`). A range of nodes is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified node number(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`<item>`). Multiple slots are separated with a single comma (`1, 2, 3`). A range of slots is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified PCI slot number(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`<item>`). Multiple ports are separated with a single comma (`1, 2, 3`). A range of ports is separated with a hyphen (`0-5`). The primary path of the disks must be on the specified port number(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (`<item>`). Multiple drive cages are separated with a single comma (`1, 2, 3`). A range of drive cages is separated with a hyphen (`0-3`). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The `1.` or `0.` displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (`<item>`). Multiple drive magazines are separated with a single comma (`1, 2, 3`). A range of drive magazines is separated with a hyphen (`0-3`). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (`<item>`). Multiple disk positions are separated with a single comma (`1, 2, 3`).

A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

-dk <item>

Specifies one or more physical disks. Disks are identified by one or more integers (<item>). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

-tc\_gt <number>

Specifies that physical disks with total chunklets greater than the number specified are selected.

-tc\_lt <number>

Specifies that physical disks with total chunklets less than the number specified are selected.

-fc\_gt <number>

Specifies that physical disks with free chunklets greater than the number specified are selected.

-fc\_lt <number>

Specifies that physical disks with free chunklets less than the number specified are selected.

-devid <model>

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

-devtype <type>

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

-rpm <number>

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd -i` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example, `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays a histogram of service times for all physical disks and shows the columns from 8ms to 8192 ms. Only pds with more than 500 accesses with service time equal or greater than 16ms are displayed:

```
cli% histpd -begin -metric time -timecols 10 20 -filt t,16,500
23:01:12 08/09/10 -----Time (millisec)-----
ID      Port      8    16    32  64 128 256 512 1024 2048 4096 8192
0       0:0:1    3647  550  29  1  0  0  0  0  0  0  0
1       1:0:1    2742  969 111  7  0  0  0  0  0  0  0
3       1:0:1    4181 2786 292  0  0  0  0  0  0  0  0
5       1:0:1    3397 1818 228  3  0  0  0  0  0  0  0
7       1:0:1    2793 1281  77  0  1  0  0  0  0  0  0
8       0:0:1    1449  801  23  0  0  0  0  0  0  0  0
9       1:0:1    2425 2779 287  3  0  0  0  0  0  0  0
11      1:0:1    3526  860 157  1  1  0  0  0  0  0  0
12      0:0:1    6049 2171  58  3  0  0 13  6  0  0  0
13      1:0:1    4444 2942 261  9  0  0  0  0  0  0  0
16      0:0:2    3630  555  35  0  0  0  0  0  0  0  0
17      1:0:2    2769  958 105  0  0  0  0  0  0  0  0
19      1:0:2    4227 2773 263  0  0  0  0  0  0  0  0
21      1:0:2    2757 2353 339  4  0  0  0  0  0  0  0
23      1:0:2    2735 1321  94  2  0  0  0  0  0  0  0
24      0:0:2    1360  577  15  2  0  2  3  0  0  0  0
25      1:0:2    2484 2420 286  0  0  0  0  0  0  0  0
27      1:0:2    4504  633 122  1  0  0  0  0  0  0  0
28      0:0:2    6059 2177  65  3  0  1  1  2  0  0  0
29      1:0:2    4245 3113 300  1  0  0  0  0  0  0  0
-----
total          69423 33837 3147 40  2  3 17  8  0  0  0
Press the enter key to stop...
```

## NOTES

- Each service time histogram column shows the number of accesses with service times between the point in time shown in the column's heading to the point in time shown in the heading of the column to its right (or infinity for the last column). Unless all columns are shown, the first column shows the number of accesses with service times less than the heading of the second column.
- Each I/O size histogram column shows the number of accesses with I/O size between the size shown in the column's heading to the size shown in the heading of the column to its right (or infinity for the last column).
- Previous options `-n <node_list>`, `-s <slot_list>`, and `-p <port_list>` have been replaced with `-nodes <node_list>`, `-slots <slot_list>`, and `-ports <port_list>`.

# histport

## DESCRIPTION

The `histport` command displays a histogram of service times for ports within the system.

## SYNTAX

```
histport [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-both|-ctl|-data
```

Specifies that both control and data transfers are displayed (`-both`), only control transfers are displayed (`-ctl`), or only data transfers are displayed (`-data`). If this option is not specified, only data transfers are displayed.

```
-nodes <node_list>
```

Specifies that the display is limited to specified nodes and Physical Disks (PDs) connected to those nodes. The node list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the node list is not specified, all disks on all nodes are displayed.

```
-slots <slot_list>
```

Specifies that the display is limited to specified PCI slots and PDs connected to those PCI slots. The slot list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the slot list is not specified, all disks on all nodes are displayed.

```
-ports <port_list>
```

Specifies that the display is limited to specified ports and PDs connected to those ports. The port list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the port list is not specified, all disks on all nodes are displayed.

```
-host|disk|-rcfc|-peer
```

Displays only host ports (target ports), disk ports (initiator ports), Fibre Channel Remote Copy configured ports, or Fibre Channel ports for Data Migration. If no option is specified, all ports are displayed.

```
-metric both|time|size
```

Selects which metric to display. Metrics can be one of the following:

- `both` - (Default) Displays both I/O time and I/O size histograms.
- `time` - Displays only the I/O time histogram.
- `size` - Displays only the I/O size histogram.

```
-timecols <fcol> <lcol>
```

For the I/O time histogram, show the columns from the first column `<fcol>` through last column `<lcol>`. The available columns range from 0 through 31.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 6).
- The last column (`<lcol>`) must be less than or equal to 31 (default value of 15).
- The first column includes all data accumulated for columns less than the first column and the last column includes accumulated data for all columns greater than the last column.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, show the columns from the first column (`<fcol>`) through the last column (`<lcol>`). Available columns range from 0 through 15.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 3).
- The last column (`<lcol>`) must be less than or equal to 15 (default value of 11).

`-pct`

Shows the access count in each bucket as a percentage.

---

**NOTE:** For the following options, by default the histogram shows data from the start of the command.

---

`-prev|-begin`

Histogram displays data either from a previous sample (`-prev`) or from when the system was last started (`-begin`). If no option is specified, the histogram shows data from the beginning of the command's execution.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

`-filt <fspec>`

Specifies that histograms below the threshold specified by the `<fspec>` argument are not displayed. The `<fspec>` argument is specified in the syntax of `<op>,<val_ms>,<count>`.

- `<op>`

The `<op>` argument can be specified as one of the following:

- `r` - Specifies read statistics.
- `w` - Specifies write statistics.



- `t` - Specifies total statistics.
- `rw` - Specifies total read and write statistics.
- `<val_ms>`  
Specifies the threshold service time in milliseconds.
- `<count>`  
Specifies the minimum number of access above the threshold service time. When filtering is done, the `<count>` is compared with the sum of all columns starting with the one which corresponds to the threshold service time. For example, `-t, 8, 100` specifies that only the rows where the 8ms column and all columns to the right adds up to more than 100 are to be displayed.

`-ni`

Specifies that histograms for only nonidle devices are displayed. This option is shorthand for the option `-filt t, 0, 0`.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays a histogram of service times for reads and writes to ports:

```

li% histport
12:35:24 10/20/04 -----Time (millisec)-----
  Port      D/C  0.26  0.53  1.05  2.1  4.2  8.4  17  34  67  135
0:0:1      data    0    0    0    0    0    0    0  0  0  0
0:0:2      data  315  778    2    0    0    0    0  0  0  0
0:1:1      data    0    0    0    5   24   51  25  4  0  0
0:1:2      data    0    0    0    5   27   53  23  1  0  0
1:5:1      data    0    0    0    2   19   38  28 11  0  0
1:5:2      data    0    0    0    5   20   36  29  7  0  0
-----
  total      data  315  778    2   17   90  178 105 23  0  0
Press the enter key to stop...

```

## NOTES

- Each service time histogram column shows the number of accesses with service times between the point in time shown in the column's heading to the point in time shown in the heading of the column to its right (or infinity for the last column). Unless all columns are shown, the first column shows the number of accesses with service times less than the heading of the second column.
- Each I/O size histogram column shows the number of accesses with I/O size between the size shown in the column's heading to the size shown in the heading of the column to its right (or infinity for the last column).
- Previous options `-n <node_list>`, `-s <slot_list>`, and `-p <port_list>` have been replaced with `-nodes <node_list>`, `-slots <slot_list>`, and `-ports <port_list>`.

# histrccv

## DESCRIPTION

The `histrccv` command shows a histogram of total Remote Copy service times and backup system Remote Copy service times in a timed loop.

## SYNTAX

```
histrccv [options <arg>] [<VV_name>|<pattern>]...
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command uses a 2-second default interval.

`-iter <number>`

Specifies that the statistics are to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-t <target_name>...|<pattern>...`

Shows only volumes whose group is copied to the specified target name or pattern. Multiple target names or patterns may be specified using a comma-separated list.

`-port <port_NSP>...|<pattern>...`

Show only volumes that are copied over the specified port, expressed as `<N:S:P>`, or pattern of ports. Multiple ports or patterns may be specified using a comma-separated list.

`-g <group_name>...|<pattern>...`

Shows only volumes whose volume group matches the specified group name or pattern of names. Multiple group names or patterns may be specified using a comma-separated list.

`-sync`

Show only volumes that are being copied in synchronous mode.

`-periodic`

Show only volumes which are being copied in asynchronous periodic mode.

`-primary`

Show only virtual volumes in the primary role.

`-secondary`

Show only virtual volumes in the secondary role.

`-targetsum`

Displays the sums for all volumes of a target.

`-portsum`

Displays the sums for all volumes on a port.

`-groupsum`

Displays the sums for all volumes of a volume group.

`-vvsum`

Displays the sums for all targets and links of a virtual volume.

`-domainsum`

Displays the sums for all volumes of a domain.

-domain <domainname>...|<pattern>...

Shows only the virtual volumes that are in domains with names that match the specified domain name(s) or pattern(s).

-timecols <fcol> <lcol>

For the I/O time histogram, shows the columns from the first column (<fcol>) through the last column (<lcol>). The available columns range from 0 through 31.

- <fcol> must be equal to or greater than 0. The default value of <fcol> is 6.
- <lcol> must be:
  - greater than <fcol>
  - less than or equal to 31

The default value of <lcol> is 15.

-pct

Shows the number of times the service time appears in each bucket as a percentage. If this option is not specified, the histogram shows the service times.

-prev

Specifies that the histogram displays data from a previous sample.

-sortcol <col> [,<dir>] [:<col>[,<dir>]...]

Sorts command output based on column number (<col>). Columns are numbered from left to right, beginning with 0. You must specify a column number.

In addition, you can specify the direction of sorting (<dir>):

- inc - Sort in increasing order (the default).
- dec - Sort in decreasing order.

-filt <fspec>

Specifies that histograms below the threshold specified by the <fspec> argument are not displayed. To specify the <fspec> argument, use the syntax: <op>,<val\_ms>,<count>.

- <op> - The<op> argument can be:
- <val\_ms> - Specifies the threshold service time in milliseconds.
- <count> - Specifies the minimum number of times the service time is above the threshold service time. When filtering is done, the <count> is compared with the sum of all columns, starting with the one that corresponds to the threshold service time.

For example, -filt t,8,100 specifies that the display should include only the rows where the 8ms column and each subsequent column to the right adds up to more than 100.

-ni

Displays histograms for all non-idle devices. This option is shorthand for the option -filt t,0,0.

## SPECIFIERS

<VV\_name|pattern>...

Displays statistics only for the specified virtual volume or volume name pattern. Multiple volumes or patterns can be repeated (for example, <VV\_name> <VV\_name>...). If not specified, all virtual volumes that are configured for Remote Copy are listed.

## RESTRICTIONS

None.

## EXAMPLES

The following example shows histograms sums for all synchronous Remote Copy volumes:

```
cli% histrcvv -vvsum -sync
09:50:40 03/30/10 -----Svt (millisec)----- -----Rmt Svt
(millisec)-----
VVname RCGroup Target Mode 0.50 1 2 4 8 16 32 64 128 256 0.50 1 2 4 8 16
32 64 128 256
testvv.2 multi.1 amp2 Sync 0 0 0 163 61 16 3 0 0 0 0 0 224 19 0 0 0
0 0 0 0
testvv.3 multi.1 amp2 Sync 0 0 0 138 62 37 4 2 0 0 0 0 224 19 0 0 0
0 0 0 0
testvv.8 sync.2 amp3 Sync 0 0 0 0 0 4 13 11 5 4 0 0 0 0 4 12
12 7 1 1
testvv.4 multi.1 amp2 Sync 0 0 0 54 132 52 17 2 0 0 0 0 252 5 0 0 0
0 0 0 0
testvv.0 multi.1 amp2 Sync 0 0 0 59 138 57 17 2 0 0 0 0 258 15 0 0 0
0 0 0 0
testvv.9 sync.2 amp3 Sync 0 0 0 0 1 0 14 8 6 3 0 0 0 0 2 7
14 4 4 1
testvv.1 multi.1 amp2 Sync 0 0 0 130 71 40 3 0 0 0 0 0 225 19 0 0 0
0 0 0 0
-----
total 0 0 0 544 465 206 71 25 11 7 0 1183 77 0 6 19
26 11 5 2
Press the enter key to stop...
```

## NOTES

None.

# histvlun

## DESCRIPTION

The `histvlun` command displays Virtual Volume Logical Unit Number (VLUN) service time histograms.

## SYNTAX

```
histvlun [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-domain <domain_name>... | <pattern>...`

Shows only VLUNs whose Virtual Volumes (VVs) are in domains with names that match one or more of the specified domain names or patterns. Multiple domain names or patterns can be repeated using a comma-separated list.

`-host <hostname>... | <pattern>...`

Shows only VLUNs exported to the specified host(s) or pattern(s). Multiple host names or patterns can be repeated using a comma-separated list.

`-v <VV_name>... | <pattern>...`

Requests that only LDs mapped to VVs that match and of the specified names or patterns be displayed. Multiple volume names or patterns can be repeated using a comma-separated list.

`-l <LUN>... | <pattern>...`

Specifies that VLUNs with LUNs matching the specified LUN(s) or pattern(s) are displayed. Multiple LUNs or patterns can be repeated using a comma-separated list.

`-nodes <node_list>`

Specifies that only exports from the specified nodes are to be displayed. The node list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the node list is not specified, all disks on all nodes are displayed.

`-slots <slot_list>`

Specifies that only exports from the specified slots are to be displayed. The slot list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the slot list is not specified, all disks on all slots are displayed.

`-ports <port_list>`

Specifies that only exports to the specified ports are to be displayed. The port list is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the port list is not specified, all disks on all ports are displayed.

`-lw`

Lists the host's World Wide Name (WWN) or iSCSI name. This is especially useful when multiple WWNs or iSCSI names belonging to the same host are visible on the same port.

`-domainsum`

Specifies that sums for VLUNs are grouped by domain in the display. All VLUNs to unnamed hosts are added and displayed as a single set of data with a - host name.

`-vvsum`

Specifies that sums for VLUNs of the same VV are displayed.

`-hostsum`

Specifies that sums for VLUNs are grouped by host in the display. All VLUNs to unnamed hosts are added and displayed as a single set of data with a nameless host.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` - (Default) Displays both I/O time and I/O size histograms.
- `time` - Displays only the I/O time histogram.
- `size` - Displays only the I/O size histogram.

`-timecols <fcol> <lcol>`

For the I/O time histogram, show the columns from the first column `<fcol>` through last column `<lcol>`. The available columns range from 0 through 31.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 6).
- The last column (`<lcol>`) must be less than or equal to 31 (default value of 15).
- The first column includes all data accumulated for columns less than the first column and the last column includes accumulated data for all columns greater than the last column.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, show the columns from the first column (`<fcol>`) through the last column (`<lcol>`). Available columns range from 0 through 15.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 3).
- The last column (`<lcol>`) must be less than or equal to 15 (default value of 11).

`-pct`

Shows the access count in each bucket as a percentage.

---

**NOTE:** For the following options, by default the histogram shows data from the start of the command.

---

`-prev|-begin`

Histogram displays data either from a previous sample (`-prev`) or from when the system was last started (`-begin`). If no option is specified, the histogram shows data from the beginning of the command's execution.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

dec

Sort in decreasing order.

-filt <fspec>

Specifies that histograms below the threshold specified by the <fspec> argument are not displayed. The <fspec> argument is specified in the syntax of <op>,<val\_ms>,<count>.

- <op>

The <op> argument can be specified as one of the following:

- r - Specifies read statistics.
- w - Specifies write statistics.
- t - Specifies total statistics.
- rw - Specifies total read and write statistics.

- <val\_ms>

Specifies the threshold service time in milliseconds.

- <count>

Specifies the minimum number of access above the threshold service time. When filtering is done, the <count> is compared with the sum of all columns starting with the one which corresponds to the threshold service time. For example, -t , 8 , 100 specifies that only the rows where the 8ms column and all columns to the right adds up to more than 100 are to be displayed.

-ni

Specifies that histograms for only nonidle devices are displayed. This option is shorthand for the option -filt t,0,0.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays two iterations of a histogram of service times for all VLUNs:

```
cli% histvlun -iter 2
      12:48:50 10/20/04 -----Time (millisec)-----
Lun VVname      Host  Port 0.26 0.53 1.05 2.1 4.2 8.4 17 34 67 135
  0  tppv queasy09 0:0:2   0   1  20   0   0   0   0   0   0   0
-----
      total                0   1  20   0   0   0   0   0   0
      12:48:52 10/20/04 -----Time (millisec)-----
Lun VVname      Host  Port 0.26 0.53 1.05 2.1 4.2 8.4 17 34 67 135
  0  tppv queasy09 0:0:2   0   1  30   0   0   0   0   0   0
-----
      total                0   1  30   0   0   0   0   0   0
```

## NOTES

- Each service time histogram column shows the number of accesses with service times between the point in time shown in the column's heading to the point in time shown in the heading of the column to its right (or infinity for the last column).
- Each I/O size histogram column shows the number of accesses with I/O size between the size shown in the column's heading to the size shown in the heading of the column to its right (or infinity for the last column). Unless all columns are shown, the first column shows the number of accesses with service times less than the heading of the second column.
- Previous options `-n <node_list>`, `-s <slot_list>`, and `-p <port_list>` have been replaced with `-nodes <node_list>`, `-slots <slot_list>`, and `-ports <port_list>`.



# histvv

## DESCRIPTION

The `histvv` command displays Virtual Volume (VV) service time histograms in a timed loop.

## SYNTAX

```
histvv [options <arg>] [<VV_name>|<pattern>]...
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-domain <domainname>...|<pattern>...
```

Shows only the VVs that are in domains with names that match the specified domain name(s) or pattern(s).

```
-metric both|time|size
```

Selects which metric to display. Metrics can be one of the following:

- `both` - (Default) Displays both I/O time and I/O size histograms.
- `time` - Displays only the I/O time histogram.
- `size` - Displays only the I/O size histogram.

```
-timecols <fcol> <lcol>
```

For the I/O time histogram, show the columns from the first column `<fcol>` through last column `<lcol>`. The available columns range from 0 through 31.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 6).
- The last column (`<lcol>`) must be less than or equal to 31 (default value of 15).
- The first column includes all data accumulated for columns less than the first column and the last column includes accumulated data for all columns greater than the last column.

```
-sizecols <fcol> <lcol>
```

For the I/O size histogram, show the columns from the first column (`<fcol>`) through the last column (`<lcol>`). Available columns range from 0 through 15.

- The first column (`<fcol>`) must be a value greater than or equal to 0, but less than the value of the last column (`<lcol>`) (default value of 3).
- The last column (`<lcol>`) must be less than or equal to 15 (default value of 11).

```
-pct
```

Shows the access count in each bucket as a percentage.

---

**NOTE:** For the following options, by default the histogram shows data from the start of the command.

---

```
-prev
```

Histogram displays data from a previous sample.

```
-rw
```

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

```
-d <secs>
```

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

`-filt <fspec>`

Specifies that histograms below the threshold specified by the `<fspec>` argument are not displayed. The `<fspec>` argument is specified in the syntax of `<op>`, `<val_ms>`, `<count>`.

- `<op>`

The `<op>` argument can be specified as one of the following:

- `r` - Specifies read statistics.
- `w` - Specifies write statistics.
- `t` - Specifies total statistics.
- `rw` - Specifies total read and write statistics.

- `<val_ms>`

Specifies the threshold service time in milliseconds.

- `<count>`

Specifies the minimum number of access above the threshold service time. When filtering is done, the `<count>` is compared with the sum of all columns starting with the one which corresponds to the threshold service time. For example, `-t, 8, 100` specifies that only the rows where the 8ms column and all columns to the right adds up to more than 100 are to be displayed.

`-ni`

Specifies that histograms for only nonidle devices are displayed. This option is shorthand for the option `-filt t, 0, 0`.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays two iterations of a histogram of service times for all VVs:

```
%cli histvv -iter 2
12:53:03 10/20/04 -----Time (millisec)-----
      VVname 0.26 0.53 1.05 2.1 4.2 8.4 17 34 67 135
      admin   0   0   0   0   0   0   0   0   0   0
      tpvv   29   0   0   0   0   0   0   0   0   0
-----
      total  29   0   0   0   0   0   0   0   0   0

12:53:05 10/20/04 -----Time (millisec)-----
      VVname 0.26 0.53 1.05 2.1 4.2 8.4 17 34 67 135
      admin   0   0   0   0   0   0   0   0   0   0
      tpvv  105   0   0   0   0   0   0   0   0   0
-----
      total 105   0   0   0   0   0   0   0   0   0
```

## NOTES

- Each service time histogram column shows the number of accesses with service times between the point in time shown in the column's heading to the point in time shown in the heading of the column to its right (or infinity for the last column).
- Each I/O size histogram column shows the number of accesses with I/O size between the size shown in the column's heading to the size shown in the heading of the column to its right (or infinity for the last column). Unless all columns are shown, the first column shows the number of accesses with service times less than the heading of the second column.
- If a `<VV_name>` or `<pattern>` are specified, then VVs with names that match any of the patterns are listed, otherwise all VVs are listed. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.
- Virtual volumes may be accessed externally by hosts and internally by the prefetcher. Virtual volume data measured by this command include accesses by the prefetcher.
- In addition to external accesses by hosts, VVs can be read internally by the system read-ahead prefetcher. The `histvv` data includes read-ahead accesses from the prefetcher that can cause the read data to appear more than seen by the hosts. Use the `histvlnun -vvsum` command to see data for only accesses from the host.

---

# 16 Import Command

## importvv

### DESCRIPTION

The `importvv` command initiates the migration of data from a remote LUN to the local HP 3PAR Storage System. The remote LUN must be prepared for migration by using the `admitvv` command before using the `importvv` command.

### SYNTAX

```
importvv [options] <usrcpg> <VV_name|pattern|VV_set> ...
```

### AUTHORITY

- Super, Service, Edit
- Any role granted the `vv_import` right.

### OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-snap <snapname>`

Creates a snapshot of the volume at the end of the import phase. While the data is being imported, the local volume and the remote volume are kept in sync (i.e., all the data that is written while data is getting imported is mirrored to the remote array.) Once the volume import is complete, data is only written to the volume on the array that was importing the data and the volume on the old array will no longer be updated. The `-snap` parameter will create a snapshot at the last phase of the import and the content of the created snapshot will be identical to the state of the volume on the old array when the import task is completed.

If multiple VVs are being imported in a single command, `<snapname>` should be a VV pattern. See `help sub, vvnamepat` for details.

`-snp_cpg <snp_cpg>`

Specifies the name of the CPG from which the snapshot space will be allocated. This option needs to be specified if the `-snap` option is used.

The following options can be used when creating thinly provisioned volumes:

`-tpvv`

Imports the volume into a thinly provisioned space in the CPG specified in the command line. The import will enable zero detect for the duration of import so that the data blocks containing zero do not occupy space on the new array.

### SPECIFIERS

`<usrcpg>`

Specifies the name of the CPG from which the volume user space will be allocated. If the `-tpvv` option is specified, the volume is thinly provisioned. Otherwise, the volume is fully provisioned.

`<VV_name|set:vvset|pattern>...`

Specifies the VVs with the specified name (up to 31 characters in length), matching the glob-style pattern or that are members of the supplied VV set is imported onto local storage. The VV set name must start with `set :`. This specifier can be repeated to import multiple VVs at the same time.

## RESTRICTIONS

Functionality of this command requires the Peer Motion license. Contact your local service provider for more information.

## EXAMPLES

The following example imports `vv1` previously admitted using the `admitvv` command:

```
cli% importvv cpg1 vv1
```

The following example imports `vv1` as a thin provisioned volume:

```
cli% importvv -tpvv cpg1 vv1
```

The following example imports multiple volumes as thin provisioned volumes and creates read only snapshots:

```
cli% importvv -tpvv -snap @vvname@.ro -snp_cpg cpg2 cpg1 vv*
```

## NOTES

A volume is imported online but the volume can only be accessed using the HP 3PAR storage system that is importing the volume.

For all the `<name_or_pattern>` fields, the patterns are glob-style (shell-style) patterns. Refer to “Glob-Style Pattern” (page 12) for further information.

---

# 17 Locate Commands

## locatecage

### DESCRIPTION

The `locatecage` command allows system administrators to locate a drive cage, drive magazine, or port in the system using the devices' blinking LEDs.

### SYNTAX

The syntax for the `locatecage` command can be one of the following:

- To locate an entire drive cage:

```
locatecage [option <arg>] <cage_name>
```

- To locate a drive magazine:

```
locatecage [option <arg>] <cage_name> <mag>
```

- To locate a port:

```
locatecage [option <arg>] <cage_name> <port_name>
```

### AUTHORITY

- Super, Service
- Any role granted the `cage_locate` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-t <sec>`

Specifies the number of seconds, from 0 through 255 seconds, to blink the LED. If the argument is not specified, the option defaults to 60 seconds.

### SPECIFIERS

`<cage_name>`

Specifies the drive cage name as shown in the `Name` column of `showcage` command output.

`<port_name>`

Indicates the port specifiers. Accepted values are `A0 | B0 | A1 | B1 | A2 | B2 | A3 | B3`. If a port is specified, the port LED will oscillate between green and off. The `<port_name>` specifier is not supported for DC3 drive cages.

`<mag>`

Indicates the drive magazine by number.

- For DC1 drive cages, accepted values are 0 through 4.
- For DC2 and DC4 drive cages, accepted values are 0 through 9.
- For DC3 drive cages, accepted values are 0 through 15.

### RESTRICTIONS

- Access to all domains is required to run this command.
- The `<port_name>` specifier is not supported for DC3 drive cages.

## EXAMPLES

The following example causes the Fibre Channel LEDs on the drive cage `cage0` to blink for 20 seconds:

```
cli% locatecage -t 20 cage0
```

## NOTES

- Issue the `showcage` command for a list of cage names.
- If no port or magazine is specified, all LEDs in the cage are set as amber or oscillate (depending on the cage type).
- If the port is specified, it turns green (not available in all cage types).

# locatenode

## DESCRIPTION

The `locatenode` command helps locate a particular node or its components by blinking LEDs on the node. By default all LEDs on the node will blink.

## SYNTAX

```
locatenode [options] <nodeid>
```

## AUTHORITY

- Super, Service
- Any role granted the `node_locate` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-t <sec>`

Specifies the number of seconds, from 0 through 255, to blink the LEDs. If not specified, the option defaults to 60 seconds.

`-ps <psid>`

Blinks the hotplug LED for the specified power supply.

`-pci <slot>`

Blinks the hotplug LED corresponding to the PCI card in the specified slot.

`-fan <fanid>`

Blinks the hotplug LED on the specified node fan module.

`-drive`

Blinks the hotplug LED corresponding to the node's internal drive.

`-bat`

Blinks the hotplug LED on the battery backup unit.

## SPECIFIERS

`<nodeid>`

Indicates which node the `locatenode` operation will act on. Accepted values are 0 through 7.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, power supply 1 on node 3 is identified by blinking its hotplug LED for 90 seconds

```
cli% locatenode -t 90 -ps 1 3
```

## NOTES

None.



# locatesys

## DESCRIPTION

The `locatesys` command helps locate a storage system by blinking the node status LEDs on all nodes of a storage system alternating between amber and green. By default, the LEDs in all connected cages are also set as amber or oscillating (depending on the cage).

## SYNTAX

```
locatesys [options <arg>]
```

## AUTHORITY

- Super, Service
- Any role granted the `sys_locate` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-t <seconds>`

Specifies the number of seconds to blink the LEDs. The default is 60 seconds; the maximum is 255 seconds.

`-nodes <node_list>`

Specifies a comma-separated list of nodes on which to blink LEDs. The default is all nodes.

`-nocage`

Specifies that LEDs on the drive cages should not blink. The default is to blink LEDs for all cages in the system.

## SPECIFIERS

None.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, an HP 3PAR Storage System is identified by blinking the LEDs on all drive cages in the system for 90 seconds.

```
cli% locatesys -t 90
```

## NOTES

None.

---

# 18 Move Commands

## movech

### DESCRIPTION

The `movech` command moves a list of chunklets from one physical disk to another.

### SYNTAX

```
movech [options] <fd:fp-td:tp>...
```

### AUTHORITY

- Super, Service, Edit
- Any role granted the `ch_move` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-nowait`

Specifies that the command returns before the operation is completed.

`-dr`

Specifies that the operation is a dry run. No chunklets are actually moved.

`-devtype`

Permits the moves to happen to different device types.

`-perm`

Specifies that chunklets are permanently moved and the chunklets' original locations are not remembered. If the `-perm` option is not specified, the chunklets' original locations are retained, thereby allowing the chunklets to be returned to their original locations through the `moverelocpd` and `servicemag resume` commands.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-ovrd`

Permits the moves to happen to a destination even when there will be a loss of quality because of the move. This option is only necessary when the target of the move is not specified and the `-perm` flag is used.

### SPECIFIERS

```
<fd:fp> [<-td:tp>] . . .
```

Specifies that the chunklet located at the specified PD (`<fd>`) and the chunklet's position on that disk (`<fp>`) be moved to either the specified destination disk (`<td>`) and chunklet position (`<tp>`), or a location determined by the system if a destination (`<-td:tp>`) is not specified. This specifier must be used at least once on the command line. Repeated use of this specifier allows multiple chunklets to be moved.

### RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example moves the chunklet in position 0 on disk 24, to position 50 on disk 64 and chunklet in position 0 on disk 25, to position 1 on disk 27:

```
cli% movech 24:0-64:50 25:0-27:1
Are you sure you want to move the chunklets?
select q=quit y=yes n=no: y

Move      -State- --Detailed_State---
24:0-64:50 normal    normal
25:0-27:1 degraded disks_reused_in_row
```

The columns in the previous example are identified as follows:

- `Status`. The overall status of the move.
- `normal`. Indicates the chunklet has successfully moved with no loss of quality.
- `degraded`. Indicates the chunklet has successfully moved with loss of quality.
- `failed`. Indicates the chunklet was not moved.
- `Detailed_State`. Provides additional details of the move with General Information, Error Information, or Degraded Information.

General Information:

- `dest_unknown`. Destination is unknown.
- `dest_known`. Destination is known.
- `valid_move`. Source and Destination are valid.
- `ch_moved`. Chunklet was moved.
- `ch_move_pending`. Chunklet move is pending due to `-nowait` option.
- `move_error`. Error moving chunklet.

Error Information:

- `error_type_unknown`. An unknown error occurred.
- `spares_not_found`. No suitable spares available.
- `duplicate_src`. Duplicate source input.
- `duplicate_dest`. Duplicate destination in chunklet list.
- `src_relocating`. Source is relocating.
- `ch_synching`. Chunklet is synchronizing.
- `src_no_ld`. Source not associated with an LD.
- `src_ld_invalid`. Source associated with invalid LD.
- `src_set_invalid`. Source is in invalid set.
- `src_not_found`. Source chunklet does not exist.
- `invalid_dest`. Destination is invalid.
- `move_failed`. Chunklet move failed.
- `disk_relocating`. Disk is relocating.

Degraded Information:

- `disks_reused_in_row`. Disks reused in row.
- `connection_degraded`. Connection is degraded.

- `remote_pds_used`. Remote PDs used.
- `ldpattern_not_obeyed`. LD pattern was not obeyed.
- `raid_availability_reduced`. RAID availability reduced.

## NOTES

- Chunklets moved through the `movech` command are only moved temporarily. Issuing either the `moverelocpd` or `servicemag resume` command can move the chunklet back to its original position.
- Specifying the `-dr` option can be used to see if the specified moves succeed and what the results (quality) of the moves are.

# movechtospare

## DESCRIPTION

The `movechtospare` command moves data from specified Physical Disks (PDs) to a temporary location selected by the system.

## SYNTAX

```
movechtospare [options] <fd:fp>
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `ch_mveto spare` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-nowait`

Specifies that the command returns before the operation is completed.

`-dr`

Specifies that the operation is a dry run. No chunklets are actually moved.

`-devtype`

Permits the moves to happen to different device types.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<fd:fp>`

Indicates that the move takes place from the specified PD (`<fd>`) and chunklet position (`<fp>`).

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, chunklet 0 from physical disk 66 is moved to spare:

```
cli% movechtospare 66:0
      Are you sure you want to move the chunklet to spare?
      select q=quit y=yes n=no: y

Move      -Status- -Detailed_State--
66:0-54:49 normal  ch_moved,normal
```

The columns in the previous example are identified as follows:

- `Status`. The overall status of the move.
- `normal`. Indicates the chunklet has successfully moved with no loss of quality.
- `degraded`. Indicates the chunklet has successfully moved with loss of quality.

- `failed`. Indicates the chunklet was not moved.
- `Detailed_State`. Provides additional details of the move with General Information, Error Information, or Degraded Information.

#### General Information:

- `dest_unknown`. Destination is unknown.
- `dest_known`. Destination is known.
- `valid_move`. Source and Destination are valid.
- `ch_moved`. Chunklet was moved.
- `ch_move_pending`. Chunklet move is pending due to `-nowait` option.
- `move_error`. Error moving chunklet.

#### Error Information:

- `error_type_unknown`. An unknown error occurred.
- `spares_not_found`. No suitable spares available.
- `duplicate_src`. Duplicate source input.
- `duplicate_dest`. Duplicate destination in chunklet list.
- `src_relocating`. Source is relocating.
- `ch_synching`. Chunklet is synchronizing.
- `src_no_ld`. Source not associated with an LD.
- `src_ld_invalid`. Source associated with invalid LD.
- `src_set_invalid`. Source is in invalid set.
- `src_not_found`. Source chunklet does not exist.
- `invalid_dest`. Destination is invalid.
- `move_failed`. Chunklet move failed.
- `disk_relocating`. Disk is relocating.

#### Degraded Information:

- `disks_reused_in_row`. Disks reused in row.
- `connection_degraded`. Disks reused in row.
- `remote_pds_used`. Connection Degraded.
- `ldpattern_not_obeyed`. LD pattern was not obeyed.
- `raid_availability_reduced`. RAID availability reduced.

## NOTES

None.

# movepd

## DESCRIPTION

The `movepd` command moves data from specified Physical Disks (PDs) to a temporary location selected by the system.

## SYNTAX

```
movepd [options] <PD_ID>...
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `pd_move` right.

## OPTIONS

`-nowait`

Specifies that the command returns before the operation is completed.

`-dr`

Specifies that the operation is a dry run, and no physical disks are actually moved.

`-devtype`

Permits the moves to happen to different device types.

`-perm`

Makes the moves permanent, removes source tags after relocation.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<PD_ID>...`

Specifies the physical disk ID. This specifier can be repeated to move multiple physical disks.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays a dry run of moving the data on physical disk 0 to free or spare space:

```
cli% movepd -dr 0
Are you sure you want to move the pd to spare?
select q=quit y=yes n=no: y
Move      -State-  -Detailed_State-
0:0-66:50  normal    normal
0:1-62:51  normal    normal
0:2-92:51  normal    normal
0:3-88:52  normal    normal
0:4-50:53  normal    normal
0:5-86:54  normal    normal
0:6-82:55  normal    normal
```

## NOTES

- The destination physical disks do not need to be specified; the system automatically determines the spare locations.
- Specifying the `-dr` option can be used to see if the specified moves succeed and the results (quality) of the moves.



# movepdtospare

## DESCRIPTION

The `movepdtospare` command moves data from specified Physical Disks (PDs) to a temporary location selected by the system.

## SYNTAX

```
movepdtospare [options] <PD_ID>...
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `pd_movetospare` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-nowait`

Specifies that the command returns before the operation is completed.

`-dr`

Specifies that the operation is a dry run. No PDs are actually moved.

`-devtype`

Permits the moves to happen to different device types.

`-vacate`

Makes the moves permanent, removes source tags after relocation.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<PD_ID>...`

Specifies the PD ID. This specifier can be repeated to move multiple PDs.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays a dry run of moving the data on PD 0 to free or spare space:

```
cli% movepdtospare -dr 0
Are you sure you want to move the pd to spare?
select q=quit y=yes n=no: y
Move      -Status- -Detailed_State--
0:0-92:49 normal   valid_move,normal
0:1-62:50 normal   valid_move,normal
0:2-42:51 normal   valid_move,normal
0:3-88:52 normal   valid_move,normal
0:4-62:53 normal   valid_move,normal
0:5-90:55 normal   valid_move,normal
0:6-88:55 normal   valid_move,normal
```

The columns in the previous example are identified as follows:

- `Status`. The overall status of the move.
- `normal`. Indicates the chunklet has successfully moved with no loss of quality.
- `degraded`. Indicates the chunklet has successfully moved with loss of quality.
- `failed`. Indicates the chunklet was not moved.
- `Detailed_State`. Provides additional details of the move with General Information, Error Information, or Degraded Information.

General Information:

- `dest_unknown`. Destination is unknown.
- `dest_known`. Destination is known.
- `valid_move`. Source and Destination are valid.
- `ch_moved`. Chunklet was moved.
- `ch_move_pending`. Chunklet move is pending due to `-nowait` option.
- `move_error`. Error moving chunklet.

Error Information:

- `error_type_unknown`. An unknown error occurred.
- `spares_not_found`. No suitable spares available.
- `duplicate_src`. Duplicate source input.
- `duplicate_dest`. Duplicate destination in chunklet list.
- `src_relocating`. Source is relocating.
- `ch_synching`. Chunklet is synchronizing.
- `src_no_ld`. Source not associated with an LD.
- `src_ld_invalid`. Source associated with invalid LD.
- `src_set_invalid`. Source is in invalid set.
- `src_not_found`. Source chunklet does not exist.
- `invalid_dest`. Destination is invalid.
- `move_failed`. Chunklet move failed.
- `disk_relocating`. Disk is relocating.

Degraded Information:

- `disks_reused_in_row`. Disks reused in row.
- `connection_degraded`. Disks reused in row.
- `remote_pds_used`. Connection Degraded.
- `ldpattern_not_obeyed`. LD pattern was not obeyed.
- `raid_availability_reduced`. RAID availability reduced.

## NOTES

- The destination PDs do not need to be specified as the system automatically determines the spare locations.
- Specifying the `-dr` option can be used to see if the specified moves succeeds and the results (quality) of the moves.

# moverelocpd

## DESCRIPTION

The `moverelocpd` command moves chunklets that were on a physical disk to the target of relocation.

## SYNTAX

```
moverelocpd [options] [<fd>[-<td>...]
```

## AUTHORITY

- Super, Service
- Any role granted the `pd_movereloc` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-nowait`

Specifies that the command returns before the operation is completed.

`-dr`

Specifies that the operation is a dry run. No physical disks are actually moved.

`-partial`

Move as many chunklets as possible. If this option is not specified, the command fails if not all specified chunklets can be moved.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-p <pattern>`

Specifies a pattern to select `<fd>` disks. The `<td>` specifier cannot be used with this `-p` option. If no `<fd>` are specified, then all disks that match the pattern are selected as the `<fd>` disks. If `<fd>` disks are specified along with `-p` then only disks that match the pattern are selected as `<fd>` disk. The following arguments can be specified as patterns for this option:

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`item`). Multiple nodes are separated with a single comma (e.g. `1, 2, 3`). A range of nodes is separated with a hyphen (e.g. `0-7`). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`item`). Multiple slots are separated with a single comma (e.g. `1, 2, 3`). A range of slots is separated with a hyphen (e.g. `0-7`). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`item`). Multiple ports are separated with a single comma (e.g. `1, 2, 3`). A range of ports is separated with a hyphen (e.g. `0-4`). The primary path of the disks must be on the specified port(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (`item`). Multiple drive cages are separated with a single comma (e.g. `1, 2, 3`). A range of drive cages is separated with a hyphen (e.g. `0-3`). Disks must reside in the specified drive cage(s).

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (`item`). Multiple drive magazines are separated with a single comma (e.g. 1, 2, 3). A range of drive magazines is separated with a hyphen (e.g. 0-7). Disks must reside in the specified drive magazine(s).

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (`item`). Multiple disk positions are separated with a single comma (e.g. 1, 2, 3). A range of disk positions is separated with a hyphen (e.g. 0-3). Disks must reside in the specified position(s).

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (`item`). Multiple disks are separated with a single comma (e.g. 1, 2, 3). A range of disks is separated with a hyphen (e.g. 0-3). Disks must match the specified ID(s).

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the `RPM` column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

## SPECIFIERS

`<fd> [-<td>] . . .`

Specifies that the chunklets that were relocated from specified disk (`<fd>`), are moved to the specified destination disk (`<td>`). If destination disk (`<td>`) is not specified then the chunklets are moved back to original disk (`<fd>`). The `<fd>` specifier is not needed if `-p` option is used, otherwise

it must be used at least once on the command line. If this specifier is repeated then the operation is performed on multiple disks.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example moves chunklets that were on PD 8 that were relocated to another position, back to PD 8:

```
cli% moverelocpd 8
Are you sure you want to move the chunklets ?
select q=quit y=yes n=no: y
Move      -Status- -Detailed_State-
42:51-8:2 normal    normal
62:50-8:1 normal    normal
62:53-8:4 normal    normal
62:57-8:7 normal    normal
64:49-8:0 normal    normal
88:52-8:3 normal    normal
88:55-8:6 normal    normal
90:55-8:5 normal    normal
```

The columns in the previous example are identified as follows:

- `Status`. The overall status of the move.
- `normal`. Indicates the chunklet has successfully moved with no loss of quality.
- `degraded`. Indicates the chunklet has successfully moved with loss of quality.
- `failed`. Indicates the chunklet was not moved.
- `Detailed_State`. Provides additional details of the move with General Information, Error Information, or Degraded Information.

General Information:

- `dest_unknown`. Destination is unknown.
- `dest_known`. Destination is known.
- `valid_move`. Source and Destination are valid.
- `ch_moved`. Chunklet was moved.
- `ch_move_pending`. Chunklet move is pending due to `-nowait` option.
- `move_error`. Error moving chunklet.

Error Information:

- `error_type_unknown`. An unknown error occurred.
- `spares_not_found`. No suitable spares available.
- `duplicate_src`. Duplicate source input.
- `duplicate_dest`. Duplicate destination in chunklet list.
- `src_relocating`. Source is relocating.
- `ch_synching`. Chunklet is synchronizing.
- `src_no_ld`. Source not associated with an LD.
- `src_ld_invalid`. Source associated with invalid LD.

- `src_set_invalid`. Source is in invalid set.
- `src_not_found`. Source chunklet does not exist.
- `invalid_dest`. Destination is invalid.
- `move_failed`. Chunklet move failed.
- `disk_relocating`. Disk is relocating.

#### Degraded Information:

- `disks_reused_in_row`. Disks reused in row.
- `connection_degraded`. Disks reused in row.
- `remote_pds_used`. Connection Degraded.
- `ldpattern_not_obeyed`. LD pattern was not obeyed.
- `raid_availability_reduced`. RAID availability reduced.

## NOTES

- Chunklets moved from physical disks `fd` are treated as if they originated on disk `td`. Disk `td` can be the same as disk `fd`.
- Specifying the `-dr` option can be used to see if the specified moves succeeds and what the results (quality) of the moves are.
- If the `-partial` option is used, the command relocates as many chunklets as possible and prints messages for the chunklets it could not move.

# movetodomain

## DESCRIPTION

The `movetodomain` command moves objects from one domain to another.

## SYNTAX

```
movetodomain [options] <object_name> <domain_name | domain_set>
```

## AUTHORITY

- Super, Edit
- Any role granted the `domain_moveto` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-vv`

Specifies that the object is a virtual volume.

`-cpg`

Specifies that the object is a CPG.

`-host`

Specifies that the object is a host.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<object_name>`

Specifies the name of the object to be moved.

`<domain_name | domain_set>`

Specifies the domain or domain set to which the specified object is moved. The domain set name must start with `set:`. To remove the domain from an object from any domain, specify the string `-unset` for the `<domain_name>` or `<domain_set>` specifier.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the movement of VV `vv1` to domain `SampleDomain`:

```
cli% movetodomain -vv vv1 SampleDomain
The following volumes will have their domain modified:
vv1
The following hosts will have their domain modified:
thehost
The following CPGs will have their domain modified:
SampleCPG
14 associated LDs will also have their domain changed.
Do you want to proceed with moving the above to domain SampleDomain?
select y=yes n=no: y
```

The following example displays the removal of the host `testhost` from any domain:

```
cli% movetodomain -host testhost -unset

The following hosts will have their domain modified:

Id Name      Persona -WWN/iSCSI_Name- Port
2 testhost  Generic

Do you want to proceed with removing the domain of the above?
select y=yes n=no: y
```

## NOTES

- The `movetodomain` command moves all objects that are directly or indirectly related to the specified object into the specified domain. Possible relationships include, but are not limited to, Virtual Volume Logical Unit Numbers (VLUNs) between hosts and VVs, VVs using a CPG for snapshot space, and two VVs sharing the same logical disk. If the `-f` option is not used, a list of all objects that will be modified is shown before the confirmation prompt.
- Only hosts are permitted to be members of domain sets.
- When moving a host to a domain set, all objects directly or indirectly related to that host must be members of a domain contained in that domain set otherwise the command will fail.
- If the `-cpg` option is selected and the selected CPG is part of an Adaptive Optimization (AO) configuration, all CPGs in that AO configuration will be moved to the specified domain.



---

# 19 Promote Commands

## promotesv

### DESCRIPTION

The `promotesv` command copies the differences of a snapshot back to its base volume, allowing you to revert the base volume to an earlier point in time.

### SYNTAX

```
promotesv [options] <virtual_copy_name | VV_set>
```

### AUTHORITY

- Super, Edit
- Any role granted the `sv_promote` right.

### OPTIONS

`-target`

Copy the differences of the virtual copy to the specified RW parent in the same VV family tree. The default is to copy the differences to the base volume. This option cannot be used with the `-halt` option.

`-rcp`

Allows the promote operation to proceed even if the RW parent volume is currently in a Remote Copy volume group, if that group has not been started. If the Remote Copy group has been started, this command fails. This option cannot be used in conjunction with the `-halt` option.

`-halt`

Cancels an ongoing snapshot promotion. Marks the RW parent volume with the `cpf` status, which can be cleaned up using the `promotevvcopy` (see “[promotevvcopy](#)” (page 227)) command or by issuing a new instance of the `promotesv` command. This option cannot be used in conjunction with any other option.

`-pri <high|med|low>`

Specifies the priority of the copy operation when it is started. This option allows the user to control the overall speed of a particular task. If this option is not specified, the `promotesv` operation is started with a default priority of medium. High priority indicates that the operation will complete faster. Low priority indicates that the operation will run slower than the default priority task. This option can not be used with `-halt` option.

### SPECIFIERS

```
<virtual_copy_name | VV_set>
```

Specifies the name of the virtual copy volume or set of virtual copy volumes to be promoted, using up to 31 characters in length. The virtual volume set name must start with `set:.`

### RESTRICTIONS

- The virtual copy and its base volume must not be exported.
- Only one promote operation is allowed at a time within a VV family tree.

## EXAMPLES

The following example illustrates how virtual volume `vv1` can be promoted with the differences from its base volume:

```
cli% promotesv vv1
```

## NOTES

- Issue the `showvv` command to verify that differences in the snapshot volume are promoted to its target volume.
- Issue the `showvv -d` command to display the number of remaining blocks to be copied.
- The RW virtual copy and the target of the promote must not be exported.
- Only one promote operation is allowed at a time within a virtual volume family tree.

## promotevvcopy

### DESCRIPTION

The `promotevvcopy` command promotes a physical copy back to a regular base volume.

### SYNTAX

```
promotevvcopy <physical_copy_name>
```

### AUTHORITY

- Super, Edit
- Any role granted the `vvcopy_promote` right.

### OPTIONS

None.

### SPECIFIERS

<physical\_copy\_name>

Specifies the name of the physical copy to be promoted, using up to 31 characters.

### RESTRICTIONS

The physical copy must have completed the copy from the base volume.

### EXAMPLES

The following example promotes virtual volume 85 to a base volume:

```
cli% promotevvcopy 85
```

### NOTES

- The saved snapshot of the parent of <physical\_copy\_name> is also removed.
- The `promotevvcopy` command can also be used to clean up a failed physical copy.
- Issue the `showvv` command to verify that promoted volume is a base volume.
- After a physical copy has been promoted, the association between it and its parent volume is broken; the physical copy and base volume can no longer resync. The saved snapshot of the parent of physical copy is also removed.

## 20 Remove Commands

### removealert

#### DESCRIPTION

The `removealert` command removes one or more alerts from the system.

- △ **CAUTION:** Use care when removing alerts. Alerts that have not been fixed or acknowledged should **not** be removed.

#### SYNTAX

```
removealert [option] -a|<alert_ID>...
```

#### AUTHORITY

- Super, Service
- Any role granted the `alert_remove` right.

**NOTE:** You need access to all domains in order to run this command.

#### OPTIONS

-a

Specifies all alerts from the system and prompts removal for each alert. If this option is not used, then the `<alert_ID>` specifier must be used.

-f

Specifies that the command is forced. If this option is not used and there are alerts in the `new` state, the command requires confirmation before proceeding with its operation.

#### SPECIFIERS

`<alert_ID>...`

Indicates a specific alert be removed from the system. This specifier can be repeated to remove multiple alerts. If this specifier is not used, the `-a` option must be used.

#### RESTRICTIONS

Access to all domains is required to run this command.

#### EXAMPLES

The following example displays all alerts from the system with the option to remove individual alerts:

```
cli% removealert -a

Id 120 - New
Occurred 4 times, last at Tue May 03 22:45:47 PDT 2005
Message code: 196609
Tue May 03 22:23:17 PDT 2005
Node: 0 Severity: Minor
Firmware coredump event
Firmware COREDUMP: recovered file /var/core/hba/fwcore.n00.s02.p01.20050503.224547

Alert 120 is marked as "New".
```

```
Are you sure you want to remove it?  
select q=quit y=yes n=no: y
```

```
Id 131 - New
```

```
Message code: 1114115
```

```
Thu May 05 00:11:25 PDT 2005
```

```
Node: 0 Severity: Minor
```

```
Too many events are being logged
```

```
Too many events are being generated. 2 event files were rolled over in less  
than 1800 seconds. Current event files could not be archived because too many  
have been archived already.
```

```
Alert 131 is marked as "New".
```

```
Are you sure you want to remove it?
```

```
select q=quit y=yes n=no: y
```

```
Id 133 - New
```

```
Message code: 1966081
```

```
Thu May 05 00:25:27 PDT 2005
```

```
Node: 0 Severity: Degraded
```

```
Cage log event
```

```
cage2-A, loop 1:0:2, cage time Thu May 5 00:25:29 2005. Fan at position 1 is  
running at high speed. Internal parameters: 0x0003 0x0109 01 01 00 00 00 00 00  
00 00 00 00 00.
```

```
Alert 133 is marked as "New".
```

```
Are you sure you want to remove it?
```

```
select q=quit y=yes n=no:
```

## NOTES

Use care when removing alerts. Alerts that have not been fixed or acknowledged should NOT be removed.

# removeaocfg

## DESCRIPTION

The `removeaocfg` command removes specified Adaptive Optimization configurations from the system.

## AUTHORITY

Super, Edit

## SYNTAX

```
removeaocfg [options] {<aocfg_name>|<pattern>}...
```

## OPTIONS

`-pat <pattern>`

Indicates that specified patterns are treated as glob-style patterns and that all AO configurations matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `pattern` specifier is used.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<aocfg_name>`

Specifies the name of the AO configuration to be removed.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to remove multiple AO configurations. If this specifier is not used, the `<aocfg_name>` specifier must be used. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

## NOTES

None.

## EXAMPLES

The following example removes AO configurations that start with `test`.

```
cli% removeaocfg -f -pat test*
```

## removecpg

### DESCRIPTION

The `removecpg` command removes Common Provisioning Groups (CPGs) from the system or removes specific Logical Disks (LDs) from CPGs.

### AUTHORITY

- Super, Edit
- Any role granted the `cpg_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SYNTAX

```
removecpg [options <arg>] {<CPG_name>|<pattern>}...
```

### OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-ld`

Specifies that after the CPG is removed, all LDs that were part of the CPG are also removed. This is the default behavior.

`-sa <LD_name>`

Specifies that the LD, as identified with the `<LD_name>` argument, used for snapshot administration space allocation is removed. The `<LD_name>` argument can be repeated to specify multiple LDs. This option is deprecated and will be removed in a subsequent release.

`-sd <LD_name>`

Specifies that the LD, as identified with the `<LD_name>` argument, used for snapshot data space allocation is removed. The `<LD_name>` argument can be repeated to specify multiple LDs. This option is deprecated and will be removed in a subsequent release.

`-pat`

The specified patterns are treated as glob-style patterns and that all common provisioning groups matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `pattern` specifier is used.

### SPECIFIERS

`<CPG_name>`

Specifies the name of the CPG that is either being removed or losing LDs.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to remove multiple common provisioning groups. If this specifier is not used, the `<CPG_name>` specifier must be used. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The `removecpg` command fails if any of the LDs, or the entire CPG, is in use by a Thinly Provisioned Virtual Volume (TPVV).

## EXAMPLES

The following example displays the removal of CPG `cpg1`:

```
cli% removecpg cpg1
```

## NOTES

- By default, this command deletes any unused LDs. This is equivalent to using the `-ld` option. The `-ld` option still exists for backward compatibility.
- If neither the `-sa` or `-sd` options are specified, the entire CPG is removed, including all LDs.
- The operation fails if any of the LDs are in use.



# removedomain

## DESCRIPTION

The `removedomain` command removes an existing domain from the system.

## SYNTAX

```
removedomain [option] <domain_name>
```

## AUTHORITY

- Super
- Any role granted the `domain_remove` right.

Super

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-f`

When using this option, the command does not ask for confirmation before removing the domain.

## SPECIFIERS

`<domain_name>`

Specifies the domain that is removed.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example removes the domain named `sample_domain` from the system:

```
cli% removedomain -f sample_domain
```

## NOTES

None.

# removedomainset

## DESCRIPTION

The `removedomainset` command removes a domain set or removes domains from an existing set.

## SYNTAX

```
removedomainset [options] <setname> [<domain>...]
```

## AUTHORITY

- Super, Edit
- Any role granted the `domainset_remove` right.

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<setname>`

Specifies the name of the domain set.

`<domain>...`

Optional list of domain names that are members of the set. If no `<domain>` is specified, the domain set is removed, otherwise the specified `<domain>` is removed from the domain set.

## RESTRICTIONS

None.

## EXAMPLES

To remove a domain set:

```
cli% removedomainset domainset
```

To remove a single domain from a set:

```
cli% removedomainset domainset domain1
```

## NOTES

None.

# removehost

## DESCRIPTION

The `removehost` command removes a system host or paths to a host. If one or more paths are specified, the command removes only those paths, otherwise the entire host definition is removed.

## SYNTAX

```
removehost [options] <hostname> [<WWN>...|<ISCSI_name>...]
```

## AUTHORITY

- Super, Edit
- Any role granted the `host_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-rvl`

Remove World Wide Name(s) (WWN(s)) or iSCSI names even if there are Virtual Volume Logical Unit Numbers (VLUNs) exported to the host. This option cannot be used if the entire host definition is being removed.

`-iscsi`

Specifies that the paths are iSCSI names. If this option is not specified, the paths are WWNs.

## SPECIFIERS

`<hostname>`

Specifies the host name, using up to 31 characters.

`<WWN>`

Only the specified WWN(s) path to the specified host is removed. This specifier is not required on the command line. If a WWN is not specified, the entire host definition is removed.

`<ISCSI_name>`

Specifies the host iSCSI name to be removed from the specified host. If no iSCSI name is specified, the entire host definition is removed.

## RESTRICTIONS

- Access to all domains is required to run this command.
- A host that has one or more VLUNs exported on it cannot be removed.

## EXAMPLES

The following example removes host `test01`:

```
cli% removehost test01
```

## NOTES

- Removing an entire host definition by issuing the `removehost <hostname>` command is not equivalent to removing all of the paths associated with a host. The latter leaves a host definition with no paths associated to it, whereas the former removes the entire host definition.
- Verify the removal of hosts by issuing the `showhost` command.

# removehostset

## DESCRIPTION

The `removehostset` command removes a host set or removes hosts from an existing set.

## SYNTAX

```
removehostset [options] <setname> [<host>...]
```

## AUTHORITY

- Super, Edit
- Any role granted the `hostset_set` right can remove a host set or hosts from a host set.

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<setname>`

Name of the host set to remove.

`<host>...`

Optional list of host names that are members of the set. If no `<host>` is specified, the host set is removed, otherwise the specified `<host>` is removed from the host set.

## RESTRICTIONS

None.

## EXAMPLES

To remove a host set:

```
cli% removehostset hostset
```

To remove a single host from a set:

```
cli% removehostset hostset host1
```

## NOTES

None.

# removeld

## DESCRIPTION

The `removeld` command removes a specified Logical Disk (LD) from the system service group.

## SYNTAX

```
removeld [options] {<LD_name>|<pattern>}...
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `ld_remove` right.

## OPTIONS

`-pat`

Specified patterns are treated as glob-style patterns and all LDs matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `pattern` specifier is used.

`-dr`

Specifies that the operation is a dry run and no LDs are removed.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-rmsys`

Specifies that system resource LDs such as logging LDs and preserved data LDs are removed. See the *HP 3PAR StoreServ Storage Concepts Guide* for information on logging logical disks and preserved data logical disks.

---

**△ CAUTION:** System resource logical disks are required for correct operation of the HP 3PAR storage system. Removal of system resource logical disks should be performed by qualified service personnel. Incorrect use of the `-rmsys` option can result in data loss.

`-unused`

Specifies the command to remove non-system logical disks. This option cannot be used with the `-rmsys` option.

---

## SPECIFIERS

`<LD_name>`

Specifies the LD name, using up to 31 characters. Multiple LDs can be specified.

`<pattern>`

Specifies a glob-style pattern. Multiple LDs can be specified. If this specifier is not used, the `<LD_name>` specifier must be used. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

## RESTRICTIONS

- System resource LDs are required for correct operation of the HP 3PAR Storage System. Removal of system resource LDs should be performed by qualified service personnel. Incorrect use of the `-rmsys` option can result in data loss.
- If the LD is mapped to a virtual volume, the LD is not removed and the command stops at that logical disk.

- Issuing the `removeld` command with the `-pat` option specified returns a request for confirmation to remove LDs, unless the `-f` option is specified.
- Do not issue the `removeld` command while a `movech`, `movech2spare`, `movepd2spare`, or `moverelocpd` operation is being executed. Issue the `showldch` command to view operations currently running on the system. See “[showldch](#)” (page 400) for additional information.

## EXAMPLES

The following example removes logical disk `nf_vv_1.0.usr.1`:

```
cli% removeld -f nf_vv_1.0.usr.1
```

## NOTES

Verify the removal of LDs by issuing the `showld` command. See “[showld](#)” (page 394) for additional information.

# removercopygroup

## DESCRIPTION

The `removercopygroup` command removes a Remote Copy volume group or multiple Remote Copy groups that match a given pattern.

## SYNTAX

```
removercopygroup [options] <group_name> | <pattern>...
```

## AUTHORITY

- Super, Edit
- Any role granted the `rcopygroup_remove` right.

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation. If the Remote Copy group is not empty, a confirmation is requested even if `-f` is used.

`-removevv`

Remove remote sides' volumes.

`-keepsnap`

Specifies that the local volume's resync snapshot should be retained. The retained snapshot will reflect the state of the secondary volume and may be used as the starting snapshot should the volume be readmitted to a Remote Copy group. The snapshot will begin with "sv.rcpy".

`-pat`

Specifies that specified patterns are treated as glob-style patterns and that all Remote Copy groups matching the specified pattern will be removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `<pattern>` specifier is used.

## SPECIFIERS

`<group_name>`

The name of the group to be removed.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to remove multiple groups. If the `<pattern>` specifier is not used, the `<group_name>` specifier must be used.

---

**△ CAUTION:** Ensure that the correct group to be removed has been selected before executing this command.

---

## RESTRICTIONS

- This command requires the HP 3PAR Remote Copy Software license. Contact local service provider for further information.
- This is not allowed if Remote Copy is in progress; the system will generate an error. The group must be stopped using the `stoprcopygroup` command.
- You need access to the domain of the specified group (`<group_name>`) in order to run this command.



## EXAMPLES

The following example removes Group1 from a Remote Copy system:

```
# removercopygroup Group1
```

The following example removes Remote Copy groups that start with the name testgroup:

```
# removercopygroup -pat testgroup*
```

The following example removes the Remote Copy group group1 and retains the resync snapshots associated with each volume.

```
# removercopygroup -keepsnap group1
```

The following example removes Group1 and associated volumes from the local system and removes the corresponding volumes on all the target systems of Group1.

```
# removercopygroup -removevv Group1
```

## NOTES

- If the `mirror_config` policy is set for this group's target system and the group is a primary group, then this command will be mirrored to the target and the corresponding secondary group will also be removed. If the policy is set and the group is a secondary group, then this command will fail.
- The `removercopygroup` command removes all the associations configured in the specified group and removes the group name and any Remote Copy synchronization snapshots affiliated with volumes in the group.
- The `-keepsnap` and `-removevv` options are mutually exclusive.

# removercopytarget

## DESCRIPTION

The `removercopytarget` command removes target designation from a Remote Copy system and removes all links affiliated with that target definition.

## SYNTAX

```
removercopytarget [options] <target_name>
```

## AUTHORITY

- Super, Edit
- Any role granted the `rcopytarget_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-cleargroups`

Remove all groups that have no other targets or dismiss this target from groups with additional targets. All groups that contain this target must be stopped before this can be issued.

`-f`

Do not ask for confirmation when `-cleargroups` is specified.

## SPECIFIERS

`<target_name>`

The target name for the target definition to be removed.

## RESTRICTIONS

- This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.
- A target definition cannot be deleted if it is being used by any group.

## EXAMPLES

The following example removes targets `System1` and `System2` from the primary and backup systems in a Remote Copy pair:

```
# removercopytarget System1
# removercopytarget System2
```

## NOTES

None.

# removesched

## DESCRIPTION

The `removesched` command removes a scheduled task from the system.

## SYNTAX

```
removesched [options] <schedname|pattern>
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `sched_remove` right.

## OPTIONS

`-pat`

Specifies that certain patterns are treated as glob-style patterns and that all scheduled tasks matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the pattern specifier is used.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<schedname>`

Specifies the schedule that is removed. Can be at most 31 characters in length.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to remove multiple scheduled tasks. If this specifier is not used, the `<schedname>` specifier must be used. The `<schedname>` can be up to 31 characters in length.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

None.

## removesnmpmgr

### DESCRIPTION

The `removesnmpmgr` command removes preregistered SNMP managers from receiving alerts (traps).

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

### SYNTAX

```
removesnmpmgr [option <arg>] <manager_IP>
```

### AUTHORITY

- Super
- Any role granted the `snmpmgr_remove` right.

**NOTE:** You need access to all domains in order to run this command.

### OPTIONS

```
-p <port_number>
```

Specifies the port number where the manager receives traps. If not specified, the port number defaults to 162.

### SPECIFIERS

```
<manager_IP>
```

Specifies the IPv4 or IPv6 address of the host where the manager runs. IPv6 address is in hexadecimal, case insensitive, and is separated by colons. An example would be:

```
5def:2008:0:0:abcd:0:0:161a
```

In addition, a double colon (`::`) can be used once in an address to replace multiple fields of zeros. For example:

```
5def:2008:0:0:abcd::161a
```

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example displays the removal of a manager with the IPv4 address `123.45.67.89` from the list of registered managers:

```
cli% removesnmpmgr 123.45.67.89
```

The following example displays the removal of a manager with the IPv6 address `5def:2008:abcd::161a` from the list of registered managers:

```
cli% removesnmpmgr 5def:2008:abcd::161a
```

## EXIT STATUS

The following codes are returned indicating success or failure:

- 0 indicates that the trap manager host was removed and the command was successful.
- 1 indicates that the command failed.
- 2 indicates that the host is not on the list of registered hosts.

## NOTES

- SNMP managers are registered by issuing the `addsnmpmgr` command. See [“addsnmpmgr” \(page 42\)](#) for additional information.
- Verify the removal of SNMP managers by issuing the `showsnmpmgr` command. See [“showsnmpmgr” \(page 473\)](#) for more information.

## removesnmppw

### DESCRIPTION

The `removesnmppw` command allows a user to remove SNMP access community string passwords.

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

### SYNTAX

```
removesnmppw [options]
```

### AUTHORITY

- Super
- Any role granted the `snmppw_remove` right.

**NOTE:** You need access to all domains in order to run this command.

### OPTIONS

`-rw` | `-r` | `-w`

Removes the read/write (`-rw`), read-only (`-r`), or write-only (`-w`) password. If not specified, the read/write community string password is removed.

`-f`

Forces the operation so that the command does not require confirmation before proceeding.

### SPECIFIERS

None.

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example displays the removal of the read/write SNMP access password:

```
cli% removesnmppw -f
```

### EXIT STATUS

The following codes are returned indicating success or failure:

- 0 indicates that the password was removed and the command was successful.
- 1 indicates that the command failed.
- 2 indicates that a password does not exist.

### NOTES

- After a password has been removed, the system manager can no longer use that password to send requests to the SNMP agent.
- Verify the removal of SNMP passwords by issuing the `showsnmppw` command. See “[showsnmppw](#)” (page 474) for additional information.

## removesnmpuser

### DESCRIPTION

The `removesnmpuser` command allows a user to remove an SNMPv3 user.



**WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

### SYNTAX

```
removesnmpuser [options] <username>
```

### AUTHORITY

- Super, Service, Edit, Browse
- Any role granted the `snmpuser_remove` right.

### OPTIONS

`-f`

Forces the operation so that the command does not require confirmation before proceeding.

### SPECIFIERS

None.

### EXAMPLES

The following example displays the removal of the an SNMP user:

```
cli% removesnmpuser -f joe
```

### EXIT STATUS

The following codes are returned indicating success or failure:

- 0 indicates that the password was removed and the command was successful.
- 1 indicates that the command failed.
- 2 indicates that a password does not exist.

### NOTES

After a user has been removed, an SNMPv3 manager can no longer use that username to send requests to the SNMP agent. An SNMP user will also be removed if the `removeuser` command has been issued on that user.

Verify the removal of SNMP users by issuing the `showsnmpuser` command.

## removespare

### DESCRIPTION

The `removespare` command removes chunklets from the spare chunklet list.

### SYNTAX

```
removespare [options] <chunklet_specifier>...
```

### AUTHORITY

- Super, Service
- Any role granted the `spare_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-f`

Specifies that the operation is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-p`

Specifies that partial completion of the command is acceptable. Chunklets specified that are not on the current service group spare list are ignored.

### SPECIFIERS

```
<chunklet_specifier>...
```

The chunklet specifier can be issued in the following formats:

```
<PD_ID:chunklet_num>...
```

Specifies the identification of the physical disk (`PD_ID`) and the position number of the chunklet on the disk (`chunklet_num`). This specifier can be repeated.

```
<PD_ID>:a...
```

Specifies the identification of the physical disk (`PD_ID`) and all (`a`) chunklets on the disk. This specifier can be repeated.

```
a:<chunklet_num>...
```

Specifies the chunklet number on all physical disks. This specifier can be repeated.

```
a:a
```

Removes all spare chunklets that are not currently used.

```
-pos <cage:mag:disk:chunklet_num>
```

Specifies the position of a specific chunklet identified by its position in a drive cage, drive magazine, physical disk, and chunklet number. For example `-pos 1:0.2:3:121`, where 1 is the drive cage, 0.2 is the drive magazine, 3 is the physical disk, and 121 is the chunklet number.

```
-pos <cage:mag:disk:a>
```

Specifies that all chunklets on a physical disk, identified by drive cage number, drive magazine number, and disk number, are marked to be removed.

### RESTRICTIONS

Access to all domains is required to run this command.



## EXAMPLES

The following example removes a spare chunklet from position 3 on physical disk 1:

```
cli% removespare 1:3
```

## NOTES

- Verify the removal of spare chunklets by issuing the `showspare` command. See [“showspare” \(page 479\)](#) for more information.
- If a wildcard (`a`) is used or the `-p` flag is specified, prints the number of spares removed. Otherwise, if all the explicitly specified spares could not be removed, prints an error message.

# removesshkey

## DESCRIPTION

The `removesshkey` command removes your Secure Shell (SSH) public key to disable key authentication.

## SYNTAX

```
removesshkey [<user_name>... ]
```

## AUTHORITY

- Super, Service, Edit, Browse
- Any role granted the `sshkey_remove` right.

## OPTIONS

None.

## SPECIFIERS

```
<user_name>...
```

Specifies the name of the user whose SSH key is removed. If not specified, the SSH key for the current user is removed.

## RESTRICTIONS

Only Super level users are allowed to remove other users' keys.

None.

## EXAMPLES

The following example displays the removal of your SSH public key:

```
cli% removesshkey
```

## NOTES

- After removing the user's SSH public key on the HP 3PAR Storage System, the user cannot use the SSH key authentication to log in. The user must use name and password to log in.
- The `showuser -k` command can be used to display users that have SSH keys.

# removetask

## DESCRIPTION

The `removetask` command removes information about one or more completed tasks and their details.

## SYNTAX

The syntax of the `removetask` command can be one of the following:

- `removetask [options <arg>] -a`
- `removetask [options <arg>] -t <hours>`
- `removetask [options <arg>] <task_ID>...`

## AUTHORITY

- Super, Edit
- Any role granted the `task_remove` right.

## OPTIONS

`-a`

Removes all tasks including details.

`-d`

Remove task details only.

`-f`

Specifies that the command is to be forced. You are not prompted for confirmation before the task is removed.

`-t <hours>`

Removes tasks that have not been active within the past `<hours>`, where `<hours>` is an integer from 1 through 240.

## SPECIFIERS

`<task_ID>...`

Allows you to specify tasks to be removed using their task IDs.

## RESTRICTIONS

None.

## EXAMPLES

The following example shows how to remove a task based on the task ID.

```
cli% removetask 2
Remove the following tasks?
2
select q=quit y=yes n=no: y
```

The following example shows how to remove all tasks, including details.

```
cli% removetask -a
Remove all tasks?
select q=quit y=yes n=no: y
```

## NOTES

- See the *HP 3PAR StoreServ Storage Concepts Guide* and *HP 3PAR Command Line Interface Administrator's Manual* for additional information and examples regarding task management and task management commands.
- With this command, the specified task ID and any information associated with it are removed from the system. However, task IDs are not recycled, so the next task started on the system uses the next whole integer that has not already been used. Task IDs roll over at 9999. The system stores information for the most recent 1000 tasks.

# removetemplate

## DESCRIPTION

The `removetemplate` command removes one or more Virtual Volume (VV), Logical Disk (LD), and Common Provisioning Group (CPG) templates.

## SYNTAX

```
removetemplate [options] {<template_name>|<pattern>}...
```

## AUTHORITY

- Super
- Any role granted the `template_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-pat`

The specified patterns are treated as glob-style patterns and that all templates matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `pattern` specifier is used.

## SPECIFIERS

`<template_name>`

Specifies the name of the template to be deleted, using up to 31 characters. This specifier can be repeated to remove multiple templates.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to remove multiple templates. If this specifier is not used, the `<template_name>` specifier must be used. See [“Glob-Style Pattern” \(page 12\)](#) for more information

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the forced removal of template `vv1`:

```
cli% removetemplate -f vv1
```

## NOTES

None.

## removeuser

### DESCRIPTION

The `removeuser` command removes a user account from the system.

### SYNTAX

```
removeuser [option] <username>...
```

### AUTHORITY

- Super
- Any role granted the `user_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

### SPECIFIERS

`<username>...`

Specifies a login name using any combination of letters and numbers. This argument can be repeated to specify multiple user names.

### RESTRICTIONS

- Access to all domains is required to use this command.
- Do not remove users `3parsvc` and `3paradm`.
- A user cannot remove oneself. The last user on the system cannot be removed.

### EXAMPLES

The following example displays the forced removal of `user1` from the system:

```
cli% removeuser -f user1
User removed.
```

### NOTES

- Verify the removal of users by issuing the `showuser` command. See [“showuser” \(page 497\)](#) for additional information.
- The `removeuser` command does not affect currently connected users. If an attempt is made to remove a user that is currently connected, an error message will be returned.

## removeuserconn

### DESCRIPTION

The `removeuserconn` command removes user connections to the current system.

### AUTHORITY

- Super
- Any role granted the `userconn_remove` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SYNTAX

```
removeuserconn [options] <user_ID> <user_name> <IP_address>
```

### OPTIONS

`-pat`

Specifies that the `<user_ID>`, `<user_name>`, and `<IP_address>` specifiers are treated as glob-style (shell-style) patterns and all user connections matching those patterns are removed. By default, confirmation is required to proceed with removing each connection unless the `-f` option is specified.

`-dr`

Specifies that the operation is a dry run and no connections are removed.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

### SPECIFIERS

`<user_ID>`

Specifies the ID of the user to be removed.

`<user_name>`

Specifies the name of the user to be removed.

`<IP_address>`

Specifies the IP address of the user to be removed.

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example displays the forced removal of user `user1` at IP address `127.0.0.1`:

```
cli% removeuserconn -f 2315 user1 127.0.0.1
Removing user connection Id:2315 Name:user1 Addr:127.0.0.1
```

### NOTES

Because user connections can disappear from the time they are listed and the time they are removed, the `removeuserconn` command continues past errors while removing individual connections if the `-pat` option is specified.

# removevln

## DESCRIPTION

The `removevln` command removes a Virtual Volume's (VVs) SCSI Logical Unit Number (LUN) export definition from the system.

## SYNTAX

The syntax for the `removevln` command can be one of the following:

- `removevln [options] <VV|VVset> <LUN> <n:s:p>`
- `removevln [options] <VV|VVset> <LUN> <host|hostset>`
- `removevln [options] <VV|VVset> <LUN> <host|hostset> <n:s:p>`
- `removevln [options] <VV|VVset> <LUN> <n:s:p> <host|hostset>`

## AUTHORITY

- Super, Edit
- Any role granted the `vln_remove` right.

## OPTIONS

`-novcn`

Specifies that a VLUN Change Notification (VCN) not be issued after removal of the VLUN.

- For direct connect or loop configurations, a VCN consists of a Fibre Channel Loop Initialization Primitive (LIP).
- For fabric configurations, a VCN consists of a Registered State Change Notification (RSCN) that is sent to the fabric controller.

`-pat`

Specifies that the `<VV_name>`, `<LUN>`, `<N:S:P>`, and `<host_name>` specifiers are treated as glob-style patterns and that all VLUNs matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified.

`-dr`

Specifies that the operation is a dry run and no VLUNs are removed.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<VV_name | VV_set>`

Specifies the volume or volume set name, using up to 31 characters in length. The volume set name must start with `set :`.

`<LUN>`

Specifies the LUN ID to remove.

`<N:S:P>`

Specifies that exports to the specified port are removed. If this specifier is not used, the `host_name` specifier must be used.

`node`

Specifies the system port where `node` is a number from 0 through 7.



slot

Specifies the PCI bus slot in the node where `slot` is a number from 0 through 5.

port

Specifies the FCS port number of the card in PCI bus slot using 1 through 4.

<host\_name | host\_set>

Specifier requests that exports to the specified host or host set, named using up to 31 characters in length, be removed. The host set name must start with `set:.` If this specifier is not used, the N:S:P specifier must be used.

## RESTRICTIONS

- To remove a specific VLUN, you must supply the same specifiers and options that you used when that VLUN was created. Use the `showvln-t` command to view all created VLUN specifiers and options.
- Issuing the `removevln` command with the `-pat` option specified returns a request for confirmation to remove VLUNs, unless the `-f` option is specified.

## EXAMPLES

The following example deletes VLUNs for volume `vv0`, LUN 0, host `host1`:

```
cli% removevln -f vv0 0 host1
```

## NOTES

- If the VLUN to be removed is a matched set, use the `port` and `host_name` specifiers.
- Verify the removal of VLUNs by issuing the `showvln` command. See “[showvln](#)” (page 503) for more information.

## removevv

### DESCRIPTION

The `removevv` command removes Virtual Volumes (VVs) from the system.

### SYNTAX

The syntax of the `removevv` command can be as follows:

- `removevv [options] <VV_name>|<pattern>...`
- `removevv -expired [options] [VV_name>|<pattern>...]`

### AUTHORITY

- Super, Edit
- Any role granted the `vv_remove` right can remove base volumes.
- Any role granted the `vvcopy_remove` right can remove physical volumes.
- Any role granted the `sv_remove` right can remove virtual copies.

### OPTIONS

`-pat`

Specifies that specified patterns are treated as glob-style patterns and that all VVs matching the specified pattern are removed. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `pattern` specifier is used.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-dr`

Specifies that the operation is a dry run and no VVs are removed.

`-stale`

Specifies that all stale VVs can be removed.

`-expired`

Remove specified expired volumes. This option cannot be used with the `-stale` option.

`-snaponly`

Remove the snapshot copies only.

`-cascade`

Remove all the descendent volumes as long as none has an active VLUN. It will remove any VLUN templates as long as there were no active VLUNs. It will remove the volumes from all the volume sets. If the `-expired` option is specified, all expired volumes and their descendent volumes will be removed regardless if they are expired or not. If the `-stale` option is specified, all stale volumes and their descendent volumes will be removed regardless if they are stale or not.

`-nowait`

Prevents command blocking that is normally in effect until the `vv` is removed. Removal of the `vv` is performed in the background. Only snapshots can be removed with this option. An attempt to remove a base `vv` results in an error.

### SPECIFIERS

`<VV_name>`

Specifies the VV name, using up to 31 characters in length. This specifier can be repeated to remove multiple VVs. If this specifier is not used, the `pattern` specifier must be used.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to remove multiple VVs. If this specifier is not used, the `<VV_name>` specifier must be used. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

## RESTRICTIONS

- Issuing the `removevv` command with invalid VV names causes the command to exit without removing any VVs.
- Any VVs exported as Virtual Volume Logical Unit Numbers (VLUNs) are not removed and the command stops at that VV.
- Any VV that contains snapshots cannot be removed.

## EXAMPLES

The following example removes virtual volume `vv0`:

```
cli% removevv -f vv0
```

The following example removes all the expired volumes:

```
cli% removevv -f expired
```

The following example removes the volumes that start with `test` and are snapshot:

```
cli% removevv -f -snaponly -pat test*
```

The following example removes `vv1_snap` if it is a snapshot and all its descendents:

```
cli% removevv -f snaponly -cascade vv1_snap
```

## NOTES

- By default, this command deletes any unused LDs that are not also part of a CPG. This is equivalent to using the `-ld` option. The `-ld` option still exists for backward compatibility.
- A newly created LD is guaranteed to be clean. Chunklets of LDs that are removed are cleaned before they are reused. However regions of an LD that were previously used (for example by another VV) can contain data from its previous use. If these regions of the LD are mapped to your user space of a VV, that data can be visible to the host to which the VV is exported.

If this is a concern, remove LDs when the VV is removed and use only newly created LDs for your user space. Previous data in LDs used for snapshot data space or snapshot admin space is not visible to you because these spaces are only visible after being written with new data.

- Verify the removal of VVs by issuing the `showvv` command. See [“showvv” \(page 506\)](#) for additional information.

## removevvset

### DESCRIPTION

The `removevvset` command removes a VV set or removes VVs from an existing set.

### SYNTAX

```
removevvset [options] <setname> [<vv>...]
```

### AUTHORITY

- Super, Edit
- Any role granted the `vvset_remove` right can remove a volume set or volumes from a volume set.

### OPTIONS

-f

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

### SPECIFIERS

<setname>

Specifies the name of the VV set to remove.

<VV>...

Optional list of VV names that are members of the set. If no <VV> is specified, the VV set is removed, otherwise the specified <VV> is removed from the VV set.

### RESTRICTIONS

None.

### EXAMPLES

To remove a VV set:

```
cli% removevvset vvset
```

To remove a single VV from a set:

```
cli% removevvset vvset vv1
```

### NOTES

None.

---

# 21 Service Commands

## servicecage

### DESCRIPTION

The `servicecage` command is necessary when executing removal and replacement actions for a drive cage FC-AL module. The `startfc` or `unstartfc` subcommands are used to initiate service on a cage, and the `endfc` subcommand is used to indicate that service is completed.

### SYNTAX

The syntax for the `servicecage` command can be one of the following:

- `servicecage remove [-f] <cagename>`
- `servicecage startfc|unstartfc|endfc|resetfc|hresetfc|clearlog [-f] [-ovrd] [a|b] | [0|1] <cage_name>`

### AUTHORITY

- Super, Service
- Any role granted the `cage_service` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

Can vary for each subcommand as noted in the following section.

### SUBCOMMANDS

`startfc`

Prepare an FC-AL module for removal.

`unstartfc`

Stop the `startfc` subcommand. See “NOTES” for additional information about the `unstartfc` subcommand.

`endfc`

Indicates that service on the drive cage is completed and allows the system to resume use of the FC-AL module. Both `startfc` and `unstartfc` need this action to complete the service operation. See “NOTES” for additional information about the `endfc` subcommand. Permitted for Edit user in addition to Super and Service users.

`resetfc`

- For DC1 and DC3 drive cages, soft resets the FC-AL module.
- For DC2 and DC4 drive cages, resets the cage. FC-AL specifier is ignored.

`hresetfc`

- For DC1 and DC3 drive cages, hard reset the FC-AL module.
- For DC2 and DC4 drive cages, hard reset the cage. FC-AL specifier is ignored.

`remove`

Removes the indicated drive cage (indicated with the `<cage_name>` specifier) from the system. If this subcommand is used, the `a|b` or `0|1` port specifier is not required. This command fails when the cage has active ports or is in use. Only permitted for a Super user.

clearlog

- For DC2 and DC4 drive cages, clear the log in the cage. FC-AL specifier is ignored.
- For DC3 drive cages, `clearlog` is not supported.

## OPTIONS

`-f`

Forces the operation. When this option is not used, the command requires confirmation before proceeding.

`-ovrd`

Forces the specified physical disk path offline even if it is the last remaining path.

## SPECIFIERS

`a|b`

Specifies the side of the specified DC1 or DC3 drive cage to be serviced.

`0|1`

Specifies the side of the specified DC2 or DC4 drive cage to be serviced.

`<cage_name>`

Specifies the name of the drive cage to be serviced.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the commencement of Fibre Channel hot-plugging for drive cage `cage0`:

```
cli% servicecage startfc -f -ovrd cage0
```

## NOTES

- Issuing the `servicecage` command results in chunklet relocation, causing a dip in throughput.
- The `unstartfc` subcommand is provided if a mistake was made when issuing the `servicecage` command. The `unstartfc` subcommand stops the original command.
- After issuing the `startfc` or `unstartfc` subcommands, the `endfc` subcommand must be issued to indicate that service is completed and to restore the drive cage to its normal state.

# servicehost

## DESCRIPTION

The `servicehost` command executes removal and replacement actions for a host connecting to an HP 3PAR Storage System port.

## SYNTAX

The syntax for the `servicehost` command can be one of the following:

- `servicehost list`
- `servicehost remove [-f] [<N:S:P> [<WWN_or_iSCSI_name>...]]`
- `servicehost copy [-f] <src_N:S:P> <WWN_or_iSCSI_name_pattern> <dest_N:S:P>`

## AUTHORITY

- Super, Service
- Any role granted the `host_service` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

Can vary for each subcommand as noted in the following section.

## SUBCOMMANDS

`list`

Displays a list of all inactive hosts. Permitted for all users.

`remove`

Removes an inactive host, as specified with the `<WWN_or_iSCSI_name>` specifier, from the indicated port (`<N:S:P>`) and its associated VLUNs. If the `<WWN_or_iSCSI_name>` specifier is not issued with the `remove` subcommand, all inactive hosts on the specified port and their LUNs are removed. If the `<N:S:P>` specifier is not used with the `remove` subcommand, all inactive hosts in the system and their LUNs are removed. See “[RESTRICTIONS](#)” for additional information about the `remove` subcommand.

`copy`

Copies all active VLUNs from the specified source port (as specified with `<src_N:S:P>`) from host WWNs or iSCSI names matching the specified pattern (`<WWN_or_iSCSI_name_pattern>`) to the destination port (as specified with `<dest_N:S:P>`). If necessary, the port is reset to target mode.

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<N:S:P>`

Specifies the host to be removed which is visible to the specified port. This specifier can only be used with the `remove` subcommand.

`<WWN_or_iSCSI_name>`

Specifies a host's World Wide Name (WWN). This specifier can only be used with the `remove` and `copy` subcommands. When used with the `remove` subcommand, this specifier can be repeated.

<WWN\_or\_iSCSI\_name\_pattern>

Specifies that the indicated WWN or iSCSI name is treated as a glob-style pattern. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

<src\_N:S:P>

Specifies the source port when exporting VLUNs. This specifier can only be used with the `copy` subcommand.

<dest\_N:S:P>

Specifies the destination port when exporting VLUNs. This specifier can only be used with the `copy` subcommand.

## RESTRICTIONS

- Access to all domains is required to run this command.
- If the <WWN\_or\_iSCSI\_name> specifier is not issued with the `remove` subcommand, all inactive hosts on the specified port and their LUNs are removed.
- If the <N:S:P> specifier is not used with the `remove` subcommand, all inactive hosts in the system and their LUNs are removed.

## EXAMPLES

The following example displays the creation of a host on port 0:2:1 for the export of VLUNs from port 2:1:1:

```
cli% servicehost copy 2:1:1 20000200000CF790 0:2:1
Are you sure you want to run servicehost?
select q=quit y=yes n=no: y
```

The following example displays the removal of an inactive host from port 2:1:1:

```
cli% servicehost remove 2:1:1 20000200000CF790
Removing inactive host 20000200000CF790 on port 2:1:1
Are you sure?
select q=quit y=yes n=no: y
```

## NOTES

None.



## servicemag

### DESCRIPTION

The `servicemag` command executes service on a drive magazine or disk.

### SYNTAX

The syntax for the `servicemag` command can be one of the following:

- `servicemag start [options] <cage_ID> <magazine>`
- `servicemag start [options] -pdid <PD_ID_0>...<PD_ID_3>`
- `servicemag resume|unmark [options] <cage_ID> <magazine>`
- `servicemag status [options] [<cage_ID> <magazine>]`
- `servicemag clearstatus <cage_ID> <magazine>`

### AUTHORITY

- Super, Service
- Any role granted the `mag_service` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SUBCOMMANDS

`start`

Specifies that the `servicemag` command informs the system manager to log or relocate disks on a drive magazine so that the drive magazine can be removed for service.

`resume`

Specifies that the `servicemag` command informs the system manager that a drive magazine is replaced and that data services can be resumed.

`unmark`

Specifies that the `servicemag` operation is stopped and its internal state is reset. Since the `servicemag` operation is a multistep process, specifying `unmark` stops the `servicemag` operation at the completion of the current step.

Relocation of chunklets is considered one step and can take from several minutes to several hours (depending on number of chunklets) to complete. If `servicemag unmark` is issued during the relocation phase, the spin-down phase will indicate that the `servicemag start` operation Failed. This can be confirmed by issuing `servicemag status -d`. If the intent was to prevent `servicemag` from completing, issue `servicemag resume` to move the data back onto the drive(s) in this magazine once the `servicemag start` operation reports a failure. The `unmark` option should not be used without consulting with HP 3PAR engineering.

`status`

Specifies that the status of the `servicemag` command operations on a drive magazine are displayed. This subcommand is permitted for Super, Service, Edit and Browse users. Summary status is provided by default, and the `-d` option can be used to get detailed status.

`clearstatus`

Clears the log shown by the `servicemag` command status for the given cage and magazine.

### OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-wait`

Specifies that the `servicemag` command must be completed before exiting. If not specified, the `servicemag` command automatically exits before service begins and the remainder of the process proceeds in the background. This option is only valid for the `start` or `resume` operations.

`-log`

Specifies that write operations to chunklets of valid disks are written to a logging area when the magazine is out of service (or removed). When the disks return and the `servicemag resume` option is issued, the data is written from the logging Logical Disks (LDs) to those disks. Chunklets are relocated to free or spare space if their failures would result in a RAID set becoming invalid (for example, if two disks would be missing from a RAID 5 LD). All other used chunklets are placed in the logging mode. This option is only valid for the `start` operation.

`-nodisks`

Specifies that the serviced drive magazine's disk drives are valid and do not need to be replaced. This option can only be used with the `start` subcommand and `-log` option.

`-partial`

This option can only be used with the `resume` subcommand. Specifies that as many chunklets as possible are relocated. Error messages are printed for those chunklets that could not be relocated.

`-pdid <PD_ID_0>...<PD_ID_3>`

Specifies one to four physical disks (by physical disk ID) that need to be serviced or replaced. If the `-log` option is also specified, logging will only apply to the remaining disks on the magazine and not the ones specified in this option. The disks specified in this option will be vacated out to be replaced and will not be logged. This option can only be used with the `start` subcommand, and cannot be used with the `<cage_ID>` or `<magazine>` specifiers.

`-d`

Displays detailed status of a `servicemag` operation. If the `-d` option is excluded, a summary of the status is displayed. This option is only valid for the `status` subcommand.

`-dryrun`

Estimates the length of time a `servicemag start` or `servicemag resume` command will complete. If the `-dryrun` option is started before an actual `servicemag start` or `resume` command, the estimation will be based on empirical data with no I/O on the system. For a more accurate estimate, which will do runtime calculations based on the system load, use the `servicemag status <cage_ID> <magazine>` command after `servicemag start` or `servicemag resume` command has been initiated. This option is only valid for the `start` and `resume` operations.

## SPECIFIERS

`<cage_ID>`

Specifies the ID of the cage. Use the `showcage` command to determine the system's drive cage IDs.

`<magazine>`

Specifies the drive magazine within the specified drive cage to be serviced based on the side of the drive magazine and drive magazine slot number.

- For drive chassis with a single drive cage (type DC2, DC4, and DC3), the valid syntax is <position> (the numeric position of the drive magazine). Position values for DC2 drive cages can be from 0 to 9. Position values for DC3 drive cages can be from 0 to 15.

## RESTRICTIONS

- Access to all domains is required to run this command.
- Users with Browse level authority can only issue the `servicemag status` command.

## EXAMPLES

The following example displays the suspension and resumption of data services on drive magazine 0 in drive cage 2:

```
cli% servicemag start -log -wait 2 0.0
Begin servicemag start -log 2 0.0...
... disks in mag : 2 0.0
...     valid disks:  wwn [2000000087043098] id [20]  diskpos [0]
...                   wwn [2000000087008150] id [21]  diskpos [1]
...                   wwn [20000000870042F6] id [22]  diskpos [2]
...                   wwn [2000000087007E6D] id [23]  diskpos [3]
... not valid disks:
... mark disk wwn [2000000087043098] id [20] as non usable for ld allocation
... mark disk wwn [2000000087008150] id [21] as non usable for ld allocation
... mark disk wwn [20000000870042F6] id [22] as non usable for ld allocation
... mark disk wwn [2000000087007E6D] id [23] as non usable for ld allocation
... relocating chunklets to spare space
... relocating chunklets of fail sets after logging to spare space
... logging chunklets from pd wwn [2000000087043098] id [20]
... logging chunklets from pd wwn [2000000087008150] id [21]
... logging chunklets from pd wwn [20000000870042F6] id [22]
... logging chunklets from pd wwn [2000000087007E6D] id [23]
... spinning down disk wwn [2000000087043098] id [20]
... spinning down disk wwn [2000000087008150] id [21]
... spinning down disk wwn [20000000870042F6] id [22]
... spinning down disk wwn [2000000087007E6D] id [23]
... bypassing mag 2 0.0
... bypassed mag 2 0.0
servicemag start 2 0.0 -- Succeeded
cli%
cli% servicemag resume 2 0.0
Begin servicemag resume 2 0.0...
... onlooping mag 2 0.0
... checking for valid disks...
... disks in mag : 2 0.0
...     valid disks:  wwn [2000000087043098] id [20]  diskpos [0]
...                   wwn [2000000087008150] id [21]  diskpos [1]
...                   wwn [20000000870042F6] id [22]  diskpos [2]
...                   wwn [2000000087007E6D] id [23]  diskpos [3]
... not valid disks:
... playback chunklets from pd wwn [2000000087043098] id [20]
... playback chunklets from pd wwn [2000000087008150] id [21]
... playback chunklets from pd wwn [20000000870042F6] id [22]
... playback chunklets from pd wwn [2000000087007E6D] id [23]
... 74 chunklets still waiting to be played back or relocating...
... 18 chunklets still waiting to be played back or relocating..
... All chunklets played back / relocated.
... no chunklets to move
... marking pd wwn [2000000087043098] id [20] as usable for ld allocation
... marking pd wwn [2000000087008150] id [21] as usable for ld allocation
```

```
... marking pd wwn [20000000870042F6] id [22] as usable for ld allocation
... marking pd wwn [2000000087007E6D] id [23] as usable for ld allocation
servicemag resume 2 0.0 -- Succeeded
```

## NOTES

- Issuing the `servicemag` command results in chunklet relocation that causes a dip in throughput.
- When a `servicemag` command is issued with the `-log` option, all chunklets on the disks in the drive magazine being serviced are marked as `normal, smag`. This state indicates an active `servicemag` operation on the disks.
- Any I/O on the chunklets marked `normal, smag`, changes the states to `logging` and I/O is written to the logging logical disks.
- Issuing the `servicemag resume` command causes playback of the log. Any chunklets in the `logging` state enter `playback` state as their data is played back. After all the data is played back, the chunklets return to the `normal` state. Any chunklets in the `normal, smag` state return directly to the `normal` state.
- Chunklet states can be checked by issuing either the `showldch` or `showpdch` commands (see [“Show Commands” \(page 350\)](#)).
- By default, the `servicemag` command relocates all chunklets in the magazine to destinations starting first with local (such as on the owning node for the logical disk) spares, then local free space, then remote spare and finally remote free space.
- In the case when a drive needs to be replaced, the `-log` option should always be used in conjunction with the `-pdid` option.
- Replacing disks that have not had data completely relocated can lead to data loss. If the drives need to be replaced, the `-log` option should be used in conjunction with the `-pdid` option.
- For the `servicemag start` command only, instead of using the `<cage_ID> <magazine>` specifiers, the disk(s) to be serviced can also be specified using the `-pdid` option. The advantage is that the `servicemag resume` command will dismiss the old PDID when it successfully completes.

# servicenode

## DESCRIPTION

The `servicenode` command informs the system that a certain component is to be replaced, and causes the system to indicate the physical location of that component.

## SYNTAX

```
servicenode <subcommand> [options] <nodeid>
```

## AUTHORITY

- Super, Service
- Any role granted the `node_service` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

`start`

Specifies the start of service on a node.

`status`

Displays the state of any active `servicenode` operations.

`end`

Specifies the end of service on a node.

## OPTIONS

`-ps <psid>`

Specifies which power supply will be placed into service.

`-pci <slot>`

Specifies which PCI card will be placed into service.

`-fan <fanid>`

Specifies which node fan will be placed into service.

`-drive`

Specifies that the node's internal drive will be placed into service.

`-bat`

Specifies that the node's battery backup unit will be placed into service.

## SPECIFIERS

`<nodeid>`

Indicates which node the `servicenode` operation will act on. Accepted values are 0 through 7.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

In the following example, fan 1 on node 3 is put into servicing-mode:

```
cli% servicenode -fan 1 3
```

## NOTES

None.

---

## 22 Set Commands

### setalert

#### DESCRIPTION

The `setalert` command sets the status of system alerts.

#### SYNTAX

```
setalert new|ack|fixed {<alert_ID>...|-a}
```

#### AUTHORITY

- Super, Service
- Any role granted the `alert_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

#### OPTIONS

`-a`

Specifies that the status of all alerts be set to `new`, `acknowledged` (`ack`), or `fixed`. If not specified, the `<alert_ID>` specifier must be specified on the command line.

#### SPECIFIERS

`<alert_ID>...`

Specifies that the status of a specific alert be set. This specifier can be repeated to indicate multiple specific alerts. Up to 99 alerts can be specified in one command. If not specified, the `-a` option must be specified on the command line.

`new|ack|fixed`

Specifies that the alert(s), as indicated with the `<alert_ID>` specifier or with option `-a`, be set as `new`, `acknowledged` (`ack`), or `fixed`.

#### RESTRICTIONS

Access to all domains is required to run this command.

#### EXAMPLES

The following example sets the status of all system alerts as `new`:

```
cli% setalert new -a
```

#### NOTES

Verify the status of alerts by issuing the `showalert` command. See “[showalert](#)” (page 350) for additional information.

# setaocfg

## DESCRIPTION

The `setaocfg` command updates an Adaptive Optimization (AO) configuration.

## AUTHORITY

Super, Edit

## SYNTAX

```
setaocfg [options <arg>] <aocfg_name>
```

## OPTIONS

`-t0cpg <cpgname>`

Specifies the Tier 0 CPG for this AO config.

`-t1cpg <cpgname>`

Specifies the Tier 1 CPG for this AO config.

`-t2cpg <cpgname>`

Specifies the Tier 2 CPG for this AO config.

`-mode <mode>`

Specifies the optimization bias for the AO configuration, which can be one of the following:

- Performance — Move more regions toward higher performance.
- Balanced — Balanced between higher performance and lower cost.
- Cost — Move more regions toward lower cost tier.

`-name <newname>`

Specifies a new name for the AO configuration of up to 31 characters in length.

## SPECIFIERS

None.

## NOTES

- Two or more Tier CPGs must be defined.
- If domains are used, all CPGs must be in the same domain or not in any domain.
- A CPG can only belong to one AO configuration.
- A CPG can be removed from a tier by specifying a null string "". At least two tiers must remain.
- A CPG can be moved and swapped between tiers within the same AO configuration.
- A CPG cannot be moved between AO configurations; it must first be removed from one and then added to the second.
- Active use of Adaptive Optimization requires an Adaptive Optimization license. Contact your HP representative for more information.



## EXAMPLES

The following example changes the optimization bias (mode) of an AO configuration called `aocfg1` to Performance.

```
cli% setaocfg -mode Performance aocfg1
```

The following example sets the tier1 CPG for AO configuration `aocfg2` to `R5FCcpg`. `R5FCcpg` must not already be used in an AO configuration, and the tier 1 CPG for `aocfg2` must not already be set.

```
cli% setaocfg -t1cpg R5FCcpg aocfg2
```

The following example swaps a CPG between tiers.

```
cli% setaocfg -t0cpg R1SSDcpg -t2cpg R6NLcpg aocfg3
```

The following example removes a CPG from a tier. This assumes that `aocfg1` has 3 tiers initially.

```
cli% setaocfg -t0cpg "" aocfg1
```

# setauthparam

## DESCRIPTION

The `setauthparam` command is used to set the authentication and authorization parameters.

## SYNTAX

The syntax of the `setauthparam` command can be one of the following:

```
setauthparam [-f] <param> <value>
setauthparam [-f] <map-param> <map-value>...
setauthparam [-f] -clear <param>...
setauthparam [-f] -clearall
```

## AUTHORITY

- Super
- Any role granted the `authparam_set` right.

## OPTIONS

- f  
Does not ask for a confirmation before performing the operation.
- clearall  
Clears all the authentication parameters.
- clear  
Clears only the specified authentication parameters.

## SPECIFIERS

Specifiers for the `setauthparam` command can be issued as the following:

- `<param> <value>` - See “Values for `setauthparam` Specifiers” (page 274).
- `<map_param> <map_value>` - See “Examples of Domain Name Prefix Effects” (page 276)
- `<param>` - See “Values for Specifiers `<map-param>` and `<map-value>`” (page 276).

**Table 3 Values for `setauthparam` Specifiers**

<code>&lt;param&gt;</code>	<code>&lt;value&gt;</code>
<code>ldap-server</code>	Numeric IP address of the LDAP server.
<code>ldap-server-hn</code>	Indicates the host name of the LDAP server. This value must be set when the <code>ldap-reqcert</code> option is set or the <code>sasl-mechanism</code> option is set to GSSAPI. The value is the name of the LDAP server in its certificate or the value of the LDAP principal stored in the Kerberos database, and will usually be a fully-qualified domain name.
<code>ldap-port</code>	Indicates the port of the LDAP server (default: 389 for non-SSL, 636 for SSL).
<code>ldap-ssl</code>	To use SSL when communicating with the LDAP server, set the value to 1. (The default value is 0).
<code>ldap-reqcert</code>	Indicates whether a valid server certificate should be required in order to proceed (The default value is 0).

**Table 3 Values for `setauthparam` Specifiers (continued)**

<param>	<value>
ldap-ssl-cacert	Indicates the path name of the file containing the certificate of the Certificate Authority that has issued the LDAP server's certificate, or a "-" to prompt you to enter the certificate text.
ldap-StartTLS	Set this parameter to one of the following: <ul style="list-style-type: none"> <li>• no – to not request the server use StartTLS . Default.</li> <li>• try – to request the server use StartTLS but does not require it to proceed.</li> <li>• require – requests that the server uses StartTLS and continues only when it succeeds.</li> </ul>
binding	The LDAP binding type must be one of the following: <ul style="list-style-type: none"> <li>• simple – use simple binding with the server.</li> <li>• SASL - use a SASL mechanism that is expected by the server, with the mechanism set by the sasl-mechanism variable.</li> </ul>
user-dn-base	When using simple binding, the authentication process attempts to bind the user to an entry in the server's Directory Information Tree (DIT). The Distinguished Name (DN) of the entry is a concatenation of the value of user-attr, "=", the username, ",", and the value of user-dn-base . If group-obj is set to posixGroup, the value of user-dn-base is also used as the base for searching for the user's posixAccount entry, regardless of binding type.
user-attr	Indicates the attribute used to form a DN for simple binding. When the attribute ends with a back slash, the DN is the concatenation of the value of the user-attr variable and the username . When the attribute does not end with a back slash, it is as described for the user-dn-base variable.
sasl-mechanism	When the binding is SASL, the SASL mechanism must be one supported by the LDAP server. The system allows the mechanisms of PLAIN, DIGEST-MD5, and GSSAPI.
kerberos-server	Indicates the numeric IP address of the Kerberos server if different from the LDAP server.
kerberos-realm	The Kerberos realm.
allow-ssh-key	Set this value to 1 to allow LDAP users to set a public SSH key with the setsshkey command (default 0). Clearing or setting the variable to 0 disables the setting of new keys for LDAP users but any existing keys remain until they are removed with the removesshkey variable. This parameter only affects LDAP users, not local users.
groups-dn	Indicates the base of the subtree in the DIT in which to search for objects that hold group information. It is mutually exclusively with the accounts-dn variable.
group-obj	Indicates the objectClass attribute of a group object.
group-name-attr	The attribute in the group object that holds the group's name.
member-attr	The attribute that holds the names of users in the group.
accounts-dn	Indicates the base of the subtree in the DIT in which to search for objects that hold account information. It is mutually exclusively with the groups-dn variable.

**Table 3 Values for `setauthparam` Specifiers (continued)**

<b>&lt;param&gt;</b>	<b>&lt;value&gt;</b>
<code>account-obj</code>	The <code>objectClass</code> attribute of an account object.
<code>account-name-attr</code>	The attribute of an account object that holds the user's username .
<code>memberof-attr</code>	The attribute that holds the name of a group of which the user is a member.
<code>domain-name-attr</code>	When set, the mapping of groups to domains is enabled. For a user that is a member of a group that maps to a role level, the value of <code>domain-name-attr</code> is used to look up an attribute in the group that holds the name of the domain. If the domain is too long or contains characters that are not allowed in a domain name, the name is truncated to the maximum length of a domain name and invalid characters are replaced with an underscore ( <code>_</code> ).
<code>domain-name-prefix</code>	When <code>domain-name-prefix</code> is set, the value of the attribute specified by <code>domain-name-attr</code> is a candidate domain name. The value of <code>domain-name-prefix</code> is a character string used to extract the domain name from the candidate. The value is an optional exclamation point ( <code>!</code> ) followed by a character string called the prefix. The exclamation point is a flag that means the presence of the prefix is required and is described more in the paragraphs that follow. The candidate domain name is searched for the presence of the prefix and if found, the domain name starts after the first occurrence of the prefix and stops before the first space or tab following it or at the end of the candidate domain name. If the prefix is not found, the behavior depends on the flag. If the exclamation point was not used (there is no flag), the candidate domain name becomes the domain name. If the flag is present, the candidate domain name is rejected and there is no domain name. As a last step, and as described for <code>domain-name-attr</code> , domain names can be truncated and have invalid characters replaced.

Some examples of the effects of `domain-name-prefix` are shown in [Table 4 \(page 276\)](#):

**Table 4 Examples of Domain Name Prefix Effects**

<b>candidate</b>	<b>domain-name-prefix</b>	<b>result</b>
<code>dom1</code>	<code>ISDom=</code>	<code>dom1</code>
<code>ISDom=dom2</code>	<code>ISDom=</code>	<code>dom2</code>
<code>ISDom=dom3</code>	<code>!ISDom=</code>	<code>dom3</code>
<code>dom4</code>	<code>!ISDom=</code>	

In the last case there is no resulting domain name because `ISDom=` does not appear in the candidate.

**Table 5 Values for Specifiers `<map-param>` and `<map-value>`**

<b>&lt;map-param&gt;</b>	<b>&lt;map-value&gt;</b>
<code>super-map</code>	A group name that grants the user the Super role level if the user is a member of that group. Multiple group names can be specified using multiple <code>&lt;map-value&gt;</code> arguments. A value of " <code>*</code> " matches any group name.
<code>service-map</code>	Same as <code>super-map</code> , but for the Service level.

**Table 5 Values for Specifiers <map-param> and <map-value> (continued)**

<map-param>	<map-value>
edit-map	Same as super-map, but for the Edit level.
browse-map	Same as super-map, but for the Browse level.
create-map	Same as super-map, but for the Create level.
basic_edit-map	Same as super-map, but for the Basic_edit level.
3PAR_AO-map	Same as super-map, but for the 3PAR_AO level.
3PAR_RM-map	Same as super-map, but for the 3PAR_RM level.

**NOTE:** The IMC refers to <map-param> specifiers as **Authorization Groups**.

## EXAMPLES

For a comprehensive example of the `setauthparam` command used during LDAP setup, see the LDAP chapter of the *HP 3PAR Command Line Interface Administrator's Manual*.

## NOTES

- Users who have been provided with a password that allows successful binding with the LDAP server will nevertheless be denied access if they are not members of any of the groups specified by the map parameters.
- The matching of a user's groups with the mapping rules is done in the order of the mapping parameters provided previously. When there are multiple matches, the first match determines the user's role level.
- Domain names found with the use of `domain-name-attr` and `domain-name-prefix` are only potential domains and a user will only have roles in those if they are actually existing domains. The `showdomain` command will list existing domains.
- The `showauthparam` command displays authentication parameter settings and the `checkpassword` command can be used to see how the parameters are used to bind with an LDAP server and search for data to determine the user's role level.
- When HP 3PAR Domains are enabled, you can only have Super or Service roles for the domain all. Any other domain names are ignored for Super or Service level users. You can only have the Service role when no other domains match for levels other than Super or Service. If other such domains match, the Service level match is ignored.

# setbattery

## DESCRIPTION

The `setbattery` command sets battery information such as the battery's expiration date, its recharging time, and its serial number. This information gives the system administrator a record or log of the battery age and battery charge status.

## SYNTAX

```
setbattery [options <arg>] <node_ID> <powersupply_ID> <battery_ID>
setbattery [options <arg>] <node_ID>
```

## AUTHORITY

- Super, Service
- Any role granted the `battery_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-s <serial_number>`

Specifies the serial number of the battery using a limit of eight alphanumeric characters.

`-x <exp_date>`

Specifies the expiration date of the battery (mm/dd/yyyy). The expiration date cannot extend beyond 2037.

`-l`

Specifies that the battery test log is reset and all previous test log entries are cleared.

`-r`

Specifies that the battery recharge time is reset and that 10 hours of charging time are required for the battery to be fully charged.

## SPECIFIERS

`<node_ID>`

Specifies the node number where the battery is installed.

`<powersupply_ID>`

Specifies the power supply number on the node using either 0 (left side from the rear of the node) or 1 (right side from the rear of the node).

`<battery_ID>`

Specifies the battery number on the power supply where 0 is the first battery.

---

**NOTE:** The `<powersupply_ID>` and `<battery_ID>` specifiers can be obtained from the output of the `showbattery` command.

---

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example resets the battery test log and the recharging time for a newly installed battery on node 2, power supply 1, and battery 0, with an expiration date of July 4, 2010:

```
cli% setbattery -x 07/04/2010 2 1 0
```

## NOTES

To view battery status information, issue the `showbattery` command. See [“showbattery” \(page 354\)](#) for information about the `showbattery` command.

# setcage

## DESCRIPTION

The `setcage` command enables service personnel to set or modify parameters for a drive cage.

## SYNTAX

```
setcage [subcommand <arg>]... <cage_name>
```

## AUTHORITY

- Super, Service
- Any role granted the `cage_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

```
position <position>
```

Sets a description for the position of the cage in the cabinet, where `<position>` is a description to be assigned by service personnel (for example, `left-top`)

```
ps <model>
```

Sets the model of a cage power supply, where `<model>` is a model name to be assigned to the power supply by service personnel. This model name appears in the Model column of the `showcage -d` command output.

## OPTIONS

None.

## SPECIFIERS

```
<cage_name>
```

Indicates the name of the drive cage that is the object of the `setcage` operation.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example demonstrates how to assign `cage1` a position description of `Side Left`:

```
cli% setcage position Cabinet 0 Bay 5 Side Left cage1
```

The following example demonstrates how to assign model names to the power supplies in `cage1`. In this example, `cage1` has two power supplies (0 and 1). Both power supplies are assigned model name `Magnetek`.

```
cli% setcage ps 0 Magnetek ps 1 Magnetek cage1
```



## NOTES

- The parameters specified by the `setcage` command appear in the `showcage -d` output (see “[showcage](#)” (page 361)).
- The power supply model cannot be modified if the information is automatically retrieved from the system.

# setcim

## DESCRIPTION

The `setcim` command sets the properties of the CIM server, including options to enable or disable the HTTP and HTTPS ports for the CIM server. The command also provides the ability to configure the port numbers associated with these two protocols. In addition, it allows users to enable or disable the SLP port.

## SYNTAX

```
setcim [options]
```

## AUTHORITY

- Super, Service
- Any role granted the `cim_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

-f

Forces the operation of the `setcim` command, bypassing the typical confirmation message.

---

**NOTE:** At least one of the following options are required when issuing the `setcim` command.

---

-slp enable|disable

Enables or disables the SLP port.

-http enable|disable

Enables or disables the HTTP port.

-httpport <int>

Sets the HTTP port (49152 - 65535). The default value is 5988.

-https enable|disable

Enables or disables the HTTPS port.

-httpsport <int>

Sets the HTTPS port (49152 - 65535). The default value is 5989.

## SPECIFIERS

None.

## RESTRICTIONS

- Access to all domains is required to run this command.
- You cannot disable both of the HTTP and HTTPS ports.
- You cannot set the same port number for both of the HTTP and HTTPS ports.

## EXAMPLES

To disable the HTTPS ports:

```
cli% setcim -https disable
Warning: The CIM server is active and will restart.
Are you sure you want to continue (Y/N)? Y
```

To enable the HTTPS port and set the HTTPS port number to 49153:

```
cli% setcim -https enable -httpsport 49153
Warning: The CIM server is active and will restart.
Are you sure you want to continue (Y/N)? Y
```

## NOTES

When the CIM server is active, a warning message appears to inform you of the current status of the CIM server and asks you for confirmation to continue or not. The `-f` option forces the action without a warning message.

# setclienv

## DESCRIPTION

The `setclienv` command sets the CLI environment parameters.

## SYNTAX

```
setclienv <parameter> <value>
```

## AUTHORITY

- Super, Service, Edit, Browse
- Any role granted the `clienv_set` right.

## OPTIONS

None.

## SPECIFIERS

The specifiers include the parameters and values to which the parameters should be set. Valid parameters and their values are as follows:

<parameter>	<value>
currentdomain	Enter one of the following: <ul style="list-style-type: none"><li>• The name of the domain that you wish to set as the working domain for the current CLI session.</li><li>• <code>-unset</code> to set no current domain.</li></ul>
listdom	Enter one of the following: <ul style="list-style-type: none"><li>• 0 - (Default) Do not include the domain column in the output.</li><li>• 1 - Include domain column where relevant.</li></ul>
csvtable	Enter one of the following: <ul style="list-style-type: none"><li>• 0 - (Default) Normal table printing format.</li><li>• 1 - Comma Separated Values (CSV) format.</li></ul>
nohdTot	Enter one of the following: <ul style="list-style-type: none"><li>• 0 - (Default) Show header and total lines.</li><li>• 1 - Does not show the header and total lines.</li></ul>
hafter	<nlines> - Specifies the number of lines of data to display before an output header is displayed. If <nlines> is 10 or more, print the header after every <nlines> of data. If <nlines> is less than 10, print only the header at the beginning.
histstatnum	<nlines> - For the <code>hist</code> and <code>stat</code> commands, specifies the number of lines of data to display as soon as the data is available. Default is 5000 if <code>histstatnum</code> is not set or set to 0. The data sorting will be within the <histstatnum> rows.
editor	NOTE: This parameter is only supported when connected via SSH. Specifies the command line editing mode. Enter one of the following: <ul style="list-style-type: none"><li>• <code>emacs</code> - (Default) Use emacs-style line editing.</li><li>• <code>vi</code> - Use vi-style line editing.</li></ul>

## RESTRICTIONS

None.

## EXAMPLES

In the following example, the CLI environment is set to display domains information:

```
cli% setclienv listdom 1
```

## NOTES

This command is only available when you are using a CLI shell or SSH.

# setcpvg

## DESCRIPTION

The `setcpvg` command modifies existing Common Provisioning Groups (CPG).

## SYNTAX

```
setcpvg [options <arg>] <CPG_name>
```

## AUTHORITY

- Super, Edit, Service
- Any role granted the `cpvg_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-sa <LD_name>...`

Specifies additional Logical Disks (LDs) that have already been created to be used for snapshot administration space allocation. The `<LD_name>` argument can be repeated to specify multiple logical disks. This option is deprecated and will be removed in a subsequent release.

`-sd <LD_name>...`

Specifies additional logical disks that have already been created to be used for snapshot data space allocation. The `<LD_name>` argument can be repeated to specify multiple logical disks. This option is deprecated and will be removed in a subsequent release.

`-aw <percent>`

Specifies the percentage of used snapshot data space or snapshot administration space that, when reached, results in a warning alert. To disable the warning, enter 0. This option is deprecated and will be removed in a subsequent release.

`-f`

Forces the command. The command completes the process without prompting for confirmation.

---

**NOTE:** The following options control the auto logical disk creation for the common provisioning group's snapshot data regions. Auto logical disk creation occurs when the amount of free logical disk space falls below the specified grow (enlarge) size setting options (`-sdgs`, `-sdgl`).

---

`-sdgs <size> [g|G|t|T]`

Specifies the growth increment, the amount of logical disk storage created, on each autogrow operation. The default and minimum growth increments vary according to the number of controller nodes in the system. If `<size>` is non-zero it must be 8G or bigger. A size of 0 disables the auto-grow feature. Size can be specified in megabytes (default) or in gigabytes by using the `g|G` parameter and terabytes by using the `t|T` parameter. To specify the size in gigabytes, enter `g` or `G`, for terabytes, enter `t` or `T`, directly after the specified size (no space). The following table displays the default and minimum growth increments per number of nodes:

**Table 6 Growth Increment Per Number of Nodes**

Number of Nodes	Default	Minimum
1-2	32 GB	8 GB
3-4	64 GB	16 GB

**Table 6 Growth Increment Per Number of Nodes** *(continued)*

Number of Nodes	Default	Minimum
5-6	96 GB	24 GB
7-8	128 GB	32 GB

`-sdgl <size> [g|G|t|T]`

Specifies that the auto-grow operation is limited to the specified storage amount. The storage amount can be specified in MB (default) or GB (using g or G) or TB (using t or T). A size of 0 (default) means no limit is enforced. To disable auto-grow, set the limit to 1.

`-sdgw <size> [g|G|t|T]`

Specifies that the threshold of used logical disk space, when exceeded, results in a warning alert. The size can be specified in MB (default) or GB (using g or G) or TB (using t or T). A size of 0 (default) means no warning limit is enforced. To set the warning for any used space, set the limit to 1.

---

**NOTE:** The following options are used to control auto logical disk creation.

---

`-t <RAID_type>`

Specifies the RAID type of the logical disk: r0 for RAID-0, r1 for RAID-1, r5 for RAID-5, or r6 for RAID-6. If no RAID type is specified, the default is r1.

`-ssz <size_number_chunklet>`

Specifies the set size in terms of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row using an integer from 1 through 2147483647. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size from 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. The default value depends on raid type and device type used. If no value is entered and FC or NL drives are used, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. If SSD drives are used, the step size defaults to 32 KB for RAID-0 and RAID-1, and 64 KB for RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (mag). If no availability level is specified, the default is cage. This option has no meaning for RAID-0.

`-ch first|last`

Specifies the characteristics of the chunklets, either *first* (attempt to use the lowest numbered available chunklets) or *last* (attempt to use the lowest numbered available chunklets). If no argument is specified, the default characteristic is *first*.

`-p <pattern>`

Specifies a pattern for disks. Patterns are used to select disks that are used for creating logical disks. If no pattern is specified, the option defaults to all disks of the default device type specified at creation time. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern. The following arguments can be specified as patterns for this option:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-7). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-3). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following options are used to select the disks that are used to create common provisioning groups based on the characteristics of the disk.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`



Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command. If it is not specified, the default device type is FC.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and connected to node 2 through their primary path.

`-sax <LD_name> [, <LD_name> . . .]`

Specifies that the logical disk, as identified with the `<LD_name>` argument, used for snapshot administration space allocation be removed. The `<LD_name>` argument can be repeated to specify multiple logical disks.

`-sdx <LD_name> [, <LD_name> . . .]`

Specifies that the logical disk, as identified with the `<LD_name>` argument, used for snapshot data space allocation be removed. The `<LD_name>` argument can be repeated to specify multiple LDs.

`-name <newname>`

Specifies the name of the Common Provisioning Group (CPG) to be modified to. `<newname>` can be up to 31 characters in length.

## SPECIFIERS

`<CPG_name>`

Specifies the name of the CPG being modified.

## RESTRICTIONS

- Access to all domains is required to run this command.
- This command sets the parameters that will be used for future grows. Unless the the only growth parameters (`-sdgs`, `-sdgw` or `-sdgl`) are being changed, this command will OVERWRITE all previously-set parameters.

## EXAMPLES

The following example displays the modification of the auto-growth parameters for CPG `cpg1`:

```
cli% setcpg -sdgs 16g -sdgl 48g -sdgw 36g cpg1
```

The following example removes the `-cpg` pattern:

```
cli% setcpg -ha cage -t r5 -p -cg "" -devtype FC cpg1
```

## NOTES

- With this command, you can change the device type of a CPG from logical disks of one device type to logical disks of another device type (device types are Fibre Channel (FC),

nearline (NL), or solid state drive (SSD)). This implies that, within a CPG, one can have logical disks of type FC, type NL, and type SSD. However, this is only permitted so that, if a user wants to change the type of a CPG from FC to NL or SSD, they can first change the new logical disk creation characteristics using `setcpgr` and then use `region moves` to change the device types of existing logical disks. For this same reason, users are permitted to add logical disks of a different device type to a CPG.

- The options `-sdgs`, `-sdgl` and `-sdgw` control the auto LD creation for the CPG's snapshot data regions. Auto LD creation occurs when the amount of free LD space falls below the specified grow (enlarge) size setting options (`-sdgs`, `-sdgl`).
- If auto-grow is enabled, new LDs will be created automatically in addition to any LDs specified with `-sa` or `-sd` options.
- Enter " " after the `<pattern>` option to remove the pattern.
- Use `movetomain` command to move a CPG from one domain to another.

# setdate

## DESCRIPTION

The `setdate` command allows you to set the system time and date on all nodes.

## SYNTAX

The syntax for the `setdate` command can be one of the following:

- `setdate <MMDDhhmm> [[<CC>] <YY>] [<.ss>]`
- `setdate -tzlist [group]`
- `setdate -tz <tzname>`

## AUTHORITY

- Super, Service
- Any role granted the `date_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-tzlist [group]`

Displays a timezone within a group, if a group is specified. If a group is not specified, displays a list of valid groups.

`-tz <tzname>`

Sets the timezone on all nodes. The option must have a valid `tzname` from the list provided with the `-tzlist` command.

## SPECIFIERS

`<MMDD>`

Specifies the month (`MM`) and day (`DD`).

`<hhmm>`

Specifies the hour (`hh`) and minute (`mm`) on a 24-hour clock.

`<CC>`

Specifies the century (`CC`) and cannot be used unless a year is specified (`YY`). This specifier is not required.

`<YY>`

Specifies a year (`YY`). This specifier is not required.

`<.ss>`

Specifies seconds (`ss`). This specifier is not required.

Specifiers can only be used in combinations as listed in `RESTRICTIONS` in the section that follows.

## RESTRICTIONS

- Access to all domains is required to run this command.
- Specifiers must be provided in one of the combinations listed as follows when issuing the `setdate` command:
- `MMDDhhmm`

- MMDDhhmmYY
- MMDDhhmmCCYY
- MMDDhhmm.ss
- MMDDhhmmYY.ss
- MMDDhhmmCCYY.ss

## EXAMPLES

The following example shows the timezone being set:

```
Timezone set successfully.
```

The following example verifies the timezone is set to the required setting:

```
7 Mon Oct 10 23:14:52 GMT 2005
```

## NOTES

- Specifies must be provided in one of the combinations listed as follows when issuing the `setdate` command:
  - MMDDhhmm
  - MMDDhhmmYY
  - MMDDhhmmCCYY
  - MMDDhhmm.ss
  - MMDDhhmmYY.ss
  - MMDDhhmmCCYY.ss
- Check node dates by issuing the `showdate` command. See [“showdate” \(page 373\)](#) for additional information.

# setdomain

## DESCRIPTION

The `setdomain` command sets the parameters and modifies the properties of a domain.

## SYNTAX

```
setdomain [options <arg>] <domain_name>
```

## AUTHORITY

- Super
- Any role granted the `domain_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-name <name>`

Changes the name of the domain.

`-comment <comment>`

Specifies comments or additional information for the domain. The comment can be up to 511 characters long and must be enclosed in quotation marks. Unprintable characters are not allowed within the `<comment>` specifier.

`-vvretentiontimemax <value> [h|H|d|D]`

Specifies the maximum value that can be set for the retention time of a volume in this domain. `<time>` is a positive integer value and in the range of 0 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

To remove the maximum volume retention time for the domain, enter `-vvretentiontimemax " "`. As the result, the maximum volume retention time for the system is used instead.

To disable setting the volume retention time in the domain, enter 0 for `<time>`.

## SPECIFIERS

`<domain_name>`

Indicates the name of the domain.

## RESTRICTIONS

You need access to all domains to run this command.

## EXAMPLES

In the following example, the name of a domain named `Domain1` is changed to `DomainX`:

```
cli% setdomain -name DomainX Domain1
```

The following example displays the addition of a comment to the domain `Engineering`:

```
cli% setdomain -comment "This is a comment for engineering." Engineering
```

## NOTES

For moving objects into a domain, use the `movetodomain` command.

# setdomainset

## DESCRIPTION

The `setdomainset` command sets the parameters and modifies the properties of a domain set.

## SYNTAX

```
setdomainset [options <arg>] <setname>
```

## AUTHORITY

- Super, Edit
- Any role granted the `domainset_annotate` right can only annotate the comment of a domain set.
- Any role granted the `domainset_set` right can set any domain set property.

## OPTIONS

`-comment <comment>`

Specifies any comment or additional information for the set. The comment can be up to 255 characters in length. Unprintable characters are not allowed.

`-name <newname>`

Specifies a new name for the domain set. The name can be up to 27 characters in length.

## SPECIFIERS

`<setname>`

Specifies the name of the domain set to modify.

## RESTRICTIONS

None.

## Example

To rename a set from `foo` to `bar`:

```
cli% setdomainset -name bar foo
```

To change the comment on set `bar`:

```
cli% setdomainset -comment "This used to be set foo" bar
```

## NOTES

None.

# sethost

## DESCRIPTION

The `sethost` command sets properties on existing system hosts, including options to annotate a host with descriptor information such as physical location, IP address, operating system, model, and so on. The command also provides the ability to configure or remove iSCSI CHAP authentication information and to reset a host, aborting all its pending I/O.

## SYNTAX

The syntax for the `sethost` command can be one of the following:

- `sethost [options <arg>] <host_name>`
- `sethost initchap [-f] [options <arg>] <secret> {<host_name>|<pattern>}...`
- `sethost targetchap [-f] [options <arg>] <secret> {<host_name>|<pattern>}...`
- `sethost removechap [-target] [-f] {<host_name>|<pattern>}...`
- `sethost clearagent <WWN|iscsi_name>`
- `sethost rst <hostname>`
- `sethost rst -wwn <WWN> <node:slot:port>`
- `sethost rst -iscsi_name <iscsi_name> <node:slot:port>`

## AUTHORITY

- Super, Edit
- Any role granted the `host_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

`initchap`

Sets the initiator CHAP authentication information on one or more hosts.

`targetchap`

Sets the target CHAP authentication information on one or more hosts.

`removechap`

Removes CHAP authentication information on one or more hosts. By default, this removes all CHAP information for all specified hosts. Using this subcommand with the `-target` option removes only target CHAP information.

`clearagent`

Clears any host agent data associated with the host.

`rst`

Reset a host or host initiator, aborting all pending commands from the host initiator(s) and releasing any SCSI-2 reservations held by the initiator(s).

## OPTIONS

`-loc <location>`

Specifies the location of the host.



`-ip <IP_address>`

Specifies the IP address of the host.

`-os <OS>`

Specifies the operating system running on the host.

`-model <model>`

Specifies the model of the host.

`-contact <contact>`

Specifies the contact information for the host.

`-comment <comment>`

Specifies any additional information for the host.

`-name <hostname>`

Specifies the new name of the host up to 31 characters in length.

`-persona <hostpersonaval>`

Sets the host persona that specifies the personality for all ports which are part of the host set. This selects certain variations in SCSI command behavior which certain operating systems expect. The `<hostpersonaval>` is the host persona ID number with the desired capabilities. These can be seen with `showhost -listpersona`.

The following options are for use with the `initchap` and `targetchap` subcommands:

`-f`

Do not ask for confirmation before performing the operation.

`-chapname <chapname>`

Used to specify the initiator or target CHAP name. If this option is not specified, then the initiator CHAP name defaults to the host name and the target CHAP name defaults to the HP 3PAR system name.

`-hex`

The CHAP secret is treated as a hex number.

The following options are for use with the `removechap` subcommand:

`-target`

Removes only the target CHAP authentication.

## SPECIFIERS

`<host_name>`

Name of the host with a maximum of 31 characters in length.

`<pattern>`

Specifies that the properties are set for all hosts matching the specified pattern.

`<secret>`

The CHAP secret for the host or the target. If `-hex` is specified, it is treated as a hex number. Otherwise it should be a printable ASCII string 12 to 16 characters in length with no spaces, or 16 bytes in HEX.

---

**NOTE:** The CHAP configuration operations are applied to all hosts whose names match one or more of the specified `<hostname>` or `<pattern>`. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

---

`<WWN | iSCSI_name>`

The World Wide Name (WWN) or iSCSI name of the host which should be reset or for which host agent data should be cleared.

`<node:slot:port>`

`node` — Specifies the node using a number from 0 through 7.

`slot`

Specifies the PCI slot in the specified node. Valid ranges are:

- 0 – 9 for the StoreServ 10000 storage system platform
- 0 – 5 for the S and T-Class storage system platforms
- 0 – 3 for the E200 storage system platform
- 0 – 2 for the F-Class storage system platform

`port`

Specifies the port using a number from 1 through 4.

## RESTRICTIONS

Access to all domains is required for the `clearagent` subcommand.

## EXAMPLES

The following example change the settings of a host:

```
cli% sethost -contact "Joe Smith" -model "Sun Ultra 60" queasy10
cli% sethost initchap "MyChapSecret" queasy10
cli% sethost targetchap -hex "30313233343536373839303132333435" queasy10
cli% sethost removechap -target queasy10
cli% sethost clearagent 210100E08B32A58A
cli% sethost -persona 1 queasy10
cli% sethost rst -wwn 210100E08B32A58A 0:2:3
```

## NOTES

- The CHAP configurations are applied to all hosts whose names match one or more of the specified `<host_name>` or `<pattern>` specifiers. The patterns are treated as glob-style (shell-style) patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.
- The options that allow for adding descriptive information are for annotation purposes only; the storage server does not actively use the information provided here.
- Remove descriptors by passing an empty string to the command.
- Verify modification of host properties by issuing the `showhost` command.

# sethostset

## DESCRIPTION

The `sethostset` command sets the parameters and modifies the properties of a host set.

## SYNTAX

```
sethostset [options <arg>] <setname>
```

## AUTHORITY

- Super, Edit
- Any role granted the `hostset_annotate` right can only annotate the comment of a host set.
- Any role granted the `hostset_set` right can set any host set property.

## OPTIONS

```
-comment <comment>
```

Specifies a comment relating to the set.

```
-name <newname>
```

Specifies a new name for the host set.

## SPECIFIERS

```
<setname>
```

Specifies the name of the host set to modify.

## RESTRICTIONS

None.

## EXAMPLES

To rename a set from `foo` to `bar`:

```
cli% sethostset -name bar foo
```

To change the comment on a set:

```
cli% sethostset -comment "This used to be set foo" bar
```

## NOTES

None.

# setlicense

## DESCRIPTION

The `setlicense` command sets the license key information.

## SYNTAX

```
setlicense [options <arg>]
```

## AUTHORITY

- Super, Service
- Any role granted the `license_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-f <filename>`

Specifies the file from which the license key is read.

`-noconfirm`

Specifies that the system does not prompt for confirmation for the new license key.

## SPECIFIERS

None.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The entered license key is accepted only if it is recognized as a valid key. A valid license key includes an appropriate serial number and is associated with the number of nodes in the system for which the license key is being entered.
- HP 3PAR's license terms and conditions must be accepted before proceeding with this command.

## EXAMPLES

The following example displays the setting of a license key:

```
cli% setlicense
If this software is being provided to you for a limited evaluation period, then your
license shall be governed by the current HP Software License Terms (or as otherwise
agreed between us) with the exception that the term of the license shall expire upon
the earlier of the evaluation period notified to you or 120 days. Upon expiration of
the license, you must cease using the software and HP reserves the right to disable
the software without notice. By using or activating the software you are agreeing to
these terms.

Do you agree to these terms and conditions? y=yes n=no: yes

Please enter the new license key below. When finished, press enter twice. If the key
is entered by hand, note that characters other than letters and numbers are ignored,
and the key is not case-sensitive.

60R3-0C1G...
```

## NOTES

- This command prompts for a new license key. To finish entering the license key, press **enter** on a blank line.
- When the license key is being interpreted, all characters other than letters (without case-sensitivity) and numbers are ignored, and the letters are not case-sensitive.
- After the new license key has been entered, the changes between the existing license key and the new license key are displayed. There is a prompt to confirm the changes unless the `-noconfirm` option is given, in which case the information is not displayed, and the new license key is entered immediately.

## setnet

### DESCRIPTION

The `setnet` command sets the administration network interface configuration.

### AUTHORITY

- Service, Super
- Any role granted the `net_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SYNTAX

The syntax for the `setnet` command can be one of the following:

- `setnet startaddr <old_IP> <new_IP> <new_netmask>`
- `setnet startgateway <new_gateway>`
- `setnet finish [-f]`
- `setnet abort`
- `setnet cleargateway [-f]`
- `setnet speed <IP_addr> auto|<mbps> <duplex>`
- `setnet failoverping <IP_addr> <ping_addr>|none`
- `setnet ntp none|<server_addr>`
- `setnet changenode [<node_ID>]`
- `setnet addaddr <old_IP> <new_IP> <new_netmask>|<prefix_len>`
- `setnet removeaddr <old_IP>`
- `setnet dns none|<server_addr>`

### SUBCOMMANDS

`startaddr`

Specifies that the system start switching the old IP address (`<old_IP>` specifier) to the new IP address (`<new_IP>` specifier) with the specified netmask (`<new_netmask>` specifier).

`startgateway`

Specifies that the gateway be immediately set to the specified IP address if no gateway is currently defined, or switched to the specified IP address if currently defined, in both cases indicated with the (`<new_gateway>` specifier).

`finish`

Specifies that outstanding changes from the `startaddr` and `startgateway` subcommands be completed.

`abort`

Specifies that any attempt to configure a new IP address or gateway fails. The system returns to its previous state.

`cleargateway`

Specifies that the existing system gateway is removed.

`speed`

Specifies that the network interface is set to the specified speed and duplex as indicated with the `<mbps>` and `<duplex>` specifiers.

`failoverping`

Specifies that on IP failover, a ping is sent to the specified IP address as indicated with the `<ping_addr>` specifier.

`ntp none|ntp <serveraddr>`

Specifies the NTP server the system should use to synchronize its clocks. The server must be specified as an IP address.

`changenode`

Forces the system to change which node has an active Ethernet interface. If a node ID is specified, it switches to that node. Otherwise, any node with a connected Ethernet interface is chosen.



**WARNING!** If successful, this command causes any HP 3PAR management application clients currently connected to lose their connection.

`addaddr`

Specifies that the new IP (`<new_IP>` specifier) is added to the interface that is currently assigned the old\_IP (`<old_IP>` specifier). The old IP and new IP should be of different IP versions (IPv4 or IPv6).

`removeaddr`

Specifies that the old IP (`<old_IP>` specifier) be de-configured. The old IP can only be an IPv6 address.

`dns none|dns <serveraddr>`

Specifies the DNS server the system should use to resolve host names. The server must be specified as an IP address.

---

## OPTIONS

`-f`

Specifies that the operation is forced even if verification has not occurred. This option can only be used with the `finish` and `cleargateway` subcommands.

## SPECIFIERS

`<old_IP>`

Specifies an existing IP address that is to be changed. This specifier is used in conjunction with the `<new_IP>` and `<new_netmask>` specifiers and can only be used with the `startaddr` subcommand.

`<new_IP>`

Specifies a new IP address to which the system is configured. This specifier is used in conjunction with the `<old_IP>` and `<new_netmask>` specifiers and can only be used with the `startaddr` subcommand.

`<new_netmask>`

Specifies a new netmask to which the system is configured. This specifier is used in conjunction with the `<old_IP>` and `<new_IP>` specifiers and can only be used with the `startaddr` subcommand.

`<prefix_len>`

Specifies a new `prefix_len` to which the system is configured. This specifier is used in conjunction with the `<old_IP>` and `<new_IP>` specifiers. This specifier can only be used when `<new_IP>` is of IPv6 type and can only be used with the `startaddr` and `addaddr` subcommands.

<new\_gateway>

Specifies the IP address of the new gateway for the system. This specifier can only be used with the `startgateway` subcommand.

auto|<mbps> <duplex>

Specifies that the speed of the network interface is either auto negotiated (`auto`), or specified manually using the `<duplex>` and `<mbps>` specifiers.

<mbps>

Specifies the speed of the network interface. Valid values are either 10 or 100. This specifier can only be used with the `<duplex>` specifier and with the `speed` subcommand.

<duplex>

Specifies the duplex of the network interface. Valid values are either `half` or `full`. This specifier can only be used with the `<mbps>` specifier and with the `speed` subcommand.

<IP\_addr>

Specifies the IP address of the node. This specifier can only be used with the `failoverping` subcommand.

<ping\_addr>|none

Specifies that during an IP failover, a ping either be sent to the specified IP address (`<ping_addr>`) or not sent at all (`none`). This specifier can only be used with the `failoverping` subcommand.

[<node\_ID>]

Specifies the node, by ID, that has an active Ethernet interface. This specifier can only be issued with the `changenode` subcommand. This specifier is not required.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the switching of the old IP address with a new IP address and netmask:

```
cli% setnet startaddr 10.0.23.42 192.168.5.218 255.255.252.0
Change of IP address successfully started.
```

The following example displays the gateway being cleared:

```
cli% setnet cleargateway

If the machine that the HP 3PAR CLI is running on is not on the same subnet as the HP
3PAR storage system it is connected to, clearing the gateway will render the storage
system unreachable from that machine, and any future connections will need to be made
from a system which is on the same subnet as the system.

Are you sure you want to clear the gateway (y/n)?
y
Gateway modified successfully.
```



## NOTES

- If successful, this command causes any CLI or GUI clients currently connected to lose their connection.
- To make it possible to change the network configuration without running the risk of losing contact with the system because of misconfiguration, the `setnet` command uses a two step process. When a new IP address is specified with the `setnetstartaddr` command, the system is configured to listen as both the old and new IP addresses. When a new gateway is specified with the `setnet gateway` command, the system switches between the old and new gateways when it sees packets addressed to it being routed through those gateways. After a connection has been made with the new configuration, the `setnet finish` command can be used to remove the old configuration. While in the middle of this process, additional work must be done by the system. It is preferable to run the `setnet finish` command after the new configuration has been verified.
- When changing gateways, starting a CLI connection takes longer than usual, as the first reply packet is typically routed through the previously used gateway address.

# setnode

## DESCRIPTION

The `setnode` command sets the properties of the node components such as the serial number of the power supply.

## AUTHORITY

- Super, Service
- Any role granted the `node_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SYNTAX

```
setnode ps <PS_ID> [options] <node_ID>
```

## SUBCOMMAND

`ps`

Sets the power supply properties.

## OPTIONS

`-s <serial_number>`

Specifies the serial number up to eight characters in length.

## SPECIFIERS

`<PS_ID>`

Specifies the power supply ID.

`<node_ID>`

Specifies the node ID.

## RESTRICTIONS

- Access to all domains is required to run this command.
- At least one option must be specified.

## EXAMPLES

The following example displays the node power supply:

```
cli% shownode -ps
Node PS -Serial- -PSState-- FanState ACState DCState -BatState- ChrgLvl(%)
  0  0  --          NotPresent --          --          --          NotPresent  0
  0  1  FFFFFFFF OK          OK          OK          OK          OK          0
  1  0  FFFFFFFF OK          OK          OK          OK          OK          0
  1  1  --          NotPresent --          --          --          NotPresent  0
cli%
cli% setnode ps 1 -s 12345678 0
cli% shownode -ps
Node PS -Serial- -PSState-- FanState ACState DCState -BatState- ChrgLvl(%)
  0  0  --          NotPresent --          --          --          NotPresent  0
  0  1  12345678 OK          OK          OK          OK          OK          0
  1  0  FFFFFFFF OK          OK          OK          OK          OK          0
  1  1  --          NotPresent --          --          --          NotPresent  0
```

```
cli%
cli% setnode ps 0 -s aabbccdd 1
cli% shownode -ps
Node PS -Serial- -PSState-- FanState ACState DCState -BatState- ChrgLvl(%)
  0  0 --          NotPresent --      --      --      NotPresent      0
  0  1 12345678 OK           OK       OK       OK       OK           100
  1  0 AABCCDD OK           OK       OK       OK       OK           100
  1  1 --          NotPresent --      --      --      NotPresent      0
cli%
cli% setnode ps 0 -s aabbccdee 1
Error: The serial number aabbccdee is too long, should be less than 9 characters.
```

## NOTES

None.

## setntp

### DESCRIPTION

The `setntp` command sets the system Network Time Protocol (NTP) server. This command is deprecated and will be removed in a subsequent release.

### AUTHORITY

- Super, Service
- Any role granted the `ntp_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SYNTAX

```
setntp <server_IP_address>|none
```

### OPTIONS

None.

### SPECIFIERS

`<server_IP_address>`

Specifies the IP address of the NTP server to which the HP 3PAR storage system synchronizes its internal clocks.

`none`

Specifies that the HP 3PAR storage system should not synchronize its internal clocks with an external NTP server. Instead, the system synchronizes its clocks internally.

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example displays the setting of the system NTP server:

```
cli% setntp 192.168.1.1
NTP server successfully updated.
```

### NOTES

None.

# setpassword

## DESCRIPTION

The `setpassword` command allows a user with Super level role to change the password for any user and create a password file on a client. Edit-, browse-, or service-level users can use the `setpassword` command to change their own passwords or save their password files on a client.

## SYNTAX

```
setpassword [options <arg>]
```

## AUTHORITY

- Super, Edit, Browse, Service
- Any role granted the `password_setany` right can set any user password.
- Any role granted the `password_setown` right can only set their own password.

## OPTIONS

`-save` | `-saveonly`

This option cannot be used independently of the `-file` option.

`-save`

Specifies that the password, as specified with the `-file` option, is saved on both the storage system and on a client of the system.

`-saveonly`

Specifies that the password, as specified with the `-file` option, is only saved on the client.

`-file <pwfile>`

Specifies the password file to be saved. The `<pwfile>` option can be any valid file name in the client system. This option cannot be used independently of the `-save` or `-saveonly` options.

`-u <username>`

Specifies the login name of the user whose password is being changed. If a login name is not specified, the command defaults to the current user.

## SPECIFIERS

None.

## RESTRICTIONS

- Only a user with Super level role can set another user's password.
- Passwords can be no longer than eight non-null characters, and must be at least six non-null characters long.
- Using the `-saveonly` option with the `-file` option leaves a copy of the encrypted password in the `-file` argument. This file, if compromised, could allow the user to be impersonated.

## EXAMPLES

The following example shows how to set a user's (`user1`) password on an storage system and on a client:

```
cli% setpassword -save -file <insertfile> user1
```

The following example displays the prompts encountered when changing a user's (`user1`) password:

```
cli% setpassword -u user1
password:
Old password:
```

## NOTES

- The format of the entry in the file is `<username> <encrypted_password>`. This file may be referenced by the `TPDPWFILE` environment variable or `-pwf` command line option for subsequent commands.
- The `-save` or `-saveonly` option requires the `-file` option.
- Without any options, the command will prompt to change the invoking user's password on the system.
- Changing a user's password has no effect on SSH access if the user has set a valid key with the `setsshkey` command. Until the SSH key is removed the user will not have to provide the new password.
- For additional information about password files, see the *HP 3PAR StoreServ Storage Concepts Guide* and the *HP 3PAR Command Line Interface Administrator's Manual*.

# setpd

## DESCRIPTION

The `setpd` command marks a Physical Disk (PD) as allocatable or non allocatable for Logical Disks (LDs).

## SYNTAX

```
setpd ldalloc on|off <PD_ID>...
```

## AUTHORITY

- Super, Service
- Any role granted the `pd_set` right

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

```
ldalloc on|off
```

Specifies that the PD, as indicated with the `PD_ID` specifier, is either allocatable (`on`) or nonallocatable for LDs (`off`).

## OPTIONS

None.

## SPECIFIERS

```
<PD_ID>...
```

Specifies the PD identification using an integer.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays PD 0 marked as non allocatable for LDs.

```
cli% setpd ldalloc off 0
```

## NOTES

- This command can be used when the system has disks that are not to be used until a later time.
- Verify the status of PDs by issuing the `showpd -s` command. See “[showpd](#)” (page 420).

# setqos

## DESCRIPTION

The `setqos` command creates and updates QoS rules in a system.

## SYNTAX

The syntax for the `setqos` command can be one of the following examples:

- `setqos [options] [{vvset:{<name>|<pattern>}|sys:all_others}]...`

## AUTHORITY

- Super, Edit
- Any role granted the `qos_set` right can set QoS configurations.

## OPTIONS

`-io {<limit>|none}`

Set the QoS I/O issue count rate limit to `<limit>`. If "none" is specified, there is no limit on I/O issue count.

`-bw {<limit>[k|K|m|M|g|G]|none}`

Set the QoS I/O issue bandwidth rate limit to `<limit>`. If "none" is specified, there is no limit on I/O issue bandwidth rate.

`{-on|-off}`

Enable / disable QoS scheduling for the target object. By default QoS scheduling is "on".

`-clear`

Stop QoS scheduling of the rule and clear its setting.

`-vv {<vv_name>|<pattern>} [, {<vv_name>|<pattern>} ...`

Applies only to QoS rules whose targets include virtual volumes with names matching any of the names or patterns specified.

## SPECIFIERS

`{vvset:{<name>|<pattern>}|sys:all_others}`

The target objects of QoS setting. `<name>` and `<pattern>` refer to the target object name, as listed in `showvvset` commands. If "sys:all\_others" is specified, the QoS rule will be applied to the group of all virtual volumes, which don't have any specific QoS rule applied.

## EXAMPLES

The following example sets the IOPs limit of `vvset vsa` to 300:

```
cli% setqos -io 300 vvset:vsa
```

The following example turns off the QoS scheduling for `vvset vsa`:

```
cli% setqos -off vvset:vsa
```

The following example removes all QoS settings of all `vvsets`:

```
cli% setqos -clear vvset:*
```



## NOTES

For all the <pattern> fields, the patterns are glob-style (shell-style) patterns (see help on sub, globpat)

When -vv option is present, the setting is only applied to target objects with existing QoS configuration. To limit the new settings to target objects with existing QoS configuration, it is useful to specify -vv \* in the command line.

QoS rules only manage host I/O. Use of this command to create new QoS rules requires a Quality of Service license. Contact your local HP representative for information.

# setrcopygroup

## DESCRIPTION

The `setrcopygroup` command performs the following actions:

- Sets the policy of the Remote Copy volume group for dealing with I/O failure and error handling.
- Switches the direction of transfer between volume groups.
- Sets a resynchronization period for volume groups in asynchronous periodic mode.
- Sets the group's mode.

## SYNTAX

The syntax for the `setrcopygroup` command can be one of the following:

- `setrcopygroup pol [option] [<pattern>] <policy> [<group_name>]`
- `setrcopygroup period [option] [<pattern>] <period_value> <target_name>`
- `setrcopygroup mode [option] [<pattern>] <mode_value> <target_name> [<group_name>]`
- `setrcopygroup <dr_operation> [options] [<pattern>] [<target_name|group_name>...]`
- `setrcopygroup cpg -usr_cpg_unset -snp_cpg_unset <group_name>`

## AUTHORITY

- Super, Edit
- Any role granted the `rcopygroup_set` right.

## SUBCOMMANDS

`pol`

Sets the policy of the Remote Copy volume group for dealing with I/O failure and error handling.

`period`

Specifies that groups that are in asynchronous periodic mode should be periodically synchronized in accordance with the specified `<period_value>`.

`mode`

Specifies the mode to which the volume group is set.

`cpg`

Specifies the local and target cpg.

`<dr_operation>`

Specifies the operation of the group(s). Valid operations are:

- `reverse` - Changes the natural and current direction of all specified groups. The operation is mirrored resulting in a direction change on both systems. This option is very flexible depending on the options that are provided.

---

**△ CAUTION:** Do **NOT** use the `reverse` specifier as part of the disaster recovery process. Misuse of this specifier can result in lost data on the system configured as the primary system under normal operating conditions.

---

- `failover` - Changes secondary volume groups to primary volume groups on the primary system in the event of a system failure. If the group has multiple targets it will also attempt to pull more recent data from other targets and start Remote Copy to those targets when complete.
- `switchover` — Migrates the remote copy group from primary to secondary without impacting the host I/O. This command requires that associated hosts are connected to both the primary and secondary arrays. The WWNs of primary and secondary volumes are consistent and the host persona of the host must support Asymmetric Logical Unit Access (ALUA).
- `recover` - Used for groups on which the `failover` operation has already been run. Changes matching primary volume groups on the backup system to secondary volume groups and then starts and synchronizes all groups.
- `restore` - Used on groups on which the `recover` operation has already been run. Returns all groups to their natural direction and starts them.
- `override` — This command overrides the failsafe state which is applied to Remote Copy group allowing the associated volumes to be exported to attached hosts.

## OPTIONS

`-t <tname>`

When used with `<dr_operation>` subcommands, specifies the target that the `<dr_operation>` command applies to. This is optional for single target groups, but required for multi-target groups. If no groups are specified, it applies to all relevant groups. When used with the `pol` subcommand, specified for a group with multiple targets, the command only applies to that target; otherwise, it is applied to all targets.

`-f`

Does not ask for confirmation for disaster recovery commands.

`-nostart`

Specifies that groups are not started after role reversal is completed. This option can be used for `failover`, `recover`, and `restore` subcommands.

`-nosync`

Specifies that groups are not synced after the role reversal is completed through the `recover`, `restore`, and `failover` specifiers.

`-discard`

Specifies not to check a group's other targets to see if newer data should be pushed from them if the group has multiple targets. The use of this option can result in the loss of the most recent changes to the group's volumes and should be used carefully. This option is only valid for the `failover` specifier.

`-nopromote`

This option is only valid for the `failover` and `reverse` specifiers. When used with the `reverse` specifier, specifies that the synchronized snapshots of groups that are switched from primary to secondary not be promoted to the base volume. When used with the `failover` specifier, it indicates that snapshots of groups that are switched from secondary to primary should not to be

promoted to the base volume in the case where all volumes of the group were not synced to the same time point.

The incorrect use of this option can lead to the primary and secondary volumes not being consistent.

`-nosnap`

Specifies that snapshots are not taken of groups that are switched from secondary to primary. Additionally, existing snapshots are deleted if groups are switched from primary to secondary. The use of this option may result in a full synchronization of the secondary volumes. This option can be used for the `failover`, `restore`, and `reverse` subcommands.

`-stopgroups`

Specifies that groups are stopped before running the `reverse` subcommand.

`-local`

When issuing the command with the `reverse` specifier, only the group's direction is changed on the system where the command is issued.

`-natural`

When issuing the `-natural` option with the `reverse` specifier, only the natural direction of data flow between the specified volume group and its target group is reversed. The roles of the volume groups do not change.

`-current`

When issuing the `setrcopygroup` command with the `reverse` subcommand, only the current direction of the groups is reversed.

`-waittask`

Wait for all tasks created by this command to complete before returning. This option applies to the `failover`, `recover`, `restore`, and `reverse` subcommands.

`-pat`

Specifies that the patterns specified are treated as glob-style patterns and all Remote Copy groups matching the specified patterns will be set. The `-pat` option can specify a list of patterns. This option must be used if the `<pattern>` specifier is used.

`-usr_cpg <cpg name> <target_name>:<cpg_name>`

Specifies the local user CPG and target user CPG that will be used for volumes that are auto-created. Local CPG will only be used after failover and recovery.

`-snp_cpg <cpg name> <target_name>:<cpg_name>`

Specifies the local snap CPG and target snap CPG that will be used for volumes that are auto-created. Local CPG will only be used after failover and recovery.

`-usr_cpg_unset`

Unset all user CPGs that are associated with this group.

`-snp_cpg_unset`

Unset all snap CPGs that are associated with this group.

## SPECIFIERS

`<pattern>`

Specifies a glob-style pattern. If this specifier is not used, the `<group_name>` or `<target_name>` specifier must be used.

`<policy>`

Specifies the policy to assign to the group. Valid policies are:

`auto_recover`

Specifies that if the Remote Copy is stopped as a result of the Remote Copy links going down, the group is restarted automatically after the links come back up. If this policy is enabled for a group while the group is stopped after link failures it will only be started when the links come up for the failed target. If the links are already up at the time the policy is set then the group will not be restarted at that time.

If the virtual volumes in the Remote Copy group were created using the `admitrcopyvv -createvv` command, in the event of Remote Copy stopping due to link failures, the Remote Copy group goes into failsafe mode. Failsafe mode requires that the Remote Copy group be started manually using the `startcopygroup` command.

`no_auto_recover`

Specifies that if the Remote Copy is stopped as a result of the Remote Copy links going down, the group must be restarted manually after the links come back up (default).

`over_per_alert`

If a synchronization of a periodic Remote Copy group takes longer to complete than its synchronization period then an alert will be generated. This is the default behavior.

`no_over_per_alert`

If a synchronization of a periodic Remote Copy group takes longer to complete than its synchronization period then an alert will not be generated.

`<group_name>`

Specifies the name of the volume group whose policy is set, or whose target direction is switched.

`<target_name>`

Specifies the target name for the target definition created with the `creatercopytarget` command.

`<mode_value>`

Specifies the mode, `sync` or `periodic`, to which the group is set. This specifier can only be used with the `mode` subcommand.

`<period_value>s|m|h|d`

Specifies the time period in units of seconds (s), minutes (m), hours (h), or days (d), for automatic resynchronization (e.g. `14h` for 14 hours). The time must be longer than or equal to five minutes and not more than one year in duration, or set to zero to indicate that no period should be used. This specifier can only be used with the `period` subcommand.

## RESTRICTIONS

- This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for further information.
- When issuing the `setcopygroup <dr_operation>` command, either the `<group_name>` specifier, the `<target_name>` specifier, or the `<pattern>` specifier must be specified.
- Reversing the direction of primary volumes will result in the loss of any data changed after the group was stopped.
- The period can be set only for groups whose mode is asynchronous periodic (see `creatercopygroup`).
- Do **NOT** use the `reverse` value of the `<dr_operation>` as part of the normal disaster recovery process.

## EXAMPLES

The following example sets the group policy for Group1:

```
# setcopygroup pol auto_recover Group1
```

The following example reverses the current direction of secondary group `Group1` on `System2` (the secondary system) so that I/O might be applied to the group after disaster recovery:

```
# setrcopygroup failover Group1.r121
```

The following example sets `Group1` to be automatically synchronized every 30 minutes to `System2`:

```
# setrcopygroup period 30m System2 Group1
```

The following example reverses the current direction of all secondary groups that start with the name `testgroup` so that I/O can be applied to the groups during disaster recovery:

```
# setrcopygroup failover -pat testgroup*
```

The following example sets volume groups that start with the name `testgroup` to synchronize to its asynchronous periodic mode target `System2` every 30 minutes:

```
# setrcopygroup period -pat testgroup* 30m System2
```

## NOTES

- An earlier version of this command provided `fail_wrt_on_err` and `no_fail_wrt_on_err` policies. These policies were deprecated in HP 3PAR OS release 3.1.1.
- An earlier version of this command provided a `target` subcommand. This subcommand was deprecated in HP 3PAR OS release 2.2.3.
- Reversing the direction of primary volumes will result in the loss of any data changed after the group was stopped.
- There is no default resynchronization period. For groups whose mode is asynchronous periodic, you must specify a resynchronization period using `setrcopygroup period <value>` or resynchronizations will not automatically take place.
- The minimum interval for periodic resynchronizations is five minutes.
- If the `mirror_config` policy is set for this group's target and the group is a primary group, then the `setrcopygroup` command will be mirrored to the target when the `period` and `pol` subcommands are used.
- Use the `-nosnap` option when the primary system has failed or where the disks are ruined or in an unknown state. For example, an uncontrolled shutdown can result in loss of data. If you suspect that the primary volumes are not in a known good state, you should use this option to force a FULL RESYNC when the primary system is restored.
- The `-nosnap` option can be used when making a secondary group take over as the primary after a disaster takes down the primary (`setrcopygroup failover -nosnap...`). This option indicates that no incremental resynchronization of the primary group is possible while the primary system is coming back online. Without this option, a snapshot is taken when the secondary system takes over as the primary. That snapshot is used to do an INCREMENTAL synchronization of the primary after it is restored. This assumes that there was no loss of data in the primary volumes when the primary system went down.
- The `switchover` command is only supported for synchronous remote copy groups that are started and synced. The command must be issued on the primary array and upon completion of the command the remote copy group will be restarted in the reverse direction.

# setrcopytarget

## DESCRIPTION

The `setrcopytarget` command sets the name, policies, or throughput definition for the target's links.

## SYNTAX

The syntax for the `setrcopytarget` command can be one of the following:

- `setrcopytarget pol <policy> <target_name>`
- `setrcopytarget name <new_name> <target_name>`
- `setrcopytarget tput <tput_value> <target_name>`
- `setrcopytarget tunelinks <bandwidth> <latency> <target_name>`
- `setrcopytarget enable|disable <target_name>`

## AUTHORITY

- Super, Edit
- Any role granted the `rcopytarget_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

`pol`

Sets the policy for the specified target.

`name`

Changes the name of the indicated target.

`tput`

Sets the maximum throughput value for each of the target's links using the `<tput_value>` specifier. This subcommand only applies to Remote Copy over IP (RCIP) configurations.

`tunelinks`

Adjust performance values for the target's links using the `<bandwidth>` and `<latency>` specifiers.

`enable|disable`

Enables or disables the target.

## OPTIONS

None.

## SPECIFIERS

`<target_name>`

Specifies the target name for the target definition previously created with the `creatercopytarget` command.

`<policy>`

This specifier can only be used with the `pol` subcommand. The policy can be one of the following:

`mirror_config|no_mirror_config`

Specifies that all configuration commands (`creatercopygroup`, `removercopygroup`, `admitrcopyvv`, `dismissrcopyvv`, `setrcopygroup pol/period`, `startrcopygroup`,

and `stoprcopygroup`) involving the specified target are duplicated (`mirror_config`) or not duplicated (`no_mirror_config`). If not specified, all configuration commands are duplicated.

**NOTE:** The `no_mirror_config` specifier should only be used to allow recovery from an unusual error condition and only used after consulting your HP representative.

`<new_name>`

The new name for the indicated target. This specifier can only be used with the `name` subcommand.

`<tput_value>`

Specifies the maximum throughput for the indicated target's links, and is used to limit the total throughput of the links. The throughput value can take a `[g|G]` suffix (gigabytes), `[m|M]` suffix (megabytes) or `[k|K]` suffix (kilobytes) to indicate size (with no space between the specified value and size type). The default is kilobytes. Specifying a value of 0 removes the throughput. This specifier can only be used with the `tput` subcommand, which only applies to Remote Copy over IP (RCIP) configurations.

`<bandwidth>`

The measured bandwidth of the connection to the target, specified in Kilobytes (KB) per second. This specifier can only be used with the `tunelinks` subcommand.

`<latency>`

The measured round-trip latency of the connection to the target, specified in milliseconds (ms). This specifier can only be used with the `tunelinks` subcommand.

## RESTRICTIONS

- This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for further information.
- If the `mirror_config` policy is set and the `setrcopytarget` command is issued with the `pol` subcommand, the duplicated configuration commands cannot be issued on the secondary. Doing so results in an error.
- The `name` and `tput` subcommands cannot be used on a target with started groups.
- There must be an active connection between the systems in the Remote Copy pair in order to issue commands on the primary system to be mirrored to the backup system. If there is no connection, the commands will return an error.

## EXAMPLES

The following example will set the throughput of each link of target `serverB` to 5 megabytes per second:

```
cli% setrcopytarget tput 5M serverB
```



## NOTES

- The `setrcopytarget` command requires the groups associated with it be stopped prior to using the following options:
  - `setrcopytarget name <new_name> <target_name>`
  - `setrcopytarget tput <throughput> <target_name>`
- The `setrcopytarget` command with the following arguments can be run without bringing down its Remote Copy groups:
  - `setrcopytarget pol <policy> <target_name>`
  - `setrcopytarget tunelinks <bandwidth> <latency> <target_name>`
- Under normal operating conditions the `mirror_config` policy should never be changed to `no_mirror_config`. This policy option is included only as a method to correct several unusual error conditions that might occur in the course of operation which result in a mismatch in configuration between the two sides of a Remote Copy pair. For instance, it is possible for a group to be created, or a volume to be added to a group, only on one side of the pair if the operation is interrupted by a network failure. In such cases it might be necessary to temporarily change the policy to `no_mirror_config` in order to bring the configurations into alignment. After being corrected the `mirror_config` policy should be immediately restored. Such operations should generally only be undertaken on the advice of a HP representative.

# setsched

## DESCRIPTION

The `setsched` command allows users to suspend, pause, change the schedule, change the parameters, and change the name of currently scheduled tasks.

## SYNTAX

```
setsched [options <arg>] <schedname>
```

```
setsched [-suspend | -resume] <schedname>
```

```
setsched [-suspend_all | -resume_all]
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `sched_setany` right can set any user scheduled task properties.
- Any role granted the `sched_setown` right can only set their own scheduled task properties.

## OPTIONS

`-suspend <schedname>`

Suspends execution of a specified task. This option will not halt execution of a task that is already running. This option cannot be used with other options.

`-suspend_all`

Suspends execution of all scheduled tasks. This option will not halt execution of a task that is already running. This option cannot be used with other options.

`-resume`

Resumes scheduling of a specified task. This option cannot be used with other options.

`-resume_all`

Resume scheduling of all specified tasks. This option cannot be used with other options.

`-s <newschedule>`

Sets a new schedule for a given task. The `newschedule` is a cron-style schedule for the task to be run on. Each field can be up to 127 characters in length.

`-name <newname>`

Sets a new name for a given task. The name can be up to 31 characters in length.

`-no_alert`

Failures of tasks will no longer generate an alert.

`-alert`

Failures of tasks will generate an alert. This is set by default.

## SPECIFIERS

`<schedname>`

Specifies the name of the scheduled task to modify.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

None.

# setsnmpmgr

## DESCRIPTION

The setsnmpmgr command changes an SNMP manager's properties.

## SYNTAX

The syntax for the setsnmpmgr command can be one of the following examples:

- setsnmpmgr [options <arg>] <manager\_IP>

## AUTHORITY

- Super
- Any role granted to the snmpmgr\_set right

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

-p <port\_number>

Specifies the port number where the SNMP manager receives traps. The port number and IP address are used together to uniquely identify the SNMP manager. Use this option if the port number differs from the default of "162".

-pw <password>

Specifies the SNMP manager's access community string (password), using up to 32 alphanumeric characters. If not specified, the default is "public".

-snmpuser <username>

Specifies the SNMPv3 user name using up to 31 characters. The user name must be enabled for SNMPv3 with the createsnmpuser command.

-version <version>

Integer value that specifies the SNMP version supported by the manager. Use "2" for SNMPv2 and "3" for SNMPv3. The default is "2".

## SPECIFIERS

<manager\_IP>

Specifies the IP address of the host where the manager runs. It must be valid IPv4 or IPv6 address. IPv6 address is in hexadecimal, is case insensitive, and is separated by colons. An example would be: 5def:2008:0:0:abcd:0:0:161a.

In addition, a double colon (::) can be used once in an address to replace multiple fields of zeros. For example: 5def:2008:0:0:abcd::161a.

## EXAMPLES

The following example modifies the SNMP manager IPv4 address 123.45.67.89 with the assigned password of alpha1:

```
cli% setsnmpmgr -pw alpha1 123.45.67.89
```

The following example modifies the user and version properties of the SNMP manager identified by the IPv4 address 123.45.67.89:

```
cli% setsnmpmgr -snmpuser john -version 3 123.45.67.89
```

## NOTES

The storage system does not support any form of name resolution. You must specify these IP addresses directly.

Issue the `addsnmpmgr` command to add an SNMP manager.

Issue the `showsnmpmgr` command to display the list of registered SNMP managers.

Issue the `setsnmppw` command to change the SNMP passwords.

Issue the `removesnmppw` command to remove SNMP passwords.

Issue the `removesnmpmgr` to remove SNMP managers.

# setsnmppw

## DESCRIPTION

The `setsnmppw` command allows a user to update SNMP access community strings passwords. The SNMP password is required for the system manager to send requests to the SNMP agent.

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

## SYNTAX

```
setsnmppw [options] <password>
```

## AUTHORITY

- Super
- Any role granted the `snmppw_set` right.

**NOTE:** You need access to all domains in order to run this command.

## OPTIONS

`-rw` | `-r` | `-w`

Specifies that the read-write (`-rw`), read-only (`-r`), or write-only (`-w`) community password is changed. If not specified, the read/write password is changed.

## SPECIFIERS

`<password>`

Specifies the new user-defined password using up to 50 alphanumeric characters.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example changes the read/write SNMP community string password to `newpassword1`:

```
cli% setsnmppw newpassword1
```

The following example changes the read-only SNMP password to `newpassword2` by specifying the `-r` option on the command line:

```
cli% setsnmppw -r newpassword2
```

The following example changes the write-only SNMP password to `newpassword3` by specifying the `-w` option on the command line:

```
cli% setsnmppw -w newpassword3
```

## NOTES

- The default initial read/write password is `public`.
- If the read-only or write-only passwords do not exist, they are created.
- Verify SNMP passwords by issuing the `showsnmppw` command. See [“showsnmppw” \(page 474\)](#) for more information.

# setsnmpuser

## DESCRIPTION

The `setsnmpuser` command sets the SNMPv3 user secret key used for generating authentication and privacy keys. The `username` must correspond to an existing local user.

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

## SYNTAX

```
setsnmpuser <username>
```

## AUTHORITY

- Super, Service, Edit, Browse
- Any role granted the `snmpuser_set` right.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example shows the setting of a specified SNMP user:

```
cli% setsnmpuser <joe>
```

## NOTES

Issuing the `setsnmpuser` command results in the system prompting for a password. Type in the password for the user and then press ENTER. The password will be used to generate an authentication and privacy key using SHA1. The generated key is 160-bit in length. Only HMAC-SHA-96 is supported for authentication protocol and only CFB128-AES-128 for privacy protocol. If a key previously exists for the user, then the newly generated key will replace the previous one.



# setsshkey

## DESCRIPTION

The `setsshkey` command sets the SSH public key for a user.

The user will be prompted to provide the SSH public key. To finish entering the public key, press enter on a blank line. The key must have been generated using the `ssh-keygen` utility. The public key is contained in the user-defined file named with `.pub` extension. The user can open this file with an ASCII editor to copy the key and paste it. After setting the SSH public key on the HP 3PAR storage system, the user can use the corresponding private key to log on without a password. This new key replaces the existing key if any.

## SYNTAX

```
setsshkey [options]
```

## AUTHORITY

- Super, Edit, Browse, Service
- Any role granted the `sshkey_set` right.

## OPTIONS

`-add`

Specifies that the given key should be added to the list of authorized keys instead of replacing existing ones.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the setting of a user's SSH public key:

```
cli% setsshkey
Please enter the SSH public key below. When finished, press enter twice.
The key is usually long. It's better to copy it from inside an editor
and paste it here. (Please make sure there are no extra blanks.)
The maximum number of characters used to represent the SSH key
(including the "from" option, key type, and additional comments) is 4095.

ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAp+4Z3zT8Sq6t3s08q/MMd2ZnMpRc/3tyHMk63dH
R8b/VgV6ewXNfYhhfTGWRdZ1dtyLFXnuEPuf+z8EtinFStinTzA3FiJ0agK7rLoNtn/F0jBaGWm
SWukqzAQA2VJvq/keaLVMT3+J3nvXEUCjS4fApeeLwFgKczOX511oaHDtn2ys2C5l+mLw1VDUJL
wIKJljOWqr68ToeRgTDMoppOI3cG14ryF0re4xKANHFQLnSct5ANjqD2jpnYEABuOvBX7G6vI5g
zQFfcAda/a2bq563/AHr8Ehhi5EVy+GSCqjj8cr0/zHSZyX61lQUfe0YxmayPEKlods6bDi5oxG
COw== user1@server1"
```

## NOTES

- Issuing the `setsshkey` command results in the system prompting for your SSH public key. Copy and paste the key using the aforementioned ASCII editor on the command line and then press **ENTER**.
- After setting the SSH public key on the system, use the corresponding private key to log on without a password. A single ssh key may be used for multiple hosts with a single use of `setsshkey`, or different keys may be used for different hosts. To restrict the usage of a key to a particular host, a `-from` option can be added to the beginning of a key. For example:  
`from="192.168.1.1" ssh-rsa AAAAB3Nza...`
- The maximum number of characters used to represent the SSH key (including the `-from` option, key type, and additional comments) is 4095.
- LDAP users are only allowed to set an SSH key if the `setauthparam` command has been used to set the `allow-ssh-key` parameter to 1. When an LDAP user runs the `setsshkey` command, the user's role level is recorded and is assigned when the user logs in using the key. Changes in the group-to-role mappings set with the `setauthparam` command or changes in the user's data in the LDAP server have no effect as long as the user has an SSH key.
- Removing the user's SSH key forces a new role to be determined at the user's next login.
- Only one key may be entered at a time; to enter multiple keys, run the `setsshkey` command again with the `-add` option.

# setstatch

## DESCRIPTION

The `setstatch` command starts and stops the statistics collection mode for chunklets.

## SYNTAX

```
setstatch start|stop <LD_name> <chunklet_num>
```

## AUTHORITY

- Super, Edit
- Any role granted the `statch_set` right.

## SUBCOMMANDS

```
start|stop
```

Specifies that the collection of statistics is either started or stopped for the specified Logical Disk (LD) and chunklet.

## OPTIONS

None.

## SPECIFIERS

```
<LD_name>
```

Specifies the name of the LD in which the chunklet to be configured resides.

```
<chunklet_num>
```

Specifies the chunklet that is configured using the `setstatch` command.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the start of statistics collection on chunklet 0 of LD `test`:

```
cli% setstatch start test 0
```

## NOTES

After the statistic collection mode for the chunklet is set, you can then use either the `histch` command (Section (page 180)) or the `statch` command (Section (page 588)) to view the chunklet's statistics.

# setstatpdch

## DESCRIPTION

The `setstatpdch` command sets the statistics collection mode for all in-use chunklets on a Physical Disk (PD).

## SYNTAX

```
setstatpdch start|stop <PD_ID>
```

## AUTHORITY

- Super, Edit
- Any role granted the `statpdch_set` right.

## SUBCOMMANDS

`start|stop`

Specifies that the collection of statistics is either started or stopped for chunklets on the specified PD used by Logical Disks (LDs).

## OPTIONS

None.

## SPECIFIERS

`<PD_ID>`

Specifies the PD ID.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the start of statistics collection on all PD chunklets of PD 0:

```
cli% setstatpdch start 0
```

## NOTES

After the statistic collection mode for the chunklet is set, you can then use either the `histch` command ([Section \(page 180\)](#)) or the `statch` command ([Section \(page 588\)](#)) to view the chunklet's statistics.

## DESCRIPTION

The `setsys` command sets the properties of the system, and includes options to annotate a system with descriptor information such as physical location, owner, contact information, and so on. The command also enables you to set system-wide parameters such as the raw space alert.

## SYNTAX

```
setsys [options]
setsys <parameter>
```

## AUTHORITY

- Super, Service
- Any role granted the `sys_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

The following option is designed for changing the name of the system:

```
-name <systemname>
```

Specifies the new name of the system up to 31 characters in length.

The following options allow the annotation of the system with descriptor information:

```
-loc <location>
```

Specifies the location of the system.

```
-owner <owner>
```

Specifies the owner of the system.

```
-contact <contact>
```

Specifies the contact information for the system.

```
-comment <comment>
```

Specifies any additional information for the system.

## SPECIFIERS

The following parameters can be configured on the system and are issued for the `<parameter>` specifier:

```
RawSpaceAlertFC <value>
```

Sets the user configurable space alert threshold (10 to 100000 GB) for Fibre Channel type drives. When the total space on the available chunklets (both clean and unclean) for the specified drive type falls below the specified value, the alert is posted. A value of 0 will disable the alert.

```
RawSpaceAlertNL <value>
```

Performs the same function as `RawSpaceAlertFC`, but should be used for nearline type drives.

```
RawSpaceAlertSSD <value>
```

Performs the same function as `RawSpaceAlertFC`, but should be used for solid state drive type drives.

```
RawSpaceAlertSAS <value>
```

Performs the same function as `RawSpaceAlertFC`, but should be used for Serial Attached SCSI type drives

`RemoteSyslog <value>`

Enables or disables sending events as `syslog` messages to a remote system. A value of 0 disables the message, and a value of 1 enables the message. `syslog` messages are sent with a facility user and with event severities mapped to `syslog` levels such as:

**Table 7 Event severity**

Event Severity	syslog Level
fatal	alert
critical	alert
major	crit
minor	err
degraded	warning
info	info

`RemoteSyslogHost <value>`

Sets the IP address of the system to which events will be sent as `syslog` messages. The value must be a valid IP address.

`SparingAlgorithm <value>`

Sets the sparing algorithm used by the `admithw` command. Valid values are `Default`, `Minimal`, `Maximal`, and `Custom`.

`MgmtOldPorts <value>`

Enables or disables listening on the old management ports 2540 and 2550 (for SSL). The server now listens on ports 5782 and 5783 (for SSL). By default, the server also listens on the old ports unless they are disabled using this parameter. The value must be either `enable` or `disable`. Default ports 2540 and 2550 were deprecated in the 2.2.4 release and support for them will be removed in a future release.

---

**NOTE:** The server must be restarted for changes made with the `MgmtOldPorts` parameter to take effect.

---

`RemoteCopyOldPort <value>`

Enables or disables listening on the old TCP port 3491. The value must be either `enable` or `disable`. By default, Remote Copy links listen on both IANA registered port 5785 AND port 3491.

---

**⚠ WARNING!** Changing this parameter will reset all Remote Copy links. This may cause Remote Copy targets to lose their connections temporarily.

---

`VVRetentionTimeMax <value> [h|H|d|D]`

Specifies the maximum value that can be set for the retention time of a volume. `<time>` is a positive integer value and in the range of 0 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value. The default value for `<time>` is 14 days.

To disable setting the volume retention time in the system, enter 0 for `<time>`.

`UpgradeNote <value>`

Sets a note that will be displayed when `checkupgrade` is run. To include spaces, enclose the value inside double quotes. To erase an existing note, specify `""`. Maximum length is 127 characters.

PortFailoverEnabled <value>

Enables or disables the automatic failover of target ports to their designated partner ports. If enabled, automatic failover is triggered when a node goes down. <value> can be 'yes' or 'no'. The default is 'yes'.

AutoExportAfterReboot <value>

Enables or disables automatically exporting vluns after a reboot. If disabled, vluns and host ports will not become active after a reboot until 'setsysmgr export\_vluns' is issued. <value> can be 'yes' or 'no'. The default is 'yes'.

AllowR5onNLDrives <value>

Enables or disables support for RAID-5 on NL drives. If disabled, new RAID-5 CPGs cannot be created on NL drives. HP strongly recommends RAID-6 for high-capacity NL drives. <value> can be 'yes' or 'no'. The default is 'no'.

AllowR0 <value>

Enables or disables support for RAID-0. If disabled, new RAID-0 CPGs cannot be created on this system. RAID-0 virtual volumes do not offer data protection. <value> can be 'yes' or 'no'. The default is 'no'.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays setting a raw space alert of 800 gigabytes:

```
cli% setsys RawSpaceAlertFC 800
cli% showsys -param
System parameters from configured settings

----Parameter-----      ---Value----
RawSpaceAlertFC           :                800
RawSpaceAlertNL           :                 0
RemoteSyslog              :                 1
RemoteSyslogHost          :       192.168.6.15
SparingAlgorithm          :           Minimal
CopySpaceReclaim          :                 0
EventLogSize              :                 3M
VVRetentionTimeMax       :           336 Hours
```

## NOTES

Use the `showsys -param` command to see the current raw space alert setting (see [Section \(page 482\)](#)).

# setsysmgr

## DESCRIPTION

The `setsysmgr` command sets the system manager startup state.

- △ **CAUTION:** Issuing the `setsysmgr` command can potentially remove the entire state of the system causing data loss.

## SYNTAX

The syntax of the `setsysmgr` command can be one of the following:

- `setsysmgr wipe [-f] [<system_ID>] <system_name>`
- `setsysmgr tocgen [-f] [<toc_gen_number> [<disk_quorum>]]`
- `setsysmgr force_iderecovery [-f]`
- `setsysmgr force_idewipe [-f]`

## AUTHORITY

- Super
- Any role granted the `sysmgr_set` right.

**NOTE:** You need access to all domains in order to run this command.

## SUBCOMMANDS

`wipe`

Requests that the specified system be started in the new system state. If this subcommand is not used, then the `tocgen` subcommand must be used.

`tocgen`

Specifies that the system is to be started with the specified table of contents generation number. If this subcommand is not used, then the `wipe` subcommand must be used.

`force_iderecovery`

Specifies that the system starts the recovery process from the IDE disk even if all Virtual Volumes (VV) have not been started.

- △ **CAUTION:** Issuing the `setsysmgr force_idewipe` command can result in data loss.

`force_idewipe`

Specifies that the system wipes the IDE powerfail partition. The system is shutdown and restarted, during which time all logical disks and VVs are checked.

## OPTIONS

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

`<system_name>`

Specifies the name of the system to be started, using up to 31 characters in length.

`<system_ID>`



Specifies the ID of the system to be started.

<toc\_gen\_number>

Specifies the table of contents generation number for the system to start with.

<disk\_quorum>

Specifies the disk quorum for the system to start with.

## RESTRICTIONS

- Access to all domains is required to run this command.
- Use this command only when the system cannot start up normally.

## EXAMPLES

The following example starts system `mysystem` in the new system state:

```
cli% setsysmgr wipe mysystem systemid
```

The following example starts the system with the table of contents generation number of 42956, where 91 is the highest disk quorum displayed:

```
cli% setsysmgr tocgen 42956 91
```

The following example displays the start of a system's recovery process from its IDE disk:

```
cli% setsysmgr force_iderecovery
```

## NOTES

- If the `wipe` subcommand is specified, all system data and configuration information, including customer data and VV layout, are destroyed.
- If the `force_iderecovery` subcommand is specified, the system can delete data for some of the unstarted VVs. The system can run the `checkvv` and `checkld` commands to make the VVs and logical disks consistent, thereby resulting in a possible data loss.

# settask

## DESCRIPTION

The `settask` command sets the priority on specified task.

## SYNTAX

```
settask [-f] -pri <high|med|low> <task_ID>
```

## AUTHORITY

- Super, Edit
- Any role that is granted the `task_set` right.

## OPTIONS

`-f`

Forces the command. The command completes the process without prompting for confirmation.

`-pri <high|med|low>`

Specifies the priority of the task.

## SPECIFIERS

`<task_ID>`

Sets the priority on a task specified by the task ID. The `<task_ID>` must be an unsigned integer from 1 to 9999.

## EXAMPLES

The following example shows how to set a priority on a task using the task ID:

```
cli% settask -pri high 497
Are you sure you want to set priority on task 497?
select q=quit y=yes n=no: y
high priority is set on task id: 497
```

## NOTES

- Physical copy or `promotesv` tasks are supported. Setting priority on other types of tasks will result in an error.
- Task priorities can only be set one at a time.
- If the specified task is not active or valid, it will result in an error.

# settemplate

## DESCRIPTION

The `settemplate` command modifies the properties of existing templates.

## SYNTAX

```
settemplate <option_value>... [option <arg>] <template_name>
```

## AUTHORITY

- Super
- Any role granted the `template_set` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-remove <option>...`

Indicates that the option(s) that follow `-remove` are removed from the existing template. When specifying an option for removal, do not specify the option's value. For valid options, refer to "[createtemplate](#)" (page 139).

## SPECIFIERS

`<option_value>...`

Indicates the specified options and their values (if any) are added to an existing template. The specified option replaces the existing option in the template. For valid options, refer to "[createtemplate](#)" (page 139).

`<template_name>`

Specifies the name of the template to be modified, using up to 31 characters.

## RESTRICTIONS

- Access to all domains is required to run this command.
- The `-desc` option cannot be removed from a template (it can be changed to an empty string).
- The `-nrw` and `-nro` options cannot be removed from a template. These options can only be replaced by specifying either `-nrw` or `-nro` before the `-remove` option.

## EXAMPLES

- The following example displays template `vvtemp1` modified to support the availability of data should a drive magazine fail (`mag`) using the `stale_ss` policy:

```
cli% settemplate -ha mag -pol stale_ss vvtemp1
```

- In the following example, the `-nrw` and `-ha mag` options are added to the template `template1`, and the `-t` option is removed:

```
cli% settemplate -nrw -ha mag -remove -t template1
```

## NOTES

- All options available for the `createald`, `createaldvv`, `createcpg`, and `createtpvv` commands can be used with the `settemplate` command to modify an existing template.
- Options preceded with `-remove` are removed from an existing template.
- When adding options to a template, specify the option flag and its value (if any).
- When removing options from a template, specify the option flag only.

## setuser

### DESCRIPTION

The `setuser` command sets your user properties.

### SYNTAX

```
setuser [options <arg>] <user>
```

### AUTHORITY

- Super, Edit, Browse
- Any role granted the `user_setany` right can add, remove, and set default domains for any user.
- Any role granted the `user_setown` right can only set their own default domain.

### OPTIONS

`-f`

Specifies that the command is forced. No confirmation is requested before executing the command.

`-adddomain <domain>:<privilege>[,<domain>:<privilege>...]`

Adds a specified user (`<user>`) to the specified domain (`<domain>`) at the specified role level (`<privilege>`). Permitted values for `<priv>` are Super, Edit, Browse and Service.

`-rmdomain <domain_name_or_pattern>[,<domain_name_or_pattern>...]`

Remove the user from each domain with a name that matches one or more of the `<domain_name_or_pattern>` options.

`-defaultdomain <domain>`

Changes the default domain of the user to a specified domain. You must already have permission set in the domain. Specify the `-unset` option to specify no default domain. The Browse and Edit authorities for this command and option can be used by any user with their own user name.

### SPECIFIERS

`<user>`

Specifies the name of the user.

### RESTRICTIONS

The `-adddomain` and `-rmdomain` options cannot be used on a user that is currently logged in. Existing sessions can be terminated with the `removeuserconn` command.

### EXAMPLES

In the following example, user `3paruser` is permitted the `edit` level role in the domain `Engineering`:

```
cli% setuser -adddomain Engineering:edit 3paruser
```

### NOTES

None.

# setuseracl

## DESCRIPTION

The `setuseracl` command sets the Access Control List (ACL).

## SYNTAX

```
setuseracl [options] <user_name> <operation> [<name_or_pattern>]...
```

## AUTHORITY

- Super, Edit
- Any role granted the `useracl_set` right.

## OPTIONS

`-add`

Adds names or patterns of objects at the end of an existing ACL.

`-remove`

Removes names or patterns of objects from an ACL.

## SPECIFIERS

`<user_name>`

Specifies the name of the user whose ACL is being set.

`<operation>`

Specifies the operation for which the ACL is being defined. The only value currently accepted is the `updatevv` command, which updates a snapshot with a new snapshot. Refer to [“updatevv” \(page 660\)](#) for details.

`[<name_or_pattern>] ...`

Specifies a list of names or patterns of objects on which the operation (as specified by the `<operation>` argument) is performed. The object type is dependent on the specified operation. For example, the objects or names specified for the `updatevv` operation are Virtual Volume (VV) names. If an empty string is specified without any option, then any existing ACL for the `<user_name>`, `<operation>` is removed.

## RESTRICTIONS

None.

## EXAMPLES

The following example sets the ACL for user `testuser1` and allows `testuser1` to update the snapshot VVs of VVs `vv1` and `vv2`.

```
cli% setuseracl testuser1 updatevv vv1 vv2
```

The following example shows how to add `vv3` and `vv4` to the ACL for user `testuser1`:

```
cli% setuseracl -add testuser1 updatevv vv3 vv4
```

The following example shows how to remove `vv3` from the ACL for user `testuser1`:

```
cli% setuseracl -remove testuser1 updatevv vv3
```

The following example shows how to clear the ACL for user `testuser1`:

```
cli% setuseracl testuser1 updatevv ""
```

## NOTES

- The `-add` and `-remove` options are mutually exclusive.
- If the names or pattern of objects to add already exist, the request is ignored.
- If the names or pattern of objects to remove do not exist, the request is also ignored.

## DESCRIPTION

The `setvv` command changes the properties associated with a virtual volume. Use the `setvv` command to modify volume names, volume policies, allocation warning and limit levels, and the volume's controlling common provisioning group (CPG).

## SYNTAX

```
setvv [options <arg>] <VV_name|pattern>...
```

## AUTHORITY

- Super, Edit
- Any role granted the `vv_set` right can edit the properties of base volumes.
- Any role granted the `vcopy_set` right can edit the properties of physical copies of volumes.
- Any role granted the `sv_set` right can edit the properties of virtual copies of volumes.

## OPTIONS

At least one of the following options must be specified:

`-clrrsv`

Specifies that all reservation keys (i.e., registrations) and all persistent reservations on the virtual volume are cleared.

`-exp <time>[d|D|h|H]`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 0 to 43800 hours (1825 days). Time can be specified in days or hours providing either the `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-comment <comment>`

Specifies any additional information up to 511 characters for the volume. Use `-comment ""` to remove the comments.

`-retain <time>[d|D|h|H]`

Specifies the amount of time, relative to the current time, that the volume will be retained. `<time>` is a positive integer value and in the range of 1 to 43800 hours (1825 days). Time can be specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

---

**NOTE:** The `-retain` option requires the HP 3PAR Virtual Lock license. Contact your local service provider for more information.

**NOTE:** If the volume is not in any domain, then its retention time cannot exceed the value of the system's maximum VV retention time. The default value for the system's maximum VV retention time is 14 days. If the volume belongs to a domain, then its retention time cannot exceed the value of the domain's maximum VV retention time, if set. The retention time cannot be removed or reduced once it is set. If the volume has its retention time set, it cannot be removed within its retention time. If both expiration time and retention time are specified, then the retention time cannot be longer than the expiration time.

---

`-name <new_name>`

Specifies that the name of the virtual volume be changed to a new name (as indicated by the `<new_name>` argument) that uses up to 31 characters.

`-snp_cpg <snp_cpg>`



Specifies that the volume snapshot space is to be provisioned from the specified CPG. This option moves all the logical disks currently contained in the snapshot space for these volumes into the CPG. This is permitted only when none of the logical disks are shared with other volumes that are not specified in this option. If the `<snp_CPG>` specifier is specified as "", the volume snapshot space is longer provisioned from a CPG and the existing snapshot space logical disks are removed from the CPG. This is permitted only when the existing snapshot logical disks are exclusively used by the volumes specified in this option.

`-snp_aw <percent>`

---

**NOTE:** The operation of setting a snapshot space CPG for a tpsd volume (a TPVV created with HP 3PAR OS 2.2.4 or earlier) is not permitted if the volume has existing snapshots. All existing snapshots must first be removed before using this option.

---

Indicates a snapshot space allocation warning. Through this option you can generate a warning alert when the reserved snapshot space of the virtual volume exceeds the indicated percentage of the virtual volume size.

`-snp_al <percent>`

Indicates a snapshot space allocation limit. The snapshot space of the virtual volume is prevented from growing beyond the indicated percentage of the virtual volume size.

`-pol <policy>[, <pol>...]`

Specifies the policy is implemented by a virtual volume. Valid policies are as follows:

- `stale_ss` - Specifies that invalid (stale) snapshot volumes are permitted. Failures to update snapshot data occur when there is not sufficient administration or snapshot space. Failures to update snapshot data does not affect the write to the base volume. However, the snapshot is considered invalid.
- `no_stale_ss` - Specifies that stale snapshot volumes are not permitted. A failure to update a snapshot is considered a failure to write to the base volume. Existing stale snapshots remain stale.
- `one_host` - Constrains the export of a volume to one host or one host cluster (when cluster names may be used as a host name).
- `no_one_host` - This policy should only be used when exporting a virtual volume to multiple hosts for use by a cluster-aware application, or when "port presents" VLUNs are used. This is the default policy setting.
- `tp_bzero` - Specifies that if a host write results in the allocation of a new data page that is only partially filled by the host write, then a zero-fill is performed on the unwritten portion of the data page to ensure that the host cannot read data from deleted volumes or snapshot. The default allocation page size is 16 KB.
- `no_tp_bzero` - Specifies that the zero-fill operation is bypassed on the allocation of partially written data pages.
- `zero_detect` - Enables the HP 3PAR storage system to scan for zeros in the incoming write data. When used during a physical copy to a Thinly Provisioned Virtual Volume (TPVV) avoids allocating space for blocks containing zero. When used with a Thin Persistence license, reclaims allocated space when zero blocks are written to a TPVV. This policy is applicable for base TPVVs.
- `no_zero_detect` - Disables the HP 3PAR storage system to scan for zeros in the incoming write data to reclaim allocated space on the volume.

Multiple policies can be specified and are separated with commas. If a policy is not specified, the policy defaults to `stale_ss`.

The following options can only be used on Thinly Provisioned Virtual Volumes (TPVVs):

`-usr_aw <percent>`

This option returns a user space allocation warning. It generates a warning alert when the reserved user space of the TPVV exceeds the specified percentage of the virtual volume size.

`-usr_al <percent>`

This option returns the user space allocation limit. The user space of the TPVV is prevented from growing beyond the indicated percentage of the virtual volume size. After this size is reached, any new writes to the virtual volume will fail.

`-spt <sectors_per_track>`

Defines the virtual volume geometry sectors per track value that is reported to the hosts through the SCSI mode pages. The valid range is from 4 to 8192. The default value is 304.

`-hpc <heads_per_cylinder>`

Defines the virtual volume geometry heads per cylinder value that is reported to the hosts through the SCSI mode pages. The valid range is from 1 to 1024. The default value is 8.

The following option can only be used on fully provisioned volumes:

`-usr_cpg <usr_cpg>`

Specifies that the volume user space that is to be provisioned from the specified CPG. This option moves all the logical disks currently contained in the user space for these volumes into the CPG. This is permitted only when none of the logical disks are shared with other volumes that are not specified with this option. If the `<usr_cpg>` specifier is specified as "", the volume user space is no longer provisioned from a CPG and the existing user space logical disks will be removed from the CPG. This is permitted only when the existing user's logical disks are exclusively being used by the volumes specified with this option.

## SPECIFIERS

`<VV_name|pattern>...`

Specifies the virtual volume name or all virtual volumes that match the pattern specified, using up to 31 characters. The patterns are glob-style patterns. Valid characters include alphanumeric characters, periods, dashes, and underscores.

## RESTRICTIONS

At least one option must be specified.

## EXAMPLES

The following example sets the policy of virtual volume `vv1` to `no_stale_ss`.

```
# setvv -pol no_stale_ss vv1
```

The following example changes the name from `test` to `newtest`.

```
cli% setvv -name newtest test
```

The following example modifies the WWN of virtual volume `vv1`.

```
cli% setvv -wwn 50002AC0001A0024 vv1
```

## NOTES

- Use the `setvv` command to associate a standard virtual volume with a common provisioning group (CPG) for use with Remote Copy.
- To view policies assigned to the system's virtual volumes, issue the `showvv -pol` command.
- Changing the CPG for a TPVV is not allowed.
- See the *HP 3PAR Management Console Help* or the *HP 3PAR Command Line Interface Administrator's Manual* for instructions on creating CPGs and volumes.

## setvvset

### DESCRIPTION

The `setvvset` command sets the parameters and modifies the properties of a Virtual Volume (VV) set.

### SYNTAX

```
setvvset [options <arg>] <setname>
```

### AUTHORITY

- Super, Edit
- Any role granted the `vvset_annotate` right can only annotate the comment of a volume set.
- Any role granted the `vvset_set` right can set any volume set property.

### OPTIONS

```
-comment <comment>
```

Specifies any comment or additional information for the set. The comment can be up to 255 characters in length. Unprintable characters are not allowed.

```
-name <newname>
```

Specifies a new name for the VV set.

### SPECIFIERS

```
<setname>
```

Specifies the name of the VV set to modify.

### RESTRICTIONS

None.

### EXAMPLES

To rename a set from `foo` to `bar`:

```
cli% setvvset -name bar foo
```

To change the comment on a set `bar`:

```
cli% setvvset -comment "This used to be set foo" bar
```

### NOTES

None.

# setwsapi

## DESCRIPTION

The `setwsapi` command sets properties of the Web Services API server, including options to enable or disable the HTTP and HTTPS ports.

## SYNTAX

```
setwsapi [options]
```

## AUTHORITY

Super, Service

Any role granted the `wsapi_set` right

## OPTIONS

`-f`

Forces the operation of the `setwsapi` command, bypassing the typical confirmation message.

At least one of the following options are required:

`-http enable|disable`

Enables or disables the HTTP port.

`-https enable|disable`

Enables or disables the HTTPS port.

## SPECIFIERS

None.

## EXAMPLES

To disable the HTTPS port:

```
cli% setwsapi -https disable
WARNING: The Web Services API server is active and will restart.
Are you sure you want to continue (y/n)? y
```

## NOTES

Access to all domains is required to run this command.

You cannot disable both of the HTTP and HTTPS ports.

When the Web Services API server is active, a warning message showing the current status of the Web Services API server is displayed and you will be prompted for confirmation before continuing.

The `-f` option forces the action without a warning message and prompt.

---

## 23 Show Commands

### showalert

system

#### DESCRIPTION

The `showalert` command displays the status of system alerts. When issued without options, all new customer alerts are displayed.

#### SYNTAX

```
showalert [options]
```

#### AUTHORITY

Any role in the system.

#### OPTIONS

The selection of alerts to be displayed is controlled by selecting one of the following options:

`-n`

Specifies that only new customer alerts are displayed.

`-a`

Specifies that only acknowledged alerts are displayed.

`-f`

Specifies that only fixed alerts are displayed.

`-all`

Specifies that all customer alerts are displayed.

The format of the alert display is controlled by the following options:

`-d`

Specifies that detailed information is displayed. Cannot be specified with the `-online` option.

`-online`

Specifies that summary information is displayed in a tabular form with one line per alert. For customer alerts, the message text will be truncated if it is too long unless the `-wide` option is also specified.

`-svc`

Specifies that only service alerts are displayed. This option can only be used with the `-d` or `-online` formatting options.

`-wide`

Do not truncate the message text. Only valid for customer alerts and if the `-online` option is also specified.

#### SPECIFIERS

None.

#### RESTRICTIONS

Without any options, the `showalert` command displays all customer alerts in the `New` state.

## EXAMPLES

The following example displays new customer alerts on a system:

```
cli% showalert -n

Id          : 1
State       : New
Message Code: 0x2200de
Time        : 2008-07-17 20:14:29 PDT
Severity    : Degraded
Type        : Component state change
Message     : Node 0, Power Supply 1, Battery 0 Degraded (Unknown)

Id          : 2
State       : New
Message Code: 0xe000c
Time        : 2008-07-17 20:15:31 PDT
Severity    : Informational
Type        : Cluster shutdown after system recovery completion
Message     : System recovery completed for node 0 (reason Power Loss)

2 alerts
```

## NOTES

- Set the status of alerts by issuing the `setalert` command. See “[setalert](#)” (page 271) for more information.
- Alerts can be removed by issuing the `removealert` command. See “[removealert](#)” (page 228) for more information.

# showaocfg

## DESCRIPTION

The `showaocfg` command shows Adaptive Optimization (AO) configurations in the system.

## SYNTAX

```
showaocfg [options <arg> [<aocfg_name>...|<pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-domain <domain_name_or_pattern,...>
```

Shows only AO configurations that are in domains with names matching one or more of the `<domain_name_or_pattern>` argument. This option does not allow listing objects within a domain of which the user is not a member. Patterns are glob-style (shell-style) patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

## SPECIFIERS

```
[aocfg_name...|<pattern>...]
```

Specifies that AO configurations matching either the specified AO configuration name or those AO configurations matching the specified pattern are displayed. This specifier can be repeated to display information for multiple AO configurations. If not specified, all AO configurations in the system are displayed.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

None.



# showauthparam

## DESCRIPTION

The showauthparam command shows authentication parameters.

## SYNTAX

```
showauthparam
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following is example output from the showauthparam command:

```
cli% showauthparam
Param -----Value-----
ldap-server      xxx.xxx.xx.xx
ldap-server-hn   domaincontroller.work.com
binding          sasl
sasl-mechanism   GSSAPI
kerberos-realm   NTDOM1.work.COM
accounts-dn      OU=Users,DC=work,DC=com
account-obj      user
account-name-attr SAMAccountName
memberof-attr    memberOf
edit-map         CN=Software,CN=Users,DC=work,DC=com
browse-map       CN=Eng,CN=Users,DC=work,DC=com
domain-name-attr description
group-obj        group
domain-name-prefix !InServDomain=
```

## NOTES

None.

# showbattery

## DESCRIPTION

The `showbattery` command displays battery status information including serial number, expiration date, battery life, and so on, which could be helpful when determining battery maintenance schedules.

## SYNTAX

```
showbattery [options] [<node_ID> ...]  
showbattery -listcols
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-listcols`

Lists the columns available to be shown with the `-showcols` option described below (see `clihelp -col showbattery` for help on each column).

`-showcols <column>[,<column>...]`

Explicitly selects the columns to be shown using a comma-separated list of column names. For this option, the full column names are shown in the header. Run `showbattery -listcols` to list the available columns. Run `clihelp -col showbattery` for a description of each column.

`-d`

Specifies that detailed battery information, including battery test information, serial numbers, and expiration dates, is displayed.

`-log`

Specifies the battery test log information. This option is not supported on HP 3PAR StoreServ 7000 Storage systems.

`-i`

Specifies the battery inventory information.

`-state`

Displays detailed battery state information. This is the same as `-s`.

`-s`

Displays detailed battery state information.

This option is deprecated and will be removed in a future release.

`-svc`

Displays inventory information with HP serial number, spare part number, and so on. This option must be used with the `-i` option and it is supported only on HP 3PAR StoreServ 7000 Storage systems.

## SPECIFIERS

`<node_ID>...`

Displays the battery information for the specified node ID(s). `Node_ID` is an integer from 0 through 7. This specifier is not required.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays battery status information:

```
cli% showbattery
Node PS Bat Serial --State--- ChrgLvl(%) -ExpDate-- Expired Testing
  0  0  0 FFFFFFFF OK          100 05/15/2007 No     No
  0  1  0 FFFFFFFF OK          100 05/15/2007 No     No
  1  0  0 --      NotPresent -- --      No     No
  1  1  0 --      NotPresent -- --      No     No
```

The columns in the previous example are identified as follows:

- Node. The controller node number.
- PS. The power supply number.
- Bat. The battery ID.
- Serial. The battery serial number.
- State. The current status of the battery. Battery states can be as follows:
  - --. Cannot determine the battery state.
  - NotPresent. Battery is missing.
  - OK. Battery is operating normally.
  - Failed. Battery is operating abnormally.
  - MaxLifeLow. Maximum battery life is low (less than 12 minutes).
- ChgLvl. Percentage of battery charge status for the node.
- ExpDate. The expiration date of the battery.
- Expired. Indicates whether expired batteries are connected to the power supply.
- Testing. Indicates whether a battery test is in progress. When a battery test is in progress, the batteries cannot be counted so the number of batteries shown is a cached value.

The following example displays detailed battery information:

```
cli% showbattery -d
-----Node 0 PS 0 Battery 0-----
Node ID           : 0
Power Supply ID   : 0
Battery ID        : 0
Manufacturer      : MAG
Model             : 0800-0016-50.0B
Serial Number     : 70315366
State             : OK
Charge State      : FullyCharged
Charge Level(%)   : 100
Max Battery Life (mins) : 25
Expired           : No
Test in Progress  : No
Expiration Date   : 2010-07-17 13:00:00 PD
...
```

The following example displays the inventory information for the battery using the `showbattery -i` command:

```
cli% showbattery -i
Node PS Bat -Manufacturer- -Model- -Serial-
  0  0  0  --                --      FFFFFFFF
  0  1  0  --                --      FFFFFFFF
  1  0  0  --                --      --
  1  1  0  --                --      --
```

- Node. The controller node number.
- PS. The power supply number.
- Manufacturer. The manufacturer of the battery.
- Model. The battery model.
- Serial. Indicates the serial number of the battery.

The following example displays the battery test log information using the `showbattery -log` command:

```
cli% showbattery -log
Node PS Bat Test Result Dur (mins) -----Time-----
  0  0  0    0 Passed      1 Fri Jan 19 13:16:51 PST 2007
  0  0  0    1 Passed      1 Fri Feb 02 13:18:51 PST 2007
  0  0  0    2 Passed      1 Tue Feb 20 12:41:06 PST 2007
  0  0  0    3 Passed      1 Tue Mar 06 12:42:07 PST 2007
  0  0  0    4 Passed      1 Tue Mar 20 13:43:58 PDT 2007
  0  0  0    5 Passed      1 Tue Apr 03 13:45:35 PDT 2007
  0  0  0    6 Passed      1 Tue Apr 17 13:47:07 PDT 2007
  0  0  0    7 Passed      1 Tue May 01 13:49:05 PDT 2007
  0  0  0    8 Passed      1 Tue May 15 13:50:10 PDT 2007
  0  0  0    9 Passed      1 Tue May 29 13:51:36 PDT 2007
  1  1  0    0 Passed      1 Fri Jan 19 14:17:44 PST 2007
  1  1  0    1 Passed      1 Fri Feb 02 14:19:45 PST 2007
  1  1  0    2 Passed      1 Tue Feb 20 13:42:02 PST 2007
  1  1  0    3 Passed      1 Tue Mar 06 13:44:02 PST 2007
  1  1  0    4 Passed      1 Tue Mar 20 14:45:53 PDT 2007
  1  1  0    5 Passed      1 Tue Apr 03 14:47:24 PDT 2007
  1  1  0    6 Passed      1 Tue Apr 17 14:48:56 PDT 2007
  1  1  0    7 Passed      1 Tue May 01 14:50:54 PDT 2007
  1  1  0    8 Passed      1 Tue May 15 14:51:59 PDT 2007
  1  1  0    9 Passed      1 Tue May 29 14:53:25 PDT 2007
```

- Node. The controller node number.
- PS. The power supply number.
- Bat. The battery ID.
- Test. The current status of the battery.
- Result. The battery status, shows as passed or failed.
- Dur (mins). Indicates the length of time for the results to return.
- Time. Indicates the time of the last battery test.

The following example displays the detailed status of the battery using the `showbattery -s` command:

```
cli% showbattery -state
Node PS Bat -State- -Detailed_State-
  0  0  0 OK      Normal
  0  1  0 OK      Normal
  1  0  0 OK      Normal
  1  1  0 OK      Normal
```

- Node. The controller node number.
- PS. The power supply number.
- Bat. The battery ID.
- State. The current status of the battery and can be one of the following:
  - OK. The battery is operating normally.
  - Failed. The battery is operating abnormally.
  - Degraded. The battery is in degraded state.
  - Not Present. The battery is missing.
- Detailed\_State. The detailed state of the battery and can be one of the following:
  - Not Present. The battery is missing.
  - Expired. The battery is already expired.
  - Failed. The battery is operating abnormally.
  - InvalidFirmware. The battery has invalid firmware.
  - Unknown. The battery state is unknown.
  - Undefined. The battery state cannot be determined.

## NOTES

- Battery information is set by issuing the `setbattery` command. See [“setbattery” \(page 278\)](#) for more information.
- For the E-Class and F-Class Storage Servers, the Power Supply 0's primary node is 0 and its secondary node is 1. The Power Supply 1's primary node is 1 and its secondary node is 0. The primary node can read and modify the power supply's properties. The secondary node can only read the power supply's properties. Therefore, for the E-Class and F-Class, with the `-old` option, the battery information for Node 0 Power Supply 0 is the same as the battery information for Node 1 Power Supply 0. The battery information for Node 1 Power Supply 1 is the same as the battery information for Node 0 Power Supply 1.

# showblock

## DESCRIPTION

The `showblock` command displays block mapping information for Virtual Volumes (VVs), Logical Disks (LDs), and Physical Disks (PDs).

## SYNTAX

```
showblock [options <arg>] <dev> <block> [<eblock>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d`

Specifies that detailed information is displayed for the specified device and block.

## SPECIFIERS

`<dev>`

The `<dev>` specifier is specified as one of the following arguments:

`vv <VV_name> usr|snp|adm`

Specifies the VV name and the area (`usr`, `snp`, or `adm`) of that volume for the block mapping information to be displayed.

`ld <LD_name>`

Specifies the LD name.

`pd <PD_ID>`

Specifies the ID of the PD.

`<block>`

Specifies the 512 byte block number on the specified device.

`[<eblock>]`

Specifies an end range when used with the `<block>` specifier. Additional mapping for blocks at the start of each device mapping boundary for the range indicated by `<block>` and `<eblock>` is displayed. This specifier is optional.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays block mapping information for block 0 in the user space of VV admin:

```
cli% showblock vv admin usr 0
      VVname Spc      VVBlock          LDname      LDBlock PDId Chnk      PDblock
      admin  usr  0x00000000      admin.usr.0  0x00000000  88    0  0x00080000
      =      =      =              =      0x00000000  58    0  0x00080000
```

The following example displays detailed block mapping information for block 0 in the user space of VV admin:

```
cli% showblock -d vv admin usr 0
VV/LD          Name      Block          Region
VV usr:        admin 0x00000000 0x00000000-0x0007FFFF (0-256MB)
LD   :         admin.usr.0 0x00000000 0x00000000-0x0007FFFF (0-256MB)

PD Chnk          PDStep      Block          LDStep
88   0 0x00080000-0x000801FF 0x00080000 0x00000000-0x000001FF
58   0 0x00080000-0x000801FF 0x00080000 0x00000000-0x000001FF
```

The following example displays block mapping information from blocks 0x100 through 0x400 in the user space of VV admin:

```
cli% showblock vv admin usr 0x100 0x400
VVname Spc  VVBlock      LDname  LDBlock PDId Chnk  PDblock
admin usr 0x00000100 admin.usr.0 0x00000100 88 0 0x00080100
= = = = = 0x00000100 58 0 0x00080100
admin usr 0x00000200 admin.usr.0 0x00000200 87 0 0x00080000
= = = = = 0x00000200 56 0 0x00080000
admin usr 0x00000400 admin.usr.0 0x00000400 70 1 0x00100000
= = = = = 0x00000400 54 0 0x00080000
```

The following example displays detailed block mapping information from blocks 0x100 through 0x400 in the user space of VV admin:

```
cli% showblock -d vv admin usr 0x100 0x400
VV/LD          Name      Block          Region
VV usr:        admin 0x00000100 0x00000000-0x0007FFFF (0-256MB)
LD   :         admin.usr.0 0x00000100 0x00000000-0x0007FFFF (0-256MB)

PD Chnk          PDStep      Block          LDStep
88   0 0x00080000-0x000801FF 0x00080100 0x00000000-0x000001FF
58   0 0x00080000-0x000801FF 0x00080100 0x00000000-0x000001FF
-----
VV/LD          Name      Block          Region
VV usr:        admin 0x00000200 0x00000000-0x0007FFFF (0-256MB)
LD   :         admin.usr.0 0x00000200 0x00000000-0x0007FFFF (0-256MB)

PD Chnk          PDStep      Block          LDStep
87   0 0x00080000-0x000801FF 0x00080000 0x00000200-0x000003FF
56   0 0x00080000-0x000801FF 0x00080000 0x00000200-0x000003FF
-----
VV/LD          Name      Block          Region
VV usr:        admin 0x00000400 0x00000000-0x0007FFFF (0-256MB)
LD   :         admin.usr.0 0x00000400 0x00000000-0x0007FFFF (0-256MB)

PD Chnk          PDStep      Block          LDStep
70   1 0x00100000-0x001001FF 0x00100000 0x00000400-0x000005FF
54   0 0x00080000-0x000801FF 0x00080000 0x00000400-0x000005FF

cli% showblock -d ld admin.usr.1 0x100
VV/LD          Name      Block          Region
VV usr:        admin 0x00080100 0x00080000-0x000FFFFF (256-512MB)
LD   :         admin.usr.1 0x00000100 0x00000000-0x0007FFFF (0-256MB)

PD Chnk          PDStep      Block          LDStep
65   1 0x00100000-0x001001FF 0x00100100 0x00000000-0x000001FF
59   0 0x00080000-0x000801FF 0x00080100 0x00000000-0x000001FF
```

## NOTES

None.



# showcage

## DESCRIPTION

The `showcage` command displays information about drive cages.

## SYNTAX

The syntax of the `showcage` command can be one of the following:

- `showcage [options] [-d] [<cagename>...]`
- `showcage [-sfp [-d|-ddm]] [<cagename>...]`
- `showcage -i [<cagename>...]`
- `showcage -svc -i [<cagename>...]`

## AUTHORITY

Any role in the system.

## OPTIONS

`-d`

Specifies that more detailed information about the drive cage is displayed. If this option is not used, then only summary information about the drive cages is displayed.

`-e`

Displays error information.

`-c`

Specifies to use cached information. This option displays information faster because the cage does not need to be probed, however, some information might not be up-to-date without that probe.

`-sfp`

Specifies information about the SFP(s) attached to a cage. Currently, additional SFP information can only be displayed for DC2 and DC4 cages.

`-ddm`

Specifies the SFP DDM information. This option can only be used with the `-sfp` option and cannot be used with the `-d` option.

`-i`

Specifies that inventory information about the drive cage is displayed. If this option is not used, then only summary information about the drive cages is displayed.

`-svc`

Displays inventory information with HP serial number, spare part number, and so on. This option must be used with the `-i` option and it is supported only on HP 3PAR StoreServ 7000 Storage systems.

## SPECIFIERS

`<cagename> . . .`

Specifies a drive cage name for which information is displayed. This specifier can be repeated to display information for multiple cages. If no specifiers are used, the command defaults to displaying information about all cages in the system.

## RESTRICTIONS

None.

## EXAMPLES

The following examples display information for a single system's drive cages:

```
cli% showcage

Id  Name  LoopA  Pos.A  LoopB  Pos.B  Drives  Temp  RevA  RevB  Model  Side
0  cage0 0:1:1   0  1:1:1   0      40  24-33  2.05  2.05   DC4   n/a
1  cage1 0:1:2   0  1:1:2   0      24  26-32  2.05  2.05   DC2    0
1  cage1 0:1:3   0  1:1:3   0      16  28-32  2.05  2.05   DC2    1
2  cage2 0:1:4   0  1:1:4   0      16  33-36   04    04    DC3   n/a
```

The columns in the previous example are identified as follows:

- **Id.** The cage number.
- **Name.** The name of the cage.
- **LoopA.** The position of the controller node port to which the cage's A port (the top port) is connected.
- **Pos.A.** Indicates how closely connected the cage's A port is to the controller node port. The value is 0 if the A port is non daisy chained to the node or 1 if daisy chained.
- **LoopB.** The position of the controller node port that is connected to the cage's B port.
- **Pos.B.** Indicates how closely connected the cage's B port is to the controller node port. The value is 0 if the B port is non daisy chained to the node or 1 if daisy chained.
- **Drives.** The number of physical disks in the drive cage.
- **Temp.** The range of current temperatures for the drives in the drive cage, in Celsius.
- **RevA.** The cage firmware version for side A of the drive cage.
- **RevB.** The cage firmware version for side B of the drive cage.
- **Model.** The model can be DC1, DC2, DC3, or DC4.
- **Side.** Specifies the right (1) or left (0) side of the drive cage.

Specifying the `-d` option provides more detailed information about the drive cages. See the following E200 Storage Server example for `cage0`:

```
cli% showcage -d

Id  Name  LoopA  Pos.A  LoopB  Pos.B  Drives  Temp  RevA  RevB  Model  Side
0  cage0 0:0:1   0  1:0:1   0      8  29-32   03    03    DC3   n/a

-----Cage detail info for cage0 -----

Position: ---

-----Midplane Info-----
VendorId,ProductId      3PARdata,DC3
  Serial_Num  OPS45811C010719
  Node_WWN    20000050CC010719
TempSensor_State      OK
TempSensor_Value      35
OpsPanel_State        OK
Audible_Alarm_State   Muted
  ID_Switch          4
  Cage_State          OK
```

```

Interface Board Info   LoopA   LoopB
  Firmware_status Current Current
    Product_Rev      03       03
    IFC_State        OK       OK
    ESH_State        OK       OK
    Master_CPU        Yes      No
    Loop_Map         valid    valid
    Link_Speed       2Gbps   2Gbps
    Port0_State      OK       OK
    Port1_State      No_SFP  No_SFP
    Port2_State      No_SFP  No_SFP
    Port3_State      No_SFP  No_SFP

Power Supply Info State Fan State AC Model
  ps0    OK  MedSpeed OK  --
  ps1    OK  MedSpeed OK  --

-----Drive Info----- ----LoopA----- ----LoopB-----

Drive          NodeWWN State Temp(C) ALPA LoopState ALPA LoopState
  0:0 20000011c60b0379 OK 32 0x88 OK 0x88 OK
  3:0 20000011c60b18b4 OK 29 0x81 OK 0x81 OK
  4:0 2000000c50c3560d OK 31 0x80 OK 0x80 OK
  7:0 2000000c501fd935 OK 30 0x79 OK 0x79 OK
  8:0 2000000c501fd804 OK 32 0x76 OK 0x76 OK
 11:0 20000011c60b0aeb OK 29 0x73 OK 0x73 OK
 12:0 2000000c501fd7ad OK 32 0x72 OK 0x72 OK
 15:0 2000000c501fcbe9 OK 31 0x6d OK 0x6d OK

```

Specifying the `-d` option provides more detailed information about the drive cages. See the following DC4 example from a T-Class Storage Server example for cage0:

```

cli% showcage -d cage0

Id Name LoopA Pos.A LoopB Pos.B Drives Temp RevA RevB Model Side
  0 cage0 0:1:1 0 1:1:1 0 40 24-33 2.05 2.05 DC4 n/a

-----Cage detail info for cage0 -----

Position: ---

Fibre Channel Info PortA0 PortB0 PortA1 PortB1

  Link_Speed 4Gbps 0Gbps 0Gbps 4Gbps

-----SFP Info-----

FCAL SFP -State- --Manufacturer-- MaxSpeed(Gbps) TXDisable TXFault RXLoss DDM
  0 0 OK FINISAR CORP. 4.20 No No No Yes
  0 1 OK FINISAR CORP. 4.20 No No Yes Yes
  1 0 OK FINISAR CORP. 4.20 No No Yes Yes
  1 1 OK FINISAR CORP. 4.20 No No No Yes

Interface Board Info FCAL0 FCAL1
  Link A RXLEDs Green Off
  Link A TXLEDs Green Green
  Link B RXLEDs Off Green
  Link B TXLEDs Green Green
  LED(Loop_Split) Off Off
LEDS(system,hotplug) Green,Off Green,Off

-----Midplane Info-----
  Firmware_status Current
  Product_Rev 2.05

```

```

                State      Normal Op
                Loop_Split      0
VendorId,ProductId      3PARdata,DC4
                Unique_ID 1062010000001C00

Power Supply Info State Fan State AC Model
                ps0      OK      OK OK      POI
                ps1      OK      OK OK      POI
                ps2      OK      OK OK      POI
                ps3      OK      OK OK      POI

-----Magazine Info----- ---State---
Mag SysLED HplLED Disks LoopA LoopB
  0  Green  Off    4 Ready Ready
  1  Green  Off    4 Ready Ready
  2  Green  Off    4 Ready Ready
  ...
  9  Green  Off    4 Ready Ready

-----Drive Info----- -----LoopA----- -----LoopB-----
Drive      NodeWWN      LED Temp(C) ALPA LoopState ALPA LoopState
  0:0 2000001862c4e410 Green      31 0xe1      OK 0xe1      OK
  0:1 2000001862c4e3f6 Green      31 0xe0      OK 0xe0      OK
  0:2 2000001862c4e3bc Green      28 0xdc      OK 0xdc      OK
  ...
  9:1 2000001862b9affb Green      30 0xa6      OK 0xa6      OK
  9:2 2000001862b9b035 Green      27 0xa5      OK 0xa5      OK
  9:3 2000001862b9b7b5 Green      25 0xa3      OK 0xa3      OK

```

When the power supply is switched off, it will be reported as Off through the `showcage -d` command as well as a degraded alert being posted. The following is a sample of the output:

```

cli% showcage -d cage3 | egrep -i 'Power|\<ps'
Power Supply Info State Fan State AC Model
                ps0      OK      OK      OK      MAG
                ps1      Off    OK      OK      MAG
                ps2 Failed  OK Failed  MAG
                ps3      OK      OK      OK      MAG

cli% showalert | grep Cage\ 3
Message      : Cage 3, Power Supply 1 Degraded (Power Supply Off)
Message      : Cage 3, Power Supply 2 Failed (Power Supply Failed, Power Supply AC
Failed)

```

## NOTES

The power supply model, as shown in the `Model` column of the `showcage -d` output, is set by service personnel using the `setcage` command, as described in “[setcage](#)” (page 280).

# showcim

## DESCRIPTION

The `showcim` command displays the CIM server current status, either active or inactive. It also displays the current status of the HTTP and HTTPS ports and their port numbers. In addition, it shows the current status of the SLP port, that is either enabled or disabled.

## SYNTAX

`showcim`

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLE

The following example shows the current CIM status:

```
cli% showcim
-Service- -State- --SLP-- SLPPort -HTTP-- HTTPPort -HTTPS- HTTPSPort PGVer CIMVer
Enabled   Active  Enabled   427 Enabled   5988 Enabled   5989 2.5.1 2.3.1
```

Where the columns are defined as:

- **Service.** Indicates the CIM server status.
  - `--`. Cannot determine the CIM server status.
  - `Enabled`. The CIM server is running.
  - `Disabled`. The CIM server is not running.
- **State.** Indicates if the CIM server is `Active` or `Inactive`.
- **SLP.** Indicates the SLP port state.
  - `--`. Cannot determine the SLP port state.
  - `Enabled`. The SLP port state is enabled.
  - `Disabled`. The SLP port state is disabled.
- **SLPPort.** The SLP port. Default is 427.

- HTTP. Indicates the HTTP port state.
  - --. Cannot determine the HTTP port state.
  - Enabled. HTTP port is enabled.
  - Disabled. HTTP port is disabled.
- HTTPPort. HTTP port (1024 - 65635). The default value is 5988.
- HTTPS. The HTTPS port state.
  - --. Cannot determine the HTTPS port state.
  - Enabled. HTTPS port is enabled.
  - Disabled. HTTPS port is disabled.
- HTTPSPort. The HTTPS port (1024 - 65535). The default value is 5989.
- PGVer. The Pegasus version.
- CIMVer. Indicates the CIM version running.

## NOTES

None.

# showclienv

## DESCRIPTION

The `showclienv` command displays the CLI environment parameters.

## SYNTAX

```
showclienv
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the currently set CLI environment variables for sample system TestSystem:

```
cli% showclienv
Parameter Value
csvtable      0
nohdtot       0
hafter        -1
listdom       0
editor        emacs
```

## NOTES

See the `setclienv` command for a complete description of the environment parameters.

# showcpg

## DESCRIPTION

The `showcpg` command displays Common Provisioning Groups (CPGs) in the system.

## SYNTAX

```
showcpg [options <arg>] [<CPG_name>... | <pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

The following options cannot be used together with other options except `-hist` and `-domain`:

`-d`

Show the detail information of CPGs.

`-r`

Specifies that raw space used by the CPGs is displayed.

`-alert`

Indicates whether alerts are posted.

`-alerttime`

Show times when alerts were posted (when applicable).

`-sag`

Specifies that the snapshot administration space autogrowth parameters are displayed.

`-sdg`

Specifies that the snapshot data space autogrowth parameters are displayed.

The following options can be used together with other options:

`-hist`

Specifies that current data from the CPG, as well as the CPG's history data is displayed.

`-domain <domain_name_or_pattern, ...>`

Shows only CPGs that are in domains with names matching one or more of the `<domain_name_or_pattern>` argument. This option does not allow listing objects within a domain of which the user is not a member. Patterns are glob-style (shell-style) patterns. Refer to ["Glob-Style Pattern" \(page 12\)](#) for further information.

## SPECIFIERS

```
[<CPG_name>... | <pattern>...]
```

Specifies that CPGs matching either the specified CPG name or those CPGs matching the specified pattern are displayed. This specifier can be repeated to display information for multiple CPGs. If not specified, all CPGs in the system are displayed. See ["Glob-Style Pattern" \(page 12\)](#) for more information.

## RESTRICTIONS

None.



## EXAMPLES

The following example displays a system's CPGs:

```
cli% showcpg
```

----- (MB) -----														
Id	Name	Warn%	-Volumes-		-Usage-		--- Usr ---		--- Snp ---		-- Adm ---			
			VVs	TPVVs	Usr	Snp	Total	Used	Total	Used	Total	Used	Total	Used
0	cpg1	-	2	0	2	1	15360	15360	32768	0	8192	0		
1	cpg2	-	2	2	0	2	0	0	32768	1024	8192	256		
2	cpg3	-	1	1	0	1	0	0	32768	512	8192	128		
-----														
3	total				2	4	15360	15360	98304	1536	24576	384		

The columns for the previous example output are identified as follows:

- Id. The CPG ID.
- Name. The CPG name.
- Warn%. The CPG's allocation warning threshold.
- Volumes. Virtual Volumes (VVs) and Thinly Provisioned Virtual Volumes (TPVVs).
- VVs. The Number of VVs (including TPVVs) using the CPG.
- TPVVs. The number of TPVVs using the CPG.
- Usage. Virtual Volumes using the CPG.
- Usr. The number of VVs whose User Space is using the CPG.
- Snp. The number of VVs whose Snapshot Space is using the CPG.
- Usr. User space.
- Total. The total logical disk space in MBs in the Usr space.
- Used. The total logical disk space in MBs used in Usr space.
- Snp. Snap space.
- Total. The total logical disk space in MBs in the Snp space.
- Used. The total logical disk space in MBs used in Snp space.
- Adm. Administration space.
- Total. The total logical disk space in MBs in the Adm space.
- Used. The total logical disk space in MBs used in Adm space.

The following example displays the detailed information of common provisioning groups.

```
cli% showcpg -d
```

----- (MB) -----															
Id	Name	Warn%	-Volumes-		-Usage-		--- Usr ---		--- Snp ---		-- Adm ---		--- LD ---		
			VVs	TPVVs	Usr	Snp	Total	Used	Total	Used	Total	Used	Usr	Snp	
0	cpg1	-	2	0	2	1	15360	15360	32768	0	8192	0	4	4	2
1	cpg2	-	2	2	0	2	0	0	32768	1024	8192	256	0	4	3
2	cpg3	-	1	1	0	1	0	0	32768	512	8192	128	0	4	2
-----															
3	total				2	4	15360	15360	98304	1536	24576	384	8	12	7

The columns in the previous example are defined as follows:

- Id. The CPG ID.
- Name. The CPG name.

- Warn%. The CPG's allocation warning threshold.
- Volumes. Virtual Volumes (VVs) and Thinly Provisioned Virtual Volumes (TPVVs).
- VVs. The Number of VVs (including TPVVs) using the CPG.
- TPVVs. The number of TPVVs using the CPG.
- Usage. Virtual Volumes using the CPG.
- Usr. The number of VVs whose User Space is using the CPG.
- Snp. The number of VVs whose Snapshot Space is using the CPG.
- Usr. User space.
- Total. The total logical disk space in MBs in the Usr space.
- Used. The total logical disk space in MBs used in Usr space.
- Snp. Snap space.
- Total. The total logical disk space in MBs in the Snp space.
- Used. The total logical disk space in MBs used in Snp space.
- Adm. Administration space.
- Total. The total logical disk space in MBs in the Adm space.
- Used. The total logical disk space in MBs used in Adm space.
- LD. The number of logical disks in Usr, Snp, and Adm space.
- Usr. The total number of logical disks in the Usr space.
- Snp. The total number of logical disks in the Snp space.
- Adm. The total number of logical disks in the Adm space.

The following example displays the common provisioning group's snapshot data space's autogrowth parameters:

```
cli% showcpgrp -sdg
----- (MB) -----
Id Name Warn Limit Grow Args
0 cpg1 70 85 32768 -p -devtype FC
1 cpg2 - - 32768 -p -devtype FC
2 cpg3 - - 32768 -p -devtype FC
```

The columns in the previous example are identified as follows:

- Id. The CPG ID.
- Name. The CPG name.
- Warn. The CPG's snapshot data space allocation warning threshold in MBs.
- Limit. The CPG's snapshot data allocation limit threshold, or growth limit in MBs.
- Grow. The CPG's snapshot data space allocation limit threshold.
- Args. The options used in the creation of the CPG.

The following example displays the raw space used by the system's common provisioning groups:

```
cli% showcpgrp -alert
----- Data ----- --- Adm ----
- Setting(MB) - Alerts Alerts
Id Name Warn% Total Warn Limit W% W L F Total W% F
0 cpg1 - 32768 70 85 - - Y - 8192 - -
```

1	cpg2	-	32768	-	-	-	-	-	-	-	8192	-	-
2	cpg3	-	32768	-	-	-	-	-	-	-	8192	-	-
3	cpg4	-	32768	-	-	-	-	-	-	-	8192	-	-

The columns in the previous example are identified as follows:

- Id. The physical disk ID.
- Name. The name of the common provisioning group.
- Warn%. The allocation warning percentage (see `-aw` option of the `createcpg` or `setcpg` command).
- Total. The total logical disk MB space in a CPG.
- Warn. The size in MB of the space at which a warning alert is generated.
- Limit. The limit size in MB beyond which the space (Data or Adm) will not grow.
- Alerts. There are columns for the 4 types of alerts listed below. For the `-alert` option indicates `Y` if an alert is posted or `-` if no alert has been posted. The `-alerttime` option indicates the time that the alert was posted.
- W%. An alert corresponding to Warn%.
- W. An alert corresponding to Warn.
- L. An alert corresponding to Limit.
- F. An alert corresponding to a growth failure.

The following example displays the raw space used by common provisioning groups:

```
cli% showcpg -r

----- (MB) -----
----- -Volumes- -Usage- ----- Usr ----- Snp -----
----- Adm -----
Id Name  Warn%  VVs  TPVVs  Usr  Snp  Total  RTotal  Used  RUsed  Total  RTotal  Used  RUsed
Total  RTotal  Used  RUsed
 0 cpg1   -    2    0    2    1 15360  30720 15360 30720  32768  65536   0   8192
24576   0    0    0
 1 cpg2   -    2    2    0    2    0    0    0    0    32768  65536 1024  2048
8192 24576 256   768
 2 cpg3   -    1    1    0    1    0    0    0    0    32768  65536  512  1024
8192 24576 128   384

-----
 3 total                2    4 15360  30720 15360 30720  98304 196608 1536 11264
40960 131072 384  1152
```

The columns in the previous example are identified as follows:

- Id. The CPG ID.
- Name. The CPG name.
- Warn%. The CPG's allocation warning threshold.
- Volumes. Virtual Volumes (VVs) and Thinly Provisioned Virtual Volumes (TPVVs).
- VVs. The Number of VVs (including TPVVs) using the CPG.
- TPVVs. The number of TPVVs using the CPG.
- Usage. Virtual Volumes using the CPG.

- `Usr`. The number of VVs whose User Space is using the CPG.
- `Snp`. The number of VVs whose Snapshot Space is using the CPG.
- `Usr`. User space.
- `Total`. The total logical disk space in MBs in the `Usr` space.
- `RTotal`. The total raw MBs of (raw) space in the `Usr` space.
- `Used`. The total logical disk space in MBs used in `Usr` space.
- `RUsed`. The total MBs of (raw) space used in the `Usr` space.
- `Snp`. Snap space.
- `Total`. The total logical disk space in MBs in the `Snp` space.
- `RTotal`. The total raw MBs of (raw) space in the `Snp` space.
- `Used`. The total logical disk space in MBs used in `Snp` space.
- `RUsed`. The total MBs of (raw) space used in the `Snp` space.
- `Adm`. Administration space.
- `Total`. The total logical disk space in MBs in the `Adm` space.
- `RTotal`. The total raw MBs of (raw) space in the `Adm` space.
- `Used`. The total logical disk space in MBs used in `Adm` space.
- `RUsed`. The total MBs of (raw) space used in the `Adm` space.

## NOTES

- When using the `createaldvv` command, the size of the Logical Disk (LD) space created is the first integer multiple of the RAID set size that is large enough to accommodate the requested virtual volume size.

For example, with the default RAID-5 layout with a set size of 768 MB, a requested virtual volume size of 8192 MB causes the creation of LDs with a total size rounded up to an integer multiple of 768 that is 8448 MB. The growth increment of CPGs is similarly rounded up because the growth is done by creating LDs that must be created in units of the LD RAID set size. See the *HP 3PAR Command Line Interface Administrator's Guide* for further details.

- For this command: 1 MB = 1048576 bytes.
- A `Domain` column can be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

# showdate

## DESCRIPTION

The `showdate` command displays the date and time for each system node.

## SYNTAX

```
showdate
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the date and time for the system node:

```
cli% showdate
Node Date
0   Mon Apr 17 17:07:44 PDT 2007 (US/Pacific)
1   Mon Apr 17 17:07:44 PDT 2007 (US/Pacific)
```

## NOTES

Set date and time information on nodes by issuing the `setdate` command. The output of the `showdate` command include an abbreviated time zone which may be non-unique. A unique and parenthesized long format time zone name is appended at the end of each row. The long format time zone name is the official time zone string set via `setdate`. See [“setdate” \(page 291\)](#) for additional information.

# showdomain

## DESCRIPTION

The `showdomain` command displays a list of domains in a system.

## SYNTAX

```
showdomain [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d`

Specifies that detailed information is displayed.

```
-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]
```

Sorts command output based on the column number `<col>`. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays detailed information about a system's domains:

```
cli% showdomain -d
ID Domain      -----CreationTime----- --Comments--- -VVRetentionTimeMax-
1 TestDomain1  2009-08-22 14:23:30 PDT Beef Test           0 Hours
2 TestDomain2  2009-08-22 14:23:30 PDT Chicken Test        0 Hours
3 TestDomain3  2009-08-22 14:23:30 PDT Pork Test            0 Hours
```

In the example above:

- `ID`. The domain ID.
- `Domain`. The domain name.
- `CreationTime`. The date and time the domain was created.
- `Comments`. Information about the domain.
- `VVRetentionTimeMax`. Maximum retention time that may be set for volumes in this domain; if `--`, the system `VVRetentionTimeMax` value is used instead.

## NOTES

If the `VVRetentionTimeMax` is `--`, then the minimum volume retention time for the system is used instead. If the `VVRetentionTimeMax` is `0`, then the volume retention time in the domain is disabled.

# showdomainset

## DESCRIPTION

The `showdomainset` command lists the host sets defined on the HP 3PAR storage system and their members.

## SYNTAX

```
showdomainset [options] [<setname_or_pattern>...]
```

```
showdomainset -domain [options] [<domainname_or_pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

-d

Show a more detailed listing of each set.

-domain

Show domain sets that contain the supplied domains or patterns

## SPECIFIERS

<setname\_or\_pattern>...

An optional list of <setnames> or <patterns>. If no <setname> or <pattern> is specified all sets are displayed, otherwise only sets with names matching one or more of the setnames or patterns are displayed. The patterns are glob-style patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

<domainname\_or\_pattern>...

Specifies that the domain sets containing domains with the specified names or matching the glob-style patterns should be displayed.

## RESTRICTIONS

None.

## EXAMPLES

To show all domain sets defined to the system:

```
cli% showdomainset
Id Name      Members
 7 domainset domainset.1
   domainset.2
23 newset    testdomain
```

Show details of a specific set:

```
cli% showdomainset -d newset
Id Name      Members      Comment
23 newset    testdomain  this set has been renamed and now has a comment
```



Show domain sets containing domains matching the pattern `domainset.*`:

```
cli% showdomainset -domain domainset.*
Id Name      Members
 7 domainset domainset.1
      domainset.2
```

## NOTES

None.

# showeeprom

## DESCRIPTION

The showeeprom command displays node EEPROM log information.

## SYNTAX

```
showeeprom [options] [<node_ID>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

-dead

Specifies that an EEPROM log for a node that has not started or successfully joined the cluster be displayed. If this option is used, it must be followed by a list of nodes.

## SPECIFIERS

<node\_ID>...

Specifies the node ID for which EEPROM log information is retrieved. Multiple node IDs are separated with a single space (0 1 2). If no specifiers are used, the EEPROM log for all nodes is displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the EEPROM log for all nodes:

```
cli% showeeprom
Node: 0
-----
      Board revision: 0920-1053-03.01
          Assembly: FLH 2007/50 Serial 0039
      System serial: 1000183
      BIOS version: 2.1.3
      OS version: 2.2.4.32
      Reset reason: Unknown
      Last boot: 2008-02-28 14:58:25 PST
      Last cluster join: 2008-02-28 14:58:37 PST
      Last panic: Never
      Last panic request: Never
      Error ignore code: 00
      SMI context: 00
      Last HBA mode: 2a000000
      BIOS state: ff 23 26 27 28 29 2b 80
      TPD state: 34 40 ff 2a 2c 2e 30 32
Code 128 (BIOS update) - Subcode 0x2020103 (2020102) Thu Feb 28 14:54:13 2008
Code 25 (PROM Failure) - Subcode 0x1 (0) Fri Feb 15 07:58:48 2008
[Repeat] Fri Feb 15 07:59:20 2008
Code 128 (BIOS update) - Subcode 0x2020102 (2020009) Fri Feb 15 07:58:39 2008
Code 25 (PROM Failure) - Subcode 0x1 (0) Fri Feb 15 07:56:33 2008
Code 20 (AP Init Failure) - Subcode 0x0 (0) Thu Feb 14 23:30:05 2008
[Repeat] Fri Feb 15 08:36:13 2008
Code 25 (PROM Failure) - Subcode 0x1 (0) Tue Jan 29 13:31:35 2008
[Repeat] Tue Jan 29 13:32:07 2008
```

```

Code 20 (AP Init Failure) - Subcode 0x0 (0)          Tue Jan 29 13:30:56 2008
Code 25 (PROM Failure) - Subcode 0x1 (0)           Tue Jan 29 13:17:57 2008
Code 20 (AP Init Failure) - Subcode 0x0 (0)          Tue Jan 29 13:17:28 2008
Code 25 (PROM Failure) - Subcode 0x1 (0)           Tue Jan 29 13:14:49 2008
Code 20 (AP Init Failure) - Subcode 0x0 (0)          Tue Jan 29 13:04:57 2008
Code 10 (PCI Failure) - Subcode 0xd (30)            Mon Jan 14 18:17:12 2008

```

Node: 1

```

-----
      Board revision: 0920-1053-03.01
          Assembly: FLH 2007/50 Serial 0042
      System serial: 1000183
          BIOS version: 2.1.3
          OS version: 2.2.4.32
      Reset reason: COLD_POWERON
          Last boot: 2008-02-28 14:59:14 PST
      Last cluster join: 2008-02-28 14:59:32 PST
          Last panic: Never
      Last panic request: Never
      Error ignore code: 00
          SMI context: 00
      Last HBA mode: 2a000000
          BIOS state: ff 23 26 27 28 29 2b 80
          TPD state: 34 40 ff 2a 2c 2e 30 32

Code 128 (BIOS update) - Subcode 0x2020103 (2020102) Thu Feb 28 14:54:18 2008
Code 128 (BIOS update) - Subcode 0x2020102 (2020009) Fri Feb 15 08:10:03 2008
Code 20 (AP Init Failure) - Subcode 0x0 (0)          Thu Feb 14 23:34:54 2008
[Repeat]                                           Fri Feb 15 08:41:02 2008
Code 20 (AP Init Failure) - Subcode 0x0 (0)          Tue Jan 29 13:58:56 2008
Code 15 (PCI_Fibre_Failure) - Subcode 0x0 (0)        Tue Jan 29 13:50:54 2008
[Repeat]                                           Tue Jan 29 13:51:02 2008
Code 15 (PCI_Fibre_Failure) - Subcode 0x0 (5)        Tue Jan 29 13:50:38 2008
Code 25 (PROM Failure) - Subcode 0x0 (0)           Tue Jan 29 13:49:11 2008
Code 20 (AP Init Failure) - Subcode 0x0 (0)          Tue Jan 29 13:05:32 2008
Code 25 (PROM Failure) - Subcode 0x0 (0)           Wed Jan 23 15:03:20 2008
Code 25 (PROM Failure) - Subcode 0x0 (0)           Mon Jan 21 00:14:45 2008
Code 25 (PROM Failure) - Subcode 0x0 (0)           Fri Jan 18 11:38:31 2008
Code 15 (PCI_Fibre_Failure) - Subcode 0x0 (5)        Tue Jan 15 18:49:06 2008

```

In the example above:

- Board revision indicates the HP 3PAR part number for the node board, including any minor revision codes.
- Assembly indicates the code of the assembly, the year or week the node was produced, and the node serial number.
- System serial is the cluster serial number.
- BIOS version displays the currently installed BIOS version.
- OS version displays the currently installed OS version.
- Reset reason displays why the board was previously reset. Values can be:
  - COLD\_POWERON. The node was powered off and back on.
  - EXTERNAL\_RESET. Another node in the cluster forced the reset.
  - WATCHDOG\_RESET. A watchdog timer forced the reset.
  - PCI\_RESET. The node restarted.
- Last boot displays the time the node last started the OS.
- Last cluster join displays the time the node last joined the cluster.

- `Last panic` displays the last time another node in the cluster requested this node to take a panic.
- `Error ignore code` is for engineering use only.
- `SMI context` is for engineering use only.
- `Last HBA mode` contains PCI Fibre port settings forcing certain ports to start up in initiator mode and certain ports to start up in target mode.
- `BIOS state` is for engineering use only.
- `TPD state` is for engineering use only.

## NOTES

None.

# showeventlog

## DESCRIPTION

The `showeventlog` command displays the current system event log.

## SYNTAX

```
showeventlog [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-min <number>`

Specifies that only events occurring after the specified number of minutes are shown. The `<number>` is an integer from 1 through 2147483647.

`-more`

Specifies that you can page through several events at a time.

`-oneline`

Specifies that each event is formatted on one line.

`-d`

Specifies that detailed information is displayed.

`-startt <time>`

Specifies that only events after a specified time are to be shown. The `time` argument can be specified as either `<timespec>`, `<datespec>`, or both.

---

**NOTE:** If you would like to specify both a `<timespec>` and `<datespec>`, you must place quotation marks around them; for example, `-startt "2012-10-29 00:00"`.

---

`<timespec>`

Specified as the hour (`hh`), as interpreted on a 24 hour clock, where minutes (`mm`) and seconds (`ss`) can be optionally specified. Acceptable formats are `hh:mm:ss` or `hhmm`.

`<datespec>`

Specified as the month (`mm` or `month_name`) and day (`dd`), where the year (`yy`) can be optionally specified. Acceptable formats are `mm/dd/yy`, `month_name dd`, `dd month_name yy`, or `yy-mm-dd`. If the syntax `yy-mm-dd` is used, the year must be specified.

`-endt <time>`

Specifies that only events before a specified time are to be shown. The `time` argument can be specified as either `<timespec>`, `<datespec>`, or both.

---

**NOTE:** If you would like to specify both a `<timespec>` and `<datespec>`, you must place quotation marks around them; for example, `-startt "2012-10-29 00:00"`.

---

`<timespec>`

Specified as the hour (`hh`), as interpreted on a 24 hour clock, where minutes (`mm`) and seconds (`ss`) can be optionally specified. Acceptable formats are `hh:mm:ss` or `hhmm`.

`<datespec>`

Specified as the month (mm or month\_name) and day (dd), where the year (yy) can be optionally specified. Acceptable formats are mm/dd/yy, month\_name dd, dd month\_name yy, or yy-mm-dd. If the syntax yy-mm-dd is used, the year must be specified.

---

**NOTE:** The pattern argument in the following options is a regular expression pattern that is used to match against the events each option produces. For each option, the pattern argument can be specified multiple times. For example: showeventlog -type Disk.\* -type <Tpdctl client> -sev Major displays all events of severity Major and with a type that matches either the regular expression Disk.\* or <Tpdctl client> .

---

-sev <pattern>

Specifies that only events with severities that match the specified pattern(s) are displayed.

-nsev <pattern>

Specifies that only events with severities that do not match the specified pattern(s) are displayed.

-class <pattern>

Specifies that only events with classes that match the specified pattern(s) are displayed.

-nclass <pattern>

Specifies that only events with classes that do not match the specified pattern(s) are displayed.

-node <pattern>

Specifies that only events from nodes that match the specified pattern(s) are displayed.

-nnode <pattern>

Specifies that only events from nodes that do not match the specified pattern(s) are displayed.

-type <pattern>

Specifies that only events with types that match the specified pattern(s) are displayed.

-ntype <pattern>

Specifies that only events with types that do not match the specified pattern(s) are displayed.

-msg <pattern>

Specifies that only events, whose messages match the specified pattern(s), are displayed.

-nmsg <pattern>

Specifies that only events, whose messages do not match the specified pattern(s), are displayed.

-comp <pattern>

Specifies that only events, whose components match the specified pattern(s), are displayed.

-ncomp <pattern>

Specifies that only events, whose components do not match the specified pattern(s), are displayed.

## SPECIFIERS

None.

## RESTRICTIONS

The HP 3PAR OS stores 30 MB of event logs in segments of 3 MB each. When one 3 MB segment is filled, events are written to the next segment. When all ten segments are filled, they are overwritten beginning with the oldest segment.

## EXAMPLES

The following example displays the system events occurred during the last 20 minutes:

```
cli% showeventlog -min 20
Mon Sep 29 09:48:07 2003 PST
Node: 0, Seq: 51, Class: Status change, Severity: Informational, Type: Node booted
Node 0 has booted
Mon Sep 29 09:48:13 2003 PST
Node: 1, Seq: 50, Class: Status change, Severity: Informational, Type: Node booted
Node 1 has booted
Mon Sep 29 09:48:53 2003 PST
Node: 0, Seq: 334, Class: Status change, Severity: Informational, Type: Cage loop
status
Cage 0 is connected to the system on both ports. Autofixing previous alerts.
Mon Sep 29 09:48:53 2003 PST
Node: 0, Seq: 337, Class: Status change, Severity: Informational, Type: Cage loop
status
Cage 1 is connected to the system on both ports. Autofixing previous alerts.
Mon Sep 29 09:48:54 2003 PST
Node: 0, Seq: 419, Class: Status change, Severity: Informational, Type: Notification
VV 0 has started
Mon Sep 29 09:48:54 2003 PST
Node: 0, Seq: 421, Class: Status change, Severity: Informational, Type: Notification
VV 1 has started
```

The following example displays the system eventlog using the `-oneline` option:

```
cli% showeventlog -min 20 -oneline
Time                TZn Node  Seq Class                Severity      Type
  Message
Fri Sep  5 19:42:04 2003 PST    0 1154 Status change      Minor          Process has
died Process /opt/tpd/bin/tpdtcl /opt/tpd/bin/tpdtcl.tcl has died on node 0
Fri Sep  5 19:42:04 2003 PST    0 1155 Status change      Informational  Change in alert
state Alert 122 changed from state Resolved by System to New
Fri Sep  5 19:42:09 2003 PST    0 1157 Status change      Informational  Change in alert
state Alert 122 changed from state New to Resolved by System
Fri Sep  5 19:52:19 2003 PST    0 1192 Status change      Minor          Process has
died Process /opt/tpd/bin/tpdtcl /opt/tpd/bin/tpdtcl.tcl has died on node 0
Fri Sep  5 19:52:19 2003 PST    0 1193 Status change      Informational  Change in alert
state Alert 122 changed from state Resolved by System to New
```

The following example displays CRC errors in the last 10 minutes using the `-msg` option:

```
cli% showeventlog -debug -min 10 -msg CRC
```

The following example displays Remote Copy messages in the last 5 minutes using the `-comp` option:

```
cli% showeventlog -debug -min 5 -comp rmm
```

## NOTES

The HP 3PAR OS stores 30 MB of event logs in segments of 3 MB each. When one 3 MB segment is filled, events are written to the next segment. When all ten segments are filled, they are overwritten beginning with the oldest segment.

# showfirmwaredb

## DESCRIPTION

The `showfirmwaredb` command displays the current database of firmware levels for possible upgrade. If issued without any options, the firmware for all vendors is displayed.

## SYNTAX

```
showfirmwaredb [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-n <vendor_name>`

Specifies that the firmware vendor from the SCSI database file is displayed.

`-l`

Reloads the SCSI database file into the system.

`-all`

Specifies current and past firmware entries are displayed. If not specified, only current entries are displayed.

`-sortcol <col>[,<dir>] [:<col>[,<dir>] ...]`

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting `<dir>` can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns are sorted by values in later columns.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the current database of firmware levels and prints firmware data:

```
cli% showfirmwaredb
Vendor Prod_rev          Dev_Id  Fw_status  Cage_type
Firmware_File
HITACHI  [C1C1]      DK..DJ-18FC  Current    DC4
/opt/tpd/fw/drive/MDJFC1C1.BIN
HITACHI  [C1C1]      DK..DJ-72FC  Current    DC4
/opt/tpd/fw/drive/MDJFC1C1.BIN
HITACHI  [JLAK]      DK..CJ-18FC  Current    DC4
/opt/tpd/fw/drive/MCJF_LAK.BIN
```



```

HITACHI [JLAK] DK..CJ-36FC Current DC4
/opt/tpd/fw/drive/MCJF_LAK.BIN
HITACHI [JLAK] DK..CJ-72FC Current DC4
/opt/tpd/fw/drive/MCJF_LAK.BIN
HITACHI [GLAK] DK..CJ-18FC Current DC4
/opt/tpd/fw/drive/MCJF_LAK.BIN
HITACHI [GLAK] DK..CJ-36FC Current DC4
/opt/tpd/fw/drive/MCJF_LAK.BIN
HITACHI [GLAK] DK..CJ-72FC Current DC4
/opt/tpd/fw/drive/MCJF_LAK.BIN
HITACHI [C0C0] DK..EJ-36FC Current DC4.DC2
/opt/tpd/fw/drive/MEJFC0C0.BIN
HITACHI [C0C0] DK..EJ-72FC Current DC4.DC2
/opt/tpd/fw/drive/MEJFC0C0.BIN
HITACHI [C0C0] DK..EJ-14FC Current DC4.DC2
/opt/tpd/fw/drive/MEJFC0C0.BIN
HITACHI [A6A6] HUS157336ELF200 Current ALL
/opt/tpd/fw/drive/MEKFA6A6.BIN
HITACHI [A6A6] HUS157373ELF200 Current ALL
/opt/tpd/fw/drive/MEKFA6A6.BIN
HITACHI [FA16] HUS103014FLF210 Current ALL
/opt/tpd/fw/drive/MFJFFA16.BIN
HITACHI [FA16] HUS103030FLF210 Current ALL
/opt/tpd/fw/drive/MFJFFA16.BIN
HITACHI [F7A7] DK..BJ-xxFC Current DC4
/opt/tpd/fw/drive/3BJF_7A7.BIN
SEAGATE [0004] ST39103FC Current DC4
/opt/tpd/fw/drive/0004.lod
SEAGATE [0004] ST318203FC Current DC4
/opt/tpd/fw/drive/0004.lod
SEAGATE [0005] ST318304FC Current DC4
/opt/tpd/fw/drive/0005.lod
SEAGATE [0005] ST336704FC Current DC4
/opt/tpd/fw/drive/0005.lod
...
Source file: /var/opt/tpd/scsi_db.cfg

```

### NOTES

The firmware information displayed by the `showfirmwaredb` command is used when issuing the `upgradecage` and `upgradepd` commands. See “[upgradecage](#)” (page 662) and “[upgradepd](#)” (page 664) for more information.

# showhost

## DESCRIPTION

The `showhost` command displays information about defined hosts and host paths in the system.

## SYNTAX

```
showhost [options <arg>] [<host_name>...|<pattern>...|<host_set>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d`

Shows a detailed listing of the host and path information. This option can only be used with `-agent` and `-domain` options.

`-verbose`

Shows a verbose listing of all host information.

`-chap`

Shows the CHAP authentication information.

`-desc`

Shows the host descriptor information.

`-agent`

Shows information provided by host agent.

`-pathsum`

Shows summary information about hosts and paths. This option cannot be used with the `-d` option.

`-persona`

Shows the host persona settings in effect. This option cannot be used with the `-d` option.

`-listpersona`

Lists the defined host personas. This option cannot be used with the `-d` option. Different host personas support different host operating systems and have different capabilities. Host personas may have the following additional capabilities:

- `UARepLun`. Sends a unit attention when the LUN list changes due to adding or removing VLUNs.
- `ALUA`. Enables the Asymmetric Logical Unit Access (ALUA) command and asymmetric state change unit attention when path counts change due to adding or removing ports in the host's definition.
- `VolSetAddr`. Enables HPUX Volume Set Addressing (VSA).
- `SoftInq`. Enables inquiry data formats for hosts such as Egenera and NetApp.
- `NACA`. Enables Normal Auto Contingent Allegiance (NACA) bit for AIX.
- `SESLun`. Enables SCSI Enclosure Services (SES) LUN for host agent support.

`-noname`

Shows only host paths (WWNs and iSCSI names) that are not assigned to any host. This option cannot be used with the `-d` option.

`-domain <domainname_or_pattern,...>|<domain_set>`

Shows only hosts that are in domains or domain sets that match one or more of the specifier `<domain_name_or_pattern>` or `set:<domain_set>` arguments. The set name `<domain_set>` must start with `set:.` This option does not allow listing objects within a domain of which the user is not a member.

## SPECIFIERS

`<host_name>...`

Name of the host up to 31 characters in length. This specifier can be repeated to set properties for multiple hosts.

`<pattern>...`

Specifies that information is shown for all hosts matching the specified glob-style pattern. This specifier can be repeated to set properties for multiple hosts using different patterns.

`set:<host_set>...`

Specifies that information about all the hosts that are members of set `<host_set>` should be displayed. The set name `<host_set>` must start with `set:.` Acts as if all members were individually specified as parameters to the comment. May be repeated to specify multiple host sets.

## RESTRICTIONS

None.

## EXAMPLES

**NOTE:** For the following two examples, the Domain column appears only if the `-listdom` global option or `TPDLISTDOM` environment variable was set prior to starting the CLI.

The following example displays detailed host and path information:

```
cli% showhost -d
Id Name                Persona -----WWN/iSCSI_Name----- Port  IP_addr
0 pe750-07-iscsi      Generic 210000E08B023F71          1:3:1 0.0.0.0
1 adt                  Generic 210000E08B056C21          0:2:1 0.0.0.0
1 adt                  Generic 210100E08B256C21          1:2:1 0.0.0.0
-- --                  Generic 210000E08B023C71          1:5:1 0.0.0.0
-- --                  Generic 210000E08B023F77          0:2:2 0.0.0.0
```

The following example displays host descriptor properties:

```
cli% showhost -desc
----- Host queasy10 -----
Name       : queasy10
Domain     : -
Id         : 0
Location   : Rack 35, Position 8
IP Address : --
OS         : --
Model      : --
Contact    : --
Comment    : --
```

The following example displays host CHAP properties:

```
cli% showhost -chap
Id Name      -Initiator_CHAP_Name- -Target_CHAP_Name-
```

```

0 queasy10 queasy10          s019
1 foo      --              --

```

The following example displays all host information:

```

cli% showhost -verbose
Id Name      Persona  -----WWN/iSCSI_Name----- Port  IP_addr
0 queasy10  Generic  210000E08B027B60          0:0:1 n/a
1 foo      Generic  myiscsipath.3pardata.com ---   0.0.0.0

Id Name      -Initiator_CHAP_Name- -Target_CHAP_Name-
0 queasy10  queasy10          s019
1 foo      --              --

----- Host queasy10 -----
Name       : queasy10
Domain     : --
Id         : 0
Location   : Rack 35, Position 8
IP Address : --
OS         : --
Model      : --
Contact    : --
Comment    : --

Id Name      Persona_Id Persona_Name Persona_Caps
0 queasy10      0 Generic    SESLun
1 foo          0 Generic    SESLun

```

## NOTES

- If host names or patterns are specified, then hosts with names that match any of the patterns are listed. Otherwise all hosts are listed. Patterns are glob-style (shell-style) patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.
- Host descriptor information is available only for hosts that have been assigned a name through the `createhost` command.
- A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables command.

# showhostset

## DESCRIPTION

The `showhostset` command lists the host sets defined on the HP 3PAR storage system and their members.

## SYNTAX

```
showhostset [options] [<setname_or_pattern>...]
```

```
showhostset -host [options] [<hostname_or_pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

-d

Show a more detailed listing of each set.

-host

Show host sets that contain the supplied hostnames or patterns.

## SPECIFIERS

<setname\_or\_pattern>...

An optional list of setnames or patterns. If no <setname> or <pattern> is specified all sets are displayed, otherwise only sets with names matching one or more of the setnames or patterns are displayed. The patterns are glob-style patterns. Refer to “[Glob-Style Pattern](#)” (page 12) for further information.

<hostname\_or\_pattern>...

Specifies that the sets containing hosts with the specified names or matching the glob-style patterns should be displayed.

## RESTRICTIONS

None.

## EXAMPLES

Show all host sets defined to the system:

```
cli% showhostset
Id Name      Members
22 myset     -
18 seta      -
  3 sunv40z-09 sunv40z-09-0
                    sunv40z-09-1
                    sunv40z-09-2
                    sunv40z-09-3
```

Show the details of myset only:

```
cli% showhostset -d myset
Id Name  Members Comment
22 myset -          This is an empty set
```

Show the host sets containing host sun40z-09-0:

```
cli% showhostset -host sun40z-09-0
Id Name      Members
 3 sunv40z-09 sunv40z-09-0
   sunv40z-09-1
   sunv40z-09-2
   sunv40z-09-3
```

## NOTES

A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Run `cli -h` and `setclienv -h` for details of the environment variables.

# showinventory

## DESCRIPTION

Shows information about all the hardware components in the system.

## SYNTAX

```
showinventory [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-svc`

Displays inventory information with HP serial number, spare part number, and so on. This option must be used with the `-i` option and it is supported only on HP 3PAR StoreServ 7000 Storage systems.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

None.

## NOTES

The inventory is divided into sections and inventory for each of these sections can be shown separately with the following commands:

Section	Command
Node	<code>shownode -i</code>
Battery	<code>showbattery -i</code>
Port	<code>showport -i</code>
Cage	<code>showcage -i</code>
Disk	<code>showpd -i</code>

# showiscsisession

## DESCRIPTION

The showiscsisession command shows the iSCSI sessions.

## SYNTAX

```
showiscsisession [option <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-sortcol <col>[, <dir>] [:<col>[, <dir>] ...]
```

Sorts command output based on column number <col>. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting <dir> can be specified as follows:

inc

Sort in increasing order (default).

dec

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:), and rows that have the same earlier columns will be sorted by the values in the later columns.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the iSCSI session information:

```
cli% showiscsisession

N:S:P ---IPAddr--- TPGT TSIH Conns -----iSCSI_Name-----
-----StartTime-----

1:3:1 192.168.2.181 131 13 1 iqn.1991-05.com.microsoft:pe750-07 Tue Nov 29
12:43:25 PST 2005
```

In the example above:

- N:S:P. The port location in Node:Slot:Port format, where Slot is the PCI slot number in the node and Port is the port number in the PCI card.
- IPAddr. The IP address of the Ethernet port.
- TPGT. The Target Portal Group Tag.
- TSIH. The Target Session Identifying Handle.
- Conns. The number of connections for the session.



- `iSCSI_Name`. The iSCSI name of the host.
- `StartTime`. The time the session was started.

## NOTES

None.

# showld

## DESCRIPTION

The `showld` command displays configuration information about the system's Logical Disks (LDs).

## SYNTAX

```
showld [options <arg>] [<LD_name>|<pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-cpg <CPG_name|pattern>...`

Requests that only logical disks in Common Provisioning Groups (CPGs) that match the specified CPG names or patterns be displayed. Multiple CPG names or patterns can be repeated using a comma-separated list (for example `-cpg <CPG_name>,<CPG_name>...`).

`-vv <VV_name|pattern>...`

Requests that only logical disks mapped to virtual volumes that match any of the specified names or patterns be displayed. Multiple volume names or patterns can be repeated using a comma-separated list (for example `-vv <VV_name>,<VV_name>...`).

`-domain <domainname|pattern>...`

Only shows logical disks that are in domains with names that match any of the names or specified patterns. Multiple domain names or patterns can be repeated using a comma-separated list (for example `-vv <domainname_name>,<domainname_name>...`).

---

**NOTE:** When working with domains, you can use the `-listdom` option to view the Domain column in the command output or for a more global solution, set the `TPDLISTDOM` environment variable.

---

`-sortcol <col> [,<dir>] [:<col>[,<dir>] ...]`

Sorts command output based on the column number `<col>`. Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

`-d`

Requests that more detailed layout information is displayed.

`-p`

Requests that policy information about the logical disk is displayed.

`-state`

Requests that the detailed information is displayed. This is the same as the `-s` option.

`-s`

Requests that the detailed state information is displayed.

This option is deprecated and will be removed in a future release.

## SPECIFIERS

<LD\_name>...

Requests that information for a specified logical disk is displayed. This specifier can be repeated to display configuration information about multiple logical disks. If not specified, configuration information for all logical disks in the system is displayed.

<pattern>...

Specifies that the logical disk matching the specified glob-style pattern is displayed. This specifier can be repeated to display configuration information about multiple logical disks. If not specified, configuration information for all logical disks in the system is displayed. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information for all LDs in a two node system:

```
cli% showld
```

Id	Name	RAID	-Detailed_State-	Own	SizeMB	UsedMB	Use	Lgct	LgId
0	log0.0	1	normal	0/-	20480	0	log	0	---
	WThru MapV								
	Y N								
1	log1.0	1	normal	1/-	20480	0	log	0	---
	Y N								
2	pdsld0.0	1	normal	0/1	8192	0	P,F	0	---
	Y N								
3	admin.usr.0	1	normal	0/1	5120	5120	V	0	---
	N Y								
4	admin.usr.1	1	normal	1/0	5120	5120	V	0	---
	N Y								
5	VV111.usr.0	0	normal	0/1	256	256	V	0	---
	N Y								
6	VV111.usr.1	0	normal	1/0	256	256	V	0	---
	N Y								

The following example displays information for all LDs in a four node system:

```
cli% showld
```

Id	Name	RAID	State	Own	SizeMB	UsedMB	Use	Lgct	LgId	WThru	MapV
0	log0.0	1	normal	0/-/-/-	20480	0	log	0	---	Y	N
1	log1.0	1	normal	1/-/-/-	20480	0	log	0	---	Y	N
2	pdsld0.0	1	normal	0/1/2/3	4096	0	P,F	0	---	Y	N
3	admin.usr.0	1	normal	0/1/3/2	3584	3584	V	0	---	N	Y
4	admin.usr.1	1	normal	0/1/2/3	1536	1536	V	0	---	N	Y
5	admin.usr.2	1	normal	1/0/3/2	5120	5120	V	0	---	N	Y
6	100_tune.usr.0	1	normal	0/1/2/3	512	512	V	0	---	N	Y

The columns in the previous example are identified as follows:

- Id. The ID of the logical disk.
- Name. The name of the logical disk.
- (Not shown) Domain. The domain to which the logical disks belongs. If the domain does not exist, - is displayed.

- RAID. The RAID type (0 is for RAID-0, 1 is for RAID-1, 5 is for RAID-5, and 6 is for RAID-6).
- State. The current status of the logical disk.
  - normal. The logical disk has started and is available for use.
  - orphan. Both the primary owner and backup owner nodes are down, and the logical disk's data is not available.
  - preserved. Some disks used by the logical disk are missing. Data belonging to the logical disk is saved on the preserved logical disk.
  - stopped. The logical disk is stopped, and its data is not available.
  - stopping. The logical disk is being stopped; normally flushes any in-flight data to disk.
  - removing. The logical disk is being deleted.

The following State values indicate that an uncontrolled shutdown has occurred and the logical disk was not properly closed before the shutdown.

- auto\_check. The logical disk is checked for validity.
- checking. The logical disk is checked for validity.
- need\_check. The logical disk has been checked, and an inconsistency has been found.
- need\_pd. One of the physical disks containing chunklets that make up the logical disk is not yet in the valid state.
- Own. The first number is the logical disk owner node, and the second number is the logical disk backup node.
- SizeMB. The total size of the logical disk, in MB.
- UsedMB. The portion of the logical disk that is being used by virtual volumes, in MB.
- Use. The function of the logical disk.
  - V. The logical disk is used for a virtual volume.
  - P, F. The first logical disk is used for preserved data.
  - P. The logical disk is used for preserved data.
  - C, SA. The logical disk is used for the snapshot administration space for a common provisioning group (CPG)
  - C, SD. The logical disk is used for the snapshot data space for a CPG.
  - log. The logical disk is used as a logging logical disk.
- Lgct. The number of chunklets that are in logging mode in the logical disk.
- LgId. The ID of the logging disk that is being used for logging by the logical disk.
- WThru. Indicates whether the logical disk is in write-through mode.
- MapV. Indicates if the logical disk is mapped to a virtual volume. Valid values are Y (yes) and N (no).

The following example displays detailed information about the system LDs:

```
cli% showld -d
Id Name          CPG RAID Own SizeMB RSizeMB RowSz StepKB SetSz Refcnt Avail CAvail
-----CreationTime----- -CreationPattern-
```

0	log0.0	---	1	0/-	20480	40960	1	256	2	0	mag	mag
2007-11-29 18:44:02 PST -p -devtype FC												
1	log1.0	---	1	1/-	20480	40960	1	256	2	0	mag	mag
2007-11-29 18:44:02 PST -p -devtype FC												
2	pdsld0.0	---	1	0/1	4096	8192	2	256	2	0	mag	mag
2007-11-29 18:44:03 PST -p -devtype FC												
3	admin.usr.0	---	1	0/1	5120	10240	2	256	2	0	mag	mag
2007-11-29 18:44:12 PST -p -devtype FC												
4	admin.usr.1	---	1	1/0	5120	10240	2	256	2	0	mag	mag
2007-11-29 18:44:12 PST -p -devtype FC												
5	Collie.usr.0	---	0	1/0	256	256	1	256	1	0	ch	ch
2008-01-15 16:51:23 PST -p -devtype FC												
-----												
6												
				55552	110848							

The columns in the previous example are identified as follows:

- **Id.** The ID of the logical disk.
- **Name.** The name of the logical disk.
- **Domain.** The domain to which the logical disks belongs. If the domain does not exist, - is displayed.
- **CPG.** Lists the CPG to which the logical disk belongs. If the logical disk does not belong, --- is displayed.
- **RAID.** The RAID type (0 is for RAID-0, 1 is for RAID-1, 5 is for RAID-5, and 6 is for RAID-6).
- **Own.** The first number is the logical disk owner node, and the second number is the logical disk backup node.
- **SizeMB.** The total size of the logical disk, in MB.
- **RSizeMB.** The logical disk's raw size, in MB.
- **RowSz.** The row size for the logical disk.
- **StepKB.** The step size for the logical disk, in KB (1024 bytes). The number of contiguous bytes that the system accesses before moving to the next chunklet.
- **SetSz.** The set size for the logical disk.
- **Refcnt.** Indicates how many active relocation operations are occurring for the logical disk (reference count).
- **Avail.** Indicates availability characteristics associated with a created LD. Availability determines from where space chunklets can be allocated when one of the LD's chunklets fails. Availability characteristics are as follows:
  - **disk.** Chunklets in the same RAID set may reside on the same disk.
  - **mag.** Chunklets from another disk within the same drive magazine can be used as a replacement.
  - **cage.** Chunklets in the same RAID set belong to disks on different cages.
  - **port.** Chunklets in the same RAID set belong to disks on different port pairs.
  - **ch.** No redundancy is provided for the logical disk when a chunklet fails. This is only valid for RAID-0 LDs.
- **CAvail.** Indicates the current, or actual, availability: disk, mag, port, or cage.
- **Creation Time.** Indicates when the logical disk was created.

The following example displays policy information about all system LDs:

```
cli% showld -p
Id Name          Keep_Preserved Growth_Blocked Dev_Type RPM
0 log0.0         0              0 FC          10
1 log1.0         0              0 FC          10
2 pdsld0.0       0              0 FC          10
3 pdsld0.1       0              0 FC          10
4 pdsld0.2       0              0 FC          10
5 admin.usr.0    1              0 FC          10
6 admin.usr.1    1              0 FC          10
7 admin.usr.2    1              0 FC          10
8 admin.usr.3    1              0 FC          10
9 tp-0-sa-0.0   1              0 FC          10
10 tp-0-sa-0.1  1              0 FC          10
11 tp-0-sa-0.2  1              0 FC          10
14 tp-0-sa-0.4  1              0 FC          10
15 vl.0.usr.0   1              0 FC          10
16 vl.1.usr.0   1              0 FC          10
17 tp-0-sd-0.1  1              1 FC          10
18 tp-0-sd-0.0  1              0 FC          10
-----
17
```

The columns in the previous example are identified as follows:

- **Id.** The logical disk ID.
- **Name.** The logical disk name.
- **Keep\_Preserved.** Indicates if preserved data is saved for the logical disk. Valid values are 1 (saved) and 0 (not saved).
- **Growth\_Blocked.** Indicates that the LD is blocked from growing. This is used when tuning TPVV and snap space to the same CPG to stop the LD increasing in size during the tune.
- **Dev\_Type.** Device type for the physical disk (FC for Fibre Channel or NL for nearline or SSD for solid state drive). If no device type is specified, the default is Fibre Channel drives. If a system has only nearline drives, `-p -devtype NL` must be specified when creating the volumes.
- **RPM.** Drive relative performance metric. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drives, the number is to be treated as a relative performance benchmark that takes into account I/O's per second, bandwidth and access time.

The following example displays detailed states of each LD:

```
cli% showld -state
Id Name          -State- -Detailed_State-
0 log0.0         normal  normal
1 pdsld0.0       normal  normal
2 pdsld0.1       normal  normal
3 pdsld0.2       normal  normal
4 admin.usr.0    normal  normal
5 vvfromcpg2.usr.0 normal  normal
6 vvfromcpg2.usr.1 normal  normal
7 Temple.usr.0   normal  normal
...
```

The columns in the previous example are identified as follows:

- `Id`. The logical disk ID.
- `Name`. The logical disk name.
- `State`. The current state of the LD that is one of the following:
  - `normal`. The LD is operating normally.
  - `failed`. The LD is operating abnormally.
  - `degraded`. The LD is in degraded state.
- `Detailed_State`. The detailed state of the LD that is one of the following:
  - `nodes_unavail`. The nodes are down.
  - `not_stated`. The LD has stopped and needs to be manually started (see `startld` command).
  - `unavail`. The LD state not available.
  - `preserved`. One or more sets of the LD are not recoverable because some chunklets are missing. The remaining data from the LD has been preserved.
  - `need_check`. Consistency checking needs to be manually started (see `checkld` command).
  - `check_failed`. The LD check has failed.
  - `need_pd`. The LD needs a PD before it can be started.
  - `check_ongoing`. The LD is currently being checked for consistency.
  - `degraded_avail`. The availability of the LD is degraded.
  - `degraded_perf`. The performance of the LD is degraded.
  - `unknown`. The LD state is unknown.

## NOTES

- For this command: KB = 1024 bytes and MB = 1048576 bytes.
- A `Domain` column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

# showldch

## DESCRIPTION

The `showldch` command displays configuration information about the chunklet mapping for one Logical Disk (LD).

## SYNTAX

```
showldch [options <arg>] <LD_name>
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-degraded`

Show only the chunklets in sets that cause the LD availability to be degraded. For example, if the LD normally has cage level availability, but one set has two chunklets in the same cage, then the chunklets in that set are shown. This option cannot be specified with option `-lformat` or `-linfo`.

`-lformat <form>`

Shows the LD's row and set layout on the Physical Disk (PD), where the line format `<form>` is one of:

`row`

One line per LD row.

`set`

One line per LD set.

`-linfo <info>[,<info>...]`

Specifies the information shown for each LD chunklet, where `<info>` can be one of:

- `pdpos` - Shows the PD position (default).
- `pdid` - Shows the PD ID.
- `pdch` - Shows the PD chunklet.

If multiple `<info>` fields are specified, each corresponding field will be shown separated by a dash (-).

## SPECIFIERS

`<LD_name>`

Specifies the LD name.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about chunklets for LD `r1.usr.0`:

```
cli% showldch r1.usr.0
Ldch Row Set PdPos Pdid Pdch State Usage Media Sp From To
  0   0   0 1:3:2   30   0 normal   ld valid  N   --- ---
  1   0   0 1:3:3   31   3 normal   ld valid  N 10:0 ---
  2   0   1 2:3:1   45   0 normal   ld valid  N   --- ---
```



3	0	1	1:3:0	28	0	normal	ld valid	N	---	---
4	0	2	0:1:2	6	0	normal	ld valid	N	---	---
5	0	2	2:1:3	39	0	normal	ld valid	N	---	---
6	0	3	0:2:0	8	0	normal	ld valid	N	---	---
7	0	3	1:2:2	26	0	normal	ld valid	N	---	---
8	0	4	2:3:3	47	0	normal	ld valid	N	---	---
9	0	4	1:1:2	22	0	normal	ld valid	N	---	---
10	0	5	2:2:3	43	0	normal	ld valid	N	---	---
11	0	5	0:3:0	12	0	normal	ld valid	N	---	---
12	0	6	0:0:0	0	0	normal	ld valid	N	---	---
13	0	6	1:0:2	18	0	normal	ld valid	N	---	---
14	0	7	2:0:1	33	0	normal	ld valid	N	---	---
15	0	7	2:0:2	34	5	normal	ld valid	N	16:1	---

The columns in the previous example are identified as follows:

- Ldch. The chunklet on the logical disk.
- Row. The row that contains the chunklet.
- Set. The set that contains the chunklet.
- PdPos. The position of the disk in the drive magazine.
- Pdid. The ID of the physical disk that contains the chunklet.
- Pdch. The physical disk ID for the chunklet.
- State. The current status of the chunklet.
  - normal. The chunklet is available for use.
  - normal, smag. A servicemag operation is being performed on the disks.
  - stale. The chunklet is not available for use because of a medium failure or a connectivity failure.
  - logging. Writes to the chunklet are being logged to a separate logging logical disk.
  - playback. Data is played back from the logging logical disks.
  - passthru. The chunklet does not process physical disk errors.
  - preserved. Any I/O to the chunklet is written to the preserved logical disks.
  - preserved playback. Data is played back from the preserved logical disks.
- Usage. The current use of the chunklet.
  - available. The chunklet is not in use.
  - ld. The chunklet is in use by a logical disk.
  - relsrc. The chunklet is the source of a logical disk relocation operation.
  - reltgt. The chunklet is the target of a logical disk relocation operation.
  - sync. The chunklet is both the source and the target of a logical disk relocation operation (synchronizing the chunklet).
  - cmprel. The system is completing the logical disk relocation operation.
  - abtrel. The system is canceling the logical disk relocation operation.

- **Media.** The current status of the physical disk medium for the chunklet.
  - **valid.** The chunklet is available for use.
  - **failed.** The medium has encountered errors and is not available for use.
- **Sp.** The spare status of the chunklet; **Y** indicates the chunklet is used for spare, **N** indicates the chunklet is not used as spare.
- **From.** The initial location of the chunklet before relocation.
- **To.** The destination location of the chunklet during relocation

The following example displays information about degraded chunklets for LD `r1.usr.0`.

```
cli% showldch -degraded r1.usr.0
Ldch Row Set PdPos Pdid Pdch State Usage Media Sp From To
  0  0  0 1:3:2  30  0 normal  ld valid N   --- ---
  1  0  0 1:3:3  31  3 normal  ld valid N 10:0 ---
 14  0  7 2:0:1  33  0 normal  ld valid N   --- ---
 15  0  7 2:0:2  34  5 normal  ld valid N 16:1 ---
cli% showldch -degraded r1.usr.1
No degraded sets in LD r1.usr.1
```

The following example displays row and set layout for chunklets for LD `test.usr.0`.

```
cli% showldch -lformat row test.usr.0
-----Set0----- -----Set1-----
row  Ch0  Ch1  Ch2  Ch3  Ch0  Ch1  Ch2  Ch3
  0 2:3:1 1:2:2 0:3:2 1:3:0 0:0:0 2:0:1 1:2:0 0:1:0
  1 2:3:3 1:0:2 0:0:2 2:0:3 0:2:2 1:1:0 2:1:1 1:3:0
  2 0:3:0 2:2:1 1:2:2 2:1:3 0:1:2 1:3:2 2:3:1 0:2:2
  3 0:2:0 1:2:0 2:1:3 1:0:0 2:2:3 0:0:0 1:1:2 0:1:0
  4 2:3:3 1:0:2 0:3:2 2:0:1 0:0:2 1:3:0 2:1:1 1:1:2
```

The following example displays row and set layout including pdid and pdch for chunklets for LD `test.usr.0`.

```
cli% showldch -lformat row -linfo pdid,pdch test.usr.0
-----Set0----- -----Set1-----
row  Ch0  Ch1  Ch2  Ch3  Ch0  Ch1  Ch2  Ch3
  0 45-7 26-6 14-7 28-6  0-7 33-7 24-6  4-6
  1 47-7 18-7  2-6 35-6 10-7 20-7 37-6 28-8
  2 12-6 41-6 26-8 39-7  6-8 30-8 45-9 10-9
  3  8-7 24-8 39-9 16-8 43-8  0-9 22-7  4-8
  4 47-9 18-9 14-9 33-9  2-8 28-9 37-8 22-9
```

The following example displays row and set layout including pdid and pdpos for chunklets for LD `test.usr.0`.

```
cli% showldch -lformat set -linfo pdid,pdpos test.usr.0
row set      Ch0      Ch1      Ch2      Ch3
  0  0 45-2:3:1 26-1:2:2 14-0:3:2 28-1:3:0
  0  1  0-0:0:0 33-2:0:1 24-1:2:0  4-0:1:0
  1  0 47-2:3:3 18-1:0:2  2-0:0:2 35-2:0:3
  1  1 10-0:2:2 20-1:1:0 37-2:1:1 28-1:3:0
  2  0 12-0:3:0 41-2:2:1 26-1:2:2 39-2:1:3
  2  1  6-0:1:2 30-1:3:2 45-2:3:1 10-0:2:2
  3  0  8-0:2:0 24-1:2:0 39-2:1:3 16-1:0:0
  3  1 43-2:2:3  0-0:0:0 22-1:1:2  4-0:1:0
```

4	0	47-2:3:3	18-1:0:2	14-0:3:2	33-2:0:1
4	1	2-0:0:2	28-1:3:0	37-2:1:1	22-1:1:2

## NOTES

None.

# showldmap

## DESCRIPTION

The `showldmap` command displays the mapping from a Logical Disk (LD) to Virtual Volumes (VVs).

## SYNTAX

```
showldmap <LD_name>
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

<LD\_name>

Specifies the LD name.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the region of LD `v0.usr.0` that is used for a VV:

```
cli% showldmap v0.usr.0
```

Area	Start (MB)	Length (MB)	VVId	VVName	VVSp	VVOff (MB)
0	0	512	0	v0	usr	0

The columns in the previous example are identified as follows:

- `Area`. The ID of the region.
- `Start (MB)`. The offset from the beginning of the logical disk, in MB.
- `Length (MB)`. The length, or size, of the region, in MB.
- `VVId`. The ID of the virtual volume that contains the region.
- `VVName`. The name of the virtual volume that contains the region.
- `VVSp`. The type of the space-user (`usr`), snapshot data (`snp`), or snapshot administration (`adm`)-for which the region is being used.
- `VVOff (MB)`. The offset from the beginning of the space that contains the region.

## NOTES

None.

# showlicense

## DESCRIPTION

The showlicense command displays the currently installed license key and current license information.

## SYNTAX

```
showlicense
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-raw
```

Specifies that the license key originally entered (the raw license) be displayed. The license key is displayed in a manner that is acceptable input for the setlicense command.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the currently installed license information:

```
cli% showlicense
License key was generated on Mon Sep 14 18:30:24 2009

License features currently enabled:
Dynamic Optimization
InForm Suite
Recovery Manager for Exchange
Recovery Manager for Oracle
System Reporter
Remote Copy
System Tuner
Thin Provisioning (1024G)
VSS Provider for Microsoft Windows

License features enabled on a trial basis:
Virtual Copy                               Expires on September 14, 2012
```

The following example displays the original license key entered on the system:

```
cli% showlicense -raw
60R3-0C1G-60R3-2C1G-60R3-0C9G-70R3-0C1G
60RK-0C0A-FSXZ-8YZ4-Z884-84DW-7CD6-JLKB
7GZA-RRZH-L01W-00AW-FFLR-T848-VWQA-K3F1
GX CJ-G8MG-0XW7-3VGL-EF28-MBDM-03V4-LG2D
YWQ5-KW9G-99GB-3FRL-4FJN-3AH2-T287-SNGD
XN9F-EVGV-25Z9-D2VK-5EXD-KXJ4-JMQE-6JSL
1XA0-9ZTA-H5KR-VG8Y-JBV8-BR72-A1E1-3GS3
ZSG4-32VZ-C2EQ-C69H-B0FR-0XG3-4NAF-G3VA
```

```
SV47-NH2R-BL1L-TJKR-31F2-V9QX-0WM0-AWTH  
LRB7-8XQD-BLHD-LF68-A4BW-K4QG-ZS7B-Q41X  
35Y1-6CZC-KBJ5-6VQE-EC2G-Q6EG-SJV0-KMHC  
SAWG-YJ4V-WRE5-3GZA-DGW0-ZYVE-5SVT-8TJX  
QR9W-R92D-SSTY-RVWY-1Y2B-YH8D-KRN5-ZZ7Y...
```

## NOTES

Without options, a description of which features are enabled is displayed. When the license was generated and any expiration dates are also shown. If the `-raw` option is specified, the license key prints in a manner that is acceptable input for the `setlicense` command.

# shownet

## DESCRIPTION

The `shownet` command displays the configuration and status of the administration network interfaces, including the configured gateway and Network Time Protocol (NTP) server.

## SYNTAX

```
shownet [option]
```

## AUTHORITY

Any role in the system.

## OPTION

`-d`

Displays detailed information.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the status of the system administration network interfaces:

```
cli% shownet -d
IP Address: 192.168.5.191      Netmask 255.255.252.0
Assigned to nodes: 01
Connected through node 0
Status: Active

Admin interface on node 0
MAC Address:      00:02:AC:43:00:34
RX Packets:      534389      TX Packets:      121669
RX Bytes:        67828134    TX Bytes:        60638375
RX Errors:       0          TX Errors:       0
RX Dropped:     0          TX Dropped:     0
RX FIFO Errors: 0          TX FIFO Errors: 0
RX Frame Errors: 0          TX Collisions:  0
RX Multicast:   0          TX Carrier Errors: 0
RX Compressed:  0          TX Compressed:  0

Remote copy interface in slot 1 on node 0
MAC Address:      00:04:23:C2:1B:72
RX Packets:      0          TX Packets:      0
RX Bytes:        0          TX Bytes:        0
RX Errors:       0          TX Errors:       0
RX Dropped:     0          TX Dropped:     0
RX FIFO Errors: 0          TX FIFO Errors: 0
RX Frame Errors: 0          TX Collisions:  0
RX Multicast:   0          TX Carrier Errors: 0
RX Compressed:  0          TX Compressed:  0

Remote copy interface in slot 1 on node 0
MAC Address:      00:04:23:C2:1B:73
RX Packets:      0          TX Packets:      0
```

```

RX Bytes:                0 TX Bytes:                0
RX Errors:               0 TX Errors:                0
RX Dropped:             0 TX Dropped:              0
RX FIFO Errors:         0 TX FIFO Errors:          0
RX Frame Errors:        0 TX Collisions:           0
RX Multicast:           0 TX Carrier Errors:       0
RX Compressed:          0 TX Compressed:           0

Admin interface on node 1
MAC Address:      00:02:AC:43:00:33
RX Packets:      477147 TX Packets:                66399
RX Bytes:       59353196 TX Bytes:              33589695
RX Errors:      0 TX Errors:                0
RX Dropped:    0 TX Dropped:              0
RX FIFO Errors: 0 TX FIFO Errors:          0
RX Frame Errors: 0 TX Collisions:           0
RX Multicast:  0 TX Carrier Errors:       0
RX Compressed:  0 TX Compressed:           0
...

```

## NOTES

Specifying `-d` includes information useful for debugging network issues.



# shownode

## DESCRIPTION

The `shownode` command displays an overview of the node-specific properties and its component information. Various command options can be used to display the properties of PCI cards, CPUs, physical memory, disk drives, and power supplies.

## SYNTAX

```
shownode [option] [<node_ID>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

The following options are for node summary and inventory information:

`-listcols`

List the columns available to be shown with the `-showcols` option described below (see `clihelp -col shownode` for help on each column).

By default (if none of the information selection options below are specified) the following columns are shown:

Node Name State Master InCluster LED Control\_Mem Data\_Mem Available\_Cache

To display columns pertaining to a specific node component use `-listcols` option in conjunction with one of the following options: `-pci`, `-cpu`, `-mem`, `-drive`, `-fan`, `-mcu`.

`-showcols <column>[,<column>...]`

Explicitly select the columns to be shown using a comma-separated list of column names. For this option, the full column names are shown in the header.

Run `shownode -listcols` to list Node component columns.

Run `shownode -listcols <node_component>` to list columns associated with a specific `<node_component>`.

`<node_component>` can be one of the following options: `-pci`, `-cpu`, `-mem`, `-drive`, `-fan`, `-mcu`.

If a specific node component option is not provided, then `-showcols` expects Node columns as input.

If a column (Node or specific node component) does not match either the Node columns list or a specific node component columns list, then the `shownode -showcols <cols>` request is denied.

If an invalid column is provided with `-showcols`, the request will be denied.

The `-showcols` option can also be used in conjunction with a list of node IDs.

Run `clihelp -col shownode` for a description of each column.

`-i`

Shows node inventory information in the table format.

`-d`

Shows node and component information in the table format.

The following options are for node component information. These options cannot be used together with options `-i` and `-d`.

`-verbose`

Specifies detailed information in verbose format. It can be used with any of the following component options:

-fan

Displays the node fan information.

-pci

Displays PCI card information.

-cpu

Displays CPU information.

-mem

Displays physical memory information.

-drive

Displays the disk drive information.

-ps

Displays power supply information.

-mcu

Displays MicroController Unit information.

-state

Displays the detailed state information for the node or power supply (proceed with the -ps option). This is the same as -s.

-s

Displays the detailed state information for node or power supply (proceed with the -ps option). This option is deprecated and will be removed in a future release.

-uptime

Shows the amount of time each node has been running since the last shutdown.

-svc

Displays inventory information with HP serial number, spare part number, and so on. This option must be used with the -i option and it is supported only on HP 3PAR StoreServ 7000 Storage systems.

## SPECIFIERS

<node\_ID> . . .

Displays the node information for the specified node ID(s). This specifier is not required.

## Restrictions

None.

## EXAMPLES

The following example displays the operating environment status for all nodes in the system:

```
cli% shownode
```

Node	--Name--	-State-	Master	InCluster	---LED---	Control Mem(MB)	Data Mem(MB)	Cache Available(%)
0	enodec34	OK	Yes	Yes	GreenBlnk	2048	2048	100
1	enodec33	OK	No	Yes	GreenBlnk	2048	2048	100

In the example above:

- `Node`. The node ID.
- `Name`. The node name.
- `State`. The state of the node. Values are as follows:
  - `--`. Cannot determine the overall node state.
  - `OK`. The node and its components are operating normally.
  - `Degraded`. For T-Series and S-Series nodes, the node is degraded due to a missing, failed, or degraded power supply. For E-series nodes, the node is degraded to due a missing or degraded fan.
  - `Failed`. The node has not initialized, is offline, has mismatching kernel versions has bad drive partitions, is rebooting, or has shutdown.
- `Master`. Specifies if the node is the master node.
- `InCluster`. Indicates if the node is in the cluster.
- `LED`. The node LED information. Values are as follows:
  - `--`. The node LED is unknown.
  - `off`. The node LED is off.
  - `Green`. The kernel is not running.
  - `GreenBlink`. The node is in normal state.
  - `Amber`. The node is degraded or failed and the kernel is not running.
  - `AmberBlink`. The node is degraded or failed.
- `Control Mem (MB)`. The total memory in the node in MB.
- `Data Mem (MB)`. The total data memory in the node in MB.

The following examples display detailed information (`-d` option) for the nodes including their components in a table format. The `shownode -d` command can be used to display the tail information of the nodes including their components in name and value pairs.

```
cli% shownode -d

-----Physical Memory-----
Node Riser Slot SlotID -Name-- -Usage- --Type--- --Manufacturer--- -Serial- -Latency-
Size (MB)
 0 n/a      0 J4200  DIMM0   Control FB-DIMM   Micron Technology E20BCA01 CL5.0/5.0
 2048
 0 n/a      1 J4300  DIMM1   Control FB-DIMM   Micron Technology E20BCA0C CL5.0/5.0
 2048
 0 2-slot   0 J0901  DIMM0.0 Data    DDR_SDRAM Micron Technology E010DF6E CL2.0/2.5
 2048
 0 4-slot   1 J0900  DIMM1.0 Data    DDR_SDRAM Micron Technology E010DF67 CL2.0/2.5
 2048
 0 4-slot   2 J1300  DIMM2.0 Data    DDR_SDRAM Micron Technology E010DF63 CL2.0/2.5
 2048
 1 n/a      0 J4200  DIMM0   Control FB-DIMM   Micron Technology E20BC9AC CL5.0/5.0
 2048
 1 n/a      1 J4300  DIMM1   Control FB-DIMM   Micron Technology E20BC9AE CL5.0/5.0
 2048
 1 2-slot   0 J0901  DIMM0.0 Data    DDR_SDRAM Micron Technology E010DF95 CL2.0/2.5
 2048
```

```

1 4-slot 1 J0900 DIMM1.0 Data DDR_SDRAM Micron Technology E010DF97 CL2.0/2.5
2048
1 4-slot 2 J1300 DIMM2.0 Data DDR_SDRAM Micron Technology E010DF96 CL2.0/2.5
2048

-----Internal Drives-----
Node Drive -Manufacturer- ---Model--- -Serial- -Firmware- Size(MB) Type
0 0 Seagate ST9100821AS 5NJ09DF3 3.AAB 95396 SATA
1 0 Seagate ST9100821AS 5NJ08NA4 3.AAB 95396 SATA

```

These columns and values are described in detail in the following examples.

```

cli% shownode -mem
Node Riser Slot SlotID -Name-- -Usage- --Type--- --Manufacturer--- -Serial- -Latency-
Size(MB)
0 n/a 0 J4200 DIMM0 Control FB-DIMM Micron Technology E20BC997 CL5.0/5.0
2048
0 n/a 1 J4300 DIMM1 Control FB-DIMM Micron Technology E20BC996 CL5.0/5.0
2048
0 2-slot 0 J0901 DIMM0.0 Data DDR_SDRAM Micron Technology E010DF65 CL2.0/2.5
2048
0 4-slot 1 J0900 DIMM1.0 Data DDR_SDRAM Micron Technology E010DF98 CL2.0/2.5
2048
0 4-slot 2 J1300 DIMM2.0 Data DDR_SDRAM Micron Technology E010DF64 CL2.0/2.5
2048
1 n/a 0 J4200 DIMM0 Control FB-DIMM Micron Technology E20BC995 CL5.0/5.0
2048
1 n/a 1 J4300 DIMM1 Control FB-DIMM Micron Technology E20BC992 CL5.0/5.0
2048
1 2-slot 0 J0901 DIMM0.0 Data DDR_SDRAM Micron Technology E010DF6A CL2.0/2.5
2048
1 4-slot 1 J0900 DIMM1.0 Data DDR_SDRAM Micron Technology E010DF6F CL2.0/2.5
2048
1 4-slot 2 J1300 DIMM2.0 Data DDR_SDRAM Micron Technology E010DF69 CL2.0/2.5
2048

```

In the example above:

- Node. The node ID.
- Riser. The location of the DIMM. The DIMM may be located in a 2-slot or 4-slot riser card. If the DIMM is located on the motherboard the value is n/a.
- Slot. The slot number.
- SlotID. The slot ID in JXXX format.
- Name. The location of the DIMM slots printed on the board.
- Usage. The usage of the physical memory, either Control or Data.
- Type. The type of DIMM such as SDRAM, DDR, or DDR2.
- Manufacturer. The manufacturer of the memory.
- Serial. The serial number.
- Latency. The CAS latency.
- Size. The memory size in MB.

```

cli% shownode -drive
...
Node Drive -Manufacturer- ---Model--- -Serial- -Firmware- Size(MB) Type

```

0	0	Seagate	ST9100821AS	5NJ09DF3	3.AAB	95396	SATA
1	0	Seagate	ST9100821AS	5NJ08NA4	3.AAB	95396	SATA

In the example above:

- Node. The node ID.
- Drive. The disk drive ID.
- Manufacturer. The manufacturer of the disk drive.
- Model. The model number of the disk drive.
- Serial. The serial number of the disk drive.
- Firmware. The firmware version on the disk drive.
- Size. The drive size in MB.
- Type. The type of disk drive.

```
cli% shownode -pci

-----PCI Cards-----
Node Slot Type -Manufacturer- -Model- -Serial- -Rev- Firmware
  0    0 FC   QLOGIC          2302   D13503   1     3.3.16
  0    1 FC   QLOGIC          2302   D44171   1     3.3.16
  1    0 FC   QLOGIC          2302   C31037   1     3.3.16
```

In the example above:

- Node. The node ID.
- Slot. The slot ID.
- Type. The PCI card type, either Fibre Channel (FC) or Ethernet (Eth).
- Manufacturer. The PCI card manufacturer.
- Model. The model of the PCI card.
- Serial. The serial number of the PCI card.
- Rev. The revision number of the PCI card.
- Firmware. The firmware version on the PCI card.

```
cli% shownode -cpu

-----CPUs-----
Node CPU -Manufacturer- -----Serial----- CPUSpeed (MHz) BusSpeed (MHz)
  0    0 GenuineIntel   000188AAF2AEA667          995          132.76
  0    1 GenuineIntel   0000D8D47BD100A6          995          132.76
  1    0 GenuineIntel   0000F5A65AAD5D6F          995          132.72
  1    1 GenuineIntel   00028FE5F6E4068D          995          132.72
```

In the example above:

- Node. The node ID.
- CPU. The CPU ID.
- Manufacturer. The manufacturer name of the CPU.
- Serial. The serial number of the CPU.

- CPUSpeed. The speed of the CPU in MHz.
- BusSpeed. The bus speed of the CPU in MHz.

```
cli% shownode -ps

-----Power Supplies-----
Node PS -PSState-- FanState ACState DCState -BatState- ChrgLvl(%)
  0  0 NotPresent --      --      --      NotPresent      0
  0  1 OK          OK       OK       OK       OK          100
  1  0 OK          OK       OK       OK       OK          100
  1  1 NotPresent --      --      --      NotPresent      0
```

In the example above:

- Node. The node ID.
- PS. The power supply ID.
- PSState. The power supply state. Values are as follows:
  - --. Cannot determine the state.
  - OK. The power supply is operating normally.
  - Failed. The power supply is operating abnormally.
  - NotPresent. The power supply is missing.
  - Degraded. There is a fan failure, or the battery state is not OK.
- FanState. The power supply fan state. Values are as follows:
  - --. Cannot determine the state.
  - OK. The fan is operating normally.
  - Failed. The fan is operating abnormally.
- ACState. The state of the AC power. Values are as follows:
  - --. Cannot determine the state.
  - OK. Normal operation.
  - Failed. Abnormal operation.
- DCState. The state of DC power. Values are as follows:
  - --. Cannot determine the state.
  - OK. Normal operation.
  - Failed. Abnormal operation.
- BatState. The battery state. Values are as follows:
  - OK. Normal operation.
  - --. Cannot determine the state.
  - Failed. Abnormal operation.

- NotPresent. The battery is missing.
- MaxLifeLow. The maximum battery life is low.
- ChrgLvl. The battery charge level in percentage.

The following example displays the detailed state of the nodes:

```
cli% shownode -state

Node -State- -Detailed_State-
  0 OK      OK
  1 OK      OK
  2 OK      OK
  3 OK      OK
```

In the example above:

- Node. The node ID.
- State. The state of the node. Values are as follows:
  - OK. The node and its components are operating normally.
  - Degraded. The node is degraded when the power supply is missing, failed, or degraded (fan failed, battery max life low, failed, expired, or not present).
  - Failed. The node is either not initialized, offline, kernel revision mismatched, disk partition bad, rebooting, or shut down.
- Detailed\_State. The detailed state of the node. Values are as follows:
  - tod\_bat\_fail. The time of day battery failed.
  - invalid\_bat\_config. The battery has an invalid configuration.
  - link\_error. The node has a link error.
  - uncorrectable\_mem\_error. The node has an uncorrectable memory error.
  - multi\_uncorrectable\_mem\_error. The node has multiple uncorrectable memory error.
  - correctable\_mem\_error. The node has a correctable memory error.
  - internal\_system\_error. The node has an internal system error.
  - hardware\_watchdog\_error. The node has a hardware watchdog error.
  - pci\_error. There is a PCI error in the node.
  - driver\_software\_error. The node has a driver software error.
  - cpu\_overheating. The node CPU overheating.
  - cpu\_vrm\_overheating. The node CPU VRM overheating.
  - control\_cache\_dimm\_overheating. The node Control Cache DIMM is overheating.
  - node\_offline\_due\_to\_failure. The node is offline due to failure.
  - node\_shutdown\_manually. The node was shutdown manually.
  - unknown. The node state is unknown.

The following example displays the detailed state of the power supplies:

```
cli% shownode -ps
Node PS -State- -Detailed_State-
  0  0  OK      OK
  1  1  OK      OK
  2  2  OK      OK
  3  3  OK      OK
```

In the example above:

- Node. The node ID.
- PS. The power supply ID.
- State. The power supply state. Values are as follows:
  - OK. The power supply is operating normally.
  - Failed. The power supply is operating abnormally.
  - NotPresent. The power supply is missing.
  - Degraded. The fan failure or battery state is not OK.
- Detailed\_State. The power supply detailed state. Values are as follows:
  - invalid\_bat\_count. The power supply has an invalid battery count.
  - dc\_failed. The power supply DC failed.
  - ac\_failed. The power supply AC failed.
  - fan\_failed. The power supply fan failed.
  - charger\_overload. The power supply charger overloaded.
  - battery\_not\_present. The power supply battery is not present.
  - invalid\_firmware. The power supply firmware is invalid.
  - oscillating\_presence. The power supply presence is oscillating.
  - oscillating\_dc. The power supply DC is oscillating.
  - oscillating\_ac. The power supply AC is oscillating.
  - oscillating\_fan. The power supply fan is oscillating.
  - oscillating\_charger. The power supply charger is oscillating.
  - oscillating\_bat. The power supply battery is oscillating.
  - NotPresent. The power supply is not present.
  - unknown. The power supply state is unknown.

## NOTES

None.



# shownodeenv

## DESCRIPTION

The `shownodeenv` command displays the node operating environment status, including voltages and temperatures.

## SYNTAX

```
shownodeenv [options <arg>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-n <node_ID>...
```

Specifies the ID of the node whose environment status is displayed. Multiple node IDs can be specified as a series of integers separated by a space (1 2 3). If no option is used, then the environment status of all nodes is displayed.

## SPECIFIERS

None.

## Restrictions

None.

## EXAMPLES

The following example displays the operating environment status for all nodes in the system:

```
cli% shownodeenv
Node 0
-----
      Measurement      Reading  Lo Limit  Hi Limit  Status
CPU0 1.32V:          1.31 V   1.28 V   1.36 V   Within Tolerance
CPU1 1.32V:          1.31 V   1.28 V   1.36 V   Within Tolerance
82563 1.20V:          1.22 V   1.13 V   1.26 V   Within Tolerance
31154 1.30V:          1.29 V   1.22 V   1.37 V   Within Tolerance
82563 1.90V:          1.92 V   1.79 V   2.00 V   Within Tolerance
      3.30V:          3.34 V   3.11 V   3.47 V   Within Tolerance
PLX 3.30V:           3.32 V   3.12 V   3.47 V   Within Tolerance
VCC 5.00V:           5.15 V   4.74 V   5.76 V   Within Tolerance
V_PTT 1.20V:          1.20 V   1.13 V   1.26 V   Within Tolerance
MCH 1.50V:           1.50 V   1.41 V   1.58 V   Within Tolerance
ESB 1.50V:           1.51 V   1.41 V   1.58 V   Within Tolerance
FBD 1.50V:           1.44 V   1.41 V   1.58 V   Within Tolerance
FBD 1.80V:           1.80 V   1.69 V   1.89 V   Within Tolerance
VTT_FBD 0.90V:       0.91 V   0.84 V   0.95 V   Within Tolerance
      ESB 1.20V:       1.21 V   1.13 V   1.26 V   Within Tolerance
      PLX 1.00V:        1.00 V   0.94 V   1.05 V   Within Tolerance
Osprey DDR 1.25V:     1.25 V   1.17 V   1.32 V   Within Tolerance
Osprey DDR 2.50V:     2.50 V   2.36 V   2.63 V   Within Tolerance
Osprey Lnk 1.87V:     1.85 V   1.76 V   1.97 V   Within Tolerance
FPGA 2.50V:           2.50 V   2.36 V   2.63 V   Within Tolerance
      12.00V:          12.06 V  11.37 V  12.62 V  Within Tolerance
      MCH Temp:         38 C     0 C     85 C   Within Tolerance
      Board Temp:       25 C     0 C     70 C   Within Tolerance
      LM94 Temp:        23 C     0 C     65 C   Within Tolerance
      LM87 Temp:        23 C     0 C     65 C   Within Tolerance
```

LM87 Ext Temp:	20 C	-10 C	65 C	Within Tolerance	
CPU0 Temp:	24 C	0 C	85 C	Within Tolerance	
CPU1 Temp:	25 C	0 C	85 C	Within Tolerance	
CPU0 VRM Temp:	n/a	n/a	n/a	Within Tolerance	
CPU1 VRM Temp:	n/a	n/a	n/a	Within Tolerance	
CPU DIMM0 Temp:	37 C	0 C	105 C	Within Tolerance	
CPU DIMM1 Temp:	38 C	0 C	105 C	Within Tolerance	
Node 1					
-----					
	Measurement	Reading	Lo Limit	Hi Limit	Status
	...				

## NOTES

None.

# showpatch

## description

The `showpatch` command displays patches applied to a system.

## SYNTAX

```
showpatch [option <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-hist`

Specifies the history of all patches and updates applied to the system.

`-d <ID>`

Specifies the details on a specified patch ID.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The `showpatch` command is specific to each individual patch and typically displays these fields:

- `Patch ID`. Specifies the patch ID.
- `Release Version`. Specifies TPD or UI release affected by the patch.
- `Synopsis`. Specifies the purpose of patch.
- `Date`. Specifies the build date of patch.
- `Bugs fixed`. Specifies the bugs fixed.
- `Description`. Specifies a detailed description of the problem or fix.
- `Affected Packages`. Specifies the new packages being changed.
- `Obsoletes`. Specifies the patch IDs deleted by this patch.
- `Requires`. Specifies the patch IDs of any other patches required by this patch.
- `Notes`. Specifies any special instructions for the patch.

## NOTES

This command displays all the patches currently affecting the system if options are not used.

# showpd

## DESCRIPTION

The `showpd` command displays configuration information about a system's Physical Disks (PDs).

## SYNTAX

```
showpd [options] [<PD_ID>...]
```

```
showpd -listcols
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-listcols
```

List the columns available to be shown in the `-showcols` option described below (see `clihelp -col showpd` for help on each column).

The [options] are generally of two kinds: those that select the type of information that is displayed, and those that filter the list of PDs that are displayed.

By default (if none of the information selection options below are specified) the following columns are shown: `Id`, `CagePos`, `Type`, `RPM`, `State`, `Size_MB`, `Free_MB`, `Port_A0`, `Port_B0`, `Port_A1`, `Port_B1`.

Options that select the type of information shown include the following:

```
-showcols <column>[, <column>...]
```

Explicitly select the columns to be shown using a comma-separated list of column names. For this option the full column names are shown in the header. For other options that select the type of information, the column names may not be exactly the same and there may be spanning headers on top of the column names.

Run `showpd -listcol` to list the available columns.

Run `clihelp -col showpd` for a description of each column.

```
-i
```

Specifies a request for disk (inquiry) data.

The following columns are shown: `Id`, `CagePos`, `State`, `Node_WWN`, `Manuf`, `Model`, `Serial`, `FW_Rev`.

```
-e
```

Specifies a request for the disk environment and error information. Note that reading this information places a significant load on each disk.

The following columns are shown: `Id`, `CagePos`, `Type`, `State`, `Rd_CErr`, `Rd_UErr`, `Wr_CErr`, `Wr_UErr`.

```
-c
```

Show chunklet usage information. Any chunklet in a failed disk will be shown as "Fail".

The following columns are shown: `Id`, `CagePos`, `Type`, `State`, `Total_Chunk`, `Nrm_Used_OK`, `Nrm_Used_Fail`, `Nrm_Unused_Free`, `Nrm_Unused_Uninit`, `Nrm_Unused_Unavail`, `Nrm_Unused_Fail`, `Spr_Used_OK`, `Spr_Used_Fail`, `Spr_Unused_Free`, `Spr_Unused_Uninit`, `Spr_Unused_Fail`.

```
-state
```

Shows detailed information regarding the state of each PD.

The following columns are shown: Id, CagePos, Type, State, Detailed\_State.

-s

Show detailed information regarding the state of each PD.

This option is deprecated and will be removed in a future release.

-path

Shows current and saved path information for disks.

The following columns are shown: ID, CagePos, Type, State, Path\_A0, Path\_A1, Path\_B0, Path\_B1, Order.

Path\_A1 and Path\_B1 are only shown for systems with drive chassis that are connected to four nodes.

-space

Shows disk capacity usage information (MB).

The following columns are shown: Id, CagePos, Type, State, Size\_MB, Volume\_MB, Spare\_MB, Free\_MB, Unavail\_MB, Failed\_MB.

-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]

Sorts command output based on column number (<col>). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (<dir>) can be specified as follows:

inc

Sort in increasing order (default).

dec

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

The PD filtering options include:

-failed

Specifies that only failed physical disks are displayed.

-degraded

Specifies that only degraded PDs are displayed. If both -failed and -degraded are specified, the command shows failed disks and degraded disks.

-p <pattern>

PDs matching the specified pattern are displayed. The following arguments can be specified as patterns for this option:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

-nd <item>

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-3). The primary path of the disks must be on the specified node(s).

-st <item>

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-3). The primary path of the disks must be on the specified PCI slot(s).

-pt <item>

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-3). The primary path of the disks must be on the specified port(s).

-cg <item>

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

-mg <item>

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using the `-mg` option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-3). The specified drive magazine(s) must contain disks.

-pn <item>

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

-dk <item>

Specifies one or more physical disks. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid`, and `-devtype` are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

-tc\_gt <number>

Specifies that physical disks with total chunklets greater than the number specified are selected.

-tc\_lt <number>

Specifies that physical disks with total chunklets less than the number specified are selected.

-fc\_gt <number>

Specifies that physical disks with free chunklets greater than the number specified are selected.

-fc\_lt <number>

Specifies that physical disks with free chunklets less than the number specified are selected.

-devid <model>

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

-devtype <type>

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

-rpm <number>

Disks must be of the specified speed. Device speeds are shown in the `RPM` column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative

performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

`-nodes <node_list>`

Specifies that the display is limited to specified nodes and physical disks connected to those nodes. The node list is specified as a series of integers separated by commas (0, 1, 2). A list can also consist of a single integer (1). If the node list is not specified, all disks on all nodes are displayed.

`-slots <slot_list>`

Specifies that only disks on the slots from the slot list are displayed. The slot list is specified as a series of integers separated by commas (0, 1, 2). A list can also consist of a single integer (1).

`-ports <port_list>`

Specifies that the display is limited to specified PCI slots and physical disks connected to those PCI slots. The slot list is specified as a series of integers separated by commas (0, 1, 2). A list can also consist of a single integer (1). If the port list is not specified, all disks on all ports are displayed.

`-w <world-wide_name>`

Specifies the World Wide Name (WWN) of the physical disk. This option and argument must be specified if the `<PD_ID>` specifier is not used and should be the last option in the command line.

## SPECIFIERS

`<PD_ID>`

Specifies a physical disk ID. This specifier must be used if the `-w` option is not specified.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays general information for all system physical disks:

```
cli% showpd
```

ID	CagePos	Type	RMP	State	---Size (MB)---		----Ports----	
					Total	Free	A	B
0	0:0:0	NL	7	normal	715008	695552	0:0:1*	1:0:1
1	0:3:0	FC	10	normal	69632	1024	0:0:1	1:0:1*
2	0:4:0	NL	7	normal	715008	695552	0:0:1	1:0:1*
3	0:7:0	SSD	10	normal	69632	2560	0:0:1*	1:0:1
-----								
4					1569280	1394688		

The columns in the previous example are identified as follows:

- ID. Physical disk ID, as assigned by the system. For unadmitted disk the ID appears as dashes (--).
- CagePos. Position of PD, in the format `<cage>:<side>.<mag>:<disk>` where `<cage>` is the cage number, `<side>` is 0 or 1 depending on whether the cage is on the left or right (from the front view) of the disk chassis, `<mag>` is the magazine number (0 through 4) and `<disk>` is the disk number (0 through 3) within the magazine. If the position ends with (?) the current position of the drive is not known (for example, the drive may be missing), and the position shown is the last known position.
- Type – Device type of the PD.

- FC – Fibre Channel
- NL – Nearline
- SSD – Solid State Drive
- RPM – The maximum RPM speed of the physical disk.
- State – State of the PD can be one of the following:
  - normal – PD is normal
  - degraded – The PD is not operating normally. Use `showpd -s` to find out the detail information.
  - new – The PD is new, needs to be admitted before it can be used (see `help admitpd`)
  - failed – The PD has failed.
- Total. Total size of the disk in MB (1024^2 bytes).
- Free. Free size of the disk in MB (1024^2 bytes). This includes the size that is available to use, uninitialized, and unavailable to use.
- Port\_A. The port location for the A port of the physical disk. If the primary path, the port location is followed by an asterisk (\*). If disabled, the port location is followed by a dash (-).
- Port\_B. The port location for the B port of the physical disk. If the primary path, the port location is followed by an asterisk (\*). If disabled, the port location is followed by a dash (-).

The following example displays only information for nearline drives:

```
cli% showpd -c -p -devtype NL
----- Normal Chunklets ----- - Spare Chunklets --
- Used -- ----- Unused ----- - Used - - Unused
--
ID CagePos Type State Total OK Fail Free Uninit Unavail Fail OK Fail Free Uninit
Fail
0 0:0:0 NL normal 2793 76 0 2717 0 0 0 0 0 0
0 0
1 0:2:0 NL normal 344 234 0 4 0 0 0 0 0 34
0 0
2 0:4:0 NL normal 2793 90 0 2717 0 0 0 0 0 0
0 0
3 0:7:0 NL normal 272 228 0 10 0 0 0 0 0 34
0 0
-----
4 total 6202 614 5448 68
```

The columns in the previous example are identified as follows:

- ID. Physical disk ID, as assigned by the system. For unadmitted disk the ID appears as dashes (--).
- CagePos. Position of PD, in the format `<cage>:<side>.<mag>:<disk>` where `<cage>` is the cage number, `<side>` is 0 or 1 depending on whether the cage is on the left or right (from the front view) of the disk chassis, `<mag>` is the magazine number (0 through 4) and `<disk>` is the disk number (0 through 3) within the magazine. If the position ends with a question mark (?) the current position of the drive is not known (for example, the drive may be missing), and the position shown is the last known position.
- Type – Device type of the PD.
- FC – Fibre Channel



- NL – Nearline
- SSD – Solid State Drive
- State. State of the PD can be one of the following:
  - normal – PD is normal.
  - degraded – The PD is not operating normally. Use `showpd -s` to find out the detail information.
  - new – The PD is new, needs to be admitted before it can be used (see `help admitpd`).
  - failed – The PD has failed.
- Total. Total size of the disk in MB (1024<sup>2</sup> bytes).
- Normal Chunklets. This area provides information about chunklets that are not reserved for use as spares.
- Spare Chunklets. This area provides information about chunklets that are reserved for use as spares.
- OK. Number of chunklets with data that is accessible to the system.
- Fail. Number of failed chunklets.
- Free. Number of initialized but currently unused chunklets available for use by logical disks.
- Uninit. Number of chunklets being cleaned.
- Unavail. Number of chunklets that are unavailable for use.

The following example displays inquiry information for all disks:

```
cli% showpd -i
ID CagePos State      ----Node_WWN---- --MFR-- ---Model--- -Serial- -FW_Rev--
 0 0:0:0  normal  2210000A330013ED SEAGATE ST3750640NS 3QD0MM1B .AEV,1230
 1 0:3:0  normal  2000000C501FD935 SEAGATE ST373207FC 3KT01JF1 XR36
 2 0:4:0  normal  2210000A33000CBC SEAGATE ST3750640NS 3QD0T6AN .AEV,1230
 3 0:7:0  normal  20000011C60B0AEB SEAGATE ST373207FC 3KT01QZF XR36
 4 0:8:0  normal  2210000A33000CCA SEAGATE ST3750640NS 3QD0MTPK .AEV,1230
```

The columns in the previous example are identified as follows:

- ID. Physical disk ID, as assigned by the system. For unadmitted disk the ID appears as dashes (--).
- CagePos. Position of PD, in the format < cage > : < side > . < mag > : < disk > where < cage > is the cage number, < side > is 0 or 1 depending on whether the cage is on the left or right (from the front view) of the disk chassis, < mag > is the magazine number (0 through 4) and < disk > is the disk number (0 through 3) within the magazine. If the position ends with a question mark (?) the current position of the drive is not known (for example, the drive may be missing), and the position shown is the last known position.
- State. State of the PD can be one of the following:
  - normal - PD is normal.
  - degraded - The PD is not operating normally. Use `showpd -s` to find out the detail information.
  - new - The PD is new, needs to be admitted before it can be used (see `help admitpd`).
  - failed - The PD has failed.

- Node\_wwn. Node World Wide Name of the disk.
- MFR. Physical disk manufacturer.
- Model. Physical disk manufacturer's device ID.
- Serial. Physical disk manufacturer's serial number.
- FW\_Rev. Physical disk manufacturer's firmware revision tracking string.

The following example displays chunklet use information for all disks:

```
cli% showpd -c
```

		----- Normal Chunklets -----								- Spare Chunklets - -				
		- Used - -				----- Unused -----				- Used - -		Unused		
ID	CagePos	Type	State	Total	OK	Fail	Free	Uninit	Unavail	Fail	OK	Fail	Free	Uninit
0	0:0:0	NL	normal	2793	76	0	2717	0	0	0	0	0	0	0
1	0:3:0	FC	normal	272	234	0	4	0	0	0	0	0	0	34
2	0:4:0	NL	normal	2793	76	0	2717	0	0	0	0	0	0	0
3	0:7:0	FC	normal	272	228	0	10	0	0	0	0	0	0	34
-----														
4 total				6130	614		5448							68

The columns in the previous example are identified as follows:

- ID. Physical disk ID, as assigned by the system. For unadmitted disk the ID appears as dashes (--).
- CagePos. Position of PD, in the format <cage>:<side>.<mag>:<disk> where <cage> is the cage number, <side> is 0 or 1 depending on whether the cage is on the left or right (from the front view) of the disk chassis, <mag> is the magazine number (0 through 4) and <disk> is the disk number (0 through 3) within the magazine. If the position ends with a question mark (?) the current position of the drive is not known (for example, the drive may be missing), and the position shown is the last known position.
- Type – Device type of the PD.
- FC – Fibre Channel
- NL – Nearline
- SSD – Solid State Drive
- State. State of the PD can be one of the following:
  - normal – PD is normal
  - degraded – The PD is not operating normally. Use showpd -s to find out the detail information.
  - new – The PD is new, needs to be admitted before it can be used (see help admitpd).
  - failed – The PD has failed.
- Total. Total size of the disk in MB (1024^2 bytes).
- Normal Chunklets. This area provides information about chunklets that are not reserved for use as spares.

- Spare Chunklets. This area provides information about chunklets that are reserved for use as spares.
- OK. Number of chunklets with data that is accessible to the system.
- Fail. Number of failed chunklets.
- Free. Number of initialized but currently unused chunklets available for use by logical disks.
- Uninit. Number of chunklets being cleaned.
- Unavail. Number of chunklets that are unavailable for use.

The following example displays environment and error information for all disks:

```
cli% showpd -e
```

ID	CagePos	Type	State	-Read Error-		-Write Error-		T(C)
				Corr	UnCorr	Corr	UnCorr	
0	0:0:0	FC	normal	0	0	0	0	33
1	0:0:1	FC	normal	0	0	0	0	34
2	0:0:2	FC	normal	0	0	0	0	30
3	0:0:3	FC	normal	0	0	0	0	25
4	0:1:0	FC	normal	0	0	0	0	29
5	0:1:1	FC	normal	0	0	0	0	30
6	0:1:2	FC	normal	0	0	0	0	28
7	0:1:3	FC	normal	0	0	0	0	24
8	1:2:0	FC	normal	0	0	0	0	32
9	1:2:1	FC	normal	0	0	0	0	32
10	1:2:2	FC	normal	0	0	0	0	30
11	1:2:3	FC	normal	0	0	0	0	25
12	1:3:0	FC	normal	0	0	0	0	29
13	1:3:1	FC	normal	0	0	0	0	29
14	1:3:2	FC	normal	0	0	0	0	28
15	1:3:3	FC	normal	0	0	0	0	24

The columns in the previous example are identified as follows:

- Id. Physical disk ID, as assigned by the system. For unadmitted disk the ID appears as dashes (--).
- CagePos. Position of PD, in the format <cage>:<side>.<mag>:<disk> where <cage> is the cage number, <side> is 0 or 1 depending on whether the cage is on the left or right (from the front view) of the disk chassis, <mag> is the magazine number (0 through 4) and <disk> is the disk number (0 through 3) within the magazine. If the position ends with (?) the current position of the drive is not known (for example, the drive may be missing), and the position shown is the last known position.
- Type – Device type of the PD.
- FC – Fibre Channel
- NL – Nearline
- SSD – Solid State Drive
- Read\_Error\_Corr. Number of correctable read errors.
- Read\_Error\_UnCorr. Number of uncorrectable read errors.
- Write\_Error\_Corr. Number of correctable write errors.
- Write\_Error\_UnCorr. Number of uncorrectable write errors.
- T(C). Temperature in degrees celsius.

The following example displays the states of each physical disk:

```
cli% showpd -state
ID CagePos  Type  -State-  -Detailed_State-
 0 0:0:0    FC   normal  normal
 1 0:0:1    FC   normal  normal
 2 0:0:2    FC   normal  normal
 3 0:0:3    FC   normal  normal
 4 0:1:0    FC   normal  normal
 5 0:1:1    FC   normal  normal
 6 0:1:2    FC   normal  normal
 7 0:1:3    FC   normal  normal
 8 1:2:0    FC   normal  normal
 9 1:2:1    FC   normal  normal
10 1:2:2    FC   normal  normal
11 1:2:3    FC   normal  normal
12 1:3:0    FC   normal  normal
13 1:3:1    FC   normal  normal
14 1:3:2    FC   normal  normal
15 1:3:3    FC   degraded not_available_for_allocations
```

The following example displays the capacity usage totals for all disks:

```
cli% showpd -space
----- (MB) -----
ID CagePos  Type  -State-  Size Volume Spare  Free Unavail Failed
 0 0:0:0    FC   normal  17152  10496  1280   5376      0      0
 1 0:0:1    FC   normal  17152   6400  1280   9472      0      0
 2 0:0:2    FC   normal  17152  10496  1280   5376      0      0
 3 0:0:3    FC   normal  17152   6400  1024   9728      0      0
 4 0:0:0    FC   normal  17152  10752  1024   5376      0      0
 5 0:0:1    FC   normal  17152   6400  1024   9728      0      0
 6 0:0:2    FC   normal  17152  10496  1024   5632      0      0
 7 0:0:3    FC   normal  17152   6400  1024   9728      0      0
 8 1:0:0    FC   normal  17152  10496  1024   5632      0      0
 9 1:1:1    FC   normal  17152   6400  1024   9728      0      0
10 1:1:2    FC   normal  17152  10496  1024   5632      0      0
11 1:1:3    FC   normal  17152   6400  1024   9728      0      0
12 1:1:0    FC   normal  17152  10496  1024   5632      0      0
13 1:1:1    FC   normal  17152   6400  1024   9728      0      0
14 1:1:2    FC   normal  17152  10496  1024   5632      0      0
15 1:1:3    FC   normal  17152   6400  1024   9728      0      0
-----
16 total                274432 135424 17152 121856      0      0
```

The following example displays disk information for the nearline disks on cage 0 and 3 only:

```
cli% showpd -p -cg 0,1 -devtype NL
-----Size(MB)-----  -----Ports-----
ID CagePos  Type      RPM State      Total  Free  A      B
 0 0:0:0    NL        7 normal    715008 684288 0:0:1* 1:0:1
 2 0:4:0    NL        7 normal    715008 684288 0:0:1  1:0:1*
 4 0:8:0    NL        7 normal    715008 684288 0:0:1* 1:0:1
 6 0:12:0   NL        7 normal    715008 684288 0:0:1  1:0:1*
-----
 4 total                2860032 2737152
```

The columns in the previous example are identified as follows:

- ID. Physical disk ID, as assigned by the system. For unadmitted disk the ID appears as dashes (--).
- CagePos. Position of PD, in the format < cage> : < side> . < mag> : < disk> where < cage> is the cage number, < side> is 0 or 1 depending on whether the cage is on the left or right (from the front view) of the disk chassis, < mag> is the magazine number (0 through 4) and < disk> is the disk number (0 through 3) within the magazine. If the position ends with (?) the current position of the drive is not known (for example, the drive may be missing), and the position shown is the last known position.
- Type – Device type of the PD.
  - FC – Fibre Channel.
  - NL – Nearline.
  - SSD – Solid State Drive.
- RPM. The maximum RPM speed of the physical disk. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drives, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.
- State. State of the PD can be one of the following:
  - normal - PD is normal.
  - degraded - The PD is not operating normally. Use `showpd -s` to find out the detail information.
  - new - The PD is new, needs to be admitted before it can be used (see `help admitpd`).
  - failed - The PD has failed.
- Total. Total size of the disk in MB (1024<sup>2</sup> bytes).
- Free. Free size of the disk in MB (1024<sup>2</sup> bytes). This includes the size that is available to use, uninitialized, and unavailable to use.
- Port\_A. The port location for the A port of the physical disk. If the primary path, the port location is followed by an asterisk (\*). If disabled, the port location is followed by a dash (-).
- Port\_B. The port location for the B port of the physical disk. If the primary path, the port location is followed by an asterisk (\*). If disabled, the port location is followed by a dash (-).

The following example displays disk information for the nearline disks on cage 0 and sort the output by the cage position:

```
cli% showpd -sortcol 1 -p -cg 0 -devtype NL
      ---Size(MB)---  ---Ports---
ID CagePos Type      RPM State   Total   Free   A      B
0 0:0:0 NL           7 degraded 715008 684288 0:0:1* 1:0:1
2 0:4:0 NL           7 degraded 715008 684288 0:0:1  1:0:1*
4 0:8:0 NL           7 degraded 715008 684288 0:0:1* 1:0:1
6 0:12:0 NL          7 degraded 715008 684288 0:0:1  1:0:1*
-----
4 total                2860032 2737152
```

The following example displays all disk in magazine 0 of cage 0 and 1:

```
cli% showpd -p -mg 0 -cg 0,1
--Size (MB)--- ----Ports----
ID CagePos Type      RPM State   Total   Free   A      B
0 0:0:0  NL          7 degraded 715008 684288 0:0:1* 1:0:1
8 1:0:0  FC          10 normal  69632  2560  0:0:2* 1:0:2
-----
2 total                                784640 686848
```

## NOTES

- In the `showpd` output, when the position of the disk is not valid (for example, in the case of a missing disk), the most recent position might be displayed, followed by a question mark (?).
- To see the device type for a PD (Fibre Channel, nearline, or solid state drive), use the `showpd` command.
- Without the `-i`, `-c`, `-e`, `-s`, `-path` or `-space` options, basic information about the PD is printed. Note that the primary path to the disk is shown by an asterisk (\*) in either the `A`Port or `B`Port column, and a minus (-) sign following a path indicates the port is disabled.
- If the `<PD_ID>` specifier and the `-w` option is not specified, all disks are displayed.

# showpdata

## DESCRIPTION

The `showpdata` command displays information about the preserved data in the system.

## SYNTAX

```
showpdata [<LD_name>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

[<LD\_name>]

Requests that preserved data for a specific Logical Disk (LD) is displayed. This specifier is not required on the command line. If not specified, then the amount of preserved data by LD is displayed.

## RESTRICTIONS

Access to all domains is required to run this command if no LD name is specified. If an LD name is specified, then access to the domain of the LD is required.

## EXAMPLES

The following example displays preserved data information for LD `admin.usr.3`:

```
cli% showpdata admin.usr.3
showpdata v0.usr.0
Preserved LD raid sets
      Ldname   Set   PreservedCnt
      admin.usr.3   0       1
No preserved chunklets
```

## NOTES

None.

# showpdch

## DESCRIPTION

The `showpdch` command displays the status of selected Physical Disk (PD) chunklets.

## SYNTAX

```
showpdch [options]
```

```
showpdch [options] <pdid>|<pattern>... (deprecated usage)
```

## AUTHORITY

Any role in the system.

## OPTIONS

The following filtering options specify conditions that a chunklet should meet in order for the chunklet to be displayed. Multiple conditions can be specified and a chunklet will be displayed if any of the specified conditions are met. By default (if no filtering options are specified) only those chunklets that are mapped to an LD are displayed.

`-a`

Specifies that information about all chunklets is displayed.

`-fail`

Specifies that information about failed chunklets (media-failed chunklets, disk-failed chunklets, or chunklets marked as failed by the operating system) is displayed.

`-mov`

Specifies that information about chunklets that have moved, are scheduled to move, or are moving, is displayed.

`-from <pdid, ...>`

Specifies chunklets that have moved or are to be moved from the matching PD IDs.

`-cln`

Specifies that information for clean chunklets is displayed.

`-cng`

Specifies that information for chunklets that are being cleaned by the system, is displayed.

`-tgt`

Specifies that information for chunklets marked as targets of relocation is displayed.

`-src`

Specifies that information about chunklets that are marked as sources of relocation, is displayed.

`-spr`

Specifies that information about chunklets that are marked as spares, is displayed.

`-log`

Specifies that information about chunklets that are logging is displayed.

`-sync`

Specifies that information about chunklets that are synchronizing with their RAID sets is displayed.

`-sortcol <col> [, <dir>] [:<col> [, <dir>] ...]`

Sorts command output based on column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:



inc

Sort in increasing order (default).

dec

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

-p <pattern>

Specifies a pattern for disks. Patterns are used to select disks that are used for creating LDs. If no pattern is specified, the option defaults to all Fibre Channel (FC) disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks matching the pattern. The -devtype pattern cannot be used to mix Near Line (NL), FC and SSD drives.

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

-nd <item>

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node(s).

-st <item>

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-7). The primary path of the disks must be on the specified PCI slot(s).

-pt <item>

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port(s).

-cg <item>

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

-mg <item>

Specifies one or more drive magazines. The 1. or 0. displayed in the CagePos column of showpd output indicating the side of the cage is omitted when using the -mg option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-7). The specified drive magazine(s) must contain disks.

-pn <item>

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified drive position(s) must contain disks.

-dk <item>

Specifies one or more PDs. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, -tc\_gt , -tc\_lt , -fc\_gt , -fc\_lt , -devid , and -devtype are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that PDs with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that PDs with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that PDs with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that PDs with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that PDs identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that PDs must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

## SPECIFIERS

`<PD_ID>|<pattern>...` (deprecated usage)

Specifies the PD IDs or the PD ID pattern for disks whose chunklets are to be displayed.

## RESTRICTIONS

If no option is specified, the `showpdch` command defaults to displaying information about chunklets used for logical disks (`-ld`).

## EXAMPLES

The following example displays information about chunklets on PD 1:

```
cli% showpdch 1
Pdid Chnk          LdName LdCh  State Usage Media Sp Cl From To
  1    0   vvfromcpg2.usr.1  0 normal   ld valid  N  N  --- ---
  1    1   vvfromcpg2.usr.1  4 normal   ld valid  N  N  --- ---
  1    2   vvfromcpg2.usr.1  8 normal   ld valid  N  N  --- ---
-----
Total chunklets: 3
```

The columns in the previous example are identified as follows:

- **Pdid.** The physical disk on which the chunklets reside.
- **Chnk.** The chunklet number.
- **LdName.** The name of the logical disk that is using the spare chunklet.
- **LdCh.** The position of the chunklet on the logical disk.
- **State.** The state of the chunklet as identified by the kernel.
  - **logging.** I/O to the chunklet is written to the logging logical disk.
  - **playback.** Data is played back from the logging logical disks.
  - **passthru.** Chunklets do not process physical disk errors.
  - **preserved.** Any I/O to the chunklet is written to the preserved logical disks.
  - **preserved playback.** Data is played back from the preserved logical disks.
  - **stale.** The chunklet is not available for use because of a medium failure or a connectivity failure.
  - **normal.** The chunklet is available for use.
  - **normal, smag.** A servicemag operation is performed on the disks.
  - **none.** Chunklets were not used by any logical disk.
- **Usage.** Shows whether the spare chunklet is in use by a logical disk.
  - **available.** The chunklet is available for use as a spare or as a logical disk.
  - **ld.** The chunklet is in use by a logical disk.
  - **synch.** The chunklet is both the source and the target of a logical disk relocation operation (synchronizing the chunklet).
  - **cmprel.** The system is completing the logical disk relocation operation.
  - **relsrc.** Relocation source. The data has been moved to another chunklet.
  - **reltgt.** Relocation target. The data in the chunklet has been moved from another spare chunklet.
  - **abtreel.** Abort relocation. The system is canceling the logical disk relocation operation.
- **Media.** The current status of the physical disk medium for the chunklet.
  - **valid.** The chunklet is available for use.
  - **failed.** The medium has encountered errors and is not available for use.
- **Sp.** The spare status of the chunklet; **Y** indicates the chunklet is reserved for spare, **N** indicates a previously free chunklet selected by the system as a spare.
- **C1.** The clean status of the chunklet. **N** indicates that the chunklet is in-use. **Y** indicates that the chunklet is clean. **Cg** indicates that the chunklet is being cleaned.
- **From.** The initial location of the chunklet before relocation in the syntax `<PD_ID>:<chunklet_number>`.
- **To.** The destination location of the chunklet during relocation in the syntax `<PD_ID>:<chunklet_number>`.

## NOTES

None.

# showpdvv

## DESCRIPTION

The `showpdvv` command displays the virtual volumes that are mapped to a particular physical disk.

## SYNTAX

```
showpdvv [options] [<PD_ID> [:<chunklet>]...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-sum`

Shows number of chunklets used by virtual volumes for different space types for each physical disk.

`-p <pattern>`

PDs matching the specified pattern are displayed. The following arguments can be specified as patterns for this option:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-3). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-3). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-3). The primary path of the disks must be on the specified port(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-3). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid`, and `-devtype` are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpdvv` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

`-sortcol <col>[,<dir>] [:<col>[,<dir>] ...]`

Sorts command output based on column number (*<col>*). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (*<dir>*) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

`<PD_ID>`

Specifies the physical disk ID using an integer. This specifier is not required if `-p` option is used, otherwise it must be used at least once on the command line.

[ :<chunklet> ]

Specifies the chunklet number in a physical disk to which virtual volumes are mapped. This specifier is not required. This specifier is not required. This specifier cannot be used along with `-p` option.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays that the user space virtual volumes `v0` and `v1`, respectively, are mapped to PD 44:

```
cli% showpdvv 44
PDId CagePos Type   RPM(K) VVId VVName VVSp
 44 2:3:2   FC      10  109 v0     usr
 44 2:3:2   FC      10  110 v1     usr
```

The following example displays the summary output for volumes mapped to physical disk 55:

```
cli% showpdvv -sum 55
                                     ----Chunklets----
PDId CagePos Type   RPM(K) VVId VVName Adm Snp Usr  Total
 55 4:9:0   FC      15    2 v0     0  0  2    2
 55 4:9:0   FC      15    3 v1     0  0 20   20
```

## NOTES

None.

# showport

## DESCRIPTION

The `showport` command displays information about ports in the system.

## SYNTAX

The syntax of the `showport` command can be one of the following:

- `showport [options] [-failed] [-sortcol <col>[, <dir>]] [<node:slot:port> | <pattern>...]`

## AUTHORITY

Any role in the system.

## OPTIONS

`-i`

Show hardware and inventory formation.

`-c`

Displays all devices connected to the port. Such devices include cages (for initiator ports), hosts (for target ports) and ports from other storage systems (for RCFC and peer ports).

`-par`

Displays a parameter listing such as the configured data rate of a port and the maximum data rate that the card supports. Also shown is the type of attachment (Direct Connect or Fabric Attached) and whether the `unique_wwn` and `VCN` capabilities are enabled.

`-rc`

Displays information that is specific to the Remote Copy ports.

`-rcfc`

Displays information that is specific to the Fibre Channel Remote Copy ports.

`-peer`

Displays information that is specific to the Fibre Channel ports for Data Migration.

`-rcip`

Displays information specific to the Ethernet Remote Copy ports.

`-iscsi`

Displays information about iSCSI ports.

`-iscsiname`

Displays iSCSI names associated with iSCSI ports.

`-fcoe`

Displays information that is specific to Fibre Channel over Ethernet (FCoE) ports.

`-sfp`

Displays information about hot pluggable SFPs attached to ports.

`-ddm`

Displays information about the SFPs DDM. This option must be used with the `-sfp` option.

`-d`

Displays detailed information about the SFPs attached to ports. This option is used with the `-sfp` option.



-failed

Displays only failed ports.

-state

Displays the detailed state information.

-s

Displays the detailed state information. This option has been deprecated and will be removed in a future release.

-ids

Displays the identities hosted by each physical port.

-sortcol <col>[, <dir>] [:<col>[, <dir>] ...]

Sorts command output based on column number <col>. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting <dir> can be specified as follows:

inc

Sort in increasing order (default).

dec

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by the values in the later columns.

## SPECIFIERS

<node:slot:port>...

Requests that information for a specified port is displayed. This specifier can be repeated to display configuration information about multiple ports. If not specified, configuration information for all ports in the system is displayed.

node

Specifies the node using a number from 0 through 7.

slot

Specifies the PCI bus slot in the specified node using a number from 0 through 5 for platforms other than the V-Class. For V-Class systems, the PCI slot number ranges from 0 through 9.

port

Specifies the port using a number from 1 through 4.

<pattern>...

Specifies that the port matching the specified glob-style pattern is displayed. This specifier can be repeated to display configuration information about multiple ports. If not specified, configuration information for all ports in the system is displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about all ports in the system:

```
root@snodeb40:S170# showport
N:S:P      Mode      State  ----Node_WWN----  -Port_WWN/HW_Addr-  Type Protocol Label
Partner  FailoverState
```

0:0:1	target	ready	2FF70002AC0000AA	20010002AC0000AA	host	FC	-
1:0:1		none					
0:0:2	initiator	ready	2FF70002AC0000AA	20020002AC0000AA	disk	FC	-
-		-					
0:0:3	target	loss_sync	2FF70002AC0000AA	20030002AC0000AA	free	FC	-
1:0:3		none					
0:0:4	target	ready	2FF70002AC0000AA	20040002AC0000AA	host	FC	-
-		-					
0:3:1	target	loss_sync	2FF70002AC0000AA	20310002AC0000AA	free	FC	-
1:3:1		none					
0:3:2	initiator	ready	2FF70002AC0000AA	20320002AC0000AA	disk	FC	-
-		-					
0:4:1	target	ready	-	00C0DD086530	iscsi	iSCSI	-
1:4:1		none					
0:4:2	target	loss_sync	-	00C0DD086532	iscsi	iSCSI	-
1:4:2		none					
0:5:1	initiator	ready	2FF70002AC0000AA	20510002AC0000AA	disk	FC	-
-		-					
0:5:2	target	ready	2FF70002AC0000AA	20520002AC0000AA	host	FC	-
1:5:2		none					
0:6:1	peer	offline	-	0002AC53069C	rcip	IP RCIP0	-
-		-					
1:0:1	target	ready	2FF70002AC0000AA	21010002AC0000AA	host	FC	-
0:0:1		none					
1:0:2	initiator	ready	2FF70002AC0000AA	21020002AC0000AA	disk	FC	-
-		-					
1:0:3	target	loss_sync	2FF70002AC0000AA	21030002AC0000AA	free	FC	-
0:0:3		none					
1:0:4	initiator	ready	2FF70002AC0000AA	21040002AC0000AA	host	FC	-
-		-					
1:3:1	target	loss_sync	2FF70002AC0000AA	21310002AC0000AA	free	FC	-
0:3:1		none					
1:3:2	initiator	loss_sync	2FF70002AC0000AA	21320002AC0000AA	free	FC	-
-		-					
1:4:1	target	ready	-	00C0DD0779C1	iscsi	iSCSI	-
0:4:1		none					
1:4:2	target	offline	-	00C0DD0779C3	iscsi	iSCSI	-
0:4:2		none					
1:5:1	initiator	ready	2FF70002AC0000AA	21510002AC0000AA	disk	FC	-
-		-					
1:5:2	target	ready	2FF70002AC0000AA	21520002AC0000AA	host	FC	-
0:5:2		none					
1:6:1	peer	offline	-	0002AC520041	rcip	IP RCIP1	-
-		-					

The columns in the previous example are identified as follows:

- N:S:P. The physical position of the port, in the syntax node:slot:port.
- Mode. Indicates whether the port is an initiator, target, or peer. Initiators connect to disks (default) and target ports connect to hosts or fabrics. A target port that has yet to be initialized by the system appears as suspended. Ethernet ports use peer mode for Remote Copy.
- State. State of the port. Possible values vary according to whether the port is an Ethernet or Fibre Channel port.
  - config\_wait. Configuration waiting.
  - alpa\_wait. ALPA waiting.
  - login\_wait. Login waiting.
  - ready. Link is ready.

- `loss_sync`. Link loss sync.
- `error`. Currently in an error state.
- `non_participate`. Link not participating.
- `taking_coredump`. Coredump in progress.
- `offline`. Link is offline.
- `fw_dead`. Firmware dead.
- `link_idle_for_reset`. Link is idle for reset.
- `dhcp_in_progress`. DHCP is in progress.
- `pending_reset`. Link reset is pending.
- `unknown`. Link state is unknown.
- `Node_wwn`. The WWN that belongs to the controller node identified in the N:S:P column.
- `Port_wwn/HW_Addr`. The WWN that belongs to the controller node port identified in the N:S:P column.
- `Type`. Indicates the port connection type.
  - `host`. Port is connected to hosts. This port can also be used for Remote Copy over IP (RCIP).
  - `disk`. Port is connected to disks.
  - `rcfc`. FC port is used for Remote Copy.
  - `peer`. FC port is used for data migration.
  - `rcip`. IP port is used for Remote Copy.
  - `iscsi`. iSCSI port connected to hosts.
  - `free`. Port is not connected to hosts or disks.
  - `fcoe`. Port is used for Fibre Channel over Ethernet (FCoE).
- `Protocol`. Indicates the protocol type.
  - FC Fibre Channel
  - FCoE Fibre Channel over Ethernet
  - IP Internet Protocol (Remote Copy)
  - iSCSI iSCSI
  - - No mode selected (for CNA ports)
- `Label`. Configurable, human-readable label identifying the HBA port

- Partner Location of failover partner port in <Node>:<Slot>:<Port> format
- FailoverState The failover state of the two ports indicated in the N:S:P and Partner columns. The value can be one of the following:
  - none No failover in operation
  - failover\_pending In the process of failing over to partner.
  - failed\_over Failed over to partner
  - active The partner port is failed over to this port
  - active\_down The partner port is failed over to this port, but this port is down
  - fallback\_pending In the process of failing back from partner

The following example displays hardware and connection information about the ports settings:

```
cli% showport -i
N:S:P Brand Model Rev Firmware Serial
1:2:1 3PAR FC044X 08 1.02.N.5 00981760001d6187
1:2:2 3PAR FC044X 08 1.02.N.5 00981760001d6187
1:2:3 3PAR FC044X 08 1.02.N.5 00981760001d6187
1:2:4 3PAR FC044X 08 1.02.N.5 00981760001d6187
```

The following example displays all devices connected to ports and information about the ports settings on node 0 slot 4:

```
cli% showport -par 0:4:*
N:S:P Connmode ConnType CfgRate MaxRate Class2 UniqNodeWwn VCN IntCoal
0:4:1 host point auto 4Gbps disabled disabled disabled enabled
0:4:2 host point auto 4Gbps disabled disabled disabled enabled
0:4:3 disk loop auto 4Gbps disabled disabled disabled enabled
0:4:4 disk loop auto 4Gbps disabled disabled disabled enabled
-----
4
```

The following example displays each system ports' configuration:

```
cli% showport -par
N:S:P Connmode ConnType CfgRate MaxRate Class2 UniqNodeWwn VCN IntCoal
0:0:1 disk loop auto 2Gbps disabled disabled disabled enabled
0:0:2 disk loop auto 2Gbps disabled disabled disabled enabled
0:1:1 disk loop auto 2Gbps disabled disabled disabled enabled
0:1:2 disk loop auto 2Gbps disabled disabled disabled enabled
0:2:1 disk loop auto 2Gbps disabled disabled disabled enabled
0:2:2 disk loop auto 2Gbps disabled disabled disabled enabled
0:5:1 peer point auto 2Gbps disabled disabled disabled enabled
0:5:2 disk loop auto 2Gbps disabled disabled disabled enabled
0:5:3 disk loop auto 2Gbps disabled disabled disabled enabled
0:5:4 disk loop auto 2Gbps disabled disabled disabled enabled
...
-----
```

The columns in the previous example are identified as follows:

- N:S:P. The physical position of the port, in the syntax node:slot:port.
- Connmode. Indicates the connection mode which can be rcfc, peer, host or disk.

- ConnType. Indicates the type of connection configured for the port; loop for loop, point for point-to-point, or lp for loop or point-to-point.
- CfgRate. The configurable bit rate of data transfer between the port and a host or a disk; either auto, 1Gbps, 2Gbps, or 4Gbps.
- MaxRate. Indicates the maximum bit rate of transfer between the HBA and the host or disk.
- Class2. Identifies whether class 2 is enabled (ack0 or ack1) or disabled.
- VCN. VLUN State Change Notification support setting. Valid values are n/a, enabled or disabled. When enabled and in public loop or fabric topology, a Registered State Change Notification (RSCN) message is issued to the fabric controller whenever a VLUN is created or removed.
- IntCoal. Indicates whether the interrupt coalesce setting is Enabled or Disabled.

The following example displays information about all Remote Copy ports:

```
cli% showport -rc
N:S:P State          HwAddr      Rate Type
5:3:2 ready 25320002AC000006 2Gbps rcip
4:1:1 ready 24110002AC000006 2Gbps rcip
0:5:1 ready      0002B39B2013 100Mbps rcip
```

The columns in the previous example are identified as follows:

- N:S:P. The physical position of the port, in the syntax node:slot:port.
- State. State of the port.
  - config\_wait. Configuration waiting.
  - alpa\_wait. ALPA waiting.
  - login\_wait. Login waiting.
  - ready. Link is ready.
  - loss\_sync. Link loss sync.
  - error. Currently in an error state.
  - non\_participate. Link not participating.
  - taking\_coredump. Coredump in progress.
  - offline. Link is offline.
  - fw\_dead. Firmware dead.
  - link\_idle\_for\_reset. Link is idle for reset.
  - dhcp\_in\_progress. DHCP is in progress.
  - pending\_reset. Link reset is pending.
  - unknown. Link state is unknown.
- HwAddr. A unique identifier of the port hardware used for Remote Copy connection. For an RCIP port, it is the MAC address of the port.
- Rate. Data transfer rate (bitrate) for the Remote Copy interface.

- Type. Indicates the port connection type.
- rcip. Port is used for Remote Copy over IP (RCIP).

The following example displays the detailed state of the port:

```
cli% showport -state
N:S:P --State-- -Detailed_State-
0:0:1 ready    loss_sync
0:0:2 ready    loss_sync
0:3:1 ready    offline
0:3:1 ready    offline
0:5:1 ready    loss_sync
-----
10
```

The columns in the previous example are identified as follows:

- N:S:P. The physical position of the port, in the syntax node:slot:port.
- State. State of the port. The states are as follows:
  - config\_wait. The link configuration is waiting.
  - alpa\_wait. The link ALPA is waiting.
  - login\_wait. The link login is waiting.
  - ready. The link is online and ready for use.
- Detailed State. Detailed state of the port.
  - loss\_sync. The link is not physically connected to anything.
  - error. The link has an error.
  - non\_participate. The link is not participating.
  - taking\_coredump. The link is taking a core dump.
  - offline. The link is offline.
  - fw\_dead. The link's firmware is dead.
  - link\_idle\_for\_reset. The link is idle and ready for reset.
  - dhcp\_in\_progress. The link DHCP is in progress.
  - pending\_reset. The link reset is pending.
  - unknown. The link state is unknown.

The following example displays information about RCIP ports:

```
cli% showport -rcip
N:S:P  State ---HwAddr--- IPAddr Netmask Gateway MTU Rate Duplex AutoNeg
0:1:1  offline 000423C21B72   -      -      -      -  n/a   n/a   n/a
0:1:1  offline 000423C21B73   -      -      -      -  n/a   n/a   n/a
1:2:1  offline 000423ADE95E   -      -      -      -  n/a   n/a   n/a
1:2:1  offline 000423ADE95F   -      -      -      -  n/a   n/a   n/a
```

The columns in the previous example are identified as follows:

- N:S:P. The physical position of the port, in the syntax node:slot:port.
- State. State of the port.
  - ready. The port is online and ready for use.
  - loss\_sync. The port is not physically connected to anything.
  - config\_wait. Firmware has yet to be initialized.
  - login\_wait. Fibre Channel adapter is attempting port and process logins with all loop ports.
  - error. Fibre Channel adapter has experienced an unrecoverable error.
  - non\_participate. Port is logically isolated from the Fibre Channel loop.
  - offline. The port is offline.
- HwAddr. A unique identifier of the port hardware used for Remote Copy connection. For an RCIP port, it is the MAC address of the port.
- IPAddr. The IP address of the Remote Copy interface.
- Netmask. Netmask for the Ethernet port.
- Gateway. Gateway address for the Remote Copy interface.
- MTU. Maximum Transfer Unit (MTU) size for the specified Remote Copy interface (default is 1500). The largest supported value is 9000 and the smallest is 100.
- Rate. Data transfer rate for the Remote Copy interface.
- Duplex. Values can be either Full or Half.
- AutoNeg. Values can either be Yes or No.

The following example displays information about iSCSI ports:

```
cli% showport -iscsi
N:S:P State IPAddr Netmask Gateway TPGT MTU Rate iSNS_Prim
iSNS_Sec iSNS_Port
1:3:1 ready 192.168.9.163 255.255.255.0 192.168.9.1 131 1500 1Gbps 0.0.0.0
0.0.0.0 3205
1:3:2 loss_sync 0.0.0.0 0.0.0.0 0.0.0.0 132 1500 n/a 0.0.0.0
0.0.0.0 3205
```

The following example displays information about iSCSI names associated with iSCSI ports:

```
cli% showport -iscsiname
N:S:P IPAddr -----iSCSI_Name-----
1:3:1 0.0.0.0 iqn.2000-05.com.3pardata:21310002ac00000a
1:3:2 0.0.0.0 iqn.2000-05.com.3pardata:21320002ac00000a
```

The following example displays all ports that are configured as peer:

```
cli% showport -peer
N:S:P Mode State ---Node_WWN--- ---Port_WWN--- Rate
0:5:1 initiator ready 2FF70202AC000007 20510202AC000007 2Gbps
```

The following examples display both standard and detailed information about SFPs attached to ports:

```
cli% showport -sfp
N:S:P -State- -Manufacturer- MaxSpeed(Gbps) TXDisable TXFault RXLoss DDM
0:0:1 OK      FINISAR_CORP.      2.10 No      No      No      Yes
0:0:2 OK      FINISAR_CORP.      2.10 No      No      Yes     Yes
0:3:2 OK      SIGMA-LINKS        2.10 No      No      Yes     Yes
1:0:1 OK      FINISAR_CORP.      2.10 No      No      No      Yes
1:0:2 OK      FINISAR_CORP.      2.10 No      No      Yes     Yes
cli%

cli% showport -sfp -d
-----Port 0:0:2-----
N:S:P      : 0:0:2
State      : Degraded
Manufacturer : PICOLIGHT
Part Number : PL-XPL-VE-S24-31
Serial Number : 425EF1E6
Revision   : N/A
MaxSpeed(Gbps) : 2.10
Qualified  : No
TX Disable : --
TX Fault   : --
RX Loss    : --
RX Power Low : No
DDM Support : No

-----Port 1:3:1-----
N:S:P      : 1:3:1
State      : OK
Manufacturer : FINISAR_CORP.
Part Number : FTLF8519P2BNL
Serial Number : U76031S
Revision   : A
MaxSpeed(Gbps) : 2.10
Qualified  : Yes
TX Disable : No
TX Fault   : No
RX Loss    : No
RX Power Low : No
DDM Support : Yes
```

## NOTES

See “[RESTRICTIONS](#)” for important information regarding port modes and port pair protection.



# showportarp

## DESCRIPTION

The `showportarp` command shows the ARP table for iSCSI ports in the system.

## SYNTAX

```
showportarp [<N>:<S>:<P>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

```
[<N>:<S>:<P>]
```

Specifies the port for which information about devices on that port are displayed.

`node`

Specifies the node.

`slot`

Specifies the PCI bus slot in the specified node.

`port`

Specifies the Fibre Channel port number of the PCI card in the specified PCI bus slot.

If `<N>:<S>:<P>` is not specified, the ARP table for all iSCSI ports is displayed.

## EXAMPLES

The following example displays the ARP table for the iSCSI ports in the system.

```
cli% showportarp
N:S:P      HwAddr          IPAddr  Time (mins)
1:3:1  00E07BF8BF87    192.168.9.1    0
1:3:1  001143CD039A  192.168.8.151  0
```

In the example output above:

- `HwAddr`. The MAC address of a remote host discovered through the MAC address resolution process.
- `IPAddr`. The IP address of the remote host to which the port is attempting to connect.
- `Time (mins)`. The amount of time (in minutes) that the entry has been in the table. When the entry has been in the table for 20 minutes, it is removed.

## NOTES

None.

# showportdev

## DESCRIPTION

The `showportdev` command displays detailed information about devices on a specified port.

## SYNTAX

```
showportdev loop|all|ns|sas|fcswitch|fcfabric <N:S:P>
```

```
showportdev sas [options] <N:S:P>
```

## AUTHORITY

Any role in the system.

## SUBCOMMANDS

`loop`

Specifies that information is returned for arbitrated loop devices that are attached to the specified port. This subcommand is only for use with Fibre Channel arbitrated loop ports.

`all`

Specifies that information for all devices attached to the specified port is returned.

`ns`

Specifies that information for the switch name server database is returned. This subcommand is only for use with fabric-attached topologies.

`fcf`

Specifies that information for all FCoE forwarders (FCFs) known to the specified port are returned. This subcommand is only for use with Fibre Channel over Ethernet (FCoE) ports.

`sas`

Specifies that information for all devices in the SAS topology attached to the specified port is returned. This subcommand is only for use with SAS ports.

`fcswitch`

Specifies that a list of all switches in the Fibre Channel fabric is returned. This subcommand is only for use with fabric-attached Fibre Channel ports.

`fcfabric`

Specifies that a description of the Fibre Channel fabric is returned. This subcommand is only for use with fabric-attached Fibre Channel ports.

`findport`

Searches the Fibre Channel fabric attached to the specified port for information on the supplied WWN. Supplying the term `this` in place of a WWN indicates that the port WWN of the specified HP 3PAR storage system host port should be used. This subcommand is only for use with fabric-attached Fibre Channel ports.

## OPTIONS

`-pel`

Includes the SAS Phy Error Log (PEL) data for each phy in the SAS topology. This option is only valid when using the `sas` subcommand.

## SPECIFIERS

`<n:s:p>`

Specifies the port for which information about devices on that port are displayed.

node

Specifies the node.

slot

Specifies the PCI bus slot in the specified node.

port

Specifies the Fibre Channel port number of the PCI card in the specified PCI bus slot.

## RESTRICTIONS

The `loop` subcommand is functional only in a private loop topology.

## EXAMPLES

The following example displays information about all devices attached to Fibre Channel port 1:0:2:

```
cli% showportdev all 1:0:2
PtId LpID Hadr          Node_WWN          Port_WWN          ftrs  svpm  bbct  flen
0xd3 0x0c 0x00 2FF70002AC000013 21020002AC000013 0x8800 0x0022 n/a 0x0800
0xef 0x00 0xef 2000000087002078 2200000087002078 0x8800 0x0012 n/a 0x0800
0xe8 0x01 0xe8 2000000087002515 2200000087002515 0x8800 0x0012 n/a 0x0800
0xe4 0x02 0xe4 20000000870024CB 22000000870024CB 0x8800 0x0012 n/a 0x0800
0xe2 0x03 0xe2 20000000870028AE 22000000870028AE 0x8800 0x0012 n/a 0x0800
0xe1 0x04 0xe1 2000000087002224 2200000087002224 0x8800 0x0012 n/a 0x0800
0xe0 0x05 0xe0 2000000087003019 2200000087003019 0x8800 0x0012 n/a 0x0800
0xdc 0x06 0xdc 5000087000190E9F 5000087000190EA1 0x8800 0x0012 n/a 0x0800
0xda 0x07 0xda 2000000087002397 2200000087002397 0x8800 0x0012 n/a 0x0800
```

The columns in the previous example are identified as follows:

- PtId. The ID of the port.
- LpID. The ID of the loop.
- Hadr. The hard address.
- Node\_WWN. The WWN of the node.
- Port\_WWN. The WWN of the port.
- ftrs. Common features that are located in PLOGI\_ACC common word 1, bits 31-16.
- svpm. The service parameters that are located in PRLI word 3, bits 15-0.
- bbct. The buffer to buffer credit that is located in PLOGI common word 0, bits 15-0.
- flen. The maximum received frame length that is located in PLOGI\_ACC class-3 word 1, bits 15-0.

The following example displays the SAS topology for port 1:0:2:

```
cli% showportdev sas 1:0:2
```

The following example displays the SAS topology with PEL data for port 1:0:2:

```
cli% showportdev sas -pel 1:0:2
```

## NOTES

The `loop` subcommand is functional only in a private loop topology.

# showportisns

## DESCRIPTION

The `showportisns` command shows iSNS host information for iSCSI ports in the system.

## SYNTAX

```
showportisns [<N>:<S>:<P>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

[<n:s:p>]

Specifies the port for which information about devices on that port are displayed.

`node`

Specifies the node.

`slot`

Specifies the PCI bus slot in the specified node.

`port`

Specifies the iSCSI port number of the PCI card in the specified PCI bus slot.

If not specified, iSNS host information for all iSCSI ports is displayed.

## EXAMPLES

The following example displays hosts discovered by the iSCSI port from the iSNS server in the system.

```
cli% showportisns
N:S:P  Host_IPAddr -----Host_iSCSI_Name-----
      Host_alias
1:3:1 192.168.2.181                iqn.1991-05.com.microsoft:pe750-07 <MS SW iSCSI
      Initiator>
1:3:1 192.168.17.33 iqn.1991-05.com.microsoft:dt-ashok-xp.hq.3pardata.com <MS SW iSCSI
      Initiator>
```

Where

- `N:S:P`. Represents the node:slot:port of the iSCSI port.
- `Host_IPAddr`. The IP address of a remote host.
- `Host_iSCSI_Name`. Represents the iSCSI name of the host.
- `Host_alias`. Represents the iSCSI alias of the host.

## NOTES

None.

# showportlesb

## DESCRIPTION

The `showportlesb` command displays Fibre Channel Link Error Status Block (LESB) counters (the number of errors accumulated for Fibre Channel devices). The LESB is composed of six counters that can measure Fibre Channel signal integrity or status.

## SYNTAX

The syntax for the `showportlesb` command can include one of the following arguments:

- `showportlesb reset`
- `showportlesb compare [all|<N:S:P>]`
- `showportlesb single|both <N:S:P>`
- `showportlesb hist [options <arg>] <N:S:P>`
- `showportlesb diffhist [options <arg>] <N:S:P>`

## AUTHORITY

Any role in the system.

## SUBCOMMANDS

`reset`

Specifies that internal counters are checked against current LESB counters and event alerts and are raised as necessary. All ports for the internal counters are reset.

`compare`

Specifies that internal HP 3PAR counters are checked against current LESB counters.

`single|both`

The `single` subcommand specifies that counters for the indicated port are displayed. The `both` subcommand specifies that counters for both ports, if the device is dual ported, are displayed.

`hist`

Displays the history of LESB raw counters on the specified port of loop devices.

`diffhist`

Displays differences between historical samples of LESB counters on the specified port of loop devices.

## OPTIONS

`-startt <time>`

Specifies that samples taken of LESB counters should commence after the indicated time (`<time>`). Time can be specified in hours or as a specific date. When specifying the time in hours, the following formats can be used:

- `hh[:mm[:ss]]`, where `hh` is the hour, `mm` is the minute (optional), and `ss` is the second (optional).
- `hhmm`, where `hh` is interpreted as a 24 hour clock.

When specifying the time as a date, the following formats can be used:

- `mm/dd[/yy]`, where `mm` is the month, `dd` is the day, and `yy` is the year (optional).
- `monthname dd[,yy]`, where `dd` is the day and `yy` is the year (optional).

- `dd monthname [yy]`, where `dd` is the day and `yy` is the year (optional).
- `yy-mm-dd`, where `yy` is the year, `mm` is the month, and `dd` is the day.

`-endt <time>`

Specifies that samples taken of LESB counters cease after the indicated time (`<time>`). Time can be specified in hours or as a specific date. When specifying in hours, the following formats can be used:

- `hh[:mm[:ss]]`, where `hh` is the hour, `mm` is the minute (optional), and `ss` is the second (optional).
- `hhmm`, where `hh` is interpreted as a 24 hour clock.

When specifying as a date, the following formats can be used:

- `mm/dd[/yy]`, where `mm` is the month, `dd` is the day, and `yy` is the year (optional).
- `monthname dd[,yy]`, where `dd` is the day and `yy` is the year (optional).
- `dd monthname [yy]`, where `dd` is the day and `yy` is the year (optional).
- `yy-mm-dd`, where `yy` is the year, `mm` is the month, and `dd` is the day.

## SPECIFIERS

`<N:S:P>`

Specifies the port for which information about devices on that port are displayed. This specifier is required for the `single`, `both`, `hist`, and `diffhist` subcommands, and optional for the `compare` subcommand. If this specifier is not used with the `compare` subcommand, then all ports are compared. The port is specified as follows:

`node`

Specifies the node.

`slot`

Specifies the PCI bus slot in the specified node.

`port`

Specifies the Fibre Channel port number of the PCI card in the specified PCI bus slot.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the reset of internal counters and ports:

```
cli% showportlesb reset
LESB reset completed
```

The following example displays the comparison of all ports:

```
cli% showportlesb compare
Port <1:0:1>

Loop <1:0:1>    Time since last save: 0:00:28
  ID ALPA LinkFail LossSync LossSig PrimSeq InvWord InvCRC
<1:0:1> 0xef      1      19      19      0      0      0
pd7    0x6d      1       5       0      0     270     0
pd6    0x72      1       4       0      0     524     0
pd5    0x73      1       4       0      0     335     0
```

```

pd4    0x76    1    4    0    0    334    0
pd3    0x79    1    4    0    0    401    0
pd2    0x80    1    4    0    0    344    0
pd1    0x81    1    4    0    0    270    0
pd0    0x88    1    4    0    0    401    0
Port <0:0:1>

Loop <0:0:1>    Time since last save: 0:00:28
    ID ALPA LinkFail LossSync LossSig PrimSeq InvWord InvCRC
<0:0:1> 0xef    1    19    19    0    0    0
pd7    0x6d    1    5    0    0    465    0
pd6    0x72    1    5    0    0    890    0
pd5    0x73    1    4    0    0    969    0
pd4    0x76    1    5    0    0    761    0
pd3    0x79    1    4    0    0    815    0
pd2    0x80    1    4    0    0    925    0
pd1    0x81    1    7    0    0    3283   0
pd0    0x88    1   258    0    0    269    0

LESB compare completed

```

The following example displays the counters for port 1:0:2:

```

cli% showportlesb single 1:0:2
    ID ALPA LinkFail LossSync LossSig PrimSeq InvWord InvCRC
cage1  0x1    3    4    0    0    755    0
pd12   0xef   1245  39201 0    0    156804 0
pd13   0xe8    1    1608 0    0    6432    0
pd14   0xe4    1    1586 0    0    6344    0
pd15   0xe2    1    1588 0    0    6352    0
pd16   0xe1    2    5088 0    0    20352   0
pd17   0xe0    1    1596 0    0    6384    0
pd18   0xdc    1    1595 0    0    6380    0
pd19   0xda    1    1596 0    0    6384    0
pd20   0xd9    2    5047 0    0    20188   0
pd21   0xd6    1    1604 0    0    6416    0
pd22   0xd5    1    1609 0    0    6436    0
pd23   0xd4    1    1616 0    0    6464    0
<1:0:2> 0xd3    0    1    1    0    0    0
cage0  0x18    1    165   0    0    26    0
pd8    0x67    2   865794 0    0    3463176 0
pd9    0x66    1   63932 0    0    255728 0
pd10   0x65    1   61572 0    0    246288 0
pd11   0x63    1   61525 0    0    246100 0
pd4    0x6c    2   67006 0    0    268024 0
pd5    0x6b    1   63474 0    0    253896 0
pd6    0x6a    1   63471 0    0    253884 0
pd7    0x69    1   63598 0    0    254392 0
pd0    0x72    2   65863 0    0    263452 0
pd1    0x71    1   64024 0    0    256096 0
pd2    0x6e    1   63942 0    0    255768 0
pd3    0x6d    1   63897 0    0    255588 0

```

The columns in the previous example are identified as follows:

- ID. The device ID.
- ALPA. Arbitrated Loop Physical Address.
- LinkFail. The Fibre Channel loop either has a loss of signal (electrical or optical) or a loss of synchronization that is greater than the timeout period.
- LossSync. Fibre Channel data is not valid though there is a signal (electrical or optical).



- `LossSig`. Loss of signal (electrical or optical) to the receiver port of a Fibre Channel node.
- `PrimSeq`. Primitive Sequence Protocol Error. There were errors during the transmission of a Fibre Channel primitive sequence. This might indicate an error during the loop recovery or initialization.
- `InvWord`. Invalid Transmission Word. Illegal Fibre Channel transmission word received.
- `InvCRC`. Invalid Cyclical Redundancy Check. Data corruption in the Fibre Channel frame.

## NOTES

- If the `both` subcommand is specified, the resulting output text is greater than 80 columns wide.
- Internal HP 3PAR counters are checked every 10 minutes.
- Each LESB counter is a 32-bit, unsigned integer.
- LESB counters on Fibre Channel devices cannot be reset.

# showqos

## DESCRIPTION

The showqos command lists the QoS rules configured in a system.

## SYNTAX

The syntax for the showqos command can be one of the following examples:

- showqos [options] [{vvset: {<name> | <pattern>} | sys:all\_others}] ...

## AUTHORITY

- Any role in the system

## OPTIONS

-{on|off}

List enabled or disabled QoS rules only.

-domain {<domainname|pattern>}...

Shows rules with target objects in domains with names that match one or more of the specified domains or patterns. If -domain is not specified, all rules with target objects in the current domain are shown. See the currentdomain parameter in the setclienv and showclienv commands.

-vv {<vv\_name> | <pattern>} {<vv\_name> | <pattern>} ...

Applies only to QoS rules whose targets include virtual volumes with names matching any of the names or patterns specified.

-sortcol <col> [, <dir>] [:<col> [, <dir>] ...

Sorts command output based on column number (<col>). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (<dir>) can be specified as follows:

inc

Sort in increasing order (default).

dec

Sort in decreasing order.

---

**NOTE:** Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

---

## SPECIFIERS

[vvset: {<name> | <pattern>} | sys:all\_others]

The QoS rules to list. If none is specified, it lists all configured QoS rules. <name> and <pattern> refer to the target object name of the rule, as listed in showvvset commands.

The QoS rules to list. If none is specified, it lists all configured QoS rules.

## EXAMPLES

To show all QoS rules defined in the system:

```
cli% showqos
      I/O per second KBytes per sec
  Id Type  Name  QoS      Limit      Limit
   2 vvset vsa   off        300         -
```

```

1 vvset vsb on          4000          204800
4 vvset vsc on           -          102400
3 vvset vsd on          5000          102400
-----
4 total

```

Show active QoS rules only:

```

cli% showqos -on

          I/O per second KBytes per sec
Id Type  Name QoS      Limit      Limit
1 vvset vsb on       4000      204800
4 vvset vsc on        -       102400
3 vvset vsd on       5000      102400
-----
3 total

```

Show QoS rules containing VV vv1:

```

cli% showqos -vv vv1

          I/O per second KBytes per sec
Id Type  Name QoS      Limit      Limit
1 vvset vsb on       4000      204800
3 vvset vsd on       5000      102400
-----
2 total

```

## NOTES

For all the <pattern> fields, the patterns are glob-style (shell-style) patterns (see help on sub,globpat).

A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

# showrcopy

## DESCRIPTION

The `showrcopy` command displays details of the Remote Copy configuration. The `showrcopy` command also displays the group's domain names if the global `-listdom` option is used or if the `TPDLISTDOM` environment variable is set.

## SYNTAX

The syntax for the `showrcopy` command can be one of the following:

- `showrcopy [options <arg>] [links]`
- `showrcopy [options <arg>] [groups [<name_or_pattern ...>]]`
- `showrcopy [options <arg>] [targets [<name_or_pattern ...>]]`

## AUTHORITY

Any role in the system.

## OPTIONS

`-d`

Displays more detailed configuration information.

`-domain <domainname_or_pattern>[, <domainname_or_pattern>...]`

Shows only Remote Copy links whose virtual volumes are in domains with names that match one or more of the specified domain name or pattern. This option does not allow listing objects within a domain of which the user is not a member.

## SPECIFIERS

`links`

Specifies all Remote Copy links.

`groups [<name_or_pattern>]`

Specifies either all Remote Copy volume groups or a specific Remote Copy volume group by name or by glob-style pattern.

`targets [<name_or_pattern>]`

Specifies either all target definitions or a specific target definition by name or by glob-style pattern.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for further information.

## EXAMPLES

The following example displays output from the `showrcopy` command:

```
# showrcopy
Remote Copy System Information
Status: Started, Normal

Target Information

Name      ID Type Status Options Policy
System2  9  IP  ready          mirror_config
```

#### Link Information

Target	Node	Address	Status	Options
System2	0	10.100.33.11	Up	
System2	1	10.101.33.11	Up	
receive	0	10.100.33.11	Up	
receive	1	10.101.33.11	Up	

#### Group Information

Name	Target	Status	Role	Mode	Options
sync_group_1	System2	Started	Primary	Sync	
LocalVV	ID	RemoteVV	ID	SyncStatus	LastSyncTime
localvv.0	391	remotevv.0	351	Syncing (25%)	Thu Dec 14 17:37:40 PST 2006
localvv.1	392	remotevv.1	352	Syncing (40%)	Thu Dec 14 17:37:40 PST 2006

Name	Target	Status	Role	Mode	Options
sync_group_2.r11	System2	Started	Secondary	Sync	
LocalVV	ID	RemoteVV	ID	SyncStatus	LastSyncTime
remotevv.0	401	localvv.0	361	Syncing	NA
remotevv.1	402	localvv.1	362	Syncing	NA

The following values can appear in the `TargetInformationStatus` field:

- `new`. The target's link have yet to come up.
- `ready`. The target has connected links.
- `unsupported`. The target system's TPD version is not compatible with this system's version.
- `failing`. The target's links have all failed, but its groups have not been stopped.
- `failed`. The target's links have all failed and its groups have been stopped.

The following values can appear in the `Link InformationStatus` field:

- `Not Started`. Link is not started or is being started, such as when its node is down or Remote Copy is stopped (through the `stoprcopy` command).
- `Down`. Link is down and will attempt to restart.
- `Up`. Link is up and running.

The following values can appear in the `Group InformationSyncstatus` field:

- `New`. Volume is configured, but has not yet been started.
- `Syncing`. Volume is currently synchronizing.
- `NotSynced`. The volume is not synchronized, likely the result of an initial sync failure or some other failure.
- `Stopped`. The volume was synced the last time the group was started, but the group is currently stopped. There might be writes that have not been sent to the secondary site.
- `Stale`. Volume was previously synchronized, but a previous synchronization attempt failed. Thus, the secondary has a valid copy, just not a valid copy from the last synchronization attempt.

The following example displays output from the `showrcopy groups <pat>` command, where `<pat>` is specified as `b*` and `l*`:

```
# showrcopy groups b* l*

Remote Copy System Information
Status: Started, Normal
```

Group Information						
Name	Target	Status	Role	Mode	Options	
bart	bf_mirror	Started	Primary	Periodic	Last-Sync Tue Jul 18 14:12:59 PDT 2006 , Period 30m	
LocalVV	ID	RemoteVV	ID	SyncStatus	LastSyncTime	
bart-tp-ws	9	bart-ws	3924	Synced	Tue Jul 18 14:13:09 PDT 2006	
Name	Target	Status	Role	Mode	Options	
lisa	bf_mirror	Started	Primary	Periodic	Last-Sync Tue Jul 18 14:09:44 PDT 2006 , Period 30m, over_per_alert	
LocalVV	ID	RemoteVV	ID	SyncStatus	LastSyncTime	
lisa-ws	2	lisa-ws	3922	Synced	Tue Jul 18 14:10:32 PDT 2006	

In the example above:

- Name. The name of the group.
- Target. The target to which the group is mirrored.
- Status. The following values can appear in the group Status field:
  - New. Group that has not yet been started.
  - Starting. Currently attempting to start the group.
  - Started. Group is started (has Remote Copy running).
  - Stopped. Group was stopped.
- Role. The role of the group as either Primary or Secondary.
- Mode. The mode of the group as either Periodic or Synchronous.
- Options. The options set for the group.
- LocalVV and ID. The name and ID of this system.
- RemoteVV and ID. The name and ID of the target system.
- SyncStatus. The following values can appear in the SyncStatus field:
  - New. Volume is configured as a primary volume, but has not yet been started.
  - Syncing. Volume is currently synchronizing.
  - Synced. The primary and secondary volumes are in sync.
  - NotSynced. The volume is not synchronized, likely the result of an initial sync failure or some other failure.
  - Stopped. The volumes were previously synchronized, but may be out of sync due to a group being stopped.
  - Stale. Volume was previously synchronized, but a previous synchronization attempt failed. Thus the secondary has a valid copy, just not a valid copy from the last synchronization attempt.
- LastSyncTime. The time at which the last volume synchronization was completed. Applies only to asynchronous periodic groups. Synchronous groups display N/A if they have been started and are actively replicating.

## NOTES

- If the `showrcopy` command is used with no specifiers, all configuration information is displayed.
- The `showrcopy` command also displays the group's domain names if the global `-listdom` option is used or if the `TPDLISTDOM` environment variable is set.
- If `showrcopy link|group|target` is used without specifying a name, information for all links, groups, or targets is displayed.
- To limit the performance impact of Remote Copy on the rest of the HP 3PAR storage system, the number of volumes that are concurrently synchronizing is limited to 20 volumes.  
This limit is not user-configurable and applies to the initial synchronization as well as subsequent resynchronizations for synchronous as well as asynchronous periodic groups. For example, if there are 30 volumes in asynchronous periodic mode that are being resynchronized, you might notice that 10 volumes do not start synchronizing until the first 20 have completed. This can be seen by monitoring the `Sync%` column of the `showrcopy` command output.
- A Domain column may be included by using the `setclienv` command to set the `listdom` option to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set.

# showcrtransport

## DESCRIPTION

The `showcrtransport` command shows status and information about end-to-end transport for Remote Copy in the system.

## SYNTAX

```
showcrtransport [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-rcip`

Show information about Ethernet end-to-end transport.

`-rcfc`

Show information about Fibre Channel end-to-end-transport.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays status and information about the end-to-end transport for all Remote Copy configured ports:

```
# showcrtransport
N:S:P Peer_Address      Address  State Type
0:5:1      - 172.100.5.87  new rcip
1:5:1      - 172.101.6.87  new rcip
```

The columns in the previous example are identified as follows:

- `N:S:P`. The physical position of the port, in the syntax `node:slot:port`.
- `Peer_Address`. IP address of the Remote Copy storage server port connected to this Remote Copy port.
- `Address`. IP address of the Remote Copy storage server port.
- `State`. Remote copy end-to-end transport state. Can include one of the following results:
  - `new`. Configuration is not completed on this port.
  - `incomplete`. Configuration is not yet completed on the peer port.



- `ready`. Configuration is completed on this port and the peer port; transport is ready for use.
- `missing`. A configured transport was disconnected.
- `Type`. Indicates the port connection type.
  - `rcip`. Port is used for Remote Copy over IP (RCIP).
  - `rcfc`. Port is used for Remote Copy over FC (RCFC).

The following example displays status and information about the end-to-end transport for RCIP ports:

```
# showrctransport -rcip
N:S:P State      HwAddr      IPAddress PeerIPAddress      Netmask Gateway  MTU  Rate Duplex
0:1:1  new 000423C21B72 192.168.25.226      - 255.255.255.0      - 1500 1Gbps Full
0:1:1  new 000423C21B73 192.168.25.226      - 255.255.255.0      - 1500 n/a   Half
1:2:1  new 000423ADE95E 192.168.25.227      - 255.255.255.0      - 1500 1Gbps Full
1:2:1  new 000423ADE95F 192.168.25.227      - 255.255.255.0      - 1500 n/a   Half
```

The columns in the previous example are identified as follows:

- `N:S:P`. The physical position of the port, in the syntax `node:slot:port`.
- `State`. Remote copy end-to-end transport state. Can include one of the following results:
  - `new`. Configuration is not completed on this port.
  - `incomplete`. Configuration is not yet completed on the peer port.
  - `ready`. Configuration is completed on this port and the peer port; transport is ready for use.
  - `missing`. A configured transport was disconnected.
- `HwAddr`. Hardware address of the Ethernet port indicated in the `N:S:P` column.
- `IPAddress`. IP address of the Ethernet port indicated in the `N:S:P` column.
- `PeerIPAddress`. IP address of the peer Ethernet port to which the port indicated in the `N:S:P` column is connected.
- `Netmask`. Netmask for the IP address.
- `Gateway`. Address of the gateway.
- `MTU`. Maximum Transfer Unit (MTU) size for the specified Remote Copy interface (default is 1500). The largest supported value is 9000 and the smallest is 100.
- `Rate`. Actual bit rate of the port indicated in the `N:S:P` column.
- `Duplex`. Values can be either `Full` or `Half`.

The following example displays status and information about the end-to-end transport for RCFC ports:

```
# showrctransport -rcfc
N:S:P Remote_Node_WWN Remote_Port_WWN      State
5:3:2 2FF70002AC000029 21110002AC000029      ready
4:1:1 2FF70002AC000029 20020002AC000029      ready
```

The columns in the previous example are identified as follows:

- `N:S:P`. The physical position of the port, in the format node:slot:port.
- `Remote_Node_WWN`. World Wide name of the node to which the port indicated in the `N:S:P` column connects.
- `Remote_Port_WWN`. World Wide name of the target port to which the port indicated in the `N:S:P` column connects.
- `State`. Indicates whether the end-to-end transport is ready to be used for Remote Copy. Can be one of the following:
  - `new`. The target port is newly discovered and has not yet been used for Remote Copy.
  - `incomplete`. Port indicated in the `N:S:P` column is activated and ready, but the target port is not yet enabled.
  - `ready`. Remote copy link is activated and ready for use.
  - `missing`. Ready link was disconnected.

## NOTES

None.

# showrole

## DESCRIPTION

The `showrole` command displays information about rights assigned to roles in the system. Without any argument, `showrole` displays the roles currently defined.

## SYNTAX

```
showrole [<role_name | pattern ...>]
showrole -listrights
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-listrights
```

Lists the rights available in the system.

## SPECIFIERS

```
<role_name | pattern>...
```

Specifies that the role name matching the specified glob-style pattern will have their rights displayed. This specifier can be repeated. This specifier is not required.

## RESTRICTIONS

If both `-listrights` and `<role_name>` patterns are provided, the `-listrights` option takes precedence and only information related to rights will be displayed.

## EXAMPLES

The following example displays the role names in the system:

```
cli% showrole
---Role---
browse
edit
service
super
```

The following example displays the rights assigned to the browse role:

```
cli% showrole
---Role---
browse
edit
service
super
create
basic edit
3par ao
3par rm
```

## NOTES

To avoid cluttering the output, the `show` commands rights are not included in the output of the `showrole` because `show` commands are granted to all roles by default.

# showrsv

## DESCRIPTION

The `showrsv` command displays SCSI reservation and registration information for Virtual Volume Logical Unit Numbers (VLUNs) bound for a specified port.

## SYNTAX

```
showrsv [options <arg>] [<VV_name>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-l <scsi3|scsi2>
```

Specifies that either SCSI-3 persistent reservation or SCSI-2 reservation information is displayed. If this option is not specified, information about both SCSI-2 and SCSI-3 reservation will be shown.

```
-host <hostname>
```

Displays reservation and registration information only for Virtual Volumes (VVs) that are visible to a particular host.

## SPECIFIERS

```
[<VV_name>]
```

Specifies the VV name, using up to 31 characters.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about reservation and registration information for VLUNs bound with host name `w2k_emx1_cisco`.

```
cli% showrsv -host w2k_emx1_cisco
      VVname          Host          Owner  Port  ReservationType
w2k_clusterd.10 w2k_emx1_cisco 10000000C92B9909 1:3:1  SCSI-3(6)
w2k_clusterd.11 w2k_emx1_cisco 10000000C92B9909 1:3:1  SCSI-3(6)
w2k_clusterd.12 w2k_emx1_cisco 10000000C92B9909 1:3:1  SCSI-3(6)
w2k_clusterd.13 w2k_emx1_cisco 10000000C92B9909 1:3:1  SCSI-3(6)
```

The columns in the previous example are identified as follows:

- `VVname`. Name of volume exported on this port to the host in `Host` column.
- `Host`. Host name of the host connected to this port.
- `Owner/Registrant`. WWN of the host that has the reservation or registration.
- `Port`. Port name in `N:S:P` format.
- `ReservationType`. The type of reservation being established either `SCSI-2` or `SCSI-3`. `SCSI-3` reservations can be as follows:
  1. (Write exclusive). All read requests allowed. Write requests allowed for the reservation holder only.
  3. (Exclusive access). Read and write requests allowed for the reservation holder only.

- 5. (Write exclusive–registrants only). All read requests allowed. Write requests allowed for registered initiators only.
- 6. (Exclusive access–registrants only). Read and write requests allowed for registered initiators only.
- 7. (Write exclusive–all registrants). All read requests allowed. Write requests allowed for registered initiators only.
- 8. (Exclusive access–all registrants). Read and write requests allowed for registered initiators only.

## NOTES

None.

# showsched

## DESCRIPTION

The `showsched` command shows the state of tasks currently scheduled on the system.

## SYNTAX

```
showsched [options] [<schedname>|<pattern>]
```

## AUTHORITY

Super, Service, Edit, Browse

Any extended role in the system.

## OPTIONS

`-all`

Specifies that all scheduled tasks will be displayed.

`-sortcol <col> [,<dir>] [:<col>[,<dir>]...]`

Sorts command output based on column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). rows with the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

`<schedname>|<pattern>...`

Specifies the schedules with the specified name (31 character maximum), matching the glob-style pattern. This specifier can be repeated to display configuration information about multiple schedules. This specifier is not required. If not specified, configuration information for all non-system scheduled tasks in the system is displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information of all scheduled tasks.

```
cli% showsched -all
```

----- Schedule -----									
SchedName	File/Command	Min	Hour	DOM	Month	DOW	CreatedBy	Status	
Alert	NextRunTime								
move_back_chunklet1	moverelocpd -f 0,7,14	17	2	*	*		0 3parsvc		
active	Y 2009-03-15 03:17:00 PDT								
move_back_chunklet2	moverelocpd -f 1,8,15	17	2	*	*		1 3parsvc		
active	Y 2009-03-16 02:17:00 PDT								
move_back_chunklet3	moverelocpd -f 2,9	17	2	*	*		2 3parsvc		
active	Y 2009-03-17 02:17:00 PDT								

move_back_chunklet4	moverelocpd -f 3,10	17	2	*	*	3	3parsvc
active	Y 2009-03-18 02:17:00 PDT						
move_back_chunklet5	moverelocpd -f 4,11	17	2	*	*	4	3parsvc
active	Y 2009-03-12 02:17:00 PDT						
move_back_chunklet6	moverelocpd -f 5,12	17	2	*	*	5	3parsvc
active	Y 2009-03-13 02:17:00 PDT						
move_back_chunklet7	moverelocpd -f 6,13	17	2	*	*	6	3parsvc
active	Y 2009-03-14 02:17:00 PDT						
remove_expired_vvs	removevv -f	27	*	*	*	*	3parsvc
active	Y 2009-03-11 17:27:00 PDT						
-----							
8	total						

The columns in the previous example are identified as follows:

- SchedName. Name of the scheduled task.
- File/Command. The file or command that has been scheduled.
- Schedule. WWN of the host that has the reservation or registration.
- Min. The minute of the hour that a scheduled task will execute.
- Hour. The hour of the day that a scheduled task will execute.
- DOM. The day of the month that a scheduled task will execute.
- Month. The month that a scheduled task will execute.
- DOW. The day of the week that a scheduled task will execute.
- CreatedBy. The name of the user that created the task.
- Status. Indicates whether the task is active or has been suspended.
- Alert. Indicates whether the task will generate an alert.
- NextRunTime. The time when the next scheduled task will run.

## NOTES

If the `-all` option is not specified then scheduled system tasks created by the `3parsvc` user will not be displayed.



# showsnmpmgr

## DESCRIPTION

The `showsnmpmgr` command displays a list of registered SNMP managers for receiving traps.

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

## SYNTAX

```
showsnmpmgr
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays a list of registered managers:

```
cli% showsnmpmgr
Manager IP                Port
82.185.98.76              162
82.162.9.7                8004
5def:2008:abcd::161a     9162
```

In the example above:

`Manager IP`. The trap manager's IP address.

`Port`. The trap manager's port number.

## EXIT STATUS

The following codes are returned indicating success or failure:

- 0 indicates that the command was successful.
- 1 indicates that the command failed.

## NOTES

Managers are registered using the `addsnmpmgr` command. See [Section \(page 42\)](#) for additional information.

# showsnmppw

## DESCRIPTION

The `showsnmppw` command displays the SNMP community string passwords.



**WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

## SYNTAX

```
showsnmppw [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-rw|-r|-w
```

Specifies that the read-write (`-rw`), read-only (`-r`), or write-only (`-w`) password is displayed. If not specified, the read/write community string password is displayed.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays all SNMP passwords:

```
cli% showsnmppw  
[password]
```

## EXIT STATUS

The following codes are returned indicating success or failure:

- 0 indicates that the command was successful.
- 1 indicates that the command failed.

## NOTES

SNMP passwords are registered using the `setsnmppw` command. See [“setsnmppw” \(page 326\)](#) for more information.

# showsnmpuser

## DESCRIPTION

The `showsnmpuser` command displays information about one or all SNMP users, including the username, authentication and privacy protocols.

**⚠ WARNING!** SNMP cannot be used in Common Criteria mode. It might compromise the security of the storage system.

## SYNTAX

The syntax for the `showsnmpuser` command can be one of the following:

```
showsnmpuser [<user_name>]
```

```
showsnmpuser
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

`<user_name>`

Specifies the SNMPv3 username, using up to 31 characters. This specifier is not required on the command line. If no specifier is used, information about all SNMP users is displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays a list of all SNMP users:

```
cli% showsnmpuser
Username AuthProtocol PrivProtocol
snmpadm  HMAC-SHA-96   CFB128-AES-128
joe      HMAC-SHA-96   CFB128-AES-128
```

## NOTES

The `showsnmpuser` command displays SNMPv3 user information for all local users when the `<username>` is not provided or the information for just the local user with the name `<username>` when it is provided. The output for users with a Browse or Service role is limited to the user's own accounts. If the `<username>` is provided, it must be the user's name.

SNMP users are created using the `createsnmpuser` command.

# showspace

## DESCRIPTION

The `showspace` command displays estimated free space for logical disk creation.

## SYNTAX

```
showspace [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

The following options are used to select the logical disk creation parameters used for space calculation:

`-cpg <CPG_name>|<pattern>`

Specifies that logical disk creation parameters are taken from CPGs that match the specified CPG name or pattern, indicated with a glob-style pattern (see “[Glob-Style Pattern](#)” (page 12) for more information). Multiple CPG names or patterns can be specified using a comma separated list, for example `cpg1, cpg2, cpg3`. Only the `-hist` option can be specified with the `-cpg` option.

`-hist`

Specifies that free space history over time for CPGs specified with the `-cpg` option is displayed. This option can only be used if the `-cpg` option is specified.

`-t <RAID_type>`

Specifies the RAID type of the logical disk: `r0` for RAID-0, `r1` for RAID-1, `r5` for RAID-5, or `r6` for RAID-6. If no RAID type is specified, the default is `r1`.

`-ssz <size_number_chunklets>`

Specifies the set size in terms of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row using an integer from 1 through 2147483647. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size in kilobytes using 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. If no value is entered, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (mag). This option has no meaning for RAID-0.

`-ch first|last`

Specifies the chunklet characteristics, either `first` (attempt to use the lowest numbered available chunklets) or `last` (attempt to use the highest numbered available chunklets). If no argument is specified, the default characteristic is `first`.

`-p <pattern>`

Specifies a pattern for candidate disks. Patterns are used to disks that are used for creating LDs. If no pattern is specified, the option defaults to all Fibre Channel (FC) disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern.

The `-devtype` pattern cannot be used to mix Near Line (NL) and FC, and Solid State Drive (SSD) drives:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (*item*). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (*item*). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-7). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (*item*). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (*item*). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (*item*). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-3). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (*item*). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more disks. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel or NL, nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command. If it is not specified, the default device type is FC.

`-rpm <number>`

Specifies that disks must be of the indicated speed. Device speeds are shown in the `RPM` column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

## SPECIFIERS

None.

## RESTRICTIONS

The `-cpg` and `-hist` options cannot be used with any other option.

## EXAMPLES

The following example displays the estimated free space for a RAID-1 LD:

```
cli% showspace -t r1
--Estimated(MB)---
RawFree UsableFree
 13824      6912
```

## NOTES

- The `showspace` command includes chunklets in the process of being initialized as shown by the `Normal`, `Unused`, `Uninit` column of `showpd -c`. The space represented by these chunklets will not actually be available until the initialization process is complete.
- The space calculated is an estimate and not an exact figure.
- For this command: MB = 1048576 bytes.

# showspare

## DESCRIPTION

The `showspare` command displays information about chunklets in the system that are reserved for spares and previously free chunklets selected for spares by the system.

## SYNTAX

```
showspare [-used]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-used`

Show only used spare chunklets. By default all spare chunklets are shown.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about spare chunklets on chunklets 53 through 56 on physical disk 4:

```
cli% showspare
PdId Chnk LdName LdCh State Usage Media Sp Cl From To
  4   53 ronnie   0 normal  ld valid  N  N 2:37 ---
  4   54 james   28 normal  ld valid  N  N 0:29 ---
  4   55 dio     28 normal  ld valid  N  N 0:32 ---
  4   56 rocks    0 normal  ld valid  N  N 0:38 ---
```

The columns in the previous example are identified as follows:

- `PdId`. The physical disk on which the chunklets reside.
- `Chnk`. The chunklet number.
- `LdName`. The name of the logical disk that is using the spare chunklet.
- `LdCh`. The position of the chunklet on the logical disk.
- `State`. The state of the chunklet as identified by the kernel.
  - `logging`. I/O to the chunklet is written to the logging logical disk.
  - `playback`. Data is played back from the logging logical disks.
  - `passthru`. Chunklets do not process physical disk errors.
  - `preserved`. Any I/O to the chunklet is written to the preserved logical disks.
  - `preserved playback`. Data is played back from the preserved logical disks.
  - `stale`. The chunklet is not available for use because of a medium failure or a connectivity failure.

- `normal`. The chunklet is available for use.
- `normal, smag`. A servicemag operation is performed on the disks.
- `none`. Chunklets were not used by any logical disk.
- `Usage`. Shows whether the spare chunklet is in use by a logical disk.
  - `available`. The chunklet is available for use as a spare or as a logical disk.
  - `ld`. The chunklet is in use by a logical disk.
  - `synch`. The chunklet is both the source and the target of a logical disk relocation operation (synchronizing the chunklet).
  - `cmprel`. The system is completing the logical disk relocation operation.
  - `relsrc`. Relocation source. The data has been moved to another chunklet.
  - `reltgt`. Relocation target. The data in the chunklet has been moved from another spare chunklet.
  - `abtre1`. Abort relocation. The system is canceling the logical disk relocation operation.
- `Media`. The current status of the physical disk medium for the chunklet.
  - `valid`. The chunklet is available for use.
  - `failed`. The medium has encountered errors and is not available for use.
- `Sp`. The spare status of the chunklet; `Y` indicates the chunklet is reserved for spare, `N` indicates a previously free chunklet selected by the system as a spare.
- `C1`. The clean status of the chunklet. `N` indicates that the chunklet is in-use. `Y` indicates that the chunklet is clean. `Cg` indicates that the chunklet is being cleaned.
- `From`. The initial location of the chunklet before relocation.
- `To`. The destination location of the chunklet during relocation.

## NOTES

The `showpdch` command is a more general and versatile command that can be used instead of `showspare`.



# showsshkey

## DESCRIPTION

The showsshkey command will displays all SSH public keys that have been set with setsshkey.

## SYNTAX

```
showsshkey
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example shows the SSH public keys that have been set by the current user:

```
cli% showsshkey
  ID Key
  0 ssh-dss AAAAB3NzaC1kc3MAAACBALDvpIVrNEGJn0tFDCSE1tLXdGVqBkb8Dm/vziYKXShc6
  EIeU3kdD7pK9yhTEKx8q9urwgtKwyYH1KMWYp042kuwIM12UzIvkV6DqbA8Z4aOH81WnBm7pEscD
  zHdq6IZJ47MsZLj1xXO2RYyWTFwsbpKYLXoUrrj8vDqCtcVFGqvAAAAFQDtTx3ZLckWAI9Pp/jgt
  JRI+Z63wAAAIAtFIyscMhuyma3yMvnE8MyUyP1mJUzpKLHKwCNfvwL49bfXSoczitmY+ENHTgtWd
  uRaX0uIMmeDeeO5qUUKDfxp5t3KURh147QcU41NmLCWvR1S5ep1ff0+D7PVjJtRwlZxLtfQMyGWz
  YCMzSRnk41pD6R392A8XLSzvqrLxat3wAAAIeAl+crC528VaZSiSbeW/FybPx3EhvvV/Zyv6FTFI
  OE5+bsWbeQZP33M3yuwTvVuLvphSzpxTKQy1TOAK/Q6XmsvE9ubUudki5X1rIuFvOzU88KJ0X1c+
  XPw5+NaI8VXat74YR7dsBE5sbC3EKhZ142fD7IH+nHfpHiHQIQSiIIIFyw= user@example.com
```

## NOTES

The public SSH keys that are displayed by this command are used to determine that the private keys that are paired with them are valid, and are not useful in determining the contents of that private key. As such, the contents of the public keys are not sensitive, and having access to them will not aid someone attempting to access an account to which they should not have access.

# showsys

## DESCRIPTION

The `showsys` command displays the HP 3PAR storage system properties includes system name, model, serial number, and system capacity information, etc.

## SYNTAX

```
showsys [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d`

Specifies that more detailed information about the system is displayed.

`-param`

Specifies that the system parameters are displayed.

`-fan`

Displays the system fan information.

`-space`

Displays the system capacity information in MB (1048576 bytes).

`-domainspace`

Displays the system capacity information broken down by domain in MB (1048576 bytes).

`-desc`

Displays the system descriptor properties.

`-mgmtoldports`

Displays the value of the `MgmtOldPorts` parameters (see help for `setsys` command for more information of this parameter). This option is deprecated and will be removed when the `MgmtOldPorts` parameter is removed.

`-devtype FC|NL|SSD`

Displays the system capacity information where the disks must have a device type string matching the specified device type; either Fibre Channel (FC), nearline (NL), solid state drive (SSD). This option can only be issued with the `-space` option.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about an HP 3PAR storage system:

```
cli% showsys
----- (MB) -----
```

ID	-Name-	---Model---	-Serial-	Nodes	Master	TotalCap	AllocCap	FreeCap	FailedCap
15	s015	InServ T400	1000015	2	0	1063424	208384	855040	0

In the previous example:

- ID. The system ID.
- Name. The system name.
- Model. The model type of the HP 3PAR storage system.
- Serial. The system serial number.
- Nodes. The number of nodes in the system.
- Master. The master node ID.
- TotalCap. The total system capacity in MB.
- AllocCap. The allocated system capacity in MB.
- FreeCap. The free system capacity in MB.
- Failed Cap. The failed system capacity in MB.

The following example displays the system descriptor properties of an HP 3PAR storage system:

```
cli% showsys -desc
-----System s36-----
System Name : Your Name
Location    : Your Facility Address
Owner       : Your Company Name
Contact     : Joe Admin
Comment     : Your Notes
```

The following example displays the system capacity in MB for an HP 3PAR storage system:

```
cli% showsys -space
-----System Capacity (MB)-----
Total Capacity      : 1063424
  Allocated          : 208384
    Volumes          : 103937
      Base Volumes   : 4266
        User         : 4266
          Copy        : 0
            Admin     : 0
      CPGs (TPVVs & CPVVs) : 98304
        Copy         : 65536
          Used        : 0
            Unused    : 65536
          Admin      : 32768
            Used      : 0
            Unused    : 32768
        Unmapped     : 1367
      System         : 104448
        Internal     : 104448
          Spare      : 0
            Used     : 0
            Unused   : 0
      Free           : 855040
        Initialized  : 855040
          Uninitialized : 0
        Failed       : 0
```

The following example displays more detailed (`-d` option) information about the same system:

```
cli% showsys -d

-----General-----
System Name       :           S424
System Model      :      InServ E200
Serial Number     :           1100424
System ID         :             424
Number of Nodes   :             2
Master Node       :             0
Nodes Online      :           0,1
Nodes in Cluster  :           0,1

-----System Capacity (MB)-----
Total Capacity    :    6277120
Allocated Capacity :    687872
Free Capacity     :    5589248
Failed Capacity   :             0

-----System Fan-----
Primary Node ID   :           0
Secondary Node ID :           1
State             :      OK
LED               :      Green
Speed             :      Normal
Primary Node ID   :           1
Secondary Node ID :           0
State             :      OK
LED               :      Green
Speed             :      Normal

-----System Descriptors-----
Location          :
Owner             :
Contact           :
Comment           :
```

The following example shows system parameters (`-param` option) for a HP 3PAR storage system:

```
cli% showsys -param

System parameters from configured settings

---Parameter---      ---Value---
RawSpaceAlertFC      :           0
RawSpaceAlertNL      :           0
RemoteSyslog         :           1
RemoteSyslogHost     :    192.168.6.15
SparingAlgorithm     :      Minimal
CopySpaceReclaim     :           0
EventLogSize         :           3M
VVRetentionTimeMax   :    336 Hours
```

## NOTES

- See “setsys” (page 333) for information on setting the threshold parameters indicated by the Value column in the output for `showsys -param`.
- In the output for `showsys -param`, (from configured settings) indicates that the system parameters displayed have been successfully read from the Persistent Repository (PR). If the PR is not available (most likely because of problems with the admin volume), the output reads (from default settings) and the values displayed would indicate the system

defaults. When (from default settings) is displayed, system parameters cannot be updated.

- The system capacity information may have some overlaps among Volumes, System, Failed Capacities.
- If the `VVRetentionTimeMax` is 0, then the volume retention time in the system is disabled.

# showsysmgr

## DESCRIPTION

The `showsysmgr` displays startup state information about the system manager.

## SYNTAX

```
showsysmgr
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the startup state information about the system manager. In this example, the system manager reports that it is up and running.

```
cli% showsysmgr
System is up and running from Thu May 24 15:39:22 PDT 2007
```

If the system has experienced a power failure, issuing the `showsysmgr` command displays the following message:

```
cli% showsysmgr
System is recovering from a previous powerfailure. Please use the CLI commands for
'showvv', 'showld', 'showpd' to see any unstarted vvs, lds, pds.
```

If the system has attempted powerfail recovery three times, and during the recovery attempts encountered kernal panics because of hardware or software errors, the following message is displayed. See [“NOTES” \(page 487\)](#) in the following section for additional information.

```
cli% showsysmgr
System is recovering from a previous power failure.
Please use the 'showvv', 'showld', 'showpd' CLI commands to
check for not started vvs, lds, pds.
Use force_idewipe to wipe pfail partititon and restart system with all
lds/vvs being checked. This can cause some data to be lost.
```

If the system has attempted powerfail recovery, and during the recovery encountered kernal panics because of hardware or software errors, the error could be associated with a specific volume. The

following message is displayed. See “NOTES” (page 487) in the following section for additional information.

```
cli% showsysmgr
System is recovering from a previous power failure.
Please use the 'showvv', 'showld', 'showpd' CLI commands to
check for not started vvs, lds, pds.
Use force_iderecovery to start pfail recovery.
VVs with the id(s) 1 will lose data.
```

## NOTES

- If the system has experienced a power failure, issue the `showvv`, `showld`, or `showpd` commands to determine if any physical disks, logical disks, or virtual volumes are unstarted. If the system stays in the powerfail state for longer than 15 minutes, the `setsysmgr` command can be issued with caution. See the “[setsysmgr](#)” (page 336) command for more information.



**CAUTION:** Issuing the `setsysmgr force_idewipe` command can result in data loss.

- If the system has experienced a power failure, any cached data is saved to the IDE partition of each node. Upon restoration of power, the saved cached data is reapplied (powerfail recovery). During powerfail recovery, if kernel panics are encountered because of hardware or software errors, the powerfail recovery process fails. In such cases, the system attempts recovery three times. After three attempts, the system waits for user intervention. Issue the `setsysmgr force_idewipe` command to force the system to restart and check all logical disks and virtual volumes upon restarting. See “[setsysmgr](#)” (page 336) for more information.
- During powerfail recovery, a kernel panic because of hardware or software errors might indicate a damaged volume. In such cases, after the system restarts, it waits for user intervention. Issue the `setsysmgr force_iderecovery` command to force the system to start another powerfail recovery. Any saved data for virtual volumes with IDs displayed in the `showsysmgr` command output can be lost. Those virtual volumes are checked when the system restarts. See “[setsysmgr](#)” (page 336) for more information.

# showtarget

## DESCRIPTION

The `showtarget` command displays information about unrecognized targets.

## SYNTAX

```
showtarget [<Node_WWN>...]
showtarget -lun <Node_WWN>...
showtarget <-inq|-mode> [-page <num>] [-d] <LUN_WWN>...
showtarget -rescan
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-lun`

Display the information for remote LUNs.

`-inq`

Display the SCSI inquiry page information.

`-mode`

Display the SCSI mode page information.

`-page <page_num>`

Specify the SCSI page number for the inquiry and mode information. For SCSI inquiry information, the valid `<page_num>` is 0, 80, and 83. For SCSI mode information, the valid `<page_num>` is 3 and 4. This option needs to be used together with `-inq` or `-mode`. If this option is not specified, the default `<page_num>` is 0.

`-d`

Display detailed information for the SCSI inquiry or mode page.

`-rescan`

Rescan the port to find the unknown target.

## SPECIFIERS

`<Node_WWN>`

Indicates the World Wide Name (WWN) of the node.

`<LUN_WWN>`

Indicates the World Wide Name (WWN) of a LUN exported from an unknown target.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about unrecognized targets:

```
cli% showtarget
Port  ----Lun_WWN-----  ----Port_WWN-----  ---State---
```



```
0:5:2 50002AC00014001F 20520002AC00001F peer_volume
1:5:2 50002AC00014001F 21520002AC00001F peer_volume
```

If unknown targets are found, information (Port, LUN\_WWN, Port WWN, and State) about each target found is displayed.

## NOTES

Some hosts might appear as unknown targets.

# showtask

## DESCRIPTION

The `showtask` command displays information about tasks. By default, this command displays all non-system tasks on the system within the last 24 hours.

## SYNTAX

```
showtask [options <arg>] [<task_name> | <pattern>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-all`

Specifies that all scheduled tasks will be displayed. Unless the `-all` option is specified, system tasks are not displayed.

`-done`

Display includes only tasks that are successfully completed.

`-failed`

Display includes only tasks that are unsuccessfully completed.

`-active`

Display includes only tasks that are currently in progress.

`-t <hours>`

Show only tasks that started within the past `<hours>`, where `<hours>` is an integer from 1 through 9999999.

`-type <task_type> | <pattern>`

Specifies that specified patterns are treated as glob-style patterns and that all tasks whose types match the specified pattern are displayed. To see the different task types use the `showtask column help`.

`-d <task_ID>...`

Show detailed task status for specified tasks. Tasks must be explicitly specified using their task IDs `<task_ID>`. Multiple task IDs can be specified. This option cannot be used in conjunction with other options.

`-sortcol <col>[,<dir>] [:<col>[,<dir>] ...]`

Sorts command output based on column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays all tasks on a system. In this case, the last task is still in progress.

```
cli% showtask

Id  Type  Name  Status Phase Step  -----StartTime-----  -----FinishTime-----
1  tune_vv  testr1  Done  0/0  0/0  Wed Oct 06 18:44:05 EDT 2004  Wed Oct 06 18:44:57 EDT
   2004
2  tune_vv  testr1  Done  0/0  0/0  Wed Oct 06 19:44:34 EDT 2004  Wed Oct 06 19:45:10 EDT
   2004
3  tune_vv  testr1  Active 2/3  5/8  Wed Oct 06 19:49:31 EDT 2004
```

The columns in the previous example are identified as follows:

- Id. The task ID for the displayed task.
- Type. The task type. Task types are as follows:
  - `vv_copy`. Track physical copy operations (`createvvcopy` command).
  - `move_regions`. Track region move operations (`moverereg` command).
  - `promote_sv`. Track virtual copy promotes (`promotesv` command). Requires an HP 3PAR Virtual Copy license.
  - `remote_copy_sync`. Track Remote Copy volume group synchronizations (`syncrcopy` and `startrcopygroup` commands). Requires an HP 3PAR Remote Copy license.
  - `remote_copy_reverse`. Track the reversal of a Remote Copy group.
  - `remote_copy_failover`. Track the change-over of a secondary volume group to a primary volume group.
  - `remote_copy_recover`. Track the starting of synchronization after a failover operation from the original secondary cluster to the original primary.
  - `remote_copy_restore`. Track the restore process for groups that have already been recovered.
  - `compact_cpg`. Track space consolidation in common provisioning groups. Requires a HP 3PAR Dynamic Optimization license.
  - `compact_lds`. Track space consolidation in logical disks. Requires a HP 3PAR Dynamic Optimization license.
  - `snapspace_accounting`. Track progress of snapshot space usage accounting.
  - `check_vv`. Track progress of the `checkvv` operation.
  - `tune_sd`. Track HP 3PAR System Tuner volume tuning operations (`tunetpvv` command). Requires an HP 3PAR Dynamic Optimization license.
  - `tune_vv`. Track 3PAR System Tuner volume tuning operations (`tunealdvv` command). Requires an HP 3PAR Dynamic Optimization license.
  - `tune_vv_restart`. Track restarted HP 3PAR System Tuner volume tuning operations (`tunealdvv -restart` command). Requires an HP 3PAR Dynamic Optimization license.

- `tune_vv_rollback`. Track rolling back of 3PAR System Tuner volume tuning operation that was previously interrupted (`tunealldv -rollback` command). Requires an HP 3PAR Dynamic Optimization license.
- `scheduled_task`. Track tasks that have been executed by the system scheduler.
- `system_task`. Track tasks that are periodically run by the system.
- `background_task`. Track commands that have been started via the `starttask` command.
- Name. The name of the system object that is being operated on. When there are multiple objects, those objects are not identified individually but as a group (for example, multiple LDs or multiple CPGs).
- Status. The task state. Task states are as follows:
  - Done. The task has completed successfully.
  - Active. The task is still in process.
  - Cancelled. The task was canceled by you.
  - Failed. The task failed to complete because of a reason other than user cancellation.
- Phase. For Active tasks, indicates the number of completed phases and the total number of phases in the current step, using the syntax `<#completed_phase>/<#total_phases>`. Note that each step is composed of an arbitrary number of phases.
- Step. For Active tasks, indicates the number of completed steps and the total number of steps in the current task, using the syntax `<#completed_step>/<#total_steps>`. Note that each task is composed of an arbitrary number of steps.
- Start Time. Indicates the time that the task was started.
- Finish Time. For Done, Cancelled, and Failed tasks, indicates the time that the task stopped because of completion, cancellation, or failure.
- Priority. Displays the priority value such as high, med or low for physical copy or promote tasks and for all other tasks, n/a will be displayed.
- User. The name of the user that initiated the task. A user `sys:3parsys` indicates that the task was generated internally. A user displayed as n/a indicates that a user was not specified for the task.

The following example shows details about a specific task using the task ID (task ID is 3).

```
cli% showtask -d 3

Id Type                Name                Status Phase Step -----StartTime-----
-----FinishTime----
  3 snapspace_accounting ss_accounting done    ---  ---  2009-02-27 11:37:46 PST
2009-02-27 11:37:48 PST

Detailed status:
2009-02-27 11:37:46 PST Created    task.
2009-02-27 11:37:46 PST Started    snapshot usage data collection process for VVs
2009-02-27 11:37:46 PST Updated    snapshot usage data for VV North
2009-02-27 11:37:47 PST Updated    snapshot usage data for VV VV_Tech_1.0020.0000.ro
2009-02-27 11:37:48 PST Updated    snapshot usage data for VV VV_Tech_1
2009-02-27 11:37:48 PST Finished    snapshot usage data collection process.
```

## NOTES

- See the *HP 3PAR Command Line Interface Administrator's Manual* for additional information and examples regarding task management and task management commands, as well as information about Dynamic Optimization.
- By default, this command shows all tasks that started within the last 24 hours.
- The system stores information for the most recent 1000 tasks. Task ID numbers roll at 9999.

# showtemplate

## DESCRIPTION

The `showtemplate` command displays existing templates that can be used for Virtual Volume (VV), Logical Disk (LD), or Common Provisioning Group (CPG) creation.

## SYNTAX

```
showtemplate [options] [<template_name_or_pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-t VV|LD|CPG`

Specifies that the template type displayed is a VV, LD, or CPG template.

`-fit`

Specifies that the properties of the template is displayed to fit within 80 character lines.

## SPECIFIERS

`<template_name_or_pattern>`

Specifies the name of a template, using up to 31 characters or glob-style pattern for matching multiple template names. If not specified, all templates are displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the properties of all templates in CLI line format:

```
cli% showtemplate
Name Type Other Options
Test1 VV -nro -desc "1st Shot"
CPGTemplate CPG -nro -ro -t r1 -ha cage -ssz 2 -ss 256 -sdgs 0
```

## NOTES

If no options are specified, all existing templates are displayed.

# showtoc

## DESCRIPTION

The `showtoc` command displays the system table of contents summary that provides a summary of the system's resources.

## SYNTAX

`showtoc`

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the system table of contents.:

```
cli% showtoc
gltab toc generation: 313
Toc header magic num: 42444854
Toc in use len: 70944
Toc not in use len: 0
Toc on disk len: 38912
Toc version: 69
Toc generation: 313
Toc pd_entries: 80
Toc ld_entries: 5
Toc vv_entries: 1
Toc cage_entries: 4
```

## NOTES

None.

# showtocgen

## DESCRIPTION

The `showtocgen` command displays the table of contents generation number.

## SYNTAX

`showtocgen`

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the table of contents generation number:

```
cli% showtocgen
Table of Contents generation number: 4292
```

## NOTES

The table of contents generation number increases each time there is a change in the system configuration.



# showuser

## DESCRIPTION

The `showuser` command displays information about one or all users, including the username, authority level, and system resources to which a given user has access.

The `showuser` command shows account information for local users (those created with the `createuser` command) or shows the SSH key information for local and LDAP users (enabled by the `setauthparam` command).

## SYNTAX

The syntax for the `showuser` command can be the following:

- `showuser [-oneline] [<user_name>]`
- `showuser -k`

## AUTHORITY

Any role in the system.

## OPTIONS

`-k`

Show users who have set a public SSH key.

`-oneline`

Shows all information about a user on one line.

## SPECIFIERS

`<user_name>`

Specifies your login name, using up to 31 characters. This specifier is not required on the command line. If no specifier is used, information about all users is displayed.

## RESTRICTIONS

Because the output is only for local users and is further limited when the user is at the Browse or Service authority level, an LDAP user cannot see any other user account information. The `showuserconn` command can be used to see the role levels of the current user and whether they are local or LDAP.

## EXAMPLES

```
cli% showuser Joe
Username Domain Privilege Default
Joe      all    super    N
```

The previous example indicates user `Joe` being a member of all domains. Valid output includes `all`, or `<domain_name>`. The columns are identified as follows:

- `Username`. Your user name.
- `Domain`. The domain to which the user belongs.
- `Privilege`. The role level required to run the command.
- `Default`. Indicates whether the domain is the default domain of the user.

## NOTES

- Users are created using the `createuser` command. See “[createuser](#)” (page 149) for more information.
- For the first usage (without the `-k` option), the `showuser` command displays account information for all local users when the `<username>` is not provided or the account information for just the local user with the name `<username>` when it is provided. The output for users with Browse or Service level roles is limited to the user's own accounts and if the `<username>` is provided, it must be the user's name. The output shows the users' username, domain, role, and whether the domain is the default for the user.
- Because the output is only for local users and is further limited when the user is at the Browse or Service authority level, an LDAP user may not see any user account information. Alternatively, both local and LDAP users can use the `showuserconn` command to see the role of the current user. See the column help for `showuserconn` for the different definition of "local" used in the output of `showuserconn`.
- For the second usage (`-k`), users who have set a public SSH key with the `setsshkey` command are displayed, one per line. For users with Browse or Service role levels, the output is limited to the current user.
- A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

# showuseracl

## DESCRIPTION

The `showuseracl` command displays a user's access control list (ACL).

## SYNTAX

```
showuseracl
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays ACL information about all system users:

```
cli% showuseracl
User      Operation Object_Names_or_Patterns
suser    updatevv avvro*
buser    updatevv avvr*,vv0,cpvv0,tpvv0 -f
ruser    updatevv vv0 cpvv0 tpvv0 avv*
```

The columns in the previous example are identified as follows:

- `User`. Your user name.
- `Operation`. The command each user is allowed to execute.
- `Object_Names_or_Patterns`. The object on which the operations are performed.

## NOTES

None.

# showuserconn

## DESCRIPTION

The `showuserconn` command displays information about users who are currently connected (logged in) to the HP 3PAR storage system.

## SYNTAX

```
showuserconn [options <arg>] [<pid> ...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-current`

Shows all information about the current connection only.

`-d`

Specifies more detailed information about the user connection.

```
-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]
```

Sorts command output based on column number `<col>`. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting `<dir>` can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

`<pid>`

Specifies the HP 3PAR storage system process ID for the user connection.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about user connections:

```
cli% showuserconn
  Id Name  --IP_Addr--- Domain Level  ----Connected_since---- Current
23180 Joe   192.168.17.7 all      super 2007/05/31 15:02:53 PDT current
-----
      1 total
```

The columns in the previous example are identified as follows:

- `Id`. Your HP 3PAR storage system identification number.
- `Name`. Indicates the user name under which you logged in.
- `IP_Addr`. The IP address where the user connection exists.

---

**NOTE:** The `Domain` column is displayed only if the CLI was started with the `-listdom` global option or with the `LISTDOM` environment variable. Refer to the *HP 3PAR Command Line Interface Administrator's Manual* for instructions on using global options and setting environment variables.

---

- `Domain`. Indicates the domain in which the user has roles.
- `Level`. Indicates the user's role level.

## NOTES

A `Domain` column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set. Issue `cli -h` and `setclienv -h` for details of the environment variables.

# showversion

## DESCRIPTION

The `showversion` command displays information about the storage server software. Use this command to determine if your system is using the latest software version.

## SYNTAX

```
showversion [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

-a

Show all component versions.

-b

Show build levels.

-s

Show release version number only (useful for scripting).

If no options are specified, the overall version of the software is displayed.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays comprehensive information about the system software:

```
cli% showversion
Release version 2.3.1.60 (DEVEL)
Patches: None

Component Name          Version
CLI Server              2.3.1
CLI Client              2.3.1
System Manager         2.3.1
Kernel                  2.3.1
TPD Kernel Code        2.3.1
```

## NOTES

- When displaying all versions, for certain components multiple versions might be installed. In such cases, multiple lines are displayed.
- If no options are specified, the overall version of the software is displayed.

# showvln

## DESCRIPTION

The `showvln` command displays information about Virtual Volume Logical Unit Numbers (VLUNs) in the system, such as all active and template VLUNs. The display is divided into two sections: the upper provides information about active VLUNs and the lower provides information about VLUN templates.

## SYNTAX

```
showvln [options <arg>]
```

```
showvln -listcols
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-listcols
```

List the columns available to be shown in the `-showcols` option described below (see `clihelp -col showvln` for help on each column).

The [options] are generally of two kinds: those that select the type of information that is displayed, and those that filter the list of VLUNs that are displayed.

By default (if none of the information selection options below are specified) the following columns are shown: LUN VVName HostName Host\_WWN Port Type

Options that select the type of information shown include the following:

```
-showcols <column>[,<column>...]
```

Explicitly select the columns to be shown using a comma-separated list of column names. For this option the full column names are shown in the header.

Run `'showvln -listcol'` to list the available columns.

Run `'clihelp -col showvln'` for a description of each column.

```
-lvw
```

Show the World Wide Name (WWN) of the Virtual Volume (VV) associated with the VLUN.

```
-pathsum
```

Shows path summary information for active VLUNs.

Options that filter the VLUNs that are displayed include the following:

```
-a
```

Shows only active VLUNs.

```
-t
```

Shows only VLUN templates.

```
-host {<hostname|pattern>}...
```

Specifies that only VLUNs exported to hosts that match the hostname or glob-style patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

```
-v {<VV_name>|<pattern>}...
```

Requests that only Logical Disks (LD) mapped to VVs that match any of the specified names or patterns be displayed. Multiple volume names or patterns can be repeated using a comma-separated list (for example `-vv <VV_name>,<VV_name>...`).

-l {<LUN|pattern>}...

Specifies that only exports to the specified LUN are displayed. This specifier can be repeated to display information for multiple LUNs.

-nodes <nodelist>

Requests that only VLUNs for specific nodes are displayed. The node list is specified as a series of integers separated by commas (for example 0, 1, 2). The list can also consist of a single integer (for example 1).

-slots <slotlist>

Requests that only VLUNs for specific slots are displayed. The slot list is specified as a series of integers separated by commas (for example 0, 1, 2). The list can also consist of a single integer (for example 1).

-ports <portlist>

Requests that only VLUNs for specific ports are displayed. The port list is specified as a series of integers separated by commas (for example 0, 1, 2). The list can also consist of a single integer (for example 1).

-domain {<domain\_name|pattern>}...

Shows only the VLUNs whose VVs are in domains with names that match one or more of the <domainname\_or\_pattern> options. This option does not allow listing objects within a domain of which the user is not a member. Multiple domain names or patterns can be repeated using a comma-separated list.

-sortcol <col> [,<dir>] [:<col>[,<dir>] ...]

Sorts command output based on column number <col>. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting <dir> can be specified as follows:

inc

Sort in increasing order (default).

dec

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays all active and template VLUNs using glob-style patterns:

```
cli% showvln -v *.2,*.3
Active VLUNs
Lun VVname      Host  ---Host_WWN---  Port Type
 2  tpv.2  pe750-07  210000E08B056C21  0:2:1 host
 3  tpv.3  pe750-07  210000E08B056C21  0:2:1 host
 2  tpv.2  pe750-07  210100E08B256C21  1:2:1 host
 3  tpv.3  pe750-07  210100E08B256C21  1:2:1 host
 2  test.2      sun  210000E08B023F71  0:2:2 host
 3  test.3      sun  210000E08B023F71  0:2:2 host
```



```

2 test.2      sun 210000E08B023C71 1:5:1 host
3 test.3      sun 210000E08B023C71 1:5:1 host
-----
8

VLUN Templates
Lun VVname      Host ----Host_WWN---- Port Type
2  tpv.2  pe750-07 -----          --- host
3  tpv.3  pe750-07 -----          --- host
2  test.2   sun -----          --- host
3  test.3   sun -----          --- host
-----
4

```

The columns in the previous examples are identified as follows:

- Lun. The LUN to which the virtual volume is exported.
- VVname. The name of the exported virtual volume.
- Host. The name of the host to which the virtual volume is exported. In the `Templates` section, the `port-presents` rule contains no value.
- Host\_WWN. The WWN of the host to which the virtual volume is exported. In the `Templates` section, dashes mean this column does not apply.
- Port. The port (node:slot:port) on which the host to which the virtual volume is exported appears. In the `Templates` section, the `host-sees` rule contains dashes.
- Type. The type of export rule that is applied when the virtual volume is exported. Possible entries are `port` for `port-presents`, `host` for `host-sees`, `hostset` for `host-set` VLUNs, `matched-set` for `matched-set`.

## NOTES

- A `Domain` column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.
- See [“Glob-Style Pattern” \(page 12\)](#) for more information.

# showvv

## DESCRIPTION

The `showvv` command displays information about all Virtual Volumes (VVs) or a specific VV in a system.

## SYNTAX

- `showvv [options <arg>] [<VV_name|pattern|VV_set>...]`
- `showvv -listcols`

## AUTHORITY

Any role in the system.

## OPTIONS

`-listcols`

List the columns available to be shown in the `-showcols` option described below (see `clihelp -col showvv` for help on each column).

The `[options]` are generally of two kinds: those that select the type of information that is displayed, and those that filter the list of VVs that are displayed.

By default (if none of the information selection options below are specified) the following columns are shown:

`Id, Name, Prov, Type, CopyOf, BsId, Rd, State, Adm_Rsvd_MB, Snp_Rsvd_MB, Usr_Rsvd_MB, VSize_MB.`

Options that select the type of information shown include the following:

`-showcols <column> [, <column>...]`

Explicitly select the columns to be shown using a comma-separated list of column names. For this option the full column names are shown in the header.

Run `showvv -listcol` to list the available columns.

Run `clihelp -col showvv` for a description of each column.

`-d`

Displays detailed information about the VVs. The following columns are shown:

`ID, Name, Rd, Mstr, Prnt, Roch, Rwch, PPrnt, PBlkRemain, VV_WWN, CreationTime.`

`-pol`

Displays policy information about the VV. The following columns are shown:

`ID, Name, Policies.`

`-s`

Displays Logical Disk (LD) space use by the VVs. The following columns are shown:

`ID, Name, Prov, Type, Adm_Rsvd_MB, Adm_Used_MB, Snp_Rsvd_MB, Snp_Used_MB, Snp_Used_Perc, Warn_Snp_Perc, Limit_Snp_Perc, Usr_Rsvd_MB, Usr_Used_MB, Usr_Used_Perc, Warn_Usr_Perc, Limit_Usr_Perc, Tot_Rsvd_MB, VSize_MB.`

---

**NOTE:** For snapshot (vcopy) VVs, the `Adm_Used_MB`, `Snp_Used_MB`, `Usr_Used_MB` and the corresponding `_Perc` columns have an (\*) before the number for two reasons: to indicate that the number is an estimate that must be updated using the `updatesnapSPACE` command, and to indicate that the number is not included in the total for the column since the corresponding number for the snapshot's base VV already includes that number.

---

-r

Displays raw space used by the VVs. The following columns are shown:

ID, Name, Prov, Type, Adm\_RawRsvd\_MB, Adm\_Rsvd\_MB, Snp\_RawRsvd\_MB, Snp\_Rsvd\_MB, Usr\_RawRsvd\_MB, Usr\_Rsvd\_MB, Tot\_RawRsvd\_MB, Tot\_Rsvd\_MB, VSize\_MB.

-zone

Displays mapping zone information for VVs. The following columns are shown:

ID, Name, Prov, Type, VSize\_MB, Adm\_Zn, Adm\_Free\_Zn, Snp\_Zn, Snp\_Free\_Zn, Usr\_Zn, Usr\_Free\_Zn.

-g

Displays the volume's SCSI geometry settings for VVs. The following columns are shown:

ID, Name, SPT, HPC, SctSz.

-alert

Indicates whether alerts are posted on behalf of the VVs. The following columns are shown:

ID, Name, Prov, Type, VSize\_MB, Snp\_Used\_Perc, Warn\_Snp\_Perc, Limit\_Snp\_Perc, Usr\_Used\_Perc, Warn\_USr\_Perc, Limit\_USr\_Perc, Alert\_Adms\_Fail\_Y, Alert\_Snp\_Fail\_Y, Alert\_Snp\_Wrn\_Y, Alert\_Snp\_Lim\_Y, Alert\_USr\_Fail\_Y, Alert\_USr\_Wrn\_Y, Alert\_USr\_Lim\_Y.

-alerttime

Shows times when alerts were posted (when applicable). The following columns are shown:

ID, Name, Alert\_Adms\_Fail, Alert\_Snp\_Fail, Alert\_Snp\_Wrn, Alert\_Snp\_Lim, Alert\_USr\_Fail, Alert\_USr\_Wrn, Alert\_USr\_Lim.

-cpprog

Shows the physical copy and promote progress. The following columns are shown:

ID, Name, Prov, Type, CopyOf, VSize\_MB, Copied\_MB, Copied\_Perc.

-cpgalloc

Shows CPGs from which a VV is allocated, if any. The following columns are shown:

ID, Name, Prov, Type, UsrcPG, SnpCPG.

-state

Shows the detailed state information for the VVs. The following columns are shown:

ID, Name, Prov, Type, State, Detailed\_State.

-hist

Shows the history information of the VVs. The following columns are shown:

ID, Name, Prov, Type, CreationTime, ExpirationEndTime, ExpirationTime, SpaceCalcTime, Comment.

-rcopy

This option appends two columns, RcopyStatus and RcopyGroup, to any of the display options above.

-notree

Do not display VV names in tree format. Unless either the -notree or the -sortcol option described below are specified, the VVs are ordered and the names are indented in tree format to indicate the virtual copy snapshot hierarchy.

-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]

Sorts command output based on the column number `<col>`. Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting `<dir>` can be specified as follows:

- `inc`  
Sort in increasing order (default).
- `dec`  
Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by the values in later columns.

A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set.

The VV filtering option include:

`-p <pattern>`

Pattern for matching virtual volumes to show (see below for description of `<pattern>`) If the `-p` option is specified multiple times, each instance of `<pattern>` adds additional candidate disks that match that pattern.

A `<pattern>` is one or more of the following:

- `-cpg {<CPG_name|pattern>}...`  
Displays only VVs with `UsrCPG` or `Snpcpg` names that matches one or more of the `<CPG_name>` or `<pattern>` specifier. Multiple `<CPG_name>` or `<pattern>` specifiers can be repeated using a comma-separated list (for example `-cpg <CPG_name>,<CPG_name>...`).
- `-prov {<prov|pattern>}...`  
Displays only VVs with `prov` (provisioning) values that match the `<prov>` or `<pattern>` specifier. Multiple `<prov>` or `<patterns>` specifiers can be repeated using a comma-separated list (for example `-prov <prov>,<prov>...`).
- `-type <type|pattern>...`  
Displays only VVs of types that match the `<type>` or `<pattern>` specifier. Multiple `<type>` or `<patterns>` specifiers can be repeated using a comma-separated list (for example `-type <type>,<type>...`).
- `-host {<host_name|pattern>}...`  
Displays only VVs that are exported as VLUNs to hosts with names that match one or more of the specified `<host_name>` or `<patterns>`. See ["SPECIFIERS" \(page 509\)](#) for additional information on patterns as used with this command. Multiple `<host_name>` or `<pattern>` specifiers can be repeated using a comma-separated list (for example `-host <host_name>,<host_name>...`).
- `-baseid {<baseid|pattern>}...`  
Displays only VVs with `bsld` column that matches one or more of the `<baseid>` or `<pattern>` specifiers. Multiple `<baseid>` or `<pattern>` specifiers can be repeated using a comma-separated list (for example `-baseid <baseid>,<baseid>...`).
- `-copyof {<vv_name|pattern>}...`  
Displays only VVs with `CopyOf` columns that match one or more of the `<copyof>` or `<pattern>` specifiers. Multiple groups or patterns can be repeated using a comma-separated list (for example `-rcopygroup <group_name>,<group_name>...`).

- `-rcopygroup {<group_name|pattern>}...`  
Displays only VVs that are in Remote Copy groups that match one or more of the specified groups or patterns. Multiple groups or patterns can be repeated using a comma-separated list (for example `-rcopygroup <group_name>,<group_name>...`).

- `-policy <policy|pattern>...`  
Show only VVs whose policy matches the one or more of the policies or patterns.

`-domain {<domain_name|pattern>}...`

Shows only VVs that are in domains with names matching one or more of the specified domains or patterns. This option does now allow listing objects within a domain of which the user is not a member. Multiple domain names or patterns can be repeated using a comma-separated list (for example `-domain <domain_name>,<domain_name>...`).

`-expired`

Show only VVs that have expired.

`-exp <time>{d|D|h|H}`

Specifies the relative time from the current time that volume will expire. `<time>` is a positive integer value and in the range of 1 - 43,800 hours (1,825 days). Time can be optionally specified in days or hours providing either `d` or `D` for day and `h` or `H` for hours following the entered time value.

`-retained`

Shows only VVs that have a retention time.

`-failed`

Shows only failed VVs.

The following VV filtering options are deprecated and will be removed in a future release. Instead, use the appropriate `-p <pattern>` option described above.

`-cpg <CPG_name|pattern>...`

Show only VVs whose `UsrCPG` or `Snpcpg` matches the one or more of the `<CPG_name>` or `<pattern>` specifier. This option is deprecated without the preceding `-p` option. Use the `-p -cpg` option described above instead.

`-tpvv`

Show only Thin Provisioned VVs (TPVVs). This option is deprecated. Use the `-p -prov tp*` option described above instead.

`-host <hostname|pattern>...`

Show only VVs that are exported as VLUNs to hosts with names that match one or more of the `<hostname>` or `<pattern>` specifier. This option is deprecated without the preceding `-p` option. Use `-p -host` option described above instead.

`-rcopygroup <groupname|pattern>...`

Show only VVs that are in Remote Copy groups that match one or more of the `<groupname>` or `<pattern>` specifier. This option is deprecated without the preceding `-p` option. Use `-p -rcopygroup` option described above instead.

## SPECIFIERS

**NOTE:** If one or more `<VV_name|pattern>` are specified, then the virtual volumes with names that match any of the patterns are listed. Otherwise, all virtual volumes are listed. The virtual volumes shown include snapshots. Patterns are glob-style (shell-style) patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

`<VV_name|pattern|VV_set>...`

Specifies the VV name (up to 31 characters in length) matching the glob-style pattern or that are members of the supplied VV set will have their information displayed. The `vv_set` name must start with `set :`. This specifier can be repeated to display configuration information about multiple VVs. This specifier is not required on the command line. If not specified, configuration information for all VVs in the system is displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about all virtual volumes:

```
cli% showvv
```

											----	Rsvd (MB)	-----	- (MB)	--	
Id	Name	Prov	Type	CopyOf	BsId	Rd	-Detailed_State-	Adm	Snp	Usr	VSize					
0	admin	full	base	---	0	RW	normal	0	0	10240	10240					
19	aldvv	full	base	---	19	RW	normal	0	0	10240	10240					
20	bar-remote	full	peer	---	20	RW	normal	0	0	20480	20480					
11	mytpvv	tpvv	base	---	11	RW	normal	512	0	2048	1024					
6	rcopy.0	cpvv	base	---	6	RW	normal	512	2048	10240	10240					
7	rcopy.1	cpvv	base	---	7	RW	normal	512	2048	10240	10240					
21	s026-foo	full	peer	---	21	RW	normal	0	0	10240	10240					
18	testgrow	full	base	---	18	RW	normal	0	0	5242880	5242880					
12	tpvv	full	base	---	12	RW	normal	0	0	1024	1024					
13	vv.0	full	base	---	13	RW	normal	0	0	1024	1024					
14	vv.1	full	base	---	14	RW	normal	0	0	1024	1024					
15	vv.2	full	base	---	15	RW	normal	0	0	1024	1024					
16	vv.3	full	base	---	16	RW	normal	0	0	1024	1024					
17	vv.4	full	base	---	17	RW	normal	0	0	1024	1024					
-----																
14	total										1536	4096	5322752	5321728		

The columns in the previous example are identified as follows:

- ID. The ID of the virtual volume.
- Name. The name of the virtual volume.
- Prov. The provisioning for the VV. Can be one of the following:
  - `full`. Fully provisioned VV, either with no Snp (snapshot) space or with statically allocated Snp space.
  - `tpvv`. Thin Provisioned VV, with space for the base volume allocated from the `Usr` space that is associated with the `UsrCPG`. Snapshots allocate space from the `Snp` space associated with the `SnpCPG` (if any).
  - `cpvv`. Commonly Provisioned VV. The `Usr` space for this VV is fully provisioned and the `Snp` space is associated with a `SnpCPG`.
  - `tps`. An old-style Thin Provisioned VV (created on a 2.2.4 release or earlier) where both the base VV and snapshot data are allocated from the `Snp` space associated with the `UsrCPG`.
  - `snp`. Since the VV is Type `vcopy` (snapshot) it is the provisioning that is associated with the base VV.
  - Domain. The domain to which the virtual volume belongs. Valid values are `-` or `<domain_name>`. If the domain does not exist, `-` is displayed. The Domain column can be included by using the `setclienv` command to set `listdom` to 1. The `listdom`

option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable.

- **Type.** Indicates the copy type of virtual volume and can be one of the following:
  - `base`. Base volume (not a copy).
  - `pcopy`. Physical copy (full copy).
  - `vcopy`. Snapshot copy (virtual copy).
  - `peer`. Remote volume admit into the local HP 3PAR storage system.
- **CopyOf.** Displays the virtual volume from which the copy was made.
  - `---`. The virtual volume is a base volume.
  - `name`. The name of the virtual volume from which a copy was made.
- **BSID.** If the virtual volume is a base volume or a physical copy, the base volume ID number is the same as the ID number in the `Id` column. If the virtual volume is a virtual copy, the column shows the base volume from which the copy was made.
- **Rd.** Indicates whether the virtual volume is read/write (RW) or read-only (RO).
- **Detailed State.** Indicates the current status of the virtual volume.
  - `lds_not_started`. LDs Not Started.
  - `needs_check`. Needs to be checked for consistency.
  - `not_started`. VV Not Started.
  - `needs_maint_check`. A maintenance check is required.
  - `internal_consistency_error`. An internal consistency error has been encountered.
  - `snapdata_invalid`. Snapdata Invalid.
  - `preserved`. One or more sets of an LD is unavailable due to missing chunklets and the remaining VV data is preserved in a preserved data ld.
  - `stale`. Parts of the VV contain old data because a copy-on-write operation failed.
  - `copy_failed`. A promote or copy to this volume failed.
  - `degraded_avail`. Degraded due to availability.
  - `degraded_perf`. Degraded due to performance.
  - `promoting`. Volume is currently the target of a promote.
  - `copy_target`. Volume is currently the target of a physical copy.
  - `resync_target`. Volume is currently the target of a resync copy.
  - `tuning`. Volume is tuning.
  - `closing`. Volume is closing.
  - `removing`. Volume is removing.
  - `creating`. Volume is creating.

- `copy_source`. Copy Source.
- `unknown`. Volume state unknown.
- `Adm`. The snapshot administrator space in megabytes.
- `Snap`. The snapshot space in megabytes.
- `user`. Your user space in megabytes.
- `VSize`. Virtual size of volume in MB (1024<sup>2</sup> bytes).

The following example displays detailed information about the system's virtual volumes:

```
cli% showvv -d
Id Name Rd Mstr Prnt Roch Rwch PPrnt PBlkRemain -----VV_WWN-----
-----CreationTime-----
0 admin RW 1/-/- --- --- --- --- - 50002AC0000001A8 Thu May 24 20:22:07
PDT 2007
7 vv1 RW 1/0/- --- --- --- --- - 50002AC0000701A8 Tue Aug 28 16:41:01
PDT 2007
8 vv2 RW 0/1/- --- --- --- --- - 50002AC0000801A8 Tue Aug 28 16:41:26
PDT 2007
9 vv3 RW 1/0/- --- --- --- --- - 50002AC0000901A8 Tue Aug 28 16:41:37
PDT 2007
-----
4
```

The columns in the output above are identified as follows:

- `Id`. The virtual volume's ID.
- `Name`. The virtual volume's name.
- `Rd`. The read/write permissions for the volume. Values can be `RW` (read and write) or `RO` (read only).
- `Mstr`. The master node for the volume responsible for assigning mapping zones.
- `Prnt`. The ID of the volume's parent in the snapshot tree.
- `Roch`. The ID of the read only child volume in the snapshot tree.
- `Rwch`. The ID of the read write child volume in the snapshot tree.
- `PPrnt`. The ID of the volume's physical parent volume.
- `PBlkRemain`. The number of remaining blocks to be copied from the parent volume (for physical copy destination).
- `VV_WWN`. The volume's World Wide Name.
- `CreationTime`. The creation date and time of the volume.

The following example displays the distribution of space for each virtual volume:

```
cli% showvv -s
-----Adm-----Snp-----Usr-----
--(MB)-- --(MB)-- -(% VSize)-- --(MB)-- --(% VSize)--
-----(MB)-----
Id Name Prov Type Rsvd Used Rsvd Used Used Wrn Lim Rsvd Used Used Wrn
Lim Tot_Rsvd VSize
0 admin full base 0 0 0 0 0.0 -- -- 10240 10240 100.0 --
-- 10240 10240
```



13	BasketDome	cpvv	base	0	0	0	0	0.0	2	5	256	256	100.0	--
--	256	256												
-----														
2	total			0	0	0	0	0.0	2	5	10496	10496	100.0	
				10496	10496									

The columns in the previous example are identified as follows:

- ID. The ID of the virtual volume.
- Name. The name of the virtual volume.
- Prov. The provisioning for the VV. Can be one of the following:
  - full. Fully provisioned VV, either with no Snp (snapshot) space or with statically allocated Snp space.
  - tpcvv. Thin Provisioned VV, with space for the base volume allocated from the U<sub>SR</sub> space that is associated with the U<sub>SR</sub>CPG. Snapshots allocate space from the Snp space associated with the SnpCPG (if any).
  - cpvv. Commonly Provisioned VV. The U<sub>SR</sub> space for this VV is fully provisioned and the Snp space is associated with a SnpCPG.
  - tpsd. An old-style Thin Provisioned VV (created on a 2.2.4 release or earlier) where both the base VV and snapshot data are allocated from the Snp space associated with the U<sub>SR</sub>CPG.
  - snp. Since the VV is Type vcopy (snapshot) it is the provisioning that is associated with the base VV.
- Adm\_Rsvd\_MB. Adm (snapshot admin or SA) reserved space in megabytes.
- Adm\_Used\_MB. Adm used space in megabytes.
- Snp\_Rsvd\_MB. Snp (snapshot data or SD) reserved space in megabytes.
- Snp\_Used\_MB. Snp used space in megabytes.
- Snp\_Used\_Perc. Snp used space as a percentage of the virtual size (VSize\_MB).
- Warn\_Snp\_Perc. Percentage of VV virtual size (VSize\_MB) at which the Snp\_Used\_MB will generate a warning alert.
- Limit\_Snp\_Perc. Percentage of VV virtual size (VSize\_MB) at which the Snp\_Used\_MB will be prevented from growing.
- U<sub>SR</sub>\_Rsvd\_MB. U<sub>SR</sub> (User) reserved space in megabytes.
- U<sub>SR</sub>\_Used\_MB. U<sub>SR</sub> used space in megabytes.
- U<sub>SR</sub>\_Used\_Perc. U<sub>SR</sub> used space as a percentage of the virtual size (VSize\_MB).
- Warn\_U<sub>SR</sub>\_Perc. Percentage of VV virtual size (VSize\_MB) at which the U<sub>SR</sub>\_Used\_MB will generate a warning alert.
- Limit\_U<sub>SR</sub>\_Perc. Percentage of VV virtual size (VSize\_MB) at which the U<sub>SR</sub>\_Used\_MB will be prevented from growing.
- Tot\_Rsvd\_MB. Total reserved space (Adm\_Rsvd\_MB + Snp\_Rsvd\_MB + U<sub>SR</sub>\_Rsvd\_MB)
- Tot\_RawRsvd\_MB. Total raw reserved space (Adm\_RawRsvd\_MB + Snp\_RawRsvd\_MB + U<sub>SR</sub>\_RawRsvd\_MB).

The following example displays policy information for virtual volume 0:

```
cli% showvv -p 0
Id Name Domain Policies
0 admin - stale_ss,system
-----
1
```

The columns in the previous example are identified as follows:

- **Id.** The virtual volume ID.
- **Name.** The virtual volume name.
- **Domain.** The domain to which the virtual volume belongs. Valid values are `-` or `<domain_name>`. If the domain does not exist, `-` is displayed. The Domain column can be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable.
- **Policies.** The current policy assigned to the displayed virtual volume.

The following example displays the snapshot space information:

```
cli% showvv -s -p -prov tp* -host hname
```

The columns in the previous example are identified as follows:

- **ID.** The ID of the virtual volume.

The following example displays the detailed state information:

```
cli% showvv -state
Id Name Prov Type State -Detailed_State-
0 admin full base normal normal
-----
1 total
```

The columns in the previous example are identified as follows:

- **ID.** The ID of the virtual volume.
- **Name.** The virtual volume name.
- **Prov.** The provisioning for the VV. Can be one of the following:
  - `full`. Fully provisioned VV, either with no Snp (snapshot) space or with statically allocated Snp space.
  - `tpvv`. Thin Provisioned VV, with space for the base volume allocated from the `Usr` space that is associated with the `UsrCPG`. Snapshots allocate space from the `Snp` space associated with the `SnpCPG` (if any).
  - `cpvv`. Commonly Provisioned VV. The `Usr` space for this VV is fully provisioned and the `Snp` space is associated with a `SnpCPG`.
  - `tps`. An old-style Thin Provisioned VV (created on a 2.2.4 release or earlier) where both the base VV and snapshot data are allocated from the `Snp` space associated with the `UsrCPG`.
  - `-.` Since the VV is Type `vcopy` (snapshot) it is the provisioning that is associated with the base VV.

- **Type.** Indicates the copy type of virtual volume and can be one of the following:
  - `base`. Base volume (not a copy).
  - `pcopy`. Physical copy (full copy).
  - `vcopy`. Snapshot copy (virtual copy).
  - `peer`. Remote volume admit into the local HP 3PAR storage system.
- **State.** The state of the virtual volume.
  - `normal`. The virtual volume is operating normally.
  - `failed`. The virtual volume is operating abnormally.
  - `degraded`. The virtual volume is degraded.
- **Detailed\_State.** The detailed state of the logical disk.
  - `lds_not_started`. The logical disks are not started.
  - `not_started`. The virtual volumes are not started.
  - `needs_check`. The logical disks needs to be checked for consistency.
  - `needs_maint_check`. A maintenance check is required.
  - `internal_consistency_error`. An internal consistency error has been encountered.
  - `snapdata_invalid`. The Snapdata is invalid.
  - `preserved`. One or more sets of a logical disk is unavailable due to missing chunklets and the remaining virtual volume data is preserved in a preserved data logical disk.
  - `stale`. Parts of the virtual volume contain old data because a copy-on-write operation failed.
  - `copy_failed`. A promote or copy to this volume failed.
  - `degraded_avail`. The availability of the virtual volume is degraded.
  - `degraded_perf`. The performance of the virtual volume is degraded.
  - `promoting`. The volume is currently the target of a promote.
  - `copy_target`. The volume is currently the target of a copy.
  - `resync_target`. Volume is currently the target of a resync copy.
  - `tuning`. The volume is currently tuning.
  - `closing`. The volume is currently closing.
  - `removing`. The volume is currently removing.
  - `creating`. The volume is currently creating.
  - `copy_source`. The volume is a copy source.
  - `unknown`. The volume state is unknown.

The following example displays raw space usage information for thin provisioned VVs exported to host hname and all VVs in the tree with the base VV of ID 50.

```
cli% showvv -r -p -prov tp* -host halfdome -p -baseid 11
```

(MB)												
			-----Adm-----		-----Snp-----		-----Usr-----		-----Tot-----			
Id	Name	Prov Type	RawRsvd	Rsvd	RawRsvd	Rsvd	RawRsvd	Rsvd	RawRsvd	Rsvd	VSize_MB	
11	HalfDome	full base	0	0	0	0	512	256	512	256	256	
1 total			0	0	0	0	512	256	512	256	256	

The columns in the previous example are identified as follows:

- ID. The ID of the virtual volume.
- Name. The virtual volume name.
- Prov. The provisioning for the VV. Can be one of the following:
  - full. Fully provisioned VV, either with no Snp (snapshot) space or with statically allocated Snp space.
  - tppv. Thin Provisioned VV, with space for the base volume allocated from the Usr space that is associated with the UsrCPG. Snapshots allocate space from the Snp space associated with the SnpCPG (if any).
  - cpvv. Commonly Provisioned VV. The Usr space for this VV is fully provisioned and the Snp space is associated with a SnpCPG.
  - tpsd. An old-style Thin Provisioned VV (created on a 2.2.4 release or earlier) where both the base VV and snapshot data are allocated from the Snp space associated with the UsrCPG.
  - -. Since the VV is Type vcopy (snapshot) it is the provisioning that is associated with the base VV.
- Type. Indicates the copy type of virtual volume and can be one of the following:
  - base. Base volume (not a copy).
  - pcopy. Physical copy (full copy).
  - vcopy. Snapshot copy (virtual copy).
  - peer. Remote volume admit into the local HP 3PAR storage system.
- Adm\_RawRsvd\_MB. Raw (including RAID overhead) Adm reserved space in MB (1024^2 bytes).
- Adm\_Rsvd\_MB. Adm (snapshot admin or SA) reserved space in MB Adm
- Snp\_RawRsvd\_MB. Raw (including RAID overhead) Snp reserved space in MB (1024^2 bytes).
- Snp\_Rsvd\_MB. Snp (snapshot data or SD) reserved space in MB (1024^2 bytes).
- User\_RawRsvd\_MB. Raw (including RAID overhead) User reserved space in MB (1024^2 bytes).
- User\_Rsvd\_MB. Usr (User) reserved space in MB (1024^2 bytes).
- Tot\_RawRsvd\_MB. Total raw reserved space (Adm\_RawRsvd\_MB + Snp\_RawRsvd\_MB + Usr\_RawRsvd\_MB).
- Tot\_Rsvd\_MB. Total reserved space (adm\_Rsvd\_MB + Snp\_Rsvd\_MB + Usr\_Rsvd\_MB).

The following example shows the policies associated with a volume:

```
cli% showvv -pol
Id Name -----Policies-----
 0 admin      stale_ss,system,no_zero_detect
19 aldvv     stale_ss,no_system,no_one_host,no_zero_detect
20 bar-remote stale_ss,no_system,no_one_host,no_cache,no_zero_detect
11 mytpvv    stale_ss,no_system,no_one_host,no_zero_detect
 6 rcopy.0   stale_ss,no_system,no_one_host,no_zero_detect
 7 rcopy.1   stale_ss,no_system,no_one_host,no_zero_detect
21 s026-foo  stale_ss,no_system,no_one_host,no_cache,no_zero_detect
18 testgrow  stale_ss,no_system,no_one_host,no_zero_detect
12 tpvv      stale_ss,no_system,no_one_host,no_zero_detect
13 vv.0      stale_ss,no_system,no_one_host,no_zero_detect
14 vv.1      stale_ss,no_system,no_one_host,no_zero_detect
15 vv.2      stale_ss,no_system,no_one_host,no_zero_detect
16 vv.3      stale_ss,no_system,no_one_host,no_zero_detect
17 vv.4      stale_ss,no_system,no_one_host,no_zero_detect
```

The columns in the previous example are identified as follows:

- `stale_ss`. Stale snapshots. If there is no space for a copy-on-write operation, the snapshot is allowed to go stale but the host write can proceed without an error.
- `no_stale_ss`. No stale snapshots. If there is no space for a copy-on-write operation, the host write will fail.
- `one_host`. This indicates a volume is constrained to export to one host or one host cluster.
- `no_one_host`. This indicates a volume exported to multiple hosts for use by a cluster-aware application, or when "port presents" VLUNs are used.
- `tp_bzero`. This indicates that if a host write results in the allocation of a new data page that is only partially filled by the host write, then a zero-fill is performed on the unwritten portion of the data page.
- `no_tp_zero`. This indicates that the zero-fill operation is bypassed on the allocation of partially written data pages.
- `zero_detect`. This indicates that the HP 3PAR storage system will scan for zeros in the incoming write data.
- `no_zero_detect`. This indicates that the HP 3PAR storage system will not scan for zeros in the incoming write data.
- `no_cache`. This indicates that the HP 3PAR storage system is disabled for write caching, read caching, and read ahead for the volume. This is a read-only policy and cannot be set.

## NOTES

- The per-snapshot space is approximate and must be calculated using the `updatesnapspace` command.
- If the `-showcols` option is used, the full column names are shown in the header otherwise the header contains abbreviated column names.
- For `<cpgname_or_pattern>`, `<hostname_or_pattern>`, `<groupname_or_pattern>`, and `<domainname_or_pattern>`, the patterns are glob-style (shell-style) patterns. Refer to ["Glob-Style Pattern" \(page 12\)](#) for further information.
- A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

- The `showvv` command has new properties that provide statistics on the growth and reclamation of `usr`, `snp`, and `adm` space within a volume. These properties can be displayed using the `-showcols` option. The new properties, as shown by the `-listcols` option are `Grown_Adm_MB`, `Grown_Snp_MB`, `Grown_Snp_SD_MB`, `Reclaimed_Adm_MB`, `Reclaimed_Snp_MB`, or `Reclaimed_Snp_SD_MB`. These statistics are only available via the CLI and only via the `-showcols` option.
- For this command: 1 MB = 1048576 bytes.
- If your system is accessible by an OpenStack cloud, you may see volumes with prefixes indicating the volumes were created through the OpenStack cloud. Volumes created through the OpenStack cloud use the OpenStack Volume (OSV) and OpenStack Snapshot (OSS) prefixes.

# showvvcpg

## DESCRIPTION

The `showvvcpg` command displays the Virtual Volume (VV) space distribution among CPGs.

## SYNTAX

```
showvvcpg [options] [<vvname|pattern|VV_set> ...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-domain <domain_name|pattern>[, <domain_name|pattern>...]
```

Only show VVs that are in domains with names matching one or more of the specified `domain_name` or patterns. Only VVs within domains that the user is a member of can be listed. Multiple domain names or patterns can be repeated using a comma-separated list (for example `-domain <domain_name>,<domain_name>...`).

```
-sortcol <col>[, <dir>] [:<col>[, <dir>] ...]
```

Sorts command output based on the column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

## SPECIFIERS

```
<vvname|pattern>...
```

Only show virtual volumes with the specified names, names that match the glob-style patterns, or that belong to matching VV sets. The VV set specifier must start with `set:` and be followed by a VV set name or glob-style pattern.

## RESTRICTIONS

None.

## EXAMPLES

The following example shows the VV space distribution among CPGs in the ESX domain for VVs with names that end in `sysrpt`:

```
cli% showvvcpg -domain ESX *sysrpt
----- (MB) ----- -New (MB) --
Name      CPG      Adm  Snp    Usr  Adm  Snp  Usr
esx-sysrpt esx-fc-r1 256 1920 114560  0  0  0
esx-sysrpt esx-ssd-r1 256 1152   7296  0  0  0
-----
1          -      512 3072 121856  0  0  0
```

The following example shows VV space distribution for VVs belonging to VV sets with names that begin with `tv`:

```
cli% showvvcpg set:tv*
----- (MB) ----- -New (MB) --
Name      CPG  Adm Snp  Usr Adm Snp Usr
testvv    cpg0  -   - 1024  0  0  0
newtestvv cpg0  -   - 1024  0  0  0
-----
2         -     0  0 2048  0  0  0
```

The following example shows how Adaptive Optimization has distributed space for the `Adm`, `Snp` and `Usr` space for a VV among 3 CPGs:

```
cli% showvvcpg Win2k8-MySQLData
----- (MB) ----- -New (MB) --
Name      CPG      Adm Snp   Usr Adm Snp Usr
Win2k8-MySQLData sysrpt-fc-r1  -   - 41472  0  0  0
Win2k8-MySQLData sysrpt-nl-r6 352 8064 191872 0  0  0
Win2k8-MySQLData sysrpt-ssd-r1 160   -   384  0  0  0
-----
1         -     512 8064 233728 0  0  0
```

The columns in the previous examples are identified as follows:

- `Name`. The VV name.
- `CPG`. The CPG designator.
- `Adm`. The amount of snapshot administration space.
- `Snp`. The amount of snapshot data space.
- `Usr`. The amount of user space.

## NOTES

A `Domain` column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

The columns shown under the heading `New (MB)` are empty (-) unless some regions are currently being moved from one CPG to another. For the duration of the move, the space being moved appears under both the normal `(MB)` heading for the old CPG and under the `New (MB)` heading for the new CPG. After the move is completed, the space is removed from the old CPG and appears only under the normal `(MB)` heading for the new CPG.



# showvmap

## DESCRIPTION

The `showvmap` command displays information about how Virtual Volume (VV) regions are mapped to logical disks.

## SYNTAX

```
showvmap <VV_name>
```

## AUTHORITY

Any role in the system.

## OPTIONS

None.

## SPECIFIERS

<VV\_name>

Specifies the VV name, using up to 31 characters in length.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about how VV `VV1` is mapped:

```
cli% showvmap VV1
```

Space		Start (MB)	Length (MB)	LdId	LdName	LdOff (MB)
adm	0	0	256	25	VV1.adm.0	0
	1	256	256	24	VV1.adm.1	0
snp	0	0	224	23	VV1.snp.0	0
	1	224	192	22	VV1.snp.1	0
usr	0	0	256	27	VV1.usr.0	0
	1	256	256	26	VV1.usr.1	0
	2	512	256	27	VV1.usr.0	256
	3	768	256	26	VV1.usr.1	256
	4	1024	256	27	VV1.usr.0	512
	5	1280	256	26	VV1.usr.1	512
	6	1536	256	27	VV1.usr.0	768
7	1792	256	26	VV1.usr.1	768	

The columns in the previous example are identified as follows:

- `Space`. The type of the space (user (`usr`), snapshot data (`snp`), or snapshot administration (`adm`) for which the region is being used followed by the ID of the region. The number to the right of the space type are the chunklets for each space.
- `Start (MB)`. The offset from the beginning of the region, in MB.
- `Length (MB)`. The length, or size, of the region in MB.
- `LdId`. The ID of the logical disk that contains the region.
- `LdName`. The name of the logical disk that contains the region.
- `LdOff (MB)`. The offset from the beginning of the logical disk that contains the region, in MB.

## NOTES

None.

# showvvpd

## DESCRIPTION

The `showvvpd` command displays Virtual Volume (VV) distribution across Physical Disks (PDs) .

## SYNTAX

```
showvvpd [option <arg>] {<VV_name|pattern>}...
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]
```

Sorts command output based on the column number (<col>). Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting <dir> as follows:

inc

Sort in increasing order (default).

dec

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by the values in later columns.

## SPECIFIERS

```
<VV_name> | <pattern>
```

Specifies the VV with the specified name (31 character maximum) or matches the glob-style pattern for which information is displayed. This specifier can be repeated to display configuration information about multiple VVs. This specifier is not required. If not specified, configuration information for all VVs in the system is displayed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays information about multiple VVs. In this case multi.0, multi.1, multi.2 and multi.3 were created using the `-cnt 4` option. Using `multi.*`, the aggregate chunklets for all the physical disks is displayed:

```
cli% showvvpd multi.*
Id Cage_Pos SA SD usr total
0 0:0:0 0 0 0 0
1 0:0:1 0 0 0 0
2 0:0:2 0 0 0 0
3 0:0:3 0 0 0 0
4 0:1:0 0 0 0 0
5 0:1:1 0 0 0 0
6 0:1:2 0 0 0 0
7 0:1:3 0 0 0 0
8 0:2:0 0 0 0 0
9 0:2:1 0 0 0 0
10 0:2:2 0 0 0 0
```

11	0:2:3	0	0	0	0
12	0:3:0	0	0	0	0
13	0:3:1	0	0	0	0
14	0:3:2	0	0	0	0
15	0:3:3	0	0	0	0
16	1:0:0	0	0	4	4
17	1:0:1	0	0	4	4
18	1:0:2	0	0	4	4
19	1:0:3	0	0	4	4
20	1:1:0	0	0	4	4
21	1:1:1	0	0	4	4
22	1:1:2	0	0	4	4
23	1:1:3	0	0	4	4
24	1:2:0	0	0	4	4
25	1:2:1	0	0	4	4
26	1:2:2	0	0	4	4
27	1:2:3	0	0	4	4
28	1:3:0	0	0	4	4
29	1:3:1	0	0	4	4
30	1:3:2	0	0	4	4
31	1:3:3	0	0	4	4
32	2:0:0	0	0	4	4
33	2:0:1	0	0	4	4
34	2:0:2	0	0	4	4
35	2:0:3	0	0	4	4
36	2:1:0	0	0	4	4
37	2:1:1	0	0	4	4
38	2:1:2	0	0	4	4
39	2:1:3	0	0	4	4
40	2:2:0	0	0	4	4
41	2:2:1	0	0	4	4
42	2:2:2	0	0	4	4
43	2:2:3	0	0	4	4
44	2:3:0	0	0	4	4
45	2:3:1	0	0	4	4
46	2:3:2	0	0	4	4
47	2:3:3	0	0	4	4
-----					
48	total	0	0	128	128

For the example above, if you only specified a single volume you would get the same result. That is because the four VVs are interleaved across the same logical disks and share the same chunklets. The following example displays the distribution of space for a single VV (multi.0):

```
cli% showvvpd multi.0
```

Id	Cage_Pos	SA	SD	usr	total
0	0:0:0	0	0	0	0
1	0:0:1	0	0	0	0
2	0:0:2	0	0	0	0
3	0:0:3	0	0	0	0
4	0:1:0	0	0	0	0
5	0:1:1	0	0	0	0
6	0:1:2	0	0	0	0
7	0:1:3	0	0	0	0
8	0:2:0	0	0	0	0
9	0:2:1	0	0	0	0
10	0:2:2	0	0	0	0
11	0:2:3	0	0	0	0
12	0:3:0	0	0	0	0
13	0:3:1	0	0	0	0
14	0:3:2	0	0	0	0
15	0:3:3	0	0	0	0
16	1:0:0	0	0	4	4

17	1:0:1	0	0	4	4
18	1:0:2	0	0	4	4
19	1:0:3	0	0	4	4
20	1:1:0	0	0	4	4
21	1:1:1	0	0	4	4
22	1:1:2	0	0	4	4
23	1:1:3	0	0	4	4
24	1:2:0	0	0	4	4
25	1:2:1	0	0	4	4
26	1:2:2	0	0	4	4
27	1:2:3	0	0	4	4
28	1:3:0	0	0	4	4
29	1:3:1	0	0	4	4
30	1:3:2	0	0	4	4
31	1:3:3	0	0	4	4
32	2:0:0	0	0	4	4
33	2:0:1	0	0	4	4
34	2:0:2	0	0	4	4
35	2:0:3	0	0	4	4
36	2:1:0	0	0	4	4
37	2:1:1	0	0	4	4
38	2:1:2	0	0	4	4
39	2:1:3	0	0	4	4
40	2:2:0	0	0	4	4
41	2:2:1	0	0	4	4
42	2:2:2	0	0	4	4
43	2:2:3	0	0	4	4
44	2:3:0	0	0	4	4
45	2:3:1	0	0	4	4
46	2:3:2	0	0	4	4
47	2:3:3	0	0	4	4
-----					
48	total	0	0	128	128

The following example displays information for a specific column:

```
cli% showvvpd -sortcol 5,dec junk
```

Id	Cage_Pos	SA	SD	usr	total
6	0:1:2	1	1	1	3
19	1:0:3	1	1	1	3
27	1:2:3	1	1	1	3
30	1:3:2	1	1	1	3
43	2:2:3	1	1	1	3
0	0:0:0	1	1	0	2
3	0:0:3	1	1	0	2
7	0:1:3	0	1	1	2
8	0:2:0	1	1	0	2
9	0:2:1	1	1	0	2
10	0:2:2	1	1	0	2
11	0:2:3	1	1	0	2
15	0:3:3	1	1	0	2
17	1:0:1	1	1	0	2
18	1:0:2	1	1	0	2
20	1:1:0	1	1	0	2
21	1:1:1	1	1	0	2
22	1:1:2	1	1	0	2
24	1:2:0	1	1	0	2
26	1:2:2	1	1	0	2
29	1:3:1	1	1	0	2
31	1:3:3	1	1	0	2
33	2:0:1	1	1	0	2
34	2:0:2	1	1	0	2
39	2:1:3	1	1	0	2
40	2:2:0	1	1	0	2

42	2:2:2	1	1	0	2
44	2:3:0	1	1	0	2
45	2:3:1	1	1	0	2
46	2:3:2	0	1	1	2
1	0:0:1	0	1	0	1
2	0:0:2	0	1	0	1
4	0:1:0	0	1	0	1
5	0:1:1	0	1	0	1
12	0:3:0	0	1	0	1
13	0:3:1	1	0	0	1
14	0:3:2	1	0	0	1
16	1:0:0	0	0	1	1
25	1:2:1	0	1	0	1
28	1:3:0	0	1	0	1
32	2:0:0	0	1	0	1
35	2:0:3	0	1	0	1
37	2:1:1	0	1	0	1
38	2:1:2	1	0	0	1
47	2:3:3	1	0	0	1
23	1:1:3	0	0	0	0
36	2:1:0	0	0	0	0
41	2:2:1	0	0	0	0
-----					
48	total	32	40	8	80

## NOTES

- The command prints the number of chunklets in each physical disk that contain data for the Snapshot Admin (SA), Snapshot Data (SD), User space as well as the total for all spaces for all the VVs that match the <vv\_name> or <pattern> list. This can be useful in determining how evenly the VV is striped across the disks.
- Not all the data in the chunklets is necessarily allocated exclusively to the selected VV. In some cases, only part of a chunklet could be data that is allocated for the VVs.

# showvvset

## DESCRIPTION

The `showvvset` command lists the Virtual Volume (VV) sets defined on the HP 3PAR storage system and their members.

## SYNTAX

```
showvvset [options] [<setname_or_pattern>...]
```

```
showvvset -vv [options] [<vvname_or_pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

-d

Show a more detailed listing of each set.

-vv

Show VV sets that contain the supplied vvnames or patterns

## SPECIFIERS

<setname\_or\_pattern>...

An optional list of setnames or patterns. If no <setname> or <pattern> is specified all sets are displayed, otherwise only sets with names matching one or more of the setnames or patterns are displayed. The patterns are glob-style patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.

<vvname\_or\_pattern>...

Specifies that the sets containing virtual volumes with the specified names or matching the glob-style patterns should be displayed.

## RESTRICTIONS

None.

## EXAMPLES

To show all VV sets defined to the system:

```
cli% showvvset
Id Name    Members
 0 oravv   oravv.0
           oravv.1
           oravv.2
           oravv.3
           oravv.4
           oravv.5
           oravv.6
           oravv.7
           oravv.8
           oravv.9
20 sia-1   test
           ttpvv.rw
           test-sv
           bar
```

Show the `sia-1` set only, with detail:

```
cli% showvvset -d sia-1
20 sia-1 test      This set has a comment
                   ttpvv.rw
                   test-sv
                   bar
```

Show VV sets containing VVs matching `test*`:

```
cli% showvvset -vv test*
Id Name  Members
20 sia-1 test
                   ttpvv.rw
                   test-sv
                   bar
```

## NOTES

A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.



# showwsapi

## DESCRIPTION

The `showwsapi` command displays the WSAPI server service configuration state as either `Enabled` or `Disabled`. It displays the server currently running status as `Active`, `Inactive` or `Error`. It also displays the current status of the HTTP and HTTPS ports and their port numbers.

## SYNTAX

```
showwsapi
```

## AUTHORITY

Any role in the system

## OPTIONS

None

## SPECIFIERS

None

## EXAMPLES

The following example shows the current Web Services API server status:

```
cli% showwsapi
-Service- -State- -HTTP_State- HTTP_Port -HTTPS_State- HTTPS_Port -Version-
Enabled   Active  Enabled           8008 Disabled           8080 1.1
```

## NOTES

The version column may display `Unknown` if the Web Services API server was restarted and is not ready to accept queries.

# 24 Shutdown Commands

## shutdownnode

### DESCRIPTION

The `shutdownnode` command shuts down a system node.

### SYNTAX

```
shutdownnode halt|reboot|wipeid <node_ID>
```

### AUTHORITY

- Super, Service
- Any role granted the `node_shutdown` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### SUBCOMMANDS

`halt`

Specifies that the nodes are halted after shutdown. If this subcommand is not specified, the `reboot` or `wipeid` (StoreServ 7000 only) subcommand must be used.

`reboot`

Specifies that the nodes are restarted after shutdown. If this subcommand is not specified, the `halt` or `wipeid` (StoreServ 7000 only) subcommand must be used.

`wipeid`

StoreServ 7000 only subcommand. this will wipe the EEPROM and leave the node in the halt state, if this command is not specified then the `reboot` or `halt` subcommand must be used.

### OPTIONS

None.

### SPECIFIERS

`<node_ID>`

Specifies the node, identified by its ID, to be shut down.

### EXAMPLES

The following example shuts down system node 0 and halts the restarting of the node:

```
cli% shutdownnode reboot 0

-----System Information-----
System Name      : maltp001
System Model     : InServ S800X
Serial Number    : 1000787

-----Partial List Of Hosts-----
Id Name          Persona          -WWN/iSCSI_Name- Port  IP_addr
0 sunx4150-01    Generic-legacy  2101001B32343495  0:5:1 n/a
1 sunx4150-02    Generic-legacy  2101001B32344695  0:5:1 n/a
2 sunx4150-03    Generic-legacy  2100001B32147595  0:5:1 n/a
```

```
3 sunx4150-04 Generic-legacy 2101001B32341C95 0:5:1 n/a
4 sunx4150-05 Generic-legacy 2101001B32342495 0:5:1 n/a
5 sunx4150-06 Generic-legacy 2100001B321A6E82 0:5:1 n/a
6 sunx4150-07 Generic-legacy 2101001B3231EE79 0:5:1 n/a
7 sunx4150-08 Generic-legacy 2101001B323BC44C 0:5:1 n/a
8 sunx4150-09 Generic-legacy 2101001B323BFF4C 0:5:1 n/a
9 sunx4150-10 Generic-legacy 2101001B323B0A4C 0:5:1 n/a
```

There are active tasks on this storage system.

It is recommended that these tasks are either allowed to finish or manually cancelled before continuing.

Continuing with this REBOOT operation may cause some of these tasks to fail.

Shutting down this node will impact applications running on the system displayed above

Do you REALLY want to REBOOT this node? yes or no: yes

The node will REBOOT in 15 seconds

Press the enter key to stop...

The node will REBOOT in 12 seconds

Press the enter key to stop...

The node will REBOOT in 9 seconds

Press the enter key to stop...

The node will REBOOT in 6 seconds

Press the enter key to stop...

The node will REBOOT in 3 seconds

Press the enter key to stop...

## NOTES

- The system manager executes a set of validation checks before proceeding with the shutdown.
- If any of the following conditions exists, the shutdown operation will not proceed:
  - The system software upgrade is in progress.
  - The target node is not online.
  - If the system is processing tasks, a warning message is displayed which informs the user that tasks are running and the shutdown operation may cause some tasks to fail. If the user confirms the shutdown operation, the specified node will reboot even if tasks are running. Note:

---

**NOTE:** If no tasks are running when the initial checks are performed but subsequently a new task starts, the shutdown will fail.

---

- If any other node is online but not yet integrated into the cluster.
- If another shutdown node operation is already in progress.
- If the shutdown node operation will result in the system shutdown due to loss of quorum.
- One or more orphaned logical disks exist on the system that cannot be preserved.

- One or more admin logical disks cannot be reset, resulting in the kernel being unable to access meta data from those LDs.
- One or more data (user or snap) logical disks cannot be reset, causing their associated VLUNs to become inaccessible to host applications.

# shutdownsys

## DESCRIPTION

The `shutdownsys` command shuts down an entire system.

## SYNTAX

```
shutdownsys halt|reboot
```

## AUTHORITY

- Super, Service
- Any role granted the `sys_shutdown` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## SUBCOMMANDS

`halt`

Specifies that the system should be halted after shutdown. If this subcommand is not specified, the `reboot` subcommand must be used.

`reboot`

Specifies that the system should be restarted after shutdown. If this subcommand is not specified, the `halt` subcommand must be used.

## OPTIONS

None.

## SPECIFERS

None.

## RESTRICTIONS

- Access to all domains is required to run this command.
- Do not issue any commands other than `showsys` while the system is shutting down.

## EXAMPLES

The following example shuts down and then restarts the system:

```
cli% shutdownsys reboot

-----System Information-----
System Name      : maltp001
System Model     : InServ S800X
Serial Number    : 1000787

-----Partial List Of Hosts-----
Id Name          Persona          -WWN/iSCSI_Name- Port  IP_addr
0  sunx4150-01   Generic-legacy  2101001B32343495  6:5:1 n/a
1  sunx4150-02   Generic-legacy  2101001B32344695  6:5:1 n/a
2  sunx4150-03   Generic-legacy  2100001B32147595  6:5:1 n/a
3  sunx4150-04   Generic-legacy  2101001B32341C95  6:5:1 n/a
4  sunx4150-05   Generic-legacy  2101001B32342495  6:5:1 n/a
5  sunx4150-06   Generic-legacy  2100001B321A6E82  6:5:1 n/a
6  sunx4150-07   Generic-legacy  2101001B3231EE79  6:5:1 n/a
```

```
7 sunx4150-08 Generic-legacy 2101001B323BC44C 6:5:1 n/a
8 sunx4150-09 Generic-legacy 2101001B323BFF4C 6:5:1 n/a
9 sunx4150-10 Generic-legacy 2101001B323B0A4C 6:5:1 n/a
```

Shutting down this storage system will impact applications running on the hosts displayed above

Do you REALLY want to REBOOT this storage system? yes or no: yes

The system will REBOOT in 15 seconds

Press the enter key to stop...

The system will REBOOT in 12 seconds

Press the enter key to stop...

The system will REBOOT in 9 seconds

Press the enter key to stop...

The system will REBOOT in 6 seconds

Press the enter key to stop...

The system will REBOOT in 3 seconds

Press the enter key to stop...

The system will REBOOT NOW !!!

## NOTES

- The execution of `shutdownsys` command can affect service. Hence, a confirmation is required before proceeding with this command.
- After the `shutdownsys` command is issued, there is no indication from the CLI that the shutdown is occurring. You can issue the `showsys` command ("[showsys](#)" ([page 482](#))) to display the current status of the system during the initial stage of the shutdown process and after the system has fully restarted.
- If the node that was running on the system manager fails or if the system manager process exits while executing the `shutdownsys` command, the shutdown will not complete. The only safe action is to reissue the `shutdownsys` command.

---

## 25 System Reporter (SR) commands

### sraomoves

#### DESCRIPTION

The `sraomoves` command shows the space that Adaptive Optimization (AO) has moved between tiers.

#### SYNTAX

```
sraomoves [options]
```

#### AUTHORITY

Any role in the system

#### OPTIONS

```
-btsecs <secs>
```

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

```
-etsecs <secs>
```

Select the end time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

#### SPECIFIERS

None

## RESTRICTIONS

None

## EXAMPLES

The following example shows space moved by AO beginning 2 hours (7200 seconds) ago:

```
cli% sraomoves -btsecs -7200
```

## NOTES

For this command: 1 MB = 1048576 bytes.

The space reported is the space that AO has requested to be moved; the actual space moved could be less (for example, if the move failed).



# srcpgspace

## DESCRIPTION

The `srcpgspace` command displays historical space data reports for common provisioning groups (CPGs).

## SYNTAX

```
srcpgspace [options] [<CPG_name>|<pattern>...]
```

## AUTHORITY

Any role in the system

## SUBCOMMANDS

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

- hires

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

- hourly

Select hourly samples for the report.

- daily

Select daily samples for the report.

- groupby <groupby> [, <groupby> ...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- DOM\_NAME Domain name
- CPGID Common Provisioning Group ID
- CPG\_NAME Common Provisioning Group name
- DISK\_TYPE The disk type of the physical disks used by the CPG
- RAID\_TYPE The RAID type of the CPG

- disk\_type <type> [, <type> ...]

Limit the data to disks of the types specified.

- FC – Fibre Channel
- NL – Nearline
- SSD – Solid State Drive

- raid\_type <type> [, <type> ...]

Limit the data to RAID of the specified types. Allowed types are 0, 1, 5 and 6.

## SPECIFIERS

[<CPG\_name>... | <pattern>...]

CPGs matching either the specified CPG\_name or glob-style pattern are included. This specifier can be repeated to display information for multiple CPGs. If not specified, all CPGs are included.

## RESTRICTIONS

None

## EXAMPLES

The following example displays aggregate hourly CPG space information for CPGs with names that match the pattern "fc\*" beginning 24 hours ago:

```
cli% srcpgspace -hourly -btsecs -24h fc*
```

The following example displays CPG space information for the most recent daily sample aggregated by the disk type and raid type for CPGs with names that match the pattern "fc\*":

```
cli% srcpgspace -daily -attime -groupby disk_type,raid_type fc*
```

## NOTES

For this command: 1 MB = 1048576 bytes.

# srhistld

## DESCRIPTION

The `srhistld` command displays historical histogram performance data reports for logical disks.

## SYNTAX

```
srhistld [options] [<LD_name>|<pattern>...]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` – (Default) Display both I/O time and I/O size histograms
- `time` – Display only the I/O time histogram
- `size` – Display only the I/O size histogram

`-timecols <fcol> <lcol>`

For the I/O time histogram, shows the columns from the first column (`<fcol>`) through the last column (`<lcol>`). The available columns range from 0 through 31.

$0 \leq fcol < lcol \leq 31$  must be satisfied.

The default value of `<fcol>` is 6.

The default value of `<lcol>` is 15.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, shows the columns from the first column (`<fcol>`) through the last column (`<lcol>`). The available columns range from 0 through 15.

$0 \leq fcol < lcol \leq 31$  must be satisfied.

The default value of `<fcol>` is 3.

The default value of `<lcol>` is 11.

`-pct`

Shows the access count in each bucket as a percentage. If this option is not specified, the histogram shows the access counts.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-cpg <CPG_name|pattern> [, <CPG_name|pattern> . . .]`

Limit the data to LDs in CPGs with names that match one or more of the specified names or glob-style patterns.

For `-attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `DOM_NAME` Domain name
- `LDID` Logical disk ID
- `LD_NAME` Logical disk name
- `CPG_NAME` Common Provisioning Group name
- `NODE` The node that owns the LD

## SPECIFIERS

`[<LD_name> . . . | <pattern> . . .]`

LDs matching either the specified `LD_name` or glob-style pattern are included. This specifier can be repeated to display information for multiple LDs. If not specified, all LDs are included.

## RESTRICTIONS

## EXAMPLES

The following example displays aggregate hourly histogram performance statistics for all logical disks beginning 24 hours ago:

```
cli% srhistld -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes.

# srhistpd

## DESCRIPTION

The `srhistpd` command displays historical histogram data reports for physical disks.

## SYNTAX

```
srhistpd [options] [<PDID|pattern>...]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` — (Default) Display both I/O time and I/O size histograms
- `time` — Display only the I/O time histogram
- `size` — Display only the I/O size histogram

`-timecols <fcol> <lcol>`

For the I/O time histogram, shows the columns from the first column (`<fcol>`) through the last column (`<lcol>`). The available columns range from 0 through 31.

$0 \leq fcol < lcol \leq 31$  must be satisfied.

The default value of `<fcol>` is 6.

The default value of `<lcol>` is 15.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, shows the columns from the first column (`<fcol>`) through the last column (`<lcol>`). The available columns range from 0 through 15.

$0 \leq fcol < lcol \leq 31$  must be satisfied.

The default value of `<fcol>` is 3.

The default value of `<lcol>` is 11.

`-pct`

Shows the access count in each bucket as a percentage. If this option is not specified, the histogram shows the access counts.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

Limit the data to LDs in CPGs with names that match one or more of the specified names or glob-style patterns.

For `-attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `PDID` Physical disk ID
- `PORT_N` The node number for the primary port for the PD
- `PORT_S` The PCI slot number for the primary port for the PD
- `PORT_P` The port number for the primary port for the the PD
- `DISK_TYPE` The disk type of the PD
- `SPEED` The speed of the PD

`-disk_type <type>[, <type>...]`

Limit the data to disks of the types specified.

- FC – Fibre Channel
- NL – Nearline
- SSD – Solid State Drive

## SPECIFIERS

[<PDID>... | <pattern>...]

PDs with IDs that match either the specified PDID or glob-style pattern are included. This specifier can be repeated to include multiple PDIDs or patterns. If not specified, all PDs are included.

## EXAMPLES

The following example displays aggregate hourly histogram performance statistics for all physical disks beginning 24 hours ago:

```
cli% srhistpd -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes



# srhistport

## DESCRIPTION

The `srhistport` command displays historical histogram performance data reports for ports.

## SYNTAX

```
srhistport [options]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-metric both|time|size`

Selects which metric to display. Metrics can be one of the following:

- `both` — (Default) Display both I/O time and I/O size histograms
- `time` — Display only the I/O time histogram
- `size` — Display only the I/O size histogram

`-timecols <fcol> <lcol>`

For the I/O time histogram, shows the columns from the first column (`<fcol>`) through the last column (`<lcol>`). The available columns range from 0 through 31.

$0 \leq fcol < lcol \leq 31$  must be satisfied.

The default value of `<fcol>` is 6.

The default value of `<lcol>` is 15.

`-sizecols <fcol> <lcol>`

For the I/O size histogram, shows the columns from the first column (`<fcol>`) through the last column (`<lcol>`). The available columns range from 0 through 15.

$0 \leq fcol < lcol \leq 31$  must be satisfied.

The default value of `<fcol>` is 3.

The default value of `<lcol>` is 11.

`-pct`

Shows the access count in each bucket as a percentage. If this option is not specified, the histogram shows the access counts.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

Limit the data to LDs in CPGs with names that match one or more of the specified names or glob-style patterns.

For `-attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `PORT_N` The node number for the port
- `PORT_S` The PCI slot number for the port
- `PORT_P` The port number of the port
- `PORT_TYPE` Port type
- `GBITPS` The speed of the port

## SPECIFIERS

None

## EXAMPLES

The following example displays aggregate hourly histogram performance statistics for all ports beginning 24 hours ago:

```
cli% srhistport -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes.

# srhistvlun

## DESCRIPTION

The `srhistvlun` command displays historical histogram performance data reports for VLUNs.

## SYNTAX

```
srhistvlun [options]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

-hourly

Select hourly samples for the report.

-daily

Select daily samples for the report.

-metric both|time|size

Selects which metric to display. Metrics can be one of the following:

- both — (Default) Display both I/O time and I/O size histograms
- time — Display only the I/O time histogram
- size — Display only the I/O size histogram

-timecols <fcol> <lcol>

For the I/O time histogram, shows the columns from the first column (<fcol>) through the last column (<lcol>). The available columns range from 0 through 31.

0 <= fcol < lcol <= 31 must be satisfied.

The default value of <fcol> is 6.

The default value of <lcol> is 15.

-sizecols <fcol> <lcol>

For the I/O size histogram, shows the columns from the first column (<fcol>) through the last column (<lcol>). The available columns range from 0 through 15.

0 <= fcol < lcol <= 31 must be satisfied.

The default value of <fcol> is 3.

The default value of <lcol> is 11.

-pct

Shows the access count in each bucket as a percentage. If this option is not specified, the histogram shows the access counts.

-rw

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

-host <host\_name|host\_set|pattern> [, <host\_name|host\_set|pattern>...]

Limit the data to hosts with names that match one or more of the specified names or glob-style patterns. Host set name must start with "set:" and can also include patterns.

-vv <VV\_name|VV\_set|pattern> [, <VV\_name|VV\_set|pattern>...]

Limit the data to VVs with names that match one or more of the specified names or glob-style patterns. VV set name must start with "set:" and can also include patterns.

-l <LUN|pattern> [, <LUN|pattern>...]

Limit the data to LUNs that match one or more of the specified LUNs or glob-style patterns.

-groupby <groupby> [, <groupby>...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- DOM\_NAME Domain name
- VV\_NAME Virtual volume name
- HOST\_NAME Host name
- LUN The LUN number for the VLUN

- `HOST_WWN` The host WWN for the VLUN
- `PORT_N` The node number for the VLUN port
- `PORT_S` The PCI slot number for the VLUN port
- `PORT_P` The port number for the VLUN port

## SPECIFIERS

None

## EXAMPLES

The following example displays aggregate hourly histogram performance statistics for all VLUNs beginning 24 hours ago:

```
cli% srhistvlun -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes.

# srlspace

## DESCRIPTION

The `srlspace` command displays historical space data reports for logical disks (LDs).

## SYNTAX

```
srlspace [options] [<LD_name>|<pattern>...]
```

## AUTHORITY

Any role in the system

## SUBCOMMANDS

None

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-highres`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-groupby <groupby> [, <groupby> ...]`

For `-attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `DOM_NAME` Domain name
- `CPG_NAME` Common Provisioning Group name
- `LDID` Logical disk ID
- `LD_NAME` Logical disk name
- `DISK_TYPE` The disk type of the physical disks used by the LD
- `RAID_TYPE` The RAID type of the LD
- `SET_SIZE` The RAID set size of the LD
- `STEP_SIZE` The RAID step size of the LD
- `ROW_SIZE` The RAID row size of the LD
- `OWNER` The owner node for the LD

`-cpg <CPG_name|pattern> [, <CPG_name|pattern> ...]`

Limit the data to LDs in CPGs with names that match one or more of the specified names or glob-style patterns.

`-disk_type <type> [, <type> ...]`

Limit the data to disks of the types specified.

- `FC` – Fibre Channel
- `NL` – Nearline
- `SSD` – Solid State Drive

`-raid_type <type> [, <type> ...]`

Limit the data to RAID of the specified types. Allowed types are 0, 1, 5 and 6.

## SPECIFIERS

`[<LD_name>... | <pattern>...]`

LDs matching either the specified `LD_name` or glob-style pattern are included. This specifier can be repeated to display information for multiple LDs. If not specified, all LDs are included.

## RESTRICTIONS

None



## EXAMPLES

The following example displays aggregate hourly LD space information for all RAID 5 LDs with names that match either "fc\*" or "ssd\*" patterns beginning 24 hours ago:

```
cli% srlldspace -raid_type 5 -hourly -btsecs -24h fc* ssd*
```

The following example displays LD space information for the most recent daily sample aggregated by the LD name for LDs with names that match the pattern "tp\*".

```
cli% srlldspace -daily -attime -groupby ld_name tp*
```

## NOTES

For this command: 1 MB = 1048576 bytes.

# srpdspace

## DESCRIPTION

The `srpdspace` command displays historical space data reports for physical disks (PDs).

## SYNTAX

```
srpdspace [options] [<PDID|pattern>...]
```

## AUTHORITY

Any role in the system

## SUBCOMMANDS

None

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of m, h or d to represent time in minutes (e.g. -30m), hours (e.g. -1.5h) or days (e.g. -7d).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of m, h or d to represent time in minutes (e.g. -30m), hours (e.g. -1.5h) or days (e.g. -7d).

If it is not specified then the report ends with the most recent sample.

`-highres`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-groupby <groupby> [, <groupby> ...]`

For `-attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `PDID` Physical disk ID
- `CAGEID` Cage ID
- `CAGESIZE` Cage size
- `MAG` Disk magazine number within the cage
- `DISK` Disk position within the magazine
- `DISK_TYPE` The disk type of the physical disk
- `SPEED` The disk speed

`-disk_type <type> [, <type> ...]`

Limit the data to disks of the types specified.

- `FC` – Fibre Channel
- `NL` – Nearline
- `SSD` – Solid State Drive

## SPECIFIERS

`[<PDID>... |<pattern>...]`

PDs with IDs that match either the specified PDID or glob-style pattern are included. This specifier can be repeated to include multiple PDIDs or patterns. If not specified, all PDs are included.

## RESTRICTIONS

None

## EXAMPLES

The following example displays aggregate hourly PD space information for all PDs beginning 24 hours ago:

```
cli% srpdSPACE -hourly -btsecs -24h
```

## NOTES

For this command: 1 MB = 1048576 bytes.

# srrgiodensity

## DESCRIPTION

The `srrgiodensity` command shows the distribution of IOP/s intensity for Logical Disk (LD) regions for a common provisioning group (CPG) or Adaptive Optimization (AO) configuration. For a single CPG, this can be used to see whether AO can be effectively used. For an AO configuration the command shows how AO has moved regions between tiers.

## SYNTAX

```
srrgiodensity [options] -cpg <cpg_name>
```

```
srrgiodensity [options] <aocfg_name>
```

## AUTHORITY

Any role in the system

## OPTIONS

```
-btsecs <secs>
```

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of m, h or d to represent time in minutes (e.g. -30m), hours (e.g. -1.5h) or days (e.g. -7d).

If it is not specified then the report begins at the earliest sample.

```
-etsecs <secs>
```

Select the end time in seconds for the report.

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of m, h or d to represent time in minutes (e.g. -30m), hours (e.g. -1.5h) or days (e.g. -7d).

If it is not specified then the report ends with the most recent sample.

```
-cmult 2|4|8
```

Select the step between histogram columns of the report. By default each column's IO density is 4 times the previous column, but a step of 2 or 8 can also be specified.

-cpg

Treat the specifier as a CPG name instead of an AO configuration name.

## SPECIFIERS

<aocfg\_name>

The name of the AO configuration to generate the report for.

<cpg\_name>

The name of the CPG to generate the report for (if the -cpg option is specified).

## EXAMPLES

The following example shows region IO performance density report for a CPG beginning 2 hours (7200 seconds) ago:

```
cli% srrgiodensity -btsecs -7200 -cpg cpg_name
```

# srstatcmp

## DESCRIPTION

The `srstatcmp` command displays historical performance data reports for cache memory.

## SYNTAX

```
srstatcmp [options] [<node>...]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

-hourly

Select hourly samples for the report.

-daily

Select daily samples for the report.

-groupby <groupby> [, <groupby>...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- NODE The controller node

By default, the output of the command lists cache read and write hit rates, access rates as well as rates for locked blocks and delayed write acknowledgements. One of the following options can be used to change what the command shows.

-full

List all the metrics for each row in a single line. The output for this option is very wide.

-page

List the page state information.

## SPECIFIERS

[<node>...]

Only the specified node numbers are included, where each node is a number from 0 through 7. This specifier can be repeated to display information for multiple nodes. If not specified, all nodes are included.

## EXAMPLES

The following example displays aggregate hourly performance statistics for all node caches beginning 24 hours ago:

```
cli% srstatcmp -hourly -btsecs -24h
```

The following example displays daily node cache performance aggregated by node for nodes 0 and 1:

```
cli% srstatcmp -daily -attime -groupby node 0 1
```

## NOTES

None

# srstatcpu

## DESCRIPTION

The `srstatcpu` command displays historical performance data reports for CPUs.

## SYNTAX

```
srstatcpu [options] [<node>...]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`



Select high resolution samples (5 minute intervals) for the report. This is the default setting.

-hourly

Select hourly samples for the report.

-daily

Select daily samples for the report.

-groupby <groupby> [, <groupby>...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- NODE The controller node
- CPU The CPU within the controller node

## SPECIFIERS

[<node>...]

Only the specified node numbers are included, where each node is a number from 0 through 7. This specifier can be repeated to display information for multiple nodes. If not specified, all nodes are included.

## EXAMPLES

The following example displays aggregate hourly performance statistics for all CPUs beginning 24 hours ago:

```
cli% srstatcpu -hourly -btsecs -24h
```

The following example displays daily node cpu performance aggregated by node for nodes 0 and 1:

```
cli% srstatcpu -daily -attime -groupby node 0 1
```

## NOTES

None

# srstatld

## DESCRIPTION

The `srstatld` command displays historical performance data reports for logical disks.

## SYNTAX

```
srstatld [options] [<LD_name>|<pattern>...]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

-hourly

Select hourly samples for the report.

-daily

Select daily samples for the report.

-groupby <groupby> [, <groupby>...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- DOM\_NAME Domain name
- LDID Logical disk ID
- LD\_NAME Logical disk name
- CPG\_NAME Common Provisioning Group name
- NODE The node that owns the LD

## SPECIFIERS

[<LD\_name>... | <pattern>...]

LDs matching either the specified LD\_name or glob-style pattern are included. This specifier can be repeated to display information for multiple LDs. If not specified, all LDs are included.

## EXAMPLES

The following example displays aggregate hourly performance statistics for all logical disks beginning 24 hours ago:

```
cli% srstatld -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes.

# srstatlink

## DESCRIPTION

The `srstatlink` command displays historical performance data reports for links (internode, PCI and cache memory).

## SYNTAX

The syntax for the `srstatlink` command can be one of the following examples:

- `srstatlink [options] [<node>...]`

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option performance is shown versus time, with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

- hires

Select high resolution samples (5 minute intervals) for the report. This is the default.

- hourly

Select hourly samples for the report.

- daily

Select daily samples for the report.

- groupby <groupby> [, <groupby> . . .]

For -attime reports, generate a separate row for each combination of <groupby> items. Each <groupby> must be different and one of the following:

- NODE The source controller node for the link
- QUEUE The XCB queue
- NODE\_TO The destination controller node for the link

## SPECIFIERS

[<node> . . .]

Only the specified node numbers are included, where each node is a number from 0 through 7. This specifier can be repeated to display information for multiple nodes. If not specified, all nodes are included.

## EXAMPLES

The following example displays aggregate hourly performance statistics for all nodes and links beginning 24 hours ago:

```
cli% srstatlink -hourly -btsecs -24h
```

The following example displays daily node link performance aggregated by node for nodes 0 and 1:

```
cli% srstatlink -daily -attime -groupby node 0 1
```

## NOTES

None

# srstatpd

## DESCRIPTION

The `srstatpd` command displays historical performance data reports for physical disks.

## SYNTAX

```
srstatpd [options] [<PDID|pattern>...]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-groupby <groupby> [, <groupby>...]`

For `-attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `PDID` Physical disk ID
- `PORT_N` The node number for the primary port for the the PD
- `PORT_S` The PCI slot number for the primary port for the the PD
- `PORT_P` The port number for the primary port for the the PD
- `DISK_TYPE` The disk type of the PD
- `SPEED` The speed of the PD

`-disk_type <type> [, <type>...]`

Limit the data to disks of the types specified. Allowed types are:

- `FC` – Fibre Channel
- `NL` – Nearline
- `SSD` – Solid State Drive

## SPECIFIERS

`[<PDID>... | <pattern>... ]`

PDs with IDs that match either the specified PDID or glob-style pattern are included. This specifier can be repeated to include multiple PDIDs or patterns. If not specified, all PDs are included.

## EXAMPLES

The following example displays aggregate hourly performance statistics for all physical disks beginning 24 hours ago:

```
cli% srstatpd -hourly -btsecs -24h
```

## NOTES

None.

# srstatport

## DESCRIPTION

The `srstatport` command displays historical performance data reports for ports.

## SYNTAX

```
srstatport [options]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`



Select high resolution samples (5 minute intervals) for the report. This is the default setting.

-hourly

Select hourly samples for the report.

-daily

Select daily samples for the report.

-groupby <groupby> [, <groupby>...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- PORT\_N The node number for the port
- PORT\_S The PCI slot number for the port
- PORT\_P The port number for the port
- PORT\_TYPE The type of the port
- GBITPS The speed of the port

## SPECIFIERS

None

## EXAMPLES

The following example displays aggregate hourly performance statistics for all ports beginning 24 hours ago:

```
cli% srstatport -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes

# srstatqos

## DESCRIPTION

The `srstatqos` command displays historical performance data reports for QoS rules.

## SYNTAX

```
srstatqos [options]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option performance is shown versus time, with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default.

`-hourly`

Select hourly samples for the report.

`-daily`

Select daily samples for the report.

`-vvset <VVSet_name|pattern> [, <VVSet_name|pattern>...]`

Limit the data to VVSets with names that match one or more of the specified names or glob-style patterns.

`-all_others`

Display statistics for all other IO not regulated by a QoS rule.

`-groupby <groupby> [, <groupby>...]`

For `-attime` reports, generate a separate row for each combination of `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `DOM_NAME` Domain name
- `TARGET_TYPE` Type of QoS rule target, i.e. `vvset`
- `TARGET_NAME` Name of QoS rule target
- `IOPS_LIMIT` The I/O per second limit
- `BW_LIMIT_KBPS` The KB per second bandwidth limit

## SPECIFIERS

None

## EXAMPLES

The following example displays aggregate hourly performance statistics for QoS rules beginning 24 hours ago:

```
cli% srstatqos -hourly -btsecs -24h
```

## NOTES

For this command KB = 1000 bytes.

# srstatvln

## DESCRIPTION

The `srstatvln` command displays historical performance data reports for VLUNs.

## SYNTAX

```
srstatvln [options]
```

## AUTHORITY

Any role in the system

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

-hourly

Select hourly samples for the report.

-daily

Select daily samples for the report.

-host <host\_name|host\_set|pattern>[,<host\_name|host\_set|pattern...]

Limit the data to hosts with names that match one or more of the specified names or glob-style patterns. Host set name must start with "set:" and can also include patterns.

-vv <VV\_name|VV\_set|pattern>[,<VV\_name|VV\_Set|pattern...]

Limit the data to VVs with names that match one or more of the specified names or glob-style patterns. VV set name must start with "set:" and can also include patterns.

-l <LUN|pattern>[,<LUN|pattern...]

Limit the data to LUNs that match one or more of the specified LUNs or glob-style patterns.

-groupby <groupby>[,<groupby...]

For -attime reports, generate a separate row for <groupby> items. Each <groupby> must be different and one of the following:

- DOM\_NAME Domain name
- VV\_NAME Virtual volume name
- HOST\_NAME Host name
- LUN The LUN number for the VLUN
- HOST\_WWN The host WWN for the VLUN
- PORT\_N The node number for the VLUN port
- PORT\_S The PCI slot number for the VLUN port
- PORT\_P The port number for the VLUN port

## SPECIFIERS

None

## EXAMPLES

The following example displays aggregate hourly performance statistics for all VLUNs beginning 24 hours ago:

```
cli% srstatvln -hourly -btsecs -24h
```

## NOTES

For this command: KB = 1000 bytes.

# srvvspace

## DESCRIPTION

The `srvvspace` command displays historical space data reports for virtual volumes (VVs).

## SYNTAX

```
srvvspace [options] [<VV_name|<pattern>...]
```

## AUTHORITY

Any role in the system

## SUBCOMMANDS

None

## OPTIONS

`-attime`

Performance is shown at a particular time interval, specified by the `-etsecs` option, with one row per object group described by the `-groupby` option. Without this option, performance is shown versus time with a row per time interval.

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. If `-attime` is specified, select the time for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`- hires`

Select high resolution samples (5 minute intervals) for the report. This is the default setting.

`- hourly`

Select hourly samples for the report.

`- daily`

Select daily samples for the report.

`- groupby <groupby> [, <groupby> ...]`

For `- attime` reports, generate a separate row for `<groupby>` items. Each `<groupby>` must be different and one of the following:

- `DOM_NAME` Domain name
- `VVID` Virtual volume ID
- `VV_NAME` Virtual volume name
- `BSID` Virtual volume ID of the base virtual volume
- `WWN` Virtual volume world wide name (WWN)
- `SNP_CPG_NAME` Snap space Common Provisioning Group name
- `USR_CPG_NAME` User space Common Provisioning Group name
- `PROV_TYPE` Virtual volume provisioning type
- `VV_TYPE` Type of virtual volume

`- usr_cpg <CPG_name | pattern> [, <CPG_name | pattern> ...]`

Only include VVs whose user space is mapped to a CPG whose name matches one of the specified `CPG_name` or glob-style patterns.

`- snp_cpg <CPG_name | pattern> [, <CPG_name | pattern> ...]`

Only include VVs whose snap space is mapped to a CPG whose name matches one of the specified `CPG_name` or glob-style patterns.

## SPECIFIERS

`[<VV_name>... | <pattern>...]`

VVs with names that match either the specified `VV_name` or glob-style pattern are included. This specifier can be repeated to include multiple VV names or patterns. If not specified, all VVs are included.

## RESTRICTIONS

None

## EXAMPLES

The following example displays aggregate hourly VV space information for VVs with names matching either `"dbvv*"` or `"testvv*"` patterns beginning 24 hours ago:

```
cli% srvvspace -hourly -btsecs -24h dbvv* testvv*
```

The following example displays VV space information for the most recent daily sample aggregated by the VV name for VVs with names that match the pattern "tp\*".

```
cli% srvvspace -daily -attime -groupby vv_name tp*
```

## NOTES

For this command: 1 MB = 1048576 bytes.



---

# 26 Start Commands

## startao

### DESCRIPTION

The `startao` command starts execution of an Adaptive Optimization (AO) configuration using data region level performance data collected for the specified number of hours.

### SYNTAX

```
startao [option] <aocfg_name>
```

### AUTHORITY

Super, Edit

Any role granted the `aocfg_start` right

### OPTIONS

`-btsecs <secs>`

Select the begin time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report begins at the earliest sample.

`-etsecs <secs>`

Select the end time in seconds for the report. The value can be specified as either:

- The absolute epoch time (for example 1351263600).
- The absolute time as a text string in one of the following formats:
  - Full time string including time zone: "2012-10-26 11:00:00 PDT"
  - Full time string excluding time zone: "2012-10-26 11:00:00"
  - Date string: "2012-10-26" or 2012-10-26
  - Time string: "11:00:00" or 11:00:00
- A negative number indicating the number of seconds before the current time. Instead of a number representing seconds, `<secs>` can be specified with a suffix of `m`, `h` or `d` to represent time in minutes (e.g. `-30m`), hours (e.g. `-1.5h`) or days (e.g. `-7d`).

If it is not specified then the report ends with the most recent sample.

`-maxrunh <hours>`

Select the approximate maximum run time in hours (default is 6 hours). The number should be between 1 and 24 hours. The command will attempt to limit the amount of data to be moved so the command can complete by the specified number of hours. If the time runs beyond the specified hours, the command will abort at an appropriate time.

`-compact <mode>`

Specify if and how CPGs should be compacted. Choices for `<mode>` are:

- `auto` Automatically select the `compactcpg` mode (default). This will free up the most space but can potentially take longer because it may cause additional region moves to increase consolidation. This is the default mode.
- `trimonly` Only run `compactcpg` with the `-trimonly` option. This will not perform any region moves during `compactcpg`.
- `no` Do not run `compactcpg`. This option may be used if `compactcpg` is run or scheduled separately.

`-dryrun`

Do not execute the region moves, only show which moves would be done.

## SPECIFIERS

`<aocfg_name>`

The AO configuration name, using up to 31 characters.

## RESTRICTIONS

## EXAMPLES

Start execution of AO config `prodaocfg` using data for the past 3 hours:

```
cli% startao -btsecs -3h prodaocfg
```

Start execution of AO config `prodaocfg` using data from 12 hours ago until 3 hours ago, allowing up to 6 hours to complete:

```
cli% startao -btsecs -12h -etsecs -3h -maxrunh 6 prodaocfg
```

## NOTES

The `startao` command can be run manually, but it can also be scheduled to run automatically at specific times using the `createsched` command.

## startcim

### DESCRIPTION

The `startcim` command starts the CIM server to service CIM requests. By default, the CIM server is not started until this command is issued.

### SYNTAX

```
startcim
```

### AUTHORITY

- Super, Service
- Any role granted the `cim_start` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

None.

### SPECIFIERS

None.

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example starts the CIM server:

```
cli% startcim
CIM server will start in about 90 seconds.
```

### NOTES

- By default, the CIM server is not started until this command is issued.
- Use `stopcim` to stop the CIM server.

# startld

## DESCRIPTION

The `startld` command starts data services on a Logical Disk (LD) that has not yet been started.

## SYNTAX

```
startld [option] <LD_name>
```

## AUTHORITY

- Super, Service
- Any role granted the `ld_start` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-ovrd`

Specifies that the LD is forced to start, even if some underlying data is missing.

## SPECIFIERS

`<LD_name>`

Specifies the LD name, using up to 31 characters.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example starts data services on LD `ld5`:

```
cli% startld ld5
```

## NOTES

None.

# startnoderescue

## DESCRIPTION

The `startnoderescue` command initiates a node rescue, which initializes the internal node disk of the specified node to match the contents of the other node disks. The copy is done over the network, so the node to be rescued must have an Ethernet connection. It will automatically select a valid unused link local address. Progress is reported as a task.

## SYNTAX

```
startnoderescue -node <node>
```

## AUTHORITY

Super, Service

## OPTIONS

`-node <node>`

Specifies the node to be rescued. This node must be physically present in the system and powered on, but not part of the cluster.

## SPECIFIERS

`<node>`

Specifies the node to be rescued. This node must be physically present in the system and powered on, but not part of the cluster.

## EXAMPLES

The following example show starting a node rescue of node 2.

```
cli% startnoderescue -node 2
Node rescue from node 0 to node 2 started.

cli% showtask
Id Type      Name              Status Phase Step -----StartTime----- -FinishTime-
-Priority- ---User----
96 node_rescue node_2_rescue active  1/1  0/1 2012-06-15 18:19:38 PDT -
n/a          sys:3parsys
```

## NOTES

On systems other than T and F-class, node rescue will automatically be started when a blank node disk is inserted into a node. The `startnoderescue` command only needs to be manually issued if the node rescue must be re-run on a disk that is not blank. For T and F-class systems, `startnoderescue` must always be issued to perform a node rescue.

## startrcopy

### DESCRIPTION

The `startrcopy` command enables Remote Copy.

### SYNTAX

```
startrcopy
```

### AUTHORITY

- Super, Edit
- Any role granted the `rcopy_start` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

None.

### SPECIFIERS

None.

### RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

### EXAMPLES

The following example starts Remote Copy on a system:

```
# startrcopy
```

### NOTES

- The `startrcopy` command must be executed before any other Remote Copy command.
- An older version of this command used `primary`, `secondary`, and `both` specifiers to designate the system on which Remote Copy is started. This syntax was deprecated in HP 3PAR OS release 2.2.3.

# startcopygroup

## DESCRIPTION

The `startcopygroup` command enables Remote Copy for the specified Remote Copy volume group.

## SYNTAX

```
startcopygroup [options] <group_name> [<vv:sv> ...]  
startcopygroup [options] <pattern>
```

## AUTHORITY

- Super, Edit
- Any role granted the `rcopygroup_start` right.

## OPTIONS

`-nosync`

Prevents the initial synchronization and sets the virtual volumes to a synchronized state.

`-wait`

Specifies that the command blocks until the initial synchronization is complete. The system generates an event when the synchronization is complete.

`-t <target_name>`

Indicates that only the group on the specified target is started. If this option is not used, by default, the `startcopygroup` command will affect all of a group's targets.

`-pat`

Specifies that specified patterns are treated as glob-style patterns and that all Remote Copy groups matching the specified pattern will be started. This option must be used if the pattern specifier is used.

## SPECIFIERS

`<group_name>`

The name of the Remote Copy volume group. Can be obtained using the `showrcopy` command.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to start multiple groups.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

## EXAMPLES

The following example starts Remote Copy for `Group1`:

```
# startcopygroup Group1
```

To start Group2, which contains 4 virtual volumes, and specify starting snapshots, with vv4 starting from a full resync:

```
# startcopygroup Group2 vv1:sv1 vv2:sv2 vv3:sv3 vv4:-
```

## NOTES

- If a group's target has the `mirror_config` policy set and the group is a primary group, then this command will be mirrored to that target and the corresponding secondary group will be started. If the policy is set and the group is a secondary, then this command will fail.
- If the `mirror_config` policy is not set, then the corresponding secondary group must already be started or this command will fail.
- Synchronous groups are automatically synchronized when started. Asynchronous periodic volume groups are synchronized only on the first time they are started. When volumes are added to existing asynchronous periodic groups their first sync occurs the next time the entire group synchronizes.
- You must enter this command on the backup system before entering it on the primary if the `mirror_config` policy is not set.
- When a secondary group says that it is in the started state, it does not necessarily mean that the group is receiving data from the primary system. The primary group might be stopped, or its system might even be down. The fact that the group is started only indicates that the group is ready to receive writes from the primary group. To determine if writes to the volumes of the primary group are being mirrored to the secondary group, the status of the primary group must be examined.



# starttask

## DESCRIPTION

The `starttask` command provides users with the ability to execute commands with long running times. The commands run in the background.

## SYNTAX

```
starttask <command>
```

## AUTHORITY

- Super, Service, Edit
- Any role granted the `task_start` right.

## OPTIONS

None.

## SPECIFIERS

<command>

Specifies the command to be run by the `starttask` command.

## RESTRICTIONS

None.

## EXAMPLES

The following example shows the `removevv` command to be started with the forced option:

```
cli% starttask removevv -f vv1
```

## NOTES

- If the command to be run requires confirmation it must be forced with the `-f` option otherwise it will fail.
- The commands that can be run with the `starttask` command are: `admithw`, `creategroupsv`, `createsv`, `moverelocpd`, `removevv`, `updatevv`, `upgradecage`, `upgradedpd` and `startao`.

## startvv

### DESCRIPTION

The `startvv` command starts data services on a Virtual Volume (VV) that has not yet been started.

### SYNTAX

```
startvv [option] <VV_name>
```

### AUTHORITY

- Super, Service
- Any role granted the `vv_start` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

`-ovrd`

Specifies that the logical disk is forced to start, even if some underlying data is missing.

### SPECIFIERS

`<VV_name>`

Specifies the VV name, using up to 31 characters.

### RESTRICTIONS

Access to all domains is required to run this command.

### EXAMPLES

The following example starts data services on virtual volume `testvv`:

```
cli% startvv testvv
```

### NOTES

None.

# startwsapi

## DESCRIPTION

The `startwsapi` command starts the Web Services API server to service HTTP and HTTPS requests. By default, the Web Services API server is not started until this command is issued.

## SYNTAX

```
startwsapi
```

## AUTHORITY

Super, Service

Any role granted the `wsapi_start` right

## OPTIONS

None.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example starts the Web Services API server:

```
cli% startwsapi
    The Web Services API server will start shortly.
```

## NOTES

Access to all domains is required to run this command.

By default, the Web Services API server is not started until this command is issued.

Use the `stopwsapi` command to stop the Web Services API server.

By default, the Web Services API server only listens for HTTPS requests.

Use the `setwsapi` command to enable HTTP requests.

---

## 27 Stat Commands

### statch

#### DESCRIPTION

The `statch` command displays chunklet statistics in a timed loop.

#### SYNTAX

```
statch [options <arg>]
```

#### AUTHORITY

Any role in the system.

#### OPTIONS

`-rw`

Specifies that reads and writes are displayed separately. If this option is not used, then the total of reads plus writes is displayed.

`-d <secs>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of 2 seconds. This option and argument are not required in the command line.

`-iter <number>`

Specifies that chunklet statistics are displayed a specified number of times as indicated by the `number` argument using an integer from 1 through 2147483647.

`-begin`

Specifies that I/O averages are computed from the system start time. If not specified, the average is computed since the first iteration of the command.

`-idlep`

Specifies the percent of idle columns in the output.

`-sortcol <col> [, <dir>] [:<col> [, <dir>] ...]`

Sorts command output based on the column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting `<dir>` can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by values in later columns.

`-filt <fspec>`

Specifies that statistics that fall below the threshold as specified by the `<fspec>` arguments, where `<fspec>` is `<type>`, `<op>`, `<meas>`, `<val>`, are filtered out and not displayed. The `<type>`, `<op>`, `<meas>`, and `<val>` arguments are separated with one comma.

- `<type>`

The `type` argument can be specified with one of the following arguments:

- `curs`

Specifies that only devices with current statistics above the threshold are displayed.

- `avgs`

Specifies that only devices with average statistics above the threshold are displayed.

- `maxs`

Specifies that only devices with maximum values above the threshold are displayed.

- `<op>`

The `operation` argument can be specified with one of the following arguments:

- `r`

Specifies that read-only statistics are displayed.

- `w`

Specifies that write-only statistics are displayed.

- `t|rw`

Specifies that statistics for read and write totals are displayed.

- `<meas>`

The `meas` argument can be specified with one of the following arguments:

- `iops`

Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `bw`

Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `svct`

Specifies that statistics for service time in milliseconds are displayed.

- `size`

Specifies that statistics for I/O operations in bytes are displayed.

- `<val> [k|K] | [m|M] | [g|G]`

Specifies the minimum threshold using any integer. The integer can optionally be followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1,000,000, or `g` or `G` to indicate a multiple of 1,000,000,000.

An example of this option in use is `-filt curs,r,iops,10k` that indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

`-ni`

Specifies that statistics for only non-idle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

`-ld <LD_name>|-ch <chunk_num>`

`-ld <LD_name>`

Specifies that statistics are restricted to chunklets from a particular logical disk.

`-ch <chunk_num>`

Specifies that statistics are restricted to a particular chunklet number.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays the collection of statistics:

```
cli% statch -iter 1
          12:47:54 04/06/06 r/w I/O per second KBytes per sec  Svt ms IOSz KB
Util %
Ldid Ldname LdCh Pdid PdCh      Cur  Avg  Max  Cur  Avg  Max Cur Avg Cur Avg Qlen Cur
Avg
-----
          total                t   0   0          0   0          0.0 0.0 0.0 0.0   0
0   0
```

For the previous example, before the `statch` command was issued, the `setstatch start` command was issued for chunklets 0 and 2 on logical disk `vv0.usr.1` and for chunklets 0 and 1 on logical disk `vv0.usr.2`.

The columns in the example above are identified as follows:

- `Ldid`. The logical disk ID.
- `Ldname`. The logical disk name.
- `LdCh`. The number of LD chunklets.
- `Pdid`. The physical disk ID.
- `r/w`. The I/O type. Values can be read (`r`), write (`w`), or read and write (`t`).
- `I/O per second Cur`. The current number of I/O per second.
- `I/O per second Avg`. The average number of I/O per second.
- `KBytes per Max`. The maximum number of KB per second.
- `KBytes per Cur`. The current number of KB per second.
- `KBytes per Avg`. The average number of KB per second.
- `Svt ms Max`. The maximum service time in milliseconds.
- `Svt ms Cur`. The current service time in milliseconds.
- `Svt ms Avg`. The average service time in milliseconds.
- `IOSz KB Cur`. The current I/O size in KB.
- `IOSz KB Avg`. The average I/O size in KB.

- `Qlen`. The queue length.
- `Util % Cur`. The percentage of current use.
- `Util % Avg`. The percentage of average use.

## NOTES

- For this command: KB = 1000 bytes.
- If no options are used, the command defaults to show reads, writes, and totals separately for all chunklets in intervals of 2 seconds.
- The `statch` command can only be used after the `setstatch` command has been issued to enable chunklet statistics. See [“setstatch” \(page 331\)](#) for information about the `setstatch` command.

# statcmp

## DESCRIPTION

The `statcmp` command displays Cache Memory Page (CMP) statistics by node or by Virtual Volume (VV).

## SYNTAX

`statcmp [options <arg>]`

## AUTHORITY

Any role in the system.

## OPTIONS

`-v`

Specifies that CMP statistics by VV instead of by node are displayed. By default, all VVs are displayed unless the `-n` option is specified.

`-n <name|pattern>`

Specifies that statistics are displayed for VVs matching the specified name or pattern. This option is valid only when used with the `-v` option.

`-domain {<domainname|pattern>}...`

Shows VVs that are in domains with names that match one or more of the specified domains or patterns. If `-domain` is not specified, the VVs that are in the current domain are shown. See the `currentdomain` parameter in the `setclienv` and `showclienv` commands. This option is only valid if the `-v` option is also specified.

`-d <seconds>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that CMP statistics are displayed a specified number of times as indicated by the `num` argument using an integer from 1 through 2147483647.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of CMP statistics for all nodes:

```
cli% statcmp -iter 1
16:13:49 03/18/11 ---- Current ----- Total -----
Node Type      Accesses Hits Hit% Accesses Hits Hit% LockBlock
  0 Read         0    0    0         0    0    0        21
  0 Write        0    0    0         0    0    0        22
  1 Read         0    0    0         0    0    0        23
  1 Write        0    0    0         0    0    0        24

      Queue Statistics
Node  Free Clean Write1 WriteN WrtSched Writing DcowPend DcowProc
```



```

0 473405 11790      0      0      0      0      0      0
1 483013  2158      0      0      0      0      0      0

      Temporary and Page Credits
Node Node0 Node1 Node2 Node3 Node4 Node5 Node6 Node7
0      0 33411 --- --- --- --- --- ---
1 33482      0 --- --- --- --- --- ---

      Page Statistics
      ---CfcDirty--- -----CfcMax----- ----DelAck----
Node FC FC15 NL SSD      FC FC15      NL SSD FC FC15 NL SSD
0 15      0 17      0 19200      0 9600      0 11      0 13      0
1 16      0 18      0 19200      0 9600      0 12      0 14      0

Press the enter key to stop...

```

The columns in the example above are identified as follows:

- Node. Node ID on the storage system.
- Type. Read or Write.
- Access. Number of Current and Total Read/Write I/Os.
- Hits. Number of Read/Write I/Os in which data was already in cache.
- Hit%. Hits divided accesses displayed in percentages.
- Free. Number of cache pages without valid data on them.
- Clean. Number of clean cache pages (valid data on page). A page is clean when data in cache matches data on disk.
- Write1. Number of dirty pages that have been modified exactly 1 time. A page is dirty when it has been modified in cache but not written to disk.
- WriteN. Number of dirty pages that have been modified more than 1 time.
- WrtSched. Number of pages scheduled to be written to disk.
- Writing. Number of pages being currently written by the flusher to disk.
- DcowPend. Number of pages waiting for delayed copy on write resolution.
- DcowProc. Number of pages currently being processed for delayed copy on write resolution.
- RecFlush. During node down, number of recovered pages currently being written by the flusher to disk.
- LockBlk. Number of pages being modified by host I/O that are temporarily blocked because page is being written to disk by the flusher.
- CfcDirty. Current number of dirty cluster memory pages in the system.
- CfcMax. Maximum allowed number of dirty cluster memory pages in the system.
- DelAck. Number of delayed acknowledgements to the host in order to throttle the host's IO writes due to cache resource constraints.

## NOTES

- Patterns are specified as regular expressions.
- Temporary and Page Credits refer to the number of credits being given by each node to other nodes in the system. The credits plus pages (free, clean, scheduled and writing) should add up to the total amount of memory in the node.

# statcpu

## DESCRIPTION

The `statcpu` command displays CPU statistics for all nodes.

## SYNTAX

```
statcpu [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d <secs>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that CPU statistics are displayed a specified number of times as indicated by the `number` argument using an integer from 1 through 2147483647.

`-t`

Show only the totals for all the CPUs on each node.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays two iterations of CPU statistics for all nodes:

```
cli% statcpu -iter 2
15:11:03
node,cpu  user  sys  idle intr/s  ctxt/s
0,0        0    0  100
0,1        0    0  100
0,total    0    0  100      162    412

1,0        0    1   99
1,1        0    1   99
1,total    0    1   99      158    269
Press the enter key to stop...

15:11:05
node,cpu  user  sys  idle intr/s  ctxt/s
0,0        0    0  100
0,1        19    7   74
0,total    10    4   87      183    444

1,0        0    0  100
1,1        0    0  100
1,total    0    0  100      158    235
Press the enter key to stop...
```

## NOTES

None.

# statfcoe

## DESCRIPTION

The `statfcoe` command displays statistics for Fibre Channel over Ethernet connections.

## SYNTAX

```
statfcoe [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d <secs>`

Specifies the looping delay in seconds `<secs>`. The default is 2.

`-iter <number>`

Specifies that the command execution should terminate after a user-defined `<number>` of iterations.

`-nodes <nodelist>`

Specifies the list of nodes for which the ports are included.

`-slots <slotlist>`

Specifies the list of PCI slots for which the ports are included.

`-ports <portlist>`

Specifies the list of ports which are included. Lists are specified in a comma-separated manner such as: `-ports 1,2` or `-ports 1`.

`-counts`

Shows the counts. The default is to show counts/sec.

`-fullcounts`

Shows the values for the full list of counters instead of the default packets and KBytes for the specified protocols. The values are shown in three columns:

`Current` - Shows counts since the last sample.

`CmdStart` - Shows counts since the start of the command.

`Begin` - Shows counts since the port was reset.

`-prev`

Shows the differences between the current and previous samples.

`-begin`

Shows the values from when the system was last initiated.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of FCoE counts:

```
cli% statfcoe -iter 1 -counts -begin
```

## NOTES

None.

# statiscsi

## DESCRIPTION

The `statiscsi` command displays the iSCSI statistics.

## SYNTAX

```
statiscsi [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d <secs>`

Looping delay in seconds `<secs>`. The default is 2.

`-iter <number>`

The command stops after a user-defined `<number>` of iterations.

`-nodes <nodelist>`

List of nodes for which the ports are included.

`-slots <slotlist>`

List of PCI slots for which the ports are included.

`-ports <port_list>`

List of ports for which the ports are included. Lists are specified in a comma-separated manner such as: `-slots 0,1,2` or `-slots 0`.

`-counts`

Shows the counts. The default is to show counts/sec.

`-fullcounts`

Show the values for the full list of counters instead of the default packets and KBytes for the specified protocols. The values are shown in three columns:

- `Current` - Counts since the last sample.
- `CmdStart` - Counts since the start of the command.
- `Begin` - Counts since the port was reset.

This option cannot be used with the `-prot` option. If the `-fullcounts` option is not specified, the metrics from the start of the command are displayed.

`-prot <prot>[, <prot>, ...]`

Shows the statistics for the specified protocols. The available protocols are:

- `Eth` - Ethernet.
- `IP` - Internet Protocol (IP).
- `TCP` - Transmission Control Protocol (TCP).
- `iSCSI` - iSCSI.
- `all` - All protocols (default).

This option cannot be used with the `-fullcounts` option.

`-prev`

Shows the differences from the previous sample.

-begin

Shows the values from when the system was last initiated.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays basic iSCSI statistics collection:

```
cli% statistcsi
16:37:59 04/06/06 ----Receive---- ---Transmit---- -----Total-----
port Protocol Pkts/s KBytes/s Pkts/s KBytes/s Pkts/s KBytes/s Errs/s
0:4:1 Eth 15633.2 1116.7 30115.9 45164.4 45749.1 46281.1 0.0
0:4:1 IP 15632.7 522.6 30116.4 44020.8 45749.1 44543.3 0.0
0:4:1 TCP 15632.7 22.3 30116.4 43057.0 45749.1 43079.4 0.0
0:4:1 iSCSI 547.7 0.0 1477.3 50452.8 2025.0 50452.8 0.0
0:4:2 Eth 0.5 0.0 0.0 0.0 0.5 0.0 0.0
0:4:2 IP 15632.1 522.6 30115.2 44019.0 45747.2 44541.5 0.0
0:4:2 TCP 15632.1 22.3 30115.2 43055.3 45747.2 43077.6 0.0
0:4:2 iSCSI 547.7 0.0 1478.7 50509.7 2026.4 50509.7 0.0
1:3:1 Eth 11307.2 807.0 21348.2 32048.1 32655.4 32855.1 0.0
1:3:1 IP 11309.2 377.4 21345.7 31233.2 32654.9 31610.5 0.0
1:3:1 TCP 11309.2 15.5 21344.7 30548.7 32653.9 30564.1 0.0
1:3:1 iSCSI 459.3 0.0 1247.9 42630.9 1707.2 42630.9 0.0
1:3:2 Eth 0.5 0.0 0.0 0.0 0.5 0.0 0.0
1:3:2 IP 11308.5 377.3 21344.5 31231.3 32653.0 31608.7 0.0
1:3:2 TCP 11308.5 15.5 21343.5 30546.9 32652.0 30562.3 0.0
1:3:2 iSCSI 459.3 0.0 1247.8 42628.4 1707.1 42628.4 0.0
-----
Total Eth 26941.4 1923.7 51464.1 77212.5 78405.5 79136.2 0.0
Total IP 53882.5 1799.8 102921.7 150504.2 156804.2 152304.1 0.0
Total TCP 53882.5 75.6 102919.7 147207.9 156802.2 147283.5 0.0
Total iSCSI 2014.0 0.0 5451.7 186221.9 7465.7 186221.9 0.0
Press the enter key to stop...
```

The following example displays one iteration of iSCSI counts (with Ethernet and transmission control protocols):

```
cli% statistcsi -iter 1 -counts -prot Eth,TCP -begin
13:24:38 03/29/06 -----From last port reset-----
-----Receive----- ---Transmit---- -----Total-----
port Protocol Pkts KBytes Pkts KBytes Pkts KBytes Errs
1:3:1 Eth 766373.0 1066175.9 394473.0 55171.4 1160846.0 1121347.2 1.0
1:3:1 TCP 722917.0 1016532.4 394441.0 30238.3 1117358.0 1046770.7 0.0
1:3:2 Eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0
1:3:2 TCP 722917.0 1016532.4 394441.0 30238.3 1117358.0 1046770.7 0.0
-----
Total Eth 766373.0 1066175.9 394473.0 55171.4 1160846.0 1121347.2 1.0
Total TCP 1445834.0 2033064.8 788882.0 60476.6 2234716.0 2093541.4 0.0*
```

## NOTES

The statistics for the TCP, IP, and iSCSI protocols listed are the combined values for both ports of the HBA. Each port reports the combined statistics for both ports for these protocols. The total reported at the bottom for these protocols is therefore twice the actual values.

## statiscsission

### DESCRIPTION

The `statiscsission` command displays the iSCSI session statistics.

### SYNTAX

```
statiscsission [options <arg>]
```

### AUTHORITY

Any role in the system.

### OPTIONS

`-d <secs>`

Looping delay in seconds `<secs>`. The default is 2.

`-iter <number>`

The command stops after a user-defined number of iterations.

`-nodes <nodelist>`

List of nodes for which the ports are included.

`-slots <slotlist>`

List of PCI slots for which the ports are included.

`-ports <portlist>`

List of port slots for which the ports are included. Lists are specified in a comma-separated manner such as: `-slots 0,1,2` or `-slots 0`.

`-counts`

Shows the counts. The default is to show counts/sec.

By default, the differences from initiating the command are shown. The following options change that behavior:

`-prev`

Shows the differences from the previous sample.

`-begin`

Shows the values from when the system was last initiated.

### SPECIFIERS

None.

### RESTRICTIONS

None.

### EXAMPLES

The following example displays the session statistics for the iSCSI:

```
cli% statiscsission
                                     15:31:35 04/04/06 --From start of
statiscsission command---
                                     ----PDUs/s----
--KBytes/s--- ----Errs/s----
port -----iSCI_Name----- TPGT Cmd Resp Total Tx
```



```
Rx Total Digest TimeOut
1:3:1 ign.1991-05.com.microsoft:dt-ashok-xp.hq.3pardata.com 131 1.0 1.0 2.0 4.0
0.0 4.0 0.0 0.0
-----
Total - - 1.0 1.0 2.0 4.0
0.0 4.0 0.0 0.0
Press the enter key to stop...
```

## NOTES

None.

# statld

## DESCRIPTION

The `statld` command displays read/write (I/O) statistics about Logical Disks (LDs) in a timed loop.

## SYNTAX

```
statld [options <arg>] [<LD_name|pattern>...]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-vv {<VV_name|pattern>}...`

Show only LDs that are mapped to Virtual Volumes (VVs) with names matching any of names or patterns specified. Multiple volumes or patterns can be repeated using a comma-separated list (for example `-vv <VV_name>,<VV_name>...`).

`-domain {<domain_name|pattern>}...`

Shows only LDs that are in domains with names matching any of the names or specified patterns. Multiple domain names or patterns can be repeated using a comma-separated list (for example `-domain <domain_name>,<domain_name>...`).

`-rw`

Specifies that reads and writes are displayed separately. If this option is not used, then the total of reads plus writes is displayed.

`-d <sec>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that I/O statistics are displayed a specified number of times as indicated by the `number` argument using an integer from 1 through 2147483647.

`-begin`

Specifies that I/O averages are computed from the system start time. If not specified, the average is computed since the first iteration of the command.

`-idlep`

Specifies the percent of idle columns in the output.

`-sortcol <col> [,<dir>] [:<col>[,<dir>] ...]`

Sorts command output based on the column number `<col>`. Columns are numbered from left to right, beginning with 0. You must specify a column number. In addition, you can specify the direction of sorting `<dir>` as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:), Rows with have the same information in them as earlier columns will be sorted by the values in the later columns.

`-filt <fspec>`

Specifies that statistics that fall below the threshold as specified by the `<fspec>` arguments where `<fspec>` is `<type>`, `<op>`, `<meas>`, `<val>`, are filtered out and not displayed. The `type`, `operation`, `meas`, and `value` arguments are separated with one comma.

- `<type>`

The `type` argument can be specified with one of the following arguments:

- `curs`

Specifies that only devices with current statistics above the threshold are displayed.

- `avgs`

Specifies that only devices with average statistics above the threshold are displayed.

- `maxs`

Specifies that only devices with maximum values above the threshold are displayed.

- `<op>`

The `operation` argument can be specified with one of the following arguments:

- `r`

Specifies that read-only statistics are displayed.

- `w`

Specifies that write-only statistics are displayed.

- `t|rw`

Specifies that statistics for read and write totals are displayed.

- `<meas>`

The `meas` argument can be specified with one of the following arguments:

- `iops`

Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `bw`

Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `svct`

Specifies that statistics for service time in milliseconds are displayed.

- `size`

Specifies that statistics for I/O operations in bytes are displayed.

- `<val>` `[k|K] | [m|M] | [g|G]`

Specifies the minimum threshold using any integer. The integer can optionally be followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1,000,000, or `g` or `G` to indicate a multiple of 1,000,000,000.

An example of this option in use is `-filt curs,r,iops,10k`. This indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

`-ni`

Specifies that statistics for only non-idle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

## SPECIFIERS

<LD\_name|pattern>...

Only statistics are displayed for the specified LD or pattern. Multiple LDs or patterns can be repeated (for example <LD\_name> <LD\_name>...).

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of I/O statistics for all LDs:

```
cli% statld -iter 1
13:03:04 04/06/06 r/w I/O per second KBytes per sec Svt ms IOSz KB Util %
  Ldname      Cur  Avg  Max  Cur  Avg  Max  Cur  Avg  Cur  Avg  Qlen  Cur  Avg
    log0.0    t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
    pdsld0.0  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  admin.usr.0 t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  admin.usr.1 t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  Test.usr.0  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  Test.usr.1  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
    log1.0    t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
    pdsld1.0  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  admin.usr.2 t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  admin.usr.3 t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  Test.usr.2  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
  Test.usr.3  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
-----
      total  t    0   0   0    0   0    0 0.0 0.0 0.0 0.0    0   0   0
```

The columns in the example above are identified as follows:

- Ldname. The logical disk name.
- r/w. The I/O type. Values can be read (r), write (w), or read and write (t).
- I/O per second Cur. The current number of I/O per second.
- I/O per second Avg. The average number of I/O per second.
- KBytes per Max. The maximum number of KB per second.
- KBytes per Cur. The current number of KB per second.
- KBytes per Avg. The average number of KB per second.
- Svt ms Max. The maximum service time in milliseconds.
- Svt ms Cur. The current service time in milliseconds.
- Svt ms Avg. The average service time in milliseconds.
- IOSz KB Cur. The current I/O size in KB.
- IOSz KB Avg. The average I/O size in KB.
- Qlen. The queue length.
- Util % Cur. The percentage of current use.
- Util % Avg. The percentage of average use.

## NOTES

- For this command: KB = 1000 bytes.
- If no option is specified, the command defaults to display statistics totals.
- If the <LD\_name> or <pattern> specifier is used, then LDs with names matching any of the patterns are listed, otherwise all LDs are listed. These patterns are glob-style patterns. Refer to “[Glob-Style Pattern](#)” (page 12) for further information.

# statlink

## DESCRIPTION

The `statlink` command displays statistics for link utilization for all nodes in a timed loop.

## SYNTAX

```
statlink [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d <sec>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that internode link statistics are displayed a specified number of times as indicated by the number argument using an integer from 1 through 2147483647.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of statistics for the internode link:

```
cli% statlink -iter 1
11:37:28 03/11/08      XCB_sent_per_second KBytes_per_second XCBSz_KB
  Node      Q ToNode   Cur   Avg      Max   Cur   Avg   Max Cur   Avg
    0      CM    0 15134 14911  15134 61951 61038 61951 4.1  4.1
    0     PCI0    0 22336 21852  22336 79831 77128 79831 3.6  3.5
    0     PCI1    1 15312 12103  19805 62106 63198 77324 4.0  4.1
    0      L0    1 10339 10307  10339 69673 69384 69673 6.7  6.7

    1      CM    1 16372 16189  16372 67020 66269 67020 4.1  4.1
    1     PCI0    1 18384 17899  18384 75285 73305 75285 4.1  4.1
    1     PCI1    1  5329  5336    5344   984   985   987 0.2  0.2
    1      L3    0 10326 10295  10326 69346 69150 69346 6.7  6.7
```

## NOTES

None.

# statpd

## DESCRIPTION

The `statpd` command displays the read/write (I/O) statistics for physical disks in a timed loop.

## SYNTAX

```
statpd [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-w <WWN>`

Specifies that statistics for a particular Physical Disk (PD) identified by World Wide Names (WWNs) are displayed.

`-nodes <node_list>`

Specifies that the display is limited to specified nodes and PDs connected to those nodes. The `node_list` argument is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the `node_list` argument is not specified, all disks on all nodes are displayed.

`-slots <slot_list>`

Specifies that the display is limited to specified PCI slots and PDs connected to those PCI slots. The `slot_list` argument is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the `slot_list` argument is not specified, all disks on all slots are displayed.

`-ports <port_list>`

Specifies that the display is limited to specified ports and PDs connected to those ports. The `port_list` argument is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the `port_list` argument is not specified, all disks on all ports are displayed.

`-devinfo`

Indicates the device disk type and speed.

`-rw`

Specifies that reads and writes are displayed separately. If this option is not used, then the total of reads plus writes is displayed.

`-d <secs>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-begin`

Specifies that I/O averages are computed from the system start time. If not specified, the average is computed since the first iteration of the command.

`-idlep`

Specifies the percent of idle columns in the output.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on the column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:), Rows that have the same information in them as earlier columns will be sorted by the values in the later columns.

`-filt <fspec>`

Specifies that statistics that fall below the threshold as specified by the `<fspec>` arguments where `<fspec>` is `<type>`, `<op>`, `<meas>`, `<val>`, are filtered out and not displayed. The `type`, `operation`, `meas`, and `value` arguments are separated with one comma.

- `<type>`

The `type` argument can be specified with one of the following arguments:

- `curs`

Specifies that only devices with current statistics above the threshold are displayed.

- `avgs`

Specifies that only devices with average statistics above the threshold are displayed.

- `maxs`

Specifies that only devices with maximum values above the threshold are displayed.

- `<op>`

The `operation` argument can be specified with one of the following arguments:

- `r`

Specifies that read-only statistics are displayed.

- `w`

Specifies that write-only statistics are displayed.

- `t|rw`

Specifies that statistics for read and write totals are displayed.

- `<meas>`

The `meas` argument can be specified with one of the following arguments:

- `iops`

Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `bw`

Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.



- `svct`  
Specifies that statistics for service time in milliseconds are displayed.
- `size`  
Specifies that statistics for I/O operations in bytes are displayed.
- `<val> [k|K] | [m|M] | [g|G]`  
Specifies the minimum threshold using any integer. The integer can optionally be followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1,000,000, or `g` or `G` to indicate a multiple of 1,000,000,000.

An example of this option in use is `-filt curs,r,iops,10k` that indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

`-ni`

Specifies that statistics for only non-idle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

`-p <pattern>`

Specifies that statistics for a pattern of PDs are displayed. Patterns are used to filter and select the disks from which the statistics are collected. If specified multiple times, each instance of the specified pattern adds additional candidate disks matching the pattern:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`item`). Multiple nodes are separated with a single comma (1, 2, 3). A range of nodes is separated with a hyphen (0-7). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`item`). Multiple slots are separated with a single comma (1, 2, 3). A range of slots is separated with a hyphen (0-5). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`<item>`). Multiple ports are separated with a single comma (1, 2, 3). A range of ports is separated with a hyphen (0-4). The primary path of the disks must be on the specified port(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (`<item>`). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using `-mg` option. Drive magazines are identified by one or more integers (`item`). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-7). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (`item`). Multiple disk positions are separated with a single comma (1, 2, 3). A

range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (*item*). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments, `-tc_gt`, `-tc_lt`, `-fc_gt`, `-fc_lt`, `-devid`, and `-devtype` are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the RPM column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example, `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of I/O statistics for all PDs:

```
cli% statpd -iter 1
16:03:44 04/06/06 r/w I/O per second KBytes per sec Svt ms IOSz KB Util %
Pdid Port Cur Avg Max Cur Avg Max Cur Avg Cur Avg Qlen Cur Avg
```

0	1:0:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1	0:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
2	1:0:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
4	1:0:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
5	0:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
6	1:0:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
7	0:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
8	1:0:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
9	0:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
10	1:0:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
11	0:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
12	1:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
13	0:2:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
14	1:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
15	0:2:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
16	1:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
17	0:2:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
18	1:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
19	0:2:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
20	1:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
21	0:2:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
22	1:0:2	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
23	0:2:1	t	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
-----															
total		t	0	0		0	0		0.0	0.0	0.0	0.0	0	0	0

The columns in the example above are identified as follows:

- Pdid. The physical disk ID.
- Port. The disk's port.
- r/w. The I/O type. Values can be read (r), write (w), or read and write (t).
- I/O per second Cur. The current number of I/O per second.
- I/O per second Avg. The average number of I/O per second.
- KBytes per Max. The maximum number of KB per second.
- KBytes per Cur. The current number of KB per second.
- KBytes per Avg. The average number of KB per second.
- Svt ms Max. The maximum service time in milliseconds.
- Svt ms Cur. The current service time in milliseconds.
- Svt ms Avg. The average service time in milliseconds.
- IOSz KB Cur. The current I/O size in KB.
- IOSz KB Avg. The average I/O size in KB.
- Qlen. The queue length.
- Util % Cur. The percentage of current use.
- Util % Avg. The percentage of average use.

## NOTES

For this command: KB = 1000 bytes.

# statport

## DESCRIPTION

The `statport` command displays read/write (I/O) statistics for ports.

## SYNTAX

```
statport [options]
```

## AUTHORITY

Any role in the system.

## OPTIONS

```
-both|-ctl|-data
```

Show data transfers only (`-data`), control transfers only (`-ctl`), or both data and control transfers (`-both`). If no option is included on the command line, the command shows data transfers only.

```
-nodes <node_list>
```

Specifies that the display is limited to specified nodes and Physical Disks (PDs) connected to those nodes. The `node_list` is specified as a series of integers separated by commas (for example 1, 2, 3). The list can also consist of a single integer (for example 1). If the node list is not specified, all disks on all nodes are displayed.

```
-slots <slot_list>
```

Specifies that the display is limited to specified PCI slots and PDs connected to those PCI slots. The `slot_list` is specified as a series of integers separated by commas (for example 1, 2, 3). The list can also consist of a single integer (for example 1). If the slot list is not specified, all disks on all slots are displayed.

```
-ports <port_list>
```

Specifies that the display is limited to specified ports and PDs connected to those ports. The `port_list` is specified as a series of integers separated by commas (for example 1, 2, 3). The list can also consist of a single integer (for example 1). If the port list is not specified, all disks on all ports are displayed.

```
-host|-disk|-rcfc|-peer
```

Displays only host ports (target ports), only disk ports (initiator ports), only Fibre Channel Remote Copy configured ports, or only Fibre Channel ports for Data Migration. If no option is specified, all ports are displayed.

```
-rcip
```

Includes only statistics for Ethernet configured Remote Copy ports.

```
-rw
```

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

```
-d <secs>
```

Sets the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

```
-iter <number>
```

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

```
-begin
```

Specifies that I/O averages are computed from the system start time. If not specified, the average is computed since the first iteration of the command.

`-idlep`

Specifies the percent of idle columns in the output.

`-sortcol <col> [, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on the column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows that have the same information in them as earlier columns will be sorted by the values in the later columns.

`-filt <fspec>`

Specifies that statistics that fall below the threshold as specified by the `<fspec>` arguments where `<fspec>` is `<type>`, `<op>`, `<meas>`, `<val>`, are filtered out and not displayed. The `-filt` option applies to data transfers only. The `<type>`, `<operation>`, `<meas>`, and `<value>` arguments are separated with one comma.

- `<type>`

The `type` argument can be specified with one of the following arguments:

- `curs`

Specifies that only devices with current statistics above the threshold are displayed.

- `avgs`

Specifies that only devices with average statistics above the threshold are displayed.

- `maxs`

Specifies that only devices with maximum values above the threshold are displayed.

- `<op>`

The `op` (operation) argument can be specified with one of the following arguments:

- `r`

Specifies that read-only statistics are displayed.

- `w`

Specifies that write-only statistics are displayed.

- `t|rw`

Specifies that statistics for read and write totals are displayed.

- `<meas>`  
The `meas` argument can be specified with one of the following arguments:
  - `iops`  
Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.
  - `bw`  
Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.
  - `svct`  
Specifies that statistics for service time in milliseconds are displayed.
  - `size`  
Specifies that statistics for I/O operations in bytes are displayed.
- `<val> [k|K] | [m|M] | [g|G]`  
Specifies the minimum threshold using any integer. The integer can optionally be followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1,000,000, or `g` or `G` to indicate a multiple of 1,000,000,000.

An example of this option in use is `-filt curs,r,iops,10k`. This indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

`-ni`

Specifies that statistics for only non-idle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of I/O statistics for all ports:

```
cli% statport -iter 1
10:38:56 09/14/09 r/w I/O per second KBytes per sec      Svt ms      IOSz KB
  Port      D/C      Cur  Avg  Max  Cur  Avg  Max  Cur  Avg  Cur  Avg  Qlen
0:0:1      Data  t      2   2   2   34  34  34  13.0 13.0 17.4 17.4  0
0:0:2      Data  t      0   0   0    4   4   4   8.2  8.2  8.2  8.2  0
0:2:1      Data  t      0   0   0    0   0   0   0.0  0.0  0.0  0.0  0
0:2:2      Data  t      0   0   0    0   0   0   0.0  0.0  0.0  0.0  0
0:3:1      Data  t      0   0   0    0   0   0   0.0  0.0  0.0  0.0  0
0:3:2      Data  t      0   0   0    0   0   0   0.0  0.0  0.0  0.0  0
1:0:1      Data  t      0   0   0    4   4   4   9.7  9.7  8.2  8.2  0
1:0:2      Data  t      2   2   2   34  34  34  11.4 11.4 17.4 17.4  0
1:3:1      Data  t      0   0   0    0   0   0   0.0  0.0  0.0  0.0  0
1:3:2      Data  t      0   0   0    0   0   0   0.0  0.0  0.0  0.0  0
-----
      10      Data  t      5   5           76  76           11.6 11.6 15.6 15.6  0
```

The columns in the example above are identified as follows:

- `Port`. The port ID.
- `D/C`. The Data or Control transfers.
- `r/w`. The I/O type. Values can be read (r), write (w), or read and write (t).
- `I/O per second Cur`. The current number of I/O per second.
- `I/O per second Avg`. The average number of I/O per second.
- `KBytes per Max`. The maximum number of KB per second.
- `KBytes per Cur`. The current number of KB per second.
- `KBytes per Avg`. The average number of KB per second.
- `Svt ms Max`. The maximum service time in milliseconds.
- `Svt ms Cur`. The current service time in milliseconds.
- `Svt ms Avg`. The average service time in milliseconds.
- `IOSz KB Cur`. The current I/O size in KB.
- `IOSz KB Avg`. The average I/O size in KB.
- `Qlen`. The queue length.
- `Errs`. Number of errors on the port.
- `Drops`. Number of dropped packets.

## NOTES

- For this command: KB = 1000 bytes.
- The `-filt` option applies only to data transfers and not control transfers.
- When a physical port is hosting multiple persistent ports (virtual ports), for example, when port failover is active, `statport` indicates the aggregate statistics for all virtual ports on the physical port.

# statqos

## DESCRIPTION

The `statqos` command displays the run-time stats of active QoS rules.

## SYNTAX

The syntax for the `showqos` command can be one of the following examples:

- `statqos [options] [{vvset:<name>|<pattern>}|sys:all_others}]...`

## AUTHORITY

- Any role in the system

## OPTIONS

`-domain {<domainname|pattern>}...`

Shows rules with target objects in domains with names that match one or more of the specified domains or patterns. If `-domain` is not specified, all rules with target objects in the current domain are shown. See the `currentdomain` parameter in the `setclienv` and `showclienv` commands.

`-vv {<vv_name>|<pattern>[{<vv_name>|<pattern>}]}...`

Applies only to QoS rules whose targets include virtual volumes with names matching any of the names or patterns specified.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the statistics are to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-begin`

Specifies that I/O averages are computed from the system start time. If not specified, the average is computed since the first iteration of the command.

`-idlep`

Specifies the percent of idle columns in the output.

`-sortcol <col>[,<dir>][:<col>[,<dir>]]...`

Sorts command output based on column number (`<col>`). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (`<dir>`) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

---

**NOTE:** Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

---

`-filt <fspec>`



Specifies that statistics that fall below the threshold as specified by the <fspec> arguments, where <fspec> is <type>, <op>, <meas>, <val> are filtered out and not displayed. The <type>, <op>, <meas>, <val> are separated by one comma.

<type>

The type argument can be specified with one of the following arguments:

- `curs` – specifies that only devices with current statistics above the threshold are displayed.
- `avgs` – specifies that only devices with average statistics above the threshold are displayed.
- `max` – specifies that only devices with maximum values above the threshold are displayed.

<op>

The operation argument can be specified with one of the following arguments:

- `r` – specifies that read-only statistics are displayed.
- `w` – specifies that write-only statistics are displayed.
- `t|rw` – specifies that read and write totals are displayed.

<meas>

The measure argument can be specified with one of the following arguments:

- `iops` – specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the <val> argument.
- `bw` – specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the <val> argument.
- `svct` – specifies that statistics for service time in milliseconds are displayed.
- `size` – specifies that statistics for I/O operations in bytes are displayed.

<val> [k|K] | [m|M] | [g|G]

Specifies the minimum threshold using any integer. The integer can optionally be followed with k or K to indicate a multiple of 1000, m or M to indicate a multiple of 1,000,000, or g or G to indicate a multiple of 1,000,000,000.

---

**NOTE:** An example of this option is `-filt curs,r,iops,10k`. This indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

---

`-ni`

Specifies that statistics for only non-idle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

## SPECIFIERS

[{`vvset`: {<name> | <pattern>} | `sys:all_others`}]

The QoS rules to display run-time stats. If none is specified, it displays all active QoS rules. <name> and <pattern> refer to the target object name of the rule, as listed in `showvvset` commands.

## EXAMPLES

The following example displays one iteration of statistics for QoS:

```
cli% statqos -iter 1
```

## NOTES

For this command KB = 1000 bytes.

For all the <pattern> fields, the patterns are glob-style (shell-style) patterns (see help on `sub,globpat`).

A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option, or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

# statrcopy

## DESCRIPTION

The `statrcopy` command displays statistics for Remote Copy volume groups..

## SYNTAX

```
statrcopy [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-d <secs>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that I/O statistics are displayed a specified number of times as indicated by the `num` argument using an integer from 1 through 2147483647.

`-u k|m|g`

Displays statistics as kilobytes (k), megabytes (m), or gigabytes (g). If no unit is specified, the default is kilobytes.

`-hb`

Specifies that the heartbeat round-trip time of the links should be displayed in addition to the link throughput.

## SPECIFIERS

None.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

## EXAMPLES

The following example shows statistics for sending links link0 and link1:

```
# statrcopy
17:37:01 05/17/07
                                -Throughput (KBytes per sec) -
Target  Node Address      IPC      Total (KBytes)      Current      Average
-----
amp1    0    10.100.33.96 RCr041    404761.15          4.95          4.95
amp1    1    10.101.33.96 RCr142    404661.63          3.30          3.30
-----
amp1                                809422.78          8.25          8.25
amp2    0    10.100.33.11 RCr037    86845920.00       24612.95       24612.95
amp2    1    10.101.33.11 RCr138    85299712.32       23217.30       23217.30
-----
amp2                                172145632.32       47830.26       47830.26
receive 0    receive      RCr039    983110.14          27.32          27.32
receive 1    receive      RCr140    823292.09          23.37          23.37
-----
```

Receive	1806402.23	50.69	50.69
Send	172955055.10	47838.51	47838.51
-----			
Total	174761457.34	47889.20	47889.20
Press the enter key to stop...			

The columns in this example provide the following information:

- **Target.** The system name of the actual link process that is running.
- **Node.** The node that the link is running on.
- **Address.** The IP address of the remote node.
- **IPC.** The mode of the Remote Copy link (r) Receive or (s) Send.
- **Total KBytes.** The amount of data that has been transmitted since the link was started, in KB.
- **Throughput (KBs).** The throughput on the link after the last iteration.
- **Current.** The amount of current transmitted since the last `statrcopy` iteration, in KB.
- **Average.** The average speed of the data transmission, in KB/s.

## NOTES

- This command repeats until directed to stop.
- Within the context of this command, KB is 1000 bytes, MB is 1000KB, and GB is 1000MB.
- The numbers displayed by this command might be somewhat less than those displayed with `statport`, as `statrcopy` output does not include TCP/IP overhead.

## statrcvv

### DESCRIPTION

The `statrcvv` command displays statistics for Remote Copy volumes in a timed loop.

### SYNTAX

```
statrcvv [options <arg>] [<VV_name>|<pattern>]...
```

### AUTHORITY

Any role in the system.

### OPTIONS

`-d <secs>`

Specifies the interval in seconds that statistics are sampled from using an integer from 1 through 2147483. If no count is specified, the command defaults to 2 seconds.

`-iter <number>`

Specifies that the statistics are to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-t <target_name>...|<pattern>...`

Show only volumes whose group is copied to the specified target name or pattern. Multiple target names or patterns may be specified using a comma-separated list.

`-port <port_NSP>...|<pattern>...`

Show only volumes that are copied over the specified port or pattern. Multiple ports or patterns may be specified using a comma-separated list.

`-g <group_name>...|<pattern>...`

Show only volumes whose group matches the specified group name or pattern. Multiple group names or patterns may be specified using a comma-separated list.

`-sync`

Show only volumes that are being copied in synchronous mode.

`-periodic`

Show only volumes that are being copied in asynchronous periodic mode.

`-primary`

Show only volumes that are in the primary role.

`-secondary`

Show only volumes that are in the secondary role.

`-targetsum`

Specifies that the sums for all volumes of a target are displayed.

`-portsum`

Specifies that the sums for all volumes on a port are displayed.

`-groupsum`

Specifies that the sums for all volumes of a group are displayed.

`-vvsum`

Specifies that the sums for all targets and links of a volume are displayed.

`-domainsum`

Specifies that the sums for all volumes of a domain are displayed.

```
-domain <domainname>...|<pattern>...
```

Show only the virtual volumes that are in domains with names that match the specified domain name(s) or pattern(s).

```
-sortcol <col>[,<dir>][:<col>[,<dir>]...]
```

Sorts command output based on column number (<col>). Columns are numbered from left to right, beginning with 0. You must specify a column number.

In addition, you can specify the direction of sorting (<dir>):

```
inc
```

Sort in increasing order (default).

```
dec
```

Sort in decreasing order.

Multiple columns can be specified and separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by values in later columns.

```
-filt <fspec>
```

Specifies that statistics that fall below the threshold specified by the <fspec> argument are filtered out and not displayed. To specify the <fspec> argument, use the syntax:

<type>,<op>,<meas>,<val>. The arguments are separated by one comma.

- `type` - The `type` argument can be specified with one of the following arguments:
  - `curs` - Specifies that only devices with current statistics above the threshold are displayed.
  - `avgs` - Specifies that only devices with average statistics above the threshold are displayed.
  - `maxs` - Specifies that only devices with maximum values above the threshold are displayed.
- `op` - The `operation` argument can be specified with one of the following arguments:
  - `r` - Specifies that read-only statistics are displayed.
  - `w` - Specifies that write-only statistics are displayed.
  - `t|rw` - Specifies that statistics for read and write totals are displayed.
- `meas` - The `measure` argument can be specified with one of the following arguments:
  - `iops` - Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the <val> argument.
  - `bw` - Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the <val> argument.
  - `svct` - Specifies that statistics for service time in milliseconds are displayed.
  - `size` - Specifies that statistics for I/O operations in bytes are displayed.
- `<val> [k|K] | [m|M] | [g|G]` - Specifies the minimum threshold using any integer. The integer can be optionally followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1000000, or `g` or `G` to indicate a multiple of 1000000000.

For example, `-filt curs,r,iops,10k` specifies that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

```
-ni
```

Specifies that statistics for only non-idle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

## SPECIFIERS

<VV\_name|pattern>...

Displays statistics only for the specified virtual volume or volume name pattern. Multiple volumes or patterns can be repeated (for example, <VV\_name> <VV\_name>...). If not specified, all virtual volumes that are configured for Remote Copy are listed.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

## EXAMPLES

The following example shows statistics for all synchronous Remote Copy volumes:

```
cli% statrcvv -sync
09:48:45 03/30/10 I/O per sec      KBytes per sec      Svt ms Rmt Svt ms
IOSz KB
  VVname RCGroup Target Mode  Port Type Cur Avg Max   Cur  Avg  Max   Cur  Avg  Cur  Avg
  Cur   Avg
testvv.0 multi.1  amp2 Sync 0:2:1  FC  32  45  50  4181  5839  6534  11.5  11.6  1.3  1.3
131.1 131.1
testvv.0 multi.1  amp2 Sync 1:2:1  FC  49  35  49  6456  4555  6456   9.3  10.4  1.3  1.5
131.1 131.1
testvv.1 multi.1  amp2 Sync 0:2:1  FC  37  38  39  4796  4952  5093  10.0  10.3  1.2  1.1
131.1 131.1
testvv.1 multi.1  amp2 Sync 1:2:1  FC  39  38  39  5164  5044  5164   7.7   7.2  1.0  1.0
131.1 131.1
testvv.2 multi.1  amp2 Sync 0:2:1  FC  45  14  45  5841  1895  5841   9.7   9.9  1.1  1.1
131.1 131.1
testvv.2 multi.1  amp2 Sync 1:2:1  FC  33  70  89  4365  9202 11721   6.9   6.6  1.0  1.4
131.1 131.1
testvv.3 multi.1  amp2 Sync 0:2:1  FC  34  37  42  4427  4907  5449   9.9  10.2  1.1  1.1
131.1 131.1
testvv.3 multi.1  amp2 Sync 1:2:1  FC  44  38  44  5779  5014  5779   7.4   7.2  1.0  0.9
131.1 131.1
testvv.4 multi.1  amp2 Sync 0:2:1  FC  45  48  51  5902  6328  6674  10.9  11.4  1.3  1.3
131.1 131.1
testvv.4 multi.1  amp2 Sync 1:2:1  FC  32  30  32  4181  3913  4181  11.1  11.3  1.5  1.5
131.1 131.1
testvv.8 sync.2    amp3 Sync 0:3:1  IP  33  33  35  4304  4326  4531  16.7  17.4  7.5  7.8
131.1 131.1
testvv.8 sync.2    amp3 Sync 1:3:1  IP  25  23  25  3259  2950  3259  15.5  15.7  7.5  7.7
131.1 131.1
testvv.9 sync.2    amp3 Sync 0:3:1  IP  28  28  28  3689  3669  3691  14.0  14.5  7.6  7.6
131.1 131.1
testvv.9 sync.2    amp3 Sync 1:3:1  IP  29  28  29  3750  3669  3750  12.8  12.8  7.5  7.6
131.1 131.1
-----
      14                504 506      66093 66262      10.6 10.7  2.6  2.7
131.1 131.1
Press the enter key to stop...
```

The columns in this example provide the following information:

- `VVname`. The name of the virtual volume being copied.
- `RCGroup`. Remote Copy group containing the volume.
- `Target`. Remote Copy target system to which the volume is copied.
- `Mode`. Remote Copy mode of the volume, either "Per" (asynchronous periodic) or "Sync" (synchronous).
- `Port`. Remote Copy port for which statistics are displayed.
- `Type`. Interface type of the port.
- `I/O per second Cur`. The current number of I/O per second.
- `I/O per second Avg`. The average number of I/O per second.
- `I/O per second Max`. The maximum number of I/O per second.
- `KBytes per second Cur`. The current number of KB per second.
- `KBytes per second Avg`. The average number of KB per second.
- `KBytes per second Max`. The maximum number of KB per second.
- `Svt ms Cur`. The current Remote Copy service time in milliseconds.
- `Svt ms Avg`. The average Remote Copy service time in milliseconds.
- `Rmt Svt ms Cur`. The current service time in milliseconds to complete I/O on the Remote Copy backup system.
- `Rmt Svt ms Avg`. The average service time in milliseconds to complete I/O on the Remote Copy backup system.
- `IOSz KB Cur`. The current I/O size in KB.
- `IOSz KB Avg`. The average I/O size in KB.

## NOTES

None.



# statvlun

## DESCRIPTION

The `statvlun` command displays statistics for Virtual Volumes (VVs) and Logical Unit Number (LUN) host attachments.

## SYNTAX

```
statvlun [options <arg>]
```

## AUTHORITY

Any role in the system.

## OPTIONS

`-domain <domain_name|pattern>...`

Shows only Virtual Volume Logical Unit Number (VLUNs) whose VVs are in domains with names that match one or more of the specified domain names or patterns. Multiple domain names or patterns can be repeated using a comma-separated list (for example `-domain <domain_name>,<domain_name>...`).

`-host <host_name|pattern>...`

Shows only VLUNs exported to the specified hosts or patterns. Multiple hosts or patterns can be repeated using a comma-separated list (for example `-host <host_name>,<host_name>...`).

`-v <VV_name|pattern>...`

Requests that only Logical Disks (LDs) mapped to VVs that match any of the specified names or patterns be displayed. Multiple volume names or patterns can be repeated using a comma-separated list (for example `-vv <VV_name>,<VV_name>...`).

`-l <LUN|pattern>...`

Specifies that VLUNs with LUNs matching the specified LUN(s) or pattern(s) are displayed. Multiple LUNs or patterns can be repeated using a comma-separated list (for example `-l <LUN>,<LUN>...`).

`-nodes <node_list>`

Specifies that the display is limited to specified nodes and Physical Disks (PDs) connected to those nodes. The `node_list` is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the `node_list` is not specified, all disks on all nodes are displayed.

`-slots <slot_list>`

Specifies that the display is limited to specified PCI slots and PDs connected to those PCI slots. The `slot_list` is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the slot list is not specified, all disks on all slots are displayed.

`-ports <port_list>`

Specifies that the display is limited to specified port slots and PDs connected to those port slots. The `port_list` is specified as a series of integers separated by commas (1, 2, 3). The list can also consist of a single integer (1). If the port list is not specified, all disks on all ports are displayed.

`-lw`

Lists the host's World Wide Name (WWN) or iSCSI names. This is especially useful when multiple WWNs or iSCSI names belonging to the same host are visible on the same port.

`-domainsum`

Specifies that sums for VLUNs are grouped by domain in the display. All VLUNs to unnamed hosts are added and displayed as a single set of data with a "-" host name.

`-vvsum`

Specifies that sums for VLUNs of the same VV are displayed.

`-hostsum`

Specifies that sums for VLUNs are grouped by host in the display. All VLUNs to unnamed hosts are added and displayed as a single set of data with a nameless host.

`-rw`

Specifies reads and writes to be displayed separately. If this option is not used, then the total of reads plus writes is displayed.

`-d <secs>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-begin`

Specifies that I/O averages are computed from the system start time. If not specified, the average is computed since the first iteration of the command.

`-idlep`

Includes a percent idle columns in the output.

`-sortcol <col>[, <dir>] [:<col>[, <dir>] ...]`

Sorts command output based on the column number (<col>). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (<dir>) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by the values in the later columns.

`-filt <fspec>`

Specifies that statistics that fall below the threshold as specified by the `<fspec>` arguments where `<fspec>` is `<type>`, `<op>`, `<meas>`, `<val>`, are filtered out and not displayed. The `<type>`, `<op>`, `<meas>`, and `<val>` arguments are separated with one comma.

- `<type>`

The `type` argument can be specified with one of the following arguments:

- `curs`

Specifies that only devices with current statistics above the threshold are displayed.

- `avgs`

Specifies that only devices with average statistics above the threshold are displayed.

- `maxs`

Specifies that only devices with maximum values above the threshold are displayed.

- `<op>`

The `operation` argument can be specified with one of the following arguments:

- `r`

Specifies that read-only statistics are displayed.

- `w`

Specifies that write-only statistics are displayed.

- `t|rw`

Specifies that statistics for read and write totals are displayed.

- `<meas>`

The `meas` argument can be specified with one of the following arguments:

- `iops`

Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `bw`

Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.

- `svct`

Specifies that statistics for service time in milliseconds are displayed.

- `size`

Specifies that statistics for I/O operations in bytes are displayed.

- `<val> [k|K] | [m|M] | [g|G]`

Specifies the minimum threshold using any integer. The integer can optionally be followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1,000,000, or `g` or `G` to indicate a multiple of 1,000,000,000.

An example of this option in use is `-filt curs,r,iops,10k` that indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

`-ni`

Specifies that statistics for only nonidle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays one iteration of statistics for VVs and LUN host attachments:

```
cli% statvlun -iter 1

15:34:18 05/31/07 r/w I/O per second KBytes per sec  Svt ms IOSz KB
Lun VVname Host Port      Cur  Avg  Max  Cur  Avg  Max Cur  Avg  Cur  Avg  Qlen
-----
total          t    0   0          0   0    0.0 0.0 0.0 0.0  0
```

The columns in the example above are identified as follows:

- LUN. The LUN.
- VVname. The name of the virtual volume.
- Host. The host from which the VLUN is exported.
- Port. The port to which the VLUN is exported.
- r/w. The I/O type. Values can be read (r), write (w), or read and write (t).
- I/O per second Cur. The current number of I/O per second.
- I/O per second Avg. The average number of I/O per second.
- KBytes per Max. The maximum number of KB per second.
- KBytes per Cur. The current number of KB per second.
- KBytes per Avg. The average number of KB per second.
- Svt ms Max. The maximum service time in milliseconds.
- Svt ms Cur. The current service time in milliseconds.
- Svt ms Avg. The average service time in milliseconds.
- IOSz KB Cur. The current I/O size in KB.
- IOSz KB Avg. The average I/O size in KB.
- Qlen. The queue length.

## NOTES

- For this command: KB = 1000 bytes.
- A Domain column may be included by using the `setclienv` command to set `listdom` to 1. The `listdom` option is also set to 1 if the CLI was started with the `-listdom` option or if the CLI was started with the `TPDLISTDOM` environment variable set. Please run `cli -h` and `setclienv -h` for details of the environment variables.

## statvv

### DESCRIPTION

The `statvv` command displays statistics for Virtual Volumes (VVs) in a timed loop.

### SYNTAX

```
statvv [options <arg>] [<VV_name_or_pattern>...]
```

### AUTHORITY

Any role in the system.

### OPTIONS

`-domain <domain_name|pattern>...`

Shows only the VVs that are in domains with names that match the specified domain names or patterns.

`-rw`

Specifies that the display includes separate read and write data. If not specified, the total is displayed.

`-d <seconds>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to an interval of two seconds.

`-iter <number>`

Specifies that the histogram is to stop after the indicated number of iterations using an integer from 1 through 2147483647.

`-sortcol <col> [,<dir>] [:<col>[,<dir>] ...]`

Sorts command output based on the column number (<col>). Columns are numbered from left to right, beginning with 0. At least one column must be specified. In addition, the direction of sorting (<dir>) can be specified as follows:

`inc`

Sort in increasing order (default).

`dec`

Sort in decreasing order.

Multiple columns can be specified separated by a colon (:). Rows with the same information in them as earlier columns will be sorted by the values in the later columns.

`-filt <fspec>`

Specifies that statistics that fall below the threshold as specified by the `<fspec>` arguments where `<fspec>` is `<type>`, `<op>`, `<meas>`, `<val>`, are filtered out and not displayed. The `<type>`, `<op>`, `<meas>`, and `<val>` arguments are separated with one comma.

- `<type>`

The `type` argument can be specified with one of the following arguments:

- `curs`  
Specifies that only devices with current statistics above the threshold are displayed.
- `avgs`  
Specifies that only devices with average statistics above the threshold are displayed.
- `maxs`  
Specifies that only devices with maximum values above the threshold are displayed.

- `<op>`

The `operation` argument can be specified with one of the following arguments:

- `r`  
Specifies that read-only statistics are displayed.
- `w`  
Specifies that write-only statistics are displayed.
- `t|rw`  
Specifies that statistics for read and write totals are displayed.

- `<meas>`

The `meas` argument can be specified with one of the following arguments:

- `iops`  
Specifies that I/O operations per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.
- `bw`  
Specifies that statistics for bandwidth in bytes per second are displayed. If this argument is used, the minimum threshold value must be specified using the `<val>` argument.
- `svct`  
Specifies that statistics for service time in milliseconds are displayed.
- `size`  
Specifies that statistics for I/O operations in bytes are displayed.

- `<val>` [`k|K`] | [`m|M`] | [`g|G`]

Specifies the minimum threshold using any integer. The integer can optionally be followed with `k` or `K` to indicate a multiple of 1000, `m` or `M` to indicate a multiple of 1,000,000, or `g` or `G` to indicate a multiple of 1,000,000,000.

An example of this option in use is `-filt curs,r,iops,10k`. This indicates that statistics for a device that has more than 10,000 current read-only I/O operations are displayed.

`-ni`

Specifies that statistics for only nonidle devices are displayed. This option is shorthand for the option `-filt curs,t,iops,0`.

## SPECIFIERS

`<VV_name|pattern>...`

Only statistics are displayed for the specified VV or pattern. Multiple volumes or patterns can be repeated (for example `<VV_name> <VV_name>...`). If not specified, all VVs are listed.

## RESTRICTIONS

None.

## EXAMPLES

The following example displays I/O statistics for all VVs:

```
cli% statvv -iter 1
15:31:21 05/31/07 r/w I/O per second KBytes per sec Svt ms IOSz KB
      VVname      Cur  Avg  Max  Cur  Avg  Max  Cur  Avg  Cur  Avg  Qlen
      admin      t    0   0   0    0   0   0  0.0  0.0  0.0  0.0   0
      test2      t    0   0   0    0   0   0  0.0  0.0  0.0  0.0   0
-----
      total      t    0   0           0   0           0.0  0.0  0.0  0.0   0
```

The columns in the example above are identified as follows:

- `VVname`. The virtual volume name.
- `r/w`. The I/O type. Values can be read (r), write (w), or read and write (t).
- `I/O per second Cur`. The current number of I/O per second.
- `I/O per second Avg`. The average number of I/O per second.
- `KBytes per Max`. The maximum number of KB per second.
- `KBytes per Cur`. The current number of KB per second.
- `KBytes per Avg`. The average number of KB per second.
- `Svt ms Max`. The maximum service time in milliseconds.
- `Svt ms Cur`. The current service time in milliseconds.
- `Svt ms Avg`. The average service time in milliseconds.
- `IOSz KB Cur`. The current I/O size in KB.
- `IOSz KB Avg`. The average I/O size in KB.
- `Qlen`. The queue length.

## NOTES

- If a `<VV_name>` or `<pattern>` are specified, then VVs with names matching any of the patterns are listed. Otherwise all VVs are listed. These patterns are glob-style patterns. Refer to [“Glob-Style Pattern” \(page 12\)](#) for further information.
- VVs may be accessed externally by hosts and internally by the prefetcher. VV data measured by this command include accesses by the prefetcher.
- In addition to external accesses by hosts, VVs may be read internally by the system read-ahead prefetcher. The `histvv` data includes read-ahead accesses from the prefetcher, which can

cause the read data to appear more than seen by the hosts. Use the `histvln -vvsum` command to see data for only accesses from the host.

- For this command: KB = 1000 bytes.



# 28 Stop Commands

## stopcim

### DESCRIPTION

The `stopcim` command stops the CIM server from servicing CIM requests.

**⚠ WARNING!** The `stopcim` command must be issued to stop the CIM server when setting the storage system to Common Criteria mode.

### SYNTAX

```
stopcim [option]
```

### AUTHORITY

Super, Service

**NOTE:** You need access to all domains in order to run this command.

### OPTIONS

`-f`

Specifies that the operation is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-x`

Specifies that the operation terminates the server immediately without graceful shutdown notice.

### SPECIFIERS

None.

### RESTRICTIONS

None.

### EXAMPLES

The following example stops the CIM server:

```
cli% stopcim
Are you sure you want to stop CIM server?
select q=quit y=yes n=no: y
CIM server stopped successfully.
```

The following example stops the CIM server immediately without graceful shutdown notice and confirmation:

```
cli% stopcim -f -x
CIM server stopped successfully.
```

### NOTES

By default, the CIM server is not started until the `startcim` command is issued.

# stoprcopy

## DESCRIPTION

The `stoprcopy` command disables the Remote Copy functionality for any started Remote Copy volume groups.

## SYNTAX

```
stoprcopy [options]
```

## AUTHORITY

Super, Edit

Any role granted the `rcopy_stop` right.

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-f`

Specifies that any started copy will not ask for confirmation for the `-clear` option.

`-stopgroups`

Specifies that any started Remote Copy volume groups are stopped.

`-clear`

Specifies that configuration entries affiliated with the stopped mode are deleted.

---



**CAUTION:** Issuing the `stoprcopy -clear` command completely removes the Remote Copy setup and is NOT reversible.

---

## SPECIFIERS

None.

## RESTRICTIONS

None.

## EXAMPLES

The following example disables the Remote Copy functionality of all primary Remote Copy volume groups:

```
# stoprcopy -stopgroups
```

## NOTES

- If the `-stopgroups` option is not used, all groups must already be stopped.
- An older version of this command provided specifiers to disable the primary or backup systems. These specifiers were deprecated in HP 3PAR OS release 2.2.3.
- Unless the `-stopgroups` option is used, the command will fail if there are any Remote Copy groups that are started. If the `-clear` option has been used, the configuration is completely erased. Consequently, Remote Copy operations cannot be restarted using only the `startrcopy` command. The configuration must be rebuilt. Therefore, the `-clear` option requires confirmation with the `-f` option, the `TPDFORCE` environment variable, or by

interactively typing,  $\gamma$ . Refer to the *HP 3PAR Command Line Interface Administrator's Manual* for information about using environment variables.

# stoprcopygroup

## DESCRIPTION

The `stoprcopygroup` command stops the Remote Copy functionality for the specified Remote Copy volume group.

## SYNTAX

```
stoprcopygroup [option <arg>] <group_name>|<pattern>...
```

## AUTHORITY

Super, Edit

Any role granted the `rcopygroup_stop` right.

## OPTIONS

`-nosnap`

In synchronous mode, this option turns off the creation of snapshots. This is useful if `removercopygroup` is to be run to remove Remote Copy. In asynchronous periodic mode, this option deletes any current synchronization snapshots.

`-t <target_name>`

Indicates that only the group on the specified target is stopped. If this option is not used, by default, the `stoprcopygroup` command will affect all of a group's targets.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

`-pat`

Specifies that specified patterns are treated as glob-style patterns and all Remote Copy groups matching the specified pattern will be stopped. The `-pat` option can specify a list of patterns. By default, confirmation is required to proceed with the command unless the `-f` option is specified. This option must be used if the `<pattern>` specifier is used.

## SPECIFIERS

`<group_name>`

The name of the Remote Copy volume group to stop.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to stop multiple groups. If the `<pattern>` specifier is not used, the `<group_name>` specifier must be used.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for more information.

## EXAMPLES

The following example stops Remote Copy for `Group1`:

```
# stoprcopygroup Group1
```

The following example stops Remote Copy Groups that start with the name `testgroup`:

```
# stoprcopygroup -pat testgroup*
```

## NOTES

- If a group's target has the `mirror_config` policy set and the group is a primary group, then this command will be mirrored to that target and the corresponding secondary group will be stopped. If the `mirror_config` policy is set and the group is a secondary, then this command will fail.
- If the `mirror_config` policy is not set and this command is issued on a secondary group, then the corresponding primary group will also be stopped as a result of this command.
- In `sync` mode, this command creates snapshots that are used for synchronizing the primary and secondary groups if `startrcopygroup` is run later.

# stopwsapi

## DESCRIPTION

The `stopwsapi` command stops the Web Services API server from servicing HTTP and HTTPS requests.

## SYNTAX

```
stopwsapi [options]
```

## AUTHORITY

Super, Service

Any role granted the `wsapi_stop` right

## OPTIONS

`-f`

Specifies that the operation is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

None

## EXAMPLES

The following example shows how to stop the Web Services API server:

```
cli% stopwsapi
Are you sure you want to stop the Web Services API server?
select q=quit y=yes n=no: y
Web Services API server stopped successfully.
```

The following example shows how to stop the Web Services API server immediately without a confirmation notice:

```
cli% stopwsapi -f
Web Services API server stopped successfully.
```

## NOTES

Access to all domains is required to run this command.

By default, the Web Services API server is not started until the `startwsapi` command is issued.

---

## 29 Sync Command

# syncrcopy

## DESCRIPTION

The `syncrcopy` command manually synchronizes Remote Copy volume groups.

## SYNTAX

```
syncrcopy [options <arg>] <group_name>|<pattern>...
```

## AUTHORITY

Super, Edit

Any role granted the `rcopy_sync` right.

## OPTIONS

`-w`

Wait for synchronization to complete before returning to a command prompt.

`-n`

Do not save resynchronization snapshot. This option is only relevant for asynchronous periodic mode volume groups.

---

**NOTE:** If you use the `-n` option, you must perform a full synchronization at the next sync

---

`-ovrd`

Force synchronization without prompting for confirmation, even if volumes are already synchronized. This option is only relevant for synchronous mode volume groups and can be used to resynchronize volumes that have become inconsistent.

`-t <target_name>`

Indicates that only the group on the specified target is synchronized. If this option is not used, by default, the `syncrcopy` command will affect all of a group's targets.

`-pat`

Specifies that the patterns specified are treated as glob-style patterns and all Remote Copy groups matching the specified pattern will be synced. The `-pat` option can specify a list of patterns. This option must be used if the `<pattern>` specifier is used.

## SPECIFIERS

`<group_name>`

Specifies the name of the Remote Copy volume group to be synchronized. This name can be obtained using the `showrcopy` command.

`<pattern>`

Specifies a glob-style pattern. This specifier can be repeated to sync multiple groups. If the `<pattern>` specifier is not used, the `<group_name>` specifier must be used.

## RESTRICTIONS

This command requires the HP 3PAR Remote Copy Software license. Contact your local service provider for further information.



## EXAMPLES

The following example specifies that Remote Copy volume group `Group1` should be synchronized with its corresponding secondary volume group:

```
# syncrcopy Group1  
Synchronization request issued for group Group1
```

The following example specifies that all Remote Copy volume groups that start with the name `testgroup` should be synchronized with their corresponding secondary volume group:

```
# syncrcopy -pat testgroup*
```

## NOTES

- Mode (synchronous or asynchronous periodic) is set using the `creatercopygroup` command.
- For information about setting targets, see the `creatercopytarget` command.

---

# 30 Tune Commands

## tunealdev

### DESCRIPTION

This command is only used for non-provisioned virtual volumes. Please use the `tunevv` command to create a virtual volume that has its user space provisioned from a CPG.

This command was deprecated in the 2.2.4 release and will be removed in a future release.

The `tunealdev` command changes the layout of a virtual volume.

### SYNTAX

The `tunealdev` command uses one of the following syntax conventions:

- `tunealdev [options <arg>] <VV_name>`
- `tunealdev restart [options <arg>] <VV_name>`
- `tunealdev rollback [options <arg>] <VV_name>`

### AUTHORITY

Super, Edit<sup>1</sup>

Any role granted the `vv_tune` right

---

**NOTE:** You need access to all domains in order to run this command.

---

### SUBCOMMANDS

`restart`

Restarts a `tunealdev` command operation that was previously interrupted because of component failure or user-initiated cancellation.

`rollback`

Rolls back a `tunealdev` command operation that was previously interrupted. The `canceltask` command needs to run before the rollback.

### OPTIONS

The following options can be used on all commands:

`-f`

Forces the command. The command completes without prompting for confirmation.

`-waittask`

Specifies that the command will wait for any created tasks to complete.

The following options cannot be used with the `restart` or `rollback` subcommands:

`-cpg <CPG_name>`

Name of the Common Provisioning Group (CPG) to which the snapshot data space is moved. If the `-cpg` option is specified, only the snapshot data space of a volume is tuned. When snapshot data space is tuned, the only permitted option is the `-cpg` option. If this option is not specified, only the USR space of a volume is tuned.

`-templ <template_name>`

1. Certain options require this additional role restriction as indicated.

Use the options defined in template `<template_name>`. The template is created using the `createtemplate` command. Options specified in the template are read-only or read-write. The read-write options may be overridden with new options at the time of their creation, but read-only options may not be overridden at creation time. Options not explicitly specified in the template take their default values, and all of these options are either read-only or read-write (using the `-nro` or `-nrw` options of the `createtemplate` command). Sizing options from the template are ignored. This command does not change the size of the VV on which it acts.

`-t <RAID_type>`

Specifies the RAID type of the Logical Disk (LD): `r0` for RAID-0, `r1` for RAID-1, or `r5` for RAID-5, or `r6` for RAID-6. If no RAID type is specified, the default is `r1`.

`-ssz <size_number_chunklets>`

Specifies the set size in the number of chunklets. The default depends on the RAID type specified: 2 for RAID-1, 4 for RAID-5, and 8 for RAID-6.

`-rs <size>`

Specifies the number of sets in a row. The `<size>` is a positive integer. If not specified, no row limit is imposed.

`-ss <size_KB>`

Specifies the step size from 32 KB to 512 KB. The step size should be a power of 2 and a multiple of 32. If no value is entered, the step size defaults to 256 KB for RAID-0 and RAID-1, and 128 KB for RAID-5. For RAID-6, the default is a function of the set size.

`-ha port|cage|mag`

Specifies that the layout must support the failure of one port pair, one cage, or one drive magazine (`mag`). This option has no meaning for RAID-0.

`-ch first|last`

Specifies the chunklet location preference, either `first` (attempt to use the lowest numbered available chunklets) or `last` (attempt to use the highest numbered available chunklets). If no argument is specified, the default location is `first`.

`-p <pattern>`

Specifies a pattern for candidate disks. Patterns are used to select disks that are used for creating logical disks. If no pattern is specified, the option defaults to all Fibre Channel (FC) disks. If specified multiple times, each instance of the specified pattern adds additional candidate disks that match the pattern. The `-devtype` pattern cannot be used to mix Near Line (NL), FC, and Solid State Drive (SSD) drives:

---

**NOTE:** An item is specified as an integer, a comma-separated list of integers, or a range of integers specified from low to high.

---

`-nd <item>`

Specifies one or more nodes. Nodes are identified by one or more integers (`<item>`). Multiple nodes are separated with a single comma (`1, 2, 3`). A range of nodes is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified node(s).

`-st <item>`

Specifies one or more PCI slots. Slots are identified by one or more integers (`<item>`). Multiple slots are separated with a single comma (`1, 2, 3`). A range of slots is separated with a hyphen (`0-7`). The primary path of the disks must be on the specified PCI slot(s).

`-pt <item>`

Specifies one or more ports. Ports are identified by one or more integers (`<item>`). Multiple ports are separated with a single comma (`1, 2, 3`). A range of ports is separated with a hyphen (`0-5`). The primary path of the disks must be on the specified port number(s).

`-cg <item>`

Specifies one or more drive cages. Drive cages are identified by one or more integers (<item>). Multiple drive cages are separated with a single comma (1, 2, 3). A range of drive cages is separated with a hyphen (0-3). The specified drive cage(s) must contain disks.

`-mg <item>`

Specifies one or more drive magazines. The 1. or 0. displayed in the `CagePos` column of `showpd` output indicating the side of the cage is omitted when using the `-mg` option. Drive magazines are identified by one or more integers (<item>). Drive magazines are identified by one or more integers (<item>). Multiple drive magazines are separated with a single comma (1, 2, 3). A range of drive magazines is separated with a hyphen (0-7). The specified drive magazine(s) must contain disks.

`-pn <item>`

Specifies one or more disk positions within a drive magazine. Disk positions are identified by one or more integers (<item>). Multiple disk positions are separated with a single comma (1, 2, 3). A range of disk positions is separated with a hyphen (0-3). The specified position(s) must contain disks.

`-dk <item>`

Specifies one or more physical disks. Disks are identified by one or more integers (<item>). Multiple disks are separated with a single comma (1, 2, 3). A range of disks is separated with a hyphen (0-3). Disks must match the specified ID(s).

---

**NOTE:** The following arguments are used to limit the disks that are used to create logical disks based on the characteristics of the disk drive.

---

`-tc_gt <number>`

Specifies that physical disks with total chunklets greater than the number specified are selected.

`-tc_lt <number>`

Specifies that physical disks with total chunklets less than the number specified are selected.

`-fc_gt <number>`

Specifies that physical disks with free chunklets greater than the number specified are selected.

`-fc_lt <number>`

Specifies that physical disks with free chunklets less than the number specified are selected.

`-devid <model>`

Specifies that physical disks identified by their models are selected. Models can be specified in a comma-separated list. Models can be displayed by issuing the `showpd -i` command.

`-devtype <type>`

Specifies that physical disks must have the specified device type (FC for Fibre Channel, NL for nearline, or SSD for solid state drive) to be used. Device types can be displayed by issuing the `showpd` command. If it is not specified, the default device type is FC.

`-rpm <number>`

Disks must be of the specified speed. Device speeds are shown in the `RPM` column of the `showpd` command. The number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth and the access time.

Disks that satisfy all of the specified characteristics are used. For example, `-p -fc_gt 60 -fc_lt 230 -nd 2` specifies all the disks that have greater than 60 and less than 230 free chunklets and that are connected to node 2 through their primary path.

`-wait <secs>`

If the `tunealdvv` command fails due to the lack of clean space, the `-wait` option specifies the number of seconds to wait for the system to clean the dirty space before returning. If `-wait 0` is issued, the command returns immediately. If this option is not used, the command will keep waiting for dirty chunklets to be cleaned if enough space will be available with the dirty chunklets cleaned.

`-dr`

Specifies that the command is a dry run and that no logical disks or virtual volumes are created.

`-verbose on|off`

Specifies that verbose output is either enabled (`on`) or disabled (`off`). If not specified, verbose is disabled.

`-cnt <number_of_VV>`

Specifies the number of identical virtual volumes to tune using an integer from 1 through 999. If not specified, one virtual volume is tuned. If the `-cnt` option is specified, then `-restart` and `-rollback` options and the `restart` and `rollback` subcommands are not permitted.

`-restart`

Restart a `tunealdvv` command call that was previously interrupted because of component failure, or because of user-initiated cancellation. This option was deprecated in the 2.2.3 release and will be changed or removed in a future release.

`-rollback`

Rollback a `tunealdvv` command call that was previously interrupted. The `canceltask` command needs to run before the rollback. This option was deprecated in the 2.2.3 release and will be changed or removed in a future release.

## SPECIFIERS

`<VV_name>`

Specifies an existing virtual volume name.

## RESTRICTIONS

- Access to all domains is required to run this command.
- This command requires a Dynamic Optimization license. Contact your local HP 3PAR representative for information.
- This command requires sufficient available physical space, equivalent to the user size of the volume being tuned.
- When changing the layout of a virtual volume, you can optionally apply arguments originally defined for logical disk creation through the `createtemplate` command by issuing the `tunealdvv -templ <template_name>` command. The `-templ` option is only valid for logical disk template object types.

## EXAMPLES

The following example shows how to use the `tunealdvv` command to convert a virtual volume (`testvol`) to RAID-5:

```
cli% tunealdvv -t r5 testvol
Task 1 started.
```

The following example shows how to use the `tunealdvv` command to change the availability level of a virtual volume (`testvol`) to `cage`. Note that because the default availability parameter setting (`-ha`) for `tunealdvv` is `cage`, it is not necessary to explicitly specify `cage`-level availability when issuing this command.

```
cli% tunealdvv testvol
Task 2 started.
```

The following example shows how to use the `tunealdvv` command to add a disk filter specifying that the logical disks supporting virtual volume `testvol` must use chunklets on physical disks 20 and 31 only.

```
cli% tunealdvv -p -dk 20,31 testvol
Task 3 started.
```

The following examples shows how to start, cancel, and then restart a `tunealdvv` operation on VV `testvol`:

```
cli% tunealdvv -t r5 -ha mag testvol
Task 1 started.
```

```
cli% canceltask 1
Are you sure you want to cancel task 1?
select q=quit y=yes n=no: y
```

```
cli% tunealdvv -restart testvol
Task 2 started.
```

## NOTES

- This command was deprecated in the 2.2.4 release and will be changed or removed in a future release. Use the `tunevv` command in the future.
- Automatic chunklet selection for relocations will prefer selection of chunklets on physical disks with the same device type as the source. Use the `-p devtype` option to override this default. Use the `showpd` command to see the device types of physical disks in the system.
- When canceling a `tunealdvv` task, the `canceltask` command can return before a cancellation is completed. Thus, resources reserved for the task cannot be immediately available. This can prevent actions like restarting the canceled `tunealdvv` task. Use the `waittask` command in your scripts to ensure orderly completion of the `tunealdvv` cancellation before taking other actions. See [“waittask” \(page 665\)](#) for details about using the `waittask` command.
- This command is only used for the non-provisioned VV. The `tunevv` command should be used instead to create a VV that has its user space provisioned from a Common Provision Group.

# tunepd

## DESCRIPTION

The `tunepd` command identifies physical disks with high service times and optionally executes load balancing.

## SYNTAX

The syntax for the `tunepd` command can be one of the following:

- `tunepd [options <arg>] maxsvct <msecs>|highest`
- `tunepd [options <arg>] avgsvct <msecs>|highest`

## AUTHORITY

Super, Edit

Any role granted the `pd_tune` right

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

---

**NOTE:** If the `-nodes`, `-slots`, `-ports`, or `-vv` options are not specified, all physical disks are included.

---

`-nodes <node_list>`

Specifies that the display is limited to specified nodes and physical disks connected to those nodes. The node list is specified as a series of integers separated by commas (1, 2, 3). The node list can also consist of a single integer (1). If the node list is not specified, all disks on all nodes are displayed.

`-slots <slot_list>`

Specifies that the display is limited to specified PCI slots and physical disks connected to those PCI slots. The slot list is specified as a series of integers separated by commas (1, 2, 3). A list can also consist of a single integer (1). If the slot list is not specified, all disks on all slots are displayed.

`-ports <port_list>`

Specifies that the display is limited to specified port slots and physical disks connected to those port slots. The port list is specified as a series of integers separated by commas (1, 2, 3). A list can also consist of a single integer (1). If the port list is not specified, all disks on all ports are displayed.

`-vv <VV_name>`

Specifies that the physical disks used by the indicated virtual volume name are included for statistic sampling.

`-d <seconds>`

Specifies the interval, in seconds, that statistics are sampled using an integer from 1 through 2147483. If no interval is specified, the option defaults to 30 seconds.

`-iter <number>`

Specifies that I/O statistics are sampled a specified number of times as indicated by the `number` argument using an integer greater than 0. If 0 is specified, I/O statistics are looped indefinitely. If this option is not specified, the command defaults to 1 iteration.

`-freq <minutes>`

Specifies the interval, in minutes, that the command enters standby mode between iterations using an integer greater than 0. If this option is not specified, the number of iterations is looped indefinitely.

`-vvlayout`

Specifies that the layout of the virtual volume is displayed. If this option is not specified, the layout of the virtual volume is not displayed.

`-portstat`

Specifies that statistics for all disk ports in the system are displayed. If this option is not specified, statistics for ports are not displayed.

`-pdstat`

Specifies that statistics for all physical disks, rather than only those with high service times, are displayed. If this option is not specified, statistics for all disks are not displayed.

`-chstat`

Specifies that chunklet statistics are displayed. If not specified, chunklet statistics are not displayed. If this option is used with the `-movech` option, either `on` or `force` must be specified. See [“RESTRICTIONS” \(page 648\)](#) for conditions on using the `-chstat` option.

`-maxpd <number>`

Specifies that only the indicated number of physical disks with high service times are displayed. If this option is not specified, 10 PDs are displayed.

`-movech auto|manual`

Specifies that if any disks with unbalanced loads are detected that chunklets are moved from those disks for load balancing.

`auto`

Specifies that the system chooses source and destination chunklets. If not specified, you are prompted for selecting the source and destination chunklets.

`manual`

Specifies that the source and destination chunklets are manually entered.

## SPECIFIERS

`maxsvct <msec>|highest`

Specifies that either the maximum service time threshold (`<msec>`) that is used to discover overutilized physical disks, or the physical disks that have the highest maximum service times (`highest`). If a threshold is specified, then any disk whose maximum service time exceeds the specified threshold is considered a candidate for load balancing.

`avgsvct <msec>|highest`

Specifies that either the average service time threshold (`<msec>`) that is used to discover overutilized physical disks, or the physical disks that have the highest average service time (`highest`). If a threshold is specified, any disk whose average service time exceeds the specified threshold is considered a candidate for load balancing.

## RESTRICTIONS

- Access to all domains is required to run this command.
- This command requires a System Tuner license. Contact your local HP 3PAR representative for information.
- The system does not allow multiple `tunepd` processes with the `-chstat on` or `-chstat force` options to run concurrently.



- If one or more chunklet statistics collection processes are running, the tunepd command exits to prevent possible tunepd -chstat on processes running simultaneously.
- Use the -chstat force option only when you have verified that no other tunepd processes are running.

## EXAMPLES

In the following example, PDs with average service times exceeding 50 milliseconds are identified and their chunklets automatically relocated to rebalance the PDs' load.

```
cli% tunepd -vvlayout -chstat -movech auto avgsvct 50
Collecting I/O statistic for physical disks (PDs) ...
PdId   Pos    APort   BPort      Iops      Kbps      Svct (ms)   IOSz (KB)
-----
  29   1:3:3  0:4:1   1:5:1*    231.9     8668.8    87.0        37.4

The following physical disks were identified as candidates
for load balancing: 29

Layout of related virtual volumes (on candidate physical disks).
VvId   VvName      LdId      LdName      Avail RAID   PdId
-----
  0     admin       5         admin.usr.2  cage  1
0,2,4,6,8,10,12,14,17,19
                                     23,25,27,29
  1     vv0         8         vv0.usr.2   cage  1
0,2,4,6,8,10,12,14,17,19
                                     23,25,27,29
  2     vv1        11        vv1.usr.1   mag   5
2,6,19,29

Enable statistic collection for chunklets on PD 29
Collecting statistic for chunklets of candidate PDs...

Disable statistic collection for chunklets on PD 29

Statistic of chunklets of candidate PDs:
PdId   PdCh   LdId      LdName      LdCh      Iops      Kbps      Svct (ms)   IOSz (KB)
-----
  29    20     8         vv0.usr.2   29        22.8     842.7     109.9       37.0
  29    19     8         vv0.usr.2   17        22.0     842.7     113.7       38.2
  29    18     8         vv0.usr.2   5         7.8      282.3     117.0       36.3
  29    26    11        vv1.usr.1   23        42.0    1561.6     77.0        37.2
  29    25    11        vv1.usr.1   19        37.8    1401.4     70.2        37.1
  29    24    11        vv1.usr.1   15        39.5    1454.1     73.3        36.8
  29    23    11        vv1.usr.1   11        35.3    1333.6     73.1        37.7
  29    22    11        vv1.usr.1   7         26.5    1018.1     76.8        38.4

Statistic of Logical disks of candidate PDs:
PdId   LdId      LdName      Iops      Kbps      Svct (ms)   IOSz (KB)
-----
  29     8         vv0.usr.2   52.6     1967.8    112.5       37.4
  29    11        vv1.usr.1   181.1    6768.8     74.0       37.4

Statistic of candidate physical disks:
PdId   Pos    APort   BPort      Iops      Kbps      Svct (ms)   IOSz (KB)
-----
  29   1:3:3  0:4:1   1:5:1*    233.7     8736.6    82.7        37.4
```

```

Physical Disk 29: The following chunklets have been marked for moving: 26

Pass 1: Dryrun moving chunklets:
Move          Status          qset grow qcon
qlocal qlost
29:26-10:16   source and destination are valid   mag  0  2
true false

Pass 2:
Move          Status          qset grow qcon
qlocal qlost
29:26-10:16   ch was moved          mag  0  2
true false

```

Note that physical disk 29 is identified as matching the search criterion of average service times greater than 50 milliseconds and its chunklets are relocated.

## NOTES

- When the `-movech auto` or `-movech manual` option is specified the system only identifies (auto mode) or recommends (manual mode) source chunklets for which there are destination chunklets retaining the availability of the source chunklets' logical disks.
- Separate instances of the `tunepd` command can be issued to identify load balancing candidates and relocate chunklets, or execute both tasks with one instance of the `tunepd` command.
- Previous options `-n <node_list>`, `-s <slot_list>`, and `-p <port_list>` have been deprecated in 2.2.3 and replaced with `-nodes <node_list>`, `-slots <slot_list>`, and `-ports <port_list>`.
- If the `-nodes`, `-slots`, `-ports` or `-vv` options are not specified, all physical disks are included.

# tunesys

## DESCRIPTION

The `tunesys` command is used to analyze and detect poor layout and disk utilization across an entire HP 3PAR storage system array. This command runs a series of low level operations to affect a re-balance of resources on the system.

## SYNTAX

```
tunesys [options]
```

## AUTHORITY

- Super, Edit
- Any role granted the `sys_tune` right

## OPTIONS

```
-cpg <CPG name | patterns>
```

Limits the scope of a `tunesys` operation to the named CPG(s). The specified CPGs must all be in the same domain as the user. The `-diskpct` and `-chunkpct` options cannot be used with this option.

```
-nodepct <percentage>
```

Control the detection of any imbalance between LD capacity allocation between nodes. If any LD in a group is `<percentage>` greater than the average of the group, then the VVs associated with that LD will be tuned. The `<percentage>` parameter must be between 1 and 100. The default value is 3.

```
-chunkpct <percentage>
```

Control the detection of any imbalance in PD chunklet allocation between PDs owned by individual nodes. If a PD has utilization of `<percentage>` less than the average for that device type, then that disk can potentially be tuned. Used in conjunction with the `diskpct` option. `<percentage>` must be between 1 and 100. The default value is 10. This option cannot be used with the `-cpg` option.

```
-diskpct <percentage>
```

Specify the percentage of disks identified by the `-chunkpct` option over which PD chunklet level tuning will be started. `<percentage>` must be between 1 and 100. The default value is 10. This option cannot be used with the `-cpg` option.

```
-maxtasks <number>
```

Specify the maximum number of individual tune tasks which the `tunesys` command can run at a time. `<number>` must be between 1 and 8. The default value is 2.

```
-maxchunk <number>
```

Specifies the maximum number of chunklets which can be moved from any PD in a single operation. `<number>` must be between 1 and 8. The default value is 2.

```
-tunenodech
```

Specify that only intra-node chunklet level rebalancing should be performed.

```
-dr
```

Specify that the command is a dry run and that the system will not be tuned. The result of the analysis can be found in the task detail log (`showtask -d taskid`).

```
-waittask
```

Wait for all tasks created by this command to complete before returning.

-f

Do not ask for confirmation.

## SPECIFIERS

None.

## RESTRICTIONS

None

- This command requires a Dynamic Optimization license. Contact your local HP representative for information.

## EXAMPLES

In the following example:

- VVs will be re-balanced between nodes if there is an imbalance in space usage between nodes of more than 5% (`nodepct` value).
- PD chunklets will be re-balanced on each node if any disk has usage less than 20% than the average chunklet usage (`chunkpct` value).
- A maximum of 4 tune tasks will be run at a time (`maxtasks` value)..
- A maximum of 5 chunklets will be moved at a time (`maxchunk` value).

```
cli% tunesys -f -nodepct 5 -chunkpct 20 -maxchunk 5 -maxtasks 4
Task 999 started
```

## NOTES

- Virtual volumes associated with CPGs which are in Adaptive Optimization configurations will not be tuned by `tunesys`.
- When the `-cpg` option is used, if the user space and snap space of a virtual volume are from different CPGs, then only the space associated with the named CPG will be tuned. Also, no tunes will be generated for any virtual volumes outside of CPGs; for example, tunes created with the `createaldvv` command.
- When the `-cpg` option is used or when the user does not have All Domain privileges, intra-node analysis & tuning will not take place. Intra-node tunes require access across all CPGs and all domains in order to work correctly.
- When canceling a `tunesys` command task, the `canceltask` command can return before a cancellation is completed. Therefore, resources reserved for the task might not be immediately available. This can prevent actions like restarting the canceled `tunesys` command task for a few minutes.
- `tunesys` runs between 1 and 3 phases depending on the options specified.
  - Phase 1 - Analyzes and rebalances space usage between nodes (inter-node tuning).
  - Phase 2 - Analyzes and rebalances space usage between disks associated with each node (intra-node tuning).
  - Phase 3 - LD re-layout tunes. LDs where the current characteristics differ from the associated CPG are re-laid out to match the CPG.
- When `tunesys` is running, `showtask` will show the current and maximum number of phases for the task. The steps displayed are the number of subordinate tunes that need to be run to

complete that phase. For example, a `showtask` step and phase display of `1/3 4/39` indicates that `tunesys` is in phase 1 of 3 (inter-node), tune 4 of 39.

- Only one `tunesys` task can be active at a time. A dry run can be performed while `tunesys` is active.

## tunetpvv

### DESCRIPTION

This command was deprecated in the 2.2.3 release and will be changed or removed in a future release. Please use the `tunevv` command in the future. If Virtual Volumes (VVs) were created with deprecated commands then only deprecated commands can be used to modify VVs.

The `tunetpvv` command allows the RAID and Availability characteristics of an existing Thin Provisioned Virtual Volume (TPVV) to be dynamically modified.

### SYNTAX

- `tunetpvv usr_cpg <CPG> [options] <VV_name>`
- `tunetpvv snp_cpg <CPG> [options] <VV_name>`
- `tunetpvv [options] <VV_name>`

### AUTHORITY

Super, Edit

Any role granted the `vv_tune` right

### SUBCOMMANDS

The following subcommands are only used for tuning a multi-space TPVV:

`usr_cpg <CPG>`

Specifies the name of the Common Provisioning Group (CPG) to which the user space of the volume is moved.

`snp_cpg <CPG>`

Specifies the name of the CPG to which the snapshot space of the volume is moved.

### OPTIONS

`-f`

Forces the command. The command completes without prompting for confirmation.

`-waittask`

Indicates to wait for created tasks to complete.

`-dr`

Specifies that the command is a dry run and that no logical disks or Virtual Volumes (VVs) are actually tuned.

`-cnt <nb_of_VV>`

Specifies the number of identical VVs to tune using an integer from 1 through 999. The default will tune one VV.

The following option is only used for tuning a legacy single-space TPVV:

`-cpg <CPG_name>`

Specifies the CPG to which the snapshot data space is moved. This option is not valid with either subcommands.

This option is deprecated and will be removed in a future release.

### specifiers

`<VV_name>`

Specifies an existing VV name.

## RESTRICTIONS

- This command requires an HP 3PAR Dynamic Optimization license. Contact your local HP 3PAR representative for information.
- This command requires sufficient available physical space with the same owner or backup node as the space it is being copied from.

## EXAMPLES

The following example shows how to use the `tunetpvv` command to change the RAID type of a TPVV (`testvol`) from `cpg1`, which is originally `cpg1`, which is of RAID 1.

```
Task 1 started.
```

The following example shows how to use the `tunetpvv` command to increase the availability level of a TPVV (`testvol`). Note that there is mag availability because `testvol` was originally on `cpg1`, which is created with option (`-ha mag`). To increase cage availability, create a CPG with cage availability and tune `testvol` to the associated CPG.

```
cli% createcpg cpg3
cli% tunetpvv -cpg cpg3 testvol
Are you sure you want to tune VV 'testvol'?
select y=yes n=no: y
Task2 started.
```

The following example shows how to tune multiple VVs together. `testvol.0`, `testvol.1` and `testvol.2` are the three VVs to be tuned:

```
cli% tunetpvv -cnt 3 testvol
Are you sure you want to tune VV 'testvol'?
select y=yes n=no: y
Task 3 started.
```

## NOTES

When canceling a `tunetpvv` command task, the `canceltask` command may return before a cancellation is complete. Thus, resources reserved for the task may not be immediately available. This will prevent actions like attempting another tune on the same VV. Scripts should use the `waittask` command in order to ensure orderly completion of the `tunetpvv` command cancellation prior to taking other actions.

## DESCRIPTION

The `tunevv` command is used to change the properties of a virtual volume that was created with either the `createvv` or `createtpvv` command by associating it with a different Common Provisioning Group.

## SYNTAX

The `tunevv` command uses one of the following syntax conventions:

- `tunevv usr_cpg <CPG> [options <arg>] <VV_name>`
- `tunevv snp_cpg <CPG> [options <arg>] <VV_name>`
- `tunevv restart [options <arg>] <VV_name>`
- `tunevv rollback [options <arg>] <VV_name>`

## AUTHORITY

Super, Edit<sup>2</sup>

Any role granted the `vv_tune` right

## SUBCOMMANDS

`usr_cpg <CPG>`

Moves the logical disks being used for user space to the specified Common Provisioning Group.

`snp_cpg <CPG>`

Moves the LDs being used for snapshot space to the specified Common Provisioning Group.

`restart`

Restarts a `tunevv` command call that was previously interrupted because of component failure, or because of user initiated cancellation. This cannot be used on Thinly Provisioned Virtual Volumes.

`rollback`

Returns to a previously issued `tunevv` operation call that was interrupted. The `canceltask` command needs to run before the rollback. This cannot be used on Thinly Provisioned Virtual Volumes.

## OPTIONS

`-f`

Forces the command. The command completes without prompting for confirmation.

`-waittask`

Specifies that the command will wait for any created tasks to complete.

`-dr`

Specifies that the command is a dry run and that no logical disks or virtual volumes are actually tuned.

The following option is used when the `<usr_cpg>` and `<snp_cpg>` subcommands are specified:

`-cnt <count>`

Specifies the number of identical virtual volumes to tune using an integer from 1 through 999. If not specified, one virtual volume is tuned. If the `-cnt` option is specified, then the subcommands, `restart` and `rollback` are not permitted.

2. Certain options require this additional role restriction as indicated.



The following options can be used when the `<usr_cpg>` subcommand is specified:

`-tpvv`

Indicates that the virtual volume should be converted to a Thinly-Provisioned Virtual Volume. Cannot be used with the `-full` option.

`-full`

Indicates that the virtual volume should be converted to a fully-provisioned virtual volume. Cannot be used with the `-tpvv` option.

`-keepvv <VV-name>`

Indicates that the original logical disks should be saved under a new virtual volume with the given name. Must be used with the `-tpvv` or `-full` options.

## SPECIFIERS

`<VV_name>`

Specifies the name of the existing virtual volume.

## RESTRICTIONS

This command requires a Dynamic Optimization license. Contact your HP representative for information.

## EXAMPLES

In the following example, the LDs used for user space are moved to CPG `cpg_sn1.0_p` for VV `nf_st_tp_22.0`:

```
cli% tunevv usr_cpg cpg_sn1.0_p nf_st_tp_22.0
Task 999 started
```

In the following example, the logical disks used for user space are moved to CPG `cpg_sn1.0_p` for virtual volume `nf_st_tp_22.0` and the virtual volume is converted to a `tpvv`:

```
cli% tunevv usr_cpg cpg_sn1.0_p -tpvv nf_st_tp_22.0
Task 1000 started
```

## NOTES

There is a limit on the amount of data that can be tuned in a `tunevv` command. This is equivalent to ten 16TB virtual volumes. If this limit is exceeded, the command will be rejected.

When canceling a `tunevv` command task, the `canceltask` command can return before a cancellation is completed. Therefore, resources reserved for the task might not be immediately available. This can prevent actions such as restarting the canceled `tunevv` command task. Scripts should use the `waittask` command in order to ensure orderly completion of the `tunevv` command cancellation before taking other actions. See [Section \(page 665\)](#) for details about using the `waittask` command.

When the `-tpvv` or `-full` options for the `usr_cpg` subcommand are specified, the tune will automatically rollback on a failure. These options do not support virtual volumes with remote copy. These options will only convert virtual volumes using snapshots if the `-keepvv` option is used, but the snapshots will reside in the virtual volume specified by the `-keepvv` option.

# 31 Update Commands

## updatesnapSPACE

### DESCRIPTION

The `updatesnapSPACE` command starts a non-cancelable task to update the snapshot space usage accounting. The snapshot space usage displayed by `showVV -snapSPACE` is not necessarily the current usage and the `TimeCalculated` column will show when it was last calculated. This command causes the system to start calculating current snapshot space usage. If one or more VV names or patterns are specified, only the specified VVs will be updated. If none are specified, all VVs will be updated.

This command will return immediately, displaying the task ID associated with the update. To wait for completion, use the `waittask` command.

### SYNTAX

```
updatesnapSPACE [<VV_name>... | <pattern>...]
```

### AUTHORITY

Super, Edit

Any role granted the `snapSPACE_update` right.

### OPTIONS

None.

### SPECIFIERS

<VV\_name>...

Specifies the VV name to update. This specifier can be repeated to display the task ID about multiple VVs. This specifier is not required on the command line. If not specified, all VVs in the system are updated.

<pattern>...

Specifies that the VVs matching the specified glob-style pattern is updated. This specifier can be repeated. This specifier is not required. See [“Glob-Style Pattern” \(page 12\)](#) for more information.

### RESTRICTIONS

None.

### EXAMPLES

The following example displays the actual snapshot space used by all VVs:

```
cli% updatesnapSPACE
Task 2 has been started to calculate actual space usage.
```

Issuing a `waittask` command displays the information about the task in process or if it has been processed:

```
cli% waittask 2
Task 2 done
```

The following example displays the task information using `-d <task_id>`:

```
cli% showtask -d 2
Id          Type          Name Status Phase Step -----StartTime-----
-----
-----FinishTime-----
  2 snapspace_accounting ss_accounting Done 0/0 0/0 Thu Sep 22 18:43:35 PDT
2005 Thu Sep 22 18:43:35 PDT 2005

Detailed status:
{Thu Sep 22 18:43:35 PDT 2005} Created task.
{Thu Sep 22 18:43:35 PDT 2005} Started snapshot usage data collection process for
VVs
{Thu Sep 22 18:43:35 PDT 2005} Updated snapshot usage data for VV emaildb
{Thu Sep 22 18:43:35 PDT 2005} Updated snapshot usage data for VV www
{Thu Sep 22 18:43:35 PDT 2005} Updated snapshot usage data for VV snapname
{Thu Sep 22 18:43:35 PDT 2005} Finished snapshot usage data collection process
```

## NOTES

- If one or more VV names or patterns are specified, only the specified VVs are updated. If VV names are not specified, all VVs are updated.
- To check snapshot space usage, use the `showvv -s` command.
- See [“showtask” \(page 490\)](#) for more information.
- See [“waittask” \(page 665\)](#) for more information.

# updatevv

## DESCRIPTION

The `updatevv` command updates a snapshot Virtual Volume (VV) with a new snapshot.

## SYNTAX

```
updatevv [options] <VV_name | VV_set>...
```

## AUTHORITY

Super, Edit, Browse

Any role granted the `vv_update` right

## OPTIONS

`-ro`

Specifies that if the specified VV (`<VV_name>`) is a read/write snapshot the snapshot's read-only parent volume is also updated with a new snapshot if the parent volume is not a member of a virtual volume set. If this option is not specified, the VV, as indicated with the `<VV_name>` specifier, is replaced by a new snapshot. See Notes for additional information.

`-anyid`

This option has been deprecated.

`-f`

Specifies that the command is forced. If this option is not used, the command requires confirmation before proceeding with its operation.

## SPECIFIERS

```
<VV_name | VV_set>...
```

Specifies the name(s) of the snapshot virtual volume(s) or virtual volume set(s) to be updated. They must be of same type (read-only or read/write). When a `<VV_set>` or multiple `<VV_name>`'s are specified group-consistent snapshots are taken. The virtual volume set name must start with `set:.` See `creategroupsv` for more information.

## RESTRICTIONS

For each snapshot VV name specified, the `updatevv` command first verifies in your Access Control List (ACL) that you have permission to run the `updatevv` command on the specified VVs. For information on viewing and setting your ACL, see ["showuseracl" \(page 499\)](#) and ["setuseracl" \(page 342\)](#).

## EXAMPLES

The following example displays the snapshot update of snapshot VV `avvro`:

```
cli% updatevv -f avvro
Updating VV avvro
```

## NOTES

- The `updatevv` command attempts to use the same VV IDs for new snapshots as the snapshots that they replace so that the new VV have the same World Wide Names (WWNs) as the originals (this might be important for hosts using the VV WWN to identify the VV). However, between the removal of the original snapshot and the creation of the new snapshot it is possible that another VV might have been created with the same ID causing the creation of the new snapshot to fail. If the `-anyid` option is specified, the command then creates the snapshot with any available ID.

Because new VVs, by default, are assigned the lowest ID available, VVs that are updated with the `updatevv` command should be assigned large IDs (using the `-i` option to the `createaldrv` command) to reduce the likelihood that their IDs are taken during the `updatevv` command operation.

- After the `updatevv` command is executed, all VLUNs associated with the specified VV name are removed. The command then updates the snapshots as follows:
  - If the `-ro` option is not specified, or if the specified VV name is a read-only snapshot, the command removes the snapshot, and creates a new snapshot of the same name and of the same parent.
  - If the `-ro` option is specified and the specified VV name is a read/write snapshot, the VV is removed and its read-only parent is replaced by a new read-only snapshot of the same name. Then a new read/write snapshot is created of the new read-only snapshot. If the read-only parent has multiple read/write snapshots, the `updatevv` operation will fail because the read-only parent volume cannot be removed.  
The command then re-creates all the VLUNs associated with the specified VV name.
- Running concurrent `updatevv` sessions for VV sets or list of VVs which have common VVs can have unpredictable results.

---

# 32 Upgrade Commands

## upgradecage

### DESCRIPTION

The `upgradecage` command downloads new firmware into the specified cage.

### SYNTAX

The syntax for the `upgradecage` command can be one of the following:

- `upgradecage [options <arg>] <cagename>...`
- `upgradecage [options <arg>] -a`

### AUTHORITY

Super, Service

Any role granted the `cage_upgrade` right

---

**NOTE:** You need access to all domains in order to run this command.

---

### OPTIONS

-a

Specifies that all drive cages are upgraded with new firmware (<cagename> should not be specified).

-noA

Do not upgrade the A loop. This option is only valid for DC1 cages.

-noB

Do not upgrade the B loop. This option is only valid for DC1 cages.

-skiptest

Skips the 10 second per PD diagnostic test normally completed after each cage upgrade.

-model <model>

Only upgrade cages of specified model. Use `showcage` command to find out the correct model for the cages. The model can be DC1, DC2, DC3, or DC4.

-file <fname>

Use firmware in file <fname>, where <fname> is the full path name of the file on the node. The default is to use the firmware that is marked current in the firmware database (see the `showfirmwaredb` command).

-minlevel <revlevel>

Minimum firmware level that the cage firmware must be at for the upgrade to be allowed. This option is deprecated and will be removed in a future release.

-maxlevel <revlevel>

Maximum firmware level that the cage firmware must be at for the upgrade to be allowed. This option is deprecated and will be removed in a future release.

### SPECIFIERS

<cagename>

Specifies the name displayed in the Name column using the `showcage` command.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays a cage with firmware level of 4.41 upgrading to 4.42:

```
cli% upgradecage -a

Upgrading cage cage0 cpuA from rev 1.46 to revision in file
/opt/tpd/fw/cage/dc2/lbod_fw.bin-2.05.
Upgrading cage cage1 cpuA from rev 1.46 to revision in file
/opt/tpd/fw/cage/dc2/lbod_fw.bin-2.05.
Upgrading cage cage2 cpuA from rev 1.46 to revision in file
/opt/tpd/fw/cage/dc2/lbod_fw.bin-2.05.
Upgrading cage cage3 cpuA from rev 03 to revision in file
/opt/tpd/fw/cage/dc3/dc3_fw.bin-04.
Skipping cage cage4 cpuA already up to date at rev 2.05
Skipping cage cage5 cpuA & cpuB already up to date at rev 04
```

## NOTES

- Before executing the `upgradecage` command, issue the `showcage` command to obtain the names of the drive cages in the system.
- When the `upgradecage` command is issued, the drive cage becomes temporarily unavailable. The cage automatically restarts following the firmware update, and may briefly disrupt the loops during the restart. It is recommended `showcage` be used approximately one minute after the update completes to ensure both loops to the cage are available again.

# upgradepd

## DESCRIPTION

The `upgradepd` command upgrades the Physical Disk (PD) firmware.

## SYNTAX

```
upgradepd [-f] [-skiptest] {-a | -w <WWN>... | <PD_ID>...}
```

## AUTHORITY

Super, Service

Any role granted the `pd_upgrade` right

---

**NOTE:** You need access to all domains in order to run this command.

---

## OPTIONS

`-f`

Upgrades the PD firmware without requiring confirmation.

`-skiptest`

Skips the 10 second diagnostic test normally completed after each PD upgrade.

`-a`

Specifies that all PDs with valid IDs and whose firmware is not current are upgraded. If this option is not specified, then either the `-w` option or `PD_ID` specifier must be issued on the command line.

`-w <WWN>...`

Specifies that the firmware of either one or more PDs, identified by their WWNs, is upgraded. If this option is not specified, then either the `-a` option or `PD_ID` specifier must be issued on the command line.

## SPECIFIERS

`<PD_ID>...`

Specifies that the firmware of either one or more PDs identified by their IDs (`PD_ID`) is upgraded. If this specifier is not used, then the `-a` option or `-w` option must be issued on the command line.

## RESTRICTIONS

Access to all domains is required to run this command.

## EXAMPLES

The following example displays the upgrade of all PDs:

```
cli% upgradepd -a
```

## NOTES

- PDs can be upgraded while I/O is occurring.
- If a disk with RAID-0 chunklets is upgraded, I/O to those chunklets at the time of the upgrade results in data loss. This is not applicable to other RAID types.
- Specify the `-w` option when upgrading unadmitted PDs.



---

# 33 Wait Command

## waittask

### DESCRIPTION

The `waittask` command asks the CLI to wait for a task to complete before proceeding. The command automatically notifies you when the specified task is finished.

### SYNTAX

The syntax for the `waittask` command can be one of the following:

```
waittask -v <task_ID>
waittask [<task_ID>...]
```

### AUTHORITY

Super, Service, Edit, Browse

Any role granted the `task_wait` right

### OPTIONS

`-v <task_ID>`

Displays the detailed status of the task specified by `<task_ID>` as it executes. When the task completes, this command exits.

`-q`

Quiet; do not report the end state of the tasks, only wait for them to exit.

### SPECIFIERS

`[<task_ID>...]`

Indicates one or more tasks to wait for using their task IDs. When no task IDs are specified, the command waits for all tasks to complete.

### RESTRICTIONS

None.

### EXAMPLES

The following example shows how to wait for a task using the task ID. When successful, the command returns only after the task is complete.

```
cli% waittask 1
Task 1 done
```

### NOTES

- See the *HP 3PAR Command Line Interface Administrator's Manual* for additional information and examples regarding task management and task management commands.
- This command returns an error if any of the tasks it is waiting for fail.

# 34 Support and Other Resources

## Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Specify the type of support you are requesting:

HP 3PAR storage system	Support request
HP 3PAR StoreServ 7200, 7400, and 7450 Storage systems	StoreServ 7000 Storage
HP 3PAR StoreServ 10000 Storage systems HP 3PAR T-Class storage systems HP 3PAR F-Class storage systems	3PAR or 3PAR Storage

## HP 3PAR documentation

For information about:	See:
Supported hardware and software platforms	The Single Point of Connectivity Knowledge for HP Storage Products (SPOCK) website: <a href="http://www.hp.com/storage/spock">http://www.hp.com/storage/spock</a>
Locating HP 3PAR documents	The HP 3PAR StoreServ Storage site: <a href="http://www.hp.com/go/3par">http://www.hp.com/go/3par</a> To access HP 3PAR documents, click the <b>Support</b> link for your product.
<b>HP 3PAR storage system software</b>	
Storage concepts and terminology	<i>HP 3PAR StoreServ Storage Concepts Guide</i>
Using the HP 3PAR Management Console (GUI) to configure and administer HP 3PAR storage systems	<i>HP 3PAR Management Console User's Guide</i>
Using the HP 3PAR CLI to configure and administer storage systems	<i>HP 3PAR Command Line Interface Administrator's Manual</i>
CLI commands	<i>HP 3PAR Command Line Interface Reference</i>
Analyzing system performance	<i>HP 3PAR System Reporter Software User's Guide</i>
Installing and maintaining the Host Explorer agent in order to manage host configuration and connectivity information	<i>HP 3PAR Host Explorer User's Guide</i>
Creating applications compliant with the Common Information Model (CIM) to manage HP 3PAR storage systems	<i>HP 3PAR CIM API Programming Reference</i>

<b>For information about:</b>	<b>See:</b>
Migrating data from one HP 3PAR storage system to another	<i>HP 3PAR-to-3PAR Storage Peer Motion Guide</i>
Configuring the Secure Service Custodian server in order to monitor and control HP 3PAR storage systems	<i>HP 3PAR Secure Service Custodian Configuration Utility Reference</i>
Using the CLI to configure and manage HP 3PAR Remote Copy	<i>HP 3PAR Remote Copy Software User's Guide</i>
Updating HP 3PAR operating systems	<i>HP 3PAR Upgrade Pre-Planning Guide</i>
Identifying storage system components, troubleshooting information, and detailed alert information	<i>HP 3PAR F-Class, T-Class, and StoreServ 10000 Storage Troubleshooting Guide</i>
Installing, configuring, and maintaining the HP 3PAR Policy Server	<i>HP 3PAR Policy Server Installation and Setup Guide</i> <i>HP 3PAR Policy Server Administration Guide</i>

<b>For information about:</b>	<b>See:</b>
<b>Planning for HP 3PAR storage system setup</b>	
Hardware specifications, installation considerations, power requirements, networking options, and cabling information for HP 3PAR storage systems	
HP 3PAR 7200, 7400, and 7450 storage systems	<i>HP 3PAR StoreServ 7000 Storage Site Planning Manual</i> <i>HP 3PAR StoreServ 7450 Storage Site Planning Manual</i>
HP 3PAR 10000 storage systems	<i>HP 3PAR StoreServ 10000 Storage Physical Planning Manual</i> <i>HP 3PAR StoreServ 10000 Storage Third-Party Rack Physical Planning Manual</i>
<b>Installing and maintaining HP 3PAR 7200, 7400, and 7450 storage systems</b>	
Installing 7200, 7400, and 7450 storage systems and initializing the Service Processor	<i>HP 3PAR StoreServ 7000 Storage Installation Guide</i> <i>HP 3PAR StoreServ 7450 Storage Installation Guide</i> <i>HP 3PAR StoreServ 7000 Storage SmartStart Software User's Guide</i>
Maintaining, servicing, and upgrading 7200, 7400, and 7450 storage systems	<i>HP 3PAR StoreServ 7000 Storage Service Guide</i> <i>HP 3PAR StoreServ 7450 Storage Service Guide</i>
Troubleshooting 7200, 7400, and 7450 storage systems	<i>HP 3PAR StoreServ 7000 Storage Troubleshooting Guide</i> <i>HP 3PAR StoreServ 7450 Storage Troubleshooting Guide</i>
Maintaining the Service Processor	<i>HP 3PAR Service Processor Software User Guide</i> <i>HP 3PAR Service Processor Onsite Customer Care (SPOCC) User's Guide</i>
<b>HP 3PAR host application solutions</b>	
Backing up Oracle databases and using backups for disaster recovery	<i>HP 3PAR Recovery Manager Software for Oracle User's Guide</i>
Backing up Exchange databases and using backups for disaster recovery	<i>HP 3PAR Recovery Manager Software for Microsoft Exchange 2007 and 2010 User's Guide</i>
Backing up SQL databases and using backups for disaster recovery	<i>HP 3PAR Recovery Manager Software for Microsoft SQL Server User's Guide</i>
Backing up VMware databases and using backups for disaster recovery	<i>HP 3PAR Management Plug-in and Recovery Manager Software for VMware vSphere User's Guide</i>
Installing and using the HP 3PAR VSS (Volume Shadow Copy Service) Provider software for Microsoft Windows	<i>HP 3PAR VSS Provider Software for Microsoft Windows User's Guide</i>
Best practices for setting up the Storage Replication Adapter for VMware vCenter	<i>HP 3PAR Storage Replication Adapter for VMware vCenter Site Recovery Manager Implementation Guide</i>
Troubleshooting the Storage Replication Adapter for VMware vCenter Site Recovery Manager	<i>HP 3PAR Storage Replication Adapter for VMware vCenter Site Recovery Manager Troubleshooting Guide</i>
Installing and using vSphere Storage APIs for Array Integration (VAAI) plug-in software for VMware vSphere	<i>HP 3PAR VAAI Plug-in Software for VMware vSphere User's Guide</i>

# Typographic conventions

**Table 8 Document conventions**

Convention	Element
<b>Bold text</b>	<ul style="list-style-type: none"><li>• Keys that you press</li><li>• Text you typed into a GUI element, such as a text box</li><li>• GUI elements that you click or select, such as menu items, buttons, and so on</li></ul>
Monospace text	<ul style="list-style-type: none"><li>• File and directory names</li><li>• System output</li><li>• Code</li><li>• Commands, their arguments, and argument values</li></ul>
<Monospace text in angle brackets>	<ul style="list-style-type: none"><li>• Code variables</li><li>• Command variables</li></ul>
<b>Bold monospace text</b>	<ul style="list-style-type: none"><li>• Commands you enter into a command line interface</li><li>• System output emphasized for scannability</li></ul>

---

**⚠ WARNING!** Indicates that failure to follow directions could result in bodily harm or death, or in irreversible damage to data or to the operating system.

---

**⚠ CAUTION:** Indicates that failure to follow directions could result in damage to equipment or data.

---

**NOTE:** Provides additional information.

---

## Required

Indicates that a procedure must be followed as directed in order to achieve a functional and supported implementation based on testing at HP.

## HP 3PAR branding information

- The server previously referred to as the "InServ" is now referred to as the "HP 3PAR StoreServ Storage system."
- The operating system previously referred to as the "InForm OS" is now referred to as the "HP 3PAR OS."
- The user interface previously referred to as the "InForm Management Console (IMC)" is now referred to as the "HP 3PAR Management Console."
- All products previously referred to as "3PAR" products are now referred to as "HP 3PAR" products.

---

## 35 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback ([docsfeedback@hp.com](mailto:docsfeedback@hp.com)). Include the document title and part number, version number, or the URL when submitting your feedback.

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