HP Storage System Scripting Utility Reference

Abstract

This document describes how to configure and use the HP SSSU to manage and monitor HP P6000 EVAs. This document is intended for operators and administrators of SANs that include supported HP storage systems.

Acknowledgements

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> **NOTE:** IPv6 is supported on server-based management HP P6000 Command View Software Suite beginning with Version 8.0.2. IPv6 is supported on array-based management HP P6000 Command View Software Suite beginning with Version 9.2.
>
> USGv6 is supported on array-based management HP P6000 Command View Software Suite beginning with Version 10.1. Internet Protocol Security (IPsec) is not supported with HP P6000 Command View Software Suite array-based management.

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1 Getting started

Overview

HP SSSU is a command line interface that allows you to configure and control EVA storage systems. Use SSSU to script and run repetitive and complex configuration tasks. Use HP P6000 Command View, the graphical user interface, for simple or initial configuration tasks.

This chapter describes how to start and use SSSU.

> ⊙ **IMPORTANT:** HP P6000 Command View (formerly HP StorageWorks Command View EVA) supports all HP P6000/Enterprise Virtual Array models except for HP EVA3000/5000. General references to HP P6000 Command View can also refer to earlier versions of HP Command View EVA.

Prerequisites

This guide assumes you have installed and configured the following HP products:

- HP EVA hardware and controller software
- HP P6000 Command View (formerly HP Command View EVA)

For supported arrays, management server hardware and software, and replication environments, including restrictions, see the *HP Enterprise Virtual Array Compatibility Reference*.

HP Storage System Scripting Utility 9.3 and later Windows requirement

HP Storage System Scripting Utility 9.3 and later for Windows requires the Microsoft Visual C++ 2008 SP1 Redistributable Package to be installed. If SSSU is installed as part of HP P6000 Command View, the installer deploys this package automatically. It is also available for download from the Microsoft Download Center website:

http://www.microsoft.com/downloads/en/default.aspx

Installing SSSU

SSSU is installed on the management server when you install HP P6000 Command View. For information about installing SSSU on a host, see *HP P6000 Command View Software Suite Installation Guide*.

> **NOTE:** For UAC-enabled systems, HP recommends that when you install or run SSSU, you select the **Run As Administrator** option.

Starting SSSU

To start SSSU:

1. Click the HP SSSU desktop shortcut to open SSSU in interactive mode.

2. When SSSU opens, you are prompted to enter the following information:
   - `Manager:` The server name or IP address of the management server. If you are logged in to the management server, you can use `localhost`.
   - `Username:` The account user name that was created for you during HP P6000 Command View installation.
   - `Password:` The account password that was created for you during HP P6000 Command View installation.

   If the login fails in interactive mode, SSSU prompts you, up to three times, to reenter the manager, user name, and password.
3. To view available storage systems, enter the following command:

   `LS SYSTEM`
4. To select a storage system to manage, enter the following command:

   `SELECT SYSTEM system_name`

Use the `SET OPTIONS` command (see "SET OPTIONS" (page 78)) to control how SSSU behaves for the current session. Each time you start SSSU, the default options are reinstated.

Configuration file

The SSSU configuration file can be used to run a specific set of commands during SSSU startup. It can be used to log into a specific HP P6000 Command View server and to set SSSU options listed under the `SET OPTIONS` command.

To create an `sssu.cfg` file, use the format in the following example:

```
Section login
{
SET OPTIONS CV_PORT=2372
SELECT MANAGER localhost user=admin
}
Section Options
{
SET OPTIONS NOCOMMAND_DELAY
SET OPTIONS EXIT_ON_ERROR
SET OPTIONS DISPLAY_STATUS
…
}
```

You can use the `SET OPTIONS` command to override values in the `sssu.cfg` file for the current SSSU session.

NOTE: The login section of the file is executed first, followed by the options section

When you create an `sssu.cfg` file, consider the following:

- The `sssu.cfg` file name is case sensitive.
- The `sssu.cfg` file must reside in the SSSU working directory.
- The login section of the file supports only the two commands listed in the example.
- The options section of the file supports all options set by the `SET OPTIONS` command. See "SET OPTIONS" (page 78).
- Unsupported commands in the file are ignored.

Interactive mode

Interactive mode consists of an HP Storage System Scripting Utility session. Press **Ctrl**+**C** to abort the execution of a command without exiting the SSSU session.

△ **CAUTION:** **Ctrl**+**C** is not supported in Linux environments and if used can crash the session.

Non-interactive mode

You can run a script in non-interactive mode without providing additional input.

Syntax

```
SSSU  arguments
```

Arguments are scripts or individual commands.

If you start SSSU with arguments, the commands are executed and shown in the command prompt. After the commands are executed, the operating system command prompt is displayed.

ⓘ **IMPORTANT:** Enclose file names, commands, and path names that contain spaces in quotation marks.

Examples

The following examples use interactive mode.

To start SSSU and run the `myFile.txt` file from the current directory, enter:

```
SSSU "file myFile.txt"
```

To include a file path name, enter:

```
SSSU "file \"c:\program files\myotherscript.txt""
```

Or

```
SSSU "file \"c:\program files\myotherscript.txt\""
```

Note the escape character (\) before and optionally after the path and file name.

You can run the script and provide the login credentials in the command line:

```
SSSU "SELECT MANAGER manager_ip_address USERNAME=username
PASSWORD=password" "file myFile.txt"
```

To start SSSU and run multiple commands, enter:

```
SSSU "cmd1" "cmd2" "cmd3"
```

Default folders and path names

The following default root folders organize storage system resources:

- `Hosts`
- `Disk Groups`
- `Data Replication`
- `Hardware`
- `Virtual Disks`

You can create folders within the `Hosts` and `Virtual Disks` root folders, but you cannot create or delete root folders. See "ADD FOLDER" (page 31).

> **IMPORTANT:** Enclose path and resource names that include spaces in quotation marks. For example:
>
> `ADD VDISK "\Virtual Disks\new_code" SIZE=10`

Shortened path names (aliases)

You can use shortened path names (sometimes called aliases) for resources when entering commands. If you do not specify a full name for a resource, SSSU checks to see if you are using an alias.

You must specify LUNs with a full name because LUNs are not uniquely identified by numbers. Several virtual disks may contain LUN 1. For example:

`LS LUN \Hosts\MainServer\3`

The following examples show how to use aliases:

- **Specifying a virtual disk**

    If you have `\virtual_disks\my_virdisk`, you can enter `my_virdisk` for the resource.

- **Specifying a disk group**

    If you have `"\Disk Groups\Default Disk Group,"` you can enter `"Default Disk Group"` for the resource.

- **Specifying a host**

    If you have `SET HOST \Hosts\h1 name=h2,` you can enter `SET HOST h1 name=h2.`

- **Adding a snapshot**

    To add a snapshot *mysnap*, instead of entering `ADD SNAPSHOT mysnap VDISK="\Virtual Disks\mydisk\ACTIVE,"` you can enter `ADD SNAPSHOT mysnap2 VDISK=mydisk.`

- **Deleting a virtual disk**

    To delete the virtual disk *mydisk*, instead of entering `"\Virtual Disks\mydisk\,"` you can enter `DELETE VDISK mydisk.`

Managing output

You can format, redirect, and filter the XML output.

Formatting output

The default command output is:

`XML element : value`

To specify XML output, add the XML option. For example:

`LS VDISK vd01 XML`

This command produces the following XML output:

`<objectname>\Virtual Disks\vd01\ACTIVE</objectname>`

Redirecting output

For any command, you can redirect the output to a file using the `>` operator and specifying a file name as displayed in the following example:

`LS VDISK FULL > OUTPUT.TXT`

Filtering output

For any command you can filter the output using the | operator, `grep` keyword, and specifying the search string as displayed in the following example:

`LS VDISK FULL | grep Vdisk00`

If you redirect and filter output in a single command, you should use the filter command first as shown in the following example:

`LS VDISK FULL | grep SIZE > OUTPUT.TXT`

NOTE: Executing a `grep` command and redirecting output in a file might not work together in UNIX environments. However, you can capture output by specifying the `grep` command in a script and executing it using a `FILE` command with redirection.

Commands requiring a license

Table 1 (page 11) identifies commands that require an HP P6000 Business Copy license, an HP P6000 Command View license, or an HP P6000 Continuous Access license. An error message displays if you attempt to use one of these commands without the required license. You must enter the appropriate license in HP P6000 Command View to continue. See *HP P6000 Command View Software Suite User Guide* for instructions.

Table 1 Commands requiring a license

Task	Command	License		
		HP P6000 Command View	HP P6000 Business Copy	HP P6000 Continuous Access
Create a virtual disk	ADD VDISK	X		
Expand a virtual disk	SET VDISK[1]	X		
Add a disk group	ADD DISK_GROUP	X		
Create a snapclone	ADD SNAPCLONE	X	X	
Detach a mirrorclone	SET VDISK or SET MULTIMIRROR	X		
Add a DR group	ADD DR_GROUP	X		X
Add a virtual disk to DR group	SET DR_GROUP[2]	X		X
Create a snapshot	ADD SNAPSHOT[3]		X	
Create a mirrorclone	ADD MIRRORCLONE		X	

[1] Requires valid HP P6000 Command View and HP P6000 Continuous Access licenses at source and destination if the virtual disk is a member of a DR group.

[2] Requires a valid HP P6000 Command View license at destination and a valid HP P6000 Continuous Access license at source and destination.

[3] An HP P6000 Business Copy license is not required if the source virtual disk already has snapshots.

Administrator and user commands

There are two types of users:

- HP Storage Administrators have the privilege to execute the complete set of commands, which are listed in .
- HP Storage Users can only execute the subset of commands that are listed in .

NOTE: Because SSSU creates trace files in the same directory as the binary. Users must have write privileges on the directory where the SSSU binary resides.

Table 2 HP Storage User commands

Command	Option
CAPTURE	CONFIGURATION VALIDATE
EMVERSION	
EXIT	
FILE	
HELP	
LS	CABINET CONTAINER CONTROLLER DISK DISK_GROUP DISKSHELF DR_GROUP FCOE_HOST FCOE_LUN FOLDER HOST ISCSI_CONTROLLER ISCSI_HOST ISCSI_IPHOST ISCSI_LICENSE ISCSI_LUN LUN MANAGER OPTIONS SNAPSHOT SYSTEM TIME UNASSIGNED_FCOE_HOST_WWN VDISK WORLD_WIDE_NAME
PAUSE	
SELECT	MANAGER SYSTEM
SET	OPTIONS

Managing passwords

In the SELECT MANAGER command, using PASSWORD is optional, which can assist you in removing passwords from scripts. When PASSWORD is not included in the SELECT MANAGER command,

SSSU looks for the password in the password file, based on the `MANAGER` and `USERNAME` included in the command. If the password is not available for the corresponding `MANAGER` and `USERNAME` combination, SSSU exits. When `PASSWORD` is included with the `SELECT MANAGER` command, SSSU does not look for the password in the password file, even if the password is wrong. For information on the commands that govern password authentication, see "Password authentication commands" (page 63).

HP SSSU best practices

Executing the scripts

Use the following best practices to execute scripts:

- Run only one instance of the script at a time.
- Do not make changes in the user interface or have the user interface active while scripts are executing.

HP P6000 Command View and HP Storage System Scripting Utility versions

Ensure that all your hosts have matching HP Storage System Scripting Utility and HP P6000 Command View versions. If you do not follow this best practice, you can experience unpredictable results such as scripts that fail.

Using capture configuration commands

When using the capture configuration commands, be aware of the following best practices:

- Execute `capture configuration` after any configuration change is made and *before* any firmware or hardware upgrade.
- The capture configuration command cannot re-create disk groups with

  ○ Mixed spindles sizes.

  ○ Spindles of different sizes. An example of disk groups with spindles of difference sizes would be one disk group with all 72 Gb drives and another disk group with all 300 Gb drives.

  Manually re-create these disk group types before proceeding with the rest of the configuration scripts.

- Before you capture the configuration of a storage system that uses an MPX200 iSCSI controller, you must remove all iSCSI and FCoE presentations of virtual disks before you uninitialize the storage system. Failure to do so can result in a faulty configuration restoration.

Creating a password file in OpenVMS

When you create a password file, the host, username, and password are saved in a password file. This file validates your credentials so that when you execute the SSSU script, you do not have to enter a password.

To create a password file in OpenVMS:

1. Set an environment variable for SSSU.

   Syntax: *Env Var* :== [*physical_path*] *name_of_executable*.exe

   For example: `sssu:==$DKA0:[SYS0.SYSMGR.SSSU]SSSU_VMS_IA64.EXE`

   ⓘ **IMPORTANT:**   You must specify the physical path for the environment variable. Do not use the logical path.

2. Use the Env Var `-a` command to create the password file.

   For example, `SSSU -a`.

The .pw file is created in the user's home directory.

3. Use the Env Var -l command to verify that the password file was created.

   For example, SSSU -l.

To determine the logical name, enter the following commands:

```
$ SHOW DEF
  SYS$SYSROOT:[SYSMGR]              (sys$sysroot is the logical name)
  =    SYS$SYSROOT:[SYSMGR]
  =    SYS$COMMON:[SYSMGR]
$
$ SHOW LOG SYS$SYSROOT   (enter the logical name here)
   "SYS$SYSROOT" = "RL1VM7$DKA0:[SYS0.]" (LNM$SYSTEM_TABLE)
       = "SYS$COMMON:"
1  "SYS$COMMON" = "RL1VM7$DKA0:[SYS0.SYSCOMMON.]" (LNM$SYSTEM_TABLE)
$
$sssu:$RL1VM7$DKA0:[SYS0.SYSMGR]SSSU.exe

$sssu SSSU
```

SSSU begins to run.

Collecting data on OpenVMS systems

Use the following procedure to collect data from EVAs connected to OpenVMS servers.

1. To create a log file:

   ```
   $ pipe sssu "file addcopy.com" | copy sys$input addcopy.log
   ```

2. Define sssu as a foreign command to pass arguments to the SSSU.exe file in OpenVMS digital command language.

Optimizing snap creation

To optimize the time it takes to perform a snap creation with a pre-allocated snapshot or snapclone:

1. Create a container with the same capacity as the parent virtual disk with the following command:

   ```
   ADD CONTAINER container_name DISKGROUP=disk_group_name SIZE=size
   REDUNDANCY=Vraid_level.
   ```

   Repeat for all virtual disks which have a point-in-time copy.

2. Flush the cache as shown in the following example:

   ```
   SET VDISK vdisk_name WRITECACHE=WRITETHROUGH.
   ```

   Repeat for all virtual disks that have a point-in-time copy.

3. For storage subsystems using XCS 09534xxx or later, prepare the empty container by using one of the following commands:

   - ```
     SET MULTISNAP PREPARE VDISK=vdisk_name CONTAINER=container_name
     snaptype
     ```

   - ```
     SET VDISK container_name PREPARE VDISK=vdisk_name
     CONTAINER=container_name snaptype
     ```

   NOTE: The prepare command is available only in XCS 09534xxx and later.

4. Quiesce the I/O throughout your application.
5. Create the snapshot or snapclone by using one of the following commands:

- `ADD MULTISNAP snapshot_name VDISK=vdisk_name CONTAINER=container_name snaptype`

- `ADD SNAPSHOT snapshot_name VDISK=vdisk_name CONTAINER=container_name`

To optimize the time it takes to create a mirrorclone:
1. Create a container with the same capacity as the parent virtual disk as displayed in the following example:

   `ADD CONTAINER container_name DISKGROUP=disk_group_name SIZE=size REDUNDANCY=Vraid_level.`

2. Prepare the empty container as displayed in the following example:

   `SET VDISK container_name PREPARE VDISK=vdisk_name snaptype`

3. Create the mirrorclone as displayed in the following example:

   `ADD MIRROR mirrorclone_name VDISK=vdisk_name CONTAINER=container_name.`

Optimizing a mirrorclone fracture

To optimize the time it takes to fracture a mirrorclone:
1. Flush the cache of the source virtual disk as shown in the following example:

   `SET VDISK vdisk_name WRITECACHE=WRITETHROUGH.`

   Repeat for all virtual disks that have a point-in-time copy.
2. Quiesce the I/O throughout your application.
3. Fracture the mirrorclone as shown in the following example:

   `SET MULTIMIRROR FRACTURE VDISK=mirrorclone_name`

Batch script command entry

If you are running VMware ESX 3.5, ensure that all commands in your batch script are entered correctly. An unsupported command or option (for instance, a misspelled option or invalid value) can cause VMware to kill SSSU.

Insufficient memory can cause the batch script to fail. HP recommends that the ESX 3.5 server system console memory is at least 400 MB.

Configuring a storage system using SSSU

This section describes the process of configuring a storage system using SSSU.
1. When you first open SSSU, enter the following information:

   ```
   Manager: cvevaserver
   Username: evaadmin
   Password: admintest
   ```

   SSSU validates the user credentials for the server and establishes an SSL connection with the server.

2. List the available storage systems:

   ```
   NoSystemSelected: LS SYSTEM
   Systems available on this Manager:
     Uninitialized Storage System [5000-1FE1-0015-1F50]
   ```

3. Select a storage system (if the storage system is uninitialized, "Uninitialized Storage System" with the worldwide name xxxx-xxxx-xxxx-xxxx is displayed):

```
NoSystemSelected: SELECT SYSTEM "Uninitialized Storage System [5000-1FE1-0015-1F50]"
```

4. Add the storage system `Archive` and display the options available with the `ADD SYSTEM` command:

```
Uninitialized Storage System [5000-1FE1-0015-1F50]: ADD SYSTEM Archive ?

  The options are:
     COMMENT
     CONSOLE_LUN_ID
     DEVICE_COUNT
     DISKGROUP_DISKTYPE
     SPARE_POLICY
```

5. Add eight disks to the `Archive` storage system:

```
Uninitialized Storage System [5000-1FE1-0015-1F50]: ADD SYSTEM Archive device_count=8
```

6. List the available storage systems:

```
NoSystemSelected: LS SYSTEM

Systems available on this Manager:
   Archive
```

7. Select the `Archive` storage system:

```
NoSystemSelected: SELECT SYSTEM Archive
```

8. Add the virtual disk `History` with a size of 10 GB to the `Archive` storage system:

```
Archive: add vdisk History size=10
```

9. Add the host `MainServer` to the storage system, specifying the WWN and the operating system:

```
Archive: ADD HOST MainServer WORLD_WIDE_NAME=1234-4321-1234-4231 OPERATING_SYSTEM=HPUX
```

10. Present the virtual disk `History` as `LUN 3` to `MainServer`:

```
Archive: ADD LUN 3 VDISK=History HOST=MainServer
```

11. List the available virtual disks on `Archive`:

```
Archive: LS VDISK

Vdisks available on this Cell:
   \Virtual Disks\History\ACTIVE
```

12. View information about the virtual disk `History`:

```
Archive: LS VDISK History

\Virtual Disks\history\ACTIVE information:
istpv  disk ...........................: false
  isvdovercommit .......................: false
  migrationinprogress ..................: 0
  objectlockstate ......................: unlocked
object
  objectid ...........................: 00200710b4080560671f10000090000000005843
  objectname ...........................: \Virtual Disks\ history\ACTIVE
  objecttype ...........................: virtualdisk
  objectwwn ............................:
  objecthexuid .........................: 6005-08b4-0010-1f67-0000-9000-4358-0000
  partitionname ........................: ACTIVE
  uid ..................................: 8192.7.16.1610942644.1056615.36864.1129840640
  parentstoragecellinfo
     storagecellname ...................: HSV210_v5100_F670
```

```
   storagecellid ......................: 08000710b4080560671f1000009000000000e942
     storagecellwwn ....................: 5005-08B4-0101-F670
objectparentuid ......................: 0.7.16.1610942644.1056615.36864.1129775104
objectparenthexuid ...................: 6005-08b4-0010-1f67-0000-9000-4357-0000
objectparentid ......................: 00000710b4080560671f10000090000000005743
 comments ............................: active comments
 creationdatetime .....................: 13-Sep-2005 18:12:50
 timestampmodify ......................: 83969593
previousclonesourcevdiskid ...........: 00000000000000000000000000000000000000000000
previousclonesourcevdiskhexuid .......: 0000-0000-0000-0000-0000-0000-0000-0000
 familyname ..........................: history
wwlunid .............................: 6005-08b4-0010-1f67-0000-9000-4358-0000
 onlinecontroller
    controllername .....................: Controller A
   controllerid ......................: 00000708b4080550591f10000000000000000000
operationalstate ......................: good
operationalstatedetail ...............: operating_normally
allocatedcapacity ....................: 10
allocatedcapacityblocks ..............: 20971520
virtualdisktype .....................: original
requestedcapacity ....................: 10
requestedcapacityblocks ..............: 20971520
sharingrelationship ..................: none
sharinginformation
   parentvdiskhexuid ..................: n/a
   parentvdiskid ......................: n/a
   parentvdiskname ....................: n/a
   childvdiskhexuid ...................: n/a
   childvdiskid .......................: n/a
   childvdiskname .....................: n/a
redundancy ...........................: vraid0
writecacheactual .....................: writethrough
writecache ...........................: writethrough
vdisksecondarystate ..................: none
mirrorcache ..........................: mirrored
readcache ............................: enable
iscsipresentationexists ..............: yes
iscsipresentations
   iscsipresentation
    iscsihostipaddress ...............: 16.112.98.100
    iscsihostname ...................:
      iqn.1991-05.com.microsoft:ait-test5.americas.hpqcorp.net
    iscsihostalias ...................:
    iscsiscsireservation .............: none
vdiskpresentedtoiscsihost ............: yes
virtualdiskpresented .................: yes
presentations
   presentation
    hostid ...........................: 17800710b4080560591f100000a0000000006701
```

```
        lunnumber ........................: 1
        hostname .........................: \Hosts\iSCSI Host
        scsireservationtype ..............: none
      presentation
       hostid ............................: 00800710b4080560ae4201000005002000000cb00
        lunnumber ........................: 3
        hostname .........................: \Hosts\MainServer
        scsireservationtype ..............: none
    writeprotect .........................: disable
    osunitid .............................: 10
    diskgroupname ........................: \Disk Groups\Default Disk Group
    diskgroupid ..........................: 00010710b4080560671f1000009000000000eb42
    preferredpath ........................: no_preference
```

13. List the available hosts on `Archive`:

```
Archive: LS HOST MainServer
Hosts available on this Cell:
\Hosts\MainServer information:
object
  objectid ..............................: 00800710b4080560ae4201000005002000000cb00
  objectname ............................: \Hosts\MainServer
  objecttype ............................: host
  objecthexuid ..........................: 6005-08b4-0001-42ae-0002-5000-00cb-0000
  hostname ..............................: MainServer
  uid ...................................: 32768.7.16.1610942644.82606.151552.13303808
  objectparentuid .......................: 1028.4.4.67372036.67372036.67372036.67372036
  objectparenthexuid ....................: 0404-0404-0404-0404-0404-0404-0404-0404
  ipaddress .............................: dynamic_ip_assignment
  presentations
    presentation
      lunnumber .........................: 3
      virtualdiskid ....................: 00200710b4080560ae4201000005002000000c700
        virtualdiskname .................: \Virtual Disks\History\ACTIVE
  operationalstate ......................: good
  operationalstatedetail ................: initialized_ok
  fcadapterports
    port
      portwwn ...........................: 1234-4321-1234-4231
  directeventing ........................: enable
  osmode ................................: hpux
  osmodebitmask .........................: n/a
```

14. List LUN 3 of host `MainServer` of storage system `Archive`:

```
Archive: LS LUN \Hosts\MainServer\3
LUNs available on this Cell:
\Hosts\MainServer\3 information:
object
  objectid ..............................: 00880710b4080560ae4201000005002000000cc00
  objectname ............................: \Hosts\MainServer\3
  objecttype ............................: presentedunit
  objecthexuid ..........................: 6005-08b4-0001-42ae-0002-5000-00cc-0000
```

```
virtualdiskname .......................: \Virtual Disks\History\ACTIVE
  virtualdiskid .........................: 00200710b4080560ae420100005002000000c700
  hostname ..............................: \Hosts\MainServer
  hostid ................................: 00800710b4080560ae420100005002000000cb00
  lunnumber .............................: 3
```

15. List LUN 3 of host `MainServer` with the output in XML format:

```
Archive: LS LUN \Hosts\MainServer\3 XML
\Hosts\MainServer\3 information:
<object>
  <objectid>00880710b4080560ae420100005002000000cc00</objectid>
  <objectname>\Hosts\MainServer\3</objectname>
  <objecttype>presentedunit</objecttype>
  <objecthexuid>6005-08b4-0001-42ae-0002-5000-00cc-0000</objecthexuid>
  <objectdiskname>\Virtual Disks\History\ACTIVE</objectdiskname>
  <objectdiskid>00200710b4080560ae420100005002000000c700</objectdiskid>
  <hostname>\Hosts\MainServer</hostname>
  <hostid>00800710b4080560ae420100005002000000cb00</hostid>
  <lunnumber>3</lunnumber>
</object>
```

16. View the preferred path connections between local and remote storage systems:

```
Archive: LS PREFERRED_PATH
Remote system connection information:
preferredportgeneral
remotestoragesystem
    storagesystemname ..................: Unknown
    storagesystemnodewwn ...............: 5000-1FE1-5001-B3C0
    nbpaths ............................: 2
    drlicensed .........................: N/A
    dractive ...........................: No
    managed ............................: No
    remotesystemportcheckinterval ......:
  remotestoragesystem
    storagesystemname ..................: eva3028
    storagesystemnodewwn ...............: 5000-1FE1-5001-B350
    nbpaths ............................: 4
    drlicensed .........................: N/A
    dractive ...........................: No
    managed ............................: No
    remotesystemportcheckinterval ......:
  remotestoragesystem
    storagesystemname ..................: Unknown
    storagesystemnodewwn ...............: 5000-1FE1-5005-E380
    nbpaths ............................: 4
    drlicensed .........................: N/A
    dractive ...........................: No
    managed ............................: No
    remotesystemportcheckinterval ......:
  remotestoragesystem
    storagesystemname ..................: Unknown
    storagesystemnodewwn ...............: 5000-1FE1-5006-C0D0
    nbpaths ............................: 4
    drlicensed .........................: N/A
    dractive ...........................: No
    managed ............................: No
    remotesystemportcheckinterval ......:
```

```
remotestoragesystem
   storagesystemname ...................: EVA-AE50
   storagesystemnodewwn ................: 5000-1FE1-5003-AE50
   nbpaths .............................: 4
   drlicensed ..........................: Yes
   dractive ............................: No
   managed .............................: Yes
   remotesystemportcheckinterval ......:
remotestoragesystem
   storagesystemname ...................: Unknown
   storagesystemnodewwn ................: 5000-1FE1-5001-B3B0
   nbpaths .............................: 4
   drlicensed ..........................: N/A
   dractive ............................: No
   managed .............................: No
   remotesystemportcheckinterval ......:
preferredportpathsdetails
   remotesystempaths
      remotesystempath
         remotestoragesystemname ..........: Unknown
         remotestoragesystemnodewwn .......: 5000-1FE1-5001-B3C0
         hostportpaths
            hostportpath
               localhostport ................: 1
               localcontrollername ..........: A
               remotehostport ...............: 2
               remotecontrollername .........: A
      remotesystempath
         remotestoragesystemname ..........: Unknown
         remotestoragesystemnodewwn .......: 5000-1FE1-5001-B3C0
         hostportpaths
            hostportpath
               localhostport ................: 1
               localcontrollername ..........: B
               remotehostport ...............: 2
               remotecontrollername .........: A
      remotesystempath
         remotestoragesystemname ..........: eva3028
         remotestoragesystemnodewwn .......: 5000-1FE1-5001-B350
         hostportpaths
            hostportpath
               localhostport ................: 1
               localcontrollername ..........: A
               remotehostport ...............: 1
               remotecontrollername .........: A
      remotesystempath
         remotestoragesystemname ..........: eva3028
         remotestoragesystemnodewwn .......: 5000-1FE1-5001-B350
         hostportpaths
            hostportpath
               localhostport ................: 1
               localcontrollername ..........: B
               remotehostport ...............: 1
               remotecontrollername .........: A
      remotesystempath
         remotestoragesystemname ..........: eva3028
         remotestoragesystemnodewwn .......: 5000-1FE1-5001-B350
         hostportpaths
            hostportpath
               localhostport ................: 1
               localcontrollername ..........: A
               remotehostport ...............: 2
               remotecontrollername .........: B
      remotesystempath
```

```
         remotestoragesystemname ..........: eva3028
         remotestoragesystemnodewwn .......: 5000-1FE1-5001-B350
       hostportpaths
         hostportpath
           localhostport ................: 1
           localcontrollername ..........: B
           remotehostport ...............: 2
           remotecontrollername .........: B
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5005-E380
     hostportpaths
       hostportpath
         localhostport ................: 1
         localcontrollername ..........: A
         remotehostport ...............: 1
         remotecontrollername .........: A
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5005-E380
     hostportpaths
       hostportpath
         localhostport ................: 1
         localcontrollername ..........: B
         remotehostport ...............: 1
         remotecontrollername .........: A
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5005-E380
     hostportpaths
       hostportpath
         localhostport ................: 1
         localcontrollername ..........: A
         remotehostport ...............: 1
         remotecontrollername .........: B
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5005-E380
     hostportpaths
       hostportpath
         localhostport ................: 1
         localcontrollername ..........: B
         remotehostport ...............: 1
         remotecontrollername .........: B
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5006-C0D0
     hostportpaths
       hostportpath
         localhostport ................: 1
         localcontrollername ..........: A
         remotehostport ...............: 1
         remotecontrollername .........: A
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5006-C0D0
     hostportpaths
       hostportpath
         localhostport ................: 1
         localcontrollername ..........: B
         remotehostport ...............: 1
         remotecontrollername .........: A
   remotesystempath
     remotestoragesystemname ..........: Unknown
     remotestoragesystemnodewwn .......: 5000-1FE1-5006-C0D0
```

```
hostportpaths
  hostportpath
    localhostport ................: 1
    localcontrollername ..........: A
    remotehostport ...............: 2
    remotecontrollername .........: B
remotesystempath
  remotestoragesystemname ..........: Unknown
  remotestoragesystemnodewwn .......: 5000-1FE1-5006-C0D0
  hostportpaths
    hostportpath
      localhostport ................: 1
      localcontrollername ..........: B
      remotehostport ...............: 2
      remotecontrollername .........: B
remotesystempath
  remotestoragesystemname ..........: EVA-AE50
  remotestoragesystemnodewwn .......: 5000-1FE1-5003-AE50
  hostportpaths
    hostportpath
      localhostport ................: 1
      localcontrollername ..........: A
      remotehostport ...............: 1
      remotecontrollername .........: A
remotesystempath
  remotestoragesystemname ..........: EVA-AE50
  remotestoragesystemnodewwn .......: 5000-1FE1-5003-AE50
  hostportpaths
    hostportpath
      localhostport ................: 1
      localcontrollername ..........: B
      remotehostport ...............: 1
      remotecontrollername .........: A
remotesystempath
  remotestoragesystemname ..........: EVA-AE50
  remotestoragesystemnodewwn .......: 5000-1FE1-5003-AE50
  hostportpaths
    hostportpath
      localhostport ................: 1
      localcontrollername ..........: A
      remotehostport ...............: 1
      remotecontrollername .........: B
remotesystempath
  remotestoragesystemname ..........: EVA-AE50
  remotestoragesystemnodewwn .......: 5000-1FE1-5003-AE50
  hostportpaths
    hostportpath
      localhostport ................: 1
      localcontrollername ..........: B
      remotehostport ...............: 1
      remotecontrollername .........: B
remotesystempath
  remotestoragesystemname ..........: Unknown
  remotestoragesystemnodewwn .......: 5000-1FE1-5001-B3B0
  hostportpaths
    hostportpath
      localhostport ................: 1
      localcontrollername ..........: A
      remotehostport ...............: 2
      remotecontrollername .........: A
remotesystempath
  remotestoragesystemname ..........: Unknown
  remotestoragesystemnodewwn .......: 5000-1FE1-5001-B3B0
  hostportpaths
    hostportpath
```

```
            localhostport ................: 1
            localcontrollername ..........: B
            remotehostport ...............: 2
            remotecontrollername .........: A
remotesystempath
  remotestoragesystemname ...........: Unknown
  remotestoragesystemnodewwn .......: 5000-1FE1-5001-B3B0
  hostportpaths
    hostportpath
            localhostport ................: 1
            localcontrollername ..........: A
            remotehostport ...............: 2
            remotecontrollername .........: B
remotesystempath
  remotestoragesystemname ...........: Unknown
  remotestoragesystemnodewwn .......: 5000-1FE1-5001-B3B0
  hostportpaths
    hostportpath
            localhostport ................: 1
            localcontrollername ..........: B
            remotehostport ...............: 2
            remotecontrollername .........: B
```

2 Commands

This chapter describes the commands and options available in SSSU, including syntax and examples. The commands are presented in alphabetical order.

Command tips

When you issue commands, consider the following:

- You can use aliases to specify names.

- If a path name contains a space, enclose the entire name in quotation marks.

- An equal sign (=) in the option name indicates an entry is required with the option.

- You can use shortcuts for command names. For example, a shortcut for EMVERSION could be EM. (Note that using just the letter E would not make the command unique because EXERCISE_DISK also starts with the letter E.)

- Command keywords are not case sensitive. User-created object names may be case-sensitive if they are intentionally created with upper and lowercase characters.

    NOTE: The grep command in uppercase letters (GREP) is not supported.

- To view a list of options for a command, enter a question mark (?) after the command or option name. For example, ADD ? displays the options available for the ADD command, and ADD SYSTEM ? displays the options available for the ADD SYSTEM command. See "HELP" (page 56).

- Although this reference shows commands spanning more than one line, always enter the command on one line.

- You can perform only one property change per SET command.

ADD CONTAINER

The ADD CONTAINER command reserves disk space for creating copies of virtual disks (snapshots and snapclones). Reserving space allows you to quickly and safely create a copy because the space for the copy is already reserved and available. You must specify the size of the container in GB when you create it (there is no default).

After you create the copy, it becomes another virtual disk. You can reverse the process and convert a virtual disk to a container using the SET VDISK *vdiskname* CHANGE_INTO_CONTAINER command.

If you do not specify a disk group, the copy is created in the default disk group. If the default disk group does not exist, an error message is displayed.

Syntax

ADD CONTAINER *container_name* SIZE=*container_size*

Options

`ALLOCATION_POLICY=`	Indicates how the space for the container is to be allocated: • Demand—The storage system allocates only enough space to store metadata. Allocated capacity will start changing only when it is attached to a demand allocated snapshot and if there is data block change happened in original vdisk. • Fully—The storage system allocates space equal to the requested capacity, plus space for metadata.
`DISK_GROUP=`	The name of the disk group in which you want to create the container.
`REDUNDANCY=`	The data protection level of the virtual disk. If not specified, the default is `Vraid1`. • `Vraid0`—Provides no data protection. It distributes data among its member disks into stripes and uses all members to process I/O requests. This method has no overhead associated with duplication of information and provides the highest performance. • `Vraid1`—Provides the highest level of data protection but uses the most space. It copies data written to one disk to a backup disk. In a multidisk configuration, `Vraid1` mirrors each pair of disks to each other. These disk pairs can then be striped to create a virtual disk. • `Vraid5`—Provides a moderate level of data protection. It distributes the parity information among all member disks. If one drive fails, the failed disk can be re-created after it is replaced. • `Vraid6`—Provides the best level of data protection. It has a dual parity and distributes the parity information among all member disks. Virtual disks of type Vraid6 can withstand up to two drive failures before data loss. **NOTE:** If you are using disk drives with a physical capacity of 1 TB or more, HP strongly recommends that you set the redundancy level to Vraid6.

ADD COPY

The `ADD COPY` command creates a copy of the specified virtual disk. A copy is a new virtual disk. The `ADD COPY` command is equivalent to creating a snapclone in HP P6000 Command View.

NOTE: The `ADD COPY` command creates virtual disks synchronously by default. However, for optimal performance, HP recommends that you create virtual disks asynchronously using the `NOWAIT_FOR_COMPLETION` option, and then use the `WAIT_UNTIL VDISK` *virtual_disk_name* `ALLOCATED` command to wait for the allocation to complete. The capture configuration script uses the same approach to create a virtual disk.

Syntax

```
ADD COPY copy_name VDISK=virtual_disk_name
```

Options

`CONTAINER=`	The name of the container to be used for the copy. The container must already exist to use this option. If not specified, the `ADD COPY` command dynamically allocates the storage before creating the copy.
`DISK_GROUP=`	The name of the disk group in which you want to create the copy. The disk group must already exist to use this option. If not specified, the `ADD COPY` command uses the same group as the source virtual disk. **NOTE:** The source virtual disk must be set to `WRITECACHE=writethrough` before a preallocated snapclone (using a container) can be created. See "SET VDISK" (page 81) for more information.
`LOCK_COMMENT=`	Provides a lock comment to tell other users that someone has locked the copy to perform certain tasks for an application. For example: `ADD COPY LOCK_STATE=lock LOCK_COMMENT=CV`

NOTE: Ensure that the value of LOCK_COMMENT does not exceed 10 characters. If the value of LOCK_COMMENT exceeds 10 characters, the following error message is displayed:

```
Error: Comment too long, limit 10 characters
```

LOCK_STATE=

Locks or unlocks the copy so that it cannot be accessed by other users while the following tasks are being performed on a specified application:

- Changing capacity
- Unpresenting
- Presenting
- Restoring from a mirrorclone or snapshot
- Changing a virtual disk name
- Changing a WWN
- Converting a virtual disk to a container
- Migrating virtual disk RAID or disk group RAID
- Fracturing a mirrorclone
- Resyncronizing a mirrorclone
- Detaching a mirrorclone
- Swapping a mirrorclone with its source
- Write protecting
- Changing an OS unit ID
- Changing the preferred path
- Deleting a virtual disk
- Changing a lock comment while preserving the lock state

Values are lock or unlock.

NOTE: If you select the LOCK_STATE option without selecting the LOCK_COMMENT option, the following error is displayed:

```
Error: LOCK_COMMENT must be specified.
```

NOWAIT_FOR_COMPLETION

Does not wait for the command to finish before displaying SSSU command prompt or running another command or script. Some operations are invalid until the initial operation finishes in the background.

OS_UNIT_ID=

The ID presented to the host operating system. If set to zero, no ID is presented to the host. This option is used for IBM AIX (set to zero), OpenVMS (required), and Tru64 UNIX (recommended). Other host operating systems ignore this option.

REDUNDANCY

The data protection level of the virtual disk. If not specified, the default is the same as the source virtual disk.

- Vraid0—Provides no data protection. It distributes data among its member disks into stripes and uses all members to process I/O requests. This method has no overhead associated with duplication of information and provides the highest performance.

- Vraid1—Provides the highest level of data protection but uses the most space. It copies data written to one disk to a backup disk. In a multidisk configuration, Vraid1 mirrors each pair of disks to each other. These disk pairs can then be striped to create a virtual disk.

- Vraid5—Provides a moderate level of data protection. It distributes the parity information among all member disks. If one drive fails, the failed disk can be re-created after it is replaced.

- Vraid6—Provides the best level of data protection. It has a dual parity and distributes the parity information among all member disks. Virtual disks of type Vraid6 can withstand up to two drive failures before data loss.

For more information about Vraid levels, see the HP Replication Solutions Manager documentation.

WAIT_FOR_COMPLETION=	Waits for the command to finish before displaying the SSSU command prompt or running another command or script. For virtual disks larger than 1 TB, using this option can result in a long waiting period before SSSU command prompt appears.
	NOTE: If the WAIT_FOR_COMPLETION option is used with ADD COPY, the storage system to which the command is issued stops executing further management commands from any other session until the ADD COPY command is complete.
WORLD_WIDE_LUN_NAME=	The worldwide LUN name of the virtual disk.

Examples

Create a copy of `payroll` named `wednesday_nite`:

```
ADD COPY wednesday_nite VDISK="\Virtual Disks\payroll
"NOWAIT_FOR_COMPLETION
```

Create a copy of `payroll` named `friday_nite` more efficiently:

```
ADD COPY friday_nite VDISK="\Virtual Disks\payroll" NOWAIT_FOR_COMPLETION
WAIT_UNTIL VDISK "\Virtual Disks\friday_nite" ALLOCATED
```

Create a copy of `daily_biz` named `save_reports` within the specified disk group:

```
ADD COPY save_reports VDISK="\Virtual Disks\daily_biz"
DISK_GROUP="\Disk Groups\small_disks"
```

NOTE: When you use the ADD COPY command, you are creating a virtual disk. To delete the virtual disk, use the DELETE VDISK command.

ADD DISK_GROUP

The ADD DISK_GROUP command adds disk groups to the storage system.

ⓘ **IMPORTANT:** For HSV340/HSV360 controllers, you must specify DISKGROUP_TYPE=enhanced. Otherwise, SSSU will return an invalid parameter error.

Syntax

ADD DISK_GROUP *group_name*

For HSV340/HSV360 controllers, ADD DISK_GROUP *group_name* DISKGROUP_TYPE=enhanced

Options

COMMENT=	Associates a user-defined comment with the disk group. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
DEVICE_COUNT=	The number of physical disks to use for this group. The limit is the number of available disks in the storage system. The default and minimum value is 8.
	NOTE: The default and minimum value is 6 if the DISKGROUP_DISKTYPE is solidstatedisk.
DISKGROUP_DISKTYPE=	Determines the types of disks to be considered for creating the disk group. Possible values are as follows:
	• Online—Only online Fibre Channel disks are considered for creating the default disk group (default).
	• Nearonline—Only near-online Fibre Channel disks are considered for creating the default disk group.
	• Solidstatedisk—Only solid-state disks are considered for creating the default disk group.

`DISKGROUP_TYPE=`	Specifies the type of disk group to create. For HSV340/HSV360 controllers, you must specify DISKGROUP_TYPE=enhanced. The following types are supported. • `Enhanced`—Creates a `Vraid6`-enabled disk group. This disk group can be used to create virtual disks of any supported Vraid levels, including type Vraid6. • `Basic`—Creates a legacy disk group which does not support Vraid6. **NOTE:** The basic type is not supported with HSV340 or HSV360 controllers.
`OCCUPANCY_ALARM=`	The point when a defined percentage of space is used. When this point is reached, an event is generated and sent to the management server (or the host) informing the administrator that the group is reaching full capacity. Do not use the percent sign (%) after the number. The default value is 95.
`TP_OCCUPANCY_ALARM=`	Indicates the virtual disk allocation alarm value. The value can be from 1 to 100. **NOTE:** The `TP_OCCUPANCY_ALARM` option is used as a warning only.
`SPARE_POLICY=`	Determines the amount of storage space, if any, set aside for use in the event that disks fail. The space set aside is not in numbers of physical disks. It is the equivalent amount of storage space spread across all disks. **NOTE:** Using a spare policy of `none` can cause data loss and is not recommended. • `None`—Reserves no space within a disk group to allow for data reconstruction in case of a disk drive failure • `Single`—Reserves space within a disk group to allow for data reconstruction in case of a failure of one disk drive (default) • `Double`—Reserves space within a disk group to allow for data reconstruction in case of a failure of two disk drives

Example

The following example creates a new disk group, `human_resources`. It has 12 physical disks with the equivalent of one disk set aside as a spare, and sends an event to the storage system when 75% of capacity is reached.

```
ADD DISK_GROUP "\Disk Groups\human_resources" DEVICE_COUNT=12
SPARE_POLICY=single OCCUPANCY_ALARM=75
```

ADD DR_GROUP

The `ADD DR_GROUP` command creates a DR group containing the specified source virtual disk. This source virtual disk is replicated on the specified destination storage system. For information about DR groups, see *HP P6000 Continuous Access Implementation Guide*.

Syntax

```
ADD DR_GROUP dr_group_name VDISK=virtual_disk_name
DESTINATION_SYSTEM=destination_array_name
```

Options

`ACCESSMODE=`	The access rights for a connected host. Possible values are: • `INQUIRY_ONLY` • `READONLY` • `NONE` (default and recommended setting)

> **NOTE:** Setting `ACCESSMODE` to `READONLY` or `INQUIRY_ONLY` can seriously impede the host operating system.

`ASYNC_TYPE=`	Specifies the type of DR group to create. The following types are supported.

- `Enhanced`—Creates a DR group that can be used to create virtual disks of any supported Vraid levels, including Vraid6.

  The enhanced type is required for HSV340/HSV360 controllers.

- `Basic`—Creates a legacy DR group which does not support Vraid6.

  The basic type is not supported with HSV340 or HSV360 controllers.

> **NOTE:** This option requires that you also specify `WRITEMODE=asynchronous`.

`COMMENT=`	Associates a user-defined comment with the DR group. The maximum number of characters is 64 (including spaces) and the string must be enclosed in quotes.
`DESTINATION_DISK_GROUP=`	The disk group in which the virtual disk on the destination storage system is created.
`DESTINATION_VDISK_NAME=`	The name of the virtual disk created on the destination storage system. By default, the virtual disk name on the destination storage system is the same as on the source storage system.
`FULLCOPY_AUTOSUSPEND=`	When enabled, suspends DR link when a full copy is triggered, enabling you to choose a convenient time to start the full copy. Possible values are:

- `Enable`
- `Disable` (default)

`LINK_DOWN_AUTOSUSPEND=`	When enabled, DR group replication is automatically suspended if the link between the storage systems goes down. Replication remains suspended even if the link becomes active again. Possible values are:

- `Enable`
- `Disable`

`LOG_DESTINATION_DISK_GROUP=`	The disk group for the DR log disk on the destination storage system.
`LOG_SOURCE_DISK_GROUP=`	The disk group for the DR log disk on the source storage system.
`MAX_LOG_SIZE=`	The maximum size of the DR log disk. The log size range depends on the EVA model and the write mode option setting.

- 136 MB (278528 blocks)–2 TB (4294967296 blocks)—Log size range if DR is in synchronous mode for EVA4000/4100, EVA6000/6100, EVA8000/8100 and P6300/P6500 EVA.
- 5 GB (10485760 blocks)–2 TB (4294967296 blocks)—Log size range for other DR options (combination of hardware model and write mode).

If the log size is left blank or set to 0 (zero), the controller software calculates the optimum log size for the available space. However, the `LS` command shows the size as 0.

`TARGETREDUNDANCY=`	The redundancy level of the virtual disk being created on the destination storage system.
`WRITEMODE=`	The I/O interaction between the destination and the source.

- `Asynchronous`
- `Synchronous` (default)

Example

The following example creates a DR group named `Transactions` that contains the source virtual disk `\Virtual Disks\Hawaii`. This DR group will connect to the destination storage system `remote_scell`, on which the destination virtual disk `\Virtual Disks\Hawaii` (same as the source by default) is created and added to the destination DR group.

```
ADD DR_GROUP Transactions DESTINATION_SYSTEM=remote_scell
VDISK="\Virtual Disks\Hawaii"
```

ADD FCOE_HOST

The `ADD FCOE_HOST` command creates a new FCoE host.

Syntax

`ADD FCOE_HOST` *host_name* `FCOE_INITIATOR_PORT_WWN=`*XXXX-XXXX-XXXX-XXXX*

Options

`COMMENT=`	Associates a user-defined comment with the folder. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
`OPERATING_SYSTEM=`	Can be one of the following: • `HP-UX` • `LINUX` • `MSWINDOWS` (default) • `MACOSX` • `OTHER` • `SUNSOLARIS` • `VMS` • `VMWARE` • `WINDOWS2008`

Examples

Create an FCoE host `FCoE_10` with initiator port WWN 1234-1234-1234-1234 on a system running Widows:

`ADD FCOE_HOST FCoE_10 FCOE_INITIATOR_PORT_WWN=1234-1234-1234-1234`

Create an FCoE host `FCoE_15` with initiator port WWN 5234-5234-5234-5234 on a system running Linux:

`ADD FCOE_HOST FCoE_15 FCOE_INITIATOR_PORT_WWN=5234-5234-5234-5234`
`OPERATING_SYSTEM=LINUX`

ADD FCOE_LUN

The `ADD FCOE_LUN` command presents the specified virtual disk to the specified FCoE host.

Syntax

`ADD FCOE_LUN FCOE_HOST=`*host_name* `VDISK=`*name_of_vdisk*

Options

`ASSIGN_PATH=`	Assigns an iSCSI MPX host to the LUN
`PROCEED_IF_OVERCOMMIT=`	Acknowledges that an overcommitted state exists and performs operations. The value of this option can be `true` or `false`. **NOTE:** The `PROCEED_IF_OVERCOMMIT` option is available for thin provisioned virtual disks only. Selecting this option for virtual disks that are not thin provisioned has no effect.

Example

Present the virtual disk `Tuesday_sales` to the FCoE host `FCoE10`:

ADD FCOE_LUN FCOE_HOST=FCoE10 VDISK=Tuesday_sales

ADD FOLDER

The `ADD FOLDER` command creates a new folder within the specified folder to aid in organizing your storage system. You can only create folders under the `Virtual Disks` and `Hosts` root folders. You cannot create root folders.

For example, if you have a controller that is serving HR and Engineering, you can create four folders; two for the virtual disks and two for the hosts:

- `\Virtual Disks\Engineering` and `\Virtual Disks\HR`
- `\Hosts\Engineering` and `\Hosts\HR`

Creating these folders allows you to put Engineering virtual disks and hosts in the Engineering folders and HR virtual disks and hosts in the HR folders. This makes it easier to keep track of the components in the storage system. To nest folders inside folders, you must add one folder at a time.

Syntax

`ADD FOLDER folder_name`

Options

`COMMENT=`	Associates a user-defined comment with the folder. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.

Examples

Create a new folder `human_resources` within the root folder `Hosts`:

`ADD FOLDER \Hosts\human_resources`

Create the `engineering` folder within the existing folder structure:

`ADD FOLDER"\Virtual Disks\colorado\colorado springs\engineering"`

ADD HOST

The `ADD HOST` command adds a host and its WWN to the list of hosts that can connect to virtual disks in the current storage system.

The `ADD HOST` command adds one FCA only. Use the "SET HOST" (page 72) command to add each subsequent adapter.

Syntax

`ADD HOST host_name WORLD_WIDE_NAME=FCA-WWN`

Options

`COMMENT=`	Associates a user-defined comment with the host. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
`IP=`	The format of the host IP address: • IPv4 • IPv6 • FQDN
`OPERATING_SYSTEM=`	The operating system of the specified host. To set a default operating system, select **User interface options** from the Management Server Options window in the user

interface. Select one of the following operating systems (they are listed as they appear in SSSU):

- CUSTOM= (You must include the equal sign after CUSTOM and the value must be 16-digit hexadecimal characters.)
- HPUX
- IBMAIX
- LINUX
- MACOSX
- OPEN_VMS
- SOLARIS
- TRU64
- UNKNOWN
- VMWARE
- WINDOWS
- WINDOWS2008

NOTE: For a complete list of supported operating systems, issue the `LS SYSTEM` command.

Example

Add the host `development` with the worldwide name of `5000-1fe1-ff00-0000`:

`ADD HOST \Hosts\development WORLD_WIDE_NAME=5000-1fe1-ff00-0000`

ADD ISCSI_CONTROLLER

The `ADD ISCSI_CONTROLLER` command performs an automatic discovery of iSCSI controllers or adds an iSCSI controller.

You can specify the IP address of an iSCSI controller or enter `IP=auto` to perform an automatic discovery.

Syntax

`ADD ISCSI_CONTROLLER IP=ip_address | auto`

Example

Add an iSCSI controller with the management port IP address of `16.112.98.124`:

`ADD ISCSI_CONTROLLER IP=16.112.98.124`

ADD ISCSI_HOST

The `ADD ISCSI_HOST` command adds an iSCSI host and its iSCSI IP host to the list of iSCSI hosts that can connect to virtual disks in the current storage system. It adds one iSCSI IP host only.

Syntax

`ADD ISCSI_HOST iSCSI_host_name ISCSI_IPHOST=iSCSI_IP_host_name`

Options

COMMENT=	Associates a user-defined comment with the iSCSI host. The maximum number of characters is 128, including spaces; the string must be enclosed in quotes.
CHAP_SECRET=	Specifies the CHAP secret to authenticate iSCSI initiators and targets. The CHAP secret can be 1—100 characters long.

`CHAP_STATE=`	The CHAP state of the iscsi host. Possible values are: • `Enable` • `Disable` The `ADD ISCSI_HOST iscsi_host_name ISCSI_IP_HOST=iscsi_host_iqn CHAP_STATE=Enable` command displays an error if the CHAP_SECRET option is not specified.
`OPERATING_SYSTEM=`	The operating system of the specified iSCSI host. Select one of the following: • LINUX • MACOSX • OPEN_VMS • OTHER • SOLARIS • VMWARE • WINDOWS • WINDOWS2008

Example

Add the iSCSI host named development with the iSCSI IP host named iqn.1991–05.com.microsoft:aittest5.americas.mycompany.net:

```
ADD ISCSI_HOST \Hosts\development
ISCSI_IPHOST=iqn.1991–05.com.microsoft:aittest5.americas.mycompany.net
```

NOTE: In the graphical user interface, LINUX displays as Linux/OS X.

ADD ISCSI_LICENSE

The `ADD ISCSI_LICENSE` command adds licenses to MPX200 controller hardware. HP recommends that the file containing the license information be located on the same system on which SSSU is running. The acceptable file extensions are `.dat` and `.txt`.

NOTE: This command is supported for MPX200 hardware with firmware V3.2.0.0 or later.

Syntax

```
ADD ISCSI_LICENSE license_filepath
```

Example

Add the MPX200 Data Migration license saved in C:\MPX200_LICENES\DM_LICENSE.TXT file:

```
ADD ISCSI_LICENSE C:\MPX200_LICENES\DM_LICENSE.TXT
```

ADD ISCSI_LUN

The `ADD ISCSI_LUN` command makes virtual disks available to iSCSI IP hosts.

NOTE: A virtual disk is eligible for iSCSI initiator presentation only after it is presented to the iSCSI Fibre Channel host.

Syntax

```
ADD ISCSI_LUN VDISK=virtual_disk_name ISCSI_HOST=iSCSI_host_name
```

Options

`PROCEED_IF_OVERCOMMIT=`	Acknowledges that an overcommitted state exists and performs operations. The value of this option can be equal to true or false.
	NOTE: The `proceed_if_overcommit` option is available for thin provisioned virtual disks only. Selecting this option for virtual disks that are not thin provisioned, has no effect.

Example

Present the payroll virtual disk to the iSCSI host development:

`ADD ISCSI_LUN VDISK="\Virtual Disks\payroll"ISCSI_HOST=development`

ADD LICENSES

The `ADD LICENSES` command adds licenses of a storage system to HP P6000 Command View license data. The file containing the license information should be located on the same system on which SSSU is running.

The following details apply to the license file:

- Start each license key string in the file on a new line.
- The file can contain a maximum of 20 licenses.
- The acceptable file extensions are `.dat` and `.txt`.

Syntax

`ADD LICENSES license_filepath`

Example

Add the license information included in file `C:\licenses\test_array_licenses.txt`:

`ADD LICENSES C:\licenses\test_array_licenses.txt`

ADD LUN

The `ADD LUN` command makes virtual disks available to a host.

Syntax

`ADD LUN LUN_number HOST=host_name VDISK=virtual_disk_name`

Options

`PROCEED_IF_OVERCOMMIT=`	Acknowledges that an overcommitted state exists and performs operations. The value of this option can be equal to true or false.
	NOTE: The `proceed_if_overcommit` option is available for thin provisioned virtual disks only. Selecting this option for virtual disks that are not thin provisioned, has no effect.

NOTE: If the LUN_number is passed as a zero (0), HP P6000 Command View assigns the next available LUN number.

A mirrorclone can only be presented to a host if it is fractured.

Examples

Add LUN 12, which presents the `payroll` virtual disk to the host `sanfran`:

`ADD LUN 12 VDISK="\Virtual Disks\payroll" HOST=\Hosts\sanfran`

Using aliases, add `LUN 175`, which presents the `user_disk` virtual disk to the host `corporate`:

`ADD LUN 175 VDISK=user_disk HOST=corporate`

ADD MIRRORCLONE

The `ADD MIRRORCLONE` command creates a copy of a source virtual disk in an existent container. The mirrorclone can remain synchronized with the virtual disk or you can fracture the link to create a point-in-time copy.

Syntax

```
ADD MIRRORCLONE mirrorclone_name VDISK=virtual_disk_name
CONTAINER=container_name
```

Options

`LOCK_COMMENT=`	Provides a lock comment to tell other users that someone has locked the mirrorclone to perform certain tasks for an application. For example:
	
	`ADD MIRRORCLONE LOCK_STATE=lock LOCK_COMMENT=CV`
	
	NOTE: Ensure that the value of `LOCK_COMMENT` does not exceed 10 characters. If the value of `LOCK_COMMENT` exceeds 10 characters, the following error message is displayed:
	
	`Error: Comment too long, limit 10 characters`

`LOCK_STATE=`	Locks or unlocks the mirrorclone so that it cannot be accessed by other users while the following tasks are being performed on a specified application: • Changing capacity • Unpresenting • Presenting • Restoring from a mirrorclone or snapshot • Changing a virtual disk name • Changing a WWN • Converting a virtual disk to a container • Migrating virtual disk RAID or disk group RAID • Fracturing a mirrorclone • Resyncronizing a mirrorclone • Detaching a mirrorclone • Swapping a mirrorclone with its source • Write protecting • Changing an OS unit ID • Changing the preferred path • Deleting a virtual disk • Changing a lock comment while preserving the lock state. Values are `lock` or `unlock`. **NOTE:** If you select the `LOCK_STATE` option without selecting the `LOCK_COMMENT` option, the following error is displayed: `Error: LOCK_COMMENT must be specified.`

Example

Create the mirrorclone `test2` from the virtual disk `payroll`:

```
ADD MIRRORCLONE test2 VDISK="\Virtual Disks\payroll" CONTAINER=container1
```

ADD MULTISNAP

The `ADD MULTISNAP` command creates multiple snapshots and snapclones, up to 28 at a time. You can combine snapshots and snapclones. The containers must already exist.

Syntax

```
ADD MULTISNAP snapname VDISK=source_virtual_disk_name
CONTAINER=container_name SNAPSHOT|SNAPCLONE snapname
VDISK=source_virtual_disk_name CONTAINER=container_name SNAPSHOT|SNAPCLONE
snapname VDISK=source_virtual_disk_name CONTAINER=container_name
SNAPSHOT|SNAPCLONE snapname....
```

Options

`snapshot`	Creates a snapshot of the virtual disk.
`snapclone`	Creates a snapclone (copy) of the virtual disk.

Example

Create a snapshot of the virtual disk `payroll` and snapclones of the virtual disks `hrd` and `finance`:

```
ADD MULTISNAP tonightsnap VDISK="\Virtual Disks\payroll"
CONTAINER=container1 SNAPSHOT hrdkp VDISK="\Virtual Disks\hrd"
CONTAINER=container2 SNAPCLONE financebkp VDISK="\Virtual Disks\finance"
CONTAINER=container3 SNAPCLONE
```

ADD SNAPSHOT

The `ADD SNAPSHOT` command creates a dependent, point-in-time copy of a virtual disk. It is dependent because data is not actually copied to the snapshot until it is overwritten on the source.

Syntax

```
ADD SNAPSHOT snapshot_name VDISK=source_virtual_disk_name
```

Options

`ALLOCATION_POLICY=`	Indicates how the space for the snapshot is to be allocated:
	• `Demand`—The storage system allocates only enough space to store metadata and pointers to the source data. As the source is overwritten, the storage system allocates more space and copies the original data to the snapshot.
	• `Fully`—The storage system allocates space equal to the capacity of the source virtual disk, plus space for metadata and pointers to the source data. As the source is overwritten, the storage system copies the original data to the snapshot.
`CONTAINER=`	The name of the container to be used for the virtual disk snapshot. The container must already exist.
`LOCK_COMMENT=`	Provides a lock comment to tell other users that someone has locked the snapshot to perform certain tasks for an application. For example:
	`ADD SNAPSHOT LOCK_STATE=lock LOCK_COMMENT=CV`

LOCK_STATE=	Locks or unlocks the snapshot so that it cannot be accessed by other users while the following tasks are being performed on a specified application:

- Changing capacity
- Unpresenting
- Presenting
- Restoring from a mirrorclone or snapshot
- Changing a virtual disk name
- Changing a WWN
- Converting a virtual disk to a container
- Migrating virtual disk RAID or disk group RAID
- Fracturing a mirrorclone
- Resyncronizing a mirrorclone
- Detaching a mirrorclone
- Swapping a mirrorclone with its source
- Write protecting
- Changing an OS unit ID
- Changing the preferred path
- Deleting a virtual disk
- Changing a lock comment while preserving the lock state.

Values are `lock` or `unlock`.

> **NOTE:** If you select the LOCK_STATE option without selecting the LOCK_COMMENT option, the following error is displayed:
>
> `Error: LOCK_COMMENT must be specified.`

OS_UNIT_ID=	The ID presented to the host operating system. If set to zero, no ID is presented to the host. This option is used for IBM AIX (set to zero), OpenVMS (required), and Tru64 UNIX (recommended). Other host operating systems ignore this option.
REDUNDANCY=	The data protection level of the virtual disk. If not specified, the default is the same as the source virtual disk.

- `Vraid0`—Provides no data protection. It distributes data among its member disks into stripes and uses all members to process I/O requests. This method has no overhead associated with duplication of information and provides the highest performance.
- `Vraid1`—Provides the highest level of data protection but uses the most space. It copies data written to one disk to a backup disk. In a multidisk configuration, `Vraid1` mirrors each pair of disks to each other. These disk pairs can then be striped to create a virtual disk.
- `Vraid5`—Provides a moderate level of data protection. It distributes the parity information among all member disks. If one drive fails, the failed disk can be re-created after it is replaced.
- `Vraid6`—Provides the best level of data protection. It has a dual parity and distributes the parity information among all member disks. Virtual disks of type Vraid6 can withstand up to two drive failures before data loss.

WORLD_WIDE_LUN_NAME=	The worldwide LUN name of the snapshot

Examples

Create the snapshot `payroll_backup` from the virtual disk `payroll` that uses capacity only as needed:

```
ADD SNAPSHOT payroll_backup VDISK=" \Virtual Disks\payroll"
ALLOCATION_POLICY=demand
```

Create the snapshot `wed_nite_biz` from the virtual disk `daily_biz` while reserving all capacity required to create the snapshot:

```
ADD SNAPSHOT wed_nite_biz VDISK=daily_biz ALLOCATION_POLICY=fully
```

NOTE: To delete snapshots created with `ADD SNAPSHOT`, use the `DELETE VDISK` command.

ADD SYSTEM

The `ADD SYSTEM` command initializes a storage system and creates a default disk group. You must select an uninitialized storage system before issuing the `ADD SYSTEM` command. If the storage system is already initialized, the command is rejected.

HP recommends that you use unique names for each storage system. For example, if you are adding a storage system to a SAN and the name for that storage system is the same as another storage system that exists in the SAN, change the name of the new storage system before adding it to the SAN. A SAN that contains storage systems with duplicate names can result in unpredictable behavior.

Use the `LS SYSTEM` command to display a list of uninitialized storage systems. See .

After initialization is complete, SSSU changes the default prompt back to `NoSystemSelected`.

When you initialize a storage system, the name of the storage system changes. Therefore, you must reselect the storage system. Issue the `SELECT SYSTEM` command using the new name of the storage system.

NOTE: shows the procedure to initialize a storage system.

Syntax

```
ADD SYSTEM system_name
```

Options

`COMMENT=`	Associates a user-defined comment with the storage system. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
`CONSOLE_LUN_ID=`	The LUN used for console communication after storage system creation. If set to zero, no console LUN is presented to the host.
`DEVICE_COUNT=`	The number of physical disks to use for this group. The limit is the number of available disks in the storage system. The default and minimum value is 8.
	NOTE: The default and minimum value is 6 if the `DISKGROUP_DISKTYPE` is `solidstatedisk`.
`DISKGROUP_DISKTYPE=`	Determines the types of disks to be considered for creating the disk group. The default value is `online`.
	• `Online`—Only online Fibre Channel disks are considered for creating the default disk group.
	• `Nearonline`—Only near-online Fibre Channel disks are considered for creating the default disk group.
	• `Solidstatedisk`—Only solid-state disks are considered for creating the default disk group.

DISKGROUP_TYPE=	Specifies the type of disk group to create. The following types are supported.
	• Enhanced—Creates a Vraid6 enabled disk group. This disk group can be used to create virtual disks of type Vraid6, in addition to the other supported Vraid levels.
	• Basic—Creates a legacy disk group which does not support Vraid6.
SPARE_POLICY=	Determines the amount of storage space, if any, set aside for use in the event that disks fail. The default is single. The space set aside is not in numbers of physical disks. It is the equivalent amount of storage space spread across all disks.
	• None—Reserves no space within a disk group to allow for data reconstruction in case of a disk drive failure
	NOTE: Using a spare policy of none can cause data loss and is not recommended.
	• Single—Reserves space within a disk group to allow for data reconstruction in case of a failure of one disk drive
	• Double—Reserves space within a disk group to allow for data reconstruction in case of a failure of two disk drives

Example

Create the initialized storage system payroll with 12 physical disks and a spare policy of single:

```
ADD SYSTEM payroll DEVICE_COUNT=12 SPARE_POLICY=single
```

ADD VDISK

The ADD VDISK command creates a virtual disk with the specified name and parameters.

NOTE: The ADD VDISK command creates virtual disks synchronously by default. However, for optimal performance, HP recommends that you create virtual disks asynchronously using the NOWAIT_FOR_COMPLETION option, and then use the WAIT_UNTIL VDISK virtual_disk_name ALLOCATED command to wait for the allocation to complete. The capture configuration script uses this approach to create virtual disks.

Syntax

```
ADD VDISK virtual_disk_name SIZE=virtual_disk_size
```

Options

COMMENT=	Associates a user-defined comment with the virtual disk. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
DISK_GROUP=	The disk group in which you want to create the virtual disk. The disk group must already exist to use this option. If not specified, the default disk group is used.
LOCK_COMMENT=	Provides a lock comment to tell other users that someone has locked the virtual disk to perform certain tasks for an application. For example:
	`ADD VDISK LOCK_STATE=lock LOCK_COMMENT=CV`
	NOTE: Ensure that the value of LOCK_COMMENT does not exceed 10 characters. If the value of LOCK_COMMENT exceeds 10 characters, the following error message is displayed:
	`Error: Comment too long, limit 10 characters`
LOCK_STATE=	Locks or unlocks the virtual disk so that it cannot be accessed by other users while the following tasks are being performed on a specified application:
	• Changing capacity
	• Unpresenting

- Presenting
- Restoring from a mirrorclone or snapshot
- Changing a virtual disk name
- Changing a WWN
- Converting a virtual disk to a container
- Migrating virtual disk RAID or disk group RAID
- Fracturing a mirrorclone
- Resyncronizing a mirrorclone
- Detaching a mirrorclone
- Swapping a mirrorclone with its source
- Write protecting
- Changing an OS unit ID
- Changing the preferred path
- Deleting a virtual disk
- Changing a lock comment while preserving the lock state.

Values are `lock` or `unlock`.

NOTE: If you select the `LOCK_STATE` option without selecting the `LOCK_COMMENT` option, the following error is displayed:

`Error: LOCK_COMMENT must be specified.`

`MIRRORCACHE=`	Sets the controller's mirror cache: • `Mirrored` (cache is mirrored between both controllers) • `Notmirrored` (cache is not mirrored).
`NOPREFERRED_PATH`	Allows either controller to handle I/O.
`NOREAD_CACHE`	Reads are always performed by the physical disks, not the controller's cache.
`NOWAIT_FOR_COMPLETION`	Does not wait for the command to finish before displaying SSSU command prompt or running another command or script. Some operations are invalid until the initial operation finishes in the background.
`NOWRITE_PROTECT`	Allows writing to the virtual disk from all presented LUNs and hosts.
`OS_UNIT_ID=`	The ID presented to the host operating system. If set to zero, no ID is presented to the host. This option is used for IBM AIX (set to zero), OpenVMS (required), and Tru64 UNIX (recommended). Other host operating systems ignore this option.
`PREFERRED_PATH=`	The preferred controller that will handle all I/O for the virtual disks. If the preferred controller fails, the working controller becomes the preferred controller. • `Path_A_Both`—Controller A fails over to controller B. When controller A restarts, the virtual disks fail back to controller A. This is failover/failback mode. • `Path_A_Failover`—Controller A fails over to controller B. When controller A restarts, the virtual disks do not fail back to controller A. This is failover-only mode. • `Path_B_Both`—Controller path B fails over to controller A. When controller B restarts, the virtual disks fail back to controller B. This is failover/failback mode. • `Path_B_Failover`—Controller B fails over to controller A. When controller B restarts, the virtual disks do not fail back over to controller B. This is failover-only mode.
`READ_CACHE`	Reads are performed by the controller's cache.
`REDUNDANCY=`	The data protection level of the virtual disk. If not specified, the default is `Vraid1`. • `Vraid0`—Provides no data protection. It distributes data among its member disks into stripes and uses all members to process I/O requests. This method has no overhead associated with duplication of information and provides the highest performance. • `Vraid1`—Provides the highest level of data protection but uses the most space. It copies data written to one disk to a backup disk. In a multidisk configuration,

	Vraid1 mirrors each pair of disks to each other. These disk pairs can then be striped to create a virtual disk.
	• Vraid5—Provides a moderate level of data protection. It distributes the parity information among all member disks. If one drive fails, the failed disk can be re-created after it is replaced.
	• Vraid6—Provides the best level of data protection. It has a dual parity and distributes the parity information among all member disks. Virtual disks of type Vraid6 can withstand up to two drive failures before data loss.
SIZE=	The size of the virtual disk in gigabytes (GB).
THIN_PROVISION=	Specifies whether thin provisioning is enabled.
	• True
	• False (default)
TP_OCCUPANCY_ALARM=	Indicates the virtual disk allocation alarm value. The value can be from 1 to 100.
	NOTE: The TP_OCCUPANCY_ALARM option is applicable only for thin provisioned virtual disks.
WAIT_FOR_COMPLETION	Waits for the command to finish before displaying the SSSU command prompt or running another command or script. For virtual disks larger than 1 TB, using this option can result in a long waiting period before SSSU command prompt appears.
	NOTE: If the WAIT_FOR_COMPLETION option is used with an ADD VDISK command, the storage system to which the command is issued stops executing further management commands from any other session until the ADD VDISK command is complete.
WORLD_WIDE_LUN_NAME=	The worldwide LUN name of the virtual disk.
	NOTE: This option is commonly used to allow a host to point to a new version of the virtual disk by giving the new virtual disk the same WWN as the old virtual disk.
WRITECACHE=	Sets the controller's write cache.
	• Writethrough—The operation completes when the data is written to the disk.
	• Writeback—The operation completes when the data is written to cache.
	NOTE: If you are creating a preallocated snapclone (using a container), you must set write cache on the source virtual disk to writethrough to flush cache memory to the virtual disk before it is copied. After the snapclone is created, the write cache of the source virtual disk reverts to the original setting.
WRITE_PROTECT	Does not allow writing to the virtual disk from all presented LUNs and hosts.
	The following defaults are used for the ADD VDISK command when nothing is specified:
	• MIRRORCACHE=mirrored
	• WRITECACHE=writeback
	• OS_UNIT_ID=0 (zero)
	• NOPREFERRED_PATH
	• DISK_GROUP=\Disk Groups\Default Disk Group
	• READ_CACHE
	• NOWRITE_PROTECT
	NOTE: An error occurs during virtual disk creation if you rename the default disk group without specifying a disk group.

Examples

Create a 10-GB virtual disk called scratch in the default disk group using read cache and Vraid5 redundancy level:

```
ADD VDISK "\Virtual Disk\scratch" SIZE=10 REDUNDANCY=VRAID5
```

To efficiently create a 10-GB virtual disk called `scratch` in the default disk group using read cache and Vraid5 redundancy level:

```
ADD VDISK "\Virtual Disk\scratch" SIZE=10 REDUNDANCY=VRAID5
NOWAIT_FOR_COMPLETION READ_CACHE
```

```
WAIT_UNTIL VDISK "\Virtual Disks\scratch" ALLOCATED
```

Create a 2-GB virtual disk called `gene_research` in the `small_disks` disk group:

```
ADD VDISK "\Virtual Disks\engineering\gene_research" SIZE=2
```

```
DISK_GROUP="\Disk Groups\small_disks"
```

CAPTURE CONFIGURATION

The `CAPTURE CONFIGURATION` command enables you to capture, save, and re-create a storage system configuration by querying the selected storage system and generating up to five scripts. Not all storage systems require all five scripts. For example, the script step1A is always generated and may be the only script that is required. You can use these scripts to re-create the original configuration and, in some cases, to assist in a site recovery. HP recommends that you run the `CAPTURE CONFIGURATION` command after you initialize a storage system to save a copy of the configuration.

△ **CAUTION:** Before you capture the configuration of a storage system that uses an MPX200 iSCSI controller, you must remove all iSCSI and FCoE presentations of virtual disks before you uninitialize the storage system. Failure to do so can result in a faulty configuration restoration.

NOTE: For mpx100 iSCSI controllers, the `CAPTURE CONFIGURATION` command adds only the command to add the controller to HP P6000 Command View. You must set the other iSCSI controller properties manually.

For MPX200 and MEZ iSCSI controllers, the commands to add the iSCSI controllers to HP P6000 Command View and set their properties are added to facilitate automatic restoration

With HP P6000 Command View 10.1 and later, the `CAPTURE CONFIGURATION` command captures the CHAP status of iSCSI hosts, iSCSI Controller IP ports, and presented targets. If CHAP is enabled, the commands to set the CHAP status and the CHAP secret are commented out and the value for the `CHAP_SECRET` option is blank. You must update the `CHAP_SECRET` field, and then uncomment the command in order to restore the settings from the output of the `CAPTURE CONFIGURATION` command.

The scripts output to the console unless you specify a file name. The file name is appended with _StepXX. XX is the restore step name, which is 1A, 1B, 1C, 2, or 3. For example, if you specify `CAPTURE CONFIGURATION newyear.txt`, SSSU creates the files `newyear_Step1A.txt`, `newyear_Step1B.txt`, `newyear_Step1C.txt`, `newyear_Step2.txt`, and `newyear_Step3.txt`.

SSSU verifies that other files with the same names do not exist. If the file names exist, and you are entering the command manually, SSSU prompts you to replace existing files with the new files. If you are using a script, existing files are replaced with the new files.

When creating files that contain the scripts, activity dots are displayed on the console. This command may take a long time to complete, depending on the size of the configuration.

NOTE: Do not reconfigure the selected storage system while this command is executing.

Syntax

```
CAPTURE CONFIGURATION file_name
```

Options

SAVE_ALL_WORLD_WIDE_LUN_NAME	Saves the worldwide LUN names for all virtual disks, except containers and DR group members on the destination storage system.
SAVE_DIFERENT_WORLD_WIDE_LUN_NAME	Saves the worldwide LUN names for the virtual disks for which the worldwide LUN name has changed. This option applies to all virtual disks except containers and DR group members on the destination storage system.
	NOTE: By default, CAPTURE CONFIGURATION does not save worldwide LUN names of virtual disks. You must explicitly specify one of these options.
START_AT=	Specifies the step (1A, 1B, 1C, 2, 3) at which CAPTURE CONFIGURATION must start. You need not recapture everything when the first step works and a later step fails.

Example

Start the capture configuration operation from step 2:

```
CAPTURE CONFIGURATION c:\sales.txt START_AT=2
```

Step 1 scripts

Step 1 is divided into three smaller steps to facilitate DR group recovery.

Step 1A script

Creates the storage system, disk groups, hosts, and virtual disks (excluding snapshots and mirrorclones) that are not used for data replication and LUNs for the created disks. Step 1A creates a basic storage system that does not include virtual disks that are part of DR groups. The CAPTURE CONFIGURATION command always creates this script.

Step 1B script

Creates all source virtual disks used in DR groups on this controller.

Step 1C script

Presents all source virtual disks (for DR groups) to the hosts. This step is used to recover from a DR group failure in which the source site is lost. LUNs can be presented in their original configuration by running the step 1C script.

Step 2 script

Re-creates all DR-specific configuration information for which this storage system is the source. This involves the configuration's source DR groups and their members only. Presentations of remote virtual disks are not restored by this command (see step 3).

This step provides flexibility when a site is completely lost. The source and destination storage systems have separate CAPTURE CONFIGURATION scripts, so you must run step 1A, step 1B, and step 1C on the source storage system and then run step 1A, step 1B, and step 1C on the destination storage systems before step 2 can be run.

Step 3 script

Presents destination virtual disks to the hosts.

You must run step 2 on both the source and destination storage systems before running step 3.

NOTE: If no destination virtual disk is presented to a host, a blank script is generated.

Restoring a DR group configuration

To restore a DR group configuration from captured scripts, you must run the scripts in the following order on each storage system that is part of the DR group configuration.

You may not be able to re-create a specific captured configuration on certain storage systems. For example, if a captured configuration requires 120 disks and the target storage system contains only 80, the capture configuration operation will fail.

1. Use the `SELECT MANAGER` command to specify which HP P6000 Command View instance will execute the script commands.
2. Select the storage system `Uninitialized Storage System` *WWN* to specify the uninitialized storage system on which you want to re-create the captured configuration.
3. Run scripts 1A, 1B, and 1C successfully (and separately) on the source and destination storage systems.
4. Run the step 2 script successfully (and separately) on the source and destination storage systems.
5. Run the step 3 script successfully (and separately) on the source and destination storage systems.

After the scripts have been run on all storage systems, the DR group configuration is restored to its original state.

Example

The following example creates the files `sales_Step1A.txt`, `sales_Step1B.txt`, `sales_Step1C.txt`, `sales_Step2.txt`, and `sales_Step3.txt`:

```
CAPTURE CONFIGURATION c:\sales.txt
```

NOTE: See for more information about restoring configurations.

Restoring a storage system configuration with different disk sizes and types

To restore a storage system configuration that contains disks of different sizes and types, you must manually re-create these disk groups. The controller software and the SSSU `CAPTURE CONFIGURATION` command are not designed to automatically restore this type of configuration.

To restore the storage system configuration, complete the following steps:

NOTE: This procedure assumes that you have run the `CAPTURE CONFIGURATION` command when the storage system was in a functional state to save configuration.

1. Using the HP P6000 Command View user interface or the appropriate utility commands, initialize the storage system and re-create the disk groups of the original configuration.
2. Locate the script file generated from the `CAPTURE CONFIGURATION` command. It should be in the same directory where SSSU is running.
3. In the step 1A script file, comment out the `ADD SYSTEM`, `SELECT SYSTEM`, `ADD DISK_GROUP`, and `SET DISK GROUP` lines with an exclamation point as shown in the following example:

```
!
! SSSU CAPTURE script checksum start
!
! CAPTURE CONFIGURATION Step1A on Thu Feb 16 13:59:16 2006
!
! Manager: 15.70.188.130:12301
! System: lemy5k3
!
! SSSU Build 26 for EVA Version 6.0
!
SET OPTIONS ON_ERROR=HALT_ON_ERROR
```

```
!ADD SYSTEM "lemy5k3" DEVICE_COUNT=8 SPARE_POLICY=SINGLE COMMENT="sds"
!SELECT SYSTEM "lemy5k3"
!ADD DISK_GROUP "\Disk Groups\diskgroup1" DEVICE_COUNT=11
    SPARE_POLICY=DOUBLE DISKGROUP_DISKTYPE=ONLINE OCCUPANCY_ALARM=100
!SET DISK_GROUP "\Disk Groups\Default Disk Group" OCCUPANCY_ALARM=90
ADD FOLDER "\Virtual Disks\vdf1" COMMENT="ssssssssss"
ADD FOLDER "\Virtual Disks\vdf2" COMMENT="sdvsd"
ADD FOLDER "\Hosts\hf1" COMMENT="ascfascdssa"
ADD FOLDER "\Hosts\hf2" COMMENT="dfe"
ADD FOLDER "\Hosts\testfolder"
```

Commenting out these lines ensures that the system and disk group actions are not executed when you run the step 1A script.

4. Continue the restore process using the modified step 1A script file.

CAPTURE VALIDATE

The `CAPTURE VALIDATE` command examines the specified script file for modification by calculating its checksum and comparing the result against the checksum saved in the file. A script can be modified (failing the `CAPTURE VALIDATE` command) and continue to work. SSSU runs a script even if the checksum shows file modification.

The `CAPTURE VALIDATE` determines if a captured script file has been modified after it was captured. You can determine if the script is a perfect capture of the existing storage system or if someone has modified the script after it was created.

NOTE: The `CAPTURE VALIDATE` command does not execute the specified script but verifies if it is the original script.

Syntax

`CAPTURE VALIDATE file_name`

User functionality for CAPTURE commands

When a script is created using the `CAPTURE CONFIGURATION` command, a header is added to the beginning of the text file and a checksum is added to the end. If `CAPTURE VALIDATE` does not find a correct header, it reports that the script is not a CAPTURE-generated script. If the checksum does not match, this command reports that the file has been modified.

If CAPTURE VALIDATE finds a correct header and the checksum matches, this command reports that the specified script has not been modified.

CHECK REDUNDANCY

The `CHECK REDUNDANCY` command provides information to determine if you can safely remove disk drives from the storage system.

Syntax

`CHECK REDUNDANCY`

CLEAR LICENSES

The `CLEAR LICENSES` command deletes the licenses of all the storage systems.

NOTE: The `CLEAR LICENSES` command does not remove a license that was installed incorrectly. From the HP P6000 Command View user interface, it is not possible to remove the Instant On license.

Syntax

```
CLEAR LICENSES array_name
```

Options

ALL	Deletes all of the HP P6000 Business Copy, HP P6000 Continuous Access, and HP P6000 Command View licenses on the storage system (default).
BC	Deletes all of the HP P6000 Business Copy licenses on the storage system.
CA	Deletes all of the HP P6000 Continuous Access licenses on the storage system.
CV	Deletes all of the HP P6000 Command View licenses on the storage system.
DM	Deletes all data migration licenses on the storage system.

Example

Clear the HP P6000 Business Copy license on storage system `Test1`.

```
CLEAR LICENSES Test1 BC
```

CODELOAD

The `CODELOAD` command instructs HP P6000 Command View to load a software image file.

Syntax

```
CODELOAD software_image file_path
```

Options

LOCAL_PATH	The file is assumed to be present locally where HP Storage System Scripting Utility is running. If this option is specified, the local file is transferred to the HP P6000 Command View server, and then CODELOAD is performed
SERVER_PATH	The file is assumed to be present on the management server and no transfer is done (default).
	NOTE: The SERVER_PATH option is not available when HP SSSU is used with array-based management.

Example

```
CODELOAD C:\codeload.sss LOCAL_PATH
```

CODELOAD DISK

The `CODELOAD DISK` command instructs HP P6000 Command View to load a disk firmware image file. For `filepath`, do one of the following:

- To install firmware for a single disk, specify the full path for the image file name.
- To install firmware on multiple disks, specify the full path to the folder where the bundled image file was extracted.

Syntax

```
CODELOAD DISK filepath
```

Options

`DISK=`	The name of the disk on which the code firmware image will be installed. If a DISK is not specified, the firmware image will be installed on all disks.
`FORCE_VRAID0`	Loads the code firmware image on disks that have Vraid0 redundancy.
`LOCAL_PATH`	The file is assumed to be present locally where HP Storage System Scripting Utility is running. If this option is specified, the local file is transferred to the HP P6000 Command View server and then `CODELOAD` is performed. For file names, select from the one of the following:

- To install firmware for a single disk, specify the full path of the image file name.
- To install firmware on multiple disks, specify the full path to the bundled image (zip file).

`SERVER_PATH`	The file is assumed to be present in the HP P6000 Command View server (default). For file names, select from the one of the following:

- To install firmware for a single disk, specify the full path of the image file name.
- To install firmware on multiple disks, specify the full path to the folder where the bundled image file is extracted.

NOTE: The `SERVER_PATH` option is not available when HP SSSU is used with array-based management.

Examples:

The following command loads file `FW34.lod` on Disk 001:

`CODELOAD DISK "c:\ FW34.lod" DISK="Disk 001"`

The following command loads the firmware image on all disks. All the required `.lod` files are located in zip file in the `c:\firmware\codeload` folder on the management server.

`CODELOAD DISK "c:\firmware\codeload\file.zip" SERVER_PATH`

The following command loads file `FW34.lod` present on the local machine where HP Storage System Scripting Utility is running.

`CODELOAD DISK c:\FW34.lod DISK="Disk 001" LOCAL_PATH`

The following command loads the firmware image on all disks. The bundled image is present on the local machine where HP Storage System Scripting Utility is running.

`CODELOAD DISK c:\firmware\codeload.zip LOCAL_PATH`

The following command loads the firmware image on disks that have Vraid0 redundancy:

`CODELOAD DISK "c:\ FW34.lod" DISK="Disk 001" FORCE_VRAID0`

NOTE:

- If you have HP P6000 Command View 9.3 or earlier or XCS earlier than version 10000000, and array-based management, disk drive firmware upgrade is not supported.
- The codeload operation will not occur if the disk is part of a disk group that is in a reconstructing, reverting, or degraded state.
- Disks with Vraid0 redundancy must have the FORCE_VRAID0 option set for a codeload upgrade to work.
- In any of these situations, SSSU does not provide an error message.

CODELOAD ISCSI_CONTROLLER

The `CODELOAD ISCSI_CONTROLLER` command loads iSCSI controller firmware.

Syntax

```
CODELOAD ISCSI_CONTROLLER filename ISCSI_CONTROLLER=controller_name
```

Option

LOCAL_PATH	The file is assumed to be present locally where HP Storage System Scripting Utility is running. If this option is specified, the local file is transferred to the HP P6000 Command View server and then CODELOAD is performed.
SERVER_PATH	The file is assumed to be present in the HP P6000 Command View server (default).
	NOTE: The SERVER_PATH option is not available when HP SSSU is used with array-based management.

DELETE DISK_GROUP

The DELETE DISK_GROUP command deletes a disk group from the configuration. The command is rejected if any virtual disks are present in the disk group.

Syntax

```
DELETE DISK_GROUP group_name
```

Example

Delete the disk group human_resources:

```
DELETE DISK_GROUP "\Disk Groups\human_resources"
```

DELETE DR_GROUP

The DELETE DR_GROUP command deletes the DR group on the source and destination storage systems.

NOTE: The SET OPTION NOSAFE_DELETE command does not override this command. You can delete a DR group on the source storage system at any time.

Syntax

```
DELETE DR_GROUP group_name
```

Example

Delete the DR group payroll:

```
DELETE DR_GROUP "\Data Replication\payroll"
```

DELETE FCOE_HOST

The DELETE FCOE_HOST command deletes the specified FCoE host from the storage system.

Syntax

```
DELETE FCOE_HOST host_name
```

Example

Delete the FCoE host FCoE01:

```
DELETE FCOE_HOST FCoE01
```

DELETE FCOE_LUN

The DELETE FCOE_LUN command unpresents the specified virtual disk from the host.

Syntax

```
DELETE FCOE_LUN FCOE_HOST=host_name VDISK=disk_name
```

Options

`PROCEED_IF_OVERCOMMIT=`	Acknowledges that an overcommitted state exists and performs operations. The value of this option can be true or false.
	NOTE: The `proceed_if_overcommit` option is available for thin provisioned virtual disks only. Selecting this option for virtual disks that are not thin provisioned, has no effect.

Example

Unpresent the virtual disk `payroll` from the host `development`:

```
DELETE FCOE_LUN FCOE_HOST=development VDISK=payroll
```

DELETE FOLDER

The `DELETE FOLDER` command deletes the specified empty folder. The command fails if the specified folder is not empty. To delete multiple layers of folders, you must do so sequentially.

NOTE: You cannot delete a root folder.

Syntax

```
DELETE FOLDER folder_name
```

Examples

Delete the folder `human_resources` in the `Hosts` folder:

```
DELETE FOLDER \Hosts\human_resources
```

Delete the folder `engineering` in the `colorado_springs` folder:

```
DELETE FOLDER \Hosts\colorado\colorado_springs\engineering
```

DELETE HOST

The `DELETE HOST` command deletes a host from the storage system.

Syntax

```
DELETE HOST host_name
```

Example

Delete the host `development`:

```
DELETE HOST \Hosts\development
```

DELETE ISCSI_CONTROLLER

The `DELETE ISCSI_CONTROLLER` command removes an iSCSI controller from HP P6000 Command View.

Syntax

```
DELETE ISCSI_CONTROLLER iSCSI_controller_name
```

Example

Delete `iSCSI controller 1` from HP P6000 Command View:

```
DELETE ISCSI_CONTROLLER "\Hardware\iSCSI Devices\iSCSI controller 1"
```

DELETE ISCSI_HOST

The `DELETE ISCSI_HOST` command deletes an iSCSI host from the storage system.

Syntax

```
DELETE ISCSI_HOST iSCSI_host_name
```

Example

Delete the iSCSI host `development`:

```
DELETE ISCSI_HOST \Hosts\development
```

DELETE ISCSI_LUN

The `DELETE ISCSI_LUN` command removes access to a virtual disk from an iSCSI IP host.

Syntax

```
DELETE ISCSI_LUN VDISK=virtual_disk_name ISCSI_HOST=iscsihost_name
```

Option

`PROCEED_IF_OVERCOMMIT=`	Acknowledges that an overcommitted state exists and performs operations. Values are: • `True` • `False` **NOTE:** The `PROCEED_IF_OVERCOMMIT` option is available for thin provisioned virtual disks only. Selecting this option for virtual disks that are not thin provisioned, has no effect.

Example

Remove access to virtual disk `payroll` from the iSCSI host `development`:

```
DELETE ISCSI_LUN VDISK="\Virtual Disks\payroll" ISCSI_HOST= "development"
```

DELETE LUN

The `DELETE LUN` command removes access to a virtual disk from a host.

Syntax

```
DELETE LUN LUN_name
```

Options

`PROCEED_IF_OVERCOMMIT=`	Acknowledges that an overcommitted state exists and performs operations. The value of this option can be equal to true or false. **NOTE:** The `PROCEED_IF_OVERCOMMIT` option is available for thin provisioned virtual disks only. Selecting this option for virtual disks that are not thin provisioned, has no effect.

Example

Remove access to LUN `12` from the host `accounting_department`:

```
DELETE LUN \Hosts\accounting_department\12
```

NOTE: When you specify a LUN, you must use the full name, not an alias.

DELETE SYSTEM

The `DELETE SYSTEM` command permanently removes a storage system. The storage system is no longer accessible and all data is lost.

⚠ **CAUTION:** The `DELETE SYSTEM` command removes the entire storage system configuration. All customer data on the storage system is lost. In addition, all information about LUNs and hosts on this storage system is lost.

The `DELETE SYSTEM` command is rejected if virtual disks exist. For information about the `NOSAFE_DELETE` option, see "SET OPTIONS" (page 78).

Syntax

```
DELETE SYSTEM array_name
```

Example

Delete the storage system `payroll`:

```
DELETE SYSTEM payroll
```

DELETE VDISK

The `DELETE VDISK` command permanently removes the specified virtual disk. The virtual disk is no longer accessible and all data is lost.

⚠ **CAUTION:** The `DELETE VDISK` command removes the entire virtual disk from the storage system. All customer data on the virtual disk is lost. In addition, all information about LUNs presented from this virtual disk is lost.

The `DELETE VDISK` command is rejected if the virtual disk is presented. See "SET OPTIONS" (page 78) for information about the `NOSAFE_DELETE` option.

The `DELETE VDISK` command returns an error if the virtual disk to be deleted is in a failed state. If the virtual disk has failed, you must use the HP P6000 Command View GUI to delete it.

NOTE: The `DELETE VDISK` command deletes virtual disks asynchronously by default. You can delete virtual disks synchronously using the `WAIT_FOR_COMPLETION` option. However, for optimal performance, HP recommends that you delete virtual disks asynchronously, and then use the `WAIT_UNTIL VDISK  virtual_disk_name DELETED` command to wait for the deletion to complete.

Syntax

```
DELETE VDISK
```

Options

`NOWAIT_FOR_COMPLETION`	Does not wait for the command to finish before displaying the SSSU command prompt or running another command or script. Some operations are invalid until the initial operation finishes in the background.
`WAIT_FOR_COMPLETION`	Waits for the command to finish before displaying the SSSU command prompt or running another command or script. For virtual disks larger than 1 TB, using this option can result in a long waiting period before the SSSU command prompt appears. If the `WAIT_FOR_COMPLETION` option is used with a `DELETE VDISK` command, the storage system to which the command is issued stops executing further management commands from any other session until the `DELETE VDISK` command is complete.

> **NOTE:** When you delete a container, `WAIT_FOR_COMPLETION` is ignored. After deletion, the container can still appear when using an `LS` command. This is because the container is deleted in the background and will continue to appear until it is fully deleted.

Examples

Delete the virtual disk `d12` and wait for the deletion to complete:

`DELETE VDISK "\Virtual Disks\d12"`

`WAIT_UNTIL VDISK "\Virtual Disks\d12" DELETED`

Delete the snapshot `wed_nite_biz` without waiting for completion:

`DELETE VDISK "\Virtual Disks\daily_biz\wed_nite_biz"`

> **NOTE:** You cannot delete a virtual disk if a snapshot or mirrorclone of the virtual disk exists. You must delete the snapshot or mirrorclone first, and then delete the virtual disk.

EMVERSION

The `EMVERSION` command displays the HP P6000 Command View version and build number.

Syntax

`EMVERSION`

> **NOTE:** You must select an HP P6000 Command View instance with the `SELECT MANAGER` command before using the `EMVERSION` command. This only applies if you are using `EMVERSION` in a batch script. You are not required to select a storage system.

Example

```
EMVERSION
Element Manager information
Version: 6.00
Build: 30
```

EXERCISE_DISK

The `EXERCISE_DISK` command tests the physical disks in the storage system for defects. You must use the full disk name, not an alias, with this command.

Syntax

`EXERCISE_DISK`

Options

START	Begins testing (exercising) the disks. You can test either: • All disks in a selected storage system (`all`) • Specific disks, with the name of each disk separated by a comma and enclosed in quotes
STOP	Stops testing the disks.
SUMMARY	Provides a summary of the testing. This option can show status while testing is in progress and when testing is complete.

Examples

Test `Disk 002` and `Disk 004`:

```
EXERCISE_DISK START "\Disk Groups\Default Disk Group\Disk 002,
\Disk Groups\Default Disk Group\Disk 004"
```

Test all disks:

```
EXERCISE_DISK START all
```

The following is sample output from the summary option:

```
ss1> exer start "\Disk Groups\Ungrouped Disks\Disk 002"

ss1> exer sum

DILX Summary Report for Storage Cell ss1

-----------------------------------------------------------

DILX process status: DILX Testing In Progress

Number of devices tested: 1

Disk 002

_____

Device handle:

noid: 0x808

id_type: 0x7

id_len: 0x10

id_value[0]: 0x20000004

id_value[1]: 0xcf792125

id_value[2]: 0

id_value[3]: 0

Device status: Testing in progress.

Total blocks transferred: 12098

Total reads issued: 329

Total writes issued: 77

1st bad sense key: 0

2nd bad sense key: 0

1st error flag: 0

2nd error flag: 0

Soft error count: 0

Hard error count: 0
```

```
1st bad ASC: 0
2nd bad ASC: 0
1st bad ASQ: 0
2nd bad ASQ: 0
ss1> exer stop
```

EXIT

The `EXIT` command terminates the SSSU session.

If SSSU is accepting input from the terminal or the command line, `EXIT` causes the session to terminate.

If SSSU is processing a script from a file and encounters a `FILE` command, the behavior of the `EXIT` command depends on how the `FILE` command was issued:

- If the `FILE` command was issued from the command line, an `EXIT` command in the file causes the SSSU session to terminate.

- If the `FILE` command was issued from the terminal, an `EXIT` command in the file causes SSSU to resume accepting input from the terminal.

- If a file is currently executing as a result of another `FILE` command, an `EXIT` command in that file returns control to the previous file. SSSU does not run any commands in a script except for the `EXIT` command. `EXIT` causes an immediate return to the previous file.

Syntax

`EXIT`

EXPORT LICENSES

The `EXPORT LICENSES` command exports licenses from storage systems to a file. You must specify the absolute path to the file. Use this command to backup license information in case it should be necessary to recover it. You can also use this command with the IMPORT LICENSES command to copy license information from one management server to another.

Consider the following:

- If you export to an existing file, the contents of the file are overwritten.

- Each license key string in the exported file starts on a new line.

- The accepted file extensions are `.dat` and `.txt`.

Syntax

`EXPORT LICENSES` *filepath*

Options

`SERVER_PATH`	The file is assumed to be present in the management server and no transfer is done (default). **NOTE:** The `SERVER_PATH` option is not applicable when HP SSSU is used with array-based management.
`LOCAL_PATH`	The file is assumed to be present locally where HP Storage System Scripting Utility is running.

Example

Export license information to file `C:\licenses\test_array_licenses.txt`:

```
EXPORT LICENSES C:\licenses\test_array_licenses.txt
```

FILE

The `FILE` command suspends the current mode of input and redirects the scripting utility to accept input from the specified file. Either the end of the file or an `EXIT` command in the specified file causes SSSU to again accept input from the previous input source.

`FILE` commands can be nested, which means that a file being executed through a `FILE` command can have `FILE @` commands in its command set. The only limitation on how deep `FILE` commands can be nested is based on the host storage system's resources.

Syntax

```
FILE file_name
```

A file name extension is not required by SSSU, but you can select one appropriate for your environment.

Examples

Execute the file `snapd1.txt` from the current directory:

```
FILE snapd1.txt
```

Execute the file `d27.txt` from the specified directory:

```
FILE d:\scripts\snapshots\d27.txt
```

FIND HOST

The `FIND HOST` command displays host information based on the host adapter's WWN. The `FIND HOST` command output is the same as the `LS HOST` command output. If there is more than one host with the specified adapter WWN, SSSU displays each one in succession.

Syntax

```
FIND HOST ADAPTER_WWN=adapter_wwn
```

Example

Display information about the host with the WWN 1000-0000-c92d-e4e7:

```
FIND HOST ADAPTER_WWN=1000-0000-c92d-e4e7
```

FIND SYSTEM

The `FIND SYSTEM` command displays storage system information based on the storage system's WWN. The `FIND SYSTEM` command output is less detailed than the `LS SYSTEM` command output.

Syntax

```
FIND SYSTEM SYSTEM_WWN=array_wwn
```

Example

Display information about the storage system with the WWN 5000-1FE1-5001-B3D0:

```
FIND SYSTEM SYSTEM_WWN=5000-1FE1-5001-B3D0
```

FIND VDISK

The `FIND VDISK` command displays virtual disk information based on the virtual disk's WWN. The `FIND VDISK` command output is the same as the `LS VDISK` command output.

Syntax

```
FIND VDISK LUNWWID=virtual_disk_wwn
```

Example

Display information about the virtual disk with the WWN
6005-08b4-0010-4949-0000-5000-57fd-0000:

```
FIND VDISK LUNWWID=6005-08b4-0010-4949-0000-5000-57fd-0000
```

HELP

The HELP command displays help information about SSSU commands.

To get help on specific command syntax, enter a space and a question mark (?) where you would normally specify an option or an option value, at any level of a command line. The help system lists the values available for that option.

Syntax

```
HELP
```

Example

Access help and request the display of the available values for the REDUNDANCY option:

```
ADD VDISK my_Vdisk REDUNDANCY= ?
```

IMPORT LICENSES

The IMPORT LICENSES command imports storage system licenses. The licenses in the specified file are appended to existing licenses. You must specify the absolute path to the file. Use this command with the EXPORT LICENSES command to restore license information or to copy license information from one management server to another.

Consider the following:

- Each license key string in the file should start on a new line.
- The accepted file extensions are .dat and .txt.

Syntax

```
IMPORT LICENSES filepath
```

Options

SERVER_PATH	The file is assumed to be present in the management server and no transfer is done (default).
LOCAL_PATH	The file is assumed to be present locally where HP SSSU is running.

Example

Import license information from file C:\licenses\test_array_licenses.txt:

```
IMPORT LICENSES C:\licenses\test_array_licenses.txt
```

LOCATE DISK

The LOCATE DISK command finds a disk by turning the locate LEDs on or off.

Syntax

```
LOCATE DISK disk_name
```

Options

ON	Turns on the locate LED
OFF	Turns off the locate LED

Examples

Turn on the locate LED for `Disk 001`:

```
LOCATE DISK "Disk 001" ON
```

Turn off the locate LED for `Disk 001`:

```
LOCATE DISK "Disk 001" OFF
```

LOCATE ISCSI_CONTROLLER

The `LOCATE ISCSI_CONTROLLER` command finds an iSCSI controller by turning the locate LEDs on or off.

Syntax

```
LOCATE ISCSI_CONTROLLER iSCSI_controller_name
```

Options

ON	Turns on the locate LED
OFF	Turns off the locate LED

Examples

Turn on the locate LED for iSCSI Controller 1:

```
LOCATE ISCSI_CONTROLLER "iSCSI Controller 1" ON
```

Turn off the locate LED for iSCSI Controller 1:

```
LOCATE ISCSI_CONTROLLER "iSCSI Controller 1" OFF
```

LS

The `LS` commands display information about the various objects in the currently selected storage system. You can view information about all objects (for example, all virtual disks) or a specific object (for example, virtual disk `vd001`).

Options

FULL	Lists all objects of the specified type (for example, all virtual disks) and displays the properties of each object.
FULL XML	Lists all objects of the specified type (for example, all virtual disks) and displays the properties of each object. The output is displayed in XML.
NOFULL	Lists all objects of the specified type.
NOFULL XML	List all objects of the specified type. The output is displayed in XML.

Examples

Display information about all virtual disks:

```
LS VDISK FULL
```

Display information about a virtual disk `mydisk001`:

```
LS VDISK mydisk001
```

LS CABINET

The `LS CABINET` command displays information about the cabinets in the currently selected storage system.

Syntax

`LS CABINET` *`cabinet_name`*

LS CONTAINER

The `LS CONTAINER` command displays information about the available containers in the currently selected storage system.

Syntax

`LS CONTAINER` *`container_name`*

LS CONTROLLER

The `LS CONTROLLER` command displays disk configuration information about the controllers in the currently selected storage system.

Syntax

`LS CONTROLLER` *`controller_name`*

Reduction of hazardous substances

The `LS CONTROLLER` output indicates compliance with the RoHS mandate. Compliance is indicated by `yes` or `no`.

LS CONTROLLER_ENCLOSURE

The `LS CONTROLLER_ENCLOSURE` command displays configuration information about the HSV300 controller enclosure for the currently selected storage system.

Syntax

`LS CONTROLLER_ENCLOSURE` *`controller_enclosure_name`*

NOTE: The `LS CONTROLLER_ENCLOSURE` command was added to support HSV3xx controllers by providing information on enclosure properties such as power, the cache battery, and the cooling fan. The same information can be obtained for HSV1xx and HSV2xx controllers using the `LS CONTROLLER` command.

LS DISK

The `LS DISK` command displays disk configuration information about the physical disks connected to the currently selected storage system.

Syntax

`LS DISK` *`disk_name`*

LS DISK_GROUP

The `LS DISK_GROUP` command displays configuration information about the disk groups for the currently selected storage system.

Syntax

```
LS DISK_GROUP disk_group_name
```

LS DISKSHELF

The `LS DISKSHELF` command displays information about the disk enclosures in the currently selected storage system.

Syntax

```
LS DISKSHELF disk_shelf_name
```

LS DR_GROUP

The `LS DR_GROUP` command displays information about the DR groups configured for the currently selected storage system.

Syntax

```
LS DR_GROUP dr_group_name
```

NOTE: If the `MAX_LOG_SIZE=`option is left blank or set to 0 (zero) when the DR group is created, the controller software calculates the optimum log size for the available space and the output for `LS DR_GROUP` shows the log size as 0.

LS DR_PROTOCOL

The `LS DR_PROTOCOL` command displays the selected DR protocol.

Syntax

```
LS DR_PROTOCOL
```

LS FCOE_HOST

The `LS FCOE_HOST` displays a list of FCoE hosts in the selected storage system.

Syntax

```
LS FCOE_HOST host_name
```

LS FCOE_LUN

The `LS FCOE_LUN` command displays a list of virtual disks presented to the FCoE host.

Syntax

```
LS FCOE_LUN full_path_of LUN
```

LS FOLDER

The `LS FOLDER` command displays a list of folders for the currently selected storage system.

Syntax

```
LS FOLDER folder_name
```

LS HOST

The `LS HOST` command displays information about the hosts configured for the currently selected storage system.

Syntax

`LS HOST` *`host_name`*

LS ISCSI_CONTROLLER

The `LS ISCSI_CONTROLLER` command displays information about the iSCSI controllers configured for the currently selected storage system.

Syntax

`LS ISCSI_CONTROLLER` *`iSCSI_controller_name`*

LS ISCSI_HOST

The `LS ISCSI_HOST` command displays information about the iSCSI hosts configured for the currently selected storage system.

Syntax

`LS ISCSI_HOST` *`iSCSI_host_name`*

LS ISCSI_IPHOST

The `LS ISCSI_IPHOST` command displays information about the iSCSI IP hosts configured for the currently selected storage system.

NOTE: This command does not have an XML output option.

Syntax

`LS ISCSI_IPHOST`

LS ISCSI_LICENSE

The `LS ISCSI_LICENSE` command displays details about all the licenses installed on the discovered MPX200 controllers or on a specific controller.

NOTE: This command is supported for MPX200 hardware with firmware V3.2.0.0 or later.

Syntax

`LS ISCSI_LICENSE`

Options

`iscsi_controller_name`   Provides information about the specified iSCSI controller only.

LS ISCSI_LUN

The `LS ISCSI_LUN` command displays information about the iSCSI LUNs configured for the currently selected storage system.

NOTE: You cannot use aliases to specify LUNs.

Syntax

`LS ISCSI_LUN` *`iSCSI_LUN_name`*

LS LICENSES

The `LS LICENSES` command displays the license information for all storage systems currently managed by HP P6000 Command View.

Syntax

```
LS LICENSES array_name
```

LS LUN

The `LS LUN` command displays information about the LUNs configured for the currently selected storage system.

NOTE: You cannot use aliases to specify LUNs.

Syntax

```
LS LUN LUN_name
```

LS MANAGER

The `LS MANAGER` command displays information about the currently selected instance of HP P6000 Command View.

NOTE: This command does not have an XML output option.

Syntax

```
LS MANAGER
```

LS OPTIONS

The `LS OPTIONS` command displays the options you have configured for the current utility session.

NOTE: This command does not have an XML output option.

Syntax

```
LS OPTIONS
```

LS PORT_PREFERENCE

The `LS PORT_PREFERENCE` command displays the data replication port preferences, including the port number and priority, for all the ports on the selected storage system to a remote storage system.

Syntax

```
LS PORT_PREFERENCE
```

Optons

`FULL`	Displays the port preferences of the selected storage system to all remote storage systems.
`REMOTE_WORLD_WIDE_NAME=`	Displays the port preferences of the selected storage system to the specified remote storage system.

Example

```
LS PORT_PREFERENCE REMOTE_WORLD_WIDE_NAME=1111-2222-3333-4444
```

LS PREFERRED_PATH

The `LS PREFERRED_PATH` command displays information about preferred port connections and general status information about these connections between the local and remote storage systems. You can use this command on storage systems running controller software XCS 6.xxx or later only.

Syntax

```
LS PREFERRED_PATH
```

LS SNAPSHOT

The `LS SNAPSHOT` command displays information about snapshots created for the currently selected storage system.

Syntax

```
LS SNAPSHOT snapshot_name
```

LS SYSTEM

The `LS SYSTEM` command displays information about the storage systems currently managed by HP P6000 Command View.

Syntax

```
LS SYSTEM array_name
```

LS TIME

Use the `LS TIME` command to display the current time for the currently selected storage system.

NOTE: This command does not have an XML output option.

Syntax

```
LS TIME
```

LS UNASSIGNED_FCOE_HOST_WWN

The `LS UNASSIGNED_FCOE_HOST_WWN` command lists FCoE host port WWNs that are visible to the iSCSI controllers and not assigned to FCoE hosts.

Syntax

```
LS UNASSIGNED_FCOE_HOST_WWN
```

LS VDISK

The `LS VDISK` command displays information about the virtual disks, containers, snapshots and mirrorclones configured for the currently selected storage system.

Syntax

```
LS VDISK virtual_disk_name
```

LS WORLD_WIDE_NAME

The `LS WORLD_WIDE_NAME` command displays the host WWNs that are visible to the currently selected storage system and that are not already assigned to hosts.

NOTE: This command does not have an XML output option.

Syntax

```
LS WORLD_WIDE_NAME
```

MIGRATE

The `MIGRATE` command changes the Vraid of a virtual disk, moves a synchronized standalone virtual disk from one disk group to another, or does both within an EVAx400 or P6x00 without disrupting host workload.

This command is available for storage systems with XCS 10000000 and later.

Syntax

```
MIGRATE virtual_disk_name DISK_GROUP=destination_disk_group_name
REDUNDANCY=Vraid_level
```

NOTE: The REDUNDANCY variable must be included, even if the Vraid level is not changed.

Option

`KEEP_SOURCE=`	If set to yes, retains the source virtual disk as a mirrorclone of the migrated virtual disk. Values are `YES` or `NO`.

Example

Migrate the virtual disk `May_sales` to the disk group `Q2_2011`:

```
MIGRATE May_sales DISK_GROUP=Q2_2011 REDUNDANCY=VRAID5
```

MOVE HOST

The `MOVE HOST` command moves a host to another host folder or to the host root folder.

Syntax

```
MOVE HOST source_host_name destination_host_folder_name
```

Example

Move the host from `\Hosts\development` to `\Hosts\america\development`:

```
MOVE HOST "\Hosts\development" "\Hosts\america\development"
```

MOVE VDISK

The `MOVE VDISK` command moves a virtual disk to another virtual disk folder or to the virtual disk root folder.

Syntax

```
MOVE VDISK source_virtual_disk_name destination_virtual_disk_folder_name
```

Example

Move the virtual disk `\Virtual Disks\engineering` to `\Virtual Disks\department\engineering`:

```
MOVE VDISK "\Virtual Disks\engineering" "\Virtual
Disks\department\engineering"
```

Password authentication commands

The following commands are available for password authentication.

SSSU -a

The `SSSU -a` command adds an entry to the password file on Windows systems. This command is invoked from the command line.

Syntax

```
SSSU -a
```

NOTE: For information about adding an entry to the password file on OpenVMS systems, see "Creating a password file in OpenVMS" (page 13).

SSSU -d

The `SSSU -d` command deletes the entry from the password file. This command is invoked from the command line.

Syntax

```
SSSU -d
```

SSSU -l

The `SSSU -l` command lists the set of entries in the password file, displaying the manager name and user name. This command is invoked from the command line.

Syntax

```
SSSU -l
```

PAUSE

The `PAUSE` command stops SSSU or script for a specified amount of time. Enter the time in seconds.

Syntax

```
PAUSE time
```

Example

Pause a script for 10 seconds:

```
PAUSE 10
```

REDISCOVER

The `REDISCOVER` command instructs HP P6000 Command View to find new storage systems or update the status of existing storage systems. For example, when communication is lost and then restored, you can use the `REDISCOVER` command.

Syntax

```
REDISCOVER
```

REFRESH

The `REFRESH` command triggers discovery of the selected storage system and updates the object states. This operation is asynchronous and takes several seconds to complete, especially on larger storage systems. Use the `PAUSE` command to wait several seconds before issuing more commands. You must select an storage system before issuing the `REFRESH` command.

Syntax

```
REFRESH
```

RESTART

The `RESTART` command restarts specified controllers.

Syntax

```
RESTART controller_name
```

Options

`ALL_PEERS`	Restart all peer controllers (both controllers) on this storage system
`NOALL_PEERS`	Restart the specified controller only (default)

Examples

Restart controller `B` and its peer controller:

```
RESTART "\Hardware\Rack 1\Enclosure 7\Controller B" ALL_PEERS
```

Restart controller `A`, but not its peer controller:

```
RESTART "\Hardware\Rack 1\Enclosure 7\Controller A" NOALL_PEERS
```

RESTART ISCSI_CONTROLLER

The `RESTART ISCSI_CONTROLLER` command restarts a specified iSCSI controller.

Syntax

```
RESTART ISCSI_CONTROLLER controller_name
```

Example

Restart `iSCSI controller 01`.

```
RESTART ISCSI_CONTROLLER "\Hardware\iSCSI Devices\iSCSI Controller 01"
```

SELECT MANAGER

The `SELECT MANAGER` command configures SSSU for use on the specified HP P6000 Command View instance. The *manager name* can be a management server name, port number, or an IP address. The *user name* and *password* are the account credentials that were created for you during HP P6000 Command View installation. The user name and password are validated in the background on every command.

This setting overrides the settings in the configuration file for the current session only. For example, if the port number is 2373, you enter `ip_address[2373] / host_name[2373]`. If a port number is not specified, 2372 is used by default. A similar result occurs when you enter a host server name or IP address in interactive mode.

NOTE: The `SELECT MANAGER` command is available for use in batch scripts only. When the command is run from a script, the command does not display on screen nor is it redirected to a file.

When HP SSSU is connected to an HP P6000 Command View server in interactive mode, the `SELECT MANAGER` command can be issued again to connect to another HP P6000 Command View server. The `SELECT MANAGER` command prompts for hostname, username, and password; however, the password is optional.

Syntax

```
SELECT MANAGER manager_name USERNAME=user_name|domain_name\user_name
```

Options

`PASSWORD=`	The account password that was created for you during HP P6000 Command View installation.
	If you do not include the password, SSSU looks for the password in the password file, based on the manager and username that you specified.

Examples

Select the `north_campus` server:

```
SELECT MANAGER north_campus USERNAME=administrator PASSWORD=administrator
```

NOTE: Because no port number is specified in this example, SSSU connects to port number 2372 by default.

Select the `north_campus` server as user `Alan` in the domain `Turing`:

```
SELECT MANAGER north_campus USERNAME=Turning\Alan PASSWORD=administrator
```

Select the `north_campus` server with HP P6000 Command View running on port number 2380:

```
SELECT MANAGER north_campus[2380] USERNAME=administrator
PASSWORD=administrator
```

In the following example, SSSU will read the password from the password file for the manager north_campus and the user alan combination, if available:

```
SELECT MANAGER north_campus USERNAME=alan
```

SELECT SYSTEM

The `SELECT SYSTEM` command directs the command prompt to the selected storage system. All configuration commands affect the selected storage system. If the system name includes spaces, enclose it in quotes.

Syntax

```
SELECT SYSTEM array_name
```

Examples

Select the `employees` storage system:

```
SELECT SYSTEM employees
```

Select the `payroll storage` storage system:

```
SELECT SYSTEM "payroll storage"
```

SET CABINET

The `SET CABINET` command changes the specified cabinet properties.

Syntax

```
SET CABINET cabinet_name
```

COMMENT=	Associates a user-defined comment with the cabinet. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
NAME=	The new name of the cabinet.

SET CONTROLLER

The `SET CONTROLLER` command changes the specified controller properties.

Syntax

```
SET CONTROLLER controller_name
```

Options

COMMENT=	Associates a user-defined comment with the controller. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
NAME=	The new name of the controller.

SET DISK

The `SET DISK` command changes the specified disk properties.

Syntax

```
SET DISK disk_name
```

Options

COMMENT=	Associates a user-defined comment with the disk. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
NAME=	The new name of the disk.

Example

Rename disk `Disk 005` to `5Disk`:

```
SET DISK "\Disk Groups\Ungrouped Disks\Disk 005" NAME=5Disk
```

SET DISK_GROUP

The `SET DISK_GROUP` command changes the specified disk group properties.

Syntax

```
SET DISK_GROUP group_name
```

Options

ADD=	The number of disk drives to add to the disk group.
COMMENT=	Associates a user-defined comment with the disk group. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
DELETE=	The name of the disk drive to remove from the disk group.
NAME=	The new name of the disk group.
OCCUPANCY_ALARM=	The point when a defined percentage of space is used. When this point is reached, an event is generated and sent to the management server (or the host) informing the

administrator that the group is reaching full capacity. Do not use the percent sign (%) after the number. The default is 95.

`TP_OCCUPANCY_ALARM=`	Indicates the virtual disk allocation alarm value. The value can be from 1 to 100.

> **NOTE:** The `TP_OCCUPANCY_ALARM` option is used as a warning only.

`SPARE_POLICY=`	Determines the amount of storage space, if any, set aside for use in the event that disks fail. The space set aside is not in numbers of physical disks. It is the equivalent amount of storage space spread across all disks.

- `None`—Reserves no space within a disk group to allow for data reconstruction in case of a disk drive failure

  > **NOTE:** Using a spare policy of `none` can cause data loss. HP recommends that you not use it.

- `Single`—Reserves space within a disk group to allow for data reconstruction in case of a failure of one disk drive (default)

- `Double`—Reserves space within a disk group to allow for data reconstruction in case of a failure of two disk drives

Example

Rename the disk group `pool` to `accounting disk group`:

`SET DISK_GROUP " \Disk Groups\pool" NAME="accounting disk group"`

SET DISKSHELF

The `SET DISKSHELF` command changes the specified disk enclosure properties.

Syntax

`SET DISKSHELF disk_shelf_name`

Options

`COMMENT=`	Associates a user-defined comment with the disk enclosure. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.

SET DR_GROUP

The `SET DR_GROUP` command changes the specified DR group properties.

Syntax

`SET DR_GROUP group_name`

Options

`ACCESSMODE=`	The access rights for a connected host. Possible values are: • `INQUIRY_ONLY` • `READONLY` • `NONE`
`ASYNC_TYPE=`	Specifies the type of DR group. The following types are supported: • `Enhanced`—A `Vraid6`-enabled DR group. This DR group can be used to create virtual disks of any supported Vraid levels, including type Vraid6. The enhanced type is required for HSV340/HSV360 controllers. • `Basic`—A legacy DR group which does not support Vraid6. The basic type is not supported with HSV340 or HSV360 controllers. **NOTE:** This option requires that you also specify `WRITEMODE=asynchronous`.
`ADD_VDISK=`	The name of the source storage system virtual disk to add to the DR group. A destination virtual disk is automatically created on the destination storage system. **NOTE:** If a name is already in use, it is rejected and you must specify a new name. When adding a virtual disk to the DR group, the following options are available: • `DESTINATION_DISK_GROUP` The disk group on the destination storage system on which the virtual disk is created. • `DESTINATION_VDISK_NAME` The virtual disk that is created on the destination storage system. By default, the name is the same as the source virtual disk. • `TARGETREDUNDANCY` The redundancy level of the virtual disk created on the destination storage system.
`COMMENT=`	Associates a user-defined comment with the DR group. The maximum number of characters is 64 (including spaces) and the string must be enclosed in quotes.
`DELETE_VDISK=`	The name of the source storage system virtual disk to remove from the DR group and delete. The corresponding virtual disk on the destination storage system is removed from the DR group and deleted from the storage system.
`DETACH_VDISK=`	The name of the source storage system virtual disk to remove from the DR group. The corresponding virtual disk on the destination storage system is removed from the DR group but not deleted. The detached destination virtual disk continues to exist as an independent virtual disk.
`FAILOVER_RESUME`	Instructs the controller to perform failover, and after failover is complete, resume the connection between the DR groups.
`FAILOVER_RESUME WHILE_NORMALIZING=`	Value can be True or False **NOTE:** This feature is available only for storage systems with firmware 0950000 or later and asynchronous data replication.
`FAILOVER_SUSPEND`	Instructs the controller to perform failover, and after failover is complete, suspend the connection between the DR groups.
`FAILOVER_SUSPEND WHILE_NORMALIZING=`	This function allows you to perform a failover when Full Copy is in progress. Value can be True or False. **NOTE:** This feature is available only for storage systems with firmware 0950000 or later and asynchronous data replication.
`FAILSAFE`	When the connection between the source and the destination storage system fails, all writes are halted immediately and no write is reported as complete until the connection is restored or the `NOFAILSAFE` option is set.
`FAILSAFE_ON_POWERUP_LINKDOWN`	Disables the unit presentations for a DR source after a hard controller reboot, when the link is down.

FORCEFULLCOPY	Forces the DR group to ignore the DR log and fully copy data from the source storage system to the destination storage system.
FULLCOPY_AUTOSUSPEND=	Suspends DR link when a full copy is triggered, enabling you to choose a convenient time to start the full copy. Possible values are: • `enabled` • `disabled` (default)
LINK_DOWN_AUTOSUSPEND=	When enabled, DR group replication is automatically suspended if the link between the storage systems goes down. Replication remains suspended even if the link becomes active again. Possible values are: • `enabled` • `disabled`
MAX_LOG_SIZE=	The maximum size of the DR log disk. The log size range depends on EVA model and write mode. • 136 MB (278528 blocks) – 2 TB (4294967296 blocks)—If DR is in synchronous mode for EVA4000/4100, EVA6000/6100, EVA8000/8100, and P6300/P6500 EVA. • 5 GB (10485760 blocks) – 2 TB (4294967296 blocks)—This log size range exists for DRs in the rest of the combination of hardware model and write mode. If the log size is left blank or set to 0 (zero), the controller software calculates the optimum log size for the available space.
NAME=	The new name of the DR group.
NOFAILSAFE	The default when you create the DR group. When the connection between the source storage system and the destination storage system fails, writes are directed to the log until the connection is restored. When the connection is restored, the pending writes are copied to the destination storage system and the log is resynchronized. If the log becomes full, the storage system makes a full copy of the source virtual disk to the destination virtual disk when the connection is restored.
NOFAILSAFE_ON_POWERUP_LINKDOWN	Enables the unit presentations for a DR source after a hard controller reboot, when the link is down.
NOSUSPEND	Allows data replication from the source storage system to the destination storage system to resume. This causes the same behavior as a restored connection.
SUSPEND	Stops data replication from the source storage system to the destination storage system. This causes the same behavior as a failed connection.
WRITEMODE=	Defines the I/O interaction between the destination storage system and the source storage system. Possible values are: • `asynchronous` • `synchronous`

Example

Suspend replication for the DR group `Transactions`:

```
SET DR_GROUP "\Data Replication\Transactions" SUSPEND
```

SET DR_PROTOCOL

The `SET DR_PROTOCOL` command starts remote data replication using one of the following protocol options, depending on whether you have a Fibre Channel or SCSI connection.

Syntax

```
SET DR_PROTOCOL dr_protocol_name
```

Options

HPCA	HP FC Data Replication Protocol—Requires in-order delivery of all FC frames between the source and the destination.
SCSIFC	HP SCSI FC Compliant Data Replication Protocol—Supports fabrics configured for either port-based or exchange-based routing.
EITHER	Either of the two protocols—Facilitates data migration between storage systems and requires in-order delivery of all FC frames between the source and the destination.

NOTE: SCSIFC is the default value for storage systems with controller software version XCS 09520000 or later. All other storage systems with earlier versions will default to HPCA.

Example

SET DR_PROTOCOL HPCA

SET FCOE_HOST

The SET FCOE_HOST command sets properties for the FCoE host.

Syntax

SET FCOE_HOST *host_name property=value*

Options

COMMENT=	Associates a user-defined comment with the host. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
NAME=	Changes the name of the host.
OPERATING_SYSTEM=	Changes the operating system.

Examples

Change the name of FCoE host human_resources to HR:

SET FCOE_HOST human_resources NAME=HR

SET FOLDER

The SET FOLDER command changes the specified folder properties.

NOTE: You cannot rename root folders.

Syntax

SET FOLDER *folder_name*

Options

COMMENT=	Associates a user-defined comment with the disk enclosure. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
NAME=	The new name of the folder.

Example

Rename the folder top_secret to everyone_knows:

SET FOLDER "\Virtual Disks\top_secret" NAME=everyone_knows

SET HOST

The `SET HOST` command changes the specified host properties.

Syntax

`SET HOST` *host_name*

Options

`ADD_WORLD_WIDE_NAME=`	Adds the worldwide name of the host Fibre Channel adapter.
`COMMENT=`	Associates a user-defined comment with the host. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
`DELETE_WORLD_WIDE_NAME=`	Deletes the worldwide name of the host Fibre Channel adapter.
`IP=`	The format of the host IP address: • IPv4 • IPv6 • FQDN
`NAME=`	The new name of the host.
`OPERATING_SYSTEM=`	The operating system of the specified host. To set a default operating system, select User interface options from Management Server Options window in the user interface. Select one of the following operating systems (they are listed as they appear in SSSU): • CUSTOM= (You must include the equal sign after CUSTOM and the value must be 16-digit hexadecimal characters.) • HPUX • IBMAIX • LINUX • MACOSX • OPEN_VMS • SOLARIS • TRU64 • UNKNOWN • VMWARE • WINDOWS • WINDOWS2008

Examples

Specify `OpenVMS` as the operating system for the host `install`:

`SET HOST \Hosts\install OPERATING_SYSTEM=OPEN_VMS`

Add a WWN to the host `install`:

`SET HOST \Hosts\install ADD_WORLD_WIDE_NAME=1000-0000-C922-36CA`

SET ISCSI_CONTROLLER

The `SET ISCSI_CONTROLLER` command changes the specified iSCSI controller properties.

Syntax

`SET ISCSI_CONTROLLER` *iSCSI_controller_name*

Options

> ① **IMPORTANT:** The designation `portn` is a generic representation for `port0`, `port1`, `port2`, and `port3`.

`COMMENT=`	Associates a user-defined comment with the iSCSI controller. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
`CHAP_SECRET`	Specifies the he CHAP secret to authenticate iSCSI initiators and targets. The CHAP secret can be 1–100 characters long.
`CHAP_STATE=`	The CHAP state of the presented target. Possible values are: • `Enable` • `Disable` The `SET ISCSI_CONTROLLER` *iscsi_controller_name* `PRESENTED_TARGET_IQN=`*presented_target_iqn* `CHAP_STATE=Enable` command displays an error if the `CHAP_SECRET` option is not specified.
`FCPORTN_EXECTHROTTLE`	FC port execution throttle. Available values range from 16 to 65535. Includes FC port execution throttle for fcport0 or fcport1. **NOTE:** `Fcportn` is a variable that represents `fcport0` or `fcport1`. This option is only supported on the Mezzanine controllers or MPX200 with firmware V3.3.x.x or later.
`FCPORTN_FRAME_SIZE=`	FC port frame size. Includes the port frame size for fcport0 or fcport1. Possible values are: • 512 • 1024 • 2048 (default) **NOTE:** This option is only supported on the MPX200 with firmware V3.2.0.0 or later.
`FCPORTN_REQ_LINKRATE=`	FC port link rate. Includes the FC port link rate for fcport0, fcport1, fcport2, and fcport3. Possible values are: • Auto • 1 • 2 • 4 • 8 **NOTE:** This option is only supported on the MPX200.
`GATEWAY`	The gateway for the controller.
`IP=`	The IP address for the management port.
`IP_MODE=`	The IP mode of the controller. Possible values are: • `dynamic` • `static`
`IPV4_ADDRESS_STATE=`	The IPv4 state of the iSCSI controller. Possible values are: • `enable` • `disable` (default) The `SET ISCSI_CONTROLLER` *Controller_name* `IPV4_ADDRESS_STATE=enable` command displays an error if the `IP=` option is not used. **NOTE:** This option is only supported on the MPX200.
`IPV6_ADDRESS1=`	IPv6 address 1 for management port.
`IPV6_ADDRESS2=`	IPv6 address 2 for management port.

`IPV6_ADDRESS_MODE`	Sets the address mode of the management port. Possible values are: • `Auto` • `Manual` (default) **NOTE:** You cannot set any of the IPv6 addresses or the `IPV6_ADDRESS_MODE` (except Port 0 and Port 1) unless you execute `IPV6_ADDRESS_STATE=ENABLE` first.
`IPV6_ADDRESS_STATE=`	The IPv6 address state of the management port. Possible values are: • `Disable` • `Enable` **NOTE:** The `SET ISCSI_CONTROLLER` *`ISCSI_controller_name`* `IPV6_ADDRESS_STATE=ENABLE` command displays an error if the `IPV6_ADDRESS_MODE` is not specified.
`IPV6_ROUTER_ADDRESS=`	The IPv6 router address for the management port. **NOTE:** `IPV6_ADDRESS1`, `IPV6_ADDRESS2` and `IPV6_ROUTER_ADDRESS` are available only when `IPV6_ADDRESS_STATE` is set to `MANUAL`.
`NAME=`	The new name of the iSCSI controller.
`PORTN_CHAP_STATE=`	The CHAP state of the iSCSI controller IP port. Possible values are: • `Enable` • `Disable` The `SET ISCSI_CONTROLLER` *`iscsi_controller_name`* `PORTN_CHAP_STATE=Enable` command displays an error if the `CHAP_SECRET` option is not specified.
`PORTN_DATA_DIGEST=`	IP ports data digest status. Possible values are: • `Disable` • `Enable` Includes a data digest status for port0, port1, port2, and port3.
`PORTN_GATEWAY=`	Gateway for the IP ports. Includes a gateway designation for port0, port1, port2, and port3.
`PORTN_HEADER_DIGEST=`	IP ports header digest status. Possible values are: • `Disable` • `Enable` Includes a status for port0, port1, port2, and port3. **NOTE:** This option is only supported on the MPX200.
`PORTN_IP_ADDRESS=`	The IP address for IP ports.
`PORTN_IPV4_ADDRESS_STATE=`	IPv4 address state for IP ports. Possible values are: • `Disable` • `Enable` **NOTE:** The `SET ISCSI_CONTROLLER` *`Controller_name`* `PORTN_IPV4_ADDRESS_STATE=ENABLE` command (where n is equal to 0, 1, 2 or 3) displays an error if the `IP=` option is not used to specify the IP address. This option is only supported on the MPX200.
`PORTN_IPV6_ADDRESS1=`	IPv6 address1 for IP ports. Includes addresses for port 0, port1, port2 and port3.
`PORTN_IPV6_ADDRESS2=`	IPv6 address2 for IP ports. Includes addresses for port 0, port1, port2, and port3.
`PORTN_IPV6_ADDRESS_MODE=`	IPv6 address mode for IP ports. Possible values are: • `Auto` • `Manual` **NOTE:** This option is only available on port0 and port1, and is not supported on the MPX200.

PORTN_IPV6_ADDRESS_STATE=	IPv6 address state for IP ports. Possible values are: • Disable (default) • Enable This option is only supported on the MPX200. **NOTE:** The SET ISCSI_CONTROLLER *Controller_name* PORTN_IPV6_ADDRESS_STATE=ENABLE command (where n is equal to 0 and 1) displays an error if the IP= option is not used to specify the IP address. However, the IP address is not required for port2 and port3.
PORTN_IPV6_ROUTER_ADDRESS	IPv6 router address for the IP ports. Includes router addresses for port0, port1, port2, and port3.
PORTN_ISNS_IP_ADDRESS	ISNS IPv4 address for the IP ports. Includes ISNS IPv4 addresses for port 0, port1, port2, and port3. If you specify the PORTN_ISNS_IP_ADDRESS, the ISNS is enabled.
PORTN_ISNS_IPV6_ADDRESS	ISNS IPv6 address for the IP ports. This option is available for port0 and port1 only. **NOTE:** This option is not supported for the MPX200.
PORTN_ISNS_STATE=	ISNS state for IP ports. Possible values are: • Disable • Enable **NOTE:** The SET ISCSI_CONTROLLER *Controller_name* PORTN_ISNS_STATE=ENABLE command (where n is equal to 0, 1, 2 or 3) displays an error if the PORTN_ISNS_IP_ADDRESS option is not used to specify the IP address.
PORTN_LINK_REQUESTED=	The requested IP port speed. This option is available for port0 and port1 only. Possible values are: • Auto • 10 • 100 • 1000 **NOTE:** This option is not supported for the MPX200.
PORTN_MTU=	IP port MTU that ranges from 582 to 900. Includes IP port MTU for port0, port1, port2, and port3. **NOTE:** This option is only supported on the MPX200.
PORTN_STATUS=	State of the IP port. Possible values are: • Disable • Enable Includes status for port0, port1, port2, and port3. **NOTE:** This option is only supported on the MPX200.
PORTN_SUBNET_MASK=	Subnet mask for the IP ports. Includes subnet masks for port0, port1, port2, and port3.
PORTN_WINDOW_SIZE	IP port window size. Possible values are: • 8192 • 16384 • 32768 (default) • 65536 • 131072 • 262144 • 524288 • 1048576

	This option includes window size for port0, port1, port2, and port3.
	NOTE: This option is only supported on the MPX200,
`PRESENTED_TARGET_IQN=`	The iqn of the presented target of the iSCSI controller.
	For a list of presented targets of the iSCSI controller, use the `LS ISCSI_CONTROLLER` `iscsi_controller_name` command.
`SUBNET_MASK=`	The subnet mask for the controller.
`SYMBOLICNAME=`	Sets or changes the controller symbolic name.
	NOTE: This option is only supported on the MPX200.

Examples

Set the IPv6 address mode to AUTO: `SET ISCSI_CONTROLLER IPV6_ADDRESS_MODE=AUTO`

To set IPv6 address mode to AUTO, If the IPV6_ADDRESS_STATE is not enabled: `SET ISCSI_CONTROLLER ISCSI_controller_name IPV6_ADDRESS_STATE=ENABLE IPV6_ADDRESS_MODE=AUTO`

Set the Port 0 IPv6 address mode to AUTO: `SET ISCSI_CONTROLLER ISCSI_controller_name PORT0_IPV6_ADDRESS_ MODE=AUTO`

Set the Port 1 IPv6 address mode to AUTO: `SET ISCSI_CONTROLLER ISCSI_controller_name PORT1_IPV6_ADDRESS_ MODE=AUTO`

If you set the IPv6 address mode to MANUAL, you must specify either the `IPV6_ADDRESS1`, `IPV6_ROUTER_ADDRESS` or `IPV6_ADDRESS2` option, or all as shown in the following examples:

- `SET ISCSI_CONTROLLER ISCSI_controller _name IPV6_ADDRESS_ MODE=MANUAL IPV6_ADDRESS1=2001::29 IPV6_ADDRESS2=FEC0::10 IPV6_ROUTER_ADDRESS=2001::87`

- `SET ISCSI_CONTROLLER ISCSI_controller_name IPV6_ADDRESS_MODE=MANUAL IPV6_ADDRESS1=2001::29`

- `SET ISCSI_CONTROLLER ISCSI_controller_name IPV6_ADDRESS2=FEC0::10` or `IPV6_ROUTER_ADDRESS=2001::87`

Set the IPv6 address mode to DISABLE: `SET ISCSI_CONTROLLER ISCSI_controller_name IPV6_ADDRESS_STATE=DISABLE`

Set the IPv6 address mode to ENABLE: `SET ISCSI_CONTROLLER <ISCSI_controller_name> IPV6_ADDRESS_MODE=AUTO` or `SET ISCSI_CONTROLLER <ISCSI_controller_name> IPV6_ADDRESS_STATE=ENABLE IPV6_ADDRESS_MODE=MANUAL IPV6_ADDRESS1=2001::35`

Set the port 0 iSNS IPv6 address: `SET ISCSI_CONTROLLER <ISCSI_controller_name>PORT0_ISNS_IPV6_ADDRESS= 2000::10`

Set the port 1 iSNS IPv6 address: `SET ISCSI_CONTROLLER <ISCSI_controller_name> PORT1_ISNS_IPV6_ADDRESS= 2000::10`

Set the iSCSI controller gateway address to 16.0.0.0:

```
SET ISCSI_CONTROLLER "\Hardware\iSCSI Devices\iSCSI Controller"
GATEWAY=16.0.0.0
```

SET ISCSI_HOST

The `SET ISCSI_HOST` command changes the specified iSCSI host properties.

Syntax

```
SET ISCSI_HOST host_name
```

Options

COMMENT=	Associates a user-defined comment with the iSCSI host. The maximum number of characters is 128, including spaces; the string must be enclosed in quotes.
CHAP_SECRET=	The CHAP secret to be used to authenticate iSCSI initiators and targets. The CHAP secret can be 1–100 characters long.
CHAP_STATE=	The CHAP state of the iSCSI host. Possible values are: • Enable • Disable If the CHAP_STATE is set to enable, the CHAP_SECRET option must also be used.
ISCSI_IPHOST=	Specifies the iSCSI IP host iqn for which CHAP settings need to be configured. This option is required to specify the CHAP settings of the iSCSI host.
NAME=	The new name of the iSCSI host.
OPERATING_SYSTEM=	The operating system of the specified iSCSI host. Select one of the following: • LINUX • OPEN_VMS • OTHER • SOLARIS • VMWARE • WINDOWS **NOTE:** In the graphical user interface, LINUX displays as Linux/OS X. Mac OS X is also a supported operating system. If the host is Mac OS X, select LINUX as the operating system.

Example

Specify Linux as the operating system when installing the iSCSI host:

```
SET ISCSI_HOST \Hosts\install OPERATING_SYSTEM=LINUX
```

SET MULTIMIRROR

The SET MULTIMIRROR command fractures, detaches, or resynchronizes multiple mirrorclones (virtual disks) with a single command. Up to 28 mirrorclones can be specified.

Syntax

```
SET MULTIMIRROR OPTION VDISK= mirror_clone_name1 VDISK=mirror_clone_name2
```

Options

NOTE:

You can only use one option each time you run the SET MULTIMIRROR command. When utilizing the SET MULTIMIRROR MIGRATE command, HP recommends that you monitor the state of the mirrorclones and verify that all mirrorclone migrate operations have completed before you issue any additional multimirror migrate commands. You can verify the successful completion of the disk group or Vraid change via the HP P9000 Command View GUI or SSSU.

FRACTURE	Fractures the relationship between the specified mirrorclone and its source virtual disk. You can resume the relationship by selecting the RESYNC option.
MIGRATE	Swaps the identities of a synchronized mirrorclone with its source virtual disk.

RESYNC	Resumes the relationship between the specified mirrorclone and its source virtual disk. The data on the mirrorclone is overwritten with the source virtual disk's data. A mirrorclone that is presented cannot be resynchronized.
DETACH	Removes the relationship between the specified mirrorclone and its source virtual disk permanently. Host I/O to the source virtual disk is no longer copied to the mirrorclone and the mirrorclone becomes an independent virtual disk.

Examples

Fracture the relationship between mirrorclones `mc1` and `mc2` and their source virtual disks:

```
SET MULTIMIRROR FRACTURE VDISK=mc1 VDISK=mc2
```

SET MULTISNAP

The `SET MULTISNAP` command prepares multiple empty containers for creating up to 28 snapshots, snapclones, or a combination of snapshots and snapclones.

Syntax

```
SET MULTISNAP PREPARE VDISK=vdisk_name CONTAINER=container_name SNAPTYPE
VDISK=vdisk_name CONTAINER=container_name SNAPTYPE VDISK=vdisk_name
CONTAINER=container_name SNAPTYPE...
```

Possible values for snaptype are:

- SNAPCLONE
- SNAPSHOT

Example

```
SET MULTISNAP PREPARE VDISK=tuesday CONTAINER=May15 SNAPSHOT
```

SET OPTIONS

The `SET OPTIONS` command changes the properties of the SSSU session.

NOTE: The options you set with the `SET OPTIONS` command are effective for the current session only. Each time you start SSSU, the commands in the `sssu.cfg` file (if used) are executed.

Syntax

```
SET OPTIONS
```

Options

COMMAND_DELAY=	The number of seconds (0–300) to wait between issuing commands when running a script from a `FILE` command. The default is 0. This option has no effect when entering commands at the command line.
COMMAND_TIMEOUT=	The point in time (in minutes) that SSSU times out if HP P6000 Command View is unresponsive. If this option is not set, SSSU waits indefinitely for a response from HP P6000 Command View.
CV_PORT=	Sets the port through which SSSU communicates to HP P6000 Command View. Typically this is the same port number that is set in `cveva.cfg` file to ensure successful communication with HP P6000 Command View. By default, the port number is set to 2372.
DISPLAY_STATUS	Displays the status of the last command executed. Zero (0) indicates that the command was successful. A nonzero value indicates a full or partial command failure.
DISPLAY_TIME_OFF	Cancels the display of the time before starting and after finishing an SSSU command. `DISPLAY_TIME_OFF` is the default setting.

DISPLAY_TIME_ON	Enables the display of the time before starting and after finishing an SSSU command.
DISPLAY_WIDTH=	Sets the number of characters (70–500) displayed on a line for LS commands. The default is 80. If you parse SSSU output, it is useful to set a high line width. This keeps the lines from wrapping, making the output easier to cut, paste, and parse.
DISPLAY_XMLSTATUS	Displays the status of the last command executed in XML format. Zero (0) indicates that the command was successful. A nonzero value indicates a full or partial command failure.
HIDE_STATUS	Hides the status of the last command executed. This is the default setting. No message is returned if the command is successful. If the command fails, an error message is displayed, but a status is not.
NOCOMMAND_DELAY	Specifies that no wait time occurs between commands issued from a FILE command.
NOCOMMAND_TIMEOUT	Specifies that SSSU waits indefinitely for a response from HP P6000 Command View.
NORETRIES	Specifies that you do not want the scripting utility to retry commands.
NOSAFE_DELETE	Allows deletion of an object even if dependent or related objects are present. The behavior of the NOSAFE_DELETE option depends on the mode of operation (entering commands manually or running commands through a script).

For example, if you enter commands manually, and you delete an object that has dependent or related objects, the Are you sure? prompt is displayed. You must enter yes to proceed. If you are using a script to run commands, SSSU deletes the dependent or related objects without a prompt.

CAUTION: Using the NOSAFE_DELETE option can cause accidental deletion of virtual disks or presentations.

ON_ERROR=	Sets the action to occur when an error is encountered. Possible values are:

- Continue—In this mode, only the EXIT command causes the scripting utility to halt. This is the default and is recommended when you are manually entering commands.

  IMPORTANT: If you are entering commands manually, HP does not recommend using exit_on_error or halt_on_error. These modes cause SSSU to exit on any kind of error, including a typographical one.

- Exit_on_error—Any error causes the scripting utility to exit with an error code. This mode is useful when requesting the entire script to halt immediately if errors occur while executing. This causes the scripting utility to exit on any kind of error: failed command, syntax error, or ambiguous command.

- Halt_on_error—This is similar to exit_on_error. Any error causes the scripting utility to halt but not exit until any key is pressed. The scripting utility then exits with an error code. This allows you to see the error before the window closes on exit. Unless you are entering commands manually, HP recommends that you use the halt_on_error setting so that you can view the error code. (See "Exit codes" (page 89).)

RETRIES=	The number of minutes (1–120) SSSU should retry a command when the HP P6000 Command View service is busy or restarting. The default is 4.
SAFE_DELETE	Specifies that you want to delete all dependent or related objects before deleting the specified object. For example, if you specify deletion of a virtual disk that has LUNs presented, the DELETE VDISK command is rejected and a message explains that you must delete all presented LUNs presented before you can delete the virtual disk. This is the default.

Examples

Set SSSU to stop when it encounters an error, and to not retry the commands:

SET OPTIONS ON_ERROR=halt_on_error NORETRIES

Set SSSU to display the status of the LS VDISK command:

SET OPTIONS DISPLAY_STATUS LS VDISK

Set SSSU to display the status of the LS VDISK command in XML:

```
SET OPTIONS DISPLAY_XMLSTATUS LS VDISK
```

SET PORT_PREFERENCE

The `SET PORT_PREFERENCE` command sets the data replication port preference values. This includes priority and preference check intervals.

Syntax

```
SET PORT_PREFERENCE
```

Options

`LCA_RCA_P1`	The priority of port 1 of local controller A on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCA_RCA_P2`	The priority of port 2 of local controller A on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCA_RCA_P3`	The priority of port 3 of local controller A on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCA_RCA_P4`	The priority of port 4 of local controller A on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCA_RCB_P1`	The priority of port 1 of local controller A on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCA_RCB_P2`	The priority of port 2 of local controller A on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCA_RCB_P3`	The priority of port 3 of local controller A on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCA_RCB_P4`	The priority of port 4 of local controller A on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCB_RCA_P1`	The priority of port 1 of local controller B on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCB_RCA_P2`	The priority of port 2 of local controller B on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCB_RCA_P3`	The priority of port 3 of local controller B on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCB_RCA_P4`	The priority of port 4 of local controller B on the selected storage system to the priority of the remote controller A on the remote storage system.
`LCB_RCB_P1`	The priority of port 1 of local controller B on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCB_RCB_P2`	The priority of port 2 of local controller B on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCB_RCB_P3`	The priority of port 3 of local controller B on the selected storage system to the priority of the remote controller B on the remote storage system.
`LCB_RCB_P4`	The priority of port 4 of local controller B on the selected storage system to the priority of the remote controller B on the remote storage system.
`PORTCHECK_INTERVAL=`	Interval after which the controller checks whether the user-set preferences can be applied.
`REMOTE_WORLD_WIDE_NAME=`	Specifies the worldwide name of the remote storage system.
`RESET_PORT_PREFERENCE`	Resets the port preferences to the default values. If this option is specified, HP recommends that either `REMOTE_WORLD_WIDE_NAME` or `FULL` be specified. No other options are valid when this option is used.

Example

Set to 1 the priority of port 1 on local controller A to the priority of the remote controller A. Set to 0 the priority of port 4 of local controller B to the priority of the remote controller B. Set the port check interval to 20.

```
SET PORT_PREFERENCE REMOTE_WORLD_WIDE_NAME=1111-2222-3333-4444
LCA_RCA_P1=1 LCB_RCB_P4=0 PORTCHECK_INTERVAL=20
```

Reset the port preferences to default values.

```
SET PORT_PREFERENCE REMOTE_WORLD_WIDE_NAME=1111-2222-3333-4444
RESET_PORT_PREFERENCE
```

SET SYSTEM

The `SET SYSTEM` command modifies the specified storage system properties.

Syntax

```
SET SYSTEM array_name
```

Options

COMMENT=	Associates a user-defined comment with the storage system. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
CONSOLE_LUN_ID=	The LUN used for console communication. If set to zero, no LUN is presented to the host. This option is used for IBM AIX (set to zero), OpenVMS (required), and Tru64 UNIX (recommended). Other host operating systems ignore this option.
MANAGE	Specifies that the storage system is to be managed by the selected HP P6000 Command View instance.
NAME=	The new name of the storage system.

Example

Rename the storage system `engineering` to `accounting`:

```
SET SYSTEM engineering NAME=accounting
```

SET VDISK

The `SET VDISK` command modifies the specified virtual disk properties.

Syntax

```
SET VDISK virtual_disk_name
```

Options

CHANGE_INTO_CONTAINER	Converts the virtual disk to a container and deletes any data on the virtual disk. Use this option to revert to a previous point-in-time copy (such as a snapclone) if a virtual disk is corrupted. The container has the same settings as the original virtual disk. You can then restore the virtual disk data by creating a snapclone of the previous backup snapclone. When the new snapclone is complete, it becomes an independent virtual disk with the same settings as the corrupted virtual disk. Your data will be as current as your most recent backup snapclone.
COMMENT=	Associates a user-defined comment with the virtual disk. The maximum number of characters is 128 (including spaces) and the string must be enclosed in quotes.
DETACH	Removes the relationship between the mirrorclone and the source virtual disk permanently. Host I/O to the source virtual disk is no longer copied to the mirrorclone and the mirrorclone becomes an independent virtual disk.

FRACTURE	Fractures the relationship between the mirrorclone and the source virtual disk. You can resume the relationship by selecting the `RESYNC` option.

LOCK_COMMENT=	Provides a lock comment to tell other users that someone has locked the virtual disk to perform certain tasks for an application. For example:
	
	`SET VDISK LOCK_STATE=lock LOCK_COMMENT=CV`
	
	NOTE: Ensure that the value of `LOCK_COMMENT` does not exceed 10 characters. If the value of `LOCK_COMMENT` exceeds 10 characters, the following error message is displayed:
	
	`Error: Comment too long, limit 10 characters`

LOCK_STATE=	Locks or unlocks the virtual disk so that it cannot be accessed by other users while the following tasks are being performed on a specified application: • Changing capacity • Unpresenting • Presenting • Restoring from a mirrorclone or snapshot • Changing a virtual disk name • Changing a WWN • Converting a virtual disk to a container • Migrating virtual disk RAID or disk group RAID • Fracturing a mirrorclone • Resyncronizing a mirrorclone • Detaching a mirrorclone • Swapping a mirrorclone with its source • Write protecting • Changing an OS unit ID • Changing the preferred path • Deleting a virtual disk • Changing a lock comment while preserving the lock state. Values are: • Lock • Unlock **NOTE:** If you select the `LOCK_STATE` option without selecting the `LOCK_COMMENT` option, the following error is displayed: `Error: LOCK_COMMENT must be specified.`
MIGRATE	Swaps the identities of a synchronized virtual disk with its mirrorclone.
MIRRORCACHE=	Sets the controller's mirror cache. Possible values are: • `MIRRORED` (cache is mirrored between both controllers) • `NOTMIRRORED` (cache is not mirrored). **NOTE:** For active-active controllers, the only option is `MIRRORED`. If you try to select `NOTMIRRORED`, an error message is displayed.
NAME=	The new name of the virtual disk.
NOPREFERRED_PATH	Allows either controller to handle I/O.
NOREAD_CACHE	Reads are always performed by the physical disks, not the controller's cache.
NOWRITE_PROTECT	Allows writing to the virtual disk from all presented LUNs and hosts.
OS_UNIT_ID=	The ID presented to the host operating system. If set to zero, no ID is presented to the host. This option is used for IBM AIX (set to zero), OpenVMS (required), and Tru64 UNIX (recommended). Other host operating systems ignore this option.

`PREFERRED_PATH=`	The preferred controller that will handle all I/O for the virtual disks. If the preferred controller fails, the working controller becomes the preferred controller. Possible values are: • `PATH_A_BOTH`—Controller A fails over to controller B. When controller A restarts, the virtual disks fail back to controller A. This is failover/failback mode. • `PATH_A_FAILOVER`—Controller A fails over to controller B. When controller A restarts, the virtual disks do not fail back over to controller A. This is failover-only mode. • `PATH_B_BOTH`—Controller B fails over to controller A. When controller B restarts, the virtual disks fail back to controller B. This is failover/failback mode. • `PATH_B_FAILOVER`—Controller B fails over to controller A. When controller B restarts, the virtual disks do not fail back over to controller B. This is failover-only mode.
`PREPARE VDISK=`	Prepares the specified empty container for snap creation. Enter the following information: *virtual_disk_name snaptype*. Possible values for snaptype are: • Snapclone • Snapshot • Mirrorclone
`READ_CACHE`	Reads are performed by the controller's cache.
`RESTORE`	Restores data from the mirrorclone or snapshot of a mirrorclone or snapshot to the source virtual disk. Data on the source virtual disk is overwritten even if the source virtual disk is write-protected. Only unpresented mirrorclones and snapshots are eligible for restoration. A mirrorclone cannot be restored if the mirrorclone source is a DR group member.
`RESYNC`	Resumes the relationship between the specified mirrorclone and its source virtual disk. The data on the mirrorclone is overwritten with the data from the source virtual disk. A mirrorclone that is presented cannot be resynchronized.
`SIZE=`	The new size of the virtual disk in whole gigabytes (GB). (Fractions are not allowed.) The value can be from 2 to 2000 GB, depending on the disk group's available space. You can specify a value for the capacity of a virtual disk that is smaller than the current size. **CAUTION:** Ensure that your host operating system can handle changes in volume size before you change the underlying virtual disk size. Changing the size on some operating systems can cause instability or data loss When using the GPT in Windows, the virtual disk should be a minimum 1 GB greater than the host volume size.
`TP_OCCUPANCY_ALARM`	Indicates the virtual disk allocation alarm value. The value can be from 1 to 100. **NOTE:** The `TP_OCCUPANCY_ALARM` option is applicable only for thin provisioned virtual disks.
`WORLD_WIDE_LUN_NAME=`	Sets the worldwide LUN name of an unpresented virtual disk. This option does not work on a presented virtual disk. **NOTE:** This option is commonly used to allow a host to point to a new version of a snapshot by giving the new snapshot the same WWN as the old snapshot.
`WRITECACHE=`	Sets the controller's write cache. Possible values are: • `Writethrough`—The operation completes when the data is written to the disk. • `Writeback`—The operation completes when the data is written to cache.
`WRITE_PROTECT`	Does not allow writing to the virtual disk from all presented LUNs and hosts.

Example

Assign the worldwide LUN name to the virtual disk `archive`:

```
SET VDISK "\Virtual Disks\archive"
```

```
WORLD_WIDE_LUN_NAME=6000-1fe1-ff00-0000
```

SHUTDOWN

The `SHUTDOWN` command shuts down any controller displayed by the `LS CONTROLLER` command.

Syntax

```
SHUTDOWN controller_name
```

Options

`ALL_PEERS`	Shuts down all peer controllers (both controllers) on this storage system. It also shuts down all disk enclosures.
`NOALL_PEERS`	Shuts down the specified controller only (default).

Examples

Shut down only controller `A`:

```
SHUTDOWN "\Hardware\Rack 1\Enclosure 7\Controller A" NOALL_PEERS
```

Shut down controller `B` and its peer:

```
SHUTDOWN "\Hardware\Rack 1\Enclosure 7\Controller B" ALL_PEERS
```

SHUTDOWN ISCSI_CONTROLLER

The `SHUTDOWN_ISCSI_CONTROLLER` command shuts down the specified iSCSI controller.

Syntax

```
SHUTDOWN ISCSI_CONTROLLER controller_name
```

Example

Shut down iSCSI controller 01.

```
SHUTDOWN ISCSI_CONTROLLER "\Hardware\iSCSI Devices\iSCSI Controller 01"
```

TRACING

The `TRACING` command performs tracing for SSSU. To enable tracing, you must have created a configuration file named `SSSUConfig.cfg` in the same location where the SSSU binary is present.

Tracing will be disabled if the configuration file is missing, but the SSSU will work without code trace support.

Syntax

```
TRACING SSSUConfig.cfg
```

Configuration File

The `SSSUConfig.cfg` file contains the following variables:

`ENABLE_LOG=`

Specify Y to enable trace in the file or N to disable it. The default in N.

`LOG_LEVEL=`

Specify the log level for tracing in the code. The default is 1.

`LOG_FILE_PATH=`

Specify the locaton of the log file. The default is the current directory of the SSSU application.

```
MAX_LOG_AGE=
```
Specify the maximum age of the log file in days.

```
LOG_SIZE=[y or n]
```
Specify the maximum size of the log in MB.

```
MAX_LOG_SIZE = MAX_LOG_SIZE
```
Specifies that if the maximum size in MB of all log files exceeds its maximum limit, a rollover will take place.

An example `SSSUConfig.cfg` file follows:

ENABLE_LOG = Y
LOG_LEVEL = 2
LOG_FILE_PATH = e:\
MAX_LOG_AGE = 2
LOG_SIZE = 2
MAX_LOG_SIZE = 5

VERSION

The `VERSION` command displays the HP Storage System Scripting Utility version.

Syntax

```
VERSION
```

WAIT_UNTIL

The `WAIT_UNTIL` command is used in conjunction with asynchronous operations such as the creation of virtual disks, snapshots, snapclones, mirrorclones, deletion of objects, ungrouping of disks, full copy in DR groups, and disk group leveling. When `WAIT_UNTIL` is used, the operation waits until the object reaches a specified *state*. This command can be used with virtual disk family objects, disk objects, disk group objects, DR group objects and the system objects. Different states are supported for each object.

NOTE: The ALLOCATED state is not valid for thin provisioned virtual disks.

Syntax

```
WAIT_UNTIL object_type object_name STATE
```
Object type values are:

- `DISK`

- `DISK_GROUP`

- `DR_GROUP`

- `SYSTEM`

- `VDISK`

Options

`TIME=`	The number of minutes to wait. If time is not specified, the program waits indefinitely until the object reaches the specified state.

States

DISK object states

CODELOADABLE	Waits until the disk becomes codeloadable.
GOOD	Waits until the state of the disk object becomes good.
UNGROUPED	Waits until the disk is ungrouped from its current disk group. Currently, ungrouping operation in SSSU is synchronous, but the same operation is asynchronous when done through the HP P6000 Command View GUI.

DISK_GROUP object states

GOOD	Waits until the state of the disk group object becomes good.
LEVELING_COMPLETE	Waits until the leveling operation in the disk group completes.
RECONSTRUCTION_COMPLETE	Waits until the reconstruction operation in the disk group completes.

DR_GROUP object states

FULL_COPY_COMPLETE	Waits until the full copy operation in the DR group completes.
GOOD	Waits until the state of the DR group object becomes good.
LOG_DISK_MERGED	Waits until the log disk merge operation in the DR group completes.
LOG_DISK_PERCENT_ATLEAST=	Waits until the log disk in the DR group is full to the specified percentage. Do not use the percent sign (%) after the number.

SYSTEM object states

GOOD	Waits until the state of the system becomes good.

VDISK object states

ALLOCATED	Waits until the virtual disk is fully allocated. It can be used for creation as well as capacity change. The ALLOCATED state is supported with the container, snapclone, and virtual disk objects.
ASYNC_DR_MEMBER_REMOVED	Waits until the virtual disk, which is a part of an asynchronous DR group, is removed from the DR group.
CHANGED_INTO_CONTAINER	Waits until the virtual disk object is converted into a container object.
DELETED	Waits until the object is deleted from HP P6000 Command View. The DELETED state is supported with all objects.
DETACHED	Waits until a mirrorclone object is detached from its parent virtual disk.
FRACTURED	Waits until a mirrorclone object is fractured from the source virtual disk.
GOOD	Waits until the operational state of the virtual disk becomes good.
RESTORED	Waits until the virtual disk is completely restored from a snapshot or snapclone.
SYNCHRONIZED	Waits until the snapclone or mirrorclone object is completely synchronized with the source virtual disk.
WRITECACHE_WRITETHROUGH	Waits until the write cache policy of the virtual disk becomes writethrough.

Examples

To verify that the container Tuesday_income is fully allocated before using it to create a snapclone:

WAIT_UNTIL VDISK *Tuesday_income ALLOCATED*

To wait until Disk 001 has been ungrouped from its current disk group before adding it to another disk group:

WAIT_UNTIL DISK "Disk 001" UNGROUPED

To wait until the reconstruction of disk group 001 completes after the failure of a disk:

WAIT_UNTIL DISK_GROUP "Disk Group 001" RECONSTRUCTION_COMPLETE

To wait until a full copy is complete before resuming I/O on the virtual disk:

```
WAIT_UNTIL DR_GROUP "DR Group 001" FULL_COPY_COMPLETE
```

To wait until the state of storage system 1010LE is good:

```
WAIT_UNTIL SYSTEM 1010LE GOOD
```

To wait until virtual disk Vdisk001 gets converted to a container so that the container can be used to create a mirrorclone:

```
WAIT_UNTIL VDISK Vdisk001 CHANGED_INTO_CONTAINER
```

3 Troubleshooting

This chapter describes issues you may encounter and possible resolutions.

Commands with unsupported options

If a storage system does not support a feature, entering an SSSU command with an option to specify the unsupported feature results in the option being ignored. For example, XL storage systems do not support the demand allocation option. If you enter `ADD CONTAINER con1 SIZE=1 ALLOCATION_POLICY=demand`, the `allocation_policy=demand` option is ignored and fully allocated container is created.

Setting the occupancy alarm and warning level

Creating a virtual disk can fail if the occupancy alarm and warning level defaults are used. To change the occupancy alarm and warning level defaults, edit the `cveva.cfg` file to lower the numeric values of `dgWarningHighwaterMark` and `dgCriticalHighwaterMark`. For example:

```
# Disk group default warning threshold level.  When the capacity of the disk group
# reaches this level, an event will be triggered.  This value is a percentage between 1
# and 100 and must be less than or equal to the critical threshold level.  The default is 70.
dgWarningHighwaterMark 60
# Disk group default critical threshold level.  When the capacity of the disk group
# reaches this level, an event will be triggered.  This value is a percentage between 1
# and 100 and must be greater than or equal to the warning threshold level.  The default is 90.
dgCriticalHighwaterMark 80
```

Using the CODELOAD DISK command

The following example displays a command sequence and an error message that follows if the `CODELOAD DISK` command is executed on network mapped drives.

`CODELOAD DISK "X:\BF146DA47A_HP02.bin"DISK =Disk 012"`

`Error: Error an internal operation failed. Trace information provides more information. {Drive code load — The descriptor file could not be opened.]`

To ensure that the `CODELOAD DISK` command executes properly, copy the required files from the network drive to the local drive and issue the `CODELOAD DISK` command on the local drive of that server.

Resetting the storage system password

Symptom: An storage system has been password protected and the password has not been entered in HP P6000 Command View. The following error message appears when attempting to enter a command:

`Error: API unable to get the lock`

Resolution: Enter the storage system password in HP P6000 Command View.

SSSU does not display prompt

When a synchronous operation is performed, SSSU does not display a prompt until the operation completes, preventing you from entering commands to the current or other SSSU sessions. This is expected behavior.

Error cannot get object properties

An attempt to delete a failed virtual disk results in the following error:

`Error: Error cannot get object properties. [Vdisk cache data lost error]`

The `DELETE VDISK` command queries the virtual disk status to determine if the virtual disk is presented to a host. If the virtual disk is in failed state, this query returns the error. If this occurs, use the HP P6000 Command View GUI to delete the virtual disk.

Losing communication with HP P6000 Command View

Symptom: In rare instances, SSSU loses communication with HP P6000 Command View and reports that it is down, stopped, or restarting, even though it is possible to browse to the HP P6000 Command View user interface.

Resolution: Restart HP P6000 Command View.

Opening https connection error

Symptom: You open SSSU and enter the manager, user name, and password, and the following error message appears:

`Error opening https connection`

Resolution: Verify the following:

- The manager, user name, and password are correct.
- The user name is a member of the HP Storage Admins or HP Storage Users group.
- The HP P6000 Command View service is running on the server to which SSSU is communicating.
- The current version of HP P6000 Command View is running.
- If SSSU is running on another server, ping the server on which HP P6000 Command View is installed.

Exit codes

The exit code informs you of the status of the last command executed before SSSU exits.

The exit code returned is, by default, the status of the last command executed. The exit code can have the following values:

- 0 = SUCCESS
- 1–239 = FAILURE
- 240–255 = TIMEOUT

NOTE: This is for the Windows and Linux platforms only. For information about exit codes for OpenVMS, see "OpenVMS".

In a non-interactive mode, where there are multiple commands in a file or in a multi-command mode, you can use either of the following options to retrieve an exit code in case of an error:

- `SET OPTIONS ON_ERROR = EXIT_ON_ERROR`
- `SET OPTIONS ON_ERROR = HALT_ON_ERROR`

If either of these options is set, in the event of an error, SSSU exits with a non-zero exit code. If the command or script executes successfully, SSSU returns an exit code of 0.

Exit codes for different platforms

Linux/UNIX

In Linux shell, the exit status of the last process is stored in the `$?` variable.

The process exit code can be retrieved using the `$?` command.

For SSSU on Linux:

- 0 = SUCCESS
- 1–239 = FAILURE
- 240–255 = TIMEOUT

Example 1

```
./sssu "SET OPTIONS ON_ERROR = EXIT_ON_ERROR""SELECT MANAGER x.x.x.x USERNAME = xxx
PASSWORD = xxx" "SELECT SYSTEM HSV400"

 var=$?

if [$var -ne 0] then
…
…
…
fi
```

Example 2: Script

```
! Sample script 'example'

SET OPTIONS ON_ERROR = HALT_ON_ERROR
SELECT MANAGER x.x.x.x USERNAME = xxx PASSWORD = xxx
SELECT SYSTEM HSV450
ADD VDISK VDisk001 SIZE=1
…
…

_____

./sssu "FILE example"

 var=$?

 if [$var -ne 0] then

…
…

fi
```

Windows

In Windows, the exit status code of the last process is stored in the `ERRORLEVEL` variable.

The exit code can be retrieved using `%ERRORLEVEL%`

For SSSU on Linux:

- 0 = SUCCESS
- 1–239 = FAILURE
- 240–255 = TIMEOUT

Example

```
sssu.exe "SET OPTIONS ON_ERROR = HALT_ON_ERROR" "SELECT MANAGER x.x.x.x USERNAME = xxx
PASSWORD = xxx" "SELECT SYSTEM HSV400"

 IF %errorlevel% NEQ 0
…
…
…
```

OpenVMS

In OpenVMS, the exit status of the last process is stored in the `$STATUS` variable.

OpenVMS supports a 32-bit exit code, with bits 3–11 representing the error code value. SSSU uses the following error code values:

SSSU uses the following values of severity:

- 0 = SUCCESS
- 1–239 = FAILURE
- 240–255 = TIMEOUT

For SSSU on OpenVMS:

- 0x8008001—SUCCESS
- Values other than 0x8008001—FAILURE/TIMEOUT

Example

```
sssu:==$DKA0:[SSSU_PATH]SSSU_VMS_IA64.EXE

sssu "SET OPTIONS ON_ERROR = HALT_ON_ERROR"  "SELECT MANAGER x.x.x.x USERNAME = xxx
PASSWORD = xxx" "SELECT SYSTEM HSV400"

 IF $STATUS .NEQ. 0x8008001 THEN
 …
 …
 …
 ENDIF
```

Resolving general errors

Symptom: The `No Object Found` error or `Neither Success or Failure` error appears.

Resolution: Do one of the following:

- Wait a few seconds and the problem may resolve itself.
- Close all open browser windows, including the HP P6000 Command View user interface. You do not need to restart SSSU. If the problem persists, restart HP P6000 Command View.

CVClientTrace logfile

Symptom: A new user is unable to read the CVClientTrace log file.

Resolution: SSSU creates trace files in the same directory as the binary. To be able to read the trace files, users must have write privleges on the directory where the SSSU binary resides.

4 Command reference

Table 3 (page 92) provides an overview of SSSU commands. All of these commands may be executed by the HP Storage Administrator.

Table 3 Command reference

Command	Options
ADD CONTAINER	ALLOCATION_POLICY= DISK_GROUP= REDUNDANCY= SIZE=
ADD COPY	CONTAINER= DISK_GROUP= LOCK_COMMENT= LOCK_STATE= NOWAIT_FOR_COMPLETION OS_UNIT_ID= REDUNDANCY VDISK= WAIT_FOR_COMPLETION WORLD_WIDE_LUN_NAME=
ADD DISK_GROUP	COMMENT= DEVICE_COUNT= DISKGROUP_DISKTYPE= DISKGROUP_TYPE= OCCUPANCY_ALARM= SPARE_POLICY=
ADD DR_GROUP	ACCESSMODE= ASYNC_TYPE= COMMENT= DESTINATION_DISK_GROUP= DESTINATION_SYSTEM= DESTINATION_VDISK_NAME= FULLCOPY_AUTOSUSPEND= LINK_DOWN_AUTOSUSPEND= LOG_DESTINATION_DISK_GROUP= LOG_SOURCE_DISK_GROUP= MAX_LOG_SIZE= TARGETREDUNDANCY= VDISK= WRITEMODE=
ADD FCOE_HOST	OPERATING_SYSTEM= COMMENT
ADD FCOE_LUN	ASSIGN_PATH= PROCEED_IF_OVERCOMMIT=

Table 3 Command reference *(continued)*

Command	Options
ADD FOLDER	COMMENT=
ADD HOST	COMMENT= IP= OPERATING_SYSTEM= WORLD_WIDE_NAME=
ADD ISCSI_CONTROLLER	IP=
ADD ISCSI_HOST	CHAP_SECRET= CHAP_STATE= COMMENT= ISCSI_IPHOST= OPERATING_SYSTEM=
ADD ISCSI_LICENSE	
ADD ISCSI_LUN	ISCSI_HOST= PROCEED_IF_OVERCOMMIT= VDISK=
ADD LICENSES	VALIDATE
ADD LUN	HOST= PROCEED_IF_OVERCOMMIT= VDISK=
ADD MIRRORCLONE	CONTAINER= LOCK_COMMENT= LOCK_STATE= VDISK=
ADD MULTISNAP	CONTAINER= SNAPCLONE SNAPSHOT VDISK=
ADD SNAPSHOT	ALLOCATION_POLICY= CONTAINER= LOCK_COMMENT= LOCK_STATE= OS_UNIT_ID= REDUNDANCY= VDISK= WORLD_WIDE_LUN_NAME
ADD SYSTEM	COMMENT= CONSOLE_LUN_ID= DEVICE_COUNT= DISKGROUP_DISKTYPE= DISKGROUP_TYPE= SPARE_POLICY=

Table 3 Command reference *(continued)*

Command	Options
ADD VDISK	COMMENT= DISK_GROUP= LOCK_COMMENT= LOCK_STATE= MIRRORCACHE= NOPREFERRED_PATH NOREAD_CACHE NOWAIT_FOR_COMPLETION NOWRITE_PROTECT OS_UNIT_ID= PREFERRED_PATH= READ_CACHE REDUNDANCY= SIZE= THIN_PROVISION= TP_OCCUPANCY_ALARM= WAIT_FOR_COMPLETION WORLD_WIDE_LUN_NAME= WRITECACHE= WRITE_PROTECT
CAPTURE CONFIGURATION	SAVE_ALL_WORLD_WIDE_LUN_NAME SAVE_DIFFERENT_WORLD_WIDE_LUN_NAME START_AT=
CAPTURE VALIDATE	
CHECK REDUNDANCY	
CLEAR LICENSES	ALL BC CA CV DM
CODELOAD	LOCAL_PATH SERVER_PATH
CODELOAD DISK	DISK= LOCAL_PATH SERVER_PATH
CODELOAD ISCSI_CONTROLLER	LOCAL_PATH SERVER_PATH
DELETE DISK_GROUP	
DELETE DR_GROUP	
DELETE FCOE_HOST	
DELETE FCOE_LUN	PROCEED_IF_OVERCOMMIT=

Table 3 Command reference *(continued)*

Command	Options
DELETE FOLDER	
DELETE HOST	
DELETE ISCSI_CONTROLLER	
DELETE ISCSI_HOST	
DELETE ISCSI_LUN	ISCSI_HOST= PROCEED_IF_OVERCOMMIT= VDISK=
DELETE LUN	PROCEED_IF_OVERCOMMIT=
DELETE SYSTEM	
DELETE VDISK	NOWAIT_FOR_COMPLETION WAIT_FOR_COMPLETION
EMVERSION	
EXERCISE_DISK	START STOP SUMMARY
EXIT	
EXPORT LICENSES	LOCAL_PATH SERVER_PATH
FILE	
FIND HOST	ADAPTER_WWN=
FIND SYSTEM	SYSTEM_WWN=
FIND VDISK	LUNWWID=
HELP	
IMPORT LICENSES	LOCAL_PATH SERVER_PATH
LOCATE DISK	ON OFF
LOCATE ISCSI_CONTROLLER	ON OFF
LS	FULL FULL XML NOFULL NOFULL XML Not all LS commands have the XML options.
LS CABINET	
LS CONTAINER	
LS CONTROLLER	

Table 3 Command reference *(continued)*

Command	Options
LS CONTROLLER_ENCLOSURE	
LS DISK	
LS DISK_GROUP	
LS DISKSHELF	
LS DR_GROUP	
LS DR_PROTOCOL	
LS FCOE_HOST	
LS FCOE_LUN	
LS FOLDER	
LS HOST	
LS ISCSI_CONTROLLER	
LS ISCSI_HOST	
LS ISCSI_IPHOST	
LS ISCSI_LICENSE	ISCSI_CONTROLLER NAME
LS ISCSI_LUN	
LS LICENSES	
LS LUN	
LS MANAGER	
LS OPTIONS	
LS PORT_PREFERENCE	REMOTE_WORLD_WIDE_NAME
LS PREFERRED_PATH	
LS SNAPSHOT	
LS SYSTEM	
LS TIME	
LS UNASSIGNED_FCOE_HOST_WWN	
LS VDISK	VIRTUAL_DISK_NAME
LS WORLD_WIDE_NAME	VIRTUAL_DISK_NAME
MOVE HOST	
MOVE VDISK	
PAUSE	
REDISCOVER	
REFRESH	
RESTART	ALL_PEERS NOALL_PEERS
RESTART ISCSI_CONTROLLER	

Table 3 Command reference *(continued)*

Command	Options
SELECT MANAGER	PASSWORD= USERNAME=
SELECT SYSTEM	
SET CABINET	COMMENT= NAME=
SET CONTROLLER	COMMENT= NAME=
SET DISK	COMMENT= NAME= TP_OCCUPANCY_ALARM=
SET DISK_GROUP	ADD= COMMENT= DELETE= NAME= OCCUPANCY_ALARM= SPARE_POLICY=
SET DISKSHELF	COMMENT=
SET DR_GROUP	ACCESSMODE= ASYNC_TYPE= ADD_VDISK= COMMENT= DELETE_VDISK= DETACH_VDISK= FAILOVER_RESUME FAILOVER_RESUME FORCE_FAILOVER= FAILOVER_SUSPEND FAILOVER_SUSPEND FORCE_FAILOVER= FAILSAFE FAILSAFE_ON_POWERUP_LINKDOWN FORCEFULLCOPY FULLCOPY_AUTOSUSPEND LINK_DOWN_AUTOSUSPEND= MAX_LOG_SIZE= NAME= NOFAILSAFE NOFAILSAFE_ON_POWERUP_LINKDOWN NOSUSPEND SUSPEND WRITEMODE=
SET DR_PROTOCOL	HPCA SCSIFC EITHER

Table 3 Command reference *(continued)*

Command	Options
SET FCOE_HOST	NAME= OPERATING_SYSTEM= COMMENT=
SET FOLDER	COMMENT= NAME=
SET HOST	ADD_WORLD_WIDE_NAME= COMMENT= DELETE_WORLD_WIDE_NAME= IP= NAME= OPERATING_SYSTEM=
SET ISCSI_CONTROLLER	COMMENT= CHAP_SECRET= CHAP_STATE= FCPORTN_EXEC_THROTTLE FCPORTN_FRAME_SIZE= FCPORTN_REQ_LINKRATE= GATEWAY= IP= IP_MODE= IPV4_ADDRESS_STATE= IPV6_ADDRESS1= IPV6_ADDRESS2= IPV6_ADDRESS_MODE= IPV6_ADDRESS_STATE= IPV6_ROUTER_ADDRESS= NAME= PORT0_IPV6_ADDRESS_1= PORT0_IPV6_ADDRESS_2= PORT1_IP_ADDRESS= PORT1_IPV6_ADDRESS_1= PORT1_IPV6_ADDRESS_2= PORT1_IPV6_ISNS_IPV6_ADDRESS= PORTN_CHAP_STATE= PORTN_DATA_DIGEST PORTN_GATEWAY= PORTN_HEADER_DIGEST= PORTN_IPV4_ADDRESS_STATE= PORTN_IPV6_ADDRESS1= PORTN_IPV6_ADDRESS2= PORTN_IPV6_ADDRESS_MODE= PORTN_IPV6_ADDRESS_STATE= PORTN_IPV6_ROUTER_ADDRESS= PORTN_ISNS_IPV6_ADDRESS -P=

Table 3 Command reference *(continued)*

Command	Options
	PORTN_ISNS_IP_ADDRESS PORTN_ISNS_STATE= PORTN_LINK_REQUESTED= PORTN_MTU= PORTN_STATUS= PORTN_SUBNET_MASK= PORTN_WINDOW_SIZE PRESENTED_TARGET_IQN= SUBNET_MASK= SYMBOLICNAME=
SET ISCSI_HOST	CHAP_SECRET= CHAP_STATE= COMMENT= ISCSI_IPHOST= NAME= OPERATING_SYSTEM=
SET MULTIMIRROR	DETACH FRACTURE MIGRATE RESYNC
SET OPTIONS	COMMAND_DELAY= COMMAND_TIMEOUT CV_PORT DISPLAY_STATUS DISPLAY_TIME_OFF DISPLAY_TIME_ON DISPLAY_WIDTH= DISPLAY_XMLSTATUS HIDE_STATUS NOCOMMAND_DELAY NOCOMMAND_TIMEOUT NORETRIES NOSAFE_DELETE ON_ERROR= RETRIES= SAFE_DELETE
SET PORT_PREFERENCE	LCA_RCA_P1 LCA_RCA_P2 LCA_RCA_P3 LCA_RCA_P4 LCA_RCB_P1 LCA_RCB_P2 LCA_RCB_P3 LCA_RCB_P4

Table 3 Command reference *(continued)*

Command	Options
	LCB_RCA_P1 LCB_RCA_P2 LCB_RCA_P3 LCB_RCA_P4 LCB_RCB_P1 LCB_RCB_P2 LCB_RCB_P3 LCB_RCB_P4 PORTCHECK_INTERVAL REMOTE_WORLD_WIDE_NAME RESET_PORT_PREFERENCE
SET SYSTEM	COMMENT= CONSOLE_LUN_ID= MANAGE NAME=
SET VDISK	CHANGE_INTO_CONTAINER COMMENT= DETACH FRACTURE LOCK_COMMENT= LOCK_STATE= MIGRATE MIRRORCACHE= NAME= NOPREFERRED_PATH NOREAD_CACHE NOWRITE_PROTECT OS_UNIT_ID= PREFERRED_PATH= READ_CACHE RESTORE RESYNC SIZE= TP_OCCUPANCY_ALARM= WORLD_WIDE_LUN_NAME= WRITE_PROTECT WRITECACHE=
SHUTDOWN	ALL_PEERS NOALL_PEERS
SHUTDOWN ISCSI_CONTROLLER	
SSSU	—a —d —l

Table 3 Command reference *(continued)*

Command	Options
`TRACING`	
`VERSION`	

`WAIT_UNTIL DISK`	`CODELOADABLE`
	`GOOD`
	`TIME=`
	`UNGROUPED`

`WAIT_UNTIL DISK_GROUP`	`GOOD`
	`LEVELING_COMPLETE`
	`RECONSTRUCTION_COMPLETE`
	`TIME=`

`WAIT_UNTIL DR_GROUP`	`FULL_COPY_COMPLETE`
	`GOOD`
	`LOG_DISK_MERGED`
	`LOG_DISK_PERCENT_ATLEAST=`
	`TIME=`

`WAIT_UNTIL SYSTEM`	`GOOD` `TIME=`

`WAIT_UNTIL VDISK`	`ALLOCATED`
	`ASYNC_DR_MEMBER_REMOVED`
	`CHANGED_INTO_CONTAINER`
	`DELETED`
	`DETACHED`
	`FRACTURED`
	`GOOD`
	`RESTORED`
	`SYNCHRONIZED`
	`TIME=`
	`WRITECACHE_WRITETHROUGH`

5 Support and other resources

Contacting HP

HP technical support

Telephone numbers for worldwide technical support are listed on the HP support website:

http://www.hp.com/support/

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's choice for business website:

http://www.hp.com/go/e-updates

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Product feedback

To make comments and suggestions about HP P6000 Command View Software Suite, please send a message to **CVfeedback@hp.com**.

Related information

Documents

For documents referenced in this guide, see the Manuals page on the Business Support Center website:

> http://www.hp.com/support/manuals

In the Storage section, click **Disk Storage Systems** or **Storage software**, and then select your product.

HP websites

- HP:
  http://www.hp.com

- HP Storage:
  http://www.hp.com/go/storage

- HP Software Downloads:
  http://www.hp.com/support/downloads

- HP Software Depot:
  http://www.software.hp.com

- HP Single Point of Connectivity Knowledge (SPOCK):
  http://www.hp.com/storage/spock
- HP Partner Locator:
  http://www.hp.com/service_locator
- HP SAN manuals:
  http://www.hp.com/go/sdgmanuals

Typographical conventions

Table 4 Document conventions

Convention	Element
Blue text: Table 4 (page 103)	Cross-reference links and email addresses
Blue, underlined text: http://www.hp.com	Website addresses
Bold text	• Keys that are pressed • Text entered into a GUI element, such as a box • GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
Italic text	Text emphasis
`Monospace` text	• File and directory names • System output • Code • Commands, their arguments, and argument values
`Monospace, italic` text	• Code variables • Command variables
`Monospace, bold` text	Emphasized monospace text
. . .	Indication that example continues
WARNING!	An alert that calls attention to important information that if not understood or followed can result in personal injury.
CAUTION:	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
IMPORTANT:	An alert that calls attention to essential information.
NOTE:	An alert that calls attention to additional or supplementary information.
TIP:	An alert that calls attention to helpful hints and shortcuts.

6 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**). Include the document title and part number, version number, or the URL when submitting your feedback.

Glossary

This glossary defines acronyms and terms used in this reference and is not a comprehensive glossary of computer terms.

A

array A synonym of storage array, storage system, and virtual array. A group of disks in one or more disk enclosures combined with controller software that presents disk storage capacity as one or more virtual disks.

array-based management A management structure in which HP P6000 Command View is installed on the management module within the EVA controller enclosure.

asynchronous A term used to describe computing models that eliminate timing dependencies between sequential processes. For example, in asynchronous replication, data is written to the source and the write is considered complete before the data is copied to the destination.

C

container Virtual disk space that is preallocated for later use as a snapclone, snapshot, or mirrorclone.

controller A hardware/software device that manages communications between host systems and other devices. Controllers typically differ by the type of interface to the host and provide functions beyond those the devices support.

D

default disk group The disk group created when the array is initialized. The disk group must contain a minimum of eight disks. The maximum is the number of installed disks.

disk group A named group of disks selected from all the available disks in a disk array. One or more virtual disks can be created from a disk group. Also refers to the physical disk locations associated with a parity group.

DR group Data replication group. A logical group of virtual disks in a remote replication relationship with a corresponding group on another array.

E

EVA HP Enterprise Virtual Array. A high-performance, high-capacity, and high-availability storage solution for the high-end enterprise class marketplace.

F

failover The process that occurs when one device assumes the workload of a failed companion device. Failovers can be planned or unplanned.

FCA Fibre Channel adapter. An adapter used to connect the host server to the fabric. Also called a host bus adapter (HBA) or a Fibre Channel host bus adapter (FC HBA).

G

GPT GUID Partition Table.

H

HBA *See* FCA.

host A computer that runs user applications and uses the information stored on an array.

M

management server
A server on which HP management software is installed.

mirrorclone
A copy of a virtual disk that is continually updated to reflect changes in the source. When first created (and whenever re-synchronized by an action or command), the content of a mirrorclone is synchronized to the source virtual disk.

R

RoHS
Reduction of Hazardous Substances.

S

SAN
Storage area network. A network of storage devices available to one or more servers.

server-based management
Management from a server.
See also management server.

snapclone
A copy that begins as a fully allocated snapshot and becomes an independent virtual disk. Applies only to the HP EVA.

snapshot
A nearly instantaneous copy of the contents of a virtual disk created without interruption of operations on the source virtual disk. Snapshots are typically used for short-term tasks such as backups.

SSD
Solid state disk. A high-performance storage device that contains no moving parts. SSD components include either DRAM or EEPROM memory boards, a memory bus board, a CPU, and a battery card.

V

virtual array
Synonymous with *disk array* and *storage system*. A group of disks in one or more disk enclosures combined with control software that presents disk storage capacity as one or more virtual disks. *See also* virtual disk.

virtual disk
Variable disk capacity that is defined and managed by the array controller and presented to hosts as a disk. May be called Vdisk in the user interface.

W

WWN
World Wide Name. A unique Fibre Channel identifier consisting of a 16-character hexadecimal number. A WWN is required for each Fibre Channel communication port.

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