Dell FluidFS 6.0 FS8600 Appliance
CLI Reference Guide

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Contents

About This Guide

This guide provide information about using the FS8600 command-line interface (CLI) to manage FluidFS clusters.

Revision History

Document number: 680-114–002

Revision	Date	Description
A	January 2017	Initial release of FluidFS v6

Audience

The intended audience for this document are storage or network administrators.

Related Documentation

The following documents comprise the core Dell FluidFS for FS8600 appliance documentation set.

Documents Intended for Dell Customers

- *Dell FluidFS Version 6.0 FS8600 Appliance Firmware Update Guide* – Provides information about upgrading the FluidFS software from version 5.0 to 6.0.
- *Dell FluidFS Version 6.0 Release Notes* – Provide information about FluidFS releases, including new features and enhancements, open issues, and resolved issues.
- *Dell Storage Manager Installation Guide* – Provides information about installing and configuring the Dell Storage Manager Data Collector and Dell Storage Manager Client.
- *Dell Storage Manager Administrator's Guide* – Provides information about using the Dell Storage Manager software to manage Storage Center and FS8600 appliances.
- *Dell Storage Manager Release Notes* – Provides information about Dell Storage Manager releases, including new features and enhancements, open issues, and resolved issues.

Documents Intended for Dell Installers and Certified Business Partners

- *Dell FluidFS Version 6.0 FS8600 Appliance Pre-Deployment Requirements* – Provides a checklist that assists in preparing to deploy an FS8600 appliance prior to a Dell installer or certified business partner arriving onsite to perform an FS8600 appliance installation.
- *Dell FluidFS Version 6.0 FS8600 Appliance Deployment Guide* – Provides information about the deploying an FS8600, including cabling the appliance to the Storage Center and network, and deploying the appliance using the Dell Storage Manager software.
- *Dell FS8600 Appliance Service Guide* – Provides information about FS8600 appliance hardware, system component replacement, and system troubleshooting.
- *Dell NAS Appliance SFP+ Replacement Procedure* – Provides information about replacing SFP+ transceivers on an inactive system.
- *Dell FluidFS FS8600 Appliance 1Gb to 10Gb Upgrade Procedure* – Provides information about upgrading a Fibre Channel FS8600 appliance from 1Gb Ethernet client connectivity to 10Gb Ethernet client connectivity.

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About the CLI

The command line interface (CLI) provides a comprehensive set of commands for managing the FluidFS cluster. The CLI allows you to perform the same management operations as the FluidFS NAS Manager WebUI, as well as operations that can be performed only from the CLI.

CLI Menus

CLI commands are organized using menus and submenus. The following table lists the CLI menus that are available.

Menu	Submenus	Description
client-access	• authentication – active-directory – users-database * monitoring-status – local-users * without-password-complexity-checks * settings – local-groups – mapping * policy * manual – available-backups – protocols * SMB-settings • GPO-settings * NFS-settings * FTP-settings * HDFS-settings • activity – active-sessions – open-files * close – virtual-machines – virtual-appliances • DNS-and-VIPs – public-IPs – DNS	Use this menu to manage local users and user groups, external user repositories, and user mapping policies.

Menu	Submenus	Description
	* monitoring-status	
environment	· data-protection – QOS – antivirus-scanners – file-access-notifications * subscribers – tape-devices – cluster-partnershps – NDMP-configuration · network – management * access · subnet * BMC-network – subnets – interface-roles – client-network-interface – default-gateway – static-routes – client-load-balancing – active-ndmp-sessions – monitor * external-servers-states * performance-per-node * performance-summary · read · write · IOPS · vmware – settings – vmware-servers – virtual-machines – virtual-appliances – computer-resources · time	Use this menu to manage client subnets, the default gateway, static routes, DNS, and client load balancing; view SMB and NDMP sessions; and monitor performance and external servers.
events	· system · auditing	Use this menu to monitor FluidFS cluster events and SACL auditing events.
hardware	· NAS-appliances – discovery · fabrics – iSCSI-portals – iSCSI	Use this menu to manage fabrics, NAS appliances and the storage subsystem; create and destroy a FluidFS cluster; and restore a configuration from storage.

Menu	Submenus	Description
	– FC • storage-subsystem – file-system-configuration • storage-identifiers • restore-configuration-from-storage • destroy-cluster	
maintenance	• block-storage • enterprise-manager • software-updates – download • mail-configuration • administrators – passwordless-access • SNMP • event-filter • support – security * support-access * FTP * ui-configuration – diagnostics * smb * nfs * ftp – internal * internal-storage-reservation * background-processes – cluster-name	Use this menu to manage the system time, data protection, administrators, SNMP, licensing, software updates, the file system, the support account, secured management, FTP, and the FluidFS cluster name; run diagnostics; and monitor background operations.
multitenancy	• tenants • NAS-volumes – volumes * clone * edit • subnet-restriction * SMB-shares • share-root-folder-permissions • share-level-permissions * NFS-exports • add-acl • delete-acl * quota	Use this menu to manage tenants.

Menu	Submenus	Description
	· rules – users – users-in-groups – groups · usage – users – groups · directory * snapshots · schedules * replication · schedules * configuration-backups * redirection-folders * file-access-notifications * list · capacity-over-time – all-SMB-shares * home-share – all-NFS-exports – all-replications – list-volumes · client-access – authentication * active-directory * local-users · without-password-complexity-checks * local-groups * users-database · monitoring-status * mapping · policy · manual * available-backups * protocols · SMB-settings – GPO-settings · NFS-settings · FTP-settings · HDFS-settings * local-users-settings – activity * active-sessions	

Menu	Submenus	Description
	* open-files * close – virtual-machines * virtual-appliances – DNS-and-VIPs * public-IPs * DNS • monitoring-status	
NAS-pool	• configuration • capacity-over-time	Use this menu to manage and configure the NAS pool.
NAS-volumes	• volumes – clone – edit * subnet-restriction – SMB-shares * share-root-folder-permissions * share-level-permissions – NFS-exports * add-acl * delete-acl – quota * rules • users • users-in-groups • groups * usage • users • groups * directory – snapshots * schedules – replication * schedules – configuration-backups – redirection-folders – file-access-notifications – list * capacity-over-time • all-SMB-shares – home-share • all-NFS-exports • all-replications	Use this menu to manage NAS volumes, clone volumes, NFS exports,SMB shares, quota rules, snapshots, replication, and configuration backups; and monitor quota usage.

Menu	Submenus	Description
	• list-volumes	

CLI Command Syntax

CLI commands have the following structure:

CLI> *<main_menu> <submenu(s)> <command> <argument(s)> -<option(s)>*

where:

- **CLI>** – Command prompt where you type the command
- ***<main_menu>*** – Name of the main menu
- ***<submenu(s)>*** – Names of one or more submenus (separated with spaces). Certain menus have multiple levels of submenus.
- ***<command>*** – Name of the command that you want to execute
- ***<argument(s)>*** – Arguments (separated with spaces) that you must enter with the command to execute the command successfully. You might have none or multiple arguments depending on the command that you want to execute. You must enter the arguments for a command in the correct order.
- ***<option(s)>*** – Options (separated with a space) that are available for a command. You might have none or multiple options depending on the command that you want to execute and you might need to enter at least one of the available options for the command to execute successfully. Each option for a command must start with a hyphen (-).

Navigating the CLI

When navigating the CLI, the following commands are available throughout the system:

- **back** — Moves back one level in the menu hierarchy
- **main** — Returns to the main menu
- **help** — Lists information about currently available menus, commands, arguments, and options
- **history** — Lists previously executed commands
- **exit** or **quit** — Exits the CLI
- **find** — Lists menus and commands containing the text you supply

Entering Commands in the CLI

There are two ways to enter commands in the CLI:

- Enter a command by navigating one menu at a time
- Enter a single line command

Press the Tab key to automatically complete a menu, submenu, command, or option name after entering a unique portion of the name. Tab completion can be useful in when entering long commands. For example, entering `net` and then pressing Tab is the same as entering `networking`. If there are several items that begin with those characters, the CLI displays the possibilities. For example, entering `NAS-volumes n` and then pressing Tab displays `NAS-pool` and `NFS-exports`.

Press Tab again to see the available submenus, commands, and options under the given string. For example, entering `events` and then pressing Tab twice displays the available events commands: `list` and `view`.

You can also use the CLI to abbreviate a command if the abbreviation uniquely identifies the command. For example, the following commands are identical: `events system list` and `events system li`.

Enter a Command by Navigating One Menu at a Time

Enter a command by navigating through the CLI one menu at a time.

1. Type the ***<menu name>*** and press the Enter key.
   The available submenus and commands under the menu are displayed.
2. If needed, type the ***<submenu name>*** and press the Enter key.
   The available submenus and commands under the submenu are displayed.
3. Repeat Step 2 until you reach the submenu level containing the command that you want to execute.
4. Type ***<command> <argument(s)> -<option(s)>*** and press the Enter key.
   The command is executed.

Example:

1. Type **client-access authentication mapping** and press the Enter key.
2. Type **mapping** and press the Enter key.
3. Type **manual** and press the Enter key.
4. Type **add NAS jsmith johns -EnableWindowsToUNIXMapping Yes** and press the Enter key.

Enter a Single Line Command

To enter a single line CLI command:

Type: ***<menu name> <submenu name(s)> <command> <argument(s)> <option(s)>*** and press the Enter key.

The command is executed.

Example:

Type: **client-access authentication mapping manual add Active-Directory jsmith johns EnableWindowsToUNIXMapping Yes** and press the Enter key.

CLI Output

Depending on the command, all available output might be displayed, or just the beginning of the output might be displayed along with the following message describing the options available for navigating the output.

```
<command> <number>% Press Enter for next line Space for next page or ESC to stop paging.
```

For some commands with lengthy output, the following options are available:

- `%` — Displays the percentage of output displayed
- `Enter` — Pressing Enter displays the next line of output
- `Space` — Pressing Space displays the next page of output
- `ESC` — Pressing Esc returns you to a command prompt

For the `-list` and `-view` commands, you can append --CSV to the command to display the command output in a comma-delimited format with a header.

Getting Help on the CLI

FluidFS Command Line Interface (CLI) provides commands for administration and monitoring of the FluidFS cluster.

- back

- main
- history
- exit
- quit
- find
- help

The CLI provides online help for menus, commands, arguments, and options. At any time while using the CLI, you can type **help** to see more information about the available menus, commands, arguments, and options.

Default commands

```
CLI/client-access/authentication/mapping/manual> help
default commands:
back
main
history
exit
quit
find
help
```

Available commands

In addition to the default commands, the following commands are available:

```
list
view
add
delete
restore
```

Example

```
CLI/client-access/authentication/mapping/manual> help view
view - Modify the mapping rule between a Windows and a UNIX user
```

Accessing the CLI

Log on to the CLI using either a VGA console or a secure shell (SSH) session.

Connect to the FluidFS Cluster CLI Using a VGA Console

Log on to the CLI using a VGA console to manage the FluidFS cluster.

NOTE: Connect a monitor to the NAS controller's VGA port and connect a keyboard to one of the NAS controller's USB ports.

1. From the command line, type the following command at the **login as** prompt:
   cli
2. Type the FluidFS cluster administrator user name at the **login as** prompt.
   The default user name is **Administrator**.
3. Type the FluidFS cluster administrator password at the ***<user_name>***'s password prompt.
   The default password is **Stor@ge!**.

You are logged on to the CLI and a Welcome window is displayed, listing the installed FluidFS version and the available commands in the main menu.

Connect to the FluidFS Cluster CLI Through SSH Using a Password

Log on to the CLI through SSH to manage the FluidFS cluster.

1. Use either of the following options:
   - Using an SSH client, connect to a client VIP. From the command line, type the following command at the **login as** prompt:
     `cli`
   - Using a UNIX/Linux workstation, type the following command from a prompt:
     `ssh cli@<client_VIP_or_name>`
2. Type the FluidFS cluster administrator user name at the **login as** prompt. The default user name is **Administrator**.
3. Type the FluidFS cluster administrator password at the ***<user_name>***'s password prompt. The default password is **Stor@ge!**.

You are logged on to the CLI and a Welcome window is displayed, listing the installed FluidFS version and the available commands in the main menu.

Connect to the FluidFS Cluster CLI Through SSH Without Using a Password

You can use SSH keys to bypass the SSH login prompt to manage the FluidFS cluster.

1. Log on to a UNIX/Linux workstation for which you want to bypass the SSH login prompt.
2. From the command line, type the following command:
   `ssh-keygen -t rsa`
3. Press Enter at the **Enter file in which to save the key (/home/***<user_name>***/**.ssh/id_rsa) prompt.
4. Press Enter at the **Enter passphrase (empty for no passphrase)** prompt and again at the **Enter same passphrase again** prompt. An SSH key is generated at **/home/***<user_name>***/**.ssh/id_rsa.pub.
5. Copy the SSH key.
6. Log on to the CLI using a password.
7. Type the following command:
   `system administrators passwordless-access add-ssh-keys Administrator <MachineName> "<SSH_key>"`

   Now you can use the following command to log on to the FluidFS cluster from the workstation without needing a password:
   `ssh <FluidFS_administrator_user_name>@<client_VIP_or_name>`

   You can also use the following format to run commands from the workstation without needing a password:
   `ssh <FluidFS_administrator_user_name>@<client_VIP_or_name> <CLI_command>`

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CLI Procedures

Adding a NAS Appliance to a FluidFS Cluster Using the CLI

Use this procedure to add a NAS appliance to a FluidFS cluster using the CLI. The recommended way to add a NAS appliance is to use the FluidFS NAS Manager WebUI. This procedure should be performed only by Dell Technical Support Services.

1. Log on to the CLI of the existing FluidFS cluster (do not log on to the new NAS appliance).
2. Determine the network ID of the existing client subnets for use in Step 3.

   ```
   environment network management access subnets list
   ```
3. Configure the client VIPs (PrivateIPs) and an IP address for each NAS controller that you are adding (PublicIPs). Dell recommends adding at least one client VIP per NAS controller.

   ```
   environment network management access subnets edit <NetworkID> <netmask> -PrivateIPs
   <x.x.x.x,x.x.x.x> PublicIPs <x.x.x.x,x.x.x.x>
   ```

   For example:

   ```
   environment network management access subnets edit 192.10.0.0 255.255.0.0 -PrivateIPs
   192.10.18.38,192.10.18.39,192.10.18.40,192.10.18.41 -PublicIPs 192.10.18.42,192.10.18.43
   ```
4. Repeat Step 3 for additional client subnets.

   For example:

   ```
   environment network management access subnets edit 10.10.76.0 255.255.252.0 -PrivateIPs
   10.10.78.121,10.10.78.122,10.10.78.123,10.10.78.124 -PublicIPs 10.10.78.125,10.10.78.126
   ```
5. (iSCSI only) Configure additional IP addresses for the iSCSI SAN subnets.

   ```
   hardware fabrics iscsi edit <name> -ControllersIPs <x.x.x.x>
   ```

   For example:

   ```
   hardware fabrics iscsi edit SANb -ControllersIPs
   192.11.18.14,192.11.18.15,192.11.18.16,192.11.18.17
   hardware fabrics iscsi edit SAN -ControllersIps
   192.11.18.10,192.11.18.11,192.11.18.12,192.11.18.13
   ```
6. Add the NAS appliance.

   ```
   hardware nas-appliances add-appliance <ApplianceServiceTag>
   ```

   For example:

   ```
   hardware nas-appliances add-appliance L846185
   ```
7. For iSCSI, the IQNs will have **FluidFS NasController*X*** in the name.
8. In the output of the following command, make sure **Luns Accessibility** shows **Optimal** from all NAS controllers to all NAS volumes.

   ```
   hardware storage-subsystem view
   ```
9. Perform an incremental format and join the new NAS appliance to the FluidFS cluster.

   ```
   hardware nas-appliances join-appliance <ApplianceID>
   ```

   For example:

   ```
   hardware nas-appliances join-appliance 2
   ```
10. After the previous command completes, confirm that the NAS appliance **Status** is **Optimal** in the output of the following command.

    ```
    hardware nas-appliances status-list
    ```