# Updating Firmware for Dell EqualLogic PS Series Storage Arrays and FS Series Appliances

# 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.**

# Contents

# About This Manual

Dell EqualLogic PS Series storage arrays optimize resources by automating capacity, performance, and network load balancing. Additionally, PS Series storage arrays offer all-inclusive array management software and firmware updates. Dell EqualLogic FS Series appliances, combined with PS Series storage arrays, offer a high-performance, high-availability, scalable NAS solution.

## Audience

The information in this guide is intended for administrators who update firmware on the PS Series storage arrays and/or FS Series appliances.

## Related Documentation

Before updating the firmware on your PS Series arrays or FS Series appliances, review the applicable documentation by logging in to the Documentation page on the Dell support site. Recommended documentation includes:

- *Dell Storage Update Manager User's Guide*
- *Dell EqualLogic Group Manager Administrator's Guide*
- *Dell EqualLogic Group Manager CLI Reference Guide*
- *Dell EqualLogic PS Series Storage Arrays iSCSI Initiator and Operating System Considerations: Optimizing Your SAN Environment for High Availability*
- *Dell EqualLogic Release and Support Guidelines*
- *Release Notes* for the firmware version to which you are updating

## Dell Online Services

To learn about Dell EqualLogic products and services:

1. Visit dell.com or the URL specified in any Dell product information.
2. Use the locale menu or click the link that specifies your country or region.

## Dell EqualLogic Storage Solutions

To learn more about Dell EqualLogic products and new releases, visit http://delltechcenter.com/page/EqualLogic. From this link, you can access articles, demos, online discussions, and more information about the Dell EqualLogic product family.

## Technical Support and Customer Service

Dell support service is available to answer your questions about PS Series storage arrays and FS Series appliances.

### Contacting Dell

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services might not be available in your area. To contact Dell for sales, technical support, or customer service issues, go to dell.com/support.

# Overview

This document describes the procedure for updating the firmware on Dell EqualLogic PS Series storage arrays and Dell EqualLogic FS Series appliances.

A PS Series storage array includes single or dual control modules, each with a compact flash card or microSD card containing the PS Series firmware. A single FS Series appliance includes two controllers, each with battery backup. An FS series appliance coupled with PS Series arrays offers a high-performance, highly available, scalable NAS solution.

To take advantage of new product features, enhancements, and bug fixes, use the latest PS Series storage array and FS Series appliance firmware.

## Release Type Definitions

Table 1. Release Type Definitions lists the release types and a short description of each type.

**Table 1. Release Type Definitions**

| Release Type | Definition |
| --- | --- |
| Major | A major release introduces new features, functionality, and/or architecture improvements. After you update the firmware to a new major revision, you will not be able to downgrade to an older release. A major release is identified by a change to the first digit of the firmware version number (**X**.Y.Z). |
| Minor | A minor release introduces new features, functionality, and/or new hardware enablement. After you update the firmware to a new minor revision (for example, 9.0.1 to 9.1.2), you might not be able to downgrade to the previous revision. A minor release is identified by a change to the second digit of the firmware version number (X.**Y**.Z). |
| Maintenance | A maintenance release carries bug fixes for enhanced stability and performance of the EqualLogic SAN. A maintenance release is identified by a change to the third digit of the firmware version number (X.Y.**Z**).<br><br>📝 **NOTE: The last number (Z) might contain more than one digit.** |
| Patch | A patch release addresses issues experienced in a customer-specific environment. A patch release is typically provided to the customer experiencing a problem by the Dell EqualLogic support team. A patch release does not require an array restart after installation in a PS Series storage array, but does require a restart after installation in an FS Series appliance. The patch being installed requires the parent firmware to be at the same version. In other words, you cannot install a 9.1.2-L1 patch if the parent firmware is at version 9.0.1. A patch release is identified by the tag "L" following the firmware version number. For example, 9.1.2-**L**1. |
| Hotfix | A hotfix release addresses issues experienced in a customer-specific environment. A hotfix release is typically provided to the customer experiencing the problem by the Dell EqualLogic support team. Hotfixes differ from patches in that they require a PS Series array and/or FS Series appliance restart after installation. A hotfix release is identified by the tag "H" following the firmware version number. For example, 9.0.3-**H**1. |

## PS Series Array and FS Series Appliance Compatibility

Table 2. Compatibility Matrix lists the supported PS Series array firmware versions and the compatible FS Series appliance firmware versions.

**Table 2. Compatibility Matrix**

| PS Series array firmware | v10.x | v9.1.x | v9.0.x | v8.1.x | v8.0.x | v7.1.x | v7.0.x |
|---|---|---|---|---|---|---|---|
| FS Series appliance firmware | v4.0.230030 or later | | | | v3.0.940200 | v3.0.x[1] | |

[1] FS Series firmware version 3.0.x, up to but not including v3.0.940200. PS Series firmware v7.1.x and v7.0.x are not compatible with FS Series firmware v3.0.940200 or later.

# About Dell Storage Update Manager

The Dell Storage Update Manager application is Dell's recommended method for performing firmware updates. This application helps you analyze your current Dell EqualLogic storage configurations to determine which components, if any, can or need to be updated.

Using a multistep firmware update wizard, Dell Storage Update Manager guides you and simplifies the update process. It provides an outline of all components that require updating and the estimated time to complete.

Deployed as a standalone Java application, Dell Storage Update Manager runs independently of Group Manager and SAN Headquarters, but offers a similar interface and help features.

Dell Storage Update Manager supports PS Series array firmware versions 6.0.x or later and FS Series appliance firmware versions 3.0.x or later.

> NOTE: If you are running a firmware version that is earlier than those supported, you must use the CLI to perform the update. Follow the procedures as described in the following sections:

- Update the PS Series Firmware Using the CLI
- FS Series Firmware Update Procedure for NAS Controllers

The Dell Storage Update Manager application updates the following components:

- PS Series array firmware
- FS Series appliance firmware
- PS Series disk drive firmware (excluding SED disk drives and FS Series disk drives)

## Features and Benefits

Dell Storage Update Manager offers the following features and benefits:

- Runs on Windows, Linux, and Macintosh systems
- Updates one group at a time
- Updates multiple members of a group
- Multiple instances can be run to update multiple groups
- When analyzing groups, provides the latest firmware versions
- Provides log files for each group
- Launches the Group Event Log Viewer for troubleshooting

# EqualLogic Host Software

> NOTE: Dell recommends that you install the EqualLogic host software products, Host Integration Tools (HIT) and SAN Headquarters (SAN HQ).

Host Integration Tools enable application and hypervisor-consistent data protection and integrated end-to-end management and operation of the EqualLogic SAN through tight integration with Microsoft, VMware, and Linux operating platforms and applications. HIT also enables host platforms to intelligently leverage EqualLogic SAN architecture, storage, and network usage, and implements changes such as registry settings and configuration options on the hosts that follow Dell's recommended best practices. Additionally,

in NAS environments, Virtual Storage Manager (VSM) for VMware vSphere (previously known as HIT/VMware) recognizes Dell EqualLogic FS Series appliances and allows provisioning, resizing, and deletion of NFS datastores.

SAN HQ enables you to centrally monitor alerts from your EqualLogic environment, obtain historical performance reporting, and analyze trends for capacity planning and troubleshooting. With SAN HQ, you can centrally monitor multiple EqualLogic groups from a single graphical interface. SAN HQ also enables the collection of diagnostic data and alerts that can be, at your discretion, automatically transmitted to Dell support to expedite resolution of issues.

Whenever SAN HQ is not monitoring the group, Group Manager displays an Action alarm in the Alarms and Operations panel. This alarm is also displayed if you are not running version 3.0 or later of SAN HQ with PS Series firmware version 7.0.x or later.

As a best practice, Dell recommends that you install or update to SAN HQ version 3.1.x or later and enable SupportAssist before updating to PS Series firmware version 10.x. For more information about SAN HQ and SupportAssist, visit the Dell website at [dell.com](dell.com).

You can download the Host Integration Tools from [eqlsupport.dell.com](eqlsupport.dell.com).

# Enhancements

This section describes changes that are not new to this release, but improve usability of the product.

## 32-Bit and 64-Bit Update Files

The compressed update kit available from the Dell EqualLogic customer support site includes two update files, a 32-bit version and a 64-bit version.

**NOTE:**

- The Dell Storage Update Manger extracts the correct kit, based on your configuration.
- During the update process, you must select which file to install. Table 3. 32-Bit and 64-Bit Arrays lists which file to select for each array. If you have a group that includes some arrays that require the 32-bit file and some arrays that require the 64-bit file, and you are using the Group Manager GUI to update the arrays, you must first perform the update procedure (including restarting the arrays) on all arrays of one type and then perform the procedure on all arrays of the other type.

**Table 3. 32-Bit and 64-Bit Arrays**

| Array Model Number | Required Update File |
|---|---|
| PS60x0 | 32-bit |
| PS65x0 | 32-bit |
| PS-M4110 | 32-bit |
| PS41x0 | 64-bit |
| PS4210 | 64-bit |
| PS61x0 | 64-bit |
| PS6210 | 64-bit |
| PS6610 | 64-bit |

## Language Packs

The Group Manager GUI defaults to the same language as your browser and operating system. You do not need to download and install a language pack to set the Group Manager GUI to a non-English supported language.

If your browser and operating system are set to a non-English supported language and you want the GUI to display in English, log in to the Group Manager GUI using the Group Manager IP address and appending **/english.html** (for example, **http://*ip_address*/english.html**).

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# PS Series Arrays – Planning and Prerequisites

📝 **NOTE: Any account with group administrator permissions can update array firmware.**

**Before performing a firmware update:**

- You must understand the impact of the update on the infrastructure and plan the update process carefully to avoid unplanned downtime. After updating any SAN component, test it to make sure that it is functioning properly.

    📝 **NOTE: Dell recommends that you perform firmware updates during periods of low activity. If possible, perform the update after a backup.**

- If you are planning to update the firmware on your FS Series appliances, you must first update the firmware on your PS Series storage arrays.

- Visit the Dell Recommended firmware versions page at eqlsupport.dell.com for the latest release recommendations. If the array is not running a supported version of array firmware, Dell strongly recommends that you update the firmware.

- If you receive an array with a later version of firmware than the version that is running on other arrays, update all your arrays to the later firmware version. If that update is not feasible, contact your Dell EqualLogic support representative.

- If you are adding an array to an existing group, update the firmware on the other group members to the latest recommended firmware first. Then, update the array's firmware to the latest recommended version. When all group members are running the same firmware, add the new member to the group.

    📝 **NOTE: Mixed firmware groups are supported only during the update process.**

- Optimize your SAN for high availability by reading and implementing the best practices documented in *Dell EqualLogic PS Series Storage Arrays iSCSI Initiator and Operating System Considerations: Optimizing Your SAN Environment for High Availability*.

## PS Group Health Check

Make sure that the EqualLogic PS Series group and arrays that you are updating have no current health problems. Check the following areas for issues:

- Group Message Log — Verify that no active errors or warnings are in the group message log.
- Group Configuration Check — Verify that RAID is healthy and not in a degraded state.
- Individual array attributes

    – Verify that disk drives are healthy and no disks have failed.

    – Verify that no arrays exhibit any enclosure threshold warnings.

    – Verify that array controllers are healthy and update paths are allowed.

Do not update a PS Series group or upgrade an array if the array is experiencing any of the following issues:

- Near or above max I/O load — View SAN HQ to determine this value.
- Limited free space — Recommended minimum free space per pool is 5 percent of total pool capacity or 100GB per pool member, whichever is less. View SAN HQ to determine this value.
- A replication operation is in progress.
- A volume or array migration is in progress.

# Disabling Email Home During Updates

By default, the Email Home feature sends an email to Dell support when you update group members.
If you do not want an email sent to Dell support, you can temporarily disable Email Home either in the Group Manager GUI or in the CLI.

To disable Email Home using the GUI, log in and then follow these steps:

1. Click **Group → Group Configuration**.
2. Click the **Notifications** tab to open the **Group Notifications** window.
3. Clear the **Send email alerts to Customer Support** (Email Home) checkbox.

To disable Email Home using the CLI, use the **grpparams email-contact** command.

You can also disable Email Home during an update using the GUI or CLI. To disable Email Home using the GUI, follow the same steps above. To disable Email Home using the CLI, type n when you are prompted to send the email to Dell support.

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# PS Series Array Preparation — Known Limitations and Recommendations

This section lists known limitations and recommendations associated with preparing the array for a firmware update.

## Minimizing Host Disruption

The firmware update process requires updating the firmware code and restarting each array controller. To reduce the impact of the controller restart operation on the host operating system and applications, the firmware update process occurs as a rolling controller update. During this process, a controller failover event causes the host initiators to log out and then log back in to the volumes connected to the SAN. If you have implemented the EqualLogic best practices for host settings and network design, this logout/login process has minimal effect on host volumes. The update process does not impact data integrity or result in any data loss.

For more information about minimizing host disruption, see *Dell EqualLogic PS Series Storage Arrays iSCSI Initiator and Operating System Considerations: Optimizing Your SAN Environment for High Availability* on the support website, eqlsupport.dell.com.

## Supported Update Paths

When updating array firmware, you must follow the supported update path, as shown in Table 4. Supported PS Series Firmware Update Paths. The first column lists starting firmware versions, and the second column lists the versions to which they can be updated.

> 📝 **NOTE: Dell Storage Update Manager can be used when updating firmware from the following versions:**
>
> - PS Series Storage Arrays firmware version 6.0 and later
> - FS Series Storage Appliances firmware version 3.0 and later

The notation used in the table refers to all releases of a given firmware revision. For example, 9.1.x refers to versions 9.1.1, 9.1.2, and so on, as well as all version 9.1 patch releases.

**Table 4. Supported PS Series Firmware Update Paths**

| Starting Versions | Supported Update Versions |
|---|---|
| 10.0.x | • Later 10.0.x releases |
| 9.1.x | • Later 9.1.x releases<br>• 10.0.x releases |
| 9.0.x | • Later 9.0.x releases<br>• 9.1.x releases |
| 8.1.x | • Later 8.1.x releases<br>• 9.0.7 or later; cross-platform replication requires v9.0.9 or later |
| 8.0.x | • Later 8.0.x releases<br>• 8.1.x releases |

| Starting Versions | Supported Update Versions |
|---|---|
| | • 9.0.x releases |
| 7.1.x | • Later 7.1.x releases<br>• 8.0.x releases<br>• 8.1.x releases (if not using FS Series appliances) |
| 7.0.x | • 7.0.9 or later releases<br>• 7.1.x releases<br>• 8.0.x releases<br>• 8.1.x releases (if not using FS Series appliances) |
| 6.0.x | • 6.0.5 or later releases<br>• 7.0.9 or later releases<br>• 7.1.x releases |

**NOTE:**

- You cannot update from v8.0 or v8.1 directly to v9.1. You must update to v9.0 first, and then from v9.0 to v9.1.
- If you are updating from a version earlier than v6.0.x, contact Dell Technical Support for assistance.

# General Rules

Unless otherwise indicated, the following rules apply when updating array firmware:

- You can download the update kit to multiple members simultaneously, but you can restart only one member at a time. For this reason, Dell discourages updates from multiple simultaneous GUI or CLI sessions.
- You can update firmware to a later release within its own version. For example, you can update version 9.0.1 to any subsequent version 9.0.x release.
- You can update firmware to the next version. For example, you can update any version 8.1.x release to a version 9.0.x release.
- If you are updating across multiple releases, you might have to update to one or more interim versions before updating to the latest firmware. For example, to update a group from version 8.1.2 to version 9.1, you must first update to version 9.0, then to version 9.1. See Supported Update Paths for version-specific limitations.

# Known Limitations and Recommendations

The following known limitations and recommendations apply when updating firmware under certain conditions.

## Pause Collection Replications Before Updating Firmware

When planning an update, identify a time period when replication is not occurring. Check all the collection replication schedules.

**NOTE: Dell recommends that you not update a PS Series group member while collection replication outbound from the group is in progress; otherwise, the collection replication operation might fail or appear to hang.**

To ensure that no collection replication occurs during an update:

- Make sure that collection replication does not begin while you are updating member firmware.
- Disable all the collection replication schedules.
- Verify that all in-progress replication operations have completed before updating the member.

## GUI Firmware Update Does Not Work in an Environment Running Only IPv6

The PS Series group must have IPv4 addresses to use the GUI update procedure. If your group uses an IPv6 address, follow the steps listed under Update the PS Series Firmware Using the CLI.

## Use the CLI to Update Firmware in a Single Controller Environment

The Firmware Update Wizard displays the error `Single controller updates are not allowed from the GUI` in the Group Manager GUI when the array module being updated has only a single control module. In a single controller environment, you must perform the update using the CLI.

## Updating Firmware Not Allowed from GUI when FTP is Disabled

Firmware updates cannot be performed using the Group Manager GUI when FTP is disabled. To update array firmware for groups in which FTP has been disabled, use the CLI instead.

## Working With Multimember Groups

A PS Series group includes one or more PS Series storage arrays configured as group members. Dell recommends that all PS Series group members run the same version of the storage array firmware; in multiversion configurations, the group can support only the functionality that is common to all versions.

## Add a New Array to an Existing Group

If you are adding a new array to an existing group, consider updating the group to the latest firmware before adding the new member to the group.

> NOTE: In general, mixed firmware groups are supported only during the period of time during which you are updating all members. See Supported Update Paths for information about specific firmware releases.

## Update Across Multiple Releases

If you must update to an interim version, update all the members to the interim version, then update all the members to the final version. Between updating group members, wait for the SAN to stabilize before continuing with the update. Use the Group Manager GUI or CLI to make sure that all members and volumes are online. Also, make sure that iSCSI initiators reconnect to volumes (if applicable).

## Important Information About Dell EqualLogic Firmware Updates and Microsoft Windows Clusters

Before you execute a Dell EqualLogic firmware update, to prevent potential conflicts between the SAN infrastructure and cluster follow the requirements and recommendations described in the following section:

### Microsoft Windows 2012 or 2016 Server Cluster

Place the Windows 2012 or 2016 cluster in maintenance mode during a SAN infrastructure firmware update. The average storage array restart time ranges from 15 seconds to several minutes, depending on your specific configuration.

Dell strongly recommends taking the following actions:

- Ensure that all cluster nodes are running the latest Microsoft updates, patches, and service pack levels prior to performing a SAN infrastructure firmware update.
- Update all cluster nodes to the latest Host Integration Tools (HIT kit) prior to performing a SAN infrastructure firmware update.

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# PS Series Array Firmware Update Procedure

This section describe how to download the firmware update kit and update the Group Manager firmware.

## Update the Firmware Using Dell Storage Update Manager

The Dell Storage Update Manager application is Dell's recommended method for performing firmware updates. Using a multistep firmware update wizard, Dell Storage Update Manager guides you and simplifies the update process.

For complete instructions on updating your firmware using the Dell Storage Update Manager application, refer to the *Dell Storage Update Manager User's Guide*, which is available at eqlsupport.dell.com.

## Update the Firmware Without Using Dell Storage Update Manager

If you are not using the Dell Storage Update Manager application, follow the procedures in the following sections to update your firmware.

## Download the Firmware Update Kit

To download the firmware update kit:

1. On a host that has the FTP utility available, use a web browser to access the Dell EqualLogic support website (eqlsupport.dell.com).
2. Log in to your support account. If you do not have an account, request one from the Login page.
3. Click the **Downloads** tab, then click **PS Series Firmware**.
4. Select the PS Series firmware version that you want to download.
5. Download the firmware to a host that has network access to the array.

    NOTE: Depending on the firmware version, the file might be 12–20MB in size, and might be in .tgz (GZIP compressed tar archive file), .tar, or .zip format.

6. If you downloaded the firmware in a compressed format (.tar or .zip), decompress the file to a directory on the host.

## Identify the Controller Type in the Group Manager GUI

To identify the control module type in the Group Manager GUI:

1. Log in to Group Manager.
2. In the Group panel, expand **Members**.
3. Click to highlight the member.
4. In the right panel, click the **Controllers** tab.
5. Make note of the control module type.

## Update the PS Series Firmware Using the GUI

This section provides the procedure to update the firmware using the GUI.

📝 **NOTE:**

- To perform a firmware update using the CLI, see Update the PS Series Firmware Using the CLI.
- You must perform the update from a host that has access to both control modules in the array and to the switch ports to which they are connected. Use the **ping** command to test network connectivity to the IP address of Ethernet port 0 on the array.
- Select whether to install the 32-bit version of the update file or the 64-bit version. See 32-Bit and 64-Bit Update Files for more information.

1. On the system where you downloaded the firmware kit, start the Group Manager GUI and log in to an account that has administrator privileges.
2. Click **Tools → Update Firmware**.
3. Select **Update using Group Manager** in Member firmware update dialog box.
4. Type the password for account with administrator privileges, then click **OK**.
5. In the **Select Firmware Update File** dialog box, navigate to the location of the firmware kit that you downloaded, then click **Open**.

   The **Firmware Update** dialog box displays firmware for each group member. If this dialog box does not open automatically, click **Browse** in the dialog box to open it.
6. Click **Select all** to update all members of the group, or click **Update selected members** to update only certain members of the group.

   For each member that you are updating, the Action column displays a different option depending on the firmware version you are applying and the version currently installed on the member:

   - **Upgrade** – Kit firmware is a later version than the member firmware.
   - **Downgrade** – Kit firmware is an earlier version than the member firmware.
   - **Reinstall** – Kit firmware is the same version as the member firmware.
   - **Apply patch** – Kit firmware is a patch.
7. Select an action to start the update process:

   - Step 1 of 3: FTP transfer (FTP the kit to the array)
   - Step 2 of 3: Processing firmware update

| Status | Action | Operation (what is happening in background) |
| --- | --- | --- |
| Step 1 of 3: Processing firmware update | Update | Occurs when you run a firmware version that is later than what is currently being run on an array |
| Step 2 of 3: Processing firmware update | Scroll bar | Firmware packet is being unpacked on the array controllers |
| Step 3 of 3: Update to vx.x.x pending restart to complete | Restart / Reupdate | Option choice to administrator |

8. When the preparatory steps are complete, the Action column displays a link to restart the member.

   - Step 3 of 3: Click **Restart** and then click **Yes** in the confirmation dialog box.

| Status | User Action | Operation (what is happening in background) |
| --- | --- | --- |
| Processing firmware update | None | Firmware update starts on the secondary controller. |
| (If lead member offline) | None | Standby controller restarts and member remains offline until restart is complete, controllers fail over, and group stabilizes. |
| (If non-lead member offline) | None | Standby controller restarts and member remains offline until restart is complete, controllers fail over, and group stabilizes. |

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| Status | User Action | Operation (what is happening in background) |
|---|---|---|
| Up to date | None | Standby controller has updated, restarted, and is now the active controller on the member. Group is stable and the active (now standby) controller is finishing the restart operation. |

> **NOTE:**
> - The firmware update is not complete until the updated members restart. Dell recommends that you restart one group member at a time after downloading the firmware on all the members.
> - During the member restart process, the secondary control module is restarted first. After the secondary control module has completed the restart operation, the active control module restarts, and active connections fail over to the secondary control module. This failover process might result in a temporary loss of connectivity to the Group Manager GUI, if connected through that member, during the restart. The Group Manager GUI displays `Lost Connectivity!` in the top-right corner. This behavior is normal. Log in to the Group Manager GUI again to continue.
> - In a single-member group, or on a member with a single control module, when the member goes offline during its update process, the status might not display correctly. A member that is offline cannot report its status. When the member restarts and is again online, the GUI displays the correct status.

9. Repeat steps 6 and 7 for each additional group member.

> **NOTE: Between updating members, wait for the SAN to stabilize before continuing with the update. For example, make sure all members and volumes are online.**

10. When all group members are updated to the same firmware version, click **Close**.
11. Clear the browser cache and the Java cache, especially if you updated firmware between maintenance releases.
12. Close and restart the GUI after all members are updated to make sure the GUI is consistent with the new features in the updated firmware.
13. Verify the firmware update by selecting **Members** in the navigation panel, selecting the members for which you have updated firmware, and then clicking the **Controllers** tab.

# Update the PS Series Firmware Using the CLI

This section provides the procedure to update the firmware using the CLI.

## Constraints and Prerequisites for Using the CLI

- If you are using a serial connection, make sure the connection has the following characteristics:

  - 9600 baud
  - 1 STOP bit
  - No parity
  - 8 data bits
  - No hardware flow control

- On an array with dual control modules, the **update** command updates both control modules. See PS Series Array CLI Output Examples for examples of the screen output displayed during this process.

## Update the Firmware Using the CLI

To update the firmware using the CLI:

1. Use FTP to copy the firmware .tgz file to the array that you are updating. See Output Displayed When Firmware Is Copied to an Array Using FTP for an example of screen output shown when you perform this step.

> **NOTE: On Linux systems, run the scp command to copy the firmware file to the array. If you want to use scp, skip to step 2.**

   a. Type `ftp` to open an FTP session.
   b. Type `open`, followed by the IP address of the array to establish a connection.

For example: `open 192.0.2.20`

c. When prompted for an account and password, type the password for an account that has administrator privileges.

d. Enter `binary` to enable a binary mode transfer.

e. Type `put` followed by the file name to transfer the file.

For example: `put kit_12345678.tgz`

A `Transfer complete` status message is displayed, indicating that the file transfer was successful. File names are case sensitive.

f. Type `close` to close the session.

g. Type `bye` to close the FTP window.

2. If you did not use FTP to copy the file to the array as described in step 1, use the Linux **scp** command to copy the firmware .tgz file to the array that you are updating. (If you used FTP in step 1 to copy the file, skip this step.) See Output Displayed When Firmware Is Copied to an Array Using SCP for an example of screen output shown when you perform this step.

a. Enter the **scp** command using the following syntax:.

```
$scp file_name grpadmin@ip_address_of_array:
```

For example:

```
$scp kit12345678.tgz grpadmin@192.0.2.20:
```

Make sure to include the colon (:) at the end of the IP address of the array.

If you have not previously used SSH or **scp** with this group, the system displays a message indicating that the authenticity of the host cannot be established. If you receive this message, verify that you are connected to the correct system and type `yes`.

b. Type the password for an account that has administrator privileges.

3. Connect to the array using telnet, SSH, or a serial connection. Connect through an IP address assigned to a network interface on the array (for example, Ethernet port 0). Do not connect to the group IP address.

4. Log in to the array using an account that has administrator privileges.

5. At the Group Manager CLI prompt, enter the **update** command. See Output Displayed When Update Command Is Entered for sample screen output shown when you perform this step.

6. When prompted, type `Y` to confirm that you want to update the array's firmware.

7. Verify the firmware update by entering the **member select** *member_name* **show controllers** command, where *member_name* is the name of the member that you have updated.

In the command output, note the SlotID value (which shows the control module) and FW Rev value (which shows the firmware version). See Output Displayed When Firmware Version Is Confirmed for sample screen output shown when you perform this step.

8. If necessary, restart the browser.

After updating the firmware on a member, the link to reconnect to the Group Manager GUI might not respond when you click it. Restart the browser to log in to the GUI again.

9. Repeat this process for each additional group member.

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# FS Series Appliances — Planning and Prerequisites

This section includes information that you should review before updating FS Series appliances.

**NOTE:**

- If you are running a firmware version that is not compatible with the corresponding FS Series appliance firmware version listed in Table 2. Compatibility Matrix, the following operations are not supported:

  – NAS reserve resize

  – Adding an appliance

  – Quota creation (allowed by the CLI)

  – User mapping (allowed by the CLI)

  – Forming a new cluster

  – All new features added in later releases

- As of FS Series appliances firmware version 3.0, any account with group administrator permissions can update array firmware. Before you update your NAS controllers to the latest version of FS Series firmware, you must first update all the storage arrays in the EqualLogic group to the corresponding PS Series firmware version. See PS Series Array and FS Series Appliance Compatibility for information about the latest FS and PS series firmware versions.

- Before updating your FS series firmware:

  – Ensure that your FS series NAS appliance is in a healthy state. If the appliance has any issues, or if you have questions or concerns, contact Dell Technical Support for help.

  – Make a backup copy of your data.

In some cases, you might have to update the firmware on the NAS controllers on a Dell EqualLogic FS Series appliance. Before updating the firmware, note the following restrictions:

- You must have the password for an account that has administrator privileges to update the NAS controller firmware.

- You cannot update the NAS controller firmware if a NAS controller is down or detached, or if the NAS service is stopped.

- Dell recommends updating the NAS firmware during a scheduled maintenance, because it can take 30-45 minutes for the update to complete.

- Because the NAS controllers are restarted during the update process, all Server Message Block (SMB) clients disconnect. Although connections to the Network File System (NFS) shares will not disconnect, I/O to these shares will stop for several minutes during the update. For these reasons, Dell suggests that you stop all I/O to the NAS cluster before the update.

## FS Series Appliances Health Check

**Before you begin:** Make sure that the NAS controllers that you are updating have no current health problems. See the *Dell EqualLogic Group Manager CLI Reference Guide* for detailed information about commands that you might need to run to validate the health of your appliances.

For a successful firmware update, ensure that:

- Replication partnership protocol is at version 3 or later

- NFS export netmask is in prefix format (in the range 1–31)

- All storage arrays in the EqualLogic group have been updated to the corresponding PS Series firmware version

- File system is not in maintenance mode

- SAN network is reachable from both ends (**NAS → EQL** and **EQL → NAS**)

- All attached controllers are up and running
- Admin subnet network is not restricted
- Client network and iSCSI (SAN) networks do not overlap
- Static route gateway or destination network ID is not 0.0.0.0
- No local administrator has a reserved name
- Nonanonymous binding in LDAP server configuration does not have an empty password
- FluidFS health scan rate is set to normal

  You can set the scan rate using the CLI command **nas-cluster select *cluster_name* fs-scan-rate normal**.

Table 5. PreUpdate Events lists sample errors that might be reported in the event log and the corresponding corrective action you should take if the firmware update process fails.

**Table 5. PreUpdate Events**

| Event Text | Corrective Action (if any) |
|---|---|
| NFS export netmask {{*mask*}} for path {{*path*}} is out of range. Prefix form of this netmask should be in range 1..31 | Check the validity of an NFS Export ACE regarding the subnet netmask:<br><br>· Netmask is not 255.255.255.255<br>· Netmask is a flat network (not 255.0.255.0) |
| Mount table is locked on controller(s) | Reboot controllers. |
| Pristine image is missing on controller(s) | Contact Dell Technical Support. |
| Check that EqualLogic firmware and FluidFS versions match | See Table 2. Compatibility Matrix. |

# NAS Reserved Names

When naming NAS volumes and snapshots, use the guidelines in the following sections.

## NAS Volumes (Containers)

Some names are reserved for internal FluidFS cluster functions. Ensure that no NAS volumes have the following names.

| . | .. | .snapshots |
|---|---|---|
| acl_stream | cifs (or smb) | int_mnt |
| unified | Any name starting with: locker_ | |

## NAS Snapshots

Some names are internal reserved names. Ensure that no NAS snapshots have the following names.

| rep_* | rollback | current |
|---|---|---|

# Supported Update Paths

When updating the NAS controllers on FS Series appliances, you must follow the supported update path shown in Table 6. Supported Firmware Update Paths. The first column lists the starting versions and the second column lists the versions to which they can be updated.

**NOTE: The notation used in the table refers to all releases of a given revision. For example, 3.0.x refers to versions 3.0.8690, 3.0.910390, 3.0.911021, and so on.**

**Table 6. Supported Firmware Update Paths**

| Starting Version | Supported Update Path |
|---|---|
| 4.0.x | Later 4.0.x releases |
| 3.0.940200 | 4.0.x releases |
| 3.0.940120 | 3.0.940200 |
| 3.0.920760 | 3.0.940200 |
| 3.0.911021 | 3.0.920760, 3.0.940200 |
| 3.0.910390 | 3.0.920760, 3.0.940200 |
| 3.0.8690 | 3.0.920760, 3.0.940200 |
| 2.0.7680 | 3.0.920760, 3.0.940120 |
| 2.0.7630 | 2.0.7680, 3.0.940120 |
| 2.0.7170 | 2.0.7680, 3.0.940120 |
| 2.0.6740 | 2.0.7680, 3.0.940120 |
| 2.0.6220 | 2.0.7680 |
| 2.0.4720 | 2.0.7680 |
| 1.0.x | 2.0.7680 |

**7**

# FS Series Firmware Update Procedure for NAS Controllers

If your NAS controllers are currently running any version of the FS Series firmware prior to version 3.0, you must use FTP to transfer the service pack to the NAS controllers and then use the **service-pack** command to update the controllers.

If your NAS controllers are currently running version 3.0 or later of the FS Series firmware, you also must first use FTP to transfer the service pack to the controllers, but then you must use the Dell EqualLogic Group Manager CLI command **nas-cluster select update** to update the controllers.

This chapter contains instructions for both procedures.

## Update the Firmware Using Dell Storage Update Manager

The Dell Storage Update Manager application is Dell's recommended method for performing firmware updates. This application helps you analyze your current Dell EqualLogic storage configurations to determine which components, if any, can or need to be updated. Using a multistep firmware update wizard, Dell Storage Update Manager guides you and simplifies the update process. It provides an outline of all components that require updating and the estimated time to complete

For complete instructions on updating your firmware using the Dell Storage Update Manager application, refer to the *Dell Storage Update Manager User's Guide*, which is available at eqlsupport.dell.com.

## Update the Firmware Without Using Dell Storage Update Manager

If you are not using the Dell Storage Update Manager application to update the firmware, follow the procedures in the next sections instead.

## Before You Begin — Determine the NAS Cluster Management IP Address

Both procedures require that you know the NAS cluster management IP address (which is not the same as the PS Series group management address). If you do not know the NAS cluster management IP address, use the Group Manager GUI to determine it:

1. Click **Group → Group Configuration**.
2. Select the NAS cluster (or NAS service).
3. Click the **Network** tab.
4. On the SAN Network panel, locate the **Network Settings** field.
5. Record the management IP address.

# Updating NAS Controllers Running FS Series Firmware Versions Earlier Than 3.0

This section describes how to update the NAS controllers if your controllers are currently running any version of the FS Series firmware earlier than version 3.0.

1. Download the service pack from the Dell EqualLogic support site (eqlsupport.dell.com) to your local host.
2. Connect to the **servicepack** directory on the NAS controller using FTP. The FTP port is 44421.

   ```
   ftp://grpadmin@nas_cluster_ip_address:44421/servicepack
   ```

   where *nas_cluster_ip_address* is the NAS cluster management IP address obtained in Before You Begin – Determine the NAS Cluster Management IP Address. Do not change the service pack file name.

   > 👉 **Important: Transfer the file in binary mode. If you transfer the service pack using auto mode, the file is treated as text and transferred in ASCII mode. Transferring in auto mode adds control characters to the service pack, which might cause the embedded checksum to fail.**

3. When prompted, type the grpadmin password and press Enter.
4. Copy the service pack from your local host to the **servicepack** directory on the NAS controller.
5. Disconnect from FTP.
6. Connect to the NAS cluster management IP address and log in to the NAS cluster using SSH on a server with access to the client network:

   ```
   ssh grpadmin@nas_cluster_management_ip_address
   ```

7. When prompted, type the grpadmin password and press Enter.
8. At the NAS cluster prompt, enter the **service-pack start** command and specify the name of the service pack file that you copied to the NAS controller. Press Enter.

   ```
   service-pack start service_pack_file_name
   ```

   During the update process, all even-numbered controllers reboot simultaneously and all odd-numbered controllers reboot simultaneously. You can monitor the progress of the update from an SSH connection to the NAS cluster using the **service-pack status** command.

9. In the Group Manager GUI, verify that the update has completed by checking the messages in the Monitoring window for a message similar to the following one:

   ```
   Successfully upgraded firmware to 3.0.920760
   ```

   You can also monitor the progress of the update using the Group Manager CLI using the following command: **nas-cluster select *cluster_name* operation show**

10. When all controllers have updated, perform a mass rebalance operation to rebalance the SMB clients between NAS controllers. In the GUI:

    a. Click **Group Configuration**, then select the NAS cluster (or service).
    b. On the **Advanced** tab, select **SMB Client Connections**.
    c. Click **Rebalance connections**.

    Or, in the Group Manager CLI, enter this command: **nas-cluster select *cluster_name* mass-rebalance**

# Updating NAS Controllers Running FS Series Firmware Version 3.0 and Later

This section describes how to use the Dell EqualLogic Group Manager CLI to update the NAS controllers. You can use this procedure only if your NAS controllers are currently running version 3.0 or later of the FS Series firmware.

1. In version 3.0, FTP is enabled by default. If FTP is disabled, you can enable it by logging in to the Dell EqualLogic Group Manager CLI and using the **nas-cluster select ftp-service** command:

   ```
   nas-cluster select appliance_name ftp-service enable
   ```

2. Download the service pack from the Dell EqualLogic support site (eqlsupport.dell.com) to your local host.

3. Connect to the **servicepack** directory on the NAS controller using FTP. The FTP port is 44421.

   `ftp://grpadmin@`*`nas_cluster_ip_address`*`:44421/servicepack`

   where *`nas_cluster_ip_address`* is the NAS cluster management IP address obtained in <u>Before You Begin — Determine the NAS Cluster Management IP Address</u>. Do not change the service pack file name.

   > 👉 **Important: Transfer the file in binary mode. If you transfer the service pack using auto mode, the file is treated as text and transferred in ASCII mode. Transferring in auto mode adds control characters to the service pack, which might cause the embedded checksum to fail.**

4. When prompted, type the password for an account with administrator privileges and press Enter.

5. Copy the service pack from your local host to the **servicepack** directory on the NAS controller.

6. Disconnect from FTP.

7. In the Group Manager CLI, enter the command to start the update in this format:

   `nas-cluster select `*`cluster_name`*` update start DellFluidFS-4.0.`*`version`*`-SP.iso`

   > 📝 **NOTE: If you are already at firmware v4.0 and are updating, the service pack extension is `.iso` and not `.sh`.**

8. In the Group Manager GUI, verify that the update has completed by checking the messages in the Monitoring window for a message similar to the following one:

   `Successfully upgraded firmware to 4.0.`*`version`*

   You can also monitor the progress of the update using the Group Manager CLI using the following command: **nas-cluster select** *cluster_name* **operation show**

9. When all controllers have updated, perform a mass rebalance operation to rebalance the SMB clients between NAS controllers.

   In the Group Manager GUI:

   a. Click **Group Configuration**, then select the NAS cluster.
   b. On the **Advanced** tab, select **SMB Client Connections**.
   c. Click **Rebalance connections**.
   d. Manually reconnect all SMB clients.

   Or, in the Group Manager CLI, enter this command: **nas-cluster select** *cluster_name* **mass-rebalance**

# PS Series Array CLI Output Examples

The following sections provide examples of the output displayed when you update the PS Series firmware as described in Update the PS Series Firmware Using the CLI.

## Output Displayed When Firmware Is Copied to an Array Using FTP

The following example uses FTP to copy a firmware update kit named kit_12345678.tgz from a host to an array with the IP address 192.0.2.53.

📝 **NOTE: This output is displayed during step 1 of the procedure in Update the PS Series Firmware Using the GUI.**

```
$ ftp
ftp> open 192.0.2.53
Connected to 192.0.2.53.
220 192.0.2.53 FTP server (NetBSD-ftpd 20100320) ready.
Name: (192.0.2.53:root): grpadmin
331 Password required for grpadmin.
Password: xxxxxxx
230 User grpadmin logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> binary
200 Type set to I
ftp> put kit_v10.0.0-R420720_2965447215.tgz
local: kit_v10.0.0-R420720_2965447215.tgz remote: kit_v10.0.0-R420720_2965447215.tgz
200 PORT command successful.
150 Opening BINARY mode data connection for 'v10.0.0-R420720_2965447215.tgz'.
226 Transfer complete.
13508472 bytes sent in 02:42 (81.06 KB/s)
ftp> close
221- Data traffic for this session was 13508472 bytes in 1 file.
Total traffic for this session was 13509009 bytes in 1 transfer.
221 Thank you for using the FTP service on 192.0.2.53.
ftp> bye
```

## Output Displayed When Firmware Is Copied to an Array Using SCP

The following example uses the Linux **scp** command to copy a firmware update kit named kit_12345678.tgz from a host to an array with the IP address 192.0.2.53.

📝 **NOTE: This output is displayed during step 2 of the procedure in Update the PS Series Firmware Using the CLI.**

```
$ scp kit_12345678.tgz grpadmin@192.0.2.53:
The authenticity of host '192.0.2.53' can't be established.
DSA key fingerprint is 93:30:25:e1:7f:f8:ce:78:06:a6:97:67:94:70:aa:e6.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.0.2.53' (DSA) to the list of known hosts.
grpadmin@192.0.2.53's password: xxxxxxx
kit_12345678.tgz 100% 26MB 4.4MB/s 00:06
```

# Output Displayed When Update Command Is Entered

The following example displays the output when you use the **update** command. After you enter the command, the system prompts for confirmation.

> ✎ NOTE: This output is displayed after you enter the command shown in step 5 of the procedure in <u>Update the PS Series Firmware Using the CLI</u>.

```
> update
Updating from kit file "kit_v9.1.0-R420720_2965447215.tgz"
This command will update the firmware on the array's flash card memory
using the update kit file that was copied to the array.
If you choose to proceed, you will be shown the current firmware version
and the version to which you will update. You will then be given the
choice to proceed again.
Do you want to proceed (y/n) [y]: y
Verifying kit integrity.
Active and secondary controllers detected.
Currently running version is: Storage Array Firmware V8.1.0 (R420509)
You will be updating to version: Unreleased V9.1.0 (R420720)
PLEASE NOTE:
You are upgrading from firmware version V8.1.0 to version V9.1.0.
You will NOT be able to downgrade back to V8.1.0 once the
upgrade is finished.
The firmware update will not take effect until you restart the array.
Do you want to proceed (y/n) [n]: y
Preparing to update active controller.
Updating flash memory on active controller.
This will take several minutes.
Update of flash memory on active controller completed.
Updating flash memory on secondary controller.
This will take several minutes.
Preparing to update secondary controller.
Update completed successfully.
The firmware update will take effect when the array is restarted.
To restart the array, enter the restart command at the CLI prompt.
>
```

# Output Displayed When Firmware Version Is Confirmed

The following example displays the output shown when you enter **member select** *member_name* **show controllers** to verify the firmware revision on the array's control modules. The SlotID value shows the control module, and the FW Rev. value shows the firmware revision running on the controller. In this scenario, the controllers are running firmware version 9.1.

> ✎ NOTE: This output is displayed after you enter the command shown in step 7 of the procedure in <u>Update the PS Series Firmware Using the CLI</u>.

```
> member select memlab2 show controllers

_____Controller Information _____

SlotID: 0                              Status: active
Model: 70-0425 (TYPE 15)                 BatteryStatus: ok
ProcessorTemperature: 48               ChipsetTemperature: 33
LastBootTime: 2017-02-28:10:14:48      SerialNumber: RMS0935328G2A44
Manufactured: 05AC                     ECOLevel: C00
CM Rev.: A02                           FW Rev.: Storage Array FW V9.1.0 (R20720)
NVRAM Battery: good                    BootRomVersion: 4.4.4
BootRomBuildDate: Wed Nov 20 16:37:31
EST 2013

_____
_____

SlotID: 1                              Status: secondary
```

```
Model: 70-0425(TYPE 15)           BatteryStatus: ok
ProcessorTemperature: 0           ChipsetTemperature: 0
LastBootTime: 2017-02-28:13:31:73  SerialNumber: RMS0935328G2A1J
Manufactured: 059A                ECOLevel: C00
CM Rev.: A02                      FW Rev.: Unreleased V9.1.0(R420720)
NVRAM Battery: good              BootRomVersion: 4.4.4
BootRomBuilDate: Wed Nov 20 01:29:14
 EDT 2013
_____
_____Cache Information _____

CacheMode: write-back             Controller-Safe: disabled
Low-Battery-Safe: enabled
```

# B

# FS Series Appliance CLI Output Examples

The following sections provide examples of the output displayed when you update the FS Series firmware as described in FS Series Appliances - Planning and Prerequisites.

## Output Displayed When Firmware Is Copied to an Appliance Using FTP

The following example uses FTP to copy a firmware update kit named DellFS-4.0.*version*-SP.iso from a host to an appliance with the IP address 192.0.2.21.

```
530 Please login with USER and PASS.
-----------------------------------------------------------
output from ftping the servicepack to the nodes (using SAN VIP)
-----------------------------------------------------------

[user@sparkperf3 ~]$ ftp 192.0.2.21 44421
Connected to 192.0.2.21.
220-This is system maintenance FTP service
220-=====================================
220-
220-Use this service to download diagnostic files and to upload
220-signed service-pack packages.
220-
220
530 Please login with USER and PASS.
KERBEROS_V4 rejected as an authentication type
Name (192.0.2.21:user): grpadmin
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> bin
200 Switching to Binary mode.
ftp> cd servicepack
250 Directory successfully changed.
ftp> put DellFluidFS-4.0.<version>-SP.iso
local: DellFS-4.0.<version>-SP.iso remote: DellFS-4.0.<version>-SP.iso
227 Entering Passive Mode (10,125,176,240,173,151)
150 Ok to send data.
226 File receive OK.
1143122587 bytes sent in 20 seconds (5.7e+04 Kbytes/s)
ftp> bye
221 Goodbye.
[user@sparkperf3 ~]$
```

**NOTE:**

- If you do not change to the **servicepack** directory, you will not be able to copy the file.
- When you ftp to the SAN VIP, you must use port 44421. A `connection refused` message is displayed when you use any other port, as shown in the following example:

```
-------------------------------------------
[user@sparkperf3 ~]$ ftp 192.0.2.21
ftp: connect: Connection refused
ftp> bye
-------------------------------------------
```

## Output from the Update Process

> NOTE: During the update, the nodes are rebooted. When rebooting occurs, you will lose connectivity. The command prompt might not appear automatically. Press Enter to display the prompt.

**Start the upgrade using the EQL CLI:**

```
qa85grp> nas-cluster select cla1-nas update start DellFluidFS-4.0.<version>-SP.iso
The system is carrying out a NAS command that takes a long time to complete.
It may be several minutes until you can issue another command.
Progress.....................  ( 0)%1607:257:ApplExec:28-Aug-2016
12:28:49.530257:ApplWorkItem.cc:751:INFO::49.2.30:Successfully started NAS
cluster update operation.

Progress.....................  (100)%

qa85grp>

qa85grp> 1621:270:ApplExec:28-Aug-2015
12:31:34.1000270:Appliance.cc:1799:INFO::55.2.153:Firmware4.0.<version> installation
started.
qa85grp>
```

**To view the update progress:**

```
eqa85grp> nas operation show
_____ Operations In Progress_____

Type          State           Progress Status   Long Running Op    P Object
----          -----           ---------------   ---------------    --------

nas-cluster-  nas-cluster-
update        update-in-      14%               false              dcooper
              progress

qa85grp>
```

The **nas show** command also shows the progress:

```
qa85grp> nas show

_____ NAS Cluster Information _____

Name: dcooper                         Type: nas
IPAddress: 192.0.2.21                 NASreserve: 3TB
Used Space Warn: 80%                  Available-Space-Warn: 10%
No Of Controllers: 2                  Gateway IP: 192.0.2.45
Desired Service Mode: normal          Service Mode Status: normal
FTP-service: enabled                  Max-Supported-NFS_Version: nfs-v3
Cluster MPV: 4                        TotalContainerCapacity: 4.7TB
InUseContainerSpace: 0MB              FreeContainerSpace: 0MB
AllocatedContainerSpace: 0MB
FreeContainerSpaceUnReserved: 2.63TB
FreeContainerSpaceOverCommitted: 0MB  SnapSpace: 0MB
No of Containers: 0                   No Of Thin-Clones: 0
No of NFS Exports: 0                  No Of SMB Shares: 0
No Of Snapshots: 0                    Total-DataReduction-Space-
FS-Scan-Rate: normal                     Savings:0MB

_____ Cluster-Wide Defaults _____

Container-Space-Provision: thick      Thin-Reserve: 0%
Space-Warn: 80%                       Def-Snap-Reserve: 50%
Def-Snap-Warn: 80%                    File-Permission: 744
Dir-Permission: 755                   File-Access-Security: ntfs
SMB-Guest-Access: N                   SMB-Antivirus: disable
SMB-FileExtensions:                   SMB-ExcludeDirPaths:
```

```
NFS-Permission: read-write              NFS-Trusted-Users: all-except-root
NFS-FileId-32bit-Compatibility: enabled SMB-LargeFileSize: 3GB
                                        SMB-LargeFileOpenPolicy: denied


_____ Cluster-Wide Data Reduction Defaults _____

Compression: disabled                   Access-Time-Filter: 30 days
Modify-Time-Filter: 30 days


_____Operations In Progress _____
                             Progress
Type            State        Status        Long Running Op    OP Object
----            -----        --------       ---------------    ---------
nas-cluster-    nas-cluster-
update          update-in-   14%            false              dcooper
                progress


_____ NAS Controller Information_____

Name          Service Tag     Version       NAS Controller State
-----         -----------     --------      -------------------
controller0   6HFWHX1-1       V4.0.230030    online

controller1   6HFWHX1-2       V4.0.230030    online


_____ NAS Cluster Status_____

Critical conditions::

NAS controller backup power supply status is critical.

Warning conditions::

_____ NAS Antivirus Server Information_____

Antivirus Hosts::

qa85grp>
```

The CLI message seen after the update completes (also seen in the GUI as in previous versions): `1938:552:ApplExec:28-Aug-2016:13:05:40.210552:Appliance.cc:1799:INFO:: 55.2.155:Successfully upgraded firmware to 4.0.<version>`.

# Output Displayed from service-pack start Command

The following example displays the output when you use the **service-pack start** command. After you enter the command, the system prompts for a confirmation.

```
> service-pack start DellFluidFS-4.0.<version>-SP.iso
SMB users might suffer from disconnection. Do you wish to continue
(Yes/No)? yes
Please wait, this operation may take a long time.
Starting
Checking preconditions
Blocking UI for administrative updates
Preparing alternate partition set
Saving configuration from current version
Migrating configuration from previous version
Copying to all controllers
Guarding file system
Rebooting cluster controllers - first half
Write failed: Broken pipe
[user@helix kit.sbmips.release]$ ssh grpadmin@192.0.2.21
grpadmin@192.0.2.21's password:
```

```
Welcome to "puppets" (4.0.<version>)
Installed on Fri Aug 28 06:25:09 EST 2015
Hello grpadmin, welcome to the Equallogic NAS Manager command line
interface (version 4.0.<version>)!
The available menus are:
administrators
backup-configuration
diag
static-routes
service-pack
There are no available commands.
<puppets> CLI > service-pack status
[Service Pack Installation Progress]
Overall Status = NotAvailable
Percents Completed = 100
Version = 4.0.<version>
Build Date = 28-Aug-2015.13:03 (1143122587)
[Detailed Progress]
Service pack step | Status
---------------------------------------|----------
Starting | Complete
Checking preconditions | Complete
Blocking UI for administrative updates | Complete
Preparing alternate partition set | Complete
Saving configuration from current version | Complete
Migrating configuration from previous version | Complete
Copying to all controllers | Complete
Guarding file system | Complete
Rebooting cluster controllers - first half | Complete
Rebooting cluster controllers - second half | Complete
Final cluster sync | Complete
Finished up | Complete
<puppets> CLI >
```