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

Beta Draft

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Preface

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.

Intended 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 and Resources

Before updating the firmware on your PS Series storage arrays or your NAS controllers on your FS Series appliances, review the following applicable documentation. These documents are available at the customer support website eqlsupport.dell.com. This link requires a login; see following section if you do not yet have a support site account.

- *iSCSI Initiators 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

To learn more about Dell EqualLogic products and new releases being planned, visit Dell EqualLogic TechCenter. Here you can also see articles, demos, online discussions, and more details about the benefits of our 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.

If you are a customer in the United States or Canada in need of technical support, call 1-800-945-3355. If you are outside of the United States or Canada, visit support.dell.com/support/topics/global.aspx for a listing of international Dell EqualLogic support telephone numbers.

If you have an Express Service Code, have it ready. The code helps the Dell automated support telephone system direct your call more efficiently.

Registering for an EqualLogic Support Site Account

Customer Support Site Access Benefits

You can access the following benefits when you have a support site account:

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- The latest EqualLogic PS Series array and FS Series appliance firmware with new features, functionality and bug fixes
- The newest releases of EqualLogic host software for Microsoft®, VMware® and Linux™ environments
- The latest EqualLogic management tools
- Ability to log and manage support cases
- Important technical alerts, technical notifications and the *Customer Connection Newsletter*
- Ability to register for webcasts and listen to archived webcasts
- Technical reports on a wide variety of topics

Creating an Account

To create an account:

1. Go to eqlsupport.dell.com.
2. Click `Create Account`.
3. Type your corporate email address and then click `Begin`. Dell does not accept addresses from third-party hosts such as Yahoo®, Hotmail®, or Gmail®.
4. Type the company, product, and installation site information.
5. Type your login information.
6. Click `Submit`.

Note: Requests are processed within one business day of receipt by the EqualLogic Customer Service Team. Account activation might take longer than one day if any required information is missing, inaccurate, or unverifiable.

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1 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 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 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, 5.1.2 to 5.2.2, 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**). **Note**: For FS Series appliances, 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 requires 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 a5.2.5-L1 patch if the parent firmware is at version 5.2.1. A patch release is identified by the tag "L" following the firmware version number. For example, 5.2.5-**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, 5.0.3-**H**1.

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PS Series Array and FS Series Appliance Compatibility

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

Table 2: Compatibility Matrix

PS Series array firmware	v8.0.x	v7.0.x	v6.0.x	v5.2.x	v5.1.x	v5.0.x
FS Series appliance firmware	v3.1.x	v3.0.x	v2.0.x	v1.0.x	v1.0.x	not supported

EqualLogic Host Software

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.

As of version 7.0 of the PS Series firmware, Group Manager displays an Action alarm in the Alarms and Operations panel whenever SAN HQ is not monitoring the group. This alarm is also displayed if you are not running version 3.0 or later of SAN HQ with PS Series firmware version 8.0.

As a best practice, Dell recommends that you install or update to SAN HQ version 3.0 or later and enable SupportAssist before updating to PS Series firmware version 8.0. For more information about SAN HQ and SupportAssist, refer to the Dell website at: dell.com/Learn/us/en/04/campaigns/equallogic-software?c=us&l=en&s=bsd&cs=04&redirect=1&delphi:gr=true.

You can download the Host Integration Tools from eqlsupport.dell.com.

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2 PS Series Array Planning and Prerequisites

The following section contains information about PS Series storage array planning and prerequisites.

Note: As of PS Series Storage Array version 7.0, any account with the group administrator permissions can update array firmware.

Planning and Prerequisites

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 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 recommended 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, upgrade all of your arrays to the later version. If that upgrade is not feasible, contact your Dell EqualLogic support representative.

- If you are adding an array to an existing group, upgrade the other group members to the latest recommended firmware first. Then, upgrade 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 the Dell EqualLogic document *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 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.

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  - Verify that all arrays do not exhibit any enclosure threshold warnings.
  - Verify that array controllers are healthy and upgrade paths are allowed.

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

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

Disabling E-Mail Home During Updates

By default, the E-Mail Home feature sends an email to Dell customer support when you update group members.

If you do not want an email sent to Dell customer support, you can temporarily disable the E-Mail Home feature (either in the Group Manager GUI or in the CLI using the `grpparams email-contact` command). You can disable the E-Mail Home feature during an update using the CLI. On the CLI screen, type `n` when prompted to send the email to customer support.

To disable the E-mail Home feature using the GUI, log in and complete these steps:

1. Click `Group`, then `Group Configuration`.
2. Click the `Notifications` tab to open the Group Notifications window.
3. Clear the `Send e-mail alerts to Customer Support` (E-Mail Home) checkbox.

Installing and Using Localized Versions of the GUI

Beginning with version 6.0, you can install language files that allow you to interact with the Group Manager GUI in languages other than English. This section provides information about downloading, installing, and using the language files.

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Language File Considerations

The language pack for a firmware release includes all the language files (one per language) available for use with that release. You must use the files in the language pack that correspond to the firmware version currently running on your arrays.

Install the firmware, and then install the corresponding language files you want to use. On earlier systems, the capacity of the boot flash device might limit the number of languages you can install, but installing a single language file is supported on all PS40x0/5000/60x0 series arrays.

If you already have one or more language files installed, and you are upgrading to a maintenance release (for example, from version 8.0.x to version 8.0.y), do not reinstall the language files. The language files you are currently using are still available and valid after the upgrade.

If you are upgrading to a new major release (for example, from version 8.0.x to version 8.1.x), your installed language file is not valid for the upgrade. New language packs are usually available within 90 days of the firmware release. If you can manage temporarily with the English-only kit, you can upgrade the firmware and then install the corresponding language files when they are available.

Available Languages

The following language files are available as part of language pack on the Dell EqualLogic customer support website eqlsupport.dell.com with firmware releases beginning with version 6.0:

- French (fr)
- German (de)
- Japanese (ja)
- Korean (ko)
- Simplified Chinese (zh)
- Spanish (es)

Before you install a language pack, check the compatibility information listed in Table 3.

Table 3: Language Pack Compatibility

Firmware Version	Language Pack
7.0.2 or later	7.0.T2
7.0.1 or earlier	7.0.T1
6.0.9 or later	6.0.T2
6.0.8 or earlier	6.0.T1

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Overview of Language Installation and Use

To download, install, and use localized versions of the GUI:

1. Download the language pack from the Dell EqualLogic customer support website (eqlsupport.dell.com).
2. Install the file for the language(s) you want to use.
3. Specify the language settings for the operating system and browser.
4. Clear the Java cache and browser cache.

Each of these steps is explained in the following sections.

Downloading the Language Pack

Download the language pack for a firmware release from the same place where you obtained the firmware:

1. On a host that has the FTP utility available, use a web browser to access the Dell EqualLogic customer support website eqlsupport.dell.com).
2. Log in to your support account. If you do not have a support account, request an account from the Login page.
3. Click the `Downloads` tab, then click `PS Series Firmware`.
4. Select the PS Series firmware version you are currently using.
5. Click the link for the required languages.
6. Download the language pack .zip file. The files for all available languages are compressed into the same .zip file.
7. Unzip the files to a directory on the host.

Installing the Language Files

You can use the Group Manager GUI or the Group Manager CLI, to install the required language pack, as described in the following sections.

Installing Language Files Using the GUI

1. On the computer where you have downloaded the language pack, start the Group Manager GUI and log in using the `grpadmin` account.
2. From the Group Manager GUI Tools menu, select `Update firmware`.
3. Type the password for the default group administration account on the group (`grpadmin`), then click `OK`.
4. In the `Select Firmware Update File` dialog box, navigate to the location of the language files.

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5. Select the language file that you downloaded and click `Open`.
6. Click `Select all` to install the language on all members of the group, or click `Update selected members` to install the language on certain members of the group.
7. Under `Action`, click `Install`. The language file is installed.
8. Repeat steps 4 through 7 for each language file you want to install.

Note: Restarting a member is not required after performing an update to install a language file.

Installing the Language Files Using the CLI

The procedure for installing a language file using the Group Manager CLI is the same as the procedure for updating firmware.

Notes:

- If you have more than one array in the group, you must install the language files on each array.
- You can install more than one language file on each array, but you must install the files one at a time.

1. Use FTP to copy the firmware language file to the array. See *Output Displayed When Firmware Is Copied to an Array Using FTP on page 33* 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 open a connection.
   For example: `open 192.168.10.20`

   c. When prompted for an account and password, specify the `grpadmin` account and password.

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

   e. Type `put` followed by the file name to transfer the file.
   For example:
   `put kit_V8.0.0-T1_fr_1234567`

   Note: A `Transfer complete` status message appears to indicate 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 language file to the array you are updating. See *Output Displayed When Firmware Is Copied to an Array Using SCP on page 33* for an example of the screen output shown when you perform this step.

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Type the `scp` command using the following syntax:

`$scp filename grpadmin@`*`ip_address_of_array`*`:`

For example:

```
$scp kit_V8.0.0-T1_fr_1234567 grpadmin@192.168.10.20:
```

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 enter `yes`.

a. Type the password for the `grpadmin` account.

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 the `grpadmin` account.
5. At the Group Manager CLI prompt, enter the `update` command. See *Output Displayed When Update Command Is Entered on page 34* for a sample screen output shown when you perform this step.
6. When prompted, enter `Y` to confirm that you want to update the firmware with the language file.

Note: Restarting a member is not required after performing an update to install a language file.

Specifying Language Packs

The language setting for your operating system must match the language setting for your browser. If the language settings do not match, the GUI displays English only.

The method for specifying the language settings varies based on the type of operating system and browser. This section describes how to specify the language settings for the system running Windows with the Internet Explorer® 8 browser.

Setting the System Language on Systems Running Windows

1. Open the Control Panel.
2. Select `Region and Language`.
3. From the dialog box, click the `Formats` tab (default).
4. From the `Format` drop-down box, shown in Figure 1, choose a setting for the language you want to use.
5. (Required only for Java 7) From the dialog box, click the `Keyboards and Languages` tab and then select the language you want to use in the `Choose a display language` section.

   Note: If the language you want to use is not listed, you can obtain the language pack from Microsoft.
6. Click `OK`.

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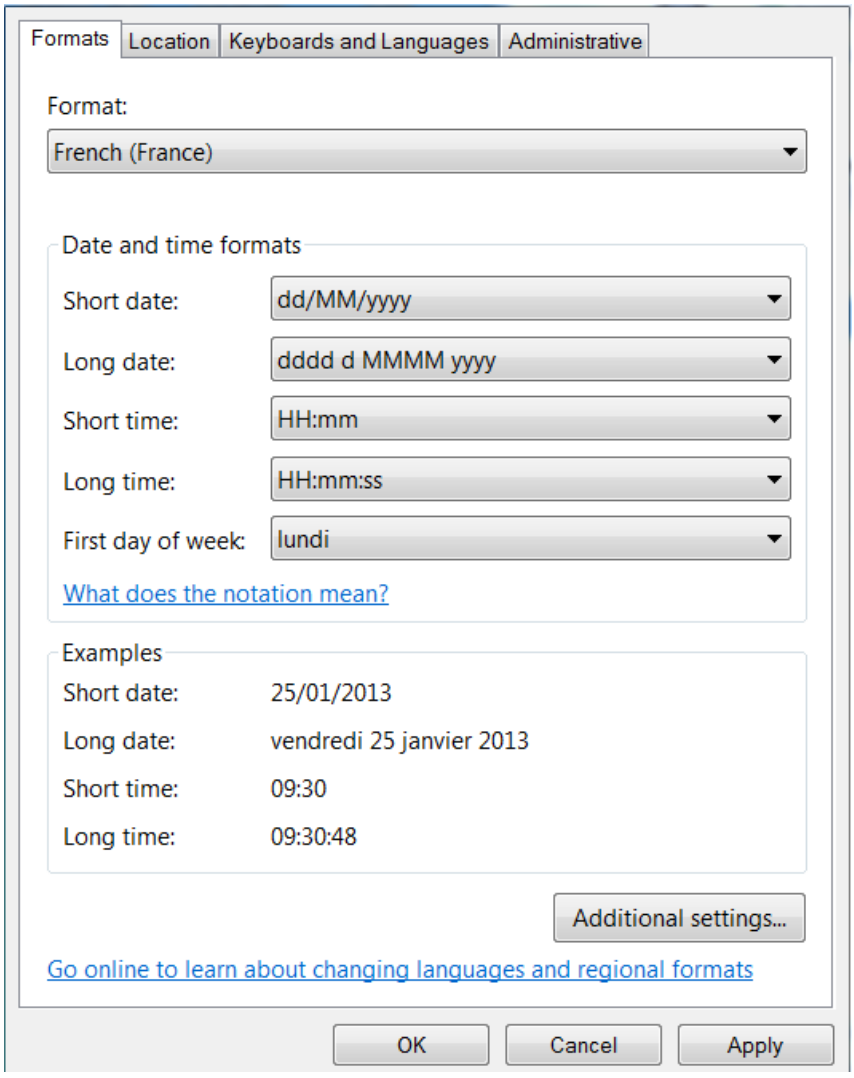
Figure 1: Region and Language Formats Selection Box



Specifying the Browser Language in Internet Explorer

1. From the `Tools` menu, select `Internet Options`.
2. Click `Languages` at the bottom of the `General` tab.
   The currently selected language is displayed in the list box, as shown in Figure 2.
3. If the language you want to use is not displayed, click `Add` and then select the language you want to use.
4. Click the `Move up` button to move your selected language up until it is the first language in the list box, which is the configured language for the browser.
5. Click `OK`.

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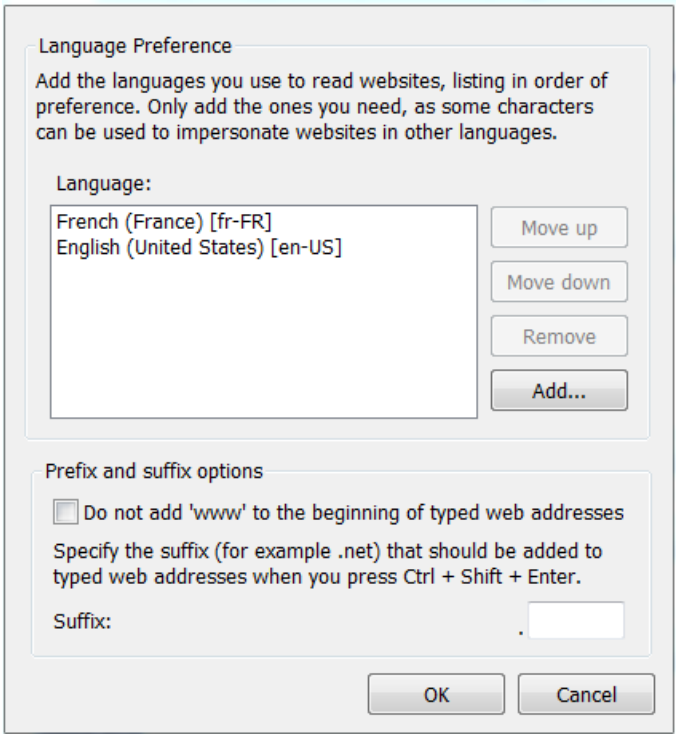
Figure 2: Language Preference Screen



Clearing the Java Cache and Browser Cache

After changing the language settings, clear the Java cache and the browser's cache on your system if you are updating from one major version to another.

1. Log out and close any instances of the Group Manager GUI that are running on your system.
2. Clear the system's Java cache:
   a. Open the Control Panel.
   b. Select `Java`.
   c. Under `Temporary Internet Files`, click `Settings`.
   The Temporary Files Settings screen (Figure 3) is displayed.
   d. Click `Delete Files`.
   e. Click `OK` until the Control Panel screens exit.

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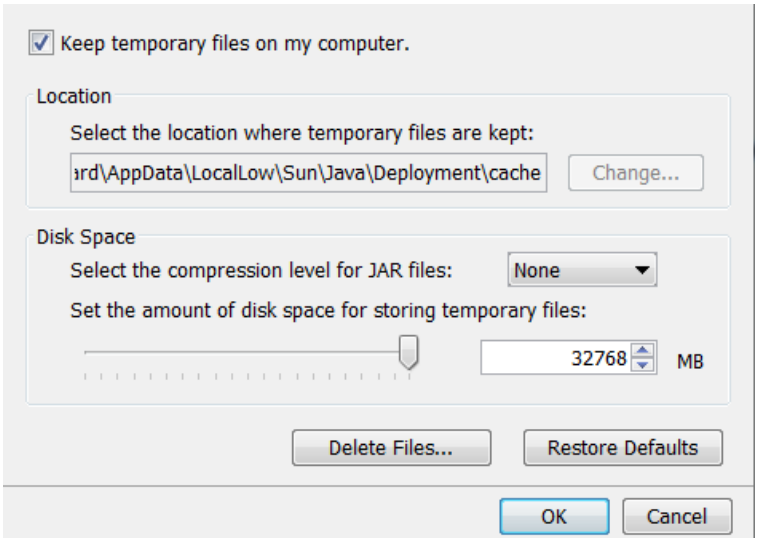
Figure 3: Temporary Files Settings Screen



3. Clear your browser's cache:

   a. From the `Tools` menu, select `Internet Options`.

   b. In the Browsing History section, click `Delete`.
   The Delete Browsing History screen (Figure 4) is displayed.

   c. Make sure the `Preserve Favorites website data` checkbox is cleared.

   d. Make sure the `Temporary Internet files`, `Cookies`, and `History` boxes are selected.

   e. Click `Delete`.

   f. Click `OK`.

4. Log in to the Group Manager GUI.

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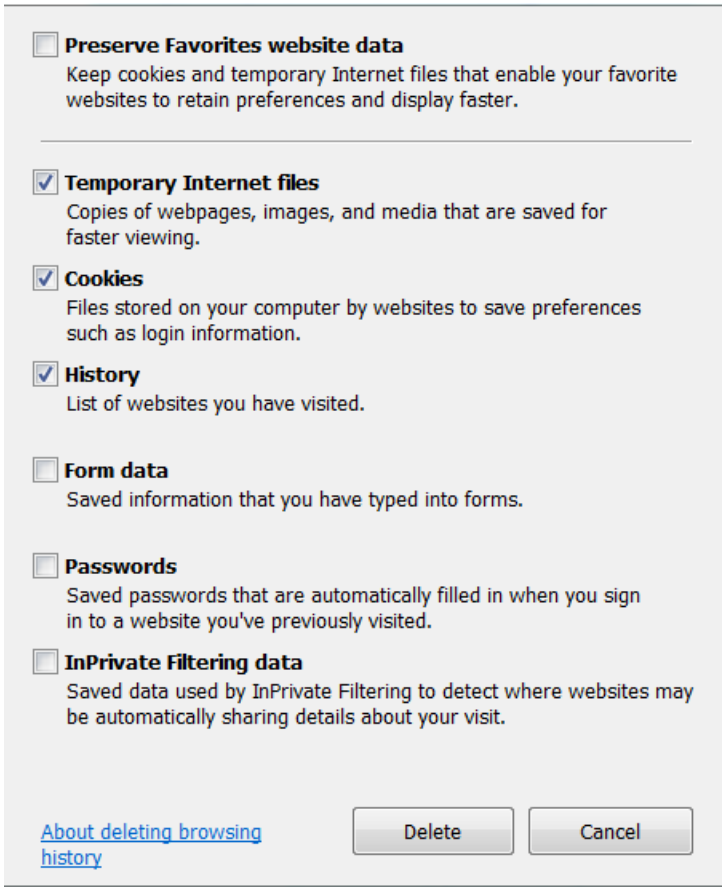
Figure 4: Delete Browsing History Screen



Changing to English GUI

If you have installed one or more language packs, but would like to see the English language version of the Group Manager GUI, log in to the GUI using the Group Manager IP address with the string `/english.html` at the end, as in the following example:

```
http://10.121.1.1/english.html
```

A completely new GUI session starts in English.

Using Localized Online Help

Localized online help is served from psonlinehelp.equallogic.com to your web browser. An Internet connection is required. If you do not have access to the internet, contact your support representative for a copy of the language pack.

1. Open a web browser and navigate to eqlsupport.dell.com.
2. Log in using your Customer Support Account.
3. Hover over `Downloads` and then click `PS Series Firmware`.

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4. Click the appropriate version number. Notice that more options are displayed.
5. Click the version number to the right of Download page.
6. Navigate to the translated documents link in the documentation section.
7. Click the desired language under `Downloadable Online Help for Group Manager`.

To use a localized version of the online help, follow the instructions in the readme file posted with the language files.

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3 Major Changes

This section describes the major changes that are new to PS Series Storage Arrays firmware version 7.0.

32-Bit and 64-Bit Upgrade Files

Starting with version 7.0, the compressed upgrade kit that you download from the Dell EqualLogic customer support site includes two upgrade files, a 32-bit version and a 64-bit version.

During the upgrade process, you must select which file to install. The following table lists which file to select for each array.

Note: 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 4: 32-Bit and 64-Bit Arrays

Array Model Number	Required Upgrade File
PS4000	32-bit
PS5x00	32-bit
PS5x00E	32-bit
PS60x0	32-bit
PS6510	32-bit
PS-M4110	32-bit
PS41x0	64-bit
PS61x0	64-bit
PS6210	64-bit

Dell Array Retirement

Controller Types 4, 5, and 6

Arrays with controller types 4, 5, and 6 have reached end-of-service life. Firmware version 8.0 will not load on these arrays, listed in Table 5

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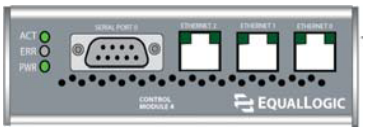
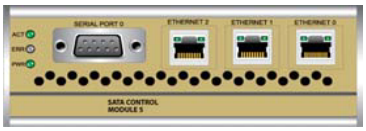
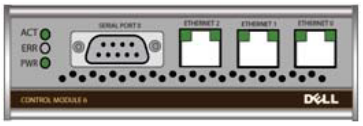
Table 5: Arrays With Controller Types 4, 5, and 6

Array Model	Controller Type	Faceplate	Drive Type
PS3000X, PS3000XV, PS5000	Type 4		SAS
PS5000E	Type 5		SATA
PS5500	Type 6		SATA

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4 Preparing the Array – 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 upgrade. 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 upgrade process does not impact data integrity or result in any data loss.

For more information about minimizing host distruption, see the *iSCSI Initiators and Operating System Considerations: Optimizing Your SAN Environment for High Availability* document at the customer support website eqlsupport.dell.com.

Supported Upgrade Paths

When updating array firmware, you must follow the supported upgrade path, shown in Table 6.

The first column lists starting firmware 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 firmware revision. For example, 4.3.x refers to versions 4.3.2, 4.3.4, 4.3.5, 4.3.6, 4.3.7, and 4.3.8, as well as all version 4.3 patch releases.

Table 6: Supported Firmware Upgrade Paths

PS Series Storage Array Starting Version	Supported Upgrades
8.0.x	• Later 8.0.x releases
7.0.x	• Later 7.0.x releases
6.0.x	• Later 6.0.x releases
5.2.10 and later	• Later 5.2.x releases • 6.0.6 and later
5.2.x up to 5.2.9	• Later 5.2.x releases • 6.0.x up to 6.0.5
5.1.x	• Later 5.1.x releases

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PS Series Storage Array Starting Version	Supported Upgrades
	• 5.2.x and 6.0.x
5.0.x (excluding 5.0.0 and 5.0.1)	• Later 5.0.x releases • 5.1.x • 5.2.x
5.0.0 and 5.0.1	• 5.0.2
4.3.x	• Later 4.3.x releases • 5.0.x (excluding 5.0.0 and 5.0.1)
4.2.x	• Later 4.2.x releases • 4.3.x • 5.0.x (excluding 5.0.0 and 5.0.1)
4.1.x	• Later 4.1.x releases • 4.2.x • 4.3.x
4.0.x	• Later 4.0.x releases • 4.1.x

General Rules

Unless otherwise indicated in Table 6, 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 7.0.2 to any subsequent version 7.0.x release.
- You can update firmware to the next version. For example, you can update any version 5.1.x release to a version 5.2.x release.
- If you are running older firmware versions, or 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 4.0.1 to version 5.2.5, you must first update to version 4.1.x, then to version 4.3.x, then to version 5.0.x, and finally to version 5.2.5.

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Known Limitations and Recommendations

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. Do 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. In addition, make sure that collection replication does not begin while you are upgrading member firmware.

To make sure that no collection replication occurs during an update, disable all the collection replication schedules. Then, verify that all in-progress replication operations have completed before updating the member.

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

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 *Updating the PS Series Firmware Using the CLI on page 25*.

Use the CLI to Update Firmware in a Single Controller Environment

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

Updating Firmware Not Allowed from GUI when FTP Is Disabled

You cannot perform firmware updates 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 requires that all PS Series group members run the same version of the storage array firmware; in multiversion configurations, the group can support only functionality common to all versions.

Adding a New Array to an Existing Group

If you are adding a new array to an existing group, update the group to the latest firmware before adding the new member to the group. Mixed firmware groups are supported only while you are updating all members. See *Supported Upgrade Paths on page 17* for information about specific firmware releases.

Updating 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 Upgrades and Microsoft Windows Clusters

The following upgrade paths require additional steps to transition between SCSI Primary Command Specifications (SPC) revisions:

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- v4.1.x to v4.3.5-H1
- v4.2.x, v4.3.x to v5.x
- v5.x to v6.x

Before you execute a Dell Equallogic firmware update, to prevent potential conflicts between the SAN infrastructure and cluster, follow these requirements and recommendations:

Microsoft Windows 2008/2008-R2/2012 Server Cluster

You must place the Windows 2008 or Windows 2012 cluster in maintenance mode during a SAN infrastructure firmware update. The average storage array restart times range from 15 seconds to several minutes, depending on your specific configuration.

Recommendations

Dell strongly recommends taking the following actions:

- Ensure all cluster nodes are running the latest Microsoft® updates, patches, and service pack level prior to performing a SAN infrastructure firmware update.
- Upgrade all cluster nodes to latest Host Integration Tools (HIT kit) prior to performing a SAN infrastructure firmware update.
- Apply the hotfix described in the following Microsoft KnowledgeBase articles.

Windows Server 2008

- If your environment contains Microsoft Windows Server 2008 R2 clusters, apply the following hotfix to each cluster node before updating group members:

http://support.microsoft.com/kb/978562 —The "Validate Multiple Arbitration" test on a Windows Server 2008 R2-based failover cluster might fail incorrectly.

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5 PS Series Array Firmware Update Procedure

The following sections describe how to download the firmware update kit and update the group member firmware.

Downloading 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 customer support website (eqlsupport.dell.com).
2. Log in to your support account. If you do not have a support account, request an account from the Login page.
3. Click the `Downloads` tab, then click `PS Series Firmware`.
4. Select the PS Series firmware version 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.

Note: To use the Group Manager GUI in a language other than English, you must also download the appropriate language pack from the support website. See *Installing Language Files Using the GUI on page 6* for more information.

Identifying the Controller Type in the Group Manager GUI

You can identify control module type in the Group Manager GUI using the following procedure:

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

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Updating the Firmware Using the GUI

Notes:

- To perform a firmware update using the CLI, refer to *Updating the PS Series Firmware Using the CLI on page 25*.
- 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.
- Starting with version 7.0, you must select whether to install the 32-bit version of the upgrade file or the 64-bit version. See *32-Bit and 64-Bit Upgrade Files on page 15* for more information.

1. On the system where you downloaded the firmware kit, start the Group Manager GUI and log in using the `grpadmin` account.
2. Click `Tools`, then `Update Firmware`.
3. Type the password for default group administration account on the group (`grpadmin`), then click `OK`.
4. In the `Select Firmware Update File` dialog box, navigate to the location of the firmware kit you downloaded, then click `Open`. If this dialog box does not open automatically, click `Browse` in the Firmware Update dialog box to open it.

   The `Firmware Update` dialog box displays firmware for each group member.

   Note: Starting with v7.0, you must select whether to install the 32- or 64-bit upgrade file. See *32-Bit and 64-Bit Upgrade Files on page 15* for more information.
5. Click `Select all` to update all members of the group, or click `Update selected members` to update only certain members of the group.

   Note: In versions prior to 6.0, the `Select all` option is not available.

   For each member 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 higher version than the member firmware.
   - `Downgrade`—Kit firmware is a lower version than the member firmware.
   - `Reinstall`—Kit firmware is the same version as the member firmware.
   - `Apply patch`—Kit firmware is a patch.
6. 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	Upgrade	Occurs when you run a firmware version that is higher

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Status	Action	Operation (what is happening in background)
firmware update		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 / Re-update	Option choice to admin

7. 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 upgrade 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.
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.

Notes:

- 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 will result in 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.

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8. Repeat steps 7 and 8 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.

9. When all group members are updated to the same firmware version, click `Close`.
10. Clear the browser cache and the Java cache, especially if you updated firmware between maintenance releases.
11. 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.
12. 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.

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Updating 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 that the connection has the following characteristics:
  - 9600 baud
  - One STOP bit
  - No parity
  - Eight 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 on page 33* for examples of the screen output displayed during this process.

To update the firmware using the CLI:

1. Use FTP to copy the firmware .tgz file to the array you are upgrading.
   See *Output Displayed When Firmware Is Copied to an Array Using FTP on page 33* 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 192.168.10.20`

   c. When prompted for an account and password, type the `grpadmin` account and password.

   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 appears, 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 you are upgrading. (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 on page 33* for an example of screen output shown when you perform this step.

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a. Type the `scp` command using the following syntax:
`$scp filename grpadmin@`*`ip_address_of_array`*`:`
For example:
`$scp kit12345678.tgz grpadmin@192.168.10.20:`

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 the `grpadmin` account.

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 the `grpadmin` account.

5. At the Group Manager CLI prompt, type the `update` command. See *Output Displayed When Update Command Is Entered on page 34* 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 typing `member select` *`member_name`* `show controllers`, where *`member_name`* is the name of the member 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 on page 34* 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 clicked. Restart the browser to log in to the GUI again.

9. Repeat this process for each additional group member.

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6 FS Series Appliances – Planning and Prerequisites

The following section includes information you should review before updating FS Series appliances.

Notes:

- As of FS Series Appliances Firmware version 3.0, any account with the group administrator permissions can update array firmware.
- Before you upgrade your NAS controllers to the latest version of FS Series firmware, you must first upgrade all of the storage arrays in the EqualLogic group to the corresponding PS Series firmware version. Refer to the Dell EqualLogic support site at eqlsupport.dell.com for information about the latest FS and PS series firmware versions.
- Before upgrading your FS series firmware, as a best practice, Dell recommends that you 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.

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 access to the NAS firmware that you download onto the NAS controllers.
- You must have the `grpadmin` account password 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. If possible, perform the update after a backup.
- Because the NAS controllers are restarted during the update process, all Common Internet File System (CIFS) clients disconnect. You will have to manually reconnect the CIFS clients after the update. Also, 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.

Supported Upgrade Paths

When updating the NAS controllers on FS Series appliances, you must follow the supported upgrade path shown in Table 7. 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, 1.0.x refers to versions 1.0.425, 1.0.424, and 1.0.402.

Table 7: Supported Firmware Upgrade Paths

Starting Version	Supported Upgrade Path
3.0.911021	3.0.920760

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Starting Version	Supported Upgrade Path
3.0.910390	3.0.920760
3.0.8690	3.0.920760
2.0.7680	3.0.920760
2.0.7630	2.0.7680, 3.0.920760
2.0.7170	2.0.7680, 3.0.920760
2.0.6740	2.0.7680, 3.0.920760
2.0.6220	2.0.7680
2.0.4720	2.0.7680
v1.0.x	Later 1.0.x releases and 2.0.x

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7 NAS Controller Update Procedure

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 higher 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 section contains procedures for both methods.

Before You Begin: Determining 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. From the Group page, click `Group Configuration`.
2. Select `NAS Service`.
3. Click the `Network` tab.
4. On the SAN Access panel, locate the `SAN Network Settings` field.
5. Record the management IP address.

Updating NAS Controllers Prior to Version 3.0

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

1. Download the service pack from the Dell EqualLogic support site at 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: Determining the NAS Cluster Management IP Address on page 29*. Do not change the service pack file name.

   Important: Transfer the file in binary mode. If you transfer the service pack using the 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.

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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, type 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. The update process can take several minutes. During most of this time, 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 Group Monitoring screen for a message similar to the following one:
   `Successfully upgraded firmware to 3.0.7691`

   You can also monitor the progress of the update using the Group Manager CLI using the following command:

   ```
   > nas-cluster select spartan61 operation show
   ```
10. When all controllers have updated, perform a mass rebalance operation to rebalance the CIFS clients between NAS controllers:

    In the GUI:

    a. Click `Group Configuration`, then select the NAS cluster.

    b. On the `Advanced` tab, select `CIFS Client Connections`.

    c. Click `Rebalance connections`.

    d. Manually reconnect all CIFS clients.

    Or, in the Group Manager CLI, enter this command:

    ```
    > nas-cluster select spark61 mass-rebalance
    ```

Updating NAS Controllers After Version 3.0

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 higher of the FS Series firmware.

1. In version 3.0, FTP is disabled by default. To enable FTP, log in to the Dell EqualLogic Group Manager CLI and use the `nas-cluster select` command:

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

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2. Download the service pack from the Dell EqualLogic support site at 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 *Before You Begin: Determining the NAS Cluster Management IP Address on page 29*. 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 `grpadmin` password 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, start the update:

   ```
   > nas-cluster select spark61 update start DellFluidFS-3.0.7862-SP.sh
   ```
8. In the Group Manager GUI, verify that the update has completed by checking the messages in the Group Monitoring screen for a message similar to the following one:
   `Successfully upgraded firmware to 3.0.7691`

   You can also monitor the progress of the update using the Group Manager CLI using the following command:

   ```
   > nas-cluster select spark61 operation show
   ```
9. When all controllers have updated, perform a mass rebalance operation to rebalance the CIFS clients between NAS controllers:

   In the Group Manager GUI:

   a. Click `Group Configuration`, then select the NAS cluster.

   b. On the `Advanced` tab, select `CIFS Client Connections`.

   c. Click `Rebalance connections`.

   d. Manually reconnect all CIFS clients.

   Or, in the Group Manager CLI, enter this command:

   ```
   > nas-cluster select spark61 mass-rebalance
   ```

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Appendix A: PS Series Array CLI Output Examples

The following sections provide examples of screen output displayed when you upgrade the PS Series firmware as described in *Updating the PS Series Firmware Using the CLI on page 25*.

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 192.168.1.53.

Note: This output is displayed during step 1 of the procedure in *Updating the PS Series Firmware Using the CLI on page 25*.

```
$ ftp
ftp> open 192.168.1.53
Connected to psa1.site.com.
220 192.168.1.53 FTP server ready.
Name: 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_12345678.tgz
local: kit_1234567.tgz remote: kit_1234567.tgz
229 Entering Extended Passive Mode (|||65534|)
150 Opening BINARY mode data connection for 'kit_12345678.tgz'.
100%|**********************| 13191 KB 81.26 KB/s 00:00 ETA
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 192.168.1.53.
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 192.168.1.53.

Note: This output is shown during step 2 of the procedure in *Updating the PS Series Firmware Using the CLI on page 25*.

```
$ scp kit_12345678.tgz grpadmin@192.168.1.53:
The authenticity of host '192.168.1.53' 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 '192.168.1.531' (DSA) to the list of known hosts.
grpadmin@192.168.1.53's password: xxxxxxx
```

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```
kit_12345678.tgz 100% 26MB 4.4MB/s 00:06
```

Output Displayed When Update Command Is Entered

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

Note: This output is shown after you enter the command shown in step 5 of the procedure in *Updating the PS Series Firmware Using the CLI on page 25*.

```
> update
Updating from kit file "kit_V6.0.0-R242280_4075033671.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 V5.2.0 (R212916)
You will be updating to version: Unreleased V6.0.0 (R242280)
PLEASE NOTE:
You are upgrading from firmware version V5.2.0 to version V6.0.0.
You will NOT be able to downgrade back to V5.2.0 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 screen 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 5.0.0.

Note: This output is shown after you enter the command shown in step 7 of the procedure in *Updating the PS Series Firmware Using the CLI on page 25*.

```
> member select memlab2 show controllers
```

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```
_____________________Controller Information _____________________________
SlotID: 0                              Status: active
Model: 70-0011(TYPE 2)                 BatteryStatus: ok
ProcessorTemperature: 55               ChipsetTemperature: 38
LastBootTime: 2010-06-03:13:31:46      SerialNumber: B027885
Manufactured: 2807                     ECOLevel: C00
CM Rev.: R33                           FW Rev.: Storage Array Firmware V5.0.0
NVRAM Battery: good                    (R124915)
BootRomVersion: 3.3.1                  BootRomVrsion: 2.3.3
                                       EDT 2006
_____________________________________________________________________________
_____________________________________________________________________________
SlotID: 1                              Status: active
Model: 70-0011(TYPE 2)                 BatteryStatus: ok
ProcessorTemperature: 55               ChipsetTemperature: 38
LastBootTime: 2010-06-03:13:31:73      SerialNumber: B027885
Manufactured: 2807                     ECOLevel: C00
CM Rev.: R33                           FW Rev.: Storage Array Firmware V5.0.0
NVRAM Battery: good                    (R124915)
BootRomVersion: 3.3.1                  BootRomBuilDate: Wed Sep 27 01:29:14
                                       EDT 2006
_____________________________________________________________________________
_____________________Cache Information _____________________________________
CacheMode: write-back Controller-Safe: disabled
Low-Battery-Safe: enabled
```

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Appendix B: FS Series Appliance CLI Output Examples

The following sections provide examples of screen output displayed when you upgrade the FS Series firmware as described in *FS Series Appliances – Planning and Prerequisites on page 27*.

Output Displayed When Firmware Is Copied to an Appliance Using FTP

The following example uses FTP to copy a firmware update kit named DellFS-2.0.6730-SP.sh from a host to an appliance with the IP address 10.123.456.789.

Note: This output is shown after you enter the command shown in step 2 in the *NAS Controller Update Procedure on page 29*.

```
530 Please login with USER and PASS.
-------------------------------------------------------------
output from ftping the servicepack to the nodes (using SAN VIP)
-------------------------------------------------------------
[user@spartanperf3 ~]$ ftp 10.123.456.789 44421
Connected to 10.123.456.789.
220-This is system maintenance FTP service
220-====================================
220-
220-Use this service to download diagnostic files and to upload signed
220-service-pack packages.
220-
220
530 Please login with USER and PASS.
KERBEROS_V4 rejected as an authentication type
Name (10.123.456.789: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 DellFS-2.0.6730-SP.sh
local: DellFS-2.0.6730-SP.sh remote: DellFS-2.0.6730-SP.sh
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 as shown in the following example.

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```
----------------------------------------
ftp> put DellFS-2.0.6730-SP.sh
local: DellFS-2.0.6730-SP.sh remote: DellFS-2.0.6730-SP.sh
227 Entering Passive Mode (10,125,183,80,173,146)
553 Could not create file.
ftp> cd servicepack
250 Directory successfully changed.
ftp> put DellFS-2.0.6730-SP.sh
local: DellFS-2.0.6730-SP.sh remote: DellFS-2.0.6730-SP.sh
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>
----------------------------------------
```

Note: 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 10.123.456.789
ftp: connect: Connection refused
ftp> bye
----------------------------------------
```

Output From the Upgrade Process

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

```
----------------------------------------
[user@sparkperf3 ~]$ ssh grpadmin@10.123.456.789
grpadmin@10.123.456.789's password:
Welcome to "scooper" (1.0.425)
Installed on Mon Mar 4 11:48:51 CST 2013
Hello grpadmin, welcome to the NAS Manager command line interface (version 1.0.425)!
The available menus are:
administrators
diag
service-pack
There are no available commands.
<scooby-doo> CLI > service-pack start DellFS-2.0.6730-SP.sh
Please wait, this operation may take a long time.
Starting
Checking preconditions
Saving configuration from current version
Preparing alternate partition set
Extracting new software
Copying to all controllers
Guarding file system
Rebooting cluster controllers - first half
Read from remote host 10.123.456.789: Connection reset by peer
Connection to 10.123.456.789 closed.
[user@sparkperf3 ~]$
----------------------------------------
```

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Note: After losing connectivity, you can log back and check the upgrade status. The following output is displayed if the upgrade is still in progress.

```
----------------------------------------
[user@spartanperf3 ~]$ ssh grpadmin@10.123.456.789
grpadmin@10.123.456.789's password:
Welcome to "scooby-doo" (2.0.6730)
Installed on Tue Mar 5 06:26:15 EST 2013
Hello grpadmin, welcome to the Equallogic NAS Manager command line interface (ver-
sion 2.0.6730)!
The available menus are:
administrators
backup-configuration
diag
static-routes
service-pack
There are no available commands.
<scooper> CLI > service-pack status
[Service Pack Installation Progress]
Overall Status = NotAvailable
Percents Completed = 100
Version = 2.0.6730
Build Date = 13-Feb-2013.13:03
[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
<scooper> CLI >
```

Output Displayed When The Service-Pack Start Command Is Entered

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

Note: This output is shown after you use the command shown in step 8 of the *NAS Controller Update Procedure on page 29*

```
> service-pack start DellFS-2.0.6730-SP.sh
CIFS 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
```

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```
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@10.123.456.789
grpadmin@10.123.456.789's password:
Welcome to "puppets" (2.0.6730)
Installed on Tue Mar 5 06:25:09 EST 2013
Hello grpadmin, welcome to the Equallogic NAS Manager command line interface (version
2.0.6730)!
The available menus are:
administrators
backup-configuration
diag
static-routes
service-pack
There are no available commands.
<muppets> CLI > service-pack status
[Service Pack Installation Progress]
Overall Status = NotAvailable
Percents Completed = 100
Version = 2.0.6730
Build Date = 13-Feb-2013.13:03 (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 >
```

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