



PS Series Storage Arrays

Updating Storage Array Firmware

This document describes the considerations and procedures for updating firmware on PS Series storage arrays. It applies to all supported firmware update paths and includes the following sections:

- *Planning the Update* on page 1
- *Obtaining the Firmware Update Kit* on page 2
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A PS Series storage array includes single or dual control modules, each with a compact flash card running the PS Series firmware. To take advantage of new product features, enhancements, and bug fixes, you should always run the latest PS Series storage array firmware, located on the EqualLogic Customer Support website.

Planning the Update

When scheduling a firmware update, be sure to allow sufficient time to update and restart the entire group of arrays. Keep in mind the following *important* issues:

Choosing the Current Firmware Version

Usually, you can update an array directly to the latest firmware version. However, in some cases, you may need to update to an interim version before updating to the latest version. (See the latest PS Series *Release Notes* for information about supported firmware update paths.)

If an array is currently running a PS Series firmware version prior to 2.2.3, you *must* use the `restart` command to restart the array *before* copying the update kit to the array. In addition, regardless of the current running firmware, you must restart the array *after* the update procedure completes.

Minimizing Host Disruption and Planning for Downtime

The update procedure requires an array restart. During an array restart, volumes with data on the array will be momentarily unavailable until the restart completes. (The PS Series *Release Notes* provides examples of operating system and iSCSI initiator configurations that may be able to handle an array restart without disruption.)

- **Host Disruption** – While the volumes are unavailable, some iSCSI initiators may return errors to the operating system or applications. You should ensure that the applications themselves can tolerate the restart. In some cases, you may need to make modifications to the operating system. In other cases, configurations may be able to tolerate an array restart without disruption. In all cases, you should first test them in a non-production environment.
- **Planned Downtime** – If you do not have one of the identified configurations or if you are unsure of your application's ability to tolerate the restart, you should consider planning for downtime when updating firmware. This can involve shutting down the hosts accessing the group before beginning the update procedure. After the update completes, you can restart the hosts. Planning for application downtime may be the best way to protect against unexpected disturbances.

Working with Multi-Member Groups

EqualLogic recommends that all PS Series group members run the same version of the storage array firmware. The PS Series *Release Notes* describe which firmware versions can co-exist in a group; however, only features and bug fixes common to all versions will be available.

- Mixed firmware in a 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.
- Multi-member group updates – In a multi-member group, perform the update procedure on one member at a time. 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. For example, use the Group Manager GUI or CLI to ensure that all members and volumes are online. Also, be sure that iSCSI initiators reconnect to volumes (if applicable).
- Disallowed downgrades – If you have run the `grpparams disallow-downgrade` command in the group (see the *CLI Reference* for more information), you cannot return any group member to a PS Series firmware version prior to V3.2.

Backing Up Data

Regular backups are a vital part of maintaining a storage environment. In addition, because upgrading infrastructure is a critical service procedure, it should be carefully planned and implemented at off-peak hours (if possible) and after a backup has occurred.

Obtaining the Firmware Update Kit

Follow these steps to obtain the update kit and associated documentation:

1. On the host that has the FTP utility available, use a web browser to access the EqualLogic website (www.equallogic.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 Customer Service Home tab in the upper left corner.
4. Click the Downloads tab and select Firmware.
5. Select the PS Series firmware version you want to update to.
6. Download the firmware to the host. The file is approximately 12 MB in size.
7. Unzip or uncompress the file to a directory on the host. This extracts the .tgz file that you will copy to the array later.

Updating an Array

Use this procedure shown next to update an array to the latest firmware version.

Prerequisite: Review the PS Series *Release Notes* before beginning the update.

The update procedure requires the information shown in Table 1: Array Update Requirements for each array you are updating.

Table 1: Array Update Requirements

	Requirement	Description
√	Array IP address	IP address assigned to Ethernet Port 0
√	Host IP address	IP address where the FTP or SCP utility is located
√	Network access to each array being updated	Use the <code>ping</code> command to test network connectivity from an array's IP address to a host.

To update firmware, follow these steps:

1. (If running firmware prior to V2.2.3) Cleanly restart the array.

If the array is currently running a PS Series firmware version prior to 2.2.3, you must use the `restart` command to restart the array *before* copying the update kit to the array.

2. Connect to the array.

You can use a serial connection that is right for your control module model or use telnet or SSH to connect to an array. 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.*

If you are using a serial connection, the following characteristics are required for CLI access:

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

Once connected, press the <Enter> key and log in to an administration account that has read-write permission (for example, the `grpadmin` account).

3. Copy the firmware to the array.

Use FTP to copy the firmware `.tgz` file from the host to the array being updated.

Note: You cannot modify the update kit name at any step in the copy process. If the name is changed, the update will fail.

- a. To specify you want to open an ftp session, type: **ftp**.
- b. To open the session, type: **open <IP address of the array>**.
(For example: `open 192.168.10.20`)
- c. When prompted for an account and password, specify the **grpadmin** account and password.
- d. To enable a binary mode transfer, type: **binary**.

- e. To transfer a file, type: **put** *<file name that you want to transfer>*.

(For example: put kit_12345678.tgz)

Note: Because some versions of FTP convert file names to uppercase, specify the file name twice with the put command, as shown in the example below.

- f. To close the session, type: **close**.
- g. To end the ftp session, type: **bye**.

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.

```
$ ftp
ftp> open 192.168.1.53
Connected to psal.site.com.
220 192.168.1.53 FTP server ready.
Name: grpadmin
331 Password required for grpadmin.
Password: xxxxxxxx
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 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
```

← Note the file name is entered twice.

- 4. Update the array firmware.

At the Group Manager CLI prompt, enter the update command, as shown in the following example.

Note: On a dual control module array, both control modules will be updated.

```
> update
This command will update the firmware on the array's flash card memory using the kit
that is already loaded onto 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.

The firmware update will not take effect until the array is restarted.
Do you wish to proceed (y/n) [y]: y
.
.
.
```

- 5. (Optional) Shut down the hosts accessing the group volumes.

Before you restart the array in the next step, consider whether you want to shut down the hosts accessing the group volumes. (See “Minimizing Host Disruption and Planning for Downtime” on page 1.)

6. Cleanly restart the array.

You *must* restart the array to apply the new firmware. It is recommended that you restart the array as soon as possible. Wait until the update completes. Then, at the CLI prompt, enter the `restart` command.

7. Verify the firmware update.

- In the GUI, you can view control module information by expanding the members list in the leftmost panel, selecting a member name, and then clicking the Controllers tab.
- In the CLI, use the following command, specifying the member name:

```
member select member_name show controllers
```

The following shows sample command output.

```
> member select memlab2 show controllers
_____ Controller Information _____
SlotID: 0                               Status: active
Model: 70-0011                           BatteryStatus: ok
ProcessorTemperature: 62                  ChipsetTemperature: 45
LastBootTime: 2007-02-06:12:07:57        SerialNumber: B018429
Manufactured: 0107                        ECOLevel: C00
CM Rev.: R32                              FW Rev.: Storage Array Firmware V3.1.1
NVRAM Battery: good                       (R51839)
BootRomVersion: 3.3.1                     BootRomBuildDate: Wed Sep 27 01:29:14
                                           EDT 2006
_____
SlotID: 1                               Status: secondary
Model: 70-0011                           BatteryStatus: ok
ProcessorTemperature: 58                  ChipsetTemperature: 45
LastBootTime: 2007-02-06:12:07:58        SerialNumber: B016259
Manufactured: 4506                        ECOLevel: C00
CM Rev.: R32                              FW Rev.: Storage Array Firmware V3.1.1
NVRAM Battery: good                       (R51839)
BootRomVersion: 3.3.1                     BootRomBuildDate: Wed Sep 27 01:29:14
                                           EDT 2006
_____ Cache Information _____
CacheMode: write-back                     Controller-Safe: disabled
Low-Battery-Safe: enabled
```

On a dual control module array, the firmware on both control modules must be the same. If not, or if only one control module appears but two are installed, contact EqualLogic Customer Support.

8. (Optional) Update additional group members.

If you are updating firmware on a multi-member group, repeat steps 1 through 7 on the remaining members.

Tip: Between updating group members, wait for the SAN to stabilize before continuing with the update.

9. (Optional) Turn on hosts.

If you shut down the hosts accessing the group volumes (see step 5), you can now turn them back on.