

## PS Series Storage Arrays

### Updating Storage Array Firmware

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You should always run the latest PS Series storage array firmware, located on the EqualLogic Customer Support website, to take advantage of new product features, enhancements, and bug fixes.

#### Before You Begin

When updating array firmware, you must keep in mind the following *important* issues:

- **Update path.** 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.
- **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.
- **Mixed firmware in a group.** EqualLogic recommends that all PS Series group members run the same version of the storage array firmware. The *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. 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.
- **Updating versions prior to 2.2.3.** 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.** When scheduling a firmware update, be sure to allot sufficient time to update and restart the entire group of arrays. At least one restart is required when updating an array.

The latest PS Series *Release Notes* provide examples of operating system and iSCSI initiator modifications that permit them to handle an array restart without disruption. You should also ensure that the applications themselves can tolerate a brief period of I/O delays. Other configurations may be able to tolerate an array restart without disruption. In all cases, you should first test them in a non-production environment.

If you do not have one of the identified configurations or if you are unsure of your application's ability to tolerate a brief period of I/O delays, 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.

- **Backing up data.** Regular backups should be 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.

## Updating an Array

The following steps take you through the PS Series storage array firmware update procedure.

### 1. Gather network information and locate a host.

The update procedure requires the following items for each array you are updating:

- IP address assigned to a network interface on the array (for example, the IP address assigned to Ethernet Port 0). *Do not use the group IP address.*
- Host that has the FTP utility available and network access to each array being updated. You can use the `ping` command to test network connectivity from an array's IP address to a host.

### 2. Obtain the firmware update kit and documentation from EqualLogic.

Follow these steps to obtain the update kit and documentation:

- a. On the host that has the FTP utility available, use a web browser to access the EqualLogic website ([www.equallogic.com](http://www.equallogic.com)). Log in to your support account. Create an account if you do not have one.
- b. In the Downloads area, select the PS Series firmware version you want to update to, and download it to the host. The file is approximately 12 MB in size.
- c. Unzip or uncompress the file to a directory on the host. This extracts the file (with an extension of `.tgz`) that you will copy to the array in a later step.

It is recommended that you read the PS Series *Release Notes* before beginning the update.

### 3. Consider host implications.

See the latest PS Series *Release Notes* for information about specific configurations that should not be affected by the momentary disruption in volume availability resulting from an array restart. If your configuration does not meet the requirements in the *Release Notes*, you may want to consider shutting down the hosts accessing the group volumes. After the update, you can restart the hosts.

### 4. Cleanly restart the array, if currently running firmware prior to V2.2.3.

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.

To connect to the array, do one of the following:

- Use telnet or SSH to connect to an array 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.*

The following serial connection characteristics are required for CLI access:

9600 baud	1 STOP bit	No parity	8 data bits	No hardware flow control
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Once connected, press the <Enter> key and log in to an administration account that has read-write permission (for example, the `grpadmin` account).

### 5. Copy the kit to the array.

Use FTP to copy the firmware `.tgz` file from the host (extracted in Step 2c) to the array being updated. Specify the array IP address obtained in Step 1 as input to the `open` command. When prompted for an account and password, specify the `grpadmin` account and password. *Be sure the transfer occurs in binary mode.*

**Note:** The update kit name must not be changed at any step in the copy process. If the name is changed, the update will fail. 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.

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.

### 6. Log in to the array.

Use a serial connection that is right for your control module model or use telnet or SSH to connect to an IP address assigned to a network interface on the array (for example, Ethernet Port 0). *Do not connect to the group IP address.*

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

### 7. Update the array firmware.

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

## 8. Cleanly restart the array.

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

## 9. Verify the firmware.

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. You can also use the following CLI 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.

## 10. Repeat the procedure on each group member.

If you are updating firmware on a multi-member group, repeat Steps 4 to 9 on the remaining members. Between updating group members, wait for the SAN to stabilize before continuing with the update.

## 11. Turn on hosts.

If you shut down the hosts accessing the group volumes, you can turn them back on.