PowerScale Node Firmware Package

10.3.7

Release notes

October 2021

The 10.x.x Node Firmware Package (NFP) provides support with OneFS 8.2.x and earlier on Generation 5 and 6 nodes. For Generation 6 support with OneFS 9.x.x or support for all PowerScale branded nodes, install NFP 11.x.x.

This firmware package is available for download from Dell EMC Product Support. The firmware package has been released independent of any OneFS release.

Installing a firmware package extracts the files in the package archive on each node in a cluster but does not automatically update firmware on the cluster. Follow the provided instructions to install and update the firmware on your cluster.

Only one firmware package can be installed at any given time.

ⓘ NOTE: Opening an SR with Technical Support to let them know you are going to perform a node firmware update reduces the response time if you require assistance.

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Supported platforms

Before you update a firmware package, contact Technical Support and confirm that your platform supports the new firmware.

⚠ CAUTION: Only update firmware with this package if your cluster contains Generation 6 or Generation 5 hardware.

This firmware package is compatible with the following Isilon clustered storage platforms that are running OneFS 9.0.0.0 or earlier:
- Generation 6: F800, F810, H5600, H600, H500, H400, A200, A2000
- Generation 5: X210, S210, X410, NL410, HD400
- A100 Performance and Backup Accelerators

Confirming free space

Before you upgrade the node firmware package, ensure that there is enough free space available for the node firmware binaries. Approximately 200 MB of free space in `/var` is required on each node.

New features and resolved issues

New features

The following firmware additions and updates are in the new firmware package:
- Generation 6
  - x509 binary signing
  - Battery Charge Circuit
    - DEbcc_infinity 2.20
    - EPbcc_infinity 2.20
  - BIOS and BIOS ME
    - DEbios_banshee 37.41
    - DEspime_banshee 02.02
    - EPbios_warthog 32.51
    - EPspime_warthog 08.00
  - Management controller
    - DEbmc_main 24.51
    - EPbmc_main 24.51
  - POST
    - DEpost_banshee 28.15
    - EPpost_warthog 22.14
  - Drive controllers
    - DEsas_infinity 0001.0004.0000.11192
    - DEsas_catamaran 0015.0004.0000.0000
    - EPsas_infinity 0001.0004.0000.11192
    - EPsas_catamaran 0015.0004.0000.0000
  - Support for new power supply units for Generation 6

Resolved issues

- BIOS security fixes, including Intel IPU and non-IPU notifications
- Generation 6 BMC security hardening
- Improve Generation 6 BBU Built In Self Test field performance and temperature extremes charging behavior

Known issues

There are no known issues affecting Isilon Generation 5 or Generation 6 nodes.

Firmware versions

Firmware packages listed in this section with the prefix DE refer to A200, A2000, and H400 nodes, and the EP prefix refers to the balance of Generation 6 node models.

Table 1. Isilon Generation 6 Node Firmware; A200, A2000, H400, H500, H5600, H600, F800, F810

Isilon Platform	Hardware Component	Firmware Version
DE (Capacity)	DEadpt_moons	01.80
	DEbcc_infinity	02.20
	DEbios_banshee	37.41
	DEbmc_bblock_moons	01.40
	DEbmc_main	24.51
	DEccdes	1.10.4+21.00
	DEcdes	2.38.5+0.18.0+21.00
	DEcmd_100d815pin	03.08.103.01
	DEcmd_mam_64pin	02.05.102.02
	DEcmd_cat_64pin	02.05.102.02
	DEeth_infinity	02.52
	DEeth_sageville_infinity	0128.0000.0005.0195
	DEfp_fpinffw	02.0c
	DEfp_fpioc	00.0b
	DEpost_banshee	28.15
	DEps	gen2_artesyn: 02.14 zeus_acbel: 04.12
	DEsas_catamaran	0015.0002.0000.0000
	DEsas_infinity	0001.0004.0000.11192
	DEserdes_banshee	08.00
	DEspime_banshee	02.02
	DEssp_infinity	02.83
	DEuefi_fw_volume_infinity	03.43

Table 1. Isilon Generation 6 Node Firmware; A200, A2000, H400, H500, H5600, H600, F800, F810 (continued)

Isilon Platform	Hardware Component	Firmware Version
	DEvrd0_banshee_stmicro	2.01
	DEvrd1_banshee_stmicro	01.00
EP (Performance)	EPadpt_moons	01.80
	EPbcc_infinity	02.20
	EPbios_warthog	32.51
	EPbmc_bblock_moons	01.40
	EPbmc_main	24.51
	EPccdes	1.10.4+21.00
	EPcdes	2.38.5+0.18.0+21.00
	EPcmd_100d815pin	03.08.103.01
	EPcmd_mam_64pin	02.05.102.02
	EPcmd_cat_64pin	02.05.102.02
	EPeth_infinity	02.52
	EPfp_fpinffw	02.0c
	EPfp_fpioc	00.0b
	EPpost_warthog	22.14
	EPps	gen2_artesyn: 02.14 zeus_acbel: 04.12
	EPsas_catamaran	0015.0004.0000.0000
	EPsas_infinity	0001.0004.0000.11192
	EPserdes_warthog	08.00
	EPspime_warthog	08.00
	EPssp_infinity	02.83
	EPuefi_fw_volume_infinity	03.43
	EPvrd0_warthog_stmicro	01.01
	EPvrd1_warthog_stmicro	01.01
	EPvrd2_warthog_stmicro	01.01
Network Interface Cards (common across Generation 6)	Network Interface Card (Fibre Channel/ Ethernet)	11.4.204.21
	Mellanox CX3 (InfiniBand/10GbE)	2.40.5030+ISL1090110018
	Mellanox CX3 (InfiniBand/40GbE)	2.40.5030+EMC0000000004
	Mellanox CX3 (40GbE)	2.40.5030+EMC1090111023
	Mellanox CX3 (10GbE)	2.40.5030+EMC0000000002
	Mellanox CX4 (25GbE)	14.27.6008+DEL2420110034
	Network Interface Cards (Compression/Ethernet, F810 only)	
	Mellanox-FPGA	0x100a+0x100a
	Mellanox5-EN0	16.28.1002+EMC0000000017

Generation 5 node firmware

The following table lists the firmware versions included in the firmware package associated with Generation 5 nodes.

Table 2. Isilon Generation 5 Node Firmware; A100, HD400, NL410, S210, X410

Isilon Platform	Hardware Component	Firmware Version
A100 Performance and Backup Accelerators	DiskCtrl	13.00.66.00
S210	Front panel	UI.01.36
	BMC	1.25.9722
	Lsi DiskCtrl	20.00.04.00
	NVRAM	rp180d01+rp180d01
	CMC	02.07
	CAR	02.07
	CMCSDR	00.0B
	CFFPS	Octane: 09.0b Octane_Acbel: 0A.01
	DiskExp	0910+0210
X410	Front panel	UI.01.36
	BMC	1.25.9722
	NVRAM	rp180d01+rp180d01
	CMC	02.07
	CMCSDR	00.0B
	CFFPS	Blastoff: 03.09 Optimus_Flex: 04.14 Optimus_Acbel: 02.02
	DiskExp	0910+0210
	Lsi DiskCtrl	20.00.04.00
HD400	Front panel	UI.01.36
	BMC	1.25.9722
	Lsi DiskCtrl	20.00.04.00
	NVRAM	rp180d01+rp180d01
	CMC	02.07
	CMCSDR	00.08
	CDES2	2.38.5+0.18.0+21.00
	CMD	02.0b+49+01
	CFFPS	Ramjet: 06.06 Ramjet_Acbel: 01.03
X210	Front panel	UI.01.36
	BMC	1.25.9722
	NVRAM	rp180d01+rp180d01

Table 2. Isilon Generation 5 Node Firmware; A100, HD400, NL410, S210, X410 (continued)

Isilon Platform	Hardware Component	Firmware Version
	CMC	02.07
	CMCSDR	00.03
	CMD	02.0d+4c+01
	CFFPS	Octane: 09.0b Octane_Acbel: 0A.01
	DiskExp	0910+0210
	Lsi DiskCtrl	20.00.04.00
NL410	Front panel	UI.01.36
	BMC	1.25.9722
	Lsi DiskCtrl	20.00.04.00
	NVRAM	rp180d01+ rp180d01
	CMC	02.07
	CMCSDR	00.06
	CFFPS	Optimus_Flex: 04.14 Optimus_Acbel: 02.02
	DiskExp	0910+0210
Network Interface Cards	Mellanox CX3 (InfiniBand)	4.8.930+205-0002-05
	Qlogic NetXtreme II BCM57810 10GbE	7.13.0

Upgrade   considerations

Before you begin a firmware upgrade, be aware of the impact the upgrade process has on cluster operations.

A firmware upgrade takes approximately 10 minutes for Generation 5 nodes. An upgrade might take up to 60 minutes for Generation 6 nodes when using the rolling firmware upgrade, depending on how many devices are upgraded. Each node is upgraded individually and is automatically restarted when the upgrade is complete. The time that is taken for upgrade is reduced substantially by using the OneFS 8.2 simultaneous upgrade feature.

For large clusters, you can break the upgrade process into manageable sections of time by including the following command options:

- Earlier than OneFS 8.0
  ```
  isi firmware upgrade --include-nodes<node-number>
  ```

- To run the upgrade on a single node, specify the node number that you want to upgrade:

  OneFS 8.0 or later `isi upgrade cluster firmware  start  --no-verify  --nodes-to-upgrade <node-number>`

  Earlier than OneFS 8.0
  ```
  isi firmware upgrade --include-nodes<node-number>
  ```

- To run the upgrade on a range of nodes, specify the first and last node numbers of the range you want to upgrade:

  OneFS 8.0 or later `isi upgrade cluster firmware start  --no-verify  --nodes-to-upgrade <node-number>- <node-number>`

  Earlier than OneFS 8.0
  ```
  isi firmware upgrade --include-nodes<node-number>- <node-number>
  ```

- To run the upgrade on specific individual nodes, specify the node numbers that you want to upgrade in a list separated by commas:

OneFS 8.0 or later	`isi upgrade cluster firmware start --no-verify --nodes-to-upgrade` *<node-number>*, *<node-number>*, *<node-number>*
Earlier than OneFS 8.0	`isi firmware upgrade --include-nodes`*<node-number>*, *<node-number>*, *<node-number>*

ⓘ NOTE: In a partial cluster upgrade, the system generates an alert notification indicating that a firmware upgrade has not been applied.

Perform a simultaneous firmware upgrade on multiple nodes

Simultaneous firmware upgrades are available in OneFS 8.2 and later. Simultaneous firmware upgrades can upgrade firmware in multiple nodes simultaneously. A new tool, `isi_upgrade_helper,` was added to assist end users to determine how the simultaneous firmware upgrade can best meet business requirements.

The rolling (serial) firmware upgrade process upgrades on one node at a time and is the least disruptive method for business continuity. However, simultaneous firmware upgrades substantially decrease the time that is required for the upgrade maintenance window.

1. Run the `isi_upgrade_helper` tool:

   Select from the three options:
   - Least Disruptive Firmware Upgrade Recommendation
   - Fastest Firmware Upgrade Recommendation
   - Balanced Firmware Upgrade Recommendation

2. Use the corresponding command in the chosen recommendation:
   - If `Least Disruptive Firmware Upgrade Recommendation` is chosen, run `isi upgrade firmware start.`
   - If `Fastest Firmware Upgrade Recommendation` is chosen, run the corresponding simultaneous firmware upgrade command that is in isi_upgrade_helper.
   - If `Balanced Firmware Upgrade Recommendation` is chosen, run the corresponding command that is in isi_upgrade_helper.

3. Repeat steps 1 and 2 until the firmware upgrade is complete for all nodes in the cluster.

Additional information about Simultaneous firmware upgrade is available in the Dell EMC Isilon: Non-disruptive Upgrade Best Practices Guide.

Check the firmware update progress

You can view the progress of a firmware update at any time.

After you begin a firmware update, view the progress of the update by running the `isi upgrade cluster nodes firmware progress list` command.

Install the firmware package and update firmware

Isilon provides firmware updates to customers with active support contracts to upgrade existing Isilon clusters. Visit Dell EMC online support to download the latest firmware package update. For questions about Isilon firmware, contact PowerScale Technical Support.

Installing a firmware package extracts the files in the package archive on each node in a cluster and does not automatically update firmware on the cluster.

Only one firmware package can be installed at any given time. To determine if there is a firmware package already installed on a node, run one of the following commands depending on your version of OneFS:

OneFS 8.0 or later	`isi upgrade firmware package`
Earlier than OneFS 8.0	`isi firmware package`

The output from this command displays the version number and contents of the currently installed firmware package. If there is no package installed, the output displays the message `No firmware images available`.

If there is a previous version of the node firmware package installed, remove it by running one of the following commands:

ⓘ NOTE: When removing the isiFw_Package, be careful that you do not delete any existing patches.

| OneFS 8.0 or later | `isi upgrade patches uninstall IsiFw_Package_`*`<version-number>`* `--rolling=false` |
| Earlier than OneFS 8.0 | `isi pkg delete IsiFw_Package_`*`<version-number>`* |

Removing the firmware package does not remove the firmware from the associated hardware.

After you remove any existing firmware package, you can install the new firmware package.

ⓘ NOTE: Run the package installation from the `/ifs/data` directory or specify the fully qualified filename of the firmware package.

1. Download the new firmware package.
    a. Visit EMC online support and download the latest firmware package.
    b. Open a secure shell (SSH) connection to any node in the cluster and log in using the "root" account.
    c. Copy the firmware package to the `/ifs/data` directory on the cluster.
2. Install the firmware package. Depending on your version of OneFS, run one of the following commands:

| OneFS 8.0 or later | `isi upgrade patches install IsiFw_Package_`*`<version-number>`*`.tar --rolling=false` |
| Earlier than OneFS 8.0 | `isi pkg install IsiFw_Package_`*`<version-number>`*`.tar` |

You can check on the status of the install by running the following command:

`isi upgrade patches list`

The status displays as `Installing` until the install is completed. Then the status displays as `Installed`.

3. To update the cluster firmware, run one of the following commands:

| OneFS 8.0 or later | `isi upgrade cluster firmware start --no-verify` |
| Earlier than OneFS 8.0 | `isi firmware update` |

The firmware from the firmware package is updated across the entire cluster.

You can check on the status of the update by running the following command:

`isi upgrade cluster view`

The status provides a `Percent Complete` value as well as individual node progress.

Verify the firmware installation

After the firmware update is complete for all nodes in the cluster, you can verify the new firmware installation.

⚠ CAUTION:

If you are running OneFS 7.2 or earlier, do not run multiple instances of the **`isi firmware status`** command simultaneously. Doing so results in outages. Do not use **`isi_for_array`** with the **`isi firmware status`** command, which can also cause cluster-wide restarts or outages.

1. Verify installation of new firmware. Depending on your version of OneFS, run one of the following commands:

| OneFS 8.0 or later | `isi upgrade cluster firmware devices` |

A list of devices and firmware versions similar to the following displays.

```
 Device                         Type    Firmware                   Mismatch
 Lnns
 -----------------------------------------------------------------------------
 Mellanox-EN1                   40GigE  2.40.5030+EMC1090111023 0          1-2
 EPbmc_main                     ePOST   22.71                   0          1-4
 EPspime_warthog                ePOST   07.00                   0          1-4
 EPadpt_moons                   ePOST   01.50                   0          1-4
```

The output displays a value of `1` in the `Mismatch` column of any component that has a firmwareversion that is older than the firmware in the installed firmware package. If you see the `Mismatch` value of `1`, that means that the tagged device did not update. Confirm that there are no known issues related to devices that did not update and then run the firmware update a second time. If the device still doesn't update, contact PowerScale Technical Support.

(i) NOTE: With Generation 6 nodes, only the nodes in chassis slots 1 and 3 manage the firmware updates of the power supplies. If you see the correct firmware version listed for the nodes in chassis slots 1 and 3, then the firmware for all four PSUs in the chassis were updated.

Earlier than OneFS 8.0

`isi firmware status`

A list of devices and firmware versions similar to the following displays.

```
 Device        Type       Firmware                    Nodes
 -----------   ---------  --------------------------  -------
 Lsi           DiskCtrl   <new firmware number>          1
 Mellanox      Network    <new firmware number>          1
```

The output displays an asterisk next to any component that has a firmware version that is older than the firmware in the installed firmware package. If you see an asterisk, that means that the tagged device did not update. Confirm that there are no known issues related to devices that did not update and then run the firmware update a second time. If the device still doesn't update, contact PowerScale Technical Support.

2. After you confirm installation of the new firmware, remove the firmware package by running one of the following commands:

(i) NOTE: When removing the isiFw_Package, be careful that you do not delete any existing patches.

OneFS 8.0 or later	`isi upgrade patches uninstall IsiFw_Package_`*<version-number>* `--rolling=false`
Earlier than OneFS 8.0	`isi pkg delete IsiFw_Package_`*<version-number>*

Removing the firmware package files does not remove the firmware from the associated hardware.

Troubleshooting

Below are instructions for resolving issues that might arise during the firmware upgrade process.

● This issue was resolved with front panel firmware version UI.01.29. If the configuration number of a front panel is truncated or corrupted at the time of the firmware update, you encounter the following error:

```
NOTE: The following devices have incorrect firmware, but are not currently supported
by update:
Traceback (most recent call last):
  File "/usr/local/lib/python2.6/logging/__init__.py", line 766, in emit
    self.stream.write(fs % msg.encode("UTF-8"))
UnicodeDecodeError: 'utf8' codec can't decode byte 0xff in position 46: unexpected
code byte
```

In the event of this error, reset the front panel and update the firmware again. Manually reset the front panel by typing the following command:

`/usr/bin/isi_hwtools/isi_fputil  -r`

After the front panel has been reset, run the firmware update again.

● This issue was resolved in LSI2008 firmware version 10.00.06.00. With firmware updates performed on versions prior to 10.00.06.00, the LSI2008 controller has shown that the following error can occur during the update:

```
ERROR: Node 2: LsiMpsFirmware._update: update failed: error=256 output: isi_mpsutil:
driver gave status 0003
```

This error reports that the LSI2008 controller did not accept nor process the firmware load command. Getting this error does not interfere with the running node nor does it change the firmware on the controller.

The workaround is to reboot the node and retry the firmware update. When running `isi firmware update`, if this error is encountered, the firmware update tool stops. This allows the user to take corrective action and reboot the failing node. Once rebooted, the firmware update command can be restarted, allowing the tool to continue updating firmware on those nodes that require updates.

● This issue was resolved in LSI Expander firmware 0910. With firmware updates performed on versions prior to 0910, the following error may occur:

```
ERROR: Node 1: Lsi0ExpFirmware._update: update failed: error=256 output:
Starting fwload of /etc/ifs/hw/fwpkg/images/LsiExp0-SAS2XFW/lsisas2xfw.bin (170076
bytes):
...............fwload failure at offset 61440 sending 4096
Upload  of  /etc/ifs/hw/fwpkg/images/LsiExp0-SAS2XFW/lsisas2xfw.bin  failed.
```

The issue is caused by the Device Busy errors. The error does not affect node operation or change the expander firmware.

If you experience this error, retry the firmware update command. It is not necessary to restart the node. The update command attempts to resume where the failure occurred.

If an issue arises that is not listed here, restart the affected node or cluster and attempt the firmware update process a second time from the beginning. If the process continues to fail, contact PowerScale Technical Support.

Where to get help

The Dell Technologies Support site (https://www.dell.com/support) contains important information about products and services including drivers, installation packages, product documentation, knowledge base articles, and advisories. A valid support contract and account might be required to access all the available information about a specific Dell Technologies product or service.

Additional options for getting help

This section contains resources for getting answers to questions about PowerScale products.

Dell Technologies support	● https://www.dell.com/support/incidents-online/en-us/contactus/product/isilon-onefs
Telephone support	● United States: 1-800-SVC-4EMC (1-800-782-4362) ● Canada: 1-800-543-4782 ● Worldwide: 1-508-497-7901 ● Local phone numbers for a specific country or region are available at https://www.dell.com/support/incidents-online/en-us/contactus/product/isilon-onefs.
PowerScale OneFS Documentation Info Hubs	● https://www.dell.com/support/kbdoc/en-us/000152189/powerscale-onefs-info-hubs
Dell Community Board for self-help	● https://www.dell.com/community

Notes, cautions, and warnings

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

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

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