

# Mellanox Switches SSD Disk Firmware Update

## FAQ

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Rev 1.0

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## Document Revision History

*Table 1: Document Revision History*

| Revision | Date       | Description     |
|----------|------------|-----------------|
| 1.0      | April 2020 | Initial release |

# 1 Frequently Asked Questions and Answers

## 1.1 Why do I need to update the firmware of my switch SSD drive?

Mellanox has identified several cases in which switch systems had an internal SSD disk failure. In some cases, the disk's mode was shifted to Read-Only, and in others, it might lead to corrupt system OS.

Most of these issues can be repaired by updating the SSD controller firmware. More details about this process are given in the following procedure.



**NOTE:** The problem causing the disk failure has been fully root-caused by the disk vendor, and the solution has been fully certified by Mellanox.

## 1.2 Does the provided firmware guarantee to restore the full system functionality?

Yes. SSDs running with the new firmware are fully functional, and do not have any performance or reliability issues. Moreover, the SSD firmware upgrade procedure does not affect the user data (OS, logs, statistics, etc.).

## 1.3 How can I tell if the hardware I have is affected by this issue? I cannot find any information about the SSDs in the switch.

To read the disk type, perform the below actions.

- On ONYX:
  - When using Version 3.7.1200 and higher, run:

```
# fae show smart
```

Output example:

```
Device Model:      M.2 (S42) 3IE3
*****
*****
* Innodisk iSMART V3.9.41
2018/05/25 *
*****
*****
Model Name: M.2 (S42) 3IE3
FW Version: S16425i
Serial Number: BCA11708040400678
Health: 99.115%
Capacity: 14.914146 GB
P/E Cycle: 20000
Lifespan : 25000 (Years : 68 Months : 6 Days : 0)
iAnalyzer: Disable
Write Protect: Disable
```

- When using older versions, run the sysdump:

```
Demo-Switch [standalone: master] (config) # debug generate dump
# show files debug-dump sysdump...tgz
```

This will show the file sysinfo.txt from the sysdump bundle.

search for the word “smart” with /smart|hdparm (for Virtium):

**Virtium:**

```
SSD type (hdparm -i):
/dev/sda:
Model=StorFly VSF302XC016G-MLX, FwRev=0115-000,
SerialNo=NNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
```

**Innodisk:**

```
Output of iSmart -d /dev/sda:
Device Model:      M.2 (S42) 3ME3

*****
*****
* Innodisk iSMART V3.9.41
2018/05/25 *
*****
*****
Model Name: M.2 (S42) 3ME3
FW Version: S15A19
Serial Number: NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
Health: NN.NNNNN%
Capacity: 14.914146 GB
P/E Cycle: 3000
Lifespan : 2729 (Years : 7 Months : 5 Days : 24)
iAnalyzer: Disable
Write Protect: Disable
```

- **On Cumulus/SwitchDev/ONL/ONIE:**

```
# sudo smartctl -i /dev/sda
```

In case your switch runs with any of the following disk types and the firmware level mentioned, you must upgrade your SSD disk firmware:

| SSD Disk Vendor | Model Name               | Firmware Version | Size   | Power Cycle Required after Upgrade |
|-----------------|--------------------------|------------------|--------|------------------------------------|
| Virtium         | StorFly VSF302XC016G-MLX | 0115-000         | 15.8GB | No                                 |
| Innodisk        | M.2 (S42) 3IE3           | S16425i          | 16.0GB | Yes                                |
| Innodisk        | M.2 (S42) 3ME3           | S15A19           | 16.0GB | Yes                                |



**NOTE:** the firmware upgrade tool will only upgrade the relevant disk models and firmware levels. There is no risk in running the tool on other disk types or firmware levels.

## 1.4 Which disk types are affected by this event?

The following four disk types are included within the scope of this event:

- Virtium StorFly 16G (MEM000207)
  - Random failures have been observed (lower than 0.5%)
  - Symptoms: SSD OS to become corrupted during OS upgrade or RO filesystem
  - In most cases, failure is recoverable after reboot and/or system re-installation
  - Affected Mellanox switch models: MSN2700 and MSN2410 products family (or equivalent OEM OPNs)
  - **Firmware fix for this issue is currently available [here](#)**
- Innodisk 3ME3 16G (MEM000109)
  - Random failures have been observed (lower than 0.5%)
  - Symptoms: SSD OS to become corrupted during OS upgrade or RO filesystem
  - Failure is recoverable after reboot and/or system re-installation
  - Affected Mellanox switch models: MSN2010 and MSN2100 (or equivalent OEM OPNs)
  - **Firmware fix for this issue is currently available [here](#)**
- Innodisk 3IE3 16G (MEM000145)
  - Random failures have been observed (lower than 0.5%)
  - Symptoms: SSD OS to become corrupted during OS upgrade or RO filesystem
  - Failure is recoverable after reboot and/or system re-installation
  - Affected Mellanox switch models: MSN2010 and MSN2100 (or equivalent OEM OPNs)
  - **Firmware fix for this issue is currently available [here](#)**
- InnoDisk 3ME 32G (MEM000089)
  - Failures have been observed (lower than 0.8%), with correlation to excessive SSD disk write operations
  - Symptoms: SSD disk excessive wear-out, the system becomes un-responsive
  - Affected Mellanox switch models: MSN2700 and MSN2410 (or equivalent OEM OPNs)
  - Mellanox stopped manufacturing switches with MEM000089 disks since May 2018
  - Firmware fix for this disk is not available.
  - Mellanox provides a monitoring tool to measure the disk health and advise whether a disk replacement is required

## 1.5 Does the firmware upgrade affect the switch/fabric?

Updating the firmware on Virtium disks can be performed while the switch is running traffic. The upgrade process does not impact the traffic, and no system reboot is required.

Firmware update on InnoDisk types 3ME3 MEM000109 and 3IE3 MEM000145 requires a reboot. Please schedule a maintenance window prior to updating the disk firmware.

The upgrade process on all disk types does not require backing up your switch data.

## 1.6 Which switch operating systems support the SSD firmware upgrade procedure?

The following OS flavors are supported by the firmware upgrade tools:

- SONIC, SwitchDev or ONL (for supported versions, please contact Mellanox Support)
- Cumulus:
  - CL 3.7.12 includes an automatic firmware upgrade for the Virtium MEM000207 disk type
- Switches running ONYX version 3.9.0300 and lower using Dockers
- Switches running ONYX version 3.9.0500 or higher using a CLI command
- Switches running ONYX version 3.9.1.xxx (est. availability: July 2020) – The switch will automatically upgrade the SSD disk – no further action will be required.

## 1.7 My switches were purchased with Cumulus OS, but then changed over to Onyx OS. What should I do?

For such cases, follow up the upgrade process relevant to your current running OS.

## 1.8 If the SSD drive shifts to “read-only” mode (RO), how do I recover it?

Typically, rebooting the switch will recover from this state.

# 2 Support Information

Mellanox provides a tool for monitoring the health of switch disks from a central location – Contact Mellanox support for further information.

For any other question, please contact Mellanox support: [support@mellanox.com](mailto:support@mellanox.com).