

IntelliFlash SSDs Need Manual Check for End of Life



ALERT! SSDs wear out and fail after prolonged use. IntelliFlash does not currently monitor SSDs for wear.

Issue Summary

All IntelliFlash products are installed with at least some NVMe or SATA DOM consumable flash devices, otherwise known as solid state drives (SSDs). All SSDs are subject to wearing out with use.

SSDs with wear levels exceeding 90% can cause storage pool performance to degrade. SSDs with wear levels at 100% are in danger of failure. Failures exceeding that which the pool can tolerate may lead to data loss.

SSD endurance varies with the write patterns experienced by each drive. Nevertheless, if multiple SSDs are deployed on the storage system at the same (such as at initial installation), wear rates are likely to be similar for them all and the drives are likely to reach end-of-life around the same time.

ALERT! It is the customer's responsibility to **manually monitor** installed SSDs for wear and open a support case for drive replacement near the end of useful life.

Open a support case for SSD replacement approximately when:

- SATA DOMs show 10% life remaining
- NVMe SSDs show 90% life used

NOTE All consumable flash devices are referred to in this bulletin as "SSDs." However, different SSD types may be described differently in IntelliFlash reports and script output.

Affected Products

No current IntelliFlash OS versions monitor SSDs for wear levels or report that wear automatically. All are affected by this issue.

IntelliFlash HD2xxx, H6xxx, N6xxx, T3xxx, T4xxx, and T5xxx storage systems and their supported expansion units are affected by SSD drive wear and require manual wear monitoring.

Resolution

An upcoming release of IntelliFlash OS will automatically monitor SSD wear levels and issue expiration notifications when it determines that wear levels exceed warning limits.

Workaround

A script for manually monitoring SSD wear on IntelliFlash storage systems is available for download from IntelliFlash Support. This script, which is called `check_endurance`, must be run periodically (weekly or monthly) on the storage system and reviewed for SSDs nearing end of useful life. If such SSDs are found, open a support case and request drive replacement.

DOWNLOADING THE CHECK_ENDURANCE SSD MONITORING SCRIPT

Download the latest version of the IntelliFlash `check_endurance` SSD monitoring script as follows.

1. Log in to the storage system with your system credentials and start IntelliShell.
2. Run the command:

```
support.sh pull
```

The `pull` option pulls the latest version of the `support.sh` script and its associated components to your storage system. This includes all components needed to run the `check_endurance` SSD monitoring script.

3. Terminate IntelliShell.

RUNNING THE CHECK_ENDURANCE SSD MONITORING SCRIPT

The `check_endurance` script is always initiated by running the latest version of `support.sh` on the storage. However, SATA DOMs and NVMe SSDs must be monitored differently with this script.

- **SATA DOMs** are installed in each controller and must be locally accessed. Consequently, to view the status of these drives, the `check_endurance` *script must be run on each controller locally*.
- **NVME SSDs** are installed in the storage chassis and expansion enclosures and may be accessed either locally or remotely from either controller. Consequently, the `check_endurance` *script can be run from either controller* to capture data from all such drives in the system.

To perform a complete check of all SSDs on the system, run the `check_endurance` monitoring script as follows.

1. Log in to any controller on the storage system using SSH and your system credentials.
2. At the command line, enter:

```
support.sh check_endurance
```

This run of the script will list SSD wear statistics for all NVMe SSDs in the system, plus the SATA DOMs on the *local controller only*.

3. Log in locally to the *other* controller.
4. At the command line, enter:

```
support.sh check_endurance
```

This run of the script will provide *SATA DOM information for the second controller*. You can disregard any NVMe or SSD entries, since these will duplicate those on the prior script run.

INTERPRETING THE SSD MONITORING REPORT

Three kinds of information will be listed on the report generated by the `check_endurance` script.

NVME SSD flash life used will be reported under one of the following headings:

- NVME Device Flash Life Information
- SSD Device Flash Life Information

SATA DOM flash life remaining will be listed under the heading:

- SATA Device Flash Life Information

For example:

```
NVME Device Flash Life Information: Recommended to replace when near 90%  
=====
```

```
* Flash life used - NVME Drive nvme0 88%  
* Flash life used - NVME Drive nvme11 90%
```

```
SSD Device Flash Life Information: Recommended to replace when near 90%  
=====
```

```
* Flash life used - SSD Drive c0t5000CCA04E4AD494d0 90%  
* Flash life used - SSD Drive c0t5000CCA04E4AD4B4d0 91%
```

```
SATA Device Flash life Information: Recommended to replace when near 10%  
=====
```

```
* Flash life remaining of SATA DOM c1t0d0 5%  
* Flash life remaining of SATA DOM c1t1d0 10%
```

Contacting DDN Technical Support

Please contact DDN Technical Support at any time if you have questions or need assistance. Support can be reached online, by email, or by phone as listed below.

Web

DDN Community Support Portal <https://community.ddn.com/login>
Portal Assistance webportal.support@ddn.com

Email

Support Email support@ddn.com

Telephone

DDN Support Worldwide Directory <https://www.ddn.com/support/global-services-overview/>

Bulletins & Notices

Support Bulletins <http://www.ddn.com/support/technical-support-bulletins>
End-of-Life Notices <http://www.ddn.com/support/end-of-life-notices>
Release Notes <https://community.ddn.com/login>
Subscription Requests support-tsb@ddn.com