
ADVANCED USE CASE

Using nvmecli to run Self-Test

www.epicutils.com

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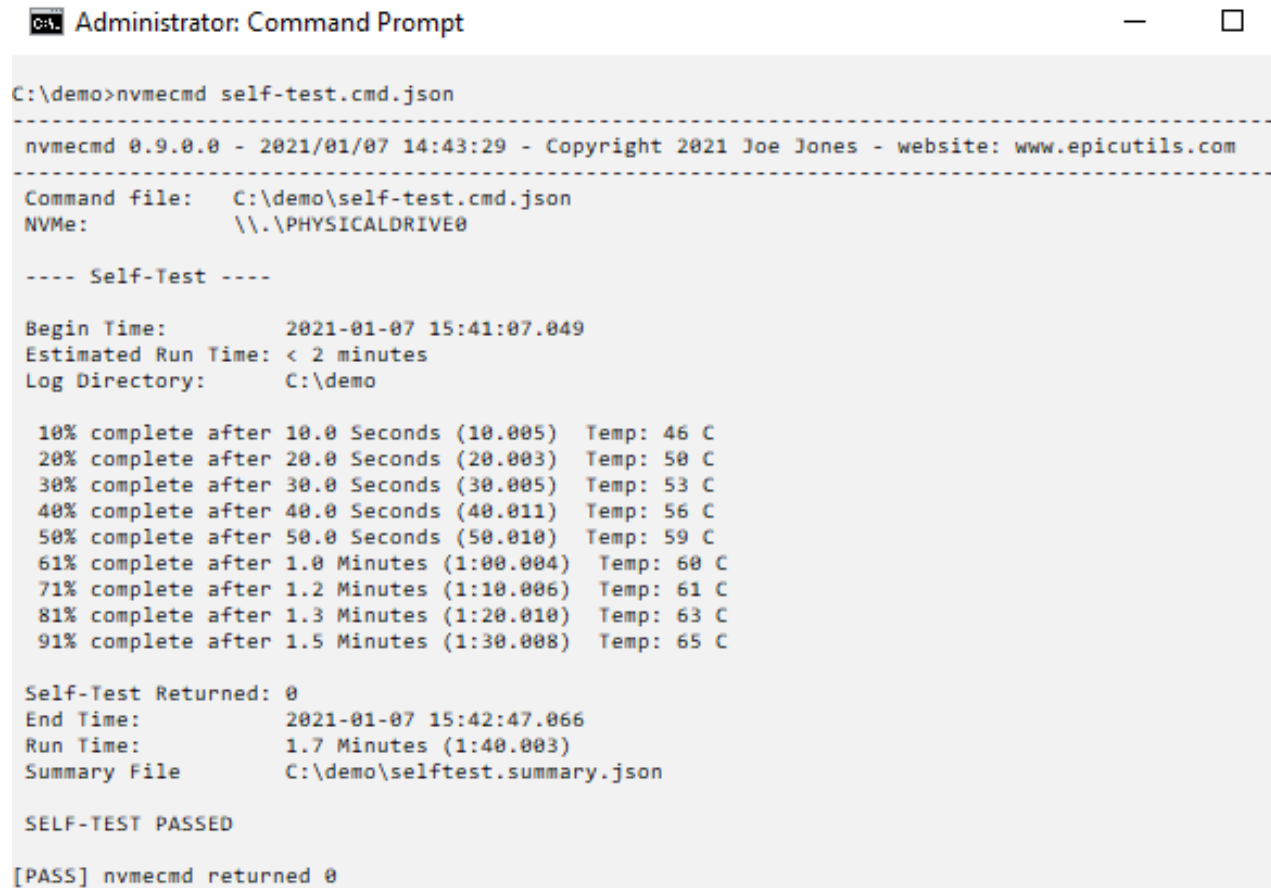
Overview

The nvmecli command line utility can run short and extended self-tests. The short self-test is run with the following command (this command must be run with administrator privileges):

```
nvmecli self-test.cmd.json
```

This command returns 0 if the self-test passes and non-zero if not.

The example output below shows a short self-test that passes.



```
C:\demo>nvmecli self-test.cmd.json

-----
nvmecli 0.9.0.0 - 2021/01/07 14:43:29 - Copyright 2021 Joe Jones - website: www.epicutils.com
-----
Command file:  C:\demo\self-test.cmd.json
NVMe:          \\.\PHYSICALDRIVE0

---- Self-Test ----

Begin Time:      2021-01-07 15:41:07.049
Estimated Run Time: < 2 minutes
Log Directory:   C:\demo

10% complete after 10.0 Seconds (10.005)  Temp: 46 C
20% complete after 20.0 Seconds (20.003)  Temp: 50 C
30% complete after 30.0 Seconds (30.005)  Temp: 53 C
40% complete after 40.0 Seconds (40.011)  Temp: 56 C
50% complete after 50.0 Seconds (50.010)  Temp: 59 C
61% complete after 1.0 Minutes (1:00.004)  Temp: 60 C
71% complete after 1.2 Minutes (1:10.006)  Temp: 61 C
81% complete after 1.3 Minutes (1:20.010)  Temp: 63 C
91% complete after 1.5 Minutes (1:30.008)  Temp: 65 C

Self-Test Returned: 0
End Time:          2021-01-07 15:42:47.066
Run Time:         1.7 Minutes (1:40.003)
Summary File      C:\demo\selftest.summary.json

SELF-TEST PASSED

[PASS] nvmecli returned 0
```

The estimated run time for a short self-test is specified in the NVMe specification as 2 minutes or less. At the end of the test the run time is displayed so the user can compare against the estimated time.

During the self-test the utility reads logs page 6 to update the progress and log page 2 to get SMART information. The utility verifies the progress doesn't decrease during the self-test the result in log page 6.

From the output above the user can check if the progress reported from log page 6 is monotonic and linear.

To run the extended self-test add the `--extended` command line parameter as shown here:

```
nvmecli self-test.cmd.json --extended
```

Below is sample output from an extended self-test. The estimated run time for extended tests is from the EDSTT parameter read using the Identify Controller command.

```
Administrator: Command Prompt

C:\demo>nvmecmd self-test.cmd.json --extended
-----
nvmecmd 0.9.0.0 - 2021/01/07 14:43:29 - Copyright 2021 Joe Jones - website: www.epicutils.com
-----
Command file:  C:\demo\self-test.cmd.json
NVMe:          \\.\\PHYSICALDRIVE0

---- Self-Test ----

Begin Time:      2021-01-07 16:13:23.078
Estimated Run Time: 39 Minutes
Log Directory:   C:\demo

 0% complete after 10.0 Seconds (10.001)  Temp: 46 C
 1% complete after 20.0 Seconds (20.010)  Temp: 50 C
 2% complete after 30.0 Seconds (30.012)  Temp: 53 C
 2% complete after 40.0 Seconds (40.015)  Temp: 54 C

 93% complete after 25.7 Minutes (25:40.006)  Temp: 71 C
 93% complete after 25.8 Minutes (25:50.005)  Temp: 70 C
 94% complete after 26.0 Minutes (26:00.009)  Temp: 70 C
 94% complete after 26.2 Minutes (26:10.013)  Temp: 71 C
 95% complete after 26.3 Minutes (26:20.014)  Temp: 71 C
 96% complete after 26.5 Minutes (26:30.009)  Temp: 71 C
 96% complete after 26.7 Minutes (26:40.014)  Temp: 72 C
 98% complete after 26.8 Minutes (26:50.009)  Temp: 69 C

Self-Test Returned: 0
End Time:           2021-01-07 16:40:19.095
Run Time:           26.9 Minutes (26:56.014)
Summary File        C:\demo\selftest.summary.json

SELF-TEST PASSED

[PASS] nvmecmd returned 0
```

Self-Test Command File

The self-test command file is a simple json file as shown below. For more information refer to the nvmecmd User Guide.

```
{  
  "cmd type": "self-test",  
  "short description": "Self-Test",  
  "display sample interval in sec": 10,  
  "extended self-test": false,  
  "read command times": true,  
  "read smart data": true,  
  "abort time": 0,  
  "high priority": false,  
  "high resolution timer": false  
}
```

References

NVMe specification <https://nvmexpress.org/developers/nvme-specification/>

Nvmecmd User Guide (Included with NVMe Info application) <http://www.epicutils.com>

User Guide provided with NVME Info application located in the Documentation folder of the install path for NVMe Info.