



USER GUIDE

SOLIDIGM™ SYNERGY CLI

April 2023

SOLIDIGM™

Revision History

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1 Introduction

This guide describes usability of Solidigm™ Synergy Tool Command Line Interface and provides reference on using the tool to configure and retrieve data from supported products.

Solidigm Synergy CLI Summary:

- CLI based tool for interacting with Solidigm™ NVMe SSDs (formerly Intel®)
- Provides basic functionality for other vendors SSDs
- Provides firmware updates to all non-OEM drives
- Supports Client drives
- Supports OS: Windows 10, Windows 11

1.1 Features

The Solidigm Synergy CLI provides a suite of capabilities for interacting with Solid State drives (SSDs).

1.1.1 Feature Availability

Availability of features is dependent on various factors. These factors include, but are not limited to, the following:

- Product
- Interface Type: ATA, NVMe (1.1, 1.2, 1.3, 1.4)
- Operating System Version/Support
- Driver: Solidigm Synergy Storage driver, Windows Inbox NVMe driver, Intel® RST driver
- Configuration: RAID

1.1.2 Feature Summary

The functionality includes:

- Detecting drives attached on the system
- Parsing a drive's Identify Device information
- Parsing a drive's SMART and Health Log information
- Support for NVMe features
- Option to retrieve output in text, JSON or xml format
- Updating SSD firmware
- Solidigm vendor unique features support

1.2 System Requirements

The Solidigm Synergy CLI is supported on the following:

- Operating systems on x64 Architecture:
 - Windows:
 - Windows Server 2012, 2012 R2, 2016, 2019, 2022
 - Windows 10, 11
 - Windows PE

NOTES:

- On Windows Server and Windows OS, administrator access is required. Open a command prompt as administrator and run the tool via the commands as described in this document. Disable UAC where applicable and run the tool in a command prompt.
- On Windows Server 2012, the tool only works with Intel/Solidigm provided Windows driver. Click [here](#) for the latest drivers. The tool will not work with the in-box Windows NVMe driver found in server 2012 R2. The tool will return an error if this driver is used.
- Earlier OS Versions not listed in supported list are generally expected to work but are not actively validated and not officially supported

1.3 Document Conventions

Throughout this guide, the format of each command is documented in a gray colored text box.

- Items in [brackets] are optional.
- For options and targets, each possible value is separated by a bar, '|', meaning "or" and the default value is listed first.
- Items in (parenthesis) indicate a user supplied value.

For example, the following **set** command is interpreted as follows:

- The verb **set** can be followed by an optional modifier (help).
- The target **-ssd** is required followed by Index or Serial number of the drive to be targeted
- It also specifies a required property **Test** in which valid values are **Test1** or **Test2**.

```
SynergyCLI set [-h|-help] -ssd [(Index|SerialNumber|PhysicalPath)]  
Test=(Test1|Test2)
```

1.4 Running the Solidigm Synergy CLI

Run the Solidigm Synergy CLI from Windows administrator command prompt. The tool is run as a single command by supplying the command and parameters immediately following the Synergy CLI executable.

```
SynergyCLI show -ssd
```

1.5 Command Syntax

The command line syntax is case insensitive and is interpreted in English-only. It follows the Distributed Management Task Force (DMTF) Server Management (SM) Command Line Protocol (CLP), or DMTF SM-CLP standard with the exception of the target portion of the command. Document number DSP0214 and can be found at <http://www.dmtf.org>.

Target specification in SM-CLP identifies CIM instances using CIM object paths. The modified syntax implemented utilizes key properties of the target without requiring a syntactically correct CIM object path. Generally, the form of a user request is:

```
SynergyCLI <verb>[<options>][<targets>][<properties>]
```

A command has a single verb that represents the action to be taken. Following the verb can be one or more options that modify the action of the verb, overriding the default behavior with explicitly requested behavior.

Options generally have a short and long form (for example, **-a** | **-all**). One or more targets are normally required to indicate the object of the action. However, there are a few cases where a target is not required. Finally, zero or more properties defined as a key/value pair can be used to modify the target.

1.6 Targets

In general, if there is only one object of a specific target type, a target value is not accepted.

Unless otherwise specified, when there are multiple objects of a specific target type, not supplying a target value implies the command should operate on all targets of that type. This is the case for the show device command, which will display all devices if no target value is specified.

```
SynergyCLI show -ssd
```

The same operation can be limited to a single object by supplying a specific target value.

```
SynergyCLI show -ssd 1
```

2 Feature List

The following table list all features available in Synergy CLI. Features are listed alphabetically. Command Syntax column describes the command and command syntax needed to perform each feature. Commands can have different options and ways to specify target drive.

Further details for each command are provided in subsequent sections of this document.

2.1 Quick Command Syntax Guide for Features Table

Options	Description
<code>[-all -a]</code>	Shows all properties.
<code>[-display -d]</code>	Filters the returned properties by explicitly specifying a comma separated list of any of the properties defined in the Return Data section.
<code>[-help -h]</code>	Displays help for the command.
<code>[-output -o (text nvml json)]</code>	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvml'.

Target	Description
<code>-ssd [(Index SerialNumber PhysicalPath Bootdrive)]</code>	Restricts output to specific SSD by supplying the device's Index or Serial Number or path or Bootdrive. BootDrive option available in Windows only.

2.2 Features



Feature	Description	Command Syntax	Example
Assert Log	Read the Assert Log binary and save it to the given filename.	<code>dump [-help -h] [-destination (path)] [-output -o (text nvml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -assertlog</code>	<code>SynergyCLI dump -destination assertlog_binary.bin -ssd 1 -assertlog</code>
Delete	NVME only Delete all the data on the selected device. To by-pass the prompt, specify the <code>-force</code> option.	<code>delete [-help -h] [-force -f] [-output -o (text nvml json)] -ssd (Index SerialNumber PhysicalPath)</code>	<code>SynergyCLI delete -ssd 1</code>

Feature	Description	Command Syntax	Example
Drive Index	Display information of selected drive by index.	show [-help -h] [-display -d (property1,...)] [-all -a] [-output -o (text nvml json)] -ssd [(Index SerialNumber PhysicalPath)]	SynergyCLI show -ssd 1
Drive List	Display a list of attached drives to the screen.	show [-help -h] [-display -d (property1,...)] [-all -a] [-output -o (text nvml json)] -ssd [(Index SerialNumber PhysicalPath)]	SynergyCLI show -ssd
Drive Path	Display information of selected drive by drive path.	show [-help -h] [-display -d (property1,...)] [-all -a] [-output -o (text nvml json)] -ssd [(Index SerialNumber PhysicalPath)]	SynergyCLI show -ssd \\.\physicaldrive1
Drive Serial	Display information of selected drive by serial number.	show [-help -h] [-display -d (property1,...)] [-all -a] [-output -o (text nvml json)] -ssd [(Index SerialNumber PhysicalPath)]	SynergyCLI show -ssd cvpo893749287gn
Event Log	Read the Event Log binary and save it to the given filename.	dump [-help -h] [-destination (path)] [-output -o (text nvml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -eventlog	SynergyCLI dump -destination eventlog_binary.bin -ssd 1 -eventlog
Firmware Activate and Configuration	<p>Activate the firmware on the selected drive (NVMe only). Configure activation notification</p> <p>Performed after firmware update with source option</p> <p>NVMe only</p>	load [-help -h] [-force -f] [-source (path)] [-output -o (text nvml json)] -ssd (Index SerialNumber PhysicalPath) -firmwareactivate [firmwareslot = ('1 2 3 4 5 6 7')] [commitation = (2 3)] set [-help -h] [-output -o (text nvml json)] -ssd (Index SerialNumber PhysicalPath) firmwareactivationnoticesconfiguration = ('true' 'false')	SynergyCLI load -ssd 1 -firmwareactivate firmwareslot = 1 commitment = 2 SynergyCLI set -ssd 1 firmwareactivationnoticesconfiguration = true
Firmware Update (load)	Update the firmware of the selected drive (if possible).	load -instelssd (Index SerialNumber PhysicalPath) load [-help -h] [-force -f] [-source (path)] [-output -o (text nvml json)] -ssd (Index SerialNumber PhysicalPath) [firmwareslot = ('1 2 3 4 5 6 7')] [commitation = (0 1 2 3)]	SynergyCLI load -ssd 1 SynergyCLI load -source firmwarebinaryfile.bin -ssd 1 firmwareslot = 1 commitment = 0
Format	NVMe Format the selected drive. NVMe only. See NVMeFormat	see nvme format	
Help	Display the help string and exit. All other arguments will be ignored.	help [-help -h] [-output -o (text nvml json)] [name = (name)] [verb = (verb)]	SynergyCLI help name = help SynergyCLI help verb = help

Feature	Description	Command Syntax	Example
Identify	Show the device identify structures. Use the -nvmecontroller and -namespace targets to select specific identify structures for NVMe devices.	show [-help -h] [-output -o (text nvmxml json)] -identify [-namespace (integer 'attached' 'allocated')] [-nvmecontroller] [-ssd [(Index SerialNumber PhysicalPath)]]	SynergyCLI show -ssd 1 -identify
			SynergyCLI show -ssd 1 -identify -namespace 1
			SynergyCLI show -ssd 1 -identify -namespace attached
			SynergyCLI show -ssd 1 -identify -namespace allocated
License	Display the tool's software license.	version [-all -a] [-display -d (property1,...)] [-help -h] [-output -o (text nvmxml json)]	SynergyCLI version -d license
Namespace Descriptors	Shows NVMe namespace descriptors (from identify structures). NVMe only.	show [-help -h] [-output -o (text nvmxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -identify -descriptors [-namespace (integer 'attached' 'allocated')]	SynergyCLI show -identify -descriptors
NLog	Read the NLog binary and save it to the given filename.	dump [-help -h] [-destination (path)] [-output -o (text nvmxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -nlog	SynergyCLI dump -destination nlog_binary.bin -ssd 1 -nlog
NVMe Controller (Show)	Show the devices list of controllers. Use the -namespace target to list controllers attached to that given namespace ID. NVMe only, requires Namespace Management support	show [-help -h] [-output -o (text nvmxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] [-namespace (namespace id)] -nvmecontroller	SynergyCLI show -ssd 1 -namespace 1 -nvmecontroller
NVMe Namespace (Show)	Show the devices list of namespaces NVMe only.	show [-help -h] [-output -o (text nvmxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -namespace (attached allocated)	SynergyCLI show -ssd 1 -namespace attached

Feature	Description	Command Syntax	Example
NVMe Get Feature	Show the attributes of the NVMe feature specified (denoted by feature id).	<pre>show [-help -h] [-display -d (property1,...)] [-all -a] [- output -o (text nvmlxml json)] -ssd (Index SerialNumber PhysicalPath) - getfeature (feature id) [-namespace (namespace id)] [select = ('current' 'default' 'saved' 'capabi lities')]</pre>	SynergyCLI show -ssd 1 - getfeature 0x1
NVMe Set Feature	Sets NVMe feature through low level data.	<pre>set [-help -h] [-output -o (text nvmlxml json)] -ssd (Index SerialNumber PhysicalPath) - setfeature (feature id) [-namespace (namespace id)] [UUIDIndex = ((0- 127))] [Save = ((true false))] [DWORD11 = (32 bit hex)] [DWORD12 = (32 bit hex)] [DWORD13 = (32 bit hex)] [InputFile = (filename)]</pre>	SynergyCLI.exe set -ssd 4 - setfeature 4 Save=true DWORD11=0000015F
NVMe Format	Issue an NVMe format to the selected drive. To by-pass the prompt, specify the -force option. NVMe only See ConfigureSSDs-NVMeFormat section for details.	<pre>start [-help -h] [-force -f] [- output -o (text nvmlxml json)] -ssd (Index SerialNumber PhysicalPath) - nvmeformat [-namespace (namespace id)] [lbaformat = (0-numlbaformats)] [secureerasesetting = (0 1 2)] [protectioninformation = (0 1)] [metadatasettings = (0 1)]</pre>	SynergyCLI start -ssd 1 - nvmeformat -namespace 1 secureerasesetting = 0
NVMe Log (Show)	Display the given NVMe log data to the screen or save log binary to file. NVMe only	<pre>show [-help -h] [-output -o (text nvmlxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -nvmelog [('commandeffectslot' 'changednamespacelist' 'errorinfo' 'smarthealthinfo' 'firmwareslotinfo' 'performancebooster')]</pre>	SynergyCLI show -ssd 1 -nvmelog smarthealthinfo
NVMe Reset	Performs an NVMe reset on the targeted NVMe controller	<pre>reset [-help -h] [-output -o (text nvmlxml json)] -ssd (Index SerialNumber PhysicalPath) - nvmecontroller</pre>	SynergyCLI reset -ssd 1 - nvmecontroller

Feature	Description	Command Syntax	Example
Performance Booster	Boost performance of SSD by flushing cache. User can start, stop, or track progress of cache flushing feature. Selected drives only	<pre>start [-help -h] [-output -o (text nvxml json)] -ssd (Index SerialNumber PhysicalPath) - performancebooster stop [-help -h] [-output -o (text nvxml json)] -ssd (Index SerialNumber PhysicalPath) - performancebooster show [-help -h] [-output -o (text nvxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -performancebooster</pre>	<pre>SynergyCLI start -ssd 1 - performancebooster SynergyCLI stop -ssd 1 - performancebooster SynergyCLI show -ssd 1 - performancebooster</pre>
Partition info	Shows partition information.	<pre>show [-help -h] [-output -o (text nvxml json)] -partition [(id)] -ssd [(Index SerialNumber PhysicalPath)]</pre>	<pre>SynergyCli show -partition -ssd 4</pre>
Sanitize	Erase all accessible storage.	<pre>start [-help -h] [-force -f] [- output -o (text nvxml json)] -ssd (Index SerialNumber PhysicalPath) - sanitize [(block crypto overwrite exit_failur e)] [nodeallocateaftersanitize = (true false)] [overwriteinvertpattern = (true false)] [overwritepasscount = (integer)] [allowunrestrictedexit = (true false)] [overwritepattern = (32-bit hex pattern)] [returnimmediately = (true false)]</pre>	<pre>SynergyCLI start -ssd 1 - sanitize</pre>
Self Test	Execute a drive self-test routine on the selected drive.	<pre>start [-help -h] [-output -o (text nvxml json)] -ssd (Index SerialNumber PhysicalPath) - selftest [('short' 'extended' 'conveyance')] show [help -h] [-output -o (text nvxml json0) [-ssd [index serialNumber PhysicalPath]] - selftest</pre>	<pre>SynergyCLI start -ssd 1 - selftest short SynergyCLI show -ssd 1 - selftest</pre>
Telemetry	Read the Telemetry Log binary and save it to the given filename.	<pre>dump [-help -h] [-destination (path)] [-output -o (text nvxml json)] [-ssd [(Index SerialNumber PhysicalPath)]] -telemetrylog</pre>	<pre>SynergyCLI dump -destination telemetry_data.bin -ssd 1 - telemetrylog</pre>

Feature	Description	Command Syntax	Example
Temp Threshold  	Set the drives temperature threshold value. NVMe only Caution: If set incorrectly could overheat drive.	<pre>set [-help -h] [-output -o (text nvmxml json)] -ssd (Index SerialNumber PhysicalPath) tempthreshold = (value)</pre>	<pre>SynergyCLI set -ssd 1 tempthreshold = 65</pre>
Trim	Trim the partition with assigned letter.	<pre>start [-help -h] [-force -f] [-output -o (text nvmxml json)] -partition (id) [-ssd [(Index SerialNumber PhysicalPath)]] -trim</pre>	<pre>SynergyCLI start -partition C -trim</pre>
UUID	Feature to show Universally Unique Identifier data	<pre>Synergy CLI show [help -h] [-output -o (text nvmxml json)] [-ssd [index serialNumber PhysicalPath]] -identify uuidlist</pre> <pre>dump [-help -h] -destination (path) [-output -o (text nvmxml json)] [-ssd (Index SerialNumber PhysicalPath)] - identify -uuidlist</pre>	<pre>SynergyCLI show -ssd 1 -identify uuidlist</pre> <pre>SynergyCLI dump -destination targetfile.bin -ssd 1 -identify -uuidlist</pre>

Notes on device target options: In Windows, device can be targeted with BootDrive option in addition to Index|SerialNumber|PhysicalPath

3 Feature Details

3.1 Show Device Information

This section provides different options to retrieve device related information.

3.1.1 Show Device List

Show information about one or more SSD devices.

Generally, this command is run as a first step to get list of devices attached and get device index.

3.1.1.1 Syntax

```
SynergyCLI show [-help|-h] [-output|-o (text|nvml|json)] -ssd
[(Index|SerialNumber|PhysicalPath)]
```

3.1.1.2 Options

Option	Description
[-display -d]	Filters the returned properties by explicitly specifying a comma separated list of any of the properties defined in the Return Data section.
[-help -h]	Displays help for the command.
[-output -o (text nvml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvml'.

3.1.1.3 Targets

Target	Description
-ssd [(Index SerialNumber PhysicalPath BootDrive)]	Restricts output to specific SSD by supplying the device's Index or Serial Number. By default, the command displays all SSDs. BootDrive option available in Windows only.

3.1.1.4 Properties

This command does not support any properties

3.1.1.5 Examples

Lists all the devices attached to the system. Basic/default properties are displayed for each device.

```
SynergyCLI show -ssd
```

Lists basic default information for drive at index 0

```
SynergyCLI show -ssd 0
```

3.1.1.6 Sample output

Default show output for -ssd target in default text format

```
>SynergyCLI.exe show -ssd
- Intel SSD DC P3608 Series CVF85156007H400AGN-2 -

Bootloader : 8B1B0131 {
DevicePath : \\.\.\PHYSICALDRIVE1 {
DeviceStatus : Healthy {
Firmware : 8DV10171 {
FirmwareUpdateAvailable : The selected drive contains current firmware as of this
tool release. {
Index : 0 {
ModelNumber : INTEL SSDPECME400G4 {
ProductFamily : Intel SSD DC P3608 Series {
SerialNumber : CVF85156007H400AGN-2
```

Default show output for -ssd target in JSON format

```
>SynergyCLI.exe show -o json -ssd
{
  "Intel SSD DC P3608 Series CVF85156007H400AGN-2":
  {
    "Bootloader":"8B1B0131",
    "DevicePath":"\\.\.\PHYSICALDRIVE1",
    "DeviceStatus":"Healthy",
    "Firmware":"8DV10171",
    "FirmwareUpdateAvailable":"The selected drive contains current firmware
as of this tool release.",
    "Index":0,
    "ModelNumber":"INTEL SSDPECME400G4",
    "ProductFamily":"Intel SSD DC P3608 Series",
    "SerialNumber":"CVF85156007H400AGN-2"
```

3.1.2 Show Device Data

Show detailed information about one or more SSD devices.

3.1.2.1 Syntax

```
SynergyCLI show [-all|-a] [-display|-d] [-help|-h] [-output|-o
(text|nvxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]
```

3.1.2.2 Options

Option	Description
[-all -a]	Shows all properties.
[-display -d]	Filters the returned properties by explicitly specifying a comma separated list of any of the properties defined in the Return Data section.
[-help -h]	Displays help for the command.
[-output -o (text nvxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvxml'.

3.1.2.3 Targets

Target	Description
-ssd [(Index SerialNumber PhysicalPath Bootdrive)]	<p>Restricts output to specific SSD by supplying the device's Index or Serial Number. By default, the command displays all SSDs.</p> <p>For Windows, Boot drive option can be used to target the boot drive.</p>

3.1.2.4 Properties

This command does not support any properties.

3.1.2.5 Return Data

By default, a table is displayed with the following default properties. Use the options to show more detail.

Property	Description
AggregationThreshold	Shows the minimum number of completion queue entries to aggregate per interrupt vector before signaling an interrupt to the host. This value is zero-based.
AggregationTime	Shows the recommended maximum time in 100 microsecond increments that a controller may delay an interrupt due to interrupt coalescing.
ArbitrationBurst	Shows the maximum number of commands that the controller may launch at one time. This value is specified in 2 ⁿ . A value of 7 indicates no limit.
AsynchronousEventConfiguration	Determines whether an asynchronous event notification is sent to the host for the corresponding Critical Warning specified in the SMART / Health Information Log.
Bootloader	(Default; For NVMe devices only, if present) Return the devices Bootloader Revision.
BusType	The bus type value determined by Windows.
Capacity	Shows total capacity of the disk.
ControllerDescription	Shows a description of the controller the device is attached to.
ControllerID	The ID value of the device controller found in the Windows OS registry.
ControllerManufacturer	The manufacturer of the controller that the device is attached to.
ControllerService	Displays the controller driver sys file that the attached device is connected to.
DevicePath	(Default) The OS path to the device (i.e. \\.\PhysicalDrive0).

Property	Description
DeviceStatus	(Default) Report the device's status. In the current implementation this will look at ErrorString and if it is empty it will report "Healthy" otherwise it will report the value of ErrorString.
DriverCommunicationError	(Default; if present) This reports if the tool detected a potential error with communicated with the driver the device is connected to. For example, the tool will detect an error if the Server 2012 R2* system is using the in-box NVMe driver from Microsoft*. Synergy CLI does not support communication with that driver.
DriverDescription	Description of the controller driver that the device is attached to. Currently in Windows OS only.
DriverMajorVersion	Major version of the controller driver that the device is attached to. Currently in Windows OS only.
DriverManufacturer	Manufacturer of the controller driver that the device is attached to. Currently in Windows OS only.
DriverMinorVersion	Minor version of the controller driver that the device is attached to. Currently in Windows OS only.
ErrorString	Shows a description of the error state of the drive. NOTE: The drive is not in an error state if the value is blank.
Firmware	(Default) Shows the firmware revision of the device.
FirmwareUpdateAvailable	(Default) Shows the firmware revision available for update. Firmware updates are carried within the tool as a "payload" binary for each supported drive. Tool reports 'Firmware is up to date as of this tool release' if the device's firmware is up to date.
HighPriorityWeightArbitration	Shows the number of commands that can be executed from the high priority services class in each arbitration round. This is a 0's based value.
FastlaneSupported	True if device supports Host Managed Cache. Solidigm NVMe disks only.
FastLaneEnabled	True if Host Managed Cache is enabled, showed only if it is supported.
Index	(Default) Shows the SSD device index, used for device selection.
SolidigmGen3SATA	True if the device is a Solidigm™ SATA SSD (formerly Intel®).
SolidigmNVMe	True if the device is a Solidigm™ NVMe (formerly Intel®) SSD.
IOCompletionQueuesRequested	Shows the number of IO Completion Queues requested.
IOSubmissionQueuesRequested	Shows the number of IO Submission Queues requested.

Property	Description
LatencyTrackingEnabled	Shows if the latency tracking feature of the drive is enabled (True) or disabled (False).
LBAFormat	Shows the LBA Format that the drive is configured with. This has a possible value of 0 to 'NumLBAFormats'. Details of the different LBA formats can be found in Identify Namespace. This value can be changed by NVMe format.
LowPriorityWeightArbitration	Shows the number of commands that can be executed from the low priority services class in each arbitration round. This is a 0's based value.
MaximumLBA	Shows the devices maximum logical block address.
MediumPriorityWeightArbitration	Shows the number of commands that can be executed from the medium priority services class in each arbitration round. This is a 0's based value.
MetadataSetting	Shows the device's Metadata setting. One of either: <ul style="list-style-type: none"> • 0: Metadata is transferred as part of a separate contiguous buffer. • 1: Metadata is transferred as part of an extended data LBA. This can be changed by issuing an NVMe format.
ModelNumber	(Default) Shows the model number assigned to the device.
NamespaceId	Shows the value of the namespace ID of the device if it has one. The namespace must be allocated and attached.
NativeMaxLBA	Shows the devices native maximum logical block address set in manufacturing. This value cannot be changed. It represents the physical maximum number of LBAs for the device.
NumErrorLogPageEntries	Shows the number of Error Information log entries that are stored by the controller. This value is zero-based.
NumLBAFormats	Shows the number of different LBA Formats the device supports. This value is zero-based. For example, a value of 6 means there are 0 to 6 possible LBA Formats (7 total).
NVMeControllerID	The value of the NVMe controller ID found in the NVMe identify controller structure.
NVMePowerState	Shows the power state of the controller. Supported power states are described in the Identify Controller data structure. This is an NVMe Get Feature (feature ID=2)
NVME_1_0_Supported	True if the device supports the NVMe 1.0 command specification.
NVME_1_2_Supported	True if the device supports the NVMe 1.2 command specification.

Property	Description
PCILinkGenSpeed	The devices PCI Gen speed.
PCILinkWidth	The devices PCI link width. E.g. 4 or 8
PhysicalSize	The physical size of the device in bytes. Value is in decimal format.
PNPString	(Windows OS only) The devices PNP String from the Windows registry.
ProductProtocol	The devices protocol e.g. ATA or NVME.
ProductFamily	(Default) Shows the SSD Series name.
ProtectionInformation	Shows the device's protection information type setting. One of: <ul style="list-style-type: none"> • 0: Protection information is not enabled. • 1: Protection information type 1 is enabled. This can be changed by issuing an NVMe format.
ProtectionInformationLocation	Shows the device's protection information location setting. One of: <ul style="list-style-type: none"> • 0: Protection information is transferred as the last 8 bytes of metadata. • 1: Protection information is transferred as the first 8 bytes of metadata.
RAIDMember	Shows if the device is part of a RAID. Currently only support RST RAID drivers and LSI Mega RAID.
ReadErrorRecoveryTimer	(For ATA devices only) Shows the time limit for read error recovery. Time limit is in 100 millisecond units.
SanitizeBlockEraseSupported	(For ATA devices only) True if the device supports the Sanitize block erase command (Identify device Word 59 bit 15).
SanitizeCryptoScrambleSupported	(For ATA devices only) True if the device supports the Sanitize crypto scramble command (Identify device Word 59 bit 13).
SanitizeSupported	(For ATA devices only) True if the device supports the Sanitize feature (Identify device Word 59 bit 12).
SataGen1	(For ATA devices only) Shows if the device supports SATA Gen 1 speed. Reports True or False.
SataGen2	(For ATA devices only) Shows if the device supports SATA Gen 2 speed. Reports True or False.
SataGen3	(For ATA devices only) Shows if the device supports SATA Gen 3 speed. Reports True or False.

Property	Description
SataNegotiatedSpeed	(For ATA devices only) Coded value indicating current negotiated SATA signal speed. One of: <ul style="list-style-type: none"> 1: SATA Gen1 rate of 1.5 Gbps 2: SATA Gen2 rate of 3 Gbps 3: SATA Gen3 rate of 6 Gbps
SCSIPortNumber	(Windows OS only) The port number of the SCSI path used by Windows.
SectorSize	Shows the sector size in bytes.
SecurityEnabled	(For ATA devices only) Shows if the device is in security enabled state. Reports True or False.
SecurityFrozen	(For ATA devices only) Shows if the device is in security frozen state. Reports True or False.
SerialNumber	(Default) Shows the serial number assigned to the device.
SMBusAddress	Shows the SM Bus address of the drive. Value of 255 means the SM Bus is disabled.
SSCEnabled	(For ATA devices only) Shows if the device has spread spectrum clocking enabled or not. Reports True or False.
StorageSpaceMember	Shows if the device is a Windows Storage Space member.
TemperatureLoggingInterval	(For ATA devices only) Shows the time interval for temperature logging.
TempThreshold	Shows the temperature threshold of the overall device. Units are in Celsius.
TimeLimitedErrorRecovery	Shows the limited retry timeout value in 100 millisecond units. This applies to I/O commands that indicate a time limit is required. A value of 0 indicates that there is no timeout.
TrimSupported	True if the device supports Trim feature.
VolatileWriteCacheEnabled	True if the volatile write cache is enabled.
WriteAtomicityDisableNormal	Shows the atomic write status. One of: <ul style="list-style-type: none"> 0: If cleared to '0', the atomic write unit for normal operation shall be honored by the controller. 1: The host specifies that the atomic write unit for normal operation is not required and the controller shall only honor the atomic write unit for power fail operations.

3.1.2.6 Examples

Lists basic properties for the SSD devices at index 1.

```
SynergyCLI show -a -ssd 1
```

3.1.2.7 Sample Output

Default show output for `-ssd` target in default text format

```
>Synergy CLI.exe show -ssd
- Intel SSD DC P3608 Series CVF85156007H400AGN-2 -

Bootloader : 8B1B0131 {
DevicePath : \\.\.\PHYSICALDRIVE1 {
DeviceStatus : Healthy {
Firmware : 8DV10171 {
FirmwareUpdateAvailable : The selected drive contains current firmware as of this
tool release. {
Index : 0 {
ModelNumber : INTEL SSDPECME400G4 {
ProductFamily : Intel SSD DC P3608 Series {
SerialNumber : CVF85156007H400AGN-2
```

Default show output for `-ssd` target in JSON format

```
>Synergy CLI.exe show -o json -ssd
{
  "Intel SSD DC P3608 Series CVF85156007H400AGN-2":
  {
    "Bootloader":"8B1B0131",
    "DevicePath":"\\.\.\PHYSICALDRIVE1",
    "DeviceStatus":"Healthy",
    "Firmware":"8DV10171",
    "FirmwareUpdateAvailable":"The selected drive contains current firmware
as of this tool release.",
    "Index":0,
    "ModelNumber":"INTEL SSDPECME400G4",
    "ProductFamily":"Intel SSD DC P3608 Series",
    "SerialNumber":"CVF85156007H400AGN-2"
  }
}
```

3.1.3 Show Device Identification Structures

The `show -identify` command shows the device identification structures for one or more SSDs.

3.1.3.1 Syntax

```
SynergyCLI show [-help|-h] [-output|-o (text|nvmlxml|json)] [-ssd
(Index|SerialNumber|PhysicalPath)] -identify [(-nvmecontroller) | (-descriptors)
| (-uuidlist)] [-namespace (id|'attached'|'allocated')]
```

3.1.3.2 Options

Option	Description
<code>[-help -h]</code>	Displays help for the command.
<code>[-output -o (text nvmlxml json)]</code>	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.1.3.3 Targets

Target	Description
-identify	Displays identification structures for SSDs.
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.
[(-nvmecontroller) (-descriptors) (-uuidlist)]	(Optional) Specify it to parse the NVMe identify controller structure, namespace descriptors or UUID list
[-namespace (id 'attached' 'allocated')]	(Optional) Specify it to parse the NVMe namespace structure for the given namespace ID. If 'attached' is given, parse the list of attached NVMe namespaces. If 'allocated' is given, parse the list of allocated NVMe namespaces (these are created and may, or may not, be attached).

3.1.3.4 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software.

3.1.3.5 Return Data

This command will return human readable text of the specified Identify structure. Use the -output option to return the parsed data in different formats.

Note: Some identify structures are not supported on all devices.

3.1.3.6 Examples

Parse the ATA identify device structure. Only a snippet of the output is shown below:

```
>SynergyCLI.exe show -identify
- ATA Identify Device CVLV119200C4300DGN -

- Word 0 -

General Configuration : 0040
Bit 15 - ATA Device Identifier : 0
Bit 14:8 - Retired : 00
Bit 7:6 - Obsolete : 1
Bit 5:3 - Retired : 0
Bit 2 - Response Incomplete : 0
Bit 1 - Retired : 0
Bit 0 - Reserved : 0

- Word 1 -

Obsolete : 3FFF

- Word 2 -

Specific Configuration : C837

- Word 3 -

Obsolete : 0010

- Word 4 -

Retired : 0000

- Word 5 -

Retired : 0000

- Word 6 -

Obsolete : 003F

- Word 7-8 -

Reserved : 00000000

- Word 9 -

Retired : 0000

- Word 10-19 -

Serial Number : CVLV119200C4300DGN
```

Display the NVMe controller identify structure in JSON format. Not all of the data is show below. Only supported on NVMe devices.

```
>SynergyCLI.exe show -o json -identify -nvmecontroller
{
  "Identify Controller CVF85156007H400AGN-1":
  {
    "Byte 0-1":
    {
      "PCI Vendor ID (VID)":8086
    },
    "Byte 2-3":
    {
      "PCI Subsystem Vendor ID (SSVID)":8086
    },
    "Byte 4-23":
    {
      "Serial Number":"CVF85156007H400AGN-1"
    },
    "Byte 24-63":
    {
      "Model Number":"INTEL SSDPECME400G4"
    },
    "Byte 64-71":
    {
      "Firmware Revision":"8DV10171"
    },
  },
}
```

Display the list of Namespace ID's that have been created.

```
>SynergyCLI.exe show -ssd 2 -identify -namespace allocated
- Allocated Namespace IDs CVEK5316004R800AGN -
Namespace ID : 1
Namespace ID : 2
```

3.1.4 Show NVMe Controller/Namespace Information

The show -nvmecontroller command lists the NVMe controller/namespaces IDs for one or more SSDs. Only supported on NVMe devices.

3.1.4.1 Syntax

```
SynergyCLI show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd
(Index|SerialNumber|PhysicalPath)] (-nvmecontroller | -namespace
('attached'|'allocated')) [-namespace (id)]
```

3.1.4.2 Options

Option	Description
[-help -h]	Displays help for the command.

[-output|-o (text | nvmlxml | json)] Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.1.4.3 Targets

Target	Description
(-nvmecontroller -namespace ('attached' 'allocated'))	(Required) Shows either list of NVMe attached controllers or namespaces. -nvmecontroller : Will parse the list of all NVMe controllers of the device. You can change the behavior if -namespace target is given. -namespace ('attached' 'allocated') : Will print list of attached or allocated namespaces
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.
[-namespace (id)]	(Optional) If given, with a valid namespace ID value, then the list of controllers attached to that given namespace ID is returned. The Tool will issue the NVMe identify command with CNS=0x12.

3.1.4.4 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software. The specified device must be an NVMe SSD. Controller and allocated namespace lists require Namespace Management feature supported by SSD.

3.1.4.5 Return Data

This command will parse, and return human readable text. Use the -output option to return the parsed data in different formats.

3.1.4.6 Examples

Parsed list of NVMe controller  on all drives.

```
>SynergyCLI.exe show -nvmecontroller
- BTWL238602AM800DGN -

Status : The selected drive does not support this feature.

- All Controllers CVEK5316004R800AGN -

Number of Controller Entries : 2
Controller ID : 0
Controller ID : 1
```

Parsed list of controllers that a given namespace ID is attached to.

```
>SynergyCLI.exe show -namespace 1 -nvmecontroller -ssd 2
- Attached Controllers CVEK5316004R800AGN -
```


Number of Controller Entries : 1
Controller ID : 1

3.1.5 Show NVMe Log Information

The show -nvme log command parses NVMe Logs for one or more SSDs. Only supported on NVMe devices.

3.1.5.1 Syntax

```
SynergyCLI show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd
[(Index|SerialNumber|PhysicalPath)]] -nvme log
[(('commandeffectslog'|'changednamespace'|'errorinfo'|'smarthealthinfo'|'firmw
areslotinfo'|'performancebooster'|'sanitizestatus'))] [namespacepecific =
(true|false)] [logspecificfield = (int)]
```

3.1.5.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.1.5.3 Targets

Target	Description
-nvme log (logID) ('ErrorInfo' 'SmartHealthInfo' 'FirmwareSlotInfo' 'PerformanceBooster' 'SanitizeStatus')	<p>Parse the NVMe log structures.</p> <p>Valid input would be LogID (integer) or one of predefined names:</p> <ul style="list-style-type: none"> • ErrorInfo - Error Information Log • SmartHealthInfo - SMART Health Information Log • FirmwareSlotInfo - Firmware Slot Information Log • Performance booster (client only) - Show the contents of the performance booster log • SanitizeStatus - Show the contents of the sanitize status log • Log ID Value - Specify an arbitrary integer value. Synergy CLI will send the log page command, and either returned parsed data or raw binary data.
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

3.1.5.4 Properties

Property	Description
NamespaceSpecific	Determines whether log page is namespace specific or not Valid values are: <ul style="list-style-type: none"> • True • False
LogSpecificField	Specifies the log specific field (LSP) of the log page Valid values are: <ul style="list-style-type: none"> • Integer

3.1.5.5 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software. The specified device must be an NVMe SSD.

3.1.5.6 Return Data

This command will parse and return human readable text of the specified NVMe log. Use the `-output` option to return the parsed data in different formats.

3.1.5.7 Examples

Parsed output of the SMART and Health information log in text format

```
>SynergyCLI.exe show -nvme log smarthealthinfo
- SMART and Health Information CVF85156007H400AGN-2 -

Available Spare Normalized percentage of the remaining spare capacity available :
100
Available Spare Threshold Percentage : 10
Available Spare Space has fallen below the threshold : False
Controller Busy Time : 0x0
Critical Warnings : 0
Data Units Read : 0x01F097
Data Units Written : 0x0
Host Read Commands : 0x86A392
Host Write Commands : 0x7772E3
Media Errors : 0x0
Number of Error Info Log Entries : 0x0
Percentage Used : 0
Power Cycles : 0x1F
Power On Hours : 0x0668
Media is in a read-only mode : False
Device reliability has degraded : False
Temperature - (Kelvin) : 318
Temperature has exceeded a critical threshold : False
Unsafe Shutdowns : 0x05
Volatile memory backup device has failed : False
```

Parsed output of the Temperature Statistics log in JSON format.

```
>SynergyCLI.exe show -o json -nvme log temperaturestatistics
{
  "Temp Statistics CVF85156007H400AGN-2":
  {
    "Current Temperature":45,
    "Overtemp shutdown Flag for Last Drive Overheat":0,
    "Overtemp shutdown Flag for Life Drive Overheat":0,
    "Highest Temperature":53,
    "Lowest Temperature":16,
    "Maximum operating temperature":85,
    "Minimum operating temperature":0,
    "Estimated offset in Celsius":-5
  }
}
```

3.1.6 Show Parsed Persistent Event Log Data

The show -persistenteventlog command parses persistent event log data either from a binary file saved on the system or pulled directly from the drive.

3.1.6.1 Syntax

SynergyCLI show [-help|-h] [-source (path)] [-destination (path)] [-output|-o (text|nvmlxml|json)] [-ssd (Index|SerialNumber|PhysicalPath)] -persistenteventlog

3.1.6.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-source (path)]	If used, will parse a persistent event log binary file at this path. If this option is not used, data will instead be pulled from the drive and parsed immediately (if a persistent event log context is established).
[-destination (path)]	If used, will output the parsed persistent event log data to a text file at the specified path. If not used, the parsed data will be displayed to the user.
[-output -o (text nvmlxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.1.6.3 Targets

Target	Description
-persistenteventlog	Used to parse persistent event log data.
[-ssd (Index SerialNumber PhysicalPath)]	Restricts output to a specific SSD by supplying the SSD Index or Serial Number.

3.1.6.4 Limitations

The persistent event log command must be supported by the drive. In order to pull the persistent event log data from the drive and parse it (by omitting the `-source` option) a persistent event log context must be established using the dump command, see [section 3.4.3](#).

3.1.6.5 Return Data

This command will parse and return human readable text of the persistent event log. Use the `-output` option to return the parsed data in different formats.

3.1.6.6 Examples

Parse a previously dumped persistent event log binary (see [section 3.4.3](#))

```
SynergyCLI.exe show -source PEL_binary.bin -destination PEL_parsed.txt -persistenteventlog
```

Parse persistent event log data directly from a drive

```
SynergyCLI.exe show -destination PEL_parsed.txt -ssd 1 -persistenteventlog
```

3.1.7 Show NVMe Feature Information

The `show -getfeature` command sends a get feature command with the specified feature id (FID) for SSDs. Only supported on NVMe devices.

3.1.7.1 Syntax

```
SynergyCLI show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -getfeature (feature id) [-namespace (namespace id)] [Select = ('current'|'default'|'saved'|'capabilities')]
```

3.1.7.2 Options

Option	Description
<code>[-help -h]</code>	Displays help for the command.
<code>[-output -o (text nvmxml json)]</code>	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.1.7.3 Targets

Target	Description
-getfeature (feature id)	Specify the feature id (FID) of the NVMe get feature command Examples of valid input would be <ul style="list-style-type: none"> • 0x1 - Arbitration • 0x2 - Power Management • 0x3 - LBA Range Type • 0x4 - Temp Threshold • 0x5 - Error Recovery • 0x6 - Volatile Write Cache • 0x7 - Number of Queues • 0x8 - Interrupt Coalescing • 0x9 - Interrupt Vector Config • 0xA - Write Atomicity • 0xB - Event Config
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.
-namespace (namespace Id)	Namespace target is optional. Must specify namespace ID if being used.

3.1.7.4 Properties

Below are the properties that can be modified.

Property	Description
Select	Sets the select value Valid values are: <ul style="list-style-type: none"> • Current • Default • Saved • Capabilities

3.1.7.5 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software. The specified device must be an NVMe SSD.

The command is entirely dependent on valid feature id values. Different drive families will support different feature ids.

3.1.7.6 Return Data

This command will parse and return human readable text of the specified NVMe get feature. Use the -output option to return the parsed data in different formats.

3.1.7.7 Examples

Parsed output of get feature with FID=1

```
> SynergyCLI show -ssd 0 -getfeature 1
- BTLJ723607AK2P0BGN -
ArbitrationBurst : 0
HighPriorityWeightArbitration : 0
LowPriorityWeightArbitration : 0
MediumPriorityWeightArbitration : 0
```

3.1.8 Show NVMe Device Self-Test result

3.1.8.1 Syntax

```
SynergyCLI show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -selftest
```

3.1.8.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.1.8.3 Targets

Target	Description
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.
-selftest	(Required) indicates NVMe Self-test operation.

3.1.8.4 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software. The specified device must be an NVMe SSD supporting device self-test feature.

3.1.8.5 Return Data

This command will parse and return human readable text for the last or currently running device self-test operation.

3.1.8.6 Examples

Results of the last device self-test operation

```
> SynergyCLI show -ssd 0 -selftest
```

```
SelfTestStatus : Operation completed without error.
```

3.1.9 Show partition information

3.1.9.1 Syntax

```
show [-help|-h] [-output|-o (text|nvmxml|json)] -partition [(id)] -ssd [(Index|SerialNumber|PhysicalPath)]
```

3.1.9.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.1.9.3 Targets

Target	Description
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.
-partition [(id)]	(Required) Shows partition information. Drive letter may be provided to focus on a single partition.

3.1.9.4 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software.

3.1.9.5 Return Data

This command will parse and return human readable information about partitions on a system.

3.1.9.6 Examples

```
> SynergyCLI show -partition C -ssd
```

```
- Partition Information -
```

```
- Partition C -
```

```
FreeSpace : 186339684352
```

```
Label : Value not found
```

```
ModelNumber : Samsung SSD 860 EVO 250GB
```

```
SerialNumber : S3YJNX1K833193Y
```

Size : 249382825984

UsedSpace : 63043141632

3.2 Configure SSDs

Configuring SSDs requires the CLI verbs Load (Firmware Update), Set (Modify Device), and Start (Execute Drive Function).

3.2.1 Firmware Update

Updates the firmware on the SSD. On the next reset, the firmware will become active.

Synergy CLI show devices (Synergy CLI.exe show -ssd) will indicate if there is firmware update available. Run the load command to update the firmware. Firmware update binaries are embedded in the tool. User doesn't have to provide firmware binary.

Note: Note: Systems configured with the SATA Controller set to IDE mode are not supported

3.2.1.1 Syntax

```
SynergyCLI load [-force|-f] [-help|-h] [-output|-o (text|nvmlxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
```

3.2.1.2 Options

Option	Description
[-force -f]	Displays a prompt by default when invoking the Firmware Update command. Use this option to bypass the prompt.
[-help -h]	Displays help for the command.
[-output -o (text nvmlxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.2.1.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	Updates the firmware on the specified SSD. Firmware binaries are embedded into the tool. See the FirmwareUpdateAvailable property for firmware update eligibility.

3.2.1.4 Properties

This command does not support any properties.

3.2.1.5 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSDs must be manageable by the host software.

3.2.1.6 Return Data

The CLI indicates the status of the firmware update operation.

3.2.1.6.1 Sample Output

```
>SynergyCLI.exe load -ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware...The selected drive contains current firmware as of this tool
release.

>SynergyCLI.exe load -ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): n
Canceled.

>SynergyCLI.exe load -f -ssd 0
Updating firmware...
The selected drive contains current firmware as of this tool release.

>SynergyCLI.exe load -ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware...
Firmware update successful.
```

3.2.1.7 Examples

Updates the firmware on the device at index 1.

```
SynergyCLI load -ssd 1
```

3.2.2 Firmware Update (with binary file)

This method is only to be used if firmware update binaries are available and update is not available in the tool.

Use this method with caution and at your own risk as drive may become unresponsive if invalid binary is loaded.

For NVMe drives, user can also choose the following options:

Commit Action to indicate when the firmware should be activated.

Firmware Slot the firmware should be loaded into if drive supports multiple slots.

3.2.2.1 Syntax

```
SynergyCLI load -source firmwareBinaryFile.bin -ssd (Index|SerialNumber|PhysicalPath)
```

NVMe only:

```
SynergyCLI load -source firmwareBinaryFile.bin -ssd (Index|SerialNumber|PhysicalPath)
[FirmwareSlot=(0,1..7)] CommitAction=(2,3)
```

3.2.2.2 Options

Option	Description
[-force -f]	Displays a prompt by default when invoking the Firmware Update command. Use this option to bypass the prompt.
[-help -h]	Displays help for the command.
[-output -o (text nvml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvml'.

3.2.2.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	Updates the firmware on the specified SSD. Firmware binaries are embedded into the tool. See the FirmwareUpdateAvailable property for firmware update eligibility.
-source	Provide firmware binary for the update
[FirmwareSlot]	Slot number that should be updated
[CommitAction]	Numeric data indicating Commit option according to NVMe specification.

3.2.2.4 Properties

This command does not support any properties.

3.2.2.5 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSDs must be manageable by the host software.

3.2.2.6 Return Data

The CLI indicates the status of the firmware update operation.

3.2.2.6.1 Sample Output

```
>SynergyCLI.exe load -ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware...The selected drive contains current firmware as of this tool
release.

>SynergyCLI.exe load -ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): n
Canceled.

>SynergyCLI.exe load -f -ssd 0
Updating firmware...
The selected drive contains current firmware as of this tool release.

>SynergyCLI.exe load -ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware...
Firmware update successful.
```

3.2.2.7 Examples

Updates the firmware on the device at index 1.

```
SynergyCLI load -ssd 1
```

3.2.3 Firmware Activate

This action will activate previously downloaded image in a provided slot (NVMe actions 2 and 3). Firmware will be activated on next controller reset or immediately.

3.2.3.1 Syntax

```
SynergyCLI load [-help|-h] [-output|-o (text|nvxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -firmwareactivate FirmwareSlot =
('1|2|3|4|5|6|7') [CommitAction = (2|3)]
```

3.2.3.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvxml'.

3.2.3.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	Updates the firmware on the specified SSD. Firmware binaries are embedded into the tool. See the FirmwareUpdateAvailable property for firmware update eligibility.
FirmwareSlot	Slot number that should be updated
[CommitAction]	Numeric data indicating Commit option according to NVMe specification.

3.2.3.4 Properties

This command does not support any properties.

3.2.3.5 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSDs must be manageable by the host software.

3.2.3.6 Return Data

The CLI indicates the status of the firmware update operation.

3.2.3.7 Examples

Updates the firmware on the device at index 1.

```
SynergyCLI load -ssd 1 -firmwareactivate FirmwareSlot=0
```

3.2.4 Modify Device

Changes the configurable settings on an SSD.

Note: You can only change one setting at a time.

3.2.4.1 Syntax

```
SynergyCLI set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) [...]
```

Property	Description
FastLaneEnabled	Enables or disables Host Managed Cache. Values are True or False.
TempThreshold	Sets the devices temperature threshold. Value is in degrees Celsius. Valid values are: 0-75

3.2.4.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.2.4.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	Modifies the selected drive by supplying its Index or Serial Number value. An -ssd must be specified for this command.

3.2.4.4 Properties

Below are the properties that can be modified. One, and only one, property must be specified.

3.2.4.5 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSD must be manageable by the host software.

3.2.4.6 Return Data

The CLI indicates the status of the operation.

3.2.4.6.1 Sample Output

```
Set TempThreshold successful.
```

3.2.4.7 Examples

Disables the write cache state of the SSD at index 0 by setting its TempThreshold to 3.

```
SynergyCLI set -ssd 0 TempThreshold=60
```

3.2.5 Device Self-Test

Executes NVMe internal device self-test.

3.2.5.1 Syntax

```
start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -selftest [( 'short' | 'extended' | 'conveyance' )]
```

3.2.5.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-force -f]	Displays a prompt by default when invoking NVMe Format functionality. Use this option to bypass the prompt.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.2.5.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-selftest ('short' 'extended' 'conveyance')	Runs a device self-test on the selected ATA device. If no test is specified, a short test is executed.

3.2.5.4 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSD must be manageable by the host software.

3.2.5.5 Return Data

The CLI returns the status of the command.

3.2.5.6 Examples

Issues an extended NVMe drive self-test to the SSD at index 1.

```
start -ssd 1 -selftest extended
```

3.2.6 Delete Device

Delete SSD will erase all the data on the drive. It will issue Microsoft call REINITIALIZE_MEDIA which for NVMe devices will translate to an NVMe Format command with SecureEraseSetting = 2. The function will keep the drive's current configuration.

When invoked, the tool will prompt you to proceed with the delete. To bypass the prompt, use the -force option.

3.2.6.1 Syntax

```
delete [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath)
```

3.2.6.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-force -f]	The tool will display a prompt by default when invoking delete. Use this option to bypass the prompt. This option will also ignore partitions on the device.
[-output -o (text nvmxml json)]	Change the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.2.6.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	Delete the selected drive Device and erase all data.

3.2.6.4 Properties

This command does not support any properties.

3.2.6.5 Limitations

To successfully execute this command, the caller must have the appropriate privileges and the specified SSD must be manageable by the host software.

3.2.6.6 Return Data

The CLI will return status of the command.

3.2.6.7 Examples

Delete the device at index 1 and erase all user data.

```
delete -ssd 1
```

3.2.7 NVMe Format

3.2.7.1 Syntax

```
start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -nvmeformat [-namespace (namespace id)]
[LBAFormat = (0-NumLBAFormats)] [SecureEraseSetting = (0|1|2)]
[ProtectionInformation = (0|1)] [MetadataSettings = (0|1)]
```

3.2.7.2 Options

Option	Description
<code>[-help -h]</code>	Displays help for the command.
<code>[-output -o (text nvmlxml json)]</code>	Change the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.
LBAFormat	<p>(-nvmeFormat) Sets a value that corresponds to one of the supported LBA Formats described in Identify Namespace. If not provided, the tool will use the current value of the selected SSD.</p> <p>Valid values are:</p> <p>0-NumLBAFormats: See NumLBAFormats Property for max value.</p>
SecureEraseSetting	<p>(-nvmeFormat) Specifies the setting for Secure Erase. If not provided, the tool will use a value of 2.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • 0: No secure erase. • 1: User data erase. • 2: Crypto erase.
ProtectionInformation	<p>(-nvmeFormat) Enables different protection information types. If not provided, the tool will use the current value of the selected SSD.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • 0: Protection information is not enabled. • 1: Protection information type 1 is enabled.
MetadataSettings	<p>(-nvmeFormat) Specifies how metadata is transferred. If not provided, the tool will use the current value of the selected SSD</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • 0: Metadata is transferred as part of a separate contiguous buffer. • 1: Metadata is transferred as part of an extended data LBA.

3.2.7.3 Targets

Target	Description
<code>-ssd (Index SerialNumber PhysicalPath)</code>	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.

3.2.7.4 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSD must be manageable by the host software. Only NVMe devices that support format operation.

3.2.8 NVMe Sanitize

Executes NVMe sanitize operation.

3.2.8.1 Syntax

```
start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -sanitize
[(block|crypto|overwrite|exit_failure)] [NoDeallocateAfterSanitize =
(true|false)] [OverwriteInvertPattern = (true|false)] [OverwritePassCount =
(integer)] [AllowUnrestrictedExit = (true|false)] [OverwritePattern = (32-bit hex
pattern)] [ReturnImmediately = (true|false)]
```

3.2.8.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Change the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.2.8.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-sanitize	(Required) Indicates sanitize operation

3.2.8.4 Properties

Below are the properties that can be modified.

Property	Description
NoDeallocateAfterSanitize	True False - If set to true controller shall not deallocate logical blocks as a result of successful sanitize operation
OverwriteInvertPattern	True False - If set to true inverts overwrite pattern after each pass.
OverwritePassCount	Integer - number of passes of pattern overwrite. 0 specifies 16 passes.
AllowUnrestrictedExit	True False - enables (un)restricted completion mode. See NVMe specification for details.
OverwritePattern	32bit integer patter of overwrite mode.
ReturnImmediately	True False - if set to true runs sanitize in the background and returns control immediately.

3.2.8.5 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSD must be manageable by the host software. Only NVMe devices that support sanitize operation.

3.2.9 Clear Write cache

Performance booster operation will clear disk's SLC cache which allows to migrate new user data to accelerate.

3.2.9.1 Syntax

```
start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -performancebooster

stop [-help|-h] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -performancebooster

show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -performancebooster
```

3.2.9.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Change the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.2.9.3 Targets

Target	Description
-ssd (Index SerialNumber PhysicalPath)	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-performancebooster	(Required) Indicates clear cache operation

3.2.9.4 Properties

This command does not support any properties.

3.2.9.5 Limitations

To run this command, you must have the appropriate host system privileges and the specified SSD must be manageable by the host software. Only Solidigm NVMe devices.

3.2.9.6 Examples

Parsed output of get feature with FID=1

```
> SynergyCli show -ssd 4 -performancebooster
```

```

- Force Flush Info BTEH14030LWN512A0000 -
Percent SLC Buffer Available : 99
Percent Completion of SLC Buffer Eviction : 100
Time elapsed to complete SLC Buffer Flush (milliseconds) : 0
Total Number of Host Initialize : 0
Total Number of Host Cancel : 0
Total Number of Drive Initialize/Cancel : 0

> SynergyCli start -ssd 4 -performancebooster

- BTEH14030LWN512A0000 -
Status : Completed successfully.
    
```

3.2.10 Set NVMe Feature

The set -setfeature command sends a set feature command with the specified feature id (FID) for SSDs. Only supported on NVMe devices.

3.2.10.1 Syntax

```

SynergyCLI set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -setfeature (feature id) [-namespace (namespace
id)] dword11 = (32 bit hex) [dword12 = (32 bit hex)] [dword13 = (32 bit hex)]
    
```

3.2.10.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.2.10.3 Targets

Target	Description
-setfeature (feature id)	Specify the feature id (FID) of the NVMe set feature command Examples of valid input would be <ul style="list-style-type: none"> • 0x1 - Arbitration • 0x2 - Power Management • 0x4 - Temp Threshold • 0x5 - Error Recovery • 0x6 - Volatile Write Cache • 0x7 - Number of Queues • 0x8 - Interrupt Coalescing • 0x9 - Interrupt Vector Config • 0xA - Write Atomicity • 0xB - Event Config
[-ssd (Index SerialNumber PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.
-namespace (namespace Id)	Namespace target is optional. Must specify namespace ID if being used.

3.2.10.4 Properties

Below are the properties that can be modified.


Property	Description
DWORD11	32 bit command dword 11 structure value that is used to set the chosen feature value. See Set Features Command specification in NVMe 1.4 spec (section 5.21) for details.
DWORD12	32 bit command dword 12 structure value.
DWORD13	32 bit command dword 13 structure value.

3.2.10.5 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software. The specified device must be an NVMe SSD.

The command is entirely dependent on valid feature id values. Different drive families will support different feature ids.

3.2.10.6 Return Data

This command will send and return the status of the NVMe set feature. There is usually a corresponding get feature command (see [get feature](#)) 

3.2.10.7 Examples

Parsed output of get feature with FID=1

```
> SynergyCLI set -ssd 0 -setfeature 4 DWORD11=1
```

```
- NVMeFeatures BTLJ723607AK2P0BGN -  
Status : Completed successfully.
```

3.3 Instrumentation Commands

3.3.1 Show Tool Configuration

Show tool configuration properties.

3.3.1.1 Syntax

```
SynergyCLI show [-all|-a] [-display|-d] [-help|-h] [-output|-o  
(text|nvmlxml|json)] -system
```

3.3.1.2 Options

Option	Description
[-all -a]	Show all properties.
[-display -d]	Filters the returned properties by explicitly specifying a comma separated list of any of the properties defined in the Return Data section.
[-help -h]	Displays help for the command.
[-output -o (text nvmlxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.3.1.3 Targets

Target	Description
-system	Represents the host system. This target has no parameters.

3.3.1.4 Properties

This command option does not support any properties.

3.3.1.5 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software.

3.3.1.6 Return Data

The command displays the following Tool configuration properties. This output could be filtered by specifying the Properties with the `-display` option.

Property	Description
EnableLog	True or False. Whether or not to save the Tool's debug log file. (Default value is False)

LogFile	Filename of the Tool's debug log file. Only saved if EnableLog is true. Can contain full qualified file system path. Log location: Windows: c:\Program Files\Solidigm\SolidigmStorageTool\SolidigmSSDTDK.log Linux: /usr/bin/Solidigm/SSDTDK.log
---------	--

3.3.1.7 Examples

Default show output for -system target in default text format.

```
>SynergyCLI.exe show -system
- Synergy CLI Config -
EnableLog: false
LogFile: C:\Program Files\Solidigm\Solidigm(TM) Storage Tool\\SolidigmTDKI.log
```

3.3.2 Modify Tool Configuration

Change the Tool's configurable settings on the host system. You can only change one setting at a time.

3.3.2.1 Syntax

```
SynergyCLI set [-help|-h] [-output|-o (text|nvmxml|json)] -system [Property=]
```

3.3.2.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.3.2.3 Targets

Target	Description
-system	Represents the host system. This target has no parameters.

3.3.2.4 Properties

One, and only one, property can be specified at a time.

Property	Description
EnableLog	Enable or disable the Tool from saving a debug log file. Supported values are "True" and "False"
LogFile	Specify the filename (and path if desired) of the Debug log file. Debug log is only saved if EnableLog=True and LogFile is a valid file name and path.

3.3.2.5 Limitations

To run this command option, the specified SSD(s) must be manageable by the host software.

3.3.2.6 Return Data

The CLI will indicate the status of the operation.

Sample Output:

```
Set EnableLog successful.
```

3.3.2.7 Examples

```
set -system EnableLog=True
```

Enable the tool's debug log file.

```
set -system LogFile=myNewLogFile.txt
```

Set the tool's debug log file. If no path is given the file will be saved in the working directory.

```
set -system EnableLSIAdapter=False
```

Disable the loading of the LSIAdapter library.

3.3.3 Dump Device Data

This command will read binary data from the device and save it to a file. This feature currently supports dumping:

- nLog
- Event Log
- Assert Log
- Telemetry Log

3.3.3.1 Syntax

```
dump[-help|-h] [--destination (filename)] [--output|-o (text|nvmxml|json)] [--ssd (Index|SerialNumber|PhysicalPath)] -nlog
```

```
dump[-help|-h] [--destination (filename)] [--output|-o (text|nvmxml|json)] [--ssd (Index|SerialNumber|PhysicalPath)] -eventlog
```

```
dump[-help|-h] [--destination (filename)] [--output|-o (text|nvmxml|json)] [--ssd (Index|SerialNumber|PhysicalPath)] -assertlog
```

```
dump -destination <output binary> -ssd <index|serial|physicalpath> -telemetrylog
```

```
dump[-help|-h] [--destination (filename)] [--output|-o (text|nvmxml|json)] [--ssd (Index|SerialNumber|PhysicalPath)] -persistenteventlog ('read'|'release') [NewContext = [('true'|'false')]]
```


3.3.3.2 Options

Option	Description
<code>[-help -h]</code>	Displays help for the command.
<code>[-destination (filename)]</code>	Specifies a filename to save the dump data to. If <code>-destination</code> option is not given, default filename is assigned based on target and drive serial number.
<code>[-output -o (text nvml json)]</code>	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvml'. This option does not affect the output in the binary file.

3.3.3.3 Targets

Target	Description
<code>-ssd (Index SerialNumber PhysicalPath)</code>	Dump the selected data from the given SSD.
<code>-nlog</code>	Read the nlog binary data from the device and save it to binary file.
<code>-eventlog</code>	Read the event log binary data from the device and save it to binary file.
<code>-assertlog</code>	Read the Assert log binary data from the device and save it to binary file.
<code>-telemetrylog</code>	Read the telemetry log binary data from the device and save it to binary file.
<code>-persistenteventlog ('read' 'release')</code>	Read the persistent event log binary data from the current context, create a new context, or release the current context.

3.3.3.4 Properties

This command does not support any properties.

3.3.3.5 Limitations

To run this command, the specified SSD must be manageable by the host software.

Telemetry is only available on selected drives.

3.3.3.6 Return Data

Binary data is saved to default file destination or if `-destination` option is given, output will be saved to given filename. Status of reading the binary data from the selected device, and saving it to file, is returned.

3.3.3.7 Examples

Read the nlog binary from all attached SSDs. Save to default files.

```
> dump -nlog
Nlog_CVF85156007H400AGN-2 : Successfully written Nlog data to
Nlog_CVF85156007H400AGN-2.bin
Nlog_CVF85156007H400AGN-1 : Successfully written Nlog data to
Nlog_CVF85156007H400AGN-1.bin
Nlog_BTWL238602AM800DGN : Successfully written Nlog data to
Nlog_BTWL238602AM800DGN.bin
```

Extract Telemetry log to file telemetry_data.bin

```
SynergyCLI.exe dump -destination telemetry_data.bin -ssd 1 -telemetrylog
```

Read Persistent event log data from the current context

```
SynergyCLI.exe dump -destination PEL_data.bin -ssd 1 -persistenteventlog read
```

Establish a new persistent event log context and read from it

```
SynergyCLI.exe dump -destination PEL_data.bin -ssd 1 -persistenteventlog read  
NewContext = true
```

Release the current persistent event log context (does not read or output any data)

```
SynergyCLI.exe dump -destination PEL_data.bin -ssd 1 -persistenteventlog release
```

3.4 Support Commands

Support commands consist of Help and Version.

3.4.1 Help Command

Shows help for the supported commands.

3.4.1.1 Syntax

```
SynergyCLI help [-help|-h] [-output|-o (text|nvmxml|json)] [Verb=(verb)]  
[Name=(command)]
```

3.4.1.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.4.1.3 Targets

This command does not support any targets.

3.4.1.4 Properties

Property	Default	Description
Verb	All Verbs	Filters help to a specific verb. One of: <ul style="list-style-type: none"> • delete • dump • help • load • set • show • start • version
Name	All commands	Filters help to a specific command by name.

3.4.1.5 Return Data

By default, the command displays an introduction to Synergy CLI followed by a list of the supported commands. When the command list can be filtered to just one command, detailed information is displayed. When the command list includes more than one command, only the command name and synopsis are displayed.

3.4.1.5.1 Sample Output (Multiple Commands)

Note: Not all commands are displayed. This is just to view how the output appears.

```
>SynergyCLI.exe help
Usage: SynergyCLI.exe <verb>[<options>][<targets>][<properties>]

Commands:

Delete:

    delete [-help|-h] [-force|-f] [-output|-o (text|nvmlxml|json)] -ssd
(Index|SerialNumber|PhysicalPath)

DriveSelfTestShow:

    show [-help|-h] [-output|-o (text|nvmlxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -selftest

DriveSelfTestStart:

    start [-help|-h] [-output|-o (text|nvmlxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -selftest [('short'|'extended'|'conveyance')]
[-mode (captive|offline)]

FirmwareActivate:

    load [-help|-h] [-output|-o (text|nvmlxml|json)] -ssd
(Index|SerialNumber|PhysicalPath) -firmwareactivate FirmwareSlot =
('1|2|3|4|5|6|7') [CommitAction = (2|3)]
```

FirmwareUpdate:

```
load [-help|-h] [-force|-f] [-source (path)] [-output|-o (text|nvmxml|json)]
-ssd (Index|SerialNumber|PhysicalPath) [FirmwareSlot = ('1|2|3|4|5|6|7')]
[CommitAction = (0|1|2|3)]
```

GetFeature:

```
show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o
(text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -getfeature (feature
id) [-namespace (namespace id)] [UUIDIndex = ((0-127))] [TransferBytes = ((int))]
[Select = ('current'|'default'|'saved'|'capabilities')]
```

Specifying the verb property filters the list to only the commands starting with the specified verb.

```
SynergyCLI.exe help verb=show
```

```
Usage: SynergyCLI.exe <verb>[<options>][<targets>][<properties>]
```

Commands:
ssd:

```
show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o
(text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]
```

SMART:

```
show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o
(text|nvmxml|json)] -smart [(id)] [-ssd [(Index|SerialNumber|PhysicalPath)]]
```

Sensors:

```
show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o
(text|nvmxml|json)] -sensor [-ssd [(Index|SerialNumber|PhysicalPath)]]
```

Performance:

```
show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o
(text|nvmxml|json)] -performance [-ssd [(Index|SerialNumber|PhysicalPath)]]
```

NVMeLog:

```
show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd
[(Index|SerialNumber|PhysicalPath)]] -nvme-log
[('ErrorInfo'|'SmartHealthInfo'|'FirmwareSlotInfo'|'TemperatureStatistics')]
```

IdentifyDevice:

```
show [-help|-h] [-output|-o (text|nvmxml|json)] -identify [-namespace
[(integer | 'attached' | 'allocated')]]
[-nvmecontroller] [-ssd [(Index|SerialNumber|PhysicalPath)]]
```

LatencyStatistics:

```
show [-help|-h] [-output|-o (text|nvmxml|json)] -latencystatistics
('reads'|'writes') [-ssd [(Index|SerialNumber|PhysicalPath)]]
```

```
HDATemperature:
  show [-help|-h] [-output|-o (text|nvmxml|json)] -hdtemperature [-ssd
[(Index|SerialNumber|PhysicalPath)]]

NVMeControllerList:
  show [-help|-h] [-output|-o (text|nvmxml|json)] [-namespace (namespace id)] -
nvmecontroller [-ssd [(Index|SerialNumber|PhysicalPath)]]

System:
  show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o
(text|nvmxml|json)] -system
```

3.4.1.5.2 Sample Output (single command)

Specifying the Name property filters the list to a specific command and detailed information is returned.

```
SynergyCLI.exe help Name=Firmware
Name: FirmwareUpdate

Description:
  Update the device's firmware. See the device's FirmwareUpdateAvailable
property for any eligible updates. To by-pass the prompt specify the -force
option.

Synopsis:
  load [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd
(Index|SerialNumber|PhysicalPath)

Verb:
  load

Options:
  [-help|-h] -- Display help for the command.

  [-force|-f] -- Force the operation

  [-output|-o (text|nvmxml|json)] -- Change the output format. One of "text",
"nvmxml" or "json".

Targets:
  -ssd (Index|SerialNumber|PhysicalPath) -- Device index or serial number is
required.

Properties:
```

3.4.1.6 Examples

Lists all supported commands.

```
SynergyCLI help
```

Lists all commands where the verb is set.

```
SynergyCLI help verb=show
```

Lists the detailed help for the given Name WriteCacheState.

```
SynergyCLI help Name=WriteCacheState
```

3.4.2 Version Command

Shows the SynergyCLI's version and End-User License.

3.4.2.1 Syntax

```
SynergyCLI version [-help|-h] [-display|-d] [-all|-a] [-output|-o  
(text|nvmxml|json)]
```

3.4.2.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-display -d]	Filters the returned properties by explicitly specifying a comma separated list of any of the properties defined in the Return Data section.
[-output -o (text nvmxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

3.4.2.3 Targets

This command does not support any targets.

3.4.2.4 Properties

This command does not support any properties.

3.4.2.5 Return Data

By default, the command returns the SynergyCLI's version information. With the -display option, it shows the License property.

Property	Description
License	Shows the End-User License for the SynergyCLI.

3.4.2.5.1 Sample Output

Default output in text.

```
> SynergyCLI.exe version
- Version Information -

Name: Solidigm(R) Synergy CLI
Version: 3.0.0
Description: Interact and configure SSDs.
```

Default output in JSON.

```
> SynergyCLI.exe version -o json
{
  "Version Information":
  {
    "Name": "Solidigm(R) Synergy CLI",
    "Version": "3.0.0",
    "Description": "Interact and configure SSDs."
  }
}
```

3.4.2.6 Examples

Display the available version information for the Synergy CLI.

```
version
```

Display the End-User License for the Synergy CLI software components.

```
version -d license
```

3.5 Debug

3.5.1 Tool Debug File

The Synergy CLI saves to a debug file that contains detailed information on the tool execution. This file is very useful for the Tool Developers when having to debug issues. Whenever requesting assistance from the Tools team on a potential issue with the tool this file will be requested. See [Show Tool Configuration](#) and [Modify Tool Configuration](#) for more information on enabling the debug log.

§

4 Response Codes

The following table lists all the possible error and status codes that are returned from the Synergy CLI. The first column lists the numeric value of the error/status code returned by the tool. In Windows, to display the numeric return value, type the following at the command prompt after running the tool:

```
>echo %errorlevel%
```

Code	Description
0	Completed successfully.
1	Failed to load the TDK Interface library.
2	An error occurred with interacting with the TDK Interface Library.
3	An error was returned from the TDK Interface when executing the given CLI functionality.
4	Encountered a read file error.
5	Encountered a write file error.
6	Invalid Boolean values were given.
7	Invalid property given.
8	Invalid CLI argument given.

§