Solidigm™ CLI Storage Tool

User Guide

November 2025
Revision 017

SOLIDIGM™

Revision History

Revision	Software Version	Description	Revision Date
001	1.0	• Initial Release	March 2022
002	1.1	• Updated System Requirements • NVMe Format section	May 2022
003	1.2	• Documentation Correction	July 2022
004	1.3	• Fixed casing on command syntax	Sept. 2022
005	1.4	• Updated ESX Support: Removed 6.x support. • Added missing features in Features table • Minor syntax corrections on tool command examples	Dec. 2022
006	1.5	• Added ESXi 8.0 Support	Jan. 2023
007	1.10	• Added ESX 8.0.u1 Support	Sept. 2023
008	1.11	• Updated RAID Support	Dec. 2023
009	1.12	• Added ESX 8.0.u2 Support • Fixed formatting	March 2024
010	1.13	• Added Stop option for Self Test • Added Health Scan feature • Added Ubuntu 22.04, 24.04 Support	June 2024
011	1.14	• Updated MegaRAID support • Update Command syntax casing for consistency • Fixed spacing in Features table	Aug. 2024
012	2.0	• Added new command: Incident Report	Sept. 2024
013	2.1	• Renamed "Incident Report" command to "Debug Logs"	Dec. 2024
014	2.2	• Updated syntax for Get/Set Feature commands	Feb. 2025
015	2.3	• Added ESXi 8.0.u3 Suport	May 2025
016	2.4	• Added Over-provisioning section • Updated examples for Firmware Update	July 2025
017	2.6	• Added Recent log entries option for Persistent Event log command • Updated Help output in Support Commands section • Updated System Requirement Notes	Nov. 2025

Contents

1 Introduction

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

SST Summary:

- CLI based tool for interacting with Solidigm™ SSDs (formerly Intel®)
- Provides firmware updates to all non-OEM drives
- Supports Client and Datacenter drives
- Supports multiple Operating Systems: Windows, Linux and ESXi

1.1 Features

The SST provides a suite of capabilities for interacting with PCIe/SATA-based 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
- Product Type: Client, Datacenter
- Interface Type: ATA, NVMe (1.1, 1.2, 1.3, 1.4)
- Operating System Version/Support
- Driver: Intel NVMe 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 (Self-Monitoring and Reporting Technology) information
- Resizing the SSD's usable storage capacity by changing its max LBA
- Option to retrieve output in text, JSON or xml format
- Updating SSD firmware:
  - Firmware binaries for updating the firmware are embedded in the tool.
  - When displaying drive information, the tool will indicate if a new firmware is available.
- Calculating drive life expectancy (Endurance Analyzer)
- Power Governor Mode (vendor unique). Three modes are supported:
  - 0: 25-watts for PCIe NVMe devices; 40W for PCIe NVMe x8 devices; Unconstrained for SATA devices.
  - 1: 20-watts for PCIe NVMe devices; 35W for PCIe NVMe x8 devices; Typical (7-watts) for SATA devices.
  - 2: 10-watts for PCIe NVMe devices; 25W for PCIe NVMe x8 devices; Low (5-watts) for SATA devices.
- Functionality to Enable/Disable Latency Tracking
- Functionality to Parse the read and write commands from Latency Tracking logs
- End of Life notification when 15% of spare is left

The following functionality and features apply to SATA drives only:

- Enabling and disabling Spread Spectrum Clocking (SSC)

- Issuing SCT Error Recover Control command
- Setting drive PHY Speed: 1.5Gbs, 3.0Gbs, and 6.0Gbs
- Setting PHY configurations:
    - 0 (Default Enterprise Settings)
    - 1 (Client Settings)
    - 2 (Alternate Enterprise Settings)

Support for SCT Feature Control:

- Write cache state
- Write cache reordering state
- Temperature logging interval
- PLI Cap test time interval (vendor unique)
- Power Governor Burst power (vendor unique)
- Power Governor Average power (vendor unique)
    - Parse ATA HDA Temp (SCT command)
    - Parsing PHY Counters (ATA command)
    - Reading ATA General Purpose Logs (GPL) (generic)
    - ATA Standby Immediate
    - ATA Drive Self-Test

The following functionality applies to PCIe NVMe drives only:

- Executing an NVMe Format command
- Parsing device log data
- Reading and setting temperature threshold
- Dumping NLOGS and Event Logs
- Reading and setting the SM Bus Address
- Namespace Management command support (NVMe 1.2 and later drives)

1.2 System Requirements

The SST is supported on the following:

- Operating systems on x64 Architecture:
    - Windows:
        - Windows Server 2012, 2012 R2, 2016, 2019, 2022
        - Windows 10, 11
    - Linux:
        - Red Hat Enterprise Linux (RHEL) 8.0, 8.2, 8.3, 8.4
        - CentOS 8.0, 8.2, 8.3, 8.4
        - SLES 12, 15
        - Ubuntu 16.04, 18.04, 20.04, 22.04, 24.04
    - ESXi:
        - Unsigned VIB
            - ESXi 7.x
            - ESXi 8.0, 8.0.u1, 8.0 u2, 8.0.u3
        - Signed Component
            - ESXi 8.0.u2, 8.0.u3
    - Available space of 400 MBs

Note:

- On Windows Server 2012/2008/R2 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 Linux systems, the tool must be run with root privileges. This can be done through either sudo or su commands. If running as a non-root user, the tool will not be able to communicate with the drive. Only basic drive information will be displayed, and no drive functions will work. There are two Linux installers: one for 32-bit systems, and one for 64-bit systems.
- On ESXi systems, due to driver limitations, SATA is not supported, only PCIe NVMe drives using the ESXi NVMe driver. The user may need to set their ESXi host acceptance level to "CommunitySupported" in order to install the tool.
- 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.
- Namespace limitations on RHEL/Centos 8.2: Kernel bug can cause deadlock on delete namespace in RHEL/CentOS 8.2
- Earlier OS Versions not listed in supported list are generally expected to work but are not actively validated and not officially supported

1.2.1 RAID Support

Supported:

- The Intel® RST RAID supports direct attached SSD SATA drives only.
- Drives attached to LSI MegaRAID adaptors
  - 64-bit OS support only
  - SATA drives
  - NVMe drives (limited functionality)
  - It is recommended to update RAID cards firmware to the latest version available from Broadcom
  - Supported Broadcom cards:
    - 9500 Series - Support based on storelib version 7.30
    - 9600 Series - (Beta) Support based on storelib version 8.9

Not Supported:

- RAID is not supported on ESXi
- Drives behind HBAs

RAID Modes Supported:

- RAID 0
- RAID 1
- RAID 5
- VROC RAID

Other Modes Supported:

- AHCI

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.

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

1.4 Running the SST

Run the SST from either a Windows administrator command prompt or a Linux terminal window. The tool is run as a single command by supplying the command and parameters immediately following the SST executable.

```
sst 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:

```
sst <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.

```
sst show -ssd
```

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

Suggestion: Targeting by index is convenient but index may change after some commands so Serial Number target is recommended for scripts/automation etc..

```
sst show -ssd 1
```

```
sst show -ssd SERIALNUMBER
```

2 Feature List

The following table list all features available in SST. Features are listed alphabetically. Command Syntax 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 is provided in subsequent sections of this document.

2.1 Quick Command Syntax Guide for Features Table

Options	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 | nvmxml | json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.

Target	Description
-ssd [(Index| SerialNumber |PhysicalPath |Bootdrive)]	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

Aggregation (Threshold/ Time)	Set the Aggregation Threshold/Time	`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -InterruptCoalescing aggregationthreshold = (value)`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -InterruptCoalescing aggregationtime = (value)`
			`sst set -ssd 1 -InterruptCoalescing aggregationthreshold = 128`
			
			`sst set -ssd 1 -InterruptCoalescing aggregationtime = 255`

Feature	Description	Command Syntax	Example
Assert Log	Read the Assert Log binary and save it to the given file-name. NVME only	`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -assertlog`	`sst dump -destination assertlog_binary.bin -ssd 1 -assertlog`
Bridge NLog	Read the Bridge NLog binary and save it to the given file-name. Selected NVME only	`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -bridgenlog`	`sst dump -destination apl_bridge_binary.bin -ssd 1 -bridgenlog`

Debug Logs	Dump debugging logs from the drive and create zip package
	Selected drives only
		`dump [-help|-h] -debuglogs [-v] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] [-type (all|list|identify|nvmelogs|system|telemetry)]`
		
		-v : Verbose mode: Show detailed command output on screen
		Default log type is 'all'
		Use "-type list" to get list of logs
			`sst dump -debuglogs -ssd 1`
			
			`sst dump -debuglogs -v -ssd 1`
			
			`sst dump -debuglogs -v -ssd 1 -type nvmelogs`

Delete	Delete all the data on the selected device. To by-pass the prompt, specify the -force option.	`delete [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)`	`sst delete -ssd 1`

DIPM	Disable/Enable drive's DIPM feature.
	
	ATA only
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) dipmenabled = ('true' | 'false')`	`sst set -ssd 1 dipmenabled = false`
			
			`sst set -ssd 1 dipmenabled = true`

Drive Index	Display information of selectrive by index.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`	`sst show -ssd 1`

Feature	Description	Command Syntax	Example
Drive List	Display a list of attached drives to the screen.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`	`sst show -ssd`
Drive Path	Display information of selected drive by drive path.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`	`sst show -ssd \\.\physicaldrive1`
Drive Serial	Display information of selected drive by serial number.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`	`sst show -ssd cvpo893749287gn`
Drive Scan	Scan the drive for Data Integrity, Read Scans, or Logs.	`start [-help|-h] [-output|-o (text|nvmxml|json)] -scan [(dataintegrity|readscan|logs)] [-ssd [(Index|SerialNumber|PhysicalPath)]] [includeos = (true|false)] [fullscan = (true|false)] [path = (drive letter)] [directorypath = (file path)] [includesysteminfo = (true|false)]`	`sst start -scan logs -ssd 1`

DSSD PowerState	Show, set DSSD Power state	`sst set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPDSSDPowerState DSSDPowerState = (Watts)`
		
		`sst show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -getFeature OCPDSSDPowerState`
			`sst set -ssd 1 -OCPDSSDPowerState DSSDPowerState=20`
			
			`sst show -ssd 1 -getFeature OCPDSSDPowerState`

Feature	Description	Command Syntax	Example
eDrive (Set)	Enable eDrive support on the device. Warning: once enabled, eDrive support cannot be disabled. Selected drives only	`set [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) edrivesupported = (true)`	`sst set -ssd 1 edrivesupported = true`
Endurance Analyzer	Run the endurance analyzer calculation to determine drives life expectancy.	`reset [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -enduranceanalyzer`	`sst reset -ssd 1 -enduranceanalyzer`
Error Injection	Inject panic error into an OCP enabled drive.	`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPErrorInjection [ErrorInjectionEntries = ((tilde separated entry list))] [File = (path to input file)]`	`sst set –ssd 1 –errorinjection numberoferrorinjections = 2 errorinjectiondatastructentry = 1|0|5|2~0|0|9|a5`

Error Recovery Timer (Read/Write)	Set the selected drive's current error read and write recovery timers.
	
	ATA only
		`show [-help|-h] [-display|-d (propoerty1, …)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) writeerrorrecoverytimer = (0-65535)`
			`sst show -d readerrorrecoverytimer –ssd 1`
			
			`sst show -d writeerrorrecoverytimer -ssd 1`
			
			`sst set -ssd 1 readerrorrecoverytimer = 2`
			
			`sst set -ssd 1 writeerrorrecoverytimer = 5`

Event Log	Read the Event Log binary and save it to the given filename.	`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -eventlog`	`sst dump -destination eventlog_binary.bin -ssd 1 -eventlog`

Feature	Description	Command Syntax	Example

Firmware Activate and Configuration	Activate the firmware on the selected drive (NVMe only).
	Configure activation notification
	Performed after firmware update with source option
	
	NVMe only
		`load [-help|-h] [-force|-f] [-source (path)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -firmwareactivate [firmwareslot = ('1|2|3|4|5|6|7')] [commitaction = (2|3)]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEventConfig firmwareactivationnoticesconfiguration = ('true' | 'false')`
			`sst load -ssd 1 -firmwareactivate firmwareslot = 1 commitaction = 2`
			
			`sst set -ssd 1 -AsyncEventConfig 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|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) [firmwareslot = ('1|2|3|4|5|6|7')] [commitaction = (0|1|2|3)]`
			`sst load -ssd 1`
			
			`sst load -source firmwarebinaryfile.bin -ssd 1 firmwareslot = 1 commitaction = 0`

Format	NVMe Format the selected drive. NVMe only. See NVMeFormat	see nvme format	
General Purpose Log (GPL)	Read the general purpose log binary and save it to the given filename. ATA only	`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -gpl (log address) [pagenum = [(page #)]] [sectorcount = [(sectors)]]`	`sst dump -destination supportedgpl.bin -ssd 1 -gpl 0 pagenum = 0 sectorcount = 1`

Feature	Description	Command Syntax	Example

Get Feature	Display the given NVMe feature data to the screen.	`show [-help|-h] [-display| -o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)] -getfeature (feature name)`
		
		To list Feature IDs and Names:
		
		`sst show -ssd [(Index|SerialNumber|PhysicalPath)] -getfeature list`
			`sst show -ssd 1 -getfeature list`
			
			`sst show -ssd 1 -getfeature OCPReadOnlyWriteMode`

HDA Temperature	Display selected drive's HDA Temperature data. ATA only	`show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)] -hdatemperature`	`sst show -ssd 1 -hdatemperature`

Health (sensor/warning)	Show properties related to device health sensors. Enable Health Critical Warnings.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -sensor`
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEventConfig smarthealthcriticalwarningsconfiguration = (0-255)`
			`sst show -ssd 1 -sensor`
			
			`sst set -ssd 1 -AsyncEventConfig smarthealthcriticalwarningsconfiguration = 255`

Health Scan	Scan Health or Data Integrity or Read Scan or log from the drive	`start [-help|-h] [-output|-o (text|nvmxml|json)] -scan [(Health|DataIntegrity|ReadScan|Logs)] [-ssd [(Index|SerialNumber|PhysicalPath)]] [-log (Filename)] [includeos = (true|false)] [fullscan = (true|false)] [path = (driveletter)] [directorypath = (file path)] [includesysteminfo = (true|false)]sst start –scan Health –ssd 1`	`sst start –scan Health –ssd 1`

Feature	Description	Command Syntax	Example
Help	Display the help string and exit. All other arguments will be ignored.	`help [-help|-h] [-output|-o (text|nvmxml|json)] [name = (name)] [verb = (verb)]`	`sst help name = help` `sst help verb = help`

Identify	Show the device identify structures. Use the -nvme-controller and -namespace targets to select specific identifystructures for NVMe devices.	`show [-help|-h] [-output|-o (text|nvmxml|json)] -identify [-namespace (integer | 'attached' | 'allocated')] [-nvmecontroller] [-ssd [(Index|SerialNumber|PhysicalPath)]]`	`sst show -ssd 1 -identify`
			`sst show -ssd 1 -identify -namespace 1`
			`sst show -ssd 1 -namespace attached`
			`sst show -ssd 1 -namespace allocated`

Latency Monitor	Set Latency Monitor values	`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPLatencyMonitor File=(path)`
		Set The Latency Monitor feature, add -source file and specify latency monitoring data structure entries in json format as below.
		Refer to OCP specification for value ranges and bitmasks
		`"LatencyMonitoring-DataStructureEntry`
		`{`
		`"ActiveBucketTimerThreshold" : 0,`
		`"ActiveThresholdA" : 0,`
		`"ActiveThresholdB" : 0,`
		`"ActiveThresholdC" : 0,`
		`"ActiveThresholdD" : 0,`
		`"ActiveLatencyConfiguration": 0x7777,`
		`"ActiveLatencyMinimumWindow" : 0,`
		`"DebugLogTriggerEnable" : 0x7777,`
		`"DiscardDebugLog" : 0,`
		`"LatencyMonitorFeatureEnable" : 1`
		`}`
			`sst set -ssd 1 -OCPLatencyMonitor file=latencydata.json`

Feature	Description	Command Syntax	Example

Latency Tracking	Display the Latency tracking status.
	
	Enable or disable the device's Latency Tracking feature.
	
	Selected drives only
		`show [-help|-h] [-output|-o (text|nvmxml|json)] -latencystatistics ('reads'|'writes') [-ssd [(Index|SerialNumber|PhysicalPath)]]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) latencytrackingenabled= (true|false)`
			`sst show -ssd 1 -latencystatistics reads`
			
			`sst show -ssd 1 -latencystatistics writes`
			
			`sst set -ssd 1 latencytrackingenabled=true`

LED Activity	Display the selected drive's LED activity settings.
	
	Selected drives only
		`show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -getFeature LEDActivity`
		`-led set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -led [idlestate = (on|off)] [durationbase = (25|50)] [formatonmultiplier = (0-15)] [formatoffmultiplier = (0-15)] [iooffmultiplier = (0-15)] [ioonmultiplier = (0-15)]`
			`sst show -ssd 1 -getFeature LEDActivity`
			
			`sst set -ssd 1 -led idlestate = on`
			
			`sst set -ssd 1 -led durationbase = 25`
			`sst set -ssd 1 -led formatonmultiplier = 5`
			
			`sst set -ssd 1 -led formatoffmultiplier = 5`
			
			`sst set -ssd 1 -led ioonmultiplier = 5`
			
			`sst set -ssd 1 -led iooffmultiplier = 5`

License	Display the tool's software license.	`version [-all|-a] [-display|-d (property1,...)] [-help|-h] [-output|-o (text|nvmxml|json)]`	`sst version -d license`

Max Address	Set the drive's maximum LBA value.
	
	Caution: Resizes the drive
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) maximumlba = (numgb|1-100%|lba|'native')`	`sst set -ssd 1 maximumlba = native`
			
			`sst set -ssd 1 maximumlba = 50gb`
			
			`sst set -ssd 1 maximumlba = 25%`
			
			`sst set -ssd 1 maximumlba = 4097151`

Feature	Description	Command Syntax	Example
Namespace (Attach/Create Delete/Detach Notification)	Configure the specified namespace ID to the given controller ID. NVMe only	attach [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace (namespace id) [-nvmecontroller (controller id integer)] create [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace size = (blocks) [lbaformat = (0-numlbaformats)] [protection-information = (0|1)] [multipathiocapabilities = (0|1)] delete [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace (namespace id) detach [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace (namespace id) set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEventConfig namespaceattributenoticesconfiguration = ('true' | 'false')	sst attach -ssd 1 -namespace 1 -nvmecontroller 0 sst create -ssd 1 -namespace size = 12345 lbaformat = 0 protection-information = 1 multipathiocapabilities = 1 sst delete -ssd 1 -namespace 1 sst detach -ssd 1 -namespace 1 sst set -ssd 1 -AsyncEventConfig namespaceattributenoticesconfiguration = true
NCQ Support (Enable/Disable)	Set the NCQ bit in the identify block Limitation: ATA DC S3500 (WL_HD) & S3700 (TV) only command	set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -ncqsupport IsEnabled=(true|false)	sst set -ssd 1 -ncqsupport IsEnabled=true sst set -ssd 1 -ncqsupport IsEnabled=false

Feature	Description	Command Syntax	Example
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`	`sst 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	`show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] [-namespace (namespace id)] -nvmecontroller`	`sst show -ssd 1 -namespace 1 -nvmecontroller`
NVMe Get Feature	Show the atrributes of the NVMe feature specified (denoted by feature id).	`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')]`	`sst show -ssd 1 -getfeature 0x1`
NVMe Format	Issue an NVMe format to the selected drive. To by-pass the prompt, specify the -force option. NVMe only See ConfigureSSDs-NVMe-Format section for details.	`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)] [Timeout = (seconds)]`	`sst start -ssd 1 -nvmeformat -namespace 1 secureerasesetting = 0 timeout = 30`

Feature	Description	Command Syntax	Example
NVMe Log (Show)	Display the given NVMe log data to the screen or save log binary to file. NVMe only	`show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -nvmelog [('commandeffect-slog' | 'changedname-spacelist' | 'error-info' | 'smarthealthinfo' | 'firmwareslotinfo' | 'temperaturestatistics' | 'queuemetrics', 'performancebooster' )]`	`sst show -ssd 1 -nvmelog smarthealthinfo`
NVMe Reset	Performs an NVMe reset on the targeted NVMe controller	`reset [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -nvmecontroller`	`sst reset -ssd 1 -nvme-controller`

NVMe Timestamp	Returns the current timestamp value for the targeted controller.
	
	Sets the timestamp value in the controller.
	
	Note: Units are in milliseconds.
		`showtimestamp:`
		`show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -getfeature timestamp`
		
		`settimestamp:`
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -Timestamp timestamp (value)`
			`sst show -ssd 1 -getfeature timestamp`
			
			`sst set -ssd 1 --Timestamp timestamp 0`

Performance	Show properties related to device performance metrics.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -performance`	`sst show -ssd 1 -performance`

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
		`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)]] -nvmelog [('commandeffectslog'|'changednamespacelist'|'errorinfo'|'smarthealthinfo'|'firmwareslotinfo'|'temperaturestatistics'|'queuemetrics'|'performancebooster')]`
			`sst start -ssd 1 -performancebooster`
			
			`sst stop -ssd 1 -performancebooster`
			
			`sst show -ssd 1 -performancebooster`

Phy Speed Configuration	Display the PHY Counters data to the screen. Set the drive's PHY settings. Set the drive's negotiated Serial ATA signal speed.
	
	ATA only
		`show [-help|-h] [-output|-o (text|nvmxml|json)] -phycounters [-ssd [(Index|SerialNumber|PhysicalPath)]]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) phyconfig = (0|1|2|3)`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) physpeed = (1.5|3|6)`
			`sst show -phycounters -ssd 1`
			
			`sst set -ssd 1 phyconfig = 1`
			
			`sst set -ssd 1 physpeed = 1.5`

Feature	Description	Command Syntax	Example
Physical Sector Size	Display the selected drives physical sector size to the screen. ATA only Caution: Changes drive sector size	`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) physicalsectorsize = (512|4096)`	`sst set -ssd 1 physicalsectorsize = 512`

PLI Test Time Interval	Display the selected drive's PLI test time interval, and option flag.
	
	ATA only
		`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) plitesttimeinterval = (0-6)`
			`sst show -d plitesttimeinterval -ssd 1`
			
			`sst set -ssd 1 plitesttimeinterval = 2`

PLP Check	Set PLP Interval and show PLP Check Value	`sst set [ help | {}h] [{-}output | -o (text | nvmxml | jason0] [-ssd [index | serialNumber | PhysicalPath)]] -OCP-PLPCheck PLPCheckInterval = (interval value)`
		
		`sst show [ help | {}h] [{-}output | -o (text | nvmxml | jason0] [-ssd [index | serialNumber | PhysicalPath)]] -PLPCheck [Select = ('current' | 'default' | 'saved' | 'capabilities')]`
			`sst set -ssd 1 -OCP-PLPCheck PLPCheckInterval=20`
			
			`sst show -ssd 1 -OCP-PLPCheck Select=current`

Power Governor Average	Display the selected drive's power governor average power setting.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`	`sst show -d powergovernoraveragepower -ssd 1`

Feature	Description	Command Syntax	Example

Power Governor (Burst/Mode)	Display the selected drive's power governor burst power setting. Set the device's Power Governor Mode. Supports SATA and NVMe devices.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) powergovernormode = (0|1|2)`
			`sst show -d powergovernorburstpower -ssd 1`
			
			`sst show -d powergovernormode -ssd 1`

Psid Revert	Issue a PSID revert to an Opal activated device. Caution: Erases your password if forgotten. Data loss	`start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -psidrevert (psid)`	`sst start -ssd 1 -psidrevert 987654321`
Read System Snapshot	Read the system snapshot from the device and save it to a binary file.	`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -systemsnapshot`	`sst dump -ssd 1 -systemsnapshot`

Sanitize	Erase all accessible storage.	`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)]`
			`sst start -ssd 1 -sanitize`

Feature	Description	Command Syntax	Example
Secure Erase (ATA Secure Erase)	Secure Erase data on the selected drive. ATA only	`start [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|PhysicalPath)] -secureerase`	`sst start -ssd 1 -secureerase`

Self Test	Execute a drive self-test routine on the selected drive.	`start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -selftest [('short'|'extended'|'conveyance')]`
		
		`sst show [ help | -h] [ -output | -o (text |nvmxml | jason0] [-ssd [index | serialNumber | PhysicalPath)]] -selftest`
			`sst start -ssd 1 -self-test short`
			
			`sst show -ssd 1 -selftest`

Smart	Display selected drive's SMART data to the screen.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -smart [(id)] [-ssd [(Index|SerialNumber|PhysicalPath)]]`	`sst show -smart -ssd 1`

SMBus Address	Display the selected drive's SM bus address.
	
	NVMe only
	
	Caution: May lock system if conflicting address set.
		`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -SMBus smbusaddress = (address)`
			`sst show -d -SMBus smbusaddress -ssd 1`
			
			`sst set -ssd 1 -SMBus smbusaddress = 106`

Spread Spectrum Clocking
(Disable/Enable)
	Disable/Enable the drive's spread spectrum clocking feature.
	
	ATA only
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) sscenabled = ('true'|'false')`	`sst set -ssd 1 sscenabled = false`
			
			`sst set -ssd 1 sscenabled = true`

Feature	Description	Command Syntax	Example
Standby Immediate	Send an ATA Standby Immediate command to the selected drive. This will prepare the drive for a power cycle. ATA only	`start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -standby`	`sst start -ssd 1 -standby`

Telemetry	Read the Telemetry Log binary and save it to the given filename. Configure log notification	`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -telemetrylog`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEventConfig telemetrylognoticesconfiguration = ('true' | 'false')`
			`sst dump –destination telemetry_data.bin -ssd 1 –telemetrylog`

Temperature Logging Interval	Display the selected drive's temperature logging interval time, and option flag.
	
	ATA only
		`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) temperatureloggininterval = (time)`
			`sst show -d temperatureloggininterval -ssd 1`
			
			`sst set -ssd 1 temperatureloggininterval = 2`

Temp Threshold (Set)	Set the drives temperature threshold value. NVMe only Caution: If set incorrectly could overheat drive.	`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -TempThreshold tempthreshold = (value)`	`sst set -ssd 1 -TempThreshold tempthreshold = 65`

Feature	Description	Command Syntax	Example

Thermal Throttle	Display the Thermal Throttle status. Optional parameter is used to enable/disable thermal throttling.	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) thermalthrottleenabled = ('true'|'false')`
			`sst show -d thermalthrottleenabled -ssd 2`
			
			`sst set -ssd 2 thermalthrottleenabled = false`

Trim	Trim the device. Specify what to trim by specifying the StartLBA and Count properties. WARNING: This commandwillmake your data inaccessible!	`start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -trim startlba = (integer) count = (integer)`	`sst start -ssd 1 -trim startlba = 0 count = 1024`

UUID	Feature to show Universally Unique Identifier data	`dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|PhysicalPath)] -identify -uuidlist`	`sst show -ssd 1 -identify -uuidlist`
			
			`sst dump -destination targetfile.bin -ssd 1 -identify -uuidlist`

Feature	Description	Command Syntax	Example

Workload Tracker	Feature to track set of key workload data.
	
	Set Workload Tracker feature properties and threshold.
	
	See: Workload Tracker Logs to get data
	
	NVMe Only
	
	Selected drives Only
		Set Workload data properties:
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -WorkloadTracker WorkloadTrackerEnable = (value) [LogGroup = (value [0..6])] [SampleTime = (value)]`
		`LogGroup Values (0-6):`
		`0 = G0 Misalignment (default)`
		`1 = CmdQ Stats`
		`2 = Internal Only`
		`3 = Random vs.Sequential Data`
		`4 = Detailed Throttle Data`
		`5 = Detailed Power Data`
		`6 = Defrag status`
		`SampleTime Values (1-15):`
		`0 = Default`
		`1 = 1ms`
		`2 = 5ms`
		`3 = 10ms`
		`4 = 50ms`
		`6 = 500ms`
		`7 = 1sec`
		`8 = 5sec`
		`9 = 10sec`
		`10 = 30sec`
		`11 = 1min`
		`12 = 5min`
		`13 = 10min`
		`14 = 30min`
		`15 = 1Hr`
		Set Feature Threshold:
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -WorkloadTrackerThreshold WorkloadTrackerThreshold = (value in percentage)`
		Disable the Feature:
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -WorkloadTracker WorkloadTrackerEnable = false`
			`sst set -ssd 1 -WorkloadTracker WorkloadTrackerEnable = true LogGroup = 6 SampleTime=3`
			
			`sst set -ssd 1 -WorkloadTracker WorkloadTrackerThreshold = 90`
			
			`sst set -ssd 1 -WorkloadTracker WorkloadTrackerEnable = false`

Feature	Description	Command Syntax	Example

Workload Tracker Log	Get Workload Feature logs
	
	Timed Log:
	Get time elapsed log in CSV format for specified time and interval
	
	NVMe Only
	
	Selected drives Only
		Get Log:
		`show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -nvmelog WorkloadTrackerLog`
		
		Get Timed Log:
		`dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] –WorkloadLogTime = (value in seconds) WorkloadLogInterval = (value in seconds)`
			`sst show -ssd 1 -nvmelog WorkloadTrackerLog`
			
			`sst dump -destination WorkloadLog.csv -ssd 1 WorkloadLogTime=5 WorkloadLogInterval=2`

Write Cache (Disable/Enable Reordering State)	Display/Disable/Enable drive's write cache/cache reordering statefeature ATA only	`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) writecachestate = (1|2|3)`
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) writecacheenabled = ('true' | 'false')`
		`show [-help|-h] [-display|-d (property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd [(Index|SerialNumber|PhysicalPath)]`
		`set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) writecachereorderingstateenabled = ('true'|'false')`
			`sst show -d writecacheenabled -ssd 1`
			
			`sst set -ssd 1 writecachestate = 1`
			
			`sst set -ssd 1 writecacheenabled = false`
			
			`sst set -ssd 1 writecacheenabled = true`
			
			`sst show -d writecachereorderingstateenabled -ssd 1`
			
			`sst set -ssd 1 writecachereorderingstateenabled = true`

Feature	Description	Command Syntax	Example
Write Same	Issue SCT Write Same command to the selected drive. The start LBA, number of sectors, and data pattern must be specified. The tool will prompt prior to issuing the Write Same command. Caution: Overwrites sectors on drive with a HEX pattern.	`start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -write-same [Count = (sectors)] [HexPattern = (0x00 - 0xFFFFFFFF)] [LBA = (0-Max LBA)]`	`sst start -ssd 1 -write-same Count = 5 LBA = 0 HexPattern = 0x0000ABAB`

Note: (on device target options)

- In Windows, device can be targeted with BootDrive option in addition to Index|SerialNumber|PhysicalPath
- PhysicalPath option may not work with some Linux distributions.

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.

Syntax

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

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

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.

Properties

This command does not support any properties

Examples

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

```
sst show –ssd
```

Lists basic default information for drive at index 0

```
sst show –ssd 0
```

Sample Output

Default show output for –ssd target in default text format

```
>sst.exe show –ssd

- BTCP351406LV1 1 -

Bootloader : Value not found
Capacity : 1.92 TB (1,920,383,410,176 bytes)
DevicePath : \\.\PHYSICALDRIVE1
DeviceStatus : Healthy
Firmware : G70YG420
Index : 1
MaximumLBA : 3750748847
ModelNumber : SB5PH27X019T
NamespaceId : 1
PercentOverProvisioned : 100.00
ProductFamily : Solidigm D7-PS1010 Series
SMARTEnabled : True
SectorDataSize : 512
SerialNumber : BTCP351406LV1
```

Default show output for –ssd target in JSON format

```
>sst.exe show –o json –ssd
{
        "BTCP351406LV1 1":
        {
                "Bootloader":"",
                "Capacity":"1.92 TB (1,920,383,410,176 bytes)",
                "DevicePath":"\\\\.\\PHYSICALDRIVE1",
                "DeviceStatus":"Healthy",
                "Firmware":"G70YG420",
                "Index":1,
                "MaximumLBA":3750748847,
                "ModelNumber":"SB5PH27X019T",
                "NamespaceId":1,
                "PercentOverProvisioned":100.00,
                "ProductFamily":"Solidigm D7-PS1010 Series",
                "SMARTEnabled":true,
                "SectorDataSize":512,
                "SerialNumber":"BTCP351406LV1"
        }
}
```

3.1.2 Show Device Data

Show detailed information about one or more SSD devices.

Syntax

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

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

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. For Windows, Boot drive option can be used to target the boot drive.

Properties

This command does not support any properties.

Return Data

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

Property	Description
AccessibleMaxAddressSupported	(For ATA devices only) True if the devices support the accessible max address commands (Identify device Word 103 bit 8).
AggregationThreshold	(For NVMe devices only) 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	(For NVMe devices only) Shows the recommended maximum time in 100 microsecond increments that a controller may delay an interrupt due to interrupt coalescing.
ArbitrationBurst	(For NVMe devices only) 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	(For NVMe devices only) 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	(Windows OS only) The bus type value determined by Windows.

Property	Description
ControllerDescription	(Currently in Windows OS only) Shows a description of the controller the device is attached to.
ControllerID	(Windows OS only) The ID value of the device controller found in the Windows OS registry.
ControllerIDEMode	Shows if the controller the device is attached to is in IDE mode. Returns either True or False.
ControllerManufacturer	(Currently in Windows OS only) The manufacturer of the controller that the device is attached to.
ControllerService	(Currently in Windows OS only) Displays the controller driver sys file that the attached device is connected to.
DigitalFenceSupported	(For ATA devices only) True if the device supports the Digital Fence feature.
DIPMEnabled	(For ATA devices only) True if the device has DIPM enabled (Identify device Word 79 bit 3).
DIPMSupported	(For ATA devices only) True if the device supports DIPM (Identify device Word 78 bit 3).
DevicePath	(Default) The OS path to the device (i.e. \\.\PhysicalDrive0).
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*. SST 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.
EnduranceAnalyzer	The drives life expectancy in years. This utilizes the 0xE2, 0xE3 and 0xE4 SMART attributes. If these SMART attributes have a value of 0xFFFF then they are still in the reset state and a 60+ minute workload (per 240GB) has yet to run. If the media wear indicator is zero, then the workload has not induced enough wear to calculate an accurate life expectancy.
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	(For NVMe devices only) 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.
IEEE1667Supported	(For ATA devices only) Shows if the IEEE1667 protocol is supported. Reports True or False.
Index	(Default) Shows the SSD device index, used for device selection.

Property	Description
SolidigmGen3SATA	True if the device is a Solidigm™ (formerly Intel®) SATA SSD.
SolidigmNVMe	True if the device is a Solidigm™ (formerly Intel®) NVMe SSD.
IOCompletionQueuesRequested	(For NVMe devices only) Shows the number of IO Completion Queues requested.
IOSubmissionQueuesRequested	(For NVMe devices only) Shows the number of IO Submission Queues requested.
LatencyTrackingEnabled	Shows if the latency tracking feature of the drive is enabled (True) or disabled (False).
LBAFormat	(For NVMe devices only) 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	(For NVMe devices only) 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	(For NVMe devices only) 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	(For NVMe devices only) Shows the device's Metadata setting. One of either: • 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	(For NVMe devices only) 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	(For NVMe devices only) Shows the number of Error Information log entries that are stored by the controller. This value is zero-based.
NumLBAFormats	(For NVMe devices only) 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	(For NVMe devices only) The value of the NVMe controller ID found in the NVMe identify controller structure.
NVMePowerState	(For NVMe devices only) 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	(For NVMe devices only) True if the device supports the NVMe 1.0 command specification.
NVME_1_2_Supported	(For NVMe devices only) True if the device supports the NVMe 1.2 command specification.
PCILinkGenSpeed	(For NVMe devices only) The devices PCI Gen speed.
PCILinkWidth	(For NVMe devices only) The devices PCI link width. E.g. 4 or 8

Property	Description
PhyConfig	(For ATA devices only) Shows the devices PHY Configuration. One of the following: • 0: Default enterprise settings • 1: Client settings • 2: Alternate enterprise settings
PhysicalSectorSize	(For ATA devices only) Shows the physical sector size in bytes. One of either: • 512 • 4096
PhysicalSize	The physical size of the device in bytes. Value is in decimal format.
PhySpeed	(For ATA devices only) Shows the maximum physical speed (in gigabits-per-second) of the device. One of the following: • 1.5 • 3 • 6
PLITestTimeInterval	(For ATA devices only) Shows the PLI Test Time interval in minutes of the device. One of: • 0: 0 min, no immediate test. • 1: 0 min, do immediate test. • 2: 60 min, do immediate test. • 3: 1440 min, do immediate test. • 4: 4320 min, do immediate test. • 5: 10080 min, do immediate test. • 6: 20160 min, do immediate test.
PNPString	(Windows OS only) The devices PNP String from the Windows registry.
ProductProtocol	The devices protocol e.g. ATA or NVME.
PowerGovernorAverage-Power	(For ATA devices only) Shows the device's power governor average power in milliwatts.
PowerGovernorBurstPower	(For ATA devices only) Shows the device's power governor burst power in milliwatts.
PowerGovernorMode	• Shows the devices' Power Governor state. 0: 25-watts for PCIe NVMe devices; 40W for PCIe NVMe x8 devices; Unconstrained for SATA devices. • 1: 20-watts for PCIe NVMe devices; 35W for PCIe NVMe x8 devices; Typical (7-watts) for SATA devices. • 2: 10-watts for PCIe NVMe devices; 25W for PCIe NVMe x8 devices; Low (5-watts) for SATA devices.
ProductFamily	(Default) Shows the SSD Series name.
ProtectionInformation	(For NVMe devices only) Shows the device's protection information type setting. One of: • 0: Protection information is not enabled. • 1: Protection information type 1 is enabled. This can be changed by issuing an NVMe format.
ProtectionInformationLoca-tion	(For NVMe devices only) Shows the device's protection information location setting. One of: • 0: Protection information is transferred as the last 8 bytes of metadata. • 1: Protection information is transferred as the first 8 bytes of metadata.

Property	Description
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.
SataNegotiatedSpeed	(For ATA devices only) Coded value indicating current negotiated SATA signal speed. One of: • 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.
SecurityLocked	(For ATA devices only) Shows if the device is security locked. Reports True or False.
SecuritySupported	(For ATA devices only) True if the devices supports ATA Security feature (Identify device Word 128 bit 0).
SerialNumber	(Default) Shows the serial number assigned to the device.
SMARTEnabled	Shows if SMART capabilities are enabled on the device. Reports True or False.
SMARTSelfTestSupported	(For ATA devices only) True if the device supports the drive self-test feature (Identify device Word 84 bit 1).
SMBusAddress	(For NVMe devices only) 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	(For NVMe devices only) Shows the temperature threshold of the overall device. Units are in Celsius.

Property	Description
TimeLimitedErrorRecovery	(For NVMe devices only) 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 time-out.
TrimSupported	True if the device supports Trim feature.
VolatileWriteCacheEnabled	(For NVMe devices only) True if the volatile write cache is enabled.
WriteAtomicityDisableNormal	(For NVMe devices only) Shows the atomic write status. One of: • 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.
WriteCacheEnabled	(For ATA devices only) Shows if the device has write cache enabled. Reports True or False.
WriteCacheState	(For ATA devices only) Shows the device's write cache state. One of: • 1: Write cache state is determined by ATA Set Features • 2: Write cache is enabled. • 3: Write cache is disabled.
WriteCacheSupported	(For ATA devices only) Shows if the device supports write cache capabilities. Reports True or False.
WriteErrorRecoveryTimer	(For ATA devices only) Shows the time limit for write error recovery in 100 millisecond units.
WriteCacheReorderingStateEnabled	(For ATA devices only) True if the write cache reordering state is enabled on the SATA device.

Examples

Lists basic properties for the SSD device at index 1.

```
sst show -ssd 1
```

List all properties for the SSD device at Index 1

```
sst show -a -ssd 1
```

List specific property(s) for the SSD device at Index 1

```
sst show -d Product, ProductFamily -ssd 1
```

Sample Output

Default show output for –ssd target in default text format

```
>sst.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

```
>sst.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":"SOLIDIGM SBFPF2BV076T",
        "ProductFamily":"Intel SSD DC P3608 Series",
        "SerialNumber":"CVF85156007H400AGN-2"
{
}
```

Show specific properties for –ssd target in JSON format

```
>sst.exe show –d Product, ProductFamily, Firmware -o json –ssd 1
{
"PHYJ0204000W3P8DGN":
        {
                "Firmware":"7CV10141",
                "Product":"Youngsville Refresh Refresh",
                "ProductFamily":"Intel SSD DC S4620 Series"
        },
}
```

3.1.3 Show Health Sensors

The show –sensor command shows the health sensor properties of one or more SSDs.

Syntax

```
sst show [-all|-a] [-display|-d] [-help|-h] [-output|-o (text|nvmxml|json)] -sensor [-ssd (Index|Serial-
Number|PhysicalPath)]
```

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.

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

Targets

Target	Description
-sensor	Displays the health related properties for device(s).
[-ssd (Index|SerialNumber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number. The default is to display sensors for all manageable SSDs.

Limitations

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

Return Data

The command displays the following properties for each sensor command option. This output could be filtered by specifying the Properties with the –display option. It can be further filtered by specifying the ID property.

Note: Some health sensor properties are not supported some devices.

Property	Description
AvailableSpare	(NVMe Devices Only). Percentage (0 to 100%) of the remaining spare capacity available.
AverageNandEraseCycles	Average number of NAND erase cycles for all blocks.
CrcErrorCount	Total number of interface (SATA or NVMe) CRC errors.
EndToEndErrorDetectionCount	Total number of end to end detected errors.
EnduranceAnalyzer	Reports the expected drive life in years.
EraseFailCount	Total number of raw erase fails.
ErrorInfoLogEntries	(NVMe Devices Only). Number of entries in the Error Info Log page over the life of the controller.
HighestLifetimeTemperature	(NVMe Devices Only). The highest lifetime temperature (in Celsius) of the device.
LowestLifetimeTemperature	(NVMe Devices Only). The lowest lifetime temperature (in Celsius) of the device.
MaxNandEraseCycles	Max number of NAND erase cycles for all blocks.
MediaErrors	(NVMe Devices Only). Number of times where the controller detected an unrecovered data integrity error.
MinNandEraseCycles	Min number of NAND erase cycles for all blocks.
PercentageUsed	Estimate of the percentage of life used of the device.

Property	Description
PowerCycles	(NVMe Devices Only). Number of power cycles.
PowerOnHours	Contains the number of power on hours of the device.
ProgramFailCount	Total number of raw program fails.
SpecifiedPCBMaxOperatingTemp	(NVMe Devices Only). Specified PCB maximum operating temperature in degrees C.
SpecifiedPCBMinOperatingTemp	(NVMe Devices Only). Specified PCB minimum operating temperature in degrees C.
Temperature	Total temperature of the device in degrees C
ThermalThrottleCount	The total number of times thermal throttle has been activated.
ThermalThrottleStatus	The amount that Thermal Throttle that is applied. A value of zero is no throttle. 100 is 100% throttling applied.
UnsafeShutdowns	Reports the number of unsafe shutdowns over the life of the device.

Examples

Default show output for –sensor target in default text format.

```
>sst.exe show –sensor
- Intel SSD DC P3608 Series CVF85156007H400AGN-2 -

AvailableSpare : 100
AverageNandEraseCycles : 1
CrcErrorCount : 0
DeviceStatus : Healthy
EndToEndErrorDetectionCount : 0
EnduranceAnalyzer : Media Workload Indicators have reset values. Run an hour or more workload (per
 240GB) prior to running the endurance analyzer.
EraseFailCount : 0
ErrorInfoLogEntries : 0x00
HighestLifetimeTemperature : 53
LowestLifetimeTemperature : 16
MaxNandEraseCycles : 3
MediaErrors : 0x00
MinNandEraseCycles : 0
PercentageUsed : 0
PowerCycles : 0x01F
PowerOnHours : 0x0667
ProgramFailCount : 0
SpecifiedPCBMaxOperatingTemp : 85
SpecifiedPCBMinOperatingTemp : 0
Temperature : 317
ThermalThrottleCount : 0
ThermalThrottleStatus : 0
```

```
UnsafeShutdowns : 0x05
```

Note: Specified the ID property to limit the output.

3.1.4 Show SMART

The show –smart command shows the SMART attributes for one or more SSDs.

Syntax

```
sst show [-all|-a] [-display|-d] [-help|-h] [-output|-o (text|nvmxml|json)] –smart [(id)] [-ssd (Index|SerialNumber|PhysicalPath)] IncludeNVMeSmartHealthLog=(true|false)
```

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

Targets

Target	Description
-smart [(id)]	Displays SMART attributes for device(s). Specific SMART attributes can be selected if (id) is given.
[-ssd (Index|SerialNumber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number. The default is to display sensors for all manageable SSDs.

Properties

Property	Description
IncludeNVMeSmartHealthLog=(true|false)	Determines whether to return NVMe SMART health log attributes in addition to standard.SMART attributes. Default is false. Supported for NVMe only.

Limitations

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

Return Data

The command displays the following properties for each SMART attribute. This output could be filtered by specifying the Properties with the –display option.

Note: Some optional properties are not supported on all device sensors and SMART Attributes F4/F5 are reported in Bytes.

Property	Description
Action	(Optional) Shows the Pass/Fail status based on the Pre-failure/advisory status bit.
Description	Shows a string representation of the ID token.
ID	The SMART Attribute ID token. Smart ID: 03, 04, 05, 0C, AA, B8, BB, C1, E2, E9, F2 Not all drives have the same SMART Id's
Normalized	Shows the normalized value of the SMART attribute.
Raw	Shows the raw value of the SMART Attribute. Value is in decimal.
Status	(Optional) Shows the status flags for the SMART attribute: • Bit 0 Pre-failure/advisory bit • Bit 1 Online data collection • Bit 2 Performance attribute • Bit 3 Error rate attribute • Bit 4 Event count attribute • Bit 5 Self-preserving attribute • Bits 6 - 15 Reserved
Threshold	(Optional) Shows the SMART Attributes threshold value.
Worst	(Optional) Shows the SMART attributes worst normalized value. Maintained for the life of the device.

Examples

Default show output for –smart target in default text format.

```
>sst.exe show –smart E9
- SMART Attributes CVLV119200C4300DGN -

- E9 -

Action : Pass
Description : Media Wearout Indicator
ID : E9
Normalized : 100
Raw : 0
Status : 50
Threshold : 0
Worst : 100
```

Note: Specified the ID property to limit the output.

Default show output for –smart target in JSON format.

```
>sst.exe show –o json –smart E9
{
"SMART Attributes CVLV119200C4300DGN":
```

```
{
        "E9":
        {
                "Action":"Pass",
                "Description":"Media Wearout Indicator",
                "ID":"E9",
                "Normalized":100,
                "Raw":0,
                "Status":50,
                "Threshold":0,
                "Worst":100
        }
}
}
```


Note: Specified the ID property to limit the output I.

Show all the properties of the SMART E9 Attribute for the SSD at Index 1.

```
show –smart E9 –ssd 1
```

Shows only the raw value of the SMART E9 Attribute for all SSDs.

```
sst show –d raw -smart E9
```

3.1.5 Show Performance Metrics

The show –performance command shows the performance metrics for one or more SSDs.

Syntax

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

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

Targets

Target	Description
-performance	Displays performance metrics for device(s).

Target	Description
[-ssd (Index|SerialNumber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number. The default is to display sensors for all manageable SSDs.

Limitations

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

Return Data

The command displays the following properties associated with performance metrics. This output could be filtered by specifying the Properties with the –display option.

Note: Some optional properties are not supported on some devices.

Property	Description
TotalLBAsRead	(ATA Devices only). Total number of sectors read by the Host.
TotalLBAsWritten	(ATA Devices only). Total number of sectors written by the Host.
ControllerBusyTime	(NVMe Devices only). Amount of time the controller is busy with I/O commands. Value is reported in minutes.
DataUnitsRead	(NVMe Devices only). The number of 512 byte data units the host has read from the device. Value is reported in units of 1000 (1 = 1000 units of 512 bytes).
DataUnitsWritten	(NVMe Devices only). The number of 512 byte data units the host has written to the device. Value is reported in units of 1000 (1 = 1000 units of 512 bytes).
HostReadCommands	(NVMe Devices only). The number of read commands completed by the controller.
HostWriteCommands	(NVMe Devices only). The number of write commands completed by the controller.

Examples

Default show output for –performance target in default text format.

```
>sst.exe show –performance
- Intel SSD DC P3608 Series CVF85156007H400AGN-2 -

ControllerBusyTime : 0x0
DataUnitsRead : 0x01F097
DataUnitsWritten : 0x0
HostReadCommands : 0x86A392
HostWriteCommands : 0x7772E3

- Intel SSD DC P3608 Series CVF85156007H400AGN-1 -

ControllerBusyTime : 0x0
DataUnitsRead : 0x10
DataUnitsWritten : 0x0
HostReadCommands : 0x777E07
HostWriteCommands : 0x7772E3
```

3.1.6 Show Device Identification Structures

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

Syntax

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

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'.

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.
[-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 NMVe namespaces (these are created and may, or may not, be attached).

Limitations

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

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.

Examples

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

```
>sst.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 list of Namespace ID's that have been created.

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

3.1.7 Show NVMe Controller Information

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

Syntax

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

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'.

Targets

Target	Description
-nvmecontroller	(Required) Will parse the list of all NVMe controllers of the device. You can change the behavior if -namespace target is given.
[-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.

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.

Return Data

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

Examples

Parsed list of NVMe controller ID's on all drives.

```
>sst.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.

```
>sst.exe show -namespace 1 -nvmecontroller -ssd 2

- Attached Controllers CVEK5316004R800AGN -

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

3.1.8 Show NVMe Log Information

The show –nvmelog command parses NVMe Logs for one or more SSDs. Only supported on NVMe devices.

Syntax

```
sst show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -nvmelog
[('commandeffectslog'|'changednamespacelist'|'errorinfo'|'smarthealthinfo'|'firmwareslotinfo'|'temperatu
restatistics'|'queuemetrics'|'performancebooster'|'sanitizestatus'|'ocperrorrecovery'|'ocpsmartcloud')]
 [namespacespecific = (true|false)] [logspecificfield = (int)]
```

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'.

Targets

Target	Description
-nvmelog ('errorinfo'| 'smarthealthinfo'| 'firmwareslotinfo'|'temperaturestatistics'|'queuemetrics' | 'performancebooster'|'sanitizestatus' |'ocperrorrecovery'|'ocpsmartcloud')	Parse the NVMe log structures. Valid input would be • ErrorInfo – Error Information Log • SmartHealthInfo – SMART Health Information Log • FirmwareSlotInfo – Firmware Slot Information Log • TemperatureStatistics – Temperature Statistics Log • QueueMetrics – Submission and completion queue metrics • Performance booster (client only) – Show the contents of the performance booster log • SanitizeStatus – Show the contents of the sanitize status log • OCPErrorRecovery – Show the contents of the error recovery log • OCPSMARTCloud – Show the contents of the SMART cloud log • Log ID Value – Specify an arbitrary integer value. SST 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.

Properties

Property	Description
NamespaceSpecific	Determines whether log page is namespace specific or not Valid values are: • True • False
LogSpecificField	Specifies the log specific field (LSP) of the log page Valid values are: • Integer

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.

To run this command option with Target 'QueueMetircs', the specified device must be an NVMe SSD and have firmware 8DV101F0 or newer firmware. With earlier firmware, SST will report command failure.

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.

Examples

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

```
>sst.exe show –nvmelog 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.

```
>sst.exe show –o json –nvmelog 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
 }
}
```

3.1.9 Show Phy Counters

The show –phycounters command parses the phy counter information for one or more SSDs. Only supported on SATA devices.

Syntax

```
sst show [-help|-h] [-output|-o (text|nvmxml|json)] -phycounters [-ssd (Index|SerialNumber|Physical-Path)]
```

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'.

Targets

Target	Description
-phycounters	Displays the device Phy Counters. ATA only
[-ssd (Index|SerialNum-ber|PhysicalPath)]	(Optional) Restricts output to a specific SSD by supplying the SSD Index or Serial Number.

Limitations

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

Return Data

This command will parse and return human readable text of the PHY Counters structure. Use the –output option to return the parsed data in different formats.

Examples

Parsed output of the PHY Counters structure in text format. Not all counters are shown below.

```
>sst.exe show –phycounters
 - PHY Counters CVLV119200C4300DGN -

- Counter ID 0x001 -

ID : 001
Description : Command failed and ICRC error bit set to one in Error register
Value : 0

- Counter ID 0x004 -

ID : 004
Description : R_ERRP response for Host-to-Device Data FIS
Value : 0

- Counter ID 0x007 -

ID : 007
Description : R_ERRP response for Host-to-Device non-Data FIS
Value : 0

- Counter ID 0x008 -

ID : 008
Description : Device-to-Host non-Data FIS retries
Value : 0
```

Parsed output of the PHY Counters in JSON output. Not all counters are shown below.

```
>sst.exe show –o json –phycounters
{
"PHY Counters CVLV119200C4300DGN":
{
        "Counter ID 0x001":
        {
                "ID":"001",
                "Description":"Command failed and ICRC error bit set to one in Error register",
                "Value":0
        },
        "Counter ID 0x004":
        {
                "ID":"004",
                "Description":"R_ERRP response for Host-to-Device Data FIS",
                "Value":0
        },
```

```
        "Counter ID 0x007":
        {
                "ID":"007",
                "Description":"R_ERRP response for Host-to-Device non-Data FIS",
                "Value":0
        },
        "Counter ID 0x008":
        {
                "ID":"008",
                "Description":"Device-to-Host non-Data FIS retries",
                "Value":0
        },
...
}
```


3.1.10 Show HDA Temperature

The show –hdatemperature command parses the HDA Temperature and temperature history information for one or more SSDs. Only supported on SATA devices.

Syntax

```
sst show [-help|-h] [-output|-o (text|nvmxml|json)] –hdatemperature [-ssd (Index|SerialNumber|Physical-Path)]
```

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'.

Targets

Target	Description
-hdatemperature	Displays HDA Temperature and history information.
[-ssd (Index|SerialNum-ber|PhysicalPath)]	Restricts output to a specific SSD by supplying the SSD Index or Serial Number.

Limitations

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

Return Data

This command will parse, and return human readable text of the HDA temperature and history structure. Use the –output option to return the parsed data in different formats.

Examples

Parsed output of the HDA Temperature structure in text format. Not all data is shown below.

```
>sst.exe show –hdatemperature
- HDA Temperature BTWL238602AM800DGN -

Format Version : 2
Sampling period : 1
Interval : 1
Maximum recommended continuous operating temperature : 70
Maximum Temperature Limit : 70
Minimum recommended continuous operating temperature : 0
Minimum Temperature Limit : 0
Circular buffer size : 478
Last Updated Entry in the circular buffer : 372

- Temperatures -

Index 0 : Initial value or discontinuity in temperature recording.
Index 1 : 17
Index 2 : Initial value or discontinuity in temperature recording.
Index 3 : 13
Index 4 : 15
Index 5 : 15
Index 6 : 16
Index 7 : 16
Index 8 : 16
Index 9 : 17
Index 10 : 17
Index 11 : 17
Index 12 : 17
Index 13 : 18
Index 14 : 18
Index 15 : 18
Index 16 : 18
Index 17 : 18
Index 18 : 18
```

3.1.11 Show Read and Write Latency Statistics Tracking Information

The show –latencystatistics command parses the Latency Statistics Logs for one or more SSDs. The LatencyTrackingEnabled must be set to true in order to read the logs.

Syntax

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

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'.

Targets

Target	Description
-latencystatistics (reads| writes)	Used to display latency statistics logs for read or write commands. In order to successfully read the logs the LatencyTrackingEnabled property must be set to True. See Modify Device *on page 67*.
[-ssd (Index|SerialNum-ber|PhysicalPath)]	Restricts output to a specific SSD by supplying the SSD Index or Serial Number.

Limitations

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

Return Data

This command will parse and return human readable text of the Latency Statistics Log structure. Use the –output option to return the parsed data in different formats.

Examples

Parsed output of the Latency Statistics log structure for read commands. Output is in text format. Not all data is shown below.

```
>sst.exe show –latencystatistics reads

- Latency Statistics For Read Commands CVF85156007H400AGN-1 -

Major Version : 3
Minor Version : 0
Group 1 Details : Range is 0-1ms. Step is 32us. Bucket size is 4 bytes. Total 32 buckets.
Group 2 Details : Range is 1-32ms. Step is 1ms. Bucket size is 4 bytes. Total 31 buckets.
Group 3 Details : Range is 32ms-1s. Step is 32ms. Bucket size is 4 bytes. Total 31 buckets.

- Group 1 Group 1 -

Bucket 1 : 0
Bucket 2 : 0
Bucket 3 : 0
Bucket 4 : 0
Bucket 5 : 0
Bucket 6 : 0
Bucket 7 : 0
```

```
Bucket 8 : 0
Bucket 9 : 0
Bucket 10 : 0
Bucket 11 : 0
Bucket 12 : 0
Bucket 13 : 0
Bucket 14 : 0
Bucket 15 : 0
Bucket 16 : 0
Bucket 17 : 0
Bucket 18 : 0
Bucket 19 : 0
Bucket 20 : 0
Bucket 21 : 0
Bucket 22 : 0
Bucket 23 : 0
Bucket 24 : 0
Bucket 25 : 0
Bucket 26 : 0
Bucket 27 : 0
Bucket 28 : 0
Bucket 29 : 0
Bucket 30 : 0
Bucket 31 : 0
Bucket 32 : 0

- Group 2 Group 2 -

Bucket 1 : 0
Bucket 2 : 0
Bucket 3 : 0
```

3.1.12 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.

Syntax

```
sst show [-help|-h] [-recent-entries|-e (int)] [-source (path)] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|PhysicalPath)] –persistenteventlog
```

Options

Option	Description
[-help|-h]	Displays help for the command.
[-recent-entries|-e]	Option to get number of recent entries. Provide number of entries.

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

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.

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 Dump Device Data *on page 92*.

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.

Examples

Parse a previously dumped persistent event log binary (see Dump Device Data *on page 92*).

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

Parse persistent event log data directly from a drive

```
sst.exe show -e 50 -destination PEL_parsed.txt -ssd 1 -persistenteventlog
```

3.1.13 Show NVMe Get Feature Information

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

Syntax

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

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'.

Targets

<table>
<tr><th>Target</th><th>Description</th></tr>
<tr><td>-getfeature (feature id)</td><td>Specify the feature id (FID) of the NVMe get feature command
Examples of valid input would be
• General NVMe feature list

<table>
<tr><th>[FID]</th><th>[Feature Name]</th><th>[Feature Description]</th></tr>
<tr><td>list</td><td>List all feature IDs available in the tool. Not checked for drive support</td><td></td></tr>
<tr><td>0x01</td><td>Arbitration</td><td>Arbitration</td></tr>
<tr><td>0x02</td><td>PowerManagement</td><td>Power Management</td></tr>
<tr><td>0x03</td><td>LBARangeType</td><td>LBA Range Type</td></tr>
<tr><td>0x04</td><td>TempThreshold</td><td>Temperature Threshold</td></tr>
<tr><td>0x05</td><td>ErrorRecovery</td><td>Controls the Error Recovery attributes</td></tr>
<tr><td>0x06</td><td>VolatileWriteCache</td><td>Volatile Write Cache</td></tr>
<tr><td>0x07</td><td>NumberOfQueues</td><td>Number Of Queues</td></tr>
<tr><td>0x08</td><td>InterruptCoalescing</td><td>interrupt coalescing settings</td></tr>
<tr><td>0x09</td><td>InterruptVectorConfig</td><td>Interrupt Vector Configuration</td></tr>
<tr><td>0x0A</td><td>WriteAtomicity</td><td>Write Atomicity Normal</td></tr>
<tr><td>0x0B</td><td>AsyncEventConfig</td><td>Asynchronous Event Configuration</td></tr>
<tr><td>0x0E</td><td>Timestamp</td><td>Timestamp</td></tr>
<tr><td>0x16</td><td>HostBehaviorSupport</td><td>Host Behavior Support</td></tr>
<tr><td>0xC0</td><td>OCPErrorInjection</td><td>OCP Error Injection</td></tr>
<tr><td>0xC1</td><td>MaxLBA</td><td>Max LBA</td></tr>
<tr><td>0xC1</td><td>OCPClearFirmwareUpdateHistory</td><td>OCP Clear Firmware Update History</td></tr>
<tr><td>0xC2</td><td>OCPReadOnlyWriteMode</td><td>OCP Read Only Write Mode</td></tr>
<tr><td>0xC2</td><td>NativeMaxLBA</td><td>Native Max LBA</td></tr>
<tr><td>0xC3</td><td>OCPClearPCIeCorrectable</td><td>OCP Clear PCIeCorrectable</td></tr>
<tr><td>0xC4</td><td>OCPIEEE1667Silo</td><td>OCP IEEE 1667Silo</td></tr>
<tr><td>0xC5</td><td>OCPLatencyMonitor</td><td>OCP Latency Monitor</td></tr>
<tr><td>0xC6</td><td>OCPPLPCheck</td><td>OCP PLP Check</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Target</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>[FID]</th><th>[Feature Name]</th><th>[Feature Description]</th></tr>
<tr><td>0xC7</td><td>OCPDSSDPowerState</td><td>OCP DSSD Power State</td></tr>
<tr><td>0xC8</td><td>OCPTelemetryProfile</td><td>OCP Telemetry Profile</td></tr>
<tr><td>0xC8</td><td>SMBus</td><td>SM Bus</td></tr>
<tr><td>0xC9</td><td>LEDActivity</td><td>LED Activity</td></tr>
<tr><td>0xC9</td><td>OCPDSSDAsyncEventConfig-uration</td><td>OCP DSSD Async Event Con-figuration</td></tr>
<tr><td>0xCB</td><td>DynamicMMIO</td><td>Dynamic MMIO</td></tr>
<tr><td>0xCB</td><td>PCIeSwitch</td><td>PCIe Switch</td></tr>
<tr><td>0xD5</td><td>ResetCRCError</td><td>Reset CRC Error</td></tr>
<tr><td>0xD9</td><td>DisableThermalThrottle</td><td>Enabling/Disabling Thermal Throttling for EMC</td></tr>
<tr><td>0xDA</td><td>DellHostMetaData</td><td>Dell - Host Metadata</td></tr>
<tr><td>0xE9</td><td>LongLatencyConfig</td><td>Long Latency Configuration</td></tr>
<tr><td>0xF1</td><td>WorkloadTracker</td><td>Set/Get Enable Workload Tracker/Trigger</td></tr>
<tr><td>0xF5</td><td>WorkloadTrackerThreshold</td><td>Set Read/Write Workload Tracker Threshold</td></tr>
</table>
</td></tr>
<tr><td>[-ssd (Index|SerialNum-ber|PhysicalPath)]</td><td>(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.</td></tr>
<tr><td>-namespace (namespace Id)</td><td>Namespace target is optional. Must specify namespace ID if being used.</td></tr>
</table>

Properties

Below are the properties that can be modified.

Property	Description
UUIIDIndex	Specify the UUID Index for vendor specific get feature
TransferBytes(int)	Specify transfer bytes when expecting buffer date to be returned
Select	Sets the select value Valid values are: • Current (default) • Default • Saved • Capabilities

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.

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.

Examples

Parsed output of get feature with FID=1

```
> sst show -ssd 0 -getfeature 1
- BTLJ723607AK2P0BGN -

DWORD0 : 0x07070703
```

3.1.14 Show NVMe IEEE 1667 Silo Information

The show OCPIEEE1667Silo command sends a get feature command with the specified feature id (FID) for SSDs. Used to show IEEE 1667 Silo information.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

```
set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPIEEE1667Silo
 Enable = ('true'|'false')
```

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'.

Targets

Target	Description
-OCPIEEE1667Silo	Specifies that IEEE 1667 Silo information is requested. No input required.
[-ssd (Index|SerialNum-ber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

Below are the properties that can be modified.

Property	Description
Select	Sets the select value Valid values are: • Current • Default • Saved • Capabilities

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

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.

Examples

```
> sst show -ssd 0 -getfeature OCPIEEE1667Silo
- BTLJ723607AK2P0BGN –
Silo : Currently Enabled
```

3.1.15 Show NVMe Read Only/Write Through Mode Information

The show -ReadOnlyWriteThrough command sends a get feature command with the specified feature id (FID) for SSDs. Used to show Read Only/Write Through mode information.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

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

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'.

Targets

Target	Description
-getFeature OCPReadOnly-WriteThrough	Specifies that Read Only/Write Through Mode information is requested.
[-ssd (Index|SerialNum-ber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

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.

Examples

```
> sst show -ssd 1 -getFeature OCPReadOnlyWriteMode
- BTCP351406LV1 -

Mode : The device will transition to Read Only Mode(ROM) at End of Life (EOL) or on PLP failure
```

3.1.16 Show NVMe Error Injection Information

The show -ErrorInjection command sends a get feature command with the specified feature id (FID) for SSDs. Used to show error injection information.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

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

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’.

Targets

Target	Description
-getFeature OCPErrorInjection	Specifies that Error Injection information is requested. No input required.
[-ssd (Index|SerialNumber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

No properties available for this feature

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

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.

Examples

```
> sst show -ssd 1 -getFeature OCPErrorinjection
- BTLJ723607AK2P0BGN –
- Error Injection Info Error Injection Info –
Number of Error Injections  : 0
```

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.

SST show devices (sst.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: Systems configured with the SATA Controller set to IDE mode are not supported.

Syntax

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

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

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.

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI indicates the status of the firmware update operation.

Sample Output

>sst.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.

>sst.exe load –ssd 0

WARNING! You have selected to update the drives firmware!

Proceed with the update? (Y|N): n

Canceled.

>sst.exe load –f –ssd 0

Updating firmware...

Firmware update successful.

>sst.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.

Examples

Updates the firmware on the device at index 1.

```
sst 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.

Syntax

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

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

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

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]	Numberic data indicating Commit option according to NVMe specification.

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI indicates the status of the firmware update operation.

Sample Output

```
>sst load -source firmwareBinary.bin -ssd 1
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.

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

>sst.exe load -source firmwareBinary.bin –f –ssd 0
Updating firmware...
The selected drive contains current firmware as of this tool release.

>sst.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.
```

3.2.3 Modify Device

Changes the configurable settings on an SSD.

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

Syntax

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

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'.

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.

Properties

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

Property	Description
DIPMEnabled	Enable or disable the SATA device's DIPM. Valid values are: • True - enables DIPM • False - disables DIPM
EnduranceAnalyzer	Resets the SMART attributes: E2, E3, and E4. The Valid value is reset. As a result, the reported raw value of these attributes will be 0xFFFF. Once the values have been reset, the device must go through a 60+ minute workload (per 240GB) for the attributes to trip.
LatencyTrackingEnabled	Enables or disables latency tracking feature. This must be enabled in order to successfully read the latency statistics logs (Show Read and Write Latency Statistics Tracking Information *on page 54*) Valid values are: • True - enables latency tracking • False - disables latency tracking
MaximumLBA	Sets the device's Maximum LBA value. This operation will overprovision the drive. The MaximumLBA can be specified in the following ways: • · xGB - Sets the devices maximum LBA such that the total capacity is the specified GB value. Value must be at least 1 and cannot exceed devices total native capacity. • X% - Sets the devices maximum LBA to the given percentage. Allowed values are 1-100%. 100% equals native maximum LBA. • · LBA - Sets the devices maximum LBA value to the given LBA. Given value must be a decimal literal. The LBA value must be at least XYZ and it cannot exceed the native maximum LBA value. • "native" - Sets the devices maximum LBA value back to its native maximum.

Property	Description
PhyConfig	(For ATA devices only) Changes the PHY configuration of the selected device. Valid values are: • 0: Default enterprise settings. • 1: Client settings • 2: Alternate enterprise settings • 3: Server Settings
PhysicalSectorSize	(For ATA devices only) Changes the devices physical sector size. Values are in byte units. Valid values are: • 512 • 4096
PhySpeed	(For ATA devices only) Changes the devices maximum allowed PHY Speed it is allowed to negotiate. Valid values are: • 1.5: SATA Gen 1 speed of 1.5 Gbs • 3: SATA Gen 2 speed of 3 Gbs • 6: SATA Gen 3 speed of 6 Gbs Actual negotiated speed is also determined by the controller the device is attached to.
PLITestTimeInterval	(For ATA devices only) Changes the devices PLI test time interval setting. Valid values are: • 0: 0 min, no immediate test • 1: 0 min, do immediate test • 2: 60 min, do immediate test • 3: 1440 min, do immediate test • 4: 4320 min, do immediate test • 5: 10080 min, do immediate test • 6: 20160 min, do immediate test
PowerGovernorMode	Changes the devices power governor mode settings. Valid values are: • 0: 25-watts for PCIe NVMe devices; 40W for PCIe NVMe x8 devices; Unconstrained for SATA devices. • 1: 20-watts for PCIe NVMe devices 35W for PCIe NVMe x8 devices; Typical (7-watts) for SATA devices. • 2: 10-watts for PCIe NVMe devices; 25W for PCIe NVMe x8 devices; Low (5-watts) for SATA devices.
ReadErrorRecoveryTimer	(For ATA devices only) Sets the devices error recovery timer for reads. Value is in 100-microsecond units (e.g., a value of 1 = 100 ms, 2 = 200 ms). Valid values are: • 0-65535
SMBusAddress	(For NVMe devices only) Sets the devices SM Bus Address. Valid values are: • 1-255. A value of 255 will disable SM Bus
SSCEnabled	(For ATA devices only) Toggles the devices spread spectrum clocking (SSC) feature on and off. • "True" - enable SSC • "False" - disable SSC Device must be power cycled after setting.
TempLoggingInterval	(For ATA devices only) Sets the devices temperature logging interval. Value is in seconds. Valid values are: • 0-65535

Property	Description
TempThreshold	(For NVMe devices only) Sets the devices temperature threshold. Value is in degrees Celsius. Valid values are: • 0-75
WriteCacheEnabled	Enable or disable the SATA device's Write Cache via ATA set features command. Valid values are: • True – enables Write Cache • False - disables Write Cache
WriteCacheState	(For ATA devices only) Sets the devices write cache state. Valid values are: • 1: Write cache state is determined by ATA Set Features • 2: Write cache is enabled. • 3: Write cache is disabled.
WriteCacheReorderingStateEnabled	Enable or disable the SATA device's write cache reordering state. Valid values are: • True – enables write cache reordering state • False – disables write cache reordering state
WriteErrorRecoveryTimer	(For ATA devices only) Set the devices error recovery timer for writes. Value is in 100-microsecond units (e.g., a value of 1 = 100 ms, 2 = 200 ms). Valid values are: • 0-65535

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'.

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.

Properties

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

Limitations

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

Return Data

The CLI indicates the status of the operation.

Sample Output

```
Set WriteCacheState successful.
```

Examples

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

```
sst set –ssd 0 WriteCacheState=3
```

3.2.4 Execute Device Function

Use the start verb to execute a function on the selected device.

Syntax

```
start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] –ssd (Index|SerialNumber|PhysicalPath) –
selftest [(‘short’|’extended’|’conveyance’)]
start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] –ssd (Index|SerialNumber|PhysicalPath)
 –nvmeformat [lbaformat=(0-numlbaformats)] [secureerasesetting=(0|1|2)] [protectioninformation=(0|1)]
 [metadatasettings=(0|1)]
start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] –ssd (Index|SerialNumber|PhysicalPath) -
standby
```

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’.

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.
-nvmeformat	Issues an NVMe format to the selected drive. See the properties below for details on how to configure the NVMe format. To by-pass the prompt, specify the –force option.
-standby	(ATA devices only) Put the selected device into standby power state. This prepares the drive for removal from the system.

Properties

Properties supported for the start verb are list below. Properties are specific to different targets.

The properties: LBAFormat, SecureEraseSetting, ProtectionInformation, and MetadataSettings are used with the –nvme-format target.

The target that they correspond to is also listed in the Description.

Property	Description
LBAFormat	(-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. Valid values are: • 0-NumLBAFormats: See NumLBAFormats Property for max value.
SecureEraseSetting	(-nvmeFormat) Specifies the setting for Secure Erase. If not provided, the tool will use a value of 2. Valid values are: • 0: No secure erase. • 1: User data erase. • 2: Crypto erase.
ProtectionInformation	(-nvmeFormat) Enables different protection information types. If not provided, the tool will use the current value of the selected SSD. Valid values are: • 0: Protection information is not enabled. • 1: Protection information type 1 is enabled.
MetadataSettings	(-nvmeFormat) Specifies how metadata is transferred. If not provided, the tool will use the current value of the selected SSD Valid values are: • 0: Metadata is transferred as part of a separate contiguous buffer. • 1: Metadata is transferred as part of an extended data LBA.

Limitations

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

Return Data

The CLI returns the status of the command.

Examples

Issues NVMe Format to the SSD at index 1 using the default values.

```
start –ssd 1 -nvmeformat
```

Issues NVMe Format to the SSD at index 1 and set the LBA Format to 3 and enable Type 1 protection information.

```
start –ssd 1 -nvmeformat lbaformat=3 protectioninformation=1
```

Issues an ATA Standby Immediate to the SSD at index 1. This will prepare the drive for power removal.

```
start –ssd 1 -standby
```

Issues an extended ATA DriveSelfTest to the SSD at index 1.

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

3.2.5 Delete Device

Delete SSD will erase all the data on the drive. For SATA devices, this will issue an ATA Secure Erase if supported, or Sanitize erase if supported. For NVMe devices, this will issue 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.

Syntax

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

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'.

Targets

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

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI will return status of the command.

Examples

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

```
delete -ssd 1
```

3.2.6 Secure Erase (ATA Secure Erase)

Perform Secure Erase on ATA drive.

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

Syntax

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

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'.

Targets

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

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI will return status of the command.

Examples

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

```
start –ssd 1 -secureerase
```

3.2.7 NVMe Format

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)]
```

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'.
LBAFormat	(-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. Valid values are: • 0-NumLBAFormats See NumLBAFormats Property for max value.
SecureEraseSetting	(-nvmeFormat) Specifies the setting for Secure Erase. If not provided, the tool will use a value of 2. Valid values are: • 0: No secure erase. • 1: User data erase. • 2: Crypto erase.
ProtectionInformation	(-nvmeFormat) Enables different protection information types. If not provided, the tool will use the current value of the selected SSD. Valid values are: • 0: Protection information is not enabled. • 1: Protection information type 1 is enabled.
MetadataSettings	(-nvmeFormat) Specifies how metadata is transferred. If not provided, the tool will use the current value of the selected SSD Valid values are: • 0: Metadata is transferred as part of a separate contiguous buffer. • 1: Metadata is transferred as part of an extended data LBA.

Targets

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

3.2.8 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.

Syntax

```
set [-help|-h] [-output|-o (text|nvmxml|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)]
```

Option

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'.

Targets

Target	Description
-setfeature (feature id)	Specify the feature id (FID) of the NVMe set feature command Examples of valid input would be • 0x01 - Arbitration • 0x02 - PowerManagement • 0x03 - LBARangeType • 0x04 - TempThreshold • 0x05 - ErrorRecovery • 0x06 - VolatileWriteCache • 0x07 - NumberOfQueues • 0x08 - InterruptCoalescing • 0x09 - InterruptVectorConfig • 0x0A - WriteAtomicity • 0x0B - AsyncEventConfig • 0x0E - Timestamp • 0x16 - HostBehaviorSupport • 0xC0 - OCPErrorInjection • 0xC1 - MaxLBA • 0xC1 - OCPClearFirmwareUpdateHistory • 0xC2 - OCPReadOnlyWriteMode • 0xC2 - NativeMaxLBA • 0xC3 - OCPClearPCIeCorrectable • 0xC4 - OCPIEEE1667Silo • 0xC5 - OCPLatencyMonitor • 0xC6 - OCPPLPCheck • 0xC7 - OCPDSSDPowerState • 0xC8 - OCPTelemetryProfile • 0xC8 - SMBus • 0xC9 - LEDActivity • 0xC9 - OCPDSSDAsyncEventConfiguration • 0xCB - DynamicMMIO • 0xCB - PCIeSwitch • 0xD5 - ResetCRCError • 0xD9 - DisableThermalThrottle • 0xDA - DellHostMetaData • 0xDE - DellErrorInjection • 0xE9 - LongLatencyConfig • 0xF1 - WorkloadTracker • 0xF5 - WorkloadTrackerThreshold

Target	Description
[-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.

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.

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.

Return Data

This command will send and return the status of the NVMe set feature. There is usually a corresponding get feature command (see Show NVMe Get Feature Information *on page 57*).

Examples

Parsed output of get feature with FID=1

```
> sst set -ssd 0 -setfeature 4 DWORD11=1
- NVMeFeatures BTLJ723607AK2P0BGN –
Status : Completed successfully.
```

3.2.9 Set NVMe IEEE 1667 Silo

The set –IEEESilo command sends a set feature command with the specified feature id (FID) for SSDs. Used to set IEEE 16667 Silo information.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

```
sst set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -
OCPIEEE1667Silo Enable = ('true'|'false')
```

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'.

Targets

Target	Description
-OCPIEEE1667Silo	Specifies that IEEE 1667 Silo is requested. No input required.
[-ssd (Index|SerialNumber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

Below are the properties that can be modified.

Property	Description
Enable	True to enable, false to disable.

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Return Data

This command will send and return the status of the NVMe set IEEE 1667 Silo. See the following section for the corresponding get feature: Show NVMe IEEE 1667 Silo Information *on page 61*.

Examples

```
> sst set -ssd 1 -OCPIEEE1667Silo Enable=True
Set Enable successful. Completed successfully.
```

3.2.10 Set NVMe Read Only/Write Through Mode

The set –ReadOnlyWriteThrough command sends a set feature command with the specified feature id (FID) for SSDs. Used to set read only or write through mode as the desired device transition and end of life.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

```
sst set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPReadOnly-
WriteMode Mode = (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'.

Targets

Target	Description
-ReadOnlyWriteThrough	Specifies that Read Only/Write Through mode is requested. No input required.
[-ssd (Index|SerialNum-ber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

Below are the properties that can be modified.

Property	Description
Mode	1 to transition to read only mode, 2 to transition to write through mode.

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Return Data

This command will send and return the status of the NVMe set Read Only/Write Through mode. See the following section for the corresponding get feature: Show NVMe Read Only/Write Through Mode Information *on page 62*

Examples

```
> sst set -ssd 1 -OCPReadOnlyWriteMode mode=1
Set Mode successful. Completed successfully.
```

3.2.11 Set NVMe Error Injection

The set -ErrorInjection command sends a set feature command with the specified feature id (FID) for SSDs. Used to forcibly inject errors into the device.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

```
set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPErrorInjection
 [ErrorInjectionEntries = ((tilde separated entry list))] [File = (path to input file)]
ShowErrorInjection:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -ocperrorin-
jection
```

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'.

Targets

Target	Description
-OCPErrorInjection	Specifies that error injection set feature is requested. No input required.
[-ssd (Index|SerialNum-ber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

Below are the properties that can be modified.

Property	Description
ErrorInjectionEntries	A tilde separated list of error injection entries. See the Open Compute Project NVMe Cloud SSD Specification for more details. **Note:** Each entry shall be formatted in a specific way. Each item in the entry is separated by a period (.). The general format is as follows: • First item is the injection enable attribute (0 or 1) • The second item is the single instance attribute (0 or 1) • The third item is the error injection type (always interpreted as hex value) • The fourth entry is a 27-byte hex value indicating the type specific data. A user doesn't have to specify all 27-bytes. If less than 27-bytes are specified, then 0's are prepended. Example: ErrorInjectionEntries= 1.0.0x3.0x44~0.1.0x12.0x3D~1.1.0x3.0xA16E **Note:** ErrorInjectionEntries properties and ErrorInjectionEntryFile are mutually exclusive.

Property	Description
File	Specifies an XML file that contains the error injection info data. This option serves to streamline the injection formatting (which is cumbersome). **Note:** ErrorInjectionEntries properties and ErrorInjectionEntryFile are mutually exclusive.

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Return Data

This command will send and return the status of the NVMe set error injections. See the following section for the corresponding get feature: Show NVMe Error Injection Information *on page 63*

Examples

```
> sst set -ssd 1 -OCPErrorinjection File=errorinjection.xml
Completed successfully.

>sst set -ssd 1 -ocperrorinjection errorinjectionentries=1.0.0x3.0x44~0.1.0x12.0x3D~1.1.0x3.0xA16E
Completed successfully Completed successfully.
```

3.2.12 Clear PCIe Correctable

The set -PCIeCorrectable command sends a set feature command with the specified feature id (FID) for SSDs. Used to clear the PCIe correctable counter.

Only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Syntax

```
sst set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -PCIeCor-
rectable ClearCounter = (true)
```

Option

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'.

Targets

Target	Description
-PCIeCorrectable	Specifies that clear PCIe correctable counter is requested. No input required.
[-ssd (Index|SerialNumber|PhysicalPath)]	(Optional) Restricts output to specific SSD by supplying the SSD Index or Serial Number.

Properties

Below are the properties that can be modified.

Property	Description
ClearCounter	Set to 'true' to clear the counter.

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.

This command is only supported on NVMe devices that support the NVMe Cloud SSD Specification from the Open Compute Project.

Return Data

This command will send and return the status of the NVMe clear PCIe correctable counter.

Examples

```
> sst set -ssd 1 -PCIeCorrectable ClearCounter=True
Set ClearCounter successful. Completed successfully.
```

3.2.13 Drive Scan

Scan the drive for Data Integrity, Read Scans, or Logs.

Note: Log scan output will be saved to the output/TIME_STAMP directory relative to the directory in which the command was run unless overridden by the DirectoryPath property.

Syntax

```
start [-help|-h] [-output|-o (text|nvmxml|json)] -scan [(DataIntegrity|ReadScan|Logs)] [-ssd [(Index|
SerialNumber|PhysicalPath)]] [IncludeOS = (true|false)] [FullScan = (true|false)] [Path = (drive let-
ter)] [DirectoryPath = (file path)] [IncludeSystemInfo = (true|false)]
```

Options

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

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

Targets

Target	Description
-ssd (Index|SerialNumber|PhysicalPath)	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-scan [(DataIntegrity|ReadScan|Logs)]	(Required) Command to scan information on the drive. Options: • DataIntegrity • ReadScan • Logs

Properties

Property	Description
[IncludeOS = (true|false)]	(Optional) Scan OS partition and/or drive as part of scan.
[FullScan = (true|false)]	(Optional) Should the command perform Full or Quick scan.
[Path = (drive letter)]	(Optional) Path to drive partition to scan. Only applicable for DataIntegrity
[DirectoryPath = (file path)]	(Optional) Specify path where drive and system logs should be saved Default is "output/" in current directory.
[IncludeSystemInfo = (true|false)]	(Optional) Should system information be included in the scan.

Limitations

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

Return Data

This will return status of the command.

Examples

```
> - Scan Results -
- Intel SSD PHYF830403701P9DGN -
- StoreLogs -
Result : Completed successfully.
```

3.2.14 Read System Snapshot

Read the system snapshot from the device and save it to a binary file.

Syntax

```
Dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|Physical-Path) -SystemSnapshot
```

Options

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

Targets

Target	Description
-ssd (Index|SerialNumber|PhysicalPath)	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-SystemSnapshot	(Required) Read the System Snapshot from the device.

Properties

No properties are applicable for this command.

Limitations

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

Return Data

This will return status of the command.

Examples

```
> sst dump -ssd 1 -systemsnapshot
SystemSnapshot_SerialNumber : Successfully written SystemSnapshot to SystemSnapshot_SerialNumber.bin
```

3.2.15 Over-provisioning

Over-provisioning is a process of increasing the spare area on a drive. Over-provisioning increases the performance and endurance of the drive.

Over-provisioning can be performed with Maximum LBA command. To over-provision, see Maximum LBA command in examples.

3.3 Configure Namespaces

3.3.1 Create a Namespace

Create a namespace. Supported on NVMe 1.2+ devices. The NVMe controller of the device will determine the Namespace ID of the newly created namespace.

Syntax

```
create [-help|-h] [-output|-o (text|nvmxml|json)] -namespace -ssd (Index|SerialNumber|PhysicalPath) Size = (blocks) [LBAFormat = (0-NumLBAFormats)] [ProtectionInformation = (0|1)] [MultiPathIoCapabilities = (0|1)]
```

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'.

Targets

Target	Description
-ssd (Index|SerialNumber|PhysicalPath)	A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-namespace	The -namespace target is required. It specifies that a namespace is to be created.

Properties

Property	Description
Size = (blocks)	The size property is required. It specifies the size of the new namespace in terms of blocks.
[LBAFormat = (0-NumLBAFormats)]	The LBAFormat property is optional. By default an LBAFormat of 0 will be used. Valid options are 0 to Number of supported LBA Formats specified in the Identify Controller structure. See the NumLBAFormats from show -ssd. The main thing this value determines is the formatted sector size. **Note:** You cannot have different namespaces with different LBA sector sizes.
[ProtectionInformation = (0|1)]	The ProtectionInformation property is optional. By default a value of 0 will be used. 0 = protection information is disabled. 1 = protection information type 1 is used.
[MultiPathIoCapabilities = (0|1)]	The MultiPathIoCapabilities property is optional. By default a value of 1 will be used. 0 = Private namespace is created. 1 = shared namespace is created.

Limitations

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

Return Data

The CLI will return status of the command

Examples

Create a given namespace with a size of 100000 blocks.

```
create -namespace -ssd 2 size=100000

- Intel SSD CVEK5316004R800AGN -

Status : create namespace successful.
```

Create a given namespace with a size of 100000 blocks, that is private and has protection type 1.

```
create -namespace -ssd 2 size=100000 MultiPathIoCapabilities=0 ProtectionInformation=1

- Intel SSD CVEK5316004R800AGN -

Status : create namespace successful.
```

3.3.2 Attach a Namespace

Attach a namespace. May specify an NVMe controller ID using the -nvmecontrollerid target. Supported on NVMe 1.2+ devices.

Syntax

```
attach [-help|-h] [-output|-o (text|nvmxml|json)] -namespace (id) -ssd (Index|SerialNumber|PhysicalPath)
 [-nvmecontroller (controller ID integer)]
```

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'.

Targets

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

Target	Description
-namespace (id)	The -namespace target is required and a valid namespace ID. It specifies that a namespace is to be attached.
[-nvmecontroller (controller ID integer)]	The -nvmecontroller target is optional. If used, a valid controller ID must be given. Used in the case of dual port drives in which a device may have more than one NVMe controller.

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI will return status of the command.

Examples

Attach namespace 1 on the device at index 2.

```
attach -namespace 1 -ssd 2

- Intel SSD CVEK5316004R800AGN -

Status : attach namespace successful.
```

3.3.3 Detach a Namespace

Detach a namespace. Supported on NVMe 1.2+ devices.

Syntax

```
detach [-help|-h] [-output|-o (text|nvmxml|json)] -namespace (id) -ssd (Index|SerialNumber|PhysicalPath)
 [-nvmecontroller (controller ID integer)]
```

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'.

Targets

Target	Description
-ssd (Index|SerialNumber|PhysicalPath)	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-namespace (id)	(Required) The -namespace target is required and a valid namespace ID. It specifies that a namespace is to be detached.
[-nvmecontroller (controller ID integer)]	The -nvmecontroller target is optional. If used, a valid controller ID must be given. Used in the case of dual port drives in which a device may have more than one NVMe controller.

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI will return status of the command.

Examples

Detach namespace 1 on the device at index 2.

```
detach -namespace 1 -ssd 2

- Intel SSD CVEK5316004R800AGN -

Status : detach namespace successful.
```

3.3.4 Delete a Namespace

Delete a namespace. Supported on NVMe 1.2+ devices.

Syntax

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

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'.

Targets

Target	Description
-ssd (Index|SerialNumber|PhysicalPath)	(Required) A specific SSD selected by supplying the SSD Index or Serial Number must be provided.
-namespace (id)	The -namespace target is required and a valid namespace id must be provided. This selects which namespace to delete.

Properties

This command does not support any properties.

Limitations

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

Return Data

The CLI will return status of the command.

Examples

Delete namespace 1 on the device at index 2.

```
delete -namespace 1 -ssd 2

WARNING! You have selected to delete the namespace!
Proceed with the delete? (Y|N): y

- Intel SSD CVEK5316004R800AGN -

Status : delete namespace successful.
```

Use the -force option to bypass the prompt.

```
delete -f -namespace 1 -ssd 2

- Intel SSD CVEK5316004R800AGN -

Status : delete namespace successful.
```

3.4 Instrumentation Command

3.4.1 Show Tool Configuration

Show tool configuration properties.

Syntax

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

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

Targets

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

Properties

This command option does not support any properties.

Limitations

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

Return Data

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

EnableLSIAdapter	True or False. Whether or not the LSIAdapter library is loaded. This affects LSI Mega RAID Controller Support. (Default value is False)
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

Examples

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

```
>sst.exe show –system
- sst Config -
EnableLSIAdapter: false
```

```
EnableLog: false
LogFile: C:\Program Files\Solidigm\Solidigm(TM) Storage Tool\\SolidigmTDKI.log
```

3.4.2 Modify Tool Configuration

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

Syntax

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

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'.

Targets

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

Properties

Property	Description
EnableLSIAdapter	Enable or disable the loading of the LSI Adapter library. Supported values are "True" and "False".
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.

Limitations

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

Return Data

The CLI will indicate the status of the operation.

Sample Output

```
Set EnableLog successful.
```

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.

3.4.3 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

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')]]
```

Options

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

Targets

Target	Description
-ssd (Index|SerialNumber|PhysicalPath)	Dump the selected data from the given SSD.
-nlog	Read the nlog binary data from the device and save it to binary file.
-eventlog	Read the event log binary data from the device and save it to binary file.

Target	Description
-assertlog	Read the Assert log binary data from the device and save it to binary file.
-telemetrylog	Read the telemetry log binary data from the device and save it to binary file
-persistenteventlog ('read'|'release')	Read the persistent event log binary data from the current context, create a new context, or release the current context

Properties

This command does not support any properties.

Limitations

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

Telemetry is only available on selected drives.

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.

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
```

Read 600 sectors the GPL at address 0xDF, Page Number 0 and save it to binary file: gpl.bin.

```
> dump –destination gpl.bin –ssd 1 -gpl 0xDF PageNum=0 SectorCount=600

GPL_BTWL238602A
M800DGN : Successfully written GPL data to gpl.bin
```

Extract Telemetry log to file telelmetry_data.bin

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

Read Persistent event log data from the current context

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

Establish a new persistent event log context and read from it

```
sst.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)

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

3.5 Support Commands

Support commands consist of Help and Version.

3.5.1 Help Command

Shows help for the supported commands.

Syntax

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

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'.

Targets

This command does not support any targets.

Properties

Property	Default	Description
Verb	All Verbs	Filters help to a specific verb. One of: • delete • dump • help • load • set • show • start • version
Name	All commands	Filters help to a specific command by name.

Return Data

By default, the command displays an introduction to SST 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.

Sample Output (Multiple Commands)

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

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

Commands:
AggregationThreshold:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -InterruptCoa-
lescing AggregationThreshold = (value)
```

```
AggregationTime:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -InterruptCoa-
lescing AggregationTime = (value)
AssertLog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] -assertlog
ATASecureErase:
    start [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|PhysicalPath)] -
secureerase
AttachNamespace:
    attach [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace
 (namespace id) [-nvmecontroller (controller ID integer)]
BackgroundProcessing:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -background-
processing
BridgeNlog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] -bridgenlog
ClearHistory:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCP-
ClearFirmwareUpdateHistory ClearHistory = ((true))
CreateNamespace:
    create [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace
 Size = (blocks) [Capacity = (blocks)] [LBAFormat = (0-NumLBAFormats)] [ProtectionInformation = (0|1|2|
3)] [MultiPathIoCapabilities = (0|1)]
DebugLogs:
    dump [-help|-h] [-destination (path)] -debuglogs [-v] [-vv] [-extended] [-output|-o (text|nvmxml|
json)] -ssd (Index|SerialNumber|PhysicalPath) [-type (all|list|LOGNAME)]
Delete:
    delete [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
DeleteNamespace:
    delete [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 -namespace (namespace id)
DetachNamespace:
    detach [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -namespace
 (namespace id) [-nvmecontroller (controller ID integer)]
DIPM:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) DIPMEnabled =
 ('true'|'false')
DriveSelfTestShow:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -selftest
DriveSelfTestStart:
    start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -selftest
 [('short'|'extended'|'conveyance')] [-namespace (namespace id)] [-mode (captive|offline)]
DriveSelfTestStop:
    stop [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -selftest
DumpIdentifyController:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify -nvmecontroller
```

```
DumpIdentifyControllerList:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] [-namespace (namespace id)] -nvmecontroller
DumpIdentifyDevice:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify
DumpIdentifyIOCommandSet:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify -iocommandset
DumpIdentifyNamespace:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify -namespace (namespace id)
DumpIdentifyNamespaceIdDescriptorList:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify -descriptors [-namespace (namespace id)]
DumpIdentifyNamespaceList:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -namespace ('attached' | 'allocated' | 'IOAllocated') [-csi (csi id)]
DumpIdentifyNSGranularityList:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify -ns_granularity
DumpIdentifyUUIDList:
    dump [-help|-h] -destination (path) [-output|-o (text|nvmxml|json)] [-ssd (Index|SerialNumber|Physi-
calPath)] -identify -uuidlist
DumpNVMeLog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] -nvmelog (log name, log ID, or 'list') [NamespaceId = ((int))] [LogSpecificField =
 ((int))] [LogSpecificId = ((int))] [UUIDIndex = ((0-127))]
    [RetainAsynchronousEvent = ((true|false))] [LogPageOffset = ((int))] [NumDWORDs = ((int))]
DumpPersistentEventLog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|Phys-
icalPath) -persistenteventlog
DumpSystemSnapshot:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|Phys-
icalPath) -SystemSnapshot
eDriveEnabled:
    set [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 EDriveSupported = ('true')
EnableLog:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -system EnableLog = ('true'|'false')
EnableLSIAdapter:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -system EnableLSIAdapter = ('true'|'false')
EnduranceAnalyzer:
    reset [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -endurance-
analyzer
EventLog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] -eventlog
fdp:
```

```
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -fdp Enable =
 (true|false) [fdpcidx = (index))] [egid = (egid)]
fdpevents:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -fdpevents
 Enable = (true|false) NamespaceId = (int) ph = (ph) [Save = (true|false)] events = (events list)
FirmwareActivate:
    load [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -firmwareac-
tivate FirmwareSlot = ('1|2|3|4|5|6|7') [CommitAction = (2|3)]
FirmwareActivationNotices:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEvent-
Config FirmwareActivationNoticesConfiguration = ('true'|'false')
FirmwareUpdate:
    load [-help|-h] [-force|-f] [-source (path)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNum-
ber|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, feature name or 'list') [-namespace (namespace id)]
 [UUIDIndex = ((0-127))] [TransferBytes = ((int))] [Select =
    ('current'|'default'|'saved'|'capabilities')] [DWORD11 = (32 bit hex)]
HDATemperature:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -hdatem-
perature
HealthCriticalWarnings:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEvent-
Config SMARTHealthCriticalWarningsConfiguration = (value)
HMCEnabled:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) HMCEnabled =
 ('true'|'false')
HostBehaviorSupport:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -HostBehav-
iorSupport [AdvancedCommandRetryEnable = (true|false)] [ExtendedTelemetryDataArea4Supported = (true|
false)] [LbaFormatExtensionEnable = (true|false)]
IdentifyDevice:
    show [-help|-h] [-output|-o (text|nvmxml|json|csv)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -
identify
IdentifyNamespace:
    show [-help|-h] [-output|-o (text|nvmxml|json|csv)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -
identify -namespace (namespace id)
LatencyStatistics:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -laten-
cystatistics ('reads'|'writes') [Type = (0-3)]
LatencyTrackingEnabled:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) Latency-
TrackingEnabled = ('true'|'false')
LogFile:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -system LogFile = (file name)
MaximumLBA:
    set [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 MaximumLBA = (numGB|1-100%|LBA|'native')
```

```
NamespaceAttributeNotices:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEvent-
Config NamespaceAttributeNoticesConfiguration = ('true'|'false')
NcqSupport:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -ncqsupport
 IsEnabled = ('true'|'false')
Nlog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] -nlog
NVMeFormat:
    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|2|3)]
    [ProtectionInformationLocation = (0|1)] [MetadataSettings = (0|1)] [Timeout = (seconds)]
NVMeReset:
    reset [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -nvmecon-
troller
OCPClearPCIeCorrectable:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCP-
ClearPCIeCorrectable ClearCounter = ((true))
Performance:
    show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] [-ssd
 [(Index|SerialNumber|PhysicalPath)]] -performance
PerformanceBoosterShow:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -performance-
booster
PerformanceBoosterStart:
    start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -perfor-
mancebooster
PerformanceBoosterStop:
    stop [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -performance-
booster
PhyConfig:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) PhyConfig =
 (0|1|2|3)
PhyCounters:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -phycoun-
ters
PhysicalSectorSize:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) PhysicalSec-
torSize = (512|4096)
PhySpeed:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) PhySpeed =
 (1.5|3|6)
PLITestTimeInterval:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) PLITestTimeIn-
terval = (0-6, 8-15 for S4520 Series, 0-6 for all other SATA drives)
PowerGovernorMode:
```

```
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) PowerGovernor-
Mode = (0|1|2)
PSIDRevert:
    start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 -psidrevert (psid)
ReadErrorRecoveryTime:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) ReadError-
RecoveryTimer = (value)
Sanitize:
    start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 -sanitize [(block|crypto|overwrite|exit_failure)] [NoDeallocateAfterSanitize = (true|false)] [Over-
writeInvertPattern = (true|false)] [OverwritePassCount = (integer)]
    [AllowUnrestrictedExit = (true|false)] [OverwritePattern = (32-bit hex pattern)] [ReturnImmediately
 = (true|false)]
SATAGeneralPurposeLog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] -gpl (log address) [PageNum = [(page #)]] [SectorCount = [(sectors)]]
Scan:
    start [-help|-h] [-output|-o (text|nvmxml|json)] -scan [(DataIntegrity|ReadScan|Logs)] [-ssd
 [(Index|SerialNumber|PhysicalPath)]] [IncludeOS = (true|false)] [FullScan = (true|false)] [Path =
 ((drive letter))] [DirectoryPath = ((file path))] [IncludeSystemInfo =
    (true|false)]
Sensors:
    show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] [-ssd
 [(Index|SerialNumber|PhysicalPath)]] -sensor
SetDSSDAsynEventConfiguration:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPDSSDA-
syncEventConfiguration DSSDAsyncEventConfiguration = ('true'|'false')
SetDSSDPowerState:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPDSSDPow-
erState DSSDPowerState = (Watts)
SetErrorInjection:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPErrorIn-
jection [ErrorInjectionEntries = ((tilde separated entry list))] [File = (path to input file)]
SetFeature:
    set [-help|-h] [-output|-o (text|nvmxml|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)]
SetIEEESilo:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -
OCPIEEE1667Silo Enable = ('true'|'false')
SetLatencyMonitor:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPLatency-
Monitor [Save = ((true|false))] [ActiveBucketTimerThreshold = (16 bit hex)] [ActiveThresholdA = (8 bit
 hex)] [ActiveThresholdB = (8 bit hex)] [ActiveThresholdC = (8 bit
    hex)] [ActiveThresholdD = (8 bit hex)] [ActiveLatencyConfiguration = (16 bit hex)] [ActiveLaten-
cyMinimumWindow = (8 bit hex)] [DebugLogTriggerEnable = (16 bit hex)] [DiscardDebugLog = (8 bit hex)]
 [LatencyMonitorFeatureEnable = (8 bit hex)] [File = (path to input
```

```
    file)]
SetLED:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -LEDActivity
 [IdleState = (on|off)] [DurationBase = (25|50)] [FormatOnMultiplier = (0-15)] [FormatOffMultiplier =
 (0-15)] [IoOffMultiplier = (0-15)] [IoOnMultiplier = (0-15)]
SetPLPCheck:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPPLPCheck
 PLPCheckInterval = (interval value)
SetReadonlyWriteThroughMode:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPReadOnly-
WriteMode Mode = (1|2|3)
SetTelemetryProfile:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -OCPTeleme-
tryProfile TelemetryProfile = (value)
SetTimestamp:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -Timestamp
 Timestamp = (value)
ShowEnduranceAnalyzer:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -endurancean-
alyzer
ShowIdentifyController:
    show [-help|-h] [-output|-o (text|nvmxml|json|csv)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -
identify -nvmecontroller
ShowIdentifyControllerList:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] [-name-
space (namespace id)] -nvmecontroller
ShowIdentifyIOCommandSet:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -identify
 -iocommandset
ShowIdentifyNamespaceIdDescriptorList:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -identify
 -descriptors [-namespace (namespace id)]
ShowIdentifyNamespaceList:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -name-
space ('attached' | 'allocated' | 'IOAllocated') [-csi (csi id)]
ShowIdentifyNSGranularityList:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -identify
 -ns_granularity
ShowIdentifyUUIDList:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|PhysicalPath)]] -identify
 -uuidlist
ShowNVMeLog:
    show [-help|-h] [-log-entries|-e] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNumber|Physi-
calPath)]] -nvmelog (log name, log ID, or 'list') [NamespaceId = ((int))] [LogSpecificField = ((int))]
 [LogSpecificId = ((int))] [UUIDIndex = ((0-127))]
    [RetainAsynchronousEvent = ((true|false))]
ShowPartitionInfo:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -partition [(id)] -ssd [(Index|SerialNumber|Physi-
calPath)]
```

```
ShowPersistentEventLog:
    show [-help|-h] [-recent-entries|-e (int)] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNum-
ber|PhysicalPath) -persistenteventlog
ShowPLITestTimeInterval:
    show [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -PLITest-
TimeInterval
SMART:
    show [-help|-h] [-output|-o (text|nvmxml|json|csv)] [-display|-d (Property1,...)] [-all|-a] [-ssd
 [(Index|SerialNumber|PhysicalPath)]] -smart [(id)] [IncludeNVMeSmartHealthLog = (true|false)]
SMBusAddress:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -SMBus SMBu-
sAddress = (address) [SMBusSelector = (selector)]
SolidigmSSD:
    show [-help|-h] [-display|-d (Property1,...)] [-all|-a] [-output|-o (text|nvmxml|json)] -ssd
 [(Index|SerialNumber|PhysicalPath)]
SSCEnabled:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) SSCEnabled =
 ('true'|'false')
Standby:
    start [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -standby
System:
    show [-help|-h] [-display|-d (Property1,...)] [-output|-o (text|nvmxml|json)] -system
TelemetryLogDump:
    dump [-help|-h] [-destination (path)] [-dataarea (1-4)] [-output|-o (text|nvmxml|json)] [-ssd
 [(Index|SerialNumber|PhysicalPath)]] -telemetrylog [HostInitiated = (true|false)] [RetainAsynchronou-
sEvent = ((true|false))]
TelemetryLogNotices:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -AsyncEvent-
Config TelemetryLogNoticesConfiguration = ('true'|'false')
TemperatureLoggingInterval:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) TemperatureL-
oggingInterval = (time)
TempThreshold:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -TempThreshold
 TempThreshold = (value)
Trim:
    start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 -trim StartLBA = (integer) Count = (integer)
UpdateIncidentReport:
    update [-help|-h] -source (path) -destination (path) [-v] [-output|-o (text|nvmxml|json)]
Version:
    version [-all|-a] [-display|-d (Property1,...)] [-help|-h] [-output|-o (text|nvmxml|json)]
WorkloadTracker:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -Workload-
Tracker WorkloadTrackerEnable = (value) [LogGroup = (value)] [SampleTime = (value)]
WorkloadTrackerDirect:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -Workload-
Tracker WorkloadTrackerControl = (value)
WorkloadTrackerThreshold:
```

```
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) -Workload-
TrackerThreshold WorkloadTrackerThreshold = (value)
WorkloadTrackerTimedLog:
    dump [-help|-h] [-destination (path)] [-output|-o (text|nvmxml|json)] [-ssd [(Index|SerialNum-
ber|PhysicalPath)]] WorkloadLogTime = ((sec)) WorkloadLogInterval = ((sec))
WriteCache:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) WriteCacheEn-
abled = ('true'|'false')
WriteCacheReorderingState:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) WriteCacheRe-
orderingStateEnabled = ('true'|'false')
WriteCacheState:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) WriteCacheS-
tate = (1|2|3)
WriteErrorRecoveryTime:
    set [-help|-h] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath) WriteError-
RecoveryTimer = (value)
WriteSame:
    start [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)] -ssd (Index|SerialNumber|PhysicalPath)
 -writesame [Count = (sectors)] [HexPattern = (0x00 - 0xFFFFFFFF)] [LBA = (0-Max LBA)]
```

Sample Output (Single Command)

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

```
sst.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:
```

Examples

Lists all supported commands.

```
sst help
```

Lists all commands where the verb is set.

```
sst help verb=show
```

Lists the detailed help for the given Name WriteCacheState.

```
sst help Name=WriteCacheState
```

3.5.2 Version Command

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

Syntax

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

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'.

Targets

This command does not support any targets.

Properties

This command does not support any properties.

Return Data

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

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

Sample Output

Default output in text.

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

Name: Solidigm(R) Storage Tool
Version: 3.0.0
Description: Interact and configure SSDs.
```

Default output in JSON.

```
> sst.exe version –o json
{
        "Version Information":
```

```
        {
                "Name":"Solidigm(R) Storage Tool",
                "Version":"3.0.0",
                "Description":"Interact and configure SSDs."
        }
}
```

Examples

Display the available version information for the SST.

```
version
```

Display the End-User License for the SST software components.

```
version –d license
```

3.6 Debug

3.6.1 Tool Debug File

The SST 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 *on page 89* and Modify Tool Configuration *on page 91* for more information on enabling the debug log.

3.6.2 Debug logs Package

This command will dump logs from the device, gather system info and package all the logs to a zip file. It can be analyzed by Solidigm to debug the drive:

Syntax

```
sst dump[-help|-h] -debuglogs [-v] [–destination (filename)] [-output|-o (text|nvmxml|json)] [-ssd
 (Index|SerialNumber|PhysicalPath)] -type (‘all’|'list'|'identify'|’nvmelogs’|'system'|'telemetry')
```

Options

Option	Description
[-help|-h]	Displays help for the command.
[-destination (filename)]	Specifies a filename to save the dump data to. If -destination option is not given, default filename is assigned based on target and drive serial number.
[-output|-o (text | nvmxml | json)]	Changes the format of the Return Data. Supported output options are: ‘text’ (Default), ‘json’, and ‘nvmxml’. This option does not affect the output in the binary file.
[-v]	If provided, verbose (detailed) output is displayed on the screen.

Targets

Target	Description
-ssd (Index|SerialNum-ber|PhysicalPath)	Dump the selected data from the given SSD.
-type	If provided, it allows user to generate specific log package. If not provided, default is all. • Options: a all b list c identify d nvmelogs e system f telemetry

Properties

This command does not support any properties.

Limitations

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

Only available on selected drives. Currently, supported by D7-PS1010 Series

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.

Examples

```
>
sst dump -debuglogs -ssd 1
sst dump -debuglogs -v ssd 1
sst dump -debuglogs -ssd 1 -type list
sst dump -destination DebugPackage.zip -debuglogs -v -ssd SERIALNUMBER
sst dump -debuglogs -v -ssd SERIALNUMBER -type nvmelogs
sst dump -destination DebugNvmeLogs.zip -debuglogs -v -ssd SERIALNUMBER -type nvmelogs
```

4 Response Codes

The following table lists some of most common error and status codes that are returned from the SST. 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.

5 Examples

5.1 Display Tool Help

Use `help` command line option to display the help table.

```
sst.exe help
```

5.2 Display Tool License

Use the `version` command with the license property to display the End-User license agreement for SST.

```
sst.exe version -d license
```

5.3 Display Drives

Use the `show` command to display a list of drives on the system.

```
sst.exe show -ssd
```

5.4 Bypass Prompt (force)

Use the `force` option to bypass the warning prompts associated with `load` and `start` commands.

5.5 Debug Log Files

The tool generates a detailed log of the tool's functionality that you can use for debugging purposes and send out for further analysis of tool issues. See Debug *on page 104*.

5.6 Display Drive Info

Use the `show` command's `-ssd` option to select which drive to execute functions on and provides a simple summary of each drive found. Use the `show` command's `-a -ssd 1` option to display a verbose output of all the information the tool can get on that particular drive.

```
sst.exe show -a -ssd 1
```

5.7 Identify Device

Use the `show` verb along with the `-identify` target to read and parse identify information. See Show Device Identification Structures *on page 46* for details.

Note: Identify device contains a large amount of data and the console window may not be large enough to display it in a readable format.

```
sst.exe show -identify -ssd 1
sst.exe show -identify -ssd 1 -nvmecontroller
```

5.8 Sensor or SMART Data

Use the `-sensor` command to read and parse the Health Sensors. Use the `-smart` command to read and parse the SMART attribute information of the selected drive.

Show all the sensor information for all SSDs

```
sst.exe show -sensor
```

Show all the SMART properties for the SSD at index 1.

```
sst.exe show -smart -ssd 1
```

5.9 Delete

Use the `Delete` command to erase all the data on the drive.

```
sst.exe delete -ssd 1
```

You will be prompted unless using the `-force` option.

```
WARNING: You have selected to delete the drive!
Proceed with the delete? (Y/N)
```

To bypass the warning prompts, use the `-force` option.

```
sst.exe delete -f -ssd 1
```

5.10 Change Maximum LBA

Use the `MaximumLBA` property to change the drive's maximum storage capacity up to the native capacity of the drive (that is, MAX LBA).

For more details, see "Over-provisioning" section.

> **Note:** Always run the `delete` command before altering the Maximum LBA of a drive. After modifying the maximum LBA, you must perform a complete power shutdown to properly reflect the changes.

The `MaximumLBA` property has four options:

The `native` option resets the drive back to its native Max LBA, or 100% of the drive.

```
sst.exe set -ssd 1 MaximumLBA=native
```

The `LBA` option specifies the drive's max LBA with a specific number. The number entered must be a decimal literal.

User input for Maximum LBA is rounded up to nearest GB

This example sets the drive's Max LBA to 55555:

```
sst set -ssd 1 MaximumLBA=55555
```

The x% percent changes the drive's size based on a percentage of native max. Values of 1-100 are valid, where a value of 100 is equivalent to using the native option.

```
sst set –ssd 1 MaximumLBA=80%
```

The xGB capacity option sets the drive to a specific capacity in gigabytes. This will result in an error if the given number of gigabytes is less than 1 or is greater than the drive's max capacity.

```
sst set –ssd 1 MaximumLBA=80GB
```

5.11 Update Firmware

Firmware Update is achieved through the load command verb and is used to update the firmware of the selected drive:

```
sst.exe load -ssd 1
```

The SST handles both updates using Windows process or Linux process.

Full Windows Process: The tool handles both updates automatically.

For example:

```
sst.exe show –ssd 1
- Ssd Index 1 –
Bootloader: 8B1B012E
DevicePath: \\\\.\\PHYSICALDRIVE1
DeviceStatus: Healthy
Firmware: 8DV10131
FirmwareUpdateAvailable: Firmware=8DV10151 Bootloader=8B1B012F
Index: 1
ProductFamily: Intel SSD DC P3700 Series
ModelNumber: INTEL SSDPEDMD800G4
SerialNumber: CVFT4174002A800CGN

sst.exe load –ssd 1
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware…
Firmware update successful. Please reboot the system.

sst.exe show –ssd 1
- Ssd Index 1 -
Bootloader: 8B1B012F
DevicePath: \\\\.\\PHYSICALDRIVE1
DeviceStatus: Healthy
Firmware: 8DV10151
FirmwareUpdateAvailable: Firmware is up to date as of this tool release.
Index: 1
ProductFamily: Intel SSD DC P3700 Series
ModelNumber: INTEL SSDPEDMD800G4
SerialNumber: CVFT4174002A800CGN
```

Linux Process: User must call the "load" function twice with a system shutdown and reboot in between.

First update:

```
sst show –ssd
- Ssd Index 0 –
Bootloader: 8B1B012E
DevicePath: /dev/nvme0n1
DeviceStatus: Healthy
Firmware: 8DV10131
FirmwareUpdateAvailable: Firmware=8DV10151
Index: 0
ProductFamily: Intel SSD DC P3700 Series
ModelNumber: INTEL SSDPEDMD800G4
SerialNumber: CVFT4174002A800CGN


[root@linuxul2br]# Sst load –ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware…
Firmware update successful. Please reboot the system.
[root@linuxul2br]#
```

The user then shuts down the system and reboots.

In the second update, the tool shows the next update to the BL12E and FW 131 combined package:

```
sst show –ssd
- Ssd Index 0 –
Bootloader: 8B1B012E
DevicePath: /dev/nvme0n1
DeviceStatus: Healthy
Firmware: 8DV10131
FirmwareUpdateAvailable: Firmware=8DV10151 Bootloader=8B1B012F
Index: 0
ProductFamily: Intel SSD DC P3700 Series
ModelNumber: INTEL SSDPEDMD800G4
SerialNumber: CVFT4174002A800CGN

[root@linuxul2br]# Sst load –ssd 0
WARNING! You have selected to update the drives firmware!
Proceed with the update? (Y|N): y
Updating firmware…
Firmware update successful. Please reboot the system.
[root@linuxul2br]#
```

The user shuts down the system and reboots.

```
sst show –ssd
- Ssd Index 0 –
Bootloader: 8B1B012F
DevicePath: /dev/nvme0n1
DeviceStatus: Healthy
Firmware: 8DV10151
```

```
FirmwareUpdateAvailable: Firmware is up to date as of this tool release
Index: 0
ProductFamily: Intel SSD DC P3700 Series
ModelNumber: INTEL SSDPEDMD800G4
SerialNumber: CVFT4174002A800CGN
```

5.12 Endurance Analyzer

Use the `enduranceanalyzer` property to calculate the life expectancy of the drive's media based on a user workload. Please note that this feature specifically measures the expected lifetime of the media, not the overall expected lifetime of the drive.

The steps are:

1. Reset SMART Attributes using the reset option.

   ```
   sst.exe reset –ssd 2 enduranceanalyzer
   ```

2. Optionally, remove the SSD and install in test system.
3. Apply minimum 60-minute workload (per 240GB) to SSD.
4. Reinstall SSD in original system if needed. Compute endurance using the show command. You can also specify the EnduranceAnalyzer property specifically using the –display (`-d`) option.

   ```
   sst.exe show –a –ssd 2
   sst.exe show –d enduranceanalyzer –ssd 2
   ```

5. Read the Endurance Analyzer value which represents the life expectancy of the drive's media in years.

Note: Endurance analyzer measures media wear only. Using media wear, calculations are performed to determine the expected life of the drive media. Please do not use this feature as an overall indicator of drive life expectancy. Media is one component of many affecting drive lifespan.

5.13 Power Governor Mode

```
sst.exe show -a –ssd 1
sst.exe show –d powergovernormode –ssd 1
```

To explicitly set the power governor mode, provide one of the supported mode options.

```
sst.exe set –ssd 1 powergovernormode=0
```

5.14 JSON - Output

Supports output to all verbs.

Note: The parsed output from "dump" still goes to the file. The output to the screen is status/error text and that is what is affected by the `-output` option.

5.14.1 Example

```
sst.exe show –o json –ssd
{
“Ssd Index 0”:
```

```
{
“DevicePath”:\\\\.\\PHYSICALDRIVE00,
“DeviceStatus”:”Healthy”,
“Firmware”:”D2010370”,
“FirmwareUpdateAvailable”:”Firmware is up to date as of this tool release.”,
“Index”:0,
“ProductFamily”:”Intel SSD DC S3500 Series”,
“ModelNumber”:”INTEL SSDSC2BB080G4”,
“SerialNumber”:”BTWL2390005K080DGN”
}
“Ssd Index 1”:
{
“DevicePath”:\\\\.\\PHYSICALDRIVE01,
“DeviceStatus”:”Healthy”,
“Firmware”:”5DV10270”,
“FirmwareUpdateAvailable”:”Firmware is up to date as of this tool release.”,
“Index”:1,
“ProductFamily”:”Intel SSD DC S3700 Series”,
“ModelNumber”:”INTEL SSDSC2BA400G3”,
“SerialNumber”:”BTTV220600B5400HGN”
}
“Ssd Index 2”:
{
“Bootloader”:”8B1B012E”,
“DevicePath”:\\\\.\\PHYSICALDRIVE02,
“DeviceStatus”:”Healthy”,
“Firmware”:”8DV10131”,
“FirmwareUpdateAvailable”:”Firmware is up to date as of this tool release.”,
“Index”:2,
“ProductFamily”:”Intel SSD DC P3600 Series”,
“ModelNumber”:”INTEL SSDPEDME800G4D HHHL NVME 800GB”,
“SerialNumber”:”CVFT4174002C800CGN”
}
}
```

5.15 NVMXML - Output

Supports output to all verbs.

Note: The parsed output from "dump" still goes to the file. The output to the screen is status/error text and that is what is affected by the `-output` option.

5.15.1 Example

```
sst.exe show –o nvmxml –ssd
<RootList>
<Ssd_Index_0>
<DevicePath>\\\\.\\PHYSICALDRIVE0</DevicePath>
<DeviceStatus>Healthy</DeviceStatus>
```

```
<Firmware>D2010370</Firmware>
<FirmwareUpdateAvailable>Firmware is up to date as of this tool release.</FirmwareUpdateAvailable>
<Index>0</Index>
<ProductFamily>Intel SSD DC S3500 Series</ProductFamily>
<ModelNumber>INTEL SSDSC2BB080G4</ModelNumber>
<SerialNumber>BTWL2390005K080DGN</SerialNumber>
</Ssd_Index_0>
<Ssd_Index_1>
<DevicePath>\\\\.\\PHYSICALDRIVE1</DevicePath>
<DeviceStatus>Healthy</DeviceStatus>
<Firmware>5DV10270</Firmware>
<FirmwareUpdateAvailable>Firmware is up to date as of this tool release.</FirmwareUpdateAvailable>
<Index>1</Index>
<ProductFamily>Intel SSD DC S3700 Series</ProductFamily>
<ModelNumber>INTEL SSDSC2BA400G3</ModelNumber>
<SerialNumber>BTTV220600B5400HGN</SerialNumber>
</Ssd_Index_1>
<Ssd_Index_2>
<DevicePath>\\\\.\\PHYSICALDRIVE2</DevicePath>
<DeviceStatus>Healthy</DeviceStatus>
<Firmware>8DV10131</Firmware>
<FirmwareUpdateAvailable>Firmware is up to date as of this tool release.</FirmwareUpdateAvailable>
<Index>2</Index>
<ProductFamily>Intel SSD DC P3600 Series</ProductFamily>
<ModelNumber>INTEL SSDPEDME800G4D HHHL NVME 800GB</ModelNumber>
<SerialNumber>CVFT4174002C800CGN</SerialNumber>
</Ssd_Index_2>
</RootList>
```