SeaTools™ SSD CLI

User Guide

100821832, Rev. F
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Revision History

Version and Date	Description of Changes
Rev E, August 2018	Updated Section 1.5, Installation from a Boot Drive.
Rev D, July 2018	Updated the following sections: ■ Installation from an OS Command Line ■ Installation from an OS GUI ■ Set Tunable Capacity Command ■ Panic Log Count Command ■ Extract Panic Log Command ■ Erase Panic Dumps Command
Rev C, July 2018	Updated the following sections: ■ Installation from an OS Command Line ■ Installation from an OS GUI
Rev B, June 2018	Updated the following sections: ■ Installation from an OS Command Line
Rev A, May 2018	First release of the document.

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1. Introduction

This section contains the following subsections:

- Overview
- Supported Systems
- Installation from an OS Command Line
- Installation from a Boot Drive
- Conventions

1.1 Overview

This document describes how to use Seagate's SeaTools™ SSD CLI, a command line interface tool for managing Seagate solid state drives on a system. SeaTools SSD CLI runs on the Microsoft Windows and Linux operating systems, and provides the following features and tools for managing SSDs:

- Displays SSD information such as model, capacity, temperature, and life remaining
- Monitors the health of SSDs
- Displays Self-Monitoring Analysis and Reporting Technology (SMART) attributes, serial number, and model number
- Performs firmware updates
- Runs diagnostic commands
- Runs erase and sanitize commands

1.2 Supported Systems

The SeaTools SSD CLI is supported on the following operating systems:

- Windows
  - Windows
  - Windows Server
- Linux
  - Ubuntu
  - RedHat
  - CentOS
  - SUSE Linux Enterprise
- Bootable USB Drive

1.3 Installation from an OS Command Line

SeaTools SSD CLI can be installed on Windows or Linux computers. This section shows installation from an OS Command Line.

To install SeaTools SSD CLI from an OS command line:

To run the CLI installation file, type the following on the command line.

- For Windows, type **SeaTools_SSD_CLI.exe -i console**
- For Linux, type **SeaTools_SSD_CLI.bin -i console**

The installation proceeds without further user input.

1.4 Installation from an OS GUI

This section shows the installation from an OS GUI.

To install SeaTools SSD CLI from an OS GUI:

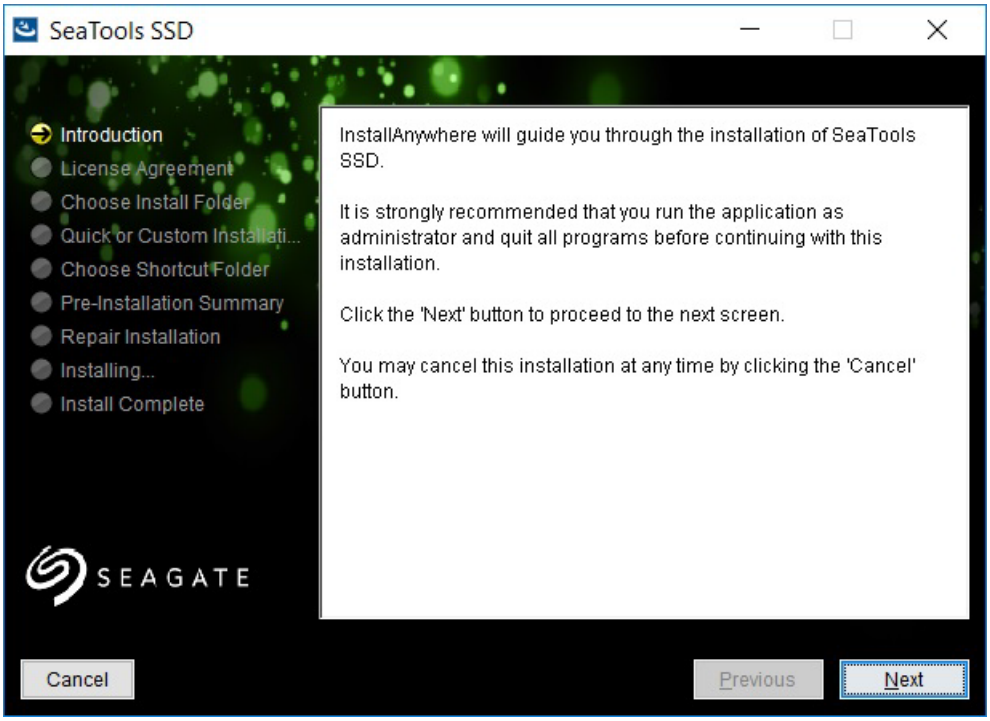
Run the GUI installation file.

- For Windows, run **SeaTools_SSD_CLI.exe**
- For Linux, run **SeaTools_SSD_CLI.bin**

Follow these steps:

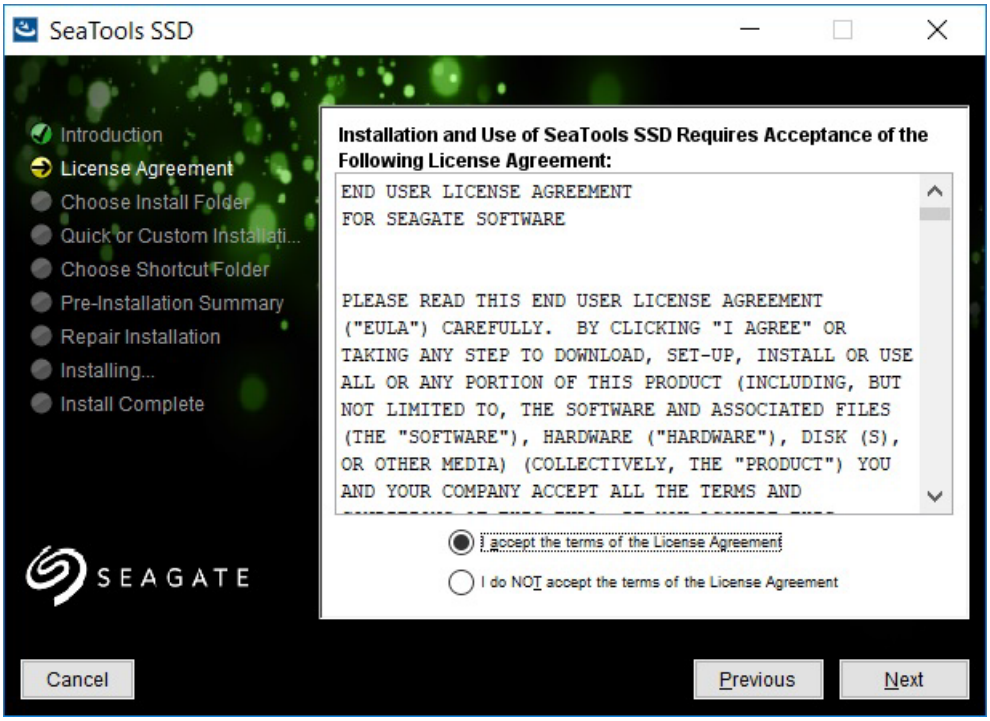
1. Click **Next** when the following window appears.

Figure 1 Installation—Introduction



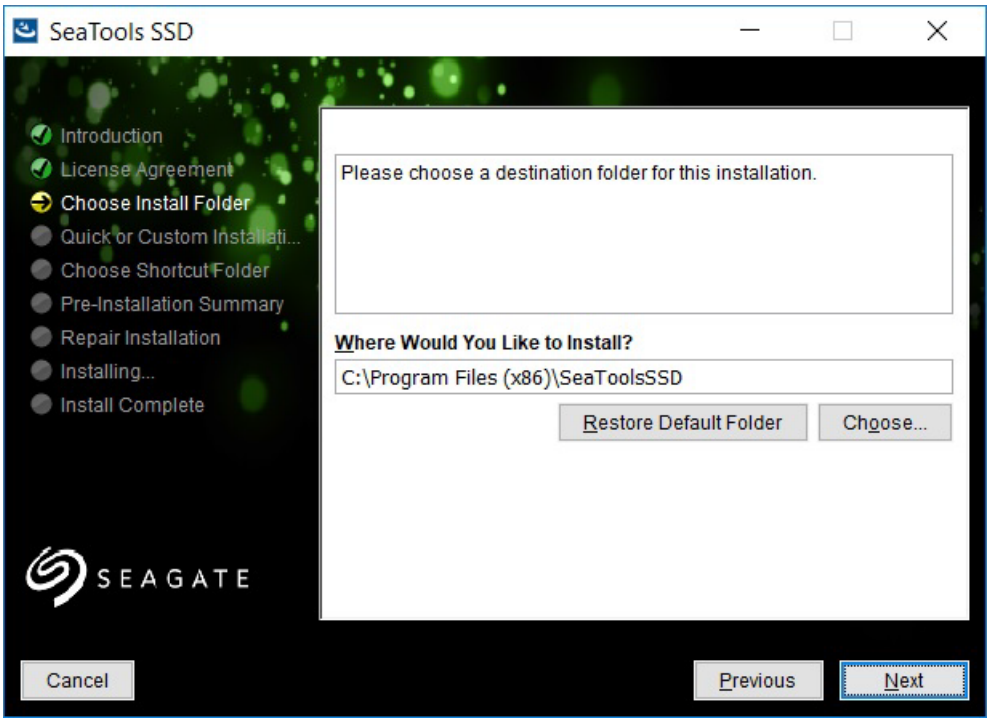
2. Read and accept the user license agreement and click **Next** when the following window appears.

Figure 2 Installation—License Agreement



3. Enter the directory to which you want to install the application or accept the default directory when the following window appears.

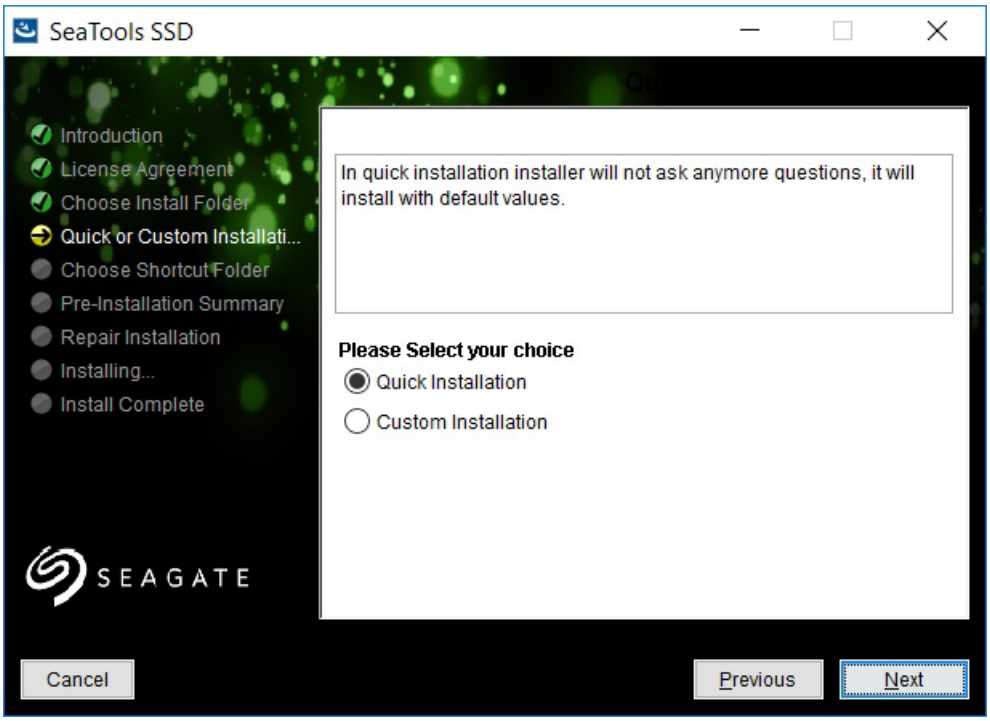
Figure 3 Installation—Choose Install Folder



4. Click **Next.**

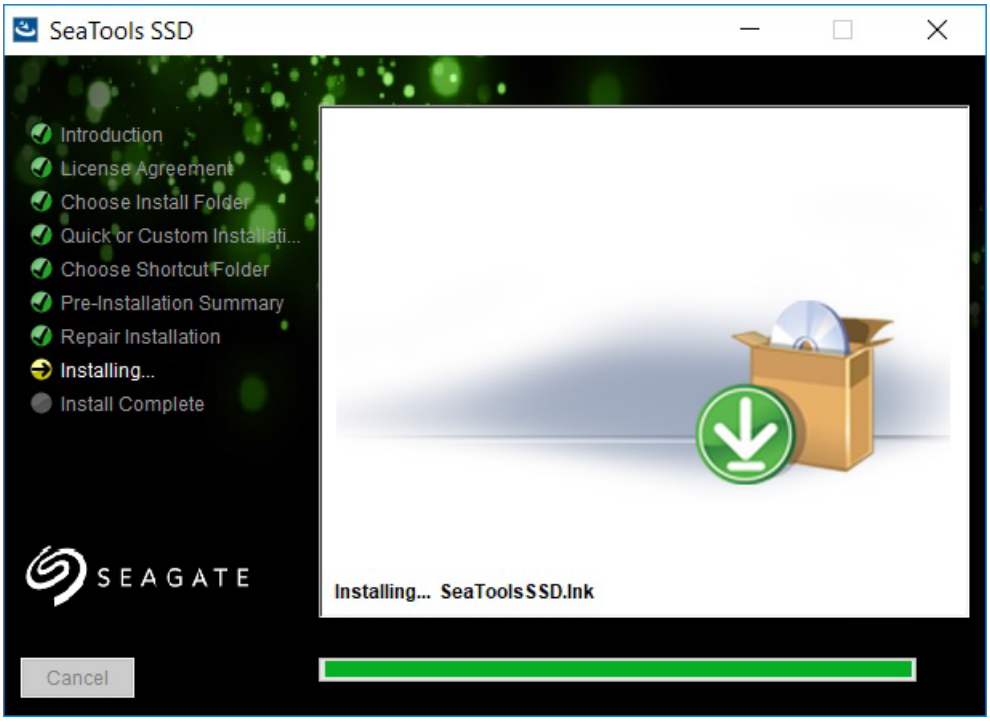
5. Select installation type and click **Install** when the following window appears.

Figure 4 Select Installation Type



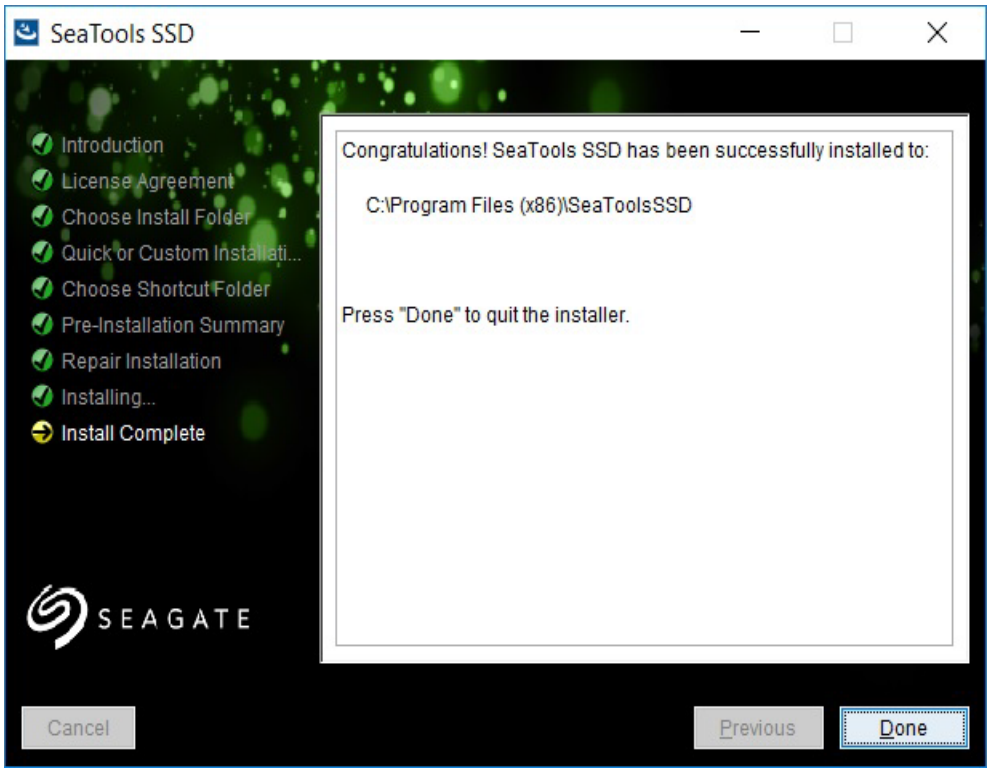
The installer shows the following image during the installation process.

Figure 5 Installation Progress



6. Click **Done** when following window appears

Figure 6 Installation—Install Complete



The installation process is complete.

1.5 Installation from a Boot Drive

NOTE Before installing from a Boot Drive, you must enable your thumb drive as a boot device for the system, and it must appear before any other eligible boot device. See your system documentation.

To install on a Windows computer from a boot drive, follow these steps:

1. Go to the SeaTools Downloads page on the Seagate website:

   https://www.seagate.com/support/downloads/seatools/

2. Download SeaTools Bootable to your thumb drive. SeaTools Bootable erases the data on your thumb drive and installs SeaTools SSD CLI.
3. With your thumb drive plugged into your computer, reboot or power on your computer.
4. SeaTools SSD CLI opens to the SSD CLI: prompt.
5. After this prompt, all commands listed in the SeaTools SSD CLI User Guide are valid.

The installation process is complete.

1.6 Conventions

This section contains the following subsections:

- Notation
- Case Sensitivity

1.6.1 Notation

The table below details notational conventions used for command line parameter and script language definitions.

Table 1 Notational Conventions

Symbol	Meaning
`->`	Is defined as ...
`a | b`	Alternatives (a or b)
`[...]`	Zero or one occurrence
`{...}`	Zero or more occurrences
`(a | b | c)`	Choose exactly one of the alternatives

1.6.2 Case Sensitivity

SeaTools SSD CLI commands are not case sensitive—*`SHOW`* is the same as *`Show`* or *`show`* or *`sHoW`*.

Strings within single quotes (' ') are case sensitive only to preserve the case entered by the user.

2. Modes

This section contains the following subsections:

- Overview
- Direct Input Mode
- Interactive Mode

2.1 Overview

The SeaTools SSD CLI runs under the following modes: Direct Input mode and Interactive mode. Both modes use the command-line switches detailed in the following table.

Table 2 CLI Mode Command Line Switches

Command	Description
`[-o outputfile]` `[-output outputfile]`	Specifies the output file name.
`[-f filename]` `[-file filename]`	Specifies a script file with CLI commands.
`[-h]` `[-help]`	Prints the usage information.
`[-v]` `[-version]`	Prints the CLI version.

2.2 Direct Input Mode

In Direct Input mode, enter a single command on the CLI command line. The command is executed and the results are printed.

Table 3 CLI Mode Command Line Switches

Command	Description
`SSDCLI [-o outputfile] "command"`	If no output file is specified, the results are sent to standard output (stdout). **NOTE** The order of parameters does not matter except that the command must be at the end and enclosed in double quotes.

2.3 Interactive Mode

In Interactive mode, commands are entered through an interactive shell. The shell maintains state, saves previous user commands, and so on.

Table 4 CLI Mode Command Line Switches

Command	Description
SSDCLI	The user can "focus" on a particular drive to work on. Command history shall be provided so the user can access a previously typed command by pressing the "UP" and "DOWN" arrow keys. The last 100 typed commands are stored in the command buffer.

3. Command Formats and Outputs

This section contains the following subsections:

- Overview
- Objects
- Verbs
- Strings
- Commands

3.1 Overview

A command starts with an object identifier, rather than a verb. The command format, with the object identifier as the initial tag, is as follows:

```
<[object identifier]> <verb> <[adverb | attributes | properties]> <[
key=value]>
```

To show the attributes of a disk with ID drive1, for example, type the following command:

```
/d0 show all
```

3.2 Objects

Objects are any system items that can be the target of a command. They are defined by a "/" followed by an object type letter and the object name.

SeaTools CLI currently has the object types described in the following table:

Table 5 Objects

Object	Description
`/d<drive name>`	The drive where to direct commands. ■ Drives are identified by unique integers
`/m<IP or hostname>`	The system where to direct commands. ■ As of v1.0, SeaTools CLI only supports "localhost." ■ This target is optional. If blank, a localhost is assumed. **NOTE** This command target is included because the user can extend the CLI to remote systems.

3.3 Verbs

Verbs specify actions that are directed to a specific target or actions directed to the command interpreter during interactive mode.

The SeaTools SSD CLI understands the following verbs:

- Diagnose start
- Diagnose status
- Diagnose log
- Download
- Erase
- Get diagnostics
- Help
- Refresh
- Rescan
- Sanitize
- Set-tunable
- Show
- Standby
- System-event log

NOTE For complete information on these verbs, see Section 4. *Commands*.

3.4 Strings

All strings are single quoted.

4. Commands

This section contains the following subsections:

- Management Commands
- Interactive Mode Commands

4.1 Management Commands

Management commands are issued to execute some action on a selected object(s). All objects must be drives. This section lists and describes the following management commands:

- Show All-Properties Command for a System
- Show Drives Command
- Show All-Properties Command for a Drive
- Show Property-Asset Command for a Drive
- Show Property-Version Command for a Drive
- Show Drive Property Drive-System-Information Command for a Drive
- Show SMART-Properties Command for a Drive
- Show Property Power-Features Command for a Drive
- Show Property Power-Capabilities Command for a Drive
- Show Property Power-State Command for a Drive
- Show Drive-Interface Command for a Drive
- Show Property Security Command for a Drive
- Download Command
- Erase Command (Supported by Linux Only)
- Refresh Command
- Rescan Command
- Standby Command
- Set Tunable Capacity Command
- Get Diagnostic Command
- Panic Log Count Command
- Extract Panic Log Command
- Erase Panic Dumps Command
- Diagnose Start Command
- Diagnose Status Command
- Diagnose Log Command
- Help Command
- System-event Log Command
- Sanitize Command

Table 6 Show All-Properties Command for a System

Parameter	Description

Command	`/system show all-properties`
	`/system show property <system-name | system-address | os-description | user>`
	`/system show <system-name | system-address | os-description | user>`

Function	Shows the following properties of the host system: ■ system-name ■ system-address ■ os-description ■ user

Output	`Machine = /mlocalhost`
	`System-name = <name>`
	`System-address = <address>`
	`Os-description = <description>`
	`User = <name>`

Table 7 Show Drives Command

Parameter	Description
Command	`show drives`
Function	Displays a list of all SSDs on the system.

Output	(For each SSD)
	`drive position = <n>`
	`device id =<n>`
	`device type = <SATA | NVME>`
	`device os name = <name>`
	`device address = <n:n:n:n>`
	`EEPROM/SPINOR version = <version | 0000000>`
	`Serial Number = <n>`
	`Lock mode = <n> [0=Default, 1-Manufacture]`

Table 8 Show All-Properties Command for a Drive

Parameter	Description
Command	`/d<device id> show all-properties`
Function	Lists all of the following properties of a single drive: ■ device-os-name ■ device-parent-os-name

Output	`machine = /mlocalhost`
	`drive = 2`
	`device-parent-os-name = PCI\VEN_8086&DEV_1C02&SUBSYS-_844D1043&REV_05\3&11583659&0&FA`
	`device-os-name = Seagate Nytro Client 141 ZA512CM10002[Disk 2]`
	`health-status = WARNING based on attribute check, some attri-bute(s) failed in the past`
	`model-number = Seagate Nytro Client 141 ZA512CM10002`
	`form-factor = 2.5 inch nominal form factor`
	`drive-serial-number = FECA076C1C0806552418`
	`wwn =`
	`controller-type = SF-2000`
	`chip-stepping = B01`
	`disk-capacity = 0`
	`used-space = 166359040`
	`free-space = 842723328`
	`firmware-version = ST0S1021`
	`rom-revision =`
	`driver-name = Microsoft`
	`driver-version = 10.0.14393.0`
	`driver-date = Wednesday, June 21, 2006 12:00:00 AM`
	`...`

Table 9 Show Property-Asset Command for a Drive

Parameter	Description
Command	`/d<device id> show property asset`
Function	Displays the following asset properties of a drive: ■ health-status ■ model-number ■ form-factor ■ serial-number ■ wwn ■ controller-type ■ chip-stepping ■ disk-capacity ■ used-space ■ free-space

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = asset`
	`health-status = WARNING based on attribute check, some attribute(s) failed in the past`
	`model-number = Seagate Nytro Client 141 ZA512CM10002`
	`form-factor = 2.5 inch nominal form factor`
	`drive-serial-number = FECA076C1C0806552418`
	`wwn =`
	`controller-type = SF-2000`
	`chip-stepping = B01`
	`disk-capacity = 0`
	`used-space = 166359040`
	`free-space = 842723328`

Table 10 Show Property-Version Command for a Drive

Parameter	Description
Command	`/d<device id> show property version`
Function	Displays the following version properties of a drive: ■ firmware-version ■ rom-version ■ driver-name ■ driver-version ■ driver-date ■ driver-provider

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = version`
	`firmware-version = ST0S1021`
	`rom-revision =`
	`driver-name = Microsoft`
	`driver-version = 10.0.14393.0`
	`driver-date = Wednesday, June 21, 2006 12:00:00 AM`
	`driver-provider = Microsoft`

Table 11 Show Drive Property Drive-System-Information Command for a Drive

Parameter	Description
Command	`/d<device id> show property drive-system-information`
Function	Displays the following drive-system-information properties of a drive: ■ boot-drive ■ os-volume-name

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = drive-system-information`
	`boot-drive = No`
	`os-volume-name = G:`

Table 12 Show SMART-Properties Command for a Drive

Parameter	Description
Command	`/d<device id> show property smart-properties`
Function	Shows the following SMART properties of a drive: ■ all ■ raw-read-error-rate ■ retired-rblock-count ■ device-power-cycle-count ■ soft-read-error-rate ■ gigabytes-erased ■ reserved-block-count ■ program-fail-count ■ power-loss-count ■ wear-range-delta ■ erase-fail-count ■ reported-io-error-detection-code-events ■ reported-uncorrectable-errors ■ temperature ■ on-the-fly-ecc-uncorrectable-error-count ■ reallocation-event-count ■ uncorrectable-sector-count ■ sata-r-crc-errors-error-count ■ uncorrectable-soft-read-error-rate ■ soft-ecc-correction-rate ■ drive-life-protection-status ■ ssd-life-left ■ power-fail-backup-health ■ lifetime-writes-from-host ■ lifetime-reads-from-host

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = smart`
	`smart attribute name = Unexpected Power loss Count`
	`attribute id = 192`
	`current value = 100`
	`raw value = 38`
	`worst value = 100`
	`flags = 18`
	`state = 3`
	`threshold = 0`
	`type = Old_age`
	`...`

NOTE The SMART properties of your SSD may differ from the above list.	

Table 13 Show Property Power-Features Command for a Drive

Parameter	Description
Command	`/d<device id> show property power-features`
Function	Shows the following power-features properties of a drive: ■ current-power-state ■ power-on-hours

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = power-features`
	`current-power-state = ACTIVE OR IDLE`
	`power-on-hours = 3384 hr`

Table 14 Show Property Power-Capabilities Command for a Drive

Parameter	Description
Command	`/d<device id> show property power-capabilities`
Function	Shows the following power-capabilities properties of a drive: ■ apm-supported ■ hipm-supported ■ dipm-supported ■ puis-supported ■ hipm-auto-partial-to-slumber-supported

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = power-capabilities`
	`apm-supported = Yes`
	`hipm-supported = Yes`
	`dipm-supported = Yes`
	`puis-supported = No`
	`hipm-auto-partial-to-slumber-supported = Yes`

Table 15 Show Property Power-State Command for a Drive

Parameter	Description
Command	/d<device id> show property power-state
Function	Shows the following power-state properties of a drive: ■ apm-state ■ apm-level ■ dipm-state ■ puis-state
Output	machine = /mlocalhost drive = 2 class = power-state apm-state = Enabled apm-level = 254 (Maximum performance) dipm-state = Disabled puis-state = Disabled

Table 16 Show Drive-Interface Command for a Drive

Parameter	Description
Command	/d<device id> show property drive-interface
Function	Shows the following drive-interface properties of a drive. ■ interface-type ■ int-mode ■ ata-version-supported ■ sata-interface-speed ■ negotiated-sata-interface-speed ■ ncq ■ sata-link-power-state
Output	machine = /mlocalhost drive = 2 class = drive-interface interface-type = SATA ata-version-supported = ATA8-AST, SATA 1.0a, SATA II: Extensions, SATA Rev 2.5, SATA Rev 2.6 sata-interface-speed = 1.5 Gbps, 3.0 Gbps, 6.0 Gbps negotiated-sata-interface-speed = 3.0 Gbps ncq = Enabled sata-link-power-state = ACTIVE OR IDLE

Table 17 Show Property Security Command for a Drive

Parameter	Description
Command	`/d<device id> show property security`
Function	Shows the following security properties of a drive: ■ security-state ■ tcg-supported ■ drive-frozen ■ drive-locked ■ security-supported ■ security-count-expired ■ master-password-capability ■ enhanced-erase-supported

Output	`machine = /mlocalhost`
	`drive = 2`
	`class = security`
	`security-state = Disabled`
	`tcg-supported = No`
	`drive-frozen = Yes`
	`drive-locked = No`
	`security-supported = Yes`
	`security-count-expired = No`
	`master-password-capability = No`
	`enhanced-erase-supported = Yes`

Table 18 Download Command

Parameter	Description
Command	`<[object identifier]> download file=<filename>`
Function	Downloads the specified firmware.
Output	`Downloading firmware to [drive] 0%...` `Downloaded firmware successfully to drive [drive]`

Table 19 Erase Command (Supported by Linux Only)

Parameter	Description
Command	`<[object identifier]> secure erase [enhanced] [master-password=<password>] [user-password=<password>]`
Function	Performs a secure erase.
Output	`Performed secure erase successfully on drive [drive]`

Table 20 Refresh Command

Parameter	Description
Command	`<[object identifier]> refresh smart-data`
Function	Refreshes the drive's SMART attribute values.
Output	`[drive] smart attributes refreshed`

Table 21 Rescan Command

Parameter	Description
Command	`rescan`
Function	Rescans system bus for new devices.

Output	(For each drive)
	`Drive position = <0 ... n>`
	`Device id = <0 ... n>`
	`Device type = <SATA | NVME>`

Table 22 Standby Command

Parameter	Description
Command	`<[object identifier]> standby`
Function	Sends a drive to the standby state.
Output	`Status = command finished successfully`

Table 23 Set Tunable Capacity Command

Parameter	Description
Command	`/d<drive-id> set-tunable op-mode=<performance/capacity>`
Function	Sets tunable capacity for the drive.
Output	`Status = command finished successfully`

This command changes drive mode between Performance-Optimized and Capacity-Optimized. The drive should not be holding user data when switching modes. You must reboot the system and reformat the drive after this operation.

Performance-Optimized mode reserves a percentage of the physical flash space. This reserved space (called Over Provisioning) enables the drive to increase speed and reduce wear on the rest of the flash. The cost is less user capacity.

Capacity-Optimized mode releases some of this reserved space (Over Provisioning). You can use this capacity to store user data. When the drive becomes full, random write performance may be affected.

NOTE This command works only for some Seagate drives. The tool will indicate if it works for your drive.

Table 24 Get Diagnostic Command

Parameter	Description
Command	`<[object identifier]> get-diagnostics output-folder=<output log folder>]`
Function	Gets diagnostic information and places it in the output folder. This command creates binary files that the user cannot decode.
Output	`Saves binary files in the output folder.` **NOTE** Seagate personnel might request these files.

NOTE This command works only for some Seagate drives. The tool will indicate if it works for your drive.

Table 25 Panic Log Count Command

Parameter	Description
Command	`<object identifier>  panic-log-count`
Function	Returns the number of panic logs in the drive.
Output	`Panic Dump Count = 0` `Status = command finished successfully`

NOTE This command works only for some Seagate drives. The tool will indicate if it works for your drive.

Table 26 Extract Panic Log Command

Parameter	Description
Command	`<object identifier> extract-panic-log-count output-file='file-name.bin' slot=0 [seek-type=scan]`
Function	Extracts a panic log from a drive and puts it in a file. ■ Output-file: The file name to store the panic dump ■ Slot: Slot number of the panic (0-17) ■ Seek-type: If required, set the value to scan.
Output	`Status = command finished successfully`

NOTE This command works only for some Seagate drives. The tool will indicate if it works for your drive.

Table 27 Erase Panic Dumps Command

Parameter	Description
Command	`<object identifier> erase-panic-dumps`
Function	Erases panic dump data from the drive.
Output	`Status = command finished successfully`

NOTE This command works only for some Seagate drives. The tool will indicate if it works for your drive.

Table 28 Diagnose Start Command

Parameter	Description
Command	`<[object identifier]> diagnose start test-type=<short-self-test | extend-self-test>`
Function	Runs a diagnostic scan. Can run online while drive is in use.
Output	`Diagnostics started on [drive] successfully.`

Table 29 Diagnose Status Command

Parameter	Description
Command	`<[object identifier]> diagnose status`
Function	Gets the status of any diagnostics running on a drive.

Output	`Display diagnostics status`
	`Offline dc status = 0`
	`Self test execution status = 0`
	`Self test execution remaining (%) = 0`
	`Time to complete offline dc = 30`
	`Time to complete self test = 0`

Table 30 Diagnose Log Command

Parameter	Description
Command	`<[object identifier]> diagnose log /test-type=extend-self-test`
Function	Gets the result of extended diagnostics that have run on a drive. Limited to extended self-test.
Output	`Display diagnostics results`

Table 31 Help Command

Parameter	Description
Command	`help <keyword>`
Function	Displays usage information for the specified keyword.

Output	`SSDCLI`
	
	`SSDCLI - LSL SF Command Line Interface (SSDCLI) manpage`
	`/ HTML Help Document Version 2.9.`
	
	`SYNOPSIS`
	`SSDCLI Interactive Mode`
	`SSDCLI -f file Process from a file`
	`SSDCLI command Process single command (batch mode)`
	
	`DESCRIPTION`
	`SSDCLI is a Command Line Interface Storage Management Software for ...`

Table 32 System-event Log Command

Parameter	Description
Command	`/d0 system-event-log output-file='system-event-log.bin`
Function	Reads the drive's system event log..
Output	The file containing the log, a binary file used by Seagate support personnel.

Table 33 Sanitize Command

Parameter	Description

Command	`ive-id> sanitize operation=<support-info|progress|block-erase|crypto|overwrite> [poll]`
	`operation type "support-info" will tell if sanitize feature is supported or not.`
	`operation type "progress" will tell if sanitize feature is in progress or not, if it is then will print percentage-completed.`
	`If [poll] option is given with operation=block-erase|crypto|overwrite, then command would run in polling fashion and will poll for sanitize status(progress) after every 5 sec until operation is completed, otherwise command would return right after starting sanitize and you have to manually poll the status by operation=progress option.`

Function	Erases content from the drive.
Output	`Performed sanitize command successfully on drive [drive]`

4.2 Interactive Mode Commands

Interactive Mode commands are used only in Interactive mode and are used to issue commands to the interpreter.

Table 34 Exit Command

Parameter	Description
Command	`exit|quit`
Function	Exit the interpreter.
Output	N/A

Seagate Technology LLC
AMERICAS Seagate Technology LLC 10200 South De Anza Boulevard, Cupertino, California 95014, United States, 408-658-1000
ASIA/PACIFIC Seagate Singapore International Headquarters Pte. Ltd. 7000 Ang Mo Kio Avenue 5, Singapore 569877, 65-6485-3888
EUROPE, MIDDLE EAST, AND AFRICA Seagate Technology SAS 16-18 rue du Dôme, 92100 Boulogne-Billancourt, France, 33 1-4186 10 00
Publication Number: 100821832, Rev. F,
January 2019