sTec Device Manager
User Guide
Version 2.0.0.130

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The following icon and text conventions are used throughout this document to identify additional information of which the reader should be aware.

CONVENTIONS		DESCRIPTION
CAUTION		This icon denotes the use of extreme caution and the user must exercise good judgment according to previous experience before advancing to the next procedure. The icon also indicates the existence of a hazard that could result in equipment or property damage, or equipment failure if the instructions are not observed.
NOTE		This icon denotes additional or related information that the user may find useful. It also identifies any information that relates to the safe operation of the equipment, software, or related items.
Bold	**Text**	Used to indicate **important technical notes**.
Bold Italic	***Text***	Used to indicate ***critical instructions***.
Light Blue	Text	Used to indicate a hyperlink or "jump" to a related topic or subtopic. In addition, the text may be **bold**.
Dark Blue Bold	**Text**	Used to indicate a hyperlink or "jump" to a related topic or subtopic. In addition, the text by be ***bold italic***.

REVISION HISTORY

REVISION STATUS SUMMARY SHEET			
REVISION	**DATE**	**PAGE(S)**	**DESCRIPTION**
2.0	08/15/2012	All	Initial release.
2.1	09/07/2012	All	Preliminary release.
2.2	10/12/2012	ii	Export Administration Regulations statement clarified.
		15	Table 1; added sTec ZeusRAM to list of supported products.
		17	Table 2; updated build number to 2.0.0.118 for archives.
		32	Figure 5; SMART Panel-SCSI Panel interface updated to reflect new option of “Clear Smart Data”.
		32	Topic; Clear Smart Alerts developed.
		44	Table 7; ClearSmartAlerts subcommand added to listing.
		50	Topic; ClearSmartAlerts developed for SDMCLI reference.
2.3	11/12/2012	All	Editorial and technical review.
		Title	Removed trademark notice from title, stylistic inconsistency.
		ii-79	Headers; removed CONFIDENTIAL from all headers. Obsolete specification.
			Footers; updated part number and revision date.
		77	Contact Information page updated.
2.4	04/05/2013	All	General review and edit.
		All	Screenshots have been updated according to new convention.
		Front	Title page information updated.
		Footers	Footer information updated.
		14	Table 1; updated supported family product listing.
		16	Table 2; updated build number to 2.0.0.130 for archives.
		Back	Back page information updated.

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Figure 1: sTec Device Manager

OVERVIEW

Welcome to the sTec Device Manager™ (SDM). The SDM is designed to efficiently assist in the administration of sTec Solid-State Drive (SSD) and Solid-State Accelerator (SSA) devices. While many IT organizations have embraced the benefits of solid-state technology, many of the current hard disk drive utilities have proven woefully inadequate in the management of enterprise solid-state devices. SDM provides the ability to easily update and configure sTec SSDs and SSAs.

AUDIENCE

This user guide is intended for system administrators, network administrators, and other IT professionals. It is therefore written specifically for a technically advanced audience; it is not intended for end-users that will eventually purchase the commercially available product. The *user*, as referenced throughout the manual, it primary concerned with industrial, commercial and military networking applications.

SUPPORTED PRODUCTS

The SDM can update and configure the following sTec SSDs and SSAs as outlined in Table 1.

Table 1: Supported Products

PRODUCT FAMILY	GENERATION	DESCRIPTION
s1120, s1122	Gen2	PCIe 2.1 x4 Lane Solid-State Accelerators (SSAs).
s620	Gen2	SATA (SATA II) Solid-State Drives (SSDs).
ZeusRAM	Gen3	ZeusRAM SAS (Serial-Attached SCSI) Solid-State Drives.
s440	Gen4	Fiber Channel (FC) Solid-State Drives (SSDs).
s840, s842, s846	Gen4	SAS (Serial-Attached SCSI) Solid-State Drives (SSDs).

FEATURES

FEATURE	DESCRIPTION
Cross-Platform Solution	Simplifies the management of sTec SSDs and SSAs in Windows and Linux enterprise environments.
GUI Drive Management	Manage sTec SSDs and SSAs using a user-friendly GUI interface.
CLI Drive Management	An alternate command line interface that supports the use of Windows batch files and Linux scripts to automate tasks.
Drive Health Check	SDM GUI is capable of manual or scheduled health checks to monitor the health and state of sTec SSDs and SSAs.
SDM Log File	SDM generates a log file to assist in the diagnosis of drive issues.
Multiple Drive Management	Simultaneous management of multiple drives, i.e., firmware download, sanitize and format, etc., for different drives.

SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Overview	Software solution that is independent of host hardware for managing multiple sTec drives.
Solid-State Device Compatibility	Any sTec SAS, Fibre Channel, PCIe and SATA solid state drive.
Operating Systems	Microsoft Windows Server 2008 R2, 64-Bit. Linux Distributions – OEL 5.6, RHEL 5/6, SUSE Enterprise 11, 64-Bit.
Capabilities	All inclusive sTec SSD management solution; firmware upgrades, format, sanitize, capture field data and drive statistics, retrieve S.M.A.R.T. data.
Management	GUI or CLI utilities to manage solid-state devices.

INSTALLATION

OVERVIEW

This section addresses issues regarding the compatibility, system requirements, installation and configuration of sTec Device Manager (SDM).

PREREQUISITES

The prerequisite software described below should be installed and configured before you install SDM.

OPERATING SYSTEMS

PREREQUISITE	DESCRIPTION
Microsoft Windows	Microsoft Windows Server 2003, Standard/Enterprise, 32-bit or 64 bit. Microsoft Windows Server 2008, Standard/Enterprise, 32-bit or 64-bit. Microsoft Windows XP, SP1, SP2, 64-Bit Extended
Red Hat Enterprise Linux	Red Hat Enterprise Linux (RHEL) 5 64-bit Red Hat Enterprise Linux (RHEL) 6 64-bit
SUSE Linux	SUSE Linux Enterprise Server (SLES) 11, 64l-bit
Oracle Linux	Oracle Enterprise Linux (OEL) 5.6

JAVA VIRTUAL MACHINE

PREREQUISITE	DESCRIPTION
Java SE	Java SE 6 or later. Latest version of Java Virtual Machine (JVM) installed on the local system to run the SDMGUI. Web: http://www.java.com/en/download/index.jsp

USER PRIVILEGES

PREREQUISITE	DESCRIPTION
Microsoft Windows	Administrator
Linux Distributions	Root

System Hardware Requirements

Item	Description
CPU	Intel Itanium 2, Xeon or equivalent 64-bit processor, 1.4GHz minimum clock speed.
Memory	512MB RAM, 1TB (Enterprise, Datacenter), 2TB (Itanium-based systems).
Hard Disk Drive	10GB available disk space minimum (40GB or greater).
Network	Internet connection required for downloads and upgrades.
Optical Drive	CD-ROM/DVD-ROM optional.
Display	Super VGA (1024 x 768) or higher resolution monitor.
Peripherals	Keyboard and Mouse (Printer optional).

Archive Files

The SDMGUI and SDMCMD interfaces are encapsulated within archives for both the Windows and Linux platforms. An authorized sTec representative will e-mail the desired SDMGUI or SDMCMD to the user. The archives must be unpacked in a default directory or a temporary directory. It is recommended that the user create the default or temporary directories off the root of the drive hierarchy. Table 2 lists the available archives and descriptions.

Table 2: SDM Archive Descriptions

sTec Part Number	Archive Name	Description
66000-00017-003	sdmcmd.2.0.0.130.zip	SDM Command Line for Windows, 32-bit
66000-00018-003	sdminstall.2.0.0.130.zip	SDM Graphical User Interface (SDMGUI) for Windows and Linux systems, 32-bit and 64-bit.
66000-00019-003	sdmcmd.2.0.0.130.tar.gz	SDM Command Line for 32-bit Linux systems.
66000-00020-003	sdmcmd64.2.0.0.130.tar.gz	SDM Command Line for 64-bit Linux systems.

LOG FILES

The log file, *sdmlogfile.txt*, contains a history of all actions performed by the SDM, both for SDMGUI and SDMCMD. Each log entry has a date and time stamp that correlates with the action. The log file resides in the SDM default directory, which is platform dependent. Table 3 lists the default locations.

Table 3: SDM Log File Default Locations

PLATFORM	LOCATION
Linux	$HOME (usually /home/username).
Windows	$USERPROFILE
Windows 7	\Users\Username
Windows XP	\Documents and Settings\Username

The following is an excerpt of a log file. Log files can be used for timing various operations.

```
20110224 113544.271     API     GetInfo target=gen3sas:Drive1
20110224 113544.271     SCSI transaction for sdmScsiGetInfo Inquiry Page 0
20110224 113544.271       Before State              : SetUp
20110224 113544.271       Before Command            : INQUIRY
20110224 113544.271       Before CDB                : 12 00 00 00 ff 00 len=6
20110224 113544.271       Before DataDirection      : DeviceToHost
20110224 113544.271       Before DataBuffer         : 0022f708
20110224 113544.271       Before DataLength         : 255
20110224 113544.271       Before Timeout            : 0
20110224 113544.271       Before SSRCB has not been executed yet
20110224 113544.271       Before StatusByte         : 00  GOOD
20110224 113544.271       Before SenseData          : len=0
20110224 113544.271       Before DataXferred        : 0
20110224 113544.271     SCSI done for sdmScsiGetInfo Inquiry Page 0, rc=0
```

SDMCMD INSTALLATION

The following procedures are for the installation of the SDM Command Line Interface (CLI) or SDMCMD. Please see the ***SDMGUI Installation*** if you want to install the SDM GUI under Windows or Linux.

WINDOWS INSTALLATION

To install the SDM Command Line Interface (SDMCMD) under Windows:

1. Create a directory of **C:\>SDMCMD** (or any other desired directory name).
2. Unzip the contents of the **sdmcmd.2.0.0.130.zip** file in the directory.
3. See the **SDMCMD** section in this manual for command syntax and usage.

LINUX INSTALLATION

To install the SDM Command Line Interface (SDMCMD) under Linux:

1. Create a directory of **/SDMCMD** (or any other desired directory name).
2. Unpack the contents of:
    a. The **sdmcmd.2.0.0.130.tar.gz** file (32-bit Linux systems) in the directory, or;
    b. The **sdmcmd64.2.0.0.130.tar.gz** file (64-bit Linux systems) in the directory.
3. See the **SDMCMD** section in this manual for command syntax and usage.

SDMGUI INSTALLATION

The following procedures are for the installation of the SDM Graphical User Interface (GUI) or SDMGUI. Please see the ***SDMCMD Installation*** if you want to install the SDM CLI under Windows or Linux.

WINDOWS INSTALLATION

To install the SDM Graphical User Interface (SDMGUI) under Windows:

1. Create a temporary installation folder or directory.
2. Unzip the contents of **sdminstall.2.0.0.130.zip** into the temporary directory. Make sure to extract all the files before performing the remaining steps.
3. Double-click the **sdminstall.2.0.0.130.jar** file. The End-User License Agreement will appear. You must read and scroll to the end of the License Agreement to activate the **Accept** option.

4. Click **Accept** after the option becomes available. The installer will prompt you to choose the location of the working directory. The default path with appear in the ***Current working directory***: text box. You can use the **Browse** option to navigate to an alternate installation directory.

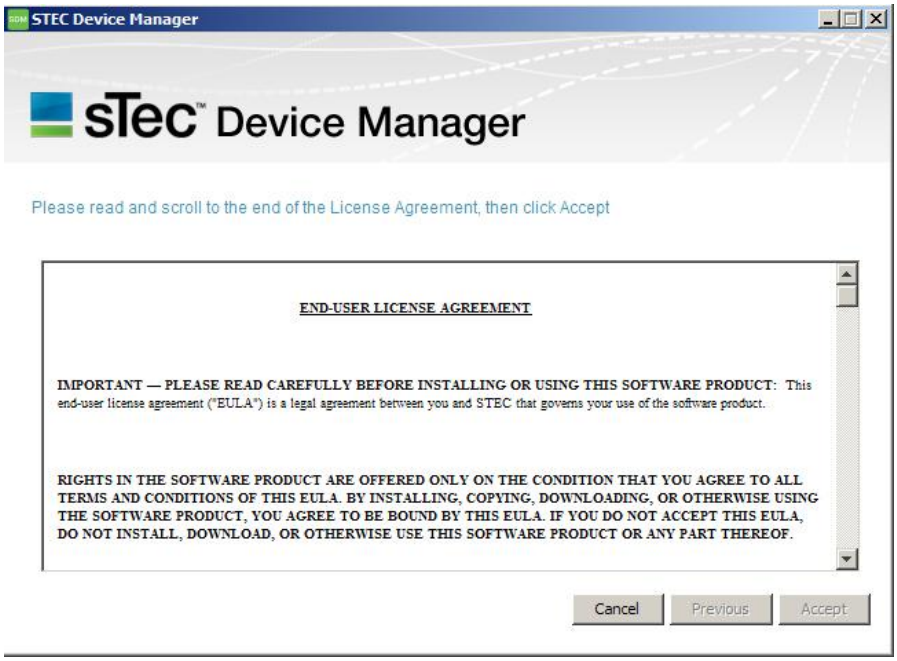
5. Click **Install**. The SDMGUI will be installed. The following message window will appear at the end of a successful installation:

6. Click **OK** to close the message window. There will be a sTec Device Manager icon on the desktop and a sTec Device Manager item installed in the Start menu. You may double-click the desktop icon or select the menu item to start sTec Device Manager.

WINDOWS UNINSTALL PROCEDURE

If you want to remove the SDMGUI under Windows:

1. Double-click the **sdminstall.jar** file. The End-User License Agreement will appear. You must scroll to the end of the License Agreement to activate the **Accept** option.



2. Place a check mark in the **Uninstall the application?** check box and then click **Install**. The SDMGUI, desktop icon and menu item will be removed from the system.

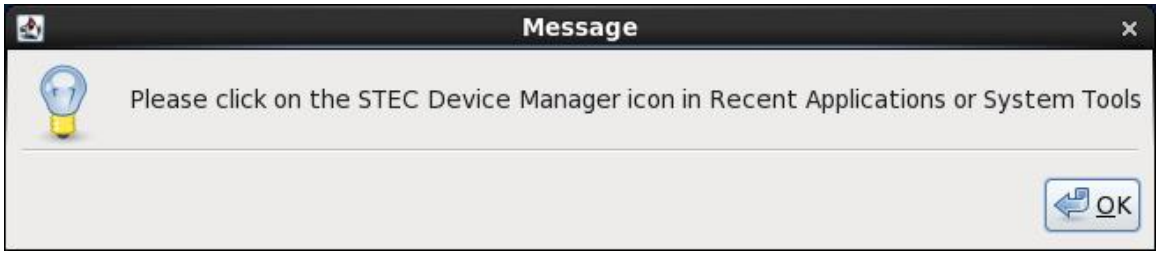
LINUX INSTALLATION

To install the SDM Graphical User Interface (SDMGUI) under Linux:

1. Create a temporary installation folder or directory.
2. Unzip the contents of **sdminstall.2.0.0.130.zip** into the temporary directory. Make sure to extract all the files before performing the remaining steps.
3. Double-click the **sdminstall.2.0.0.130.jar** file. The End-User License Agreement will appear. You must read and scroll to the end of the License Agreement to activate the **Accept** option.
4. If double-clicking the archive file does not work, open a Linux terminal window and use the following command: **java –jar sdminstall.2.0.0.130.jar**.

5. Click **Accept** after the option becomes available. The installer will prompt you to choose the location of the working directory. The default path will appear in the **Current working directory** text box. You can use the **Browse** option to navigate to an alternate installation directory.

6. Click **Install**. The SDMGUI will be installed. The following message window will appear at the end of a successful installation.



7. Click **OK** to close the message window. There will be a sTec Device Manager icon on the desktop and a sTec Device Manager item installed in the Start menu.
    a. The SDM menu item will be found under Start Menu/Recent Applications or in System Tools/sTec Device Manager, depending on which version of Linux you are running. Selecting the menu item will start SDM.
    b. You can double-click the sTec Device Manager desktop icon to launch the program.

LINUX UNINSTALL PROCEDURE

If you want to remove the SDMGUI under Linux:

1. Double-click the **sdminstall.jar** file. The End-User License Agreement will appear. You must scroll to the end of the License Agreement to activate the **Accept** option.

2. Place a check mark in the **Uninstall the application?** check box and then click **Install**. The SDMGUI, desktop icon and menu item will be removed from the system.

OVERVIEW

The sTec Device Manager GUI (SDMGUI) operates under both Windows and Linux. While the majority of illustrations in this section were taken in the Windows OS environment, there is no difference in the look or functionality of the SDMGUI.

STARTING SDM

If you install SDM onto a local system, a sTec Device Manager icon will appear on the desktop. Double-click the **sTec Device Manager** icon to launch the application. *See **Navigating the GUI***. See Figure 1.

NAVIGATING THE GUI

The SDM application window is divided into the following components: a toolbar, a Devices window and Information, SMART, Statistics, and Diagnostic panels.

Figure 2: The SDM Graphical User Interface

DEVICES WINDOW

The user should only select sTec devices in the Device window. sTec cannot guarantee the reliability or functionality of SDM for non-sTec devices.

The Devices window lists all the HHDs and SSDs installed in the system. To manage a device, click its icon in the list.

Click the **Rescan** button to rescan the system for any new SSD or HDD devices and to refresh the drive listing.

IMPORTANT!

Make sure to select the correct device that you want to manage. Notice that the **"Drive2"** icon is selected in the example to the left. This indicates that all operations will affect this device only.

Notes:

1. The system runs a health check every five (5) minutes. If a drive is busy (Sanitize, Resize, Format/Erase, Firmware Upgrade, etc.), the health check will show that the drive is busy. If the drive goes off-line, then the heath check shows the drive as off-line.

2. If the user clicks the **Rescan** button, the off-line drive will be removed from the **Devices** window; however, if the drive is busy, the drive is still listed as busy.

3. If the user exits SDM and then re-starts SDM, any off-line drives and busy drives (which do not respond to host inquiries), are not shown in the **Devices** list.

TOOLBAR

Figure 3 shows the SDMGUI toolbar. The toolbar buttons allow access to the most commonly used SDM functions: *Firmware Update*, *Format/Erase, Sanitize, and Resize*.

Figure 3: The SDMGUI Toolbar

FIRMWARE UPDATE

Click the **Firmware Update** button to update the SSD firmware. *See* ***Firmware Updates***.

FORMAT/ERASE

Click the **Format/Erase** button to Format/Erase the SSD. *See* ***Formatting a Drive****.*

SANITIZE

Click the **Sanitize** button to Sanitize the SSD. *See* ***Sanitizing a Drive****.*

RESIZE

Click the **Resize** button to resize the sector count of the SSD. *See* ***Resizing a Drive****.*

HELP

Click the **Help** button to view the on-line help system.

UTILITY PANELS

This section describes the Information, SMART, Statistics and Diagnostic panels and the relative options available in each panel. The user can access a specific panel by clicking its respective tab.

INFORMATION PANEL

The **Information** (**Info**) panel will display specific inquiry data. See Table 4 for the field descriptions. Each device is labeled by its system number. For a Windows system, citing the example below, “Drive2” would have the physical name “Physicaldrive2”. A Linux system would display “Drive2” using its physical name, i.e., “/dev/sg2”.

Figure 4: The Information Panel

Table 4: Information Field Descriptions

FIELD	DESCRIPTION
Status	The current status of the drive (online, offline, formatting, etc.).
Vendor	The name of the vendor.
Model	The model name of the SSD or SSA.
Serial Number	The serial number of the SSD or SSA.
WWN	The World Wide Name of the SSD or SSA.

FIELD	DESCRIPTION
Firmware Version	The firmware version that is currently loaded.
Boot Loader Version	The boot loader version.
HW Config Version	The hardware configuration version number.
XROM Version	The XROM version.
Sector Size	The sector size in bytes (512, 520, 524 or 528).
Max LBA (GB)	The maximum number of user-addressable logical blocks.
DIF Level	The DIF level and type.
Life Gauge	This graphical bar indicates the percentage of the life time remaining on the SSD or SSA.
PCIe	If managing a PCIe SSA, then the PCIe configuration appears in this field; otherwise “N/A” appears in this field if managing a FC, SAS, or SATA SSD.
Driver Version	If managing a PCIe SSA, then the driver version appears in this field; otherwise “N/A” appears in this field if managing a FC, SAS, or SATA SSD.

S.M.A.R.T. SPECIFICATION

S.M.A.R.T. is an acronym for Self-Monitoring, Analysis and Reporting Technology and was originally developed for ATA devices. The specification has been adapted so that SCSI devices can support S.M.A.R.T. capabilities. SDM supports the S.M.A.R.T. specifications for ATA and SCSI.

SMART PANEL-SCSI DATA

Figure 5 shows the **SMART** panel listing all the log pages supported by a SCSI device.

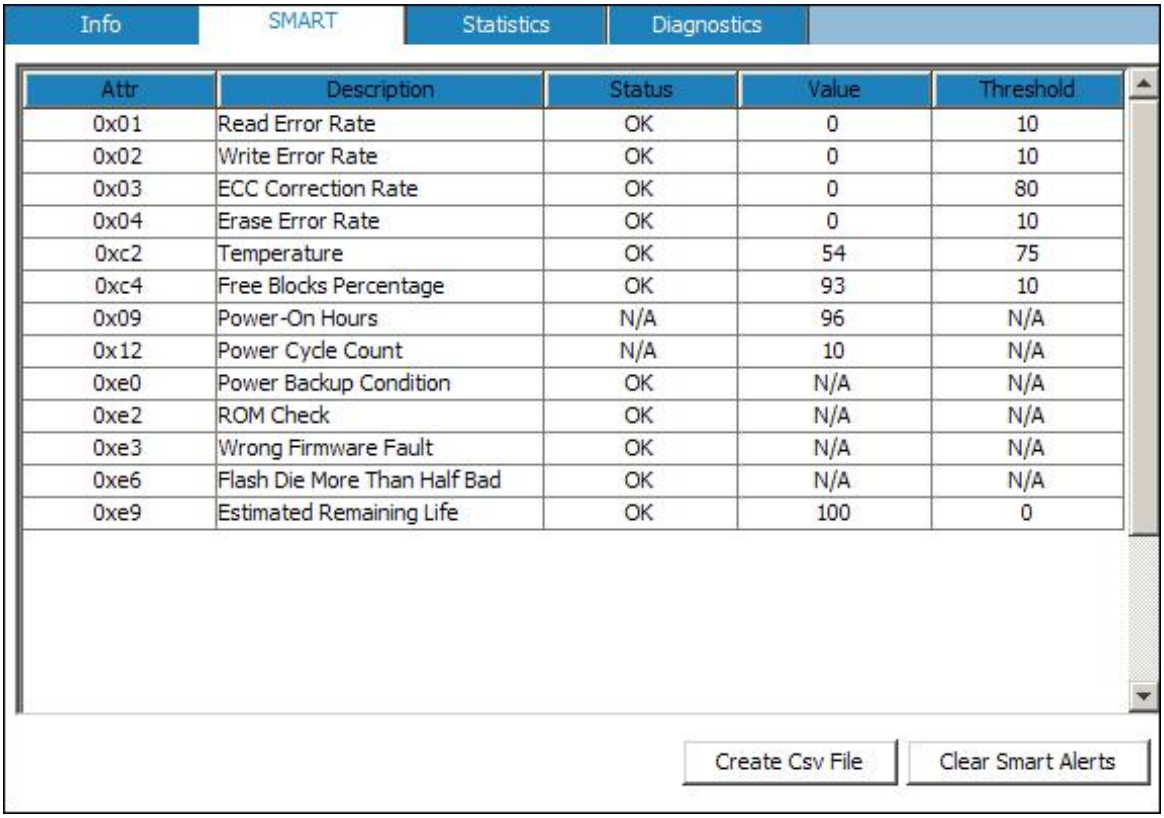


Figure 5: SMART Panel-SCSI Data

SMART Listing-SCSI Data

There are four columns in the listing: **Attr (Attribute) Description**, **Status**, **Value** and **Threshold**. Table 5 describes each column found in the SMART panel.

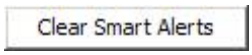
Table 5: SMART Panel Listing-SCSI Data

Label	Description
Attr	The Attr (Attribute) column lists the Attribute IDs.
Description	The names of the supported log pages.
Status	The current status as reported by the drive.
Value	This column, if applicable, will list the current value recorded in a log page.
Threshold	This column, if applicable, will list the maximum threshold value set by the user or the default threshold value set by the system.

Create Csv File

This option allows the user to save the values as a *.csv (Comma Separated Value) file.

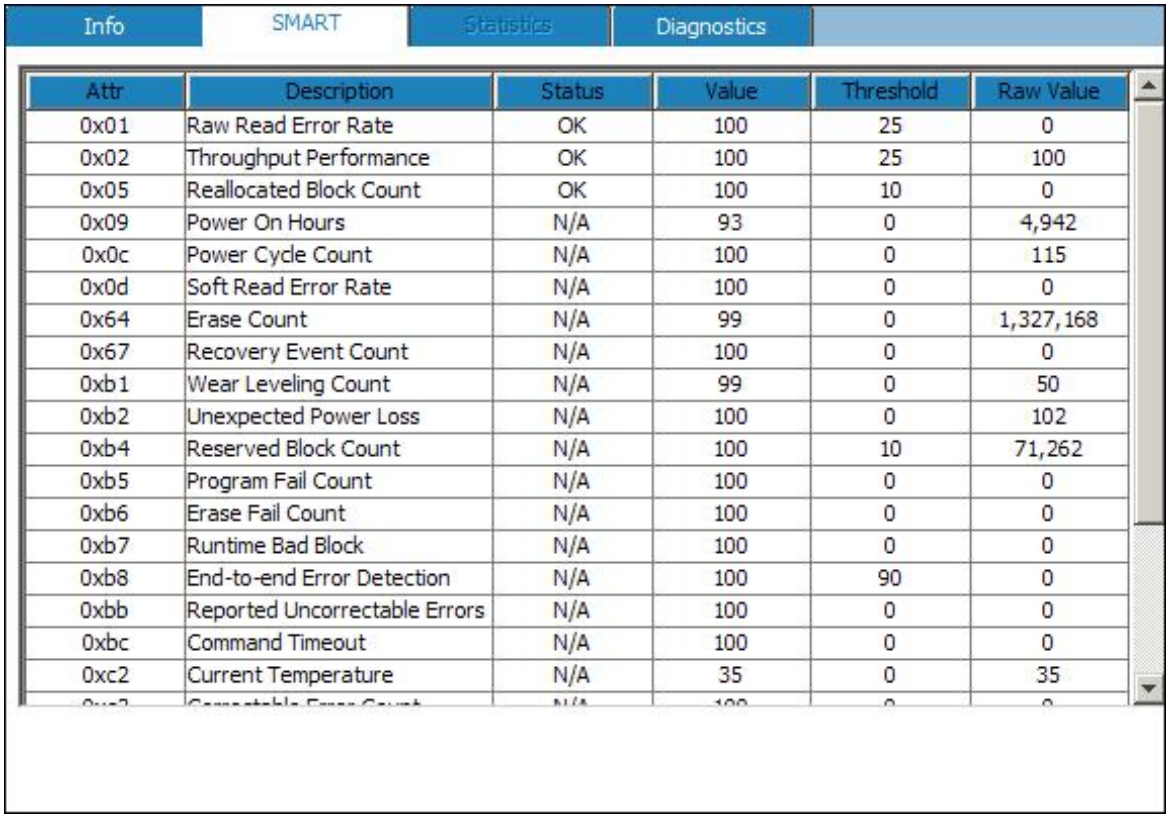
Clear Smart Alerts



This option will clear the alerts flagged by the firmware; however, the firmware will continue to flag (an alert will appear in **red text** in the SMART panel) an alert condition if it is still active. For example, if there is a temperature alert, the Clear Smart Alerts option will clear the SMART alert, but if the underlying cause is not addressed within a few minutes, the firmware will raise the alert again due to an active alert condition.

SMART PANEL-SATA DATA

Figure 6 shows the SMART panel listing all the Attribute IDs supported by a SATA device.



Attr	Description	Status	Value	Threshold	Raw Value
0x01	Raw Read Error Rate	OK	100	25	0
0x02	Throughput Performance	OK	100	25	100
0x05	Reallocated Block Count	OK	100	10	0
0x09	Power On Hours	N/A	93	0	4,942
0x0c	Power Cycle Count	N/A	100	0	115
0x0d	Soft Read Error Rate	N/A	100	0	0
0x64	Erase Count	N/A	99	0	1,327,168
0x67	Recovery Event Count	N/A	100	0	0
0xb1	Wear Leveling Count	N/A	99	0	50
0xb2	Unexpected Power Loss	N/A	100	0	102
0xb4	Reserved Block Count	N/A	100	10	71,262
0xb5	Program Fail Count	N/A	100	0	0
0xb6	Erase Fail Count	N/A	100	0	0
0xb7	Runtime Bad Block	N/A	100	0	0
0xb8	End-to-end Error Detection	N/A	100	90	0
0xbb	Reported Uncorrectable Errors	N/A	100	0	0
0xbc	Command Timeout	N/A	100	0	0
0xc2	Current Temperature	N/A	35	0	35

Figure 6: SMART Panel-SATA Data

SMART LISTING-SATA DATA

There are six columns in the listing: **Attr** (**Attribute**), **Description**, **Status**, **Value**, **Threshold** and **Raw Value**.Table 6 describes each column found in the SMART panel.

Table 6: SMART Panel Listing-SATA Data

LABEL	DESCRIPTION
Attr	The Attr (Attribute) column lists the Attribute IDs.
Description	The names of the supported attributes.
Status	The current attribute status as reported by the drive.
Value	The the current value recorded for the attribute.
Threshold	The threshold value set by the user or the default threshold value set by the system.
Raw Value	The raw value is the numeric raw data in little endian format.

STATISTICS PANEL

The **Statistics** panel will list the performance statistical counter data associated with the selected device as maintained by the various log pages.

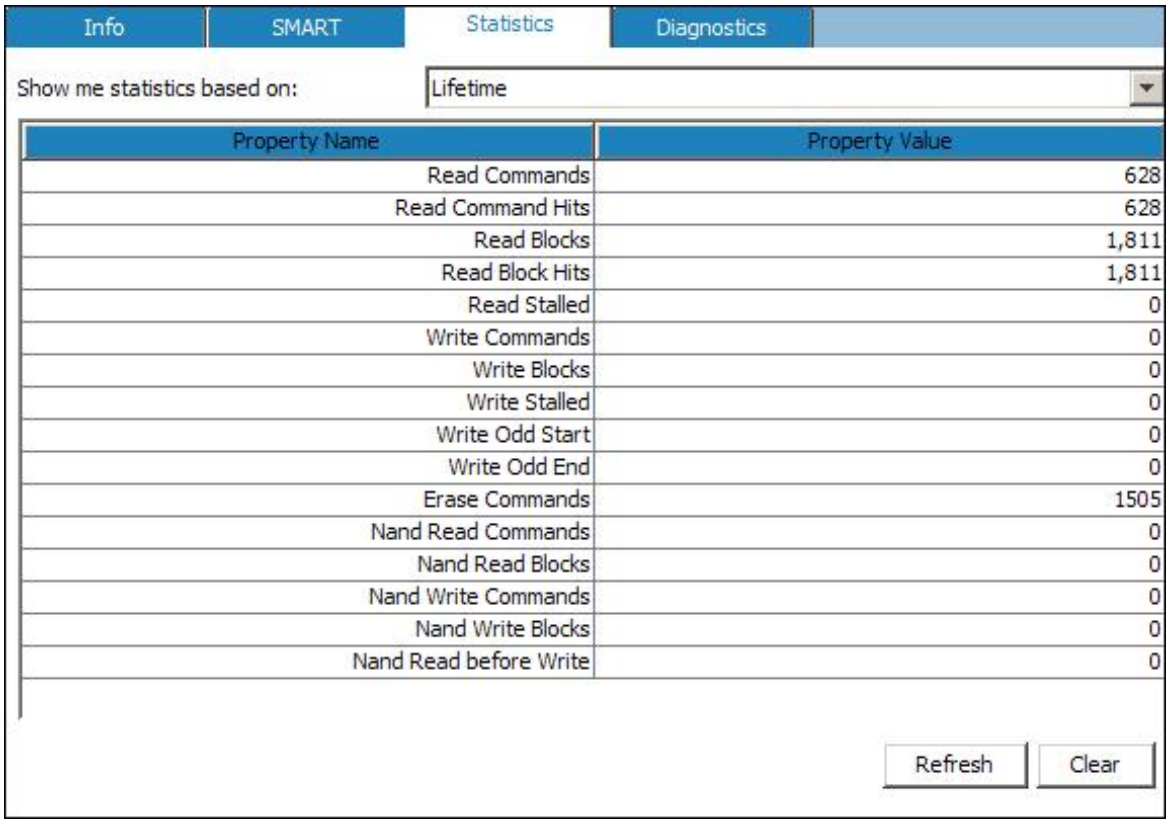
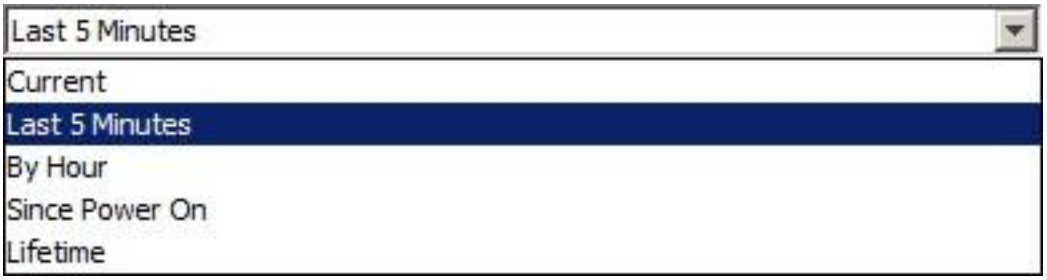
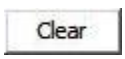


Figure 7: The Statistics Panel

The user can view a specific statistical set by selecting an option from the **Show me statistics based on** drop-down list. The options are **Current** (current statistical set), **Last 5 Minutes** (statistics gathered in the last five-minute period), **By Hour** (the statistics as recorded over the last 60 minutes), **Since Power On** (the statistics recorded since the last power-on cycle) or **Lifetime** (the statistics recorded over the lifetime of the device).



Click the **Refresh** button to refresh the values for the performance statistics.



Click the **Clear** button to reset the statistical values and to begin a recording a new set of statistics.

DIAGNOSTICS PANEL

The options in the **Diagnostics** panel allow the user to diagnose and troubleshoot advanced technical issues, generate field data for technical analysis, and to reset the factory defaults.

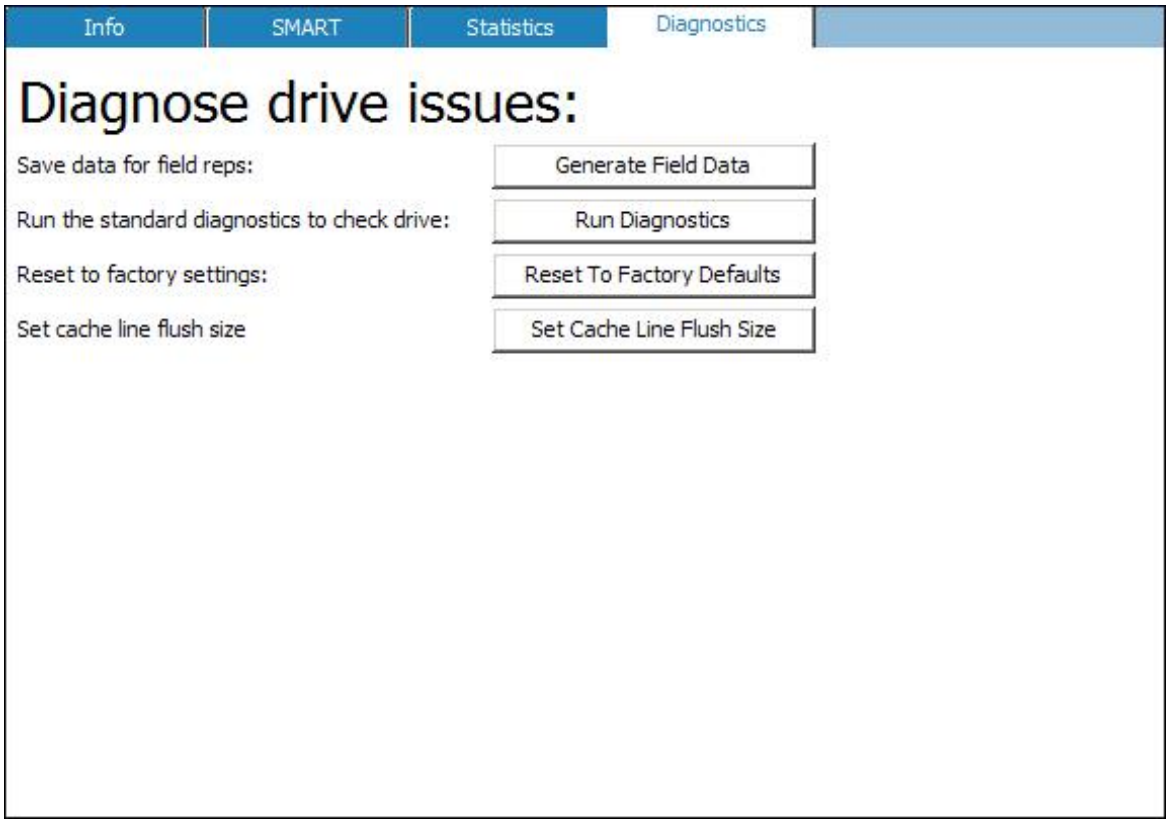


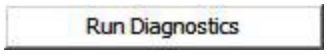
Figure 8: The Diagnostics Panel

DIAGNOSTICS PANEL OPTIONS

GENERATE FIELD DATA

Click the **Generate Field Data** button to generate a report listing all the current field values stored on the drive.

RUN DIAGNOSTICS

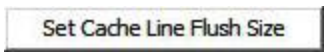


Click the **Run Diagnostics** button to run the on-board drive diagnostic system.

RESET TO FACTORY DEFAULTS

Click the **Reset To Factory Defaults** button to overwrite any user settings with the factory default settings.

SET CACHE LINE FLUSH SIZE



Click the **Set Cache Line Flush Size** button to set the granularity value for the flushing of data currently in the write cache to the media.

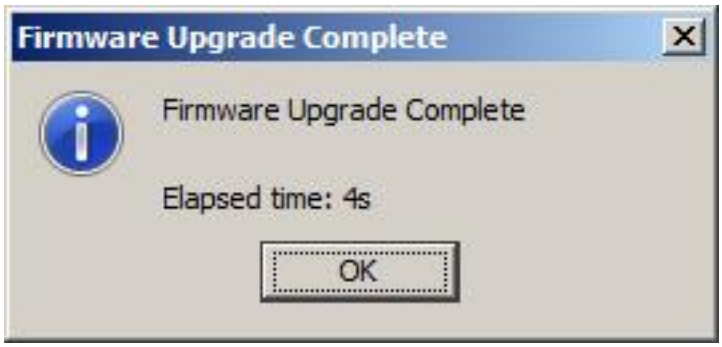
OVERVIEW

This section describes each function of the SDMGUI toolbar and a procedure for accomplishing a specific administrative task.

FIRMWARE UPDATES

To update the firmware:

1. Click the **Firmware Update** button. The Open dialog box will appear.
2. Navigate to and select the firmware file.
3. Click **Open**. You are prompted to confirm. Click **Yes** to update the firmware or click **No** to cancel.
4. If you click **Yes**, the firmware undergoes the update process. The Firmware Upgrade complete dialog box appears when the update is complete.

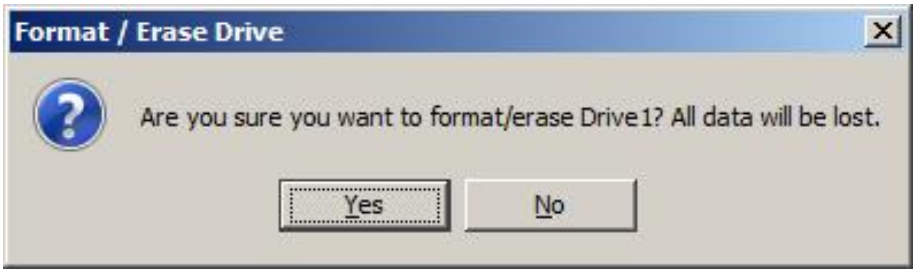


5. Click **OK** to close the dialog box.

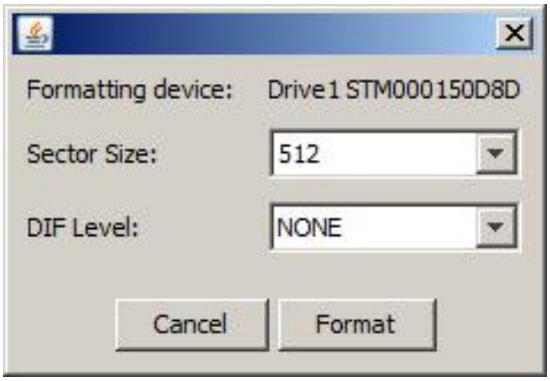
FORMATTING A DRIVE

To format/erase the drive:

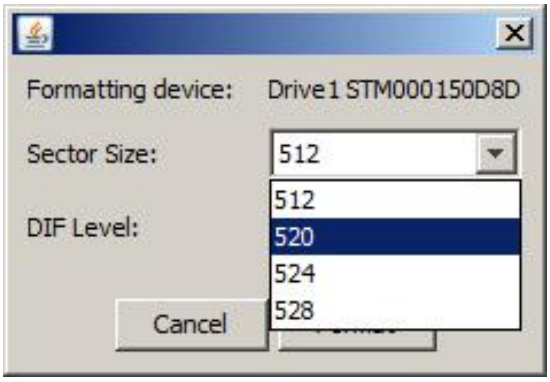
1. Click the **Format/Erase** button. The Format/Erase dialog box appears. You are prompted to confirm.
2. Click **Yes** to begin or **No** to cancel. If you click **Yes**, a confirmation dialog box appears.



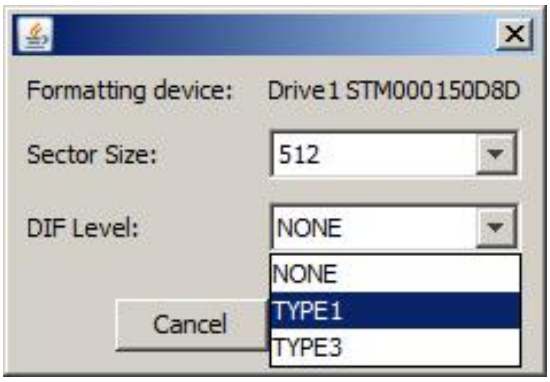
3. Click **Yes**. The Sector Size and DIF Level dialog box appears.



4. Select a sector size from the **Sector Size** drop-down list. The default is **512**-byte sector sizes, but you can also select **520**-, **524**-, or **528**-byte sector sizes.



5. Select a DIF level from the DIF Level drop-down list. The default The default is **NONE**, but you can select **TYPE 1** and **TYPE 3** DIF levels.

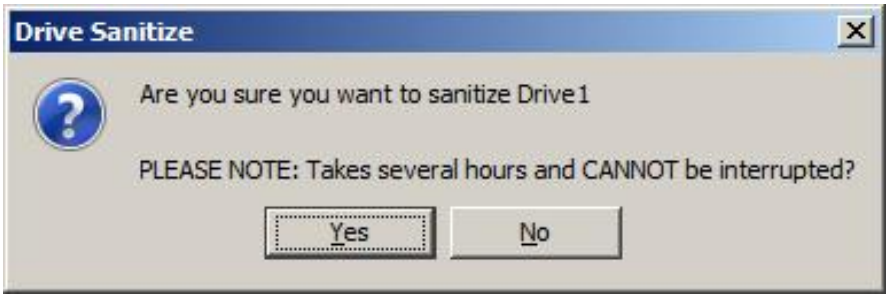


6. Click **Format** to format the drive with the selected sector size and DIF level, or click **Cancel**. If you click **Format**, the drive is formatted according to the selected **Sector Size** and **DIF Level**. Notice that the drive goes off-line and the **Status** (Information tab) will display **Formatting…**. When the format is complete, the **Status** will update to **Online**.

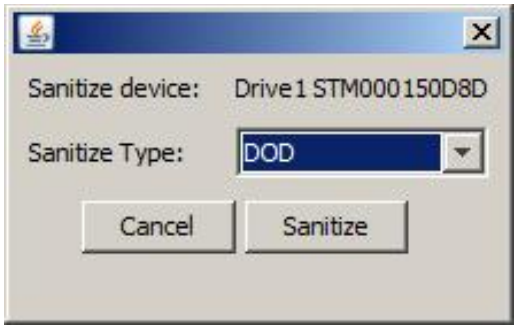
SANITIZING A DRIVE

To sanitize the drive:

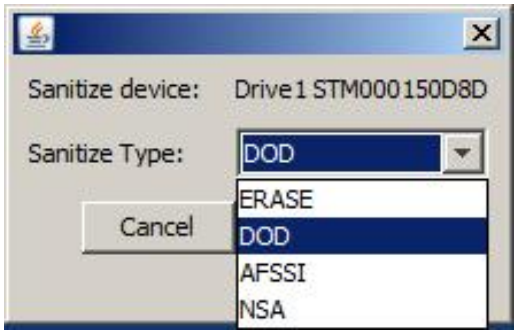
1. Click the **Sanitize** button. You are prompted to confirm.



2. Click **Yes** to continue or **No** to cancel. If you click **Yes**, the Sanitize Type dialog box appears.



3. Select a **Sanitize Type** from the drop-down list. You may choose a normal **ERASE**, or a **DOD**, **AFSSI** or **NSA** sanitization standard.

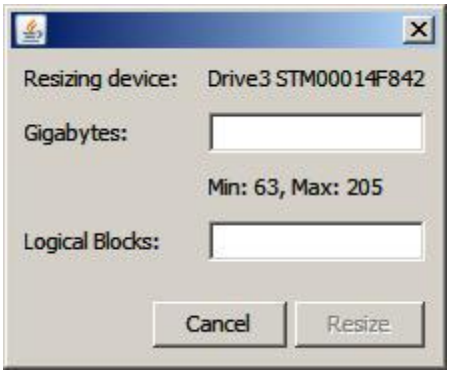


4. Click **Sanitize**. The drive is sanitized according to the selected sanitization standard. Note that the drive goes off-line and the **Status** (Information tab) is **Sanitizing…**. When the process is complete, the drive comes on-line and the **Status** updates to **Online**.

RESIZING A DRIVE

The **Resize** option will resize the total LBAs (Logical Block Addresses) or gigabyte capacity of a drive. You will want to reference the **Max LBA (GB)** value in the ***Information (Info) Panel***. For example, **Max LBA (GB):** *390,782,975 (200GB)*. Make sure to note the current LBA and corresponding gigabyte values, as you must specify a value that is less than the maximum capacity in gigabytes or is less than the maximum number of reported LBAs.

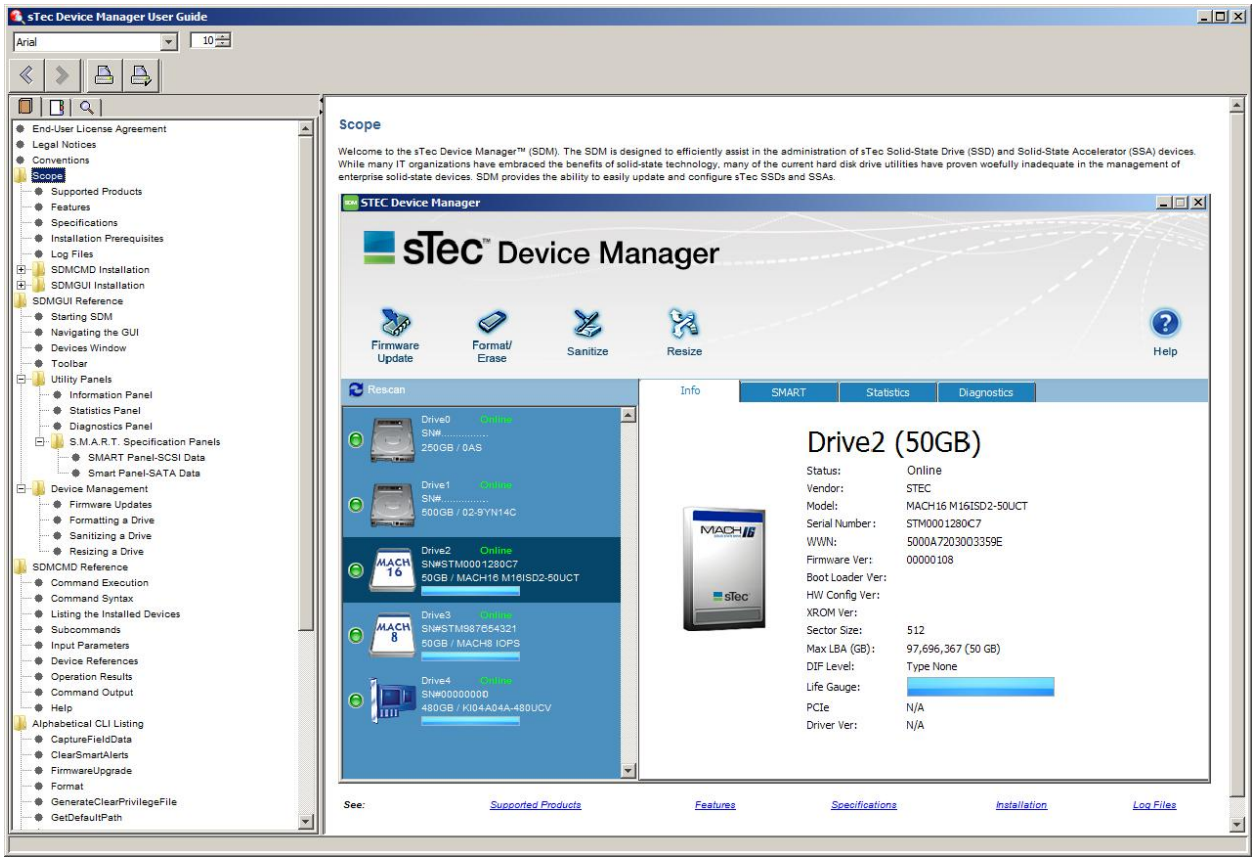
1. Click the **Resize** button. A warning message appears.
2. Click **Yes** to continue or **No** to cancel. If you click **Yes**, the Resize dialog box appears. Reference the **Max LBA (GB)** value in the **Information (Info) Panel**.
    a. You may enter a value that is less than the maximum gigabyte capacity of the drive in the **Gigabytes** text box, or;
    b. You may enter a value that is less than the maximum LBA of the drive in the **Logical Blocks** text box.



3. Type a value in either the **Gigabytes** text box or the **Logical Blocks** text box. Make sure to enter the value without any commas (,). The system does not recognize non-numerical values.
4. Click **Resize**. The drive is resized according to the user-specified logical block size. Notice that the drive goes off-line and the **Status** is **Resizing…**. When the resize process is complete, the **Status** updates to **Online**.

ON-LINE HELP

If you require help, you can access the SDM on-line help system. Click the **Help** button in the toolbar open the help window.



SDMCMD COMMAND LINE INTERFACE

OVERVIEW

SDM also supports a Command Line Interface (CLI). This section discusses the usage and capabilities of the SDMCMD CLI. The CLI is provided in situations where Java is unavailable and can automate tasks when executed as a DOS batch file or a Linux shell script.

COMMAND EXECUTION

The syntax for SDMCMD execution differs between Windows and Linux systems. In this section, the commands are shown in a platform neutral form, i.e., **sdmcmd**. However, under Windows, the command is **sdmcmd.exe**, while the syntax of **./sdmcmd** is used for the Linux platform.

COMMAND SYNTAX

The SDM commands and options use the same syntax across the Windows and Linux platforms. The spaces or delimiters are taken literally, while the brackets are ignored:

sdmcmd [subcommand] <*parameter*>=<*value*>

Where **sdmcmd** is a "meta" command that invokes the various management or administrative commands, while [*subcommand]* is the actual process and <*parameter*>=<*value*> may be an input parameter or multiple parameters that modify the command behavior.

For example, the user may want to obtain information about a specific device using the **GetInfo** subcommand. The user must therefore specify the name of the device using the *target=devicereference* input parameter.

sdmcmd getinfo *target=gen4sas:drive0*

LISTING THE INSTALLED DEVICES

Typically, the first subcommand that the user should run is **ScanLocal**. The **scanlocal** subcommand will list all the names of the SATA, SAS and PCIe drives and devices installed in the system. These names are then used in the execution of subsequent commands. For example, **GetInfo** will use the *drive name* as the *target=devicereference* parameter. See Figure 9.

```
C:\SdmInstaller\sdmcmd>sdmcmd.exe scanlocal
Results for ScanLocal
                        operationResult = Success
                          devices.count = 6
                             devices[0] = other:Drive0
                             devices[1] = mach16:Drive1
                             devices[2] = mach16sasatt:Drive4
                             devices[3] = gen4sas:Drive2
                             devices[4] = gen4sas:Drive3
                             devices[5] = gen4pcie:Drive5
C:\SdmInstaller\sdmcmd>sdmcmd.exe getinfo target=gen4pcie:drive5
Results for GetInfo
                        operationResult = Success
                               vendorId = 'STEC'
                              productId = 'KI04A04A-980UCV '
                        firmwareVersion = 'V05Y'
                      bootLoaderVersion = '2.4.10'
                  hardwareConfigVersion = '2.4.11'
                           xRomVersion = '1.0'
                 usableCapacityInSectors = 1914728448
                            capacityInGB = 980 0x3d4
                              sectorSize = 512 0x200
                              devicePath = 'PhysicalDrive5'
                             logicalPath = 'drive5'
                               driveType = Gen4Pcie
                             connectType = Lun
                            serialNumber = 'STM000161F5B    '
                                    wwnn = '5000A720300698A3'
                                difLevel = None
                     supportedSectorSizes = 512
                       supportedDifLevels = None
                     supportedDiagnostics = Type1
                   supportedSanitizeTypes = Erase,Dod,Afssi,Nsa
                             pciVendorId = 6969 0x1b39
                             pciDeviceId = 1 0x1
                    pciSubsystemVendorId = 6969 0x1b39
                    pciSubsystemDeviceId = 1 0x1
                           pciBusNumber = 3 0x3
                        pciDeviceNumber = 0 0x0
                      pciFunctionNumber = 0 0x0
                          pcieLinkSpeed = '5.0'
                          pcieLinkLanes = '4'
                          driverVersion = '2.2.1.206'
```

Figure 9: The SDM Command Line Interface

SUBCOMMANDS

Table 7 lists the subcommands that must be specified prior to an input or value parameter. *See Input Parameters*.

The SDMCMD subcommands are not case-sensitive. Commands can be entered UPPERCASE or lowercase.

Table 7: SDMCMD Subcommands

SUBCOMMAND	DESCRIPTION
CaptureFieldData	Lists the drive state, SMART statistics, model, serial number, et al.
ClearSmartAlerts	Clears the SCSI SMART alerts flagged by the firmware.
FirmwareUpgrade	Update or upgrade a portion of the firmware or all the firmware.
Format	Format or Erase all data on the device.
GenerateClearPrivilegeFile	File listing of all sTec drives detected by the system.
GetDefaultPath	The sdmlogfile.txt default path name.
GetDeviceCapabilities	Retrieve the supported interface capabilities of the device.
GetDrivePrivilege	Retrieve the privilege level for the specified drive.
GetInfo	Retrieve static information about the device.
GetPrivPath	The path to the privilege file that is to read rather than the default path.
GetState	Retrieve dynamic information about the device.
GetStatistics	Performance statistics for read/write commands and cache hits.
GetSystemName	Retrieve the host name and operating system information.
GetVersion	Retrieve the current version of the SDM API.
Help	Lists help information.
LogMessage	Add a message to the log (used by Java).
Resize	Changes the total block capacity of the device.
ResizeGB	Changes the total gigabyte capacity of the device.
RunDiagnostic	Run drive on-board diagnostics.
Sanitize	Sanitize/Erase/Fill all data on the device.
ScanLocal	Scan and detect local devices.
SetCacheLineFlushSize	Set granularity for write cache flush to NAND media.

SUBCOMMAND	DESCRIPTION
SetFactoryDefaults	Restores default factory settings and undoes any user-changeable settings.
SetPrivPath	The path to the privilege file to read rather than the default path.

INPUT PARAMETERS

The *name*=*value* is used to specify input parameters. Table 8 lists the input parameters and descriptions.

The SDMCMD input parameters are not case-sensitive. Commands can be entered UPPERCASE or lowercase.

Table 8: SDMCMD Input Parameters

PARAMETER	DESCRIPTION
target=*devicereference*	Where *devicereference* is the actual device name as recognized by the local system. *See Device References*.
sectorsize=*int*	Where *int* is an integer of the supported sector sizes, usually 512-, 520-, 524- and 528-byte sector sizes.
diflevel=*diflevel*	Where *diflevel* is the supported enumerated type of T10-DIF (Data Integrity Format) Level/Type.
logfile=*filename*	Where *filename* is the name of the log file, usually *sdmlogfile.txt*.
privilegefile=*filename*.	Where *filename* is the actual filename of the user privilege file name.

DEVICE REFERENCES

A device reference describes how a device is accessed when executing a SDMCMD command. The format is:

Device Type:Drive Reference or sTec Device Type:Drive Reference

Examples of device references would be *gen4sas:drive0, gen3sas:drive1, mach16:drive2* or *gen4pcie:drive3*. The *ScanLocal* command can be used to return a list of all device references that are available to SDM. The format is the same for Windows and Linux; however, non-sTec devices are returned as *Other:Drive(x)*.

Notes:

1. Since a MACH16 SSD can be attached via a SATA connector or to a SAS HBA (Host Bus Adapter), ScanLocal would return the device name or *devicereference* as either *mach16:drive(x)* or *mach16sasatt:drive(x)* for SATA and SAS HBA connections respectively.
    a. If the MACH16 is connected to a SATA connector, then the *devicereference* is *mach16:drive(x)*.
    b. If the MACH16 is connected to a SAS HBA, then the *devicereference* is *mach16sasatt:drive(x)*.

Operation Results

A SDM operation result indicates the outcome of the executed SDM command. Table 9 lists the possible operational results that may occur.

Table 9: SDMCMD Operational Results

Operation Result	Description
Good	The command completed successfully.
FailedBadDeviceReference	The device reference or the requested operation was invalid.
FailedUnsupportedOperation	The referenced device does not support the operation.
FailedInRoute	The operation request failed upon transfer.
FailedTimeout	The operation request failed due to unknown HBA, host, device or other hardware problem.
FailedOnDevice	The operation request was received by the device but failed.
FailedBadRequest	The operation request failed possibly due to bad command syntax or invalid parameter values.

Command Output

The resulting output of a successful SDMCDM command is a line-per-value format of *name:value*. The following is an example a successful *ScanLocal* command:

sdmcmd.exe scanlocal

Results for ScanLocal

operationResult = Success

devices.count = 3

devices[0] = other:Drive0

devices[1] = gen3sas:Drive1

devices[2] = gen4sas:Drive2

HELP

The *Help* command provides assistance for all supported SDM commands. If *Help* is used without any arguments, it will list the available subcommands; however, if the name of the *subcommand* follows the *Help* command, for example, **help *scanlocal***, it will list only the input and output parameters relevant to the *ScanLocal* subcommand. The available commands are subject to the privilege level.

Example: **sdmcmd help**

Subcommands:

CaptureFieldData	Drive state, SMART statistics, model, serial number, all relevant information.
ClearSmartAlerts	Command parameters and usage for clearing SCSI SMART alerts.
Delay	Delay for a specified number of seconds.
FirmwareUpgrade	Update some or all firmware on the device.
Format	Format/Erase all data on the device.
GetDefaultPath	The default path name of *sdmlogfile.txt.*
GetDeviceCapabilities	Retrieve the per-interface capabilities of the device.
GetDrivePrivilege	Retrieve the privilege level for the specified device.
GetHostPrivilege	Retrieve the privilege level for the host.
GetInfo	Retrieve seldom changed information about the device.
GetPrivPath	The path to the preferred privilege file rather than the default path.
GetState	Retrieve dynamic information about the device.
GetStatistics	Performance statistics for read/write blocks/commands and cache hits.
GetSystemName	Retrieve the host name and information.
GetVersion	Get the current version of the SDM API.
Help	Shows help information. Please see: sdmcmd help help.
LogMessage	Add a message to the log (used by Java).
Run	Run a specified script file.
RunDiagnostic	Run on-board diagnostics.
Sanitize	Sanitize/Erase/Fill all user data on the device.
ScanLocal	Scan and detect local devices.
SetCacheFlushLineSize	Set granularity for write cache flush to NAND media.
SetFactoryDefaults	Undoes changes to user changeable settings and restores factory defaults.
SetPrivPath	Sets the path to the preferred privilege file rather than the default path.

Named Values:

Capability	Per-interface capabilities derived from devops and privilege.
DeviceState	The basic readiness of the device.
DiagnosticType	The on-board drive diagnostics supported.
DifLevel	The level of Data Integrity Format protection.
DriveType	The types of drives supported.
OperationResult	The outcome of a SDM API call.
Privilege	The user privilege level that is used to control interface availability.
SanitizeType	The type of Sanitize to clean the device.
StatisticsLevel	The level of statistics to retrieve for GetStatistics.

CAPTUREFIELDDATA

CaptureFieldData will return the current drive state, S.M.A.R.T. statistics, model, serial number and all relevant information.

Synopsis

sdmcmd CaptureFieldData <parameter>=<value>

Example

sdmcmd capturefielddata target=*gen4sas:drive0* filename=*capture.txt*

Table 10: CaptureFieldData Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
filename=<filename.ext>	Mandatory	Windows, Linux	The name of the output data file. For example, *capture.txt*.

Output

Created Capture Field Data file 'C:\Documents and Settings\User Name\capture.txt'
CaptureFieldData = Success

CLEARSMARTALERTS

ClearSmartAlerts will clear all SCSI SMART alerts flagged by the firmware; however the firmware will continue to flag an alert condition if it still active. For example, if there is a temperature alert, ClearSmartAlerts will clear the SMART alert, but if the underlying issue has not been resolved, the firmware will raise the alert again due to an active alert condition.

Synopsis

sdmcmd ClearSmartAlerts target=<devicereference>

Example

sdmcmd clearsmartalerts target=*gen4sas:drive2*

Table 11: ClearSmartAlerts Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.

Output

If the command is successful, the output will be:

```
Results for ClearSmartAlerts
        operationresult = Success
```

If the command fails, the output will be:

```
Results for ClearSmartAlerts
        operationresult = FailedUnsupportedOption
```

FIRMWAREUPGRADE

FirmwareUpgrade will perform a partial or full update of the firmware on the target device.

Synopsis

sdmcmd FirmwareUpgrade <parameter>=<value>

Example

sdmcmd firmwareupgrade target=*gen4sas:drive0* firmwareimage=*sas440R_1024NB16C8LB-291E* firmwareimagecount=*1000000*

Table 12: FirmwareUpdgrade Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
firmwareImage=<byteptr>	Mandatory	Windows, Linux	The bits to send to the drive.
firmwareImageCount=<int>	Mandatory	Windows, Linux	The number of bytes, expressed as an *integer*, in the firmware image.

Output

operationresult=<OperationResult> Overall outcome of the FirmwareUpgrade operation.

FORMAT

Format will format or erase all user data on the target device.

Synopsis

sdmcmd Format <parameter>=<value>

Example

sdmcmd format target=*gen4sas:drive0* sectorsize=*512* diflevel=*type1*

Table 13: Format Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
sectorsize=<int>	Mandatory	Windows, Linux	The sector size in bytes, expressed as an *integer*.
diflevel=<diflevel>	Mandatory	Windows, Linux	The current integrity level. *None* = No extra integrity information for each sector; *Type1* = DIF Level 1; *Type3* = DIF Level 3.

Output

operationresult=<OperationResult> Overall outcome of the Format operation.

GENERATECLEARPRIVILEGEFILE

This command will generate the **sdmpriv.cdat** (clear-text data) file for all sTec drives detected by the system. The user should only use this command under the direction of an authorized sTec representative.

Synopsis

sdmcmd GenerateClearPrivilegeFile

Example

sdmcmd generateclearprivilegefile

Output

SDMCMD will generate the **sdmpriv.cdat** file in the root directory.

GETDEFAULTPATH

GetDefaultPath will retrieve the current default path of *sdmlogfile.txt*. There are no input parameters for the command. The output consists of a string describing the default path where *sdmlogfile.txt* is stored.

Synopsis

sdmcmd GetDefaultPath

Example

sdmcmd getdefaultpath

Output

operationResult=<OperationResult>	Overall outcome of the GetDefaultPath operation.
path=<string>	The default path name.

GETDEVICECAPABILITIES

GetDeviceCapabilities will obtain the interface-specific capabilities for the target device.

Synopsis

sdmcmd GetDeviceCapabilites <parameter>=<value>

Example

Sdmcmd getdevicecapabilities target=*gen4sas:drive1*

Table 14: GetDeviceCapabilities Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.

Output

operationResult=<OperationResult>	Overall outcome of the GetDeviceCapabilities operation.
drivePrivilege=<Privilege>	The privileges granted for the device.
capaGetInfo=<Capability>	Capability for GetInfo operation.
capaGetState=<Capability>	Capability for GetState operation.
capaFirmwareUpgrade=<Capability>	Capability for FirmwareUpgrade operation.
capaFormat=<Capability>	Capability for Format operation.
capaSanitize=<Capability>	Capability for Sanitize operation.
capaGetStatistics=<Capability>	Capability for GetStatistics operation.
capaCaptureFieldData=<Capability>	Capability for CaptureFieldData operation.
capaRunDiagnostic=<Capability>	Capability for RunDiagnostic operation.
capaSetFactoryDefaults=<Capability>	Capability for SetFactoryDefaults operation.
capaSetSmartThresholds=<Capability>	Capability for SetSmartThresholds operation.
capaResize=<Capability>	Capability for Resize operation.
capaGetLog=<Capability>	Capability for GetLog operation.
capaGetDefects=<Capability>	Capability for GetDefects operation.
capaStartTrace=<Capability>	Capability for StartTrace operation.
capaFinishTrace=<Capability>	Capability for FinishTrace operation.
capaWriteConfig=<Capability>	Capability for WriteConfig operation.
capaSetSerial=<Capability>	Capability for SetSerial operation.

capaSetWwnn=<Capability>	Capability for SetWwnn operation.
capaSetModel=<Capability>	Capability for SetModel operation.
capaGetDriveSize=<Capability>	Capability for GetDriveSize operation.
capaGetDrivePrivilege=<Capability>	Capability for GetDrivePrivilege operation.
capaGetDeviceCapabilities=<Capability>	Capability for GetDeviceCapabilities operation.

GETDRIVEPRIVILEGE

GetDrivePrivilege will retrieve the privilege level for the target device.

Synopsis

sdmcmd GetDrivePrivilege <parameter>=<value>

Example

sdmcmd getdriveprivilege target=*gen4sas:drive0*

Table 15: GetDrivePrivilege Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.

Output

operationResult=<OperationResult>	Overall outcome of the GetDrivePrivilege operation.
drivePrivilege=<Privilege>	Privilege granted to the target device.

GETINFO

GetInfo retrieves the current information associated with the target device.

Synopsis

sdmcmd GetInfo <parameter>=<value>

Examples

sdmcmd getinfo target=*gen4sas:drive0*

sdmcmd getinfo target=*mach16:drive1*

sdmcmd getinfo target=*mach16sasatt:drive2*

sdmcmd getinfo target=*gen4pcie:drive3*

Table 16: GetInfo Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.

Output

operationresult=<OperationResult>	Overall outcome of the GetInfo operation.
modelName=<string>	The model name of the device.
firmwareVersion=<string>	The firmware version of the device.
capacityInSectors=<int>	The current usable capacity expressed as an *integer*.
sectorSize=<int>	The sector size expressed as an *integer* in bytes.
physicalPath=<string>	The device node name on the host.
driveType=<DriveType>	The drive type: Gen 2, 3, 4, SAS, FC, Mach, Kronos, etc.
connectType=<ConnectType>	The type of connection: HBA/SID/LUN/PCI, PCIe, etc.
serialNumber=<string>	The serial number of the device.
wwnn=<string>	The WWNN or World Wide Node Name.
difLevel=<DifLevel>	The current integrity level.
supportedSectorSizes=<int[,...]>	The supported sector sizes.
supportedDifLevels=<DifLevel[,...]>	The supported data integrity levels.
supportedDiagnostics=<DiagnosticType[,...]>	The supported diagnostic tests.
userMin=<int>	The minimum number of NAND blocks.
userMax=<int>	The maximum number of NAND blocks.

nandTotal=<int>	The total NAND blocks per channel.
channels=<int>	The number of firmware channels.
logical=<int>	Logical Blocks per device.
nandBlock=<int>	NAND blocks per channel.
memSize=<int>	Memory Size.
firmwareType=<int>	Firmware Type Level.

GETPRIVPATH

GetPrivPath will display the path to a user-specified privilege file that is to be read.

Synopsis

sdmcmd GetPrivPath

Example

sdmcmd getprivpath

Output

operationResult=<OperationResult>	Overall outcome of the GetPrivPath operation.
path=<string>	The path name to the privilege file.

GETSTATE

GetState will retrieve the dynamic information of the target device.

Synopsis

sdmcmd GetState <parameter>=<value>

Example

sdmcmd getstate target=*gen4sas:drive0*

Table 17: GetState Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.

Output

operationresult=<OperationResult>	Overall outcome of the GetState operation.
deviceState=<DeviceState>	The basic readiness of the device.
percentDone=<int>	A percentage value of the amount of processing that occurs when the device is busy.
smartReadErrorsRate=<int>	SMART read error rate percentage.
smartReadErrorsExceeded=<bool>	SMART read error rate threshold exceeded alert.
smartWriteErrorsRate=<int>	SMART Write error rate percentage.
smartWriteErrorsExceeded=<bool>	SMART Write error rate threshold exceeded alert.
smartEccCorrectionRate=<int>	SMART ECC correction rate percentage.
smartEccCorrectionExceeded=<bool>	SMART ECC correction rate threshold exceeded alert.
smartEraseErrorRate=<int>	SMART Erase Error rate percentage.
smartEraseErrorExceeded=<bool>	SMART EraseError rate threshold exceeded alert.
smartPowerOnHours=<int>	SMART Power-On Hours percentage.
smartPowerCycleCount=<int>	SMART Power Cycle Count percentage.
smartTemperature=<int>	SMART Temperature.
smartTemperatureExceeded=<bool>	SMART Temperature threshold exceeded alert.
smartFreeBlocksPercentage=<int>	SMART Free Blocks Percentage.
smartFreeBlocksPercentageExceeded=<bool>	SMART Free Blocks Percentage threshold exceeded alert.
smartPowerBackupConditionFault=<bool>	SMART Power Backup Condition alert.
smartTranslationTableRebuildCount=<int>	SMART Translation Table Rebuild Count.

smartTranslationTableRebuildRequired=<bool>	SMART Translation Table Rebuild Required alert.
smartRomCheckFault=<bool>	SMART ROM Check Fault alert.
smartWrongFirmwareFault=<bool>	SMART Wrong Firmware alert.
smartLowFreepagesThreshold=<int>	SMART Low Free Pages Threshold.
smartWriteErrorRateThreshold=<int>	SMART Write Error Rate Threshold.
smartReadErrorRateThreshold=<int>	SMART Read Error Rate Threshold.
smartEraseErrorRateThreshold=<int>	SMART Erase Error Rate Threshold.
smartTemperatureThreshold=<int>	SMART Temperature Threshold.
smartEccCorrectionThreshold=<int>	SMART ECC Correction Threshold.
estimatedRemainingLifeInDays=<int>	An integer that indicates the remaining drive life, in days, according to previous usage patterns.

GETSTATISTICS

GetStatistics will retrieve the current performance statistics for read blocks, write blocks, commands and cache hits.

Synopsis

sdmcmd GetStatistics <parameter>=<value>

Example

sdmcmd getstatistics target=*gen4sas:drive0* level=*inprogress*

Table 18: GetStatistics Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
level=<StatisticsLevel>	Mandatory	Windows, Linux	The statistical level to retrieve. *InProgress* = The statistics currently being accumulated; *Last5Minutes* = Statistics accumulated during the last 5-minutes; *Last1Hour* = Statistics accumulated during the last hour; *SinceReset* = Statistics accumulated since the last reset or power-cycle; *SinceMade* = Statistics accumulated since the drive was manufactured; *Clear* = Clear all the accumulated statistical sets.

Output

operationResult=<OperationResult>	Overall outcome of the GetStatistics operation.
level=<StatisticsLevel>	The set of statistics provided.
readCommands=<int>	Read Commands per time interval.
readCommandHits=<int>	Read Command hits per time interval.
readBlocks=<int>	Read Blocks per time interval.
readBlockHits=<int>	Read Blocks hits per time interval.
readStalled=<int>	Read Stalled per time interval.
writeCommands=<int>	Write Commands per time interval.
writeBlocks=<int>	Write Blocks per time interval.
totalEraseCount=<int>	Total Erase Count for all drive channels.
writeOddStart=<int>	Write Odd Start per time interval.
writeOddEnd=<int>	Write Odd End per time interval.
writeStalled=<int>	Write Stalled per time interval.
nandReadCommands=<int>	NAND Read Commands per time interval.

nandReadBlocks=<int>	NAND Read Blocks per time interval.
nandWriteCommands=<int>	NAND Write Commands per time interval.
nandWriteBlocks=<int>	NAND Write Commands per time interval.
nandReadBefWrite=<int>	NAND Read before write per time interval.

GETSYSTEMNAME

GetSystemName will display the host name and information.

Synopsis

sdmcmd GetSystemName

Example

sdmcmd getsystemname

Output

operationResult=<OperationResult>	Overall outcome of the GetSystemName operation.
majorName=<int>	Windows, Linux, VMware, etc.
minorName=<int>	XP, 2008, 64bit, Ubuntu, RHEL, etc.
version=<int>	R2, 6.3.2, etc.
hostname=<string>	Name of the host computer or host system.

GETVERSION

GetVersion will obtain the current version of the SDM software. There are no input parameters for the command. The output consists of a string that displays the current software version.

Synopsis

sdmcmd GetVersion

Example

sdmcmd getversion

Output

operationResult=<OperationResult>	Overall outcome of GetVersion operation.
version=<string>	The current version of SDM.

LOGMESSAGE

LogMessage is used by Java to append or add a message to the log.

Synopsis

sdmcmd LogMessage <parameter>=<value>

Example

sdmcmd logmessage message=*string*

Table 19: LogMessage Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
message=<string>	Mandatory	Windows, Linux	The message, in the form of a *string* to be added to the log.

Output

operationResult=<OperationResult> Overall outcome of the LogMessage operation.

RESIZE

Resize will change the total block capacity of the target device.

Synopsis

sdmcmd Resize <parameter>=<value>

Example

sdmcmd resize target=*gen4sas:drive0* sectorsize=*512* logicalblocks=*xxx*

Table 20: Resize Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
sectorsize=<int>	Mandatory	Windows, Linux	The sector size in bytes, expressed as an *integer*.
logicalBlocks=<int>	Mandatory	Windows, Linux	The number of logical blocks, where *xxx* is expressed as an *integer*.

Output

operationResult=<OperationResult> Overall outcome of the Resize operation.

RESIZEGB

ResizeGB will change the total gigabyte capacity of the target device. It performs the same function as **Resize**, except the parameter is *gigabytes* instead of *logicalblocks*.

Synopsis

sdmcmd ResizeGB <parameter>=<value>

Example

sdmcmd resizeGB target=*gen4sas:drive0* sectorsize=*512* gigabytes=*xxx*

Table 21: ResizeGB Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
sectorsize=<int>	Mandatory	Windows, Linux	The sector size in bytes, expressed as an *integer*.
gigabytes=<int>	Mandatory	Windows, Linux	The number of gigabytes, where *xxx* is expressed as an *integer*.

Output

operationResult=<OperationResult> Overall outcome of the ResizeGB operation.

RUNDIAGNOSTIC

RunDiagnostic will invoke the on-board diagnostic functions of the target device.

Synopsis

sdmcmd RunDiagnostic <parameter>=<value>

Example

sdmcmd rundiagnostic target=*gen4sas:drive0* diagnostictype=*type3*

Table 22: RunDiagnostic Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
diagnosticType=<Diagnostic Type>	Mandatory	Windows, Linux	Diagnostic type or level. *Type1* = Type 1 diagnostic; *Type2* = Type 2 diagnostic; *Type3* = Type 3 diagnostic.

Output

operationResult=<OperationResult> Overall outcome of the RunDiagnostic operation.

SANITIZE

Sanitize is a vendor-specific command used to invoke a user-specified sanitization standard. The user can perform a normal erase, or erase/fill to DOD 5220.22-M, AFSSI-5020, or NSA 130-2 standards.

Synopsis

sdmcmd Sanitize <parameter>=<value>

Example

sdmcmd sanitize target=*gen4sas:drive0* sanitizetype=*dod*

Table 23: Sanitize Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
sanitizeType=<Sanitize Type>	Mandatory	Windows, Linux	The Sanitization standard or level used to erase the drive. *Erase* = Erase only; *Dod* = DOD Standard 5220.22-M; *Afssi* = AFSSI-5020 Standard; *Nsa* = NSA 130-2 Standard.

Output

operationResult=<OperationResult> Overall outcome of the Sanitize operation.

SCANLOCAL

ScanLocal will scan and detect storage devices installed in the local host. There are no input parameters for the command. The output consists of list of storage devices installed in the local system.

Synopsis

sdmcmd ScanLocal

Example

sdmcmd scanlocal

Output

operationResult=<OperationResult> Overall outcome of ScanLocal operation.

Devices=<DeviceReferenence[…]> List of sTec and other storage devices installed in host.

Where the typical output would list the results and any detected devices:

Results for ScanLocal

operationResult = Success

devices.count = 3

devices[0] = other:Drive0

devices[1] = gen3sas:Drive1

devices[2] = gen4sas:Drive2

SETCACHELINEFLUSHSIZE

SetCacheLineFlushSize will set the granularity value for the flushing of data currently in the write cache to the media. The command has two input parameters: *target=<devicereference>* and *cacheLineFlushSize*. The valid values for *cacheLineFlushSize* are *2*, *4*, *8*, *16* and *32*. There is one output parameter, *resultant CacheLineFlushSize*, which is the new size that results from the command execution. The parameter is used to change Byte 5, "Maximum Commands Per Channel to Flush" of SCSI Mode Page 0x21. The command is only valid for sTec Gen4 SAS and Gen4 PCIe drives; it is not implemented for Gen4 FC or MACH16 SSDs.

Notes:

1. If a non-supported drive is specified, SDM will return an error of UNSUPPORTED OPERATION.
2. The command is only valid for drives configured with 512-byte sector sizes due to firmware limitations. If the sector size of the drive is not equal to 512 bytes, and the *cacheLineFlushSize* is valid, the command will be accepted and the MODE SENSE command will show the new value, but the firmware will not execute it. In this event, SDM will report a successful operation, but the log file will contain a message that the value will not be processed by the firmware.
3. If SetCacheLineFlushSize is called with the value of 0 (zero), the current value of the *cacheLineFlushSize* is returned, but no update will occur.

Synopsis

sdmcmd SetCacheLineFlushSize target=<devicereference> cachelineflushsize=x.

Example

sdmcmd setcachelineflushsize *target=gen4pcie:drive0 cachelineflushsize=8*

Table 24: SetCacheLineFlushSize Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.
cachelineflushsize=*x*	Mandatory	Windows, Linux	Where *x* is the granularity value. The valid values are *2*, *4*, *8*, *16* and *32*.

Output

If the command is successful, the output will be:

```
Results for SetCacheLineFlushSize
                  operationResult = Success
      resultantCacheLineFlushSize = 8 0x8
```

If the command fails, the output will be:

```
Results for SetCacheLineFlushSize
                  operationResult = FailedBadRequest
      resultantCacheLineFlushSize = 8 0x8
```

SETFACTORYDEFAULTS

SetFactoryDefaults will overwrite any user-defined settings with factory default settings.

Synopsis

sdmcmd SetFactoryDefaults <parameter>=<value>

Example

sdmcmd setfactorydefaults target=*gen4sas:drive0*

Table 25: SetFactoryDefaults Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
target=<devicereference>	Mandatory	Windows, Linux	The drive or device to access. For example, *gen4sas:drive0 or /dev/sg0*.

Output

operationResult=<OperationResult> Overall outcome of the SetFactoryDefaults operation.

SETPRIVPATH

SetPrivPath will specify the path to the preferred privilege file rather than the default path.

Synopsis

sdmcmd SetPrivPath path=<string>

Example

sdmcmd setprivpath path=*pathname*

Table 26: SetPrivPath Input Parameters

PARAMETER	USAGE	PLATFORMS	DESCRIPTION
path=<string>	Mandatory	Windows, Linux	The path to the preferred privilege file.

Output

operationResult=<OperationResult> Overall outcome of the SetPrivPath operation.

GLOSSARY

Table 27: Glossary of Terms

TERM	DEFINITION
CGI	Common Gateway Interface.
CLI	Command Line Interface.
EULA	End-User License Agreement.
FAE	Field Application Engineer.
Fibre Channel	This term refers to devices that use the Fibre Channel-Arbitrated Loop (FC-AL) interface. It is a networking technology and protocol primarily used for storage networking.
Firmware	Firmware is a term often used to denote the embedded software programs and/or data structures used to internally control electronic devices, such as microcontrollers or microprocessors.
FW	See *Firmware*.
GNU	A recursive acronym for "*GNU's Not Unix!"*
GPL	GNU Public License.
GUI	Graphical User Interface.
HBA	Host Bus Adapter
HDD	Hard Disk Drive.
IO or I/O	Input/Output. A READ or WRITE operation of user data.
IOPS	Input/Output Per Second, usually measured in 4,096 byte sizes.
iSCSI	Internet Small Computer System Interface. A protocol that allows for the transmission of SCSI commands and data transfers over IP networks, especially SANs (Storage Area Networks).
JVM	Java Virtual Machine. JVM is a component of the Java Framework Installation that runs Java code on a particular host.
NAS	Network Attached Storage.
Operating System	An Operating System (OS), also known as system software, manages all interaction and services between the user, applications, and system resources (hardware).
OS	See *Operating System*.

TERM	DEFINITION
PCIe	PCI Express, or Peripheral Component Interconnect Express, is a computer expansion card standard. The term refers to add-in devices that use the PCIe serial interface.
SAN	Storage Area Network.
SCSI	Small Computer System Interface.
Serial-Attached SCSI	This term refers to devices that use the Serial-Attached SCSI, or SAS interface.
SSA	Solid-State Accelerator.
SSD	Solid-State Drive or Solid-State Device.

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CUSTOMER SUPPORT

sTec, Inc. offers technical support for all SDM customers. You can email sTec, Inc. for answers to simple questions and to submit bug reports. You also have the option of accessing the support web page or contacting sTec, Inc. by telephone. Please provide a detailed description of the issue and include your contact information.

ONLINE SUPPORT	TELEPHONE SUPPORT
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