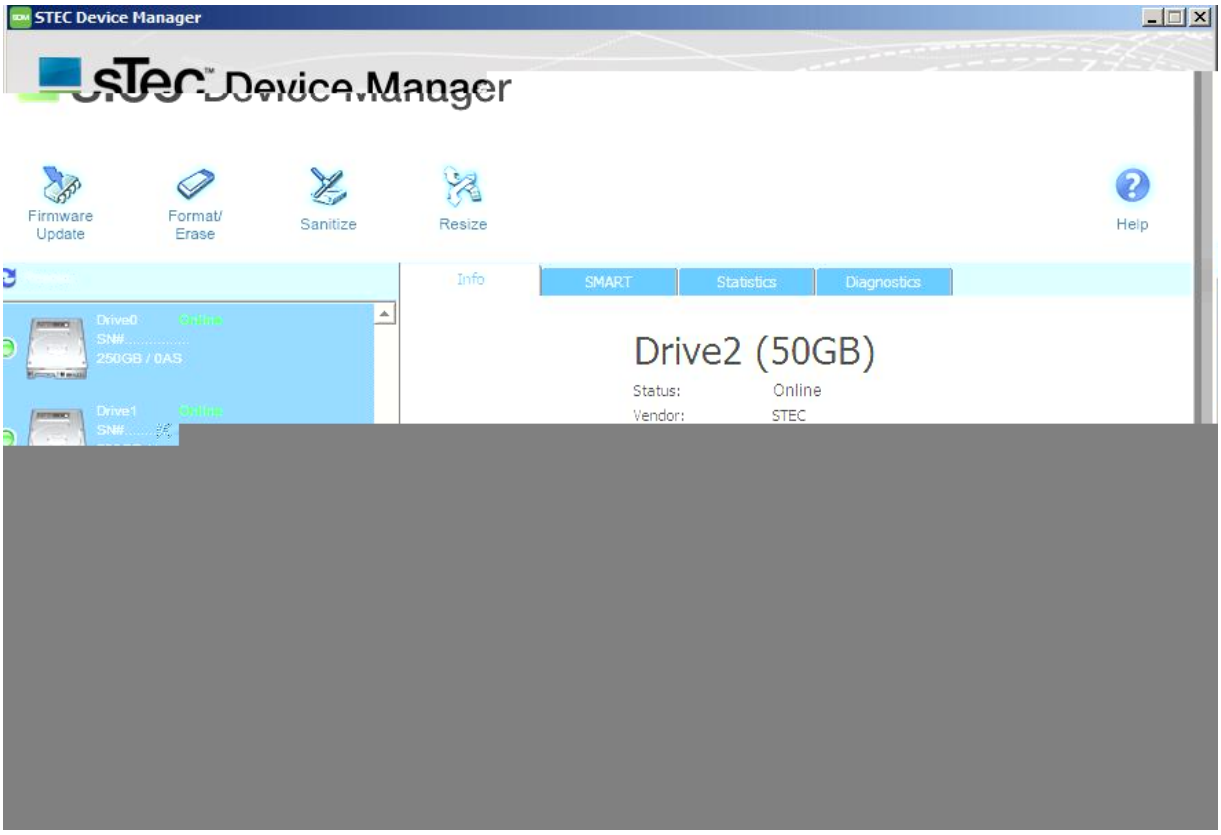
sTec Device Manager
User Guide
Version 2.0.0.130



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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	8VHG WR LQGLFDWH D K\SHUOLQN R subtopic. In addition, the text may be **bold**.
Dark Blue Bold	**Text**	8VHG WR LQGLFDWH D K\SHUOLQN R 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 UHIOHFW QHZ RSWLRQ RI ³&OHDU 6PD
		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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SCOPE

Figure 1: sTec Device Manager

OVERVIEW

Welcome to the sTec Device Manager Œ(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.

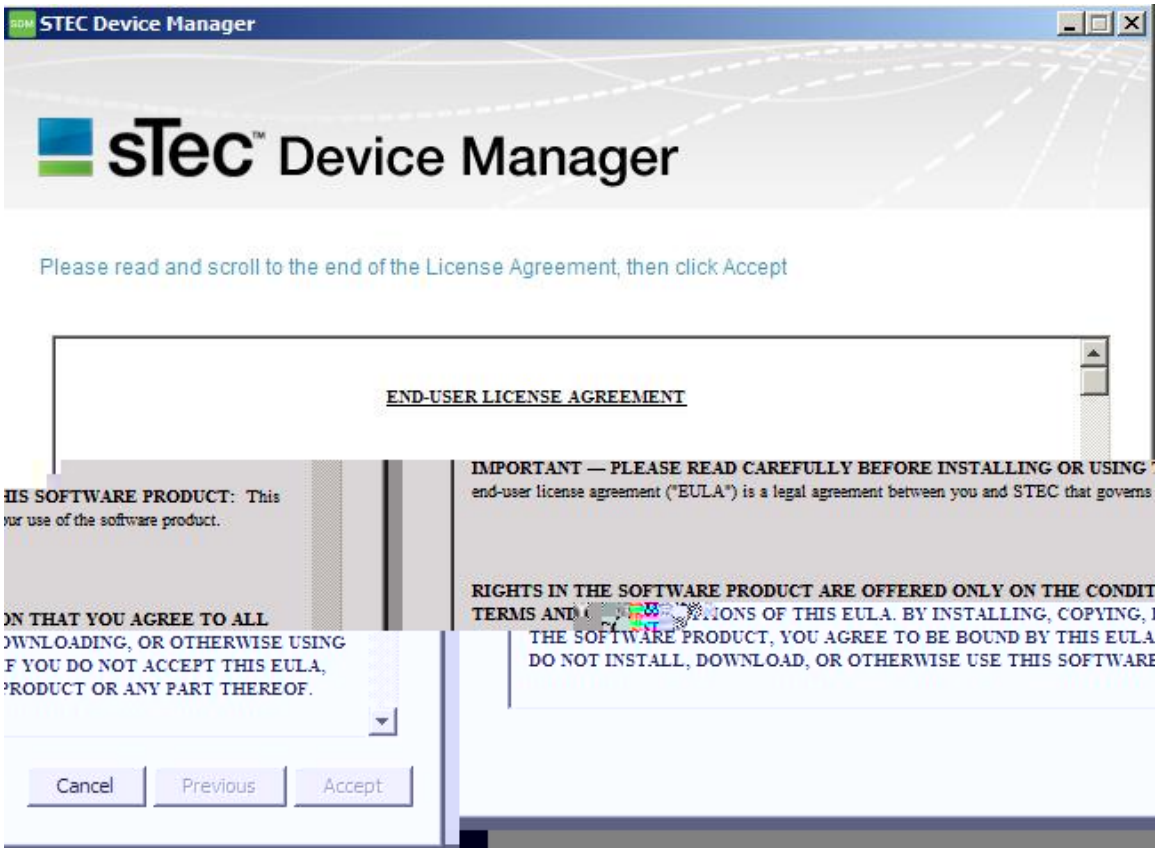
SDMGUI INSTALLATION

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.

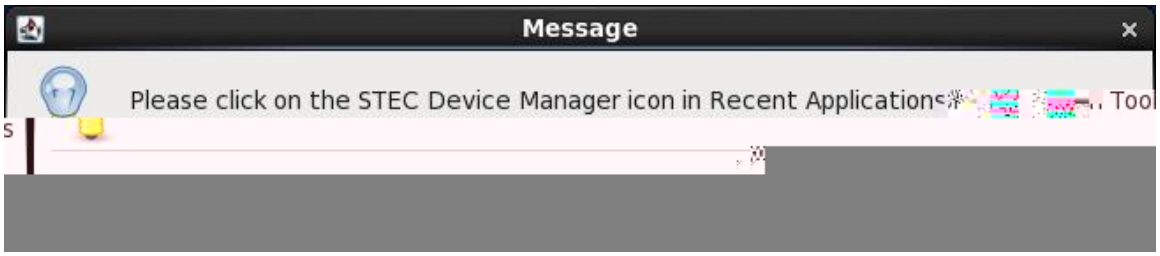
LINUX INSTALLATION

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.

SDMGUI

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.

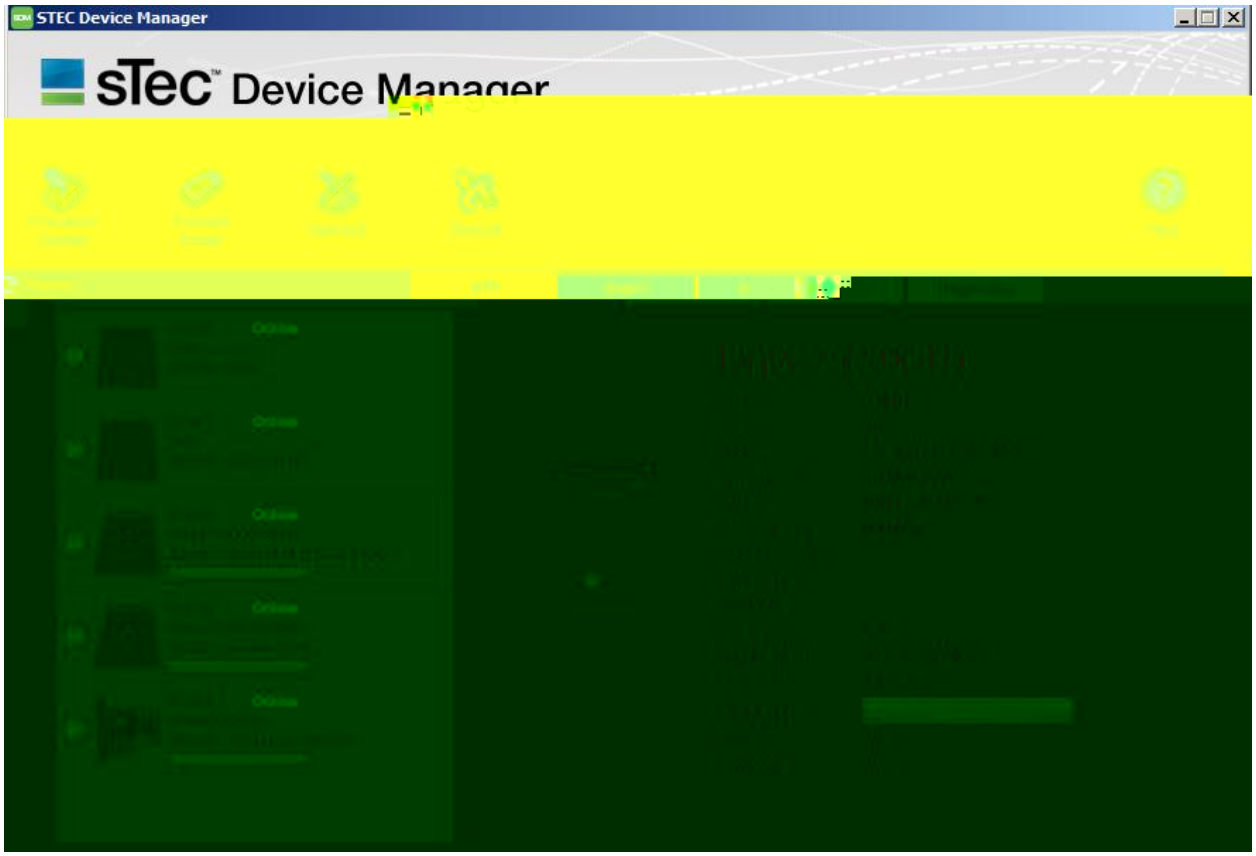
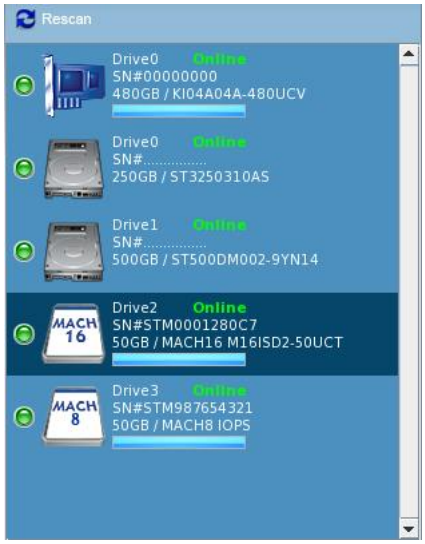


Figure 2: The SDM Graphical User Interface

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 ³'UL2´Hicon 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****.*

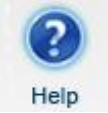
SANITIZE

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 GHYLFH LV ODEHOHG E\ LWV V\VWHP QXPEHU)RU D :LQGRZV V\VWHP F

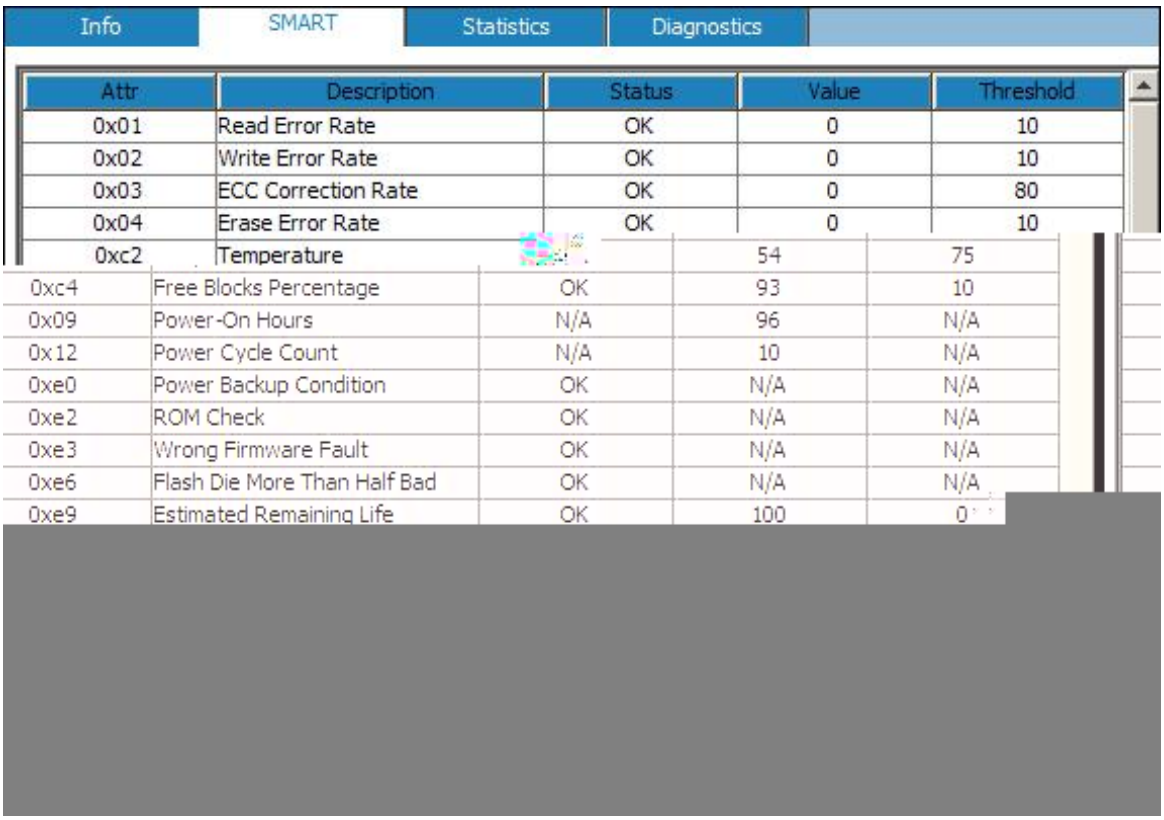
FIELD	DESCRIPTION
Firmware Version	The firmware version that is currently loaded.
Boot Loader Version	The boot loader version.
HW Config Version	The hardware configuration version number.
XROM Version	The XROM version.
Sector Size	The sector size in bytes (512, 520, 524 or 528).
Max LBA (GB)	The maximum 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; RWKHUZLVH ³1 $´ DSSHDUV LQ WKLV ILHOG LI P
Driver Version	If managing a PCIe SSA, then the driver version appears in this field; RWKHUZLVH ³1 $´ DSSHDUV LQ WKLV ILHOG LI P

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.



Info | SMART | Statistics | Diagnostics

Attr	Description	Status	Value	Threshold
0x01	Read Error Rate	OK	0	10
0x02	Write Error Rate	OK	0	10
0x03	ECC Correction Rate	OK	0	80
0x04	Erase Error Rate	OK	0	10
0xc2	Temperature		54	75
0xc4	Free Blocks Percentage	OK	93	10
0x09	Power-On Hours	N/A	96	N/A
0x12	Power Cycle Count	N/A	10	N/A
0xe0	Power Backup Condition	OK	N/A	N/A
0xe2	ROM Check	OK	N/A	N/A
0xe3	Wrong Firmware Fault	OK	N/A	N/A
0xe6	Flash Die More Than Half Bad	OK	N/A	N/A
0xe9	Estimated Remaining Life	OK	100	0

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.

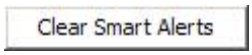
Table 5: SMART Panel Listing-SCSI Data

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.

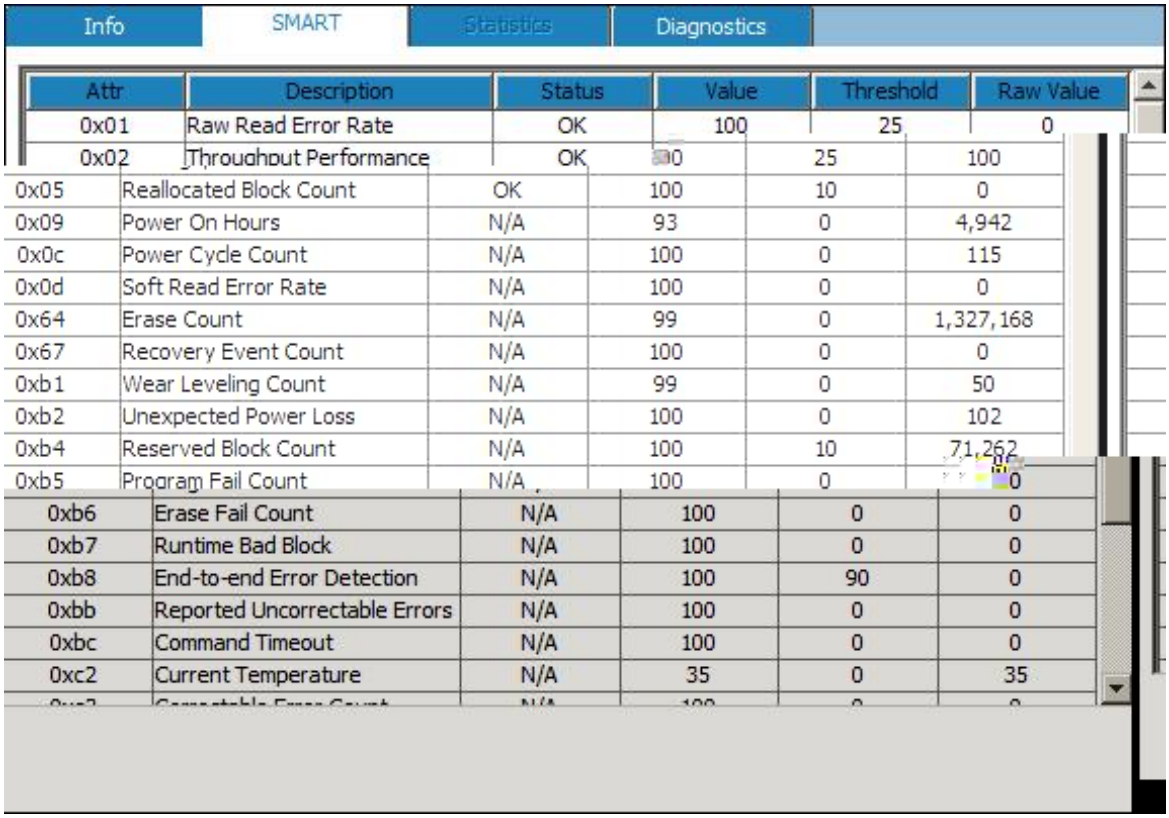
Clear Smart Alerts



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.



Info | SMART | Statistics | Diagnostics

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.

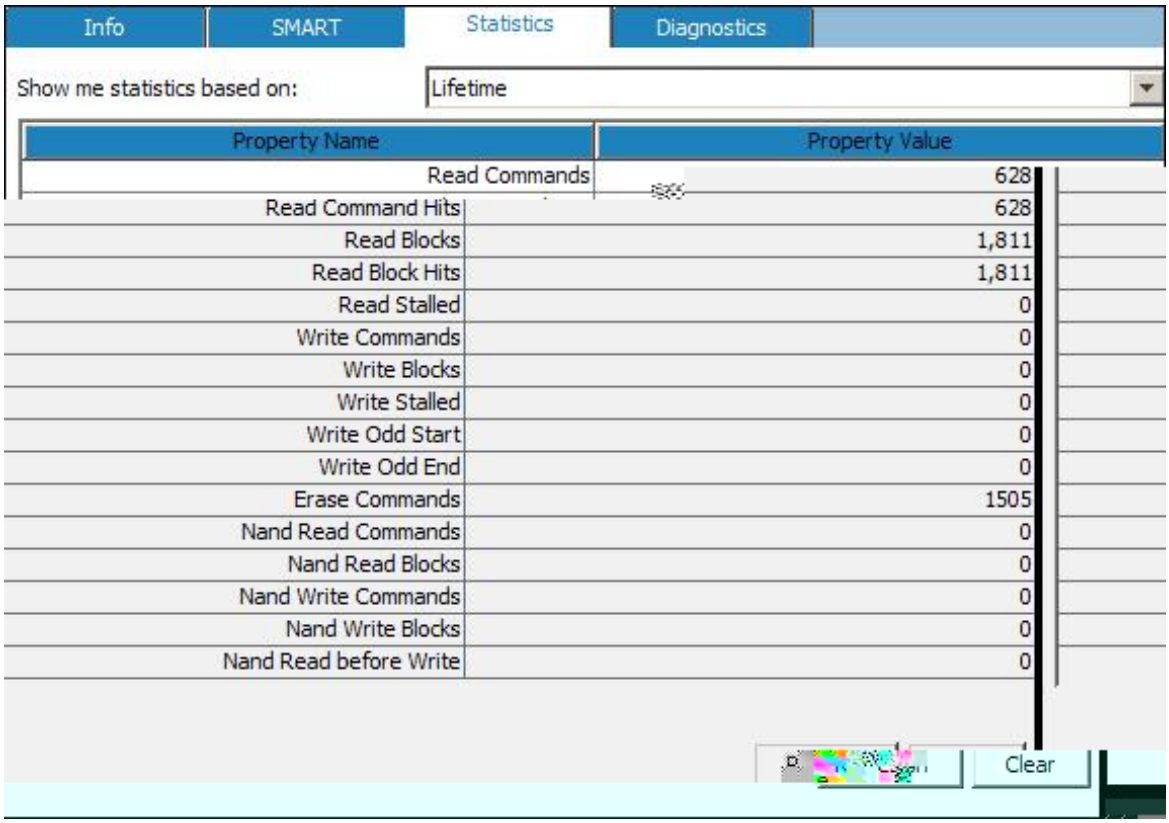
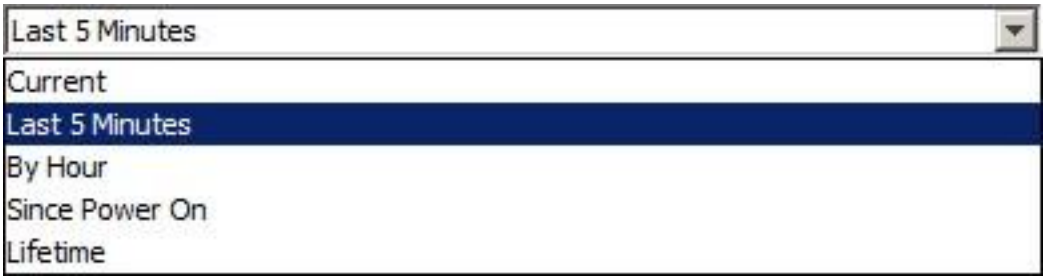
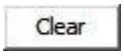


Figure 7: The Statistics Panel

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.

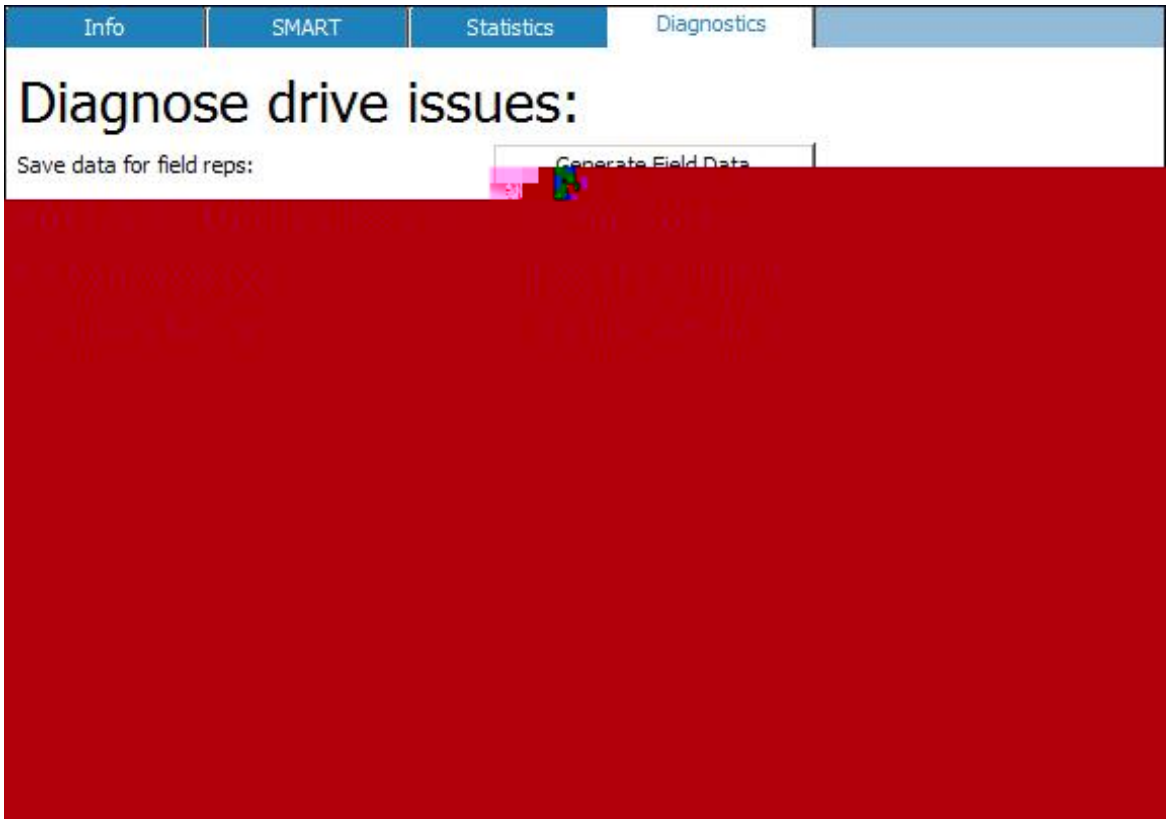


Figure 8: The Diagnostics Panel

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.

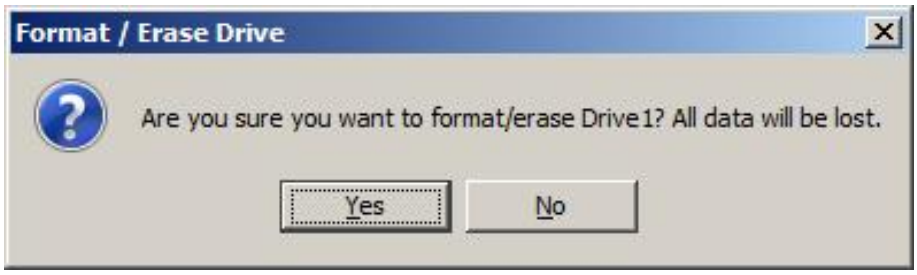
Set Cache Line Flush Size

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.

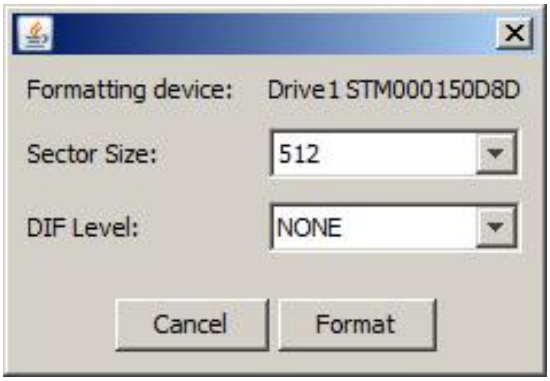
Formatting a Drive

To format/erase the drive:

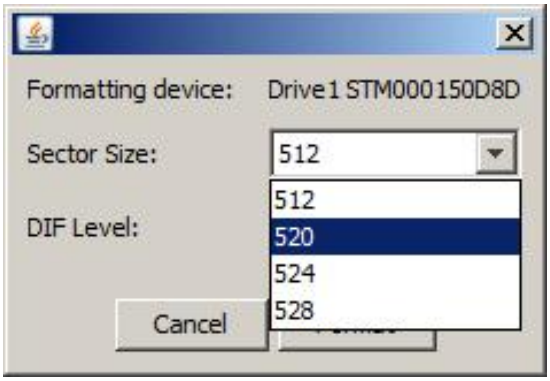
1. Click the **Format/Erase** button. The Format/Erase dialog box appears. You are prompted to confirm.
2. Click **Yes** to begin or **No** to cancel. If you click **Yes**, a confirmation dialog box appears.



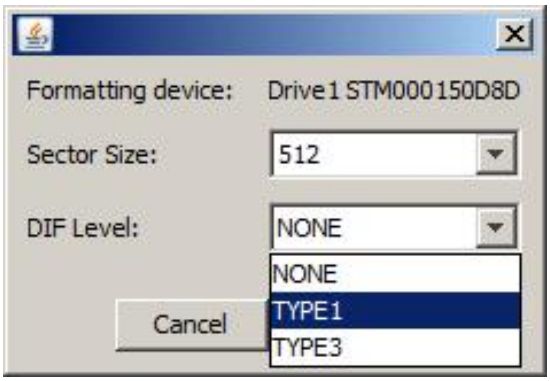
3. Click **Yes**. The Sector Size and DIF Level dialog box appears.



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.

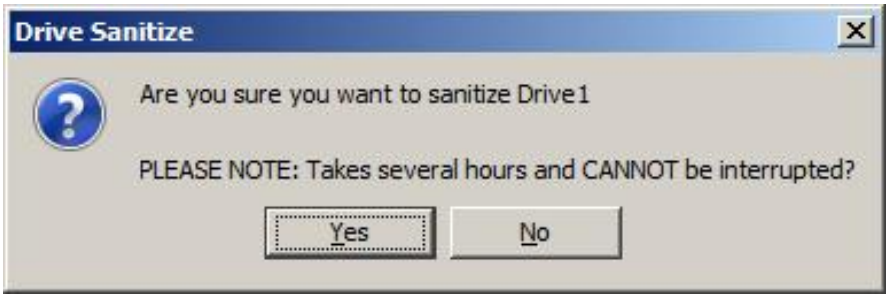


6. Click **Format** to format the drive with the selected sector size and DIF level, or click **Cancel**. If you click **Format**, the drive is formatted according to the selected **Sector Size** and **DIF Level**. Notice that the drive goes off-line and the **Status** (Information tab) will display)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

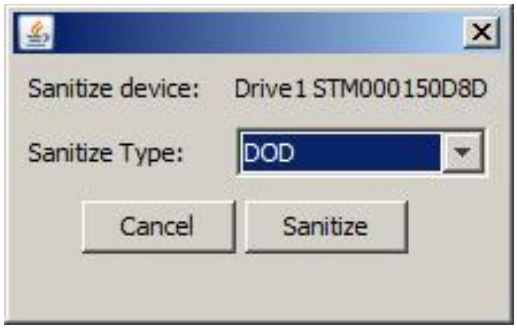
SANITIZING A DRIVE

To sanitize the drive:

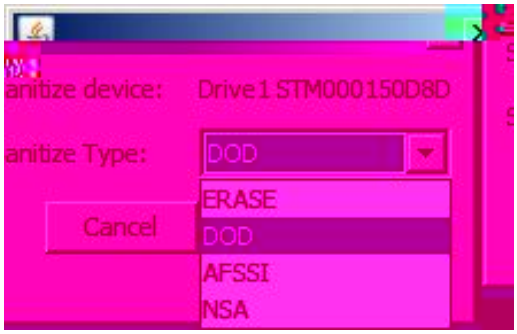
1. Click the **Sanitize** button. You are prompted to confirm.



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 6 D Q L W L.]W.Qe1 k. When the process is complete, the drive comes on-line and the **Status** updates to **Online**.

SDMCMD COMMAND LINE INTERFACE

OVERVIEW

SDM also supports a Command Line Interface (CLI). This section discusses the usage and caps8(s)-5(u72.0n5(es)-3(ta[(S

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.

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.

' H Y L F H V ' H Y L F H 5 H I H U H 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 ³ 0 D [L P X P & R P P D Q G V 3 H U &RKH&DFKH&RQWUROOHG &RQWURO 0RGH 3DJH &RGH &RQWURO &RQWURO´ 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	**$ U H F X U V L Y H D*FLUR\Q 1RW WR 8Q³L [´**
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).