

Intel[®] Solid-State Drive Toolbox

User Guide



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1.0 Overview

1.1 Purpose

This document discusses the Intel® Solid-State Drive (SSD) Toolbox, which provides the following activities in one convenient location:

- Accessing Intel SSD management features
- Reporting the drive identification data for Intel SSDs, as well as other drives
- Accessing the Self-Monitoring, Analysis, and Reporting Technology (SMART) attributes for Intel SSDs, as well as other drives
- Checking the SMART thresholds and viewing recommended actions for Intel SSDs, as well as other drives
- Running diagnostic scans on Intel SSDs to check for any READ or WRITE errors

1.2 System Requirements

Using the Intel SSD Toolbox requires the device to have:

- Microsoft Windows* operating system: Windows XP, Windows Vista* or Windows 7 (32/64 bit)
- .NET Framework 2.0
Note: If your system does not have .NET installed, the tool will direct you to the appropriate place to obtain it.
- At least 10 megabytes (MB) of available space on the SSD

To determine whether the SSD has enough available space, use the following instructions:

- Double click **My Computer**
- Right click the SSD you want to check
- Click **Properties** to display the amount of free space
- Click **Cancel** to close the window



2.0 Setup

Complete the following steps before starting the installation process on the PC containing the SSD.

1. Download the Intel® SSD Toolbox

- Go to the Intel support website located at <http://www.intel.com/go/ssdtoolbox>.
- Save the tool to a folder on your drive. Similar to a zip file, the .msi file contains the following items:
 - Intel SSD Toolbox application software
 - License Agreement
 - READ ME file (.rtf format)
 - Intel SSD Toolbox User Guide (.pdf format)

2. Install the Intel SSD Toolbox

After downloading the software,

- Click on the downloaded .msi file to start the Intel Solid-State Drive Toolbox Setup Wizard.
- Click **Next** in the Intel Solid-State Drive Toolbox Setup Wizard window to install the tool.
- Click **Next** in the Intel Solid-State Drive Toolbox Information window.
- After reading the Intel Software License Agreement, click **I Agree**. Then click **Next**.
- Either accept the default location or click **Browse** to identify where you want to store the installation folder. Then click **Next**.
- Click **Next** to confirm the installation of the Intel SSD Toolbox.
- Click **Close** to exit the installation wizard.
- Once the installation finishes, the Intel SSD Toolbox program will automatically launch. The default installation location is **Program Files\Intel\Intel SSD Toolbox**.
- After reading the license agreement, click **Accept** to continue.

3. Starting the Intel SSD Toolbox

If the tool does not automatically launch after completing the installation process or if you have already installed the Intel SSD Toolbox, double click the Intel SSD Toolbox icon on your desktop.



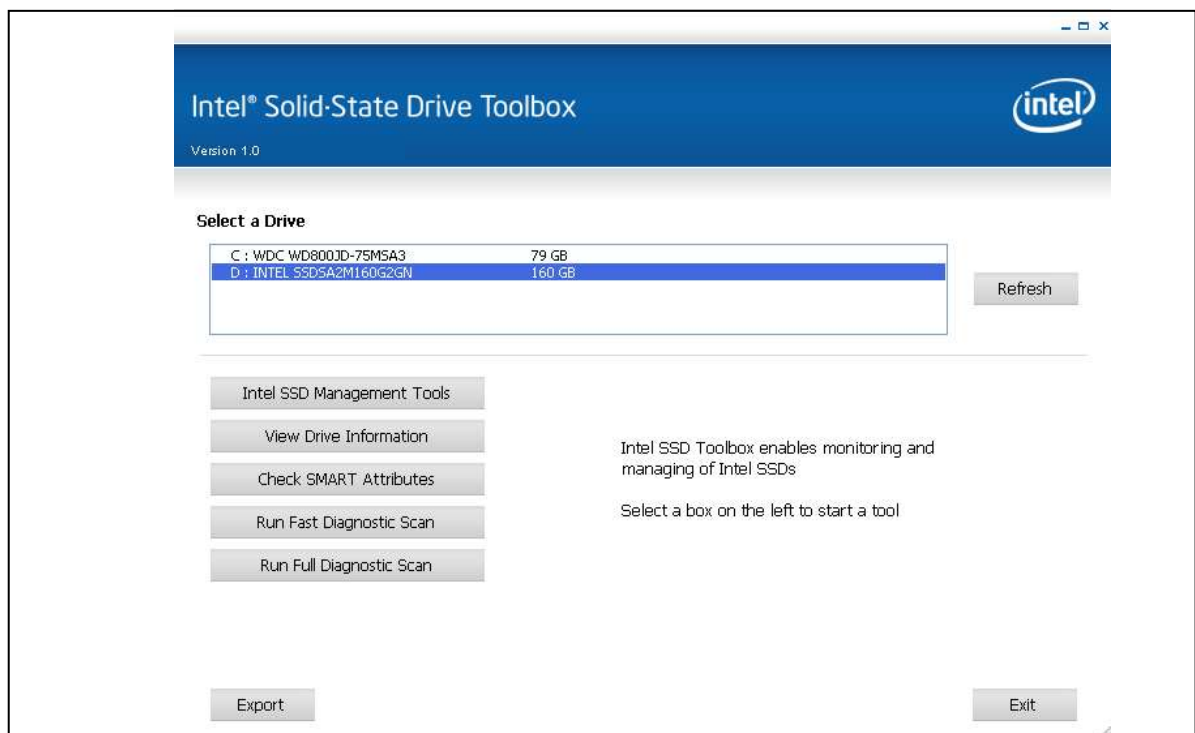


3.0 Intel® SSD Toolbox Main Screen

When the Intel SSD Toolbox opens, it displays the following screen with the name and capacity of each drive on your PC, as well as the following options:

- **Intel SSD Management Tools** – Enables monitoring and managing of any Intel SSDs associated with this computer.
- **View Drive Information** – Displays the model number, serial number and firmware number for each drive on the system. It also lists the ATA and SATA capabilities for the selected drive.
- **Check SMART Attributes** - Lists the SMART features and their respective thresholds, and, if necessary, indicates any action to take.
- **Run Fast Diagnostic Scan** – Analyzes the first 1.5 GB of an SSD to determine whether there are any READ or WRITE errors.
- **Run Full Diagnostic Scan** – Analyzes the complete SSD to determine whether there are any READ or WRITE errors or any bad blocks.

Figure 1. Main Toolbox Screen



The screen also contains the following buttons:

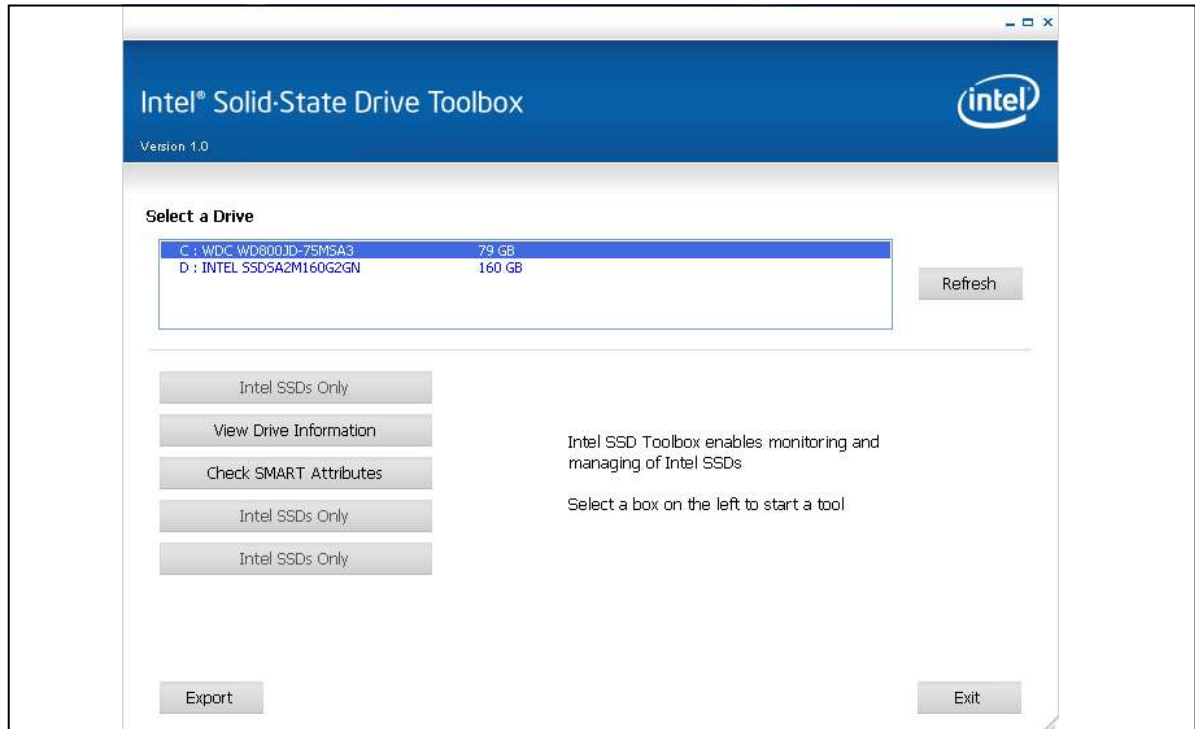
- **Refresh** – Rescans your computer, and displays the name and capacity of each drive found on your system.
- **Export** – Writes the drive information and SMART data to a .csv file on your system.

- **Exit** – Closes the Intel SSD Toolbox application.

To use the Intel SSD Toolbox, select the drive on which you want to run an activity. Then click on the corresponding box to the left.

If the **Select a Drive** box highlights a non-Intel SSD, the text in several boxes changes to **Intel SSDs Only** and becomes gray.

Figure 2. Other Drive Main Toolbox Screen



3.1 Select a Drive

This section of the screen displays all the drives available on your system, including Intel SSDs, as well as other drives. Use the **Refresh** button to rescan your computer, and display the name and capacity of each drive found on your system.

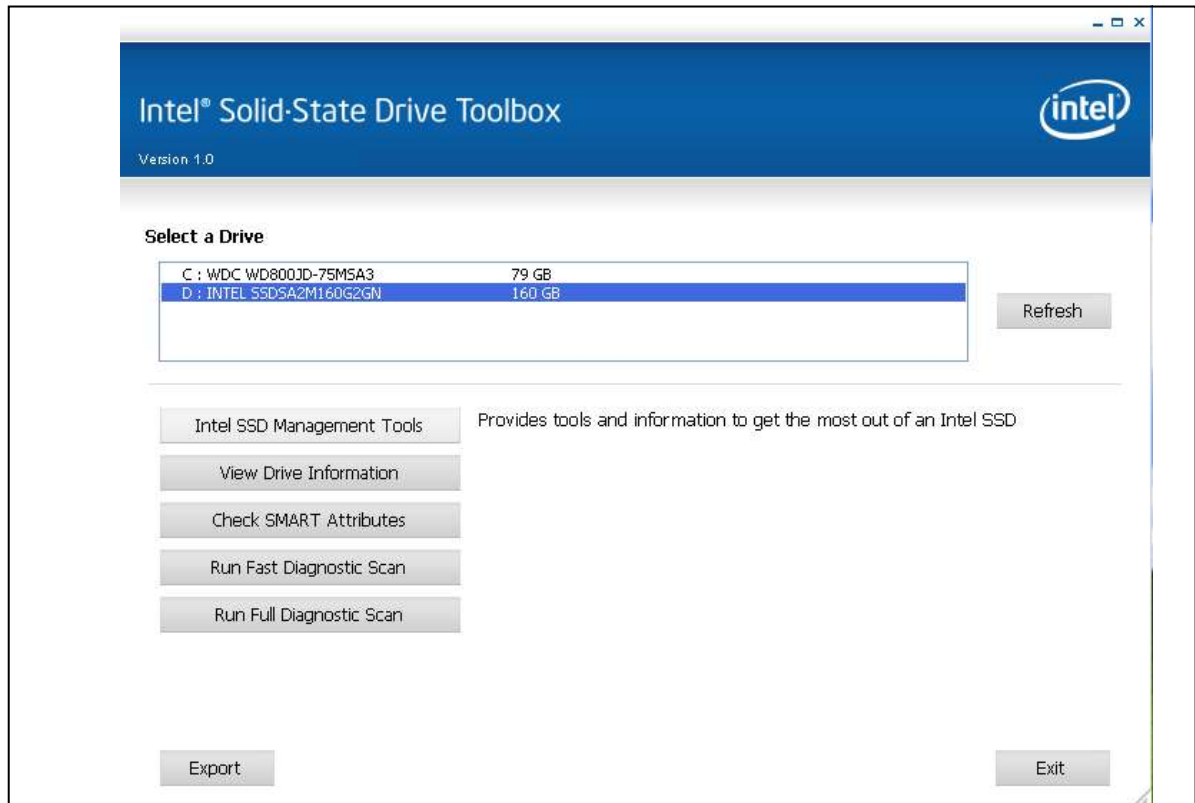
You can also use the **Select a Drive** section of the screen to identify on which drive you want to perform an Intel SSD Toolbox activity.



3.2 Intel SSD Management Tools

Use this option to access or schedule various Intel SSD management tools, such as the Intel® SSD Optimizer. In the **Select a Drive** box, select the Intel SSD, and then click the **Intel SSD Management Tools** box.

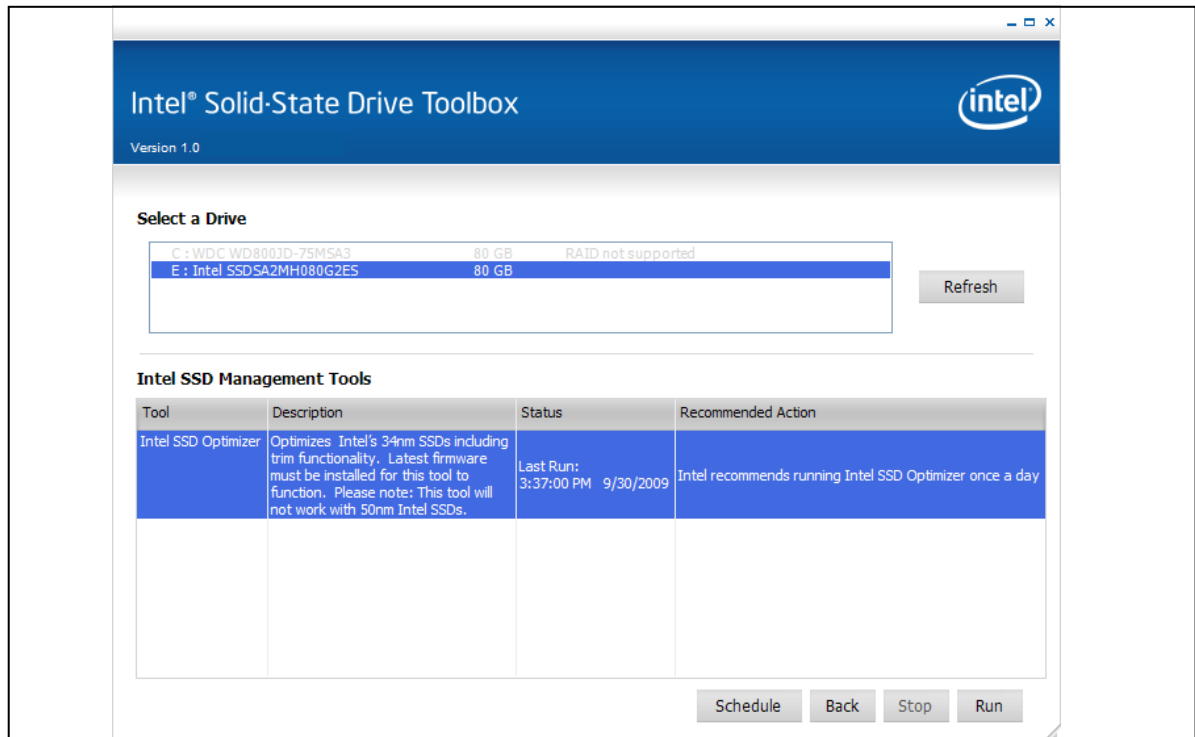
Figure 3. Intel SSD Management Tools Screen



3.2.1 Screen Display

After you click on **Intel SSD Management Tools** box, the program displays a screen containing the following fields:

- **Tool** – Lists the name of each program.
- **Descriptions** – Describes the purpose or function of the tool.
- **Status** – Displays the time and date of the last successful run.
- **Recommended Action** – Lists Intel’s recommended frequency for running this tool.

Figure 4. Intel SSD Management Tools Options


Select **Intel SSD Optimizer** to remove deleted data files from the NAND Flash management blocks on the SSD. This drive management tool helps the Intel SSD retain its out-of-box performance by utilizing the ATA Data Set Management Commands. When files are deleted by the user, the operating system marks them for deletion, but does not immediately physically erase them. Since the SSD does not know which files are deleted, it still thinks all its files contain valid data. This situation causes the SSD to continue managing the deleted files in addition to the valid data in the drive. By running the Intel SSD Optimizer, the tool identifies which files the user deleted and communicates that information to the SSD. This notification allows the SSD to clean up internal management space and eliminates the need to manage the deleted files.

3.2.2 Actions

From this screen you have the following options:

- **Schedule** – Defines when/how often you want to run the Intel SSD Optimizer on the selected SSD.
- **Back** – Returns to the main screen of the Intel SSD Toolbox program
- **Stop** – Halts the running of the Intel SSD Optimizer on a selected SSD.
- **Run** – Launches the Intel SSD Optimizer on a selected SSD.

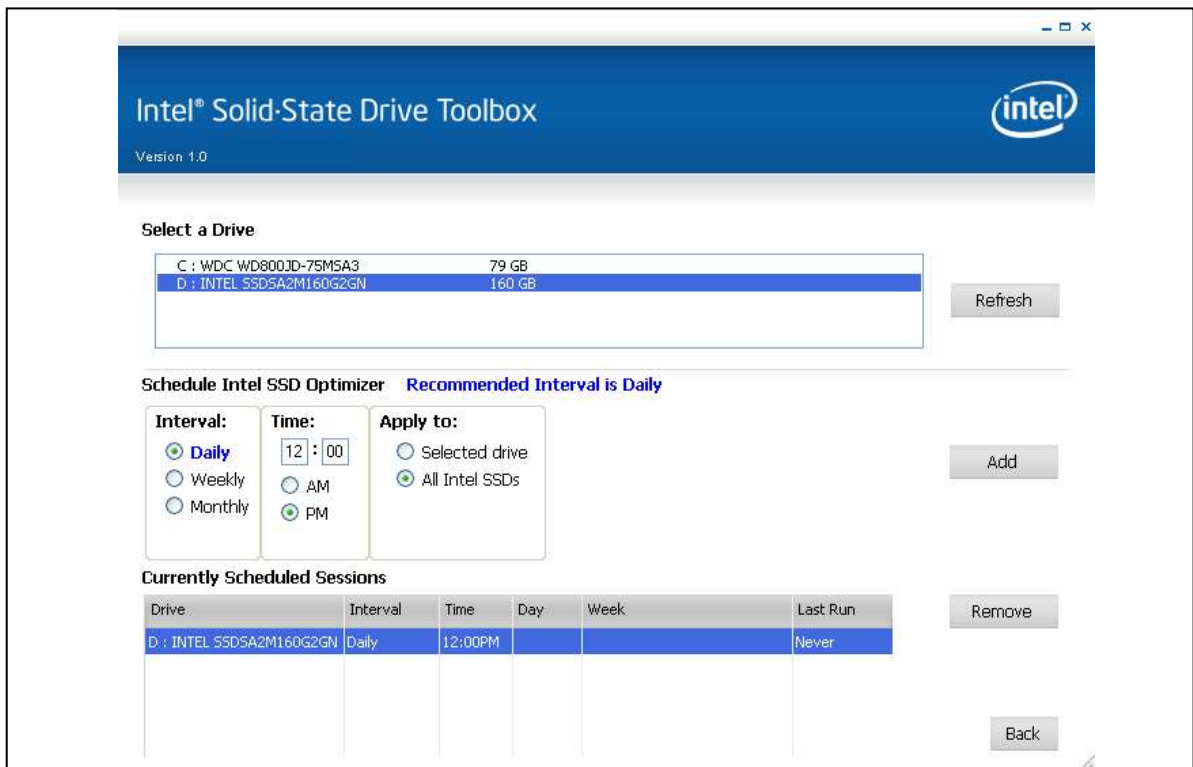


3.2.2.1 Schedule

Click **Schedule** to define the criteria for automatically launching the Intel SSD Optimizer tool.

- **Interval** – Determines how often to run the tool. You can select **Daily**, **Weekly** or **Monthly**. Depending on the option you select, the screen will change to request additional scheduling information.
- **Time** – Selects the time to run the tool.
- **Apply to** – Identifies whether the tool should be ran only on a selected drive or on all Intel SSDs in the system.
- **Currently Scheduled Sessions** – Lists any scheduled launches and their corresponding frequency.

Figure 5. Schedule Intel SSD Optimizer Screen



3.2.2.1.1 Screen Displays

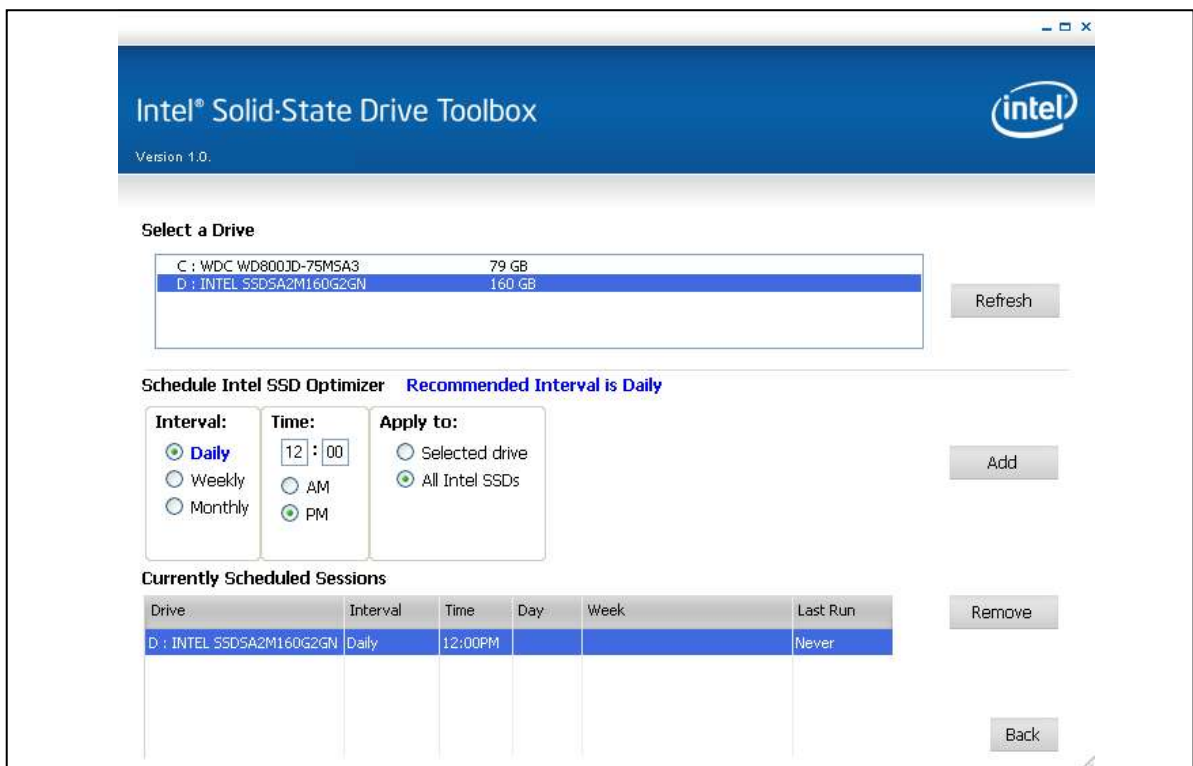
Depending on the **Interval** you select, the screen will change to request additional scheduling information.

Daily Schedule Screen

Complete the **Interval**, **Time** and **Apply to** fields, then click **Add**. The tool will then display the new schedule in the **Currently Scheduled Sessions** section.

Intel suggests running the tool daily to help optimize performance.

Figure 6. Schedule Intel SSD Optimizer Screen - Daily

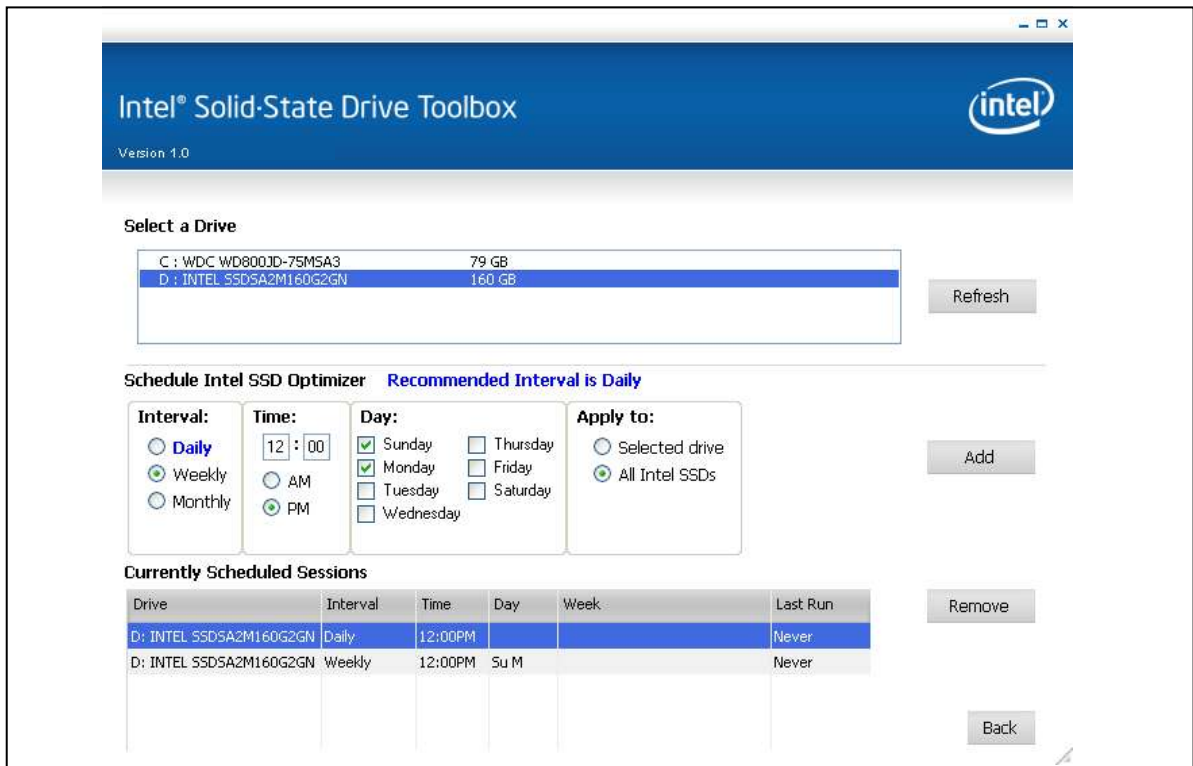




Weekly Schedule Screen

Complete the **Interval**, **Time**, **Day** and **Apply to** fields, then click **Add**. The tool will then display the new schedule in the **Currently Scheduled Sessions** section.

Figure 7. Schedule Intel SSD Optimizer Screen – Weekly

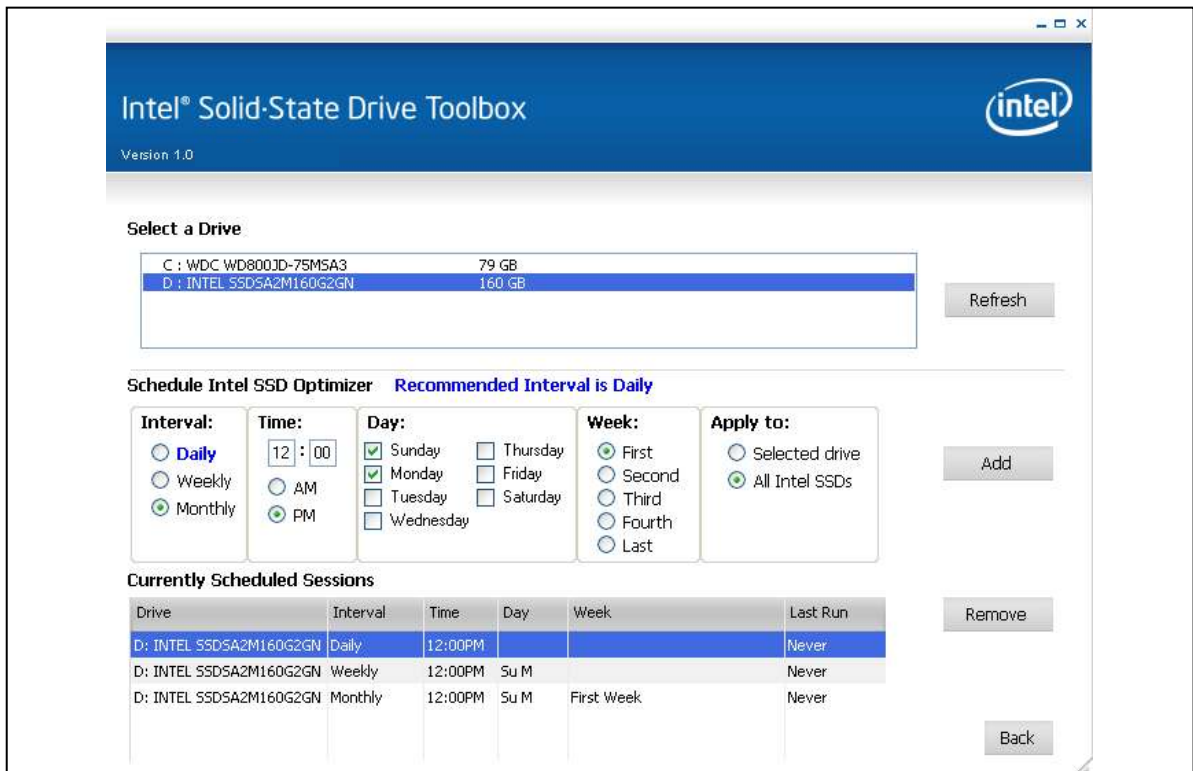


NOTE: Intel suggests running the tool daily, as identified by the **bold blue** text.

Monthly Schedule Screen

Complete the **Interval**, **Time**, **Day**, **Week** and **Apply to** fields, then click **Add**. The tool will then display the new schedule in the **Currently Scheduled Sessions** section.

Figure 8. Schedule Intel SSD Optimizer Screen – Monthly



NOTE: Intel suggests running the tool daily, as identified by the **bold blue** text.

3.2.2.1.2 Actions

The scheduling screen contains the following buttons:

- **Add** – Allows you to schedule running the Intel SSD Optimizer on one or more Intel SSDs. After entering the scheduling information, click **Add** to update the list of **Currently Scheduled Sessions**.
- **Remove** – Enables you to delete a scheduled launch session. In the **Currently Scheduled Sessions** section, select the schedule you want to delete. Then click **Remove**. The tool deletes the schedule information and redisplay the updated list in the **Currently Scheduled Sessions** section.
- **Back** – Returns to the Intel SSD Management Tools screen. Click **Back** again to return to the main Intel SSD Toolbox screen.



3.2.2.2 Back

Click **Back** to return to the main Intel SSD Toolbox screen.

3.2.2.3 Stop

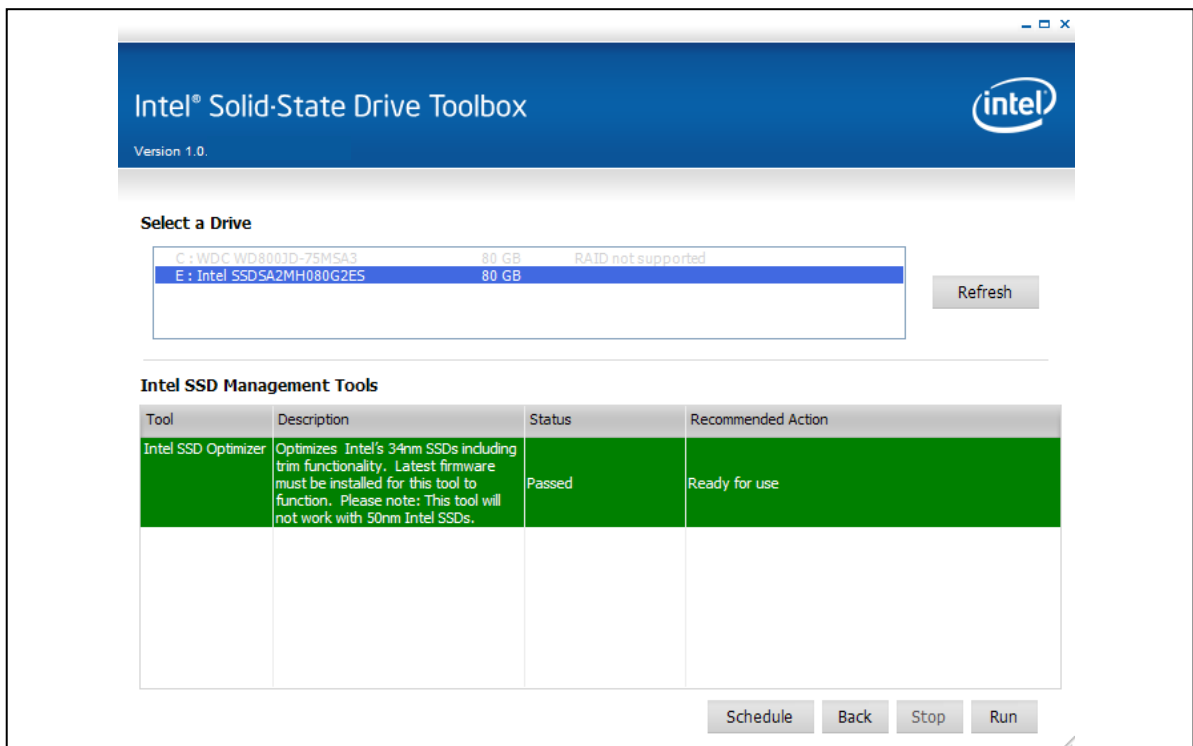
Click **Stop** to halt the running of the selected tool, such as the Intel SSD Optimizer, on the selected drive.

3.2.2.4 Run

Click **Run** to manually launch the Intel SSD Optimizer. Upon completion, the program will display a screen with columns similar to [Figure 4](#).

- **Tool** – Lists the name of each program.
- **Descriptions** – Describes the purpose or function of the tool.
- **Status** – Displays whether the program completed successfully.
- **Recommended Action** – Identifies whether the system can use the SSD for processing.

Figure 9. Intel SSD Optimizer Completion Screen



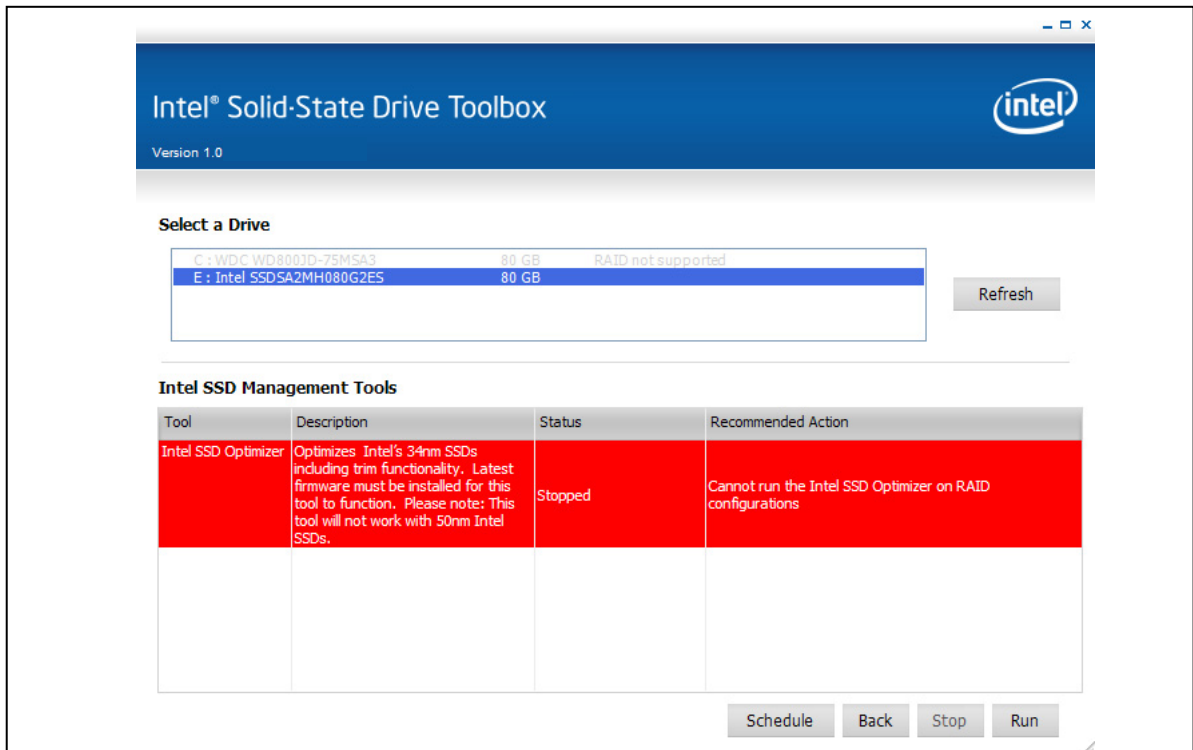
If your SSD does not have the latest firmware installed or if the drive's lithography is 50nm, the program will display the message: This tool is not supported on the selected drive.

Note: Refer to the drive name in the **Select a Drive** section. A "1" in the twelfth position indicates a 50nm drive, while a "2" indicates a 34nm. For example in [Figure 9](#): SSDSA2M160G2GN indicates a 34nm drive.

3.2.3 SSDs with a RAID Configuration or Encryption

As part of its normal processing, the Intel SSD Toolbox checks whether the selected drive has a RAID configuration. If so, the program highlights the row in red and displays following error message: **Cannot run the Intel SSD Optimizer on RAID configurations.**

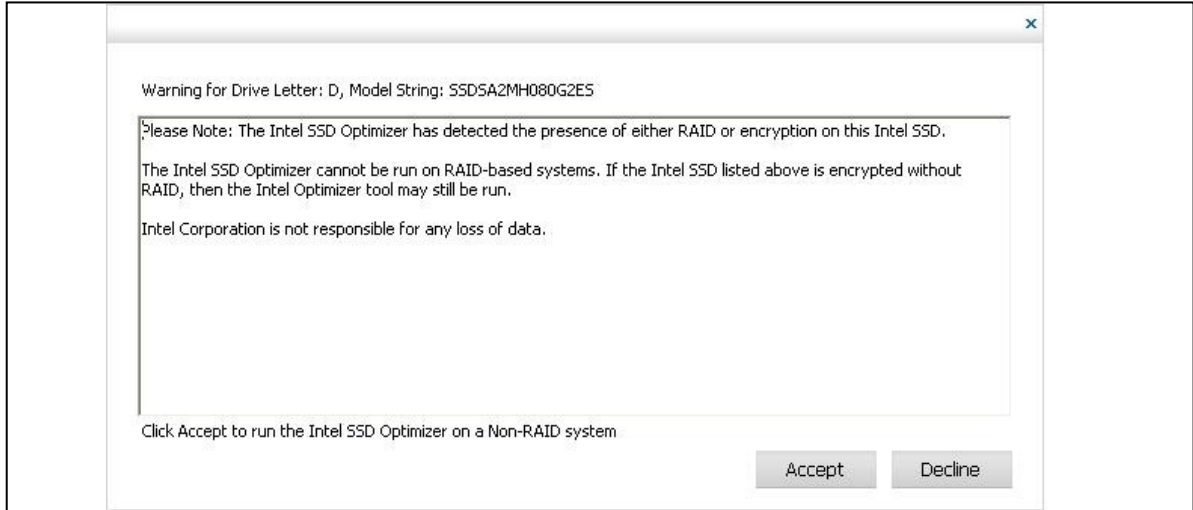
Figure 10. SSD With RAID Configuration





If the selected drive has encryption, the Intel SSD Toolbox displays the following screen.

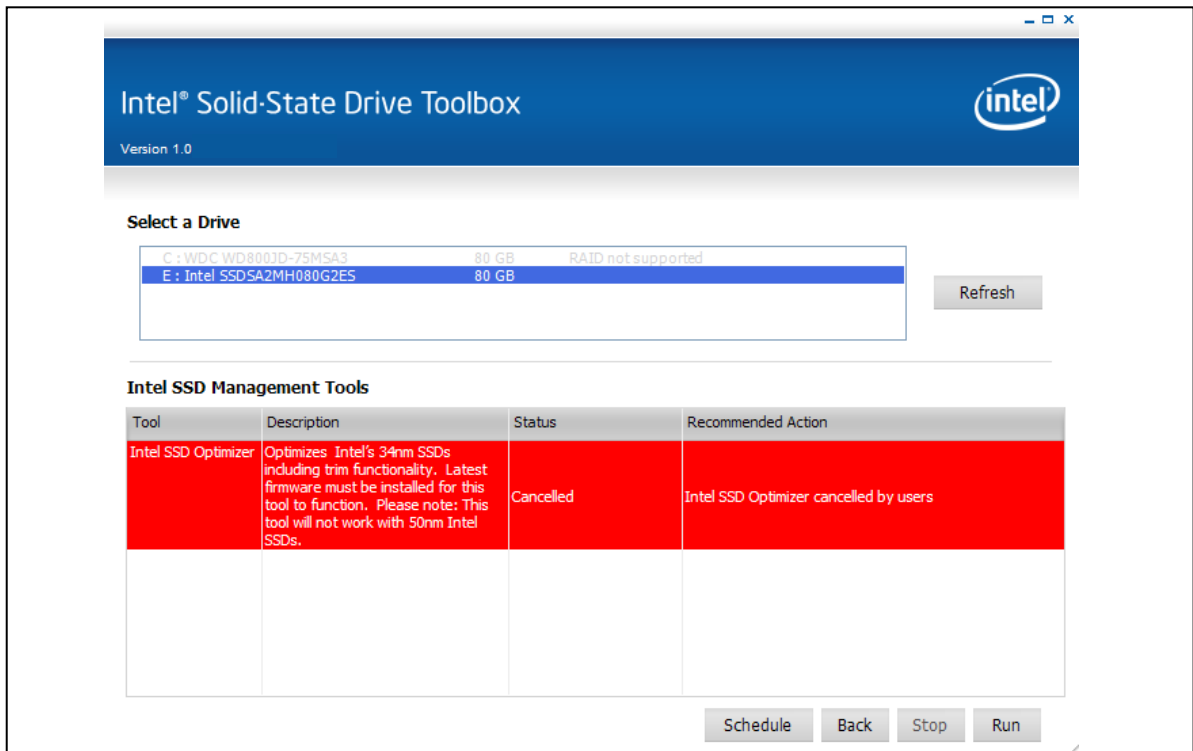
Figure 11. Warning Screen



Click **Accept** to continue running the Intel SSD Optimizer tool on the selected drive.

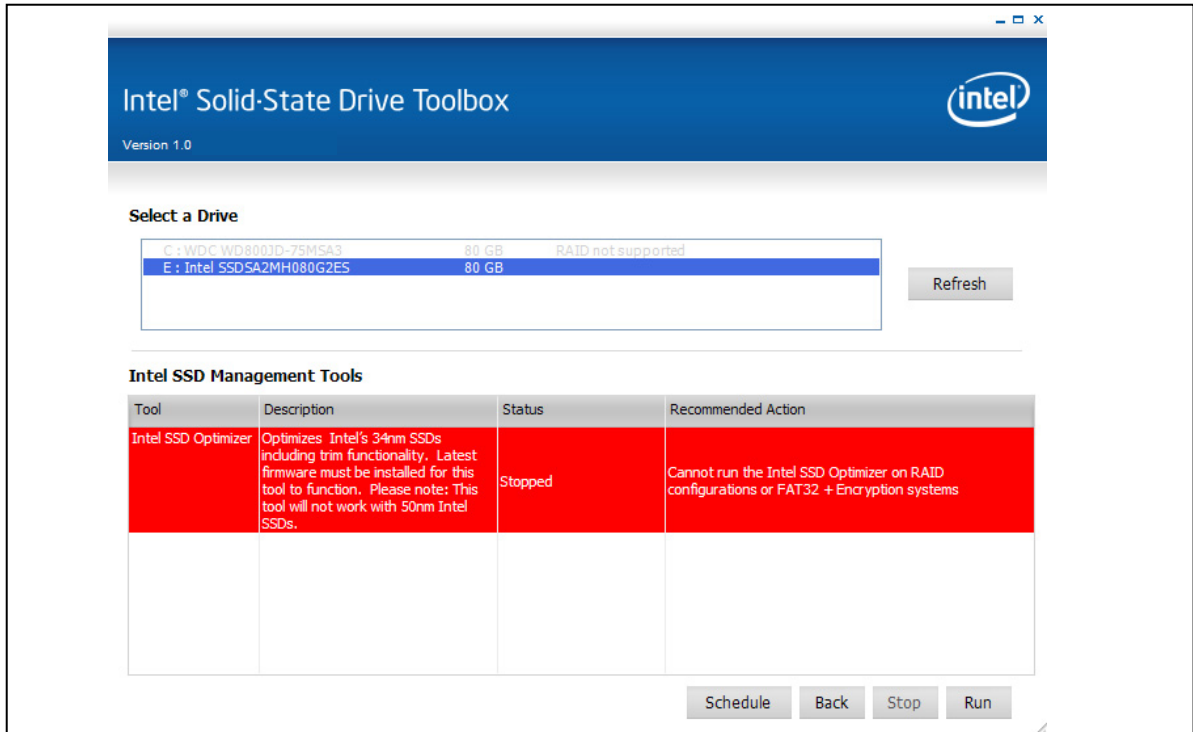
Click **Decline** to stop running the tool. The program then displays the following cancellation screen:

Figure 12. Cancelled Intel SSD Optimizer Tool Screen



The program also checks for FAT32 file systems with encryption.

Figure 13. Screen for SSD with FAT32 and Encryption



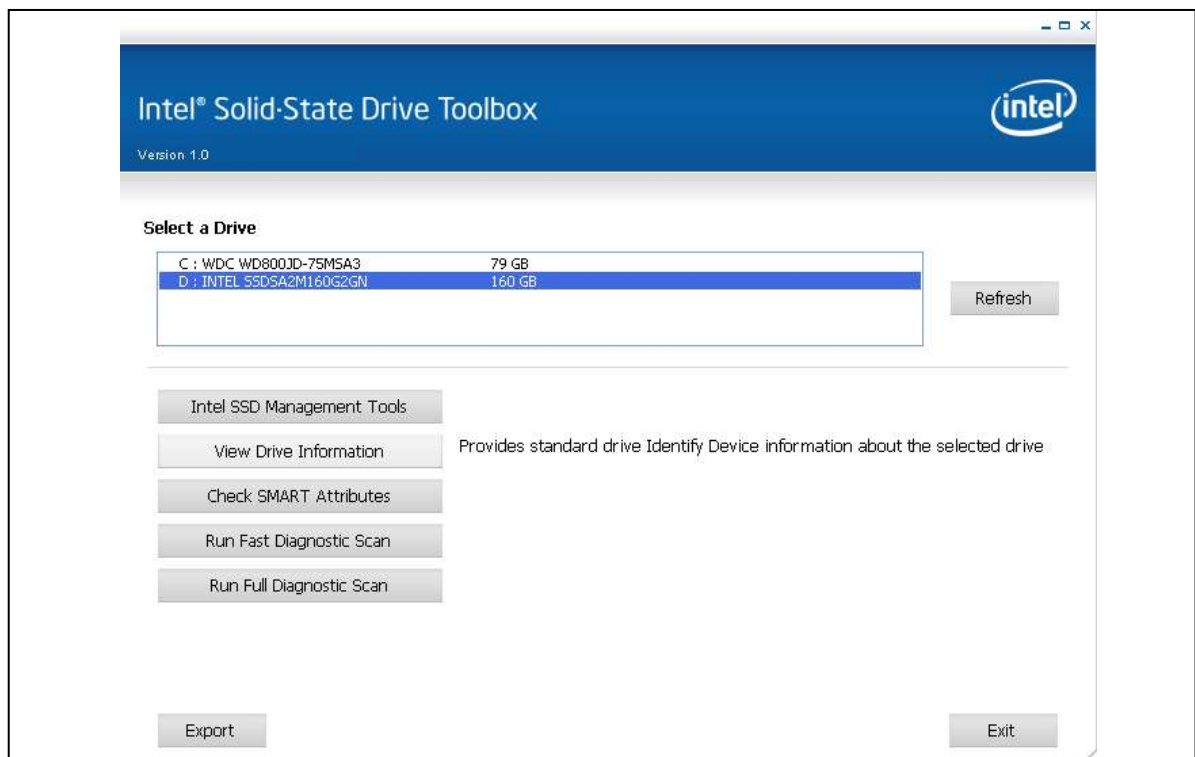
If the selected drive has a RAID configuration, the Intel SSD Toolbox displays the same warning screen as shown in [Figure 11](#). Click **Decline** to stop running the tool.



3.3 View Drive Information

Use this option to view the standard Identify Device information for Intel SSDs, as well as other drives. In the **Select a Drive** box, select a drive, then click the **View Drive Information** box to display various drive values, such as model number, serial number, and firmware number. In the figure below, we selected an Intel SSD to view.

Figure 14. View Drive Information Screen

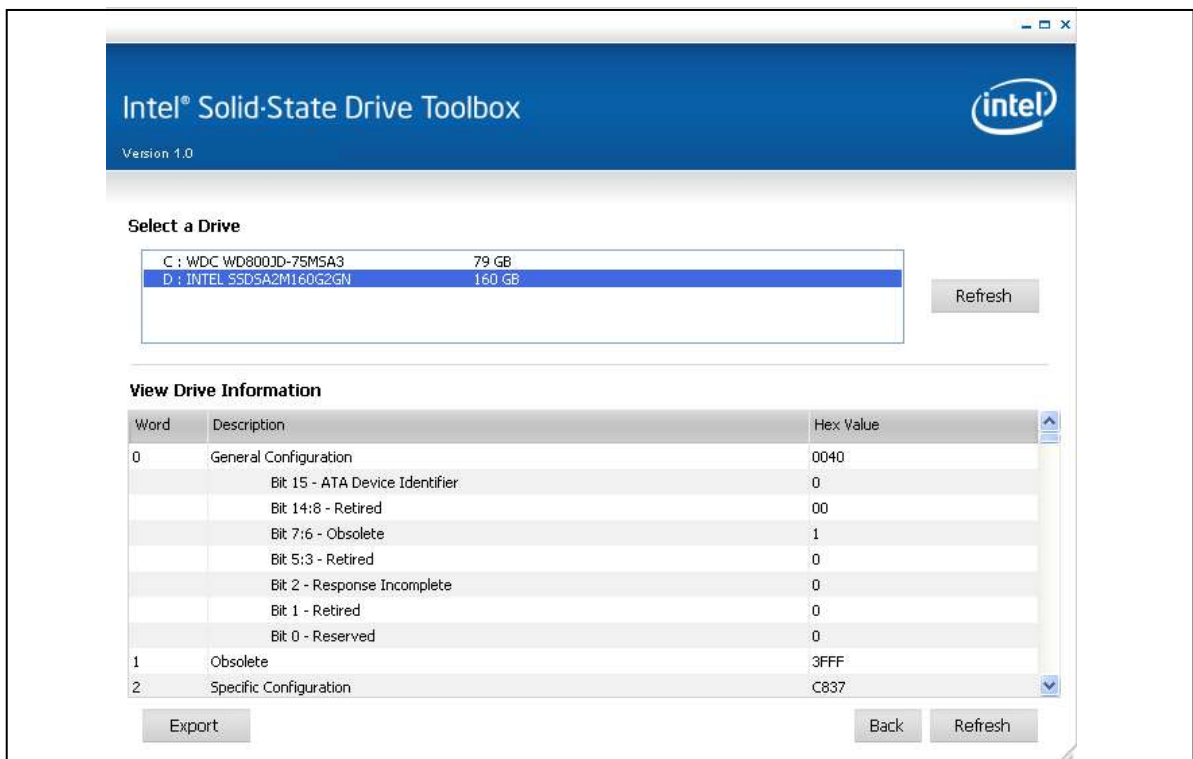


3.3.1 Screen Display

This option reports information generated by an ATA IDENTIFY DEVICE command sent to the drive. Refer to [Section 7 Reference Documents](#) for information about ATA specifications. See the following screen for details about the drive.

- **Word** – Identifies the word(s) assigned to a specific drive information value.
- **Description** – Provides the name and bit information, if needed, for each drive information value.
- **Hex Value** – Reports the hexadecimal value for each piece of drive information.

Figure 15. View Drive Information Screen

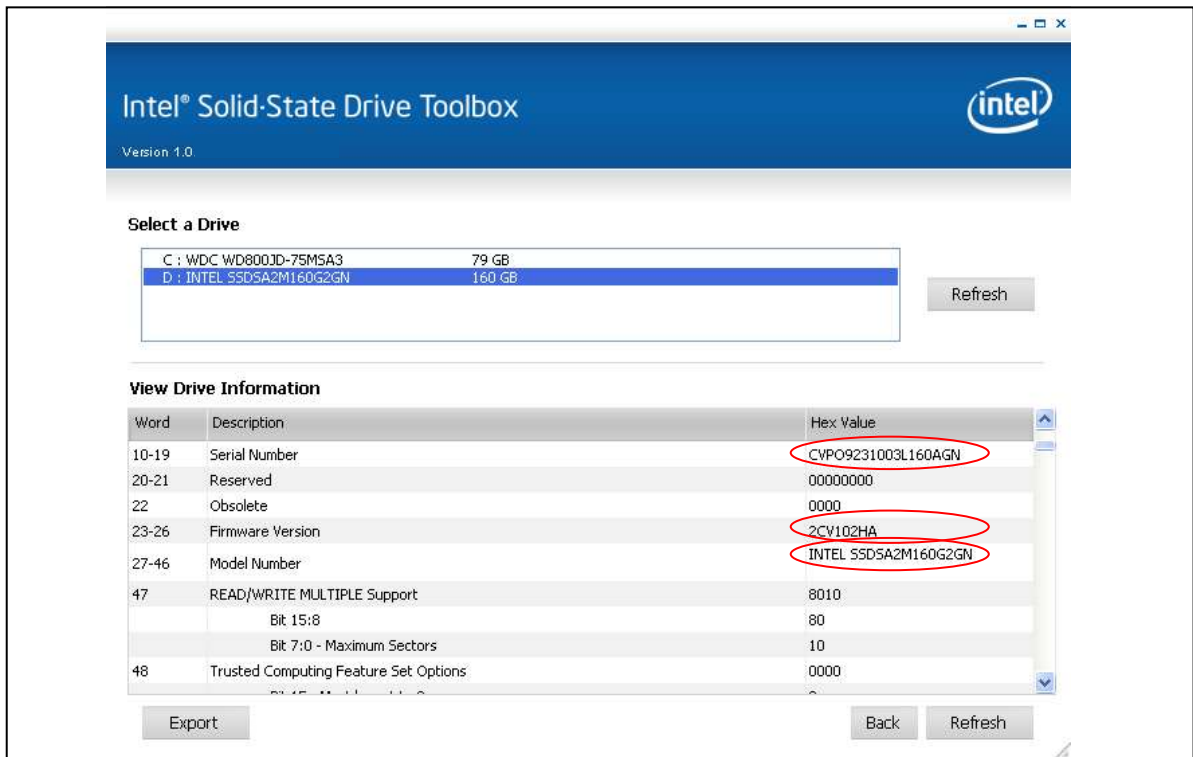




The following screen highlights information typically referenced by the host system:

- **Serial Number** (Word 10-19) – Identifies production information about the device.
- **Firmware Version** (Word 23-26) – Lists the current firmware on the drive
- **Model Number** (Word 27-46) – Provides such information as device type, bus architecture, form factor and density

Figure 16. Commonly Referenced Device Information



The following table identifies the most commonly referenced information.

Table 1. Common Device Information

Word	Description
10-19	Serial Number
23-26	Firmware Version
27-45	Model Number



Word	Description
76	Serial ATA Capabilities Bit 15 – 13: Reserved Bit 12: Native Command Queuing Priority Information Support Bit 11: Unload While NCQ Commands Outstanding Support Bit 10: Phy Event Counters Support Bit 9: Receipt of Host-Initiated Interface Power Management Requests Support Bit 8: Native Command Queuing Support Bit 7 – 3: Reserved Bit 2: Serial ATA Gen2 Signaling Speed (3.0 Gbps) Support Bit 1: Serial ATA Gen1 Signaling Speed (1.5 Gbps) Support Bit 0:
78	Serial ATA Features Supported Bit 15 – 7: Reserved Bit 6: Software Settings Preservation Supported Bit 5: Reserved Bit 4: In-Order Data Delivery Supported Bit 3: Device Initiating Interface Power Management (DIPM) Supported Bit 2: DMA Setup Auto-Activate Optimization Supported Bit 1: Non-Zero Buffer Offsets in DMA Setup FIS Supported Bit 0: Must be set to zero (0).
79	Serial ATA Features Enabled Bit 15 – 7: Reserved Bit 6: SSP Enabled Bit 5: Reserved Bit 4: In-Order Data Delivery Enabled Bit 3: Device Initiating Interface Power Management (DIPM) Enabled Bit 2: DMA Setup Auto-Activate Optimization Supported Bit 1: Non-Zero Buffer Offsets in DMA Setup FIS Enabled Bit 0: Must be set to zero (0).

Note: For more information about ATA specifications, see [Section 7 Reference Documents](#).

3.3.2 Actions

The screen also contains the following buttons:

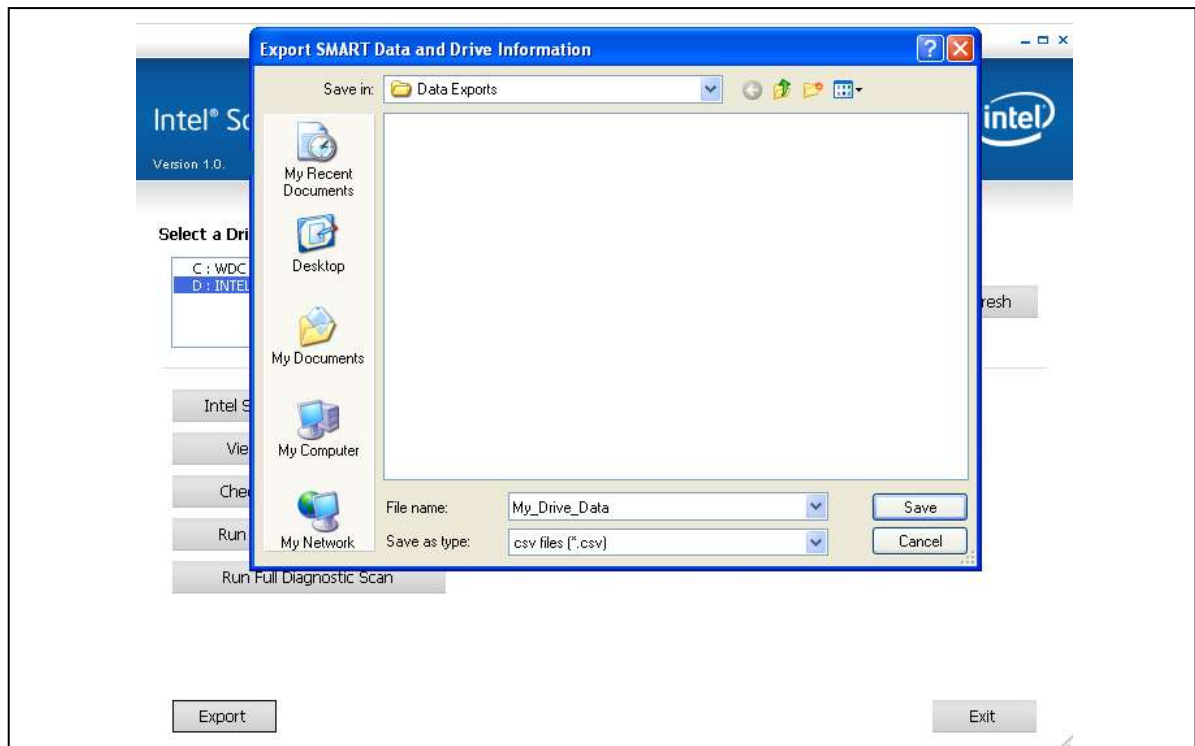
- **Export** – Writes the drive information and SMART data to a .csv file on your system.
- **Back** – Returns you to the Intel SSD Toolbox main screen.
- **Refresh** – Reloads the information for the selected drive.



3.3.2.1 Export

Use this button to write the drive information and the SMART data to a .csv file. Click **Export** to display a window so you can determine where to store the file.

Figure 17. Export Screen



After you have decided on a location and entered the file name, click **Save** to write the drive information and SMART data to the .csv file.

3.3.2.2 Back

Click the **Back** button to return to the Intel SSD Toolbox main screen.

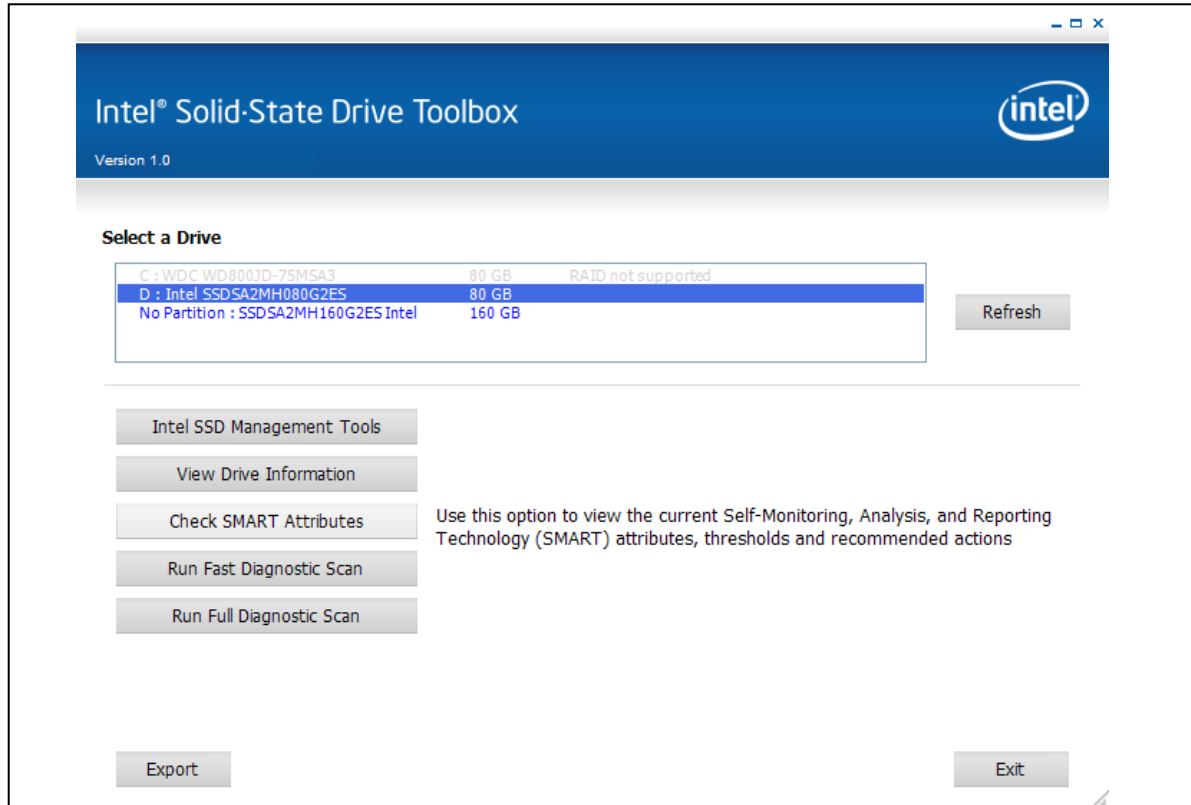
3.3.2.3 Refresh

Use this button to reissue the ATA IDENTIFY DEVICE command and redisplay the information for the selected drive.

3.4 Check SMART Attributes

Use this option to view the available SMART attributes, their thresholds and any recommended actions. After selecting a drive from the **Select a Drive** box, click the **Check SMART Attributes** box to view the drive's corresponding SMART information.

Figure 18. Check SMART Attributes Screen





3.4.1 Screen Display

After you click on the **Check SMART Attributes** box, the tool displays the following screen.

- **ID** – Lists the hexadecimal name of the SMART attribute.
- **Description** – Provides the name of the SMART attribute.
- **Raw** – Lists the raw value assigned to the SMART attribute by the manufacturer of the drive.
- **Normalized** – The value of an attribute adjusted to a scale spanning typical increments of 100 to 1 or 200 to 1.
- **Threshold** – Identifies the lowest acceptable normalized value for the drive.
- **Recommended Action** – Identifies whether the system can use the SSD for processing.

Figure 19. Check SMART Attributes Screen

Select a Drive

C :	WDC WD800JD-75MSA3	79 GB
D :	INTEL SSD5A2M160G2GN	160 GB

Check SMART Attributes

ID	Description	Raw	Normalized	Threshold	Recommended Action
03	Spin Up Time	0	100	0	Ready for use
04	Start/Stop Count	0	100	0	Ready for use
05	Re-allocated Sector Count	43	100	0	Ready for use
09	Power-On Hours Count	465	100	0	Ready for use
0C	Power Cycle Count	358	100	0	Ready for use
C0	Unsafe Shutdown Count	73	100	0	Ready for use
E1	Host Writes	22.99 TB	200	0	Ready for use
E8	Available Reserved Space	0	99	10	Ready for use
E9	Media Wearout Indicator	0	96	0	Ready for use
B8	End to End Error Detection Count	0	100	99	Ready for use



3.4.2 SMART Attributes

Each drive operates under a predefined set of attributes and corresponding threshold values, of which the drive should not pass during normal operation. Each attribute has a raw value (defined by the manufacturer) and a normalized value.

For more details on the attribute structure, please refer to the ATA-3, 5 and 7 specifications.

3.4.2.1 03 – Spin Up Time

The average time it takes the spindle to spin up. Since a SSD has no moveable parts, this attribute reports a fixed raw value of zero (0) and a fixed normalized value of 100. Use the **Raw** value for this attribute.

3.4.2.2 04 – Start/Stop Count

This type of event is not an issue for SSDs. However, hard disk drives can experience only a finite number of these events and, therefore, must be tracked. This attribute reports a fixed value of zero (0) and a fixed normalized value of 100. Use the **Raw** value for this attribute.

3.4.2.3 05 – Re-Allocated Sector Count

This attribute shows the number of retired blocks since leaving the factory (also known as a grown defect count).

The lithography (litho) of your drive determines which count you should use. Refer to the drive name in the **Select a Drive** section. A "1" in the twelfth position indicates a 50nm drive, while a "2" indicates a 34nm. For example in [Figure 15](#): SSDSA2M160G2GN indicates a 34nm drive.

For 50nm drives, the normalized value has an initial value of 100 but counts up from 1, for every 4 grown defects. The normalized value of this attribute becomes 1 when there are 4 grown defects, then the value is 2 when there are 8 grown defects, etc. See the following table for details.

Table 2. Re-Allocated Sector Count for 50nm drives

Word	Raw Value	Normalized Value of Attribute 05
0-3	0	100
4-7	0	1
8-11	0	2
...



For 34nm drives, the raw value increments for every grown defect. See the following table for details.

Table 3. Re-Allocated Sector Count for 34nm drives

Word	Raw Value	Normalized Value of Attribute 05
0	0	100
1	1	100
2	2	100
...

3.4.2.4 09 – Power-On Hours Count

This attribute reports the cumulative number of power-on hours over the life of the device. Use the **Raw** value for this attribute.

Note: The On/Off status of the device initiated power management (DIPM) feature will affect the number of hours reported.

- If DIPM is turned "On", the recorded value for power-on hours does not include the time that the device is in a "slumber" state.
- If DIPM is turned "Off", the recorded value for power-on hours should match the clock time, as all three device states are counted: active, idle and slumber.

3.4.2.5 0C – Power Cycle Count

This attribute reports the cumulative number of power cycle events (power on/off cycles) over the life of the device. Use the **Raw** value for this attribute.

3.4.2.6 C0 – Unsafe Shutdown Count

This attribute reports the cumulative number of unsafe (unclean) shutdown events over the life of the device. An unsafe shutdown occurs whenever the device is powered off without STANDBY IMMEDIATE being the last command. Use the **Raw** value for this attribute.

3.4.2.7 E1 – Host Writes

This attribute reports the total number of sectors written by the host system. The raw value is increased by 1 for every 65,536 sectors written by the host. Use the **Raw** value for this attribute.



3.4.2.8 E8 – Available Reserved Space

This attribute reports the number of reserve blocks remaining. The attribute value begins at 100 (64h), which indicates that the reserved space is 100 percent available. The threshold value for this attribute is 10 percent availability, which indicates that the drive is close to its end of life. Use the **Normalized** value for this attribute.

3.4.2.9 E9 – Media Wearout Indicator

This attribute reports the number of cycles the NAND media has experienced.

The normalized value declines linearly from 100 to 1 as the average erase cycle count increases from 0 to the maximum rated cycles.

Once the normalized value reaches 1, the number will not decrease, although it is likely that significant additional wear can be put on the device. Use the **Normalized** value for this attribute.

3.4.2.10 B8 – End to End Error Detection Count

This attribute is only available for 34nm drives and counts the number of times errors are encountered during logical block addressing (LBA) tag checks on the data path within the drive. Use the **Normalized** value for this attribute.

3.4.3 Actions

The screen also contains the following buttons:

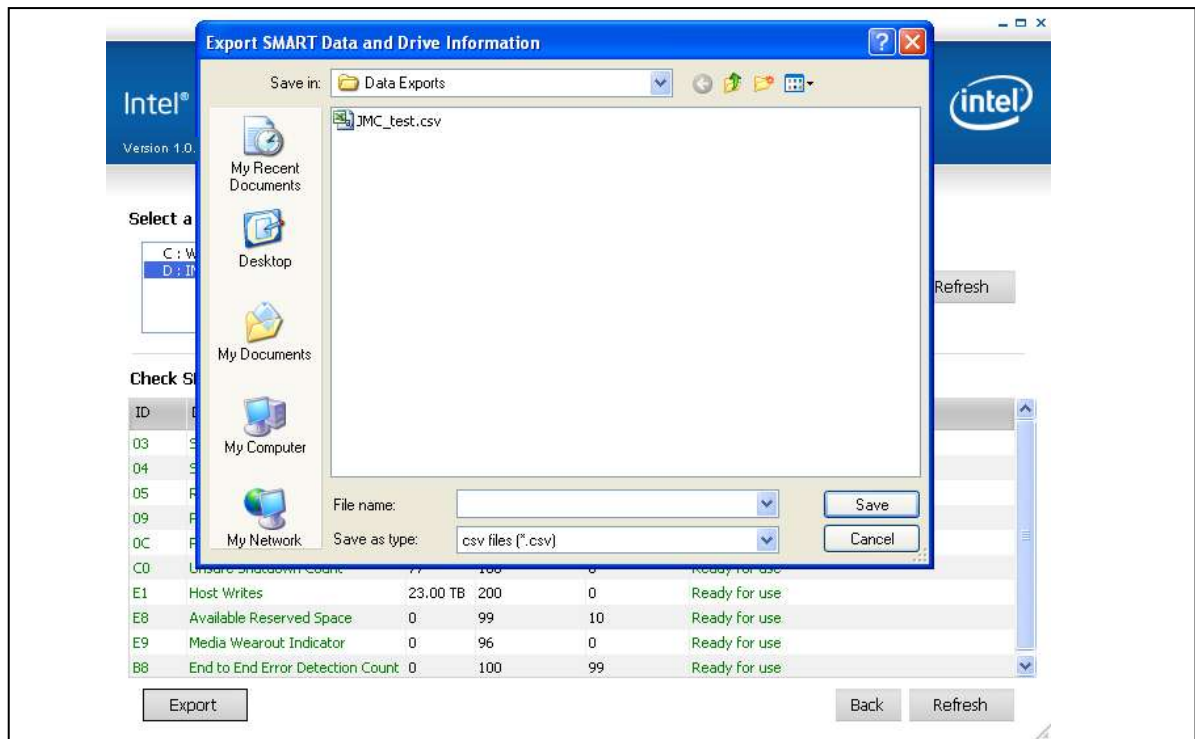
- **Export** – Writes the drive information and SMART data to a .csv file on your system.
- **Back** – Returns you to the Intel SSD Toolbox main screen.
- **Refresh** – Reloads the SMART data for the selected drive.



3.4.3.1 Export

Use this button to write the drive information and SMART data to a .csv file. Click **Export** to display a window so you can determine where to store the file.

Figure 20. Export Screen



After you have decided on a location and entered the file name, click **Save** to write the drive information and SMART data to the .csv file.

3.4.3.2 Back

Click the **Back** button to return to the Intel SSD Toolbox main screen.

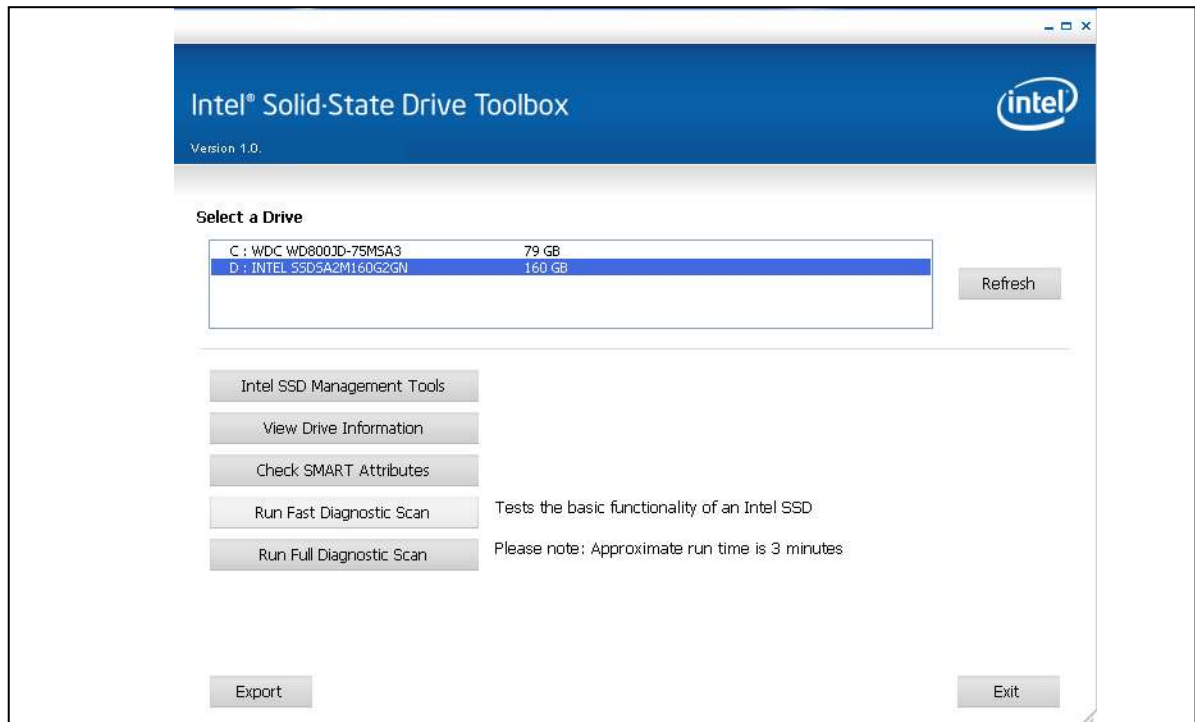
3.4.3.3 Refresh

Use this button to reload the SMART data for the selected drive.

3.5 Run Fast Diagnostic Scan

Use this option to perform a quick check on the health of the Intel SSD. After checking 1.5 GB of the drive for READ errors, the scan creates 1 GB of random data and then compares it for data integrity. The scan takes approximately three to five minutes to run.

Figure 21. Run Fast Diagnostic Scan Screen



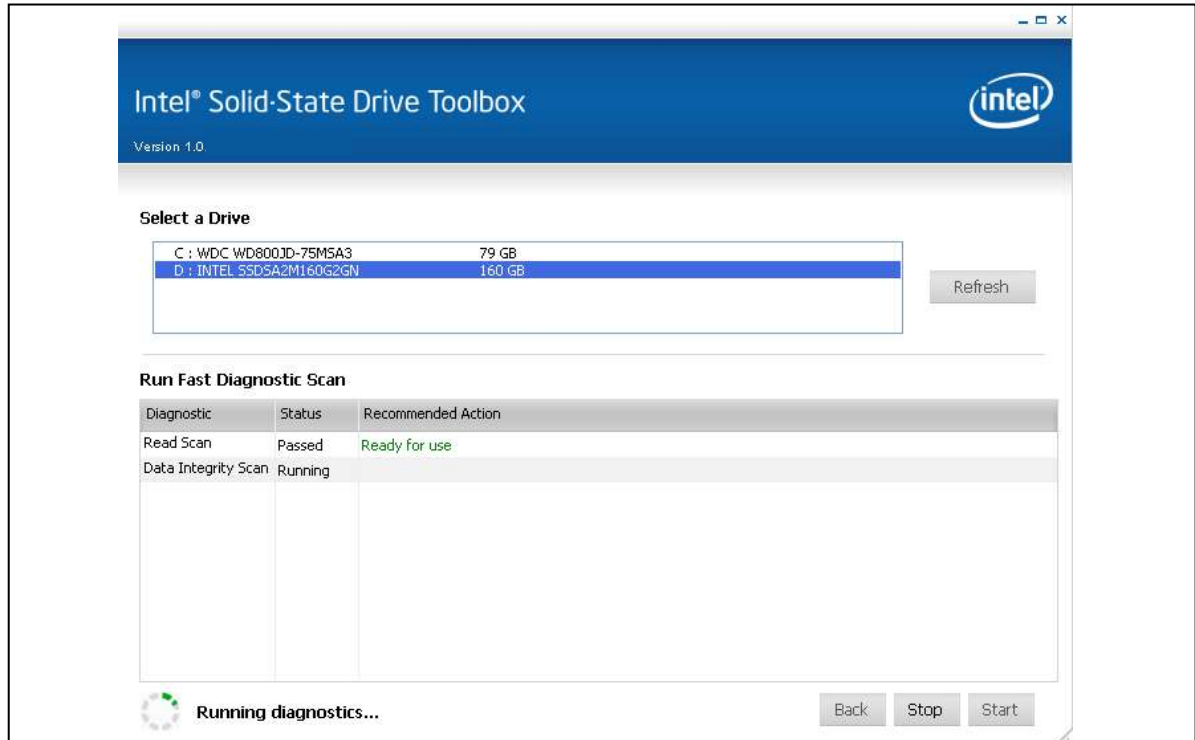
3.5.1 Screen Display

After you click the **Run Fast Diagnostic Scan** box, the tool displays the following screen.

- **Diagnostic** – Lists the name of the available scans.
- **Status** – Reports the progress of the scan. Initially blank, the field is populated while running the scan.
- **Recommended Action** – Identifies whether the system can use the drive for processing. Initially blank, the field is populated after each scan finishes.



Figure 22. Fast Diagnostic Scan Report



3.5.2 Actions

The screen also contains the following buttons:

- **Back** – Returns you to the Intel SSD Toolbox main screen.
- **Stop** – Halts the running of the Diagnostic Scan on the selected drive.
- **Start** – Launches the Fast Diagnostic Scan.

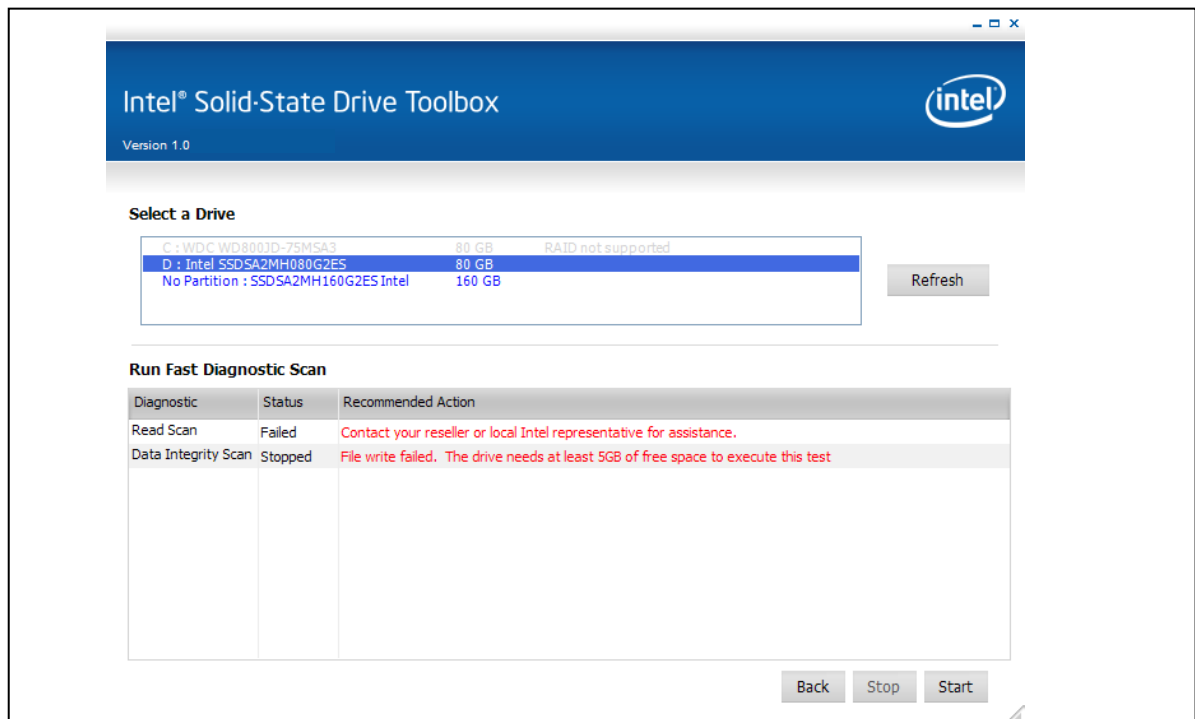
3.5.3 Error Messages

If the Fast Diagnostic Scan encounters a problem, the tool displays the corresponding error message and next step information under the **Recommended Action** heading.

3.5.3.1 Inadequate Amount of Free Space

In the example below, the scanned drive needs more free space before attempting to run the Fast Diagnostic Scan again.

Figure 23. Error Message Screen – Inadequate Space to Run Test

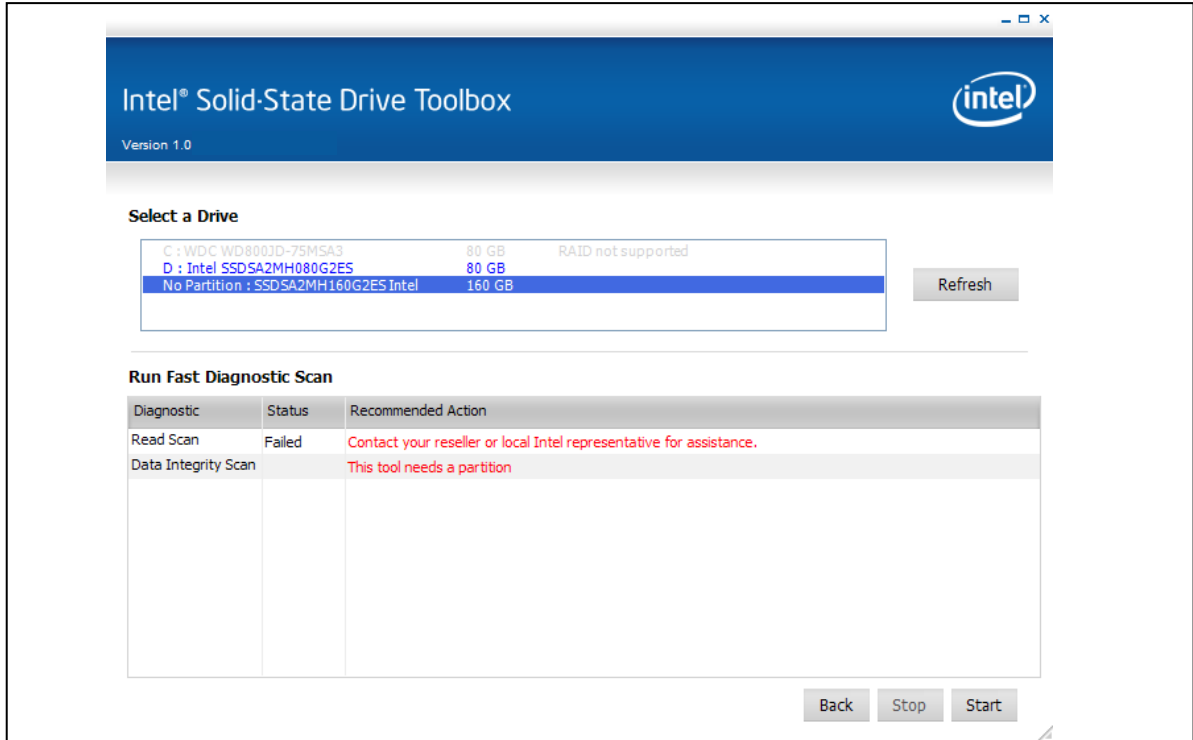




3.5.3.2 No Partition

In this example, the scanned drive did not contain a partition. For the Fast Diagnostic Scan to function properly, the scan requires a partitioned area to create and validate the one (1) GB of random data.

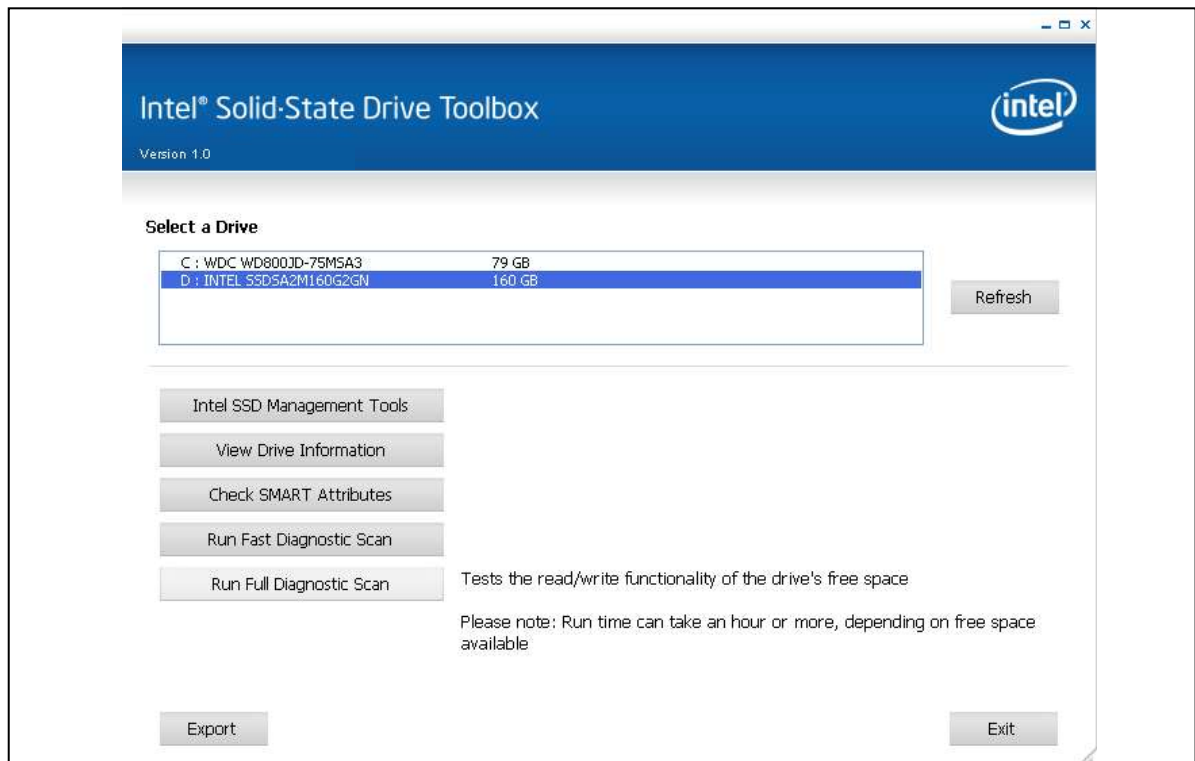
Figure 24. Error Message Screen – No Partition



3.6 Run Full Diagnostic Scan

Use this option to perform an overall evaluation on the health of the Intel SSD. After checking every logical block address (LBA) for READ errors, the scan uses the free space to write random data and then reads it back to ensure data integrity. This scan can take an hour or more to run, depending on the amount of free space on the drive.

Figure 25. Run Full Diagnostic Scan Screen



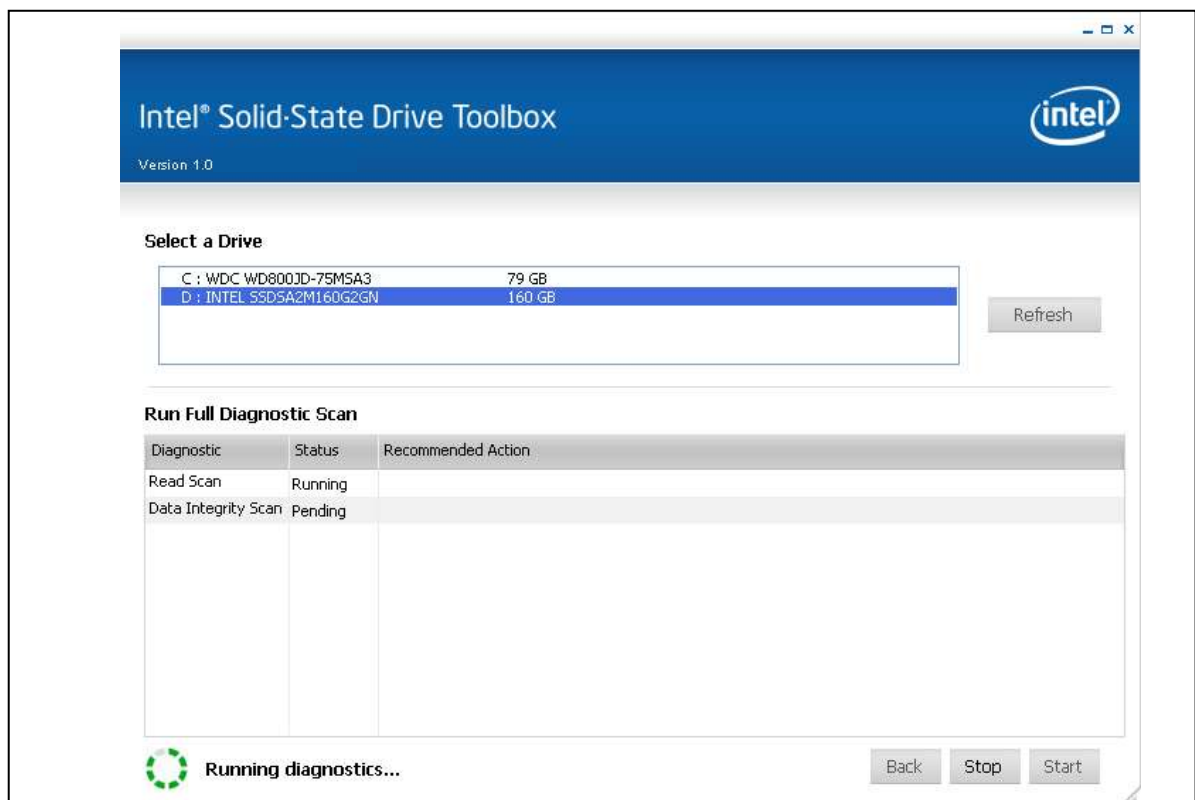


3.6.1 Screen Display

After you click the **Run Full Diagnostic Scan** box, the tool displays the following screen.

- **Diagnostic** – Lists the name of the available scans.
- **Status** – Reports the progress of the scan. Initially blank, the field is populated while running the scan.
- **Recommended Action** – Identifies whether the system can use the drive for processing. Initially blank, the field is populated after each scan finishes.

Figure 26. Run Full Diagnostic Scan Report



3.6.2 Actions

The screen also contains the following buttons:

- **Back** – Returns you to the Intel SSD Toolbox main screen.
- **Stop** – Halts the running of the Diagnostic Scan on the selected drive.
- **Start** – Launches the Full Diagnostic Scan.

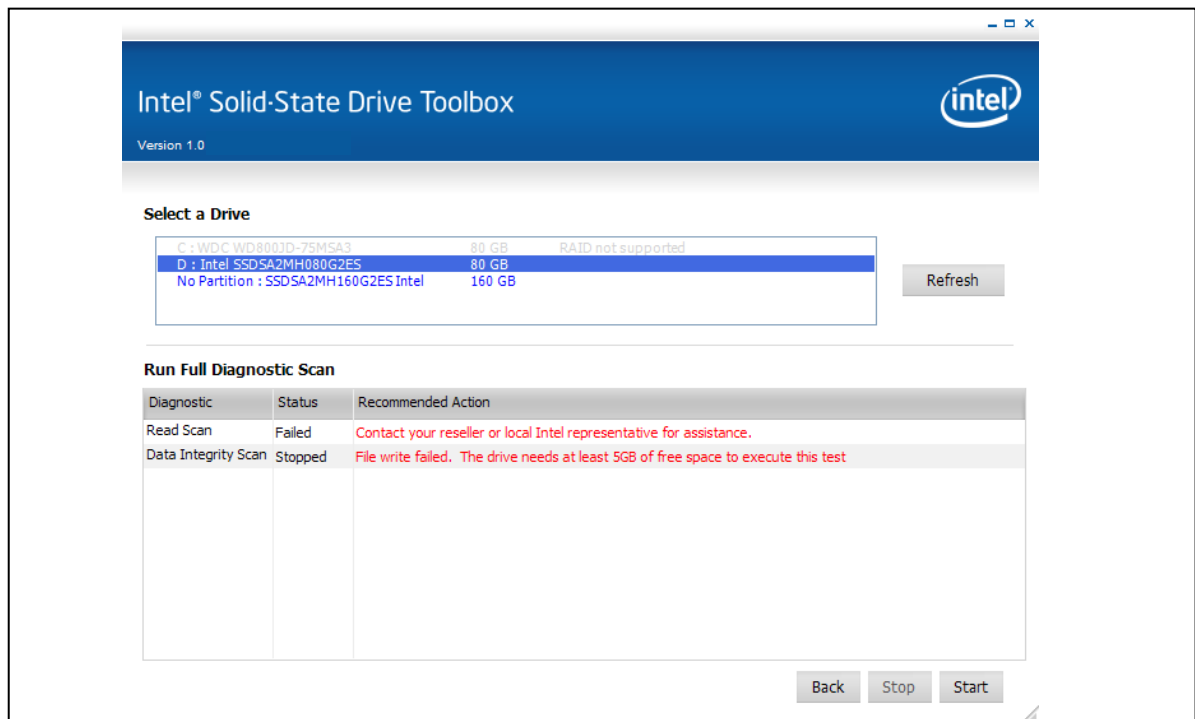
3.6.3 Error Messages

If the Full Diagnostic Scan encounters a problem, the tool displays the corresponding error message and next step information under the **Recommended Action** heading.

3.6.3.1 Inadequate Amount of Free Space

In the example below, the scanned drive needs to create more free space before attempting to run the Full Diagnostic Scan again.

Figure 27. Error Message Screen – Inadequate Space to Run Test

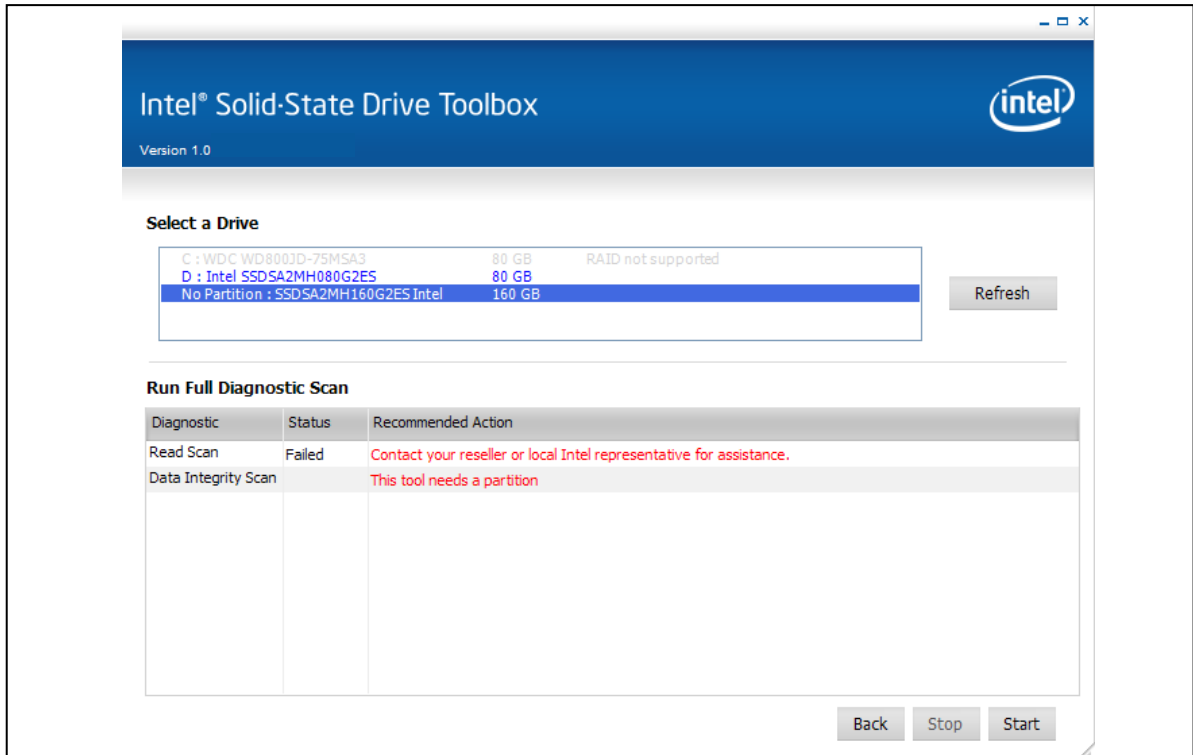




3.6.3.2 No Partition

In this example, the scanned drive did not contain a partition. For the Full Diagnostic Scan to function properly, the scan requires a partitioned area to create and validate random data.

Figure 28. Error Message Screen – No Partition





4.0 Reference Documents

This document references standards and specification defined by a variety of organizations. Please use the following information to identify the location of an organization's standards information.

Table 4. Standards References

Document	Document No./Location
ATA-7 Volume 1 Specification, April 2004	http://www.t13.org/Documents/UploadedDocuments/docs2007/D1532v1r4b-AT_Attachment_with_Packet_Interface_-_7_Volume_1.pdf
ATA-5 Specification, February 2000	http://www.t13.org/Documents/UploadedDocuments/project/d1321r3-ATA-ATAPI-5.pdf
ATA-3 Specification, January 1997	http://www.t10.org/t13/project/d2008r7b-ATA-3.pdf Expired and withdrawn in 2002
SATA Rev 2.6 Specification, February 2007	http://www.sata-io.org
SFF-8035i Specification	http://www.cotsworks.com/PDFs/SFF-8053.pdf

5.0 Additional Information

For detailed information about the Intel Performance SSDs, please refer to the corresponding documentation.

Table 5. Related Documentation

Document	Document No./Location
Intel® High Performance SATA SSD SMART Features User Guide	320520-003US
Intel® High Performance SATA SSD SMART Features User Guide – 34nm Product Line	322737-001US
Intel® X25-E SATA Solid-State Drive Product Manual	319984-005US
Intel® X18-M/X25-M SATA Solid-State Drive Product Manual	318765-008US
Intel® X18-M/X25-M SATA Solid-State Drive – 34nm Product Line Product Manual	322296-002US



6.0 Glossary

Table 6. Terms and Acronyms

Term	Description
ATA	Advanced Technology Attachment
DIPM	Device Initiated Power Management
ECC	Error Correcting Code
FAT32	File Allocation Table
Gbps	Gigabits per second
LBA	Logic Block Address
OS	Operating System
RAID	Redundant Array of Independent Disks
SATA	Serial ATA
SMART	Self-Monitoring, Analysis, and Reporting Technology: an open standard for developing hard drives and software systems that automatically monitors a hard drive's health and reports potential problems.
SSD	Solid-State Drive

7.0 Revision History

Date	Revision	Description
October 2009	001	Initial release