

Intel® Solid State Drive Pro Administrator Tool

User Guide

December 2016

Software Version 2.x



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1 Introduction

This guide explains how to use the Intel® Solid State Drive Pro Administrator Tool. This is a Windows* command-line tool, and is designed to support security and manageability settings on the Intel® SSD Professional Family and Embedded Family of products.

This tool supports the following functions:

1. Detects and reports status of Intel® SSDs attached to the system
2. Enables eDrive* (supported on the generic Intel® SSD Pro 2500, Pro 5400s, and Pro 6000p Series products)
3. Completes the PSID Revert process[†]
4. Executes a Secure Erase

[†]Only available on Intel® SSDs with Opal support. May have limitations based on OEM vendor requirements.

1.1 Revision History

Revision Number	Description	Revision Date
001	Initial release software version 1.0.0	January 2014
002	Updated for software version 1.1.0	July 2014
003	Amended section 4.4, "PSID Revert."	December 2014
004	Updated for software version 1.1.3	June 2016
005	Updated for software version 2.0.0 – modifications to the syntax formatting	December 2016

1.2 Terminology

Term	Description
Opal*	A specification by the Trusted Computing Group* that provides a comprehensive architecture for putting storage devices under a security policy controlled by the platform host
PSID	Physical presence Security ID: A unique code printed on the drive's label
eDrive*	Microsoft* specification for a drive that complies to the TCG* Opal 2.0* and IEEE 1667* standards
SECURE ERASE	A command that removes all user data from a drive. This could reference ATA Security Erase or NVMe* Format.
OS	Operating System
RAID	Redundant Array of Independent Disks (formerly Redundant Array of Inexpensive Disks)
SATA	Serial ATA
SSD	Solid State Drive



1.3 Known Issues and Limitations

Compatibility	Intel SSD Pro Administrator Tool is not compatible with the Supermicro* H8DAi-2, TYAN* Thunder N3600M motherboard – NVIDIA nForce* Pro 3600
Functionality	<p>Secure_erase</p> <ul style="list-style-type: none">Secure erase feature is blocked in the tool on Windows 8* and newer including Windows PE* 4.0 and 5.0 due to operating system and driver limitations. <p>Psid_revert</p> <ul style="list-style-type: none">If user enters the PSID password wrong 5 times, a power cycle is required. User only allowed 5 attempts per power cycle.If user hits CTRL-Z and presses Enter at one of the prompts, the Intel SSD Pro Administrator Tool will go into an infinite loop.

2 Setting Up the Tool

2.1 System Requirements

Requirements for the Intel SSD Pro Administrator Tool are:

- Intel SSD Professional Family and/or Embedded Family drive.
- Administrator rights are required to run the tool on Windows 7*, Windows 8*, Windows 8.1*, and Windows 10*.

2.2 Installing the Administrator Tool

To install the Intel SSD Pro Administrator Tool:

1. Create a directory on the host (for example: C:\temp).
2. Go to intel.com/ssd.
3. Under **Additional Resources, Tools**, click on “**SSD download center**” - will open link to download center with all SSD tools.
4. Select **Intel® SSD Pro Administrator Tool**.
5. Download the tool to the directory you created in step 1.

NOTE: The tool is available in 64 and 32-bit versions. Download appropriate version for your system configuration.

The downloaded executable is named in the format: SSDProAdminTool_<version>_[win32|win64].exe.

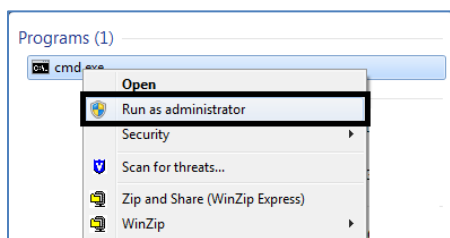
For example, if you downloaded version 1.1.0 for a 64-bit system, the executable would be named:

SSDProAdminTool_1.1.0_win64.exe

2.3 Launching the Administrator Tool

To launch the Intel SSD Pro Administrator Tool:

1. Type **cmd** in the Windows* search field to show the cmd.exe program
2. Right click to open the menu and select **Run as administrator**.



3. In the command window, change to the directory where you copied the tool.
4. Run the tool. For example:

```
C:\temp\SSDProAdminTool_1.1.0_win64.exe
```



3 Command Line Options

The Intel SSD Pro Administrator Tool uses a Command Line Interface (CLI). The following table is a summary of the types of action commands (verbs), targets, and command option properties available with the tool. Further details for each command is provided in subsequent sections of this document.

Verb	Description	Target	Properties
help	Shows help for the supported commands.		[Verb=(verb)] [Name=(command)]
version	Shows Version and End-User License Information.		
show	Shows information about one or more Intel SSDs.	[-log (FileName)] -intelssd [(Index SerialNumber)]	
secure_erase	Secure erases the selected Intel SSD	[-log (FileName)] -intelssd (Index SerialNumber)	
psid_revert	Issues an Opal Revert to the selected Intel SSD	[-log (FileName)] -intelssd (Index SerialNumber)	
enable_edrive	Enables eDrive on the selected Intel SSD	[-log (FileName)] -intelssd (Index SerialNumber)	

3.1 Show Device Information

Show information about one or more Intel SSD devices.

3.1.1 Syntax

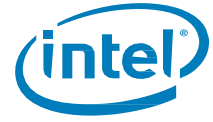
```
SSDProAdminTool show [-help|-h] [-output|-o (text|nvmxml|json)] [-log (FileName)] -intelssd [(Index|SerialNumber)]
```

3.1.2 Options

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

3.1.3 Targets

Target	Description
-intelssd [(Index SerialNumber)]	Restricts output to specific Intel SSD by supplying the device's Index or Serial Number. By default, the command displays all Intel SSDs.
[-log (FileName)]	Saves a detailed output file of the execution steps that the tool took to run the specified functionality. This is mainly useful for debug purposes.



3.1.4 Properties

This command does not support any properties.

3.1.5 Return Data

Displays information about one or more Intel SSD device.

3.1.6 Examples

Lists the default fields for each Intel SSD.

```
SSDProAdminTool show -intelssd
```

3.1.7 Sample Output

Show output for -intelssd target in default text format.

```
SSDProAdminTool_2.0.0_win64.exe show -intelssd 1

- Intel SSD Pro 5400s Series Opal Ready CVLY605500UD360E -

Device Path : \\\\.\\PHYSICALDRIVE2
Device Status : Healthy
Firmware : LSFL38P
eDrive Supported : False
Index : 1
Model Number : INTEL SSDSCKKF360H6L
Opal State : Opal Ready
Marketing String : Intel SSD Pro 5400s Series Opal Ready
Serial Number : CVLY605500UD360E
Default show output for -intelssd target in JSON format
```

Show output for -intelssd target in json text format.

```
SSDProAdminTool_2.0.0_win64.exe show -o json -intelssd 1
{
  "Intel SSD Pro 5400s Series Opal Ready CVLY605500UD360E":
  {
    "Device Path": "\\\\.\\PHYSICALDRIVE2",
    "Device Status": "Healthy",
    "Firmware": "LSFL38P",
    "eDrive Supported": false,
    "Index": 1,
    "Model Number": "INTEL SSDSCKKF360H6L",
    "Opal State": "Opal Ready",
    "Marketing String": "Intel SSD Pro 5400s Series Opal Ready",
    "Serial Number": "CVLY605500UD360E"
  }
}
```



3.2 Secure Erase

Secure erases the selected Intel SSD.

3.2.1 Syntax

```
SSDProAdminTool secure_erase [-help|-h] [-output|-o (text|nvmlxml|json)] [-force|-f] [-log  
(FileName)] -intelssd (Index|SerialNumber)
```

3.2.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmlxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.
[-force -f]	Used to bypass any warning prompts.

3.2.3 Targets

Target	Description
-intelssd (Index SerialNumber)	A specific Intel SSD selected by supplying the Intel SSD Index or Serial Number must be provided.
[-log (FileName)]	Saves a detailed output file of the execution steps that the tool took to run the specified functionality. This is mainly useful for debug purposes.

3.2.4 Properties

This command does not support any properties.

3.2.5 Return Data

The CLI will return status of the command.

3.2.6 Limitations

To successfully execute this command, the caller must have the appropriate privileges. In addition, this feature is blocked in the tool on Windows 8* and newer including Windows PE* 4.0 and 5.0 due to operating system and driver limitations.

3.2.7 Examples

Performs a secure erase on the Intel SSD device at index 1.

```
SSDProAdminTool secure_erase -intelssd 1
```

Performs a secure erase on the Intel SSD device at index 1 without asking for user confirmation.

```
SSDProAdminTool secure_erase -force -intelssd 1
```



3.2.8 Sample Output

Secure erase output for -intelssd 1 in default text format

```
>SSDProAdminTool_2.0.0_win64.exe secure_erase -intelssd 0
WARNING! You have selected to secure erase the drive! This will delete all data
on the drive.
Proceed with the secure erase? (Y|N): y
Performing secure erase...

- Intel SSD DC S3520 Series PHDV6094004S240AGN -

Status : Delete successful.
```

3.3 Opal Revert using the PSID

Issue an Opal Revert using the PSID on an Intel SSD device. This will return the device back to factory defaults. The PSID is a 32 character value that can be found on the physical label on the drive. When running a PSID revert, the user is prompted for the value from the command prompt. This value must be entered exactly as it appears on the drive.

3.3.1 Syntax

```
SSDProAdminTool psid_revert [-help|-h] [-output|-o (text|nvmlxml|json)] [-log (FileName)] -
intelssd (Index|SerialNumber)
```

3.3.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmlxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.3.3 Targets

Target	Description
-intelssd (Index SerialNumber)	A specific Intel SSD selected by supplying the Intel SSD Index or Serial Number must be provided.
[-log (FileName)]	Saves a detailed output file of the execution steps that the tool took to run the specified functionality. This is mainly useful for debug purposes.

3.3.4 Properties

This command does not support any properties.



3.3.5 Limitations

To successfully execute this command, the caller must have the appropriate privileges and the Intel SSD must already be Opal Activated. The PSID value must be entered exactly as it appears on the drive label. If the PSID value is entered incorrectly five times, the drive must be power cycled as only five attempts at revert are allowed per power cycle

3.3.6 Examples

Issues an Opal Revert to the Intel SSD device at index 1.

```
SSDProAdminTool psid_revert -intelssd 1
```

3.3.7 Sample output

Opal Revert output for -intelssd 1 in default text format

```
>SSDProAdminTool_2.0.0_win64.exe psid_revert -intelssd 1

The PSID revert operation will revert the drive back to its original factory state.

*** THIS OPERATION WILL MAKE ALL THE DATA ON YOUR DRIVE INACCESSIBLE! ***
Intel is not responsible for loss of data using this tool.
WARNING! PSID revert will erase ALL the data on the drive!
Proceed with the operation? (Y|N): y

Enter SSD Pro Series PSID value.
The 32 character value can be located physically on the drive's label.
The value is case sensitive. Enter it as it appears on the label or scan the 2D
barcode next to the value.
The value may appear as two values on multiple lines.
Enter a single value with no spaces or new lines.

Enter PSID [(q) to quit] > psidpsidpsidpsidpsidpsidpsidpsidpsidpsid
Completed successfully.
```



3.4 Enable eDrive

The `enable_edrive` command enables support for Microsoft* eDrive* requirements on Intel SSDs with eDrive capability (check product specification for support; If the Intel SSD was purchased from an OEM, the enable eDrive command may not be supported for SKU). Specifically, it enables the IEEE 1667 support required by Windows BitLocker* to work with hardware encryption provided by the Intel® SSD Professional Family.

3.4.1 Syntax

```
SSDProAdminTool enable_edrive [-help|-h] [-output|-o (text|nvmxml|json)] [-force|-f] [-log (FileName)] -intelssd (Index|SerialNumber)
```

3.4.2 Options

Option	Description
<code>[-help -h]</code>	Displays help for the command.
<code>[-output -o (text nvmxml json)]</code>	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmxml'.
<code>[-force -f]</code>	Used to bypass any warning prompts.

3.4.3 Targets

Target	Description
<code>-intelssd (Index SerialNumber)</code>	A specific Intel SSD selected by supplying the Intel SSD Index or Serial Number must be provided.
<code>[-log (FileName)]</code>	Saves a detailed output file of the execution steps that the tool took to run the specified functionality. This is mainly useful for debug purposes.

3.4.4 Properties

This command does not support any properties.

3.4.5 Return Data

The CLI will return status of the command.

3.4.6 Examples

Enables eDrive on the Intel SSD devices at index 1 (if feature is enabled for the selected device).

```
SSDProAdminTool enable_edrive -intelssd 1
```

Enables eDrive on the Intel SSD devices at index 1 without further prompts to the user (if feature is enabled for the selected device).

```
SSDProAdminTool enable_edrive -force -intelssd 1
```



3.4.7 Sample Output

Enable eDrive output for -intelssd 1 in default text format

```
>SSDProAdminTool_2.0.0_win64.exe enable_edrive -intelssd 1
You have selected to enable eDrive support on the drive. It is not possible to undo this step!
Proceed with the operation? (Y|N): y
Enabling eDrive...
Completed successfully.
```

3.5 Support Commands

Support commands consist of **Help** and **Version**.

3.5.1 Help Command

Shows help for the supported commands.

3.5.1.1 Syntax

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

3.5.1.2 Options

Option	Description
[-help -h]	Displays help for the command.
[-output -o (text nvmlxml json)]	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmlxml'.

3.5.1.3 Targets

This command does not support any targets.

3.5.1.4 Properties

Property	Default	Description
Verb	All Verbs	Filters help to a specific verb. One of: <ul style="list-style-type: none">• help• version• show• secure_erase• psid_revert• enable_edrive
Name	All commands	Filters help to a specific command by name.



3.5.1.5 Return Data

By default, the command displays an introduction to Pro Administrator Tool followed by a list of the supported commands. When the command list can be filtered to just one command, detailed information is displayed. When the command list includes more than one command, only the command name and synopsis are displayed.

3.5.1.5.1 Sample Output (Multiple Commands)

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

```
>SSDProAdminTool_2.0.0_win64.exe help
Usage: SSDProAdminTool_2.0.0_win64.exe <verb>[<options>][<targets>][<properties>]

Commands:
Help:
    help [-help|-h] [-output|-o (text|nvmxml|json)] [Name = (name)] [verb =
    (verb)]
IntelSSD:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-intelssd
    [(Index|SerialNumber)]] [-log (Filename)]
SecureErase:
    secure_erase [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)]
    -intelssd (Index|SerialNumber) [-log (Filename)]
PSIDRevert:
    psid_revert [-help|-h] [-output|-o (text|nvmxml|json)] -intelssd
    (Index|SerialNumber) [-log (Filename)]
EnableEDrive:
    enable_edrive [-help|-h] [-force|-f] [-output|-o (text|nvmxml|json)]
    -intelssd (Index|SerialNumber) [-log (Filename)]
Version:
    version [-all|-a] [-display|-d (Property1,...)] [-help|-h] [-output|-o
    (text|nvmxml|json)]Sample output (verb filter to multiple commands)
```

Specifying the verb property filters the list to only the commands starting with the specified verb.

```
>SSDProAdminTool_2.0.0_win64.exe help verb=show
Name: IntelSSD
Description:
    Get a list of Intel SSDs attached to a system.
Synopsis:
    show [-help|-h] [-output|-o (text|nvmxml|json)] [-intelssd
    [(Index|SerialNumber)]] [-log (Filename)]
Verb:
    show
Options:
    [-help|-h] -- Display help for the command.
    [-output|-o (text|nvmxml|json)] -- Change the output format. One of
    "text", "nvmxml" or "json".
Targets:
    [-intelssd [(Index|SerialNumber)]] -- Device index or serial number
    [-log (Filename)] -- A filename is required.
Properties:Sample output (single command)
```



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

```
>SSDProAdminTool_2.0.0_win64.exe help Name=Enable
Name: EnableEDrive
Description:
    Enable eDrive on the selected device (if possible). To by-pass the prompt,
    specify the -force option.
Synopsis:
    enable_edrive [-help|-h] [-force|-f] [-output|-o (text|nvmlxml|json)]
    -intelssd (Index|SerialNumber) [-log (Filename)]
Verb:
    enable_edrive
Options:
    [-help|-h] -- Display help for the command.
    [-force|-f] -- Force the operation
    [-output|-o (text|nvmlxml|json)] -- Change the output format. One of
    "text", "nvmlxml" or "json".
Targets:
    -intelssd (Index|SerialNumber) -- Device index or serial number is
    required.
    [-log (Filename)] -- A filename is required.
Properties:
```

3.5.1.6 Examples

Lists all supported commands

```
SSDProAdminTool help
```

Lists all commands where the verb is set

```
SSDProAdminTool help verb=show
```

Lists the detailed help for the given Name eDrive

```
SSDProAdminTool help Name=edrive
```

3.5.2 Version Command

Shows the Intel SSD Pro Administrator Tool's version and License.

3.5.2.1 Syntax

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




3.5.2.2 Options

Option	Description
<code>[-all -a]</code>	Shows all properties.
<code>[-display -d]</code>	Filters the returned properties by explicitly specifying a comma separated list of any of the properties defined in the Return Data section.
<code>[-help -h]</code>	Displays help for the command.
<code>[-output -o (text nvmexml json)]</code>	Changes the format of the Return Data. Supported output options are: 'text' (Default), 'json', and 'nvmexml'.

3.5.2.3 Targets

This command does not support any targets.

3.5.2.4 Properties

This command does not support any properties.

3.5.2.5 Return Data

By default, the command returns the Intel SSD Pro Administrator Tool's version information. With the `-display` option, it shows the License property.

Property	Description
License	Shows the license and terms of use for the Intel SSD Pro Administrator Tool.

3.5.2.5.1 Sample Output

Default output in text.

```
>SSDProAdminTool_2.0.0_win64.exe version
- Version Information -
Name: Intel(R) Pro Administrator Tool
Version: 2.0.0
Description: Intel SSD Pro Administrator Tool is used to complete a PSID Revert operation on
an Opal Activated drive and / or a secure erase operation.
```

3.5.2.6 Examples

Display the available version information for the Pro Administrator Tool software.

```
SSDProAdminTool version
```

Display the End-User License for the Pro Administrator Tool software components.

```
SSDProAdminTool version -d license
```



3.6 Debug

3.6.1 Tool Debug File

The Intel SSD Pro Administrator Tool can save appends to a debug file that contains detailed information on the tool execution. This file is very useful for the Tool Developers when having to debug issues. Whenever requesting assistance from the Tools team on a potential issue with the tool this file will be requested. The `-log (FileName)` must be stated with each command to have the log written. Syntax details on this are included with each of the command descriptions earlier in this document.



4 Response Codes

The following table lists all the possible error and status codes that are returned from the Intel SSD Pro Administrator Tool. The first column lists the numeric value of the error/status code that is returned by the tool. In Windows, to display the numeric return value, type the following in the command prompt after running the tool:

```
>echo %errorlevel%
```

Code	Description
0	Completed successfully.
1	Failed to load the Intel TDK Interface library.
2	An error occurred with interacting with the TDK Interface Library.
3	An error was returned from the TDK Interface when executing the given CLI functionality.
4	Encountered a read file error.
5	Encountered a write file error.
6	Invalid boolean values were given.
7	Invalid property given.
8	Invalid CLI argument given.



5 Examples

5.1 Display Drives

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

```
SSDProAdminTool.exe show -intelssd
```

5.2 Secure Erase

Use the **secure_erase** command to secure erase a selected Intel SSD on the system.

```
SSDProAdminTool.exe secure_erase -intelssd 1
```

5.3 Opal Revert using the PSID

Use the **psid_revert** command on an Intel SSD to return the device back to factory defaults.

```
SSDProAdminTool.exe psid_revert -intelssd 1
```

5.4 Enable eDrive

The **enable_edrive** command enables support for Microsoft* eDrive* requirements on Intel SSDs with eDrive capability (check product specification for support). Specifically, it enables the IEEE 1667 support required by Windows BitLocker* to work with hardware encryption provided by the Intel® SSD Professional Family.

```
SSDProAdminTool.exe enable_edrive -intelssd 1
```

5.5 Display Tool Help

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

```
SSDProAdminTool.exe help
```

5.6 Display Tool License

Use the **version** command with the license property to display the End-User license agreement for Intel SSD Data Center Tool.

```
SSDProAdminTool.exe version -d license
```