SanDisk®

SanDisk Crypto Erase Tool

User’s Manual

v1.0.0.0

April 2014

Technical Support

SanDisk Knowledgebase
Contact SanDisk

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1. Introduction

The SanDisk Crypto Erase tool is a Windows application, which can be used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. After a Crypto Erase, all security keys will be deleted; therefore, user data will be destroyed. Also, OPAL or eDrive will be deactivated, and the drive can then be reused with any compatible security application. Crypto Erase is only supported on security enabled SSDs. The drive's unique Physical Security ID (PSID), which is printed on the drive's label, is required to perform a Crypto Erase. The Crypto Erase process is often referred to as a PSID Revert.

Note: It is not possible to perform a Crypto Erase on an SSD which does not have OPAL or eDrive activated on it.

The SanDisk Crypto Erase tool can perform a Crypto Erase on primary as well as secondary SSDs. Secondary SSDs can easily be erased using the Windows GUI by selecting the SSD and providing the correct PSID. For primary SSDs, a bootable USB drive must be created, which can then be used as the boot drive on the target system. For detailed instructions, please refer to Section 4: Crypto Erase on a Primary SSD.

2. Installing the SanDisk Crypto Erase Tool

System Pre-requisites

The SanDisk Crypto Erase tool is a Windows application. It can be installed on 32 or 64 bit Windows 7, 8, or 8.1 environments. For systems that have SanDisk secure SSDs installed in them but are not running Windows, please use the bootable USB drive method (as described in section 4: Crypto Erase on a Primary SSD) to perform Crypto Erase on the SSDs.

Supported Operating Systems

- Windows 7 (32/64 bit)
- Windows 8 (32/64 bit)
- Windows 8.1 (32/64 bit)

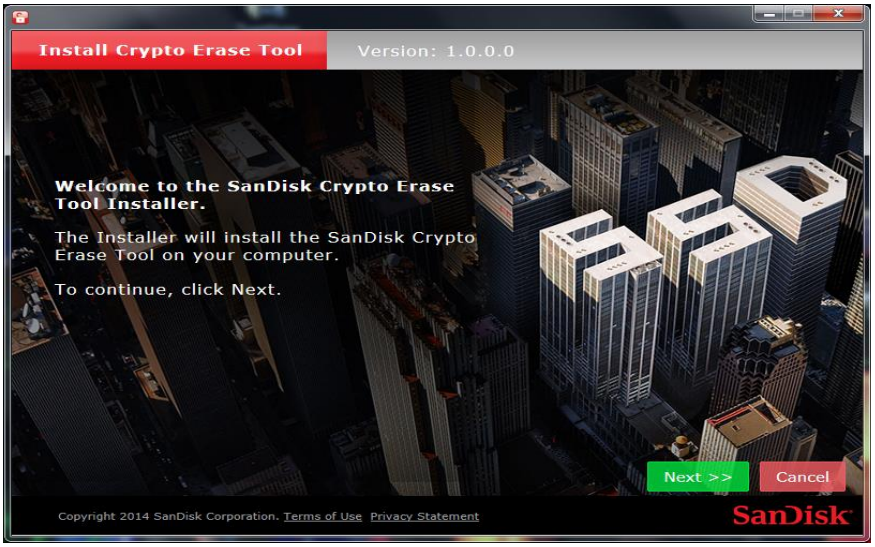
Supported Drives

- SanDisk Self-Encrypting Drives (SED)

Procedure

The SanDisk Crypto Erase download consists of a Windows installer. This installer can be used to install the Crypto Erase tool on target systems that meet the system pre-requisites outlined above. To install the tool, please follow the instructions below.

1. Download and save the SanDisk Crypto Erase installer (*CryptoEraseSetup.exe*) in a folder or directory on the target system.
2. Double click on the *CryptoEraseSetup.exe* file to launch the installer. Administrator rights will be required to perform this step. Click *Next* to continue.


Install Crypto Erase Tool
Version: 1.0.0.0
Next >>
Cancel
Copyright 2014 SanDisk Corporation. Terms of Use Privacy Statement
SanDisk

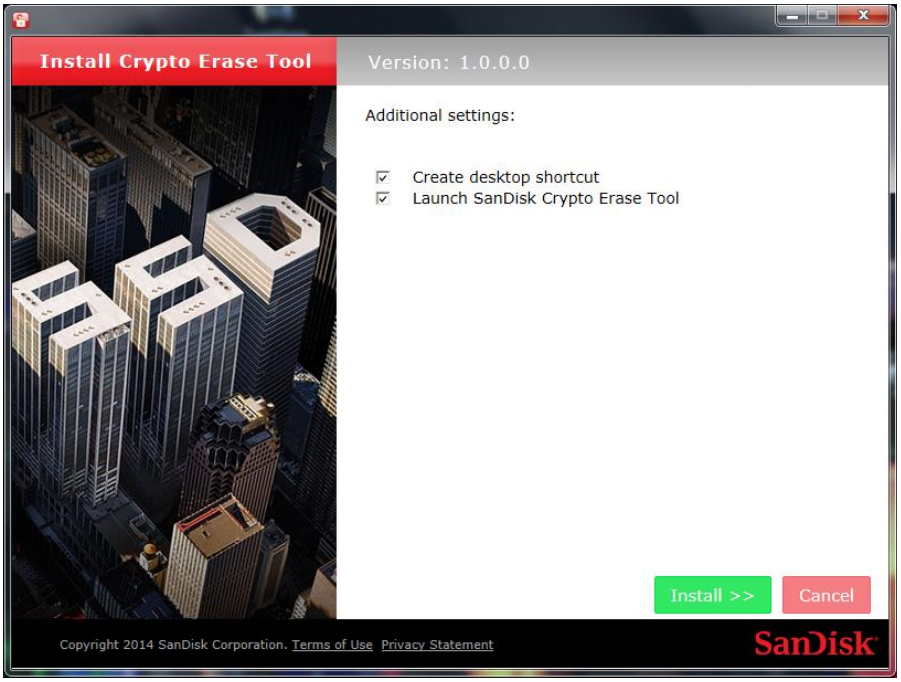
Welcome to the SanDisk Crypto Erase Tool Installer.

The Installer will install the SanDisk Crypto Erase Tool on your computer.

To continue, click Next.

Figure 1: Launch the Crypto Erase installer

3. Verify the installation settings, and click on *Install* to begin installation.

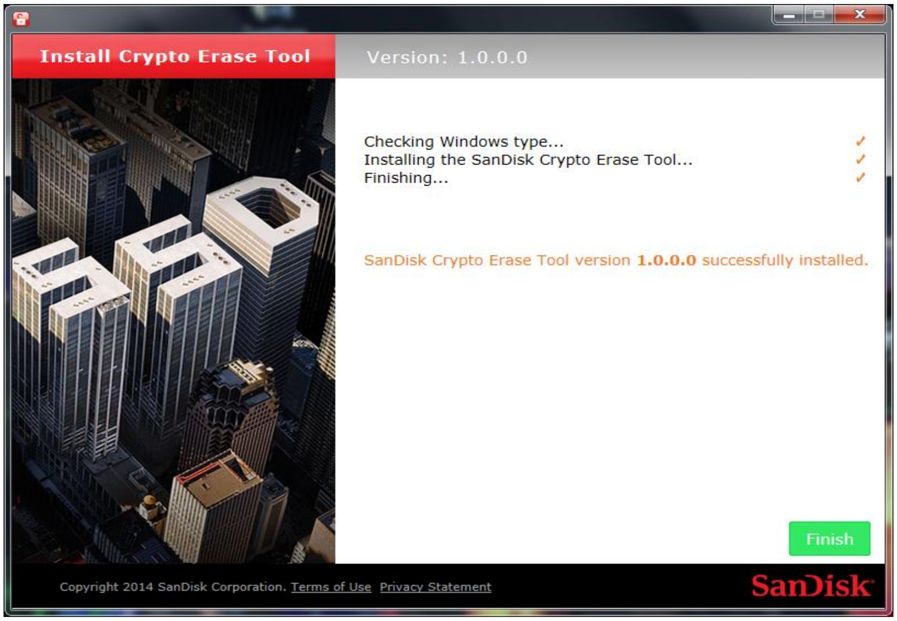

Install Crypto Erase Tool
Version: 1.0.0.0
Install >>
Cancel
Copyright 2014 SanDisk Corporation. Terms of Use Privacy Statement
SanDisk

Additional settings:

☑ Create desktop shortcut
☑ Launch SanDisk Crypto Erase Tool

Figure 2: Verify installation settings

4. Click on *Finish* to complete installation.


Install Crypto Erase Tool
Version: 1.0.0.0
Finish
Copyright 2014 SanDisk Corporation. Terms of Use Privacy Statement
SanDisk

Checking Windows type... ✓
Installing the SanDisk Crypto Erase Tool... ✓
Finishing... ✓

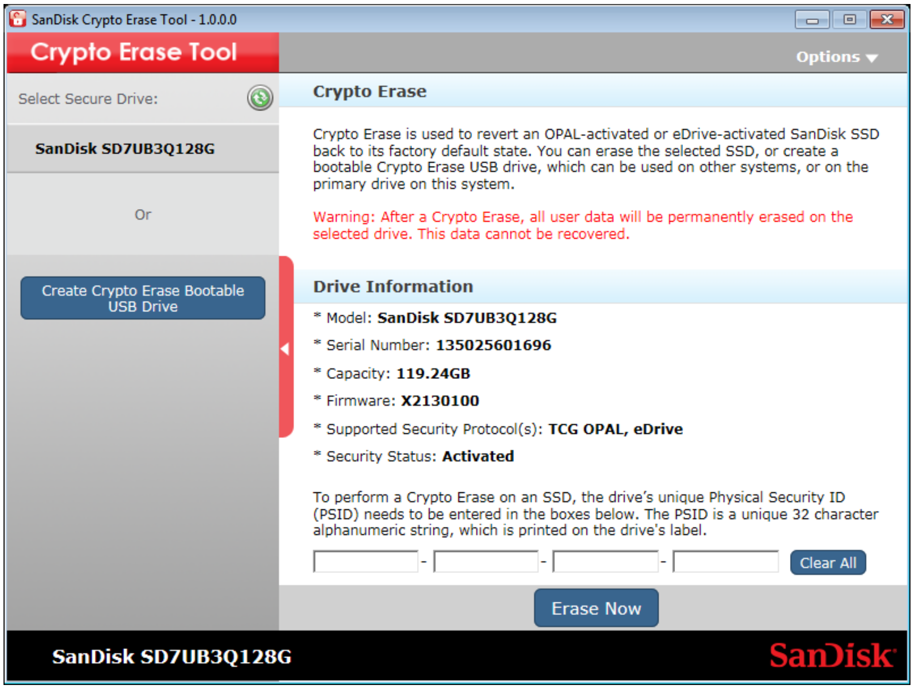
SanDisk Crypto Erase Tool version **1.0.0.0** successfully installed.

Figure 3: Crypto Erase successfully installed on the system

3. Crypto Erase on a Secondary SSD

Any drive that is not the primary boot drive of that system is referred to as a secondary drive. The SanDisk Crypto Erase tool can be installed on a system whose primary operating system is Windows and contains secondary SSDs which need to be erased. The procedure for performing the crypto erase is outlined below:

1. Install the Crypto Erase tool on the desired system. (See Section 2: Installing the Crypto Erase Tool for detailed instructions.)
2. Launch the Crypto Erase tool.
3. The tool will scan the system and list all detected secure SanDisk SSDs in the left panel. If an SSD is not listed, click on the Refresh icon to rescan the system. If a Refresh fails to detect the SSD, check the SATA connection, and try again.



List of SanDisk secure SSDs →

SanDisk Crypto Erase Tool - 1.0.0.0

Crypto Erase Tool

Select Secure Drive:

SanDisk SD7UB3Q128G

Crypto Erase

Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

Drive Information

- Model: **SanDisk SD7UB3Q128G**
- Serial Number: **135025601696**
- Capacity: **119.24GB**
- Firmware: **X2130100**
- Supported Security Protocol(s): **TCG OPAL, eDrive**
- Security Status: **Activated**

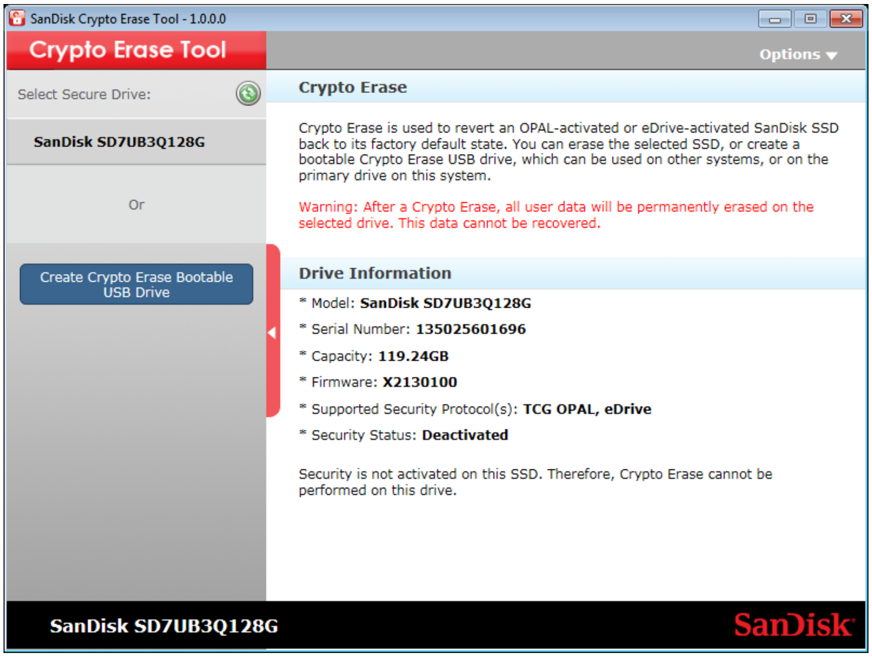
To perform a Crypto Erase on an SSD, the drive's unique Physical Security ID (PSID) needs to be entered in the boxes below. The PSID is a unique 32 character alphanumeric string, which is printed on the drive's label.

SanDisk SD7UB3Q128G

Figure 4: Crypto Erase for secondary SanDisk SSD

4. Choose the drive that needs to be erased by clicking on the drive name.

5. Details about the drive will be shown on the right panel. Crypto Erase is only allowed on SSDs in an *Activated* (security) state, i.e., on SSDs which have OPAL or eDrive enabled on them. If the drive's Security State is *Deactivated*, Crypto Erase will be disabled for it.



Crypto Erase

Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

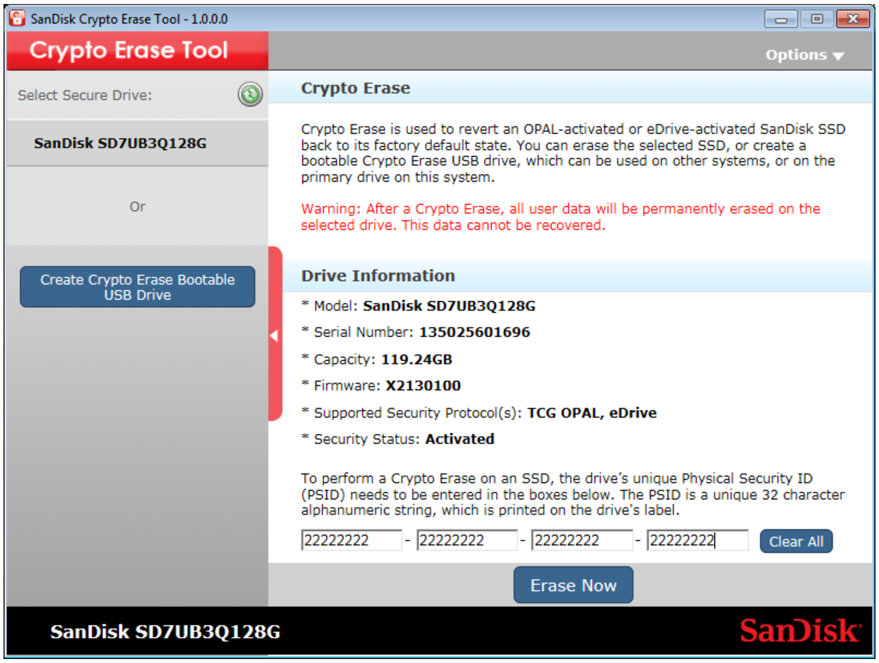
Drive Information

- Model: **SanDisk SD7UB3Q128G**
- Serial Number: **135025601696**
- Capacity: **119.24GB**
- Firmware: **X2130100**
- Supported Security Protocol(s): **TCG OPAL, eDrive**
- Security Status: **Deactivated**

Security is not activated on this SSD. Therefore, Crypto Erase cannot be performed on this drive.

Figure 5: Crypto Erase disabled for an OPAL-deactivated SSD

6. Confirm that the selected drive is correct, and provide the PSID in the boxes provided. The PSID can be found on the drive's label as a 32-character string and a 2D barcode.
Note: The PSID can only be alphanumeric. Special characters will be rejected.



Crypto Erase

Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

Drive Information

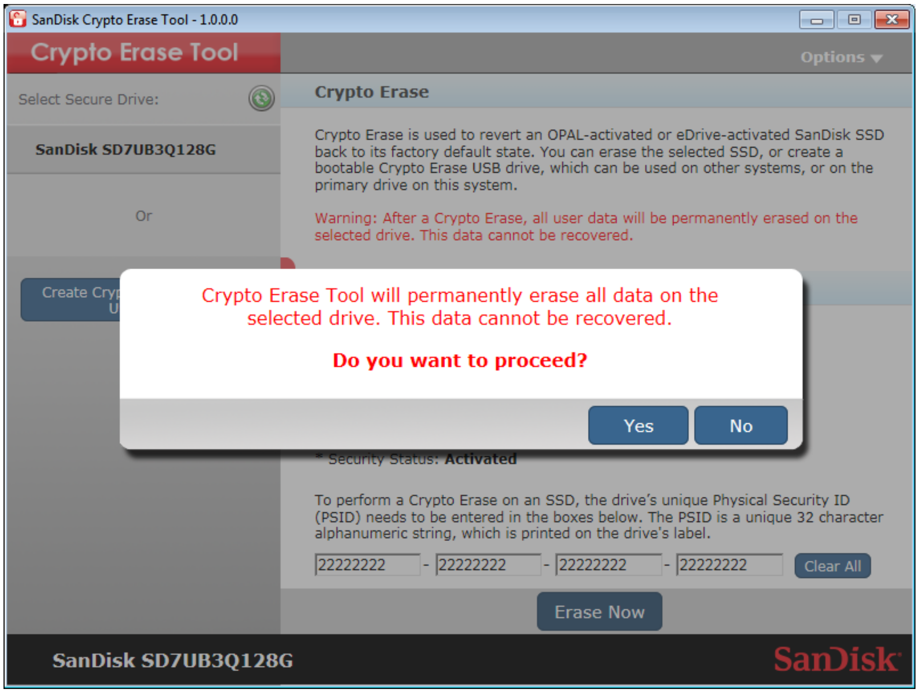
- Model: **SanDisk SD7UB3Q128G**
- Serial Number: **135025601696**
- Capacity: **119.24GB**
- Firmware: **X2130100**
- Supported Security Protocol(s): **TCG OPAL, eDrive**
- Security Status: **Activated**

To perform a Crypto Erase on an SSD, the drive's unique Physical Security ID (PSID) needs to be entered in the boxes below. The PSID is a unique 32 character alphanumeric string, which is printed on the drive's label.

22222222 - 22222222 - 22222222 - 22222222

Figure 6: PSID entry for performing Crypto Erase

7. Confirm the PSID typed into the boxes. If any errors are detected in the typed PSID, use the *Clear All* button to clear the PSID boxes and start again.
8. If the PSID is correct, continue with the Crypto Erase, by clicking on the *Erase Now* button.
9. **Warning**: All user data will be destroyed after a Crypto Erase. To initiate Crypto Erase on the selected drive, accept the warning by clicking *Yes* on the pop-up. Clicking *No* will cancel the Crypto Erase on the SSD.



Crypto Erase

Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

Crypto Erase Tool will permanently erase all data on the selected drive. This data cannot be recovered.

Do you want to proceed?

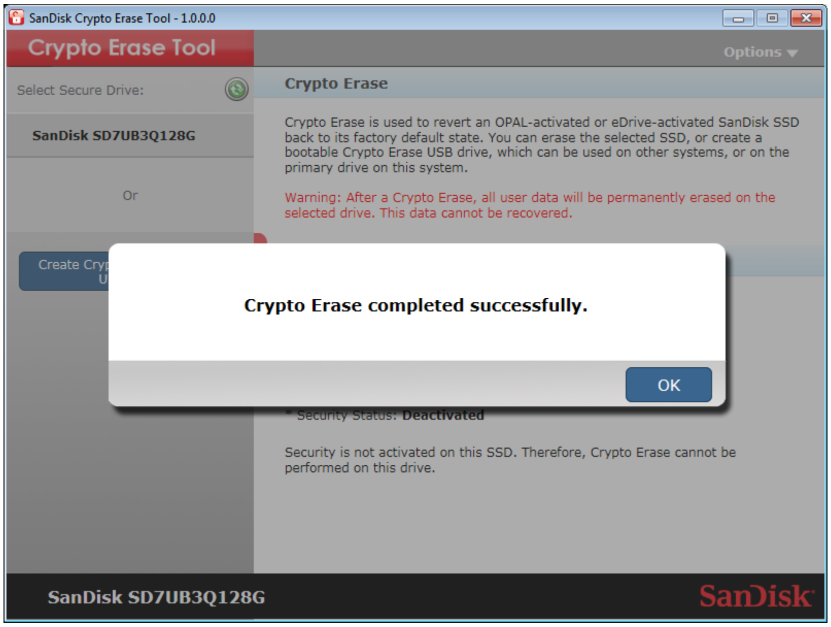
* Security Status: **Activated**

To perform a Crypto Erase on an SSD, the drive's unique Physical Security ID (PSID) needs to be entered in the boxes below. The PSID is a unique 32 character alphanumeric string, which is printed on the drive's label.

22222222 - 22222222 - 22222222 - 22222222

Figure 7: Warning message before Crypto Erase

10. After a successful Crypto Erase, the SSD security state will change to *Deactivated*, and all user data will be destroyed. The drive will be in an uninitialized state and will need to be initialized and reformatted for reuse.



Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

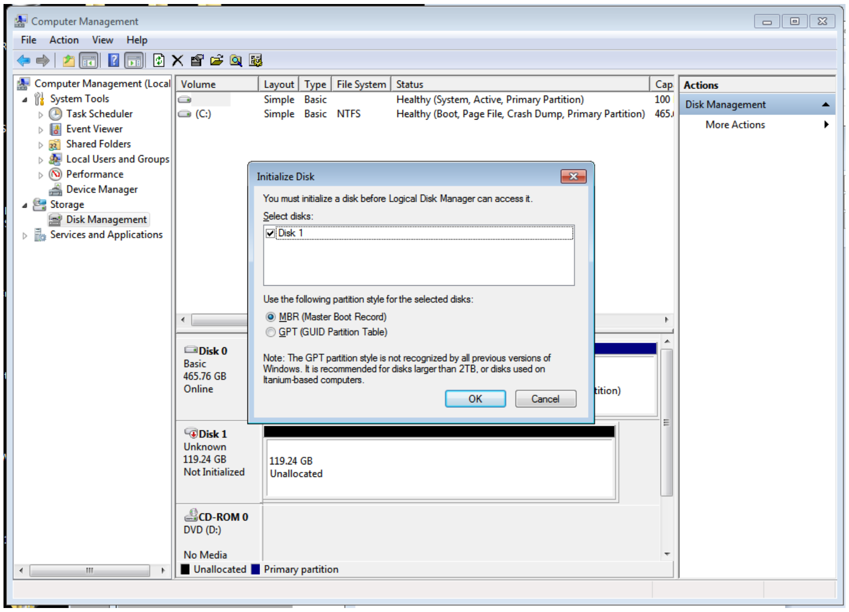
Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

Crypto Erase completed successfully.

* Security Status: Deactivated

Security is not activated on this SSD. Therefore, Crypto Erase cannot be performed on this drive.

Figure 8: Successful Crypto Erase on a secondary SSD



Volume	Layout	Type	File System	Status	Cap
	Simple	Basic		Healthy (System, Active, Primary Partition)	100
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	465.(

You must initialize a disk before Logical Disk Manager can access it.

Select disks:

☑ Disk 1

Use the following partition style for the selected disks:

● MBR (Master Boot Record)

○ GPT (GUID Partition Table)

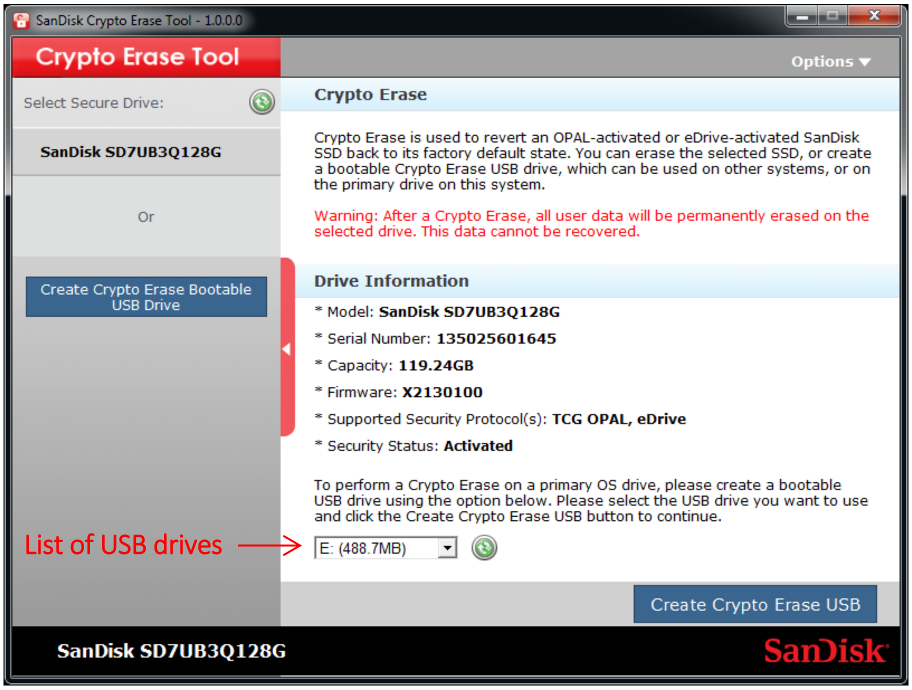
Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.

Figure 9: Drive in uninitialized state after a successful crypto erase

4. Crypto Erase on a Primary SSD

To erase a primary boot drive or to perform a Crypto Erase on non-Windows systems, a Crypto Erase bootable USB drive must be created. The USB drive will contain a bootable Linux kernel with the Crypto Erase utility installed on it. The system can be booted to this USB drive to perform Crypto Erase on the target SSD(s). To create a bootable Crypto Erase USB drive and use it to perform Crypto Erase on SanDisk SSDs, please follow these steps:

1. Install the Crypto Erase tool on any compatible Windows system. (See Section 2: Installing Crypto Erase Tool for detailed instructions.)
2. Launch the Crypto Erase tool.
3. Click on the *Create Crypto Erase Bootable USB Drive* button.
4. The tool will scan the system and display a list of available USB drives. If the desired USB drive is not shown on the list, unplug and re-plug in the USB drive, then click on the refresh icon to see an updated list of USB drives.



Crypto Erase

Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

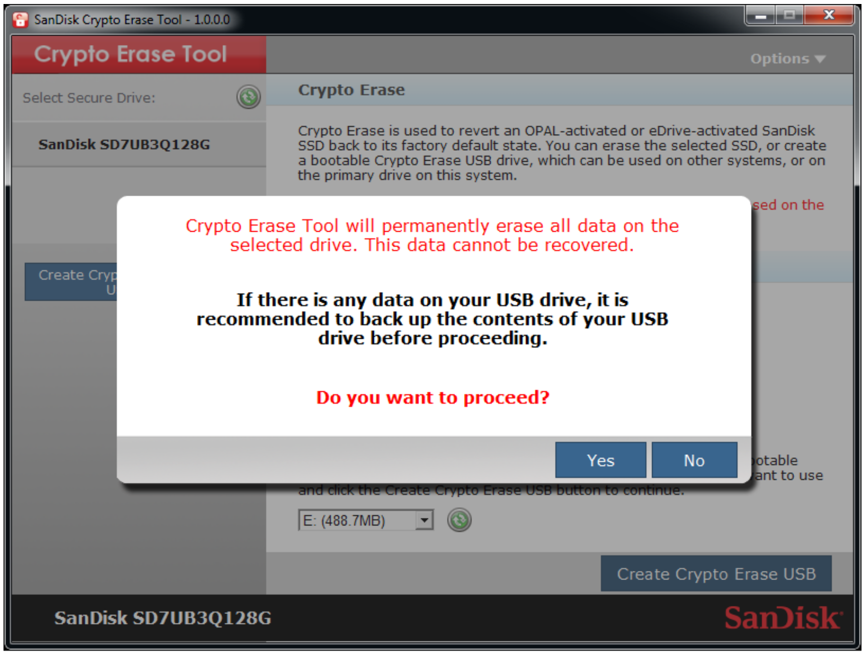
Drive Information

* Model: **SanDisk SD7UB3Q128G**
* Serial Number: **135025601645**
* Capacity: **119.24GB**
* Firmware: **X2130100**
* Supported Security Protocol(s): **TCG OPAL, eDrive**
* Security Status: **Activated**

To perform a Crypto Erase on a primary OS drive, please create a bootable USB drive using the option below. Please select the USB drive you want to use and click the Create Crypto Erase USB button to continue.

Figure 10: Crypto Erase for a Primary Drive using a bootable USB

5. Select the correct USB drive from the drop down list, and click on the *Create Crypto Erase USB* button to create a bootable Crypto Erase USB drive.
   Note: The USB must have at least 50MB of free space to perform this operation. If enough free space is not available, the contents of the USB may be deleted. To prevent loss of data, it is recommended to backup the contents of the USB drive before proceeding.



Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

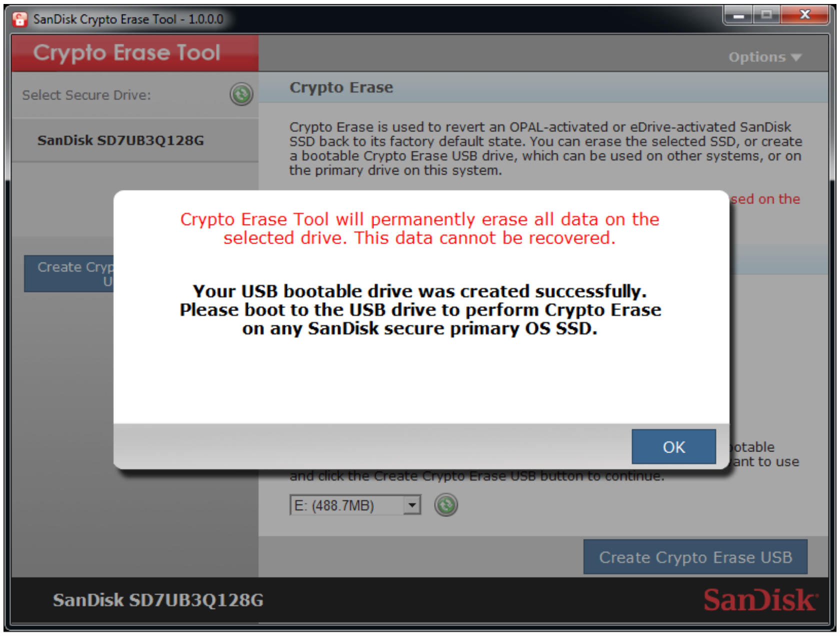
Crypto Erase Tool will permanently erase all data on the selected drive. This data cannot be recovered.

If there is any data on your USB drive, it is recommended to back up the contents of your USB drive before proceeding.

Do you want to proceed?

Figure 11: Warning to backup contents of USB

6. The tool will display a confirmation when the bootable USB drive is ready to use.



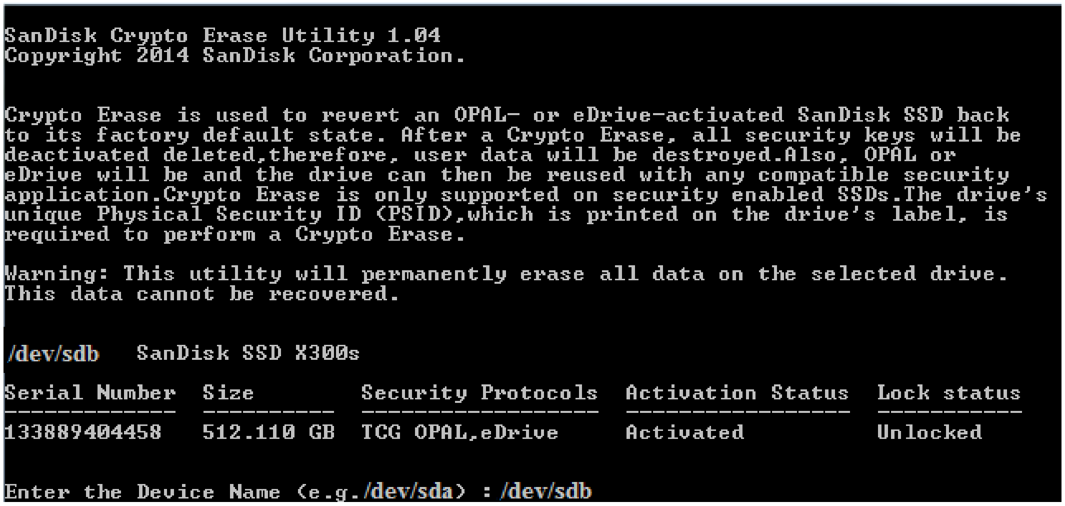
Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. You can erase the selected SSD, or create a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Crypto Erase Tool will permanently erase all data on the selected drive. This data cannot be recovered.

Your USB bootable drive was created successfully. Please boot to the USB drive to perform Crypto Erase on any SanDisk secure primary OS SSD.

Figure 12: Bootable crypto erase USB drive successfully created

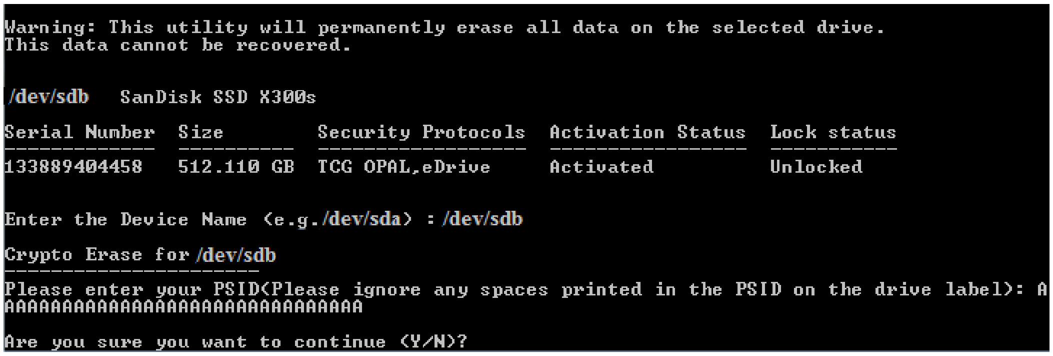
7. Connect the bootable Crypto Erase USB drive to the target system.
8. If needed, change the boot priority in the BIOS settings on the target system to allow booting to USBs.
9. Boot the target system to the Crypto Erase USB.
10. The Crypto Erase Utility on the USB will launch automatically and display a list of all connected SanDisk secure SSDs.



```
SanDisk Crypto Erase Utility 1.04
Copyright 2014 SanDisk Corporation.


Crypto Erase is used to revert an OPAL- or eDrive-activated SanDisk SSD back
to its factory default state. After a Crypto Erase, all security keys will be
deactivated deleted,therefore, user data will be destroyed.Also, OPAL or
eDrive will be and the drive can then be reused with any compatible security
application.Crypto Erase is only supported on security enabled SSDs.The drive's
unique Physical Security ID (PSID),which is printed on the drive's label, is
required to perform a Crypto Erase.

Warning: This utility will permanently erase all data on the selected drive.
This data cannot be recovered.


/dev/sdb   SanDisk SSD X300s

Serial Number  Size         Security Protocols  Activation Status  Lock status
-------------  -----------  ------------------  -----------------  -----------
133889404458   512.110 GB   TCG OPAL,eDrive     Activated          Unlocked


Enter the Device Name (e.g./dev/sda) : /dev/sdb
```

Figure 13: Crypto Erase USB lists all connected secure drives at boot-up

11. The utility will prompt to select the SSD for performing a Crypto Erase. Enter the name of the drive to select. (Drive name will be in the format */dev/sdX*, where X can be a, b, c, etc…)
12. Enter the PSID of the selected drive. While entering the PSID, please ignore any spaces or hyphens, which may be printed on the label.

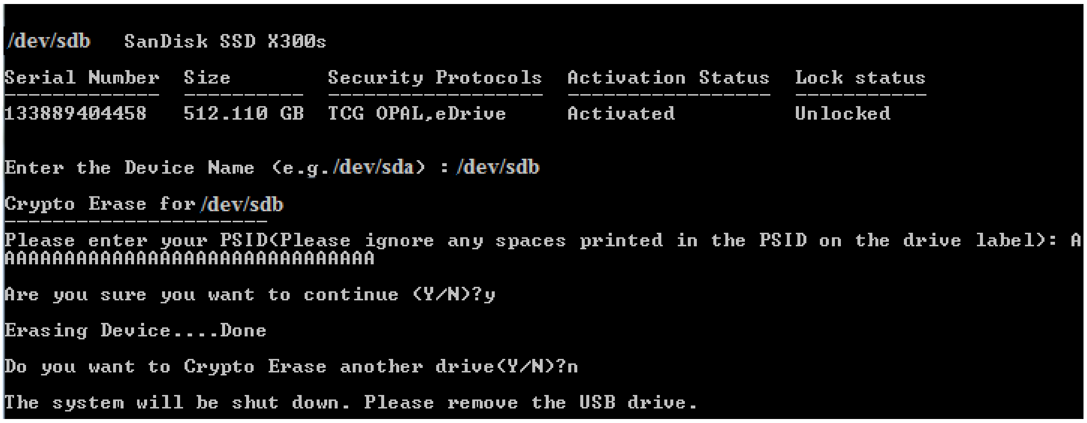


```
Warning: This utility will permanently erase all data on the selected drive.
This data cannot be recovered.

/dev/sdb   SanDisk SSD X300s

Serial Number  Size         Security Protocols  Activation Status  Lock status
-------------  -----------  ------------------  -----------------  -----------
133889404458   512.110 GB   TCG OPAL,eDrive     Activated          Unlocked

Enter the Device Name (e.g./dev/sda) : /dev/sdb

Crypto Erase for /dev/sdb
-----------------------
Please enter your PSID(Please ignore any spaces printed in the PSID on the drive label): A
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

Are you sure you want to continue (Y/N)?
```

Figure 14: Entering PSID of selected drive

13. Confirm the PSID, and hit *Enter* to issue a Crypto Erase to the selected SSD.
14. **Warning:** All user data will be destroyed after a Crypto Erase. To initiate the Crypto Erase, type *Y* or *y* at the prompt. Entering *N* or *n* will cancel the Crypto Erase on the SSD.
15. After a successful Crypto Erase, the SSD security state will change to *Deactivated*, and all user data will be destroyed. The drive will be in an uninitialized state and will need to be initialized and reformatted for reuse.

16. Repeat steps 10-14 for any other secure SanDisk SSDs in the system that need to be erased.



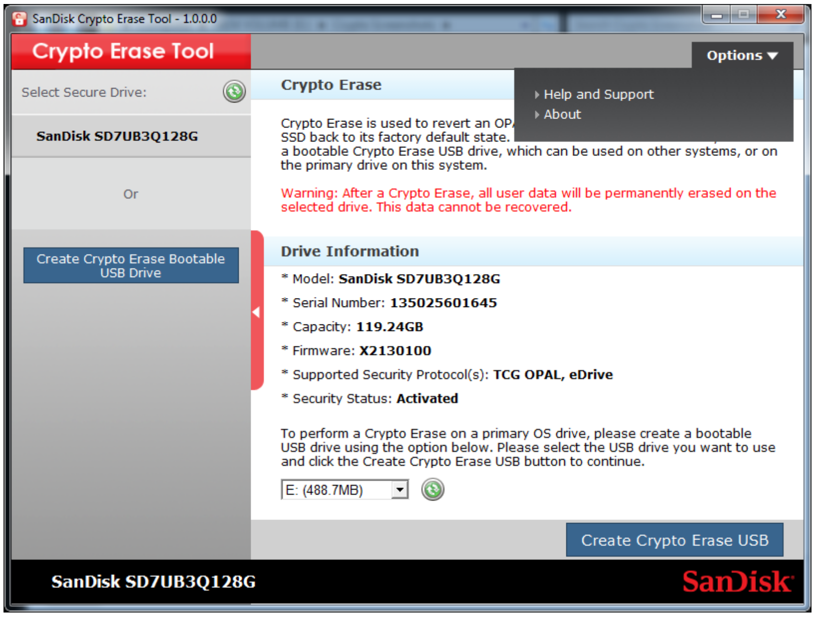
```
/dev/sdb   SanDisk SSD X300s
Serial Number  Size        Security Protocols   Activation Status   Lock status
-------------  ----------  -------------------  ------------------  -----------
133889404458   512.110 GB  TCG OPAL,eDrive      Activated           Unlocked

Enter the Device Name (e.g./dev/sda) : /dev/sdb
Crypto Erase for /dev/sdb
----------------------
Please enter your PSID(Please ignore any spaces printed in the PSID on the drive label): A
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Are you sure you want to continue (Y/N)?y
Erasing Device....Done
Do you want to Crypto Erase another drive(Y/N)?n
The system will be shut down. Please remove the USB drive.
```

Figure 15: Successful Crypto erase using bootable USB method

17. The same USB can be used on any target platform to perform Crypto Erase on SanDisk secure SSDs.

5. Getting Help

The *Options* menu on the SanDisk Crypto Erase tool provides links for getting help for the tool. Selecting Help & Support from this menu will redirect the user to the help page of the SanDisk Crypto Erase tool. More information about the tool and SanDisk secure SSDs can be found there. The system must be connected to the Internet for this option to work.



Crypto Erase

Crypto Erase is used to revert an OP/
SSD back to its factory default state.
a bootable Crypto Erase USB drive, which can be used on other systems, or on the primary drive on this system.

Warning: After a Crypto Erase, all user data will be permanently erased on the selected drive. This data cannot be recovered.

Drive Information

* Model: **SanDisk SD7UB3Q128G**

* Serial Number: **135025601645**

* Capacity: **119.24GB**

* Firmware: **X2130100**

* Supported Security Protocol(s): **TCG OPAL, eDrive**

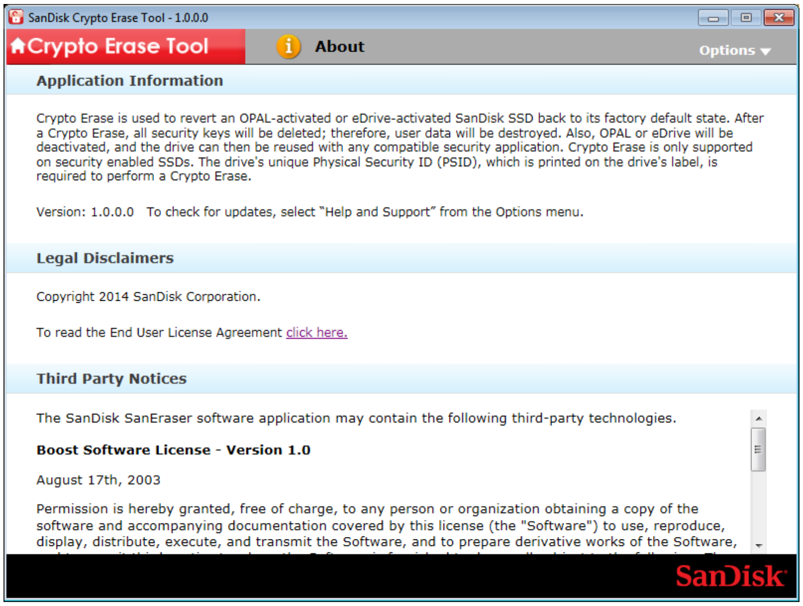
* Security Status: **Activated**

To perform a Crypto Erase on a primary OS drive, please create a bootable USB drive using the option below. Please select the USB drive you want to use and click the Create Crypto Erase USB button to continue.

E: (488.7MB)

Figure 16: Get help for Crypto Erase tool

More information about the tool such as application revision, legal disclaimers, etc... can be found on the *About* page.



Application Information

Crypto Erase is used to revert an OPAL-activated or eDrive-activated SanDisk SSD back to its factory default state. After a Crypto Erase, all security keys will be deleted; therefore, user data will be destroyed. Also, OPAL or eDrive will be deactivated, and the drive can then be reused with any compatible security application. Crypto Erase is only supported on security enabled SSDs. The drive's unique Physical Security ID (PSID), which is printed on the drive's label, is required to perform a Crypto Erase.

Version: 1.0.0.0 To check for updates, select "Help and Support" from the Options menu.

Legal Disclaimers

Copyright 2014 SanDisk Corporation.

To read the End User License Agreement click here.

Third Party Notices

The SanDisk SanEraser software application may contain the following third-party technologies.

Boost Software License - Version 1.0

August 17th, 2003

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Figure 17: About page of Crypto Erase tool

6. FAQs

1. What is Crypto Erase?
   Crypto Erase is the process of reverting an OPAL-activated or eDrive-activated SSD back to its factory default state. After a Crypto Erase, all security keys are deleted; therefore, user data is destroyed. Also, OPAL or eDrive is deactivated, so the drive can then be reused with any compatible security application. The drive's unique Physical Security ID (PSID), which is printed on the drive's label, is required to perform a Crypto Erase. This process is also referred to as PSID Revert.

2. Can user data be recovered after a Crypto Erase?
   No, user data is permanently destroyed after a Crypto Erase.

3. Can I re-use the SSD after a Crypto Erase?
   Yes, the SSD will return to a factory default state after a Crypto Erase. It can then be re-initialized and formatted like any other SSD. Any compatible security application can be used to re-activate OPAL or eDrive on the SSD after a Crypto Erase.

4. Can I perform Crypto Erase on a non-secure SSD? What will happen if I run this application on a non-secure SSD or non-SanDisk SSD?
   No, Crypto Erase is only supported on OPAL-activated or eDrive-activated SSDs. The application scans the local system and lists all security capable SanDisk SSDs. Crypto Erase will be disabled for SSDs that are security capable but are not OPAL-activated or eDrive-activated. To activate OPAL or eDrive on a security capable SSD, use a security application, such as Microsoft Bitlocker.

5. When will I need to use the SanDisk Crypto Erase Tool?
   The SanDisk Crypto Erase tool should be used for an OPAL-activated or eDrive-activated SanDisk SSD if the password has been forgotten or lost. It can also be used to wipe user data before returning a drive for an RMA.

6. When should I use the "Create Crypto Erase Bootable USB Drive" option?
   This option is typically used for performing Crypto Erase on a primary boot drive.

7. Are there any size limitations for the USB, when choosing the "Create Crypto Erase Bootable USB Drive" option?
   The minimum free-space requirement for the USB is 50MB. It must be formatted as a FAT/NTFS drive.

8. What is a PSID? Where can I find it?
   PSID stands for Physical Security ID. It is a unique 32-character alphanumeric identifier for security-capable SSDs, which is required for a Crypto Erase. It is printed on the drive's label as both a 32-character string and a 2D barcode.

9. What is TCG OPAL?
   TCG stands for Trusted Computing Group. OPAL is a security specification, for storage devices, defined by TCG.

10. What is eDrive?
    eDrive is a security storage specification defined by Microsoft. It is based on the TCG OPAL and IEEE 1667 specifications.

11. What does the "Activated" or "Deactivated" status mean?
    An "Activated" SanDisk SSD refers to a security capable SSD which has OPAL or eDrive enabled on it. OPAL or eDrive may be enabled by security applications, such as Microsoft Bitlocker. When no security application has been used to enabled OPAL or eDrive on the SSD, it remains in a "Deactivated" state. A secure SSD will also get "Deactivated" after a Crypto Erase operation.

12. How do I know if my SSD is a secure drive?
    The SanDisk Crypto Erase tool will scan the local system and list all security capable SanDisk SSDs in the left panel. If your SSD is displayed in the list after the scan, it is a secure drive.

13. Why is my SSD not listed in this application?
    The SanDisk Crypto Erase tool will only list SanDisk secure SSDs. All other drives on the system will be ignored.

14. Will the Crypto Erase Tool work on any platform?
    The Crypto Erase tool is a Windows application. To perform an erase on other operating systems, it is recommended to use the "Create Crypto Erase Bootable USB Drive" option.