KillDisk 11 - User Manual

Contents

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Introduction

As a relatively new technology, an overwhelming majority of people, businesses and organizations do not understand the importance of security in digital data storage. The average hard drive sees thousands of files written to it, many of which contain sensitive information. Over the course of a hard drives lifetime, the likelihood for **recoverable** remnants of sensitive information left on a hard drive at its' end of life is very high. To see this firsthand, simply try out `KillDisk`'s *File Browser* on page 49 on your system drive. You'll be surprised to see what you find!

Note: Additionally, try formatting a USB drive with files on it and browse it with `KillDisk`'s *File Browser* on page 49 as well. Data breaches are not limited to hard drives!

Advanced Data Recovery Systems

Advances in data recovery have been made such that data can be reclaimed in many cases from hard drives that have been wiped and disassembled. Security agencies use advanced applications to find cybercrime related evidence. Also there are established industrial spy agencies adopting sophisticated channel coding techniques such as PRML (Partial Response Maximum Likelihood), a technique used to reconstruct the data on magnetic disks. Other methods include the use of magnetic force microscopy and recovery of data based on patterns in erase bands.

Although there are very sophisticated data recovery systems available at a high price, data can also be easily restored with the help of an off-the-shelf data recovery utility like `Active@ File Recovery` (*http://www.file-recovery.com*), making your erased confidential data quite accessible.

Using `KillDisk`, our powerful and compact utility, all data on your hard drive or removable device can be destroyed without the possibility of future recovery. After using `KillDisk`, disposal, recycling, selling or donating your storage device can be done with peace of mind.

Erasing Confidential Data

Modern methods of data encryption are deterring unwanted network attackers from extracting sensitive data from stored database files. Attackers who want to retrieve confidential data are becoming more resourceful by looking into places where data might be stored temporarily. A hard drive on a local network node, for example, can be a prime target for such a search. One avenue of attack is the recovery of data from residual data on a discarded hard disk drive. When deleting confidential data from hard drives, removable floppies or USB devices, it is important to extract all traces of the data so that recovery is not possible.

Most official guidelines around disposing of confidential magnetic data do not take into account the depth of today’s recording densities, nor the methods used by the operating system when removing data. For example, the Windows DELETE command merely changes the file name so that the operating system will not look for the file. The situation with NTFS is similar.

Removal of confidential personal information or company trade secrets in the past might have used the FORMAT command or the DOS FDISK command. Ordinarily, using these procedures give users a sense of confidence that the data has been completely removed.

When using the FORMAT command, Windows displays a message like this:

Important:

Formatting a disk removes all information from the disk.

The FORMAT utility actually creates new FAT and ROOT tables, leaving all previous data on the disk untouched. Moreover, an image of the replaced FAT and ROOT tables are stored, so that the UNFORMAT command can be used to restore them.

As well, FDISK merely cleans the Partition Table (located in the drive's first sector) and does not touch anything else.

Wiping Confidential Data

You may have confidential data on your hard drive in spaces where data may have been stored temporarily. You may also have deleted files by using the Windows Recycle Bin and then emptying it. While you are still using your local hard drive, there may be confidential information available in these unoccupied spaces.

Wiping the logical drive's deleted data does not delete existing files and folders. It processes all unoccupied drive space so that recovery of previously deleted files becomes impossible. Installed applications and existing data are not touched by this process.

When you wipe unoccupied drive space, the process is run from the bootable CD/DVD operating system. As a result, the wipe or erase process uses an operating system that is outside the local hard drive and is not impeded by Windows system caching. This means that deleted Windows system records can be wiped clean.

`KillDisk` wipes unused data residue from file slack space, unused sectors, and unused space in MTF records or directory records.

Wiping drive space can take a long time, so do this when the system is not being otherwise utilized. For example, this can be done overnight.

International Standards in Data Destruction

`KillDisk` conforms to dozens of international standards for clearing and sanitizing data, including the US DoD 5220.22-M standard. You can be sure that once you erase a disk with `KillDisk`, sensitive information is destroyed forever.

`KillDisk` is a quality security application that destroys data permanently from any computer that can be started using a bootable CD or DVD-ROM. Access to the drive's data is made on the physical level via the BIOS (Basic Input-Output Subsystem), bypassing the operating system’s logical drive structure organization. Regardless of the operating system, file systems or type of machine, this utility can destroy all data on all storage devices. It does not matter which operating systems or file systems are located on the machine

KillDisk overview

KillDisk 11

`KillDisk 11` is the most powerful consumer edition released to date. With the development and release of `KillDisk Industrial`, `KillDisk 11` benefits from industrial stability, improved disk handling, interface layout and several new features including:

- Redesigned and improved user interface
- Enhanced visualization of physical disks and erase processes
- Improved handling of disks with controller malfunctions
- Stable handling of hot-swappable and dynamic disks
- Sound notifications for completed erase jobs with different results
- Auto hibernate or shutdown the system after all jobs are completed
- Enhanced certificates and reports for disk erase and wipe
- Advanced Disk Viewer with flexible Search for low-level disk inspection
- Customizable file names for certificates & XML reports
- Unique Computer ID can be displayed in certificates/reports
- Disk health - S.M.A.R.T. information can be displayed and monitored
- Customizable look & feel: four different application styles included
- ATA Secure Erase command - available in Ultimate package

This release is available as an executable to run in your desktop environment, or in a bootable format with the help of the `Active@ Boot Disk Creator` - the bootable disk creation tool included in the installation package.

Software Licensing

`KillDisk` is licensed **per concurrent use of the software** and **for each concurrent disk being wiped**, outlined in the EULA. The maximum number of disks erased in parallel corresponds to the number of purchased licenses.

One Corporate license grants you to ability to run the software on one machine and erase one disk at any given time. **To run on several machines in an office or multiple drives concurrently on one machine, you require the corresponding number of licenses.**

Site and Enterprise licenses grant the license holder *unlimited* use of the software in a geographical location and worldwide respectively.

This licensing is maintained through software registration and activation. Once the full version of `KillDisk` is purchased, the license holder will receive an email with their **Registered Name** and **Registration Key**. Any machine that needs to use the full version of the software needs to be activated with this key.

Activations are limited to the number of licenses held. To transfer from one machine to another, they must be deactivated from decommissioned hardware first.

For boot disks to be created, the `Active@ Boot Disk Creator` must be registered with an active registration key.

Registering the Software (Online)

For this task you require an active internet connection on the machine you wish to register the product on.

After installation, `Active@ KillDisk` still starts as FREE version (unregistered), you need to register it first to have all professional features activated. To register the software with an active internet connection:

1. Select **Register or Upgrade Software** in the initial Registration & Licensing dialog launched on application start up, or click **Registration…** from the Help menu to access it from the application.

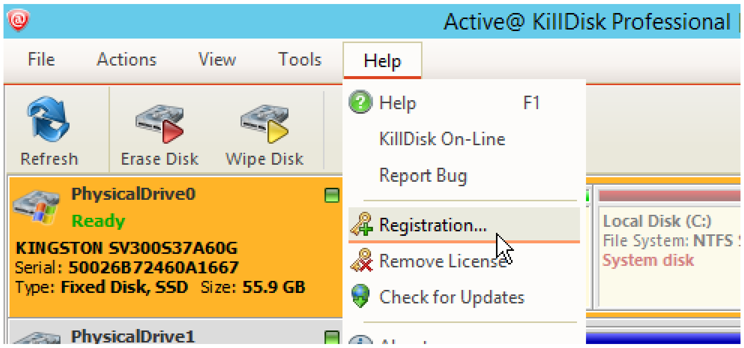
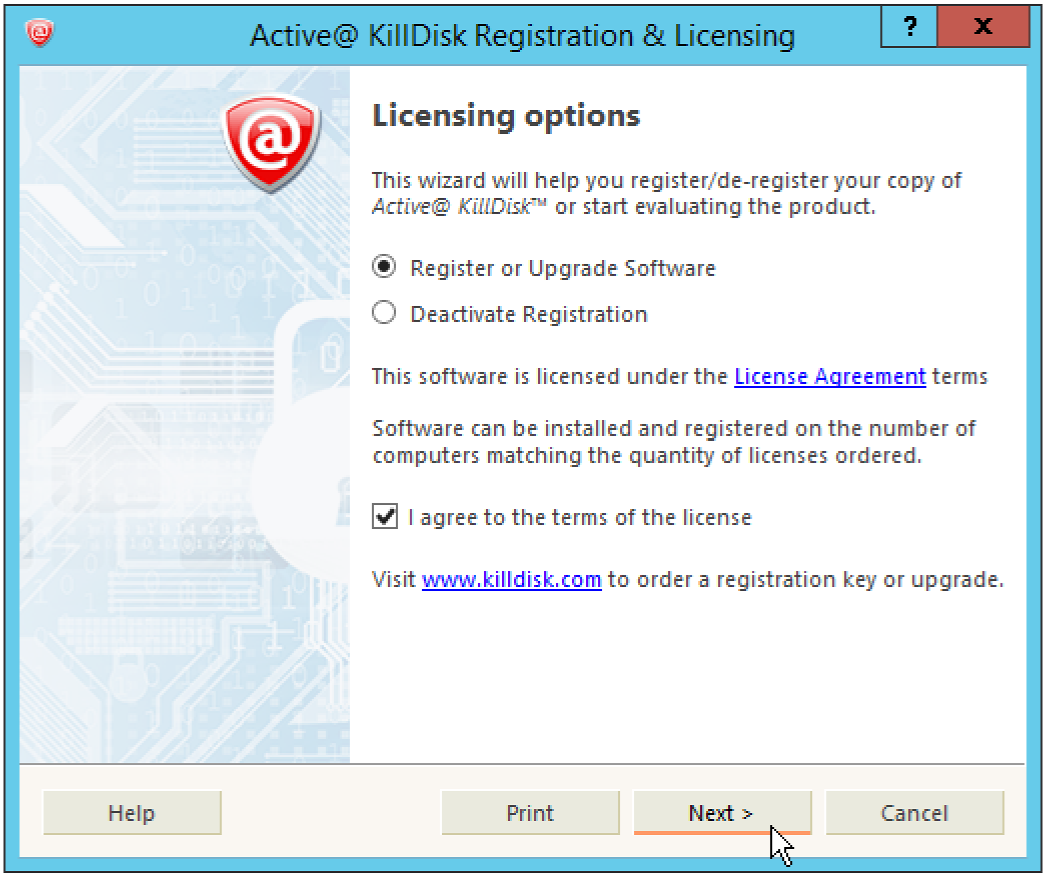


Figure 1: Accessing the registration window

2. Select the **Register or Upgrade Software** radio button
3. Read the License agreement and activate the check box to agree to the terms of the license
4. Click **Next** to proceed with the registration



Licensing options

This wizard will help you register/de-register your copy of *Active@ KillDisk™* or start evaluating the product.

● Register or Upgrade Software

○ Deactivate Registration

This software is licensed under the License Agreement terms

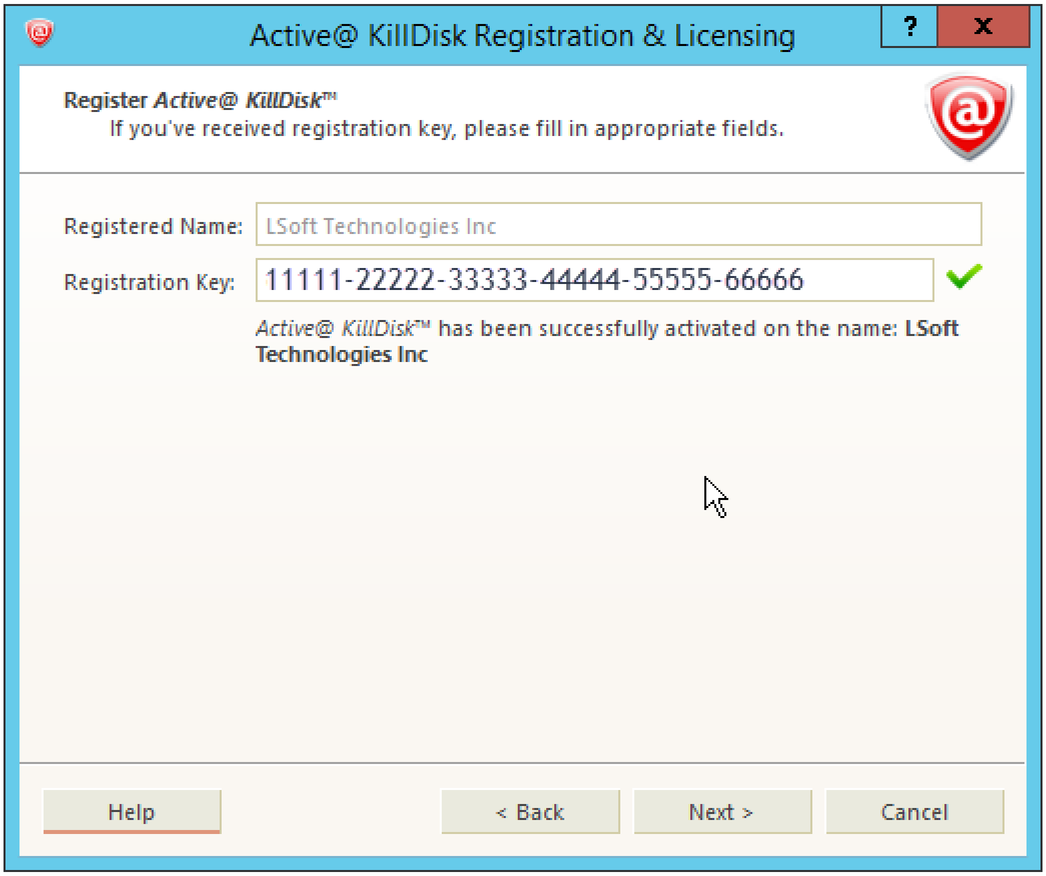
Software can be installed and registered on the number of computers matching the quantity of licenses ordered.

☑ I agree to the terms of the license

Visit www.killdisk.com to order a registration key or upgrade.

Figure 2: Registration window

5. Copy & Paste your 30-digit registration key into the field called **Registration Key:**
6. You should receive a response that the software has been registered. The registration is now complete. You may click **Next** and exit the registration window


Active@ KillDisk Registration & Licensing

Register *Active@ KillDisk™*
If you've received registration key, please fill in appropriate fields.

Registered Name: LSoft Technologies Inc

Registration Key: 11111-22222-33333-44444-55555-66666 ✓

Active@ KillDisk™ has been successfully activated on the name: **LSoft Technologies Inc**

Figure 3: Completed registration

You now have access to the full features of the application.

Note: If your registration key is too long, you are using the key for an earlier version. Ensure you update to the latest version by making sure your support and updates are active and use the key to this latest version. This can be done through your client profile.

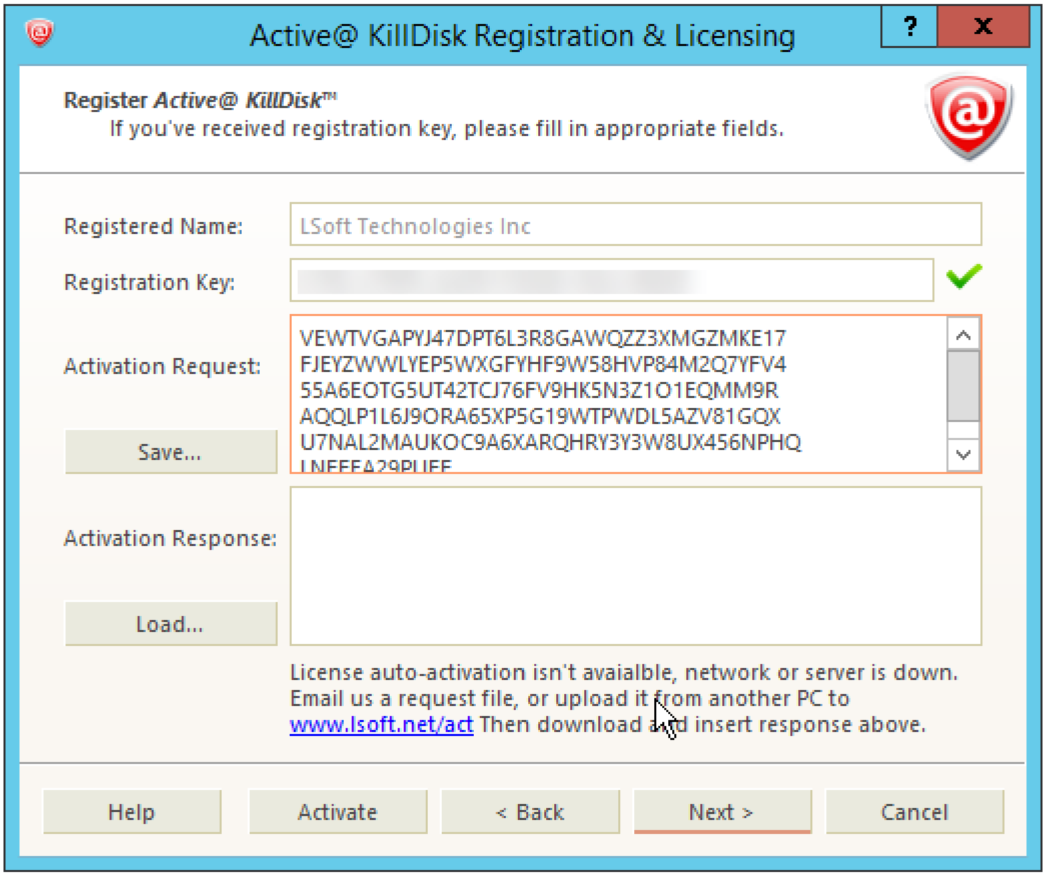
Note: You can also load registration information from a text file, (either INI or TXT type) where the first line is the name and second line is the key.

Registering the Software (Offline)

For this method of activation, you need any computer with a web browser and active internet connection and a USB. **Use this method only if the computer you are activating does not have internet access.**

In some cases, such as security or lack of access, you may not have access to an internet connection on the machine you wish to install the software on. For offline activation:

1. Select **Register or Upgrade Software** in the initial Registration & Licensing dialog launched on application start up, or click **Registration…** from the Help menu to access it from the application.
2. Select the **Register or Upgrade Software** radio button
3. Read the license agreement and activate the check box to agree to the terms of the license
4. Click **Next** to proceed with the registration
5. Copy & Paste your 30-digit registration key into the **Registration Key:** field. The Activation Request and Activation Response boxes will appear



Register *Active@ KillDisk™*

If you've received registration key, please fill in appropriate fields.

Registered Name: LSoft Technologies Inc

Registration Key: [redacted] ✓

Activation Request:

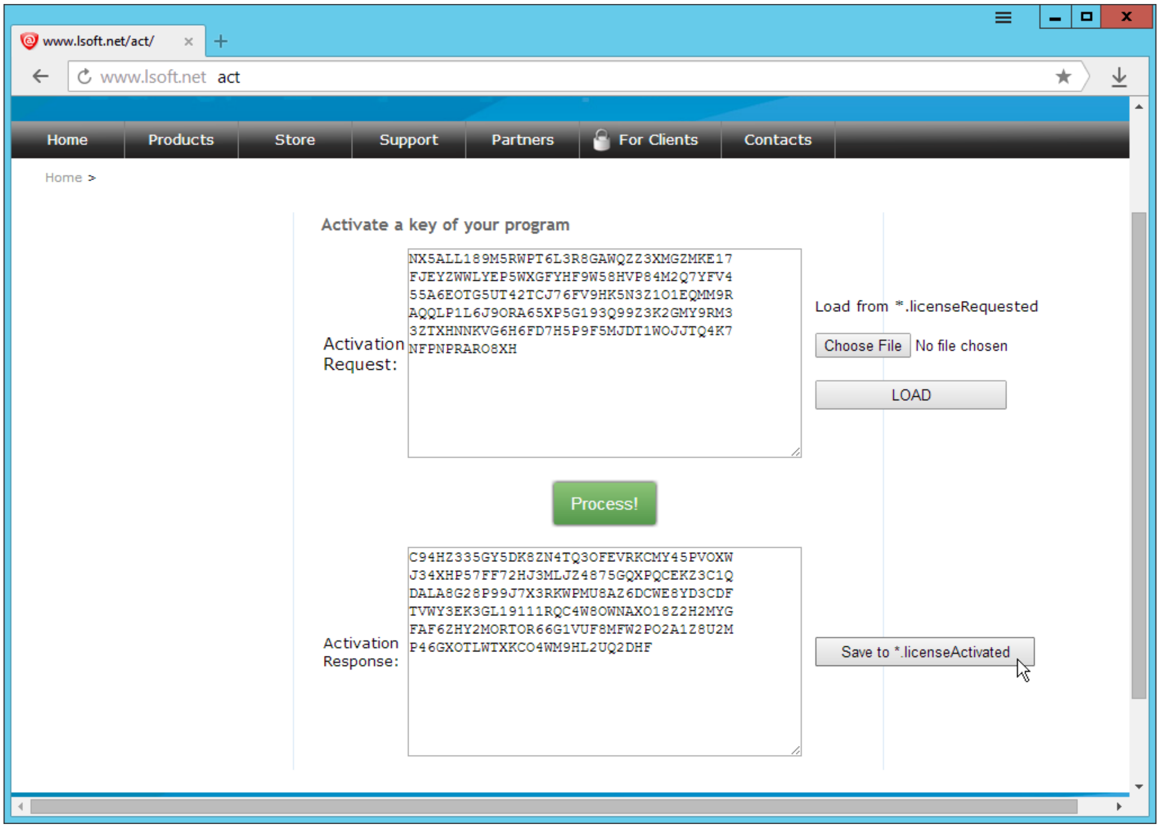
```
VEWTVGAPYJ47DPT6L3R8GAWQZZ3XMGZMKE17
FJEYZWWLYEP5WXGFYHF9W58HVP84M2Q7YFV4
55A6EOTG5UT42TCJ76FV9HK5N3Z1O1EQMM9R
AQQLP1L6J9ORA65XP5G19WTPWDL5AZV81GQX
U7NAL2MAUKOC9A6XARQHRY3Y3W8UX456NPHQ
LNEFEA29PUEE
```

Activation Response:

License auto-activation isn't avaialble, network or server is down. Email us a request file, or upload it from another PC to www.lsoft.net/act Then download and insert response above.

Figure 4: Offline activation boxes appearing

6. Click **Save...** to generate a registration request file. Copy this file to a USB.
7. Bring the USB to a computer with an active internet connection
8. Open the web browser and navigate to *lsoft.net/act*
9. Import the request file using the **Choose File** button and click **Load**
10. Click **Process!** to generate the Activation Response
11. Save the response to your USB by clicking **Save to *.licenseActivated**



Activate a key of your program

Activation Request:

```
NX5ALL189M5RWPT6L3R8GAWQZZ3XMGZMKE17
FJEYZWWLYEP5WXGFYHF9W58HVP84M2Q7YFV4
55A6EOTG5UT42TCJ76FV9HK5N3Z1O1EQMM9R
AQQLP1L6J9ORA65XP5G193Q99Z3K2GMY9RM3
3ZTXHNNKVG6H6FD7H5P9F5MJDT1WOJJTQ4K7
NFPNPRARO8XH
```

Activation Response:

```
C94HZ335GY5DK8ZN4TQ3OFEVRKCMY45PVOXW
J34XHP57FF72HJ3MLJZ4875GQXPQCEKZ3C1Q
DALA8G28P99J7X3RKWPMU8AZ6DCWE8YD3CDF
TVWY3EK3GL19111RQC4W8OWNAXO18Z2H2MYG
FAF6ZHY2MORTOR66G1VUF8MFW2PO2A1Z8U2M
P46GXOTLWTXKCO4WM9HL2UQ2DHF
```

Figure 5: Generating an offline activation

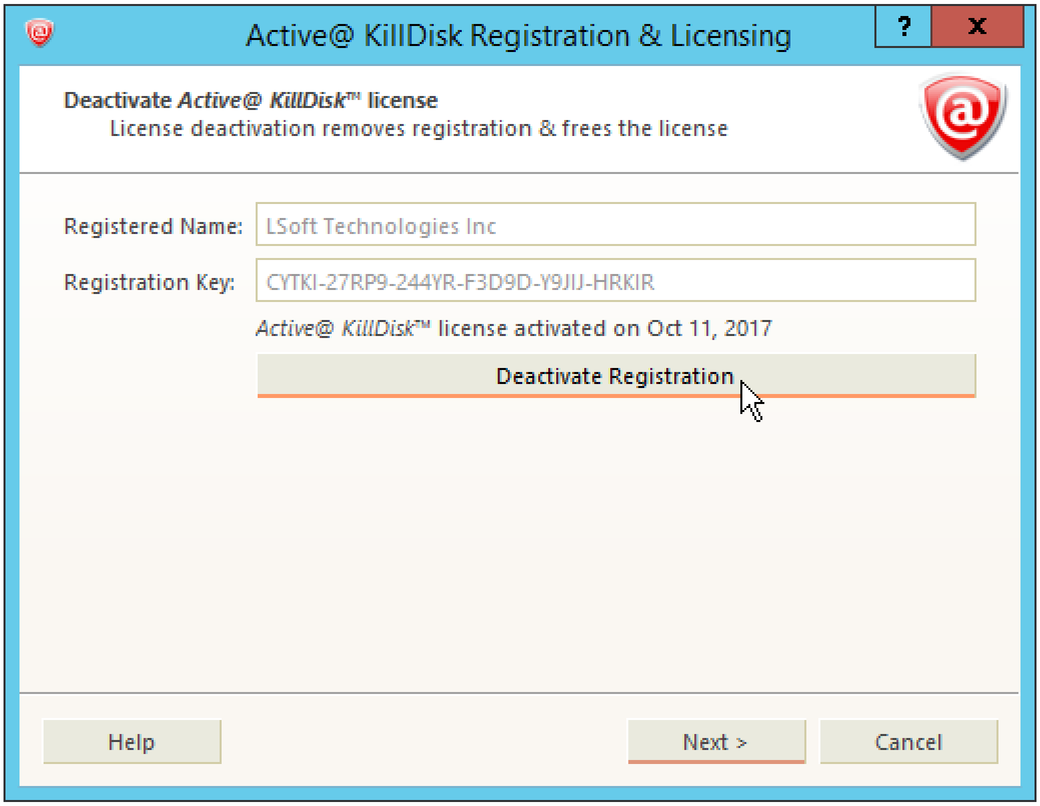
12. Bring the USB to the machine with KillDisk installed
13. Import the activation response in the registration window and click **Activate**

You have now activated the software on your offline machine.

Deactivating a Registration

To transfer licenses from one machine to another, you will need to free up your activation on the licensed machine. You may do this by deactivating the registration from within the `KillDisk` application:

1. Click **Help** > **Remove License** in the file menu bar
2. Click **Deactivate Registration** in the pop-up licensing window



Active@ KillDisk Registration & Licensing

Deactivate *Active@ KillDisk*™ license
License deactivation removes registration & frees the license

Registered Name: LSoft Technologies Inc

Registration Key: CYTKI-27RP9-244YR-F3D9D-Y9JIJ-HRKIR

Active@ KillDisk™ license activated on Oct 11, 2017

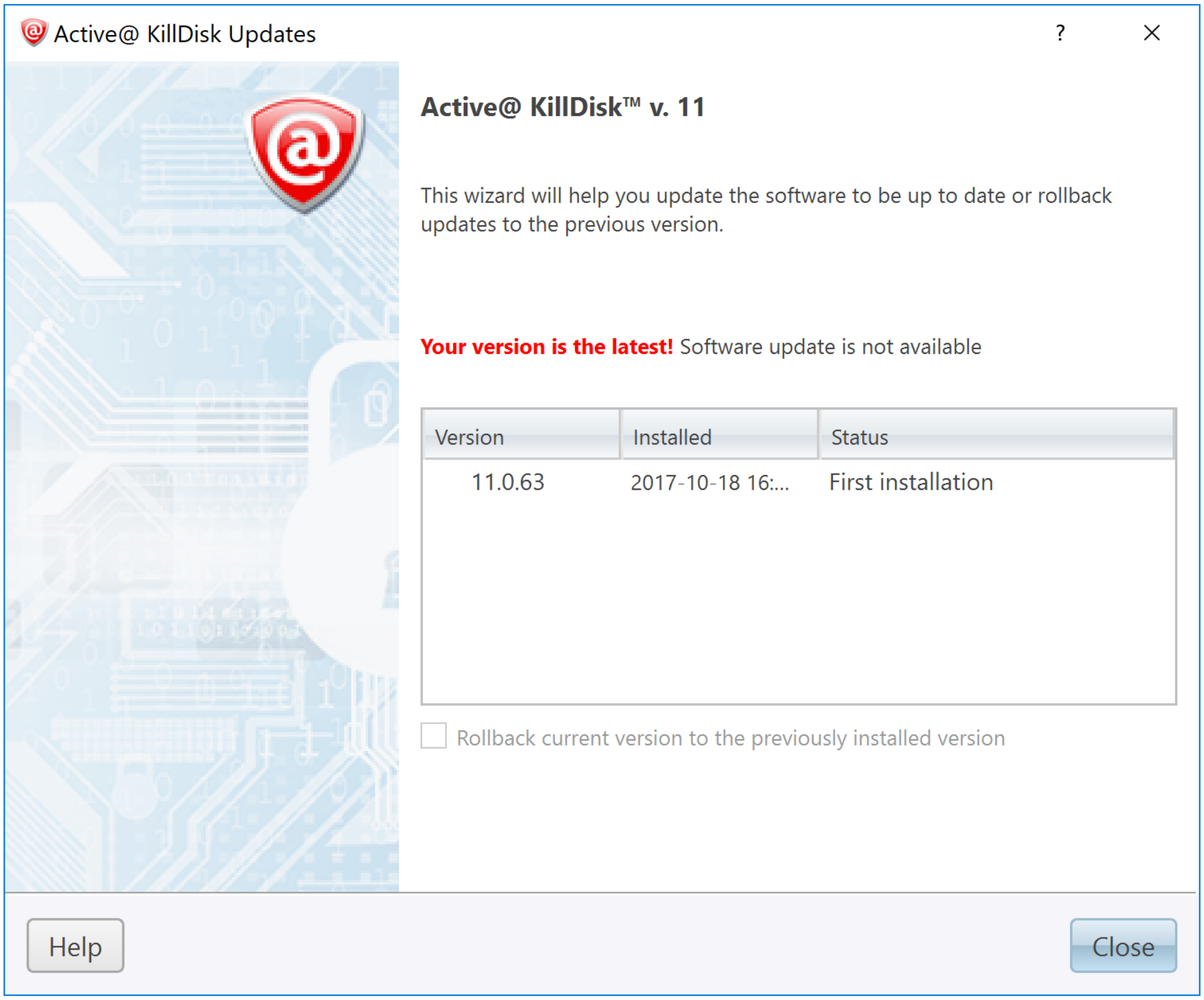
Figure 6: Deactivating a registration

Your active license is now revoked from your machine and may be used to activate a different computer.

Note: Uninstalling the application from the computer using the uninstaller will also deactivate your license from the machine, provided the machine has an active internet connection

Software Updates

`KillDisk` has a built-in update client to ensure you always have access to the latest version of the application. To update, use the file menu bar to navigate to **Help** > **Check for Updates**



Active@ KillDisk Updates

Active@ KillDisk™ v. 11

This wizard will help you update the software to be up to date or rollback updates to the previous version.

Your version is the latest! Software update is not available

Version	Installed	Status
11.0.63	2017-10-18 16:...	First installation

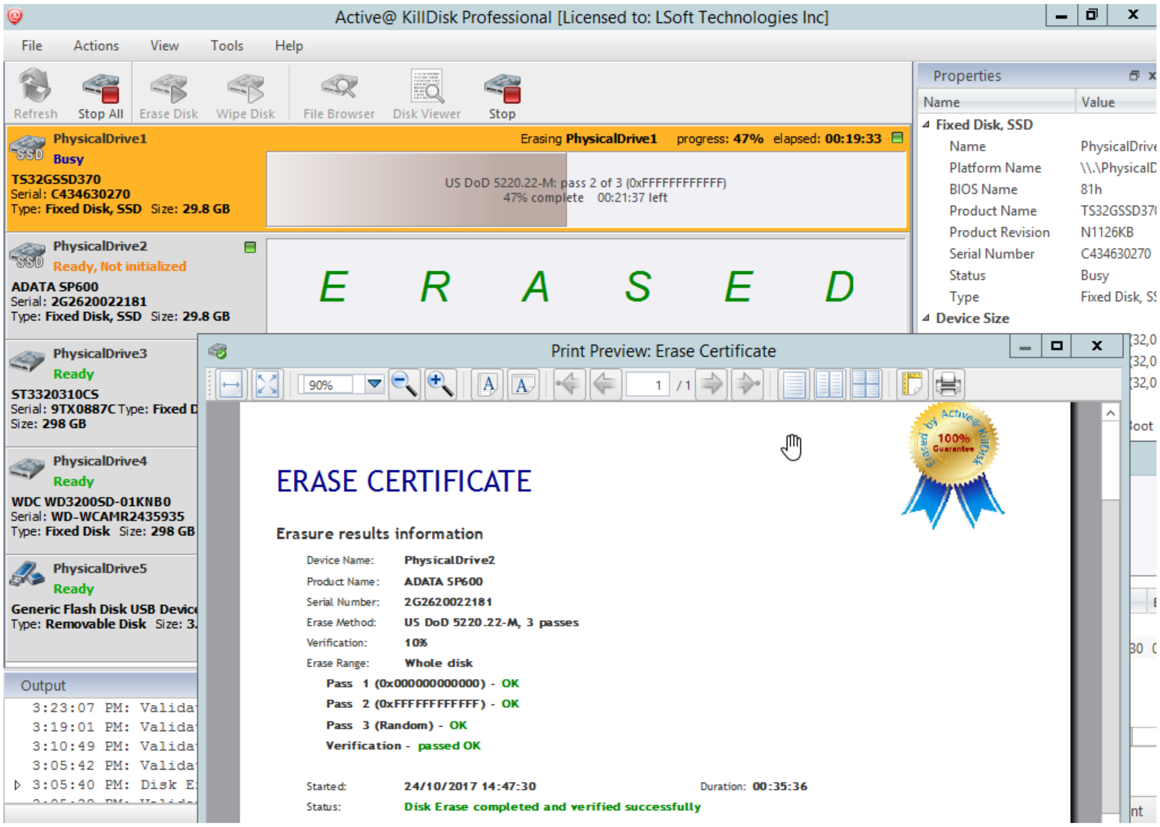
□ Rollback current version to the previously installed version

Figure 7: Checking for updates

Note: `KillDisk` stores your previously installed versions, so you may roll back to any of your older versions at any time.

Getting Started with KillDisk

This section outlines the essential features of `KillDisk` and explains basic functionality to get you started.



PhysicalDrive1
SSD Busy
TS32GSSD370
Serial: C434630270
Type: Fixed Disk, SSD Size: 29.8 GB

Erasing PhysicalDrive1 progress: 47% elapsed: 00:19:33

US DoD 5220.22-M: pass 2 of 3 (0xFFFFFFFFFFFF)
47% complete 00:21:37 left

PhysicalDrive2
SSD Ready, Not initialized
ADATA SP600
Serial: 2G2620022181
Type: Fixed Disk, SSD Size: 29.8 GB

PhysicalDrive3
Ready
ST3320310CS
Serial: 9TX0887C Type: Fixed D
Size: 298 GB

PhysicalDrive4
Ready
WDC WD3200SD-01KNB0
Serial: WD-WCAMR2435935
Type: Fixed Disk Size: 298 GB

PhysicalDrive5
Ready
Generic Flash Disk USB Devic
Type: Removable Disk Size: 3.

Name	Value
Fixed Disk, SSD	
Name	PhysicalDrive
Platform Name	\\.\PhysicalD
BIOS Name	81h
Product Name	TS32GSSD37
Product Revision	N1126KB
Serial Number	C434630270
Status	Busy
Type	Fixed Disk, S
Device Size	

```
  3:23:07 PM: Valida
  3:19:01 PM: Valida
  3:10:49 PM: Valida
  3:05:42 PM: Valida
▷ 3:05:40 PM: Disk E
```

ERASE CERTIFICATE

Erasure results information

Device Name:	PhysicalDrive2
Product Name:	ADATA SP600
Serial Number:	2G2620022181
Erase Method:	US DoD 5220.22-M, 3 passes
Verification:	10%
Erase Range:	Whole disk

Pass 1 (0x000000000000) - OK
Pass 2 (0xFFFFFFFFFFFF) - OK
Pass 3 (Random) - OK
Verification - passed OK

Started: 24/10/2017 14:47:30 Duration: 00:35:36
Status: Disk Erase completed and verified successfully

KillDisk Installation and Distribution

KillDisk 11 distribution overview

After purchasing `Active@ KillDisk` license, you will be emailed a registration key and an installation file named KILLDISK-<VERSION>-SETUP.EXE . This file contains everything you need to get started - double click on the file and the installation wizard will take you through the setup process.

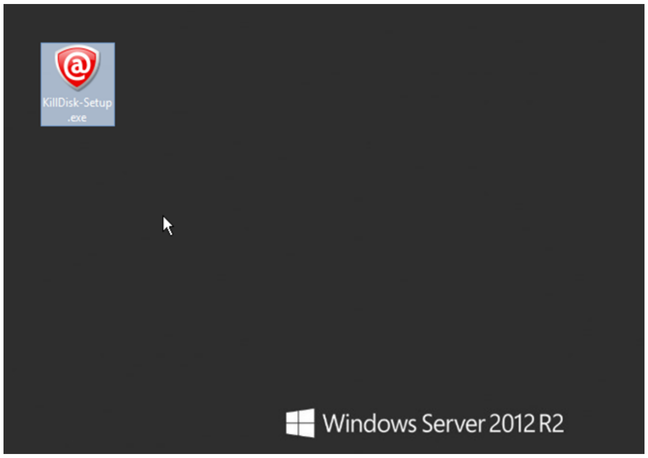


Figure 8: Installation file

Note: If you purchased the Ultimate version, you will receive the Windows executable file. To access the Linux installation files, install it on your Windows machine and navigate to the root directory of the application where you will find the Linux installation files. The path to the linux application will look something like: `C:\Program Files\LSoft Technologies\Active@ KillDisk Ultimate 11\Linux\KillDisk_Linux_Installer.tar.gz`

After installation, `Active@ KillDisk` still starts as FREE version (unregistered), you need to register it first to have all professional features activated.

Windows or Ultimate versions:

To install the application, double-click KILLDISK-SETUP.EXE and follow the instructions in the installation wizard.

The installed application contains two main applications:

- `Active@ KillDisk` for Windows (KillDisk.exe) — Run this application from your Windows operating system to inspect local disks and erase/wipe your data. KillDisk.exe contains both the 32-bit and 64- bit applications.
- `Active@ Boot Disk Creator` (BootDiskCreator.exe) — Create a bootable Windows PE CD/DVD/BD or USB disk to boot from it and run `Active@ KillDisk for Windows`. Using `Active@ KillDisk` this way allows you to wipe confidential data from the system volumes while gaining exclusive use of a partition because the operating system runs outside the partition that you are securing.

Linux versions:

To setup the application, make sure you found the Linux file, as mentioned in the note above. Double-click **KillDisk_Linux_Installer.tar.gz** in your Linux environment and unpack the archive to a proper location. To install, simply run the following command in the directory where the archive was unpacked:

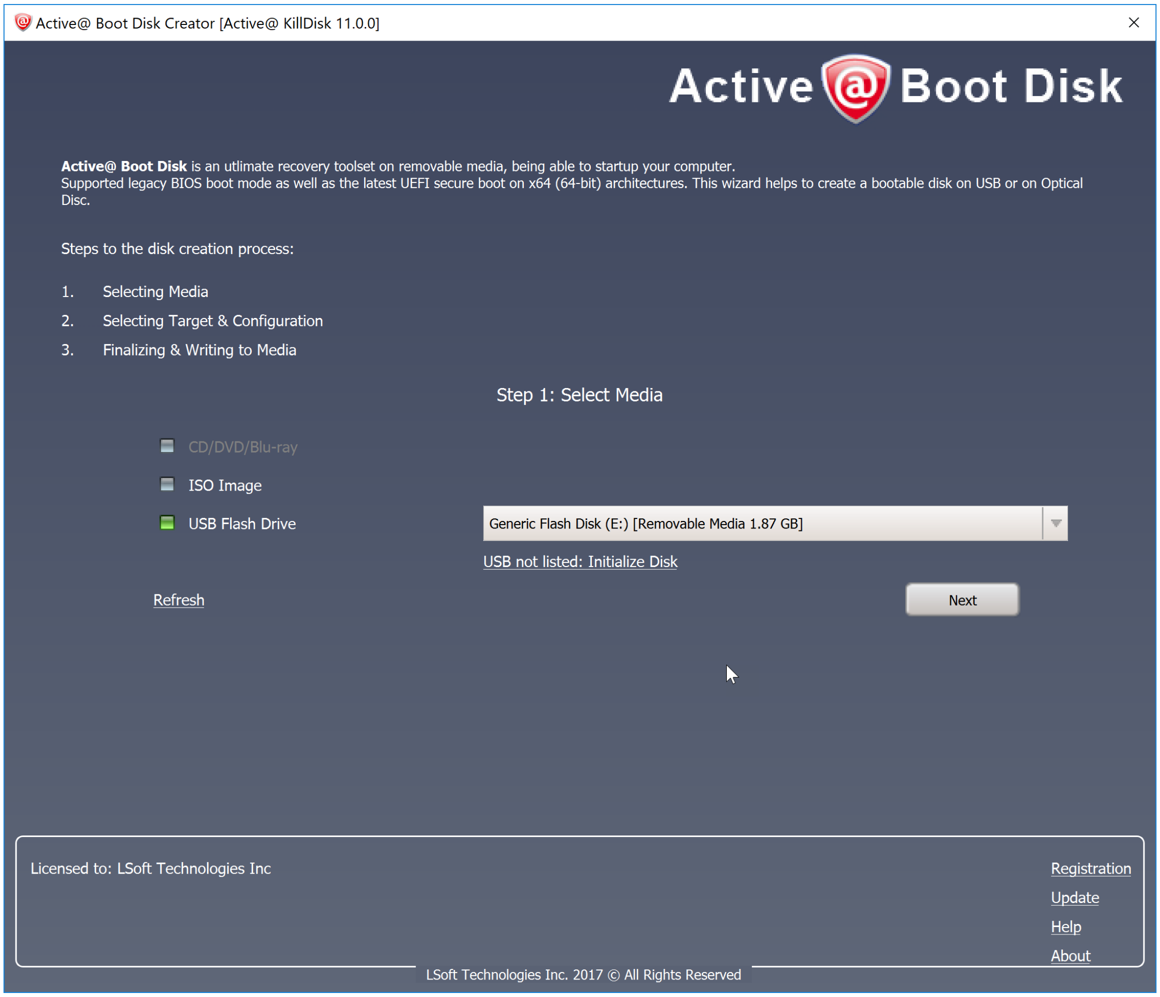
```
sudo ./KillDisk_Linux_Installer.run
```

Active@ Boot Disk Creator

`Active@ Boot Disk Creator` helps you prepare a bootable CD, DVD, Blu-ray or USB mass storage device that you may use to start a machine and repair security access issues or destroy all data on the hard drives.

To prepare a bootable device:

1. Run **Bootable Disk Creator** from the Windows Start menu (Windows platform). The `Active@ Boot Disk Creator` setup wizard will appear.



Active@ Boot Disk Creator [Active@ KillDisk 11.0.0]

Active@ Boot Disk is an utlimate recovery toolset on removable media, being able to startup your computer.
Supported legacy BIOS boot mode as well as the latest UEFI secure boot on x64 (64-bit) architectures. This wizard helps to create a bootable disk on USB or on Optical Disc.

Steps to the disk creation process:

1. Selecting Media
2. Selecting Target & Configuration
3. Finalizing & Writing to Media

Step 1: Select Media

- □ CD/DVD/Blu-ray
- □ ISO Image
- 🟩 USB Flash Drive

Generic Flash Disk (E:) [Removable Media 1.87 GB]

Licensed to: LSoft Technologies Inc

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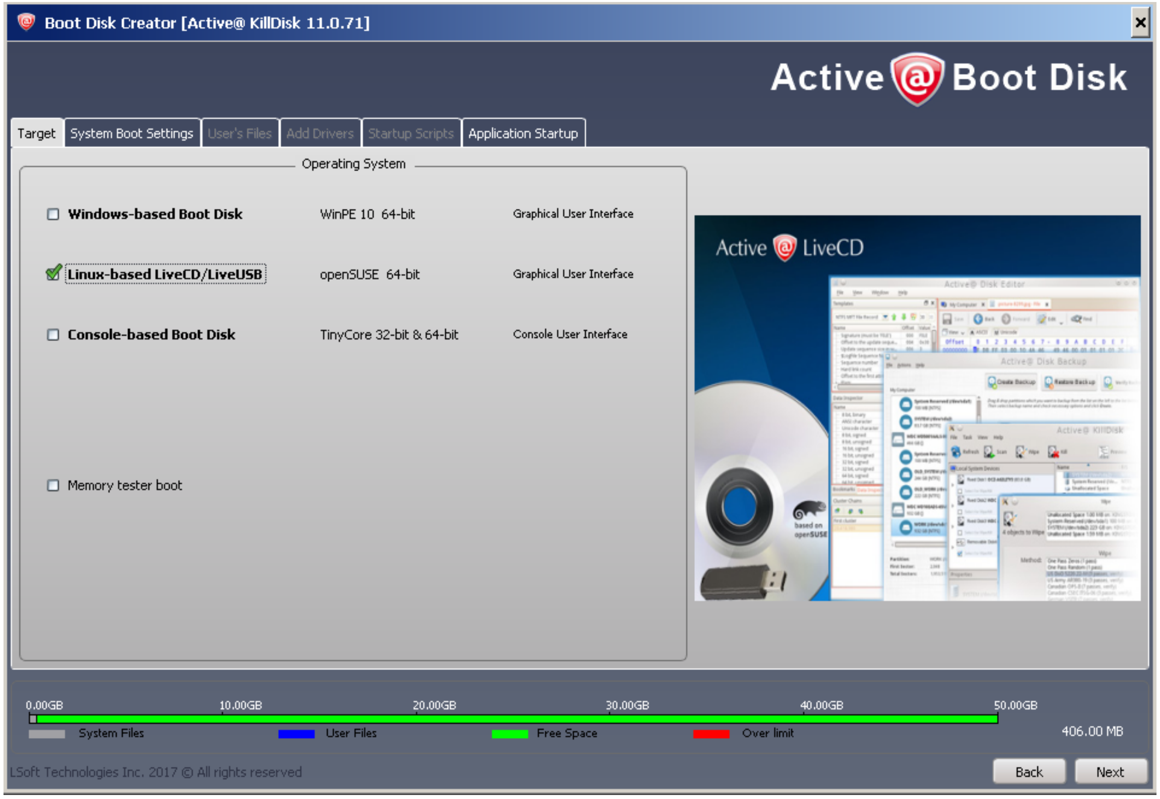
Figure 9: Boot disk creator applet

2. If `Active@ KillDisk` has not been registered yet, you need to register software first by clicking **Register** in the bottom-right corner and *Registering the Software*
3. In the `Active@ Boot Disk Creator` main page, select the desired bootable media: a **CD/DVD/Blu-ray**, a **USB Flash Drive** or an **ISO Image file** to be burned later. If several media drives are inserted, click the ellipsis button (…) and choose a particular device. Click **Next**.

   Note: If your bootable media device does not appear in the drop-down list, click **Initialize Disk**. You should be able to find the device in the setup menu and initialize it to be compatible with the application. This process **will** erase all data on the selected device.
4. Select the target platform for booting up. Depending on `Active@ KillDisk` version you purchased, one or more target platforms will be available for selection (Windows, Linux GUI or Console).



Operating System

☐ Windows-based Boot Disk	WinPE 10 64-bit	Graphical User Interface
☑ Linux-based LiveCD/LiveUSB	openSUSE 64-bit	Graphical User Interface
☐ Console-based Boot Disk	TinyCore 32-bit & 64-bit	Console User Interface

☐ Memory tester boot

▨ System Files 🟦 User Files 🟩 Free Space 🟥 Over limit

406.00 MB

LSoft Technologies Inc. 2017 © All rights reserved

Figure 10: Creating a Linux boot disk

5. At this step you can specify additional boot disk options:
   a) To customize boot options, click the **System Boot Settings** tab. You can change the default settings to be used: Time Zone, Additional Language Support, Default Application Start and Auto-Start Delay. You can also change these options in the Active@ Boot Disk initialization screen while booting (Windows version). Additional Network and Security sub-tabs allow to configure static IP & Firewall settings, as well as to protect your Boot Disk with a password at boot time.
   b) To add your custom files to the bootable media, click the **User's Files** tab. Add files or folders using the related buttons at the right side. Added items will be placed in the User_Files root folder
   c) To add specific drivers to be loaded automatically, click the Add **Drivers** tab. Add all files for the particular driver (*.INF, *.SYS, …). Added items will be placed in the BootDisk_Drivers root folder. At boot time all *.INF files located in this folder will be installed.
   d) To add specific scripts to be launched after Active@ Boot Disk is loaded, click the **Add Scripts** tab. Add your scripts (*.CMD files). Added files will be placed in the BootDisk_Scripts root folder. At boot time all *.CMD files located in this folder will be executed.
   e) To add command line parameters for KillDisk startup after the boot, click **Application Startup** tab and type desired parameters. This tab is available only if Default Application Start option is turned ON on the **System Boot Settings** tab
6. Click **Next**. Verify the selected media, sizes and boot up environment.
7. Click **Create**. A progress bar appears while the media is being prepared.

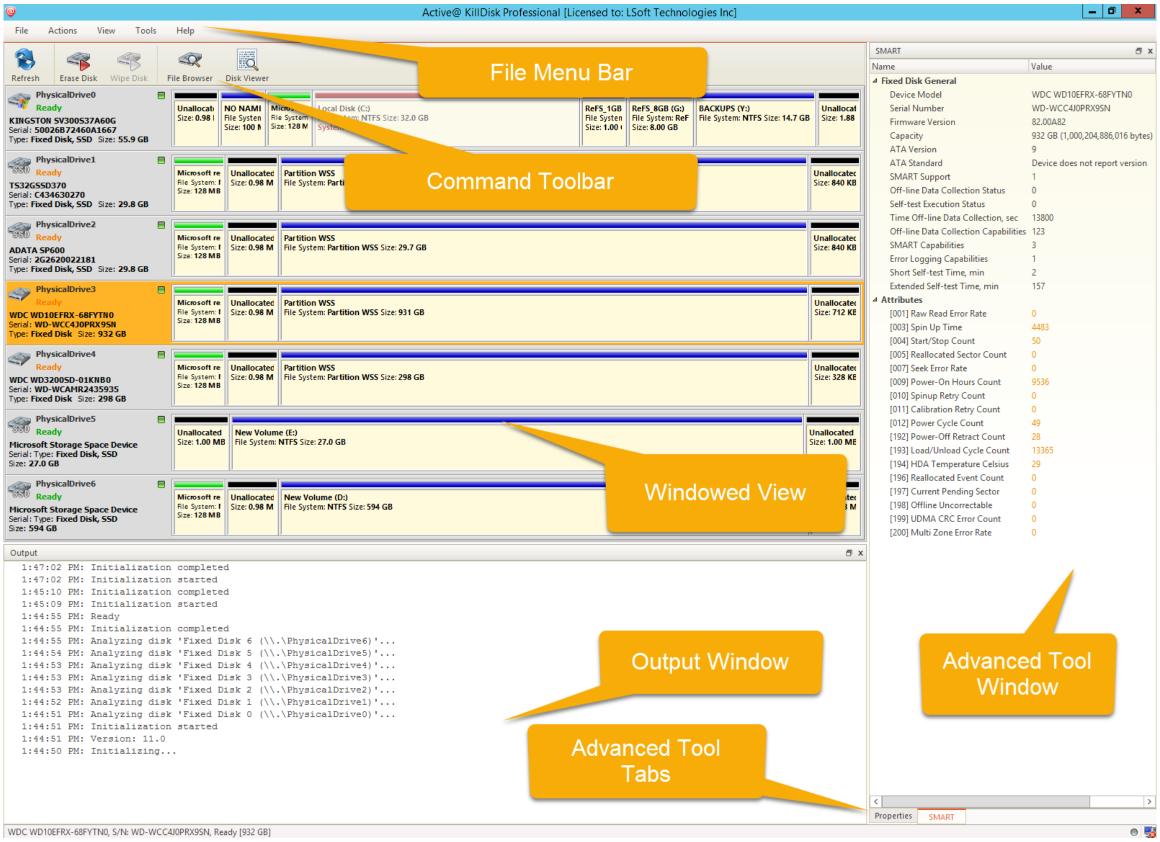
Note: Not all additional boot disk options are accessible for all platforms. For example, Add Drivers section applies only to Windows Operating System, and is available for Windows target only.

Note: A USB Drive or blank CD/DVD/BD must be inserted and explicitly chosen on the first step before you can proceed further.

Note: If you've created an ISO Image file, you can burn it to a disk later on using either our free `Active@ ISO Burner` utility (*www.ntfs.com/isoburning.htm*) or a utility of your choice.

Navigating through the Application

Once the `KillDisk` application is launched, you will be presented with the main `KillDisk` application dashboard. From here you can use any of `KillDisk`'s tools with your system. This section will outline the main components of the application. The full functionality and features of these components are discussed in their corresponding sections later in this documentation:


Active@ KillDisk Professional [Licensed to: LSoft Technologies Inc]
File
Actions
View
Tools
Help
Refresh
Erase Disk
Wipe Disk
File Browser
Disk Viewer
File Menu Bar
Command Toolbar
Windowed View
Output Window
Advanced Tool Window
Advanced Tool Tabs
PhysicalDrive0
Ready
KINGSTON SV300S37A60G
Serial: 50026B72460A1667
Type: Fixed Disk, SSD Size: 55.9 GB
PhysicalDrive1
TS32GSSD370
Serial: C434630270
Type: Fixed Disk, SSD Size: 29.8 GB
PhysicalDrive2
ADATA SP600
Serial: 2G2620022181
Type: Fixed Disk, SSD Size: 29.8 GB
PhysicalDrive3
WDC WD10EFRX-68FYTN0
Serial: WD-WCC4J0PRX9SN
Type: Fixed Disk Size: 932 GB
PhysicalDrive4
WDC WD3200SD-01KNB0
Serial: WD-WCAMR2435935
Type: Fixed Disk Size: 298 GB
PhysicalDrive5
Microsoft Storage Space Device
Serial: Type: Fixed Disk, SSD
Size: 27.0 GB
PhysicalDrive6
Microsoft Storage Space Device
Serial: Type: Fixed Disk, SSD
Size: 594 GB
Local Disk (C:)
RefS_1GB
RefS_8GB (G:)
BACKUPS (Y:) File System: NTFS Size: 14.7 GB
Partition WSS File System: Partition WSS Size: 29.7 GB
Partition WSS File System: Partition WSS Size: 931 GB
Partition WSS File System: Partition WSS Size: 298 GB
New Volume (E:) File System: NTFS Size: 27.0 GB
New Volume (D:) File System: NTFS Size: 594 GB
Unallocated
Microsoft re
Properties
SMART

Output

```
1:47:02 PM: Initialization completed
1:47:02 PM: Initialization started
1:45:10 PM: Initialization completed
1:45:09 PM: Initialization started
1:44:55 PM: Ready
1:44:55 PM: Initialization completed
1:44:55 PM: Analyzing disk 'Fixed Disk 6 (\\.\PhysicalDrive6)'...
1:44:54 PM: Analyzing disk 'Fixed Disk 5 (\\.\PhysicalDrive5)'...
1:44:53 PM: Analyzing disk 'Fixed Disk 4 (\\.\PhysicalDrive4)'...
1:44:53 PM: Analyzing disk 'Fixed Disk 3 (\\.\PhysicalDrive3)'...
1:44:53 PM: Analyzing disk 'Fixed Disk 2 (\\.\PhysicalDrive2)'...
1:44:52 PM: Analyzing disk 'Fixed Disk 1 (\\.\PhysicalDrive1)'...
1:44:51 PM: Analyzing disk 'Fixed Disk 0 (\\.\PhysicalDrive0)'...
1:44:51 PM: Initialization started
1:44:51 PM: Version: 11.0
1:44:50 PM: Initializing...
```

WDC WD10EFRX-68FYTN0, S/N: WD-WCC4J0PRX9SN, Ready [932 GB]

SMART

Name	Value
Fixed Disk General	
Device Model	WDC WD10EFRX-68FYTN0
Serial Number	WD-WCC4J0PRX9SN
Firmware Version	82.00A82
Capacity	932 GB (1,000,204,886,016 bytes)
ATA Version	9
ATA Standard	Device does not report version
SMART Support	1
Off-line Data Collection Status	0
Self-test Execution Status	0
Time Off-line Data Collection, sec	13800
Off-line Data Collection Capabilities	123
SMART Capabilities	3
Error Logging Capabilities	1
Short Self-test Time, min	2
Extended Self-test Time, min	157
Attributes	
[001] Raw Read Error Rate	0
[003] Spin Up Time	4483
[004] Start/Stop Count	50
[005] Reallocated Sector Count	0
[007] Seek Error Rate	0
[009] Power-On Hours Count	9536
[010] Spinup Retry Count	0
[011] Calibration Retry Count	0
[012] Power Cycle Count	49
[192] Power-Off Retract Count	28
[193] Load/Unload Cycle Count	13365
[194] HDA Temperature Celsius	29
[196] Reallocated Event Count	0
[197] Current Pending Sector	0
[198] Offline Uncorrectable	0
[199] UDMA CRC Error Count	0
[200] Multi Zone Error Rate	0

Figure 11: Navigating the KillDisk application

File menu bar

The file menu bar contains can be manipulated to perform nearly any operation in KillDisk, such as accessing elements of the program such a settings and help, changing views and what is visible in the dashboard, opening tools, and navigating between KillDisk's windows.

Command Toolbar

The command toolbar is a dynamic toolbar that allows the user to perform Tabbed Window-specific actions, depending on what window the user is in and what element is selected.

Windowed view

Contains the window that is currently open.

Output window

Contains the log of operations KillDisk has performed.

Advanced tool tabs

These tabs allow for navigation between the different advanced tool windows.

Advanced tool window

This window shows the data for the Advanced tool selected. The window can be moved, popped out and re-sized.

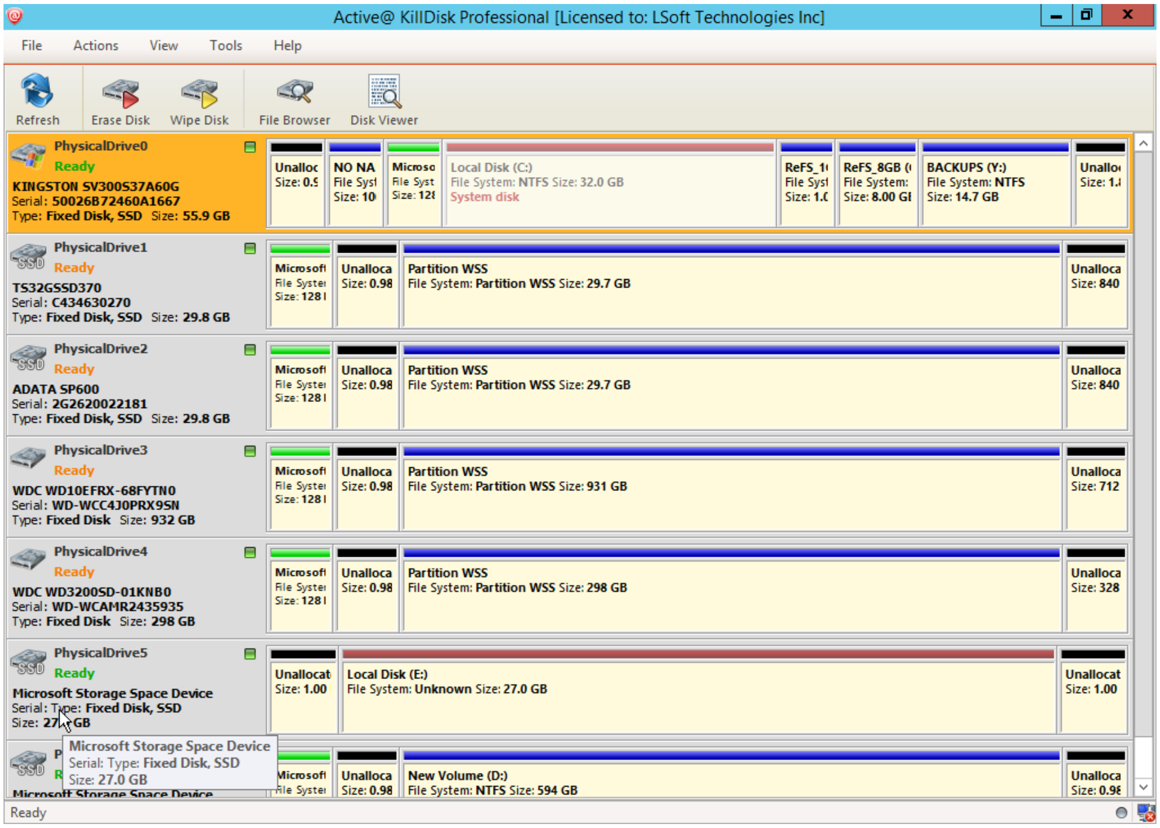
To browse through each of these views, click on the appropriate tab. You may also open a view from the **View** menu.

To close the current view at any time, press **CTRL+F4**. To open any closed view, select it from the **View** menu.

The status bar, at the bottom of the workspace shows the current status of the application or status of the activity in progress.

Disk Explorer View

The **Disk Explorer view** is the main interface for the KillDisk application. Here, disks are visualized, can be selected and manipulated. The status of any procedures performed on the disks can be seen here, new procedures like erasure can be initiated.



PhysicalDrive0
Ready
KINGSTON SV300S37A60G
Serial: 50026B72460A1667
Type: Fixed Disk, SSD Size: 55.9 GB

Unalloc Size: 0.9 | NO NA File Syst Size: 10 | Microso File Syst Size: 12 | Local Disk (C:) File System: NTFS Size: 32.0 GB System disk | ReFS_1 File Syst Size: 1.0 | ReFS_8GB (File System: Size: 8.00 GB | BACKUPS (Y:) File System: NTFS Size: 14.7 GB | Unallo Size: 1.

PhysicalDrive1
Ready
TS32GSSD370
Serial: C434630270
Type: Fixed Disk, SSD Size: 29.8 GB

Microsoft File Syste Size: 128 | Unalloca Size: 0.98 | Partition WSS File System: Partition WSS Size: 29.7 GB | Unalloca Size: 840

PhysicalDrive2
Ready
ADATA SP600
Serial: 2G2620022181
Type: Fixed Disk, SSD Size: 29.8 GB

Microsoft File Syste Size: 128 | Unalloca Size: 0.98 | Partition WSS File System: Partition WSS Size: 29.7 GB | Unalloca Size: 840

PhysicalDrive3
Ready
WDC WD10EFRX-68FYTN0
Serial: WD-WCC4J0PRX9SN
Type: Fixed Disk Size: 932 GB

Microsoft File Syste Size: 128 | Unalloca Size: 0.98 | Partition WSS File System: Partition WSS Size: 931 GB | Unalloca Size: 712

PhysicalDrive4
Ready
WDC WD3200SD-01KNB0
Serial: WD-WCAMR2435935
Type: Fixed Disk Size: 298 GB

Microsoft File Syste Size: 128 | Unalloca Size: 0.98 | Partition WSS File System: Partition WSS Size: 298 GB | Unalloca Size: 328

PhysicalDrive5
Ready
Microsoft Storage Space Device
Serial: Type: Fixed Disk, SSD
Size: 27 GB

Unallocat Size: 1.00 | Local Disk (E:) File System: Unknown Size: 27.0 GB | Unallocat Size: 1.00

Microsoft Storage Space Device
Serial: Type: Fixed Disk, SSD
Size: 27.0 GB

Microsoft Storage Space Device

Microsoft File Syste | Unalloca Size: 0.98 | New Volume (D:) File System: NTFS Size: 594 GB | Unalloca Size: 0.98

Ready

Figure 12: Disk explorer view

Using KillDisk

KillDisk 11 is a powerful tool to provide disk erasure solutions for personal and corporate use. This section outlines the key features of KillDisk and how to use this software's many features. Much of the software is highly customizable and this guide will help get you started with configuring KillDisk for your particular system, and using KillDisk to its' full potential.

Disk Erase

KillDisk is an extremely powerful tool for secure disk erasure. Individual disks or batches of disks can be erased to any desired standard with just a few clicks. The process to achieve this is outlined in this section.

1. Select a disks for erasure

   Use *Disk Explorer View* on page 19 to select disk bays.

2. Open **Erase disks dialog** dialog using one of the following methods:

   - Click the **Erase** command in the action toolbar
   - Click **Actions** > **Disk Erase** command from main menu
   - Click **Disk Erase** command from context menu

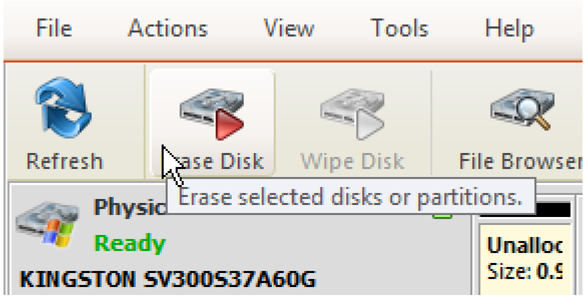
   

   Figure 13: Initiating the Erase operation

3. Confirm erasure options

   Use tabbed views to adjust disk erasure options if necessary. Available options:

   - *Disk Erase Options* on page 32
   - *Certificate Options* on page 35
   - *Report Options* on page 37

   Note:

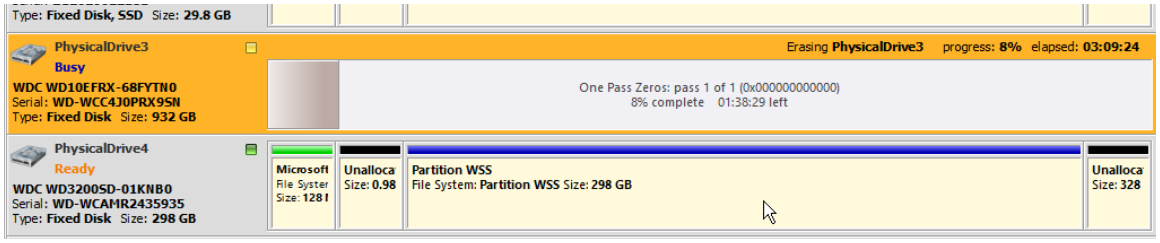
   If only one disk was selected for erasure than you can specify boundaries of erased area for selected disk by clicking **Select exact disk area**. Here you may select sector ranges, or select individual partitions.

   Click **OK** button to begin disk erase process.

4. Observe erase process

   Once the Erase procedure begins, you will see the disk bay represented as a progress bar and it will show the erase method and progress of that disk operation. The progress bar represents the percentage of data left to erase on the drive, with the corresponding percentage shown. As the procedure progresses, the percentage will decrease, and the red bar will get smaller.

   The remaining time will also be seen and progress in the operation will be displayed, as shown below:



Type: Fixed Disk, SSD Size: 29.8 GB

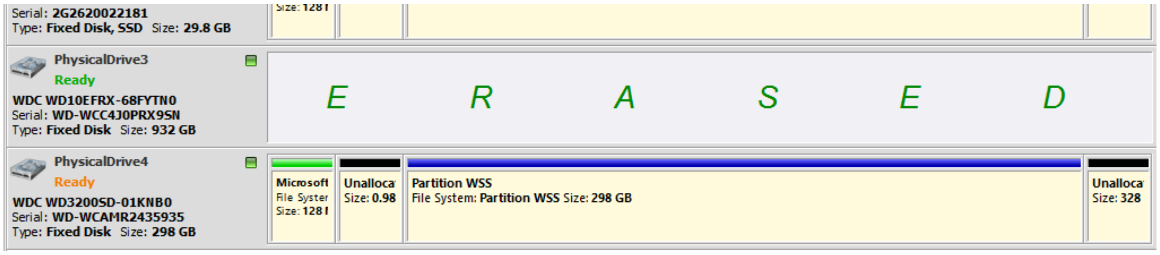
PhysicalDrive3
Busy
WDC WD10EFRX-68FYTN0
Serial: WD-WCC4J0PRX9SN
Type: Fixed Disk Size: 932 GB

Erasing PhysicalDrive3 progress: 8% elapsed: 03:09:24

One Pass Zeros: pass 1 of 1 (0x000000000000)
8% complete 01:38:29 left

PhysicalDrive4
Ready
WDC WD3200SD-01KNB0
Serial: WD-WCAMR2435935
Type: Fixed Disk Size: 298 GB

Figure 14: Disk Erase progressing



Serial: 2G2620022181
Type: Fixed Disk, SSD Size: 29.8 GB

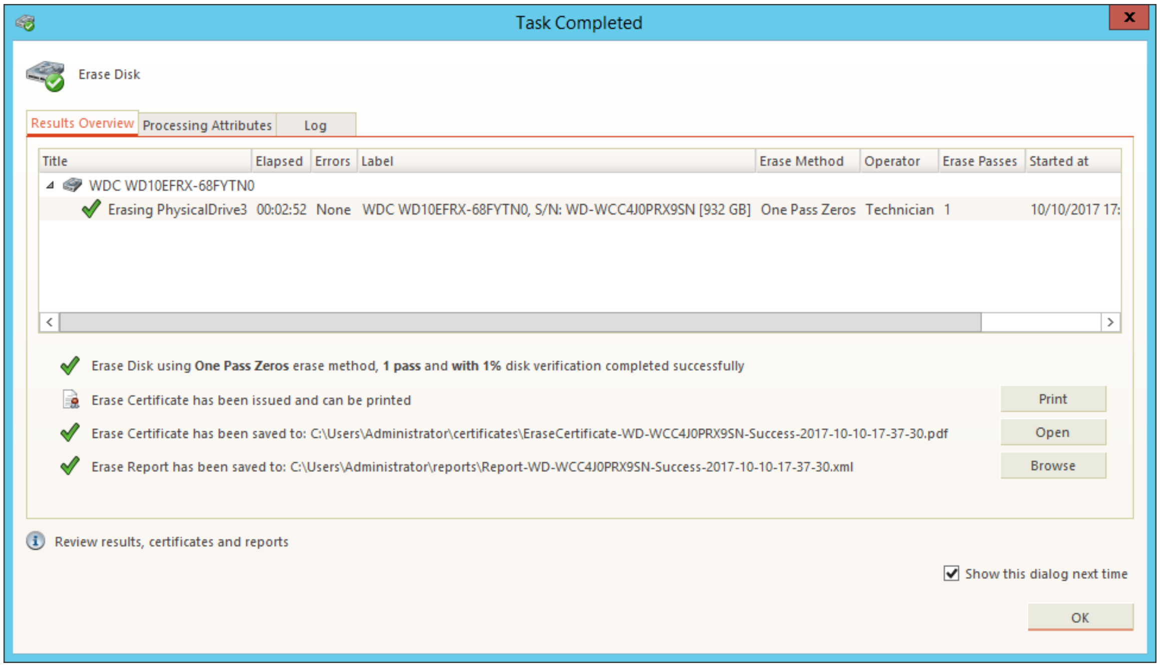
PhysicalDrive3
Ready
WDC WD10EFRX-68FYTN0
Serial: WD-WCC4J0PRX9SN
Type: Fixed Disk Size: 932 GB

E R A S E D

PhysicalDrive4
Ready
WDC WD3200SD-01KNB0
Serial: WD-WCAMR2435935
Type: Fixed Disk Size: 298 GB

Figure 15: Disk Erase completed

When erasing completes you can review results and print an *Erase Certificate* on page 42 for processed disks.



Task Completed

Erase Disk

Title	Elapsed	Errors	Label	Erase Method	Operator	Erase Passes	Started at
WDC WD10EFRX-68FYTN0							
✓ Erasing PhysicalDrive3	00:02:52	None	WDC WD10EFRX-68FYTN0, S/N: WD-WCC4J0PRX9SN [932 GB]	One Pass Zeros	Technician	1	10/10/2017 17:

✓ Erase Disk using **One Pass Zeros** erase method, **1 pass** and with **1%** disk verification completed successfully

Erase Certificate has been issued and can be printed — Print

✓ Erase Certificate has been saved to: C:\Users\Administrator\certificates\EraseCertificate-WD-WCC4J0PRX9SN-Success-2017-10-10-17-37-30.pdf — Open

✓ Erase Report has been saved to: C:\Users\Administrator\reports\Report-WD-WCC4J0PRX9SN-Success-2017-10-10-17-37-30.xml — Browse

Review results, certificates and reports

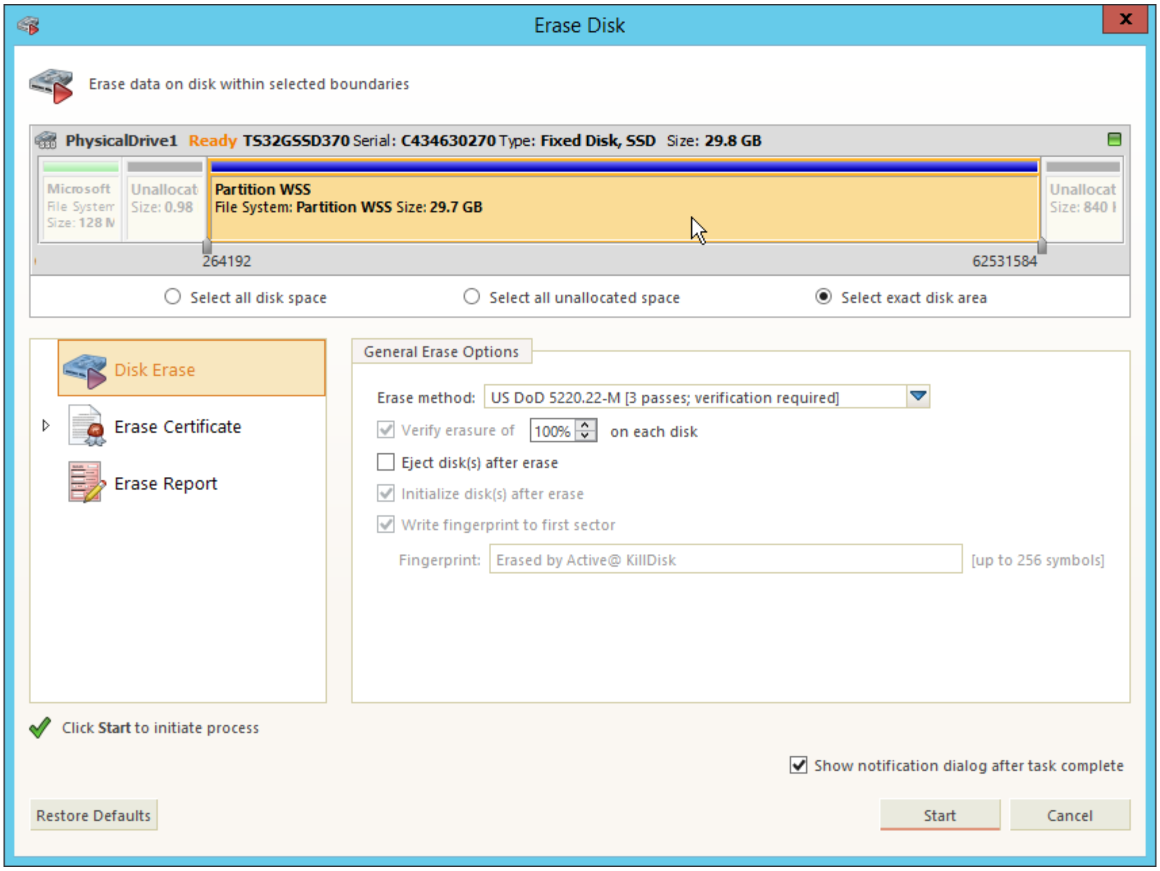
☑ Show this dialog next time

Figure 16: Disk Erase Summary

Selecting Disk Area for Erasure & Erasing Partitions

When selecting a single disk to erase in **KillDisk**, you will be given the option to specify the area on the disk to erase. The default option is **Select entire disk**, which will apply the selected operation on the entire disk selected.

If you're interested in specific areas of the disk (specific partitions, for example), you may use the **Select exact disk area** option. This will allow you to use the sliders on the visualization of your disk to select a particular range of sectors. You may also click on individual partitions and the individual partitions will be selected for erasure.



Erase data on disk within selected boundaries

PhysicalDrive1 Ready TS32GSSD370 Serial: C434630270 Type: Fixed Disk, SSD Size: 29.8 GB

Microsoft File System Size: 128 M | Unallocat Size: 0.98 | Partition WSS File System: Partition WSS Size: 29.7 GB | Unallocat Size: 840 I

264192 62531584

○ Select all disk space ○ Select all unallocated space ● Select exact disk area

Erase method: US DoD 5220.22-M [3 passes; verification required]

☑ Verify erasure of 100% on each disk

☐ Eject disk(s) after erase

☑ Initialize disk(s) after erase

☑ Write fingerprint to first sector

Fingerprint: Erased by Active@ KillDisk [up to 256 symbols]

✓ Click **Start** to initiate process

☑ Show notification dialog after task complete

Figure 17: Erasing a specific partition

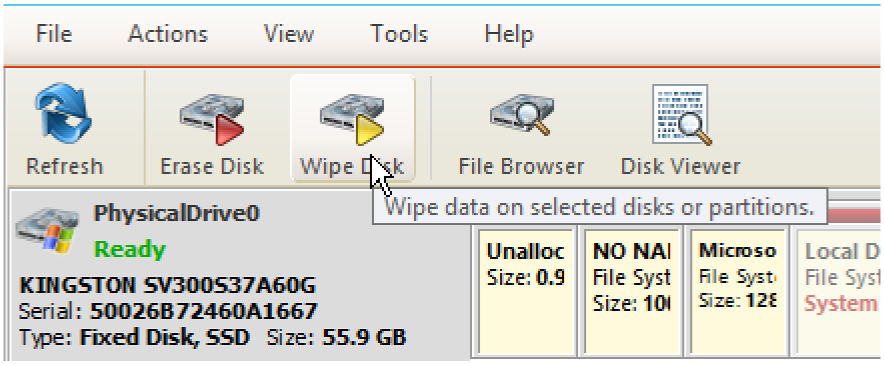
Disk Wipe

When you select a physical device such as Fixed Disk0, the wipe command processes all logical drives consecutively, deleting data in unoccupied areas. Unallocated space (where no partition exists) has been erased as well. If KillDisk detects that a partition has been damaged or that it is not safe to proceed, KillDisk does not wipe data in that area. The reason it does not proceed is that a damaged partition might contain important data.

There are some cases where partitions on a device cannot be wiped. Some examples are an unknown or unsupported file system, a system volume, or an application start up drive. In these cases the **Wipe** button is disabled. If you select a device and the **Wipe** button is disabled, select individual partitions (drives) and wipe them separately.

If you want to erase data from the hard drive device permanently, see *Disk Erase* on page 20.

1. Select the device to wipe in the disk explorer view. You may select multiple devices to be wiped out simultaneously
2. Click the **Wipe** toolbar button to wipe out all data in unoccupied sectors on the disk or one of its' partitions.



Wipe data on selected disks or partitions.

PhysicalDrive0
Ready
KINGSTON SV300S37A60G
Serial: 50026B72460A1667
Type: Fixed Disk, SSD Size: 55.9 GB

Unalloc
Size: 0.9

NO NAI
File Syst
Size: 10(

Microso
File Syst
Size: 128

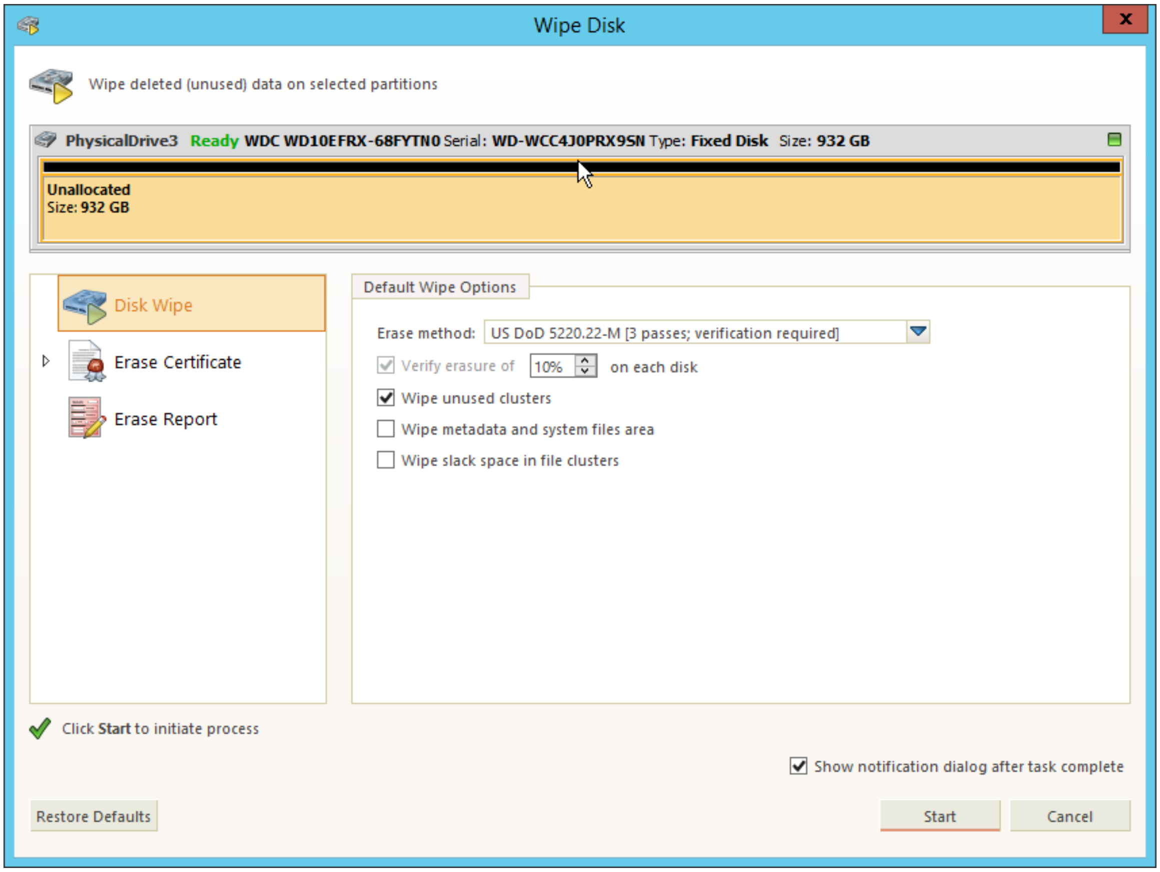
Local D
File Syst
System

Figure 18: Initiating the Wipe operation

3. Confirm Wipe options

   Use tabbed views to adjust disk wipe options if necessary. Available options:

   - *Disk Wipe Options* on page 34
   - *Certificate Options* on page 35
   - *Report Options* on page 37



Wipe deleted (unused) data on selected partitions

PhysicalDrive3 Ready WDC WD10EFRX-68FYTN0 Serial: WD-WCC4J0PRX9SN Type: Fixed Disk Size: 932 GB

Unallocated
Size: 932 GB

Default Wipe Options

Erase method: US DoD 5220.22-M [3 passes; verification required]

☑ Verify erasure of 10% on each disk

☑ Wipe unused clusters

☐ Wipe metadata and system files area

☐ Wipe slack space in file clusters

✓ Click **Start** to initiate process

☑ Show notification dialog after task complete

Figure 19: Selecting an an erase algorithm for the wipe

4. Select the areas of the disks to be wiped. With individual disks you may select individual partitions.
5. Click **Ok** to advance to the final step before erasing data. The progress of the wiping procedure will be monitored in the Disk Wiping screen.

   To stop the process for any reason, click the stop button for a particular disk. Click the stop all button to cancel wiping for all selected disks. Note that all existing applications and data will not be touched. Data that has been wiped from unoccupied sectors is not recoverable.

6. Optional: Select the wiped partition and press **ENTER** or double-click it to inspect the work that has been done.

   KillDisk scans the system records or the root records of the partition. The Folders and Files tab appears. Existing file names and folder names appear with a multi-colored icon and deleted file names and folder names appear with a gray-colored icon. If the wiping process completed correctly, the data residue in these deleted file clusters and the place these files hold in the directory records or system records has been removed. You should not see any grey-colored file names or folder names in the wiped partition.

You will see a confirmation dialog when the process is complete, where you may and print an *Erase Certificate* on page 42

Note: If there are any errors, for example due to bad clusters, they will be reported on the Interactive screen and in the Log. If such a message appears, you may cancel the operation or continue wiping data.

Additional Options and Features

KillDisk also has a number of supporting features to ensure the most complete sanitation operation, flexibility to meet the most stringent requirements and compatibility with a wide range of systems. This section outlines these features.

Mapping Network Shares

Mapping Network shares is very useful, especially when booting from a boot disk and running the application in batch mode. It guarantees a specific drive letter to save logs and certificates to, as well as provides a central location for erase reports to be stored.

1. In the file menu bar, navigate to `File > Map Network Share...`

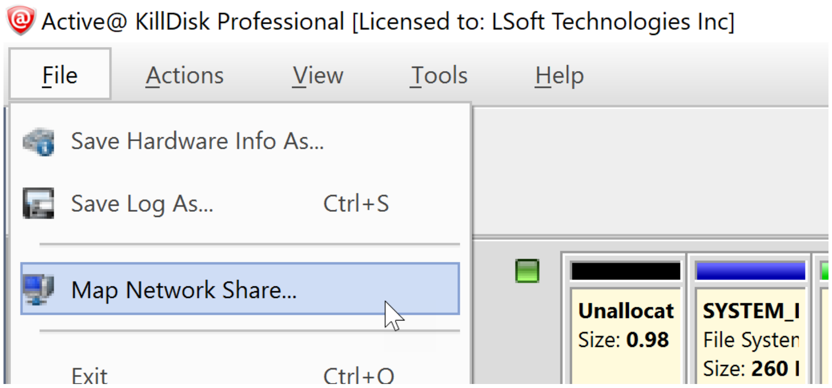
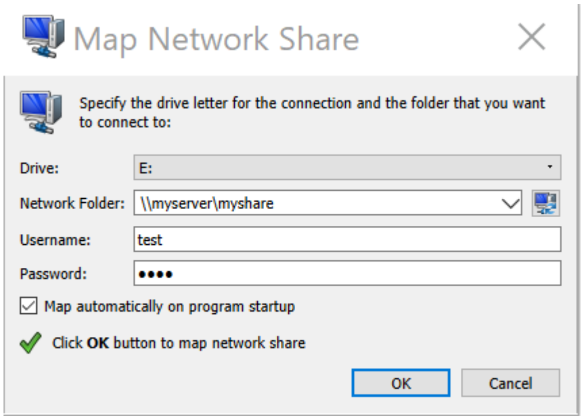


Figure 20: Accessing the network mapping menu

2. Configure your network drive and assign a letter to it, then press **OK**



Specify the drive letter for the connection and the folder that you want to connect to:

Drive: E:

Network Folder: \\myserver\myshare

Username: test

Password: ●●●●

☑ Map automatically on program startup

✓ Click **OK** button to map network share

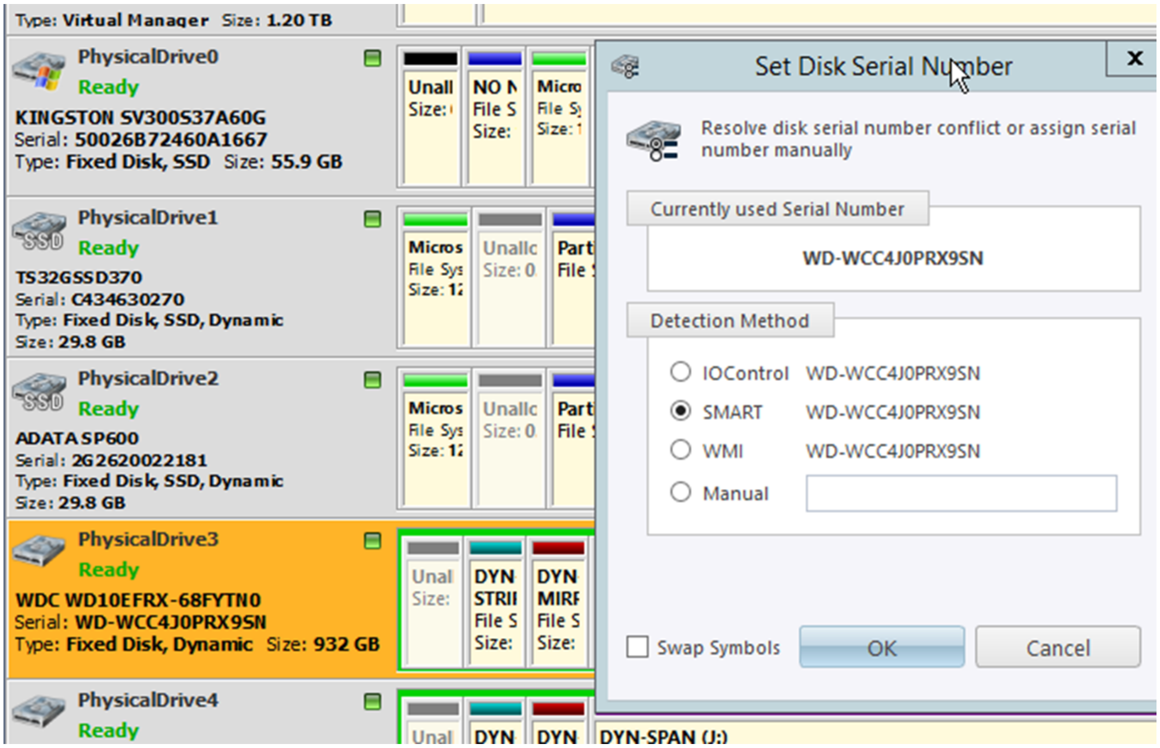
Figure 21: Mapping a network drive

Note: KillDisk will identify all connected network drives, so you may use the drop-down list to select the one you'd like to use

3. Now that your network drive is configured, you may select it as a destination for certificates and reports in your *application preferences*

Changing Disk Serial Number

In case you notice a disk serial number does not match the number on the disk, KillDisk supports several methods of assigning disk serial numbers, where it pulls it from various sources. To access this feature, right-click the disk in question and select **Set Serial Number..** in the context menu.



Type: Virtual Manager Size: 1.20 TB

PhysicalDrive0
Ready
KINGSTON SV300S37A60G
Serial: 50026B72460A1667
Type: Fixed Disk, SSD Size: 55.9 GB

PhysicalDrive1
Ready
TS32GSSD370
Serial: C434630270
Type: Fixed Disk, SSD, Dynamic
Size: 29.8 GB

PhysicalDrive2
Ready
ADATA SP600
Serial: 2G2620022181
Type: Fixed Disk, SSD, Dynamic
Size: 29.8 GB

PhysicalDrive3
Ready
WDC WD10EFRX-68FYTN0
Serial: WD-WCC4J0PRX9SN
Type: Fixed Disk, Dynamic Size: 932 GB

PhysicalDrive4
Ready

Set Disk Serial Number

Resolve disk serial number conflict or assign serial number manually

Currently used Serial Number
WD-WCC4J0PRX9SN

Detection Method
○ IOControl WD-WCC4J0PRX9SN
● SMART WD-WCC4J0PRX9SN
○ WMI WD-WCC4J0PRX9SN
○ Manual

□ Swap Symbols

Figure 22: Setting the Disk Serial number

Note: If you don't see your serial number in any of the detection methods, try checking the **Swap Symbols** check box. If this doesn't help, input the serial number manually using the last option. The serial number you are looking for does not match the serial number stored by the disk (i.e. the sticker does not match the drive).

Reset Hidden Areas

KillDisk supports erasing hidden areas of the disk. To perform this task on its' own, right click on the disk and select **Reset Hidden Areas...**

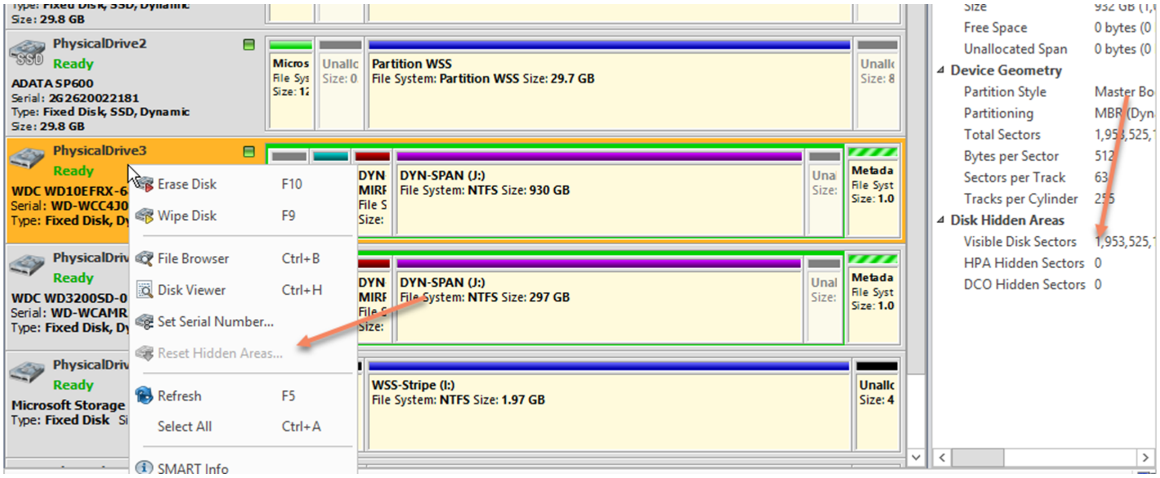


Figure 23: Resetting Hidden Areas

Property views

To show detailed information about any subject of an application, such as disk, partition, volume, file etc., KillDisk uses information views. When open, they follow selected changes and show information about the selected item automatically. Besides only displaying valuable data, they also allow you to copy that information onto a clipboard by using context menu commands.

Copy Value

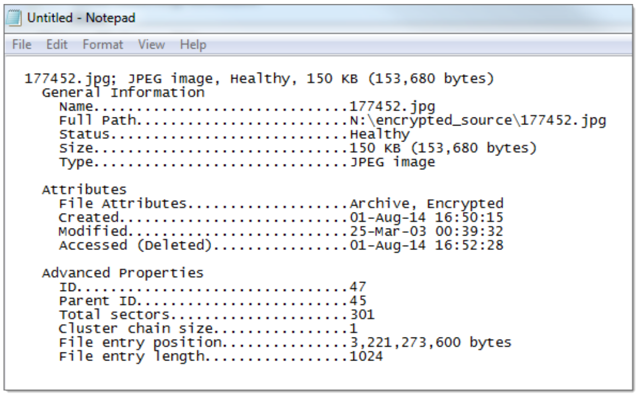
Copy only value of selected field in the information view.

Copy Field

Copy formatted name and value field pair.

Copy All

Copy all information as formatted set of name and value pairs.



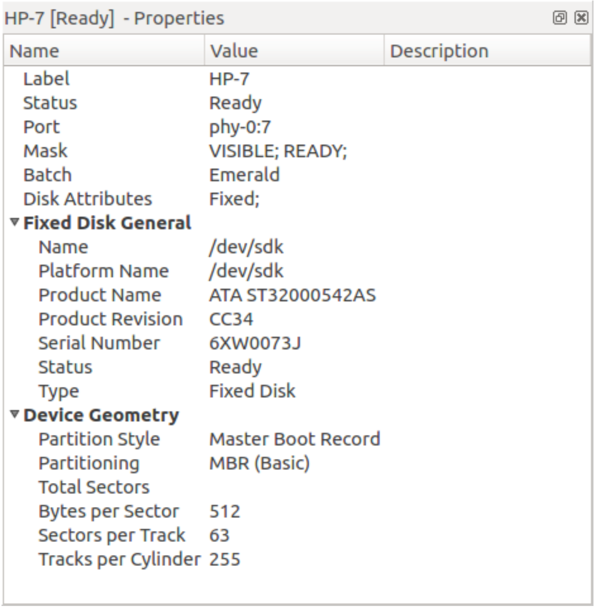
```
177452.jpg; JPEG image, Healthy, 150 KB (153,680 bytes)
  General Information
    Name..............................177452.jpg
    Full Path.........................N:\encrypted_source\177452.jpg
    Status............................Healthy
    Size..............................150 KB (153,680 bytes)
    Type..............................JPEG image

  Attributes
    File Attributes...................Archive, Encrypted
    Created...........................01-Aug-14 16:50:15
    Modified..........................25-Mar-03 00:39:32
    Accessed (Deleted)................01-Aug-14 16:52:28

  Advanced Properties
    ID................................47
    Parent ID.........................45
    Total sectors.....................301
    Cluster chain size................1
    File entry position...............3,221,273,600 bytes
    File entry length.................1024
```

Figure 24: Example of copied information about file

Property view

To show property view for selected item do one of the following:

- Click **View** > **Windows** > **Properties**
- Click **F4** keyboard short cut or
- Use context menu command **Properties** for the same effect



HP-7 [Ready] - Properties

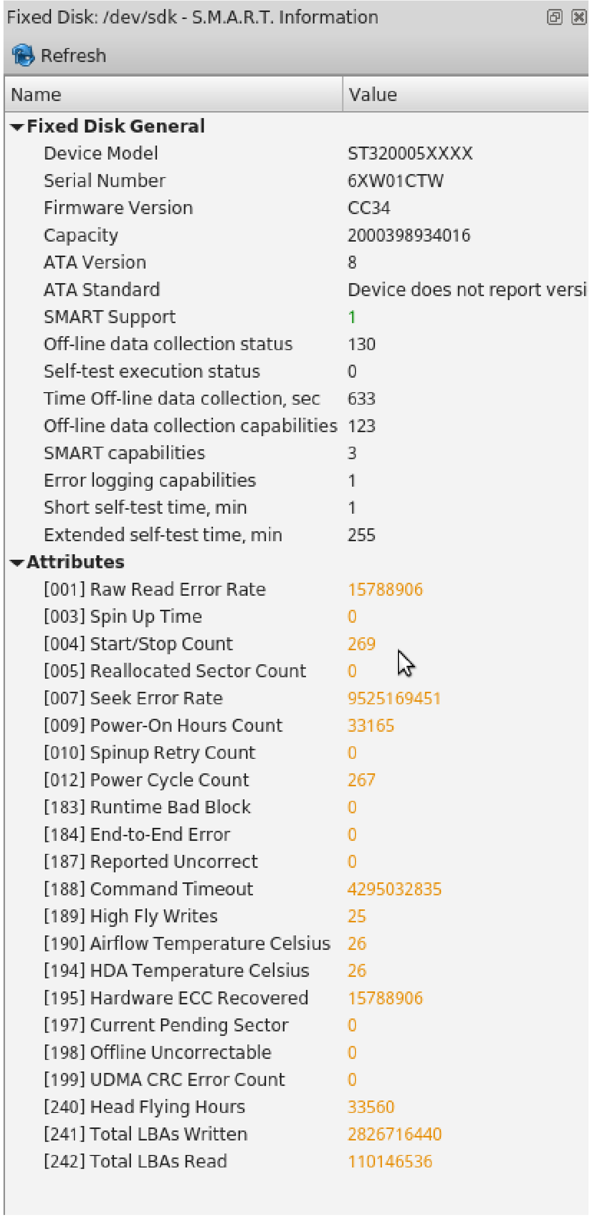
Name	Value	Description
Label	HP-7	
Status	Ready	
Port	phy-0:7	
Mask	VISIBLE; READY;	
Batch	Emerald	
Disk Attributes	Fixed;	
▼ **Fixed Disk General**		
Name	/dev/sdk	
Platform Name	/dev/sdk	
Product Name	ATA ST32000542AS	
Product Revision	CC34	
Serial Number	6XW0073J	
Status	Ready	
Type	Fixed Disk	
▼ **Device Geometry**		
Partition Style	Master Boot Record	
Partitioning	MBR (Basic)	
Total Sectors		
Bytes per Sector	512	
Sectors per Track	63	
Tracks per Cylinder	255	

Figure 25: Property view example

S.M.A.R.T. Information

This is another information view, displaying SMART (Self-Monitoring, Analysis and Reporting Technology) data of the selected hard drive, if the device supports it. To show this view:

- Click **View** > **Windows** > **SMART Info**
- Use context menu command **SMART Info** for the same effect



Fixed Disk: /dev/sdk - S.M.A.R.T. Information

Name	Value
Fixed Disk General	
Device Model	ST320005XXXX
Serial Number	6XW01CTW
Firmware Version	CC34
Capacity	2000398934016
ATA Version	8
ATA Standard	Device does not report versi
SMART Support	1
Off-line data collection status	130
Self-test execution status	0
Time Off-line data collection, sec	633
Off-line data collection capabilities	123
SMART capabilities	3
Error logging capabilities	1
Short self-test time, min	1
Extended self-test time, min	255
Attributes	
[001] Raw Read Error Rate	15788906
[003] Spin Up Time	0
[004] Start/Stop Count	269
[005] Reallocated Sector Count	0
[007] Seek Error Rate	9525169451
[009] Power-On Hours Count	33165
[010] Spinup Retry Count	0
[012] Power Cycle Count	267
[183] Runtime Bad Block	0
[184] End-to-End Error	0
[187] Reported Uncorrect	0
[188] Command Timeout	4295032835
[189] High Fly Writes	25
[190] Airflow Temperature Celsius	26
[194] HDA Temperature Celsius	26
[195] Hardware ECC Recovered	15788906
[197] Current Pending Sector	0
[198] Offline Uncorrectable	0
[199] UDMA CRC Error Count	0
[240] Head Flying Hours	33560
[241] Total LBAs Written	2826716440
[242] Total LBAs Read	110146536

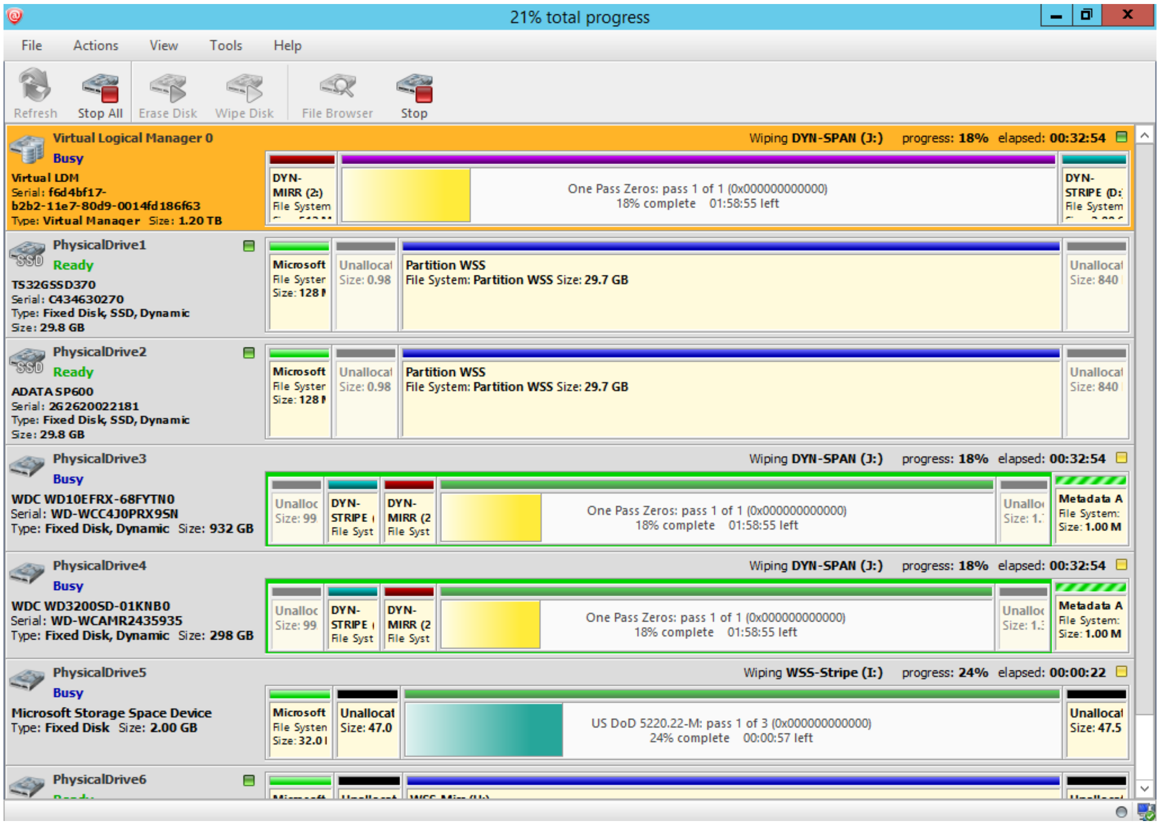
Figure 26: SMART information for physical device example

SMART data can be used to diagnose disks by showing important information such as Power-on Hours, Reallocated Sectors and Current Pending Sectors

Note: If the Current Pending Sectors parameter is not 0, the disk has bad sectors that will cause problems in the future. Dispose of these disks as soon as possible.

Dynamic Disks, Virtual Drives and Windows Storage Spaces

Dynamic Disks (LDM), Virtual Drives and Windows Storage Spaces (WSS) are fully supported with KillDisk 11. These disks will appear in the disk view as any other disks would, along with their component disks. When you launch an erase operation on the virtual disk, you will see it reflected on the components disks as well.



21% total progress

Virtual Logical Manager 0
Busy
Virtual LDM
Serial: f6d4bf17-b2b2-11e7-80d9-0014fd186f63
Type: Virtual Manager Size: 1.20 TB
Wiping DYN-SPAN (J:) progress: 18% elapsed: 00:32:54
DYN-MIRR (2:) File System
One Pass Zeros: pass 1 of 1 (0x000000000000)
18% complete 01:58:55 left
DYN-STRIPE (D: File System

PhysicalDrive1
Ready
TS32GSSD370
Serial: C434630270
Type: Fixed Disk, SSD, Dynamic
Size: 29.8 GB
Microsoft File Syster Size: 128 I
Unallocat Size: 0.98
Partition WSS
File System: Partition WSS Size: 29.7 GB
Unallocat Size: 840

PhysicalDrive2
Ready
ADATA SP600
Serial: 2G2620022181
Type: Fixed Disk, SSD, Dynamic
Size: 29.8 GB
Microsoft File Syster Size: 128 I
Unallocat Size: 0.98
Partition WSS
File System: Partition WSS Size: 29.7 GB
Unallocat Size: 840

PhysicalDrive3
Busy
WDC WD10EFRX-68FYTN0
Serial: WD-WCC4J0PRX9SN
Type: Fixed Disk, Dynamic Size: 932 GB
Wiping DYN-SPAN (J:) progress: 18% elapsed: 00:32:54
Unalloc Size: 99
DYN-STRIPE File Syst
DYN-MIRR (2 File Syst
One Pass Zeros: pass 1 of 1 (0x000000000000)
18% complete 01:58:55 left
Unalloc Size: 1.
Metadata A File System: Size: 1.00 M

PhysicalDrive4
Busy
WDC WD3200SD-01KNB0
Serial: WD-WCAMR2435935
Type: Fixed Disk, Dynamic Size: 298 GB
Wiping DYN-SPAN (J:) progress: 18% elapsed: 00:32:54
Unalloc Size: 99
DYN-STRIPE File Syst
DYN-MIRR (2 File Syst
One Pass Zeros: pass 1 of 1 (0x000000000000)
18% complete 01:58:55 left
Unalloc Size: 1.
Metadata A File System: Size: 1.00 M

PhysicalDrive5
Busy
Microsoft Storage Space Device
Type: Fixed Disk Size: 2.00 GB
Wiping WSS-Stripe (I:) progress: 24% elapsed: 00:00:22
Microsoft File Systen Size: 32.0
Unallocat Size: 47.0
US DoD 5220.22-M: pass 1 of 3 (0x000000000000)
24% complete 00:00:57 left
Unallocat Size: 47.5

PhysicalDrive6

Figure 27: Virtual drive being erased in conjunction with a WSS striped array

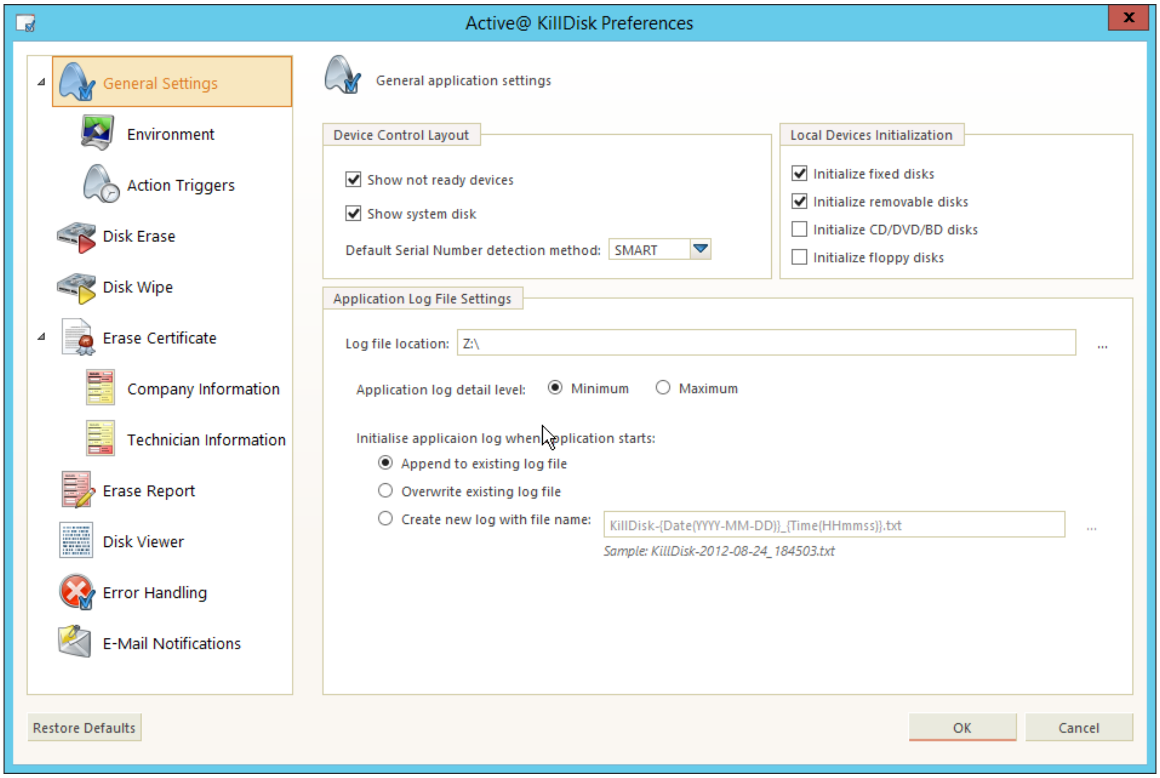
Preferences

The **KillDisk Preferences** window is the central location where `KillDisk` features can be configured. These features are split up into several tabs.

To open Preferences dialog:

- From main menu choose **File** > **Preferences...** or
- Use **F2** keyboard shortcut at any time

Preferences dialog could be open from other task dialogs to change related settings.



General application settings

Device Control Layout

☑ Show not ready devices

☑ Show system disk

Default Serial Number detection method: SMART

Local Devices Initialization

☑ Initialize fixed disks

☑ Initialize removable disks

□ Initialize CD/DVD/BD disks

□ Initialize floppy disks

Application Log File Settings

Log file location: Z:\

Application log detail level: ● Minimum ○ Maximum

Initialise applicaion log when application starts:

● Append to existing log file

○ Overwrite existing log file

○ Create new log with file name: KillDisk-{Date(YYYY-MM-DD)}_{Time(HHmmss)}.txt

Sample: KillDisk-2012-08-24_184503.txt

Figure 28: KillDisk 11 Preferences dialog

Accessing the **Preferences** allows users to configure all the global settings for the application.

When a `KillDisk` operation, such as **Wipe** or **Erase** is initiated, a smaller subset of these settings is available to modify, or the global settings may be kept, pertinent to the particular job.

The process and functionality of the **Preferences** options will be outlined in this section.

General Preferences

The General preferences options allow the user to configure general application settings, as well as the visual aspects of the application.

General Settings

These are configurable options pertaining to the applications functionality.

Device control layout

These settings controls disk bay layout behavior in main *Disk Explorer View* on page 19

Device signaling delay, sec

When a process finishes, KillDisk displays a message, overlaying the disk. In the disk bays view This setting configures the delay of this notification when the process finishes.

Show removable devices in separate row

All removable devices will be shown in separate row (column) regardless of disk bay mapping.

Hide system disk

Hides the disk used by the operating system from the `KillDisk` application.

Default Serial Number detection method

Select how KillDisk retrieves the disk serial number

Local devices initialization

Select which types of devices appear in `KillDisk` for examination and erasure

Application log file settings

These settings apply to the log file automatically generated by the application. Not to be confused with the erasure report or certificate. All operations performed in a `KillDisk` session will be saved in this log.

Log file location

Allows the user to specify where the application log file is saved. By default, this is set to KillDisk's root directory.

Initialize application log when application starts

This setting configures whether `KillDisk` generates a new log file for every session (erasing the log of the previous session), or appends new sessions to one log file.

Environment

These are configurable options pertaining to the applications user interface and user experience.

Use sound notifications

Toggles sound tones being used for notifying the user of the completion of a task, errors and notification during an operation.

Show notification dialog after process complete

Process complete dialog will be shown at the end of single or multiple disk processing, letting user print certificate, erase labels etc.

Application style

Configures the colour scheme used in the application

Toolbar style

Configures how icons are shown in the toolbar (shown below).

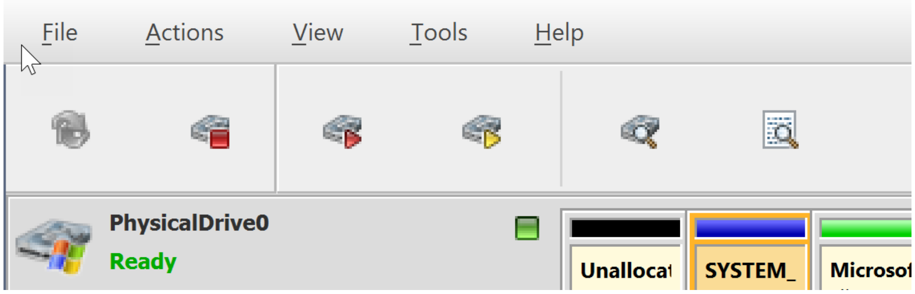


Figure 29: Small icons no text

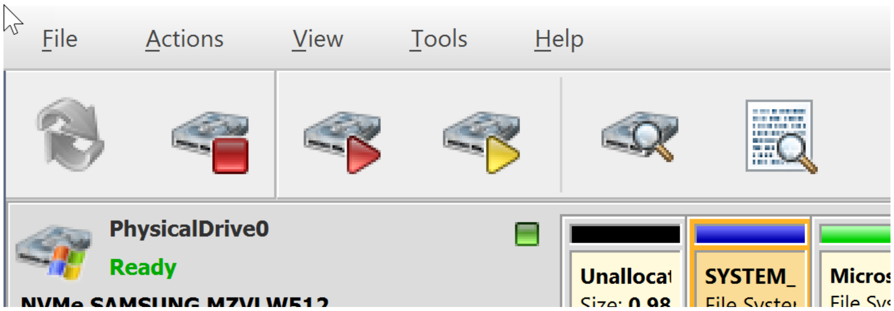


Figure 30: Large icons no text

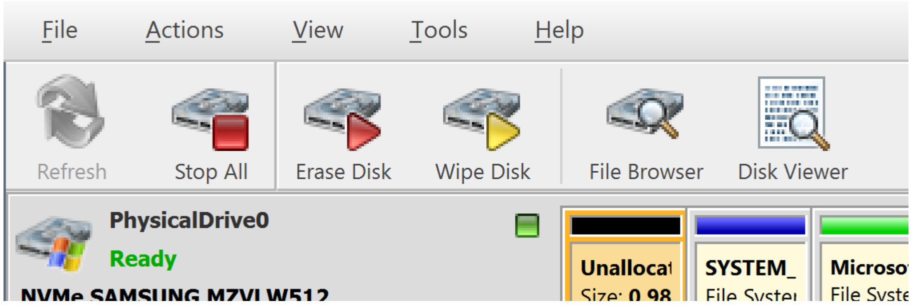


Figure 31: Large icons with text

Default help source

If available, user can select help documentation source to be addressed when requested

Run-time Actions

Configure actions performed while application is running

Automatically check for software updates

If this option set, application will check for a new updates during start.

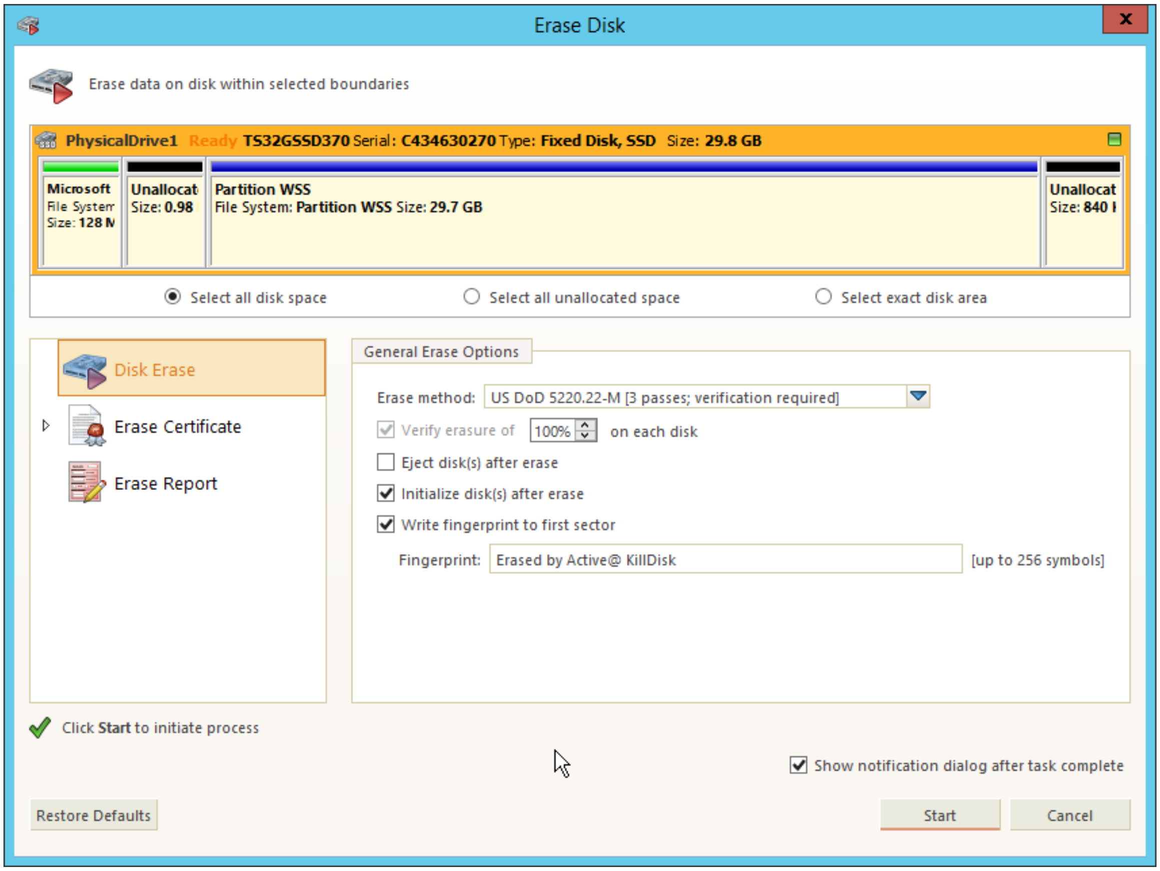
Action after all processes complete

Select either no action or **hibernate** or **shutdown** system after all processes finished.

⚠ **Caution:** You will have 30 seconds to abort system hibernation or shutdown.

Disk Erase Options

The Erase Preferences tab allows for users to configure settings for the `KillDisk` erase procedures.



Erase data on disk within selected boundaries

PhysicalDrive1 Ready TS32GSSD370 Serial: C434630270 Type: Fixed Disk, SSD Size: 29.8 GB

Microsoft File Systerr Size: 128 N	Unallocat Size: 0.98	Partition WSS File System: Partition WSS Size: 29.7 GB	Unallocat Size: 840 I

● Select all disk space ○ Select all unallocated space ○ Select exact disk area

General Erase Options

Erase method: US DoD 5220.22-M [3 passes; verification required]

☑ Verify erasure of 100% on each disk

□ Eject disk(s) after erase

☑ Initialize disk(s) after erase

☑ Write fingerprint to first sector

Fingerprint: Erased by Active@ KillDisk [up to 256 symbols]

✓ Click **Start** to initiate process

☑ Show notification dialog after task complete

Figure 32: Erase options dialog

Select entire disk

Entire surface of the disk will be erased

Select exact area

Allows you to use the sliders on the visualization of your disk to select a particular range of sectors for erasure. You may also click on individual partitions and the selected individual partitions will be erased.

Erase method

One of many internationally recognized erase methods *supported by KillDisk*.

Erase verification

Percentage of disk to be verified after disk was erased.

> **Note:** In some erase methods such as the US DoD 5220.22-M, this option is mandatory. After the erase operation has completed, this option will scan the entire drive evenly and verify the integrity of the erase operation. The percentage indicates the percent of the sectors that are checked, spread across the disk. Most standards specify 10% as an accurate sample size for the verification.

Initialize after erase

Formats the disk to be ready to use after erasure.

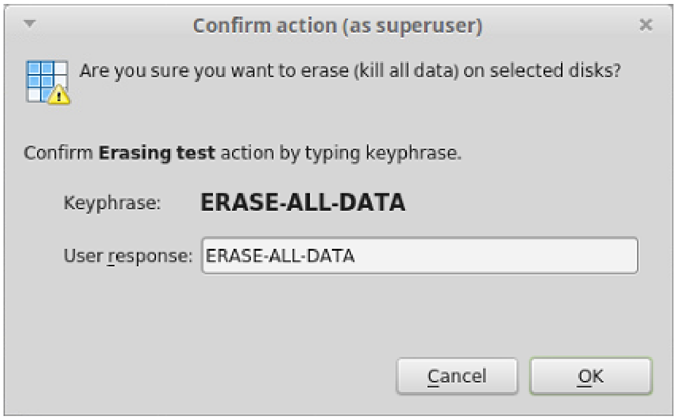
Write fingerprint

This feature will write the specified fingerprint to the first sector of the erased drive. If a machine is booted from this drive, the user will see this fingerprint as a message on the screen.

Erase confirmation

As a safety precaution to prevent accidental destruction of hard drives, KillDisk has the user type a keyphrase before the erase procedure is initiated (Figure 3.1.6). By default this precaution is set with the keyphrase

"ERASE-ALL-DATA". This keyphrase can be modified, set as a randomly generated set of characters, or disabled in these settings.



Confirm action (as superuser)

Are you sure you want to erase (kill all data) on selected disks?

Confirm **Erasing test** action by typing keyphrase.

Keyphrase: **ERASE-ALL-DATA**

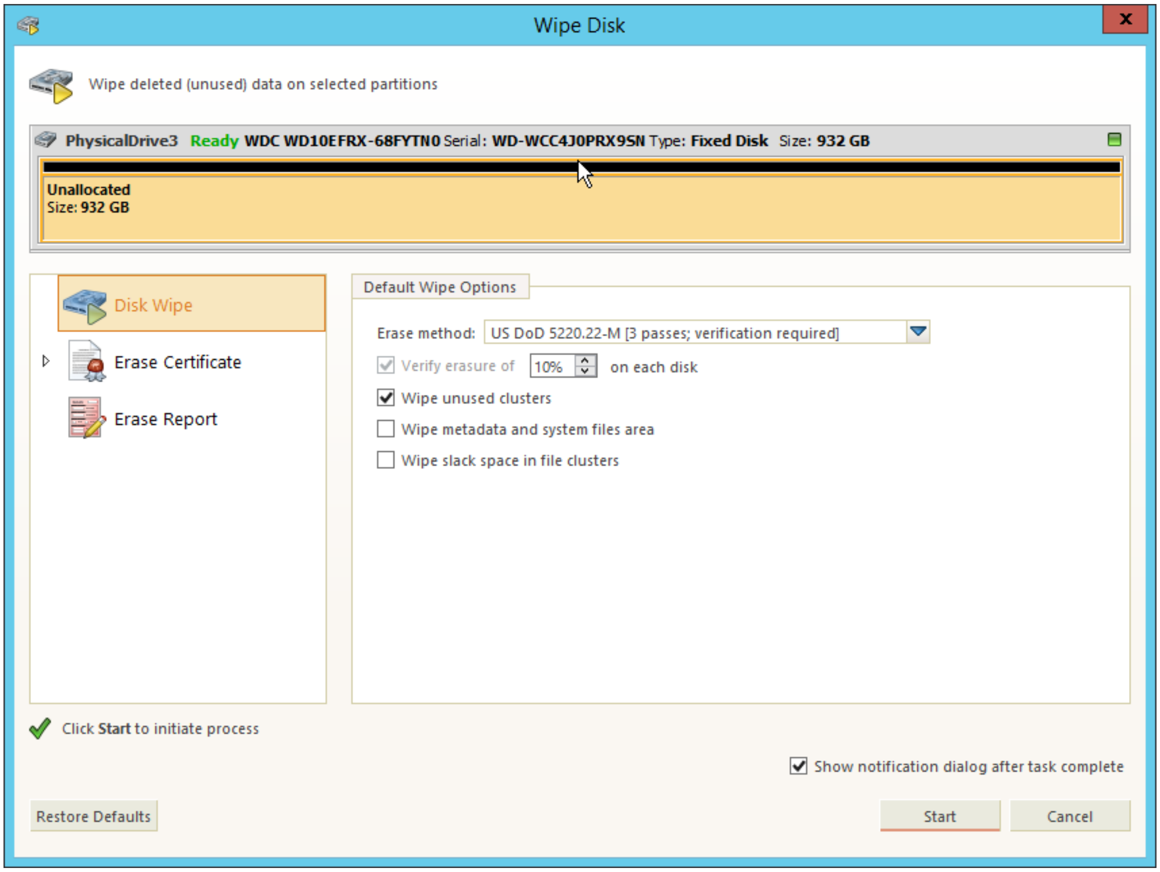
User response: ERASE-ALL-DATA

Figure 33: Sensitive action confirmation dialog

Also see *Report Options* on page 37 for information about erase report.

Disk Wipe Options

The disk wipe procedure, like with the erase procedure, allows you to specify the erase method used, as well as a few additional wipe-specific options.



Wipe Disk

Wipe deleted (unused) data on selected partitions

PhysicalDrive3 **Ready** **WDC WD10EFRX-68FYTN0** Serial: **WD-WCC4J0PRX9SN** Type: **Fixed Disk** Size: **932 GB**

Unallocated
Size: 932 GB

Erase method: US DoD 5220.22-M [3 passes; verification required]

☑ Verify erasure of 10% on each disk

☑ Wipe unused clusters

☐ Wipe metadata and system files area

☐ Wipe slack space in file clusters

Click **Start** to initiate process

☑ Show notification dialog after task complete

Figure 34: Wipe options dialog

Select entire disk

Entire surface of the disk will be wiped

Select all volumes

All volumes will be selected for the wipe operation

Select all unallocated space

Only unallocated space (unformatted, no drive letter) will be wiped

Select single partition

Select a specific partition to be wiped

Erase method

One of many internationally recognized erase methods *supported by KillDisk*.

Erase verification

Percentage of disk to be verified after disk was erased.

Wipe unused clusters

Erase areas of the hard drive that are not formatted and not currently used by the operating system (data has not been recently written there unless this is a recently deleted partition).

Wipe metadata and system files area

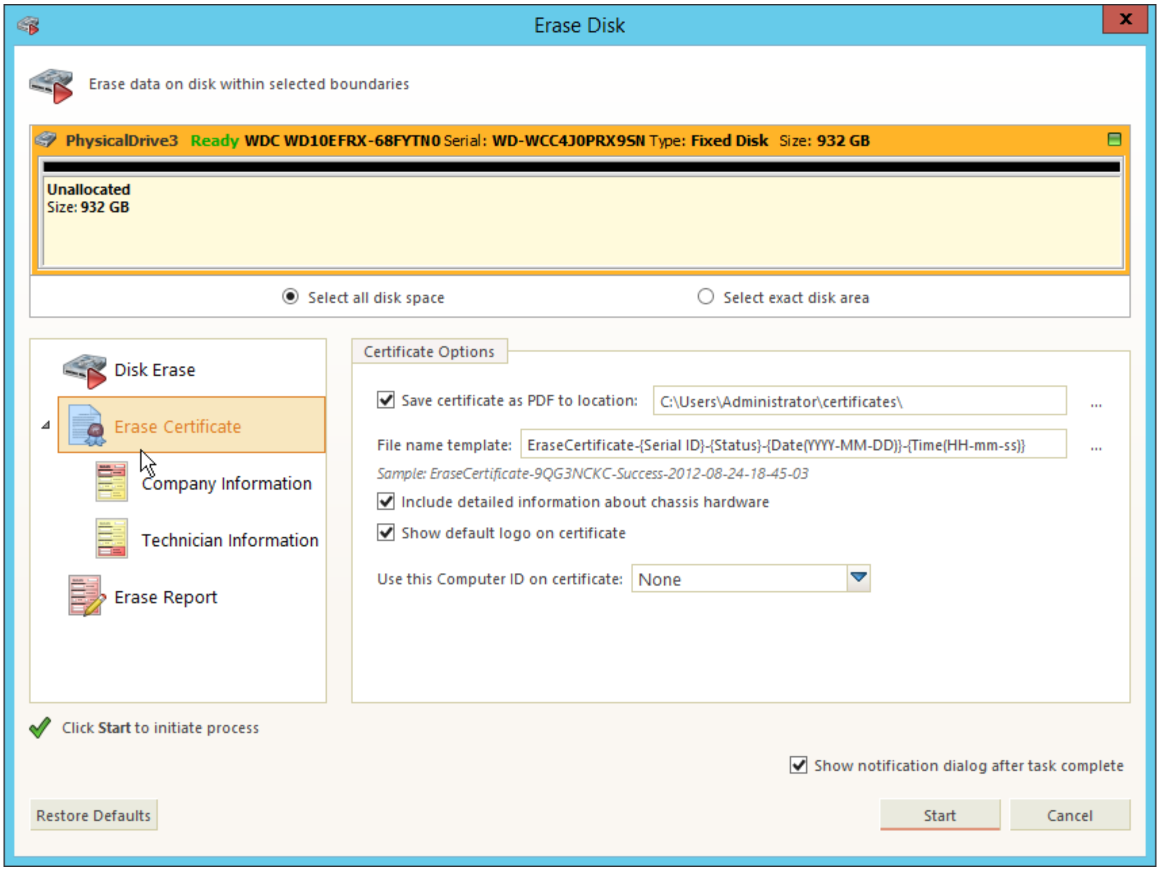
Erase areas of the disk containing information about previous files on the volume and prevents recovery of files using past records of them.

Wipe slack space in file clusters

Erase slack space within files. Files are allocated a set amount of space by the OS, in certain increments (depending on the file system). Because files are usually never *exactly* the size of the space allocated to them, there may be unused space within a file that may contain traces of data. This algorithm wipes this space to remove these data traces.

Certificate Options

These preferences allow the user to customize the erasure certificates with company specific information, technician information, and additional certificate options.



Erase Disk

Erase data on disk within selected boundaries

PhysicalDrive3 Ready WDC WD10EFRX-68FYTN0 Serial: WD-WCC4J0PRX9SN Type: Fixed Disk Size: 932 GB

Unallocated
Size: 932 GB

● Select all disk space ○ Select exact disk area

Certificate Options

☑ Save certificate as PDF to location: C:\Users\Administrator\certificates\

File name template: EraseCertificate-{Serial ID}-{Status}-{Date(YYYY-MM-DD)}-{Time(HH-mm-ss)}

Sample: EraseCertificate-9QG3NCKC-Success-2012-08-24-18-45-03

☑ Include detailed information about chassis hardware

☑ Show default logo on certificate

Use this Computer ID on certificate: None

✓ Click **Start** to initiate process

☑ Show notification dialog after task complete

Figure 35: Certificate options window

Save PDF certificate

Use this option to save erase certificate as file in PDF format to selected **location**.

File name template

Here you may specify the name template for the erase certificate. To see additional file name tags available, see the *File name tags section* in the Appendix.

Include detailed information about chassis hardware

Ensures that the system-specific information is saved in the XML report, such as:

- Operating system
- Kernel version
- Platform name
- Device attributes
- Disk geometry
- Partitioning information
- Active partitions

Show default logo on certificate

Uses the logo "Erased by Active@ KillDisk" in the certificate

Use Computer ID on certificate

This option includes the Hardware ID of the machine being erased on the certificate. It may be taken from the BIOS or the Motherboard (these values may differ from each other).

Company information

This section allows for the user to customize company features like:

- Licensed name
- Business name
- Location
- Phone
- Disclaimer
- Signature field for a company supervisor (optional)

Additionally, custom logos can be added by clicking `Set` and selecting an logo through the file explorer. The logo will be previewed in the Company logo space above.

Tip: It is recommended for better results to use company logo with resolution suitable for printing (300dpi) with a side not exceeding 300px.

Technician Information

This section allows for the user to customize company features like:

- Licensed name
- Business name
- Location
- Phone
- Disclaimer
- Signature field for a company supervisor (optional)

Report Options

These settings allow you to configure the XML reports generated by `KillDisk` operations

Report Location

User may configure where XML erasure reports are saved.

File Name template

Here you may specify the name template for the XML reports. Because every erase operation will generate a separate report, KillDisk saves the date and time in the default settings to keep reports. The main tags available are:

Table 1: Default file name template tags:

Available file name element:	Tag:
Serial ID	{Serial ID}
Erasure Status	{Status}
Date of Erasure	{Date(YYYY-MM-DD)}
Time of Erasure	{Time(HH-mm-ss)}

To see additional file name tags available, see the *File name tags section* in the Appendix.

Include system and hardware info

Ensures that the system-specific information is saved in the XML report, such as:

- Operating system
- Kernel version
- Platform name

- Device attributes
- Disk geometry
- Partitioning information
- Active partitions

Include technician information

Optionally place the technician information (defined in the *Certificate Preferences*) into the XML erasure report

The `KillDisk` XML report contains the following parameters:

Table 2: XML Report Parameters

Type of Information	Specific data
Company Information	*Name*
	License
	Location
	Phone
	Disclaimer
System Information	*OS version*
	Platform
	Kernel
Erase Attributes	*Erase Verify*
	Passes
	Method
	Verification passes
Error Handling Attributes	*Errors terminate*
	Skip interval
	Number of Retries
	Lock
	Source?
	Ignore Write?
	Read?
	Lock?
Disks	*Device Size*
	Device Type
	Serial Number
	Revision
	Product Number
	Name
	Geometric Information

Type of Information	Specific data
	Partitioning Scheme
Additional Report Attributes	*Fingerprint Information*
	Initialize disk?
Result	*Bay*
	Time and Date Started
	Disk Information
	Status
	Result
	Time Elapsed
	Errors
	Name of operation

Disk Viewer Settings

Allows user to set hexadecimal view settings, font and interaction.

Hexadecimal offset

Toggles offset format between decimal and hexadecimal.

Show ASCII column

Toggles display content in ASCII format

Show UNICODE column

Toggles display content in UNICODE format

Bytes per line

Defines amount of bytes per line in binary display

Lines to scroll

Number of lines to scroll for a single mouse wheel sweep

Pages to scroll

Number of pages to skip for a single **PageUp** or **PageDown** click

Font name

Select any monospace font available for better experience

Font size

Font size to be used in binary view

Error Handling

`KillDisk` has a broad capabilities to handle errors encountered during continuous disk processing. This is an advanced preference that allows for the configuration of `KillDisk`'s error handling of continuous processes.

Error handling attributes

`KillDisk` allows you to select one of three ways to handle Read/Write Errors:

Abort entire disk group processing

This means that if you're running a batch erase and one of the disks has errors, the erase process for ALL the disks in the batch will be terminated.

Abort only failed disk from group processing

This is the suggested setting. Failed disks will return an error and terminate the erase process, but other disks in the batch will not be interrupted from completing the erase operation.

Ignore error for disk grouping

Ignores the read/write error and continues erasing wherever is possible on the disk. No active or forth going operations are terminated.

Additional settings:

Terminate process after number of errors

Sets the error threshold to a certain amount before the disk operation is terminated and deemed unsuccessful.

Number of Read/Write attempts

Sets the number of attempts KillDisk make to perform an operation when an error is encountered.

Sectors to skip after detection of a bad sector

Sets the number of sectors ignored by the software when bad sectors are found.

Use disk lock

Locks disks from being used by any other applications.

Ignore disk lock errors

Errors encountered with KillDisk not being able to access locked disks are ignored.

Ignore read/write errors

Toggle whether errors should appear for read and/or write errors.

Email Notifications

These settings allow configuring mailer settings for delivering erasing/wiping reports to your mailbox. Simple Mail Transport Protocol (SMTP) is responsible for transmitting e-mail messages and needs to be configured properly.

These options can be configured in the Free version, but are useable only in the Professional version.

Account Type

`KillDisk` offers you a free SMTP account located on www.smtp-server.com that can be used for sending out reports. By default all required parameters are pre-filled and configured properly. The only field you need to type in is the e-mail address where reports will be sent to. If your corporate policy does not allow using services other than its own, you need to switch this option to Custom Account and configure all settings manually. Ask your system/network administrator to get these parameters.

To

Type the e-mail address where erasing/wiping reports will be sent to.

From

Type the e-mail address which you expect these reports to come from.

SMTP Server

`KillDisk` offers you the use of smtp-server.com for a free SMTP account. This account is pre-configured for KillDisk users. Ask your system/network administrator to get the SMTP server name to be used in the Custom Account.

SMTP Port

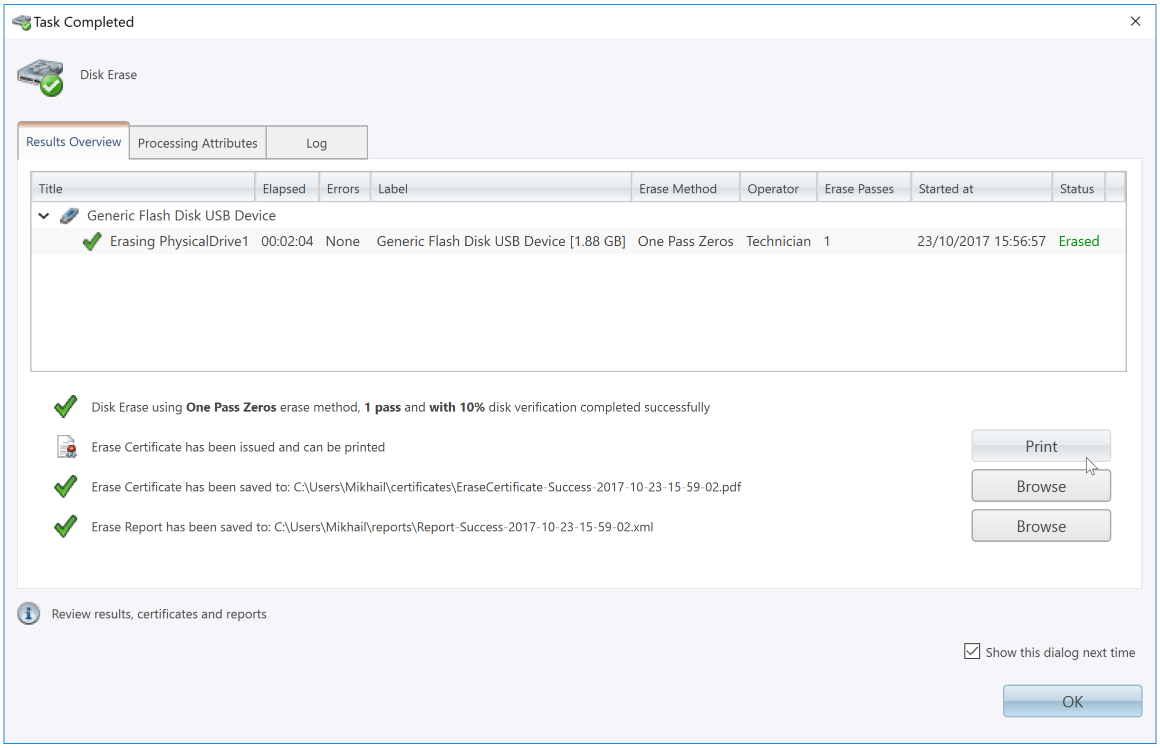
For the free SMTP account, `KillDisk` allows you to use smtp-server.com on port 80. This is a standard WWW port being used by all web browsers to access the internet. This port most likely will be kept open on a corporate or home network. Other ports can be filtered by and closed on a network firewall. Ask your system/network administrator to set proper SMTP port for the related SMTP server.

SMTP Server requests authorization

To avoid spam and other security issues, some SMTP servers require each user to be authorized before allow sending e-mails. In this case a proper user name and password are required. Ask your system/network administrator to get proper configuration settings.

Processing Summary

Once KillDisk's finishes processing any task, such as disk erasure or disk examination, a task complete dialog will appear with a summary of the task, containing all of the information pertaining to the operation. For example, this includes information like disks operated on, status of erasure and all associated certificates and reports.



Title	Elapsed	Errors	Label	Erase Method	Operator	Erase Passes	Started at	Status
Generic Flash Disk USB Device								
✓ Erasing PhysicalDrive1	00:02:04	None	Generic Flash Disk USB Device [1.88 GB]	One Pass Zeros	Technician	1	23/10/2017 15:56:57	Erased

✓ Disk Erase using **One Pass Zeros** erase method, **1 pass** and **with 10%** disk verification completed successfully

Erase Certificate has been issued and can be printed

✓ Erase Certificate has been saved to: C:\Users\Mikhail\certificates\EraseCertificate-Success-2017-10-23-15-59-02.pdf

✓ Erase Report has been saved to: C:\Users\Mikhail\reports\Report-Success-2017-10-23-15-59-02.xml

Review results, certificates and reports

☑ Show this dialog next time

Figure 36: Example of task complete dialog after disk erasure

The successful erasure window contains the features of the successful erasure, discussed further in this section.

Devices

All devices erased are displayed with their erasure status in list format at the top of the notification.

Erasure Status

Details the status of the disk erase operation showing the erasure specifications and status with which the erasure was completed.

Disk Erasure Certificate

Verifies that the erasure PDF certificate has been saved and specifies the path to the saved report. Allows user to examine the certificate by pressing the Open button.

Disk Erasure Report

Verifies that the erasure report has been saved and specifies the path to the saved report. Allows user to examine the .xml erasure report by pressing the **Browse** button.

Note: The Wipe operation will produce a similar processing summary for the disk wipe

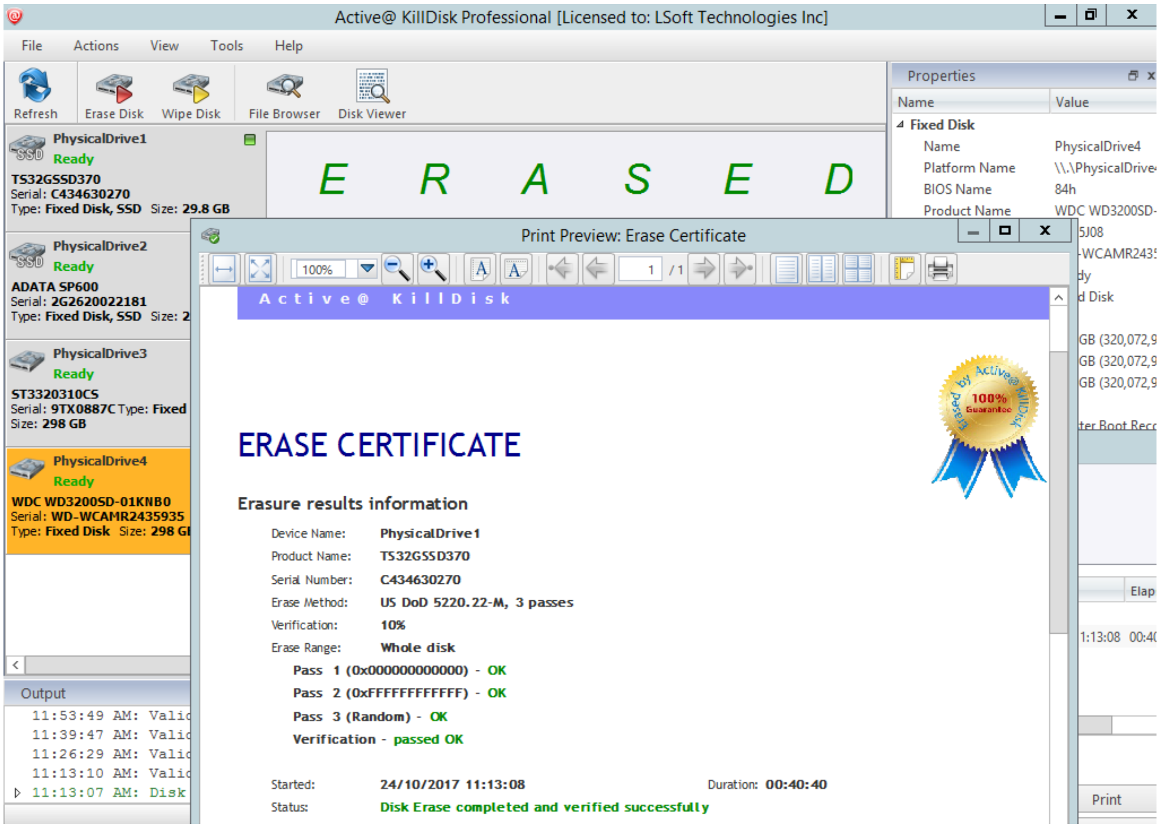
Reports and Certificates

KillDisk maintains the highest standards in disk erasure, and with that, provides extensive documentation options for its' operations through *Reports* and *Certificates*. This section will discuss these features in length.

Erase Certificate

Overview

`KillDisk` provides PDF certificates of erasure upon the completion of data erase operations. These certificates may be customized to include company-specific information and notes specific to the particular procedure. Configuring these custom settings is outlined in the *Certificate Preferences* section of this guide. A sample of the certificate is shown below:



Active@ KillDisk

ERASE CERTIFICATE

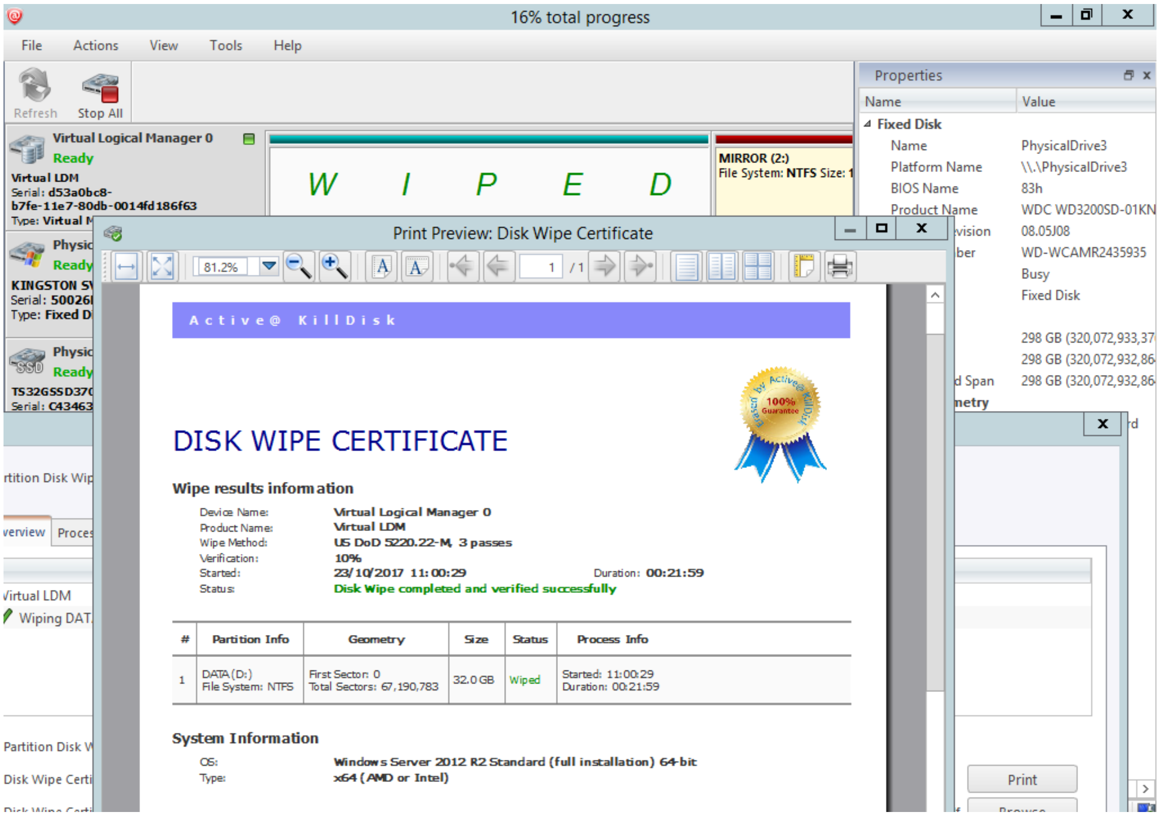
Erasure results information

Device Name:	PhysicalDrive1
Product Name:	TS32GSSD370
Serial Number:	C434630270
Erase Method:	US DoD 5220.22-M, 3 passes
Verification:	10%
Erase Range:	Whole disk

Pass 1 (0x000000000000) - OK
Pass 2 (0xFFFFFFFFFFFF) - OK
Pass 3 (Random) - OK
Verification - passed OK

Started: 24/10/2017 11:13:08 Duration: 00:40:40
Status: Disk Erase completed and verified successfully

Figure 37: Disk Erase Certificate.



DISK WIPE CERTIFICATE

Wipe results information

Device Name:	Virtual Logical Manager 0
Product Name:	Virtual LDM
Wipe Method:	US DoD 5220.22-M, 3 passes
Verification:	10%
Started:	23/10/2017 11:00:29 Duration: 00:21:59
Status:	Disk Wipe completed and verified successfully

#	Partition Info	Geometry	Size	Status	Process Info
1	DATA (D:) File System: NTFS	First Sector: 0 Total Sectors: 67,190,783	32.0 GB	Wiped	Started: 11:00:29 Duration: 00:21:59

System Information

OS:	Windows Server 2012 R2 Standard (full installation) 64-bit
Type:	x64 (AMD or Intel)

Figure 38: Disk Wipe Certificate

Certificate Elements

Company Information

Displays all company information provided in the preferences. The user in the above example only provided their business name, but other company information may also be included in the certificate.

Technician Information

Displays the technician information provided in the preferences. Namely, this section is for the name of the operator and any notes they may want to include in the certificate report.

Erasure Results Information

Displays information pertaining to the erasure procedure conducted on the hard drive(s). Type of erasure algorithm, custom settings, date and time started and duration of the erasure are all listed here.

Disk

Uniquely identifies the disk that was operated on by the KillDisk application. Includes information like Name, Serial Number, Size and Partitioning Scheme.

System Information

Provides details on the system used to run KillDisk, such as the Operating System and architecture.

Note: The system information here only applies to the system running `KillDisk`, not the system that was erased by the application! Provided `KillDisk` remains on one workstation, this information will stay consistent with all systems that the workstation erases.

Reports

`KillDisk` gives you the option to save XML reports for any major operation it performs on a disk, such as **Examination** and **Erasure**. These reports contain all the information pertaining to the `KillDisk` procedure. The contents of the report are outlined below.

Company Information • Name • License • Location • Phone • Disclaimer **System Information** • OS version • Platform • Kernel **Erase Attributes** • Erase verify • Passes • Method • Verification passes **Error Handling Attributes** • Errors terminate • Skip interval • Number of Retries • Lock Source? • Ignore Write? • Read? • Lock?	**Disks** • Device Size • Device Type • Serial Number • Revision • Product Number • Name • Geometric Information • Partitioning Scheme **Additional Report Attributes** • Fingerprint Information • Initialize disk? **Result** • Bay • Time and Date Started • Disk Information • Status • Result • Time Elapsed • Errors • Name of operation

Command Line and Batch Modes

KillDisk can be executed with some settings pre-defined when started from a command prompt with specific command line parameters.

KillDisk can be also launched in fully automated mode (batch mode) which requires no user interaction.

KillDisk execution behavior depends on either command line parameters (highest priority), settings configured in interactive mode and stored in the KILLDISK.INI file (lower priority), or default values (lowest priority).

Command Line Mode

To run Active@ KillDisk in command line mode, open a command prompt screen.

At the command prompt, start Active@ KillDisk for Windows by typing:

```
KILLDISK.EXE -?
```

In Linux environment, type:

```
KillDisk -?
```

A list of parameters appears. You can find explanations of them in the table below.

Table 3: Command Line Parameters

Parameter	Short	Default	Options
no parameter			With no parameter, the Interactive screens
-erasemethod=[0-23]	-em=	2	0 - One pass zeros (quick, low security)
			1 - One pass random (quick, low security)
			2 - US DoD 5220.22-M (slow, high security)
			3 - US DoD 5220.22-M (ECE) (slow, high security)
			4 - Canadian OPS-II (slow, high security)
			5 - British HMG IS5 Baseline (1 pass, quick)
			6 - British HMG IS5 Enhanced (slow, high security)
			7 - Russian GOST p50739-95(slow, high security)
			8 - US Army AR380-19 (slow, high security)
			9 - US Air Force 5020 (slow, high security)
			10 - Navso P-5329-26 RL (slow, high security)
			11 - Navso P-5329-26 MFM (slow, high security)
			12 - NCSC-TG-025 (slow, high security)
			13 - NSA 130-2 (slow, high security)
			14 - German VSITR (slow, high security)
			15 - Bruce Schneier (slow, high security)
			16 - Gutmann (very slow, highest security)
			17 - User Defined Method. Number of passes and Overwrite pattern supplied separately
			18 - NIST 800-88 (1 pass zeroes, quick)
			19 - NIST 800-88 (1 pass random, quick)
			20 - NIST 800-88 (3 pass zeroes, slow, high security)
			21 - Canadian CSEC ITSG-06 (3 passes, verify, slow, high security)
			22 - US DoE M205.1-2 (3 passes, verify)
			23 - Austriliam ISM-6.2.93 (1 pass random, quick)
-passes=[1 - 99]	-p=	3	Number of times the write heads will pass over a disk area to overwrite data with User Defined Pattern. Valid for User Defined Method only
-verification=[1 - 100]	-v=	10	Set the amount of area the utility reads to verify that the actions performed by the write head comply with the chosen erase method (reading 10% of the areaby default). Verification is a long process. Set the verification to the level that works best for you

Parameter	Short	Default	Options
-retryattempts=[1 - 99]	-ra=	2	Set the number of times that the utility will try to rewrite in the sector when the drive write head encounters an error
-erasehdd=[0,1..63]	-eh=		Number in BIOS of the disk to be erased. First physical disk has a zero number. In Linux first disk usually named /dev/sda. In Windows Disk Manager first disk is usually named Disk 0. On older systems (DOS, Windows 9x) first disk is usually named 80h (obsolete syntax is still supported in the parameter)
-eraseallhdds	-ea		Erase all detected disks
-excluderemovable	-xr		Exclude all removable disks from erasing when erase all disks selected
-excludefixed	-xf		Exclude all fixed disks from erasing when erase all disks option selected
-excludedisk=[0,1..63]	-xd=		Exclude disk from erasing when erase all disks option selected
-ignoreerrors	-ie		Do not stop erasing each time a disk error is encountered. When you use this parameter, all errors are ignored and just placed to the application log
-initdisk	-id		Initialize disk(s) after erase
-fingerprint	-fp		Initialize disk(s) and write fingerprint to the disk’s first sector
-computerid	-ci		1 - Display BIOS ID on the certificate
			2 - Display Motherboard ID on the certificate
-clearlog	-cl		Use this parameter to clear the log file before recording new activity. When a drive is erased, a log file is kept. By default, new data is appended to this log for each erasing process. By default the log file is stored in the same folder where the software is located
-exportlog	-el		Export a log file as XML report
-logpath=[“fullpath”]	-lp=		Path to save application log file. Can be either directory name or full file name. Use quotes if full path contains spaces
-certpath=[“fullpath”]	-cp=		Path to save erase/wipe certificate. Can be either directory name or full file name. Use quotes if full path contains spaces
-inipath=[“fullpath”]	-ip=		Path to the configuration file (KILLDISK.INI) for loading the advanced settings. See table below
-noconfirmation	-nc		Skip confirmation steps before erasing starts. By default, confirmation steps will appear in command line mode for each hard drive as follows: Are you sure?
-beep	-bp		Beep after erasing is complete
-wipeallhdds	-wa		Wipe out unallocated space on all recognized volumes located on all detected disks
-wipehdd = [0,1…63]	-wh=		Wipe out unallocated space on the disk specified by BIOS number

Parameter	Short	Default	Options
-test			If you are having difficulty with Active@ KillDisk, use this parameter to create a hardware information file to be sent to our technical support specialists
-batchmode	-bm		Execute in batch mode based on command line parameters and INI file settings (without user interaction, all operations being stored to log file)
-userpattern =[“fullpath”]	-u		File to get user-defined pattern from. Applied to User Defined erase method. Each line in the file corresponds to the particular pass pattern
-shutdown	-sd		Save log file and shutdown PC after completion
-nostop	-ns		Prevent erase/wipe stop action
-help or -?			Display this list of parameters

Note: Parameters -test and -help must be used alone. They cannot be used with other parameters.

Note: Commands –erasehdd, -eraseallhdds, -wipehdd and -wipeallhdds cannot be combined.

Type the command and parameters into the command prompt console screen at the prompt. Here is a Windows example:

```
killdisk.exe -eh=80h -bm
```

The same in Linux:

```
KillDisk -eh=80h -bm
```

In the example above, data on device 80h will be erased using the default method (US DoD 5220.22-M) without confirmation and returning to the command prompt screen when complete.

Here is another Windows example:

```
killdisk.exe -eh=80h -nc -em=2
```

The same in Linux:

```
KillDisk -eh=80h -nc -em=2
```

In this example, all data on the device 80h will be erased using US DoD 5220.22-M method without confirmation and showing a report at the end of the process.

Note: In Linux environment, to detect and work with physical disks properly, Active@ KillDisk must be launched under SuperUser account, so, if you are not a Super User, you should type a prefix sudo, or su (for different linux versions) before each command.

After you have typed KillDisk and added command line parameters, press ENTER to complete the command and start the process.

Information on how drives have been erased is displayed on the screen when the operation has completed successfully. KillDisk execution behavior depends on either command line parameters (highest priority), settings configured in interactive mode and stored in the KILLDISK.INI file (lower priority), or default values (lowest priority).

Batch Mode

Note: This feature is intended for advanced users only

Batch mode allows KillDisk to be executed in fully automated mode without any user interaction. All events and errors (if any) will be placed in the log file. This allows system administrators and technicians to automate erase/ wipe tasks by creating scripts (*.CMD, *.BAT files) for different scenarios that can be executed later on in different environments.

To start KillDisk in batch mode, add the –bm (or -batchmode) command line parameter to the other parameters and execute KillDisk either from the command prompt or by running a script.

Here is an example of batch mode execution with the wipe command:

```
KillDisk -wa -bm -em=16
```

This will, using Gutman's method and returning to the command prompt when complete, wipe all deleted data and unused clusters on all attached physical disks without any confirmations

If –ns (-nostop) command line parameter is specified, no user interaction is possible after erase/wipe action started, so user cannot cancel the command being executed.

After execution, application returns exit codes to the operating system environment: 0 (zero) if all disks being erased successfully, 1 (one) if errors occurred or nothing erased/wiped, and 2 (two) if minor warnings occurred.

Advanced Tools

KillDisk offers a number of advanced tools to work in conjunction with the software to make operations easier to perform and the disks easier to navigate. KillDisk give you the power to browse through disks on both a file level and a low, HEX level, as well as analyze disk health with its' SMART monitor. This section describes each of these features at length:

- *File Browser*
- *Hexadecimal Viewer*

File Browser

KillDisk also includes a built-in file browser for examining the contents of disks for verification purposes of the procedure and that correct hard drives are being selected, and validation that erased files have been overwritten after erase and wipe. Details on using this feature will be discussed in this section.

Note: KillDisk **will** detect files that have been deleted, but not sanitized. They will appear grey and indicate deleted files with a high probability of being recovered with file recovery tools.

Opening the browse view

To browse the contents of a specific disk from the Disk Bay layout view, simply select the desired disk and click **Browse Disk** in the action toolbar. This action can be found in the disk action list shown below.

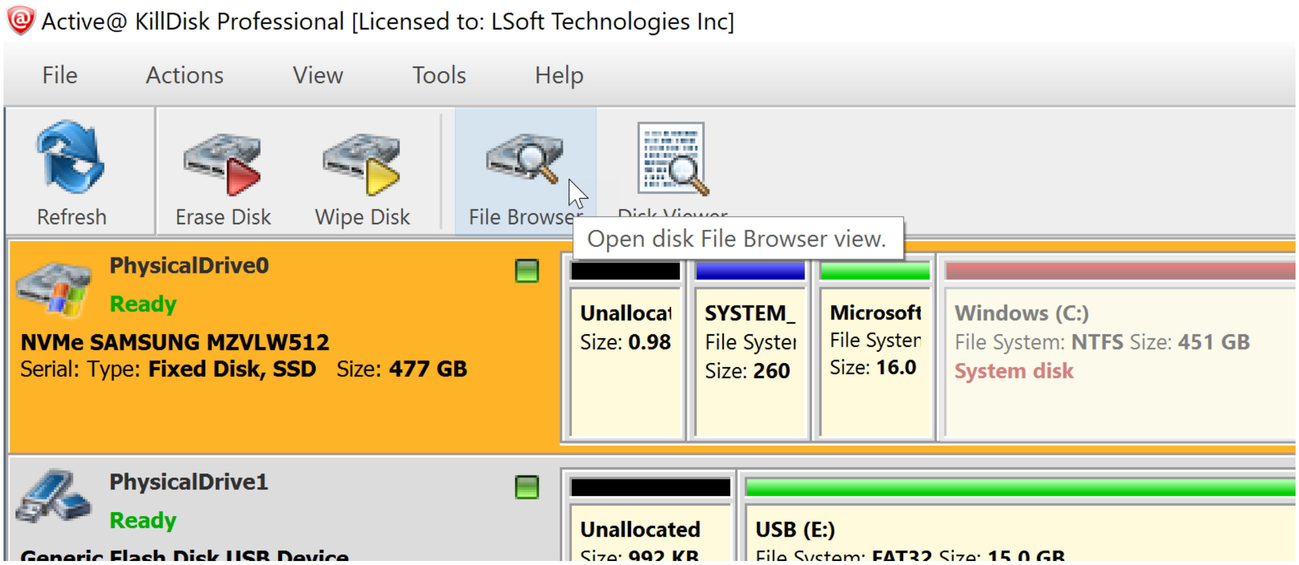
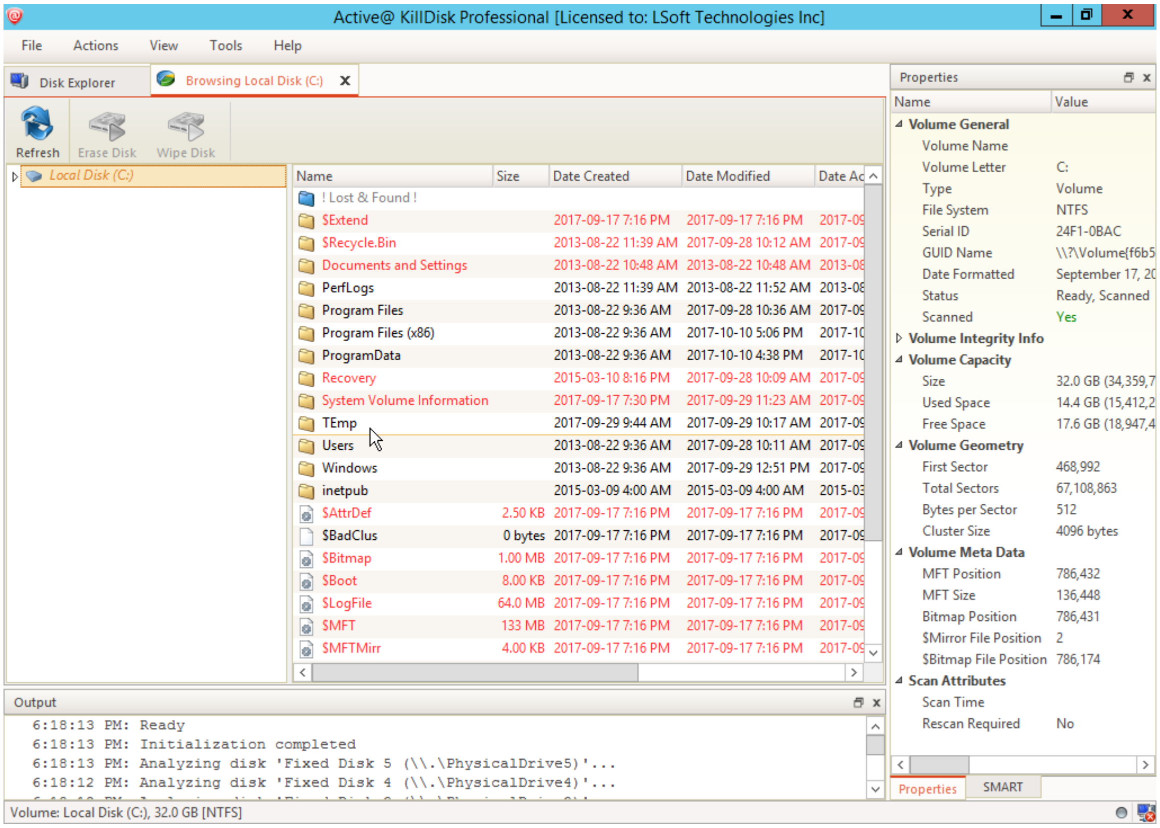


Figure 39: Launching the file browser

This will launch the file browser window, seen below.



Name	Size	Date Created	Date Modified	Date Ac
! Lost & Found !				
$Extend		2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$Recycle.Bin		2013-08-22 11:39 AM	2017-09-28 10:12 AM	2017-09
Documents and Settings		2013-08-22 10:48 AM	2013-08-22 10:48 AM	2013-08
PerfLogs		2013-08-22 11:39 AM	2013-08-22 11:52 AM	2013-08
Program Files		2013-08-22 9:36 AM	2017-09-28 10:36 AM	2017-09
Program Files (x86)		2013-08-22 9:36 AM	2017-10-10 5:06 PM	2017-10
ProgramData		2013-08-22 9:36 AM	2017-10-10 4:38 PM	2017-10
Recovery		2015-03-10 8:16 PM	2017-09-28 10:09 AM	2017-09
System Volume Information		2017-09-17 7:30 PM	2017-09-29 11:23 AM	2017-09
TEmp		2017-09-29 9:44 AM	2017-09-29 10:17 AM	2017-09
Users		2013-08-22 9:36 AM	2017-09-28 10:11 AM	2017-09
Windows		2013-08-22 9:36 AM	2017-09-29 12:51 PM	2017-09
inetpub		2015-03-09 4:00 AM	2015-03-09 4:00 AM	2015-03
$AttrDef	2.50 KB	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$BadClus	0 bytes	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$Bitmap	1.00 MB	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$Boot	8.00 KB	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$LogFile	64.0 MB	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$MFT	133 MB	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09
$MFTMirr	4.00 KB	2017-09-17 7:16 PM	2017-09-17 7:16 PM	2017-09

Name	Value
Volume General	
Volume Name	
Volume Letter	C:
Type	Volume
File System	NTFS
Serial ID	24F1-0BAC
GUID Name	\\?\Volume{f6b5
Date Formatted	September 17, 20
Status	Ready, Scanned
Scanned	Yes
Volume Integrity Info	
Volume Capacity	
Size	32.0 GB (34,359,7
Used Space	14.4 GB (15,412,2
Free Space	17.6 GB (18,947,4
Volume Geometry	
First Sector	468,992
Total Sectors	67,108,863
Bytes per Sector	512
Cluster Size	4096 bytes
Volume Meta Data	
MFT Position	786,432
MFT Size	136,448
Bitmap Position	786,431
$Mirror File Position	2
$Bitmap File Position	786,174
Scan Attributes	
Scan Time	
Rescan Required	No

Output

```
6:18:13 PM: Ready
6:18:13 PM: Initialization completed
6:18:13 PM: Analyzing disk 'Fixed Disk 5 (\\.\PhysicalDrive5)'...
6:18:12 PM: Analyzing disk 'Fixed Disk 4 (\\.\PhysicalDrive4)'...
```

Volume: Local Disk (C:), 32.0 GB [NTFS]

Figure 40: File Browser window

The file browser window displays the disk selected. The **Expand All** button at the top left expands all the partitions on the disk in the Navigator Pane, while the **Collapse All** button hides them. The file explorer windowed view may also be manipulated by navigating to the **Settings** button at the top. Here, you can you have options to manipulate the elements below.

Advanced

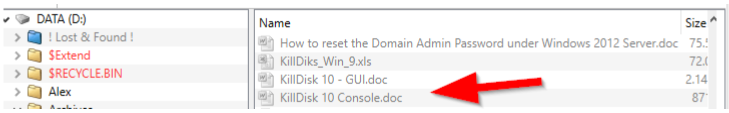
Toggles advanced disk information being shown.

Show Partitions

Toggles the disk partitions being shown.

Navigator Pane

Toggles the Navigator Pane view on and off.



Name	Size
How to reset the Domain Admin Password under Windows 2012 Server.doc	75.5
KillDiks_Win_9.xls	72.0
KillDisk 10 - GUI.doc	2.14
KillDisk 10 Console.doc	87

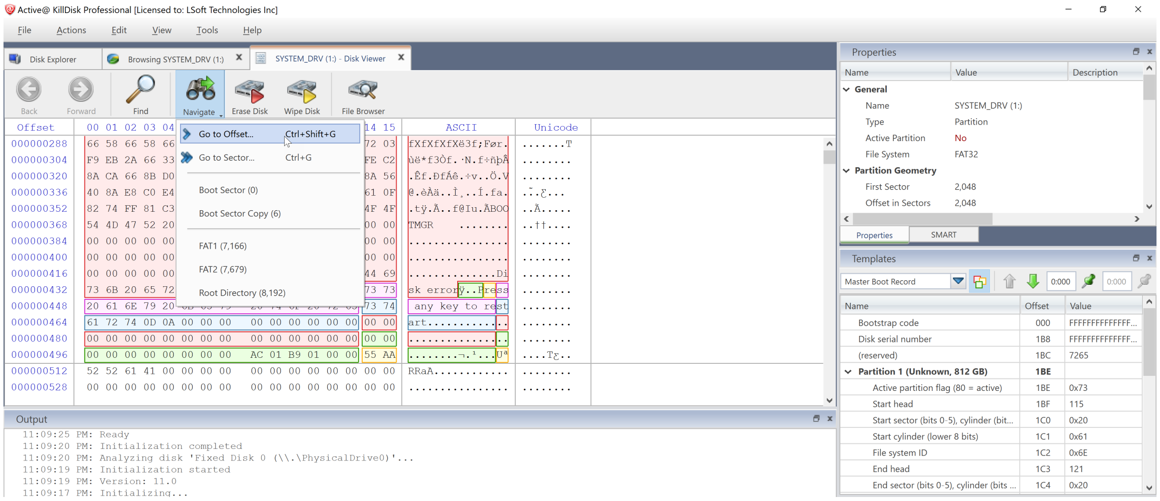
Figure 41: Deleted files in the Disk Explorer

Grey files indicate deleted files that have not been sanitized. These files are recoverable. Running `KillDisk`'s *Wipe* operation will ensure these files are unrecoverable and make these grey files disappear from the file browser.

Note: Found deleted files will appear in their original directory (before they were deleted). The **! Lost & Found !** folder a directory created for found deleted files where the directory information is not discovered by the application.

Disk Viewer

`KillDisk`'s Disk Viewer allows users to view the contents of connected drives in a Hex Editor view.



```
Offset     00 01 02 03 04                              14 15   ASCII              Unicode
000000288  66 58 66 58 66                              72 03   fXfXfXfXë3f;Før.   .......T
000000304  F9 EB 2A 66 33                              FE C2   ùë*f3Òf.·N.f÷ñþÂ   ........
000000320  8A CA 66 8B D0                              8A 56   .Êf.ÐfÁê.÷v..Ö.V   ........
000000336  40 8A E8 C0 E4                              61 0F   @.èÀä..Ì¸..Í.fa.   .˜.Ɛ...
000000352  82 74 FF 81 C3                              4F 4F   .tÿ.Ã..f@Iu.ÃBOO   ..Ã.....
000000368  54 4D 47 52 20                              00 00   TMGR    ........   ..††....
000000384  00 00 00 00 00                              00 00   ................   ........
000000400  00 00 00 00 00                              00 00   ................   ........
000000416  00 00 00 00 00                              44 69   ..............Di   ........
000000432  73 6B 20 65 72                              73 73   sk errorÿ..Press   ........
000000448  20 61 6E 79 20                              73 74    any key to rest   ........
000000464  61 72 74 0D 0A 00 00 00  00 00 00 00 00 00  00 00   art.............   ........
000000480  00 00 00 00 00 00 00 00  00 00 00 00 00 00  00 00   ................   ........
000000496  00 00 00 00 00 00 00 00  AC 01 B9 01 00 00  55 AA   ........¬.¹...Uª   ....TƐ..
000000512  52 52 61 41 00 00 00 00  00 00 00 00 00 00  00 00   RRaA............   ........
000000528  00 00 00 00 00 00 00 00  00 00 00 00 00 00  00 00   ................   ........
```

```
11:09:25 PM: Ready
11:09:20 PM: Initialization completed
11:09:20 PM: Analyzing disk 'Fixed Disk 0 (\\.\PhysicalDrive0)'...
11:09:19 PM: Initialization started
11:09:19 PM: Version: 11.0
11:09:17 PM: Initializing...
```

Properties

Name	Value	Description
General		
Name	SYSTEM_DRV (1:)	
Type	Partition	
Active Partition	No	
File System	FAT32	
Partition Geometry		
First Sector	2,048	
Offset in Sectors	2,048	

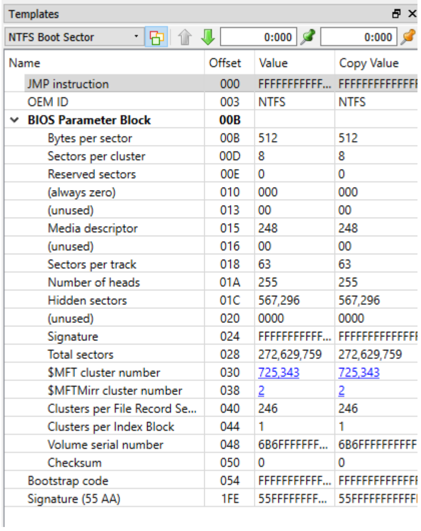
Templates

Master Boot Record 0:000 0:000

Name	Offset	Value
Bootstrap code	000	FFFFFFFFFFFFFF...
Disk serial number	1B8	FFFFFFFFFFFFFF...
(reserved)	1BC	7265
Partition 1 (Unknown, 812 GB)	**1BE**	
Active partition flag (80 = active)	1BE	0x73
Start head	1BF	115
Start sector (bits 0-5), cylinder (bit...	1C0	0x20
Start cylinder (lower 8 bits)	1C1	0x61
File system ID	1C2	0x6E
End head	1C3	121
End sector (bits 0-5), cylinder (bits ...	1C4	0x20

Figure 42: KillDisk's built-in disk viewer with the MBR template

To make it easier to navigate the Hex Editor view, `KillDisk` also offers a list of templates to help display the organization of the sectors on the disk by colored sections. The above uses the MBR template.


Templates

NTFS Boot Sector 0:000 0:000

Name	Offset	Value	Copy Value
JMP instruction	000	FFFFFFFFFFF...	FFFFFFFFFFFFFF
OEM ID	003	NTFS	NTFS
BIOS Parameter Block	**00B**		
Bytes per sector	00B	512	512
Sectors per cluster	00D	8	8
Reserved sectors	00E	0	0
(always zero)	010	000	000
(unused)	013	00	00
Media descriptor	015	248	248
(unused)	016	00	00
Sectors per track	018	63	63
Number of heads	01A	255	255
Hidden sectors	01C	567,296	567,296
(unused)	020	0000	0000
Signature	024	FFFFFFFFFFF...	FFFFFFFFFFFFFF
Total sectors	028	272,629,759	272,629,759
$MFT cluster number	030	725,343	725,343
$MFTMirr cluster number	038	2	2
Clusters per File Record Se...	040	246	246
Clusters per Index Block	044	1	1
Volume serial number	048	6B6FFFFFFF...	6B6FFFFFFFFFF
Checksum	050	0	0
Bootstrap code	054	FFFFFFFFFFF...	FFFFFFFFFFFFFF
Signature (55 AA)	1FE	55FFFFFFFF...	55FFFFFFFFFFF

Figure 43: NTFS boot sector template values

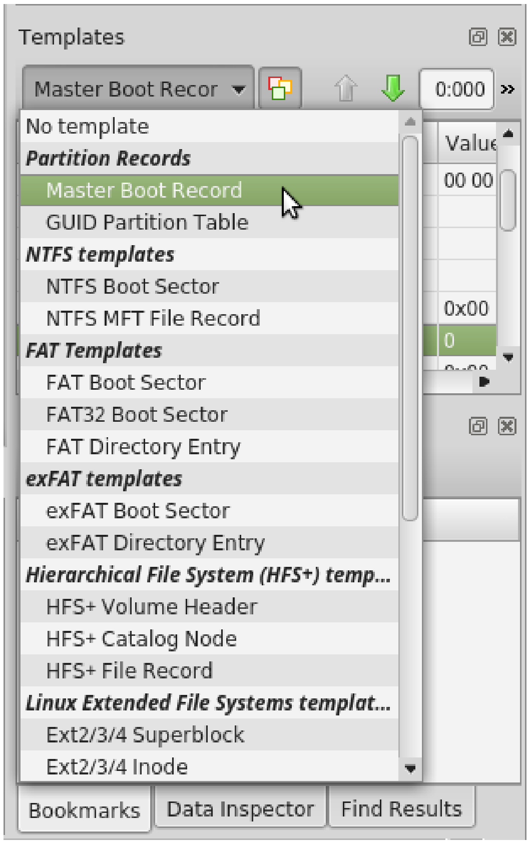
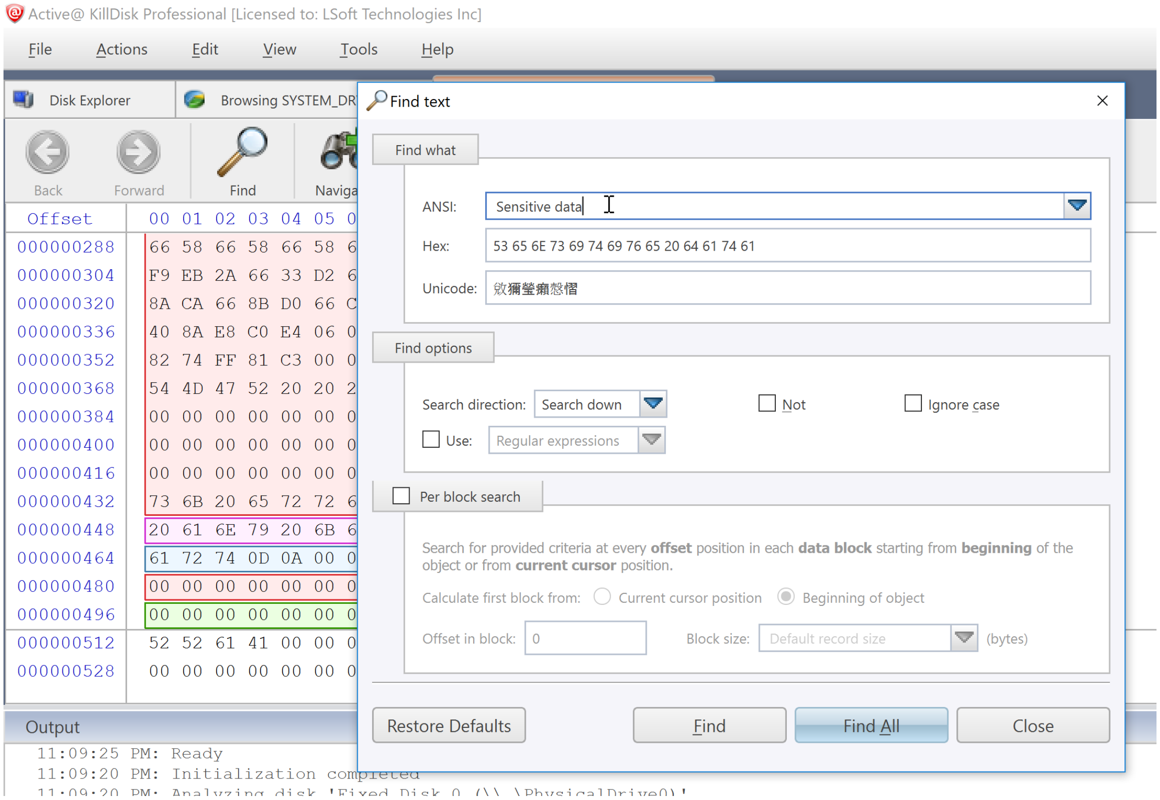


Figure 44: KillDisk's disk viewer templates

The Disk Viewer also includes a Find feature, for locating specific data in the low-level disk view



ANSI: Sensitive data

Hex: 53 65 6E 73 69 74 69 76 65 20 64 61 74 61

Unicode: 敓獮瑩癩慤慴

Search direction: Search down

□ Not

□ Ignore case

□ Use: Regular expressions

□ Per block search

Search for provided criteria at every **offset** position in each **data block** starting from **beginning** of the object or from **current cursor** position.

Calculate first block from: ○ Current cursor position ● Beginning of object

Offset in block: 0

Block size: Default record size (bytes)

```
Offset     00 01 02 03 04 05 0
000000288  66 58 66 58 66 58 6
000000304  F9 EB 2A 66 33 D2 6
000000320  8A CA 66 8B D0 66 C
000000336  40 8A E8 C0 E4 06 0
000000352  82 74 FF 81 C3 00 0
000000368  54 4D 47 52 20 20 2
000000384  00 00 00 00 00 00 0
000000400  00 00 00 00 00 00 0
000000416  00 00 00 00 00 00 0
000000432  73 6B 20 65 72 72 6
000000448  20 61 6E 79 20 6B 6
000000464  61 72 74 0D 0A 00 0
000000480  00 00 00 00 00 00 0
000000496  00 00 00 00 00 00 0
000000512  52 52 61 41 00 00 0
000000528  00 00 00 00 00 00 0
```

```
11:09:25 PM: Ready
11:09:20 PM: Initialization completed
11:09:20 PM: Analyzing disk 'Fixed Disk 0 (\\.\PhysicalDrive0)'
```

Figure 45: Finding data in the disk viewer

Find what

Input the characters you are searching for in ANSI, Hex or Unicode

Search Direction

If you have an idea of where the data may be located, specify where to search

Not

Search for characters that do not correspond to the **Find what** parameter

Ignore case

Disables case-sensitivity in the search

Use

Select between regular expressions and wildcards

Per block search

To speed up the search process, if you are familiar with the position of the data in the data block, you may specify a search with an offset or beginning of the object

Application Settings

When you start `KillDisk`, change its settings (erase method, certificate options, etc…) and close the application, all current settings are saved to the **KILLDISK.INI** file in the location of the `KillDisk` executable. These settings will be used as default values the next time `KillDisk` is run.

KILLDISK.INI is a standard text file possessing sections, parameter names and values. All `KillDisk` settings are stored in the [General] section.

For parameter storage the syntax being used is:

`Parameter=value`

Here is an example of an INI file:

```
[General]
excludeSystemDisk=false
initHD=true
initRD=true
initCD=false
initFD=false
defaultSerialDetectionMethod=2
clearLog=false
logPath=C:\\Program Files\\LSoft Technologies\\Active@ KillDisk
Ultimate 11\\
logName=killdisk.log
logging=0
shutDown=false
saveToRemovable=false
showCert=true
killMethod=0
killVerification=false
killVerificationPercent=10
initDevice=true
fingerPrint=false
autoEject=false
skipConfirmation=false
wipeMethod=0
wipeVerification=false
wipeVerificationPercent=10
wipeUnusedCluster=true
wipeUnusedBlocks=false
```

```
wipeFileSlackSpace=false
wipeInHex=false
wipeUserPattern=Erased by Active@ KillDisk
wipeUserPasses=3
eraseInHex=false
killUserPattern=Erased by Active@ KillDisk
killUserPasses=3
accessDeniedCount=10
retryAtt=3
ignoreErrors=true
saveCert=true
certPath=C:\\Users\\Mikhail\\certificates\\
hideDefaultLogo=false
computerIDSource=0
showLogo=false
logoFile=
clientName=
companyName=
companyAddress=
companyPhone=
logComments=I hereby state that the data erasure has been
carried out in accordance with the instructions given by software
provider.
technicianName=Technician
sendSMTP=false
attachCert=true
useDefaultAccount=true
fromSMTP=
toSMTP=
nameSMTP=
portSMTP=2525
authorizeSMTP=false
usernameSMTP= password
SMTP=
mapName=
mapPath=
mapUser=
mapPass=
```

When KillDisk is running in interactive mode, all these parameters can be configured from a settings dialog accessed by clicking the “Settings” toolbar button. They also can be changed manually by editing the **KILLDISK.INI** file in any text editor such as Notepad.

Here is an explanation of all settings:

Table 4: KillDisk's Settings.ini Parameters

Parameter	Default	Options
defaultSerialDetectionMethod=	2	1 - use operating system’s DeviceIOControl method
		2 - use S.M.A.R.T information, if device supports it
		3 – use Windows Management Instrumentation (WMI), if operating system supports it
showCert=	true	true/false – option of displaying the Erase/Wipe Certificate for printing after completion
saveCert=	false	true/false – option of saving the Erase/Wipe Certificate after completion
certPath=		Full path to the location where Erase/Wipe Certificate will be saved. This is a directory name
logPath=		Full path to the location where log file will be saved. This is a directory name
logName=		Name of the log file where event log will be saved to
skipConfirmation=	false	true/false – whether to display or skip Erase/Wipe confirmation dialog, or not
ignoreErrors=	false	true/false – whether to display disk writing errors (bad sectors), or ignore them (just place them to the log file)
clearLog=	false	true/false – whether to truncate log file content before writing new sessions, or not (append to existing content)
initDevice=	true	true/false – whether to initialize disks after erasing complete, or not
fingerPrint=	false	true/false – whether to initialize disk(s) and write fingerprint to the disk’s first sector, or not
hideDefaultLogo	false	true/false – whether to hide default KillDisk logo at the top-left corner of the certificate, or not
computerIDSource=	0	0 - Disables showing the computer ID on the certificate
		1 - Shows BIOS ID in the certificate
		2 - Shows Motherboard ID in the certificate
shutDown=	false	true/false – whether to shutdown PC after Erase/Wipe execution complete, or not
sendSMTP=	false	true/false – to send e-mail report by email via SMTP
attachCert=	false	true/false – to attach a PDF certificate to e-mail report being sent
useDefaultAccount=	true	true/false – use pre-defined Free SMTP account for sending e-mail reports
fromSMTP=		E-mail address you’ll get a report from, for example: reports@killdisk.com

Parameter	Default	Options
toSMTP=		E-mail address the report will be sent to
nameSMTP=		SMTP server (relay service) being used for sending e-mail reports, for example: www.smtp-server.com
portSMTP=	25	TCP/IP port SMTP service will be connected on. The standard SMTP port is 25, however some internet providers block it on a firewall
authorizeSMTP=	false	true/false – use SMTP authorization for sending e-mail reports (Username and Password must be defined as well)
usernameSMTP=		In case if SMTP service requires authorization, this is SMTP Username
passwordSMTP=		In case if SMTP service requires authorization, this is SMTP Password
showLogo=	false	true/false – whether to display custom Logo (image) on a Certificate, or not
logoFile=		Full path to the file location where Logo image is stored
clientName=		Client Name - custom text to be displayed on a Certificate
technicianName=		Technician Name - custom text to be displayed on a Certificate
companyName=		Company Name - custom text to be displayed on a Certificate
companyAddress=		Company Address - custom text to be displayed on a Certificate
companyPhone=		Company Phone - custom text to be displayed on a Certificate
logComments=		Any Comments - custom text to be displayed on a Certificate
killMethod=	2	[0-23] – Erase method to use for disk/volume erasing. See table of Erase Methods available. DoD 5220.22-M by default
killVerification=	true	true/false – whether to use data verification after erase, or not
killVerificationPercent=	10	[1-100] – verification percent, in case if data verification is used
killUserPattern=		ASCII text to be used for User Defined erase method as a custom pattern
killUserPasses=		[1-99] – number of overwrites to be used for User Defined erase method
wipeMethod=	2	[0-23] – Wipe method to use for volume wiping. See table of Erase Methods available. DoD 5220.22-M by default
wipeVerification=	true	true/false – whether to use data verification after wipe, or not
wipeVerificationPercent=	10	[1-100] – verification percent, in case if data verification is used
wipeUserPattern=		ASCII text to be used for User Defined wipe method as a custom pattern
wipeUserPasses=		[1-99] – number of overwrites to be used for User Defined wipe method
wipeUnusedCluster=	True	true/false – whether to wipe out all unused clusters on a volume, or not
wipeUnusedBlocks=	False	rue/false – whether to wipe out all unused blocks in system records, or no
wipeFileSlackSpace=	False	true/false – whether to wipe out all file slack space (in last file cluster), or not

When you start `KillDisk` with or without command line parameters, its execution behavior depends on either command line settings (highest priority), settings configured in interactive mode and stored in the **KILLDISK.INI** file (lower priority), or default values (lowest priority).

Default value means that if the **KILLDISK.INI** file is absent, or exists but contains no required parameter, the pre-defined (default) value will be used.

Troubleshooting, Backup and System Recovery

In the event that you encounter technical difficulties with `KillDisk`, you may choose to either troubleshoot the system yourself with the files describe or, if you have active support and updates (you receive 1 year free with your purchase), contact our support team and attach your application log and hardware configuration file.

Common Troubleshooting Tips

Active@ Boot Disk Creator Troubleshooting:

All the OS options are greyed out

Ensure you have the Boot Disk Creator activated. You should see your registered name in the application.

Image file not found

You have activated the freeware that does not have the boot disk image you wish to create. Download your complete version using the link provided in your email and reinstall the software.

Issues formatting USB drive

This may happen occasionally when the file system causes conflicts in Windows. Launch the KillDisk application and erase the first few megabytes of the USB drive you wish to use. This will solve the problem.

Issues booting from the boot disk

Ensure the boot disk device is set at the top of your boot priority in the BIOS

Ensure your system time in the BIOS is accurate

Ensure you are not booting a 64-bit boot disk on a 32-bit system. In these cases, create a Console boot disk

Active@ KillDisk Troubleshooting:

Disk data will not erase

Ensure you are not erasing the system disk from the application. Use the boot disk to erase system disks

Data still found after a 'Wipe' operation

The Wipe operation will only sanitize data that has already been deleted in the OS. To sanitize all the data, including the operating system, use the 'Kill' operation

Erased the wrong disk

Stop the operation as soon as possible. Once data is sanitized by KillDisk, it will no longer be accessible. Use a tool like Active@ File Recovery to recover any data that has not been sanitized

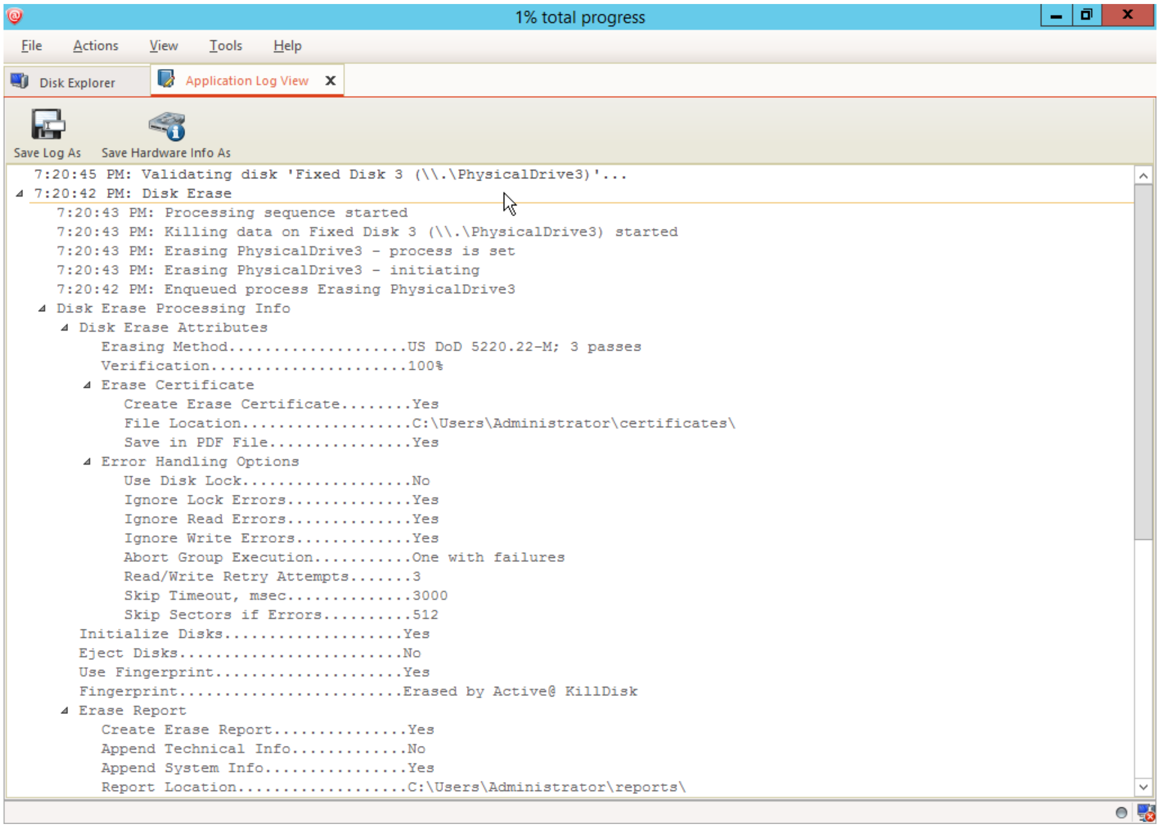
Application Log

This log view monitors each action taken by the application and displays messages, notifications and other service information. Use the messages in this screen to observe and further understand the flow of the recovery process.

To open and activate Application log view do one of the following:

- From main menu choose **Tools** > **Application Log** or
- Use **F8** keyboard shortcut at any time

It is best to save the log file to a physical disk that is different from the disk that holds the deleted data. By doing this, you reduce the risk of writing over the data that you are trying to recover.



```
7:20:45 PM: Validating disk 'Fixed Disk 3 (\\.\PhysicalDrive3)'...
7:20:42 PM: Disk Erase
  7:20:43 PM: Processing sequence started
  7:20:43 PM: Killing data on Fixed Disk 3 (\\.\PhysicalDrive3) started
  7:20:43 PM: Erasing PhysicalDrive3 - process is set
  7:20:43 PM: Erasing PhysicalDrive3 - initiating
  7:20:42 PM: Enqueued process Erasing PhysicalDrive3
  Disk Erase Processing Info
    Disk Erase Attributes
      Erasing Method....................US DoD 5220.22-M; 3 passes
      Verification......................100%
      Erase Certificate
        Create Erase Certificate........Yes
        File Location...................C:\Users\Administrator\certificates\
        Save in PDF File................Yes
      Error Handling Options
        Use Disk Lock...................No
        Ignore Lock Errors..............Yes
        Ignore Read Errors..............Yes
        Ignore Write Errors.............Yes
        Abort Group Execution...........One with failures
        Read/Write Retry Attempts.......3
        Skip Timeout, msec..............3000
        Skip Sectors if Errors..........512
    Initialize Disks....................Yes
    Eject Disks.........................No
    Use Fingerprint.....................Yes
    Fingerprint.........................Erased by Active@ KillDisk
    Erase Report
      Create Erase Report...............Yes
      Append Technical Info.............No
      Append System Info................Yes
      Report Location...................C:\Users\Administrator\reports\
```

Figure 46: Viewing the application log

Log filter

Show or hide specific entry types in log view:

Show warning entries

Show non-critical warning entries

Show advanced entries

Show advanced entries related to application behavior and data analysis

Show console entries

Duplicate console entries into main log view

Show system entries

Show entries related to operating system activity and state

Font size

Change size of mono-space font used in log view for better experience

Write log on Disk

Writes log entries in dedicated file on disk, located in application directory. **Off** by default.

Expand and Collapse

Expand or collapse all log entries respectively

Clear

Clear log for current application sessions

Tip: We recommend that you attach a copy of the log file to all requests made to our technical support group. The entries in this file will help us resolve certain issues.

Console view

Additional log view (pane) to show log entries related to active feature view to display active process (erasure, disk examination etc.) entries and urgent (critical) messages.

To open console panel use:

- From main menu choose **View** > **Output** or
- Use **Ctrl+O** keyboard shortcut at any time

Hardware Diagnostic File

If you want to contact our technical support staff for help, a file that contains a summary of your local devices is helpful.

`KillDisk` allows you to create a summary listing file in XML format. This data format is “human-readable” and can help our technical support staff analyze your computer configuration or point out disk failures or abnormal behavior.

Create a hardware diagnostic file from the **File** menu by clicking the **Save Hardware Info As...** command.

Note: To save time when contacting our technical support staff, we highly recommend that you provide us with a hardware diagnostic file.

Appendix

Glossary

BIOS settings

Basic Input Output Subsystem. This programmable chip controls how information is passed to various devices in the computer system. A typical method to access the BIOS settings screen is to press F1, F2, F8, F10 or ESC during the boot sequence.

boot priority

BIOS settings allow you to run a boot sequence from a floppy drive, a hard drive, a CD/DVD-ROM drive or a USB device. You may configure the order that your computer searches these physical devices for the boot sequence. The first device in the order list has the first boot priority. For example, to boot from a CD/DVD-ROM drive instead of a hard drive, place the CD/DVDROM drive ahead of the hard drive in priority.

compressed cluster

When you set a file or folder property to compress data, the file or folder uses less disk space. While the size of the file is smaller, it must use a whole cluster in order to exist on the hard drive. As a result, compressed clusters contain "file slack space". This space may contain residual confidential data from the file that previously occupied this space. KillDisk can wipe out the residual data without touching the existing data.

cluster

A logical group of disk sectors, managed by the operating system, for storing files. Each cluster is assigned a unique number when it is used. The operating system keeps track of clusters in the hard disk's root records or MFT records. (See lost cluster).

file slack space

The smallest file (and even an empty folder) takes up an entire cluster. A 10- byte file will take up 2,048 bytes if that is the cluster size. File slack space is the unused portion of a cluster. This space may contain residual confidential data from the file that previously occupied this space. KillDisk can wipe out the residual data without touching the existing data.

free cluster

A cluster that is not occupied by a file. This space may contain residual confidential data from the file that previously occupied this space. KillDisk can wipe out the residual data.

deleted boot records

All disks start with a boot sector. In a damaged disk, if the location of the boot records is known, the partition table can be reconstructed. The boot record contains a file system identifier.

ISO

An International Organization for Standardization ISO-9660 file system is a standard CD-ROM file system that allows you to read the same CD-ROM whether you're on a PC, Mac, or other major computer platform. Disk images of ISO-9660 file systems (ISO images) are a common way to electronically transfer the contents of CD-ROMs. They often have the filename extension .ISO (though not necessarily), and are commonly referred to as "ISOs".

lost cluster

A cluster that has an assigned number in the file allocation table, even though it is not assigned to any file. You can free up disk space by reassigning lost clusters. In DOS and Windows, you can find lost clusters with the ScanDisk utility.

MFT records

Master File Table. A file that contains the records of every other file and directory in an NTFS-formatted hard disk drive. The operating system needs this information to access the files.

root records

File Allocation Table. A file that contains the records of every other file and directory in a FAT-formatted hard disk drive. The operating system needs this information to access the files. There are FAT32, FAT16 and FAT versions.

sector

The smallest unit that can be accessed on a disk. Tracks are concentric circles around the disk and the sectors are segments within each circle.

unallocated space

Space on a hard disk where no partition exists. A partition may have been deleted or damaged or a partition may not have been created.

unused space in MFT records

The performance of the computer system depends a lot on the performance of the MFT. When you delete files, the MFT entry for that file is not deleted, it is marked as deleted. This is called unused space in the MFT. If unused space is not removed from the MFT, the size of the table could grow to a point where it becomes fragmented, affecting the performance of the MFT and possibly the performance of the computer. This space may also contain residual confidential data (file names, file attributes, resident file data) from the files that previously occupied these spaces. KillDisk can wipe out the residual data without touching the existing data.

Windows system caching

Windows reserves a specified amount of volatile memory for file system operations. This is done in RAM because it is the quickest way to do these repetitive tasks.

Windows system records

The Windows registry keeps track of almost everything that happens in windows. This enhances performance of the computer when doing repetitive tasks. Over time, these records can take up a lot of space.

Erase Methods and Sanitation Standards

One Pass Zeros or One Pass Random

When using One Pass Zeros or One Pass Random, the number of passes is fixed and cannot be changed. When the write head passes through a sector, it writes only zeros or a series of random characters.

US DoD 5220.22-M

The write head passes over each sector three times. The first time with zeros (0x00), second time with 0xFF and the third time with random characters. There is one final pass to verify random characters by reading.

Canadian CSEC ITSG-06

The write head passes over each sector, writing a Random character. On the next pass, writes the compliment of previously written character. Final pass is Random, proceeded by a verify.

Canadian OPS-II

The write head passes over each sector seven times (0x00, 0xFF, 0x00, 0xFF, 0x00, 0xFF, Random). There is one final pass to verify random characters by reading.

British HMG IS5 Baseline

Baseline method overwrites disk's surface with just zeros (0x00). There is one final pass to verify random characters by reading.

British HMG IS5 Enhanced

Enhanced method - the write head passes over each sector three times. The first time with zeros (0x00), second time with 0xFF and the third time with random characters. There is one final pass to verify random characters by reading.

Russian GOST p50739-95

The write head passes over each sector two times. (0x00, Random). There is one final pass to verify random characters by reading.

US Army AR380-19

The write head passes over each sector three times. The first time with 0xFF, second time with zeros (0x00) and the third time with random characters. There is one final pass to verify random characters by reading.

US Air Force 5020

The write head passes over each sector three times. The first time with random characters, second time with zeros (0x00) and the third time with 0xFF. There is one final pass to verify random characters by reading.

Navso P-5329-26 RL

RL method - the write head passes over each sector three times (0x01, 0x27FFFFFF, Random).

There is one final pass to verify random characters by reading.

NCSC-TG-025

The write head passes over each sector three times (0x00, 0xFF, Random). There is one final pass to verify random characters by reading.

NSA 130-2

The write head passes over each sector two times (Random, Random). There is one final pass to verify random characters by reading.

NIST 800-88

Supported three NIST 800-88 media sanitization standards:

1. The write head passes over each sector one time (0x00).

2. The write head passes over each sector one time (Random).

3. The write head passes over each sector three times (0x00, 0xFF, Random).

For details about this,the most secure data clearing standard, you can read the original article at the link below:*http://csrc.nist.gov/publications/nistpubs/800-88/NISTSP800-88_with-errata.pdf*

German VSITR

The write head passes over each sector seven times.

Bruce Schneier

The write head passes over each sector seven times (0xFF, 0x00, Random, Random, Random, Random, Random). There is one final pass to verify random characters by reading.

Peter Gutmann

The write head passes over each sector 35 times. For details about this, the most secure data clearing standard, you can read the original article at the link below:

http://www.cs.auckland.ac.nz/%7Epgut001/pubs/se%0Acure_del.html

Australian ISM-6.2.93

The write head passes over each sector once with random characters. There is one final pass to verify random characters by reading.

User Defined

User indicates the number of times the write head passes over each sector. Each overwriting pass is performed with a buffer containing random characters. Enables user to define any disk erase algorithm.

File Name Tags

Sequence number

Sequential number, used for group (batch) processing.

{Sequence #}

{Sequence 0#}

{Sequence 00#}

{Sequence 000#}

Date

Date file name tag uses current date in most cases in different formats:

{Date(YYYYMMDD)}

{Date(YYYY-MM-DD)}

{Date(YYMMDD)}

{Date(YYYY)}

{Date(YY)}

{Date(Month)}

{Date(MM)}

{Date(DD)}

Time name tags

{Time(HHmmss)}

{Time(HH-mm-ss)}

{Time(HH)}

{Time(mm)}

{Time(ss)}

Disk name tags

Values for these name tags retrieved from context device:

{Serial ID}

Disk serial number, retrieved from OS or from SMART attributes

{Platform ID}

Disk platform identification (may be vary due to OS format);

{Product ID}

Disk manufacturer id

{Model}

Disk model name (if available);

{Size}

Disk size in gigabytes

{Sectors}

Disk size in sectors

Processing attributes

Disk processing attributes based on execution conditions:

{BatchName}

Batch name, if part of a batch processing.

{BayName}

Label of disk bay (slot).

{Status}

Overall completion status for group processing or separate disk processing status.