

HDShredder

5





HDShredder 5

Manual

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1 Introduction

Thank you very much for choosing HDS shredder. It is our expressed goal to offer a product which fully meets your requirements and expectations. Should you wish to offer any suggestions for improvement or if you for any reason are not satisfied with the software, we kindly ask that you send your suggestions and feedback to feedback@miray.de.

1.1 Brief Description

With HDS shredder, it is possible to delete entire hard drives or other disks, as well as individual partitions, securely and irreversibly as desired in accordance with international standards. The data can then not be recovered, even with the use of data recovery software. HDS shredder deletes storage media, regardless of their respective partitioning schemes, data systems used and installed operating systems. HDS shredder offers the highest security with its supported deletion standards, while at the same time providing great flexibility by offering the option to freely define deletion patterns. Therefore, HDS shredder is especially suitable for the named tasks in ▶ 2 Areas of Application.

1.2 Chapter Summary

- 1 **Introduction:** General information about this manual and HDS shredder. Summary of the available editions and features.
- 2 **Areas of Application:** Descriptions of the most common use cases.
- 3 **Supported Hardware:** Minimal requirements and supported devices.
- 4 **Quickstart:** Short description of installation and program startup.
- 5 **Installation:** Installation of HDS shredder in minutes under Windows and/or creating a HDS shredder bootable media (USB stick or CD/DVD).
- 6 **Program Startup:** Starting HDS shredder - under Windows and self-booting.
- 7 **Inline help:** Operating information is available directly within the program.
- 8 **Troubleshooting:** Should you encounter any problems when using HDS shredder, this chapter provides information and suggestions for solutions.
- 9 **Miscellaneous:** Legal disclaimer and feedback.

1.3 Character Conventions

In this manual, keys on the keyboard are printed with an inverted background, for example **Esc** for the escape key or **Return** for the return key. Some keys are represented by their corresponding symbol, for example **f** for the 'up'-key. Visual controls on the screen, particularly buttons are represented over-and-underlined with italic font, for example *next*, *back*.

1.4 Edition Summary

There are various editions of HDS shredder. They differ from one another by the number of features they offer, their supported device types, performance and special options. The following table shows a side-by-side comparison of each edition and its features.

Edition ¹⁾	FE	BE	SE	PE	EE
Deletion Speed					
Maximum speed in GB per min.	6+ ²⁾	6+ ²⁾	6+ ²⁾	6+ ²⁾	60+ ²⁾
Device Support					
IDE/ATA/SATA hard disks	●	●	●	●	●
AHCI (SATA II)	●	●	●	●	●
USB 1.1 and 2.0	●	●	●	●	●
Bluetooth (HDI input device)	●	●	●	●	●
Hard disks > 2048 GB (2 TB)	○	●	●	●	●
USB 3.0 (XHCI)	○	○	●	●	●
Firewire / IEEE1394 (OHCI)	○	○	○	●	●
Intel & NVIDIA Software RAID 0/1/10/5	○	○	○	●	●
Dynamic disks	○	○	○	●	●
ATA-Password unlock	○	○	○	●	●
TRIM command for faster SSDs	○	○	○	●	●
SCSI hard disks	○	○	○	●	●
SATA-Hotplug & Port-Multiplier	○	○	○	○	●
Deletion Modes					
Easy & Safe	●	●	●	●	●
Standardized	○	○	●	●	●
Individualized	○	○	○	●	●
Special Modes					
Single partition deletion	○	●	●	●	●
SmartDefectSkip	○	●	●	●	●

Edition ¹⁾	FE	BE	SE	PE	EE
Command line interface	○	○	○	●	●
Storing a deletion report (TXT & PDF)	○	○	○	●	●
MultiDelete (4x, 8x, 16x)	○	○	○	○	●
Supported Standards					
VSITR	○	○	●	●	●
BSI-GSB	○	○	●	●	●
ACSI 33	○	○	●	●	●
AFSSI 5020	○	○	●	●	●
AR380-19	○	○	●	●	●
DoD5200.28M	○	○	●	●	●
DoD5220.22M	○	○	●	●	●
NCSC-TG-025	○	○	●	●	●
HMG IS5 (Baseline)	○	○	●	●	●
HMG IS5 (Enhanced)	○	○	●	●	●
GOST P50739-95	○	○	●	●	●
RCMP TSSIT OPS-II	○	○	●	●	●
Bruce-Schneier-Method	○	○	●	●	●
Roy-Pfitzner-Method	○	○	●	●	●
Peter-Gutmann-Method	○	○	●	●	●

¹⁾ Within the table the following abbreviations are used to identify the different editions:

FE = Free Edition, **BE** = Basic Edition, **SE** = Standard Edition, **PE** = Professional Edition,

EE = Enterprise Edition

²⁾ No software speed limit.

³⁾ Use of RAW images at nearly hardware speed.

2 Areas of Application

HDS shredder specializes in deleting complete hard drives or other storage media, as well as individual partitions, quickly yet also securely - that is, irrecoverably. The media will remain useable following the deletion. The deletion is done irreversibly on a physical level. HDS shredder thereby offers special benefits when it comes to the deletion of [▶ 2.9 Damaged Media](#). Additionally, when required, HDS shredder works independently from any partitioning scheme, data or operating system, and can therefore delete entire operating systems at once ([▶ 2.5 Deleting Installed Software](#)), or in the event of unknown/proprietary data systems, can execute a secure deletion ([▶ 2.8 Proprietary Formats](#)). With its universal deletion process, HDS shredder covers a broad spectrum of application possibilities. Below you can find descriptions of frequently applied uses, as well as additional hints for the use of HDS shredder.



Hint: With HDS shredder, it is possible to delete data from media (i.e. hard drives) that have not been used on a PC ([▶ 2.10 Arbitrary Computer Systems](#)).



Note: Any media deleted by HDS shredder remains fully operational and useable. In contrast to mechanical or physical deletion processes, media are not damaged or destroyed when deleted with HDS shredder.

2.1 Deletion of Data

Generally, HDS shredder's main use is the deletion of data. To securely delete data, select a deletion pattern of a higher standard or a self-created pattern. The deletion report, which can be generated at the end of a deletion process, will provide information regarding the parameters and the result of the deletion. This report can be used to provide clients with a confirmation of the completed deletion process.



Note: Any media that undergoes the deletion process with HDS shredder remains useable. The media itself is not damaged by the deletion. After renewed formatting (and partitioning, if applicable), the media will be operational once again. The reconstruction of data deleted by HDS shredder, even if the deletion occurred accidentally, is not possible.

2.2 Computer Disposal

In the event of a complete disposal of computers, the deletion of the installed hard drive(s) therein is recommended to avoid your data being easily accessed by a third party. This is possible with HDS shredder, as even non-functional operating systems and hard drive defects pose no problem, and the deletion can still be executed. Of course this also applies to the disposal of individual and external storage medias.

2.3 Selling Computers

Before selling your used computer or your used hard drives, you should ensure that any personal or other sensitive files cannot be accessed or recovered by the buyer. HDS shredder enables the fast and secure deletion of the entire hard drive or of individual partitions.

2.4 Passing on Computers

Prior to passing on computers or storage media, even within a company or organization, any sensitive data should preferably be removed. HDS shredder offers an advantage over mechanical or physical deletion processes, as the media from which the data is deleted, can still be used afterwards..

2.5 Deleting Installed Software

In some cases it makes sense to not just delete the data, but also the installed software and the operating system. In cases of commercial software that you may want to continue using, any remaining installation may be regarded as a pirated copy. With HDS shredder, when selling or passing on your computer or hard drives, you can make sure that no unauthorized person is able use your software license information.

2.6 Deleting Photos and Videos

Nowadays, when passing on or disposing of mobile storage media, especially flash drives for digital cameras and camcorders, the deletion of any images or other files contained therein is often forgotten and may end up in the wrong hands. With HDS shredder, you can clear these media simply and securely.

2.7 Removal of Viruses

Even though HDS shredder is not an anti-virus program, some viruses are so persistent, that they remain hidden in areas of the hard drive that are normally inac-

cessible (boot sector, MBR, non-partitioned areas). In these cases, the complete deletion of the hard drive, followed by a new installation, may not provide the most elegant, but definitely one of the safest solutions in order to remove malware from your hard drive in the long-term.

2.8 Proprietary Formats

HDS shredder deletes entire hard drives or individual partitions, regardless of any file or operating systems thereon. As a result, you can delete all hard drives or partitions with HDS shredder, regardless of the type of software or file systems installed on them. Therefore, the deletion of proprietary or rare formats is possible and unproblematic.

2.9 Damaged Media

Oftentimes damaged media are simply disposed of after data rescue without any further measures, due to them being “defective.” Yet third parties may just as well use data rescue software in order to recover large parts of data. This is why damaged media should also be deleted with HDS shredder, of course after it has undergone any possible data rescue.



Note: HDS shredder also works on media containing defective sectors. In this case, all writable sectors are overwritten. Defective sectors cannot be read anymore nonetheless.

2.10 Arbitrary Computer Systems

HDS shredder cannot only be used on PC systems. Many specialized systems, for instance industrial and medical technology, are compatible with PCs. In these cases, HDS shredder can be executed directly onto the pertinent system. Due to its independence from any operating system, it does not rely on working with the operating system installed on the PC. You may therefore deploy HDS shredder on arbitrary, PC-compatible systems in order to simply and irreversibly delete their data



Note: HDS shredder can also be used on non-PC systems. These types of systems often use IDE, SCSI or SATA hard drives, or storage media. In order for them to be deleted, connect them to a PC in the event of HDS shredder not running on the respective system.

3 Supported Hardware

This section contains information on the hardware supported by HDS shredder/W (Windows) and HDS shredder/S (self-booting).

3.1 HDS shredder/W

Under Windows, HDS shredder can use all devices which are supported by Windows natively or which have a specific Windows driver installed.

3.1.1 Supported Systems

HDS shredder/W runs on PCs (x86 + x64) with the following versions of Windows:

Workstation

- Windows Vista (32+64 bit)
- Windows 7 (32+64 bit)
- Windows 8 (32+64 bit)
- Windows 8.1 (32+64 bit)
- Windows 10 (32+64 bit)

Server

- Windows Server 2003 (32+64 bit)
- Windows Server 2008 (32+64 bit)
- Windows Server 2008 R2 (64 bit)
- Windows Server 2012 (64 bit)
- Windows Server 2012 R2 (64 bit)

3.1.2 Supported Controllers and Adapter Cards

All controllers and adapter cards supported by Windows.

3.1.3 Supported Devices and Media

All devices and mass storage media supported by Windows.

3.2 HDS shredder/S

The self-booting version of HDS shredder runs on PCs (x86) and supports a wide range of hardware. Details about the supported systems, controllers and devices are listed in the following subchapters.



Note: The devices listed below show the entire spectrum of hardware supported by HDS shredder. ▶ **1.4 Edition Summary** shows which devices can be used with certain editions of the software.

3.2.1 Supported Systems

- PC 80586 or higher, 500 MHz, 128 MB RAM, VGA (optimal: VESA support)
- Keyboard & mouse: PS/2, USB or Bluetooth
- Bootable CD drive or USB bootable media

3.2.2 Supported Controllers

- PCI-IDE controller and Bus Master IDE controller
- Adaptec PCI-SCSI host adapter (▶ 3.3 Compatibility)
- SATA controller with IDE interface
- SATA-II controller with AHCI interface
- USB 1.1 (UHCI & OHCI controller)
- USB 2.0 (EHCI controller)
- USB 3.0 (XHCI controller)
- Bluetooth USB-HCI
- Firewire (IEEE1394 OHCI controller)
- Intel Onboard RAID Controller (SATA-RAID)

3.2.3 Supported Devices

- IDE/ATA hard disks, CompactFlash via IDE ¹⁾
- SATA hard disks (internal & external)
- Intel Software RAID (0, 1, 10, 5)
- SCSI hard disks (internal & external)
- USB hard disks (internal & external)
- Firewire hard disks (internal & external)
- USB sticks ²⁾
- SD ³⁾, microSD ³⁾, SDHC ³⁾ and MMC ³⁾
- CompactFlash I ³⁾, CompactFlash II ³⁾
- MicroDrive ³⁾, xD-Picture Card ³⁾
- Memory Stick ³⁾, Memory Stick PRO ³⁾, Memory Stick DUO ³⁾

¹⁾ CompactFlash media with TrueIDE support

²⁾ must support the USB-Mass-Storage-Class protocol

³⁾ connected over a USB card reader or an equivalent adaptor

3.3 Compatibility

HDS shredder was developed to support general hardware standards. It has been tested on many devices. (▶ 3.2 HDS shredder/S , ▶ 3.3.1 Compatibility Check)

3.3.1 Compatibility Check

You can use HDS shredder Free Edition to check in advance if your devices are supported at no cost to you. To do so, start HDS shredder Free Edition on your PC, then select the **SpeedTest** function from the **Tools** group. Select the desired drive list entry. The edition required for the listed disks will be shown in the info box to the right of the list field under the **Supported** caption.

3.3.2 Device Standards

To support a wide spectrum of devices, HDS shredder/S implements the official interface standards for the particular device types. In addition, we perform extensive tests with each type of device. Though should you experience any issues, in most cases these can be resolved by setting the options appropriately (see ▶ 8 Troubleshooting). The event that this does not solve the issues, our Support Team (▶ 9.4 Support) will be glad to help you.

3.3.3 Transfer Rates

The achievable speed always depends on the physical abilities of your storage device hardware. The following table offers a rough classification:

Type	Age	Transfer Rate
Older drives	5-10 years	~ 5-30 MB/sec
Newer drives	2-5 years	~ 30-60 MB/sec
Top models	0-2 years	~ 60-150 MB/sec and more
SSD's	0-2 years	~ 90-300 MB/sec and more

3.4 SATA

HDS shredder supports SATA disks of any generation (SATA, SATA-II, SATA-6G). Subject to the BIOS settings, these can be used in AHCI or IDE operating mode. Setting of the SATA controller to AHCI operating mode in BIOS is recommended, if available. Should the installed operating system require IDE mode to boot, AHCI mode may be set temporarily for the deleting, then be reset.

3.4.1 SATA-Hotplug

Enterprise Edition required

To connect SATA devices to a running system (hot-plugging), the SATA controller has to be set to **AHCI** (instead of **IDE**) operating mode in BIOS, and the ports to be used for hot-plugging must be set to **Hotplug**. Alternatively, SATA ports can also commonly be used for hot-plugging when they have a SATA device connected at power-on.



Warning: It is absolutely essential to first set the AHCI operating mode for the SATA controller in BIOS. In IDE operating mode, the plugging of devices into a running system usually causes a system crash.

3.4.2 Port-Multiplier

Enterprise Edition required

A port multiplier allows the connection of several SATA devices to a single SATA port, thereby sharing the transfer rate of the port. This enables the connection of more SATA disks than native SATA ports are available at one time. Disks connected over a port multiplier will be recognized and displayed automatically.

3.5 SCSI and SAS

Professional Edition or more advanced required

Under Windows, HDShredder/W supports available ▶ 8.6.1 SCSI and SAS drives, should a suitable driver be installed. HDShredder/S currently only supports the following Narrow-, Wide-, Ultra- and Ultra-Wide-SCSI controllers from Adaptec:

AHA-2930U	AHA-2940 Ultra	AHA-2940UW	AHA-2940AU
AHA-2944UW	ASC-19160	ASC-29160	ASC-29160LP
ASC-29160N	ASC-39160		



Hint: Use the Free Edition in order to determine whether your SCSI/SAS controller is supported (▶ 3.3.1 Compatibility Check). If HDShredder recognizes the connected drive, the SCSI/SAS controller is supported.

3.6 RAID

Professional Edition or more advanced required

HDShredder can also delete RAIDs. Generally, the individual disks on the RAID can be deleted consecutively. Yet oftentimes the RAID can be addressed

directly, so that the data from all of the RAID's disks can be deleted in a single step.

3.6.1 RAID under Windows

HDS shredder/W can basically use all available mass storage media on Windows, therefore also RAID's which present as normal drives on Windows. They can be deleted with HDS shredder. HDS shredder deletes RAID's just as it would be regular disks. The RAID structure is hidden by Windows and therefore special RAID properties are not visible to HDS shredder/W.

3.6.2 Intel RAID

Since 2003, Intel has offered the support for software RAID's in its chipsets, which we will refer to here as Intel RAID's. HDS shredder/S supports the deletion of Intel RAID's. The RAID's thereby must be connected, in their original configuration, to the internal Intel-SAT-controller. The available RAID volumes will be shown as disk in the drive list. In the event of incomplete or defective RAID sets, the deletion of the individual disks is required.

3.7 USB

HDS shredder can be used with USB devices of the USB versions 1.1 (UHCI, OHCI), 2.0 (EHCI) and 3.0 (XHCI). HDS shredder supports USB mass storage media (USB Mass Storage Class), USB keyboards, mice (HID) and USB hubs.

3.8 Firewire (IEEE1394)

Professional Edition or more advanced required

HDS shredder works with any Firewire drive or Firewire card reader which supports the Serial-Bus-Protocol (SBP).



Note: Please ensure to connect Firewire devices prior to starting HDS shredder, and if possible directly to the PC or to the Firewire controller.

4 Quickstart

You can use HDSHredder in two variants: HDSHredder/W as a Windows application or HDSHredder/S as a self-booting program.



Note: Further information on launching the program can be found under ▶ **5 Installation** and ▶ **6 Program Startup**. Information on how to use HDSHredder can be found under ▶ **7 Inline help**.

4.1 Windows – HDSHredder/W

Please take the following steps to start HDSHredder in Windows:

1. Start the setup for Windows (**setup.exe**) and follow the instructions. Accept the default settings.
2. When setup is finished, HDSHredder will start automatically. Alternately, you can start HDSHredder from the Desktop or the Windows Start Menu.
3. After starting HDSHredder, select the desired function and follow the course of the program. For further information, please refer to ▶ **7 Inline help**.

4.2 Self-booting – HDSHredder/S

To start (=boot) HDSHredder without Windows, the following steps are required:

1. If you already have a bootable media (CD/DVD or USB stick) with HDSHredder, please proceed with step 4.
2. Plug a USB stick into your PC or insert an empty CD/DVD into your CD/DVD writing drive. Start the Boot-Setup under:
[Programs](#) ▶ [HDSHredder...](#) ▶ [Create bootable media](#)
3. Select the desired CD/DVD drive or the desired USB stick and create a bootable media.
4. Boot the desired PC from this media.
5. When the main program screen opens, select the desired function and follow the course of the program. For further information, please refer to the ▶ **7 Inline help**.

5 Installation

HDSshredder has two variants, HDSshredder/W (Windows program) and HDSshredder/S (self-booting program). Use ▶ 5.1 Setup for Windows to install HDSshredder/W in Windows and/or create a bootable media (HDSshredder/S) with ▶ 5.2 Boot-Setup or as described in ▶ 5.4 ISO Image.



Note: Should you have obtained HDSshredder on a media (CD/DVD or USB stick), you can start HDSshredder/W and/or HDSshredder/S directly from there (▶ 6 Program Startup).

5.1 Setup for Windows

Setup will install HDSshredder on your Windows PC. Start `setup.exe` and select the desired option on the first screen (▶ fig. 1). Then click Next and follow the course of the Setup. After this process is completed, you can start HDSshredder/W immediately.

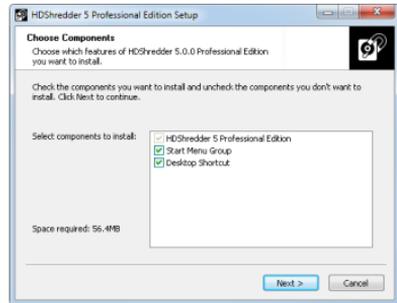


fig. 1: HDSshredder Setup start screen

5.2 Boot-Setup

Boot-Setup (▶ fig. 2) creates a bootable disk for booting HDSshredder/S on a PC without running Windows.

Start Boot Setup one of three ways:

- After HDSshredder has been installed (▶ 5.1 Setup for Windows), you find the Boot-Setup under *Programs* ▶ *HDSshredder...* ▶ *Create bootable disk*.
- Start HDSshredder/W, click on the Toolbox symbol (🔧) or press **F6** and select Boot-Setup.
- Start `hdshredder.exe` from the program package. Then select the *Create bootable disk* button.



fig. 2: Boot-Setup

The Boot-Setup window offers these options:

- **Select target:** Select the desired type (USB or CD/DVD) and a drive from the drop-down box. Drive lists are updated automatically. Alternately, you may select an ISO image to be created.
- **UEFI boot support:** Adds boot support for modern UEFI systems. The disk will also still boot on BIOS systems. Should you encounter any boot problems, simply deactivate this option to create a bootable disk without UEFI bootcode.
- **Format drive:** This option is available for USB disks only. It formats the selected drive prior to making it bootable. This is helpful with boot problems or for simply starting with a fresh drive. All data on the drive will be deleted.

Click on Create now to start creating the bootable disk. Follow the instructions and wait for the program to confirm successful completion. Continue under ▶ 6 Program Startup or ▶ 4 Quickstart.



Note: When creating a CD/DVD, please always use a new, empty writeable CD/DVD. Otherwise there may be problems when trying to boot HDSHredder from this CD/DVD.

5.3 Bootable Windows CD

Use of HDSHredder with storage devices or controllers requiring special Windows drivers must occur directly on Windows. If no Windows installation is available, you may create a bootable Windows CD which includes the required drivers described in the paragraphs below.

5.3.1 BartPE (Windows XP)

BartPE creates a specially configured Windows XP system, which can be started from CD. Download PE Builder at <http://www.nu2.nu/pebuilder/>. A plug-in used to integrate HDSHredder into the PE system is to be found at <http://www.miray-software.com/public/support/HDSHredder-BartPE-Plugin.en.zip>. Install PE Builder on your system and unpack the plug-in to `pebuilder3110a\plugin`. Create the new folder `HDSHredder` there. Copy `hdshredder.exe` to `pebuilder3110a\plugin\HDSHredder\files`. If the mass storage devices and controller on your target system will require special drivers, copy the driver files to `pebuilder3110a\drivers\SCSIAdapter`.

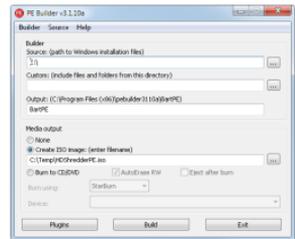


fig. 3: PE Builder configuration dialog

to `pebuilder3110a\drivers\SCSIAdapter`.

Then start `pebuilder.exe` from the folder `pebuilder3110a`. After few seconds, a popup window will appear (▶ fig. 3). Please enter the path to the Windows XP installation files into the input field at the top. These can be found on your Windows XP installation CD. Therefore, this field usually contains the drive letter of your CD/DVD drive – unless you have copied the installation files to another location. You can now choose a name and a location for the boot image by clicking on Create ISO image in the box **Media output**. If another CD/DVD writer is available, you can immediately create a CD by clicking on Burn to CD/DVD. Otherwise, an ISO image must be created first.

After clicking on Build, PE Builder will create the CD. Depending on your system, this may take a few minutes. If you did not select Burn to CD/DVD in the previous step, it is necessary to write the newly created ISO image to CD with your recording software. Please note that the file has to be written directly to CD as an image. Normal writing will not be sufficient in this case. Instead, please start your recording software and select Create from image file (or similar description, depending on the recording software used).

Start your PC from the CD created. HDS shredder is to be found at **Go ▶ Programs**.

5.3.2 Windows PE

You may also create a bootable CD version of Windows Vista, Windows 7, or Windows 8/8.1. For this purpose, we recommend the Builder projects of CWCodes which can be found at <http://www.cwcodes.net/> at no cost to you.

You will find the projects for **Windows Vista PE**, **Windows 7 PE** and **Windows 8 PE** and **Windows 8.1** at the following URLs:

- Windows Vista PE (VistaPE): <http://vistape-capi.cwcodes.net/>
- Windows 7 PE (Win7PE SE): <http://w7pese.cwcodes.net/>
- Windows 8 PE (Win8PE SE): <http://w8pese.cwcodes.net/>
- Windows 8.1 (Win8.1 SE): <http://win81se.cwcodes.net/>
- Windows 10 (Win10 SE): <http://win10se.cwcodes.net/>

When using a 64 bit Windows PE (x64), HDS shredder, as it is a 32 bit application requires the WoW64 subsystem. In order to ensure that this is included with the Windows PE image, select the Build ▶ 5 - WoW64 Basic option on the left hand side in Builder.

After having created a USB stick with Builder, copy `hdshredder.exe` into the stick's root folder. If using a CD/DVD, select Finals ▶ Create ISO on the left hand side in builder prior to creating the ISO. The button Put Files for 'RootCD' Here will

open a folder to which you can copy `hdshredder.exe`, in order for it to be included with the ISO image to be created.



Hint: You may also include device drivers, especially for RAID's, with Windows PE. This will make them accessible from HDSHredder. For this purpose, the desired drivers must already be installed on the system you are using. On the left hand side, select in Builder Drivers ▶ Driver Integration. Click on Double Driver Export Host Drivers to include the installed drivers with the Windows PE to be created.

5.3.3 Windows HotCopy

There is a practical alternative to creating a ▶ 5.3.1 BartPE (Windows XP) or ▶ 5.3.2 Windows PE in order to obtain an independently bootable Windows; for example to use special Windows drivers for RAID's or SCSI/SAS. Simply create a temporary clone of an existing Windows Installation. Install additional required drivers before or after creating the clone. This clone will then offer a Windows which can be booted independently from the installed operating system, similar to a BartPE or Windows PE. Start HDSHredder/W from there.

5.4 ISO Image

The HDSHredder software package contains an ISO image (`hdshredder.iso`):

- To be created with ▶ 5.2 Boot-Setup, option ISO image.
- In a program package in ZIP format as `hdshredder.iso`.
- On the genuine media (CD/DVD or USB stick) as `hdshredder.iso`.

It can be used to create a bootable HDSHredder CD/DVD in any operating system using third party CD/DVD writing software capable of burning ISO files. For further information, please refer to the manual of your CD/DVD writing software.

1. Start your CD/DVD writing software and choose **Create CD from image file** (or similar option, depending on the CD/DVD writing software used).
2. Specify the file `hdshredder.iso` as an image file (instead of adding it as a normal file).
3. Insert a blank CD /DVD into the drive and start the burning process.

Once these steps have been completed, you will have created a bootable CD/DVD. You can use it to start (boot) the software directly on any PC with a bootable CD/DVD drive as described in ▶ 6 Program Startup.



Hint: The easiest way to create a bootable CD under Linux is to use the software tool `cdrecord` with the following syntax:
`cdrecord hds shredder.iso`

6 Program Startup

6.1 Windows – HDSHredder/W

Following the installation (▶ 5.1 Setup for Windows), you may start HDSHredder from the Windows Start Menu under *Program* ▶ *HDSHredder 5...* ▶ *Start HDSHredder*. Alternately HDSHredder can be started by invoking the file `hdshredder.exe` either from the genuine HDSHredder media or directly from the software package (ZIP archive).

6.2 Self-booting – HDSHredder/S

Connect the bootable USB stick or insert the bootable CD/DVD (▶ 5.2 Boot-Setup). Start the PC and ensure that BIOS will boot from the desired media. HDSHredder will then be launched from the bootable media.



Note: Should your PC not boot from the HDSHredder boot media, press **F8**, **F11** or **F12** (BIOS dependent) as soon as you power on the PC to access the boot menu and select the boot media.

Symbi will also boot on UEFI systems, with or without SecureBoot mode.

6.3 Quit Program

In the lower right of the system bar you find a symbol to close the application ( in HDSHredder/W) or to power off the PC ( in HDSHredder/S). Click on the particular symbol or press the **Esc** key to quit HDSHredder.

If a program function remains open, you can return to the main screen by clicking on the menu symbol () in the lower left hand corner of the system bar or by pressing the **Esc** key. An actively running process will have to be finished or cancelled first.



Note: (HDSHredder/S only) If you do not want to start HDSHredder when starting the computer next time, remember to first remove the HDSHredder boot media from the boot drive.

7 Inline help

7.1 General

HDShreder contains an inline help system (Help), which allows you to review a detailed description of the program functions and controls, as well as their modes of operation, which can be accessed directly within the program. You can access Help using the questionmark symbol (?) on the system bar in the lower left hand corner of the screen, or by pressing the **F1** key. In many cases, Help will already show a page with the current program context upon opening. Should there be no context available, Help's starting page will be displayed, allowing you to use either the table of contents or the search function to open the desired topic.

Generally, Help has the same contents for HDShreder/W and HDShreder/S. Yet there are some minor differences between both Help variants, which are described in the following chapters.

7.2 Windows (HDShreder/W)

If HDShreder was installed by using [▶ 5.1 Setup for Windows](#), HDShreder/W will use the Windows help system, this means Help will open in a separate window.

In this case, you may also open Help independently from the program under the HDShreder entry in the Windows Start Menu ([▶ fig. 4](#)).

If HDShreder/W is started without previous installation using the Setup for Windows, the integrated help system will be used, as described in [▶ 7.3 Self-booting \(HDShreder/S\)](#). The Help window will then appear within the HDShreder application window.

7.3 Self-booting (HDShreder/S)

The bootable version of HDShreder also contains Help in full. Here it will display in an integrated help system. This integrated help system is also used, if HDShreder is used in Windows without installing it before.

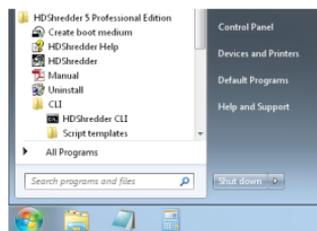


fig. 4: Windows Start Menu

8 Troubleshooting

This paragraph describes problems you may encounter when using HDS shredder and offers proposals for solutions of these problems. Should you find no proposed solution to a problem, please feel free to contact our ▶ **9.4 Support**.

8.1 General

8.1.1 Retry

Should a process not run as expected during the first attempt, a common, yet often effective solution is to give it a second try. This saves time, especially if hardware issues are the root cause, as many problems will resolve upon reconnecting hardware, or by using a different port.

8.1.2 System-Log

Should you encounter any problems in general, but especially when contacting our ▶ **9.4 Support**, please create a System Log first and attach it. Similar to a flight recorder, it will contain information about internal program activities; this will help us – as well as you – to find a solution more quickly. Store the System Log as follows:

1. **HDS shredder/S**: If you have not booted HDS shredder from a USB stick, please connect one to store the System Log onto.
2. Click on the Toolbox symbol (🔌) or press **Ctrl + Alt + F12**.
3. Select the **Store System Log** option.
HDS shredder/S: If you have booted HDS shredder from a USB stick, the System Log will be stored to it automatically. Otherwise, a popup will open and prompt you to select a storage media.
HDS shredder/W: The System Log will be stored on the Public Desktop. If it is not visible on your desktop, press **F5** or open the path **C:\Users\Public\Desktop** (hidden folder) in Windows Explorer.
4. A popup window will appear, which will display the storage progress as well as the storage location and the file name.

If an older System Log is found at the storage location, the number contained in the file name will be increased automatically. The latest System Log will always be the one with the highest number.



Hint: If saving the System Log to a log file fails when triggered over the System Bar, you can still force HDSHredder to store a continuous System Log upon startup. Use the Startup option **System Log: <Startup>** (HDSHredder/S) to store the log to the HDSHredder bootable disk, or start **hdshredder.exe log** (HDSHredder/W) to store the log automatically to the Public Desktop.

8.2 Create a Bootable HDSHredder Media

This chapter addresses potential issues when creating a bootable media for the self-booting version of HDSHredder.

8.2.1 USB Stick not Working

If creating a bootable USB stick or booting from this USB stick fails, the cause may be that the USB stick lacks a partition table. Should this be the case, start **► 5.2 Boot-Setup**, use the option **Format media** and recreate the bootable USB stick. All stored data on the USB stick will be irretrievably lost.

8.2.2 CD/DVD Writer not Selectable

Should no drive be offered for selection at **CD/DVD writer** although a CD/DVD writer is available on the system, the installed CD/DVD writing software may be the culprit. It may reserve the drive exclusively, so that **Boot-Setup** cannot access it. Deactivate or uninstall the CD/DVD writer software in this case or create a bootable CD/DVD with your CD/DVD writing software the **► 5.4 ISO Image** contained in the software package.

8.3 Booting HDSHredder

Should issues arise while booting HDSHredder from a USB stick or CD/DVD (for example black screen or startup screen freezes), the following chapters provide appropriate solutions.

8.3.1 BIOS-USB-Boot

If the HDSHredder bootable media (USB stick or USB CD/DVD drive) is not listed in the BBS menu (**► 6.2 Self-booting – HDSHredder/S**), activate USB boot support in the BIOS setup first. Press **F2**, **Del**, or **F10** (depending on BIOS) to enter BIOS setup. The setting can be found under different names and menu items, depending on the BIOS version. In most cases, it can be found under labels such as **USB**, **Boot** and **Legacy**. In BIOS setup you can also opt to boot from USB permanently, usually under the menu item **Boot**.

8.3.2 UEFI-Boot and SecureBoot

Current PC models often have a UEFI-BIOS. HDSHredder/S supports booting with UEFI. Some PCs also offer the SecureBoot function, which HDSHredder/S also supports. Should an issue arise when booting with SecureBoot, deactivate SecureBoot while using HDSHredder/S. You can activate SecureBoot again afterwards. Should you encounter any issue when booting with UEFI, recreate the HDSHredder bootable media (▶ 5.2 Boot-Setup) while the Include UEFI boot support option is disabled. Restart HDSHredder/S from this bootable media.

8.3.3 Extended Boot Options

The boot settings of HDSHredder/S are optimized for fast booting. If there are any problems with booting, change the settings on the boot screen (▶ fig. 5) press the **M** key for More Options. This will display the Extended Boot Options.

Startup modes

The startup modes already cover a certain boot setting, which will be modified by the selected startup options.

- **Start Symbi:** Start the system normally.
- **Single Core Mode:** Recommended in the event of booting issues.
- **Safe Mode:** Recommended in the event of issues with connected devices, especially mass storage or input devices.

Startup options

These options can be activated or deactivated independently. They will be applied when booting one of the startup modes.

- **IRQ:** Deactivate if any hardware problems occur (passive device access).
- **SATA & Parallel ATA (AHCI/IDE):** Deactivate to eliminate interference caused by SATA and IDE devices.
- **SATA PortMultiplier: extended detection:** Activate in the event that disks which are connected over a PortMultiplier are not properly detected.
- **USB 1.0/1.1/2.0 (UHCI/OHCI/EHCI):** Deactivate to eliminate interference caused by devices which are connected to normal USB ports (connect input devices to USB 3 or PS/2 instead!).

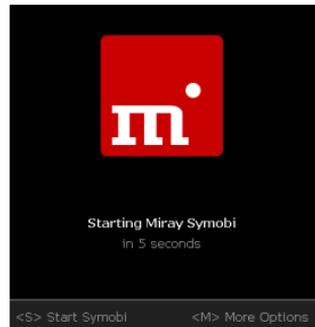


fig. 5: Boot screen

- **USB 3.0 (XHCI)**: Deactivate to eliminate interference caused by devices connected to USB-3-Ports.
- **Advanced input device drivers + Bluetooth**: Deactivate in the event of issues with input devices.
- **SCSI & Firewire (IEEE1394)**: Deactivate to eliminate interference caused by SCSI or Firewire devices.
- **Advanced bootloading**: Deactivate in the event of booting issues.
- **Video mode**: The default **auto** will select the video mode automatically. **Native** will use the video mode set via BIOS/UEFI. **VESA**, **VGA-BIOS** and **VGA** explicitly allow activation of one of these legacy drivers.
- **System log**: Default is **normal**. Select **reduced** only in the event of oversized system logs. The option **autosave** will save the system log automatically and continuously to the root directory of the bootable disk as **Symobi.1.log**.

Select the desired startup options, then boot, invoking the desired startup mode (↑, ↓ and **Return** key).

8.4 Input Devices

If there is no reaction on the mouse or keyboard input after starting HDShredder/S, the following subchapters provide further information and solutions.

8.4.1 General

A generally very successful solution when having issues with input devices is to connect an alternative USB input device of the same type.

8.4.2 Bluetooth Devices

HDShredder/S also supports Bluetooth mice and keyboards. If a Bluetooth input device is not recognized, please connect another USB device of the same type.

8.4.3 Problem Devices

A few input devices contain a flawed implementation of the standard. Though those devices may work with Windows, as vendors usually test them against Windows, they will not work with other operating systems. Should this be the case, please use a different USB device temporarily. Create a **► 8.1.2 System-Log** and submit it, together with information about the applicable vendor and model of the non-working device to our **► 9.4 Support**.

8.5 Deletion Process

8.5.1 Read, Write and Verification Errors

The errors reported by HDS shredder normally refer to defects on the disk. Yet sometimes general problems with the storage device may generate read and write errors. An indication for this is a very high number of indicated errors and/or when errors occur from the beginning. In these cases, terminate the deletion process, connect the respective disk via a different port and check if it is defective. Then begin anew.



Note: With USB disks, change the USB port and ensure that the power supply is sufficient. With USB enclosures for IDE and SATA hard drives, ensure that the enclosure works normally.

8.5.2 Deletion Performance

Should the speed indicated by HDS shredder not reach the expected value, please consider the following possibilities:

- Is the disk working properly? Please use the **SpeedTest** function to check if the disks attain the expected speed, and which one may deviate from the value.
- When working with USB enclosures for SATA and IDE hard drives, ensure that the transfer speed from USB 2 is below the transfer speed of the SATA and IDE.
- Ensure that USB 3 devices are connected with a USB3 connector (blue). While USB 3 devices are downwardly compatible, they merely reach the lower USB 2 speed when connected via a USB 2 connector (black).

8.6 Mass storage

Please ensure that the disks are working properly and connected correctly and that the power supply is sufficient. The following subchapters contain information about certain types of storage media.

8.6.1 SCSI

When using SCSI devices, they must be configured correctly and connected to one of the supported SCSI controllers. A list of supported SCSI controllers can be found at [▶ 3.3 Compatibility](#).

HDS shredder supports even more controllers, either as onboard chipset (AIC) or as add-on card (AHA, ASC). These can be determined by their respective vendor and device IDs which are listed in the table below.

Vendor	Model	Device
9004h	AHA-2930U	3860h
9004h	AHA-2930CVAR	3868h
9004h	AHA-2930CVAR	3869h
9004h	AHA-4944(U)W	3878h
9004h	AIC-755x	5x75h
9004h	AIC-785x	5x78h
9004h	AIC-7560	6075h
9004h	AIC-786x	6x78h
9004h	AIC-7870	7078h
9004h	AHA-2940(W)	7178h
9004h	AHA-3940(W)	7278h
9004h	AHA-2944	7478h
9004h	AHA-3944(W)	7578h
9004h	AHA-4944(U)W	7678h
9004h	AIC-7877	7778h
9004h	AIC-7860	7860h
9004h	AIC-7895	7895h
9004h	AIC-7880	8078h
9004h	AHA-2940U(W)	8178h
9004h	AHA-3940U(W)(D)	8278h
9004h	AHA-2944UW	8478h
9004h	AHA-3944U(WD)	8578h

Vendor	Model	Device
9004h	AHA-4944UW	8678h
9004h	AIC-7887	8778h
9004h	AIC-7888	8878h
9004h	AHA-4944(U)W	EC78h
9005h	AHA-2940/50U2W	0010h
9005h	AIC-789x	001xh
9005h	AIC-789x	002xh
9005h	AIC-789x	003xh
9005h	AHA-3940/50U2x	0050h
9005h	AHA-3950 U2x	0051h
9005h	AIC-7896/7 U2	005Fh
9005h	AIC-789x	006xh
9005h	AIC-789x	007xh
9005h	AIC-7892(A B)U160	008xh
9005h	AIC-789x	009xh
9005h	AIC-789x	00Axh
9005h	AIC-789x	00Bxh
9005h	AIC-7899(A) U160	00Cxh
9005h	AIC-789x	00Dxh
9005h	AIC-789x	00Exh
9005h	AIC-789x	00Fhx
9005h	AHA-2930U2	0180h

8.6.2 USB Hubs

USB devices can either be connected directly or over a USB hub. In order to achieve the highest transfer rates as possible, it is recommended that they be connected directly to the PC or the USB controller.

8.6.3 USB 3 devices

Always ensure that USB3 devices are connected to a proper USB3 connector (blue) in order to utilize the full performance of USB3.

8.7 Mapped Network Drives

When using mapped drives in Windows, in some cases HDS shredder may not find the mapped drives, since HDS shredder runs in administrator mode. To use the established mapped drives, a small change to the Windows Registry is required. Usually, ▶ 5.2 Boot-Setup will handle this automatically, you can also make this change manually, by following the directions below:

- Open the registry editor (**regedit.exe**)
- Move to the following registry key in the tree structure
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System

- Create the **DWORD** value `EnableLinkedConnections`
- Set its value data to 1 and restart your computer



Note: To undo these changes, simply delete the registry value.

9 Miscellaneous

9.1 Disclaimer

Parts of this product are based on products which are licensed under the GNU General Public License (GPL). The applicable license can be found by visiting <http://www.gnu.org/copyleft/gpl.html>. Upon submission of a request to support@miray.de you will be sent a copy of the source code.

While HDS shredder was programmed and tested with the greatest possible care, please understand that we cannot assume any liability for the proper functionality of the program, and that we cannot be held liable for any damages that may result from its usage, which may be subject to gross negligence or intent.

9.2 Licensing

9.2.1 License Types

HDS shredder is offered under different license types to serve various types of use.

- **Workplace License:** Permanent installation on up to two PCs belonging to the licensee, typically PC and laptop.
- **Technician License:** Usable on random PCs with the associated USB token. Additional permanent installation on up to two PCs owned by the licensee.
- **Volume License:** Permanent use on a determined number of PCs, according to the selected licensing volume. May also be used to extend existing Workplace, Technician and Volume Licenses.
- **Maintenance License:** Usable on random PCs with the associated USB token. Extends existing Technician Licenses.
- **One-time License:** Contingent on individual start-ups of the software. May be used with random PCs. Also suitable for simultaneous usage and for remotely operated systems. Extends existing Technician Licenses.

We offer further licensing options per request, for example within local networks or as a Corporate or Site License.

9.2.2 Activation

Some license types require mandatory activation (Workplace License, Volume License, One-time License), while some activations are optional (Technician License). Activations are divided into Single Activation (SA) and Permanent Activation (PA). These are performed automatically upon installation or when starting the program. In the event that both activation types are available, the software will prompt you on which one to use.



Important: Workplace and Technician Licenses contain only a small number of SAs, which are intended for emergencies. Therefore, please always use PAs or the USB stick (Technician License) first.

A PA has only to be completed once per system. Afterwards, the program can be started without any further activation. When switching systems (for example migration), you can release an existing PA by uninstalling the software. Your activation may then be (re-)used on the new system.



Note: With a Technician License, the USB stick must be connected to the PC before installing or starting the program. The software will then automatically recognize no need for activation in this case.

9.3 Feedback

Your feedback is highly valued. Should you experience any program errors, we will certainly make every effort to rectify these issues. If you would like to make any suggestions for improvement, we would like to hear them in order to implement and integrate your ideas. We welcome and look forward to any opinions or information that you would like to share with us regarding this software.

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81371 Munich
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9.4 Support

Should you encounter any problems with any of our products, our support team will be glad to assist you. Please send us your inquiry via our homepage at miray-software.com/support or email us at support@miray.de.