

# Ontrack Eraser Software



## Erase patterns

# Table of Contents

Table of Contents .....	1
Welcome to Ontrack Eraser.....	2
Introduction .....	3
Specifications for erase patterns.....	4
US DoD 5220.22M .....	4
Kroll Ontrack Algorithm.....	4
German VSITR standard .....	4
BSI s 2.167 (minimum) .....	4
BSI s 2.167 (Preferred).....	5
HMG Infosec Standard 5 (Lower overwriting standard) .....	5
HMG Infosec Standard 5 (Higher overwriting standard) .....	5
US Standard SP800-36 & SP800-53.....	5
Peter Gutmann .....	6
Support .....	7



## Welcome to Ontrack Eraser

Ontrack Eraser Software (in the following called OES) is a program which is used to erase data. Data can be erased from different media such as hard drives, SD cards, USB-discs and other storage media.

The expression erasing data is for many equal to, that data is whipped away from the media. This is, however, not correct. The method used to remove the data is instead writing over the data. This means that the old data is written over with new data and as such, the old data is removed.

Included in OES are 10 predefined erase standards. You also have the possibility to define your own erase standards.

OES is certified by the Norwegian authorities NSM (Nasjonal Sikkerhetsmyndighet) and the English authorities CESG (Communications-Electronics Security Group).



## Introduction

Following erase standards are included with OES:

- US DoD 5220.22M
- Kroll Ontrack Algorithm
- German VSITR
- BSI S 2.167 (Minimum)
- BSI S 2.167 (Preferred)
- HMG Infosec Standard 5 (Lower overwriting standard)
- HMG Infosec Standard 5 (Higher overwriting standard)
- US Standards SP800-36 SP800-53
- Peter Gutmann

Besides above erase standards there is also the possibility to create user defined standards (simple standards).

The erase standard is selected in either Client Configurator (as a part of the erase policy) or in the erase client (when no predefined erase policy is defined). See the 'OES Getting Started' manual in order to learn more about how the Client Configurator is used, as well as how the erase client is used.

When data is saved on a media, data is written to blocks on the media. Erasing data, with software, is done by overwriting the data, with a given pattern, in the blocks, on the media. Therefore, the time it takes to erase a media, depends on the writing speed of the media.

The overwriting of the data can be controlled as a part of the erase process, in order to confirm the overwriting (full verify). This means, that data written is read and compared to the pattern chosen. Depending on the erase standard chosen, the erase process will terminate, if there is a difference between the written data and the data pattern from the erase standard (some erase standards do accept a given number of inconsistencies before the erase process is terminated).

The overwriting control can be disabled in some of the included erase standards. If this is done, a minor overwriting control still takes place (quick verify). The process will control 150 MB or 1/3 of the media, whichever is the smallest. The control will be done in the first, the middle and the last part of the media.

In the following is explained which data patterns are used in the individual erase standards.

# Specifications for erase patterns

## ***US DoD 5220.22M***

In this standard, 3 overwriting circles are used as well as a full verify.

- Overwriting of all blocks with the pattern 0x00
- Overwriting of all blocks with the pattern 0xFF
- Overwriting of all blocks with a random pattern
- Full verify

## ***Kroll Ontrack Algorithm***

In this standard, 1 overwriting circles is used as well as 1 quick verify. Full verify can be enabled.

- Overwriting of all blocks with the Ontrack Eraser block pattern (traceable)
  - Block number and block pattern is written in all blocks.
- Quick verify

## ***German VSI TR standard***

In this standard, 7 overwriting circles is used as well as 1 quick verify. Full verify can be enabled.

- Overwriting of all blocks with the pattern 0x00
- Overwriting of all blocks with the pattern 0xFF
- Overwriting of all blocks with the pattern 0x00
- Overwriting of all blocks with the pattern 0xFF
- Overwriting of all blocks with the pattern 0x00
- Overwriting of all blocks with the pattern 0xFF
- Overwriting of all blocks with the pattern 0xAA
- Quick verify

## ***BSI s 2.167 (minimum)***

In this standard, 4 overwriting circles is used as well as 1 quick verify. Full verify can be enabled.

- Overwriting of all blocks with the pattern 0xC1
- Overwriting of all blocks with the pattern 0x3E
- Overwriting of all blocks with the pattern 0xC1
- Overwriting of all blocks with the pattern 0x3E
- Quick verify

### ***BSI s 2.167 (Preferred)***

In this standard, 6 overwriting circles are used as well as 1 quick verify. Full verify can be enabled.

- Overwriting of all blocks with the pattern 0xC1
- Overwriting of all blocks with the pattern 0x3E
- Overwriting of all blocks with the pattern 0xC1
- Overwriting of all blocks with the pattern 0x3E
- Overwriting of all blocks with the pattern 0xC1
- Overwriting of all blocks with the pattern 0x3E
- Quick verify

### ***HMG Infosec Standard 5 (Lower overwriting standard)***

In this standard, 1 overwriting circle is used as well as a full verify.

- Overwriting of all blocks with the pattern 0x00
- Full verify

The standard accepts up to (and including) 50 bad blocks on the media. The physical address of the bad block will be written to the erase report. The erase process will be terminated if more than 50 bad blocks is being reported.

### ***HMG Infosec Standard 5 (Higher overwriting standard)***

In this standard, 3 overwriting circles are used as well as a full verify.

- Overwriting of all blocks with the pattern 0x55
- Overwriting of all blocks with the pattern 0xAA
- Overwriting of all blocks with a random pattern
- Full verify

The standard accepts up to (and including) 50 bad blocks on the media. The physical address of the bad block will be written to the erase report. The erase process will be terminated if more than 50 bad blocks is being reported.

### ***US Standard SP800-36 & SP800-53***

In this standard, 3 overwriting circles are used as well as 1 quick verify. Full verify can be enabled.

- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with the pattern 0x55
- Overwriting of all blocks with the pattern 0xAA
- Quick verify

## ***Peter Gutmann***

In this standard, 35 overwriting circles are used as well as 1 quick verify. Full verify can be enabled.

- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with the pattern 0x555555
- Overwriting of all blocks with the pattern 0xAAAAAA
- Overwriting of all blocks with the pattern 0x924924
- Overwriting of all blocks with the pattern 0x492492
- Overwriting of all blocks with the pattern 0x249249
- Overwriting of all blocks with the pattern 0x000000
- Overwriting of all blocks with the pattern 0x111111
- Overwriting of all blocks with the pattern 0x222222
- Overwriting of all blocks with the pattern 0x333333
- Overwriting of all blocks with the pattern 0x444444
- Overwriting of all blocks with the pattern 0x555555
- Overwriting of all blocks with the pattern 0x666666
- Overwriting of all blocks with the pattern 0x777777
- Overwriting of all blocks with the pattern 0x888888
- Overwriting of all blocks with the pattern 0x999999
- Overwriting of all blocks with the pattern 0xAAAAAA
- Overwriting of all blocks with the pattern 0xBBBBBB
- Overwriting of all blocks with the pattern 0xCCCCCC
- Overwriting of all blocks with the pattern 0xDDDDDD
- Overwriting of all blocks with the pattern 0xEEEEEE
- Overwriting of all blocks with the pattern 0xFFFFFF
- Overwriting of all blocks with the pattern 0x924924
- Overwriting of all blocks with the pattern 0x492492
- Overwriting of all blocks with the pattern 0x249249
- Overwriting of all blocks with the pattern 0x6DB6DB
- Overwriting of all blocks with the pattern 0xB6DB6D
- Overwriting of all blocks with the pattern 0xDB6DB6
- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with a random pattern
- Overwriting of all blocks with a random pattern
- Quick verify

# Support

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