



# BCWipe

Help File



# Introduction

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**Wiping** is the term used to describe the process of securely erasing data, such as contents of a file or disk space. When files are properly wiped, data is erased beyond recovery.

Wiping is necessary because when you just 'delete' files from your computer, the operating system does not erase the contents of these files from the hard drive – only the 'references', or links, to these files are removed. Sensitive data that you intended to erase still remains intact on your hard drive and can easily be restored with widely available undelete, or data recovery, tools.

BCWipe data wiping software from Jetico gives you peace of mind – thanks to the confidence that your deleted files are securely erased and cannot be recovered. You can easily run wiping commands from Windows Explorer, from BCWipe Task Manager or from a command-line prompt. Or by utilizing BCWipe's **Transparent Wiping** feature, all wiping operations can be set to run automatically.

With BCWipe's **Transparent Wiping** feature, Jetico has pioneered a higher level of protecting deleted data from unauthorized recovery. When Transparent Wiping is activated, BCWipe will automatically erase all contents of any deleted file or temporary file beyond recovery. So, you no longer need to worry about securely wiping all traces of every single sensitive file you've been working on – BCWipe's Transparent Wiping will always be there to take care of it!

BCWipe's **Reserved Space** functionality significantly cuts the time need to Wipe Free Space by preserving previously wiped space in a clean state. Once the Reserved Space is created, BCWipe will recognize it the next time the Wipe Free Space process is running. Since the wiped data in Reserved Space is considered occupied, it will not get used or "dirty", so that space does not need to be wiped. Less space to wipe results in less time spent on this process. BCWipe ensures that there is always sufficient free space available for work by automatically monitoring and maintaining the threshold as set by the user.

BCWipe features **Enforcer** for centralized control of data wiping. IT administrators can surgically remove all traces of selected data on any drive in their network. With Enforcer, an administrator can run BCWipe as a system service in Windows to perform wiping tasks remotely without end-user intervention. Used with the Jetico Central Manager utility, BCWipe Enforcer allows enterprises to remotely install BCWipe across all workstations and centrally manage data wiping policies in real time. BCWipe Enforcer is also compatible with systems management software, such as Microsoft SMS and LANDesk.

**NOTE: BCWipe Enforcer** feature and the **Jetico Central Manager** utility are only available in BCWipe Enterprise Edition. See [documentation for Jetico Central Manager for more details](#).

BCWipe is a powerful, military grade data wiping tool that utilizes U.S. DoD 5220.22-M and many other standards and schemes. BCWipe also allows the users to create and use their own **custom wiping schemes**.

BCWipe is designed to surgically delete specific data files without harming the hard drive; to erase all contents of whole hard drives, including boot records and operating system files, see [BCWipe Total WipeOut](#).

To protect the data you keep, Jetico also offers [BestCrypt](#) software for strong encryption that's easy to use – wherever you store sensitive data. BestCrypt offers robust algorithms, supports all major operating systems and allows you to keep any form of data (files, documents, pictures, databases) in encrypted form on the hard disk, network disks, removable media CDs/DVDs and even floppies. BestCrypt provides on-the-fly data encryption for transparent encrypt/decrypt operations. Nobody can read the data unless they have the right password or keys. So if your computer were ever lost or stolen, you would be certain that your personal information is secure and cannot be obtained by someone else.

# Main Functions & Tools of the BCWipe System

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The BCWipe system provides the following ways to shred contents of deleted files:

- **Delete with wiping** - Using the **Delete with wiping** command, you can delete and wipe file or folder, as well as selected group of files/folders. As well, BCWipe wipes the file slack, file attributes and (for NTFS) alternate data stream, if it exists.
- **Wipe free space** - When you delete sensitive files using a standard Windows 'Delete' command, the operating system does not shred contents of the documents from hard drive, it just marks disk space, earlier occupied by the files, as 'free'. To remove all the traces of the earlier deleted files completely, use this command to wipe free space on the disk, where these files were stored. **Reserved Space** functionality significantly cuts the time need to Wipe Free Space by preserving previously wiped space in a clean state.
- **Wipe Internet History** - BCWipe can completely wipe all traces of your Internet history: cache, cookies, browsing history, search history, saved passwords, last active tabs, etc. Supported web browsers include the latest versions of Internet Explorer, Mozilla Firefox, Google Chrome and Opera.
- **Wipe Local History** - (Wipe names of recently used files) BCWipe can wipe names of files opened with Windows components and other popular applications. Names stored on a subfolder or in Windows Registry can be wiped. View detailed information about every entry, such as in the Find History list. Individual entries can be wiped without deleting the whole list.
- **Swap file protection** - BCWipe utility can wipe unused space in the Swap File or keep the whole swap file encrypted.
- **Wipe file slacks** - File slack is the disk space from the actual end of a file up to end of the last cluster used by the file. You can turn on/off file slack wiping before running the **Wipe Free Space** process.
- **Wipe MFT records** - for NTFS drives - **MFT - Master File Table** is a reserved space on NTFS disk, where the file system stores names and attributes of files. Small files may reside inside MFT completely. After ordinary Windows 'Delete' operation, Windows marks corresponding MFT record as 'unused'. Windows does not erase the MFT entry contents (that is why Unerase utilities work!). Any file that has been 'deleted' by Windows, can get its name restored by special utilities, and if the file body has not been overwritten, contents of the file can be recovered. BCWipe can wipe empty MFT Records - i.e. records related to deleted files.
- **Wipe directory slacks** - NTFS directory is a special file that contains names of files and subdirectories. Disk cluster that belongs to a directory is named **directory node**. Directory node has a slack (space from the end of directory data up to the end of cluster). On FAT/exFAT file systems, file names are stored in so called directory entries. Slack of the directory node or directory entry may still contain name of the deleted file, as well as other deleted data.
- **Wipe NTFS transactions log file** - NTFS is a journaling file system and uses the NTFS Log (\$LogFile) to record temporary data for all files you were working with. Transactions log file is used to restore file system in case of a failure.
- **Transparent Wiping** - Automatic wipe of the contents of every file or folder deleted by applications or operating system. This functionality is activated by creating the special task called **Transparent Wiping** in BCWipe Task Manager.
- **Wipe Compressed Files** - Compressed files cannot be wiped by usual means. BCWipe contains the special module that can read disk sectors on a low level. Due to this module,

BCWipe can wipe compressed files. Administrator rights are required to wipe compressed files.

- **Disk-level verification** - BCWipe contains the special module that can read disk sectors on a low level. Due to this module, BCWipe can run advanced verification of wiping process by reading results directly from physical disk sectors. Administrator rights are required to run this type of verification.

The following tools allows users to configure and control the wiping process:

- **BCWipe Task Manager** - The utility allows configuring BCWipe to run some wiping tasks automatically. You can set a time for running the task, as well as special options for the task. The utility is used by administrators to configure automatic tasks on users' computers.

- **Wiping Scheme Editor** - Wiping Scheme Editor allows creating custom wiping schemes.

- **Swap File Encryption** utility - Swap File is the Windows system file that is used for the virtual memory support, and it can store parts of documents, you are working with, in an opened form on hard drive. Even if some powerful encryption program encrypts an original document, Windows can put a whole document or part of it to the Swap file in an opened form. Encryption keys, passwords, and other sensitive information can also be swapped to hard drive. Even if you use all of the security advantages of the latest Windows versions, simple investigating of the Swap file in DOS mode may allow extracting a lot of interesting information from the file. BCWipe allows encrypting the Swap file contents and preventing such a leak in the operating system.

- **Hexadecimal File Viewer** - Using the Viewer you can examine contents of file after wiping. The utility is useful for investigating a quality of wiping process, for example when you use a custom wiping scheme.

- **Log Viewer** - A convenient tool for reading, searching and filtering information about wiping process.

- **Automatic Update** utility - Allows users to get the latest updates of the software automatically.

#### See also:

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[Delete with wiping](#)

[Wipe free space](#)

[Wiping Options](#)

[BCWipe Task Manager](#)

[Transparent Wiping overview](#)

[Swap File Encryption](#)

[Hexadecimal File Viewer](#)

[Log File Viewer](#)

# BCWipe Prerequisites

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BCWipe requires the following minimum computer configuration:

## **Hardware**

- PC with 486 or higher processor
- Minimum 20MB of free HDD space to install and run the BCWipe software

## **Software**

- Windows 8
- Windows 7
- Windows Vista
- Windows 2008 Server
- Windows XP
- Windows 2003 Server  
including 32-bit and 64-bit versions

# New Features in BCWipe v.6

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With this new version, BCWipe moves towards more reliable privacy protection and higher performance. BCWipe v6 includes the following new features:

- **Reserved space** for large disks - Wipe Free Space is time-consuming process. On modern large disks with terabytes of free space it may take several days to complete. Reserved Space functionality of BCWipe is intended to save the time by preserving the wiped space in clean state.
- **Wipe directory slacks** on NTFS drives - NTFS directory is a special file that contains names of files and subdirectories. Disk cluster that belongs to a directory is named **directory node**. Directory node has a slack (space from the end of directory data up to the end of cluster). Slack of the directory node may still contain name of the deleted file, as well as other deleted data. BCWipe can now wipe slack space in directories.
- Wipe temporary data stored in **NTFS transaction log file** - NTFS is a journaling file system, it uses the NTFS Log (\$LogFile) to record file system usage history. BCWipe v6 optionally takes care about these data.
- **Wiping free space - without 'low disk space' condition** - Previous versions of BCWipe allocated all available disk space for a short time and Windows displayed the 'Low disk space' warning message. Using the smart technology, BCWipe can now overwrite free space without getting into 'Low disk space' condition.
- **MFT wiping - faster and more skilful than ever** - When wiping free space and unused MFT records, BCWipe v6 wipes MFT several times faster than the previous version. When wiping a file, BCWipe v6 wipes corresponding MFT record.
- **New wiping standards:**
  - Russian GOST R 50739-95
  - British HMG IS5 (Baseline, Enhanced)
  - NAVSO-P5239-26
  - Canadian RCMP TSSIT OPS-II
  - US Army AR380-19
- Since version 6.02 BCWipe supports **Windows 8** operating system. BCWipe works with **Storage Spaces** (a new capability that can combine multiple hard drives into a single virtual drive) just as it would for a simple disk partition. Users won't need to waste time to wipe the huge amount of virtual disk space. BCWipe is smart enough to distinguish free allocated space and free not-allocated space that was never used and does not require wiping.

## See also:

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[Reserved Space](#)

[Wipe free space command](#)

[Wiping options for the Wipe Free Space command](#)

# How to Install BCWipe

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**BCWipe Setup program** uses standard Windows way to install the software and provides all necessary explanations of the installation details. The only default information the user may want to change during installation is the **Program Folder** name for the BCWipe software and the **Destination Directory** name where to place BCWipe files.

All dialog windows of the Setup program have the following buttons:

[**C**ancel] - click this button to abort installation

[**N**ext] - click this button to proceed with the installation

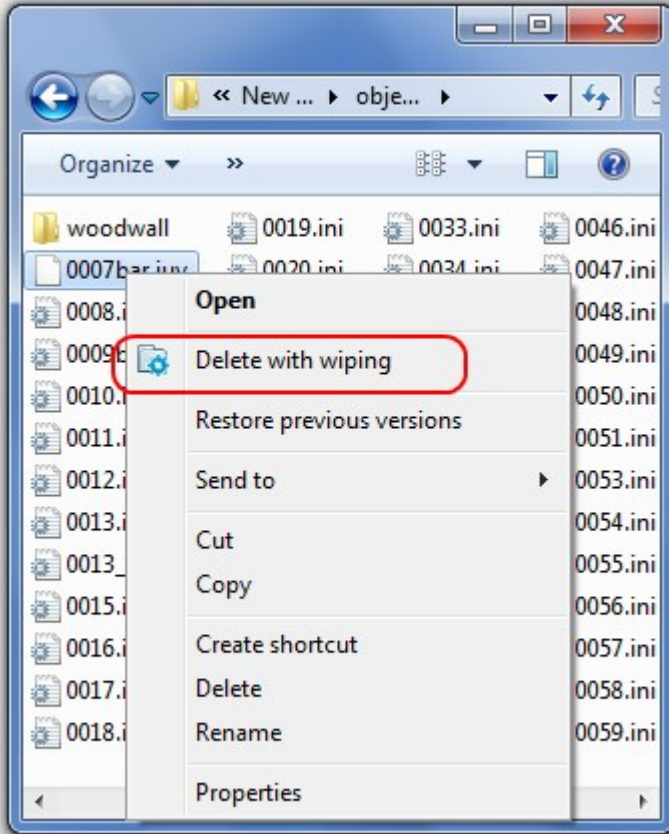
[**B**ack] - click this button to return to the previous step

**NOTE:** BCWipe Setup program also writes data to the **Windows Registry** database, places dynamic load libraries in the system WINDOWS\SYSTEM directory, and prepares a file for the uninstall procedure. Please do not perform any manual manipulations to install or uninstall the BCWipe software in order to prevent appearance of unused garbage software in the system directory or unused strings in Registry database.

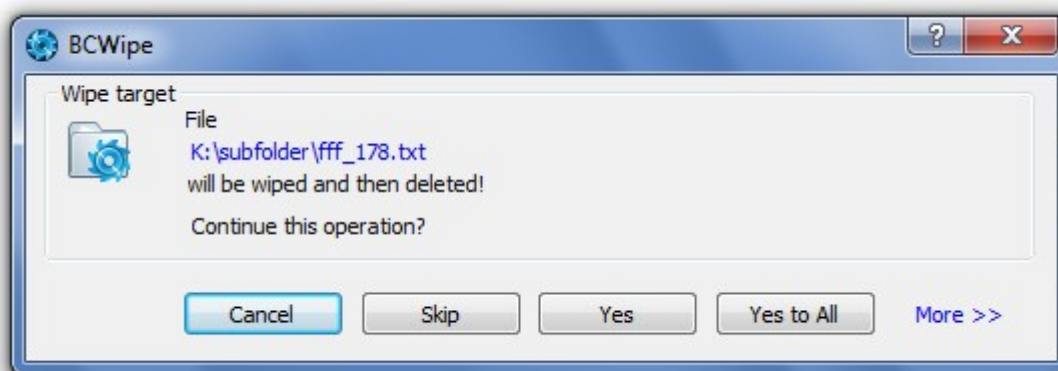
# Delete With Wiping Command for Files & Folders

To delete a file or folder with BCWipe, use the **Delete with wiping** command from Explorer's pop-up menu. Right-click on the item you want to delete in Explorer: this will bring up the menu that includes **Delete with wiping** command.

The following picture illustrates how to run the command:



When you run the **Delete with wiping** command, the following window appears:



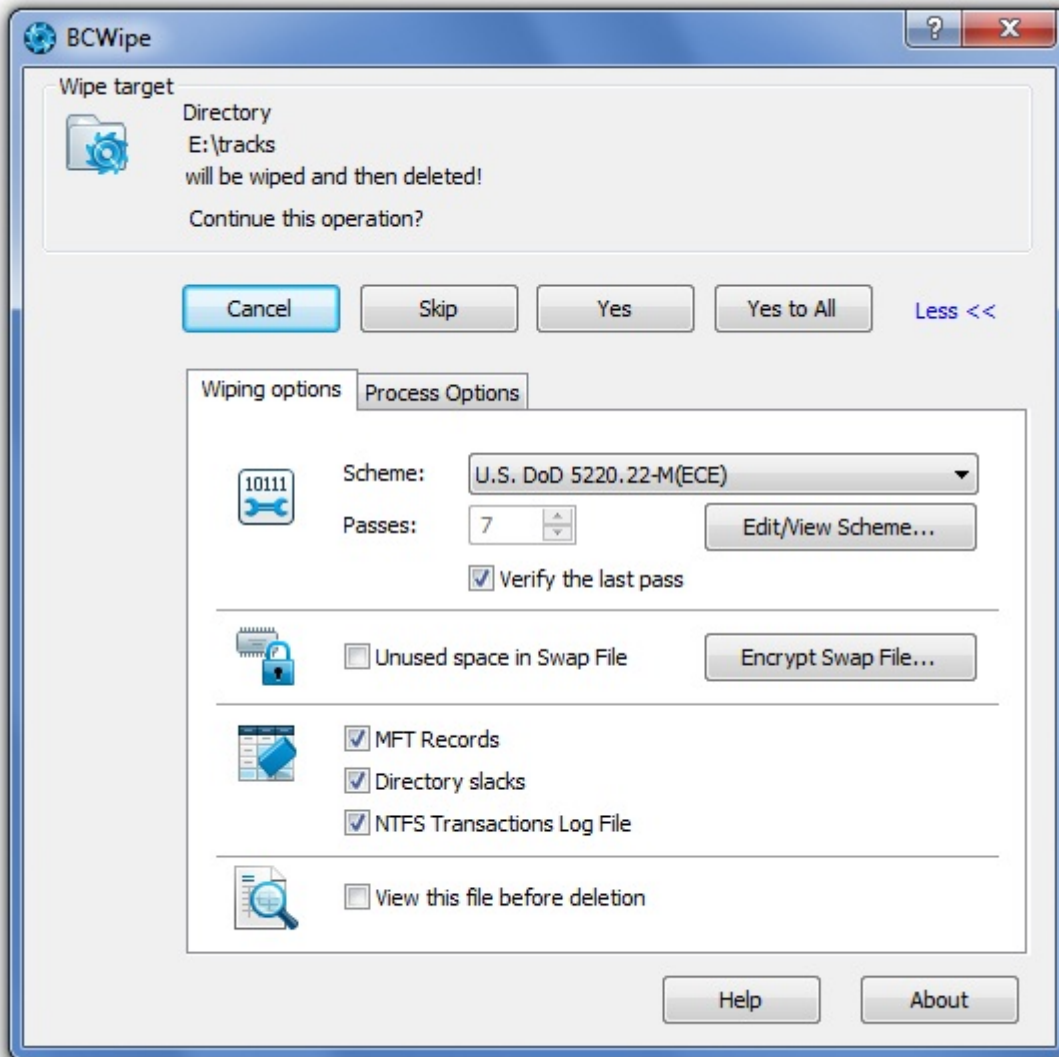
To terminate the wiping process click [Cancel].

If you wipe group of files, you can wipe them one-by-one by clicking [Yes] to confirm wipe of a single file. It is possible to skip wipe of some file by clicking [Skip]. If you are sure that all the selected files should be wiped, click [Yes to All].

Click **More>>** to set wiping options.



## Wiping options



**Scheme** - BCWipe allows user to wipe data with predefined wiping schemes , as well the software includes **Wiping Scheme Editor** utility to view and edit number of wiping passes and binary patterns used in each pass. You can customize all the details concerning the wiping process if you click [Edit/View scheme]. Read more details about creating your own wiping scheme in the [Wiping Scheme Editor](#) chapter.

**Unused space in Swap file** - **Swap file** is the Windows system file that is used for the virtual memory support, and it can store parts of documents, you were working with, in an opened form on hard drive. If you set the option, BCWipe will erase unused space in the swap file. Hence, if some sensitive data is still stored on the unused space, it will be wiped. More cardinal way to solve the problem of security leak through the swap file is to activate **Swap File Encryption** task.

Click **Encrypt Swap File** to enable swap file encryption. (see also [Swap File Encryption](#) chapter).

**NOTE:** If you turn on **Swap File Encryption**, you do not need to wipe the swap file at all.

**MFT records** (on NTFS drives) - **MFT - Master File Table** is a reserved space on NTFS disk, where the file system stores names and attributes of files. Small files may reside inside MFT completely. When BCWipe wipes a file or folder, it can wipe the MFT record associated with this file/folder.

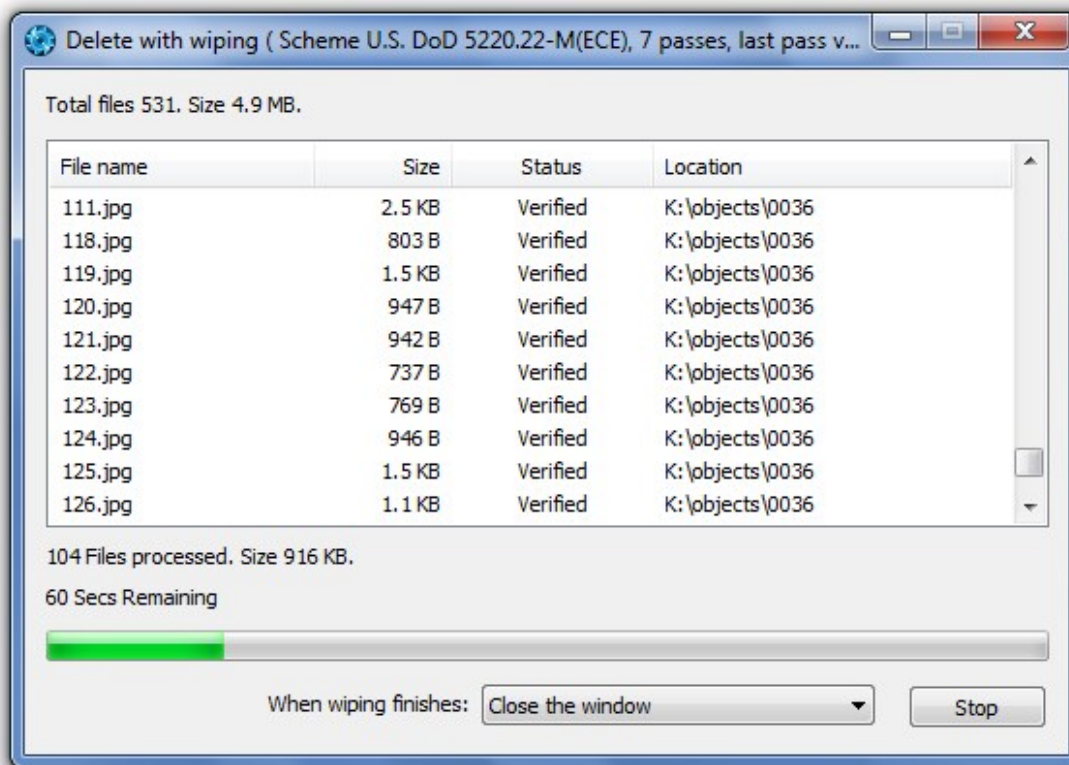
**Directory slacks** (on NTFS drives) - NTFS directory is a special file that contains names of files and subdirectories. Disk cluster that belongs to a directory is named **directory node**. Directory node has a slack (space from the end of directory data up to the end of cluster). Slack of the directory node may still contain name of the deleted file, as well as other deleted data.

**Empty directory entries** (on FAT/exFAT drives) - Directory entries on FAT/exFAT drives contains file names and other attributes.

**NTFS transactions log file** - NTFS is a journaling file system and uses the NTFS Log (\$LogFile) to record temporary data for all files you were working with. Transactions log file is used to restore file system in case of a failure.

**View this file before deletion** - the option allows verifying result of wiping the file you are going to delete. If you set the option, BCWipe will run Hexadecimal File Viewer program to show you bytes, written to the sectors on disk where the file was stored. Normally you will see the last pass pattern according to the chosen wiping scheme.

When you click [Yes] or [Yes to All], the process will start and BCWipe will show the process statistics:



BCWipe counts the number of files set to be wiped and total size. It tries to estimate the time the process will take. If an error happens, it reports the reason in **Status** column. During the process user can specify an action that BCWipe should perform after wiping - in **When wiping finishes** combobox.

**See also:**

- [Delete with wiping task type](#)
- [Swap File Encryption](#)
- [Hexadecimal File Viewer](#)
- [Wiping Scheme Editor](#)
- [Process Options](#)

# Wipe Free Space

Wipe free space command

Wiping options for the Wipe Free Space command

Process Options

Reserved Space

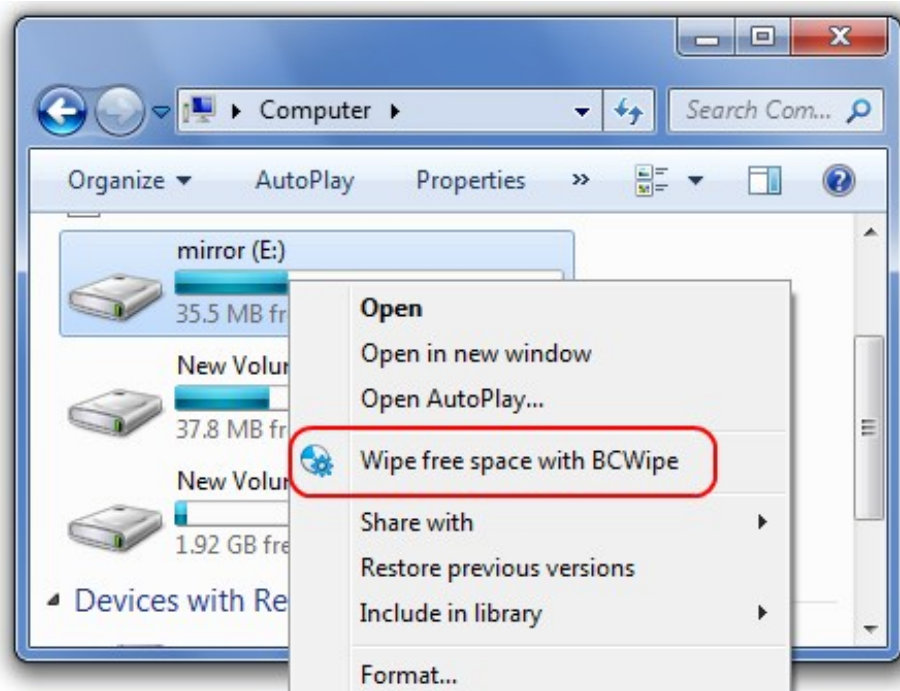
# Wipe Free Space Command

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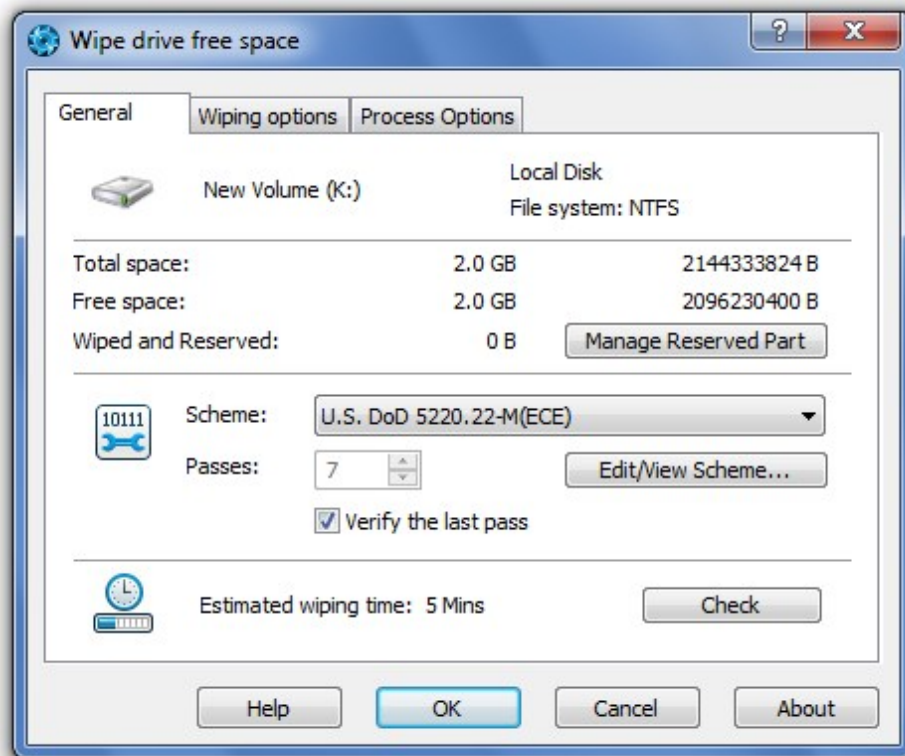
When you delete sensitive files using standard Windows 'Delete' command, the operating system does not shred contents of the documents from hard drive, it just marks disk space, earlier occupied by the files, as 'free'. To completely remove all the traces of the earlier deleted files, use **Wipe Free Space** command to wipe free space on the disk, where these files were stored.

In order to clean free space on a hard drive, BCWipe creates temporary files with wiping pattern inside. These temporary files overwrite old data written to the disk. Using a smart technology, BCWipe can overwrite free space without allocating all available disk space at once, it means that the drive **never gets 'Low disk space' condition**.

To wipe free space on a disk, run **Wipe Free Space** command from Windows Explorer using a pop-up menu. Right-click on the drive item you want to wipe: this will bring up the menu that includes **Wipe Free Space**. The following picture illustrates how to run the command:



When you run the **Wipe Free Space** command the following window appears:



The top part of the window reports information about the disk - total size, file system, free space. Click **[Manage Reserved Part]** if you want to enable **Reserved Space** feature and assign the free space threshold. See Reserved Space chapter for more details.

Choose the desired wiping scheme in Scheme drop-down list. Click **[Edit/View Scheme]** to see the wiping scheme patterns and/or to create a custom scheme.

BCWipe reports **Estimated wiping time** at the bottom part of the window. When BCWipe estimates the time, it assumes that the writing speed is some average value and calculates how long it will take to wipe the free space.

Click **[Check]** to make BCWipe "try" the writing operation for this specific disk to make more exact estimation.

**NOTE:** Before running the **Wipe Free Space** command on the disk, it would be wise to:

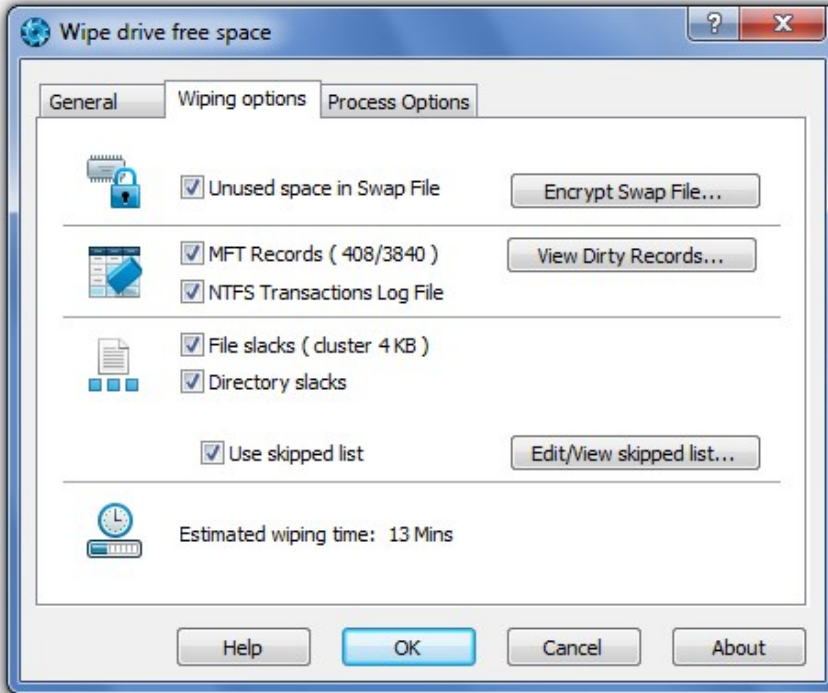
- Close all applications. Some programs create temporary files while they are running. Those temporary files will not be wiped when you run the command. Besides, Windows swap file (or page-file) may store sensitive information that is used by currently loaded applications. This part of swap file will not be wiped.
- Check the disk for errors. If some part of the hard drive was in incorrect state before running BCWipe, it may cause more serious problem when BCWipe allocates all available space.

**See also:**

- [Reserved Space](#)
- [Wiping Scheme Editor](#)
- [Wiping Options](#)
- [Process Options](#)

# Wiping Options for the Wipe Free Space Command

If you select the **Wiping Options** property page when you run the **Wipe Free Space** command, the following window appears:



**Unused space in Swap file** - Swap file is the Windows system file that is used for the virtual memory support, and it can store parts of documents, you were working with, in an opened form on hard drive. If you set the option, BCWipe will erase unused space in the swap file. Hence, if some sensitive data is still stored on the unused space, it will be wiped. More cardinal way to solve the problem of security leak through the swap file is to activate **Swap File Encryption** task by clicking [**Encrypt Swap File**] (see also the [Swap File Encryption](#) chapter).

**MFT records** (on NTFS drives) - **MFT (Master File Table)** is a reserved space on NTFS disk, where the file system stores names and attributes of files. Small files may reside inside MFT completely. It is recommended to enable this option for complete security. Before running the wiping process BCWipe reads MFT table, calculates and shows the total number of records in MFT and number of **dirty** records, i.e. records corresponding to deleted files. In the illustration above - BCWipe has found 408 dirty records and 3840 is the total number of MFT records. Click [**View Dirty Records**] to see the names of previously deleted files stored inside MFT:

The screenshot shows a dialog box titled "Dirty MFT records - 4" containing a table with the following data:

File name	Record number	Date	Size	Attributes
fff_40.txt	86	2/9/2012 10:29:09 AM	0 B	A
fff_42.txt	88	2/9/2012 10:29:09 AM	0 B	A
fff_44.txt	90	2/9/2012 10:29:09 AM	0 B	A
fff_46.txt	92	2/9/2012 10:29:09 AM	0 B	A
fff_48.txt	94	2/9/2012 10:29:09 AM	0 B	A



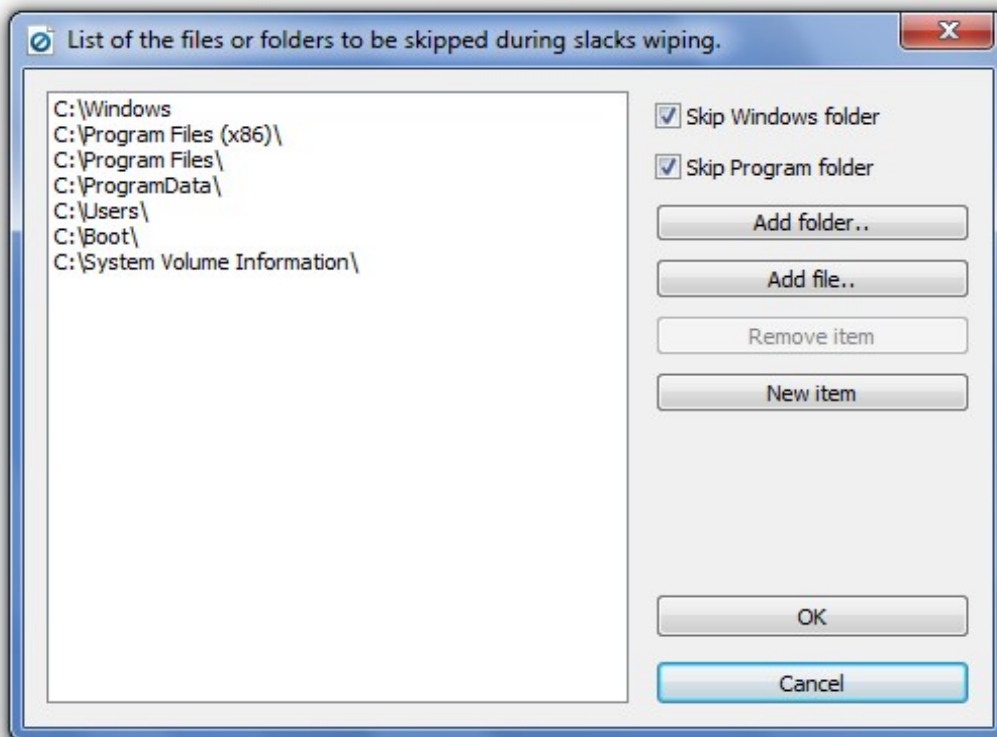
**NTFS transactions log file** - NTFS is a journaling file system and uses the NTFS Log (**\$LogFile**) to record temporary data for all files you were working with. Transactions log file is used to restore file system in case of a failure.

**File slacks** - File slack is the disk space from the actual end of a file up to end of the last cluster used by the file. The space may contain data from files written there earlier. Set the option if you want to wipe slacks of files on the disk.

**Directory slacks** (on NTFS drives) - NTFS directory is a special file that contains names of files and subdirectories. Disk cluster that belongs to a directory is named **directory node**. Directory node has a slack (space from the end of directory data up to the end of cluster). Slack of the directory node may still contain name of the deleted file, as well as other deleted data.

**Wipe directory entries** (on FAT/exFAT drives) - Directory entries on FAT/exFAT drives contains file names and other attributes.

**Use skipped list** - Wipe of file and directory slacks may be a time-consuming process, especially if there are many files and folders on the disk. If we take into account that some files and folders have been stored on the disk for a long time, we can wipe their slacks once only, and then configure BCWipe so that the program will skip these directories. To create list of files and folders that must be skipped when the program wipes file and directory slacks, click [**Edit/View skipped list**] and the following window will appear:



It is recommended to add standard Windows folders in the list of files to be skipped when BCWipe wipes file slacks by setting the **Skip Windows folder** and **Skip Program folder** checkbox. Other files and folders can be added in the list by clicking [**Add folder**] or [**Add file**]. The same skipped list is related to **Wipe directory slacks** procedure.

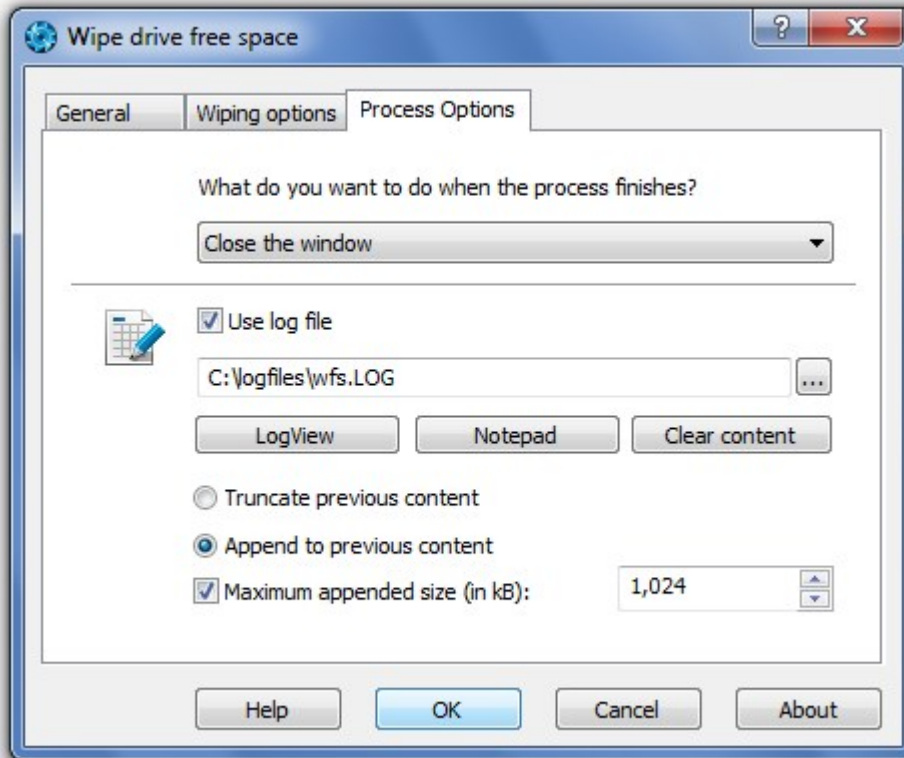
**See also:**

[Swap File Encryption](#)

# Process Options

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Wiping process can be configured to perform additional actions, like writing main steps to a log file, shutting down computer or logging off the current user after finishing the process. If you select the **Process Options** property page when you run **Wipe Free Space** or **Delete With Wiping** command, the following window appears:



What do you want to do when the process finishes? Since wiping may be time-and-resource-consuming procedure, you may run it at the time when you leave computer. In this case you can instruct BCWipe to shut down computer or log off current user when BCWipe finishes its job.

**Use log file** - If you set the option, BCWipe will write reports about results of the process to a log file. You can select the log file by clicking [ . . . ] . As well, you can open the existing file with **Log Viewer** if you click [LogView], or with Notepad (**Notepad**) or erase contents of the log file by clicking [Clear content].

To avoid unlimited growing of the log file you can use one of two ways. First, instruct BCWipe to erase reports about previous wiping processes by setting the **Truncate previous content** radio-button. Second way is to allow BCWipe to keep reports about many wiping processes, but set maximum size of the log file by setting the **Append to previous content** radio-button.

## See also:

[Log File Viewer](#)



# Reserved Space

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## What is it for?

**Wipe Free Space** is time-consuming process. On modern large disks with terabytes of free space it may take several days to complete. **Reserved Space** functionality of BCWipe is intended to save the time by preserving the wiped space in clean state. As soon as Reserved Space is created, next time when Wipe Free Space process is running, BCWipe will recognize the clean space and won't wipe it.

## How does it work?

Wipe Free Space process allocates free disk space temporarily and overwrites it according to the wiping scheme. Then the process deletes the temporary files; as a result, the disk has the same amount of free space as before. When **Reserved Space** feature is enabled, BCWipe does not delete some temporary files. The wiped space is still considered as "occupied" and it won't be used, so it won't become "dirty" and it won't need wiping.

The size of free and reserved space is maintained by BCWipe automatically. The user just assigns a **threshold** - the size of free space that remains after wiping. BCWipe will ensure that the drive never has lower free space than the 'threshold'.

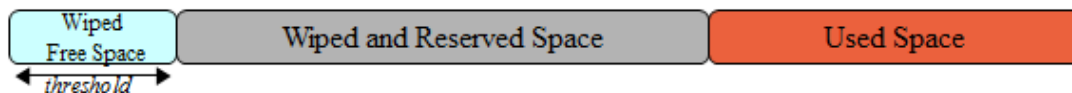
## What happens just after wiping free space?

If the reserved space is assigned, every time 'Wipe Free Space' is started and the process is successfully completed, BCWipe sets the amount of free space to be equal to the assigned **threshold**. The rest of newly wiped space is added to the reserved space.

*Before wiping:*



*After wiping:*

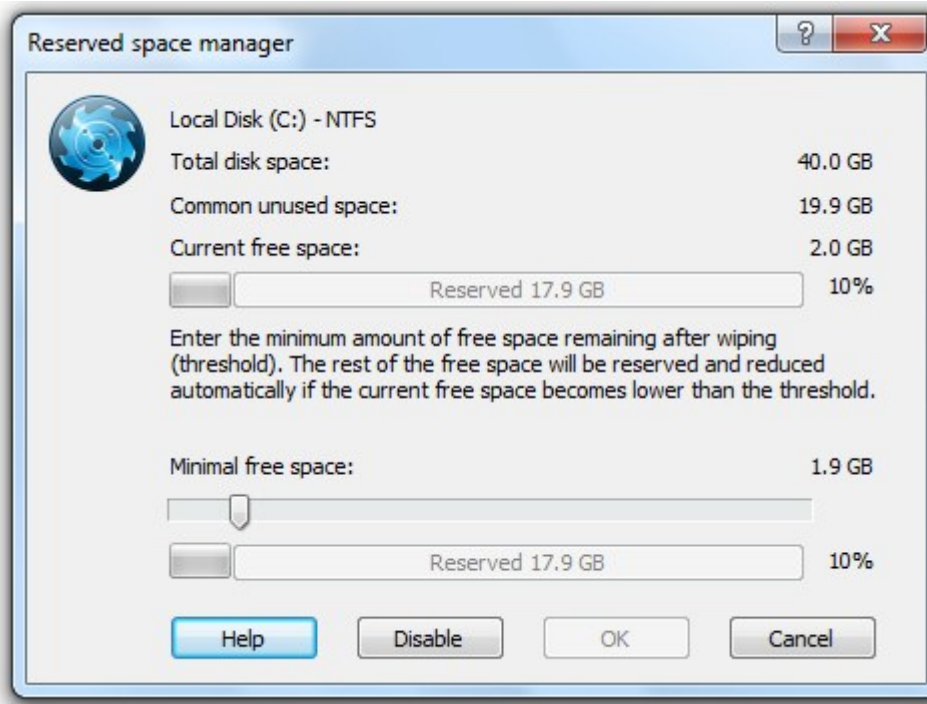


## Wear leveling

After second and subsequent wiping, when new portion of wiped space has been added to the reserved space, an old portion of the reserved space might be freed. This is done to make all parts of disk work, to avoid using and reserving the same disk sectors for a long time.

## Reserved Space Manager

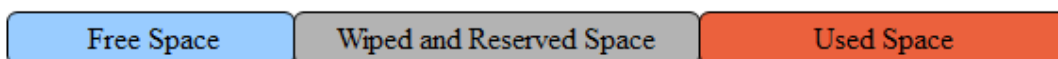
**Reserved Space Manager** allows the users to manage the free/reserved disk space.



The top part of the window shows the current disk statistics - total disk space, size of free space and size of reserved space. The slider in the bottom part sets the **threshold**. The available free space will never be lower than the assigned threshold, while the reserved portion exists.

### What happens if the system or an application allocates disk space?

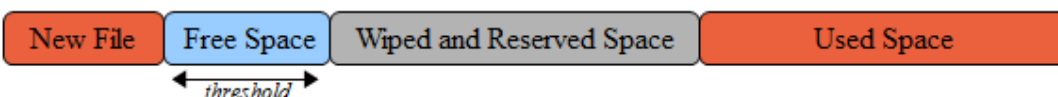
BCWipe continuously monitors the amount of free space on the disk where Reserved Space feature is enabled. If the system or an application creates new file so that the actual free space becomes lower than the **threshold**, BCWipe automatically increases size of free space up to the threshold by reducing the reserved portion. If the reserved portion on the disk becomes empty, then BCWipe stops monitoring free space on the disk.



*Create new file:*



*BCWipe increases Free Space up to threshold:*



**See also:**

[Wipe free space command](#)

# Transparent Wiping

[Transparent Wiping overview](#)

[How to activate Transparent Wiping](#)

[Include and Exclude lists](#)

[Transparent Wiping icon in the system tray](#)

[Transparent Wiping logging](#)

# Transparent Wiping Overview

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While editing a Microsoft Office document or browsing the Internet, you might not realize that tons of information about your work is being written to or deleted from the disk without your knowledge. While a typical application is running, it creates temporary files, cache objects or other special system files that may contain confidential information. Even when these files are deleted, sensitive data that you intended to completely erase remains on your hard drive and could still be restored.

Jetico is introducing a higher level of protecting deleted information from unauthorized recovery – BCWipe’s **Transparent Wiping**. When **Transparent Wiping** task is activated on your computer, BCWipe will automatically wipe all contents of any file or folder that is deleted. Just configure Transparent Wiping according to your needs and activate! BCWipe’s Transparent Wiping will always be there to securely erase all traces of your sensitive files so you won’t have to worry about it. Instead, you can just focus on your work.

Transparent Wiping securely deletes the following sensitive information on the fly:

- All files and folders that are deleted using normal commands
- Temporary files deleted by Windows applications and by Windows itself
- Data stored in Windows Restore Point when the Restore Point is deleted
- Data stored in Recycle Bin when Empty Recycle Bin is selected
- Or only specific types of files, folders or applications by configuring include/exclude lists

Transparent Wiping is compatible with Windows Recycle Bin and similar utilities. So after activating Transparent Wiping, your Recycle Bin will continue to work normally – except that now when Empty Recycle Bin is selected, all contents of the Recycle Bin will be permanently erased by BCWipe.

Transparent Wiping can be set to work only for specific files, folders or applications (or file/application patterns) by configuring include and exclude lists. When Transparent Wiping is activated, the status is displayed by a special icon in the system tray. BCWipe provides detailed logging of Transparent Wiping. The log output can be configured.

## See also:

[How to activate Transparent Wiping](#)

[Include and Exclude lists](#)

[Transparent Wiping icon in the system tray](#)

[Transparent Wiping logging](#)

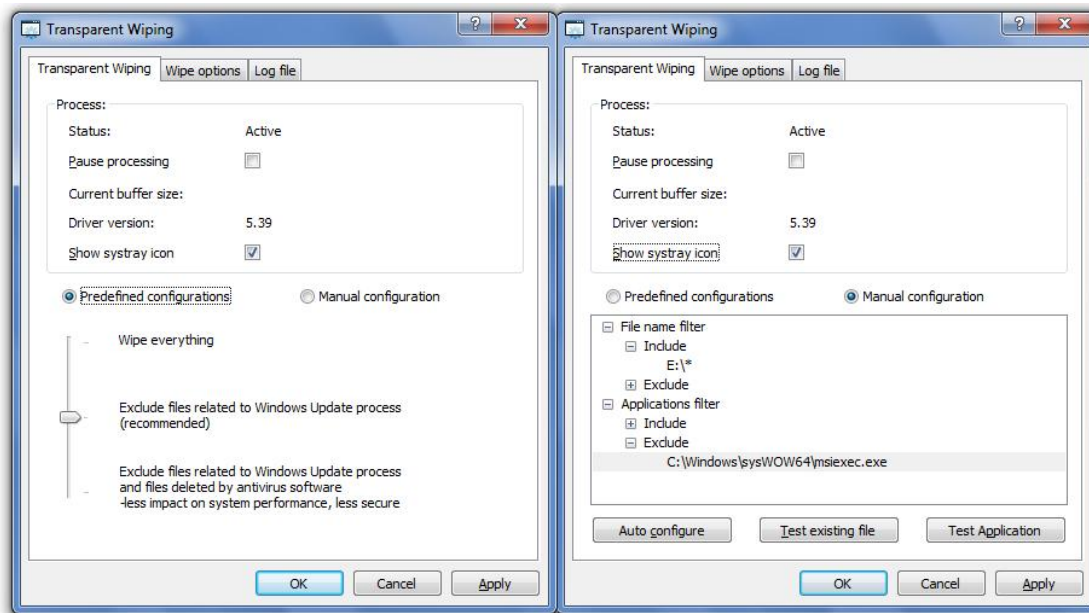
# How to Activate Transparent Wiping

To activate transparent wiping create **Transparent Wiping** task in BCWipe Task Manager.

**NOTE:** Only administrators can create **Transparent Wiping** task. On Vista and Windows 7 - run BCWipe Task Manager "as administrator" to get the task available.

Open **BCWipe Task Manager** and run **Create new task** command from the [Tasks] menu. Select **Transparent Wiping** task type. The task window contains three pages:

## 1. Transparent Wiping page - Predefined and Manual configurations



The page reports:

- Current status of the task - active or paused
- Current size of the buffer condemned to wiping
- Version of Transparent Wiping driver

To **pause** Transparent Wiping activity - mark the checkbox **Pause processing**. If system performs huge file operations, that do not concern sensitive files (like Windows Update or antivirus scan) - you may pause Transparent Wiping to speed up the process. All the files in the TW buffer will be promptly deleted without wiping. Then you can resume TW again.

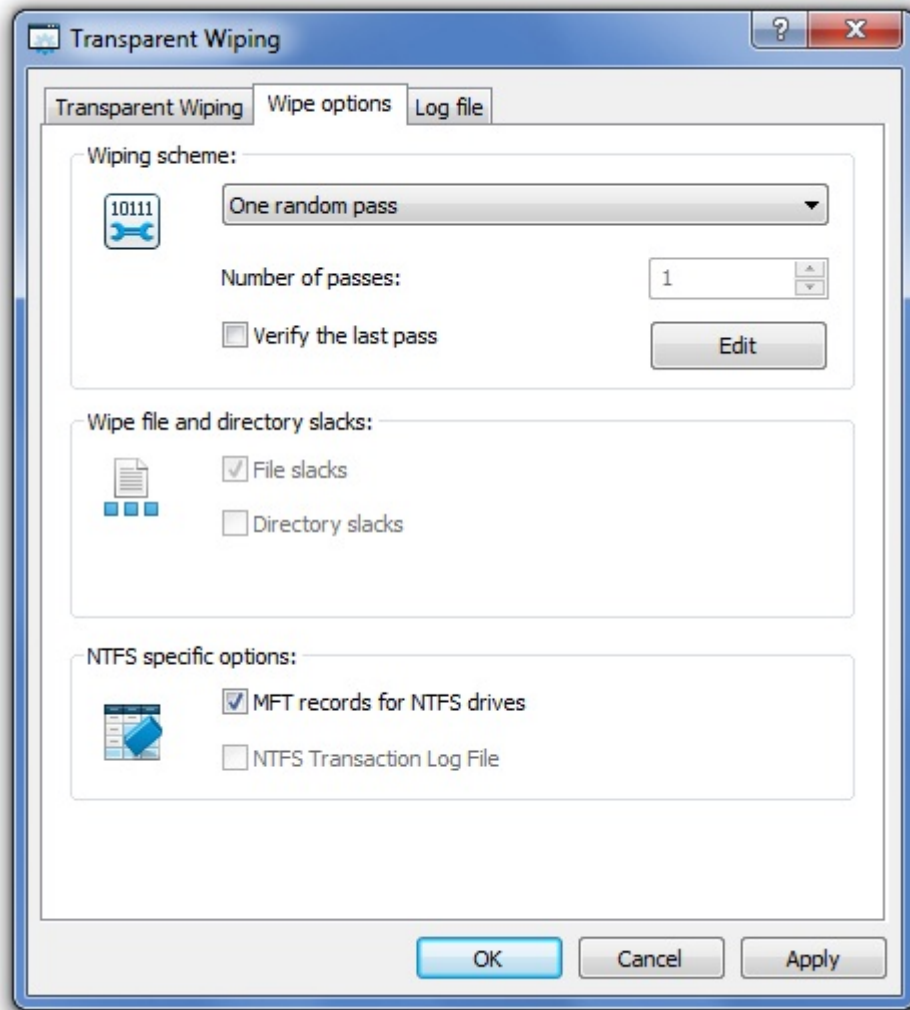
To **hide** Transparent Wiping icon in system tray area - unmark the checkbox **Show systray icon**.

The bottom part of the page is intended for configuration of Include and Exclude lists. See Include and Exclude lists for more details

To run Transparent Wiping with a predefined configuration of **Include/Exclude lists** - select **Predefined configuration** option and move the slider to the desired level.

To create your own configuration of **Include/Exclude lists** - select **Manual configuration** option and create the configuration.

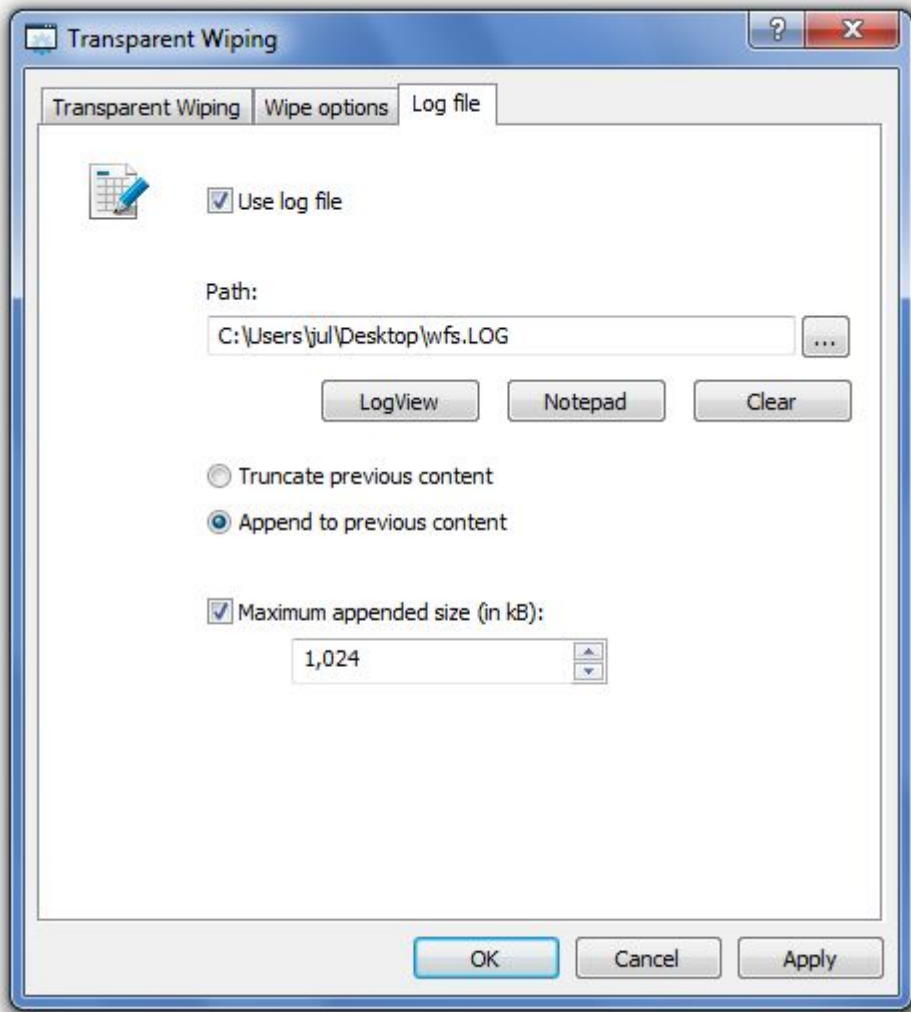
## 2. Wipe Options page



For **Transparent Wiping** task you can specify the wiping scheme in the same way as you do it for any other wiping task. It is recommended to use one pass scheme and disable verification to minimize possible impact on system performance.

**MFT records** (on NTFS drives) - MFT (Master File Table) is a reserved space on NTFS disk, where the file system stores names and attributes of files. Small files may reside inside MFT completely. When BCWipe wipes a file or folder, it can wipe the MFT record associated with this file/folder.

### 3. Log file page



To enable generation of the logfile where BCWipe will write all the information concerning **Transparent Wiping** activity - mark the checkbox **Use log file** and specify a name for the logfile.

When configuration is completed - click [**Apply**] and Transparent Wiping will start working.

#### See also:

- [Transparent Wiping logging](#)
- [Transparent Wiping icon in the system tray](#)
- [Include and Exclude lists](#)

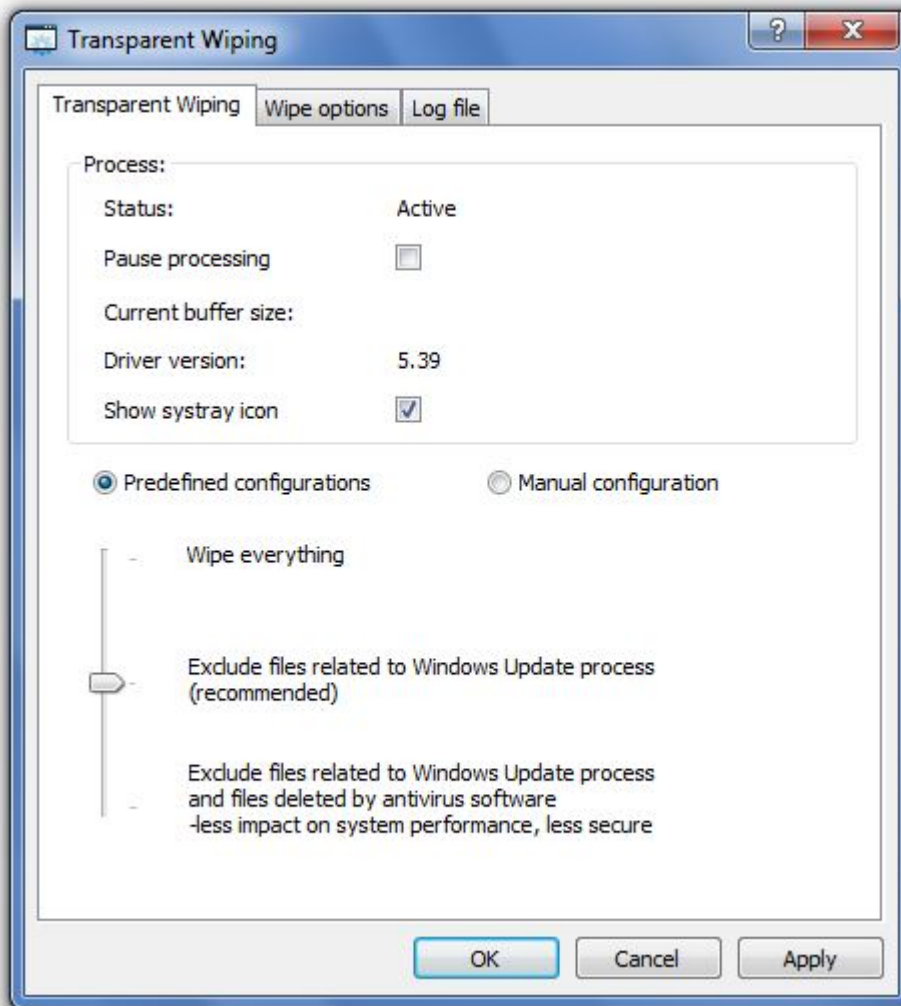
# Include & Exclude Lists

Sometimes an excessive amount of temporary files are being deleted on the system beyond the capacity of this feature, so Transparent Wiping is not able to wipe all the files being deleted causing a rapid decrease in free disk space. This problem is typically caused by a conflict with an anti-virus or anti-spyware program. In that case, it is strongly recommended to add some folders and/or applications into **Exclude list** so that only selected files will be wiped and the rest will be just deleted.

There are three predefined configurations of **Transparent Wiping**:

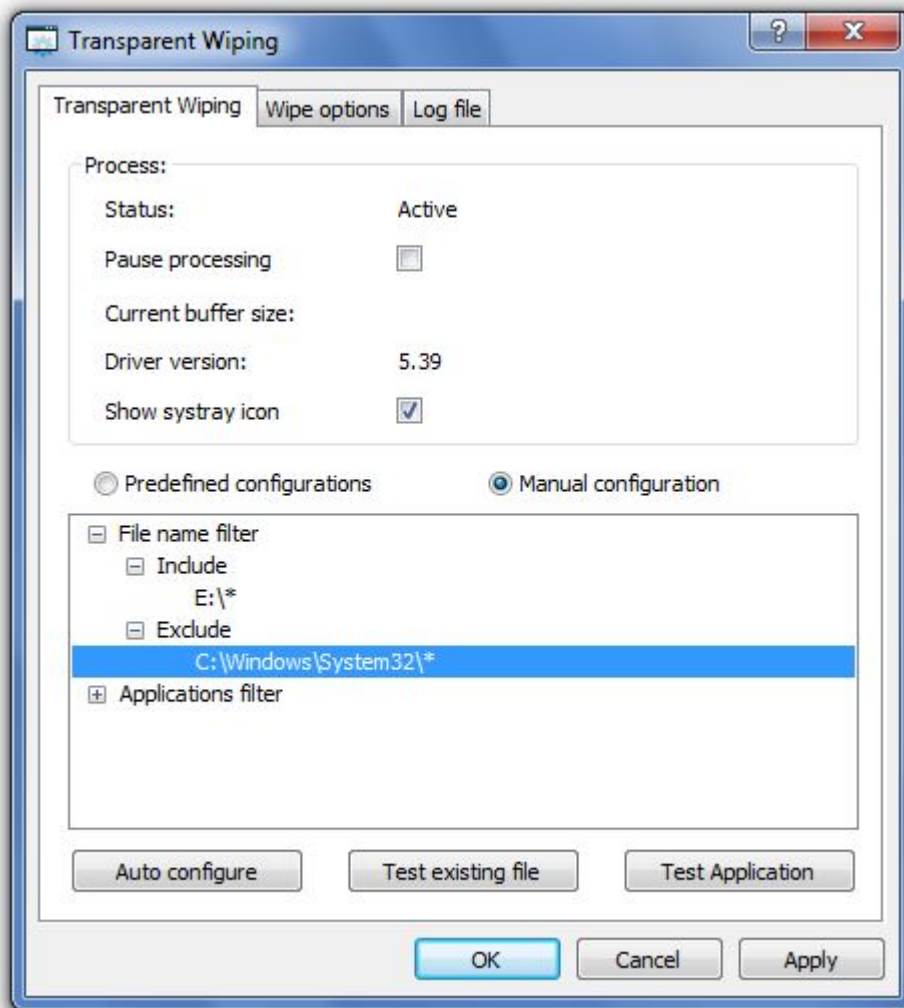
- Wipe everything
- Exclude files related to Windows Update process (recommended)
- Exclude files related to Windows Update process and files deleted by antivirus software  
- less impact on system performance, less secure

Move the slider to set the desired level of security:



The following dialog window is used to create the configuration manually:





There are two ways to include or exclude files - by file name and by the application (or system process) that launches the deletion. These two ways are implemented through **File name filter** and **Application filter**. With the commands **Add file**, **Add folder** and **Add pattern** (which are available through right-click menu ) users can add items in these lists. The pattern items may contain asterisk (\*) which means any sequence of symbols.

After configuring excluded and included items, there are four lists:

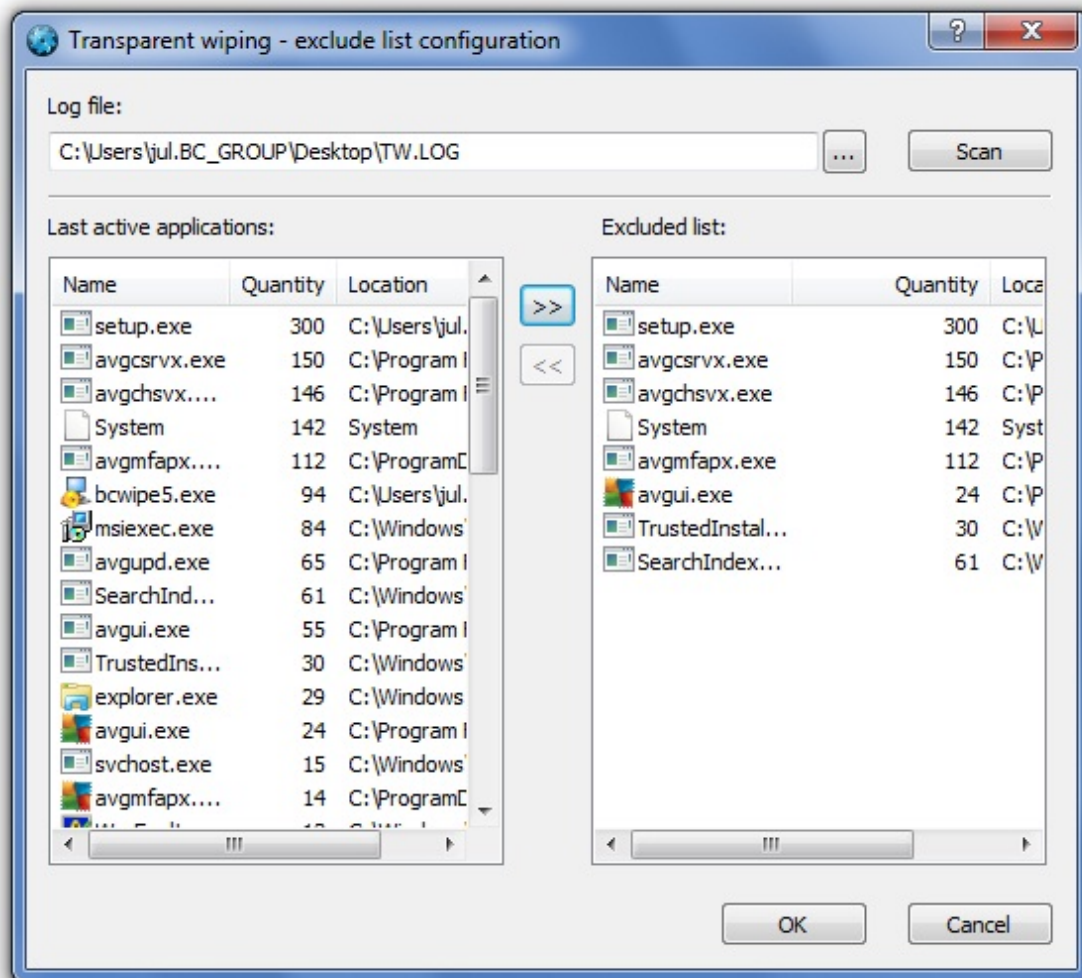
- Items included by file name
- Items excluded by file name
- Items included by application name
- Items excluded by application name

**THE MAIN RULE:** a file will be wiped only if it matches both **included** pattern and does not match both **excluded** patterns.

Use [Test existing file] and [Test application] buttons to know if a specific file or application is included or excluded.

## Automatic configuration of Excluded Applications list

BCWipe contains **Transparent Wiping auto-configure** utility that helps to configure the list of Excluded applications specifically for your system. To use the utility - click [Auto configure]. The utility will read the current log file assigned to the Transparent Wiping task, calculate the number of strings associated with each application and show the resulted statistics:



Click [Scan] to make the utility read the log file which name is reported in the edit box. Click column name **Name** or **Quantity** to sort the list by the name or by the number of occurrences.

Use buttons [>>] or [<<] to add or remove items to configure the Exclude list. After putting the desired items, click [OK].

# Transparent Wiping Icon in the System Tray

---

After activation of Transparent Wiping, if you enabled the option **Show systray icon**, new icon will appear in system tray area (notification area):



The icon performs several functions:

1. Report the current status of Transparent Wiping task if you point to the icon by mouse. The following states are possible:

- Active - the functionality is enabled and the deleted files are wiped
- Paused - the deleted files are moved to BCWipe temporary folder and deleted in usual way

The icon will indicate **paused** status of the process as follows:



- **No Transparent Wiping task** - there is no Transparent Wiping task in BCWipe Task Manager. The driver has been loaded, but is not active - the deleted files are not moved to BCWipe folder
- **Disabled** - not all modules needed for transparent wiping have been loaded

2. If you click on the icon by left mouse button - **Transparent Wiping** task will be opened .
3. If you click on the icon by right mouse button - list of the commands will appear. You can:
  - Open BCWipe Task Manager
  - View Log File
  - Pause/Resume Transparent Wiping.
4. If BCWipe temporary folder has become large and Transparent Wiping process is currently wiping the folder, the icon will indicate the pressure of work by red color:



Note that you can hide the Transparent Wiping tray icon by unchecking the checkbox **Show systray icon** in Transparent Wiping task properties window.

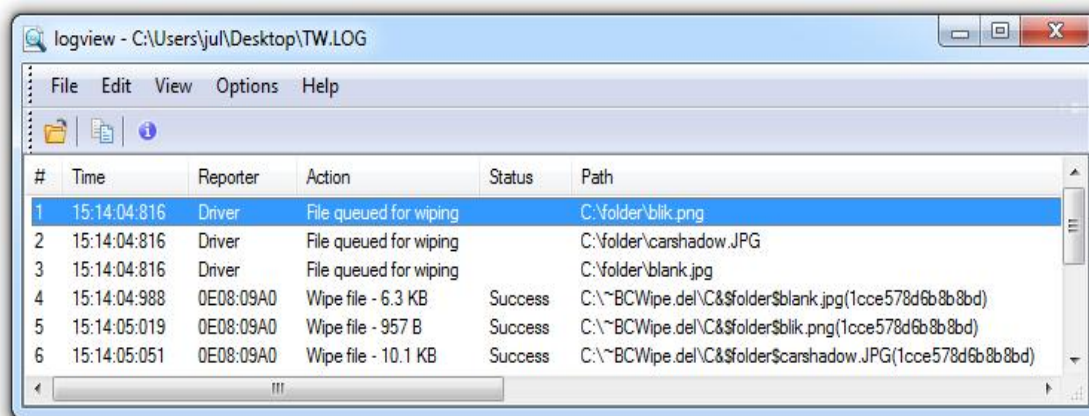
# Transparent Wiping Logging

**Transparent Wiping** task can generate detailed progress report. The name of the logfile is specified on **Log file** page of Transparent Wiping task window. **Log Viewer** utility allows viewing the process while it is running.

The procedure of Transparent Wiping consists of two steps:

- Interception of 'Delete' operation and moving the file to BCWipe temporary folder. This step is performed by special low-level driver (fsh.sys). After moving the file the driver reports to the logfile: file queued for wiping. If the driver reports that the file was not moved, it specifies the reason. For example, the file is locked by system. Additionally, FSH.SYS reports the name of the process that launched the 'Delete' operation. This field is helpful for setting up an **Application Filter**.
- Wiping the file. The step is performed by standard BCWipe application. It reports time, code of the wiping process, file name and the result of wiping.

Example of the log file generated after transparent wiping of three files:



The screenshot shows a window titled "logview - C:\Users\ju\Desktop\TW.LOG". The window contains a table with the following data:

#	Time	Reporter	Action	Status	Path
1	15:14:04:816	Driver	File queued for wiping		C:\folder\blik.png
2	15:14:04:816	Driver	File queued for wiping		C:\folder\carshadow.JPG
3	15:14:04:816	Driver	File queued for wiping		C:\folder\blank.jpg
4	15:14:04:988	0E08:09A0	Wipe file - 6.3 KB	Success	C:\~\BCWipe.del\C&\$folder\$blank.jpg(1cce578d6b8b8bd)
5	15:14:05:019	0E08:09A0	Wipe file - 957 B	Success	C:\~\BCWipe.del\C&\$folder\$blik.png(1cce578d6b8b8bd)
6	15:14:05:051	0E08:09A0	Wipe file - 10.1 KB	Success	C:\~\BCWipe.del\C&\$folder\$carshadow.JPG(1cce578d6b8b8bd)

## See also:

[Log File Viewer](#)

# Task Manager

**BCWipe Task Manager**

**Delete With Wiping task**

**Wipe Free Space task**

**Wipe Internet History task**

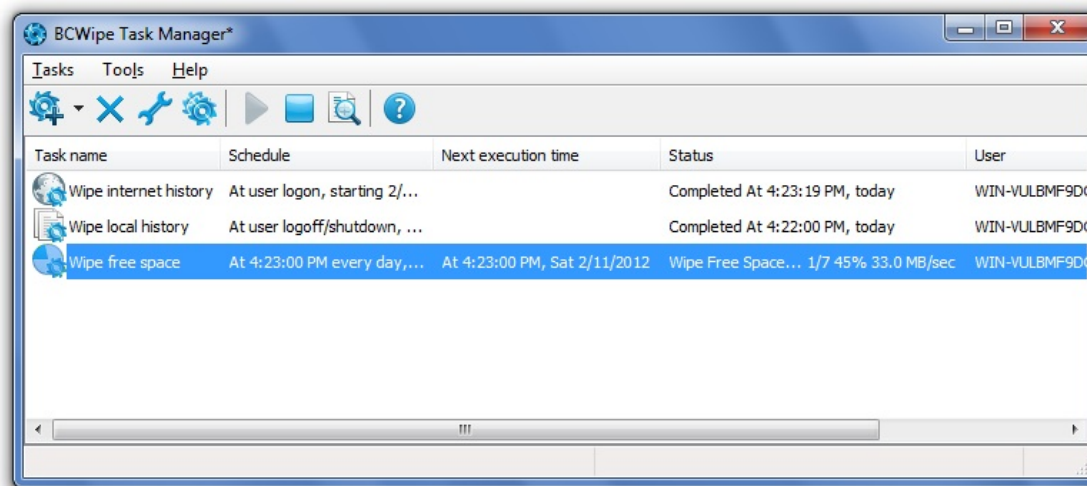
**Wipe Local History task**

**Schedule for running BCWipe tasks automatically**

# BCWipe Task Manager

BCWipe data wiping software includes the **BCWipe Task Manager** utility for configuring wiping tasks to be run automatically. In addition to setting the time for running a wiping task, you can also set special options for the task. For example, you can configure BCWipe to wipe free space of all your hard drives at midnight every Friday and use the U.S. DoD wiping standard for the process.

BCWipe Task Manager is run from the BCWipe program folder. The following picture displays the main window of the program:



This picture illustrates three tasks that BCWipe will run automatically. You can create as many tasks as you wish by selecting the **Create New Task** command from the 'Tasks' menu.

BCWipe Task Manager is used to control the following tasks:

- **Delete with wiping** - BCWipe will wipe certain selected files or folders automatically according to a schedule.
- **Wipe free space** - BCWipe will wipe free space to remove all traces of previously deleted files. This task can be set to run on a selected hard drive partition or on a set of partitions.
- **Wipe Internet History** - BCWipe can completely wipe all traces of your Internet history: cache, cookies, browsing history, search history, saved passwords, last active tabs, etc. Supported web browsers include the latest versions of Internet Explorer, Mozilla Firefox, Google Chrome and Opera.
- **Wipe Local History** - BCWipe Task Manager can be configured to clear traces of your local activity (not related to Internet history) which are stored on your computer. For example, Windows creates temporary folders for your user account and Recycle Bin folders. This task is also used to wipe names of recently opened files, which can be useful for security reasons. For example, you can configure BCWipe to clear the list of recently opened Word documents; so if another person opens Word on your computer, they would not be able to see which documents you've worked on.
- **Transparent wiping** - BCWipe's special Transparent Wiping feature securely wipes deleted or temp files automatically on the fly – eliminating time-consuming processes to wipe free space, wipe temporary files or wipe old file versions. Transparent Wiping is a specific task that can either be active or suspended, but it cannot be scheduled for a predefined time.
- **Swap File Encryption** - The BCWipe CryptoSwap utility allows you to encrypt the Swap File, which provides you with additional security. This is another specific task that can be active, but it cannot be scheduled for a predefined time.

**'User' column** - In addition to displaying tasks created by the current active user, BCWipe Task Manager in version 5 also displays tasks created by other users on that computer, as well as

tasks assigned by an administrator using **Jetico Central Manager**. Information about the task owner (or creator) is reported in this special column labeled as **User**.

**'Status' column** - A column labeled as Status has been added to BCWipe Task Manager in version 5. When a task is running, it will be reported in this column. For **Wipe free space**, the Status column will report the current stage of the process. For other tasks, the Status column will report 'wiping...'. After the task is completed, this column will report the final task's status. The above picture shows that the Wipe free space is currently running; the other two tasks were successfully completed at the time of this report.

**Managing of currently running tasks** - Running tasks can be controlled with BCWipe Task Manager in version 5. For example, the user can **Terminate** the task or view progress with the **View log file** command. Both commands are available through the task's right-click menu and from toolbar buttons. Please note that only an administrator can terminate tasks created by other users.

REMOVED FUNCTIONALITY: The ability to **Wipe unused space in the swap file** has been removed from BCWipe Task Manager. Yet this functionality is still available when BCWipe is running in interactive mode (from Windows Explorer). This has been done because this operation allocates all available memory which can completely lock the computer. Since BCWipe v.5 can run wiping tasks created by other users or by administrator via Jetico Central Manager, we'd prefer to avoid an unexpected lock during an active user session. To protect the swap file, it is recommended to enable Swap File Encryption task.

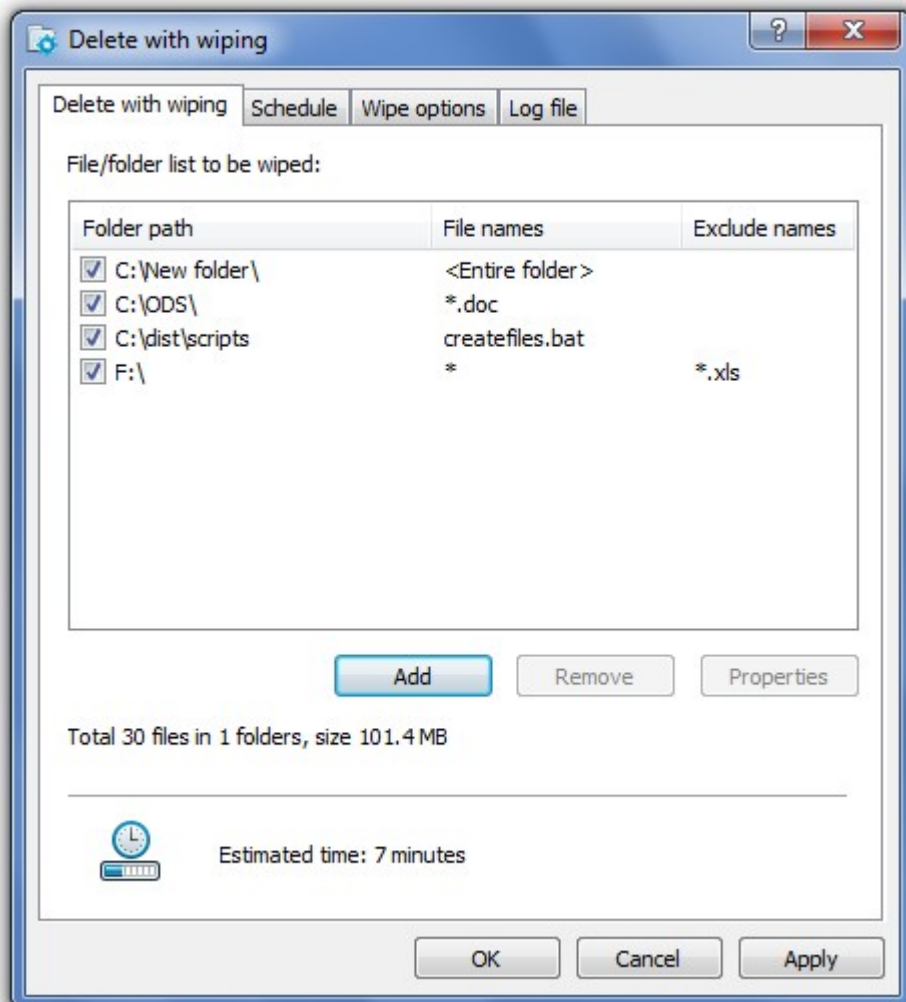
#### See also:

- 
- [Delete with wiping task](#)
  - [Wipe free space task](#)
  - [Wipe Internet History task](#)
  - [Wipe Local History task](#)
  - [Transparent Wiping overview](#)
  - [How to activate Transparent Wiping](#)
  - [Schedule for running BCWipe tasks automatically](#)



# Delete With Wiping Task

**BCWipe Task Manager** can set automatic wiping of selected files or folders by creating a new **Delete with wiping** task. To create a new task, run the Create new task command from the **Tasks** menu in BCWipe Task Manager. The following picture illustrates the dialog window that appears when you run the command and select the **Delete with wiping** task.



To add a file or folder to the list to be wiped automatically, click **[Add]**. BCWipe allows wiping the whole directory or assigning a pattern of file names that must be wiped.

To remove an item from the list, click **[Remove]**. Additional information about any file or folder from the list will be shown when you click **[Properties]**.

To set a schedule for running the **Delete With Wiping** task, select the **Schedule** tab.

To set wiping options for the process, select the **Wipe options** tab.

To assign a log file for the process, select the **Log File** tab.

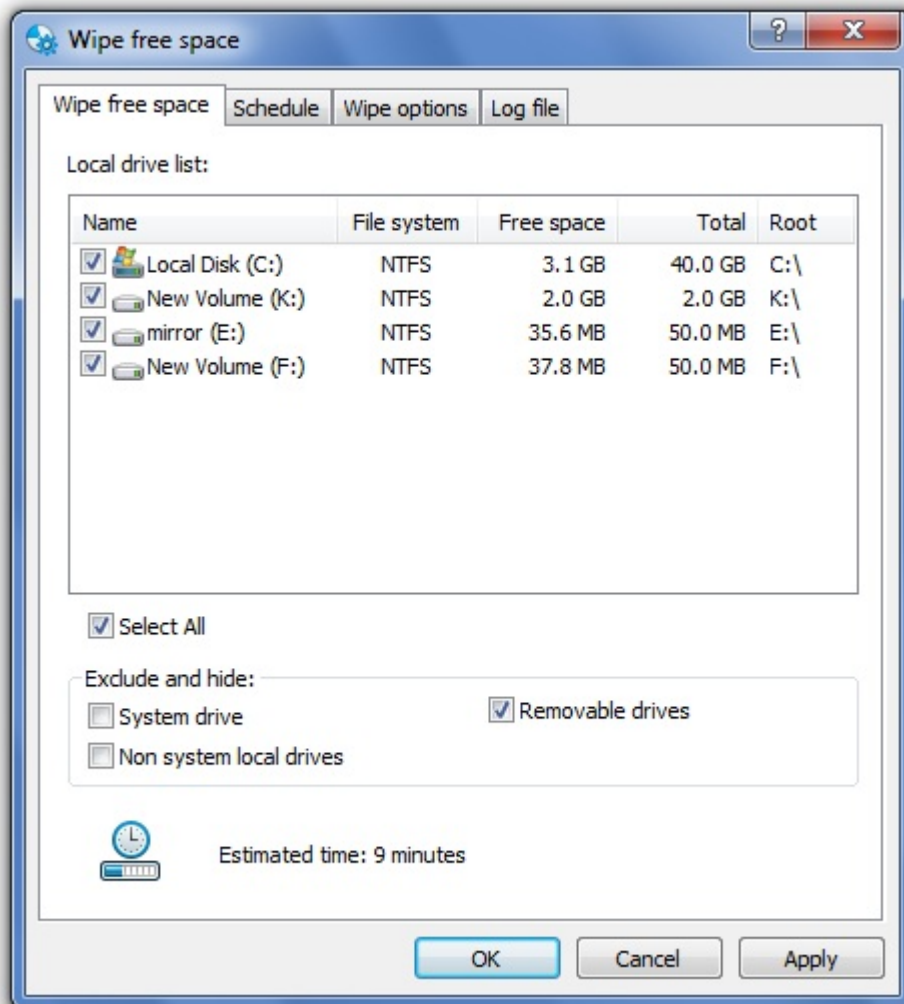
## See also:

[Schedule for running BCWipe tasks automatically](#)  
[Delete With Wiping command for files and folders](#)  
[Process Options](#)



# Wipe Free Space Task

**BCWipe Task Manager** can be set to automatically wipe free space on disk drives by creating a new **Wipe Free Space** task. To create the new task run the **Create new task** command from the **Tasks** menu in BCWipe Task Manager. The following picture illustrates the dialog window that appears when you run the command and select the **Wipe Free Space** task.



The Local drive list table shows all the drives available on your computer. Check the box corresponding to the drive that you wish to be wiped automatically. To set a schedule for running the **Wipe Free Space** task, select the **Schedule** tab. To set wiping options for the process, select the **Wipe Options** tab. To assign a log file for the process, select the **Log File** tab.

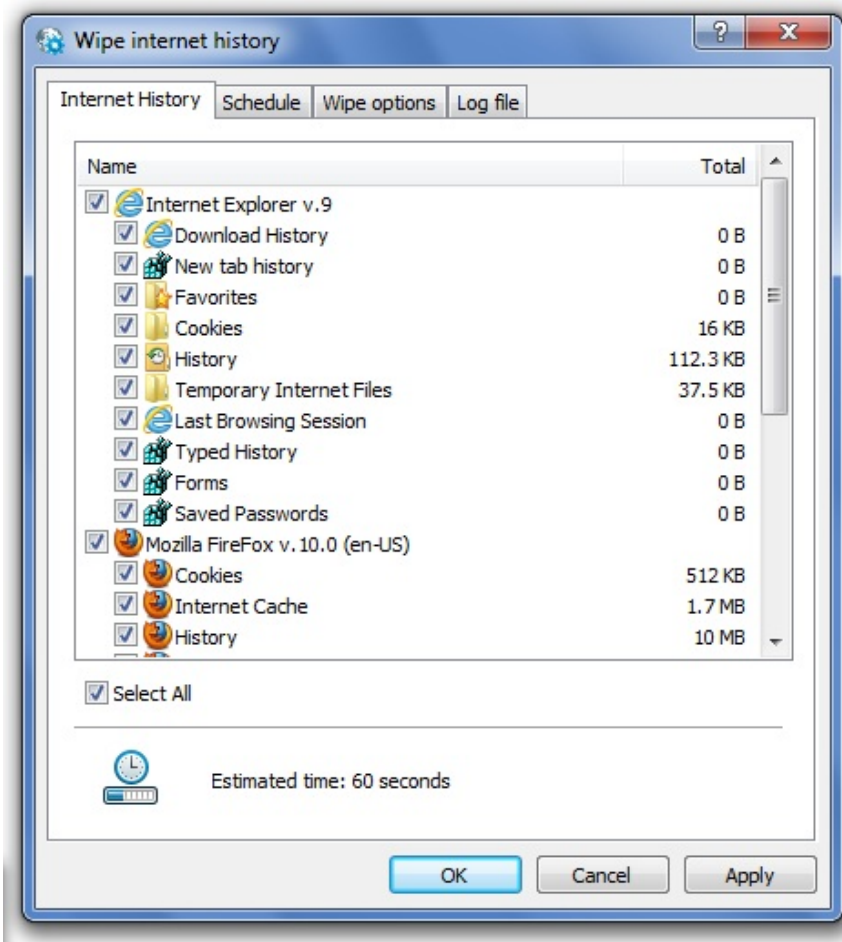
## See also:

- [Schedule for running BCWipe tasks automatically](#)
- [Wipe free space command](#)
- [Wiping options for the Wipe Free Space command](#)

# Wipe Internet History Task

**BCWipe Task Manager** can be set to automatically wipe all traces of your Internet browsing history stored on your computer. Traces include: Internet Cache (Temporary Internet Files), Cookies, History, saved passwords, last active tabs, typed addresses, etc. To wipe all these items, create a new task by selecting the **Create new task** command from the 'Tasks' menu in BCWipe Task Manager.

The following picture illustrates the dialog window that appears when you run the command and select the **Wipe Internet History** task.



Check the box, corresponding to the item that you wish to be wiped. BCWipe v.6 supports the following web browsers:

- Internet Explorer
- Mozilla Firefox
- Opera
- Google Chrome

**NOTE:** For Internet Explorer, some special files like "index.dat" may be locked by the system and cannot be wiped during a Windows session. In this case, BCWipe will rename those files to its own temporary directory and will wipe them at system startup.

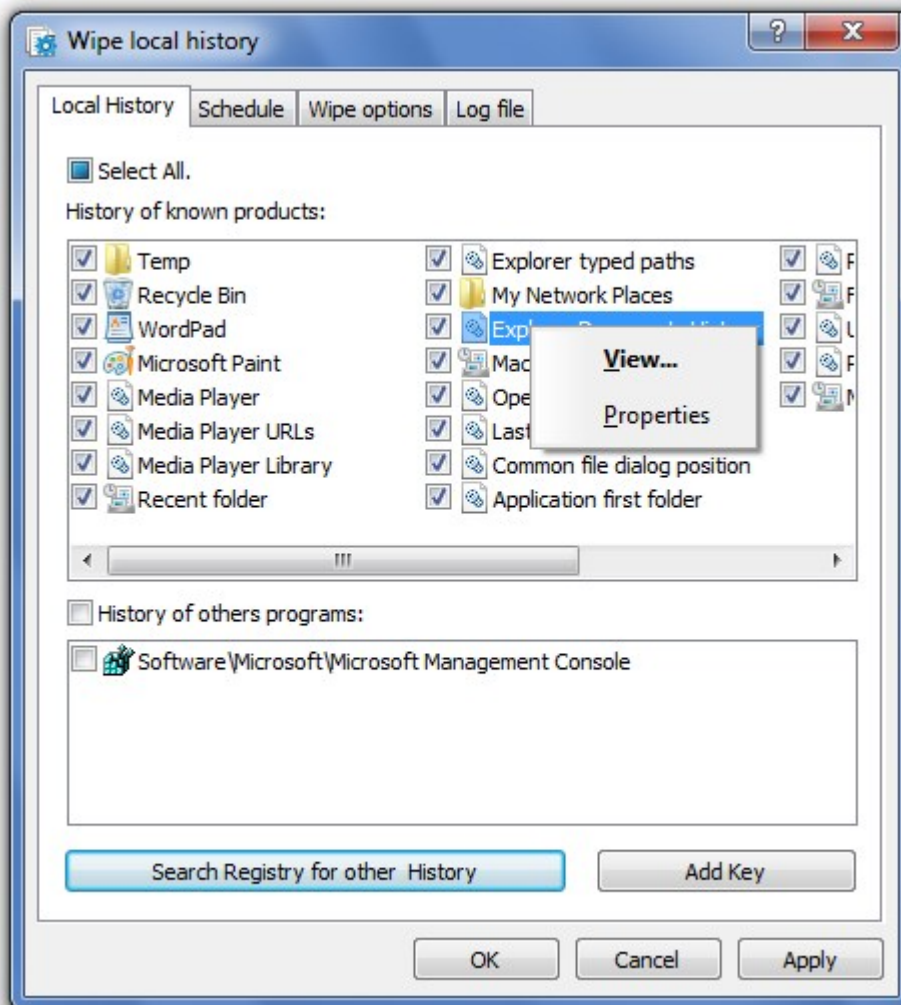
# Wipe Local History Task

**BCWipe Task Manager** can be configured to clear names of recently used files (also known as **Most Recently Used lists**, or **MRU lists**), which can be useful for security reasons. For example, you can configure BCWipe to clear the list of recently opened Word documents; so if another person opens Word on your computer, they would not be able to see which documents you've worked on.

The List of Local History items in BCWipe Task Manager also includes **Windows Temp** and **Recycle Bin** folders.

BCWipe Task Manager can set to automatically wipe your **Local History** by creating a new **Wipe Local History** task. To create the new task, select the **Create new task** command from the 'Tasks' menu in BCWipe Task Manager.

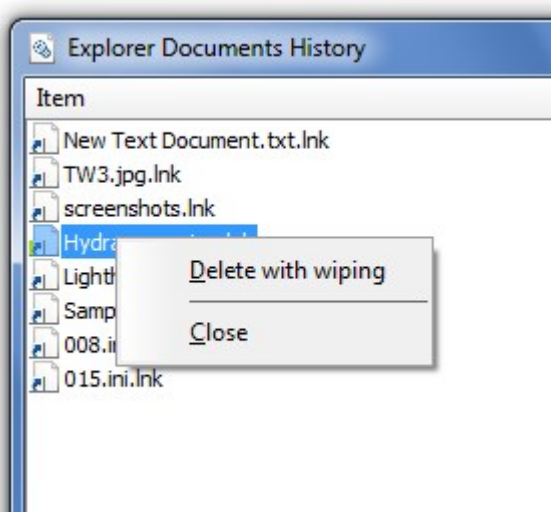
The following picture illustrates the dialog window that appears when you run the command and select the **Wipe Local History** task.



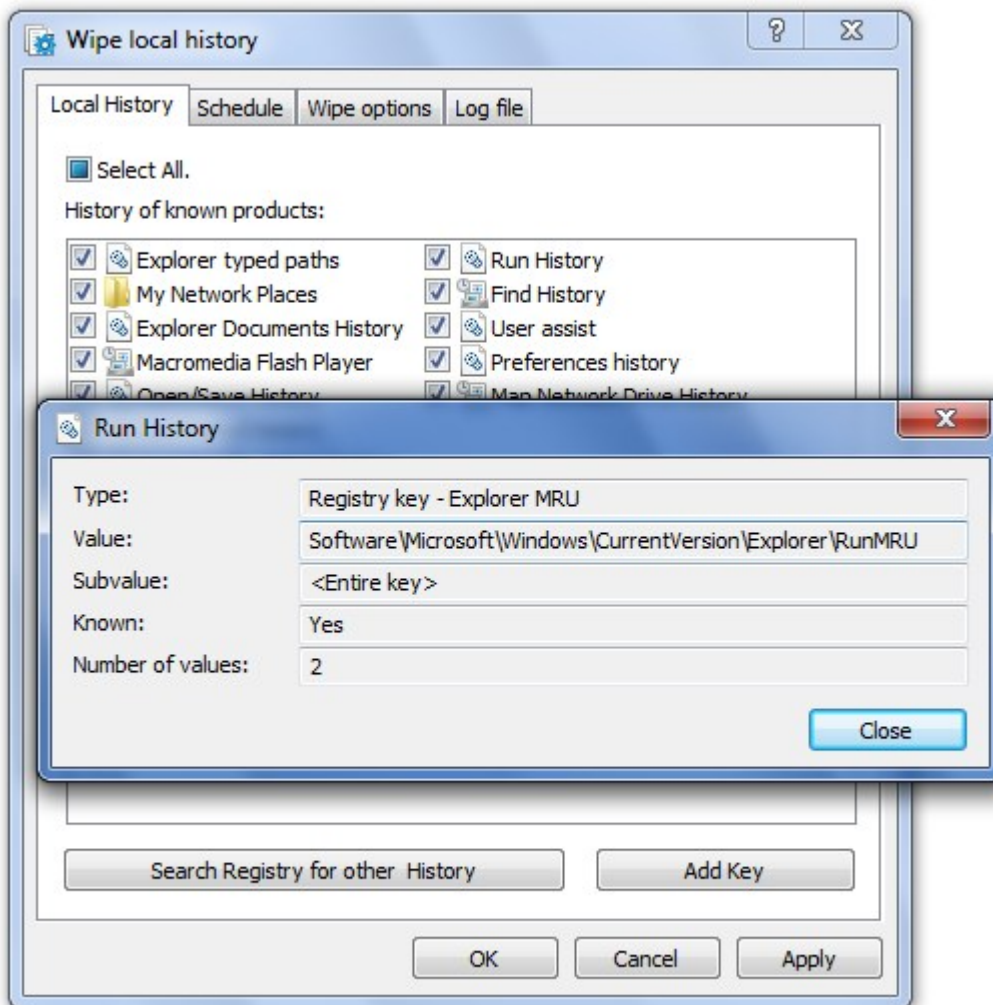
In the dialog window, the top pane shows the **History of known programs**. BCWipe can also search the **Windows Registry** database for registered MRU lists of other products. Click [**Search Registry for other history**] to run a search of the Registry for such lists. BCWipe will then display search results in the **History of other programs** tab.

Check the box corresponding to any type of MRU lists to instruct BCWipe wipe it automatically.

Another unique feature of this function is that BCWipe allows the user to view detailed information about every entry that can be wiped. Furthermore, each entry can be wiped without deleting the whole list. To do so, right-click on a selected MRU list (like **Run history** or **Find history**) and run the **View** command. BCWipe will then show the list where you can right-click on any item and run the **Delete with wiping** command:



Running the **Properties** command will show the location of this MRU list in the registry or in a folder.



BCWipe allows you to wipe **any key** in the CURRENT\_USER section of Windows Registry. Click [Add key], run Windows Registry Editor by clicking **Regedit**, copy any key from the CURRENT\_USER section and paste it into BCWipe. The key will be included in the **History of other programs** list.

To set a schedule for running the Wipe local history task, select the **Schedule** tab. To set wiping options for the process, select the **Wipe Options** tab.

NOTE: When you run **Wipe Local History** (or MRU lists), you instruct BCWipe to wipe references to the files, but not the files themselves! However, for Windows Temp and Recycle Bin items, the contents are completely wiped.

**See also:**

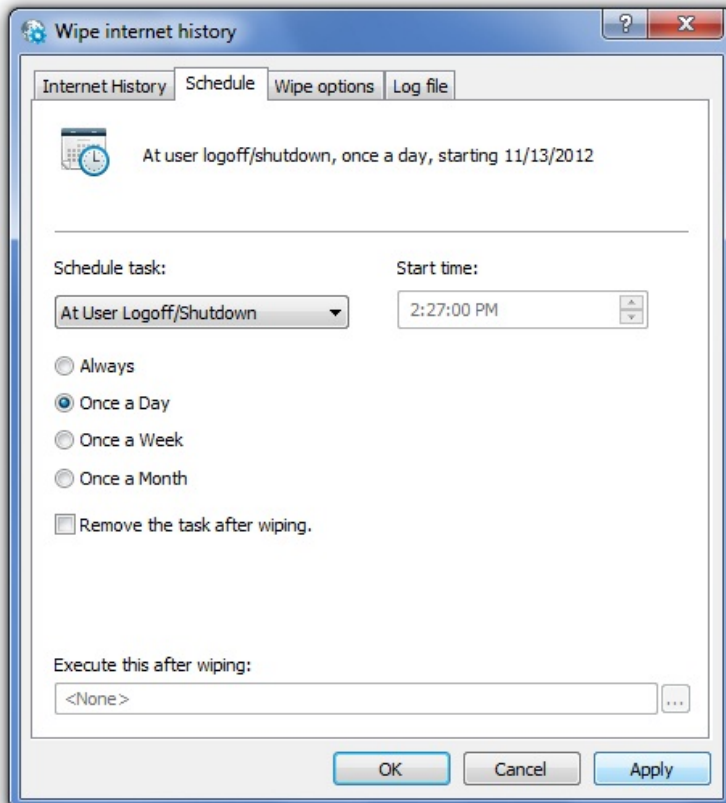
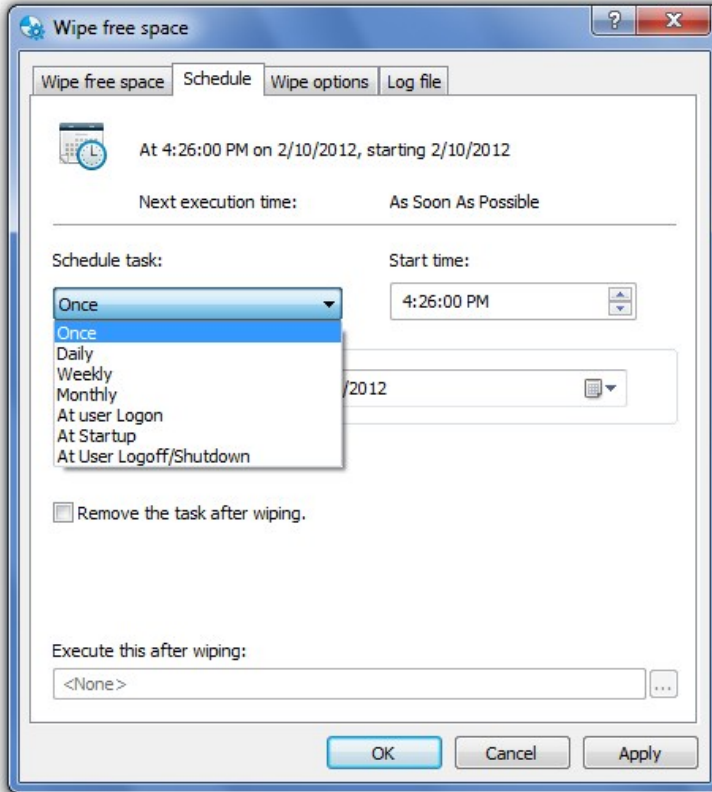
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[Schedule for running BCWipe tasks automatically](#)  
[Delete With Wiping command for files and folders](#)

# Schedule for Running BCWipe Tasks Automatically

Any existing task (except **Transparent Wiping** and **Swap File Encryption**) can be run manually by running the **Start the selected task now** command in the 'Tasks' menu of BCWipe Task Manager, or using the toolbar button.

To make BCWipe run a wiping task automatically, select **Schedule** tab in the task properties window.





**NOTE:** A user does not have to be logged on at the time when the task starts. Just be sure that the computer is turned ON, and the task will run. No user interaction is required; the task is running in the background and no reports are displayed on the screen. The current status of a running task is reported in the **Status** column of BCWipe Task Manager. Use the log file to see task progress and wiping results. To open the assigned log file, run the **View log file** command in the right-click menu of the selected task. Use the **Terminate** command to cancel the process.

BCWipe supports the following types of schedules:

- **Once** - This type of task schedule runs automatically at the time set in the Start time control box. If the user is not logged on at that time, the task will be started and the items will be wiped. The only exclusion is that registry items will be wiped later, when the user logs on. If the computer is turned off at the predefined time, the task will be launched at the next startup.
- **Daily** - This type of task schedule runs automatically every day at the time set in the Start time control box. You can also configure the task to be performed every 2nd, 3rd, or N-th day. If the user is not logged on at the predefined time, the task will be started and the items will be wiped. The only exclusion is that registry items will be wiped later, when the user logs on.
- **Weekly** - This type of task schedule runs automatically every week at the time set in the Start time control box. You can set a concrete day and time of the week for running the task. If the user is not logged on at the predefined time, the task will be started and the items will be wiped. The only exclusion is that registry items will be wiped later, when the user logs on.
- **Monthly** - This type of task schedule runs automatically every month at the time set in the **Start time** control box. You can set a specific week (first week ... last week), day of the week, and months when the wiping task must be run. If the user is not logged on at the predefined time, the task will be started and the items will be wiped. The only exclusion is that registry items will be wiped later, when the user logs on.
- **At logon** - This type of wiping task runs automatically when the user logs on. It is also possible to enable the options **Once a Day, Once a Week, Once a Month**.
- **At startup** - This type of wiping task runs automatically when the system starts. Registry items will be wiped at user logon. It is also possible to enable the options **Once a Day, Once a Week, Once a Month**.
- **At logoff/shutdown**. This type of wiping task runs automatically when the user logs off or shuts down. When the task is started, BCWipe allows to continue Logoff. In case if Logoff was launched - the wiping process will be continued after Logoff without user environment. In case if Shutdown was launched and the user continues Logoff - the wiping task will be terminated by the shutdown process. It is also possible to enable the options **Once a Day, Once a Week, Once a Month**.

**NOTE:** Windows **Group Policy** has a setting that determines how long the system waits for scripts applied by Group Policy to run. By default, the timeout is set to 10 minutes. If the wiping task takes more than 10 minutes to run, the system will continue logoff. Then, if "logoff" was launched, then the wiping task will still be running. But if "shutdown" was launched, then the shutdown process will terminate the running task. To prolong the timeout period, please do as follows (you must have administrative rights to perform these steps):

- Open Group Policy: Start --> Run --> type 'gpedit.msc'.  
In the left tab navigate to Computer Configuration --> Administrative Templates --> System --> Scripts

Select **Maximum wait time for Group Policy scripts**, right-click and run the Properties command.

- Click the 'Enabled' radio-button and set seconds to zero.
- Click Apply --> OK.

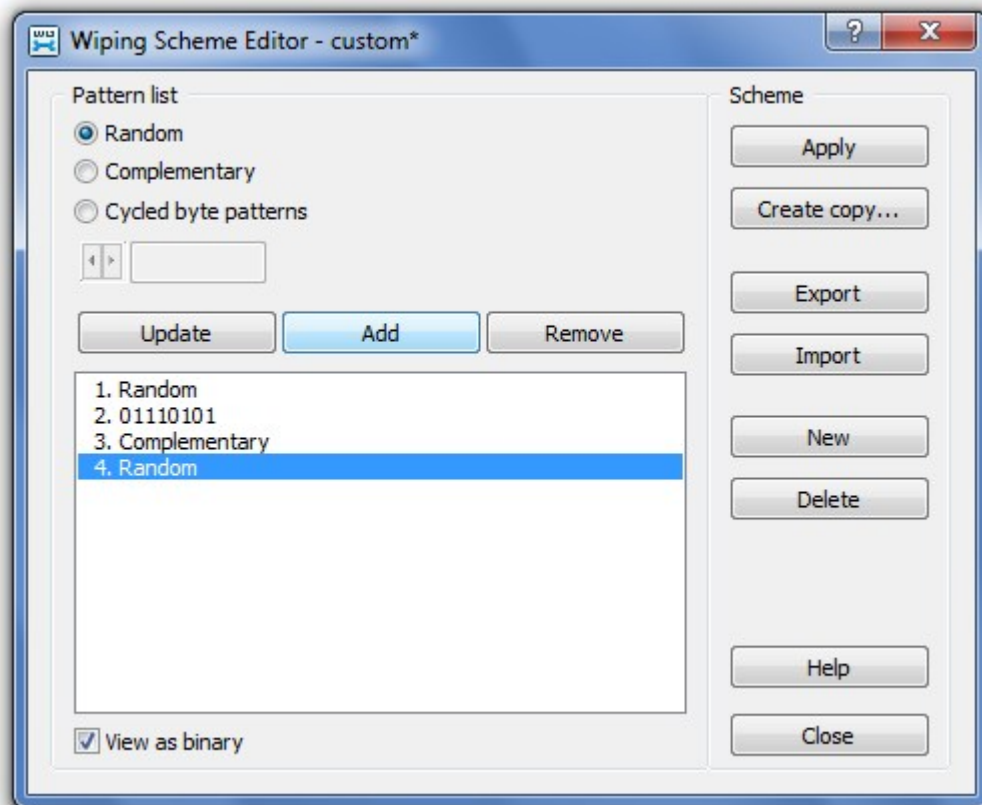


# Wiping Scheme Editor

The following wiping standards are embedded in BCWipe:

- US DoD 5220.22-M(ECE) - 7 passes
- US DoD 5220.22-M(E) - 3 passes
- German BCI/VSITR
- US DoE - Department of Energy standard
- Russian GOST R 50739-95
- British HMG IS5 (Baseline, Enhanced)
- NAVSO-P5239-26 (MFM,RLL)
- Canadian RCMP TSSIT OPS-II
- US Army AR380-19
- Bruce Schneier
- Peter Gutmann
- one random pass

Additionally, the software includes the **Wiping Scheme Editor** utility to view and edit number of wiping passes and binary patterns used at each pass. Click [**Edit**] in the dialog window of any wiping command to get more details of the selected wiping scheme or create custom scheme. The following dialog window appears:



To create new scheme -click [**New**] and specify a name of your scheme. The picture illustrates creation of custom wiping scheme called 'My wiping scheme'. BCWipe performs 7 passes of wiping when it shreds information according to the scheme. 11 passes means that BCWipe overwrites the information 7 times, and uses different byte patterns for overwriting. For example, in the first and the last (7-th) passes BCWipe uses random bytes to overwrite data. Then set:

- **Random** radio button - if you wish to use random bytes for overwriting
- **Complementary** - if you wish to use byte pattern complementary to the previous pass
- **Cycled byte patterns** - if you wish to set a concrete byte patterns for the wiping pass

To insert additional pass to the scheme, click [**Add**].

To update existing pass, select the pass in the list of passes and click [**Update**].

To remove a pass from the wiping scheme, select the pass in the list of passes and click **[Remove]**.

When you finish editing the wiping scheme, click **[Apply]** to make BCWipe apply the new settings.

If you wish to make a copy of existing wiping scheme and then edit the copy, click **[Create copy]**. BCWipe will ask you to enter a name for the new wiping scheme, and then will allow you to edit the new scheme.

Usually BCWipe stores wiping schemes in **Windows Registry** Database, but it is also possible to save them to files for further using the scheme on other computers. Procedure of saving the scheme to file is called **Export**, and procedure of loading wiping scheme from file is called **Import**. To save the wiping scheme to file, click **[Export]**, and click **[Import]** if you wish to load a scheme from file.

# Swap File Encryption

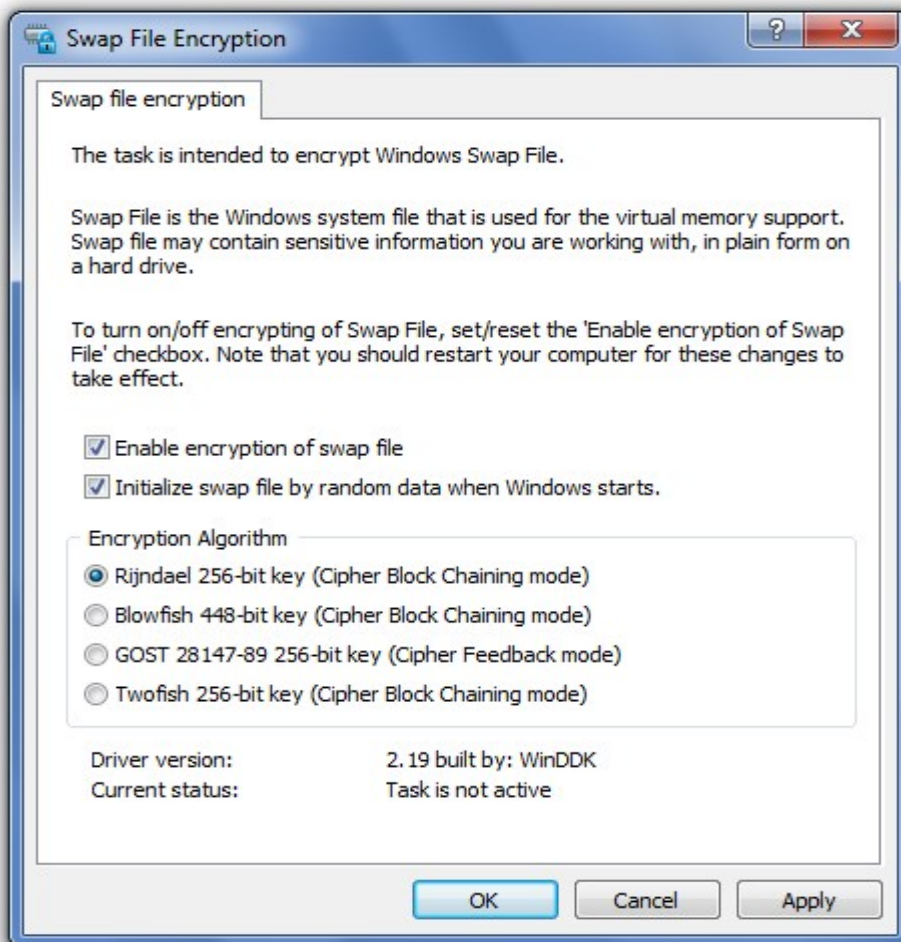
BCWipe allows encrypting **Windows Swap File**. Swap File is the Windows system file that is used for the virtual memory support, and it can store parts of documents, you are working with, in an opened form on hard drive. Even if some powerful encryption program encrypts an original document, Windows can put a whole document or part of it to the Swap file in an opened form. Encryption keys, passwords, and other sensitive information can also be swapped to hard drive. Even if you use all of the security advantages of the latest Windows versions, simple investigating of the Swap file in DOS mode may allow extracting a lot of information from the file.

## How to activate Swap File Encryption

**BCWipe Task Manager** can be used to activate encryption of the swap file by creating new task of the **Swap File Encryption** type. To create the new task run the **Create new task** command from the 'Tasks' menu in the BCWipe Task Manager program.

**NOTE:** Only administrators can create Swap File Encryption task. On Vista and Windows 7 - run BCWipe Task Manager "as administrator" to get the task available.

The following picture illustrates dialog window, appeared when you run the command and select the **Swap File Encryption** type of task.



**Note:** The same window appears when you click [Encrypt Swap File] on **Wiping Options** property page in the dialog window associated with **Delete With Wiping** or **Wipe free space** right-click menu commands

To turn on/off encryption of the swap file, set/reset the **Enable encryption of swap file** checkbox. Note that BCWipe will start (or stop) encrypting the Swap file only after reboot. If the

computer is not restarted after enabling the utility, **Current status** is reported as Not active, and vice versa - if you disable the utility and have not restarted computer, Current status is reported as still Active.

**Swap File Encryption** utility (called also **CryptoSwap**) allows choosing one of the following encryption algorithms - Rijndael, Blowfish, GOST 28147-89 or Twofish.

Encryption key is generated from random statistics, like nanoseconds timing intervals, when Windows boots up, and new key is generated every time when computer is rebooted.

**CryptoSwap** utility does not store the key somewhere on disk, it "forgets" the key after rebooting the computer.

**Note:** CryptoSwap will start (or stop) encrypting the Swap file only after reboot.

## How Swap File Encryption utility works

**Swap File Encryption** utility (CryptoSwap) loads low-level driver when Windows is started and before the operating system runs its virtual memory support mechanism and initializes the Swap File.

At the time of initialization the driver generates random encryption key, which is unique for the current Windows session. Encryption key is generated from random statistics, like nanoseconds timing intervals, and new key is generated every time you reboot computer. The CryptoSwap utility does not store the key somewhere on disk, it "forgets" the key when you reboot or shutdown computer.

The CryptoSwap driver intercepts all filesystem operations, like open/close, read/write file and others, detects requests to the system Swap File and encrypts data buffers when Windows writes something to Swap File. Similarly, when Windows reads data from Swap File, CryptoSwap decrypts the data. Hence, activity of the CryptoSwap utility is transparent for the operating system and for running applications.

## About initialization of the Swap File

When you reserve, for example, 5 Mbytes for an usual new file, the operating system clears the reserved 5 Mbytes of disk space with zeros. It is not so for the Swap File. When Windows boots up, it reserves disk space for the Swap File without re-writing the reserved disk space.

As a result, the following effect may occur. CryptoSwap starts to encrypt all the read/write operations to the Swap File, but activity on computer is not too high, and there is no need to use the Swap File. Hence, encrypted information won't be written to the disk space, reserved for the Swap File.

Now we boot to DOS and notice that only a small part of the Swap File (pagefile.sys) has been encrypted, all the other space in the file is just garbage, stored earlier on the disk. Since the 'garbage' can also contain some sensitive information, it is recommended to check **Initialize swap file by random data when Windows starts** checkbox.

Another solution is running **Wipe Free Space** command with **Swap File Wiping** option at least once, when you turn on encrypting Swap File for the first time. After that you do not have to use Swap File Wiping option at all, because contents of the Swap File will be encrypted.

# Run BCWipe from the Command-line Prompt

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You may run BCWipe commands to wipe free space on the disk and delete files or folders with wiping from the command line prompt.

This allows you to insert wiping commands to your batch (\*.bat) files and then run the batch file when you wish to run a number of wiping procedures with custom parameters.

BCWipe Setup program installs the program BCWipe.exe to the directory you have chosen during installation.

All the commands of the BCWipe.exe program include the **Mode** parameter, which describes wiping scheme and can be one of the following:

- DoD - Seven passes predefined pattern scheme according to US DoD 5220.22-M standard, (default scheme)
- PG - Peter Gutmann 35-passes predefined pattern scheme
- PF[file path name] - Previously created file with custom wiping scheme
- PS[scheme name] - User defined wiping scheme, created with Wiping Scheme Editor
- UD[1..100] - User Defined Number of wiping passes (first passes use complement patterns, the last pass uses random buffer)

## Wipe Free Space

To wipe free space on hard drive partition, run BCWipe.exe with the following parameters:

BCWipe FreeSpace [-Mode] [-Options] [drive name]

[Options]

- NoSwapFile - Disable swap file wiping ( by default it will be wiped )
- NoFileSlack - Disable file slack wiping ( by default it will be wiped )
- NoEmptyRecycleBin- Disable emptying Recycle Bin ( by default it will be erased )
- NoDirEntries - Disable everything: MFT records and Directory Nodes/Entries
- NoDirectoryNodeSlack - Disable Directory Entries wiping on FAT and Directory Nodes wiping on NTFS ( by default they will be wiped )
- NoMFTRecords - Disable MFT records wiping ( by default they will be wiped )
- NoNTFSLogFile - Disable NTFS Log File (\$LogFile) wiping;
- NoVerification - Disable disk-level verification;
- disableSR - Delete Restore Points;

EXAMPLE:

> **BCWipe FreeSpace -DoD -NoFileSlack -NoEmptyRecycleBin -NoDirEntries C:**

## Delete with Wiping

To delete files or folders run BCWipe.exe this way:

BCWipe Delete [-Mode] [-Options] [file or folder name or @listFile] [file or folder name]...

[Options]

- NoSwapFile - Disable swap file wiping ( by default it will be wiped )
- NoDirEntries - Disable everything: MFT records and Directory Nodes/Entries
- NoDirectoryNodeSlack - Disable Directory Entries wiping on FAT and Directory Nodes wiping on NTFS ( by default they will be wiped )
- NoMFTRecords - Disable MFT records wiping ( by default they will be wiped )
- NoNTFSLogFile - Disable NTFS Log File (\$LogFile) wiping;
- NoVerification - Disable disk-level verification;
- disableSR - Delete Restore Points;
- View - Start BCView after wiping file contents and before final deleting the file
- @listFile - Text file where every file name starts from a new line

EXAMPLES:

> **BCWipe Delete -PG -NoSwapFile -NoDirEntries -View C:\SecureData.doc**

> **BCWipe Delete C:\Test**

will delete ALL FILES IN THE FOLDER , and REMOVE THE FOLDER ITSELF! Compare the command with the following one:

> BCWipe Delete C:\Test\\*.\*

In the last example BCWipe deletes files inside the Test folder, but does not delete the folder.

## Swap File Wiping

To wipe the swap file, run BCWipe.exe with the following parameters:

BCWipe WipeSwapFile [-Mode]

EXAMPLE:

> **BCWipe WipeSwapFile -UD1**

## File Slacks Wiping

To run BCWipe for wiping file slacks, run BCWipe.exe with the following parameters:

BCWipe.exe FileSlack [-Mode] [-Options] [file or folder name or @listFile] [file or folder name]...

[Options]

- View - Start BCView twice before and after file slack wiping
- @listFile - Text file where every file name starts from a new line

EXAMPLE:

> **BCWipe FileSlack -UD3 -View C:\Test.txt**

Note that when you run BCWipe.exe with the FileSlack parameter, the program does not shred the file itself, it only wipes slack of the file. Neither contents of the file, nor its attributes become changed.

**ATTENTION:** the BCWipe.exe utility works without asking any additional confirmation for deleting files and for wiping free space on the disk. The program is designed so to provide a silent functionality when you run it from batch files.

## Common Options

- -Hidden - allows running the wiping utility in background
- -SuperHidden - same as previous, but it also hides the free space wiping progress bar
- -ExtendedErrorCodes - activates extended error code mapping;
- -LF [log file name] - assigns log file for wiping process, use quote for names containing spaces
- -LS[size in KBytes] - allows size limitation for the log file
- -ErrorLoggingOnly - only log strings containing 'Error';
- -ForceAPI - if all options are disabled, BCWipe won't load DefragAPI module. This flag forces BCWipe to load it anyway. It may be required to properly wipe encrypted/compressed files;

EXAMPLE:

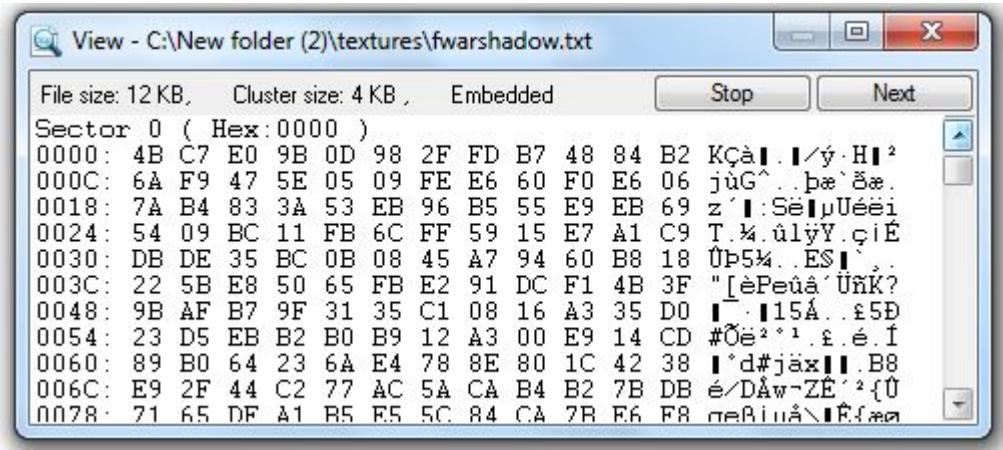
> **BCWipe Delete -Hidden -LF "C:\BCWipe.log" -LS200 C:\Test\\*.\***

# Hexadecimal File Viewer

The BCWipe software includes **Hexadecimal File Viewer** utility.

By using the utility you can examine file contents after wiping. The utility is useful for investigating a quality of wiping process, for example when you use a custom wiping scheme. You should just set the **'View this file before deleting'** check box in the **'Wiping Options'** property page in the **Delete with wiping** dialog window. (See also the [Delete With Wiping command for files and folders](#) chapter).

Hexadecimal File Viewer window looks like:



If you choose to view a group of files, then **Stop** and **Next** buttons will be available in the upper right corner of the viewer window.

Click **Next** to view the next file in the group. You can terminate viewing and continue wiping operation if you click **Stop**.

You can also run the viewer from the command line prompt. Use the arguments:

**> BCView.exe [View Slack-( 1-view, 0-no(default ))]**

You can change the viewer's font and colors by right-clicking mouse on the viewer's window. Note that **Fixed Font** is required for hexadecimal viewing, therefore only Fixed Font will be available in the **Choose Font** dialog window.

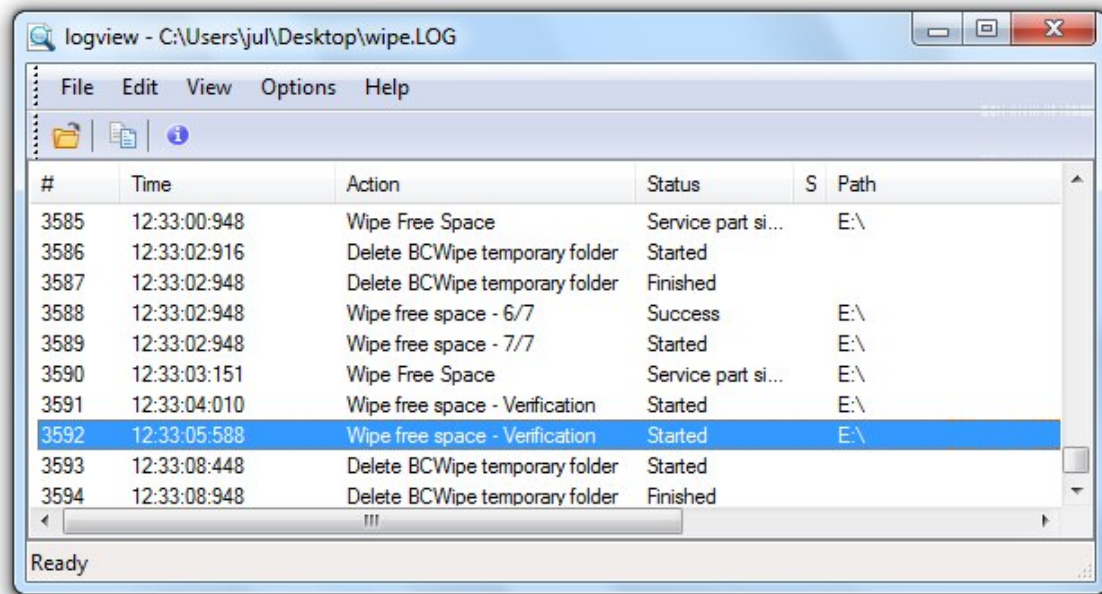


# Log File Viewer

The BCWipe software includes **Log Viewer** utility.

The log file can be generated by any BCWipe task, the Log Viewer gets the logfile as input file and shows its contents in a readable way. The information is shown by Log Viewer dynamically, i.e. the user can open the Log Viewer and monitor the process while it is being performed.

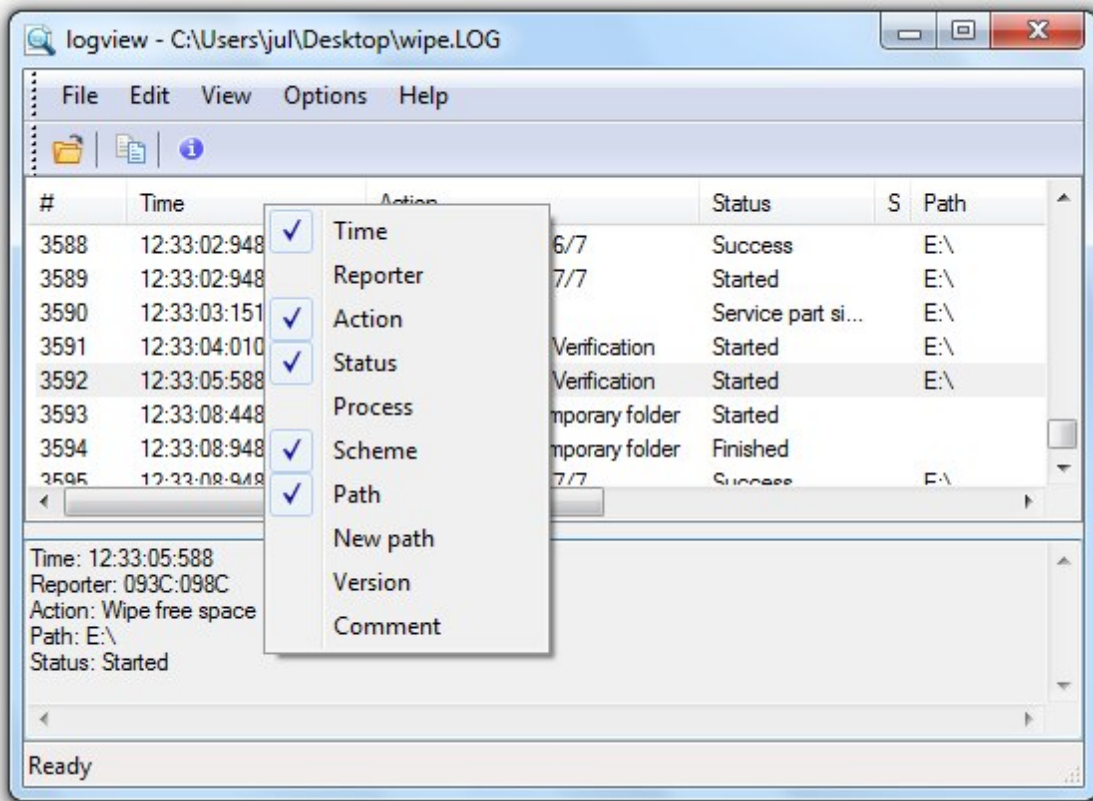
Log Viewer window looks like:



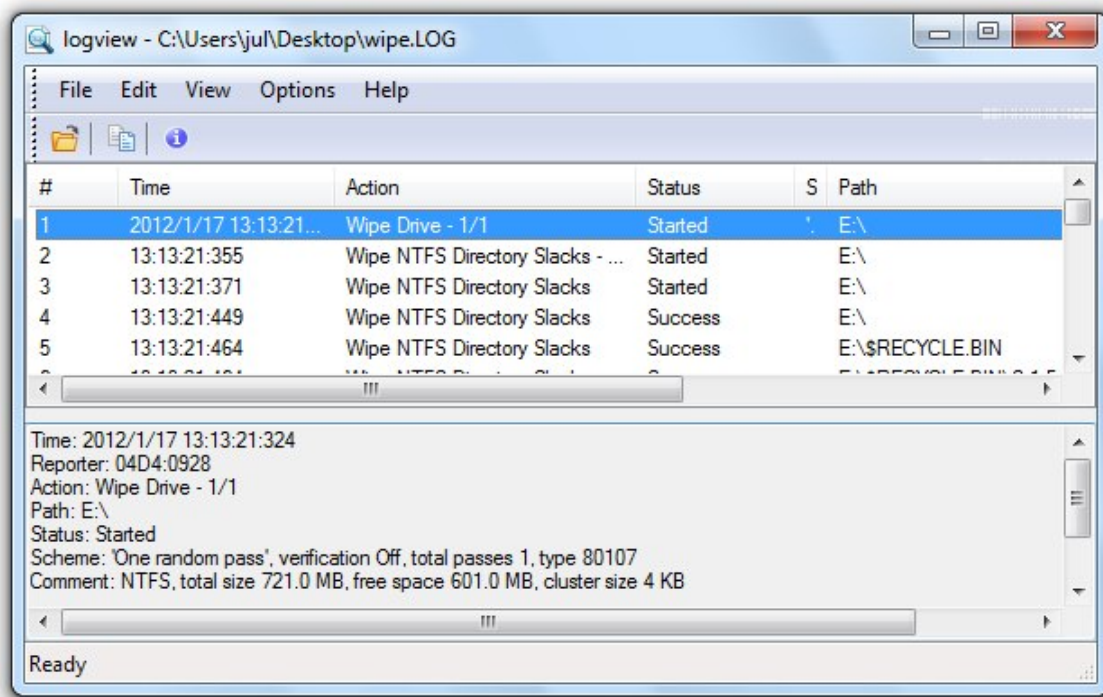
The following information is gathered and displayed by Log Viewer in separate columns:

- # - line number
- Time - time of the operation
- Reporter - driver or a high-level process (code of the process is reported)
- Action - operation performed
- Status - result of the action
- Process - for Transparent Wiping - the name of the process which deleted the file
- Scheme - wiping scheme
- Path - full name of the file or directory
- New Path - if the action is 'renaming' then new path is reported here
- Version -
- Comment - reserved column

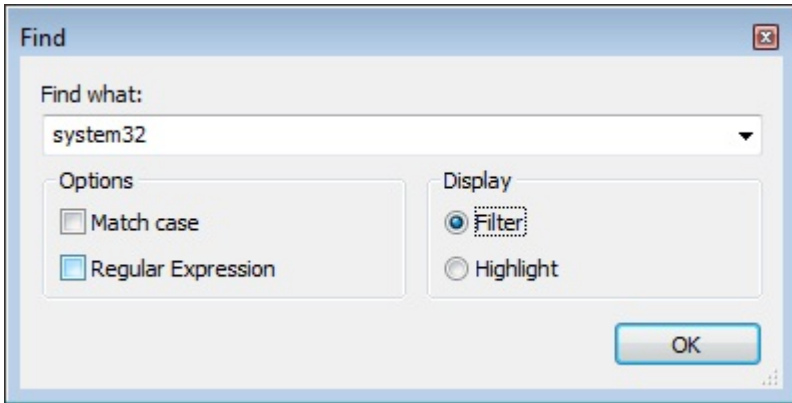
To hide/show columns - right-click on the column name and mark the desired columns:



Enable the option **Details** in **View** menu to display the bottom pane where the selected string is shown in more details:



To search for a string - use **Edit-->Find** menu. The following window will appear:



In **Find what**: edit box - type a sequence of symbols to search for.

- Select **Filter** radio-button to show only the result of search procedure.
- Select **Highlight** radio-button to highlight the result of search procedure.
- Select **Match case** radio-button to make search procedure case-sensitive.
- Select **Regular Expression** radio-button to consider the typed sequence as regular expression.

A regular expression is a flexible form of search pattern description. Regular expressions act pretty like wildcards, but they are even more powerful.

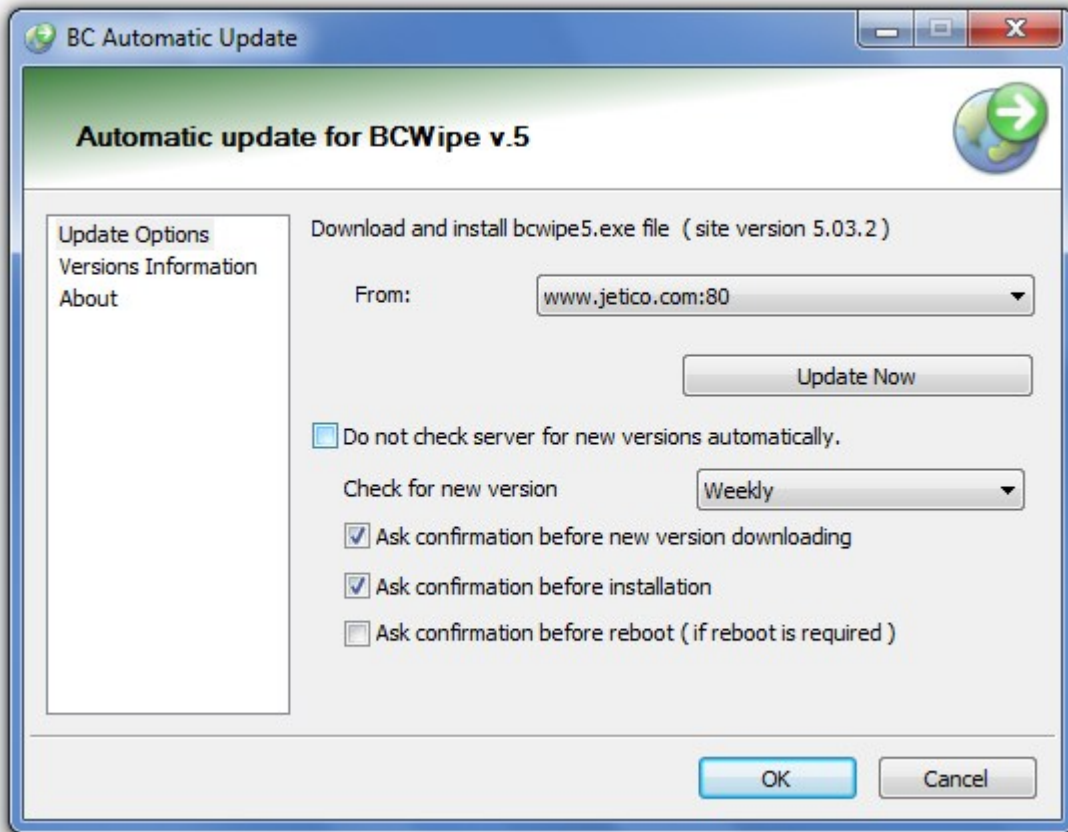
Read the following articles to know more about regular expressions and basic syntax:

<http://www.regular-expressions.info/reference.html>,

[http://en.wikipedia.org/wiki/Regular\\_expression](http://en.wikipedia.org/wiki/Regular_expression)

# Automatic Update Utility

BCWipe contains an utility that allows users to get the latest updates of the software automatically. To configure the utility, run it from **Tools** menu of BCWipe Task Manager. The following window will appear:



There are three tabs on the window: **Update options**, **Version Information** and **About**.

- **Update options** tab allows running the update procedure manually, or set it to be started automatically (daily, weekly, monthly). Also, you are able to set some options concerning confirmation messages.
- **Version Information** tab shows information about BCWipe files installed on your computer in comparison with the latest versions of the files available on our site.
- **About** tab contains information about AutoUpdate utility.

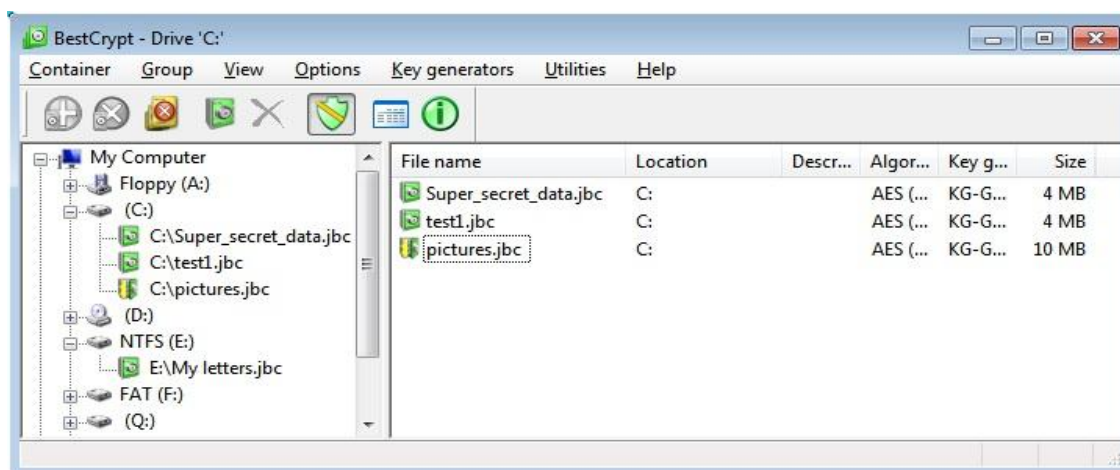
# What is the BestCrypt Data Encryption System?

BCWipe was originally built as the data wiping utility contained within BestCrypt, Jetico's encryption software, in order to deliver a complete data protection system to protect sensitive information throughout the lifecycle. BCWipe has been made available as its own software product, but BCWipe is also still included in BestCrypt.

**BestCrypt Data Encryption System** allows users to keep any form of data (files, letters, pictures, databases) in encrypted form on the hard disk, networks disks, removable disks, CD-ROM's and floppies. BestCrypt then lets user access it from any application.

Using BestCrypt you can create a container file (for example, you may create a 5Mbyte container file called LETTERS.jbc). Then you can mount this container as an additional logical drive: it will show up in Windows as an additional 5Mbyte virtual disk. When mounted, this logical drive looks and operates just like an ordinary disk drive: you can store your files on it. All files stored on the disk are automatically encrypted. Every read operation, which addresses the drive, causes decryption of the data, and every write operation causes encryption of data to be written. This approach is called **transparent encryption**. Using this system, your data is always stored in a safe encrypted form and appear decrypted only in the application you use to process them, and only while they are processed.

The following picture shows the **BestCrypt Control Panel**, used to perform all control operations (creating and mounting containers, setting BestCrypt options and so on):



BestCrypt uses encrypted logical disks technology to provide transparent encryption of your data. You only need to choose a drive letter and a password for your new BestCrypt logical drive. After password verification, access and use of encrypted data become transparent for any application.

To achieve maximum security BestCrypt utilizes the well-known encryption algorithms:

- Blowfish - in Cipher Block Chaining mode (256-bit key size)
- Twofish - in Cipher Block Chaining mode (256-bit key size)
- GOST 28147-89 - in Cipher Feedback mode (256-bit key size)
- Rijndael - in Cipher Block Chaining mode (256-bit key size)

We offer you a fully functional trial version of BestCrypt: <http://www.jetico.com/download.htm>

# If You Want to Comment on the Software

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If you have a product suggestion or comments on how to make BCWipe documentation better, send us E-mail at this Internet address:

***support@jetico.com***

Be sure to include your name, e-mail, version number of BCWipe. Please visit Jetico WWW-site to get information about our other products, Frequently Asked Questions lists, Download Evaluation Software page and other:

<http://www.jetico.com/download.htm>

We are always trying to improve BCWipe. User feedback is important and extremely valuable to the development team.

Thank you for your time!  
The Jetico Team