

Active@ File Recovery

User Guide

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Overview

What Happened to my Data?

When a file is written to a hard drive, two separate systems come into play:

1. A record of the file is kept in the Root Table or Master File Table (MFT).
2. Data is written to physical hard drive addresses. The physical addresses are labeled as 'occupied'. These addresses are called clusters.

When file is deleted from a hard drive, the same two systems are notified:

1. The file record in the Root Table or MFT indicates the file has been deleted.
2. Clusters are labeled as 'unoccupied'. The data is not removed.

In the event of an accidental file deletion we strongly recommend that you perform the recovery operation as soon as possible. If any new files are written to the same drive, there is a chance that the file-writing process may allocate data to these clusters.

Welcome to Active@ File Recovery

Active@ File Recovery is a powerful software utility, designed to restore accidentally deleted files and directories. It allows you to recover files that have been deleted from the **Recycle Bin**, as well as those deleted after avoiding the Recycle Bin (e.g. **Shift-Delete**).

Active@ File Recovery can be installed on and run from CD/DVD or USB disk, so that the risk of overwriting your data is minimized.

Active@ File Recovery will help you to restore data residing on hard drives, floppy or USB drives formatted in any of the following file systems:

- Microsoft NTFS / ReFS / FAT / exFAT
- Apple HFS+ / ApFS
- Linux Ext2 / Ext3 / Ext4 / Btrfs
- Unix UFS, Silicon Graphics XFS, IBM JFS, Sun ZFS
- CD/DVD/Blu-ray, UDF & ISO9660

It works under all Windows family operating systems:

- Windows 11, Windows 10, Windows 8, Windows 7
- Windows Server 2000, 2003, 2008, 2008 R2, 2012, 2016, 2019, 2022
- Windows XP, Vista
- Windows PE (embedded Windows environment loaded from CD/DVD/BD or USB disk)

Active@ File Recovery supports:

- IDE, SATA, eSATA, SAS, SSD, NVMe, SCSI hard drives, USB Drives and Memory Cards
- Damaged or deleted RAID virtual reconstruction (RAID-0, RAID-1, RAID-5, Span)
- Large-sized drives (more than 2TB)
- Long file names and local language (non-English) file names
- Recovery of compressed, fragmented and encrypted files on NTFS
- Detection and recovery from deleted or damaged partitions
- Saving scan results to the storage and opening them later on
- Deleted files filtering, exact or partial file name search
- Disk Image creation and loading (to restore files and folders from)
- Search deleted files by predefined signatures, including custom signature definition
- Integration with a Disk Viewer/Editor - to be able to inspect raw disk/partition/file data

RAID-5 of different types is being supported:

- Left Asynchronous (the most frequently used in hardware RAIDs)
- Left Synchronous (used in the most software RAIDs based on LDM)
- Right Synchronous
- Right Asynchronous

New in version 25

- Added creating raw disk images for specific disk regions to improve file analysis
- Added eBooks signatures recovery: MOBI, AZW, AZ3, AZ4, PRC, EPUB
- Improved recovery of properties for PDF, MP3 and other signatures
- Latest recovery Kernel 15.01.17 includes many improvements and bug fixes
- The latest Linux Boot Disk based on openSUSE Leap 15.6
- Active@ Boot Disk upgraded to WinPE based on Windows 11 24H2 code base

New in version 24

- Latest recovery Kernel 14.01.17 many improvements and bug fixes
- Improved recovery for volumes with cluster size > 64Kb
- Added advanced SuperScan options:
 - Reconstruct disks having different physical sector size
 - Reconstruct devices starting with non-zero offset in sector
- Improved Boot Disk – added Display Scaling and Network Drive Mapping
- Active@ Boot Disk upgraded to WinPE based on Windows 11 23H2

New in version 23

- Improved recovery of NTFS volumes formatted with large cluster size
- Added recovery of Sun ZFS file system
- Latest recovery Kernel including many improvements and bug fixes
- Ultimate package: improved Bootable Disk Creator – stores custom configuration for WIM PXE boot
- Ultimate package: Active@ Boot Disk switched to the latest WinPE v.10 based on Windows 11 v22H2 code base

New in version 22

- Performance enhancements and bug fixes
- Ultimate package: improved Bootable Disk Creator
- Ultimate package: Active@ Boot Disk switched to the latest WinPE v.10 based on Windows 11 v21H2 code base
- Added new predefined file signatures recognition:
 - Apple iWork Pages (PAGES)
 - Apple iWork Numbers (NUMBERS)
 - Apple iWork Keynotes (KEY)

New in version 21

- Simplified and improved User Interface
- Latest Recovery Kernel includes improvements and bug fixes
- Ultimate version: Active@ Boot Disk upgraded to the latest WinPE based on Windows 10 build 2004
- Ultimate version: Active@ LiveCD upgraded to openSUSE 15.2: Linux Kernel 5.3, KDE 5.18

New in version 20

- Added recovery of Apple ApFS file system
- Reimplemented recovery of Microsoft ReFS file system
- Latest Recovery Kernel including many improvements and bug fixes
- Added new pre-defined file signatures:
 - Ancestral Quest Database File (AQ)
 - LibreOffice Documents
 - WPS Office Documents

New in version 19

- Improved Welcome Dialog and Registration
- Improved NTFS recovery on volumes located in Windows Storage Spaces
- Latest Recovery Kernel including many improvements and bug fixes
- Added pre-defined file signatures:
 - Canon Raw Image File (CR3)
 - Finale Notation File (MUSX)

New in version 18

- New Easy Mode – simplifies search for lost files and data recovery on live volumes

- Added more pre-defined file signatures recognition:
 - Microsoft Office Documents (ONE, PUB)
 - MySQL files (IBD,FRM,MYI)
 - Oracle VirtualBox (VDI)
 - Betacase Client Info (BCB)

New in version 17

- More pre-defined file signatures recognition: Microsoft SQL Server Database (MDF), Virtual Hard Drive Files (VHDX)
- Support for Microsoft's ReFS versions 3.x file system data recovery
- Improvements in Linux/Unix JFS and XFS file systems data recovery
- Improved handling of dynamic virtual disk arrays: Microsoft's LDM & Linux's LVM
- Improved software stability while working with damaged disks
- Improvements in Windows Storage Spaces partitions handling
- Data recovery for ReFS file system having non-standard sector sizes: 1024, 2048 & 4096 bytes
- Improved Custom Signatures scripting for user templates creation to search deleted file by their signatures
- Professional & Ultimate packages: the latest Active@ Disk Editor version 7 included
- Ultimate package: Active@ Boot Disk switched to WinPE 10 x64 base, Active@ LiveCD switched to KDE5 base

New in version 16

- More pre-defined file signatures recognition: AI, ACCDB, OST, DB3, VCPROJ, USER, SVG, FBR
- Support for Microsoft's new generation ReFS file system scan & data recovery
- Support for Linux/Unix JFS file system scan & data recovery
- Recovery of fragmented files by signatures (MOV/MP4)
- Redesigned User Interface: dockable dialogs, semi-transparent popups
- Full support for HiDPI monitors (large screen resolutions)
- Improvements in XFS / Ext4 filesystems recovery
- New security based on software registration and activation

Active@ Scan Technology

Active@ Scan technology allows you to recognize files based on file signatures for the following file types:

Adobe Files

- Adobe Acrobat Document (*.pdf)
- Adobe Photoshop Document (*.psd)
- Adobe Shockwave Flash File (*.swf)
- Adobe Effects Projects (*.aep)
- Adobe Illustrator (*.ai)

Apple iWork Files

- Apple iWork Pages (*.pages)
- Apple iWork Numbers (*.numbers)
- Apple iWork Keynotes (*.key)

Camera Raw Files

- Canon Raw CIFF Image File (*.crw)
- Canon Raw Image File (*.cr2, cr3)
- Digital Negative Image File (*.dng)
- Fuji FinePix Raw Image File (*.raf)
- Hasselblad 3F Raw Image File (*.3fr)
- Kodak Photo-Enhancer File (*.kdc)
- Kodak Raw Image File (*.der)

- Konica Minolta Raw Image File (*.mrw)
- Leaf Aptus Raw Image File (*.mos)
- Leica Raw Image File (*.raw)
- Mamiya Raw Image File (*.mef)
- Nikon Raw Image File (*.nef)
- Olympus Raw Image File (*.orf)
- Panasonic LX3/LX5 Raw Image File (*.rw2)
- Pentax Raw Image File (*.pef)
- Samsung Raw Image File (*.srw)
- Seiko Epson Raw Image File (*.erf)
- Sigma Raw Image File (*.x3f)
- Sony Digital Camera Raw Image File (*.arw)
- Sony SR2 Raw Image File (*.sr2)
- Sony SRF Raw Image File (*.srf)

Compressed Archives

- 7-Zip File Archive (*.7z)
- ARC File Archive (*.arc)
- ARJ File Archive (*.arj)
- BZ2 Compressed Archive (*.bz2)
- LZ4 Compressed Archive (*.lz4)
- XZ Compressed Archive (*.xz)
- GNU Zipped File Archive (*.gz)
- LZH File Archive (*.lzh)
- TAR Archive File (*.tar)
- Windows Cabinet Archive File (*.cab)
- RAR Archive File (*.rar)
- Zipped File Archive (*.zip)
- ZOO File Archive (*.zoo)

Electronic Books

- Amazon Kindle eBook (*.azw)
- Amazon KF8 eBook (*.azw3)
- Amazon Print Replica eBook (*.azw4)
- DjVu eBook Image File (*.djvu)
- EPUB eBook File (*.epub)
- Fiction Book 2.0 File (*.fb2)
- Microsoft eBook Format (*.lit)
- MobiPocket eBook File (*.mobi)
- Palm MobiPocket eBook (*.prc)
- Rocket eBook File (*.rb)

File System Metadata

- CDFS Disk Image File (*.iso)
- FAT Directory Record (*. \$dir)
- NTFS File Record (*. \$file)
- NTFS Index Record (*. \$indx)

FileMaker Platform

- FileMaker Pro 3.0 File (*.fp3)
- FileMaker Pro Database (*.fp5)
- File Maker Pro Document (*.fmp12)
- File Maker Pro Ver.7 + Database (*.fp7)

Formatted Text Files

- Compiled HTML Help File (*.chm)
- Extensible Markup Language Document (*.xml)
- Hypertext Markup File (*.htm)
- Rich Text Format File (*.rtf)

Microsoft Office & OpenOffice Documents

- Crystal Report (*.rpt)
- Microsoft Access 2007 Database (*.accdb)
- Microsoft Access Database (*.mdb)
- Microsoft Excel Open XML Document (*.xlsx)
- Microsoft Excel Spreadsheet (*.xls)
- Microsoft OneNote Document (*.one)
- Microsoft Outlook Message (*.msg)
- Microsoft PowerPoint Presentation (*.ppt)
- Microsoft Publisher Document (*.pub)
- Microsoft Word Document (*.doc)
- Microsoft Word Open XML Document (*.docx)
- OpenDocument Text Document (*.odt)
- Other OLE-container (*.ole)
- Outlook Offline Folder Files (*.ost)
- Outlook Personal Information Store (*.pst)
- PowerPoint Open XML Presentation (*.pptx)
- Visio Drawing File (*.vsd)
- XML Paper Specification File (*.xps)
- OpenOffice Text Document (*.odt)
- OpenOffice Spreadsheet (*.ods)
- OpenOffice Database (*.odb)
- OpenOffice Formula (*.odf)
- OpenOffice Graphic (*.odg)
- OpenOffice Presentation (*.odp)
- LibreOffice Text Document (*.odt)
- LibreOffice Graphic (*.odg)
- LibreOffice Presentation (*.odp)
- LibreOffice Spreadsheet (*.ods)
- LibreOffice Formula (*.odf)
- LibreOffice Database File (*.odb)
- WPS Office Document (*.docx)
- WPS Office Spreadsheet (*.xlsx)
- WPS Office Presentation (*.pptx)

Music & Audio Files

- 4X Technologies Audio File (*.4xa)
- Advanced Audio Coding File (*.aac)
- Audio Codec 3 File (*.ac3)
- Audio Interchange File (*.aiff)
- Compressed Audio Interchange File (*.aifc)
- Free Lossless Audio Codec File (*.flac)
- MIDI File (*.mid)
- Monkey's Lossless Audio Codec File (*.ape)
- MP3 Audio File (*.mp3)
- Ogg Vorbis Compressed Audio File (*.ogg)
- Rich Music Format File (*.ra)

- Simple Audio File (*.au)
- Synthetic Music Mobile File (*.mmf)
- WAVE Audio File (*.wav)
- WavPack Correction Audio Stream (*.mvc)
- Windows Media Audio File (*.wma)
- Finale Notation File (*.musx)

Photos & Images

- Bitmap Image File (*.bmp)
- Corel Metafile Exchange Image (*.cmx)
- Corel Draw Image File (*.cdr)
- Graphical Interchange Format File (*.gif)
- Icon File (*.ico)
- JPEG Image File (*.jpg)
- JPEG 2000 Core Image File (*.jp2)
- JPEG 2000 Image File (*.j2c)
- Maxon Cinema 4D (*.c4d) Multiple-image Network Graphics (*.mng)
- Paintbrush Bitmap Image File (*.pcx)
- Portable Network Graphics (*.png)
- Scalable Vector Graphics File (*.svg)
- Tagged Image File (*.tif)
- Windows Animated Cursor (*.ani)

QuickTime Multimedia

- 3G2 Multimedia File (*.3g2)
- 3GP Multimedia File (*.3gp)
- CDC Multimedia File (*.cdc)
- DRM Multimedia File (*.dcf)
- F4V Multimedia File (*.f4v)
- JPA Multimedia File (*.jpa)
- JPM Multimedia File (*.jpm)
- JPX Multimedia File (*.jpx)
- M4A Multimedia File (*.m4a)
- M4B Multimedia File (*.m4b)
- M4V Multimedia File (*.m4v)
- MAF Multimedia File (*.maf)
- Motion JPEG 2000 Video Clip (*.mj2)
- MOV Multimedia File (*.mov)
- MP4 Multimedia File (*.mp4)
- MPG Multimedia File (*.mpg)
- MQV Multimedia File (*.mqv)
- SDV Multimedia File (*.sdv)

Video Files

- 4X Technologies Media File (*.4xm)
- Advanced Systems Format File (*.asf)
- Anime Music Video File (*.amv)
- Audio Video Interleave File (*.avi)
- Autodesk Animation File (*.fli)
- Autodesk Animation Pro File (*.flc)
- Flash Video File (*.flv)
- FlashBack Screen Recording File (*.fbr)
- Material Exchange Format File (*.mxf)
- Matroska Video File (*.mkv)

- MPEG (RIFF) File (*.mpg)
- MPEG Transport Stream (*.mts)
- MPEG Video File (*.mpeg)
- MPEG2 Video File (*.m2v)
- Red Core Digital Cinema Camera (*.r3d)
- Red Media Format File (*.rm)
- Windows Media Video File (*.wmv)
- Red Media Format File (VBR)(*.rmvb)

Miscellaneous Files

- 3D Studio Max Model File (*.max)
- Ancestral Quest Database (*.aq)
- Autodesk 3DS file (*.3ds)
- Drawing Exchange Format File (*.dxf)
- Encapsulated PostScript File (*.eps)
- QuickBooks Data File (*.qbw)
- 3D Systems StereoLithography (*.stl)
- FireBird Database File (*.fdb)
- AutoCAD Drawing Database (*.dwg)
- SQLite Database File (*.db3)
- Visual Studio Project File (*.vcproj)
- Visual Studio User Options (*.user)
- Microsoft SQL Server Database (*.mdf)
- Virtual Hard Drive File (*.vhd)
- Betacase Bankruptcy Client Info (*.bcb)
- MySQL Data File (*.ibd)
- MySQL Form Configuration (*.frm)
- MySQL Index File (*.myi)
- Oracle VirtualBox Image (*.vdi)

Custom file signatures can be defined via user templates placed into and loaded from text files. After you recover files by signatures, you can use Organizer to organize them in folders with readable (non-abstract) names.

The free evaluation version has full functionality of all features with a limitation only on maximum size of the file being restored.

♦ Important

PROTECT THE DRIVE LOCATION WHERE YOU HAVE ACCIDENTALLY DELETED FILES.

Any program that writes data to the disk, even the installation of data recovery software can spoil your sensitive data.

DO NOT RECOVER DATA ONTO THE SAME DRIVE THAT YOU FOUND ERASED DATA!

While saving recovered data onto the same drive where sensitive data was located, you can spoil the process of recovering by overwriting table records for this and other deleted entries. It is better to save data onto another logical, removable, network or floppy drive.

IF YOU HAVE AN EXTRA HARD DRIVE, OR OTHER LOGICAL DRIVES THAT ARE BIG ENOUGH, CREATE A DISK IMAGE.

A Disk Image is a single-file mirror copy of the contents of your logical drive. Backing up the contents of the whole drive - including deleted data - is a good safety precaution in case of failed recovery. Before you start recovering deleted files, create a Disk Image for this drive.

Use Easy Recovery Mode to recover lost files on live volumes

Easy Recovery Mode - simplifies search for lost files and data recovery on live volumes.

Search for lost files in Easy Recovery Mode being performed in two stages:

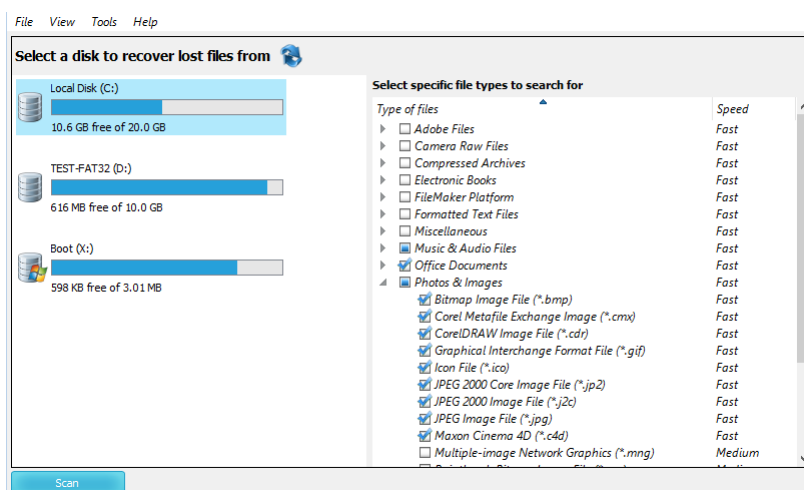
1. **QuickScan** – scans (enumerates) all directories on existing (live) volume and populates a Volume Tree with deleted entries. If a folder (plus its subfolders) does not contain any deleted files that can be detected by QuickScan, these folders won't be displayed in a Volume Tree. Displayed only folders containing deleted files.
2. **Search by File Signatures** – enumerates each and every sector on a volume, trying to match its content with pre-defined signatures of known file types (more than 150 pre-defined signatures available). If sector signature matches pre-defined file signature – additional logic applied to define file size and some extended attributes. In case if target file is not fragmented – all its data (data clusters) should be located consequently in volume sectors, thus making file recovery possible.

Note

Signature search could be a long process, especially if you selected too many signatures to look for. We recommend you to narrow down the search by selecting the only file types you need (for example to select the only JPEG images) to speed up.

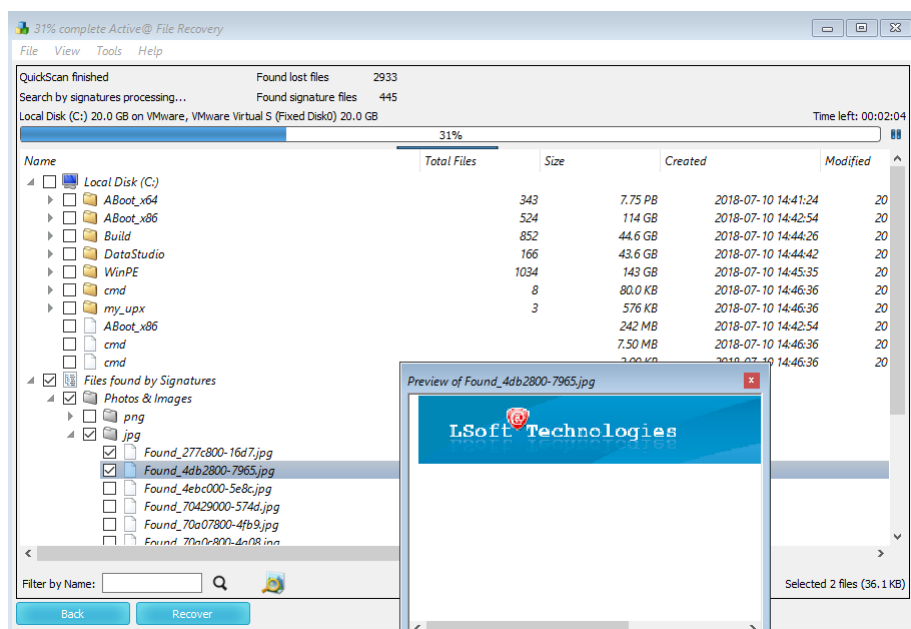
To run Active@ File Recovery in Easy Recovery Mode – click on **Easy Recovery** widget at program start.

Easy Recovery Mode start dialog appears:



To find and recover lost files:

1. Select a volume at the left panel to search lost files on
2. Select file types you want to search for at the right panel (more than 150 pre-defined file types supported)
3. Click **Scan** button at bottom. Alternatively you can double-click the volume to start scanning
4. Observe scanning progress and wait until search finishes. In the mean time you can browse found files in a tree.
5. To preview some types of files – double-click file or select a file and click **Preview** button at bottom
6. To narrow down search results you can type symbols file name or extension includes and click **Filter** button at bottom



7. Select a file or group of files(folders) using check boxes at the left of the file name.
8. Click **Recover** button at bottom to start recovery process
9. Select a Recovery path - destination volume or folder where to recover selected files and folders
10. Observe recovery progress. When complete, notification pops up - how many files being recovered and where to
11. After recovery is complete, Windows Explorer is launched to browse destination path and evaluate recovered files.

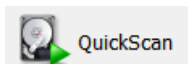
Note

To switch between **Easy Recovery Mode** and **Advanced Mode** at any time, click **Switch Mode** menu item form **View** menu.

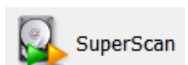
Use QuickScan to scan volume for deleted files

QuickScan searches existing **partitions** (volumes) for deleted or damaged files or folders. Before you begin to search for files and folders or recover data, you must scan the drive.

There are two methods for scanning:



QuickScan is a fast and basic scan. Most deleted files and folders can be found using this method.



SuperScan is a much slower and thorough scan. It processes the whole hard drive surface detecting all possible deleted data. If, after running **QuickScan** you did not find your deleted files, try **SuperScan**. For more information on **SuperScan**, click the link at the bottom of this topic.

To run QuickScan, open Active@ File Recovery and do the following:

- In the Local System Devices list, select the drive you want to inspect for deleted files and folders.
- Click **QuickScan** button on the toolbar
- Or, right-click the drive and select **QuickScan** from the context menu
- Or, double-click the drive to start scanning
- Or, press [ENTER] to start **QuickScan** using keyboard.

Disk scanning starts. To cancel the scanning process for any reason, click **Stop** button on a progress window.

After QuickScan is completed, you can inspect detected files and volumes, and recover your data.

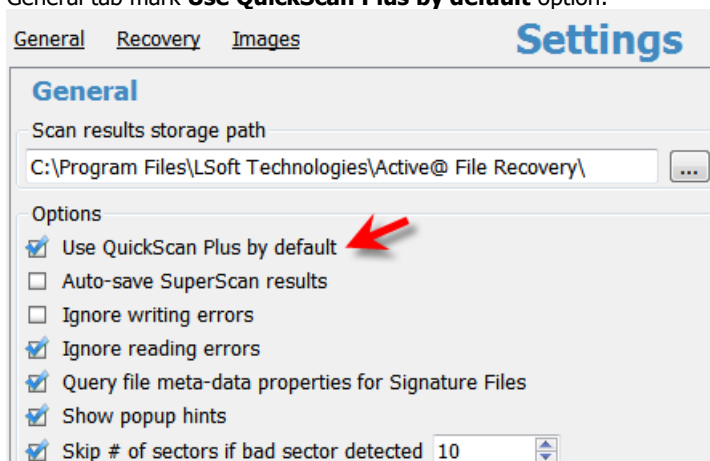
To locate your deleted files and folders, you may search either manually, by opening folders in the tree, or automatically, using the [search](#) mode.

QuickScan Plus

QuickScan Plus is an advanced version of QuickScan. It processes more unallocated space where deleted data assumed to be located, so it is a bit slower than QuickScan, however it detects more deleted files and folders. **QuickScan Plus** is still faster comparing to SuperScan (which processed all available disk space: unallocated and currently allocated).

After the regular **QuickScan** for the particular volume completed, toolbar button label and related menu items change to **QuickScan Plus**. This means that if you scan the same object one more time, some advanced features of QuickScan will be activated. It will take a bit more time, however it could detect more deleted files and folders. Advanced features include looking for files beyond the "live" system areas (current MFT area on NTFS, or directories tree on FAT). Moreover, for transactional file systems, like NTFS, Log File (\$LogFile) and User Journal (\$UsnJrnl\$) are processed to get more information about recent transactions (deleting, renaming,...). This could be very useful when you quick-formatted your hard drive or USB flash disk.

To change default action for QuickScan button and menu item to use **QuickScan Plus** always, open Settings, and on the General tab mark **Use QuickScan Plus by default** option:



Analyzing detected by QuickScan objects

You can tell the state of your files by the color of the icons:

- Blue icon shows an existing file
- Grey icon shows a deleted file

You can tell the state of your folders by the color of the icons:

- Yellow icon shows an existing folder
- Grey icon shows a deleted folder

You can inspect the content of the file by selecting the file and clicking **Preview** toolbar button, or executing **Preview** command from the context menu, or by pressing **Alt+P** key combination.

If you are looking for deleted files and folders, to locate them, you may search either manually, by opening folders in the tree, or automatically, using the search mode.

If you are satisfied with results, select an object (file, folder or partition) proceed with a recovery (click **Recover** toolbar button).

Use SuperScan to analyze deleted and damaged volumes

Use **SuperScan** when trying to recover a [partition](#) or [volume](#) that you know has been deleted or damaged. In other words, if you do not see a [logical drive](#) listed under a [device node](#) in the *Local System Devices* list, it is time to use SuperScan.

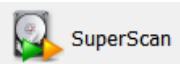
Another reason to use SuperScan is when the volume has been quick-formatted, or disk's surface has been heavily overwritten by other data, so you are not able to find your deleted data using [QuickScan](#) and [Search](#) procedures. SuperScan gives a chance to detect damaged file records as well as to reconstruct some known file types by signatures.

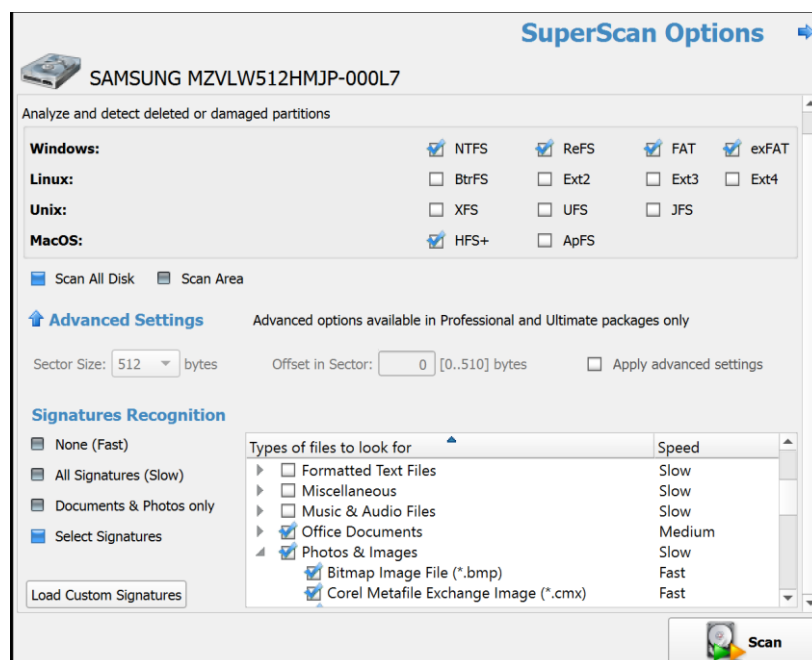
SuperScan processes the whole surface of the [physical device](#) searching for all possible logical drives (volumes) and partitions, whether they existing, damaged or deleted. If a partition cannot be found, SuperScan keeps searching. SuperScan reads each [disk sector](#) and looks for not only the [boot sector](#), but also tries to reconstruct the drive structure, based on residual clues to the drive's system structures that remain on the disk surface. This is a time-consuming process, however it usually gives much better results than QuickScan.

When SuperScan finds file data and the deleted or damaged file is not fragmented, the SuperScan can detect files by matching [template](#) patterns to the found data. These files collected to [Signature Files](#) folder and can be recovered from there. Usually such files do not have name, date stamp and other file record information.

To run SuperScan:

1. In the **Local System Devices** list, select a physical device, or a volume that contains your data. It may be a Fixed Disk, USB external or Removable Disk, Memory Card, and even Floppy and CD/DVD-ROM
2. To open the **SuperScan Options** dialog, do one of the following:

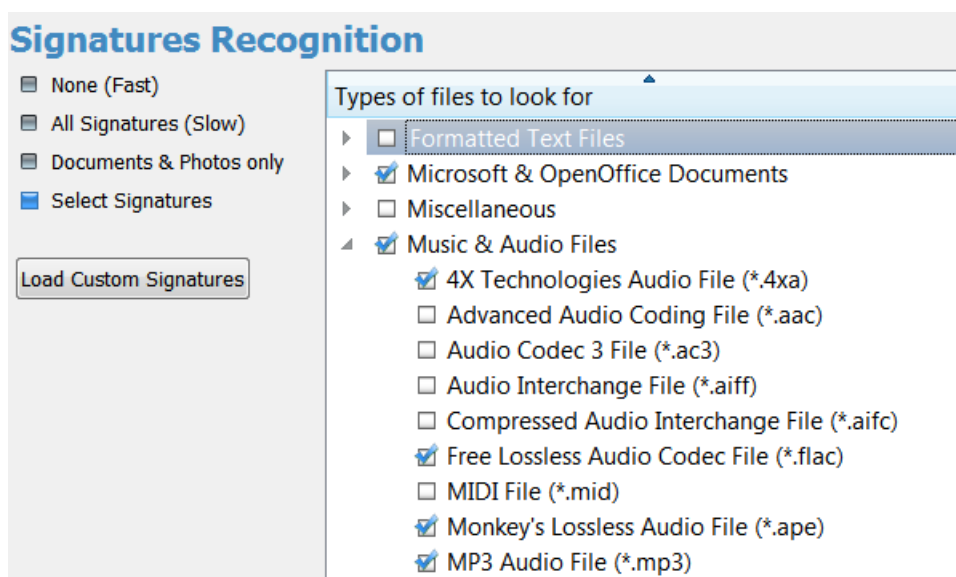
- Click **SuperScan** toolbar button: 
- Right-click the disk and choose **SuperScan...** from the context menu
- Press **Ctrl+Enter** key combination



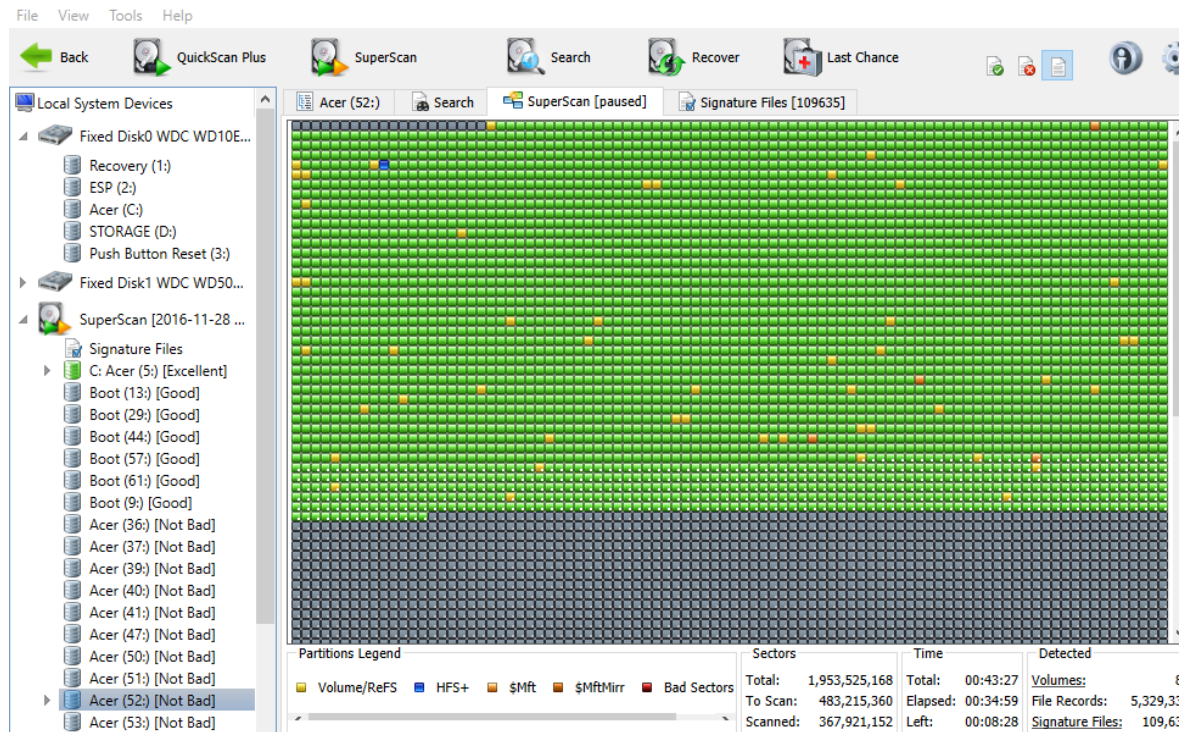
3. In the **Analyze and detect deleted or damaged partitions** area, select the check boxes next to the partition types that you want to look for. Clear the check boxes next to the partitions that you do not want to look for. If you select

all partition types, the scanning takes a longer time, however you may find more recoverable partitions. All disk surface will be scanned by default (**Scan All Disk** option). This is a time consuming process. In case if you know for sure the area that needs to be scanned, click **Scan Area** option and define scan parameters manually:

- Fields **From** and **Size** contain currently selected object's geometry in sectors. You can switch geometry display to other units (Bytes, MB and GB) using drop down combo-box. If you click **Scan** now - this area will be scanned by default
 - To select disk's area manually, type the starting sector number in the **From** field and the number of sectors in the **Size** field. If you need several areas to be scanned, define area parameters and click **Add** button, then type other area parameters and click **Add** again
4. If a physical disk (or opened disk image) has now different geometry (other than original configuration), you can click **Advanced Settings** and mark checkbox **Apply** to use alternative device configuration:
- Apply different sector size (512 or 4096 bytes)
 - Apply non-zero offset within a sector to search for valuable data, like boot sectors. Non-zero offset can be used by some rare disk controllers and even malware ("scrambling" disk data this way)
5. If a disk has been severely damaged and partitions and files are not found, you may use the **Signatures Recognition** option. Provided that the files are not fragmented, Active@ Scan technology would detect the file signatures and would try to reconstruct files of certain types. The detected files, when this option is turned on, will be placed into the **Signature Files** virtual folder and will have abstract filenames (because no file header could be detected, only file data), however their content can be valid. You may try to recover your documents or images from the **Signature Files** virtual folder later on. The **None** option means that no signatures recognition will be applied, it will speed up the SuperScan process, and less memory (RAM) will be consumed. The **All Signatures** option instructs SuperScan to recognize all possible supported signatures. The **Documents & Photos only** option lets you recover specific file types, and **Select Signatures** let you choose the file particular types you want to recognize based on signatures (including user-defined signatures being loaded from template file) and recover them later on:



6. Click **Scan** or press **Enter** to start SuperScan process
7. The statistics and progress bar appear underneath the scanning area. To stop the SuperScan at anytime, click **Pause** red button at bottom, or choose **Pause SuperScan** from the context menu. If SuperScan has been paused, you may resume it by clicking **Resume** button at bottom or by choosing **Resume SuperScan** from the context menu. If you have saved paused SuperScan results, its state being saved as well, so you can resume SuperScan later on, after loading SuperScan results - even after re-boot, or on another machine having the same HDD/USB disk attached



8. For each SuperScan process a new virtual folder named **SuperScan [YYYY-MM-DD HH:MM:SS]** has been added to the *Local System Devices* list. The contents of this folder displayed in the tree (left panel) as well as in the *Volumes* tab (right panel). You may treat SuperScan virtual folder and its contents the same way that you treat other device nodes in the list. You may follow the same steps to [scan](#) found volumes, then search for files and folders to be recovered

Inspecting SuperScan results

SuperScan can be a long process. You can check the estimated run time displayed on the status panel at bottom of the Scanning Area. You can wait until SuperScan finishes, or you can inspect and manage found partitions (volumes) "on-the-fly":

- Click the volume in the tree (left panel) to highlight the volume position in the Scanning Area (right panel)
- Right-click the volume and choose **Properties** from the context menu - to check volume integrity and attributes being detected
- Double-click the volume, or choose QuickScan from the context menu - to scan the volume, browse its folders, view files and so on
- You can preview and recover your files from the found volume while SuperScan is still in progress
- After you have inspected the volume, if results are not satisfactory, you can hide the volume, by choosing **Remove** from the context menu
- To unhide all volumes being removed previously from the list, choose **Show All Volumes** from SuperScan node context menu

Note

Applying **Advanced Settings** for the SuperScan available in Professional and Ultimate packages only.

Note

After you run a SuperScan, you may notice a tab named **Signature Files**. This virtual folder contains file data that was After you run a SuperScan, you may notice a tab named **Signature Files**. This virtual folder contains file data that was detected

based on templates of commonly used file types (*.JPG, *.DOC, etc...). Files in this folder have been renamed because no file header was detected. If the file data is un-fragmented, there is a good chance that SuperScan recovers the data in these files. If you haven't found your files during volumes inspection, try to recover similar file types from *Signature Files* folder. There could be a chance you find your data even if file record containing file name has been overwritten.

Important

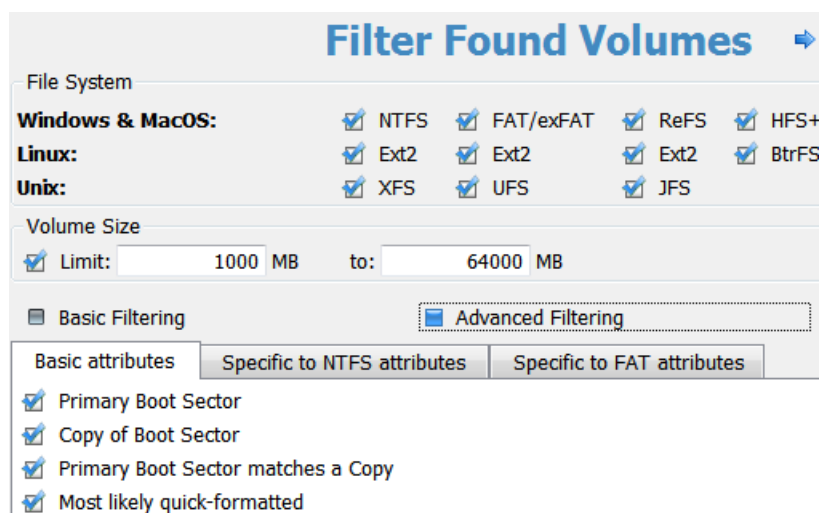
After you complete a SuperScan, you may find hundreds of partitions. Volumes having different locations and sizes, may have been created and then deleted at different times on the device being scanned. If you have virtual VMware workstation profiles (from VMware, Inc.) or VirtualPC profiles (from Microsoft Corp.), these files also contain partition information. Moreover, if remainings of damaged disk structures not enough to define all necessary partition parameters, SuperScan uses complex algorithms to project the most probable parameters and instead of one partition could create 10-20 partitions having different sizes, offsets, cluster size and so on. This does not mean that SuperScan creates a lot of garbage. This means that among these projected partitions most likely will be the one you've lost, and most likely you'll be able to find and recover your data. So, if you cannot find your data on the volumes having *Excellent* or *Good* recovery status, it is still recommended that you wait until SuperScan finishes and then inspect all found volumes once again.

Filtering SuperScan results

To reduce the amount of work, you may use a filter so that you are working with a smaller set of data. After the SuperScan, all detected volumes are displayed. When you change the settings in the filter dialog box, you can display only selected types of volumes.

To filter SuperScan results:

1. After running **SuperScan**, select the virtual folder with the name **SuperScan [date time stamp]**
2. Right-click the node. From the context menu choose **Filter...** The **Filter Found Volumes** dialog box appears



3. To select the types of file systems to display, in the **File System** area, clear the check box beside the types that you do not want to display. Only the selected types of file systems data will be displayed
4. To display only those partitions within a specified size limit, in the **Volume Size** area, indicate the minimum and maximum sized partitions in Megabytes. Only those partitions within the specified range will be displayed
5. To use basic filtering parameters, click **Basic Filtering**. To select displayed partitions based on [partition status](#), in the **Basic Filtering [Volume Status]** area, clear the check box next to each partition status number that you do not want to display. Only the selected status ratings will be displayed
6. To use advanced filtering parameters, click **Advanced Filtering** and use the bottom section:
 - To restrict displayed results for found [boot sector's](#) attributes (file system-independent), in the **Basic Attributes** area, select the check box beside all the types of data that you want to display

- To restrict displayed results for NTFS-specific parameters, in the **Specific to NTFS attributes** area, select the check box beside all the types of data that you want to display
 - To restrict displayed results for FAT-specific parameters, in the **Specific to FAT attributes** area, select the check box beside all the types of data that you want to display
7. Click **Filter** to set up a filter for all volumes found by SuperScan

To remove a Filter, execute **Remove Filter...** context menu command on the particular SuperScan node.

Searching SuperScan results to find files and folders

If, as a result of your **SuperScan** you find a large number of partitions, you may want to use a [Search](#) to help you locate specific files or folders. You may apply Search for the particular volume, or for all volumes found. There are options in the search dialog box that allow you to make the search go faster. For example, you may want to restrict the search so that only deleted files and folders appear in the results, or restrict files by size. By choosing strict conditions, you may be able to locate a specific file or folder faster.

Storing and loading SuperScan results

Depending on the size of the drive that you are scanning, it can take a long time to scan partitions. On large or damaged drives, it can take hours. If you have to exit Active@ File Recovery for any reason, it would take a long time to scan the partition again. So that you don't lose the information that you have scanned, you may save the SuperScan results to a file. When you open Active@ File Recovery, opening the saved results file takes much less time.

If you decide to stop the SuperScan process, it is easy to continue scanning from the point that you stopped. After SuperScan has stopped, you may save the SuperScan virtual folder results, exit and re-start the application, open SuperScan results and resume SuperScan from the last point. To continue scanning, select the SuperScan virtual folder and click **Resume** button on the right of the progress bar.

To save SuperScan results

1. In the *Local System Devices* list, select the **SuperScan** virtual folder and do one of the following:
 - Right-click the device node. From the context menu click **Save Scan Results...**
 - From the **File** menu, choose **Save Scan Results...**
2. In the **Save Scan Results** dialog box, type a path or browse to a folder where the scan results file is to be stored
3. Click **Save**

To open SuperScan results

1. From the **File** menu click **Open Scan Results...**
2. In the **Open Scan Results** dialog box, browse to the file where you saved the scan results file
3. Click **Open**
4. In the **Matched Devices** dialog box confirm the device name (HDD/USB name) to apply SuperScan results for.

Note

Several devices might have the same name, for example, similar disks usually used in RAID arrays. In this case the order they appear in *Matched Devices* dialog matches the order devices appear in *Local System Devices* list. You may inspect your disks in *Local System Devices* list to know for sure which device to choose.

Important

SuperScan results can be saved automatically. You can configure this option and storage path in **General** tab of product **Settings**.

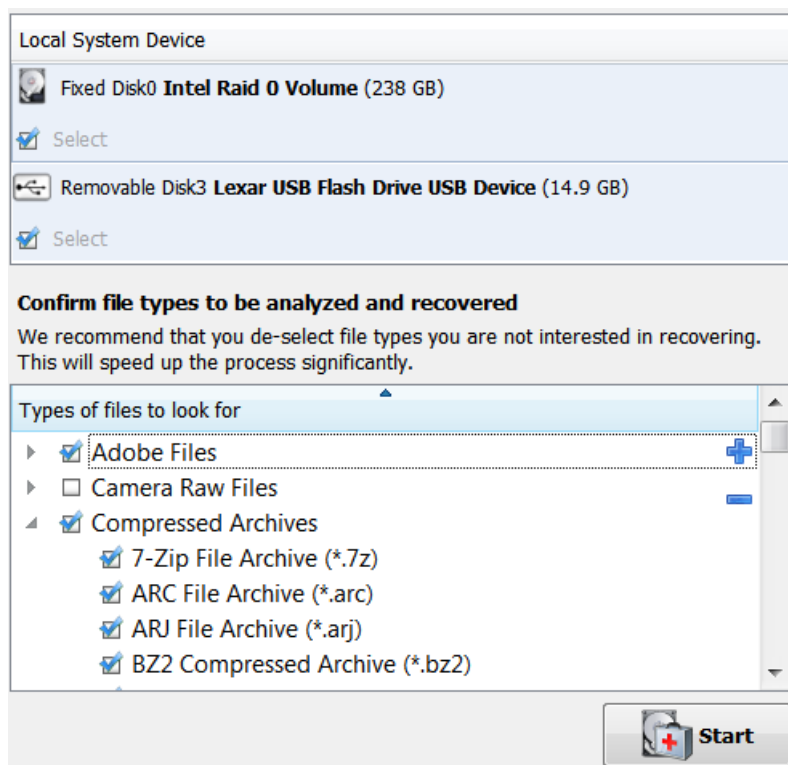
Use Last Chance recovery by file signatures

This recovery method is helpful when primary recovery methods (QuickScan and SuperScan) either haven't detected your files and folders, or hundreds of volumes are being detected and you cannot locate or recover your files from them.

This recovery method tries to detect all un-fragmented files based on their standard signatures. In most cases we will be able to detect and properly recover the contents of lost files. However we won't be able to detect the file system attributes (eg. original filename, creation date, modification date etc). Detected and recovered files will be grouped by file extension only, and will have abstract file names. The File Organizing feature will help you to group your files into folders based on extended file attributes (available for some file types). For example, songs may be grouped by artist and or album, and photo images may be grouped by camera and the date the photo was taken.

To use Last Chance recovery method:

1. Launch Active@ File Recovery and click **Last Chance** toolbar button, or click **Last Chance** from **Tools** menu
2. Select the drives you wish to analyze, or de-select disks you are not interested in
3. Confirm file signatures to be analyzed and de-select file types you are not interested in recovering (this will speed up the process significantly)



4. Click **Start** button and wait until the scan process completes
5. Review found by signatures files, Preview file content to make sure files are recoverable and it's what you need
6. If needed, re-organize found files in folders by specific attributes using File Organizer:

Organizer		Show Attributes: 5	Subsequent Column Sorting: On				
Name	Size	Count	Attr #1	Attr #2	Attr #3	Attr #4	Attr #5
Photos & Images	12.1 MB	152					
▶ jpg	4.99 MB	46	MODEL	CREATED	DESCRIPTION	SOFTWARE	MODIFIED
▶ ico	25.6 KB	2					
▶ png	7.07 MB	97					
▶ gif	25.4 KB	7					
Music & Audio Files	448 MB	90					
▶ mp3	448 MB	82	ARTIST	ALBUM	TITLE	GENRE	YEAR
Call of the Wild.mp3	4.09 MB		Roxette	Pearls of Passion	Call of the Wild	255	1986
From One Heart to Another.mp3	3.76 MB		Roxette	Pearls of Passion	From One Heart...	255	1986
Goodbye to You.mp3	3.65 MB		Roxette	Pearls of Passion	Goodbye to You	255	1986
I Call Your Name.mp3	3.06 MB		Roxette	Pearls of Passion	I Call Your Name	255	1986
I Call Your Name.mp3	2.77 MB		Roxette	Pearls of Passion	I Call Your Name	255	1986
I Call Your Name.mp3	3.28 MB		Roxette	Pearls of Passion	I Call Your Name	255	1986
It Must Have Been Love.mp3	4.39 MB		Roxette	Pearls of Passion	It Must Have Be...	255	1986

7. Select file groups or particular files to be recovered and click **Recover** toolbar button to recover them all at once

Search for Deleted Files and Folders

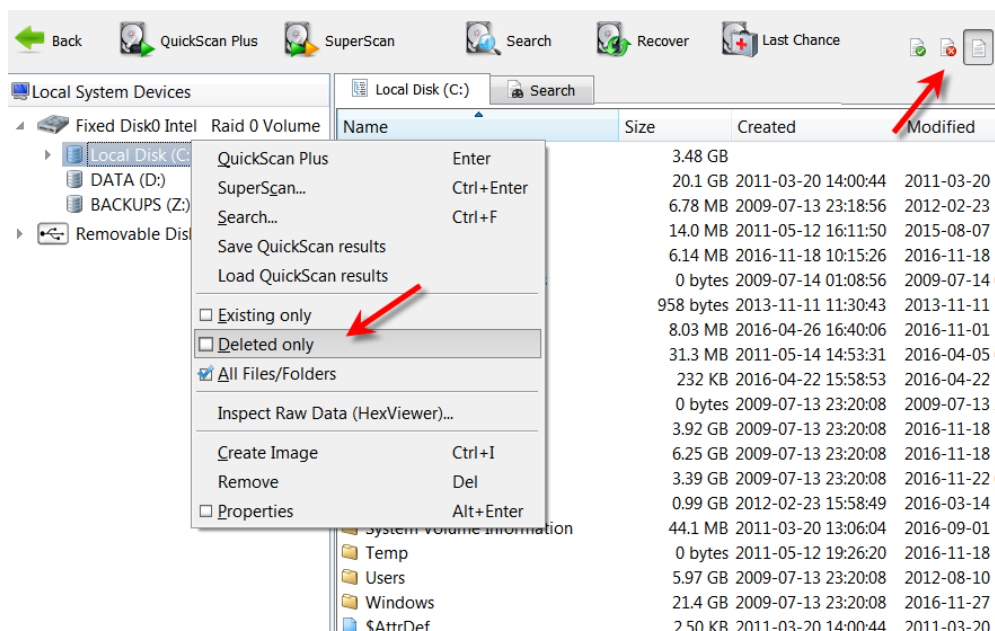
Search procedure can be helpful when you've completed [QuickScan](#) for the particular volumes and you are not able to locate your files, or you cannot assume the location.


Advice

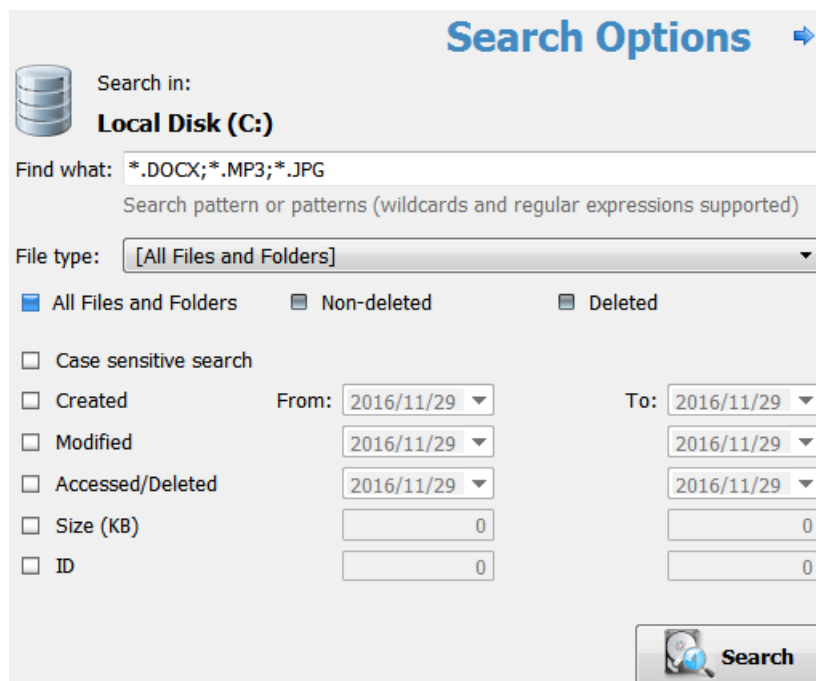
Before using any recovery software, including Active@ File Recovery, check the **Recycle Bin** to see if the deleted file or folder is there. If it is, use the standard Windows **Restore** command to recover your data from there. If you cannot find the file or folder you are looking for in the Recycle Bin, continue with search and recovery procedures.

To locate specific files and folders:

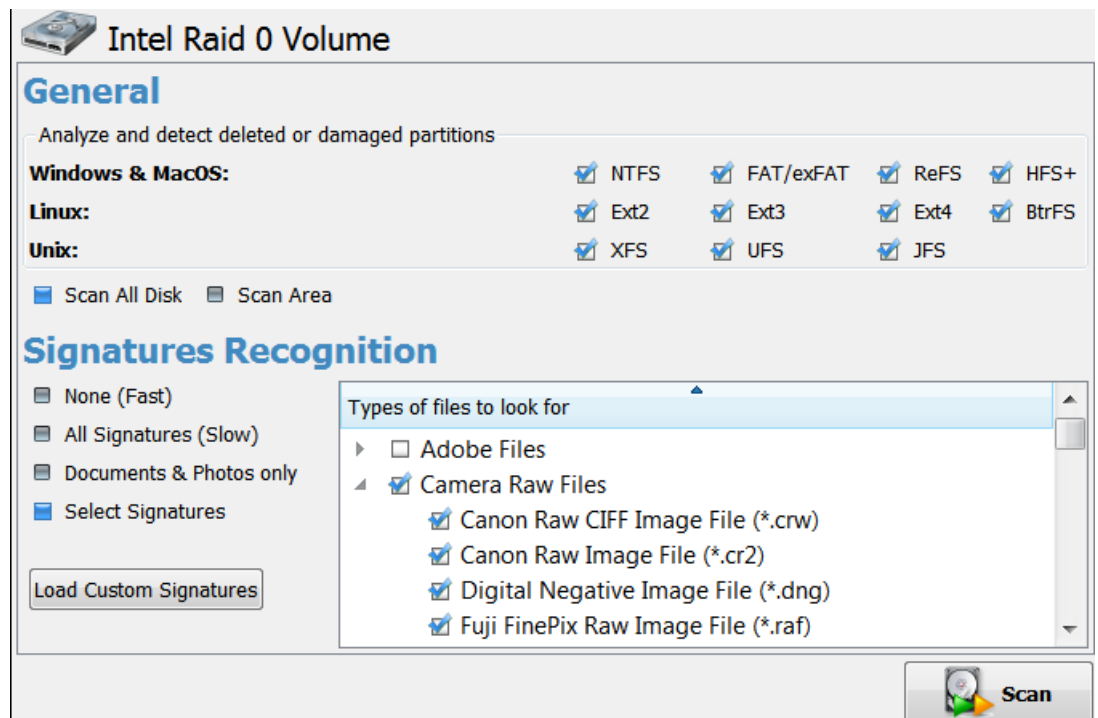
1. Launch Active@ File Recovery and select a volume that supposedly contains deleted files
2. **Try direct listing:** If you know exactly where the deleted files or folders are located, you can use the [volume scan](#) procedure. After the drive has been scanned, manually navigate to the folder path the same way as you would in Windows Explorer. If you cannot find the file or folder, open a tree node named **!Lost & Found!** If the parent folder of the deleted file has been deleted as well, it is very likely the deleted item will be placed in this virtual folder. If you are still unable to locate your data, proceed to the next step
3. **Try filtering:** For the particular volume (or even folder) you can setup a filter to display deleted only or existing only files and folders:
 - To display only deleted files, right-click the volume and choose **Deleted Files/Folders only** from the context menu. You can also click **View Deleted Files/Folders only** toolbar button in **Filter** section
 - To display only existing files, right-click the volume and choose **Existing Files/Folders only** from the context menu. You can also click **View Existing Files/Folders only** toolbar button in **Filter** section
 - To clear the filter, right-click the volume and choose **All Files/Folders** from the context menu. You can also click **View All Files/Folders** toolbar button in **Filter** section



4. **Try Search mode:** If you are not  the deleted file or folder was located before it was deleted, select a drive or folder and click **Search** on the toolbar, or right-click the drive or folder and choose **Search** in the context menu, or select a volume and press **Ctrl+F**. Do the following in the *Search* dialog box:
- To find a file by name, enter the file name in the **Find what** field. Search will look for files that match the name. You may enter part of the file name and use an asterisk (*) to represent the rest of the name. Regular expressions are supported (**RegExp**)
 - To search by file type, choose a file type from the **File type** drop-down list
 - To exclude existing files and folders from the search results, mark the **Deleted** option
 - To exclude deleted files and folders from the search results, mark **Non-deleted** option
 - To use case sensitive search, clear the **Case insensitive search** check box
 - To search for a file based on a date, select the **Created**, **Modified** or **Accessed [Deleted]** check boxes and enter a **From** and **To** date range
 - To search for a file based on the size of the file, select the **Size** check box and enter a **From** and **To** size range
 - Click **Search** to start the Search process



- After the Search is complete, examine the **Search** virtual folder. This is a flat list of all items satisfying your criteria. You can sort Search results on any column (name, size, date, ID...), check properties of items, preview and recover files and folders.
5. **Try SuperScan:** If no files were found, use the [SuperScan](#) to thoroughly scan the HDD/SSD/USB surface to reconstruct all possible data entries. This is relatively slow process, however it brings maximum results:
- SuperScan detects and reconstructs many volumes presumably existed on scanned disk area. It can detect FAT/FAT32/exFAT, NTFS, ReFS, Apple HFS+, Linux Ext2/Ext3/Ext4/Btrfs, Unix UFS/XFS/JFS file systems. Inspect these volumes to evaluate a full data set being recovered.



- SuperScan inspects existing volumes more deeply, for example, if you formatted the volume, QuickScan displays no files on it, however SuperScan most likely will detect formatted data structures and will reconstruct previous data tree.
- SuperScan has an option of detecting deleted files by their signatures. More than 50 predefined file signatures have been implemented internally (MP3, JPG, DOC, ZIP, etc..) and there is an option to create and load custom signatures from template files.

If you have completed all the steps listed above and your files and folders still cannot be found, it is likely that the drive space formerly occupied by your files has been completely overwritten with other data. If this is the case, there are no recovery tools that can help you. This can happen when a lot of writing operations occur on the drive, for example during a software installation. As well, Windows operating system will sometimes create temporary files for different processes. If the process involves a lot of data and many temporary files are written, your deleted files may have been destroyed.

Important

When you are using a search pattern in **Search**, it is the same pattern recognized when searching in Microsoft Windows. The asterisk symbol (*) in the pattern means, that at this place can be zero, or any number of any symbols.

Examples:

- * - All files on the drive or in the folder
- *.TXT - All files with "TXT" extension
- My*. * - All files starting with "My"
- MyFile.txt - Search for the file named "MyFile.txt"

Note

You can distinguish deleted files and folders from existing files and folders by the icons:

- Blue or yellow icons show existing file or folder
- Grey icons show deleted file or folder

Preview File Contents (Recovery Status Check)

In order to recover files or folders, you must scan the drive or partition and then search for damaged or deleted files or folders. If you have found some damaged or deleted files and you are not sure whether or not a file is safe for recovery or you are not sure whether or not the file data has been overwritten on the drive, you may preview the contents of files with this feature.

For **Preview** mode to be available, **File Preview** component needs to be selected when you are installing the software. If File Preview has not been installed, **Preview** command will be greyed out and inaccessible.

If the file data has been overwritten on the drive, it is not likely that the file can be previewed. If this is the case, you will see a warning message, and file will be previewed in Hex format. If you plan to purchase the commercial version of Active@ File Recovery, you may want to preview file contents to help you determine whether or not the contents are valuable using the DEMO version of the software. If you can preview file contents, it is likely that you can recover the file.

Preview file contents using the built-in preview module works with the following image files: ***.bmp, *.wbmp, *.dib, *.gif, *.jpg, *.jpeg, *.pcx, *.ico, *.tif, *.tiff, *.png, *.wmf**.

Other document types can be previewed using an external viewer like Microsoft Word or using the built-in Hex/Text viewer. If you want to preview a file named *MyDoc.DOC* you must have an application installed that is able to open *.DOC files. The file will be rendered and previewed using this application. If you do NOT have an application installed that is able to open *.DOC files, the file will be previewed in the default built-in Hex/Text viewer.

For example, if you have Microsoft Office installed, most likely you will be able to preview office document types: ***.doc, *.docx, *.xls, *.xlsx, *.ppt, *.pptx, *.vsd, *.mpp, *.rpt**.

Important

Avoid previewing large files! In order to preview a file's contents, the file needs to be recovered and placed in temporary storage. The built-in or external preview utility reads this temporary file. If you have enough RAM, the temporary file is kept in volatile memory. If you do not have enough RAM, a temporary file could be written onto the drive that contains damaged or deleted files and there is a chance that you may overwrite your original deleted data.

To preview file contents and check recovery status:

1. In Active@ File Recovery, [search for deleted files and folders](#) and select the file.
2. To launch **Preview** module, use one of the following methods:
 - Right-click the file, and choose **Preview** from the context menu
 - Double-click the file
 - Press **Enter** or **Ctrl+P** key combination
3. A Preview window appears with the first page of your document.

Note

You cannot preview encrypted files and files having size more than 10MB.

Restore a Deleted File

You can distinguish deleted files from existing files by the icons:


- Blue icons show existing files
- Grey icons show deleted files

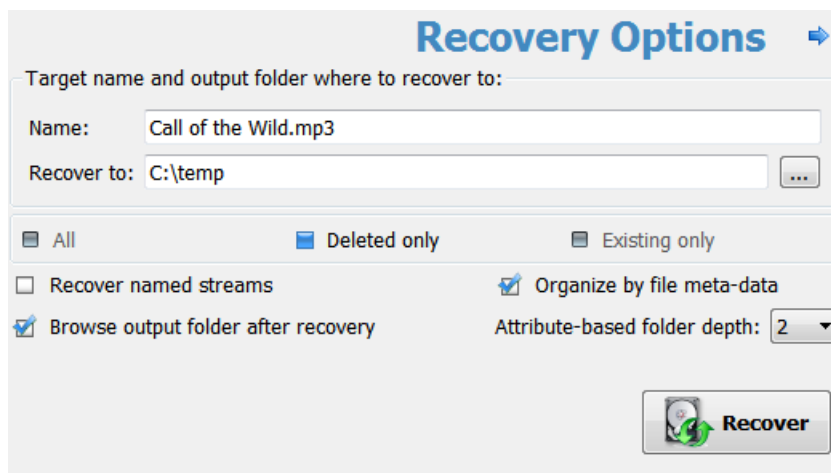
Important

For the safety reasons, Active@ File Recovery warns you if you are trying to write the restored file back onto the same drive. When you write a file to the same drive that contains deleted or damaged data, you may overwrite data that belongs to other deleted files or folders, or you may overwrite part of the same file that you are trying to recover. Always restore files to another physical HDD, external USB, removable or network drive.

To restore a deleted file:

1. In Active@ File Recovery, [search for deleted files](#) and select the file (or group of files) to be recovered
2. Launch **Recovery Options** dialog using one of the following methods:

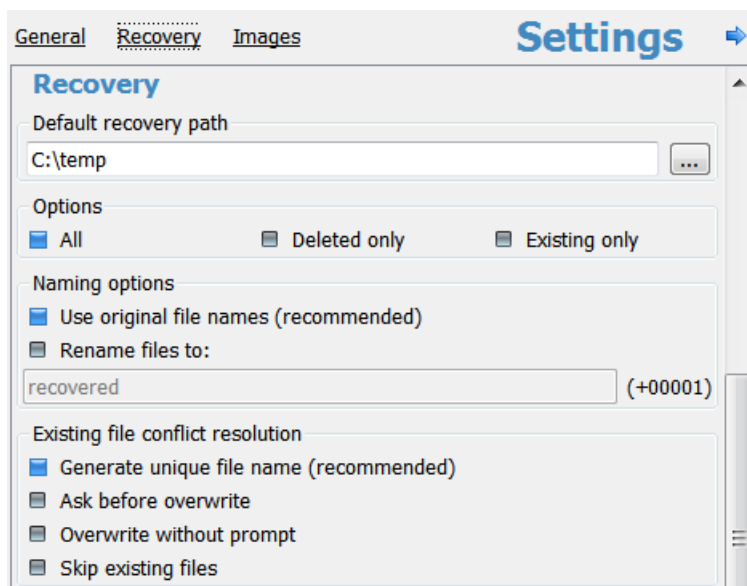
- Click **Recover** button on the toolbar: 
- Right-click the file, and then choose **Recover** from the context menu
- Press **Ctrl+R** key combination



3. To give the file a name, you may use the file name that appears in the **Name** field or you may type a different name. This option is only available if selected the only one folder
4. To recover the file to a specified location, in the **Recover to** field, you may type a different path or click the ellipsis button (...) and browse to a recovery folder location
5. If you selected several files, you have an option of filtering them for the recovery process: to recover **All** selected files, **Deleted only** or **Existing only** files
6. You have an option of recovering [named streams](#) attached to a file on NTFS volume. This includes, for example, Music ratings and album info, Document Author and properties, and so on... These streams will only be recovered and attached to a file when recovering target is an NTFS volume (FAT/exFAT do not support named streams)
7. When you selected and want to recover files detected by their signatures, option **Organize by file meta-data** is available. If you turn on this option all selected files will be sorted and placed to subdirectories by **Title** then by

Creation Date. This allows, for example, organizing pictures by Camera Model, and inside the particular Camera Model organize pictures by the date when these pictures have been taken. If this option is turned off - all selected files will be recovered as a flat list of files located in one folder

8. Option **Browse output folder after recovery** will open Windows Explorer and display the recovered file after recovery process is complete
9. Extended recovery configuration options are available in **Settings**:



- **Naming options:** whether to use original file names, or to generate unique file names for each file being recovered
- **Conflict resolution:** what to do when file being recovered already exists in the target folder (name duplicate detected)

10. Click **Recover**

After the recovery process is complete, make sure that the results are correct by verifying the contents of files. In some cases, a file cannot be reliably restored because its contents or a part of it has been overwritten.

Restore a Deleted Folder

You can distinguish deleted folders from existing folders by the icons:


- Yellow icons show existing folders
- Grey icons show deleted folders

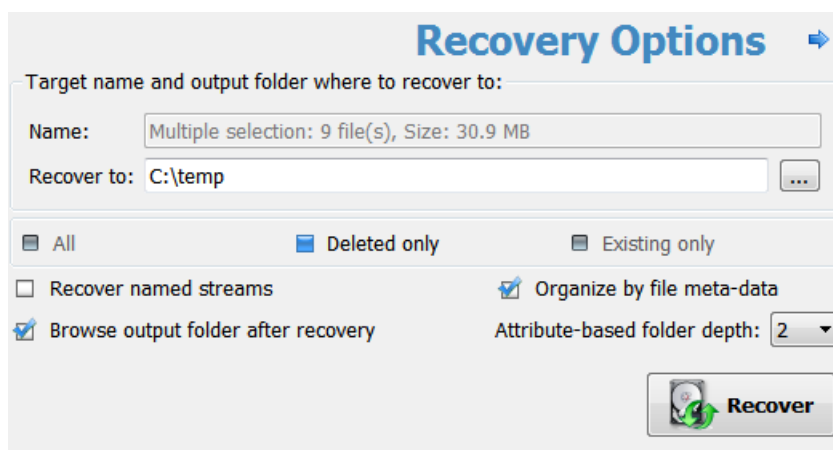
Important

For the safety reasons, Active@ File Recovery warns you if you are trying to write the restored file back onto the same drive. When you write a file to the same drive that contains deleted or damaged data, you may overwrite data that belongs to other deleted files or folders, or you may overwrite part of the same file that you are trying to recover. Always restore files to another physical HDD, external USB, removable or network drive.

To restore a deleted folder:

1. In Active@ File Recovery, [search for deleted data](#) and select the folder (or group of folders) to be recovered
2. Launch **Recovery Options** dialog using one of the following methods:

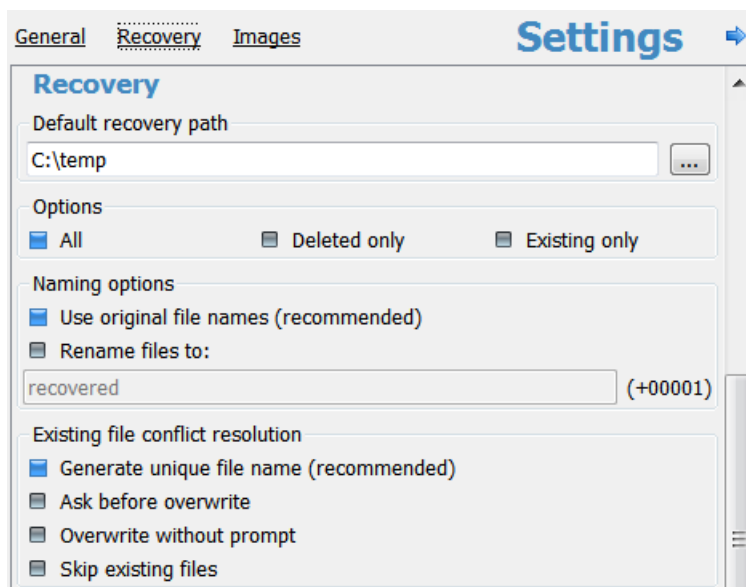
- Click **Recover** button on the toolbar: 
- Right-click the file, and then choose **Recover** from the context menu
- Press **Ctrl+R** key combination



3. To give a name, you may use the name that appears in the **Name** field or you may type a different name. This option is only available if selected the only one folder
4. To recover the to a specified location, in the **Recover to** field, you may type a different path or click the ellipsis button (...) and browse to a recovery folder location
5. If you selected several folders, you have an option of filtering them for the recovery process: to recover **All** selected folders, **Deleted only** or **Existing only** folders
6. You have an option of recovering [named streams](#) attached to a file on NTFS volume. This includes, for example, Music ratings and album info, Document Author and properties, and so on... These streams will only be recovered and attached to a file when recovering target is an NTFS volume (FAT/exFAT do not support named streams)
7. When you selected and want to recover files detected by their signatures, option **Organize by file meta-data** is available. If you turn on this option all selected files will be sorted and placed to subdirectories using specified column order and folder depth. For example, with default options MP3 music files will be displayed and recovered by **Artist** then by **Album**, and files will be named using **Title** attribute. This allows, for example, organizing pictures by

Camera Model, and inside the particular Camera Model organize pictures by the date when these pictures have been taken. If this option is turned off - all selected files will be recovered as a flat list of files located in one folder

8. Option **Browse output folder after recovery** will open Windows Explorer and display the recovered items after recovery process is complete
9. Extended recovery configuration options are available in **Settings**:



- **Naming options:** whether to use original file names, or to generate unique file names for each file being recovered
- **Conflict resolution:** what to do when file being recovered already exists in the target folder (name duplicate detected)

10. Click **Recover**

After the recovery process is complete, make sure that the results are correct by verifying the contents of files. In some cases, a file cannot be reliably restored because its contents or a part of it has been overwritten.

Virtually Reassemble Deleted or Damaged RAID

There are many reasons for a Redundant Array of Independent Disks (RAID) system to fail (RAID controller failures, software RAID emulator errors, etc.). Active@ File Recovery provides an easy way to assemble array disks together and make damaged or deleted data accessible.

You can combine together a disk that was previously used as a part of a RAID system in a temporal (virtual) disk array. With this virtual configuration, you are able to perform all drive file recovery manipulations as though it is regular drive. You can even to create a Disk Image for the whole RAID and store it to the safe location.

It is important that you specify the parameters of the RAID system that you know existed before the fault so that you can virtually reassemble the same system.

It is also important to list the disks in the correct order when making a virtual disk array. In most cases, the correct order is unknown. The only way to discover the correct order is to try all available combinations until you reach the one that works. If you are dealing with only two disks, it is simple. You have only two ways to arrange the order. If there are three disks, you must try a maximum of six combinations. If there are four disks, 24 combinations, and so on...

Each time you try a combination, write down the order you are trying, click **Re-Create** and check the results by trying to access and scan the newly-created virtual RAID that is added to the list of **Local System Devices**. If you don't see your data or if there was an error during virtual array creation, mark this one as a failure and try another order of disks in array.

To create a Virtual Disk Array (RAID):

1. To open **RAID Reassembly** dialog, do the following:
 - In the **Tools** menu, choose **Virtual Disk Array (RAID)...**

RAID Reassembly

RAID-5

Left Asynchronous

Options

Stripe Block (RAID0 and RAID5) 32 KB

Disk Area to Use in RAID (Sectors)

Device offset: 0 Size: 4294967295

Available Disks	BpS
Disk3 Lexar USB Flash Drive USB Device	512
Disk0 Intel Raid 0 Volume	512

Selected Disks	BpS
Virtual Machine (VMWare) Disk Image Fixed Disk 0	512
Damaged Device	
Virtual Machine (VMWare) Disk Image Fixed Disk 1	512

Re-Create

2. To choose a supported RAID type, in the top drop-down list box, choose one of the following:
 - [Stripe Array \(RAID-0\)](#) - Data located in stripes (blocks of size 32KB, 64KB, 128KB, etc.) distributed between two or more drives
 - [Mirror Array \(RAID-1\)](#) - Data on two disks is identical - provides complete data duplication (or mirroring)
 - [RAID-5 Array](#) - Data located in stripes distributed between two or more drives with parity control
 - [Span Array](#) - Data located contiguously on one disk then on another disk, and so on...
3. To select disks from a list to create a virtual disk array:
 - a. In the **Available Disks** list, select a device (or disk image)
 - b. To add it to the **Selected Disks** list, click **Add**
 - c. Repeat steps a. and b. for every disk in the original array. If one of the disks is physically damaged and not accessible, and if you have selected RAID-0 or RAID-5 in step 2, from the **Available Disks** list add **Damaged Device** instead of the named damaged disk
 - d. To change the order of disks in the **Selected Disks** list, select a disk name and click **Up** or **Down** to change its position in the list
4. To indicate the size of the stripe block, in the **Options** area, type the size of the block in kilobytes in the **Stripe Block (RAID0 and RAID5)** field. This is applicable only to RAID-0 and RAID-5 arrays. Standard values are 32Kb, 64Kb, 128Kb, 256Kb. If you are not sure, try each size until you get the correct one
5. To indicate the offset and the size of the device, measured in [sectors](#) (each sector is 512 bytes), in the **Disk Area to Use in RAID (Sectors)** area, type the values in the **Device Offset** and **Size** fields. In most cases, the default values are acceptable. Some RAID controllers use only part of the disk surface. For example HighPoint 370 uses the first 100 sectors on the first drive for its own system information. In this case you would specify the offset as 100 sectors
6. Click **Re-Create** to start Virtual Disk Array reassembly process
7. In the **Local System Devices** list, a new Virtual Disk Array [device node](#) appears. You may treat this new node and its contents the same way that you treat other device nodes in the list.

You may follow the standard steps to [scan](#) the Virtual Disk Array node, then search for files and folders to be recovered. You may also create a Disk Image of the whole Virtual Disk Array to work with it later on.

Note

When dealing with Span Arrays, you may get the size of a Damaged Disk a couple of ways:

- Go to the hard drive manufacturer's web site and look for the model.
- Look for the device geometry label on the top of the physical drive. If you find it (it is not always there) you can multiply the parameters C*H*S (Cylinders * Heads *Sectors per Track) to get the number of sectors. For example, *Samsung SW0212A* has the following: **CYL 4092, HD 16, SEC 63, 2.1GB**. Multiply 4,092*16*63 to get **4,124,736** sectors. To calculate the disk size, multiply 4,124,736*512 = 2,111,864,832bytes = **2.1GB**. We just confirmed the size 2.1GB. The size is marked on drive label and that proves that our calculations are correct.

Important

When dealing with RAID5 Arrays, if the most frequently used Left Asynchronous type does not work for you, you may try some several different types of building array:

- Left Asynchronous (the most frequently used in hardware RAIDs)
- Left Synchronous (used in the most software RAIDs, based on LDM)
- Right Synchronous

- Right Asynchronous

You may consult your RAID controller manufacturer to determine the proper RAID5 type being used in hardware.

Open and work with Disk Image

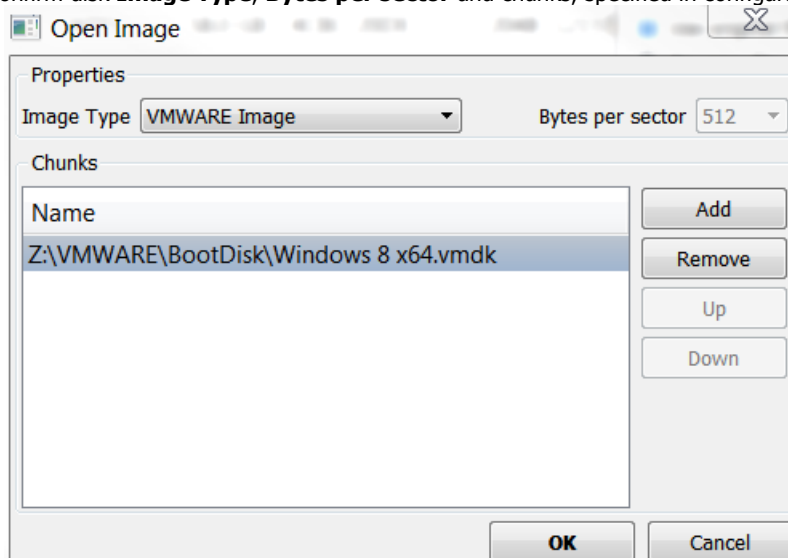
A Disk Image is a mirror copy of your entire [logical drive](#) or [physical device](#) stored as file or set of files. If you have enough space on another drive, it may be a good idea to create a Disk Image for a drive containing deleted files that you want to recover.

Active@ File Recovery can open:

- RAW and RAW-Compressed disk images (Active@ Image format: *.DIM)
- RAW disk images created by third party software (WinHex, etc...)
- Disk Images (RAW format) composed from several chunks
- VMWARE (*.vmdk) and VirtualPC (*.vhd) Disk Images

To open a Disk Image:

1. Start **Active@ File Recovery**.
2. To invoke the Open Image dialog, do one of the following:
 - Press **Ctrl+O** key combination
 - In the **File** menu, choose **Open Image...**
3. Use drop-down list-box at bottom to specify disk image type: Active@ Image, Any RAW image, VMWare or VirtualPC Disk image
4. Locate and select disk image file you want to open. Click **Open**
5. Confirm disk **Image Type**, **Bytes per sector** and chunks, specified in configuration file:



6. If there are no configuration file, you can add chunks and change their order manually, using buttons at the right side
7. Click **OK** to complete configuration and read disk image structures.

The opened disk image appears in the **Local System Devices** list.

You may treat the opened Disk Image node and its content the same way that you treat other device nodes in the list. You may follow the same steps to [scan](#) the volume, search for files and folders to be recovered. Or you can use opened Disk Images as devices for creating RAID Virtual Arrays.

Note

If you've created raw disk image using other third-party utilities (like copying sectors from **WinHex**) you are still able to open it! Just choose **Any Raw Image** disk image type in the **Open File** standard dialog and you will see all files on the disk. Select the required one.

Create a Disk Image

A Disk Image is a mirror copy of your entire **logical drive** (volume) or **physical device** (HDD, USB, ...) stored as set of files. It may be a good idea to create a Disk Image for a drive containing deleted files that you want to recover, if you have enough space on another drive.

You might ask, "Why should I create a Disk Image on a drive that holds my deleted files?"

Here is the answer: If you do something wrong while attempting to recover the files (for example, recovering files onto the same drive could destroy their contents), you will be able to recover these deleted files and folders from the Disk Image that you have wisely created.

Disk Image (Active@ Image format) consists of configuration file (with an extension *.DIM*) and set of file chunks having extensions *.000*, *.001*, *.002* ... By default Active@ File Recovery tries to create one file (chunk) for the whole volume/device, however, in case if target location is FAT, it may not be possible due to file system limitations. In this particular case disk image splitted to several chunks and each file has a size of 2Gb. Chunks content can be RAW or RAW-Compressed, depending on settings.

To create a Disk Image:

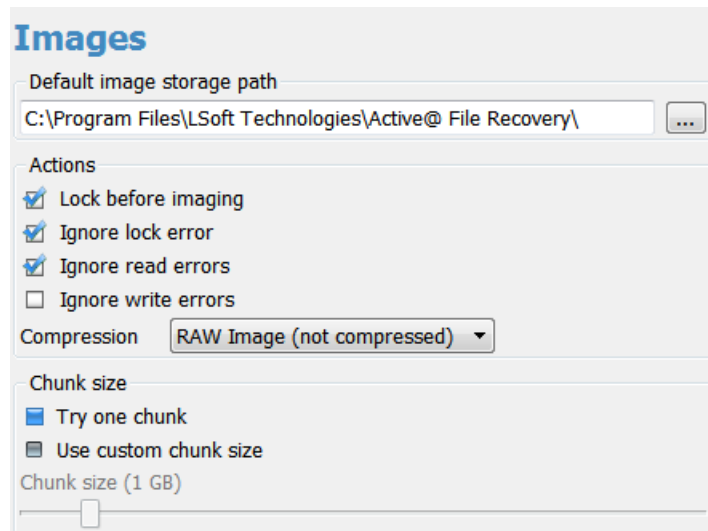
1. Start **Active@ File Recovery** and select a drive (volume) or physical device that you want to create image for
2. To open the **Create Image** dialog box, do one of the following:
 - Choose **Create Image...** from the **File** menu
 - Press **Ctrl+I** key combination
 - Right-click the device and choose **Create Image** on the context menu
3. Select another physical device or another logical drive to store Disk Image files
4. Browse to the folder where you want to save the Disk Image
5. To give the Disk Image file a different name, type a new name in the **File Name** field
6. Click **Save** to start Disk Image creation
7. Watch the progress and wait while drive's contents are copied to the new location. You may cancel the process of image creation anytime by clicking **Stop**

To create Disk Image default options being used.

To change Disk Imaging default options:

1. Click **Settings** toolbar button, or choose **Settings...** from **View** menu, or press **F2**
2. Click **Images** tab

3. Change default storage path, locking and error options, compression and chunks splitting options:



Important

You must always create a Disk Image on a drive other than the source drive. Do not try to save a Disk Image of a drive onto itself.

Search for File Signatures and Define Custom Signatures

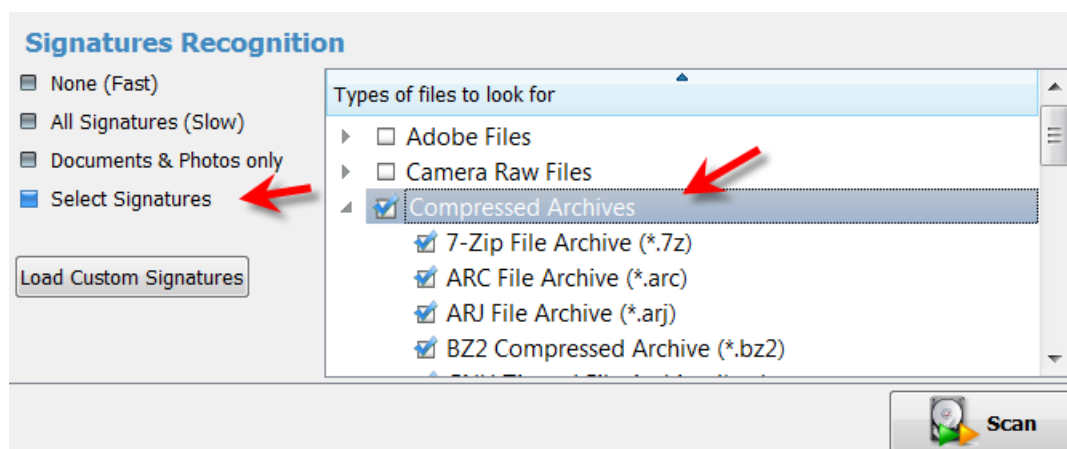
In case if recovery software is unable to detect deleted files after QuickScan or SuperScan (for example, when directory area keeping file headers is wiped out or overwritten by other data), the only chance to recover files is to search for file signatures. In this case un-fragmented files can still be detected and recovered.

Active@ File Recovery comes with more than hundred predefined (internally programmed, very fast) standard file signatures to be analyzed while SuperScan (MS Office Documents, Photo Camera Image formats, ZIP/RAR Archives, Music & Video MP3/MP4, etc..). For expert users there is advanced programming language which allows to define custom file signatures for Active@ File Recovery to search for specific data formats.

Active@ File Recovery offers advanced tools to define user's templates for signatures to be analyzed. Signatures can be described using extended definition language RegExp (Regular Expressions).

To search for standard file signatures:

1. Start Active@ File Recovery and choose a disk or volume to be inspected (place a cursor on it)
2. Launch **SuperScan** dialog box and define SuperScan options
3. Select **All Signatures, Documents & Photos only** or **Select Signatures** to be recognized:
4. If you selected **Select Signatures** option, verify and select particular signatures to be processed and recognized:
- 5.



6. Click **Scan** button and wait until some files have been recognized
7. Inspect specific groups in Signatures folder for files being detected
8. Preview and recover files (if detected) from specified groups

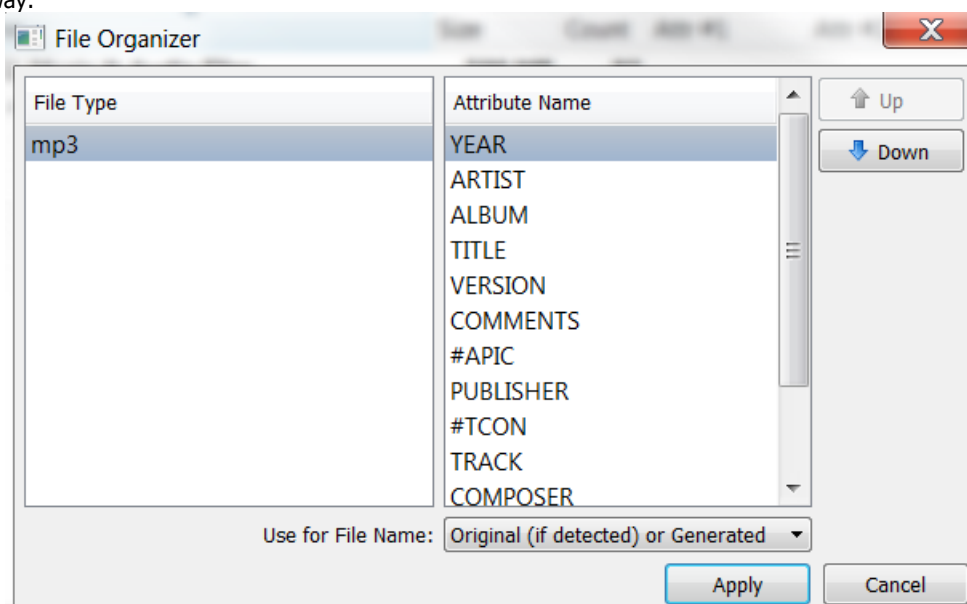
To preview, organize and recover files detected by signatures:

1. Select **SuperScan** node in the tree view on the left and **Signature Files** tab in the list view on the right

- Expand general groups (Music, Documents) and specific sub-types (MP3, XLS,...) to inspect what is detected:

Name	Size	Count	Attr #1	Attr #2	Attr #3	Attr #4
Music & Audio Files	500 MB	93				
mp3	500 MB	88	ARTIST	ALBUM	TITLE	VERSION
I Call Your Name.mp3	11.2 MB	a-ha	East of the Sun, West of ...	I Call Your Name	3	
Crying in the Rain.mp3	10.1 MB	a-ha	East of the Sun, West of ...	Crying in the Rain	3	
Early Morning.mp3	6.84 MB	a-ha	East of the Sun, West of ...	Early Morning	3	
The Blue Sky.mp3	6.00 MB	a-ha	Hunting High and Low	The Blue Sky	3	
Take On Me.mp3	8.77 MB	a-ha	Hunting High and Low	Take On Me	3	
Train Of Thought.mp3	9.72 MB	a-ha	Hunting High and Low	Train Of Thought	3	
Call of the Wild.mp3	4.09 MB	Roxette	Pearls of Passion	Call of the Wild		
From One Heart to Another...	3.76 MB	Roxette	Pearls of Passion	From One Heart to...		
Goodbye to You.mp3	3.65 MB	Roxette	Pearls of Passion	Goodbye to You		
I Call Your Name.mp3	3.06 MB	Roxette	Pearls of Passion	I Call Your Name		
I Call Your Name.mp3	2.77 MB	Roxette	Pearls of Passion	I Call Your Name		

- If file detected by signatures has some extended attributes, like **AUTHOR, CREATED, TITLE**, etc., these attributes will be displayed on the right. By default the only 5 first detected file attributes being displayed. To display more attributes, use **Show Attributes** drop down list
- By default files are not sorted and displayed in the order of detection. To group files by attributes, click the column you want to sort on. If **Subsequent Column Sorting** option is turned ON, files are grouped & sorted on all columns followed the column you clicked. This could be convenient, for example, if you want to group music by **Artist** and then by **Album**
- If you want to hide some attributes or change display order, click **Organizer** button on the toolbar to open **Signature Files Organizer**. Dialog appears and you can change the attribute for the particular file type (MP3, XLS, ...) to be displayed in the particular column on the screen. For example, default column order for music is **Artist, Album, Title, Genre, Year**,... To group MP3 first by **Year**, then by **Artist**, then by **Album**, change column order using arrows at the right side this way:



... and you will see:

Name	Size	Count	Attr #1	Attr #2	Attr #3	Attr #4
Music & Audio Files	500 MB	93				
mp3	500 MB	88	YEAR	ARTIST	ALBUM	TITLE
I Call Your Name.mp3	11.2 MB	1990	a-ha	East of the Sun, We...	I Call Your N...	
Crying in the Rain.mp3	10.1 MB	1990	a-ha	East of the Sun, We...	Crying in th...	
Early Morning.mp3	6.84 MB	1990	a-ha	East of the Sun, We...	Early Morning	
The Blue Sky.mp3	6.00 MB	1990	a-ha	Hunting High and ...	The Blue Sky	
Take On Me.mp3	8.77 MB	1990	a-ha	Hunting High and ...	Take On Me	
Train Of Thought.mp3	9.72 MB	1990	a-ha	Hunting High and ...	Train Of Tho...	
Call of the Wild.mp3	4.09 MB	1986	Roxette	Pearls of Passion	Call of the ...	
From One Heart to Another....	3.76 MB	1986	Roxette	Pearls of Passion	From One H...	
Goodbye to You.mp3	3.65 MB	1986	Roxette	Pearls of Passion	Goodbye to...	
I Call Your Name.mp3	3.06 MB	1986	Roxette	Pearls of Passion	I Call Your N...	
I Call Your Name.mp3	3.77 MB	1986	Roxette	Pearls of Passion	I Call Your N...	

- To recover files detected by Signatures, select the particular file or group of files, or even all signature files and click **Recover** button. On **Recovery Options** dialog use **Organize by file meta-data** option to group files in folders based on attributes (meta-data):

- Use **Attribute-based folder depth** parameter to organize recovered files in a specified number of sub-folders. For example, for the MP3 files default columns are **Artist, Album, Title** and default folder depth is **2**. When you recover MP3s using default parameters, your music files will be organized first by **Artist**, then by **Album**, so all album songs will be in one folder. If you reorganize columns display like in example above (**Year, Artist, Album,...**) and specify folder depth **3**, after recovery you'll have music grouped in folders first by **Year**, then by **Artist**, then by **Album**.

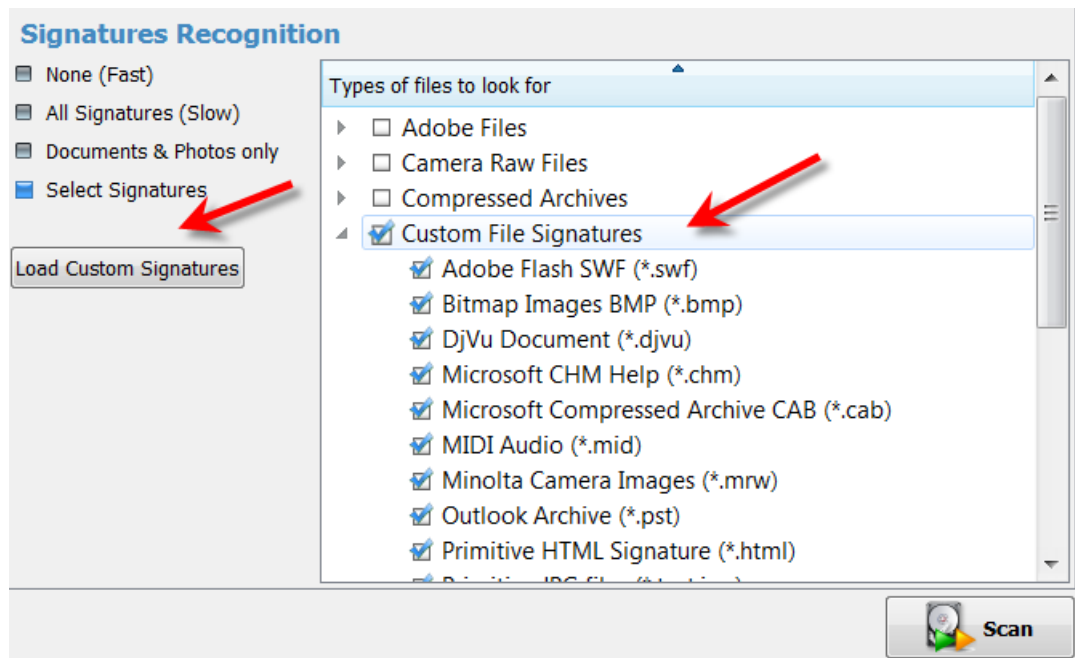
Custom File Signatures

Sometimes advanced users need to detect more specific file formats, not being described in standard set of file signatures.

Active@ File Recovery offers advanced tools to define user's templates for signatures to be analyzed. Signatures can be described using extended definition language (including scripting and calculation capabilities) which also complies with RegExp (Regular Expressions). See language definition and syntax below.

To create and use a custom file signatures:

- Create a text file containing one or multiple signatures definition (using syntax and examples below)
- Launch Active@ File Recovery, select disk or volume to be inspected, and click **SuperScan** button
- In SuperScan options, **File types to be recognized based on signatures** area, choose **Signatures Recognition** tab
- Load created text file contents into Recognized Signatures tree:
 - Click **Load Custom Signatures** button
 - Select text file containing signatures definition (load included example **Custom_Signatures.txt**, or create a new one)
 - Find custom signatures in Signatures Tree and make sure that they are selected



5. Click **Scan** button to execute **SuperScan**
6. Inspect specific groups in **Signatures Files** panel for files being detected
7. Preview and recover files (if detected) from specified groups

Signatures definition language and examples:

```
; =====
;                                     Signature Templates Usage
; =====
; Empty lines and lines starting with semicolon are ignored
; Sections order and lines order in sections are not important
; Letter case is not important (excepting RegExp fields)
; -----
; Section TEMPLATES - required and contains fields numbering from one
;   - TEMPLATE### - points to the section where signature template is described (numbered from one)
; -----
; Section Template Header - required and contains fields:
;   - BEGIN - required. Points to the section describing begin of the signature file
;   - FOOTER - non required. Points to the section describing end of the signature file
;   - MAX_SIZE - non required. Maximum file size to force file-end, if no file-end signature is detected. By
;     default it is 64Kb.
;   - GROUP - non required. If missed - template goes to User Defined templates group by default
;   - DESCRIPTION - non required. This is a descriptive name of user template being displayed on a screen
;   - EXTENSION - non required. This is a file extension to be assigned and displayed
;   - SCRIPT - non required. Refers to the section where size of the file being calculated
; -----
;   Note: If field SCRIPT is present, then field FOOTER is ignored
; -----
; Section describing file beginning (required), contains fields of the same type:
;
;   <signature> = <offset_start> | <offset_end>
;
;   signature      - expression (regular or RegExp-compatible). Expression max length is 1024 bytes.
;   offset_start   - acceptable minimal signature offset from the beginning of the file
;   offset_end     - acceptable maximum signature offset from the beginning of the file
;
;   If there are several fields listed in signature beginning, logical AND operation applied to confirm file
;   start.
; -----
; Section calculating file size (not required), contains operators of four types:
;   <result> = <command> (<argument>, <argument>)
;   <result> = <argument>
;   IF (<argument> <condition> <argument>) GOTO <label>
```



```

; GOTO <label>
;
; <commands> : READ, ENDIAN, SUM, SUB, MUL, DIV, SHR, SHL, AND, OR and XOR
; Most of commands are the same as in assembler programming language, except:
; READ - first argument - data type (size) to be read, second - offset from the beginning of the file
; ENDIAN - first argument - data type (size), second - expression, which byte order will be swapped
; First argument for commands READ and ENDIAN must be one of reserved data types: BYTE, WORD, DWORD, QWORD
; <argument> : can be either a named variable or a constant
; <result> : can be the only named variable
; <condition>: can be one of : < <= == >= > != (meaning is the same as in C++)
; <label> : consists of label name followed by colon and it can precede any operator
;
; Label named EXIT has been reserved and instructs to complete the calculations
; Named variable SIZE has been reserved and keeps the file size
; Constants can be in Decimal form, Binary (followed by 'b'), Octal ('o'), and Hexadecimal ('h') or can be a text
string
;
; -----
; Section describing file end (not required), contains fields of the same type:
;
; <signature> [= <bytes_to_append>]
;
; signature - expression (regular or RegExp-compatible). Expression max length is 1024 bytes.
; bytes_to_append - not required. How many bytes to append to the file after the signature is found
;
; If there are several fields listed in signature, logical OR operation applied to define file end.
;
; =====
; Examples
; =====

[TEMPLATES]
TEMPLATE1 = PRIMITIVE_HTML
TEMPLATE2 = PRIMITIVE_JPG
TEMPLATE3 = QBW_HEADER
TEMPLATE4 = CHM_HEADER
TEMPLATE5 = SWF_HEADER
TEMPLATE6 = PST_HEADER
TEMPLATE7 = MRW_HEADER
TEMPLATE8 = MID_HEADER
TEMPLATE9 = CAB_HEADER
TEMPLATE10 = BMP_HEADER
TEMPLATE11 = DJV_HEADER

[PRIMITIVE_HTML]
DESCRIPTION = Primitive HTML Signature
EXTENSION = html
BEGIN=HTML_BEGIN
FOOTER=HTML_FOOTER
MAX_SIZE = 655360

[HTML_BEGIN]
<html = 0 | 512
<head = 0 | 1024

[HTML_FOOTER]
</html> = 2

[PRIMITIVE_JPG]
BEGIN=BEGIN.TEST.JPG
GROUP = Images and Camera RAW files
DESCRIPTION = Primitive JPG files
FOOTER=FOOTER-.TEST.JPG
EXTENSION = test.jpg
MAX_SIZE = 3221225472
[BEGIN.TEST.JPG]
\xff\xd8\xff = 0 | 0

[FOOTER-.TEST.JPG]
\xff\xd9

[DJV_HEADER]
DESCRIPTION=DjVu Document
EXTENSION=djvu
BEGIN=DJV_BEGIN
SCRIPT=DJV_SCRIPT

[DJV_BEGIN]
AT&TFORM=0|0

[DJV_SCRIPT]
size = read(dword, 8)

```

```

        size = endian(dword, size)
        size = sum(size, 12)

[QBW_HEADER]
DESCRIPTION=QuickBooks Document
EXTENSION=qbw
BEGIN=QBW_BEGIN
SCRIPT=QBW_SCRIPT

[QBW_BEGIN]
MAUI=96|96

[QBW_SCRIPT]
        data = read(dword, 36)
        temp = read(dword, 52)
        if (temp <= data) goto exit
        size = sum(temp, 1)
        size = shl(size, 10)

[CHM_HEADER]
DESCRIPTION=Microsoft CHM Help
EXTENSION=chm
BEGIN=CHM_BEGIN
SCRIPT=CHM_SCRIPT

[CHM_BEGIN]
ITSF=0|0

[CHM_SCRIPT]
        version = read(dword, 4)
        if (version == 0) goto exit
        header = read(dword, 8)
        if (header <= 1Ch) goto exit
        temp = read(qword, header)
        if (temp != 1FEh) goto exit
        temp = sum(header, 8)
        size = read(qword, temp)
        temp = sum(header, 10h)
        if (size > temp) goto exit
        size = 0

[SWF_HEADER]
DESCRIPTION=Adobe Flash SWF
EXTENSION=swf
BEGIN=SWF_BEGIN
SCRIPT=SWF_SCRIPT

[SWF_BEGIN]
FWS=0|0

[SWF_SCRIPT]
        data = read(byte, 3)
        if (data <= 10h) goto exit
        size = read(dword, 4)
        if (size <= 8) goto exit
        size = 0

[PST_HEADER]
DESCRIPTION=Outlook Archive
EXTENSION=pst
BEGIN=PST_BEGIN
SCRIPT=PST_SCRIPT

[PST_BEGIN]
!BDN=0|0

[PST_SCRIPT]
        data = read(byte, 10)
        if (data == 0Eh) goto valid
        if (data != 17h) goto exit
        size = read(dword, 184)
        goto exit

valid:
        size = read(dword, 168)

[MRW_HEADER]
DESCRIPTION=Minolta Camera Images
EXTENSION=mrw
BEGIN=MRW_BEGIN
SCRIPT=MRW_SCRIPT

[MRW_BEGIN]
\x00MRM=0|0

```

```

[MRW_SCRIPT]
    data = read(dword, 4)
    if (data == 0) goto exit
    width = read(word, 24)
    if (width == 0) goto exit
    width = endian(word, width)
    height = read(word, 26)
    if (height == 0) goto exit
    height = endian(word, height)
    pixel = read(byte, 32)
    if (pixel == 0) goto exit
    pixel = mul(pixel, width)
    pixel = mul(pixel, height)
    pixel = div(pixel, 8)
    size = endian(dword, data)
    size = sum(size, pixel)
    size = sum(size, 8)

[MID_HEADER]
DESCRIPTION=MIDI Audio
EXTENSION=mid
BEGIN=MID_BEGIN
SCRIPT=MID_SCRIPT

[MID_BEGIN]
MThd=0|0

[MID_SCRIPT]
next:
    temp = read(dword, size)
    if (temp == "MThd") goto valid
    if (temp != "MTrk") goto exit

valid:
    size = sum(size, 4)
    temp = read(dword, size)
    size = sum(size, 4)
    temp = endian(dword, temp)
    size = sum(size, temp)
    goto next

[CAB_HEADER]
DESCRIPTION=Microsoft Compressed Archive CAB
EXTENSION=cab
BEGIN=CAB_BEGIN
SCRIPT=CAB_SCRIPT

[CAB_BEGIN]
MSCF=0|0

[CAB_SCRIPT]
    version = read(word, 24)
    if (version != 103h) goto exit
    folders = read(word, 26)
    folders = mul(folders, 8)
    folders = sum(folders, 36)
    files = read(word, 28)
    files = mul(files, 16)
    files = sum(files, folders)
    temp = read(dword, 16)
    if (temp < folders) goto exit
    temp = read(dword, 8)
    if (temp <= files) goto exit
    flags = read(word, 30)
    flags = and(flags, 4)
    if (flags == 0) goto skip
    flags = read(dword, 36)
    if (flags != 20) goto skip
    flags = read(dword, 44)
    if (flags < temp) goto skip
    size = flags
    temp = read(dword, 48)

skip:
    size = sum(temp, size)

[BMP_HEADER]
DESCRIPTION=Bitmap Images BMP
EXTENSION=bmp
BEGIN=BMP_BEGIN
SCRIPT=BMP_SCRIPT

[BMP_BEGIN]
BM=0|0

[BMP_SCRIPT]

```

```

width = read(dword, 12h)
if (width == 0) goto exit
height = read(dword, 16h)
if (height == 0) goto exit
pixel = read(word, 1ch)
if (pixel == 1) goto valid
if (pixel == 4) goto valid
if (pixel == 8) goto valid
if (pixel == 16) goto valid
if (pixel == 24) goto valid
if (pixel != 32) goto exit

valid:
pixel = mul(pixel, width)
pixel = mul(pixel, height)
pixel = div(pixel, 1000b)
rastr_size = read(dword, 22h)
if (rastr_size < pixel) goto exit
rastr_offset = read(dword, 0Ah)
if (rastr_offset < 38) goto exit
rastr_offset = sum(rastr_offset, rastr_size)
size = read(dword, 2)
if (size >= rastr_offset) goto exit
size = 0

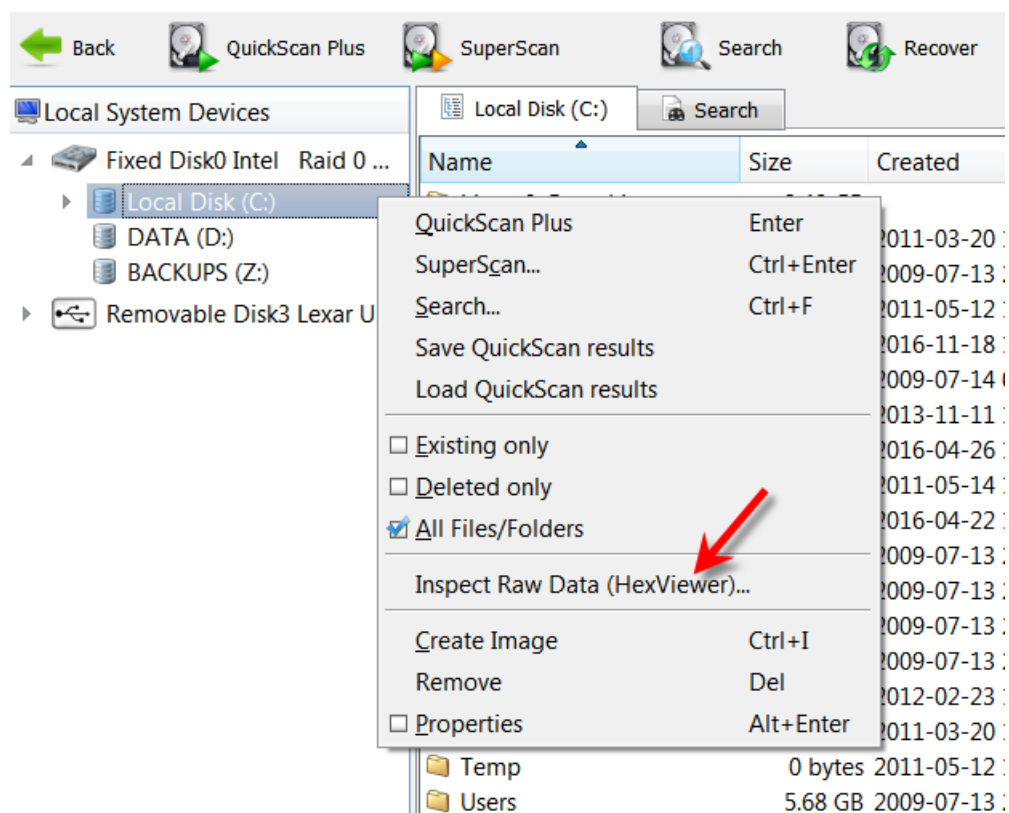
```

Important

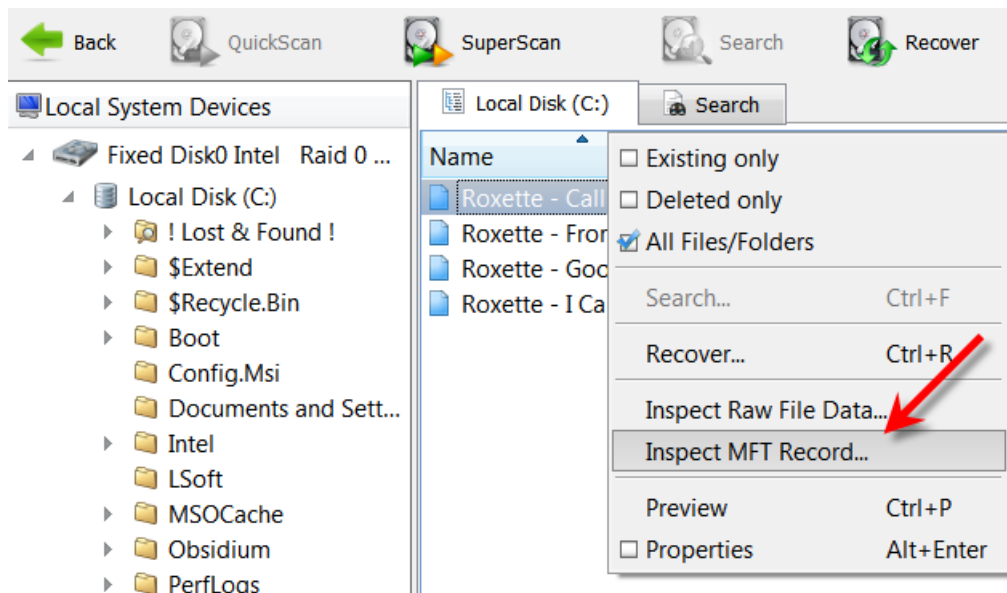
Regular Expressions can be used while defining signature headers and footers. Please check RegExp syntax on a web, for example [here](#).

Inspect file headers and disk data (raw sectors) with integrated Disk Editor (HexViewer)

Advanced users and IT professionals may require inspecting raw disk structures before actual recovery occurs - to evaluate damage to the data and recovery chances. For these purposes Disk Editor (HexViewer) supplied as a separate application and is accessible from recovery panel. Launch it from the context menu for the object to be inspected (hard disk, volume, file data):



For NTFS volumes MFT records inspection is available, Disk Editor is launched and MFT record template is applied for binary data automatically:



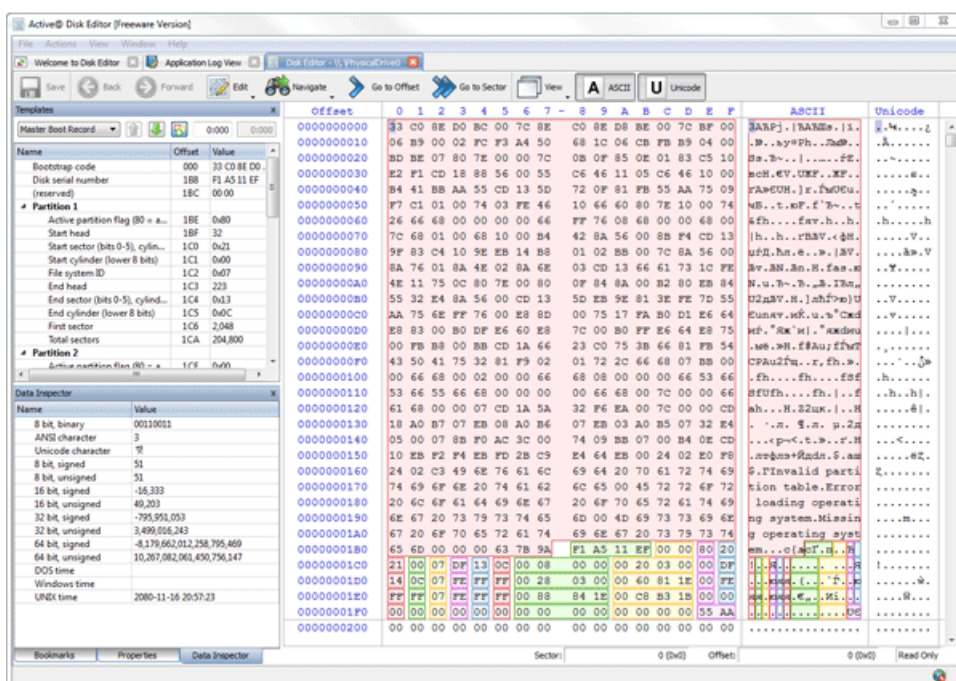
Active@ Disk Editor

Active@ Disk Editor uses a simple, low-level disk viewer which displays information in binary and text modes at the same time. You can use this view to analyze the contents of data storage structure elements such as:

- Hard disk drives
- SSD & USB Disks
- Partitions & Volumes
- Files

The Main Features

- Enhanced template view
- Detailed MFT record information
- Side-by-side Compare and Edit
- Fields coloring with data in tooltips
- Extensive exFAT support
- Fast navigation points
- Filling selection with a pattern
- Unicode support
- Quick Disk Info
- Bookmarks
- Data Inspector



Visit www.disk-editor.org and read Active@ Disk Editor documentation for more information.

Concept of File Signatures

If the data loss was caused due to a total file system failure, even the best file recovery programs can only recover the files by signature. These programs use algorithms to determine the beginning, end and extension of a file without relying on data that used to be contained in the file system. This works for only un-fragmented files (stored on the disk as a continuous set of file data clusters). The file organizing functions allow you to create folders based on information contained inside the file and outside the file system it is stored in, and move the file to these folders. This is useful when you detected and recovered files by signatures, but recovered files have abstract names. The file organizer function is primarily used to open files of a chosen extension, look at data contained within that file, create a folder structure that matches the data contained within the file and copy the file to that folder. Its primary function is to organize and rename files after a catastrophic data loss. Typically these files will be recovered into a single folder with names like **file0001.jpg**, or **file1234.mp3**. This may leave you with several folders of recovered data but the data within these folders will be difficult to use.

This is an example how NOT organized files detected by signatures could look like:

Name	Count	Size
▶ Compressed Archives	13	25.5 MB
▶ Formatted Text files	11	6.16 MB
▶ Images and Camera Raw files	331	56.6 MB
▶ Microsoft Office Documents	79	20.6 MB
▶ Music and Videos	20	74.1 MB
▶ mp3	15	73.9 MB
Found_163775519_701120.mp3		685 KB
Found_163795008_7491872.m...		7.14 MB
Found_163943451_449468.mp3		439 KB
Found_164008165_710510.mp3		694 KB
Found_164009785_712388.mp3		696 KB
Found_164043192_1638400.m...		1.56 MB
Found_167439524_768000.mp3		750 KB
Found_168197052_1439869.m...		1.37 MB
Found_170118696_7162776.m...		6.83 MB

By using the file organizer, you can quickly and easily organize these files into folders that you can recognize and use your recovered files. An example of the tremendous power of this data can be illustrated by the following scenario. You had a total file system failure and had your files recovered by signature. You now have your data stored in folders containing tens of thousands of JPG files, and another folder with all your MP3 files, and another folder with all your M4A files. These files have names like **file3124.MP3** or **file1556.M4A**. By using the file organizer, you could select your folder containing all the MP3 files, choose your re-organizing options and then recover files to the specified folder's structure.

The MP3 files (or at least the ones that contain the relevant information) without re-organization could be arranged as follows:

D:\recovered\MP3\File3124.MP3

may be renamed to something like:

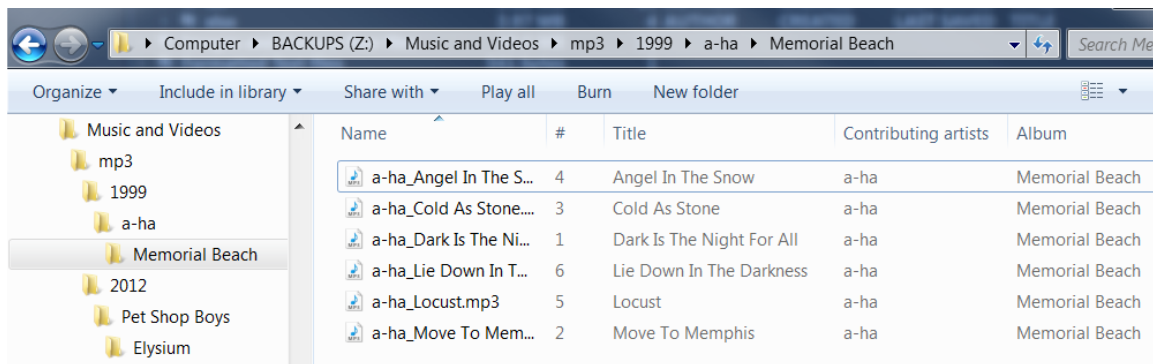
D:\MP3\year\Bandname\album\songname.mp3

You can use this functionality to organize files using information stored in the file itself.

This is an example how organized signature files could look like:

Reorganize Attributes		Show Attributes:	5	Subsequent Column Sorting:		On
Name	Count	size	Attr #1	Attr #2	Attr #3	Attr #4
Music and Videos	11	113 MB				
mp3	11	113 MB	YEAR	ARTIST	ALBUM	TITLE
a-ha_Angel In The Snow.mp3		9.70 MB	1999	a-ha	Memorial B...	Angel In Th...
a-ha_Cold As Stone.mp3		19.1 MB	1999	a-ha	Memorial B...	Cold As Stone
a-ha_Dark Is The Night For All...		8.68 MB	1999	a-ha	Memorial B...	Dark Is The ...
a-ha_Lie Down In The Darkne...		10.4 MB	1999	a-ha	Memorial B...	Lie Down In ...
a-ha_Locust.mp3		11.8 MB	1999	a-ha	Memorial B...	Locust
a-ha_Move To Memphis.mp3		10.0 MB	1999	a-ha	Memorial B...	Move To Me...
Pet Shop Boys_Breathing Spa...		10.0 MB	2012	Pet Shop Boys	Elysium	Breathing S...
Pet Shop Boys_Ego Music.mp3		6.28 MB	2012	Pet Shop Boys	Elysium	Ego Music
Pet Shop Boys_Everything Me...		9.40 MB	2012	Pet Shop Boys	Elysium	Everything ...

... and what you could see in Windows Explorer after recovery occurred:



In order to organize a file using the information stored within it, the file must obviously have the required information stored within it, and the information must be stored according to the standards of the file specification. Just because a file has an extension of JPG or MP3, does not ensure it contains the information the program needs to extract in order to rename it. If this information is not present, the program will consider the file unrenamable. If the required option is chosen, the unrenamable files will be moved to a specific folder chosen to house all the files that are unrenamable. The following types of picture files can be organized using information contained within the file.

Picture files (with embodied tiff information):

- **3FR** (Hasselblad 3F RAW Image)
- **ARW** (Sony RAW image file)
- **CR2** (Canon Digital Camera Raw Image Format)
- **CRW** (Canon Digital Camera Raw Image Format)
- **DCR** (Kodak Digital Camera Raw Image File)
- **JPG** (Joint Photographics Experts Group)
- **KDC** (Kodak DC120 digital camera RAW image definition)
- **NEF** (Nikon Digital SLR Camera Raw Image File)
- **ORF** (Olympus Digital Camera Raw Image File)
- **RW2** (Panasonic Lumix RAW image file)
- **SR2** (Sony Digital Camera Raw Image File)
- **TIF/TIFF** (Tagged Image File Format)
- **R3D** (Red One)

Music files:

- **MP3** (MPEG Layer 3)
- **M4A** (MPEG-4 Audio)

Microsoft Office documents (non-compressed and compressed):

- **DOC, DOCX, DOCM, DOTX, DOTM** (Microsoft Word)
- **XLS, XLSX, XLSM, XLTX, XLTM** (Microsoft Excel)
- **PPT, PPTX, POTX, POTM, PPTM** (Microsoft Power Point)
- **VSD** (Microsoft Visio)
- **MPP** (Microsoft Project)

RPT (Microsoft Reports)

Recovery Tips

DO NOT WRITE ANYTHING ONTO THE DRIVE CONTAINING YOUR IMPORTANT DATA THAT YOU HAVE JUST DELETED ACCIDENTALLY!

Even data recovery software installation could spoil your sensitive data. If the data is really important to you, and you do not have another logical drive to install software to, take whole hard drive out of the computer and plug into another computer where data recovery software has been already installed.

DO NOT SAVE ONTO THE SAME DRIVE DATA THAT YOU FOUND AND TRYING TO RECOVER!

While saving recovered data onto the same drive where sensitive data was located, you can intrude in process of recovering by overwriting table records for this and other deleted entries. It's better to save data onto another logical, removable, network or floppy drive.

CREATE DISK IMAGE IF YOU HAVE EXTRA HARD DRIVE, OR OTHER LOGICAL DRIVES ARE BIG ENOUGH!

Disk Image is a mirror of your logical drive that is stored in one file. This can be useful when you want to backup the contents of the whole drive, and restore it or work with it later. Before you start recovering the deleted files, it may be a good idea to create a Disk Image for this drive, if you have enough space at another drive. Why? Because if you do something wrong while recovering the files (for example, recovering them onto the same drive could destroy their contents), you still will be able to recover these deleted files and folders from the Disk Image that you have wisely created.

Frequently Asked Questions (FAQ)

[I deleted a file. How long do I have before data recovery is no longer possible?](#)

It is not possible to predict a time like this in hours or days. Microsoft Windows can overwrite a deleted file immediately if it selects the same data clusters.

To maximize recovery chances try not to write anything onto the drive where a deleted file is located before you start using recovery software.

[How can I download the trial version of Active@ File Recovery utility?](#)

You can do it from the www.file-recovery.net Web site. The trial version is a utility with full functionality of the final program. The only limitation is the maximum size of the file being restored.

[I found that I have deleted very important document. It was deleted BEFORE Active@ File Recovery was installed on my computer. Is it possible to restore it](#)

Yes, if the file has not already been written over (by some other files). If you have found that some important file is deleted, download and install Active@ File Recovery and search for this file. It may be a good idea to avoid excessive disk activity on this particular hard drive, not to make a lot of other file deletions, to avoid computer reboots, not to invoke large number of programs concurrently (which would cause the increased OS Paging/Swapping activity), etc. - all of this might overwrite or partially overwrite the deleted document and also will make finding a particular file more complicated. The more free hard drive space you have on your computer, the greater the chances for a successful retrieval of deleted file contents. It is always a good idea to extract and install [Active@ File Recovery](#) to some OTHER hard drive - that does not contain important deleted file(s).

[Does Active@ File Recovery work under Windows 2000 / XP?](#)

Yes, it does.

[Does Active@ File Recovery support localized \(e.g. French, Spanish\) files names](#)

Yes, provided the OS and file system support localized file names.

[What is a Disk Image? Why is it needed?](#)

Disk Image is a mirror of your logical drive that is stored in one file. This can be useful when you want to backup the contents of the whole drive, and restore it or work with it later. Before you start recovering the deleted files, it may be a good idea to create a Disk Image for this drive, if you have enough space at another drive. Why? Because if you do something wrong while recovering the files (for example, recovering them onto the same drive could destroy their contents), you still will be able to recover these deleted files and folders from the Disk Image that you have wisely created.

Glossary of Terms

boot record

- See boot sector.

boot sector

- The boot sector continues the process of loading the operating system into computer memory. It can be either the MBR (see MBR, below) or the partition boot sector (see partition boot sector, below).

cluster

- A group of disk sectors that contain file data. It is the smallest allocation unit for storing a file. For example, if the file size is 100 bytes and the cluster size is 4096 bytes, the file system reserves one cluster, or 4096 bytes for file data.

data striping

- Spreading blocks of data from files across multiple disk drives. Quicker read and write performance is a result.

device node

- In the Local System Devices list, a physical device containing logical drives. The first physical device is named 80h.

disk mirroring

- Identical data is written to two disks simultaneously. Used when access to data at all times is critical.

FAT

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

file

- A collection of data with a file name and file attributes, like size.. Almost all information stored in a computer must be in a file.

folder

- An object that can contain a group of files. Folders are used to organize information. In DOS and UNIX, folders are called directories or root areas.

HDD

- Hard disk drive.

log file

- A file that lists all events that have occurred. For example, Active@ File Recovery writes a log file entry for every request made to the program and every event that happens as a result. You can see the log at the bottom of the main screen.

logical drive

- A partition is a logical drive because it does not affect the physical hard disk other than the defined space that it occupies, yet it behaves like a separate disk drive.

MBR

- The Master Boot Record (MBR) is a small program that is executed when the computer is first turned on. Typically, the MBR can be found on the first sector of a disk. The MBR first reads the disk's partition table to determine which partition is used to load the operating system. The MBR then transfers control to this partition's "boot sector" to continue the process. Loading the operating system is called "booting" the computer.

MFT

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

NTFS

- NT File System. NTFS was created to provide a more reliable operating system, compared to the FAT file system.

partition

- A section of memory or hard disk isolated for a specific purpose. Each partition can behave like a separate disk drive.

partition boot sector

- On NTFS or FAT file systems, the partition boot sector is a small program that is executed when the operating system tries to access a particular partition. On personal computers, the Master Boot Record uses the partition boot sector on the system partition to determine file system type, cluster size, etc. and to load the operating system kernel files. Partition boot sector is the first sector of the partition.

partition status

- SuperScan gives each partition a rating depending on how likely it is to recover data on the partition. A status rating of 1 is very bad. A status rating of 8 is excellent.

physical device

- A piece of hardware that is attached to your computer by screws or wires. A hard disk drive is a physical device. It is also referred to as a physical drive.

RAID-0

- Provides data striping but no redundancy. This method provides quick performance but does not deliver fault tolerance. If one drive fails then all data in the array is lost.

RAID-1

- Writes identical data to two separate disks. Level 1 provides quick read performance and the same write performance as single disks.

RAID-5

- Provides data striping at the byte level and also stripe error correction information. This results in excellent performance and good fault tolerance. Level 5 is one of the most popular implementations of RAID.

root area (and root folder)

- An object that can contain a group of files in a FAT file system. In other words, a directory or folder. The root folder is the top-level folder that has no parent and can have children. A logical drive can have only one root folder. Its name is usually '.' (dot).

sector

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

span array

- A series of dynamic drives linked together to make one contiguous spanned volume.

templates

- File types are recognized by specific patterns that may serve as a reference for file recovery. When a file header is damaged, the type of file may be determined by examining patterns in the damaged file and comparing these patterns to known file type templates. This same pattern-matching process can be applied to deleted or damaged partitions. Using FAT or NTFS templates, recovery software can assume that a particular sector is a FAT or NTFS boot sector because parts of it match a known pattern.

volume

- A fixed amount of storage on a hard disk. A physical device may contain a number of volumes. It is also possible for a single volume to span a number of physical devices.