

Data Rescue DOS™

A professional data recovery tool from RecoverSoft™ Media Tools Professional™



Data Rescue DOS™ is one tool from within RecoverSoft™ Media Tools Professional™, the complete data recovery and computer forensic software suite. Chapter 1 (one page) gives an overview of Data Rescue DOS™ and RecoverSoft™ Media Tools Professional™.

Table of Contents

Chapter 1	What can Data Rescue DOS™ do for you?	3
1.1	Trial Version / Registered Version	
1.2	What can RecoverSoft™ Media Tools Professional™ do for you?	
Chapter 2	Registration and Support	4
2.1	Registration	
2.2	Software Support	
2.3	Program Developer	
Chapter 3	Set-up Procedures	7
3.1	Items Needed to Run Data Rescue DOS™	
3.2	Desktop Set-up	
3.3	Laptop Set-up	
3.4	Languages	
3.5	Drivers and Converters (Iomega ZIP/JAZ, SATA)	
Chapter 4	Running Data Rescue DOS™	10
4.1	Launch the Program	
4.2	Select Drive	
4.3	(File) System Components Search	
4.4	Save Found Components on the Data Rescue DOS™ floppy diskette	
4.5	Select File System to Rebuild	
4.6	Recover Files and Directories to a <u>FAT32</u> destination drive	
	o Directions to format a Destination Drive FAT32	
4.7	Restore Files and Directories Using WinZip™ or PKZIP™	
4.8	Use the Menus to look for and filter specific files	
Chapter 5	Save/Load Found Components	22
5.2	Save Found Components to a Bin File	
5.3	Load Found Components from the Bin File	
Chapter 6	FAQ (frequently asked questions)	29
6.1	Does Data Rescue DOS™ recover from viruses?	
6.2	Does Data Rescue DOS™ recognize USB?	
6.3	Can Data Rescue DOS™ recover from RAID?	
6.4	Can Data Rescue DOS™ recover from SATA drives?	
Chapter 7	Problem Solving	30
7.1	Problem Launching the Program	
7.2	USB Drivers do not load successfully	
7.3	Program Freezes While Using it	
7.4	File System not Displayed (in Select File System screen)	
7.5	File cannot be Located	
7.6	Cannot Locate the Root Directory	

Chapter 8	Advanced Data Recovery and Computer Forensic Procedures	32
8.1	Advanced User Set-up Window - <Ctrl S>	
8.2	RAID Recovery	
8.3	Compression on the Fly	
8.4	MD5 Hash Mark	
8.5	File System Types	
	License Agreement	37
	Software Warranty, Guarantee and Discount Coupon	39

Chapter 1 What can Data Rescue DOS™ do for you?

1.1 Trial Version / Registered Version

The Trial Version of **Data Rescue DOS™** rebuilds any FAT or NTFS (DOS™ and Windows™) file system automatically from hard drives (IDE,SATA) and removable media (USB Devices), including accidental format and deletion, corrupt or missing file systems, viruses and worms, files located in slack space from previous formats, and even digital pictures, allowing you to view which files and folders can be recovered.



The Registered Version, a purchased copy of **Data Rescue DOS™**, allows you to recover files and folders to another destination to a local network, hard drives, and USB Devices.

1.2 What can RecoverSoft™ Media Tools Professional™ do for you?

****Sold Separately from Data Rescue DOS****

The Trial Version of RecoverSoft™ Media Tools Professional™ is **sold separately** from Data Rescue DOS and allows you to perform the following functions on any DOS™ and Windows™ drives to see which files and folders can be recovered, before having to purchase the program:

File Recovery Tree™ (shown in this manual as Data Rescue DOS™) – rebuilds any FAT or NTFS (DOS™ and Windows™) file system automatically from hard drives (IDE,SATA) and removable media (USB Devices), including accidental format and deletion, corrupt or missing file systems, viruses and worms, files located in slack space from previous formats, and even digital pictures, allowing you to view which files and folders can be recovered.

Boot Partition Repair™ – rebuilds any FAT or NTFS (DOS™ and Windows™) boot sector and partition table automatically from hard drives (IDE,SATA) and removable media (USB Devices), allowing you to view which files and folders can be repaired.

Media Editor™ – mounts and rebuilds any FAT or NTFS (DOS™ and Windows™) file system through easy to follow screenshots and directions, allowing you to view which files and folders can be recovered. (Note: This option is used if Data Rescue DOS™ does not produce the results you expect).

The Registered Version, a purchased copy of RecoverSoft™ Media Tools Professional™, gives you all of the trial versions capabilities. Plus, it lets you perform the following operations on any media type or operating system:

Cycle-Clone™ (including Reverse-Clone™) /Cycle-Image™ – extracts raw data from mechanically failing drives on any media or operating system, keeping drives out of the clean room. It also creates an exact sector copy to another media or network for back up protection.

Media Editor™ – In addition to its Try Before You Buy capabilities, Media Editor™ also lets you View, Look for, Edit, and Report anything within the file system on any media or operating system much easier than other editors through custom designed editing templates.

Secure Wipe™ – quickly and permanently overwrites every bit on every sector on any media or operating system to the level the U.S. Department of Defense requires.

The **MD5 Hash Mark** can be used throughout program for computer forensic cases.

Chapter 2 Registration and Support

- 2.1 Registration / p.5
 - A. Program Registration / p.5
 - B. Failing Copies / Lost Copies / p.5
- 2.2 Software Support / p.6
- 2.3 Program Developer / p.6

2.1 Registration

2.1.A. Program Registration

1. Purchase the program. If you forget where you downloaded the program, press the **<Software Support>** button, once the program launches, for purchasing information.
2. A **Serial Number** will be issued to you as soon as your order is verified.
3. Insert the Recoversoft Data Rescue PC CD into CD drive and turn on your computer. It is self-booting and automatically launches the program.
4. Upon entering the program, you are prompted to register the program. Press **<Alt Y>** or **<Enter>**.
5. Once the Registration Window appears, type in the Serial Number sent to the email submitted during the purchasing process.
6. Enter the Serial Number in the Registration Window, and press **<Enter>** to register the program.

2.1.B. Failing Copies / Lost Copies

Download the appropriate version at <http://www.prosofteng.com>. If you have lost your Serial Number, contact Software Support.

2.2 Software Support

Frequently Asked Questions: www.prosofteng.com > Support button.

Manual: www.prosofteng.com > Support button.

Email: support@prosofteng.com

Telephone: 1-925-426-6306

2.3 Program Developer

Prosoft Engineering, Inc. has acquired all the software assets of ACR Data Recovery, Inc. All new purchases, updates, upgrades and support are all being handled directly by Prosoft. To learn about exciting new changes in the software, to purchase, or to obtain support, please visit the Prosoft website at www.prosofteng.com or call 1.877.4 PROSOFT (1.877.477.6763).

ACR Data Recovery will continue to support All software customers with In-Lab Data Recovery Services when the scope of the problem is beyond the software's capability. For information about Data Recovery Services visit www.ACRdatarecovery.com or call 1-800-444-3225.

Phone: 1-925-426-6100

Fax: 1-925-426-6309

Email: support@prosofteng.com

Corporate Website: www.prosofteng.com

Chapter 3 Set-up Procedures

- 3.1 Items Needed to Run Data Rescue DOS™ / p.8
- 3.2 Desktop Set-up / p.8
- 3.3 Laptop Set-up / p.8
- 3.4 Languages / p.8
- 3.5 Load Drivers / p.9
 - A. Iomega ZIP/JAZ / p.9
 - B. SATA / p. 9

3.1 Items Needed to Run Data Rescue DOS™

- Personal Computer (PC)
- Destination media, must be formatted FAT32
- PKZIP™ 4.0 or greater (http://www.pkware.com/products/free_eval.html) or WinZip™ 9.0 or greater (<http://www.winzip.com>) to extract your recovered files and folders.



Work on your original problem media, or on a sector-by-sector clone/image of the original problem media (see Chapter 5, Cycle-Clone/ Cycle-Image). Almost all software that clones/images does it file-by-file (not sector-by-sector), which means it cannot clone/image deleted files, files which have been overwritten, etc. In other words, you will not be able to recover your data from a drive that has been cloned/imaged with a file-by-file clone/image software. Use our sector-by-sector clone (See Chapter 5, Cycle-Clone™ / Cycle-Image™).

3.2 Desktop Set-up

- **Unhook any peripherals** not used during the recovery process (Other hard drives attached to the system, CD-ROM drive, burner, etc.), as these could interfere with the program. **Also**, each hard drive must be on a separate IDE channel (not daisy-chained).



3.3 Laptop Set-up

Take the laptop drive out and connect it to a desktop system, as a Slave Drive, using a Laptop Converter. You can get this converter from <http://www.cabledepot.com> (1-800-343-4597 toll free or 1-770-564-2323) for approximately \$15 – Part Number: ADP3040IDE



3.4 Languages

English is the default language for running Data Rescue DOS™ and for viewing files and directories.

3.5 Drivers and Converters (Iomega ZIP/JAZ, SATA)

3.5.A. Iomega™ ZIP/JAZ Drivers

If you have Zip or Jaz drivers, the Iomega™ DOS™ “Guest” program must be run prior to running Data Rescue DOS™. The Guest program can be found on the original floppy diskette that came with the Iomega drive, or you can download this DOS™ program from Iomega’s web site (<http://www.iomega.com>).

3.5.B. SATA Converter

To recover data from a Serial ATA Drive, you will need to get the Serial ATA-IDE/ATAPI Converter from <http://www.cabledepot.com> (1-800-343-4597 toll free or 1-770-564-2323) for approximately \$50.00 – Part Number: SATA-ATAPI

Chapter 4 Running Data Rescue DOS™

Data Rescue DOS™ rebuilds any FAT or NTFS (DOS™ and Windows™) file system automatically from hard drives (IDE, and SATA) and removable media (USB Devices), including accidental format and deletion, corrupt or missing file systems, viruses and worms, files located in slack space from previous formats, and even digital pictures, allowing you to recover files and folders to another destination to a local network, hard drives, and USB Devices.

You also have the ability to look for and filter specific files after the file system has been rebuilt (For more details, see 4.8, Use the Menus to look for and filter specific files).

- 4.1 Launch the Program / p.11
- 4.2 Select Drive / p.12
- 4.3 (File) System Components Search / p.13
- 4.4 Save Found Components on the Data Rescue DOS™ floppy diskette / p.13
- 4.5 Select File System to Rebuild / p.14
- 4.6 Recover Files and Directories to a FAT32 destination drive / p.16
 - o Directions to format a Destination Drive FAT32
- 4.7 Restore Files and Directories using WinZip™ or PKZIP™ / p.17
- 4.8 Use the Menus to look for and filter specific files / p.18
 - A. <Utils> Menu / p.18
 - B. <Look for> Menu / p.20
 - C. <File> Menu / p.21

4.1 Launch the Program

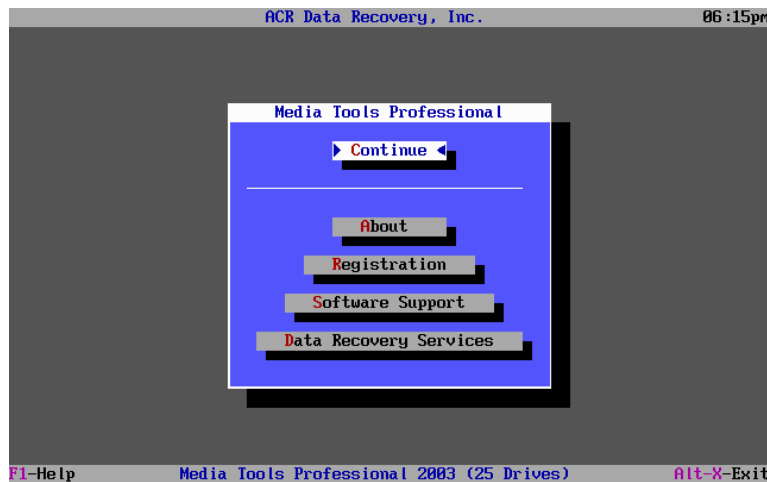


Note: Unhook any peripherals not used during the recovery process (Other hard drives attached to the system, CD-ROM drive, burner, etc., as these could interfere with the program).

1. Insert the Recoversoft Data Rescue PC CD into CD drive, turn on your computer, and let it self-boot from the CD (Make sure the computer is set to boot from the CD drive).



Having problems launching the program? See Ch 7.1, Problem Launching the Program.



2. Press <Alt C> to continue into the program.



Shortcut: When a **RED** letter is highlighted within any screen, this indicates a shortcut can be used. For example, if you look at the Data Rescue DOS™ screen above, notice that the letters **A**, **R**, **S**, and **D** are in red. Hold down your <Alt> key and press the <red letter>.

Screen Notes

Continue - Transferred to Select Drive

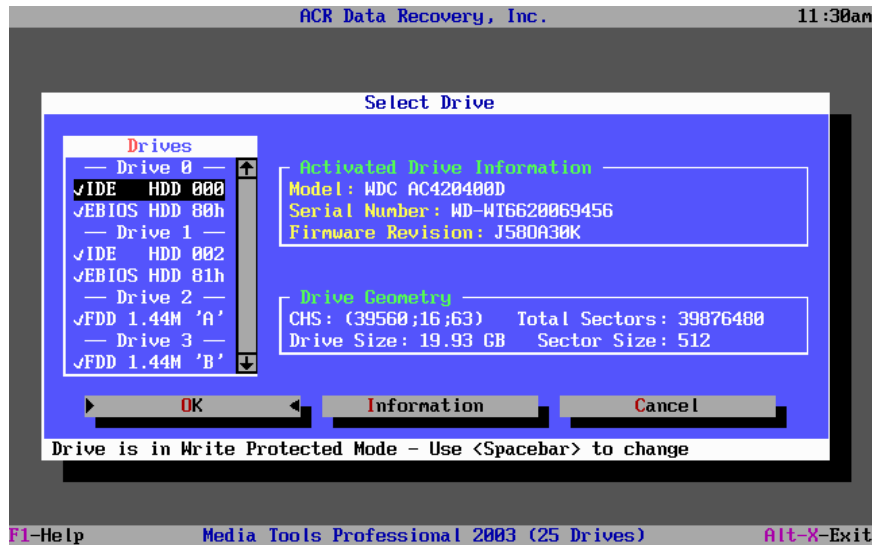
About - Copyright Information

Registration - Registration Procedures

Software Support - Technical Support, 1-925-426-6306

Data Recovery Services - ACR Data Recovery, 1-770-925-4420

4.2 Select Drive



- Using your <arrow keys ↓↑>, select the drive to be recovered, and then press <Alt O> or <Enter>. Select IDE ...for hard disk drives over EBIOS, if it is recognized.



Write Protected Mode is indicated by a checkmark. To make changes or to write to disk, uncheck the appropriate drive by using the <spacebar>.

Drive Access Methods (Advanced explanation): How Data Rescue DOS™ addresses and communicates with any drive.

IDE DRIVE - communicates with any IDE drive on the system. Data Rescue DOS™ has direct access and does not rely on the system BIOS to communicate with any media. This means, you can see the entire capacity of any IDE drive, regardless of whether the system BIOS has the ability to see the entire drive. The media is displayed as “IDE HDD 000, ...001, ...002, etc..” IDE HDD 000 always indicates your primary master.

BIOS DRIVE - communicates through the system BIOS with any media on the computer and is typically unreliable. Most new systems have the ability to handle extended int13 calls. If so, the media will be displayed as “EBIOS Drive 80h, ...81h, ...82h, etc.” and you will see the entire capacity of any drive above the 8.4GB barrier of DOS™. Otherwise, it will be displayed as “BIOS Drive 80h, ...81h, ...82h, etc” and a maximum of 8.4GB will be accessible. Do not use the EBIOS Access Method when getting read errors with mechanically failing drives.

FLOPPY DRIVE - accesses any floppy drives on the system.

4.3 (File) System Components Search

Start - <Alt S>, starts the Systems Components Search.

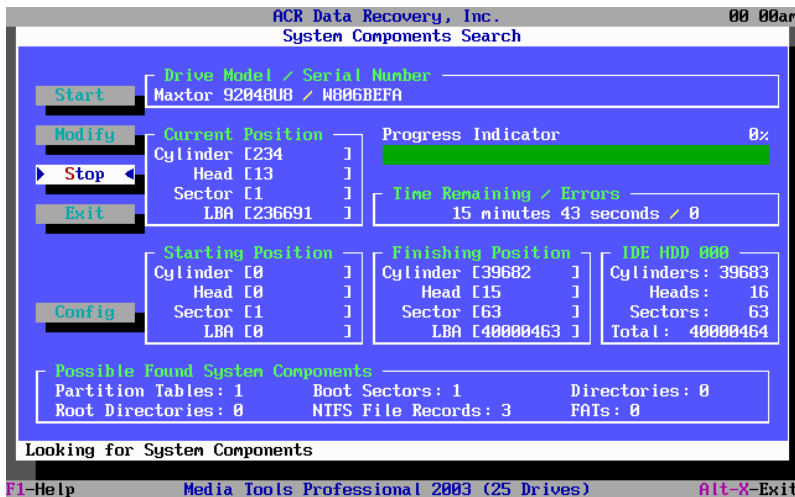
Modify - <Alt M>, allows you to modify the Cylinder, Head, and Sector of the Starting Position and Finishing Position. <Tab> or use the <Arrow Keys> on the keyboard to move between the Position fields. When you have finished making modifications press <Enter>.



Stop - <Alt S>, stops the System Components Search. <Esc> - stops the process at any time, too.

Exit - <Alt E>, exits the process and redirects you to the Selection Operation Screen.

Config - <Alt C>, directs you to <Analyze>, <Save>, <Load>, <Show>, or <Restore> all found components during the Systems Components Search.



4. Press <Alt S> to <Start> the System Component Search.

After the System Component Search is complete, the **Select File System** Screen automatically appears, showing you the file systems that can be rebuilt on this drive. If not, which one of these messages appears?



- **Error: No Valid File System Found?** Press F1 for Help.
- **Warning: Cannot Locate the Root Directory?** See Chapter 7.6.

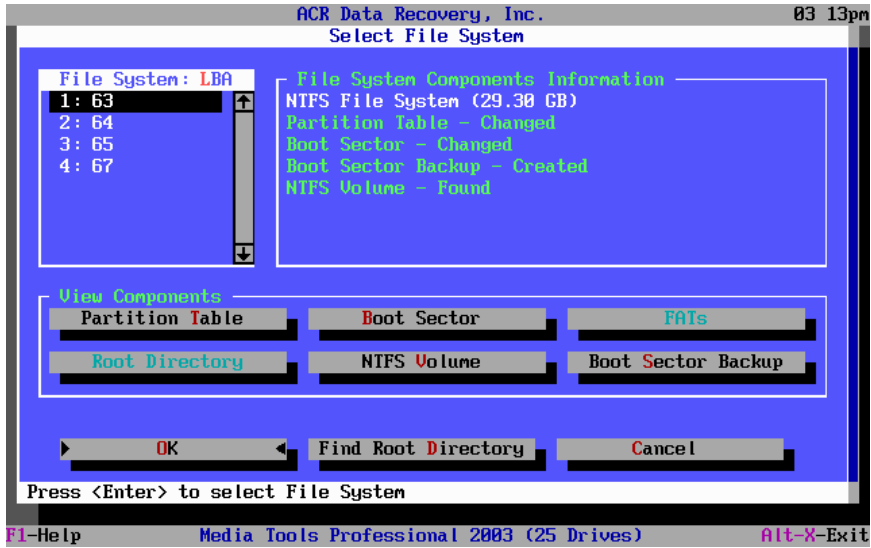
File System not Displayed? See Chapter 7.4.

4.4 Save Found Components to the Destination drive

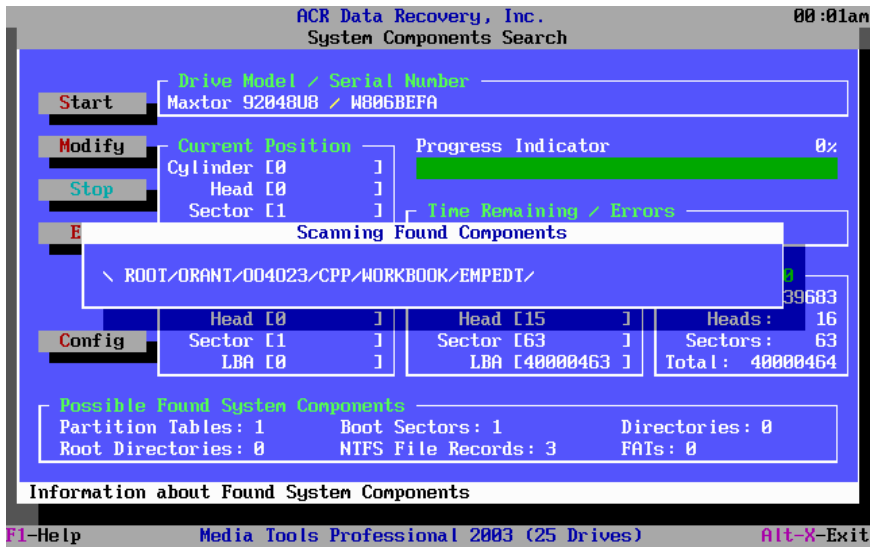


CAUTION: Save Found Components to a BIN File on another location other than your problem drive before rebuilding the file system, so that you do not have to rescan your media using the System Components Search (See Chapter 10.2, Save Found Components to the Bin File while working within the program).

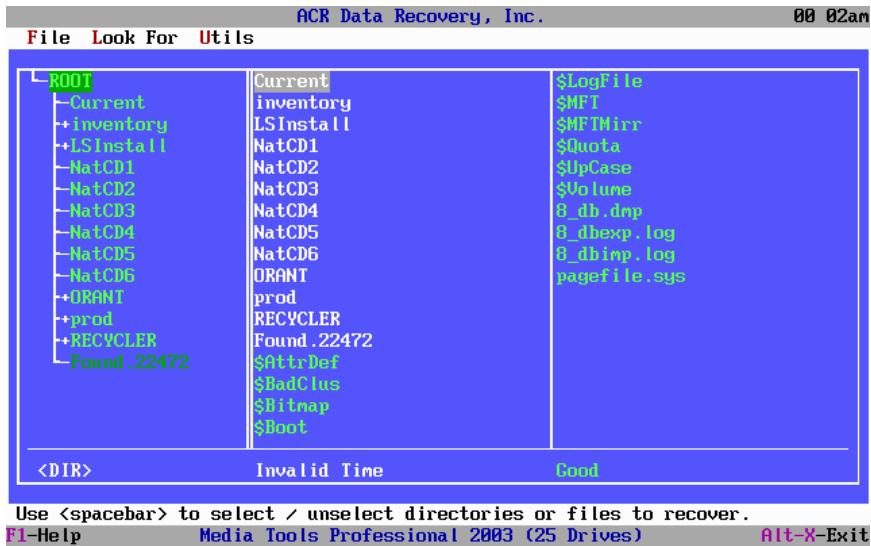
4.5 Select File System to Rebuild



5. Press <Alt L> to select the file system in question. Then, press <Alt O>.



see next page...



Use <Page Down> from any root directory to go to the next set of root directories. Use <Page Down> from any file to go to the next set of files. Use <Tab> and the <arrow keys ↓ ↑> to move between the directories and files.



Use the Menus to look for and filter specific files: <File>, <Look for>, <Utils> allow you to do specific searches, filter files, recover selected files, etc. from the Directory and File Structure Tree (See Ch. 4.7, Use the Menus to look for and filter specific files).

File Status Explanation:

Excellent - indicates a file that should have a successful recovery. Technically, the file has valid file chains, and is part of the existing file system.

Good - indicates a file that should have a successful recovery a majority of the time. Technically, the file may have valid file chains, but is either not part of the existing file system, or has corruption within the file system.

Possible - indicates a file that could have a successful recovery. Technically, "Possible" and "Good" are equal. However, a "Possible" file is less likely to be a valid file compared to a "Good" file, because of possible corruption to the file.

Poor - indicates a file that has a poor chance of recovery. Technically, the file has invalid file chains.

WHITE - indicates a sub-directory. This does not mean the files in that directory are valid, only that it is a sub-directory.

YELLOW - indicates a file or directory that has been tagged for recovery.

Important Note: If a folder also has been renamed "**Found**", the original name no longer exists. To determine if a file within a folder can be recovered, refer to the color-coding of the file. Technically, if a folder has been renamed "Found", it has been found during the scan, but is not part of the existing file system. You may want to rename the folders to their original state after you have recovered them.

4.6 Recover Files and Directories to a FAT32 Destination Drive

Why FAT32 ? You must recover data to a destination drive with a partition formatted FAT32 (or to a mapped network drive). The reason you must recover your files to a drive formatted FAT32 is, Data Rescue DOS™ is a DOS™ program (that can work with multiple file systems). However, DOS™ can only write (recover data) to a FAT Destination. Once you recover data to a FAT32 Destination Drive, you can easily transfer it to another file system.

Directions to format the Destination Drive FAT32:

Step 1 – If the Destination Drive is not already attached, press “ALT + X” to exit and follow Steps 1-3. If it is attached, go directly to Step 6.

Step 2 – Press “ALT + Y” (Save Found Components Ch. 10, if necessary).

Step 3 – Power off the computer, and then attach the Destination Drive you want to format (unless it is already attached).

Step 4 – Turn on the computer again with the Recoversoft Data Rescue PC CD. See section 3.5. USB Drivers are built into the program.)

Step 5 – Select “Continue”, and choose the Source Drive (the problem drive).

Step 6 – Within the System Components Search screen, press the “Config” button. Choose “Format Drive” and follow the directions.

Step 7 – After formatting the Destination Drive, you are instructed to turn off the computer system. Attach the Source Drive (the problem drive) if necessary.

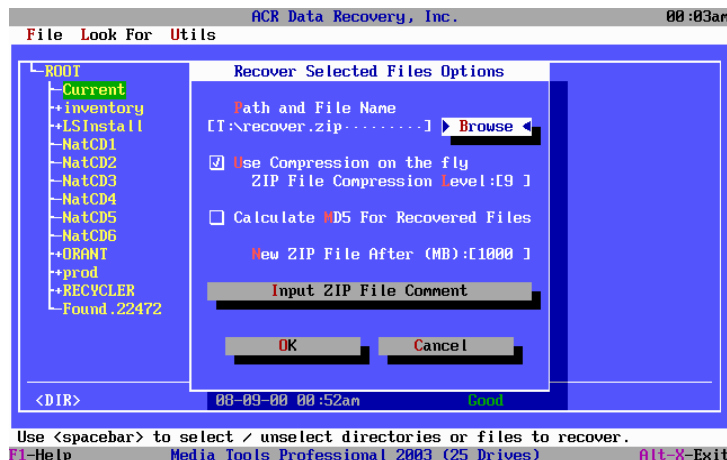
Step 8 – Repeat Step 4, and then continue to Step 9.

Step 9 – Select “Continue”, “Config” button to “Load Saved Components”, “Analyze Found Components”, and choose the appropriate File System to build a listing of your files and folders.

Step 10 – Follow the directions below.



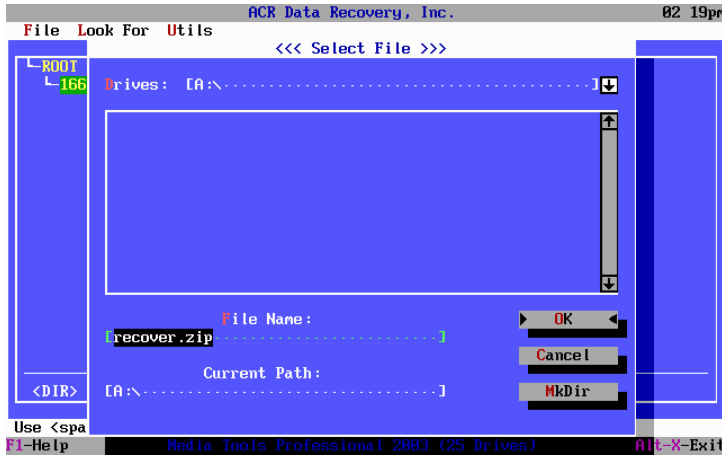
6. After the Directory and File Structure Tree is generated, use <Tab> and the <arrow keys ↓ ↑> to select the directories and files that you want to recover. Highlight “ROOT” if you want to recover all directories and the files within them. Selected files will turn **Yellow**. Press the <spacebar> to activate the desired files.
7. Press <Alt R> to recover files and directories.



8. Press <Alt B> to choose the Destination Drive path.



NOTE: Press <Alt U> to activate the **compression** on the fly. Press <Alt L> to change the compression level and <Alt M> to activate MD5. These functions are mainly used for Computer Forensics (For details, see Chapter 8.4, MD5 Hash Mark).



9. Press <Alt D> to select <Drives>. Then, using the <arrow key ↓> **choose** a Destination Drive letter (i.e. A:\ , B:\ , etc).



TIP: Use <arrow keys> to locate your Destination Drive. Use <Tab> to select a Destination folder. Press <Enter> on the folder of choice. After the Destination point has been determined, press <Alt D> again to highlight the drive location. Then, press <Enter>.

10. Press <Alt O> to transfer files from one media to another.



NOTE: A report will be generated after the files have been transferred. We suggest you save this report in case there are any technical support issues.

11. Press <Esc> to return to the Select Operation Screen.

4.7 Restore Files and Directories using WinZip™ 9.0 or PKZIP™ 4.0

To RESTORE or EXTRACT your recovered data to another destination drive (formatted FAT32), use **PKZIP™ 4.0 or greater** or **WinZip™ 9.0 or greater**. Previous versions will create errors:

WinZip™ - (<http://www.winzip.com>)

PKZIP™ - (http://www.pkware.com/products/free_eval.html)

Once PKZIP™ or WinZip™ has been installed, copy every file into a single directory on your hard drive. Then, unzip these files from this directory (By default, the entire contents of the zip files are extracted to your hard drive. However, you can choose to extract individual files from the list).



CAUTION: DO NOT restore your recovered data to the root directory, because you run a high probability of corrupting your hard drive. Extract the data to a temporary "dummy" folder on your hard drive. This will keep the original directory structure.

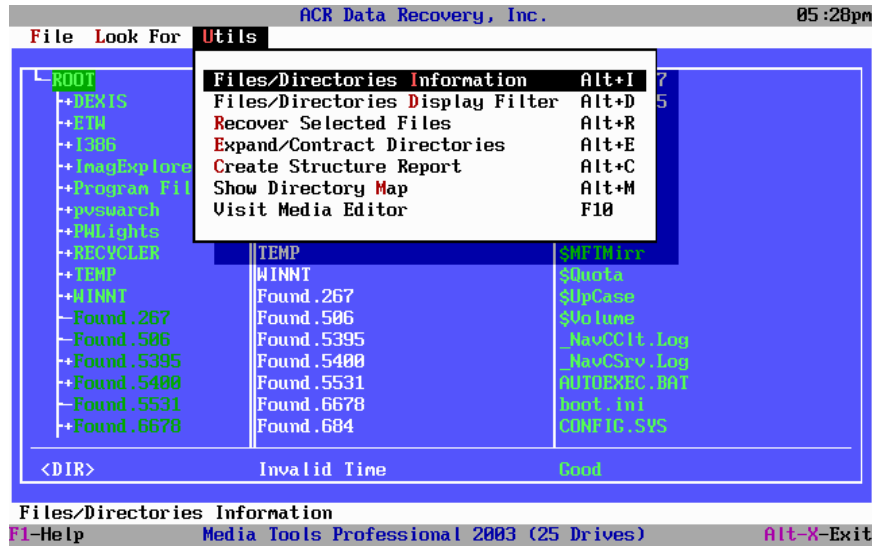


CAUTION: Make sure to test the validity of the Zip files from which you are recovering data, before discarding the Source Drive.

4.9 Use the Menus to look for and filter specific files:

4.8.A. <Utils> Menu

The <Utils>, or Utilities window provides extra searching power. The most popular functions are the <Files/Directories Display Filter> and <Recover Selected Files>.



- **Files / Directories Information** <Alt I> - Launches a report screen detailing total files and folders.
- **Files / Directories Display Filter** <Alt D> - Allows the customer to locate specific types of files.
- **Recover Selected Files** <Alt R> - Prompts customer to locate a destination drive to save information.
- **Expand / Contract Directories** <Alt E> - Expands all directories.
- **Create Structure Report** <Alt C> - Creates a structured report of drive information.
- **Show Directory Map** <Alt M> - Creates a mapping of all files and folders including condition status.
- **Visit Media Editor** - <F10> - Opens Media Editor.

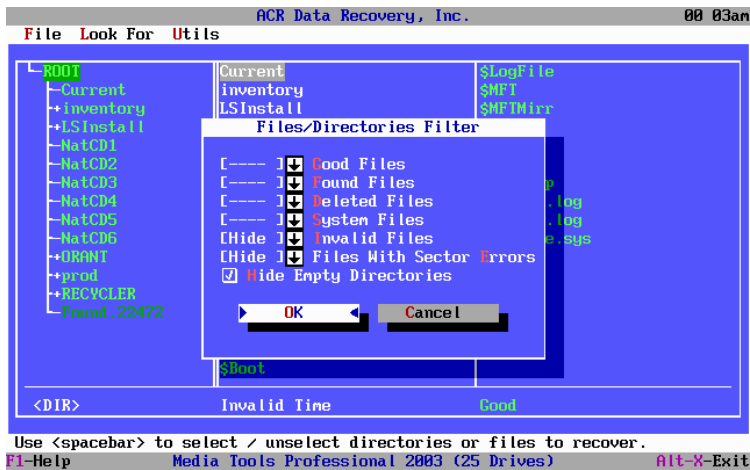
Example: <Alt D>: The File/Directories Display filter finds specific files: Good files, Found Files, Deleted Files, System Files, Invalid Files, etc.

If a file cannot be located, use the filter to show everything [---]. Once you have applied the filters, press <Alt C> to create a structure report.

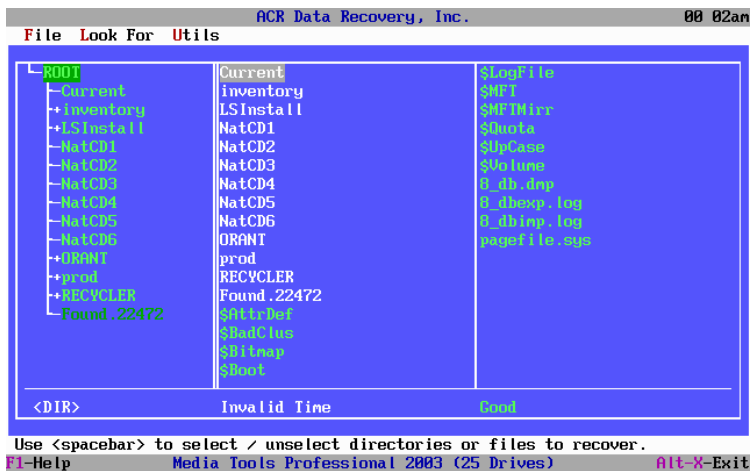


Hold down your <Alt> key and press the <red letter>. Then, use the <arrow key ↓> to open the drop. Then, use the <arrow keys ↓ ↑> to choose **Hide**, **Only**, or [---] which shows everything.

See next page...



Once you have applied the filters, press <Alt C> to create a structure report.



File Status Explanation (Technical explanations are given in section 4.5):

Excellent - indicates a file that should have a successful recovery.

Good - indicates a file that should have a successful recovery a majority of the time.

Possible - indicates a file that could have a successful recovery.

Poor - indicates a file that has a poor chance of recovery.

White - indicates a sub-directory. This does not mean the files in that directory are valid, only that it is a sub-directory.

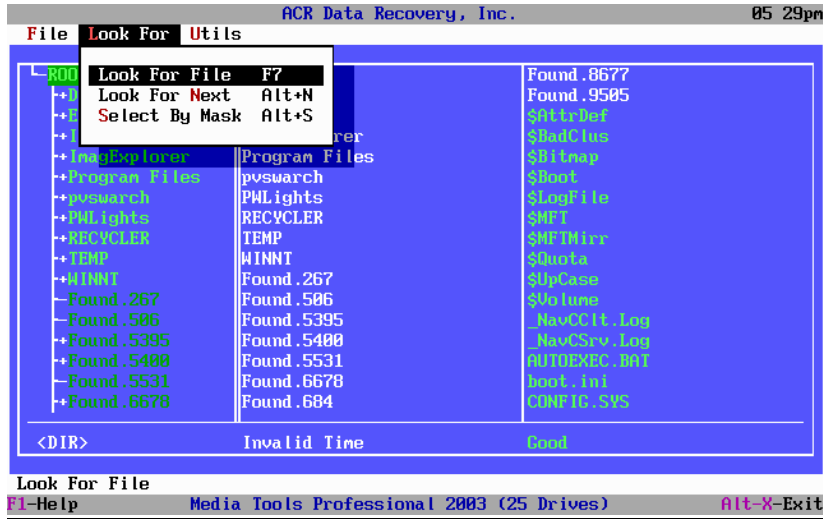
Yellow - indicates a file or directory that has been tagged for recovery.

Important Note: If a folder also has been renamed "**Found**", the original name no longer exists. To determine if a file within a folder can be recovered, refer to the color-coding of the file.

Technically, if a folder has been renamed "Found", it has been found during the scan, but is not part of the existing file system. You may want to rename the folders to their original state after you have recovered them.

4.8.B. <Look for> Menu:

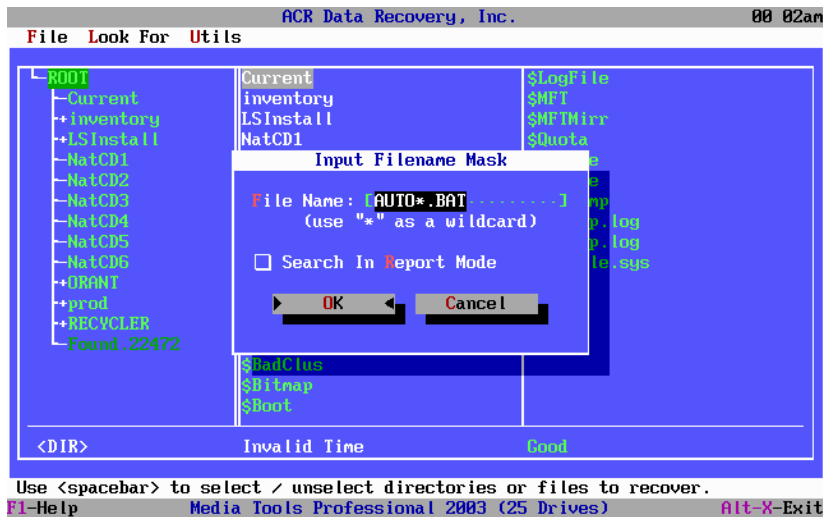
The <Look For> windows provides the capability to search for specific files such as Microsoft Word, Excel, Photoshop, or any other type of document.



- **Look For File <F7>** - Searches for a file by exact name.
- **Select By Mask <Alt S>** - Searches for files by using wildcards (read below).
- **Look For Next <Alt N>** - Continues searching the previous wildcard with a similar name or extension.

Example: <F7> and <Alt N>: Look For File searches for specific files.

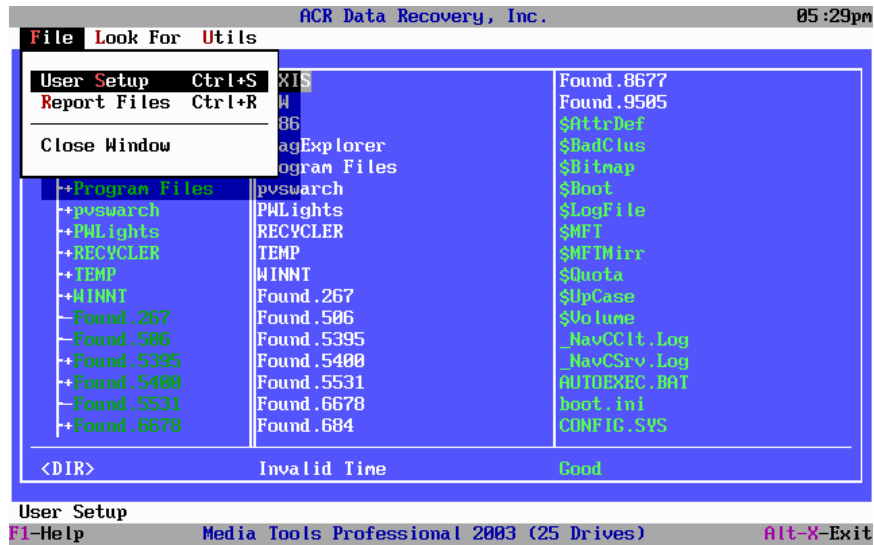
If you cannot find a file, search using a wildcard*. Type the name of the file, followed by an asterisk, a period and then the file extension with no spaces. For example, if I want to look for a file called "health...", but I cannot remember the exact name, I would type *health*.* (Another method to look for a specific file would be to include the extension as in... health*.doc) Assuming there is another related file with the title "health...", I would simply press <Alt N> to search for the next document that contains the above context.



Press <Alt O> or <Enter> to select **OK**.

4.8.C. <File> Menu:

The <File> menu allows you to change Timeout Settings, Read Parameters, and Additional Parameters within the <User Setup> Screen; or to open a <Report File>.



For **User Setup** instruction see Chapter 8.1, Advanced User Setup Window.

<File> - Accesses 3 screens:

- User Setup <Ctrl S> - Launches the User Setup window
- Report Files <Ctrl R> - Opens reports and .txt file
- Close Window - Redirects to Select File System Screen

Chapter 5 Save / Load Found Components

- 5.1 Save Found Components to a Bin File / p.23
 - A. Save Found Components while exiting the program / p.23
 - B. Save Found Components while working within the program / p.24
- 5.2 Load Found Components from the Bin File / p.26
 - A. Load Found Components while entering the program / p.26
 - B. Load Found Components while working within the program / p.27

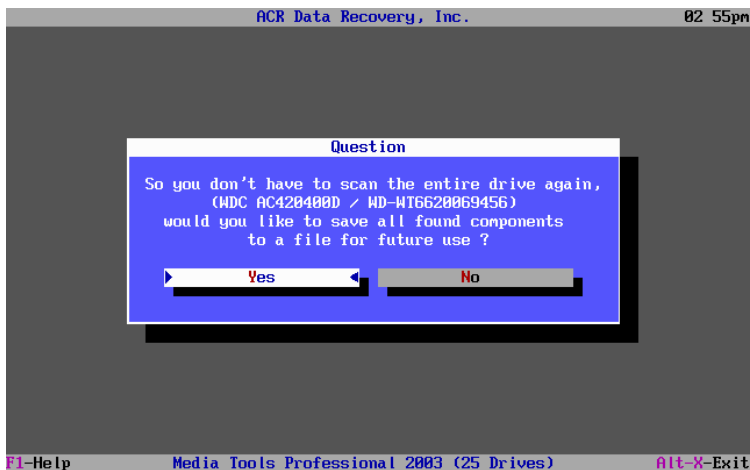
5.1 Save Found Components to a BIN FILE



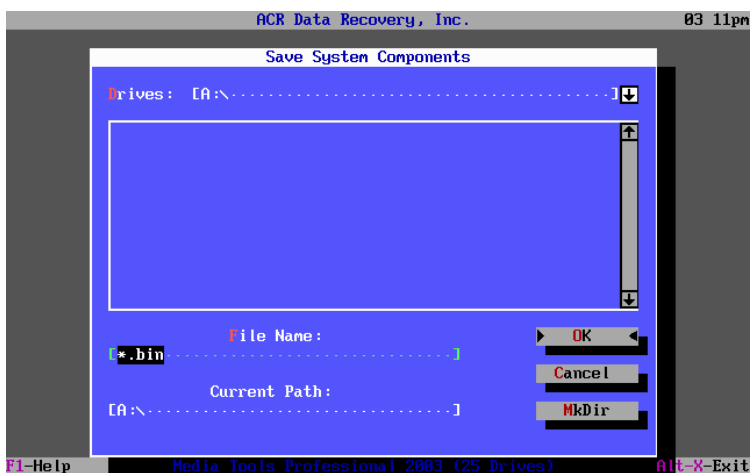
There are 2 ways to Save Found Components to the Bin File: While exiting the program or while working within the program. If you are trying to Save the Bin File while working within the program go to 5.1.B., Save Found Components while working within the program.

5.1.A. Save Found Components while exiting the program

1. Exit the program <Alt X>.
2. A Question Box will be invoked: Do you want to quit the program? Press <Enter> or <Alt Y> for <Yes>.

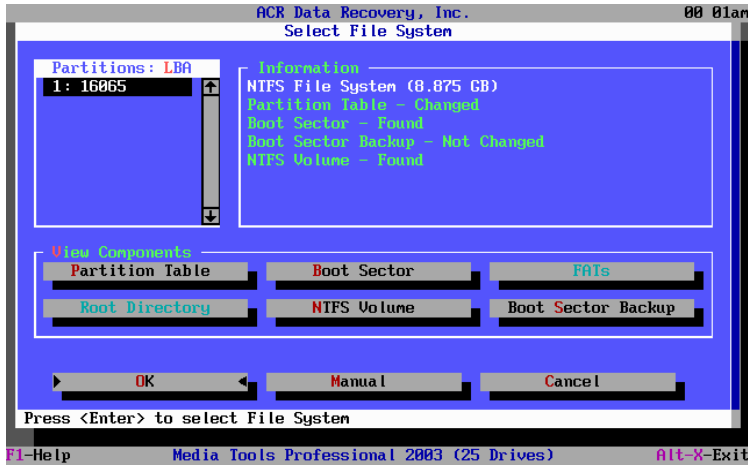


3. Another Question Box will be invoked: Would you like to save all found components to a file for future use? Press <Alt Y>, so that you do not have to scan the drive again.

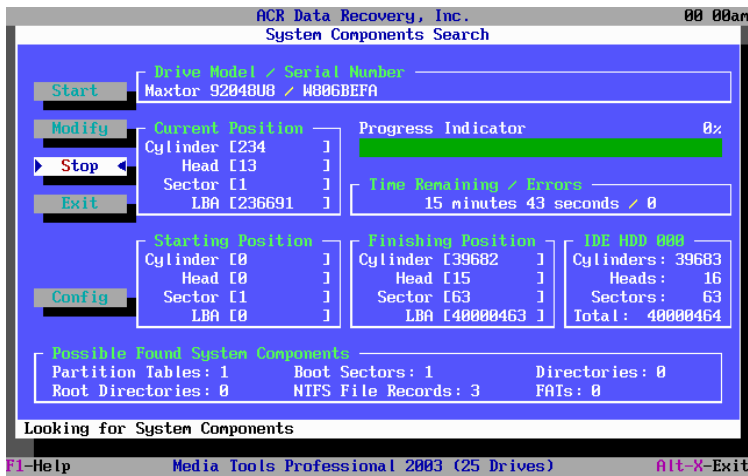


4. Name the Bin File. The Bin File naming convention is (*FileName.bin*).
5. Press <Alt F> to enter a file name. Then, press <Alt O>. (The program will exit).
6. Press <Alt Y> for **Yes**

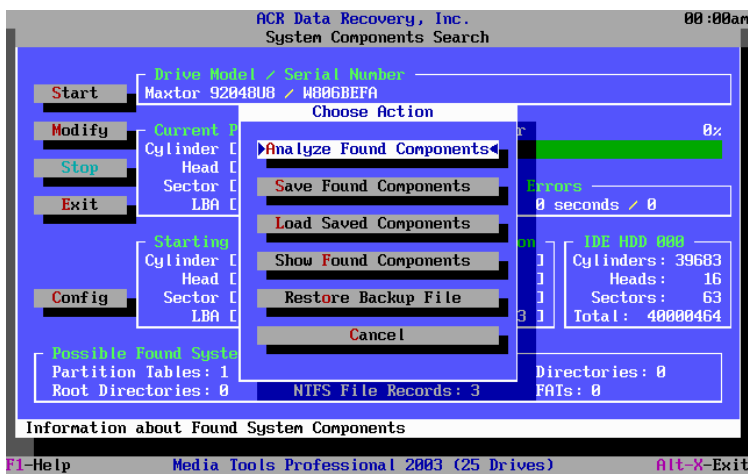
5.1.B. Save Found Components while working within the program



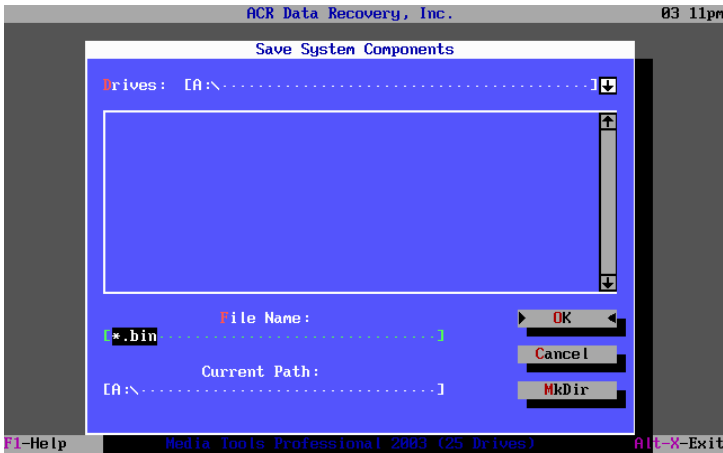
1. Press <Esc>, and the Systems Components Screen will appear.



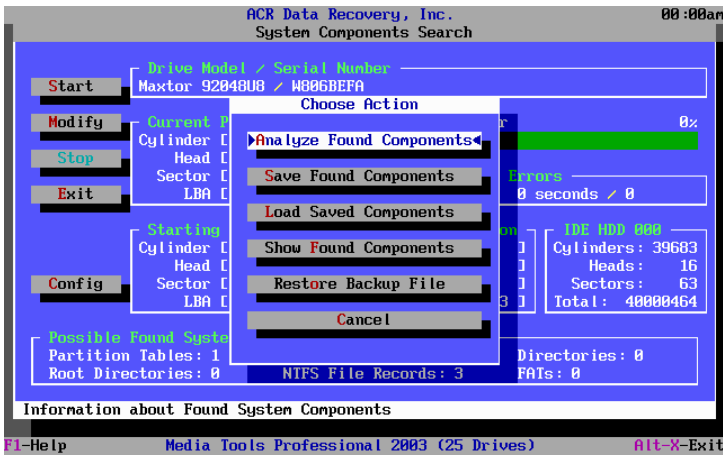
2. Press <Alt C> to select **C**onfig.



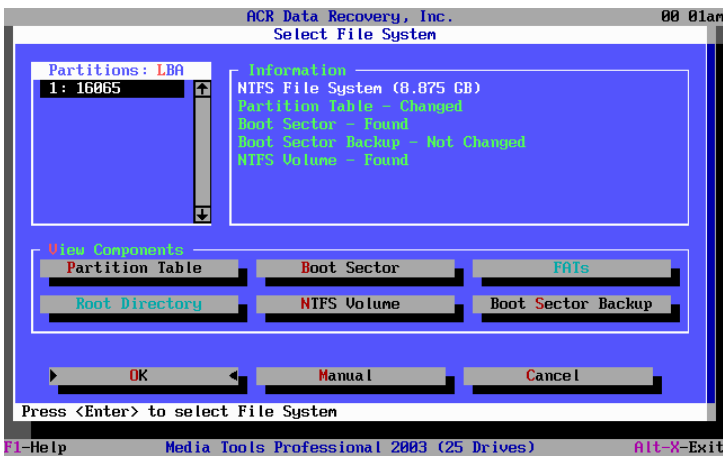
3. Press <Alt S> to select <**S**ave Found Components>.



4. Name the Bin File. The Bin File naming convention is (*FileName.bin*).
5. Press **<Alt F>** to enter a file name. Then, press **<Alt O>**.
6. Press **<Alt Y>**



7. Press **<Alt A>** to select **<Analyze Found Components>**.



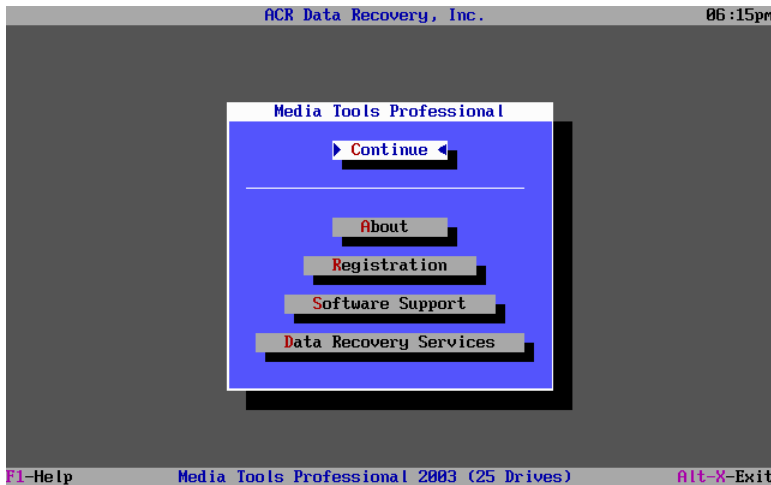
(Continue working within Data Rescue DOS™, Chapter 4.)

5.2 Load Found Components from the BIN File

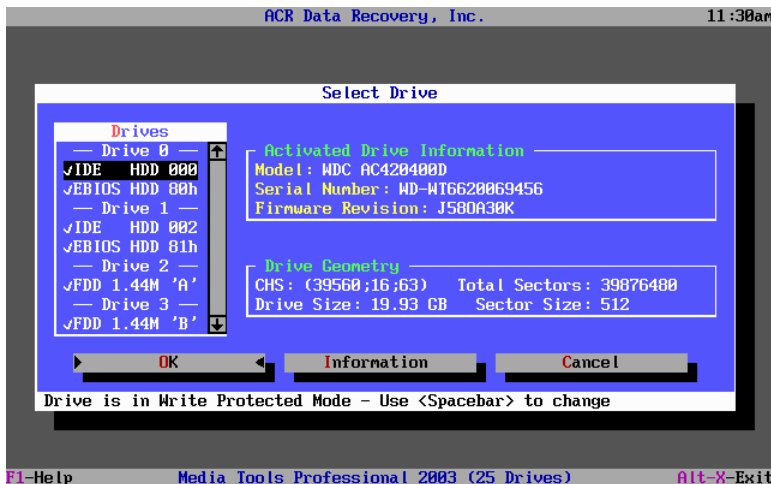


There are 2 ways to Load Found Components to the Bin File: While entering the program or while working within the program. If you are trying to Reload the Bin File while working within the program go to 5.2.B. Load Found Components while working within the program.

5.2.A Load Found Components while entering the program



1. Press **<Alt C>** to continue into the program.

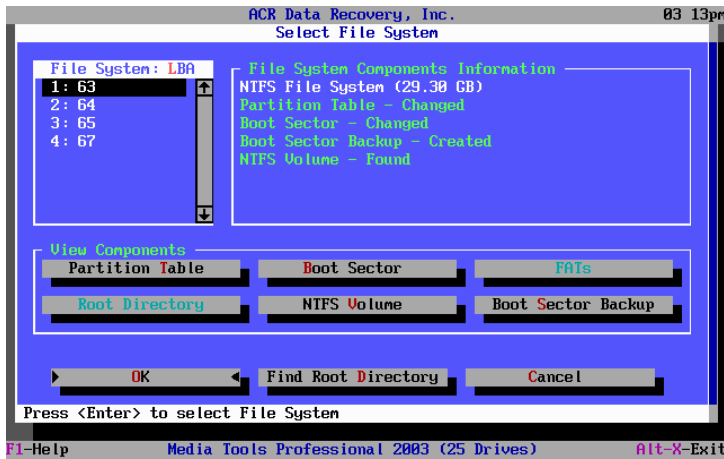


1. Using your **<up and down arrow keys ↓↑>**, select the drive to be recovered. Then, press **<Alt O>** or **<Enter>**.

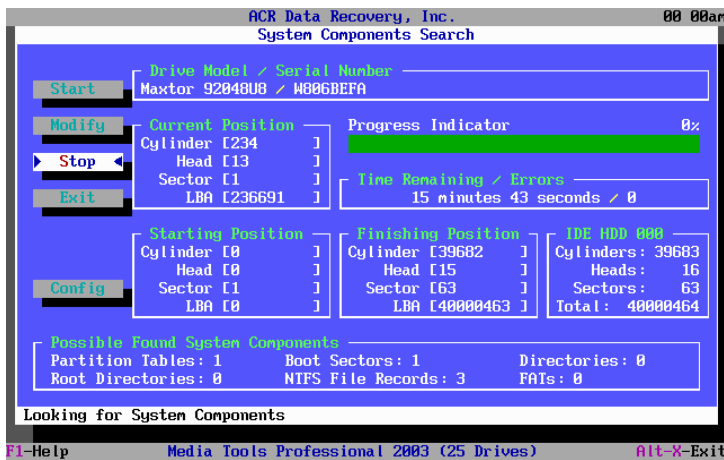


Once the System Components Search screen has appeared continue by starting at Step 2, 5.2.B., Load Found Components while working within the program (Ignore Step 1 if you have started from 5.2.A. Load Found Components while entering the program).

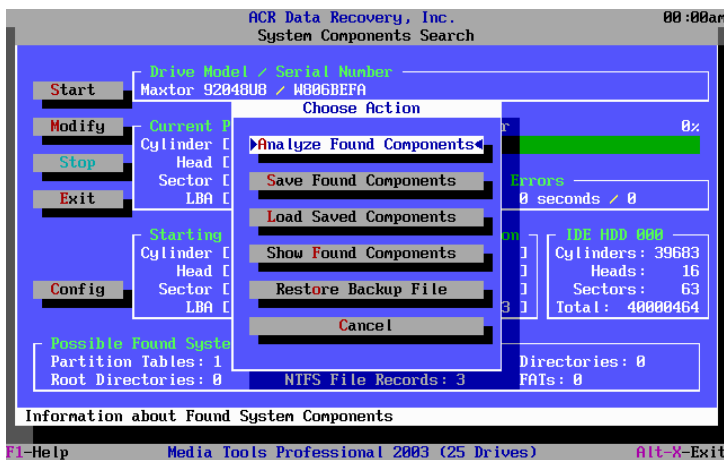
5.2.B. Load Found Components while working within the program



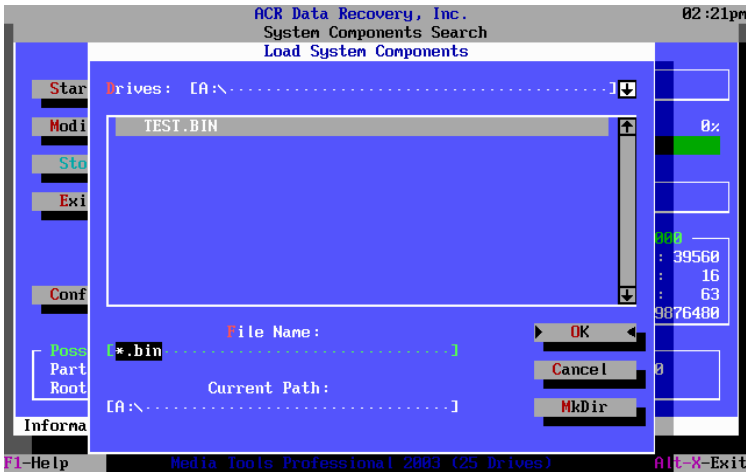
1. Press <Esc> to access the **System Components Search** screen.



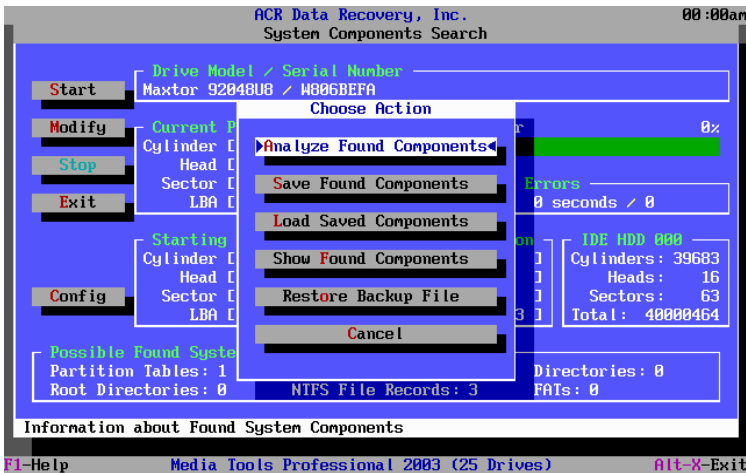
2. Press <Alt C> to select **Config**.



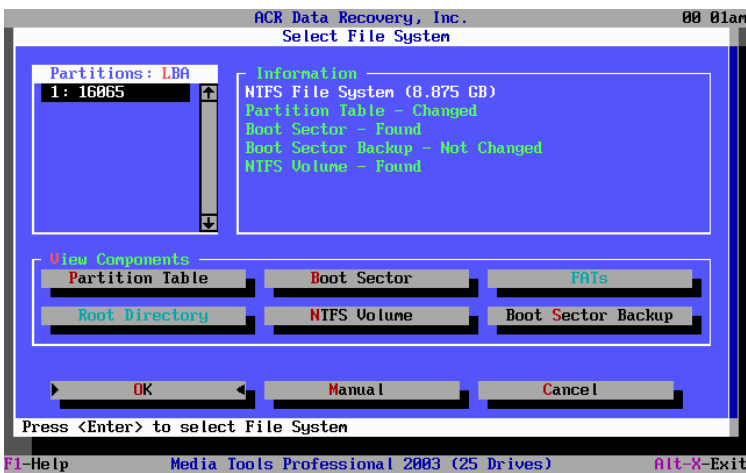
3. Press <Alt L> to select **Load Found Components**.



4. Use <Tab> to highlight the Saved BIN File, and then press <Enter>.



5. Press <Alt A> to select **Analyze Found Components**, and then press <Enter>.



(Continue working within Data Rescue DOS™, Chapter 4.)

Chapter 6 FAQ (frequently asked questions)

- 6.1 Does Data Rescue DOS™ recover from viruses? / p.29
- 6.2 Does Data Rescue DOS™ recognize USB? / p.29
- 6.3 Does Data Rescue DOS™ recover from RAID? / p.29
- 6.4 Does Data Rescue DOS™ recover from SATA drives? / p.29

6.1 Does Data Rescue DOS™ recover from viruses?

'INVALID DRIVE SPECIFICATION' or 'MISSING OPERATING SYSTEM'

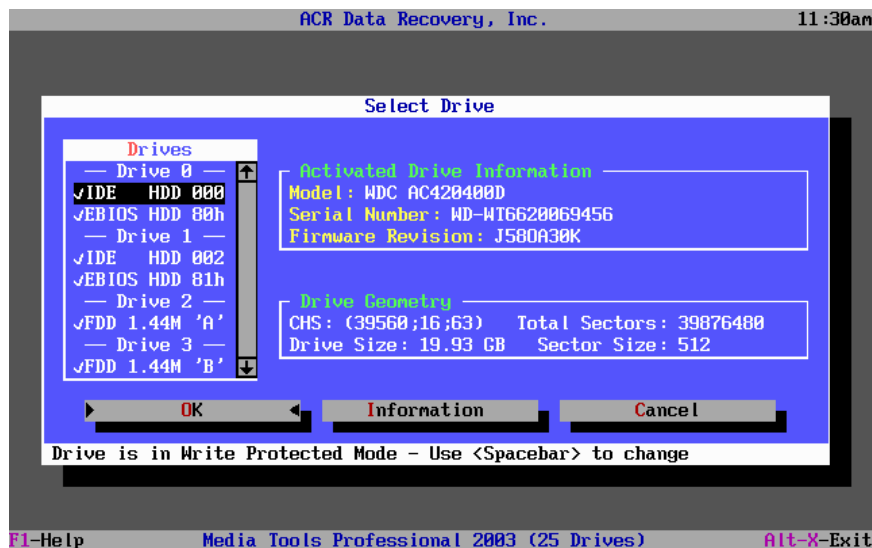
YES. If you have one of these error messages when booting your system, a virus has probably infected the Boot Sector and/or Partition Table, while leaving the rest of your file system intact. Data Rescue DOS™ will contain the virus so that you can run virus software on it to wipe it out.

6.2 Does Data Rescue DOS™ recognize USB?

YES. When booting the software you can choose to load USB drivers.

6.3 Does Data Rescue DOS™ recover from RAID?

YES. If the full capacity of the RAID appears within the Drive Geometry box below Data Rescue DOS™ can work. The drive will always appear as BIOS HDD. If the RAID appears as an 8.2GB, it will not work. Refer to the Data Recovery Services button at the beginning of the program to call us for further solutions.



6.4 Does Data Rescue DOS™ recover from SATA drives?

YES. To recover data from a Serial ATA Drive, you will need to get the Serial ATA-IDE/ATAPI Converter from <http://www.cabledepot.com> (1-800-343-4597 toll free or 1-770-564-2323) for approximately \$50.00 – Part Number: SATA-ATAPI

Chapter 7 Problem Solving

- 7.1 Problem Launching the Program / p.30
- 7.2 Program Freezes while using it / p.30
- 7.3 File System not Displayed (in Select File System screen) / p.30
- 7.4 File cannot be Located / p.30
- 7.5 Cannot Locate the Root Directory / p.31

7.1 Problem Launching the Program



If you are recovering a laptop drive, and the program freezes at “Gathering Registration Information”, then you must use a converter cable to hook the drive up to a desktop computer. Picture reference section 3.3 Laptop Set-up.

1. Try using a Windows™ 95/98 boot diskette instead of letting the program boot automatically. At the DOS™ prompt (A:\), type: **DRD(space)-F**.

7.2 Program Freezes while using it

If the computer freezes while using one of the functions within the program, reboot the system. You will automatically be taken back into the program. Then, press **<ALT-X>** to exit the program to the DOS™ prompt (A:\). At the DOS™ prompt, type: **DRD(space)-F**. This will restart the program in a more conservative manner, which should keep the program from freezing in the future.

7.3 File System not Displayed (in Select File System screen)

1. At any point within the program, press **<Alt X>** to Exit. Then, press **<Alt Y>** to select **Yes**.



Make sure you save the found components from the scan to a file on the Data Rescue DOS™ floppy diskette, if you have not already done so. See Chapter 5, Save/Load Found Components.

2. You should be at a DOS™ prompt (A:\). Type: **DRD(space)-P** and press **<Enter>**.
3. Upon entering the program, Load Found Components from the Bin File (See Chapter 5.2.A., Load Found Components while entering the program).
4. At the Select File System screen, you should see all possible file systems found during the System Component Search, even the invalid file systems. Choose a file system and then press **<Alt O>** to select **<OK>**.

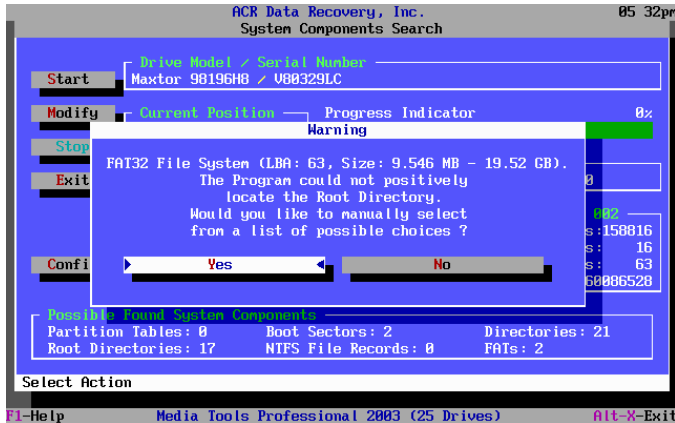


The color coding system to verify if your files and directories are valid is not applicable for file systems that previously did not appear in the Select File System Screen, which now do because of using **DRD(space)-P**.

7.4 File cannot be Located

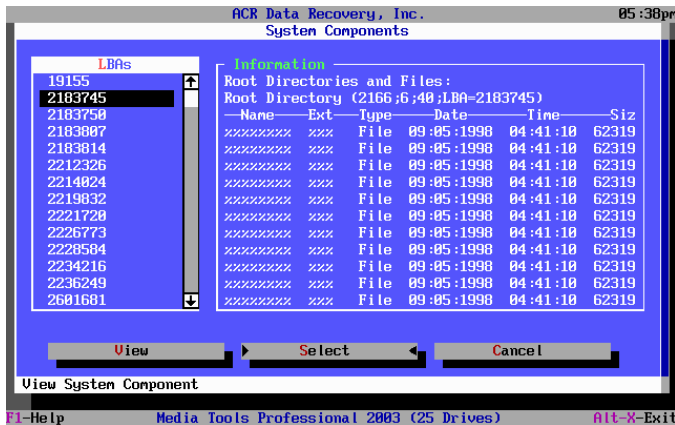
Use the Menus to look for and filter specific files within the Data Rescue DOS™ operation (See Chapter 4.7, Use the Menus to look for and filter specific files). Pay close attention to the examples given.

7.5 Cannot Locate the Root Directory



Scenario 1: If you know that your Root Directory does not exist, then press **<No>**. The program will automatically create a Root Directory with the information available. The results will appear as “Found” within the File and Directory Structure Tree (now, return to Data Rescue DOS™ within the manual).

Scenario 2: If you are not sure if the Root Directory is intact, then press **<Yes>**.



Then, use the **<arrow keys>** to move up and down until you find what looks like the Root Directory. The Root Directory typically contains folders such as Windows, My Documents and files such as IO.SYS or MSDOS.SYS. Once you have located the Root Directory, press **<Alt S>** for **<Select>** and the program will redirect you to the Select File System window.

Scenario 3: If you could not locate the Root Directory in Scenario 2, then press **<Cancel>**. The program will automatically create a Root Directory. The results will appear as “Found” within the File and Directory Structure Tree (now, return to Data Rescue DOS™ within the manual).

Chapter 8 Advanced Data Recovery and Computer Forensic Procedures

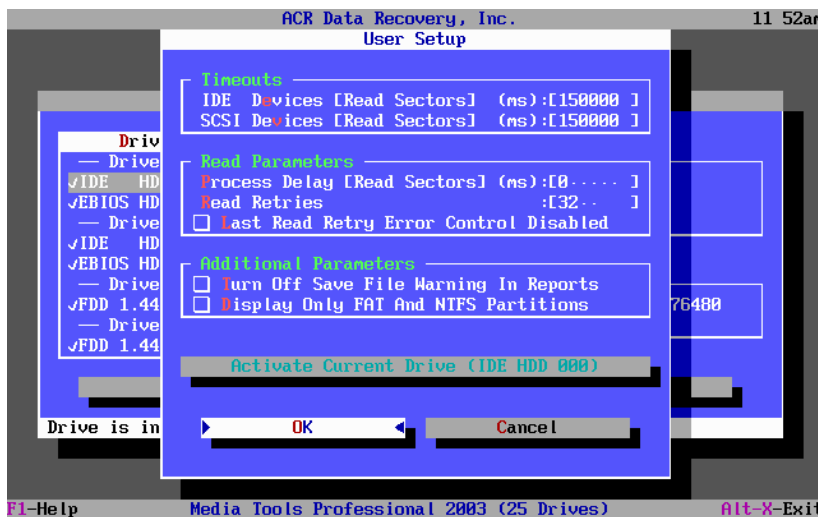
- 8.1 Advanced User Set-up Screen - <Ctrl S> / p.32
- 8.2 RAID Recovery / p.33
- 8.3 MD5 Hash Mark / p.33
- 8.4 Compression on the Fly / p.34
- 8.5 File System Types / p.35

8.1 Advanced User Setup Screen - <Ctrl S>



Mechanically Failing Drives need Reverse-Clone™, a function from within RecoverSoft™ Media Tools Professional™, to extract raw data before the drive totally fails. (see Chapter 1.2, “What can RecoverSoft™ Media Tools Professional™ do for you?”).

When you encounter sector read errors, you may need to communicate with the drive through the User Setup window. Pause the program by pressing <Ctrl S> to change the **Timeouts** and **Read Parameters** within the User Setup window. This helps you to communicate with the drive to extract data in bad sectors (see notes below).



Tip: Press <Ctrl S>: at any time, from anywhere in the program, to access this window. This is the **Control Center** for working with Mechanically Failing media, meaning you will refer to it often to make changes (such as changing the **Timeouts** variables or the **Read Parameters**).



Shortcut: When a **RED** letter is highlighted within any screen, this indicates a shortcut can be used. For example, if you look at the Data Rescue DOS™ screen above, notice that the letters **A**, **R**, **S**, and **D** are in red. Hold down your <Alt> key and press the <red letter>.

Drive Access Methods (Advanced explanation): How Data Rescue DOS™ addresses and communicates with any drive (see Ch.4.2, Select Drive for details).

Timeouts and Read Parameters

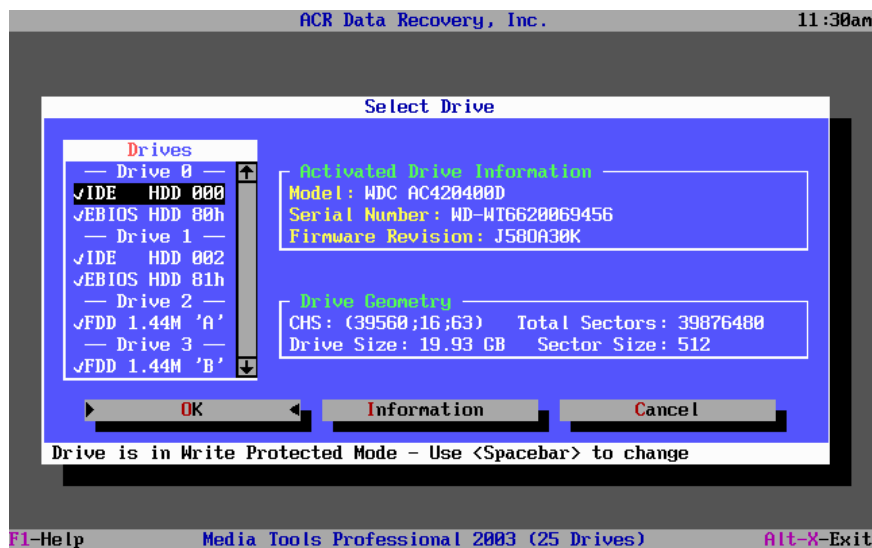
Increasing the **Timeouts** variable is sometimes the only change needed to communicate with the drive effectively. Increase the **IDE Devices** at **250,000ms**. If this does not work, the next step would be to change the Process Delay within Read Parameters.

Changing the **Read Parameters** is another method to effectively communicate with the drive. Increase the **Process Delay** at **50ms**. If this does not read the drive, increase the **Process Delay** to **100ms**. If you can read the drive, every few minutes accelerate the process by decreasing the Process Delay in increments of 5ms. This gives you the greatest control combined with maximum speed in cloning your data. If you cannot read the drive, the next step would be to change the Read Retries within Read Parameters.

Changing the **Read Retries** within **Read Parameters** gives the program more chances to read the damaged sector before moving on to the next sector. Increase the **Read Retries** to **50**. If you cannot be read the drive, decrease the **Read Retries** to 0. This is called Skip Mode, meaning the program will not attempt any Read Retries.

8.2 RAID Recovery

If the full capacity of the RAID appears within the Drive Geometry box below Data Rescue DOS™ can work. The drive will always appear as BIOS HDD. If the RAID appears as a 8.2GB it will not work. Refer to the Data Recovery Services button at the beginning of the program call us for further options.



8.3 MD5 Hash Mark (Message Digest 5)

Most all processes that are performed in the program create a report automatically. Each report records a MD5 fingerprint.

Developed in 1994 by Professor Ronald L. Rivest of MIT, MD5 (Message Digest 5) is a one-way hash algorithm that takes any length of binary data and produces a 128 bit "fingerprint" or "message digest". This fingerprint is "non-reversible". In other words, it is impossible to compute the binary data based on the fingerprint. This means someone cannot figure out your data based on its MD5 fingerprint. Every time you run the MD5 hash algorithm on the binary data, you should

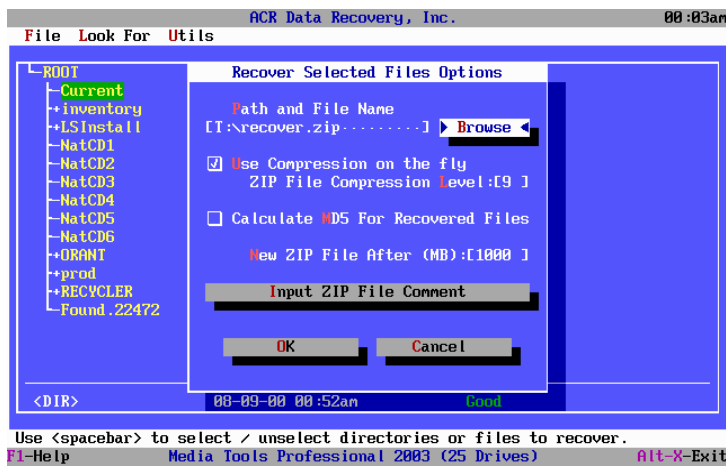
get the exact same fingerprint. If you get a different fingerprint, then the binary data has been changed.

MD5 is an industry standard in the world of forensics. As an example, it is imperative that any copy (Clone) of the media is identical to the original media. The program records the MD5 fingerprint in a report, and enables you to compare the fingerprint against any copy of the original media to show that it is an exact copy. To date, the MD5 standard has not been cracked and is accepted in our legal system as a valid authentication process.

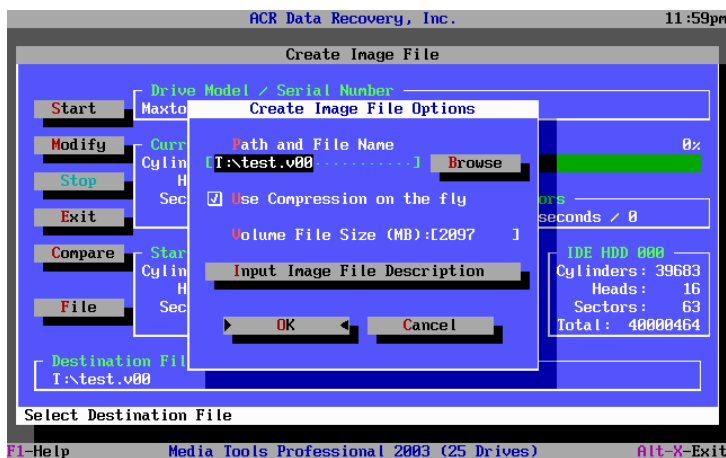
8.4 Compression on the Fly

Compression on the Fly is used in two different formats:

1. To compress files to be recovered in ZIP format.



2. To compress or uncompress an Image when using the Cycle-Image operation within RecoverSoft™ Media Tools Professional™ (See Chapter 1.2, “What can RecoverSoft™ Media Tools Professional™ do for you?”).



8.5 File System Types

Hex Value	Type	Description
00h	Unused	Empty
01h	FAT 12	DOS 12-bit FAT
02h	XenixR	XENIX /
03h	XenixU	XENIX /usr
04h	FAT 16	DOS 16-bit FAT <32M
05h	Extend	DOS Extended
06h	BigDOS	DOS 16-bit FAT >=32M
07h	NTFS	HPFS / NTFS
08h	AIXbt	AIX boot or SplitDrive
09h	AIXdt	AIX data or Coherent
0ah	OS/2BM	OS/2 Boot Manager
0bh	FAT32	Win95 FAT32
0ch	FAT32X	Win95 FAT32 (LBA)
0eh	FAT16X	Win95 FAT16 (LBA)
0fh	Win95X	Win95 Extended (LBA)
10h	OPUS	OPUS
11h	FAT12h	Hidden DOS FAT12
12h	Compaq	Compaq diagnostics
14h	FAT16h	Hidden DOS FAT16
16h	FAT16h	Hidden DOS FAT16 (big)
17h	NTFSH	Hidden HPFS/NTFS
18h	AstWin	AST Windows swapfile
24h	NecDOS	NEC DOS
3ch	PQrcv	PartitionMagic recovery
40h	Venix	Venix 80286
41h	DR_Mnx	Linux/MINIX (sharing disk with DRDOS)
42h	DR_SFS	SFS or Linux swap (sharing disk with DRDOS)
43h	DR_Lin	Linux native (sharing disk with DRDOS)
50h	DskMng	DM (disk manager)
51h	Nvl1	DM6 Aux1 (or Novell)
52h	CP/M	CP/M or Microport SysV/AT
53h	DMAux3	DM6 Aux3
54h	DM6	DM6
55h	EzDrv	EZ-Drive (disk manager)
56h	GldnBw	Golden Bow (disk manager)
5ch	Priam	Priam Edisk (disk manager)
61h	SpdStr	SpeedStor
61h	HURD	GNU HURD or Mach or Sys V/386 (such as ISC UNIX)
61h	DSKSec	DiskSecure Multi-Boot
64h	Nvl286	Novell Netware 286
65h	Nvl386	Novell Netware 386
75h	PC/IX	PC/IX
77h	QNX4.x	QNX4.x
78h	QNX4x2	QNX4.x 2nd part
79h	QNX4x3	QNX4.x 3rd part
80h	Mnx14a	MINIX until 1.4a
81h	MnxOld	MINIX / old Linux
82h	LinSwp	Linux swap
83h	Linux	Linux native
84h	OS/2h	OS/2 hidden C: drive
85h	LinExt	Linux extended
86h	NTFSv	NTFS volume set
87h	NTFSV	NTFS volume set

Hex Value	Type	Description	(Continued)
93h	Ameoba	Amoeba	
94h	AmbBBT	Amoeba BBT	
a0h	IBMPad	IBM Thinkpad hibernation	
a5h	BSD386	BSD/386	
a6h	OpnBSD	OpenBSD	
a7h	NeXT	NeXTSTEP 486	
b7h	BSDI	BSDI fs	
b8h	BSDIsw	BSDI swap	
c1h	DRDOS1	DRDOS/sec (FAT-12)	
c4h	DRDOS2	DRDOS/sec (FAT-16, < 32M)	
c6h	DRDOS3	DRDOS/sec (FAT-16, >= 32M)	
c7h	Syrinx	Syrinx	
dbh	CP/M	CP/M or Concurrent CP/M or Concurrent DOS or CTOS	
e1h	SpdStr	DOS access or SpeedStor 12-bit FAT extended partition	
e3h	DOS RO	DOS R/O or SpeedStor	
e4h	SpdS16	SpeedStor 16-bit FAT extended partition < 1024 cyl.	
Ebh	BeOS	BeOS fs	
f1h	SpdStr	SpeedStor	
f2h	DOS3.3	DOS 3.3+ secondary	
f4h	SpdStr	SpeedStor large partition	
feh	SpdStr	SpeedStor >1024 cyl. or LANstep	
ffh	XnxBBT	Xenix Bad Block Table	

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