Active Data Recovery Software

User Guide

Version Number 2.1

Active@ Partition Recovery

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Standards Used in This Guide

The following standards are used to provide more concise documentation:

Table 1 User Input

Description	Example	Action
Bold text within square brackets.	Press **[Enter]**. Press **[Y]**	Press the key on the keyboard that corresponds to the message within square brackets.
Bold text and operand within square brackets.	Press **[Ctrl + B]**	Together, press the combination of keys within the square brackets.
Bold text.	Click **OK**	With the mouse pointer, find the icon or button indicated and left-click that icon.

Contents

1 OVERVIEW

This chapter gives an overview of **Active@ Partition Recovery** application.

Introduction

Active@ Partition Recovery is a very small, powerful and easy-to-use DOS program that can help you to:

- Recover deleted partitions (FAT and NTFS)
- Restore deleted FAT and NTFS Logical Drives
- Scan hard drives and detect deleted FAT and NTFS partitions or Logical Drives
- Preview files and folders on deleted partition or drive, to recover data
- Backup the Master Boot Record (MBR), Partition Table, Volume Boot Sectors
- Restore the MBR, Partition Table and Volume Boot Sectors from backup if damaged
- Create a drive image

It will help you when:

- Drives or partitions inadvertently deleted (using FDISK or other programs)
- Hard Disk Logical Structure has been corrupted
- Boot sector is damaged by virus

What's New in Version 2.1

- Perform Extended Disk Scan in Interactive DOS mode to ignore Master Boot Record and scan drive contents.
- Easily create a "test" file using command line parameters. Send the test file to Active Data Recovery Software technicians for analysis if you encounter a drive that is difficult to restore.

Personal Computer Requirements

Active@ Partition Recovery requires:

- AT compatible CPU with 286 or greater processor
- 640Kb of RAM
- 1.44 Mb floppy diskette drive
- EGA 640x480 or better screen resolution
- Bootable Floppy disk containing MS-DOS 6.0+, or startup disk for Windows 95/98
- HDD of type IDE/ATA/SCSI attached to be recovered

Active@ Partition Recovery Version

The performance of **Active@ Partition Recovery** depends on the version of the application, as displayed in the table below:

Table 1-1 Differences Between Demo and Registered Versions

Feature	Demo Version	Registered Version
Can be saved and run from bootable floppy	yes	yes
Displays complete physical and logical drive information	yes	yes
Supports IDE / ATA / SCSI drives	yes	yes
Supports large (more than 8GB) size drives	yes	yes
Supports FAT12, FAT16, FAT32, NTFS, NTFS5 file systems	yes	yes
Supports Microsoft DOS, Windows 95 / 98 / ME / NT / 2000 / XP partitions	yes	yes
Detects deleted primary and extended partitions and drives	yes	yes
Scans partitions damaged by virus or with damaged MBR	yes	yes
Assesses ability to recover files and folders	yes	yes
Previews files and folders before recovery	yes	yes
Displays long file names	yes	yes
Creates Disk Image as a set of 1GB files	yes	yes
Creates backup for MBR, Partition Table, Boot Sectors	yes	yes
Restores MBR, Partition Table and Boot Sectors from backup		yes
Saves detected partition information back to HDD		yes

2 PROCEDURES

This chapter describes how to prepare and use the application.

Preparing a DOS-Bootable Floppy Disk (Startup Disk)

Active@ Partition Recovery operates from the floppy drive in a Microsoft DOS environment.

If you have a bootable floppy, skip to the Copying Active@ Partition Recovery section, below.

To prepare a bootable floppy from MS-DOS, Windows 95/98/ME/XP, put a blank 3.5-inch floppy in the floppy drive (a:) and follow the appropriate instructions below:

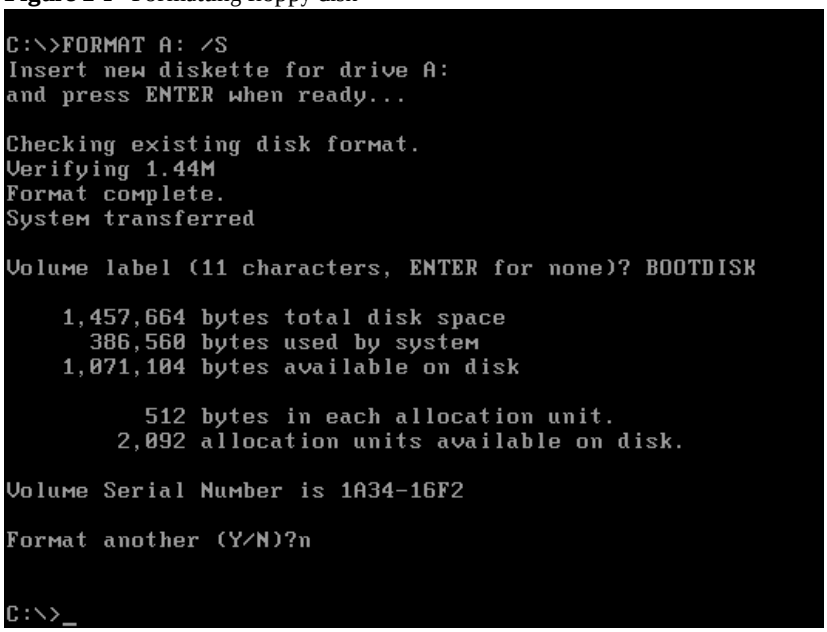
1 From MS-DOS or in Command Prompt mode of Windows 95/98:

a On the screen, type the format command as follows (see Figure 1):

```
FORMAT A: /S
```

b Follow on-screen messages until process is complete.

Figure 2-1 Formatting floppy disk



2 From the Windows 95/98/ME screen:

a Click the **Start** button and click **Settings**, **Control Panel**.

b From the **Control Panel** screen, click **Add/Remove Programs**.

c In the **Add/Remove Programs** screen, click the **Startup Disk** tab.

d Click the **Startup Disk...** button and follow the screen instructions until the process is complete.

3 From the Windows XP screen:

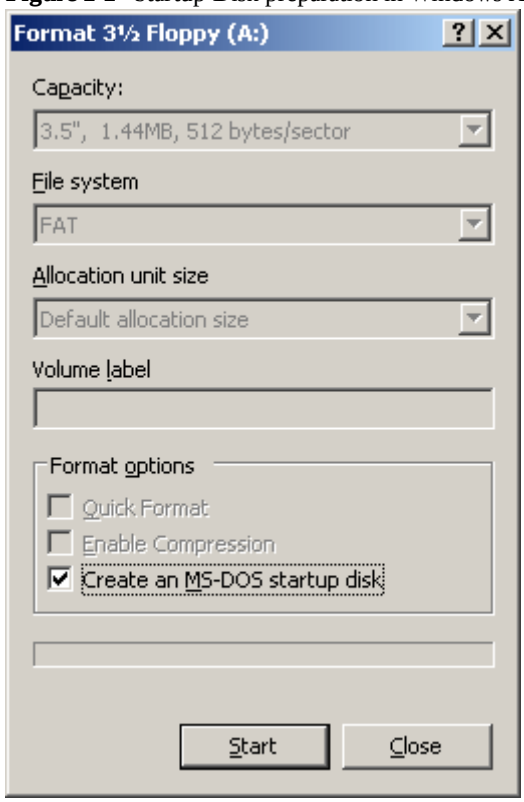
a Right-click **A: drive**.

b From the drop-down menu, click **Format...**

c Enable the checkbox beside **Create an MS-DOS startup disk**.

d Click the **Start** button and follow the screen instructions until the process is complete.

Figure 2-2 Startup Disk preparation in Windows XP



Copying Active@ Partition Recovery

Copy the **Active@ Partition Recovery** file (PR.EXE) to the bootable floppy disk or startup disk in drive a:.

If you don't have the **Active@ Partition Recovery** file, download it from http://www.partition-recovery.com.

After copying the file onto the floppy disk, remove it from the floppy drive.

Once preparation of the bootable 3.5-inch floppy disk is complete, you are ready to begin recovering data.

Starting Active@ Partition Recovery

Start the program and display drive information using the following steps:

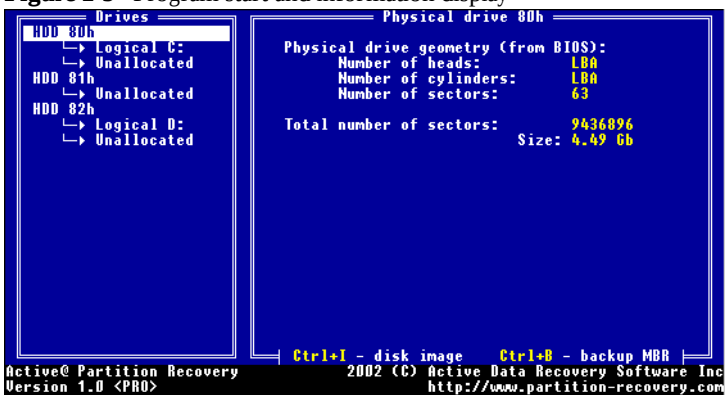
1 With power off, insert the prepared floppy disk into drive A:. Turn power on and boot from the floppy disk. The DOS screen with Command Prompt will appear.

2 Run **Active@ Partition Recovery** by typing this command, along with **[Enter]**:

```
PR.EXE
```

The **Partition Recovery** program window is displayed.

Figure 2-3 Program start and information display



3 On the left side of the window all detected Hard Disk Drives (HDD) are listed.

HDD Partitions and Logical Drives are displayed underneath in a tree formation, as shown in the figure above. Deleted partitions and HDD space not occupied by partitions are listed as “Unallocated”.

4 Use the arrow keys to move the cursor over items on the list of drives. Positioning the cursor on a named drive, displays its information on the right side of the program window.

Locating Deleted Data

Search for files using one of two methods: Scanning for Data or Scanning Damaged Areas.

Scanning for Data

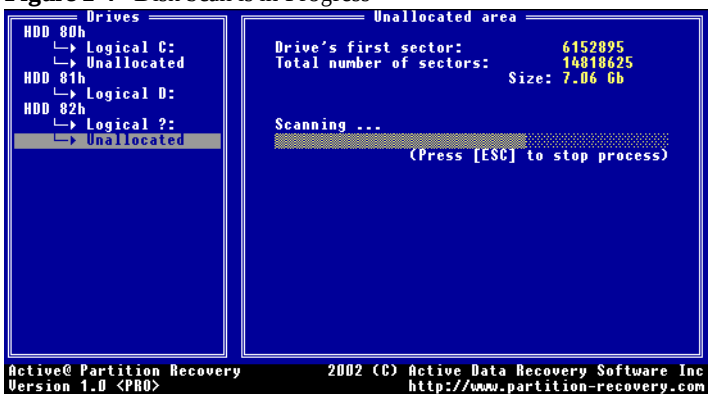
If you do not know names of deleted files or folders, scan drive or folder locations using these steps:

1 Run **Active@ Partition Recovery**.

2 Position the cursor on the word **Unallocated** under the drive containing a deleted partition and press **[Enter]**. **Active@ Partition Recovery** will start to scan the disk.

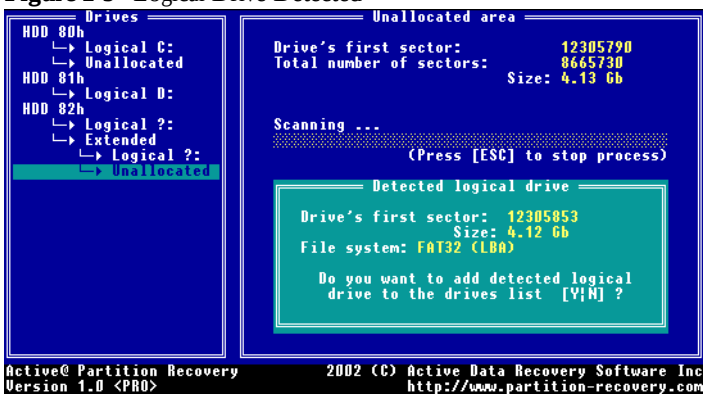
3 This method will detect the partitions recently deleted.

Figure 2-4 Disk Scan is in Progress



If the deleted partition is found - it is displayed and **Active@ Partition Recovery** will suggest that you add it to the list of found partitions:

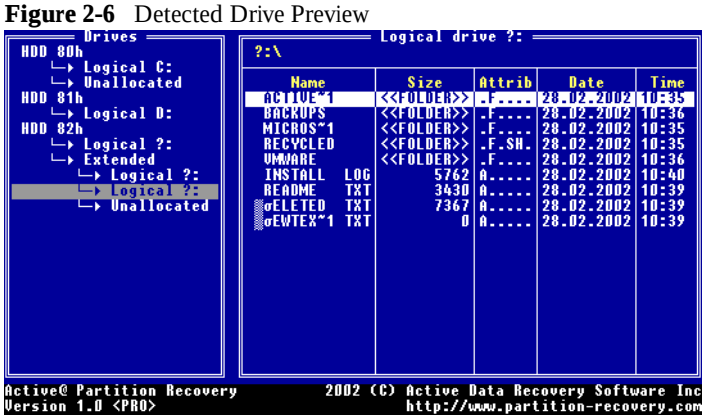
Figure 2-5 Logical Drive Detected



4 Press **[Y]** to add it. After adding the partition, files in the partition can be previewed.

5 Position the cursor on the newly-added partition and press **[Enter]**. A drive contents preview screen will appear.

Figure 2-6 Detected Drive Preview



6 If you are satisfied with the information found you can save the partition table while exiting the program (see Partition Recovery (Professional version only), below)

(i) *Note: If the newly-recovered partition is an "Extended" partition with logical drives, scan each of the logical drives after the "Extended" drive is visible.*

7 If a new **Unallocated** section appears, as a result of scanning, scan this space as well. The program will suggest that this partition be recovered as **Extended**.

Scan the **Unallocated** space beneath the **Extended** partition. The program will detect and add logical drives.

Scanning Damaged Areas

When a partition is damaged, it will appear as type **Unknown**. **Active@ Partition Recovery** cannot process it, nor preview files or folders in an **Unknown** type of partition. Assuming a partition does exist, there may be a way to recognize the data. The task is to change the **Unknown** area into **Unallocated**, so that we can scan it for detection of other partition information.

Start the program using parameter **-ignoreMBR**. Here is the DOS command syntax:

```
A:\> PR.EXE -ignoreMBR=80h
```

This parameter tells **Active@ Partition Recovery** to ignore what is stored in the default **Main Boot Record** partition information, making it possible to scan the drive as though all partitions are deleted.

After the program starts, the type **Unallocated** will be displayed beneath the damaged drive location. Scan it by pressing **[Enter]** to see if any data can be detected. If so, it might be possible to recover partitions as described earlier in this chapter.

Extended Disk Scan

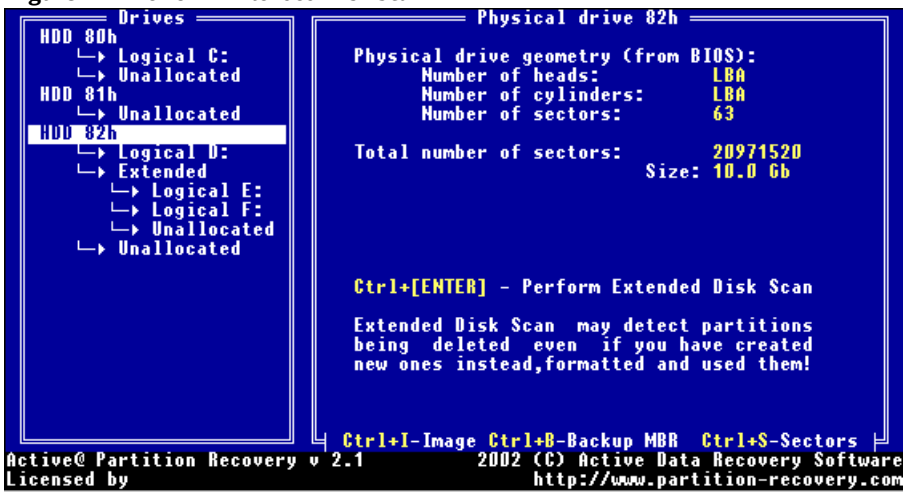
Extended Disk Scan is to be engaged if any of the following is true:

- Scanned **Unallocated** areas reveals nothing
- You suspect that partitions have been damaged
- New partitions have been created and used on top of deleted partitions

Extended Disk Scan is similar to the command line parameter **-ignoreMBR** in that the Master Boot Record is ignored, allowing access to disk data. Using this new feature,

however it is not necessary to exit the program and run software in command mode with a parameter.

Figure 2-7 Perform Extended Disk Scan



After these steps, there is an example:

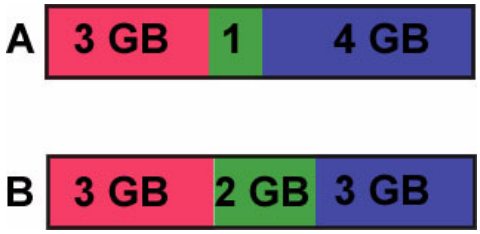
1. In the **Detected Drive** screen, position the cursor to the defective drive.
2. On the keyboard, press **[Ctrl+Enter]**. The utility begins scanning the drive surface, ignoring existing partitions and drives.
3. When a drive or partition is detected, a screen dialog will suggest adding it to the partition table.

(!) *Caution: Pay attention to the size of each detected partition and add only those partitions about which you are certain of the contents. Failure to attend to this detail might result in unrecoverable data. Once a detected partition is added to the partition table, the amount of space equal to the listed partition size will not be scanned further.*

Example of Extended Disk Scan

An original disk contained three partitions with the following sizes: 3GB, 1GB and 4GB. The second and third partitions have been deleted and two new partitions have been introduced with these specifications: 2GB and 3GB. (see figure below)

Figure 2-8 New Partitions Created



After the new partitions have been created, you recall some important data on the old 4 GB partition. The table below displays what the Extended Drive Scan will report, showing actions to be taken:

Table 2-1 Extended Disk Scan

Suggested Partition Size	Action
3 GB	Accept it **[Y]**
2 GB	Skip this partition in order to scan the space underneath
4 GB	Accept this partition. The size shows that it is the partition containing your important data. **[Y]**

The table below displays the differences between Extended Disk Scan and the DOS command-mode parameter -ignoreMBR:

Table 2-2 Extended Disk Scan vs. -ignoreMBR

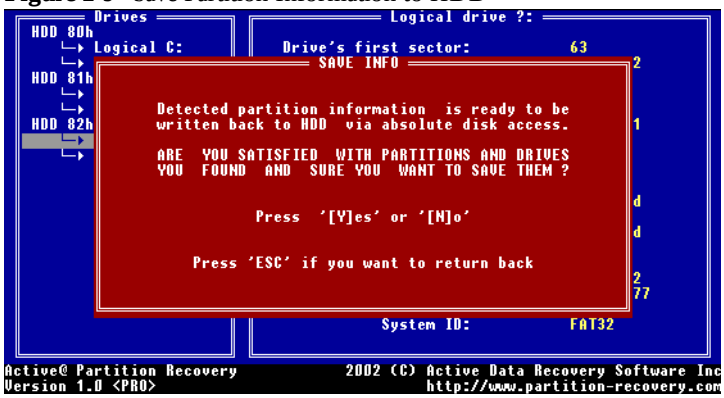
Extended Disk Scan	-ignoreMBR
Runs in DOS interface mode	Runs in DOS command mode
All detected partitions are added as primary partitions (logical drive structure ignored)	Detected partitions are added, maintaining logical drive structure. Disk is restored exactly to the same state it was before data removed.

Partition Recovery (Professional version only)

Partition recovery is possible only with the Professional, registered version of the program. This section describes backing up the **Main Boot Record** and recovery from a backed-up file.

1. Run **Active@ Partition Recovery**.
2. Scan for deleted partitions and drives or scan damaged partitions and drives.
3. If you are satisfied with the information found, press **[Esc]**. The program prepares to save the partition information.

Figure 2-9 Save Partition Information to HDD



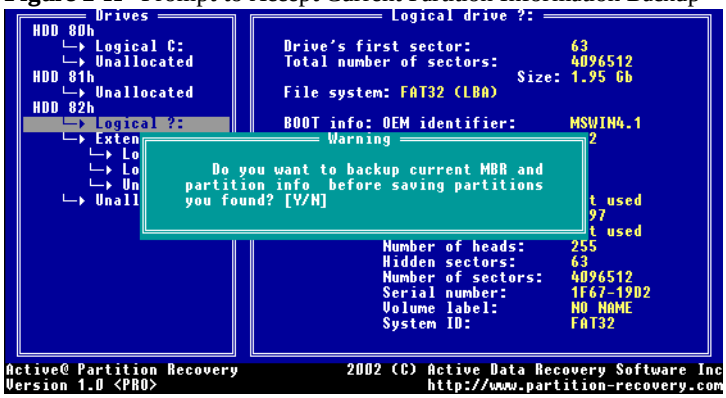
4. Press **[Y]** to confirm the action, saving partition information, or **[N]** if you want to leave program without saving.
5. If there is no partition displaying **Active** status, you will be asked to decide on one partition to be active, as displayed below:

Figure 2-10 Select "Active" partition

6. Select one and press **[Enter]**. You will be prompted to create an **MBR** backup for the current configuration before the found partition information is saved to a drive.

Making a backup at this point can be helpful if you decide later on to go back to this configuration (i.e. before partition recovery).

Figure 2-11 Prompt to Accept Current Partition Information Backup

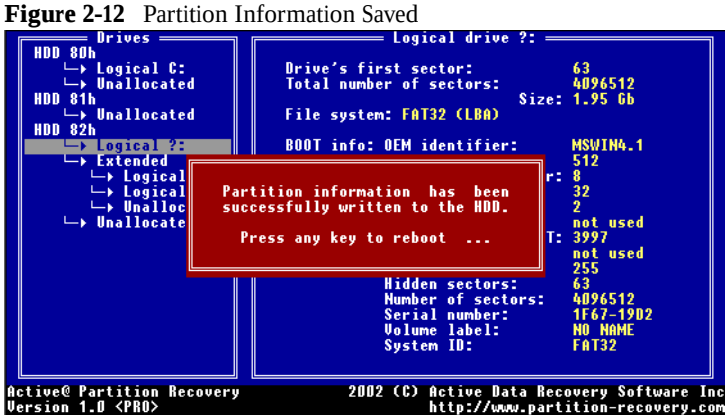


Press **[Y]** to backup current **MBR**, **Partition Table** and **Volume Boot Sectors**.

Press **[N]** to cancel backup of the current configuration.

7 After partition information is saved, re-start the machine.

Figure 2-12 Partition Information Saved



Backing Up MBR Data

The **Master Boot Record** (MBR) can be damaged in unexpected situations such as a virus attack or a power surge. When this type of damage is done to the hard drive, the computer becomes un-responsive and unable to start.

(i) *NOTE: IT IS STRONGLY ADVISED TO MAKE **MBR** AND **PARTITION** BACKUPS EVERY TIME THE COMPUTER CONFIGURATION IS CHANGED (SUCH AS ADDING OR REMOVING HARD DRIVES, PARTITIONS OR LOGICAL DRIVES).*

To allow for a recovery from a situation like this, back up your **MBR** partition information using these steps:

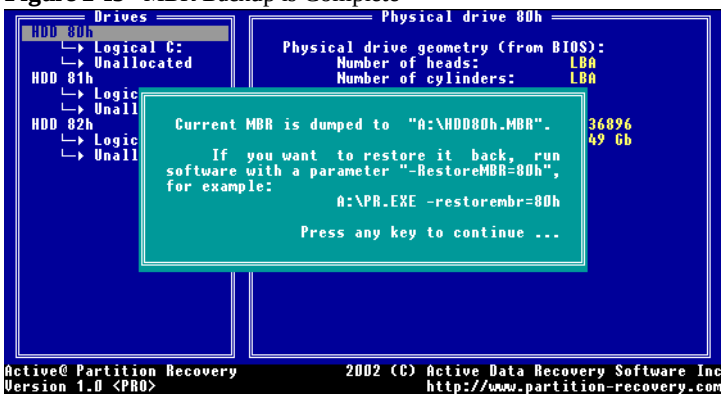
1 Run **Active@ Partition Recovery** from a floppy disk.

2 Select the hard drive MBR you want to back up.

3 Insert a blank floppy disk and press **[Ctrl+B]**.

4 Information will be saved to a file named a:\<drivename>.mbr.

Figure 2-13 MBR Backup is Complete



Using this floppy disk, the **Master Boot Record** can be restored (see the next section for details).

Restoring MBR Data

To restore partition information from backup follow the steps:

1 Insert the floppy disk containing the **Master Boot Record** backup file.

2 Run **Active@ Partition Recovery** with parameter **-restoreMBR**:

```
A:\> PR.EXE -restoreMBR=80h
```

This command will restore the **Master Boot Record, Partition Table(s)** and **Boot Sectors**.

3 Once completed, you can view partitions, logical drives and preview files.

While exiting the program, save this information back to Hard Disk Drive if you want to.

(i) *Note: The Demo version of the program allows you to load partition information from the backup and preview partition structure and files, but does not allow you to save it when you exit the program.*

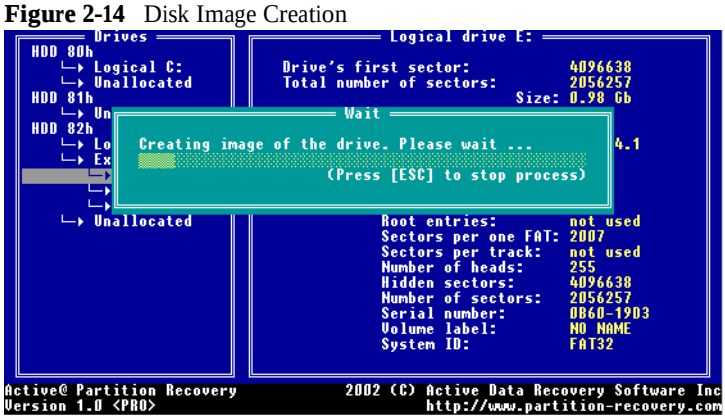
The Professional version of **Active@ Partition Recovery** allows you to save partition information from the backup back to the hard drive.

Disk Image Creation

A **Disk Image** is a copy of the drive saved in file. **Disk Image** is used for backup purposes or for analysis by other utilities like **WinHex**. Use **Active@ Partition Recovery Disk Image** for the entire Hard Disk Drive or for a particular logical drive.

1. Start **Active@ Partition Recovery**.
2. Select the drive (HDD or Logical) to create the **Disk Image**.
3. Press **[Ctrl+I]**.
4. Select the path of another logical or network drive where you wish to save the **Disk Image**.
5. Click **OK** and press **[Enter]**.
6. The progress is displayed until the creation of disk image is finished.

Figure 2-14 Disk Image Creation



Another way to perform this (available in Professional version only) is to run the software with the parameter **-image**.

For example:

```
A:\>PR.EXE -image80h=E:\
```

The resulting **Disk Image** is saved in a file named **drive_80h.hdd**, **drive_80h.001**, **drive_80h.002...** Each file (except the last one) is 1GB in size. The files are separated in 1GB file size because MS-DOS does not support files more than 2GB in size.

If you want to store the **Disk Image** files in one contiguous file - merge them manually.

Long File Names

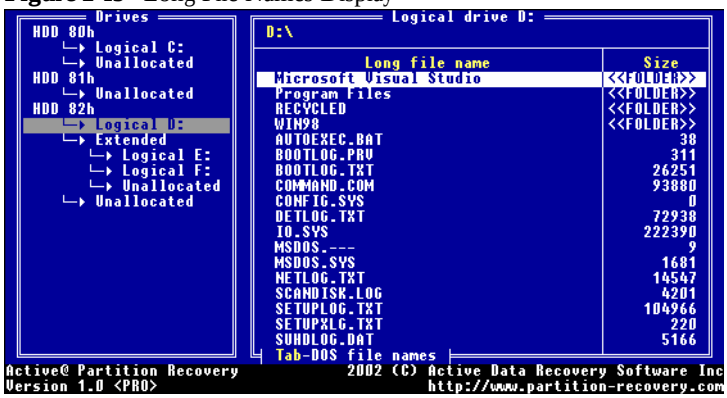
Since **Windows 95**, a file name is not limited to the 8.3 pattern. It can have a length of up to 255 characters.

Standard View displays all files and folders the same way as DOS does, i.e. file names are displayed using 8.3 format. Sometimes it is not convenient to see the only first symbols of a long file name. Follow these steps to display long filenames (up to 36 symbols):

1. Boot in DOS mode and run **Active@ Partition Recovery**.
2. Scan the particular drive by pressing **[Enter]**.

3 Press **[Tab]** to switch to long filenames view.

Figure 2-15 Long File Names Display



Command Line Parameters

Active@ Partition Recovery has the set of command line parameters. To see them and their definition, type:

```
A:\> PR.EXE -?
```

The following table describes command line parameters:

Table 2-3 Command Line Parameters

Parameter	Description	Note
	No parameter	The DOS Interactive screens will appear.
-?	Question mark	The table of parameters will appear.
-lba	Force LBA mode for access to all detected HDDs	
-lba=N	Force LBA mode for access to the specified HDD	N=[80h,81h,82h,83h]
-restoreMBR=N	Virtually restore MBR from the backup for the specified drive	N=[80h,81h,82h,83h]
-ignoreMBR=N	Do not load MBR information for the specified drive	N=[80h,81h,82h,83h] Allows scanning of 'Unknown' type or damaged partitions
-imageN=PATH	Create an image for the physical drive (Professional version only)	N=[80h,81h,82h,83h] PATH=<drive>:\\<path\\>
-test	Creates a testing file containing useful HDD configuration data	The file created by this parameter is important if you need help analyzing a problem with recovery. Contact the support reps at **Active Data Recovery Software** and send this testing file for analysis.

3 COMMON QUESTIONS

The following tips are designed to help with data recovery.

Q: Virus Attack

I know my partition is damaged because my drive was attacked by a virus. The partition cannot be recognized nor scanned. What can I do about this?

Problem Assessment:

Due to the virus attack the computer will not boot from the hard drive and FDISK displays a partition of unknown type. **Active@ Partition Recovery** also shows the partition to be **"Unknown"** type and does not allow previewing and scanning.

Probable Reason:

When a partition type is displayed as **"Unknown"**, it is likely to be damaged. **Active@ Partition Recovery** cannot handle data within partitions of this type. It does not allow files or data to be viewed in this condition. The partition does exist, however, and the task is to reveal the partition as **"Unallocated"** space.

Solution:

Start the **Active@ Partition Recovery** program with a parameter **-ignoreMBR** to ignore the Main Boot Record default partitions. Please see Scanning Damaged Areas for details.

Q: MBR Corruption

How can I protect my hard drive from **Master Boot Record** (MBR) corruption?

Problem Assessment:

In some situations such as a virus attack, power surge, etc, the **Master Boot Record** can become damaged. If this happens, the computer becomes un-responsive and will not start from the hard drive.

Solution:

The solution is simple if you have previously created a backup of the **Master Boot Record** and partition information prior to the disaster event. Using **Active@ Partition Recovery** you can easily recover and restore the Master Boot Record from a floppy disk.

Boot the machine using a system recovery floppy and run **Active@ Partition Recovery**, restoring the **Master Boot Record** from the backup.

(!) *NOTE: IT IS STRONGLY ADVISED TO MAKE MBR AND PARTITION TABLE BACKUP EVERY TIME THE COMPUTER CONFIGURATION IS CHANGED (SUCH AS ADDING OR REMOVING HARD DRIVES, PARTITIONS, LOGICAL DRIVES).*

Please see Backing Up MBR Data in the previous chapter for details.

Also see Q: FDISK and Windows 98 Limitations below.

Q: Larger Drive Sizes

My damaged hard drive is larger than 10Gb. How do I access the larger drive size? Is it the drive's problem or does your software not support drives more than 8GB?

Problem Assessment:

This client uses **Windows NT** installed under **VMWare**. When trying to scan partition that was 10Gb in size, they would get an error message saying **"Error reading physical sector"**.

Probable Reason:

It could be that there are bad clusters on the drive. As well, this client is using an operating system or a system-board **BIOS** that does not support **LBA** mode.

MS-DOS versions prior to version 6.0 do not support **LBA** mode. Some versions of system-board **BIOS** report that **LBA** mode is not supported for larger drives, when it actually does support it. **VMWare** v.3.0 is an example. **Active@ Partition Recovery** tries read the drive 100 times. If it encounters a consistent read failure, it reports this as a problem.

Solution:

Your system should be using a version of DOS that supports **LBA** mode. If it is MS-DOS then version must be 6.0 or later. In most cases you do not need to tell **Active@ Partition Recovery** to force **LBA** mode, if the **BIOS** supports it. **Active@ Partition Recovery** will recognize this support signal from the **BIOS** and will force **LBA** automatically, giving you access to larger sized hard drives.

If the system **BIOS** reports that **LBA** mode is not supported, **Active@ Partition Recovery** uses the standard **Int13h** to access the drive. Try to force **LBA** mode by starting **Active@ Partition Recovery** with a parameter **-LBA**, for example:

```
A:\>PR.EXE -LBA
```

Note that forcing **LBA** mode will not help if the **BIOS** truly does not support **LBA** mode. This usually happens with older versions of **BIOS**. If this is the case, try physically removing the hard drive and plugging it into another machine having a newer version of **BIOS**.

If your drive has lots of bad clusters, its advisable to save your data onto another physical drive and to get rid of the damaged hard drive.

Q: Limitations of Active@ Partition Recovery

Are there situations in which **Active@ Partition Recovery** is not able to restore partitions or Logical Drives?

Here is a list of such situations:

- Instead of deleting an old partition, a new partition has been created and formatted over an old partition.

- Some other information has been written into the sectors where partition information was previously located.

In the above scenarios, it is most likely **Active@ Partition Recovery** will not be able to detect the deleted partition as the partition information has been overwritten. Even if the **Master Boot Record** and **Partition Table(s)** have been detected and restored successfully, if data on the drive has been overwritten, it will be displayed as garbage data in some folders.

Q: FDISK and Windows 98 Limitations

Why is it that **FDISK** and **Windows 98** cannot display data in a detected and recovered partition?

Problem Assessment:

Active@ Partition Recovery was used to detect and successfully recover a deleted partition. After rebooting the system, **FDISK** was not able to see the recovered partition. Similarly, when trying to access drive C:, an error message was displayed, saying that the drive was not valid.

Probable Reason:

Both the **Partition Table** and **Master Boot Record** may have been damaged.

Solution:

Restore the **MBR** by running **FDISK** with parameter **/MBR** as in the example below:

```
A:\>FDISK.EXE /MBR
```

After the **MBR** has been restored, run **Active@ Partition Recovery**. If partitions have been restored successfully, they will be detected.

Q: Error Writing Physical Sector

While saving the partition information back to the hard drive, I receive an error message saying “Error writing physical sector” and I am not able to save the partition information.

Probable Reason:

1. The **Boot Sector** might be write-protected. Some **BIOS** configurations allow for protecting the **Boot Sector** from write operations in order to prevent viruses from damaging attacks.
2. The client might be trying to run the software from Windows 95/98/ME **MS-DOS Prompt** console.
3. Another reason might be that the Hard Disk Drive is physically damaged (i.e. it has bad clusters).

Solution:

1. Check your **BIOS** settings. If you have setting that reads **Virus Warning**, or similar, make sure that it has been **Disabled**.
2. DO NOT run the software from within the Windows Operating System. Start your computer in **Command Prompt** mode. To do so, press **[F8]** during the Windows startup routine, or boot from a system recovery floppy disk.

3 If your hard drive is physically damaged, it is better to remove all important data from the damaged drive and copy it to another Hard Disk Drive.

Active Data Recovery Software

Active Data Recovery Software is a software development company designing disk utilities related to the recovery of lost data and online privacy. Unique Active@ technologies allow our solutions to be easily integrated with operating system and network environment, suggesting to user powerful and flexible tools for computer management.

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