Backup and Recovery™ 10.2 Free

User Manual

Contents

Introduction

Paragon Backup and Recovery™ 10.2 is a complex disaster recovery and system migration solution. In this manual you will find the answers to many of the technical questions, which might arise while using the program.

> ⚠️ **Our company is constantly releasing new versions and updates to its software, that's why images shown in this manual may be different from what you see on your screen.**

What's New in Backup and Recovery 10.2

- **Support for the latest Windows 7**.

- **Backup to an FTP server** to provide a new level of system and data protection.

- **The latest Linux kernel** to enjoy support of a wider range of hardware configurations, including the brand new Intel ICH9 chipset.

- **More flexibility for online data processing techniques** to provide for easier configuration for both, Paragon Hot Processing and Microsoft Volume Shadow Copy Service (VSS).

- **Better support for 64-bit platforms** to reboot your computer to one of the three special modes (Windows native, Linux, or DOS) to automatically complete operations, which cannot be accomplished under 64-bit Windows.

- **Automatic data exclusion** with an advanced system of filters will help you automate the process of building up contents of the future backup image, by excluding irrelevant data such as movies, music, etc.

- **Better support for GUID Partition Table (GPT)** to back up and restore not only single GPT volumes but entire disks, including the option of resize during the restore operation.

- **Better support for Linux ExtFS** starting from Ext2FS up to the brand new Ext4FS.

- **More usability** when managing backup tasks with the new Task List and Archive View.

Product Components

In order to cope with different tasks, the product contains several components:

- **Windows based set of utilities** is the crucial part of the product. With the help of an easy to use launcher you may find and run tasks of any complexity in the field of data and system protection, hard disk partitioning and cloning, etc.

- **Linux/DOS based recovery environment** is a multi-platform bootable media that enables to run utilities under Linux or PTS DOS, and that way to get access to your hard disk for maintenance or recovery purposes. Both platforms have their strong sides, for instance Linux can boast support of FireWire (i.e. IEEE1394) or USB devices. It enables to burn CD/DVD disks. However there can be some difficulties with detecting new hardware. DOS in its turn has no problems of that kind but is limited in features. The Linux/DOS recovery environment requires no installation and can be of great help when the system fails to boot. Besides it offers a Windows XP like environment.

Features Overview

This chapter dwells upon key benefits and technical highlights of the product.

Key Features

Let us list some of the key features:

User Friendly Fault Minimizing Interface

- **Graphical representation of the data** to gain a better understanding.

- **A handy launcher** to easily find and run the required tasks.

- **Comprehensive wizards** to simplify even the most complex operations.

- **A context sensitive hint system** for all functions of the program.

- **Previewing the resulting layout of hard disks before actually executing operations** (so-called virtual operations).

Backup Facilities

- **Support of all present day techniques to store backup images**:

  - Backup to local mounted/unmounted (without drive letter assigned) partitions;

  - Backup to an external mounted storage to provide for a higher level of data protection and system independence;

  - Backup to a special secured place on the hard disk called the Backup Capsule that has an independent system layout (e.g. a separate partition) and will stay operable should the active file system be damaged. To avoid an accidental removing or unauthorized access of the backup data, this partition is hidden and thus cannot be mounted in the operating system;

  - Backup to external media (CD/DVD) to guarantee a high level of data protection as long as the backup media is kept secure;

  - Backup to a network drive to stand a better chance of success in case of a hard disk failure;

  - Backup to an FTP server to provide a new level of system and data protection.

- **Sector backup** to save not only all on-disk information but also the system service structures. It is ideal for making a backup image of an entire hard disk or system partitions to guarantee the operating system's working capability.

- **Differential backup** to a sector image to only archive changes since the last full sector-based image, thus considerably saving the backup storage space. To restore this kind of backup you will require a full image and one of its differentials.

- **Cyclic backup** to automate the backup of separate partitions. It is an ideal option if you want to establish a self-acting data protection system.

> **Cyclic Backup is only available for the Windows installation of the program.**

Restore Facilities

- **Restore an entire disk, separate partitions or only files you need** from the previously created backup image.

- **Restore with Shrink** to restore a backup image to a free block of smaller size taking into account only the amount of actual data of the image.

Partition/Hard Disk Management Facilities

- **Basic functions for initializing, partitioning and formatting hard disks** (create, format, delete). Instead of the standard Windows disk tools, the program supports all popular file systems.

- **Mount a partition** (assign a drive letter) of any file system type to make it available for your operating system.

- **Modify file system parameters** (make active/inactive, hide/unhide, change serial number, partition ID, volume label, etc.).

Automatization Facilities

- **Task scheduling** to automate routine operations. It can be particularly effective when you have to repeat a sequence of actions on a regular basis.

> ⚠️ **Scheduling is only available for the Windows installation of the program.**

Auxiliary Facilities

- **File Transfer Wizard** to make such operations as transferring of files/directories or burning of them to CD/DVD as easy and convenient as possible. Providing access to Paragon backups as regular folders, it may also help to replace corrupted data from a previously created image in case of an operating system failure.

- **Recovery Media Builder** to create a bootable recovery media based on Linux/DOS on a CD, DVD disc, or flash memory, which can later be used to boot and recover your computer in case of an operating system failure. Moreover, with its help you can save data from partitions of your hard disk directly to compact discs or burn ISO-images. The utility supports various formats of laser discs: CD-R/RW, DVD-R/RW, DVD+R/RW, DVD-R, DVD+R double layer, Blu-ray and can handle multi-session burning.

- **Network Configuration Wizard** to establish a network connection under Linux either to save a backup of a partition/hard disk or just several files on a network computer or retrieve a previously made backup from a network computer for recovery purposes.

- **Boot Corrector** to fix most of the system boot problems that can be a result of a human factor, program error or a boot virus activity.

> ⚠️ **Boot Corrector is only available for the Linux/DOS bootable recovery environment.**

Supported Technologies

Along with using innovative technologies from outside, Paragon has developed a number of its own original technologies that make its products unique and attractive for customers:

- **Paragon Hot Backup™** technology to back up locked partitions and hard disks under Windows NT+ family operating systems providing both high operating efficiency as well as low hardware requirements.

- **Paragon Power Shield™** technology to provide data consistency in case of a hardware malfunction, power outages or an operating system failure.

- **Paragon UFSD™** technology to browse partitions of any file system including hidden and unmounted, modify and copy files and folders, etc.

- **Paragon Restore with Shrink™** technology to restore a backup image to a free block of smaller size taking into account only the amount of actual data of the image.

- **Paragon Smart Partition™** technology to securely perform hard disk partitioning operations of any complexity.

- **Paragon BTE™** technology to set tasks for execution in the Windows blue screen mode, thus saving from the need to use a bootable media when modifying system partitions.

- **Microsoft Volume Shadow Copy Service** (VSS) to provide the copy/backup infrastructure for the Microsoft Windows XP/Vista/7/Server 2003/2008 operating systems. It offers a reliable mechanism to create consistent point-in-time copies of data known as shadow copies. Developed by Microsoft in close cooperation with the leading copy/backup solution vendors on the market, it is based on a snapshot technology concept.

- **Microsoft Dynamic Disk** (simple, spanned, striped, mirrored, RAID-5) to offer more management flexibility without the partition limitation of basic disks. Dynamic storage can be particularly beneficial for large-scale businesses when dealing with many physical hard disks involving complex setup.

- **GUID Partition Table** (GPT). It is the next generation of a hard disk partitioning scheme developed to lift restrictions of the old MBR. GPT disks are now supported by Windows Vista/7, Server 2008, Mac OS X and Linux.

Supported File Systems

Paragon Backup and Recovery 10.2 provides support for the major file systems presented on the market today:

- Full read/write access to FAT16/FAT32 partitions.

- Full read/write access to NTFS (Basic and all five types of Dynamic Disks) under Windows 95/98/ME, Linux and PTS DOS. Compressed NTFS files are also supported.

- Full read/write access to Ext2FS/Ext3FS/Ext4FS partitions under all versions of Windows, DOS 5.0 and later.

- Limited read/write access to Apple HFS+ partitions.

> ⚠️ **Unfortunately, support of non-Roman characters for the HFS+ file system is unavailable at the moment. The company is about to implement it in the nearest future.**

Supported Media

- Support of both MBR and GPT hard disks (up to 1,5 TB tested)

- IDE, SCSI and SATA hard disks

- CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-R, DVD+R double layer and also Blu-ray discs

- FireWire (i.e. IEEE1394), USB 1.0, USB 2.0 hard disks

- PC card storage devices (MBR and GPT flash memory, etc.)

Getting Started

In this chapter you will find all the information necessary to get the product ready to use.

Distribution

Paragon Backup and Recovery 10.2 is distributed in two ways:

- Boxed package from Paragon Technology GmbH and resellers

- Downloadable package over the Internet at the company's web-site

Distributive CD

The boxed package includes a distributive CD that is in fact a bootable Linux/DOS recovery environment with auto-run of the Windows installation, thus it can be used as a ready-made solution (see Booting from the Linux/DOS Recovery Media). But if you're going to run the Windows components, you need to install them first (see Installation).

If you want to download an update/upgrade of the product, it will be in form of the downloadable installation package as described in Online Distribution).

Online Distribution

Backup and Recovery 10.2 purchased over the Internet will be in form of an MSI package. After installing the product you can launch the Recovery Media Builder to build the Linux/DOS recovery media.

Registration

Paragon Technology GmbH provides a wide range of online services through its web-portal - www.paragon-software.com/support/:

- Registration of new users;

- Registration of purchased products for registered users;

- Available around-the-clock downloading center, where registered users can get product updates/upgrades as well as all the necessary documentation;

- Downloadable free demo versions and open documentation for all users.

> ⚠️ **It is recommended to use Internet Explorer 5+ or any compatible browser.**

To register as a new user

To register as a new user, please do the following:

1. Run an Internet browser and visit the page: www.paragon-software.com/my-account/;

2. Click **Create** of the **Create a Paragon Account** section;

3. Fill out a registration form;

4. Click **Register**.

The most important field in the form is an E-mail address, as it serves as a login to enter the system. Besides your access password will be sent to this address as well.

To register a new product

If you are a registered user and would like to register Backup and Recovery 10.2, please do the following:

1. Run an Internet browser and visit the page: www.paragon-software.com/my-account/;

2. In the **Email** field of the **Authorization** section, enter an E-mail used for registration;

3. In the **Password** field enter a password received after registration;

4. Click **Sign in**;

5. If the user name and password are valid, you will get to your account;

6. Click **Register new product** of the **Products** section;

7. Enter your product serial number in the **Serial Number** field. You can find it in the product box or obtain from your reseller. Click **Next**;

8. On the next page you will be asked to provide some additional data. Also you will need to decide whether you want to get confirmation on registering the product by E-mail or not. Click **Next**, and then click **Finish**.

That is all. The product is now registered.

How to Download Updates/Upgrades

Downloading of updates/upgrades can be fulfilled in the following way:

1. Run an Internet browser and visit the page: www.paragon-software.com/my-account/;

2. In the **Email** field of the **Authorization** section, enter an E-mail used for registration;

3. In the **Password** field enter a password received after registration;

4. Click **Sign in**;

5. If the user name and password are valid, you will get to your account;

6. Select **My Downloads** of the **Products** section to see what updates are available for you;

7. Select the desired update and click **Download**.

Contacting Paragon Technology GmbH

If you have any questions about the company products, please do not hesitate to contact Paragon Technology GmbH.

Service	Contact
Visit Paragon GmbH web site	www.paragon-software.com

Registration & updates web-service	www.paragon-software.com/support
Knowledge Base & Technical Support	kb.paragon-software.com
Pre-sale information	sales@paragon-software.com

System Requirements

Windows based set of utilities

To use the Windows utilities, you should install them first. But before that, please make sure your computer meets the following minimum system requirements:

- Operating systems: Windows 2000/XP/Vista/7 and XP SP2/Vista/7 64-bit

- Internet Explorer 5.0 or higher

- Intel Pentium CPU or its equivalent, with 300 MHz processor clock speed

- 128 MB of RAM (256+ recommended)

- Hard disk drive with 100 MB of available space

- SVGA video adapter and monitor

- Mouse

Linux/DOS based recovery environment

To use the Linux/DOS recovery environment on your computer (it doesn't matter what operating system is installed), please make sure that it meets the following minimum system requirements:

- IBM AT compatible computer with i486 or higher CPU

- 256 MB of RAM

- SVGA-compatible monitor

- Mouse (recommended)

Additional requirements

There may be additional requirements if you want to use advanced features:

- Network card to send/retrieve data to/from a network computer

- Recordable CD/DVD drive to burn data to compact discs

- External USB hard drive to store backup data.

Installation

As we have already mentioned only Windows components of the product require installation. So to install Paragon Backup and Recovery 10.2 under Windows, please do the following:

1. **Run Setup Application**. Click on the *.MSI file. This application will guide you through the process of the program installation. The setup utility is compiled with the InstallShield SDK, hence it contains the standard user interface and set of installation steps.

> ⚠️ **In case there is some previous version of the program installed on the computer, the program will offer the user to uninstall it first.**

2. **Starting Setup**. The Welcome page informs that the application is being installed. Click the Next button to continue.

3. **Confirm License Agreement**. The License Agreement page displays the Paragon License Agreement. Read the agreement and then select the appropriate option to accept. If you do not agree with any conditions stated there, the installation process will be interrupted. By clicking the Print button, the License Agreement may also be printed out.

4. **Provide Registration Information**. On the Registration page you are to provide your product key and serial number.

5. **Provide Customer Information**. On the Customer Information page you are to provide the standard information, i.e. a user name and an organization. Besides you need to decide whether to make the program available for all users of this computer (if several) or only for the current one.

6. **Select an Installation Folder**. The Destination Folder page allows you to choose a folder where the program will be installed. By default, the installation folder will be created as:

   C:\Program Files\Paragon Software\Paragon Backup and Recovery 10.2. To select another folder, click the Change… button.

   After you have selected the required folder, click the Next button to continue.

> ⚠️ **Do not install the program on network drives. Do not use Terminal Server sessions to install and run the program. In both cases, the program functionality will be limited.**

7. **Confirm Installation**. On the Ready to Install the Program page click the Install button to start the installation or the Back button to return to any of the previous pages and modify the installation settings.

8. **Copying Files**. The Copying Files page shows the overall progress of the installation. Click the Cancel button to abort the setup.

9. **Finishing the Installation**. The Final page reports the end of the setup process. Click the Finish button to complete the wizard.

> ⚠️ **To accomplish online backup/copy of locked partitions/hard disks the program uses a kernel mode hotcore driver, thus the system reboot is required to complete the installation procedure.**

First Start

To start Paragon Backup and Recovery 10.2 under Windows, please click the Windows Start button and then select **Programs > Paragon Backup and Recovery™ 10.2 > Paragon Backup and Recovery™**.

> ⚠️ **The program provides wide opportunities in the field of hard disk structure modification, so just to be on the safe side, please make a backup of your data before carrying out any operation.**

The first component that will be displayed is called the Launcher. In general it enables to run wizards and utilities, to specify program settings, to visualize the operating environment and the hard disk configuration, to launch the help system or to go to the program's home page.

> ⚠️ **To know more on the subject, please consult the Windows Components chapter.**

Building Recovery Media

Recovery Media Builder can help you accomplish the following operations:

- Prepare the Linux/DOS recovery environment (included in the installation package) on external media (CD, DVD, or flash memory) to boot and run utilities under Linux or PTS DOS, and that way to get access to your hard disk for maintenance or recovery purposes (strongly recommended);

- Prepare a custom Linux/DOS recovery environment by adding any data you like to the standard image;

- Prepare a bootable recovery environment from any ISO image;

- Create from the master CD the Linux/DOS recovery environment on a CD/DVD disc, or flash memory.

Booting from the Linux/DOS Recovery Media

The Linux/DOS recovery environment can be used to boot your computer into Linux or PTS DOS to get access to your hard disk for maintenance or recovery purposes. It also has the PTS DOS safe mode, which may help in a number of non-standard situations such as interfering hardware settings or serious problems on the hardware level. In this case, only basic files and drivers (such as hard disk drivers, a monitor driver, and a keyboard driver) will be loaded.

Startup

To start working with the Linux/DOS recovery environment, please take the following steps:

1. Start up the computer from our Linux/DOS recovery media.

> ⚠️ **Recovery Media Builder can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.**
>
> **To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.**

2. Launch a boot mode you need (Normal, Safe, Low-Graphics Safe) in the Boot menu.
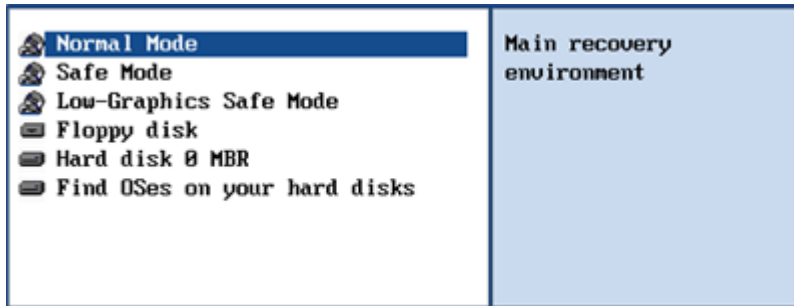
> ⚠️ **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

3. Click on the required operation to start. Hints on the selected at the moment item will help you make the right choice.

4. Consult the help system by pressing **ALT+F1** to know more on the subject.

Boot menu

The Boot menu contains the following commands:

- **Normal Mode**. Boot into the Linux normal mode. This mode uses the full set of drivers (recommended);

- **Safe Mode**. Boot into the PTS DOS mode. This mode can be used as an alternative of the Linux normal mode if it fails to work properly;

- **Low-Graphics Safe Mode**. Boot into the PTS DOS safe mode. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu;

- **Floppy Disk**. Reboot the computer from a system floppy disk;

- **Hard Disk 0**. Boot from the primary hard disk;

- **Find OS(s) on your hard disks**. The program will scan hard disks of your computer to find any bootable operating system.

To move within the menu, please use the arrow keys of the computer keyboard.

> ⚠ **While working with the recovery environment you might experience some inconvenience caused by possible video artifacts. It is just a result of changing video modes and in no way will affect the program functionality. If this is the case, please wait a bit and everything will be OK.**

Normal Mode

When the Normal mode is selected, the Linux launch menu appears:

Paragon Backup & Recovery™	You can copy an entire hard disk or its partitions to new locations. You can also save them as image files for later restoration. Please select the drive, its partition if necessary, and then activate the 'Hard Disk' or 'Partition' pull-down menu and select the operation needed.
Simple Restore Wizard	
File Transfer Wizard	
Network Configurator	
Log Saver	
Eject CD/DVD	
Start the command line	
Reboot the computer	
Power off	

- **Backup and Recovery** (enables to copy and back up separate partitions or entire hard disks, carry out basic partitioning operations, etc.);

- **Simple Restore Wizard** (allows restoring hard disks and partitions);

- **One Button Copy Wizard** (helps to carry out such a technically complicated operation as cloning of hard disks just by pressing one button);

- **File Transfer Wizard** (allows coping files/folders to another disk or a partition as well as recording them to CD/DVD);

- **Boot Corrector** (helps to correct the Windows System Registry without Windows being loaded);

- **Network Configurator** (enables to establish a network connection under Linux);

> ⚠ **If you are going to use network resources, first launch the Network Configuration Wizard to establish a network connection.**

- **Log Saver** (helps to collect and send the necessary log files to the Technical Support);

- **View the mounted partitions** (the list of all mounted partitions will be displayed);

> ⚠ **The Linux/DOS recovery environment assigns drive letters to partitions the way it is done in DOS, i.e. one after another, primary partitions at first. Thus mounted partitions may have different drive letters from Windows.**

- **Eject CD/DVD**;

- **Command Line** (allows experienced users to execute any operation);

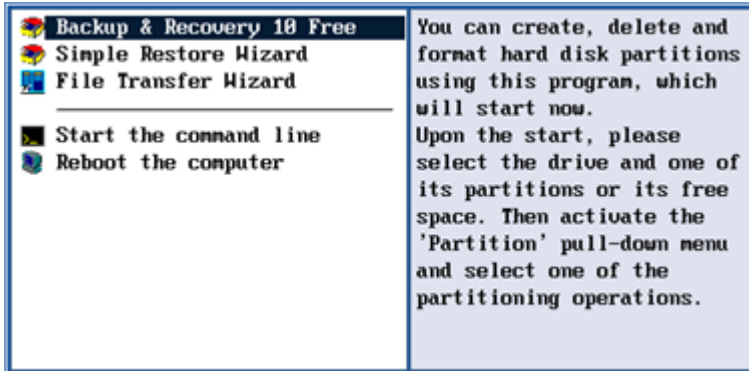- **Reboot the computer**;

- **Power off the computer**.

To move within the menu, please use the arrow keys of the computer keyboard.

Safe Mode

When the Safe mode is selected, the PTS DOS launch menu appears. It has nearly the same functionality as for the Normal mode except the **Network Configurator** and **Log Saver** commands. Besides due to certain limitations of the PTS DOS environment, there is no possibility to burn CD/DVD discs.

Low Graphics Safe Mode

When the Low Graphics mode is selected, the PTS DOS launch menu appears. It has the same functionality and looks similar to the Safe mode but graphically simpler.

```
Backup & Recovery 10 Free        You can create, delete and
Simple Restore Wizard            format hard disk partitions
File Transfer Wizard             using this program, which
                                 will start now.
                                 Upon the start, please
Start the command line           select the drive and one of
Reboot the computer              its partitions or its free
                                 space. Then activate the
                                 'Partition' pull-down menu
                                 and select one of the
                                 partitioning operations.
```

Basic Concepts

This chapter explains terms and ideas that show how the program works. To understand these helps to obtain a general notion of the operation performance and makes it easier for the user to operate the program.

System and Data Protection

The data protection issue is a growing cause of worrying for more and more people today. Indeed, it is hardly to find a person who will be particularly happy when all precious information on the hard disk is irreversible lost as a result of its malfunction. So how this tragedy can be prevented?
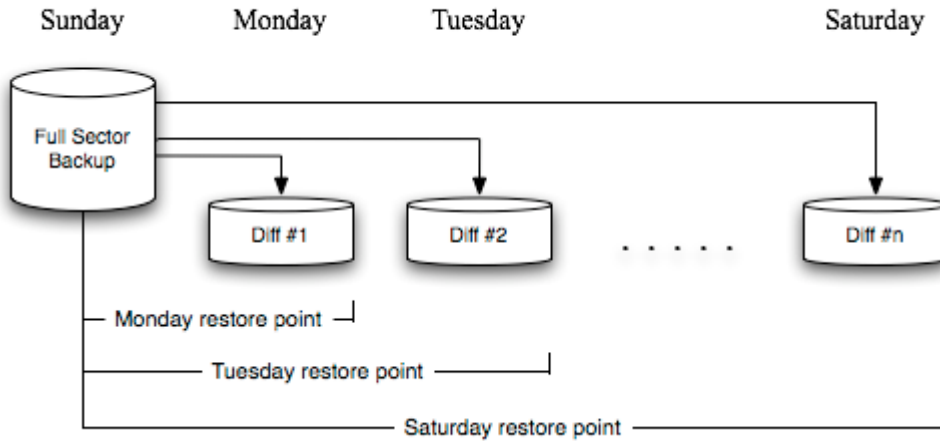
Backup Types

At the present moment the market is offering various types of backup imaging to meet the needs of any user.

Full and Differential Sector Backups

A full sector-based backup image includes all contents of a partition or a hard disk at the moment of its creation. If you roll back your system to the initial state on a regular basis, that's exactly what you're looking for. But if you want to have multiple backup archives of the same partition reflecting certain time stamps, unchanged data will inevitable be duplicated in all archives and take additional space on backup media. To tackle this issue there has been developed a supplementary technique called Differential Sector Backup.

A differential archive only contains data changed since the time of creating a full archive, which forms a base (or a parental image) in this case, thus considerably saving your system resources. It is realized by the exact bit-wise comparison of the previous partition's data (saved in the parental image) with the current data (that is actually the partition itself). To restore this kind of backup you will require a full image and one of its differentials, what is very convenient.

Differential Base to a Sector Backup

| Sunday | Monday | Tuesday | | Saturday |

Full Sector Backup → Diff #1, Diff #2 . . . . . Diff #n

Monday restore point
Tuesday restore point
Saturday restore point

⚠ **This function is only available for single primary and logical partitions.**

Backup Storage

Our program supports all present day techniques of storing backup images. Let's take a closer look at them all to understand what kind of storage is able to provide better security:

- You can place a backup image to a local mounted or unmounted (without drive letter assigned) partition. Despite the fact that it is the most convenient way, try not to use it. You can delete your backup just by accident or lose it as a result of a hardware malfunction, or a virus attack;

- You can place a backup image to an external mounted storage to provide for a higher level of data protection and system independence;

- You can place a backup image to a special secured place on the hard disk called the Backup Capsule that has an independent system layout (e.g. a separate partition) and will stay operable should the active file system be damaged. To avoid an accidental removing or unauthorized access of the backup data, this partition is hidden and thus cannot be mounted in the operating system. However it won't help you in case of a hardware malfunction;

- You can place a backup image to external media (CD/DVD) to guarantee a high level of data protection as long as the backup media is kept secure;

- You can place a backup image to a network drive to stand a better chance of success in case of a hard disk failure. Moreover, by storing it on a special-purpose server you may be pretty sure nothing will happen to it;

- Finally you can place a backup image to an FTP server to provide a new level of system and data protection.

Known Issues on FTP

1. You need to check out yourself Windows Firewall or programs of this kind let our program work with the required port (21 by default).

2. File backup and restore to/from FTP, including the selective restore functionality are not available.

3. SSL login/password encryption is not supported.

4. You can browse an FTP server in the passive mode only.

5. Parallel access to several FTP servers is limited - only one password for all servers is available.

Paragon Hot Processing & Volume Shadow Copy Service

Offline versus Online Data Processing

In the course of time there have been developed various methods of data processing. Despite different work concept, all of them can be divided into two principal groups: offline (cold) and online (hot) data processing techniques.

As the name infers, offline data processing can only be accomplished when the data is in consistent state (the operating system and all the applications are completely shut down). Actually it is the most preferable way of image creation or data cloning, since software can obtain an exclusive right to process data that guaranties high level of operating efficiency. However, the offline data processing is absolutely out of question when dealing with 24/7 production environments.

In contrast, online data processing enables to create a consistent snapshot even as the data is currently modified. It is particularly useful for systems with high availability requirements, but it won't be accomplished until all active transactions are complete. The point is to provide a coherent state of all open files and databases involved in a process, taking into account that applications may still keep writing to disks. As a result an online data processing cannot boast high operating speed.

Our program supports both offline and online methods of data processing. As far as online method is concerned it offers its own hot processing algorithm together with the possibility to use snapshot technologies provided by the Microsoft VSS framework.

Paragon Hot Processing Technology

Paragon Hot Processing is an online copy/backup technology for Windows NT+ family operating systems. Developed back in 2001, nowadays it is integrated with all copy/backup solutions offered by the company.

Paragon Hot Processing is not exactly a snapshot technology, though it has much in common with it. During an online copy/backup, the program uses the kernel mode driver HOTCORE.SYS to intercept and control disk write activity of applications and the operating system. The hotcore driver as an integral part of the program is installed during the setup procedure (that's why the system reboot is required to complete the setup procedure). For the most part the driver is in the idle mode until it is activated with the program. While in this mode it bypasses any calls having no effect on the overall system performance, but a few kilobytes of the system memory.

Paragon Hot Processing technology offers copy/backup of locked partitions and hard disks under Windows NT+ family operating systems providing both high operating efficiency as well as low hardware requirements.

> ⚠ **It is not recommended to use Paragon Hot Processing with active SQL Server, Exchange or Oracle databases since the backup image contents may be corrupted.**

Volume Shadow Copy Service

Microsoft Volume Shadow Copy Service (VSS) is designed to provide the copy/backup infrastructure for the Microsoft Windows XP/Vista/Server 2003/2008 operating systems. It offers a reliable mechanism to create consistent point-in-time copies of data known as shadow copies. Developed by Microsoft in close cooperation with the leading copy/backup solution vendors on the market, it is based on a snapshot technology concept.

Initiated by a VSS aware copy/backup utility, VSS creates snapshots for the selected volumes and represents them as virtual read-only devices, called volume shadow copies. Once the shadow copies are created, the copy/backup utility starts processing the data while applications keep writing to original volumes.

Unlike Paragon Hot Processing the VSS technology provides a unique possibility to make a synchronous snapshot of multiple volumes. This very feature can be particularly beneficial when backing up active SQL Server 2003, Exchange 2003 or Oracle databases located on multiple volumes the way it is recommended by Microsoft to improve the level of database performance and reliability, thus providing 100-percent data consistency.

> ⚠ **To use VSS it is necessary to have a mounted 300 MB+ NTFS partition.**

Dynamic Disks

As you probably know, MS-DOS, Microsoft Windows 95/98/Me/NT/2000/XP/Vista/Server 2003/2008 support four primary partitions per physical hard disk, one of which can be extended. Certainly there is the possibility to create logical drives within the extended partition. Such types of disks are called basic. Windows XP Professional, Windows 2000, Windows Vista and Windows Server 2003/2008 follow the same strategy: You can have a maximum of four primary partitions, one of which can be an extended partition with logical drives. However, these operating systems also introduce a new disk configuration type - dynamic disk - which must be understood to effectively configure and manage hard disks.

Dynamic disk is a physical disk that doesn't use partitions or logical drives. Instead, it contains only dynamic volumes. Regardless of what format you use for the file system, only Win2K computers can access dynamic volumes directly. However, computers that aren't running Win2K can access the dynamic volumes remotely when connected to the shared folders over the network.

Dynamic disks can co-exist on a system with basic disks. The only limitation is that you cannot mix Basic and Dynamic disks on the same hard drive.

There are five types of dynamic volumes: simple (uses free space from a single disk), spanned (created from free disk space that is linked together from multiple disks), striped (a volume the data of which is interleaved across two or more physical disks), mirrored (a fault-tolerant volume the data of which is duplicated on two physical disks, and RAID-5 volumes (a fault-tolerant volume the data of which is striped across an array of three or more disks).

With dynamic storage, you can perform disk and volume management without the need to restart Windows.

Limitations:

- Dynamic disks are not supported on portable computers.

- Dynamic disks are not supported on Windows XP Home Edition-based computers.

- You cannot create mirrored volumes or RAID-5 volumes on Windows XP Home Edition, Windows XP Professional, or Windows XP 64-Bit Edition-based computers.

Thus, the dynamic disk is a new way of looking at hard disk configuration. Dynamic disks offer you more management flexibility without the partition limitation of basic disks. Dynamic disks can contain an unlimited number of volumes, but they cannot contain partitions or logical drives. Dynamic storage can be particularly beneficial for large-scale businesses when dealing with many physical hard disks involving complex setup.

GPT versus MBR

GUID Partition Table (GPT) is the next generation of a hard disk partitioning scheme developed to lift restrictions of the old MBR. Being a part of the Extensible Firmware Interface (EFI) standard proposed by Intel to replace the outdated PC BIOS, it offers a number of crucial benefits:

- Up to 128 primary partitions for the Windows implementation (only 4 in MBR);

- The maximum allowed partition size is 18 exabytes (only 2 terabytes in MBR);

- More reliable thanks to replication and cyclic redundancy check (CRC) protection of the partition table;

- A well defined and fully self-identifying partition format (data critical to the platform operation is located in partitions, but not in un-partitioned or hidden sectors as this is the case with MBR).

64-bit Support

The bulk of software today is written for a 32-bit processor. It can meet the requirements of almost any end user. However that is not the case when dealing with servers processing large amounts of data with complex calculations of very large numbers. That is where 64-bit architecture comes into play.

It can boast improved scalability for business applications that enables to support more customer databases and more simultaneous users on each server. Besides a 64-bit kernel can access more system resources, such as memory allocation per user. A 64-bit processor can handle over 4 billion times more memory addresses than a 32-bit processor. With these resources, even a very large database can be cached in memory.

Although many business applications run without problems on 32-bit systems, others have grown so complex that they use up the 4 GB memory limitation of a 32-bit address space. With this large amount of data, fewer memory resources are available to meet memory needs. On a 64-bit server, most queries are able to perform in the buffers available to the database.

Some 32-bit applications make the transition to the 64-bit environment seamlessly others do not. For instance, system-level utilities and programs that provide direct hardware access are likely to fail. Our program offers a full-fledged support of the 64-bit architecture providing fault-tolerant work for such system dependent modules as Hot Processing.

Drive Partitioning

As you probably know a hard drive is to be split into one or more partitions, since it cannot hold data until it is carved up and space is set aside for an operating system. Until recently most PCs used to have just one partition, which filled the entire hard disk and contained an OS. The situation has changed however, thanks to new cost-effective high capacity hard drives, thus opening up numerous possibilities for PC users, such as editing video, archiving music, backing up CD images, etc. Huge increase in space is great, but it poses a number of problems, most important of which are effective data organization and speed.

Large drives are always going to take longer to search than smaller volumes, and an operating system is going to have its work cut out both finding and organizing files. It is for this reason that many people decide to invest in multiple hard drives, but there is an easy solution – drive partitioning. Partitioning lets you divide a single physical drive into a number of logical drives, each of which servers as a container with its own drive letter and volume label, thus enabling the operating system to process data more efficiently. Besides partitioning makes it possible to organize data so that it is easy to find and manage. You can set aside, for instance, 40 GB of a 160 GB hard drive for the OS, 70 GB for storing video and another 50 GB for your favorite music collections to provide transparent data storage.

It is also worth mentioning to that with a hard drive properly partitioned, such routine operations as files de-fragmentation or consistency check will not be that annoying and time-consuming any more.

By detaching the OS from the rest of the data you can tackle one more crucial issue – in case of a system malfunction, you can get the system back on track in minutes by recovering it from a backup image located on the other partition of the hard drive.

But that is not all drive partitioning may be used for. If you are willing to play games in Windows while browsing the Internet in Linux, 100-percent sure that no virus will attack your PC, drive partitioning is a necessity. In order to run several OSs on a single hard drive you are to create a corresponding number of partitions to effectively delineate the boundaries of each OS.

Scheduling

The automation of operations is particularly effective when you have to repeat a sequence of actions on a regular basis. For example, developing a specific project on a day-to-day basis and having to make a backup every evening so as not to lose the valuable data, you will really appreciate, when this kind of routine operations will be carried out automatically without your participation.

Another aspect of any automation process is that it allows an optimization of your computer's work-load. This is especially important when operations require a considerable amount of computer resources – processor time, memory and more. A number of tasks, which can decrease the performance, can be run during the night or whenever the computer has the least work-load to perform.

The program has a special tool for scheduling. You can set out a timetable for any operation and it will start at a specified time without interrupting your current activity.

Windows Components

In the given section you can find all the information necessary to successfully work with the Windows version of the product.

Interface Overview

This chapter introduces the graphical interface of the program. The design of the interface precludes any mistake being made on the part of the user. Most operations are performed through the system of wizards. Buttons and menus are accompanied by easy understandable icons. Nevertheless, any problems that might occur while managing the program can be tackled by reading this very chapter.

General Layout

When you start the program, the first component that is displayed is called the Launcher. It enables to run wizards and dialogs, to specify program settings, to visualize the operating environment and the hard disk configuration.

The Launcher's window can be conditionally subdivided into several sections that differ in their purpose and functionality:
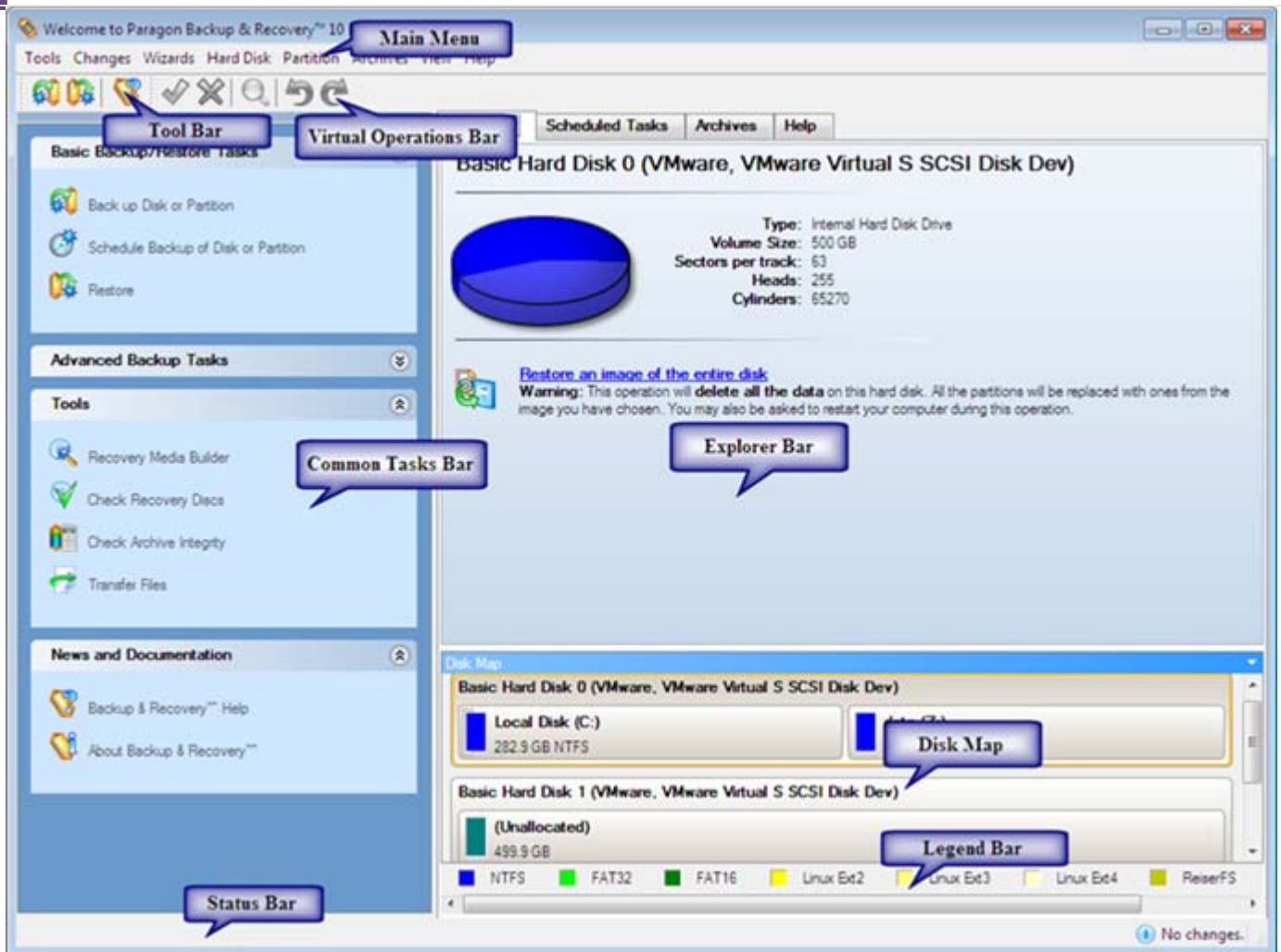
1. Main Menu

2. Tool Bar

3. Virtual Operations Bar

4. Common Tasks Bar

5. Explorer Bar

6. Disk Map

7. Legend Bar

8. Status Bar

A number of panels offer similar functionality with a synchronized layout. The program enables to conceal some of them to simplify the interface management.

All panels are separated by vertical and horizontal expandable sliders, allowing the user to customize the screen layout.

Main Menu

The Main Menu provides access to the entire functionality of the program. The available functions are as listed below:

MENU ITEM	FUNCTIONALITY
Tools	
View Logs...	View logs on the carried out operations
Send Log Files	Compress and send the log to the Paragon Support Team
Recovery Media Builder...	Restore the system even when the current operating system cannot boot anymore
Check Recovery Disks...	Verify the recovery media for integrity and ability to boot from
File Transfer Wizard...	Transfer data from any media
Settings...	Edit the general settings of the program
Exit	Exit the program
Changes	
Save to Scheduler...	Schedule pending operations
Undo `the last virtual operation`	Cancel the last virtual operation on the List of Pending Operations
Redo `the last virtual operation`	Cancel the last undo virtual operation on the List of Pending Operations
View Changes...	Display the List of Pending Operations
Apply Changes	Launch the real execution of virtual operations
Discard All Changes	Cancel all virtual operations on the List of Pending Operations
Reload Disk Info	Refresh the current information about disks
Wizards	
Back up Disk or Partition...	Create a sector-based archive of an entire hard disk or separate partitions
Schedule Backup...	Set a timetable for a disk or partition backup
Differential Backup...	Create a differential to a partition backup
Manage Backup Capsule...	Create and manage the backup capsule
Cyclic Backup...	Automate a partition backup
Restore...	Restore an entire hard disk, separate partitions, or files from the backup image

Check Archive Integrity...	Perform integrity check for the required backup image
Hard Disk	
Back Up Hard Disk...	Create a backup archive of the selected hard disk
Burn Hard Disk to CD or DVD...	Back up the selected hard disk and burn the resulted image to CD/DVD
Restore Hard Disk...	Restore the selected hard disk from a backup image
Update MBR	Update MBR (Master Boot Record) of the selected hard disk
Properties...	Get in-depth information on the properties of selected hard disk
Partition	
Create Partition...	Create a partition
Format Partition...	Format a partition
Delete Partition...	Delete a partition
Back Up Partition...	Create a backup archive of the selected partition
Burn Partition to CD or DVD...	Back up the selected partition and burn the resulted image to CD/DVD
Restore Partition...	Restore the selected partition from a backup image
Assign Drive Letter...	Assign drive letter to the selected partition
Remove Drive Letter...	Remove drive letter for the selected partition
Hide Partition...	Make the selected partition unavailable for the operating system
Unhide Partition...	Make the selected partition available for the operating system
Mark Partition as Active	Make the selected partition bootable by default
Mark Partition as Inactive	Make the selected partition non-bootable by default
Change Volume Label...	Change volume label of the selected partition
Change Serial Number...	Change serial number of the selected partition
Change Partition ID...	Change identifier of the selected partition
Test Surface...	Test surface of the selected partition/block of free space
Check File System Integrity...	Check the selected partition for possible file system errors
Properties...	Get in-depth information on the properties of selected partition

View	
Layouts	Manage the Launcher layout with several predefined profiles
Toolbar	Manage the Tool Bar representation: show / hide standard and navigation buttons, text labels and large icons
Status Bar	Display the Status Bar
Common Tasks Bar	Display the Common Tasks Bar
Disk Map Legend	Display the Disk Map legend
Disk Map Location	Select whether the Disk Map will be located on the top of the main window or at the bottom
Help	
Help	Open the Help system (you can also do it by pressing F1)
About	Open the dialog with information about the program

The Main Menu contents available at the moment may vary depending on the selected object.

Tool Bar

The Toolbar provides fast access to the most frequently used operations:

BUTTON	FUNCTIONALITY
	Back up a hard disk or partition
	Restore a disk, partition, or files
	Open the Help system

Virtual Operations Bar

The program supports previewing the resulting layout of hard disks before actually executing operations (so-called virtual mode of execution). In fact, when the virtual mode is enabled, the program does not accomplish operations immediately, but places them on the List of Pending Operations for later execution.

The Virtual Operations Bar enables to manage pending operations.

BUTTON	FUNCTIONALITY
	Cancel the last virtual operation on the List of Pending Operations

↪	Cancel the last undo virtual operation on the List of Pending Operations
🔍	Display the List of Pending Operations
✔	Launch the real execution of virtual operations
✖	Cancel all virtual operations on the List of Pending Operations

> ⚠️ **Virtual mode is an effective way of protection from any troubles, since no operations will be executed until clicking the Apply button for confirmation, thus giving a second chance to weigh all pros and cons of this or that particular operation. The program politely reminds the user that there are unsaved changes by showing the following window:**
>
> ⓘ **There are unsaved changes.**   ✖
>
> Please use the ✔ **Apply** command to commit the changes and the ✖ **Discard** command to permanently undo the changes.
>
> You can view the changes history via the 🔍 **View Changes** command and temporarily undo or redo the operation by means of the ↩ **Undo** and ↪ **Redo** commands.
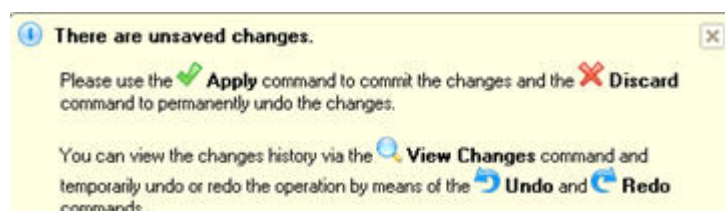
Common Tasks Bar

The Common Tasks Bar is located on the left side of the main window. It is intended for easy access to the program's wizards.

The bar contains several tabs named **Basic Backup/Restore Tasks**, **Advanced Backup Tasks**, **Copy Tasks**, **Tools** and **News and Documentation**. Each of these contains a separate button bar which can be folded by clicking it.

Basic Backup/Restore Tasks	
🗂 Back up Disk or Partition	Starting the Sector Backup Wizard to create an archive of a hard disk or separate partitions.
🕐 Schedule Backup of Disk or Partition	Starting the Sector Backup Wizard with the preset scheduling option.
🗂 Restore	Starting the Restore Wizard to restore a hard disk, separate partition, or files from the backup image.
Advanced Backup Tasks	
🗂 Differential Partition Backup	Starting the Differential Backup Wizard to create a differential to a partition backup.
Tools	
🗝 Manage Backup Capsule	Starting the Manage Backup Capsule Wizard to create, resize or delete the backup capsule.

Recovery Media Builder	Starting the Recovery Media Wizard to create a Linux/DOS bootable media which can be used to get access to your hard disk for maintenance or recovery purposes.
Check Recovery Discs	Starting the Check Recovery Disk Wizard to verify recovery media for integrity and ability to boot from.
Check Archive Integrity	Starting the Check Archive Integrity Wizard to verify backup archives for consistency.
Transfer Files	Starting the File Transfer Wizard to transfer data from any media. Besides it provides access to Paragon backups as regular folders to browse through their contents or copy required files.
News and Documentation	
Drive Backup™ Help	Launching the help system (you can also do it by pressing F1).
About Drive Backup™	Opening the page which contains information about the program. This page will be displayed in the Explorer Bar.

Disk Map

The Disk Map is displayed in the Explorer Bar when the Disk View tab is selected. It is located either at the top or at the bottom of the window, depending on the state of the Disk Map Location option (Main Menu: View > Disk Map Location).

As the name infers, the Disk Map displays the layout of physical and logical disks. Physical disks are represented with rectangle bars that contain small-sized bars. These small-sized bars represent logical disks. Their color depends on the file system of the appropriate partition.

Large-sized bars display the following information about physical disks:

- Manufacturer,
- Model.

Small-sized bars display the following information about logical disks:

- Serial number,
- Drive letter,
- Total size,
- File system.

Furthermore, it is possible to estimate the used disk space by looking at the size of the bar's shaded area. The program offers to choose from several types of the disk layout scaling. It's done especially to increase the program usability. For instance, if you've got a high capacity hard drive containing both very large (more than 100 GB) and rather small (less than 10 GB) partitions, you can select the logarithmic type to make all partitions readable, otherwise (selecting the linear type) you won't be able to see small partitions at all, but thing strips. On the other hand, if the proportional disk layout is critical for you, the linear type is exactly what you need.

Nevertheless there's a compromise solution – linear scaling with the minimal limit to small partitions. So if a partition is too small it will remain readable.

Just click on the arrow icon on the top right side of the Disk Map to select the desired scaling type.
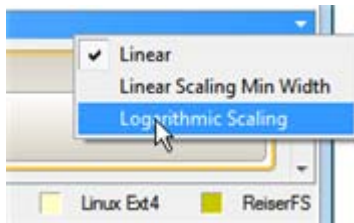
Disk Map is synchronized with the Explorer Bar. Thus by selecting a disk on the Disk Map, the Explorer Bar will automatically display detailed information on it.

> ⚠️ **The drag-and-drop functionality is not available when the logarithmic type of the disk layout is selected.**

Explorer Bar

The Explorer Bar is located in the center of the main window which emphasizes its importance. The bar displays reference information including:

- The help system;

- General information on the product including its name, version and a list of helpful links;

- Detailed information about disks selected on the Disk Map;

- List of scheduled operations;

- List of archives;

According to these categories the Explorer Bar has several tabs:

- **Disk View**.

- **Scheduled Tasks**, which gives the user the possibility of browsing and editing scheduled operations and the program scripts.

- **Archives**, which enables to manage the Archive Database.

- **Help**, which contains the program help and general information on the product.

You can access the desired information by clicking on the appropriate tab.

The Explorer Bar is a fully-functional embedded HTML browser, which offers the possibility to address, for example, the company's website to look through important technical notes or download the latest updates without having to close the program.

The program help is also HTML-oriented. You can read it and follow external links from to get additional information.

To easily navigate through browsed pages, the program provides the following functionality:

BUTTON	FUNCTIONALITY
	Return to the previously browsed page
	Open the next browsed page
	Stop loading the current page
	Refresh the contents of the current page

Legend Bar

The Legend Bar explains the color scheme used for disk and partition presentation. You can hide (or show) the bar with the appropriate Main Menu item: View > Disk Map Legend. When it is activated it can be found at the bottom of the Explorer Bar.

The program distinguishes between the following types of known file systems:

- FAT16/32,

- NTFS,

- Linux Ext2/3/4,

- Linux ReiserFS,

Status Bar

This is the bottom part of the main window. The Status Bar displays menu hints, for each item the cursor points to.

The user can hide (or show) the bar with the appropriate Main Menu item: View > Status Bar.

Settings Overview

The Settings dialog is available from the Main Menu: Tools > Settings. All the settings are grouped into several sections, which functions are described in the following paragraphs. The list of sections is placed on the left side of the dialog. By selecting a section from the list, you can open a set of options.

> **To get a detailed description to any setting, control, or field of the program just click the hint button and then the object you need.**

General Options
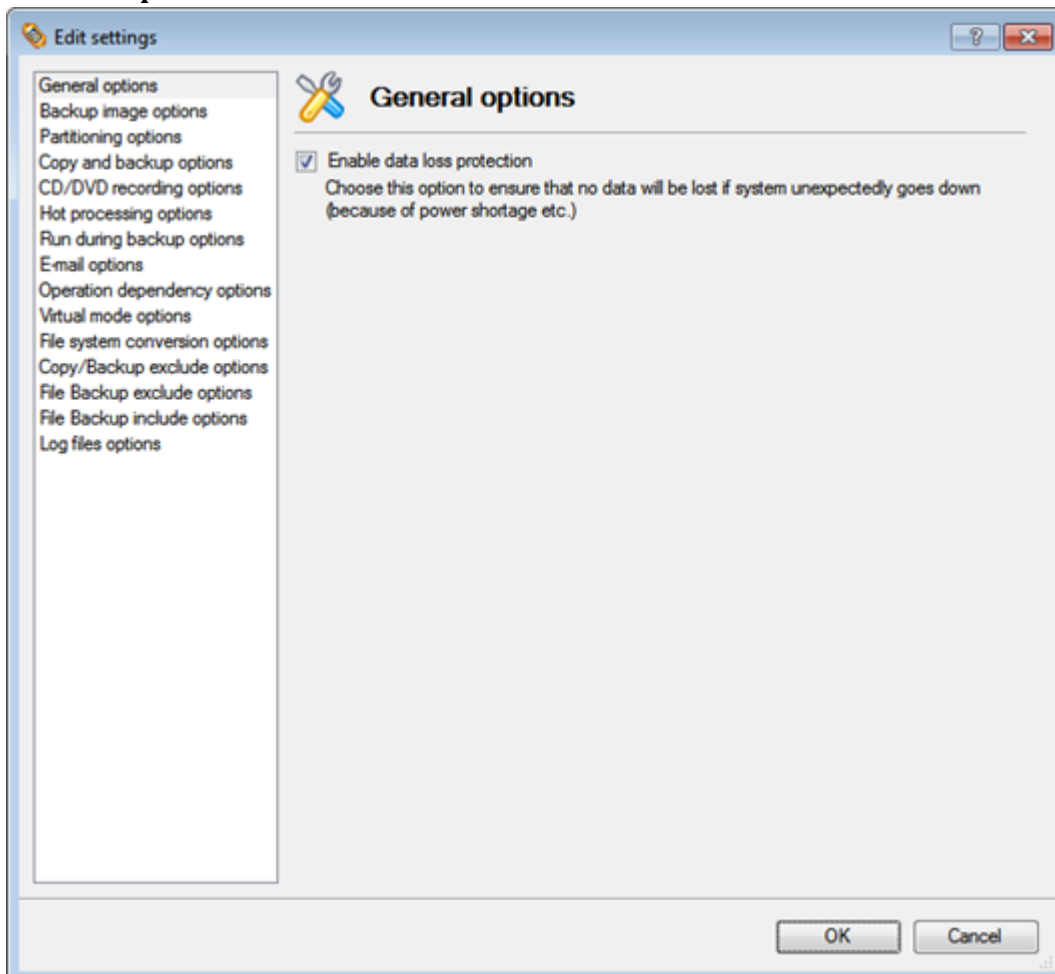
This section contains a set of general options that will be taken into account during any operation carried out with the program:

- **Enable data loss protection**. Mark the checkbox to make the program work in the fail-safe mode (also referred to as the data-loss protection mode), which ensures reliability for operations by maintaining a special journal. In case of a hardware malfunction, power outage or an OS failure happened in the middle of a data-sensitive operation (resize, move, merge, redistribute, change cluster size, etc.), the program will ask to insert the bootable recovery media and automatically complete the interrupted operation, thus reviving the corrupted partition.

> ⚠ **It is strongly recommended to enable this option.**

Backup Image Options
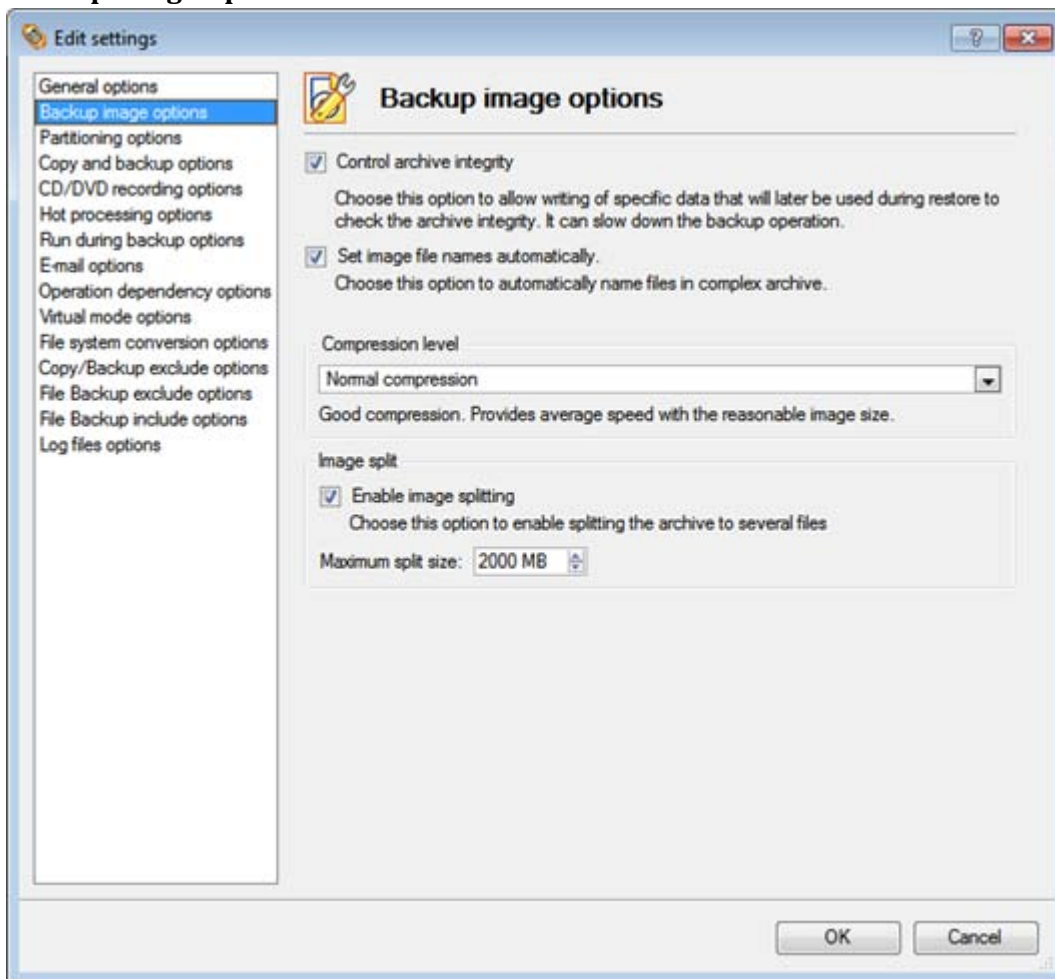
This section contains a set of options that will be taken into account during backup/restore operations:

- **Control archive integrity**. Mark the checkbox to guarantee that all backup images created with the program are 100 percent flawless. If you decided not to control the archive integrity, the backup operation would take about 3-5% less time.

- **Set image file names automatically**. Mark the checkbox to make the program automatically set a file name for every volume of a complex backup image. Otherwise you will need to do it manually during the backup operation.

- **Compression level**. From the pull-down list you can select the desired compression level for backup images that will be used by default.

- **Enable image splitting**. Mark the checkbox to automatically split every backup image to volumes of a particular size.

> ⚠ **Splitting images enables to tackle problems caused by a maximum file size limitation of some file systems.**

- **Maximum split size**. With the spinner control you can specify a maximum size for backup volumes.

Partitioning Options
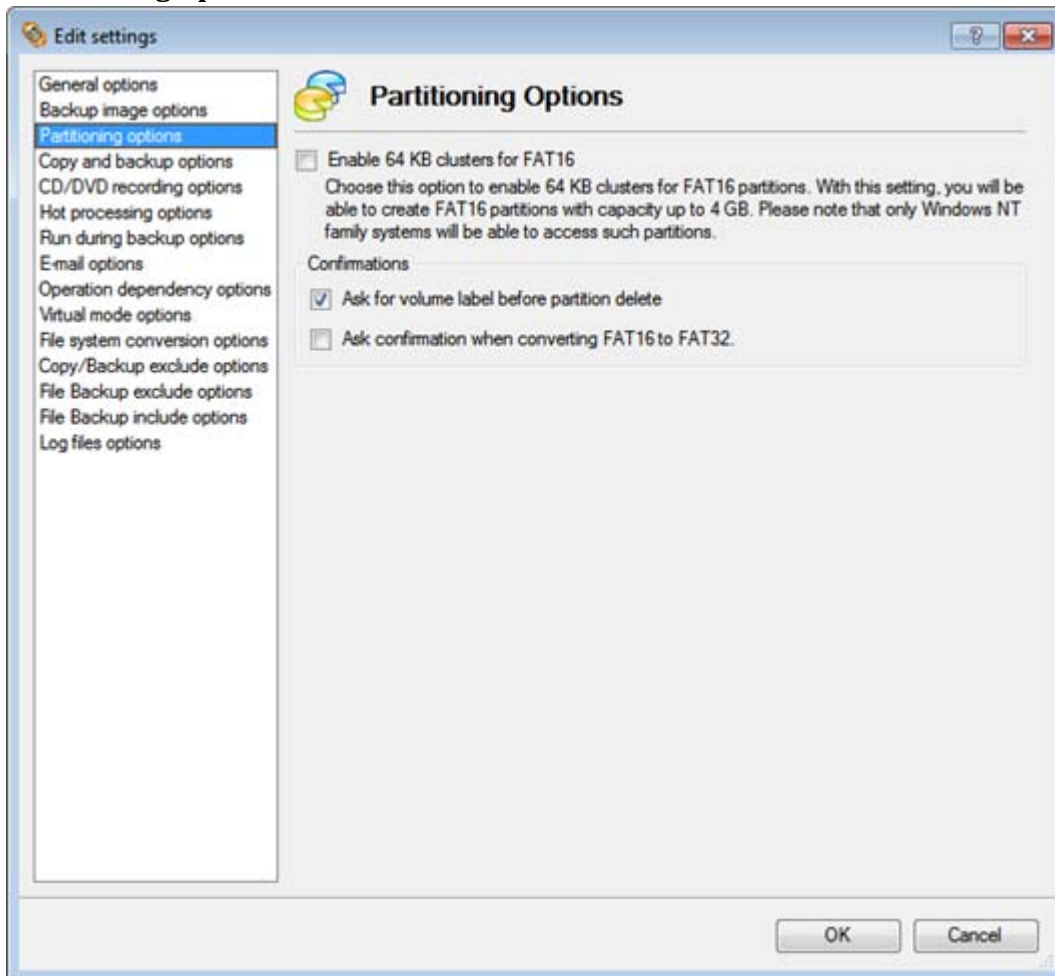
This section contains a set of options that will be taken into account during partitioning operations:

- **Enable 64 KB cluster size for FAT16**. Mark the checkbox to enable 64KB clusters for FAT16 partitions. Thus you will be able to create FAT16 partitions up to 4GB in size

> ⚠ **Due to the maximum cluster size of 32KB for Windows 95/98/ME or MS DOS, FAT16 partitions larger than 2GB are not reliably accessible under these operating systems.**

- **Request confirmation before partition deletion**. Mark the checkbox to activate an additional security mechanism. Thus when going to delete a partition you will be automatically requested to enter its label.

- **Request confirmation when converting FAT16 to FAT32**. Mark the checkbox to automatically request confirmation before converting FAT16 to FAT32. There are a number of situations when this kind of conversion is the only way out to accomplish the operation. For instance, you are going to migrate your system to a larger hard disk with the proportional resize of existing partitions, what is very convenient. As a result you can get original FAT16 partitions go beyond the 4GB limit. Thus without conversion to FAT32, this operation will in no way be possible to accomplish. The same goes for any copy hard disk/partition or restore hard disk/partition operation involving an extra upsizing.

General Copy and Backup Options
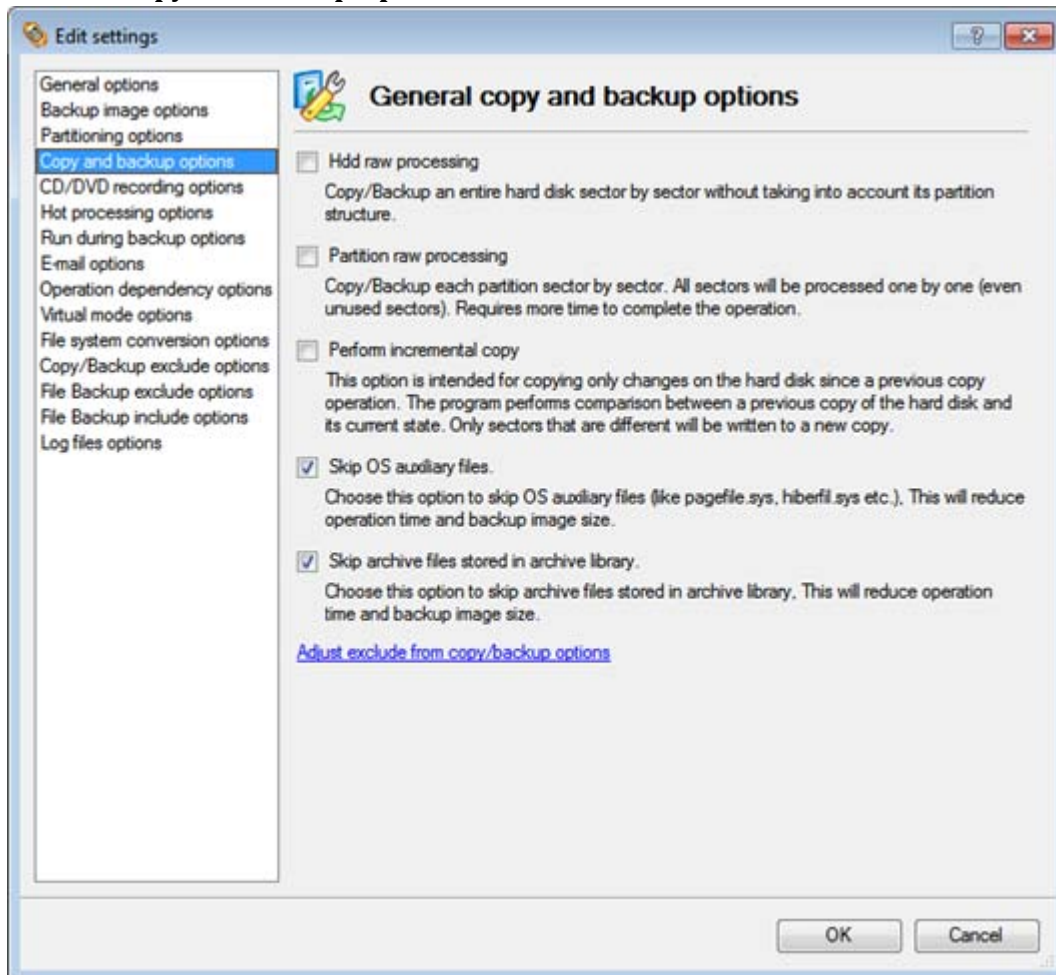
This section contains a set of options that will be taken into account during copy and backup operations:

- **HDD raw processing**. Mark the checkbox to copy/back up a hard disk in the sector-by-sector mode, thus ignoring its information structure (e.g. unallocated space or unused sectors of existing partitions will be processed as well). This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.

- **Partition raw processing**. Mark the checkbox to copy a partition in the sector-by-sector mode to successfully process unknown file systems. However it is not recommended to enable this option when working with supported file systems as it takes more time to accomplish the operation.

- **Perform incremental copy**. Mark the checkbox to only copy changes on the hard disk from the moment of the last copy operation. The program will perform comparison between a previous copy of the hard disk and

its current state. Only sectors that are different will be updated, thus considerably decreasing the amount of data to write.

- **Skip OS auxiliary files**. Mark the checkbox to skip OS auxiliary files (like pagefile.sys, hiberfil.sys, etc.), thus reducing the operation time and the resulted size of the backup image.

- **Skip archive files stored in archive library**. Mark the checkbox to skip backup images registered in the archive database, thus reducing the operation time and the resulted size of the backup image.

> **By clicking the link at the bottom of the window you can jump to the Copy/Backup Exclude Options.**

CD/DVD Recording Options
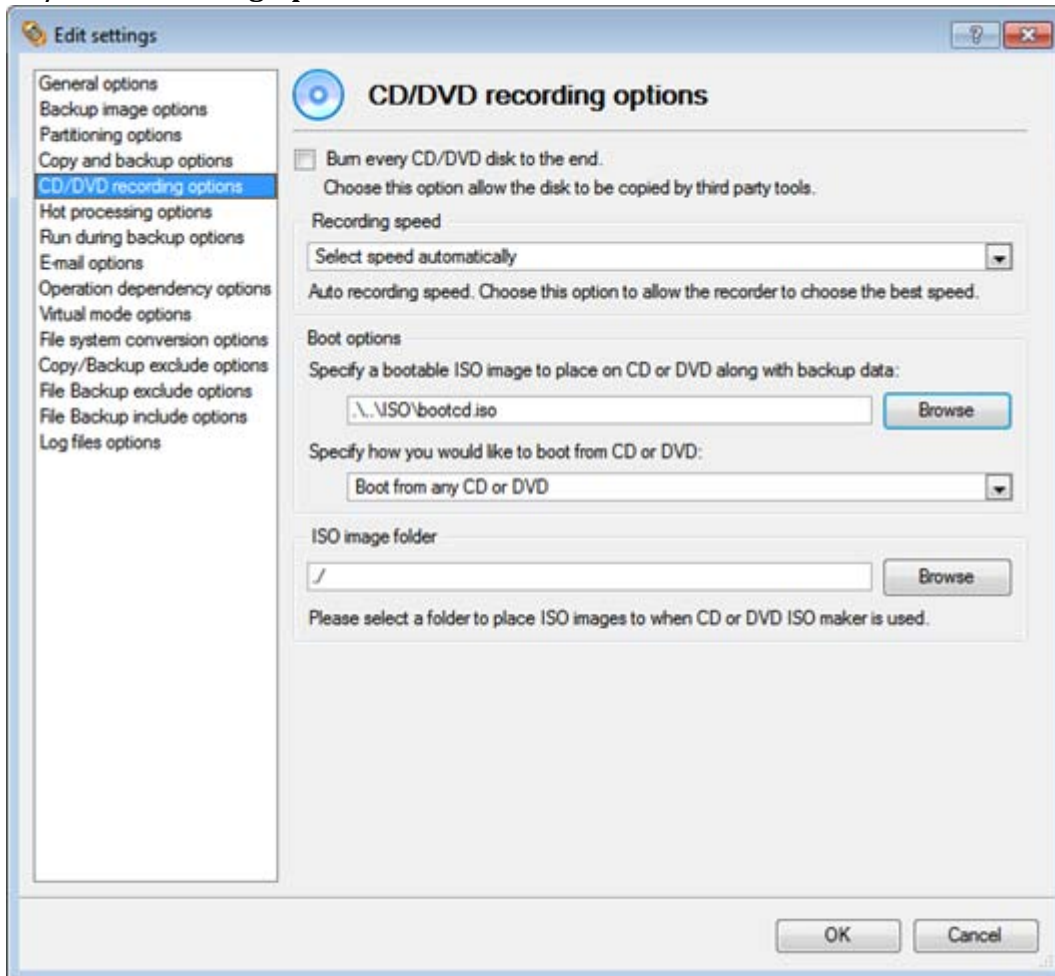
This section contains a set of options that will be taken into account during CD/DVD burn operations:

- **Burn every CD/DVD to the end**. By default, the program does not create ISO 9660 compliant burning sessions, as it processes data on-the-fly and can only estimate the resulted session size. That's why no third party tool will get access to the recorded data. To tackle the issue, mark the checkbox to make the program create a standard Disk-at-Once session. It may slow down the burning process, as every CD/DVD will be recorded up to the end, no matter how much actual information to contain.

- **Recording speed**. The user may define how fast a CD/DVD will be recorded (minimum, normal and maximum). Besides there is an automatic mode when the program will set the most appropriate speed for every CD/DVD.

- **Bootable ISO image**. That's the image to be placed together with the backup data. By default, the program offers its own bootable ISO image, which contains a Linux/DOS recovery environment. However, the user is free to use any bootable ISO image.

- **CD/DVD boot capability**. The program enables to choose whether any recorded CD/DVD will be bootable, or only the first one for a session, or without that function at all.

- **Folder where the ISO image is to be placed**. When the user decides not to physically burn a CD/DVD, but create an ISO image file, this very folder will be used to contain these images.

Hot Processing Options
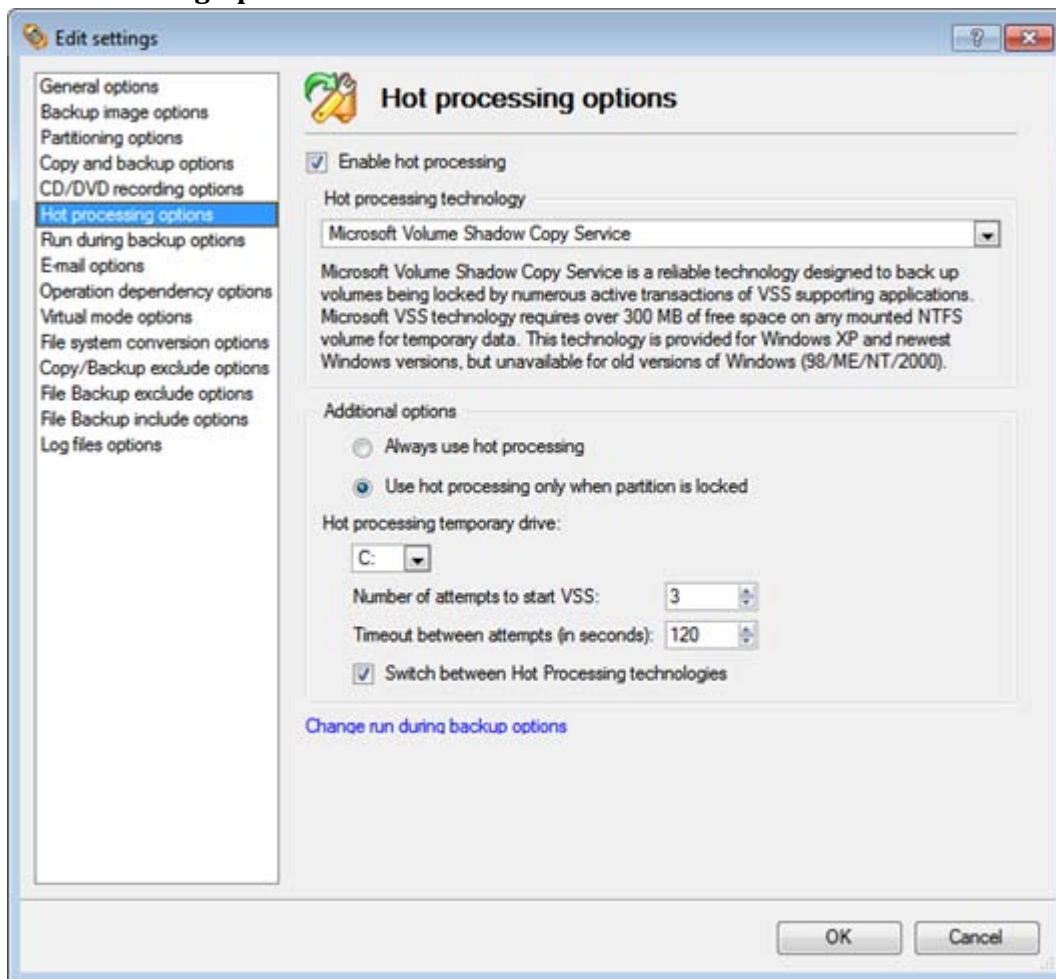
In this section you may configure the hot processing mode:

- **Enable hot processing**. Mark the checkbox to enable the so called hot data processing mode that is specially designed to process data without restarting your operating system.

- **Hot processing technology**. From the pull-down list you can select the required hot processing technology.

- **Always use hot processing**. Select the option to process partitions without making them locked. Thus you will be able to keep working with them as usual.

- **Use hot processing only when partition is locked**. Select the option to use the hot processing only when partitions are locked and cannot be processed without restarting the computer. Please keep in mind, that once you start any operation on a partition in this mode, it will automatically be locked by the program, thus you won't be able to keep working with it as usual.

- **Hot processing temporary drive**. Here you can select a disk drive that will be used to store the temporary hot backup data (by default – C:).

- **Attempts to start VSS**. Here you can set how many attempts to start Microsoft VSS the program is to do before automatically rebooting the system and accomplishing the operation in a special boot-up mode.

- **Timeout between attempts (in seconds)**. Here you can set a time period between different attempts to start Microsoft VSS.

- **Switch between hot processing technologies**. Mark the checkbox to automatically switch between Paragon Hot Processing and Microsoft VSS if one of them is unavailable at the moment.

Virtual Mode Options
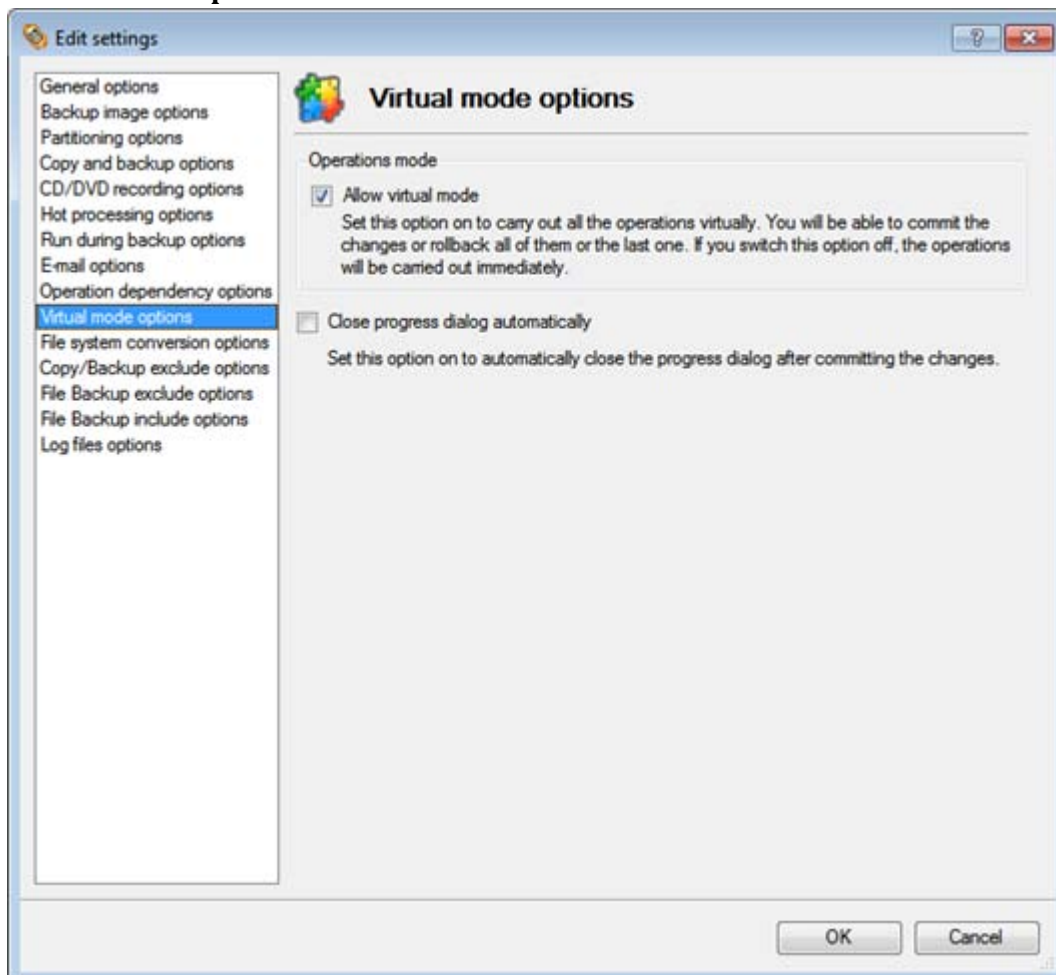

In this section you may configure the virtual mode:

- **Allow virtual mode**. Mark the checkbox to enable the virtual mode. It is an effective way of protection from any troubles, since no operation will be executed until confirmation, thus giving you a second chance to weigh all pros and cons of this or that particular operation.

![!] **We strongly recommend you to enable this mode.**

- **Close progress dialog automatically**. Mark the checkbox to automatically close the progress dialog after accomplishing operations.

File System Conversion Options
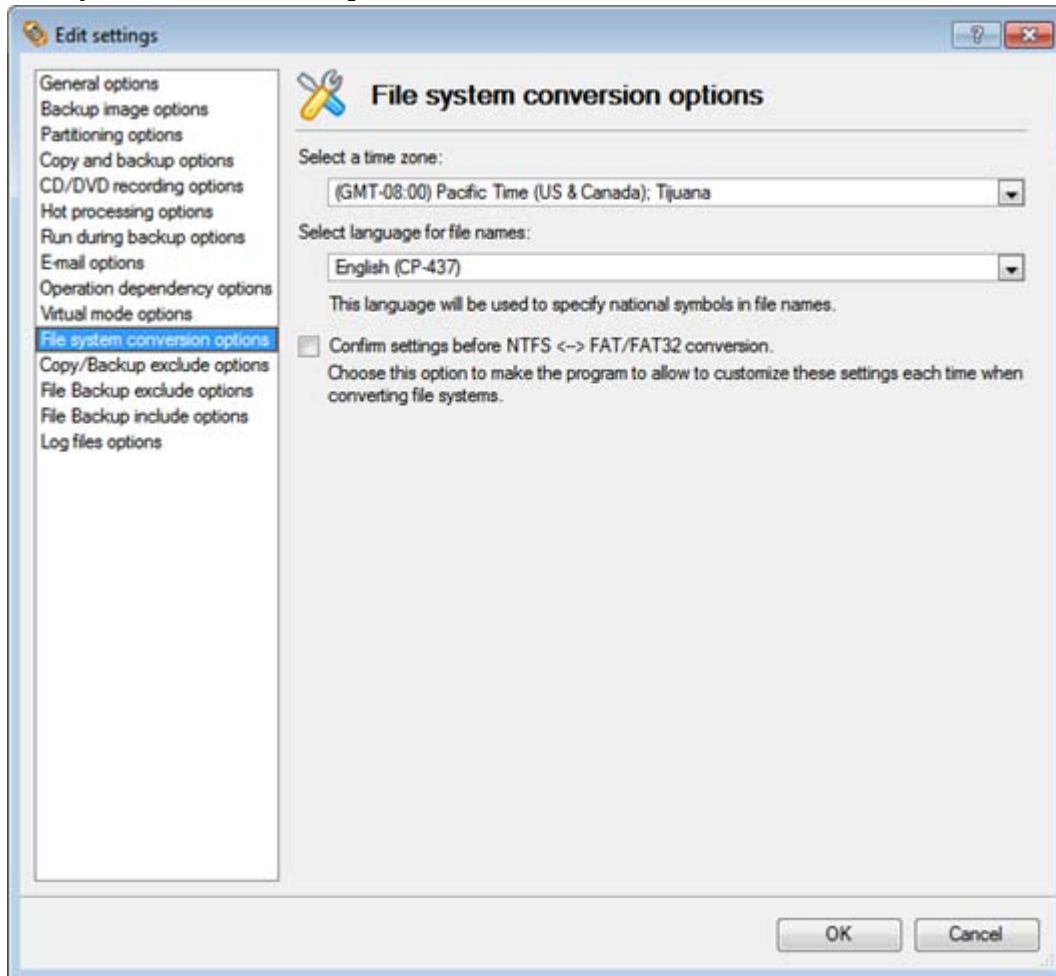
This section contains a set of options that will be taken into account when converting FAT and NTFS file systems. By default, the program takes locale (regional) settings from the system. Problems might occur however because of different standards for file names and file time stamps (Created, Modified and Last Access Time) of NTFS and FATxx file systems.

To tackle problems of that kind you can manually set:

- **Time zone** to use during the convert operation. NTFS keeps file timestamps in GMT (Greenwich Mean Time) while FAT uses a fixed local date and time. The program takes proper account of these differences and enables to adjust timestamp values.

![!] **An incorrectly chosen time zone might lead to inability to launch certain software.**

- **Language for file names** to use during the convert operation. NTFS stores file names in Unicode while FAT/FAT32 uses ANSI to save short file names (also called the DOS aliases). The codepage information is required for the correct conversion of non-English file names from Unicode to ANSI and vice versa.

> **⚠ An incorrectly chosen codepage will certainly result in corruption of non-English file names.**

- **Request confirmation of settings before NTFS < - > FAT/FAT32 conversion**. Mark the checkbox to automatically display the local settings dialog to check and modify (if necessary) the default parameters before launching the convert file system operation.

Copy/Backup Exclude Options
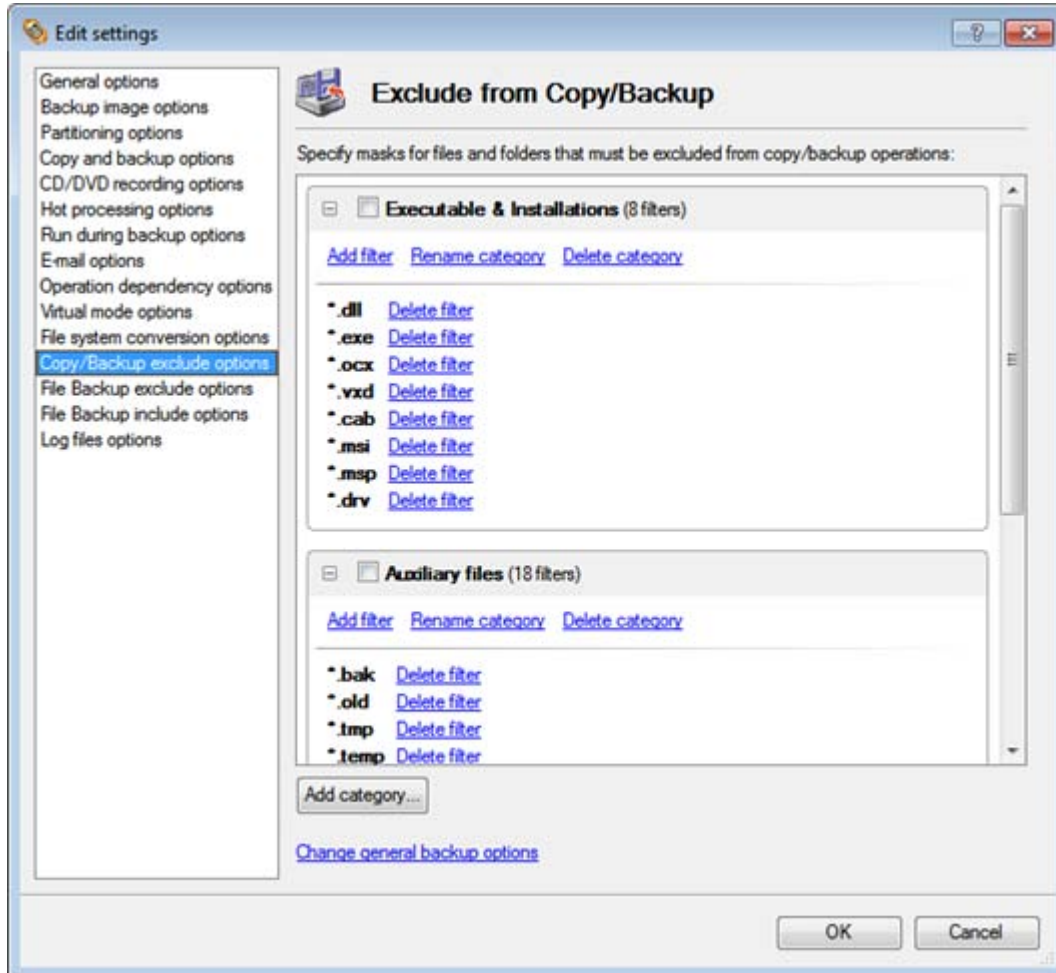
In this section the program enables to specify what data should be automatically ignored during copy and sector-based backup operations. You can filter certain files or folders either by the manual selection or by creating masks, what is more preferable. Thus you will be able to effectively manage contents of your backup images or partition/hard disk copies.

By default, there are no available filters. To create a filter, please click the Add Category… button.
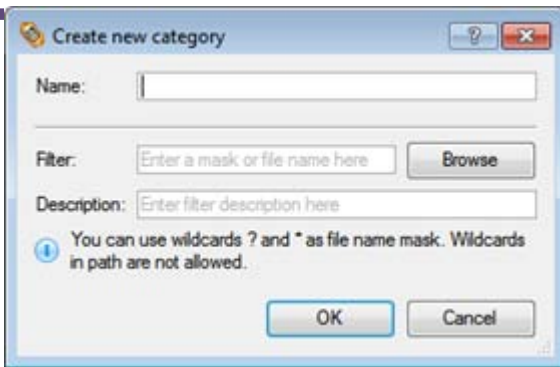
In the opened dialog the program allows the user to define the following parameters:

- **Name**. Give to the filter any name you like, but try to use an informative one;

- **Filter**. Press the Browse button to select files or folders you would like to be excluded or specify a filter mask by using * or ? wildcards;

- **Description**. Add a short description to the filter not to miss it up later.

Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.

> **By clicking the link at the bottom of the window you can jump to the General Copy and Backup Options.**

Log Files Options
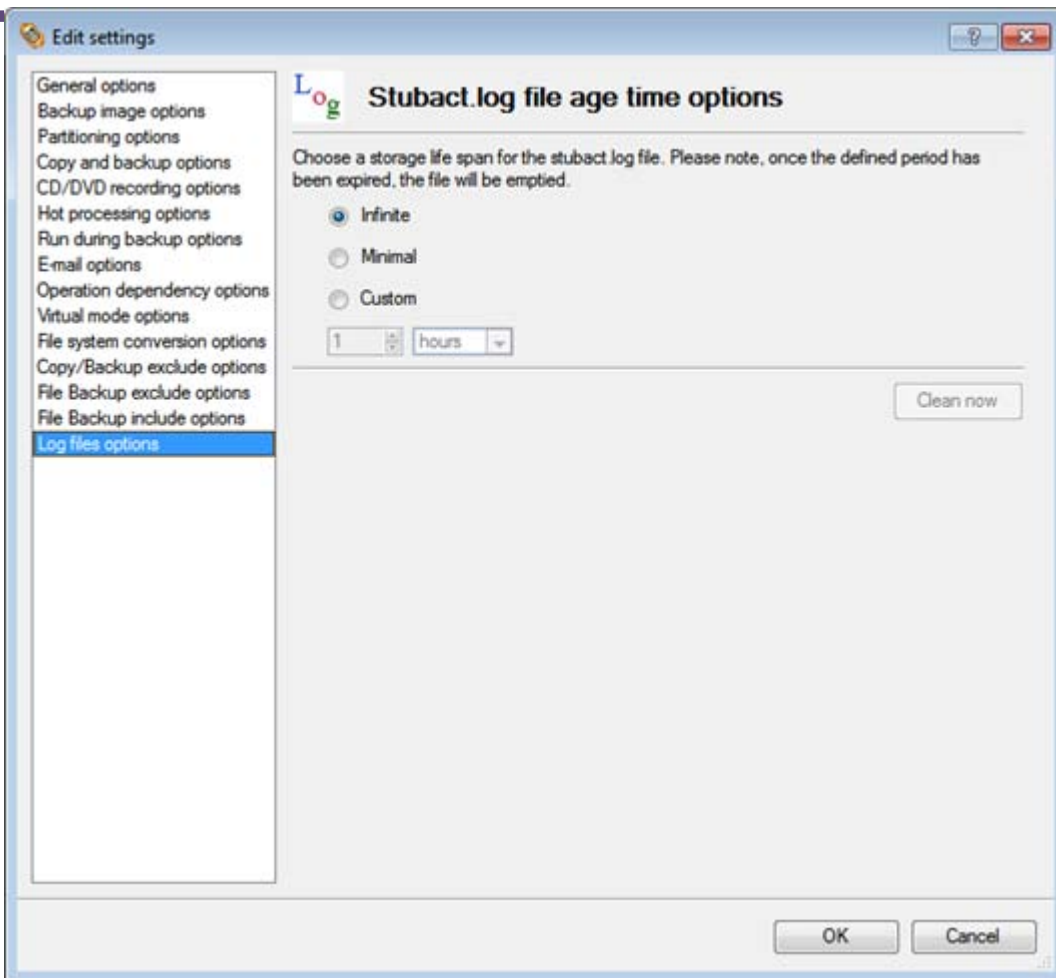
In this section you can specify a storage life span for the stubact.log file:

- **Infinite** not to empty the file ever;

- **Minimal** to have the file emptied all the time;

- **Custom** to set a certain storage life span for the file. Please note, once the defined period has been expired, the file will be emptied.

> **We strongly recommend you not to choose the Minimal option, as in case of having problems with the program, our Support Team won't be able to study operation logs, thus help you out.**

Getting Information on Disks and Backup Images

The program provides some helpful tools to get information on the properties of disks and peculiarities of existing backup images.

Viewing Disk Properties

The main tool to view in-depth information on the properties of hard disks is the Disk Map. It represents the actual state of the computer's hard disks.

Generally the hard disks are represented on the map by rectangular bars, which also contain small-sized bars. The small-sized bars represent logical disks (partitions). When you select a large-sized bar, the Explorer Bar displays information about the disk in a bright, graphical form.

Basic Hard Disk 1 (FUJITSU MPF3102AT)
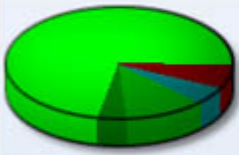
Type: Basic Hard Disk Drive
Total size: 9.5 GB
Sectors per track: 63
Heads: 255
Cylinders: 1245

Create an image of the entire disk
Back up all the data this hard disk contains. All the partitions on this disk will be added to the archive.

The model and serial number of the disk serve as the title of the browsed page. The disk layout is shown in form of a circular graph, where the color of a sector corresponds to a file system of an appropriate partition. On the right you may see a table, which contains the following information:

- Type of hard disk (basic or dynamic),

- Total size (in GB),

- Information on geometry of the disk (amount of sectors per track, heads and cylinders).

Below there is a list of available wizards. If you click a corresponding record the appropriate wizard will be started. All default values for the operation parameters will correspond to the disk's settings. The list of wizards contains a detailed description of tasks that can be performed by the wizard. This nullifies the possibility of selecting the wrong wizard.

Logical Disk (G:)

Volume letter: (G:)
Volume label: FAT32-LINUX
Type: Primary
File system: FAT32
Sectors per boot: 36
Sectors per cluster: 8

Serial number: 7493EA8F
Partition ID: 0x0B FAT32
Total size: 6.8 GB
Used space: 5.7 GB
Free space: 1 GB
Activity: Inactive
Hidden state: Not hidden

Create an image of the logical disk
Back up all the data this logical disk contains.

When you select a small-sized bar (i.e. corresponding to a logical disk) the Explorer Bar will display information on it as well. The page title will contain a drive letter, which is assigned to the disk. The disk layout graph will be colored in accordance with the volume ratio of the used space to the free space (the light colored sector). The table on the right will contain the following information:

- Volume label (if available),

- Type of the logical disk,

- File system (represented by the color of the graph and the selected bar),

- Total size, used space and free space (in GB or MB).

Below there is a list of wizards, which may be called for this disk. All default values of parameters will correspond to the disk settings.

Viewing Image Properties

General information on backup archives can be obtained either with the help of the Restore Wizard or the Archive Database:

Using the Restore Wizard

There are several ways to launch the Restore Wizard:

- In the Main menu: select **Wizards > Restore…**

- In Common Tasks bar: click the **Restore** item of the Wizards menu

- Select a hard disk/partition and then click the **Restore an image of the entire disk/Restore the logical disk from an image** link on the Explorer Bar page.

At first, the wizard displays the Welcome page – simply click the Next button at the foot of the dialog window.

The next page refers to Browse for Archive. By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).
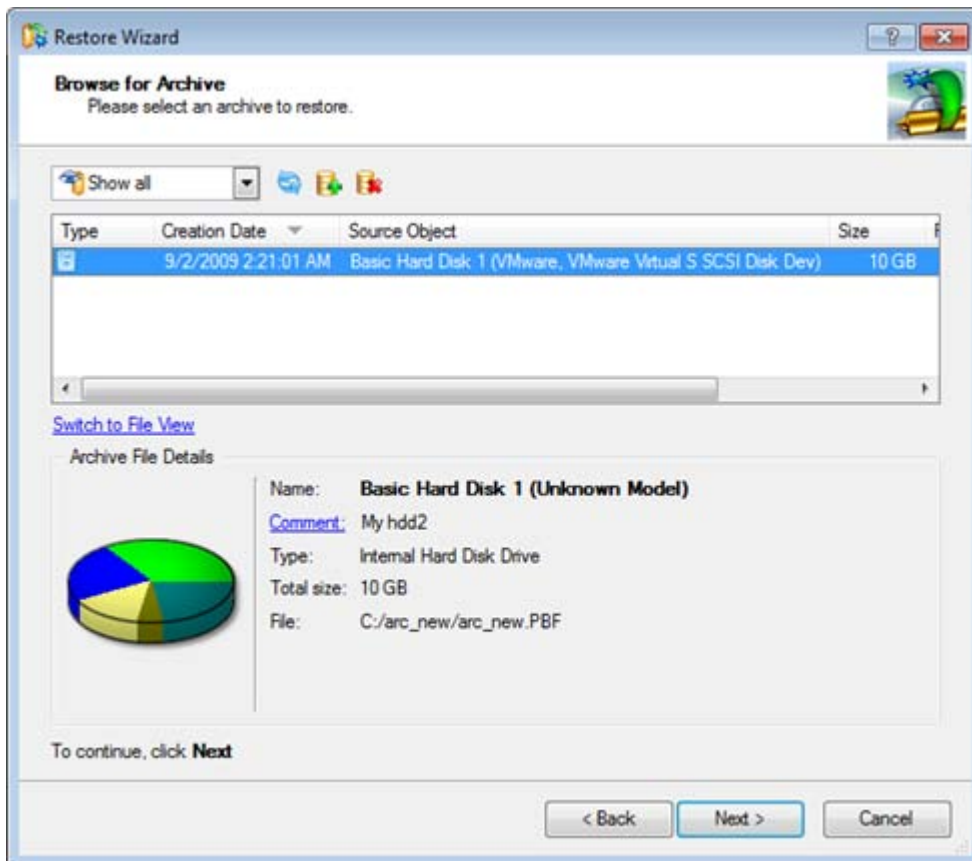
To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description, including:

- Information on a type of the archive contents (whether it is sector-based or file-based),

- Whether the archive is compressed or not,

- Whether the archive is password protected or not,

- The date, when the archive was created.

In addition, there are some special graphical flags to indicate crucial properties:

FLAG	FUNCTIONALITY
	Disk archive
	Partition archive
	File archive
	MBR archive
	System archive
	Encrypted archive
	Compressed archive
	Complex archive
	Filtered archive
	Differential archive
	Incremental archive
	File increment to a partition archive

To easily manage images in the Archive Database, the program provides the following functionality:

BUTTON	FUNCTIONALITY
	Refresh the contents of the database
	Show only existing archives
	Add the selected archive to the database
	Delete the selected archive from the database

Besides you may filter backup archives to decide whether to show only file, partition or hard disk archives. To do that, please select the required filter in the left top corner of the page.

Browse for Archive
Please select an archive to restore.
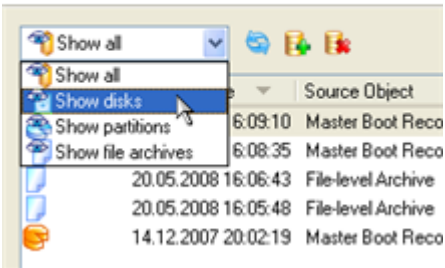
By clicking the **Switch to File View** link, you can find the required image in the browser-like window.
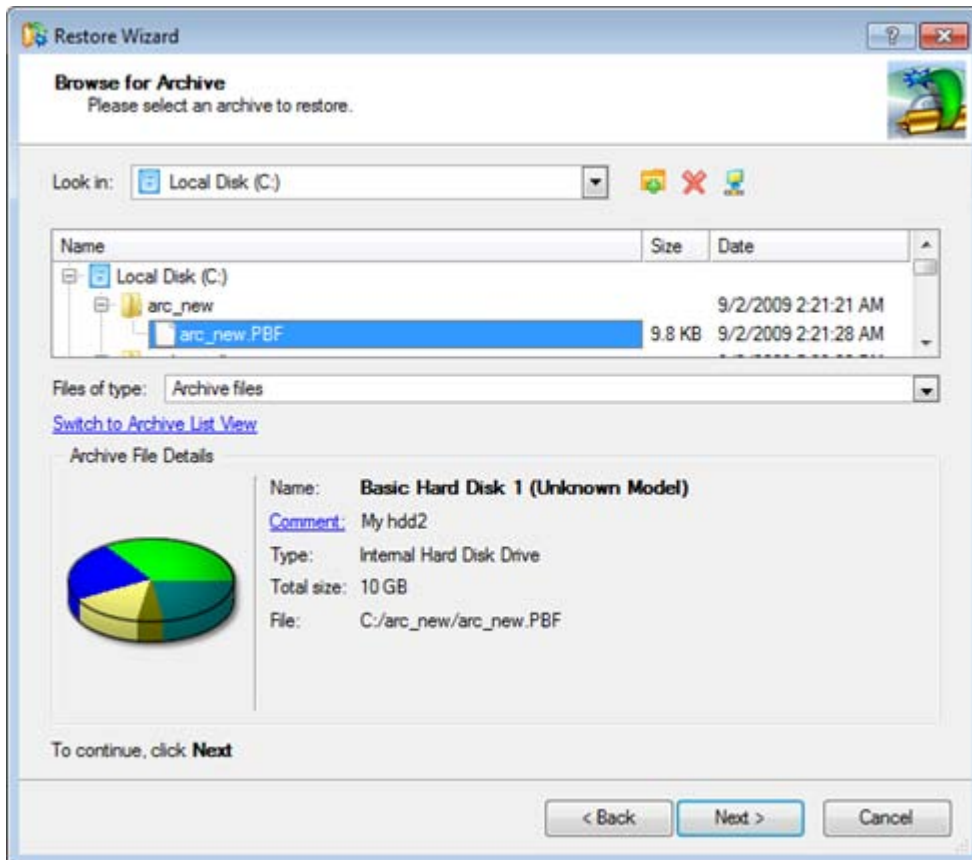
The section below (i.e. Archive File Details) displays a short description of the selected image, including:

- Information on a type of the archive contents (whether it is sector-based or file-based),

- Whether the archive is compressed or not,

- Whether the archive is password protected or not,

- The date, when the archive was created.

Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

The next page (i.e. What to restore) displays detailed information about the contents of the archive.
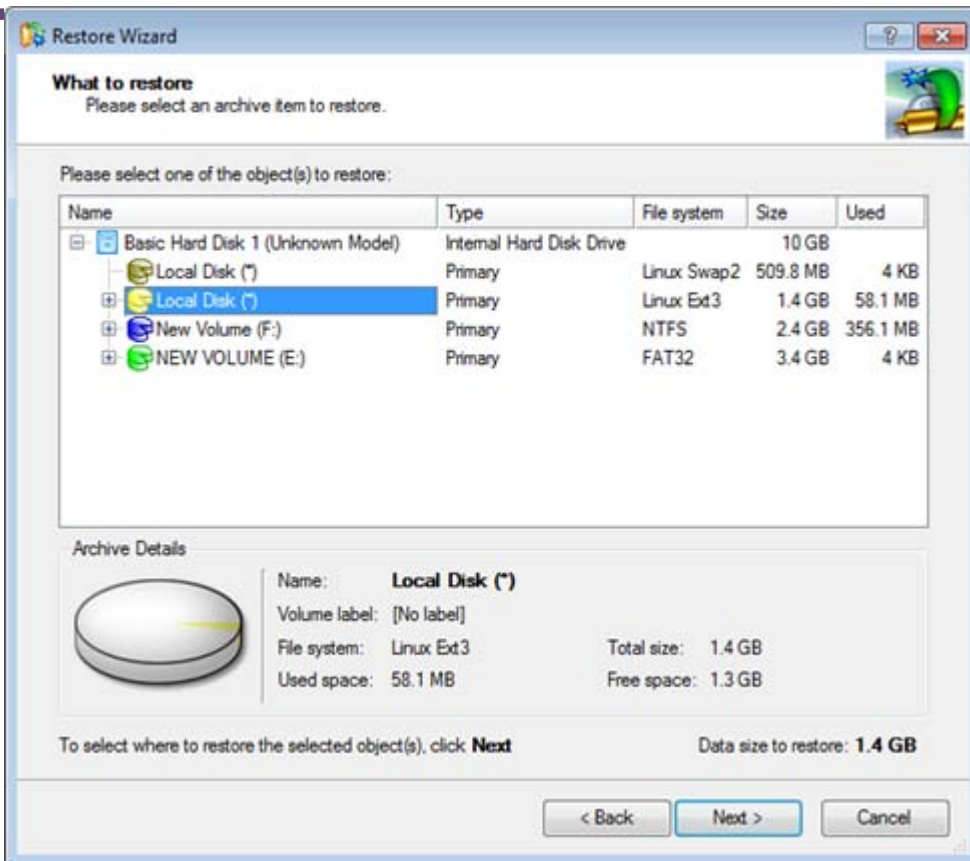
If you want to restore the image contents, click the Next button. In order to cancel, click the Cancel button.

Using the Archive Database

To open the Archive Database, click the appropriate tab in the Explorer Bar. The database window can be conditionally subdivided into several sections that differ in their purpose and functionality:
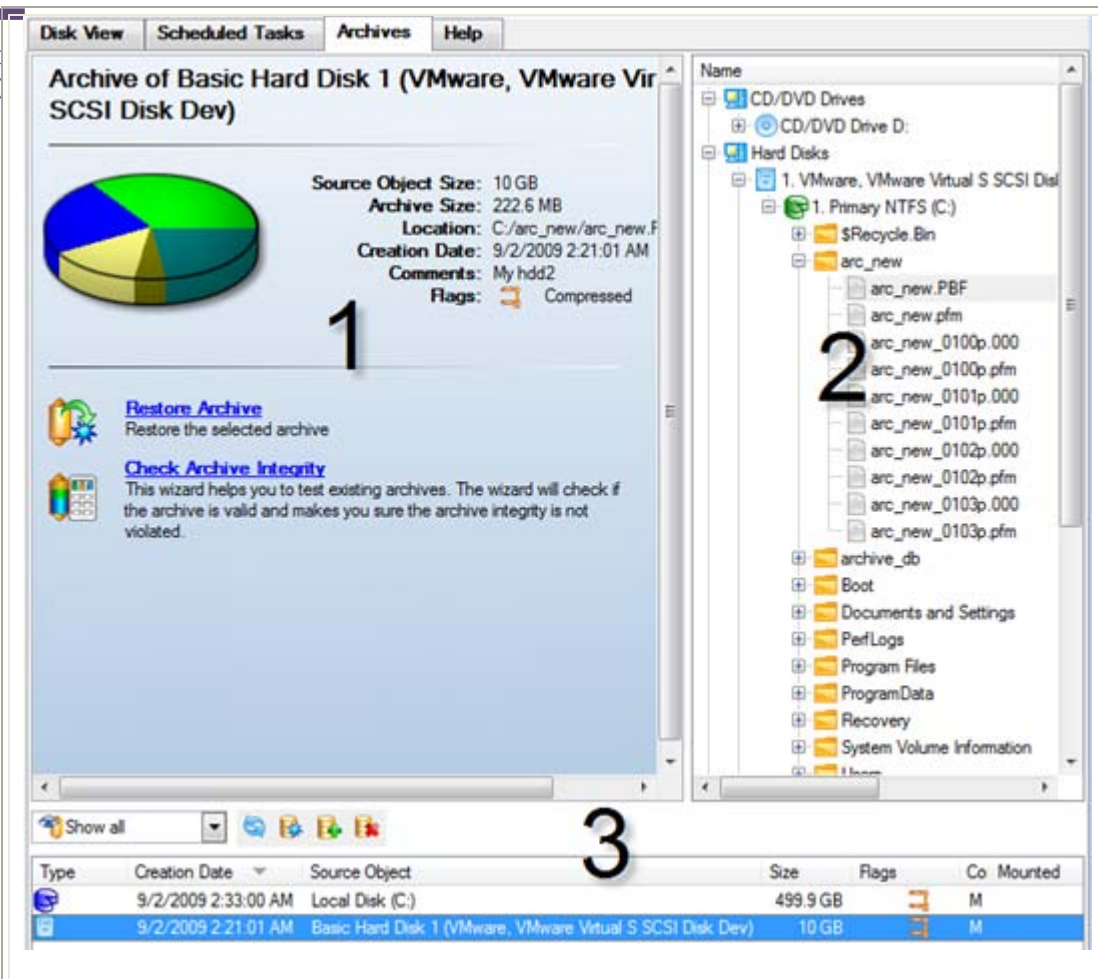
1. **Explorer Bar** that displays properties of the selected image.

2. **Files view.**

3. **Archive List** that displays a list of images contained in the Archive Database (if any). Besides the program provides all the necessary functionality to manage backup images in the database (add, delete, mount, refresh, etc.)

> ⚠ **All panels offer a synchronized layout and are separated by vertical and horizontal expandable sliders, allowing the user to customize the screen layout.**

Data Backup and Rescue
In this chapter you will find all the information necessary to establish a reliable data protection system.

Creating Backup Images
We have already mentioned that the most prevalent way to protect valuable data is to create backup copies (backup images in terms of the program) of it. Depending on a type of information you need to protect and the way this information should be processed, the program offers a number of handy backup wizards and dialogs.

Wizard Work Algorithm
To make your job with the program as easy and convenient as possible, all backup wizards share similar work algorithm. So let us just take as an example the Sector Backup Wizard to describe it in detail.

By going through steps of the wizard, you configure all the necessary settings to launch the backup operation. To minimize the possibility of making any mistake, the wizard provides auxiliary information on every single option. Moreover you can get an in-depth description to any setting, control, or field of the wizard just by clicking the hint button and then the object you need.

Startup

There are several ways to start the Sector Backup Wizard:

- In the Main Menu: select **Wizards > Back up a Disk or Partition…**

- On the Common Tasks Bar: click the **Back up a Disk or Partition** item of the Wizards menu.

- In the Toolbar: click the **Back up a Disk or Partition** button.

Setup

The wizard offers the following steps to accomplish the backup operation:

- **The object to back up**. You can back up either an entire disk or separate partitions of the disk (primary, extended or logical). In case of backing up an entire disk, you've got the possibility to include into the image such disk elements as the Master Boot Record (MBR) and the first track of the hard disk. This can be very helpful for serious disk recovery procedures.
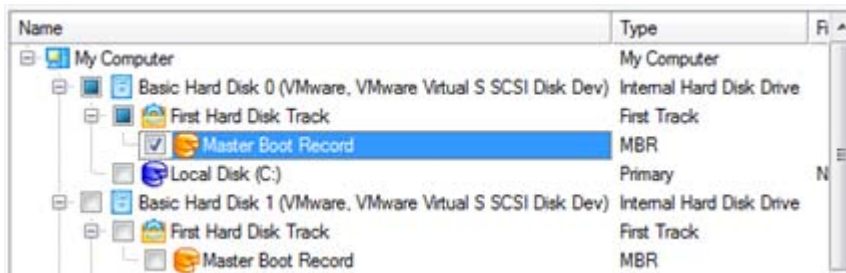
- **Backup destination**. The wizard allows saving backup archives to local or network drives, to physical partitions (without drive letters assigned), to FTP Severs, the Backup Capsule or burning them to CD/DVDs. You need to select a destination, taking the estimated archive size and available space on the backup destination into account.
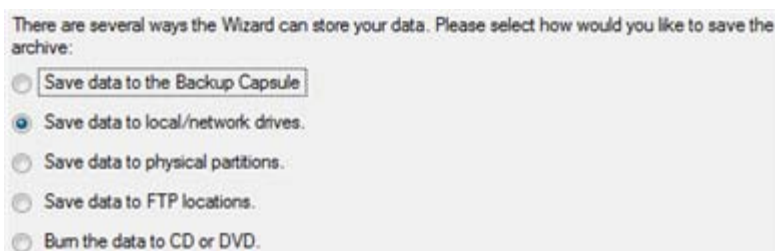
- **Name and location of the resulted image**. Provide a file name for the new image and its exact location. The program automatically offers an easy to understand name containing the date and the time of the archive creation, which can anyway be modified.

Select a folder where archive should be placed and specify archive name. Archive name will be used as a sub-folder where backup data files will be stored.

Archive location: G:/arc_test/

Name	Size	Date
⊟ 🖳 My Computer		
⊞ 📄 Local Disk (C:)		
⊞ 📄 Local Disk (E:)		
⊞ 📄 Archives (G:)		
⊞ 📄 images (\\200.0.1.164\e) (Z:)		
⊞ 🖳 Network		

Archive details

Archive name: arc_test

Estimated archive size: **2 MB**

Space available on backup destination: **38 GB**
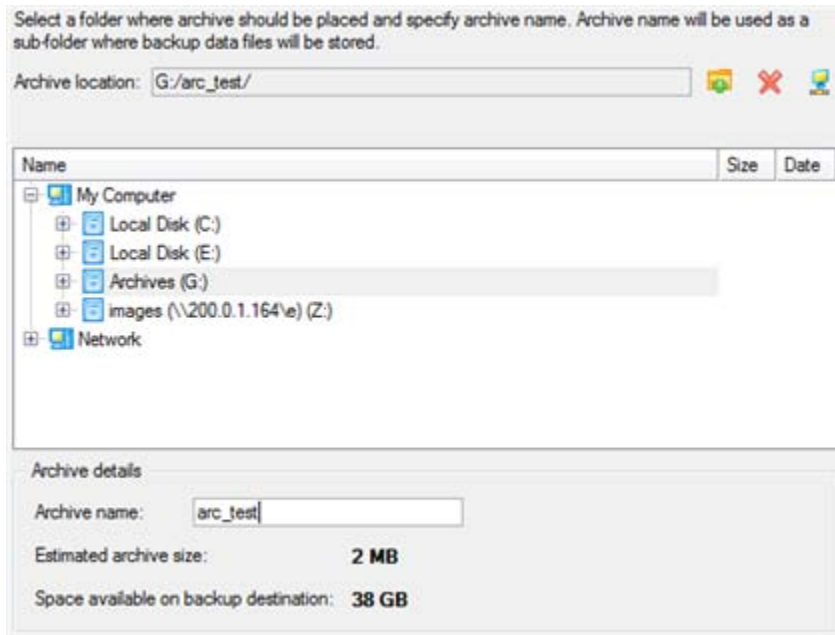
> ⚠ **The program automatically calculates size of the future archive and informs the user about space available on the selected destination.**

- **Archive Comment**. You can add some additional description to the archive that will later help to distinguish it from the others.

Please enter a short comment to describe the archive

🖊 No comment
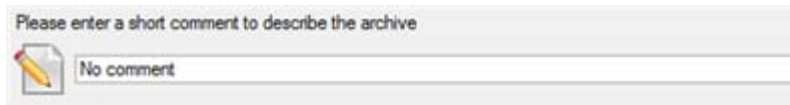
In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to mark the appropriate option on the second page of the wizard. When it is marked, the next page enables to define:

- Whether the archive integrity will be controlled.

> ⚠ **Checking archive integrity enables to guarantee that all backup images created with the program are 100 percent flawless. Nevertheless if you decided not to control the archive integrity, the backup operation would take about 3-5% less time.**

- Whether image file names will be set automatically in complex archives.

- Compression level for the backup image (including the No compression variant).

- Whether the archive will be split (if yes, you can set the maximum size for the archive files).

> ⚠ **Splitting images enables to tackle issues caused by a file size limitation of some file systems.**

- Whether the archive will be protected by password.

- Whether the selected disk (or the selected partition) will be copied in the sector-to-sector mode (including unused sectors as well).

- Whether the OS auxiliary files (pagefile.sys, hyberfil.sys) will be included in the backup image.

- Whether backup images stored in the Archive Database will be processed during the backup operation.

> ⚠ **Skipping backups of the Archive Database may considerably decrease the resulted image file and time to carry out the operation.**

- Recording speed when the user wants to burn the backup image onto CD/DVDs.

- ISO image folder where the archive that is to be recorded on a disc, is placed.

- Whether the operation will be performed without rebooting the system. The program needs to reboot the system in order to have exclusive access to processing data. In a Windows environment this is difficult to achieve because even when all the other applications are closed, the system service programs are still running. However, there is a way to avoid rebooting. The mode of processing the backup operation without rebooting is named Hot Processing. You can also define specific parameters for the Hot Processing mode.

- The data to be automatically excluded from the resulted backup.

> ⚠ **By default the program will take into account exclude filters set in the <u>Settings</u> dialog.**

Result

After the backup operation is completed you receive an image of the selected disk (or the selected partition). This image is placed into the specified destination, its features defined by the wizard.

Dialog Work Algorithm

All backup dialogs share similar work algorithm as well. Unlike wizards, settings of a backup dialog concentrate on a single page. That's why it cannot boast high level of the self-descriptiveness. Anyway with the context sensitive hint system you can get an in-depth description to any setting, control, or field of the dialog just by clicking the hint button and then the object you need.

> ⚠ **We recommend the program's dialogs for experienced users mostly.**

So let us just take as an example the Partition Backup Dialog to describe its work algorithm.

Startup

In order to start the operation you should take the following steps:

1. Select a partition on the Disk Map;

2. Call the Partition Backup Dialog to set up the operation. There are several ways to do it:

   - Select in the Main menu: **Partition > Back Up Partition**.

   - Call the popup menu for the selected partition (right click of the mouse button) then select the menu item: **Back Up Partition…**

Setup

Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Backup button to confirm the operation.
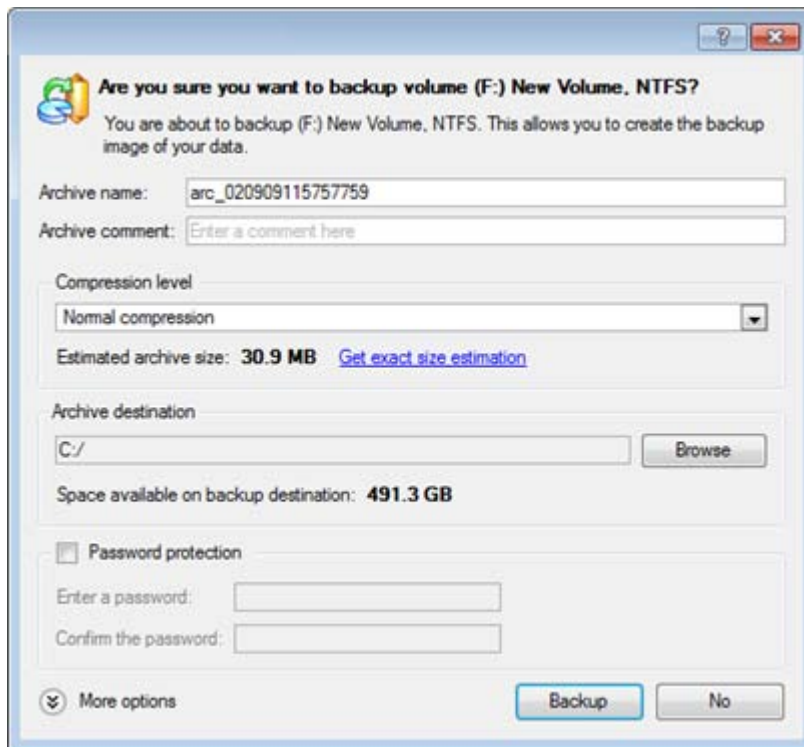
- **Archive Name**. The program automatically offers an easy to understand name containing the date and the time of the archive creation, which can anyway be modified.

- **Archive Description**. You can add some additional description to the archive that will later help to distinguish it from the others.

- **Compression Level**. From the pull-down list you can select the desired compression level for the backup image (including the No compression variant).

- **Archive Destination**. Here you can manually enter a path where to place the future backup image to or press the Browse button to find the required location.

- **Password Protection**. By setting a password you can protect contents of the archive against unauthorized access.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to click the More options button at the foot of the dialog page, so you will be able to define:
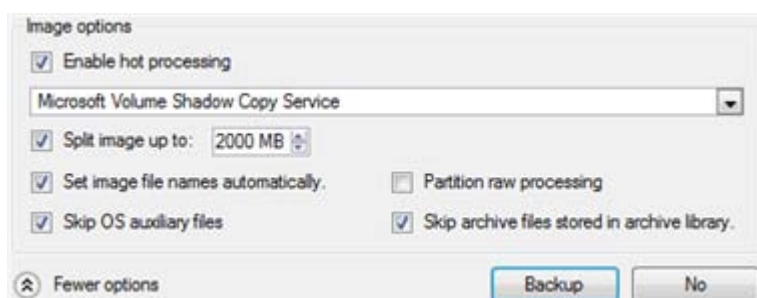
- Whether the operation will be performed without rebooting the system. The program needs to reboot the system in order to have exclusive access to processing data. In a Windows environment this is difficult to achieve because even when all the other applications are closed, the system service programs are still running. However, there is a way to avoid rebooting. The mode of processing the backup operation without rebooting is named Hot Processing. You can also define specific parameters for the Hot Processing mode.

- Whether the archive will be split (if yes, you can set the maximum size for the archive files).

> **Splitting images enables to tackle problems caused by a maximum file size limitation of some file systems.**

- Whether image file names will be set automatically in complex archives.

- Whether the OS auxiliary files (pagefile.sys, hyberfil.sys) will be included in the backup image.

- Whether the selected partition will be copied in the sector-to-sector mode (including unused sectors as well).

- Whether backup images stored in the Archive Database will be processed during the backup operation.

> **Skipping backups of the Archive Database may considerably decrease the resulted image file and time to carry out the operation.**
>
> **By default the program will take into account exclude filters set in the Settings dialog. You've got no option to change them directly from this dialog.**

Result

After the backup operation is completed you receive an image of the selected partition. This image is placed into the specified destination, its features defined by the dialog.

Available operation scenarios:

- Backing up a hard disk or partition to the Backup Capsule

- Backing up a hard disk or partition to external media (CD/DVD)

- Backing up a hard disk or partition to a network drive

- Backing up a hard disk or partition to an FTP server

- Creating a differential to a full partition backup

- Creating a cyclic partition backup

Restoring System and Data

The program includes a convenient and reliable restore wizard. With its help you can restore all types of backup images created with the program. It provides easy to understand instructions to configure and perform all the necessary settings. Moreover you can get an in-depth description to any setting, control, or field of the wizard just by clicking the hint button and then the object you need.

Startup

There are several ways to start the Restore Wizard:

- In the Main Menu: select **Wizards > Restore…**

- On the Common Tasks Bar: click the **Restore** item of the Wizards menu.

- In the Toolbar: click the **Restore Wizard** button.

Setup

The wizard offers the following steps to accomplish the restore operation:

- **A backup image to be restored**. The Browse for Archive page enables to find a backup image you need.

  By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).

  To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

> ⚠ **To know more on the subject, please consult the <u>Viewing Image Properties</u> chapter.**

  By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

> ⚠ **To know more on the subject, please consult the [Viewing Image Properties](#) chapter.**

File Backup Restore

- **Data to restore**. You've got the option to restore not only the entire archive, but separate items of it (the so called selective restore functionality) by marking checkboxes next to the data items you need.
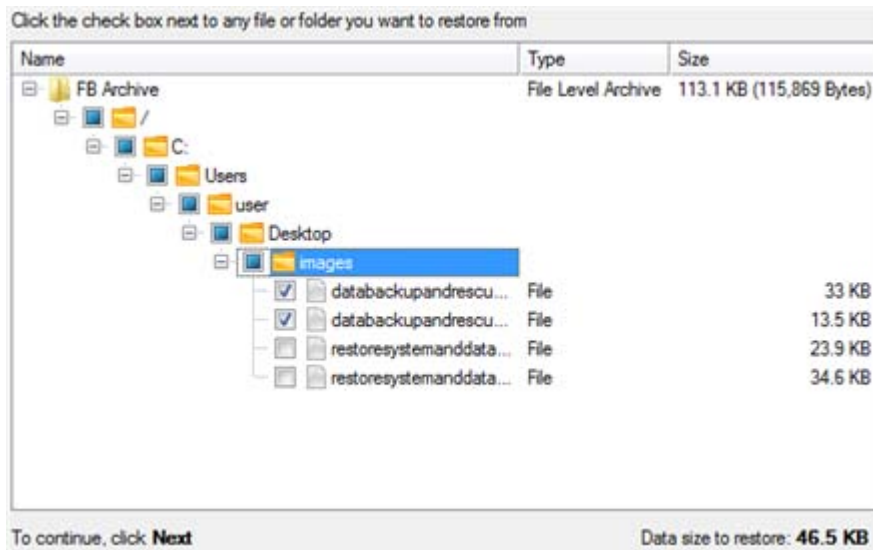
- **A place to restore**. From the pull-down list you can choose whether to restore contents of the backup image to its original location or specify some other one.
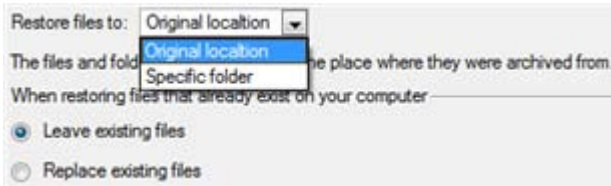
Besides if you select the Original location option, you can additionally define whether to replace already existing files during the restore operation (good for recovering presumably corrupted files) or leave them intact (good for recovering accidentally deleted files).

Sector Backup Restore

- **Data to restore.** You've got the option to restore not only the entire archive, but separate items of it (the so called selective restore functionality) by marking checkboxes next to the data items you need.
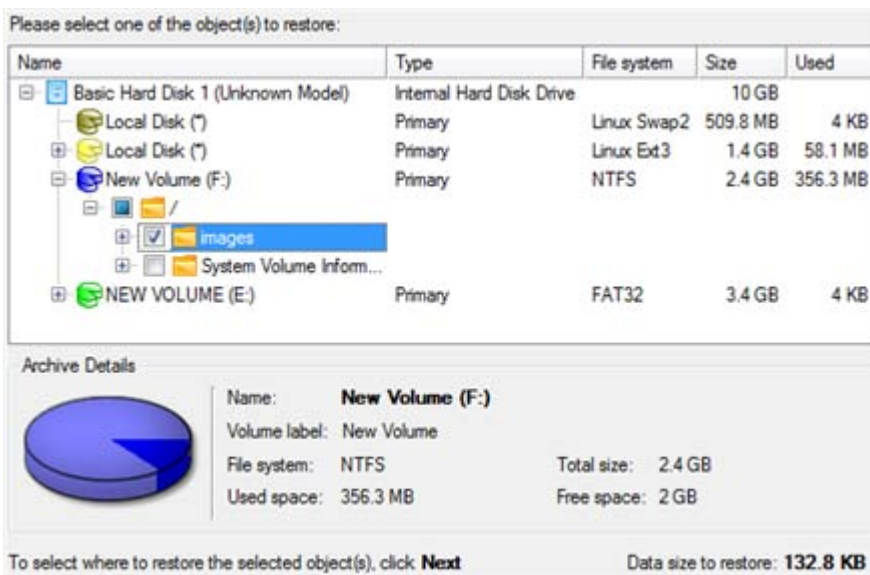
> If you select separate files or folders to restore, the wizard will continue working as though you've got to do with a file backup.

- **A place to restore**. Selecting the destination, please note - all contents on the disk selected for restoring purposes will be deleted during the operation.

To help you get a clear-cut picture of the operation outcome, the program allows inspecting the resulted disk layout.

Restoring Partition:

- **Size of the restored volume and free space before and after it on the disk.**

- **Drive letter assignment after restore**. The pull-down list contains vacant drive letters that can be associated with the restored partition.

Restoring Hard Disk:

- **Copy data and resize partitions proportionally**. If this option is activated, the program proportionally changes the size of partitions keeping their relative order intact. The option can be useful when restoring to a larger hard disk.

- **Perform surface test**. Define whether the surface test will be accomplished during the operation or not.

⚠️ **All contents on the disk selected for restoring purposes will be deleted during the operation.**

Result

The wizard will restore the archived data, and make it available to use in the operating system.

Available operation scenarios:

- [Restoring a system partition from external media (CD/DVD)](#)

- [Restoring a system partition from a network drive](#)

- [Restoring a system partition from a local drive](#)

- [Burning of data from the corrupted system disk to CD/DVD](#)

- [Copying of data from a backup to the corrupted system partition](#)

- [Restoring separate files and folders from a backup](#)

Partition Management

In this chapter you will find all the information necessary to carry out partitioning operations supported by the program.

Basic Partitioning Operations

Here you can learn how to accomplish basic partitioning operations (create, format, delete).

Creating Partitions

The program provides the ability to create a new partition by using the DOS partitioning scheme. This operation can be accomplished with the Create Partition Dialog.

Restrictions

1. Do not use the Create Partition function in order to undelete the last deleted partition.

2. The program cannot create new partitions on Dynamic Disks. The current version of the program supports only hard disks that use the DOS partitioning scheme (in Windows 2000 and XP these disks are named Basic Disks).

3. According to the rules of the DOS partitioning scheme, the following combinations of partitions cannot be created:

   - Two Extended Partitions on one hard disk

   - Five or more Primary partitions on one hard disk

   - If there is an Extended Partition on the disk, only three Primary partitions are allowed

4. The program allows creating new partitions only within blocks of un-partitioned space. It cannot convert a free space on an existing partition to a new partition.

Startup

In order to start the operation you should take the following steps:

1. Select a block of free space on the Disk Map;

2. Call the Create Partition Dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Create Partition**.

   - Call the popup menu for the block of free space (right click of the mouse button) then select the menu item: **Create Partition**.

Setup

Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Yes button to confirm the operation.
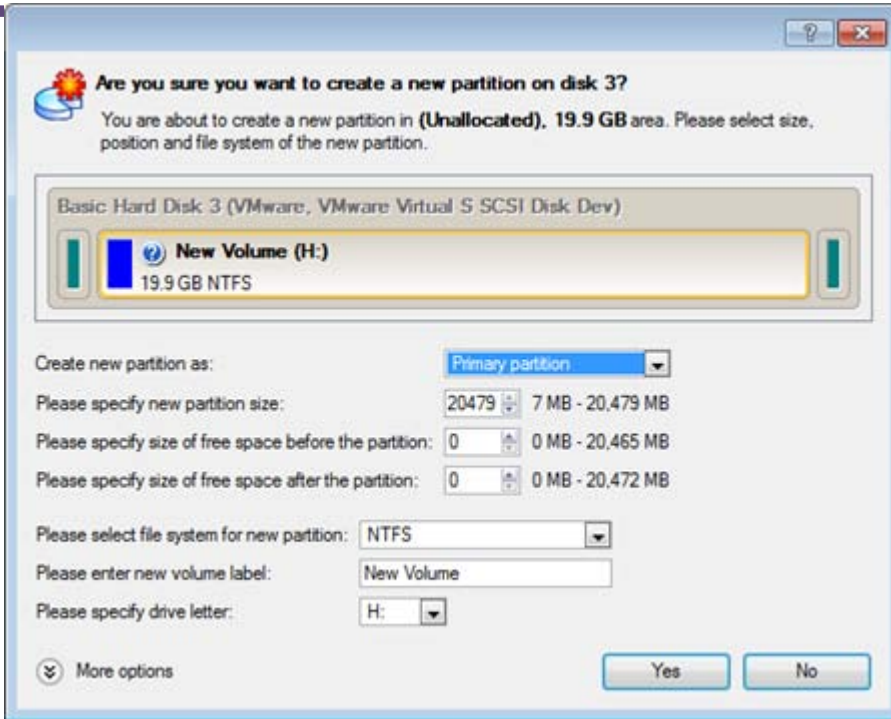
- **Define whether the partition will be Primary, Extended or Logical**. You can choose the desired partition type from the pull-down list. As a matter of fact, the available alternatives fundamentally depend on the selected block of free space - within the Logical free space, only Logical partitions can be created; Within the Primary free space, both Primary partitions or the Extended Partition can be created.

- **Partition Size**. Define the size (in Mb) of the new partition.

- **Free space before**. Define the position (in Mb) of the new partition relative to the beginning of the block of free space.

- **Free space after**. Define the amount of trailing free space (in Mb) at the end of the new partition.

⚠️ **Partition size and position may also be defined by using the drag-and-drop technique. To do that, just carry out the required operation on the Disk Map. The virtual operations are to be available.**

- **File system for new partition**. From the pull-down list select a file system the newly created partition will be formatted to, otherwise the partition will remain unformatted (so that it will not be ready to use).

- **Volume label**. Enter a label for the selected partition in this textual field. It is an irrelevant parameter usually used for drive identification.

- **Drive letter assignment**. The pull-down list contains vacant drive letters that can be associated with the newly formatted partition.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to click the More options button at the foot of the dialog page. Depending on the chosen file system, the following options become available:

- **Use OS built-in routine**. Mark the option to restrict the available values according to the used OS.

- **Whether the surface test will be performed**. Define the level of the surface check to make the program find bad and unstable sectors and mark them unusable in the file system metadata.

- **The amount of sectors per boot**. This parameter is available exclusively for FAT16 and FAT32 file systems. Set the number of sectors to be reserved for the boot area on the partition with this spinner control.

- **The amount of root entries**. This parameter is available exclusively for FAT16 file system. Set the maximum amount of files/directories to be placed in the Root Directory on the FAT16 partition.

- **The amount of sectors per cluster**. Define the Cluster Size for the formatted partition with this spinner control.

Number of available options depends on the selected file system type.

Result

After the operation is completed you receive a fully functional partition.

Formatting Partitions

Any partition should contain some file system to be used for keeping data. The process of installing a file system is commonly known as formatting. A huge variety of file systems have been developed these days.

Supported File Systems

The program provides the ability to format partitions of the following file systems:

- FAT12 & FAT16

- FAT32

- NTFS

- Ext2

- Ext3

- Linux Swap v. 2

- Apple HFS

This operation can be accomplished with the Format Partition Dialog.

Startup

In order to start the operation you should take the following steps:

1. Select a partition on the Disk Map;

2. Call the Format Partition Dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Format Partition**.

   - Call the popup menu for the selected partition (right click of the mouse button) then select the menu item: **Format Partition**.

Setup

Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Format button to confirm the operation.

- **File system**. From the pull-down list select the desired file system type. In fact, the program displays only those file systems that can correctly be placed to the selected partition, taking its capacity into account.

- **Volume label**. Enter a label for the selected partition in this textual field. It is an irrelevant parameter usually used for drive identification.

In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to click the More options button at the foot of the dialog page. Depending on the chosen file system, the following options become available:

- **Use OS built-in routine**. Mark the option to restrict the available values according to the used OS.

- **Whether the surface test will be performed**. Define the level of the surface check to make the program find bad and unstable sectors and mark them unusable in the file system metadata.

- **The amount of sectors per boot**. This parameter is available exclusively for FAT16 and FAT32 file systems. Set the number of sectors to be reserved for the boot area on the partition with this spinner control.

- **The amount of root entries**. This parameter is available exclusively for FAT16 file system. Set the maximum amount of files/directories to be placed in the Root Directory on the FAT16 partition.

- **The amount of sectors per cluster**. Define the Cluster Size for the formatted partition with this spinner control.

> ⚠ **Number of available options depends on the selected file system type.**

Result

After the operation is completed you receive a fully functional partition formatted to the specified file system.

Deleting Partitions

With the Delete Partition Dialog you can delete a partition on a hard disk partitioned with the DOS partitioning scheme. Unlike the majority of other utilities (Windows Disk Manager included), the program can not only remove references to the deleted partition from the Partition Table, thus making it unavailable for the operating system, but also enables to irreversibly destroy its data. This feature will guarantee security of your personal information.

Startup

In order to start the operation you should take the following steps:

1. Select a partition on the Disk Map;

2. Call the Delete Partition Dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Delete Partition**.

   - Call the popup menu for the selected partition (right click of the mouse button) then select the menu item: **Delete Partition**.
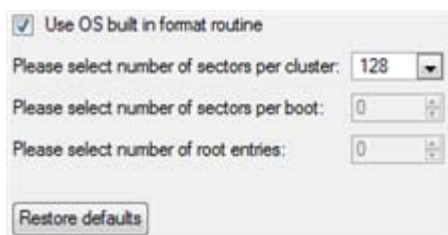
Setup

Initially the program suggests you just to remove references to the selected partition from the Partition Table.
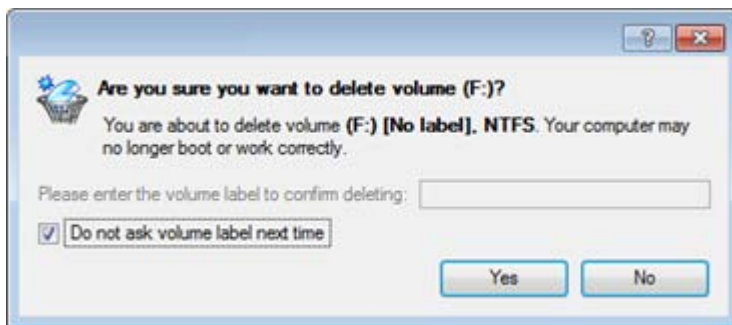
- **Enter the volume label to confirm deleting**. To confirm deletion of the selected partition, enter its Volume Label. The current volume label is displayed above.

- **Do not ask volume label next time**. Mark the option to inhibit confirmation next time you start the dialog.

Result

By default, the operation takes only a fraction of a second. However, the program waits until Windows completes the modification of the disk layout. In case you decide to wipe the on-partition data as well, the operation will take much longer, depending on the set wipe parameters.

Advanced Partitioning Operations

Here you can learn how to accomplish advanced partitioning operations (undelete).

Changing Partition Attributes

This chapter explains how you can change partition attributes (Active flag, Hidden flag, Partition ID, Volume Label, etc.).

Mark Partition Active/Inactive

The program enables to set an active/inactive flag for primary partitions of a hard disk. By default, an operating system will boot only if its partition is active or bootable.

In order to mark a partition active/inactive you should take the following steps:

1. Select a primary partition on the Disk Map.

2. Call the Mark Partition Active/Inactive Dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Mark Partition as Active/Inactive**.

   - Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Mark Partition as Active/Inactive**.
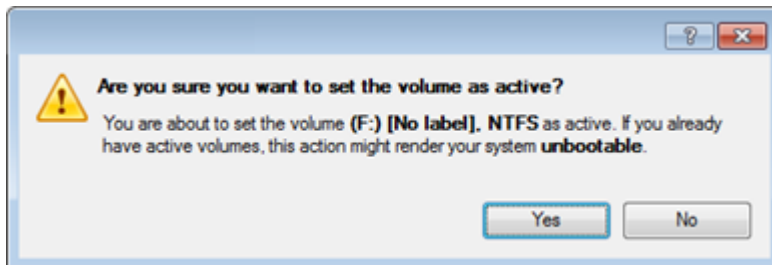
3. The operation will be performed immediately after confirmation.

> **There can only be one active partition on a hard disk, otherwise your operating system will fail to boot.**

Hide/Unhide Partition

The program allows you to hide/unhide primary and logical partitions. By default, an operating system does not mount hidden partitions, thus preventing access to their contents.

In order to hide/unhide a partition you should take the following steps:

1. Select a partition on the Disk Map.

2. Call the Hide/Unhide Partition Dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Hide/Unhide Partition**.

   - Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Hide/Unhide Partition**.

3. The operation will be performed immediately after confirmation.

> **It is strongly recommended not to hide the system partition. Otherwise your operating system will fail to boot.**

Set Label of a Partition

The Partition Label is a small textual field (up to 11 characters) that is located in the partition's boot sector. It is detectable by any partitioning tool and is used for notification purposes only.

In order to change a partition label you should take the following steps:

1. Select a partition on the Disk Map.

2. Call the Change Volume Label dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Modify > Change Volume Label**.

   - On the Explorer Bar: click on the current volume label.

   - Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Change Volume Label**.

3. Enter a label for the selected partition.

4. The operation will be performed immediately after confirmation.

Change Partition ID

Partition ID is a file system identifier. It is saved in the Partition Table and is used to quickly detect a partition of the supported type. By manually changing its value, you can manipulate accessibility of partitions.

In order to change a partition ID you should take the following steps:

1. Select a partition on the Disk Map.

2. Call the Change Partition ID dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Modify > Change Partition ID…**

   - On the Explorer Bar: click on the current partition ID.

   - Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Change Partition ID…**

3. Set a new ID for the selected partition.
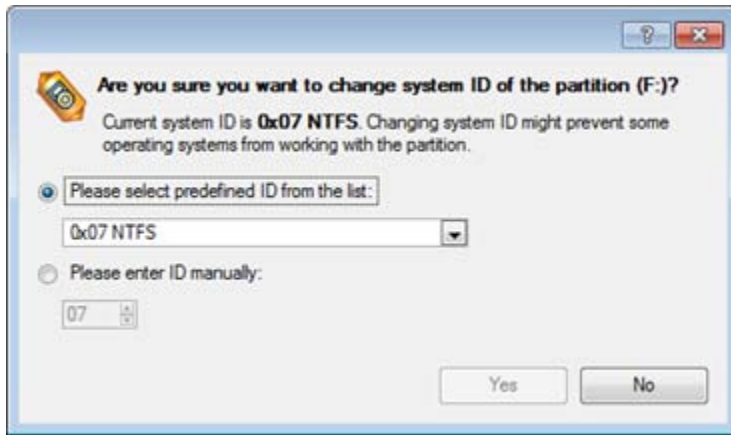
- **Predefined ID**. Select from the pull-down list the required ID.

- **Enter ID manually**. With the spinner control set the required ID value. It has to be a 1-2 digit hexadecimal number.

4. The operation will be performed immediately after confirmation.

Change Serial Number of a Partition

FAT16, FAT32, and NTFS file systems include the Serial Number parameter. A partition's serial number is saved in the boot sector. Its value is generated while formatting.

The program enables to modify the serial number parameter for FAT16, FAT32, or NTFS partitions without re-formatting.

In order to change a serial number you should take the following steps:

1. Select a partition on the Disk Map.

2. Call the Change Partition Serial Number dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Modify > Change Serial Number**.

   - On the Explorer Bar: click on the current serial number.

3. Enter a new serial number for the selected partition. It should contain 8 hexadecimal figures (0..9 or A..F). The operation cannot proceed until you enter all 8 symbols.
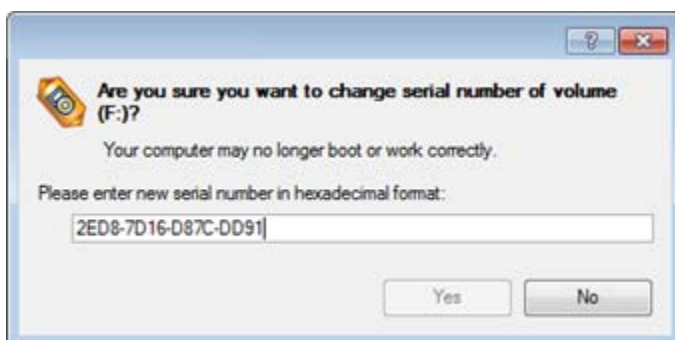
4. The operation will be performed immediately after confirmation.

Hard Disk Management

In this chapter you will find all the information necessary to carry hard disk operations supported by the program (Update MBR, Convert to Basic, Change Primary Slot).

Updating MBR

The program enables to overwrite the current bootable code in the MBR (Master Boot Record) by the standard bootstrap code. This can help to repair a corrupted bootable code of a hard disk resulted from a boot virus attack or a malfunction of boot management software.

In order to update MBR of a hard disk you should take the following steps:

1. Select a hard disk on the Disk Map.

2. Call the Update MBR dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Hard Disk > Update MBR**.

   - Call the popup menu for the selected hard disk (right click of the mouse button) on the Disk Map, then select the menu item: **Update MBR**.

3. The operation will be performed immediately after confirmation.

Task Scheduling

Automation of operations can really help you out when you've got to accomplish certain routine operations on a regular basis as it enables to execute them without your involvement while optimizing your computer's work-load.

Setting a Timetable

Thanks to the embedded Scheduler, you can set a timetable for execution of any operation. It has two categories for time settings (these correspond to appropriate items in the Schedule type menu):

- **Initiating the operation by an event**:

  - One time only (i.e. the Once item)

  - When the system starts (i.e. the At System Startup item)

  - When the user logs on (i.e. the At Logon item).

- **Initiating the operation periodically (i.e. Daily, Weekly, Monthly)**.
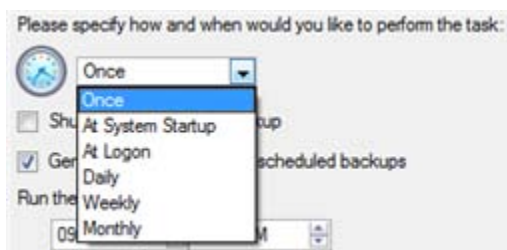
You need to select one of the variants. Depending on your choice, the scheduler displays a form that enables to set a timetable.

Please specify how and when would you like to perform the task:

Weekly

☐ Shutdown system after backup

☑ Generate unique names for scheduled backups

Run the task on:

09/02/2009 at 12:00 AM

Every

1 week(s) on: ☑ Monday   ☐ Friday
                ☐ Tuesday   ☐ Saturday
                ☐ Wednesday   ☐ Sunday
                ☐ Thursday

☐ Do not run the task after:

09/02/2009

Specify user name and password.

To run the task in the log-off mode, please specify administering login info by following the appropriate link in the left lower corner of the page.

The Shutdown System on Complete option enables to automatically switch off the computer on the successful accomplishment of the operation.

Managing Tasks

All scheduled tasks are placed in a separate list, which can be retrieved by clicking the Scheduled Tasks tab in the Explorer Bar:

| Disk View | Scheduled Tasks | Archives | Help |

Scheduled Tasks

Name	Script	When to Run
☑ Backup of MBR of hard disk 0	scr_020909124744490.psl	At 12:00:00 AM every Mon., of every week, starting 9/2/2009.

On every task you can get in-depth information, including:

- The task name

- The full path to the generated script of the task

- Scheduled time of launch

- Statistics on the last launch

- Scheduled time of the next launch

- Used account information

- Comments to the task

To easily manage tasks, the program enables to arrange them according to a certain characteristic just by clicking on the required property.

This feature can be particularly beneficial when the Scheduled Tasks list contains too many items.

You can also enable/disable, rename, delete, refresh or modify properties of the selected task.

Task Editor

With the Task Editor you can easily modify properties of scheduled tasks. To do that, you should take the following steps:

1. Select a task on the Scheduled Tasks list.

2. Call the Task Editor dialog. There are several ways to do it:

   - Click the **Properties** button on the Scheduled Tasks list.

   - Call the popup menu for the selected task (right click of the mouse button), then select the menu item: **Properties**.
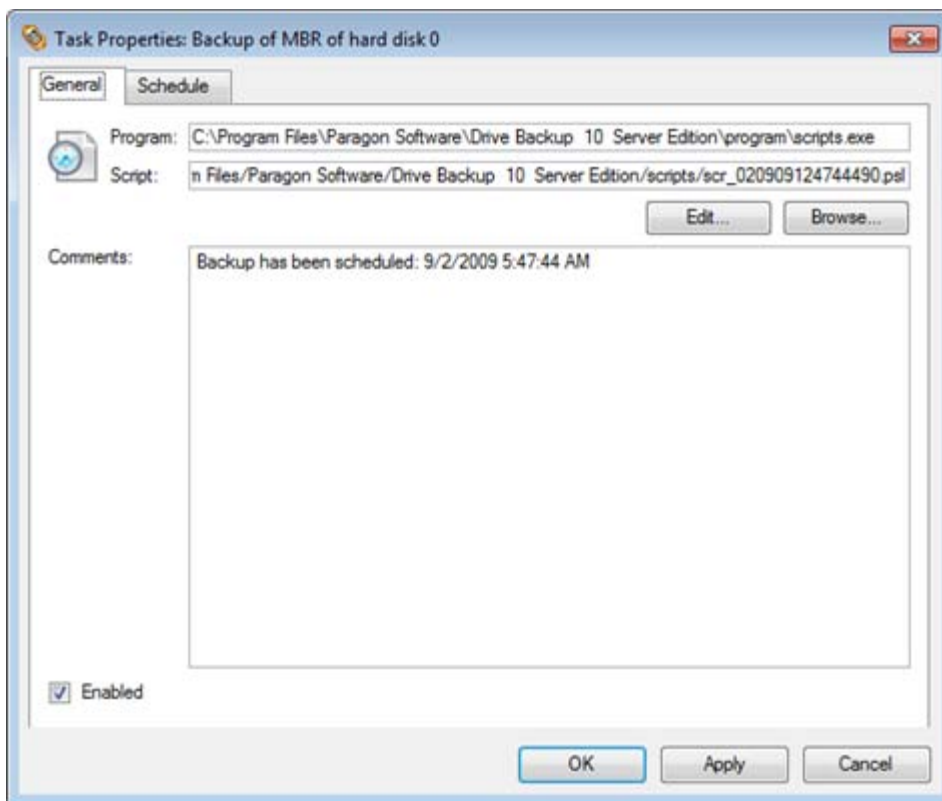
3. In the opened dialog window you can see two tabs - General and Schedule. Click the General tab to modify:

   - Full path to the macro-command program-interpreter, which describes the scheduled task;

   - Command line for starting the interpreter (i.e. the task described in macro-language)

   - Comments referring to the task

   - The option of enabling/disabling the task.

By clicking the Schedule tab you can modify the task timetable.

In order to apply the changes, you need to click the Apply button at the foot of the dialog.

Creating a Scheduled Task

You can set a timetable for execution of any operation. For backup and copy operations the program offers handy wizards, while all the others can be scheduled with the Save to Scheduler dialog.

To create a scheduled task you should take the following steps:

1. Make sure the virtual mode of execution is enabled;

2. Carry out with the program all operations you need to schedule;

3. Call the Save to Scheduler dialog in the Main Menu: **Tools > Save to Scheduler...**;
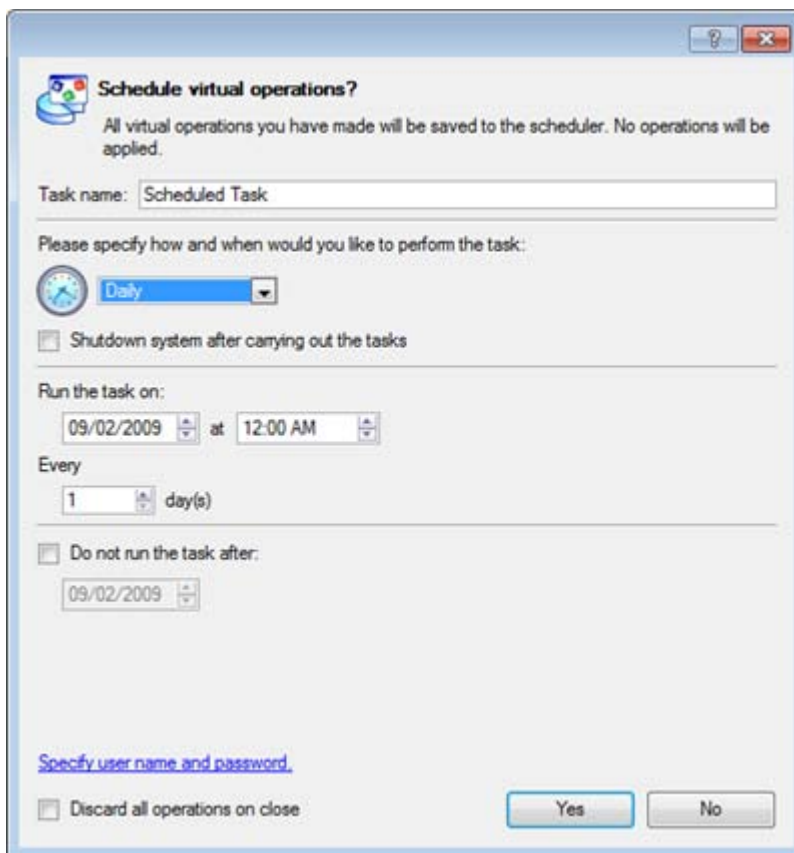
4. In the opened dialog enter the required task name and specify the task timetable;

5. The operation will be performed immediately after confirmation.

> ⚠ **This command is unavailable if there are no operations on the List of Pending Operations.**

Extra Functionality

This chapter describes the supplementary functionality available in the program.

View Partition/Hard Disk Properties

The program enables to obtain in-depth information on the properties of hard disks and partitions. Besides the general information, such as capacity, used space or file system type it provides the possibility to get info on hard disk geometry, cluster size, exact partition location, etc.

There are several ways to get properties on a partition/hard disk:

1. Choose a partition/hard disk on the Disk Map, then select in the Main Menu: **Partition/Hard Disk > Properties…**;

2. Call the popup menu for the selected partition/hard disk (right click of the mouse button) on the Disk Map, then select the menu item: **Properties…**
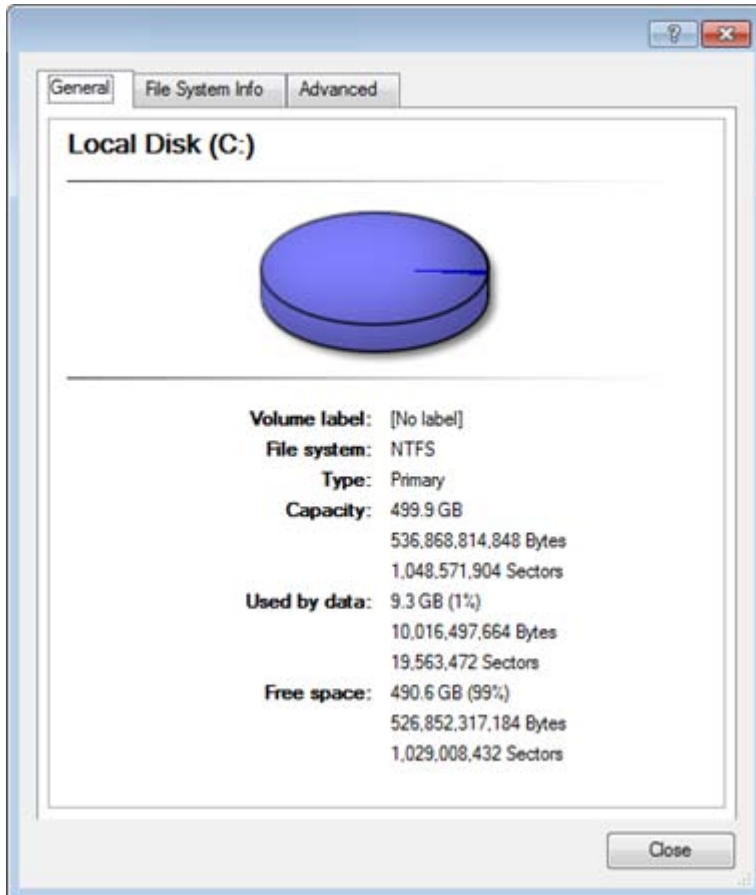
In the opened dialog information will be grouped according to its properties, thus by clicking tabs you can get information you need.

File Transfer Wizard

File Transfer Wizard is designed to make such operations as copying of separate files/directories or burning of them to CD/DVD as easy and convenient as possible. It may be of particular use in case of a system malfunction, caused either by a virus attack or files corruption, in order to get the system back on track again. Besides it provides access to Paragon backups as regular folders to browse through their contents or copy required files.

Startup

There are several ways to start the File Transfer Wizard:

- Select in the Main Menu: **Tools > File Transfer Wizard**.

- Select the **Transfer Files** item of the Wizards menu on the Common Tasks Bar.

The wizard offers the following steps to accomplish the transfer operation:

- **Place to look for files/directories**. Select a source disk from the pull-down list in the left pane of the page. The program enables to process both mounted and unmounted (without drive letter assigned) partitions. Besides it is possible to map a network drive.
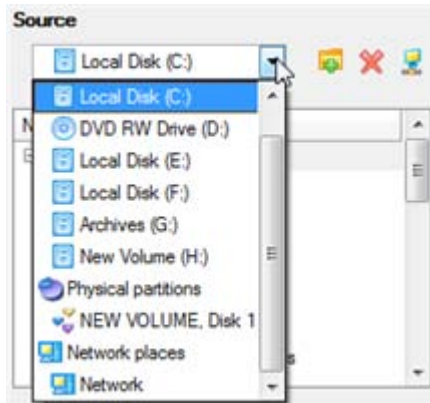
- **Object(s) of operation**. Choose files/directories you want to copy and place them to Clipboard by pressing the Add button. To delete a file/directory from the Clipboard, select it in the Clipboard pane and press the Remove button. You can also create a new folder, rename or irreversibly delete existing files/directories of the left pane by pressing the appropriate buttons.
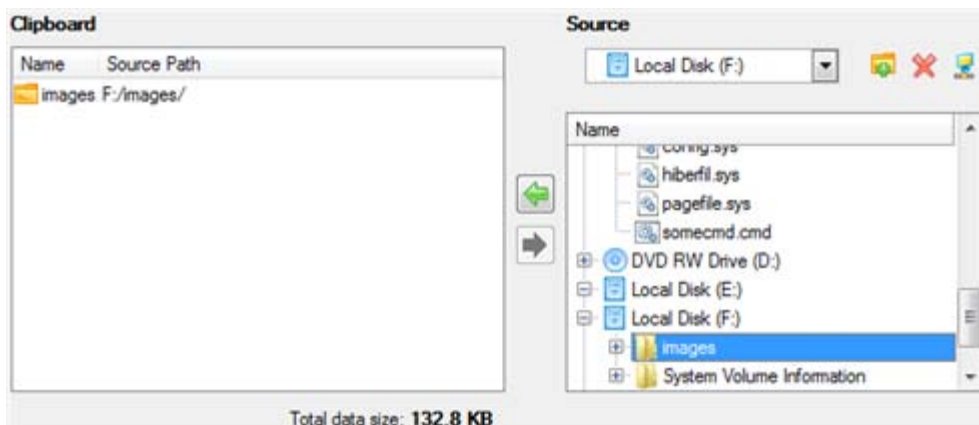
> ⚠ **Files/directories deleted from the Clipboard remain intact on source disks.**

- **Destination to store the object(s)**. The File Transfer Wizard allows copying data to local or network drives, to physical partitions (without drive letters assigned), or burning them to CD/DVDs. Choose the way the data will be stored.

- **Revision of changes**. The Transfer Summary page provides structurally divided information on all the actions made in the wizard. Check the changes and come back to any step of the wizard (if necessary) by following the required hyperlink.

Please overview the transfer options. You can return to the corresponding page and change the options by clicking on title hyperlinks.

Objects to transfer	
Object(s) selected:	1
Total data size:	132.8 KB (136,024 Bytes)
Transfer destination	
Destination path:	C:/
Space available on destination:	490.6 GB (526,821,834,752 Bytes)
Overwrite existing files:	No
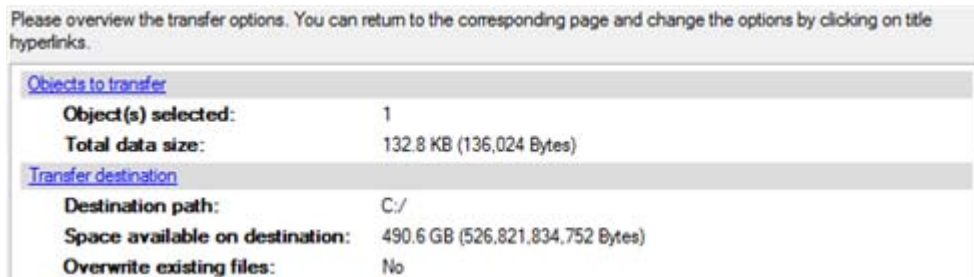
Result

After the operation is completed the required data will be placed into the specified destination.

Available Operation Scenarios:

- Copying of data from the corrupted system disk to another hard disk

- Burning of data from the corrupted system disk to CD/DVD

- Copying of data from a backup to the corrupted system partition

- Restoring separate files and folders from a backup

Mount Partition

The program enables to assign or remove drive letters of existing formatted partitions.

Assign Drive Letter

In order to mount a partition you should take the following steps:

1. Select a partition on the Disk Map.

2. Call the Add Drive Letter dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Partition > Assign Drive Letter…**

   - Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Assign Drive Letter…**

3. Specify a drive letter for the selected partition. Initially the program suggests some consistent value for this parameter. So you may just press the Yes button to confirm the operation.

Assign a drive letter?

This allows access to the volume by using the drive letter assigned. The assignment is not recommended if the volume contains a file system not supported by your operating system.

Assign the following drive letter: F:

Yes   No

However you can manually define the required letter by selecting it from the pull-down list of available drive letters.

4. The operation will be performed immediately after confirmation.

Remove Drive Letter

In order to un-mount a partition you should take the following steps:

1. Select a partition on the Disk Map.

2. Call the Remove Drive Letter dialog to define appropriate settings. There are several ways to do it:

    -   Select in the Main Menu: **Partition > Remove Drive Letter**.

    -   Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Remove Drive Letter**.

3. The operation will be performed immediately after confirmation.

> **Modifying drive letter of the system partition will result in inability to boot the operating system.**
>
> **After having processed partitions with installed software, some programs may not run properly.**

Mount Archive

The program provides the ability to assign a drive letter to a partition backup image. As a result of the operation you will get a new read-only partition in the system to easily browse through its contents and copy the required information even with the standard Windows tools.

Assign Drive Letter

In order to mount an archive you should take the following steps:

1. Select a backup image in the Archive Database.

2. Call the Mount Archive dialog to set up the operation. There are several ways to do it:

    -   Select in the Main Menu: **Archives > Mount the Selected Archive**.

    -   On the Explorer bar: select the **Mount Archive** item.

    -   Call the popup menu for the selected image (right click of the mouse button), then select the menu item: **Mount the Selected Archive…**

3. Specify a drive letter for the selected backup image. Initially the program suggests some consistent value for this parameter. So you may just press the Yes button to confirm the operation.

Assign a drive letter?

This allows access to the volume by using the drive letter assigned. The assignment is not recommended if the volume contains a file system not supported by your operating system.

Assign the following drive letter: F:

Yes   No

However you can manually define the required letter by selecting it from the pull-down list of available drive letters.

4. The operation will be performed immediately after confirmation.

> **The current version of the program allows the user to mount archives of separate partitions only.**
>
> **There is no possibility to mount archives located on physical (unmounted) partitions or in the bootable capsule.**
>
> **Archives will only be mounted for the current session and won't be available after the system restart.**
>
> **It is strongly recommended not to un-mount backup images with Windows Disk Manager or other third side software.**

Remove Drive Letter

In order to un-mount a backup image you should take the following steps:

1. Select a backup image in the Archive Database.

2. Call the Unmount Archive dialog to set up the operation. There are several ways to do it:

   - Select in the Main Menu: **Archives > Unmount the Selected Archive**.

   - On the Explorer bar: select the **Unmount Archive** item.

   - Call the popup menu for the selected image (right click of the mouse button), then select the menu item: **Unmount the Selected Archive…**

3. The operation will be performed immediately after confirmation.

Test Surface

The program enables to test surface of existing partitions and blocks of free space for bad or unstable sectors. If found any it automatically marks them unusable in the file system metadata, thus minimizing the risk of data loss.

In order to start the surface test you should take the following steps:

1. Select a partition or a block of free space on the Disk Map.

2. Call the Test Surface dialog to set up the operation. There are several ways to do it:

- Select in the Main Menu: **Partition > Test Surface...**

- Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Test Surface...**

3. From the pull-down list choose the level of the surface check.

4. The operation will be performed immediately after confirmation.

Check File System Integrity

The program allows you to check integrity of a file system. It can be used to detect possible file system errors before performing any operation on a partition.

To start the system integrity check you should take the following steps:

1. Select a partition on the Disk Map

2. Call the Check File System Integrity dialog to set up the operation. There are several ways to do it:

- Select in the Main Menu: **Partition > Check File System Integrity**

- Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Check File System Integrity**.

3. Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Yes button to confirm the operation.

- **Scan for and attempt to recover bad sectors**. Mark the checkbox to additionally process sectors marked bad in the file system metadata for the purpose of their possible recovery.

4. The operation will be performed immediately after confirmation.

Check Archive Integrity

The program provides the ability to check integrity of a backup image. The function allows distinguishing between valid and corrupted images before using them. The Check Archive Integrity Wizard will help you do that.

Startup

There are several ways to start the Check Archive Integrity Wizard:

- In the Main Menu: select **Wizards > Backup Utilities > Check Archive Integrity…**

- On the Common Tasks Bar: click the **Check Archive Integrity** item of the Wizards menu.

- Select a backup image in the Archive Database, then call the popup menu for it and choose the menu item: **Check Archive Integrity…**

Setup

The wizard offers the following steps to accomplish the operation:

- **An archive to verify**. The Browse for Archive page enables to find a backup image you need.

  By clicking the Switch to Archive List View link, you can see a list of images contained in the Archive Database (if any).

  To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

> ⚠ **To know more on the subject, please consult the <u>Viewing Image Properties</u> chapter.**

  By clicking the Switch to File View link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

Moreover, on this page you've got the possibility to create new folders, delete existing files/folders or map network drives by clicking the appropriate buttons.

> ⚠️ **To know more on the subject, please consult the <u>Viewing Image Properties</u> chapter.**

Result

After the operation is completed you can see results of the check.

Check Recovery Discs

You've got the ability to check whether backup media created with the program is 100 percent error-free and ready to use. The Check Recovery Disc Wizard will help you do that.

Startup

There are several ways to start the Check Recovery Disc Wizard:

- In the Main Menu: select **Tools > Check Recovery Discs…**

- On the Common Tasks Bar: click the **Check Recovery Discs** item of the Wizards menu.

Startup

The wizard offers the following steps to accomplish the operation:

- **CD/DVD drive**. Select from the pull-down list of available CD/DVD devices the required drive to use during the operation.
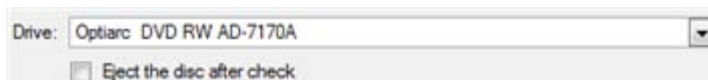
- Set whether to eject the disk after the operation is completed or not.

Result

After the operation is completed you can see results of the check.

View Logs

With a handy dialog you can study logs on any operation carried by the program. To make this job as easy as possible, all the information is structurally divided, besides there is the possibility to see the disk layout before and after an operation, what is very convenient.

In order to view logs on carried out operations call the View Logs dialog in the Main Menu: **Tools > View Logs...**
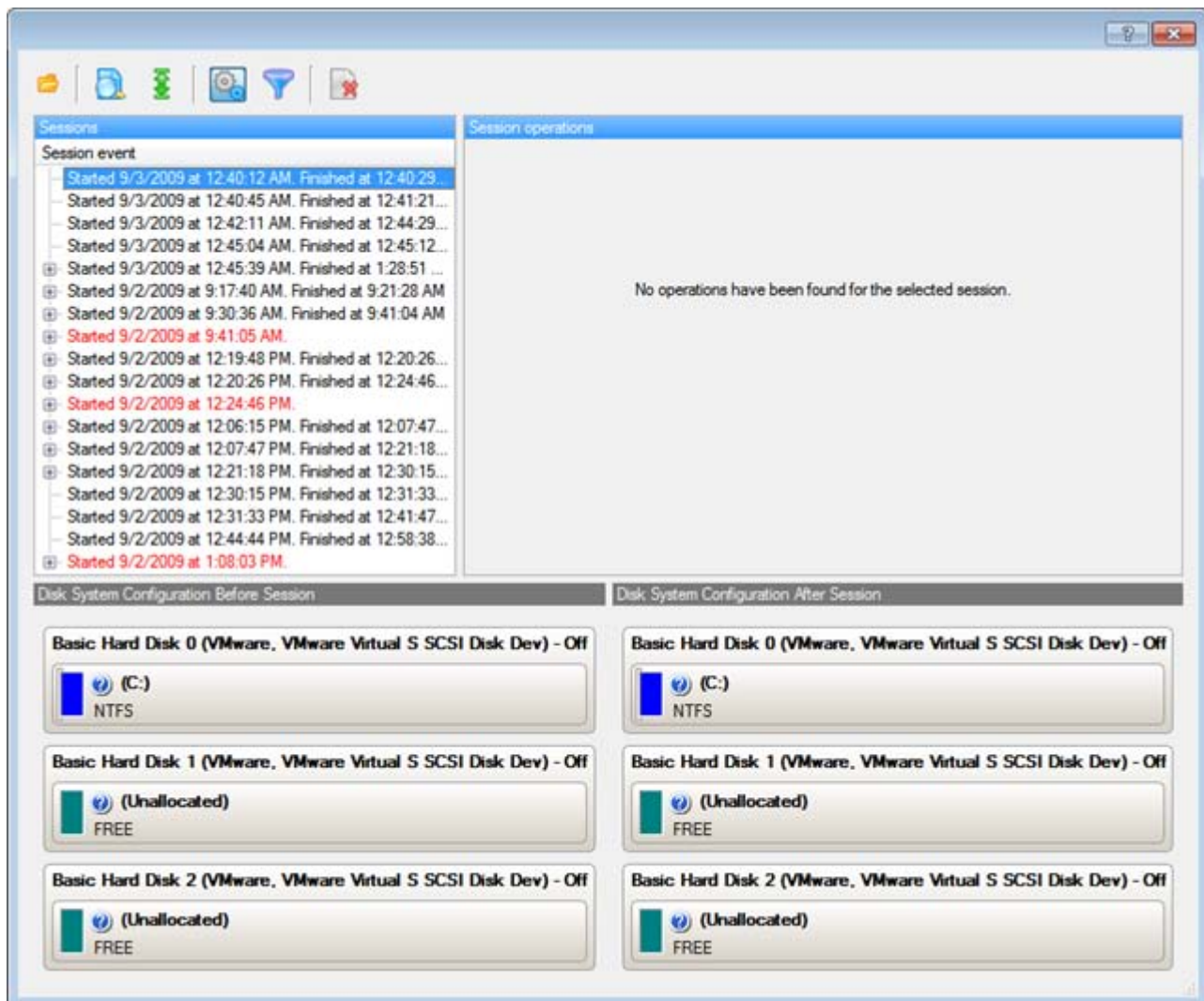
Typical Scenarios

This chapter lists a number of the most frequently used scenarios that may be accomplished with the program. You can find here useful recommendations and descriptions of operations.

Backup Scenarios

Creating the Backup Capsule

Let us take a computer of a rank and file user who is most likely to have only one hard disk with only one partition (the only partition is always system). Suppose that there is enough free space on the hard disk to create the backup capsule as well. It can be created with the Manage Backup Capsule Wizard:

1. Click the **Manage Backup Capsule** item of the Wizards menu (any of the ways described earlier can also be used here).

2. On the Wizard's Welcome page, click the Next button.

3. Select a place on the disk where the backup capsule will be created. It can be created as a primary partition or as a logical drive within an extended partition. It can be inserted into any place on the hard disk: at the end (preferable), at the beginning or somewhere in the middle between other partitions.

On this page you can select a hard disk where a backup capsule will be created as well as the relative position of the capsule on the hard disk.

Basic Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)

Local Disk (C:)
499.9 GB NTFS

Basic Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)

Archives (G:)
79.9 GB NTFS

Use the buttons to move the marker. Backup capsule will be created where the marker is.

> ⚠ **By default, the program allows the user to create the backup capsule only as the last primary or as the last logical drive within the extended partition. However, by activating the advance mode on the first page of the wizard you can remove this restriction that in its turn might result in some boot problems.**

4. Set the size for the backup capsule. It will be created at the expense of free space of the selected disk.

Backup capsule - current size is 245.3 GB
Min capsule size: 0 Bytes   Max capsule size: 490.6 GB
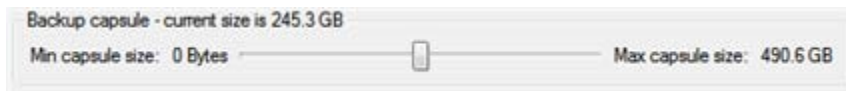
There is no restriction on the size of the backup capsule, merely depending on the available space of the hard disk and the capacity needed for the backup.

If the wizard cannot find enough free space in one block, it will redistribute free space, joining all free space blocks together into one united block and moving partitions if necessary. If the total amount of free space is still not enough, it is possible to split a fragment of space from one of the existing partitions, thus resizing it.

> ⚠ **If the partition is locked and cannot be resized, the wizard makes the system reboot to create the backup capsule and automatically boots the system again. (The rebooting mechanism is different for different versions of Windows).**

5. Activate the bootable recovery environment if needed. With its help you will get the choice to boot directly from the backup capsule for maintenance or recovery purposes every time you start up the computer.

● Allow to start recovery system from backup capsule

Time to display the backup capsule startup message: 5 seconds

Choose a hot key for startup from the backup capsule: F1

Startup message preview:

Press F1 to start recovery from Backup Capsule

○ Do not allow to start recovery system from backup capsule
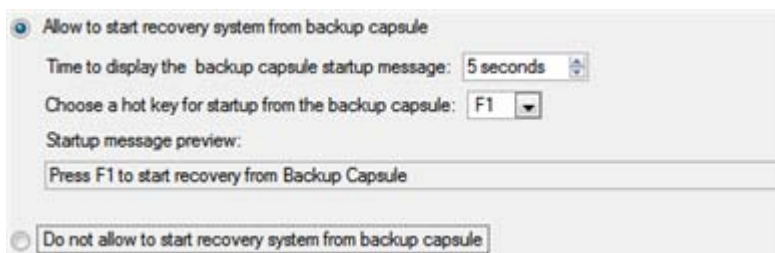
> ⚠️ **The backup capsule can only be bootable if it is located on the bootable device (assigned in the BIOS).**

6. Start the operation (by clicking the Next button) or return to correct the settings.

After the operation is completed you can place backup archives into the created backup capsule.

> ⚠️ **This operation can also be accomplished with the WinPE recovery environment.**

Backing up a hard disk or partition to the Backup Capsule

To back up an entire hard disk or a separate partition and then place the resulted image into the backup capsule, please do the following:

1. Create the backup capsule with the Manage Backup Capsule Wizard.

2. Click the **Back up a Disk or Partition** item of the Wizards menu (any of the ways described earlier can also be used here).

3. On the Wizard's Welcome page, click the Next button.

4. On the What to back up page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.
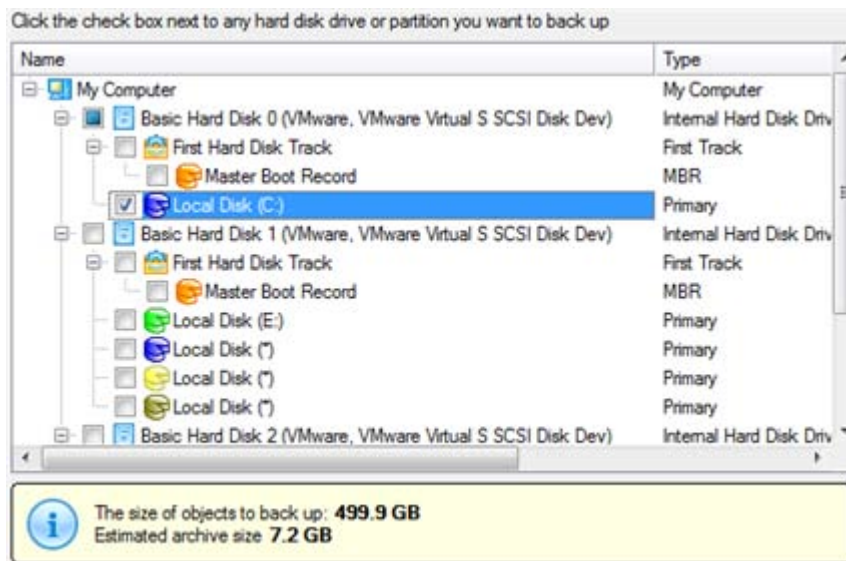
> ⚠️ **You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.**
>
> **By default the program will take into account exclude filters set in the Settings dialog.**

5. On the Backup Destination page, select the **Save data to the Backup Capsule** option.
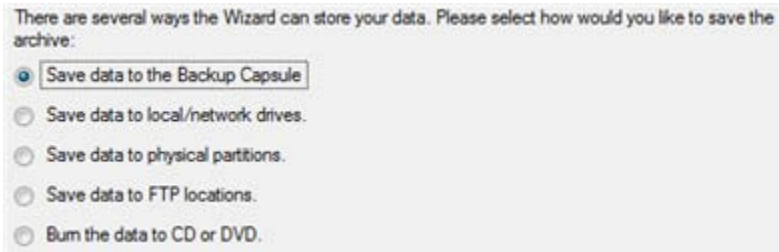
There are several ways the Wizard can store your data. Please select how would you like to save the archive:

- ⦿ Save data to the Backup Capsule
- ◯ Save data to local/network drives.
- ◯ Save data to physical partitions.
- ◯ Save data to FTP locations.
- ◯ Burn the data to CD or DVD.

6. Edit the archive name if necessary.

Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.

Archive details

Archive name:	arc_030909071001085
Estimated archive size:	4.4 GB
Space available on backup destination:	38 GB

⚠️ **Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, delete outdated backups from the Backup Capsule or resize it with the Manage Backup Capsule Wizard.**

7. Add comments to your backup describing its contents.

Please enter a short comment to describe the archive

No comment
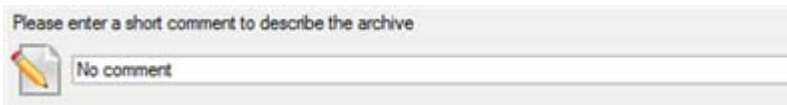
8. Choose whether to accomplish the operation immediately or set a time table for it.

9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

⚠️ **This operation can also be accomplished with the Linux/DOS or WinPE recovery environments.**

Backing up a hard disk or partition to external media (CD/DVD)

To back up an entire hard disk or a separate partition and then burn the resulted image to CD/DVD, please do the following:

1. Click the **Back up a Disk or Partition** item of the Wizards menu (any of the ways described earlier can also be used here).

2. On the Wizard's Welcome page, click the Next button.

3. On the What to back up page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.

Click the check box next to any hard disk drive or partition you want to back up

Name	Type	
⊟ 🖳 My Computer	My Computer	▲
⊟ ☐ 📄 Basic Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Driv	
⊟ ☐ 📁 First Hard Disk Track	First Track	
⌐ ☐ 📁 Master Boot Record	MBR	≣
☑ 📀 Local Disk (C:)	Primary	
⊟ ☐ 📄 Basic Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Driv	
⊟ ☐ 📁 First Hard Disk Track	First Track	
⌐ ☐ 📁 Master Boot Record	MBR	
⌐ ☐ 📀 Local Disk (E:)	Primary	
⌐ ☐ 📀 Local Disk (")	Primary	
⌐ ☐ 📀 Local Disk (")	Primary	
⌐ ☐ 📀 Local Disk (")	Primary	
⊟ ☐ 📄 Basic Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Driv	▼

ℹ️ The size of objects to back up: **499.9 GB**
Estimated archive size **7.2 GB**

> ⚠️ **You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.**
>
> **By default the program will take into account exclude filters set in the Settings dialog.**

4. On the Backup Destination page, select the **Burn the data to CD or DVD** option.

There are several ways the Wizard can store your data. Please select how would you like to save the archive:

⚪ Save data to local/network drives.

⚪ Save data to physical partitions.

⦿ Burn the data to CD or DVD.

5. Select a recordable device on the list of available CD/DVD devices and edit the archive name, if necessary.

Select a recorder to burn archive images to.

Name	Disc types
💿 Optiarc DVD RW AD-7170A	CD-R/RW; DVD-R/RW; DVD-RAM; DVD+R/RW
💿 CD Burner Emulator	CD-R/RW
💿 DVD Burner Emulator	DVD+R/RW

Archive details

Archive name: BP030909 (No more than 8 symbols and only in English.)

Estimated archive size: **4.4 GB**

> ⚠️ **Please take into account the Estimated archive size value. It can give you a hint about the number of CD/DVD discs required for the operation.**

6. Add comments to your backup describing its contents.

Please enter a short comment to describe the archive

No comment

7. Choose whether to accomplish the operation immediately, or generate a script.

8. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.
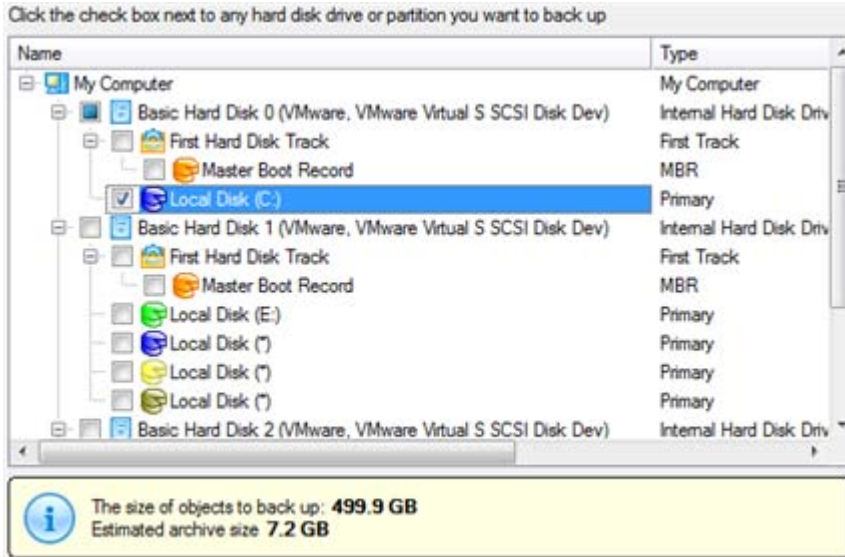
This operation can also be accomplished with the Linux/DOS recovery environments.

Backing up a hard disk or partition to a network drive

To back up an entire hard disk or a separate partition and then place the resulted image to a network share, please do the following:

1. Click the **Back up a Disk or Partition** item of the Wizards menu (any of the ways described earlier can also be used here).

2. On the Wizard's Welcome page, click the Next button.

3. On the What to back up page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.
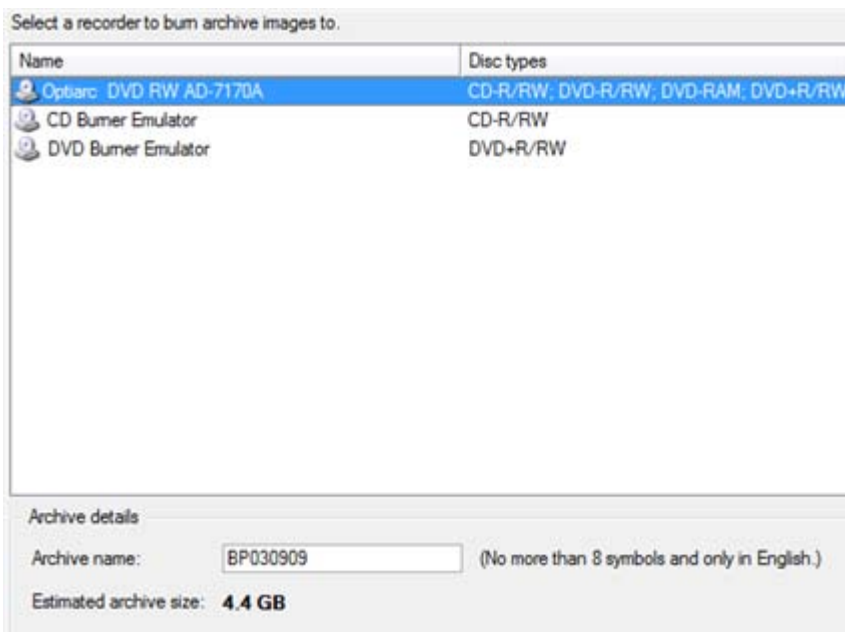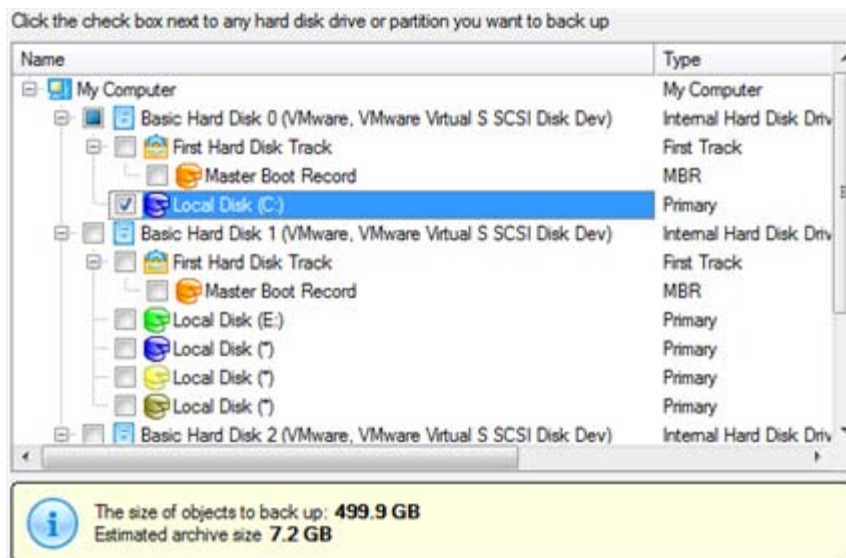
Click the check box next to any hard disk drive or partition you want to back up

Name	Type
☐ 🖥 My Computer	My Computer
☐ ▣ Basic Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Driv
☐ 📁 First Hard Disk Track	First Track
☐ 📁 Master Boot Record	MBR
☑ 🖳 Local Disk (C:)	Primary
☐ ▣ Basic Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Driv
☐ 📁 First Hard Disk Track	First Track
☐ 📁 Master Boot Record	MBR
☐ 🖳 Local Disk (E:)	Primary
☐ 🖳 Local Disk (*)	Primary
☐ 🖳 Local Disk (*)	Primary
☐ 🖳 Local Disk (*)	Primary
☐ ▣ Basic Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Driv

The size of objects to back up: **499.9 GB**
Estimated archive size **7.2 GB**

You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.

By default the program will take into account exclude filters set in the Settings dialog.

4. On the Backup Destination page, select the **Save data to local/network drives** option.

There are several ways the Wizard can store your data. Please select how would you like to save the archive:
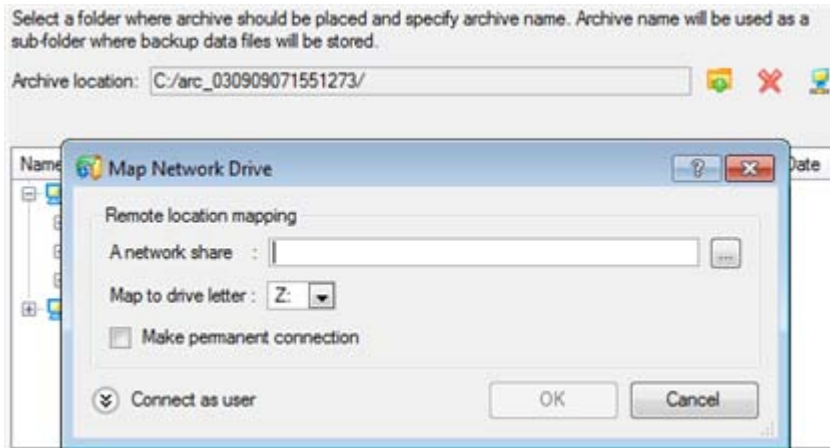
○ Save data to local/network drives.

○ Save data to physical partitions.

○ Burn the data to CD or DVD.

5. Map a network disk to place your backup image to:

- Call the Map Network Drive dialog by clicking the appropriate button;

- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

- Define a letter from the pull-down list of available drive letters;

- Mark the checkbox to make this connection permanent. Otherwise it will only be available for the current Windows session;

- Click the Connect as user button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

6. Edit the archive name if necessary.

> **Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another network drive needs to be selected.**
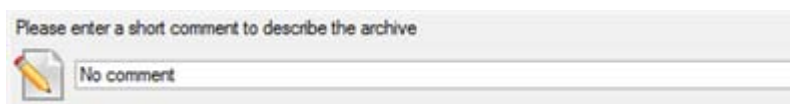
7. Add comments to your backup describing its contents.

8. Choose whether to accomplish the operation immediately, set a time table for it, or generate a script.

9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

⚠ **This operation can also be accomplished with the Linux/DOS recovery environments.**

Backing up a hard disk or partition to an FTP server

To back up an entire hard disk or a separate partition and then place the resulted image to an FTP server, please do the following:

1. Click the **Back up a Disk or Partition** item of the Wizards menu (any of the ways described earlier can also be used here).

2. On the Wizard's Welcome page, click the Next button.

3. On the What to back up page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.
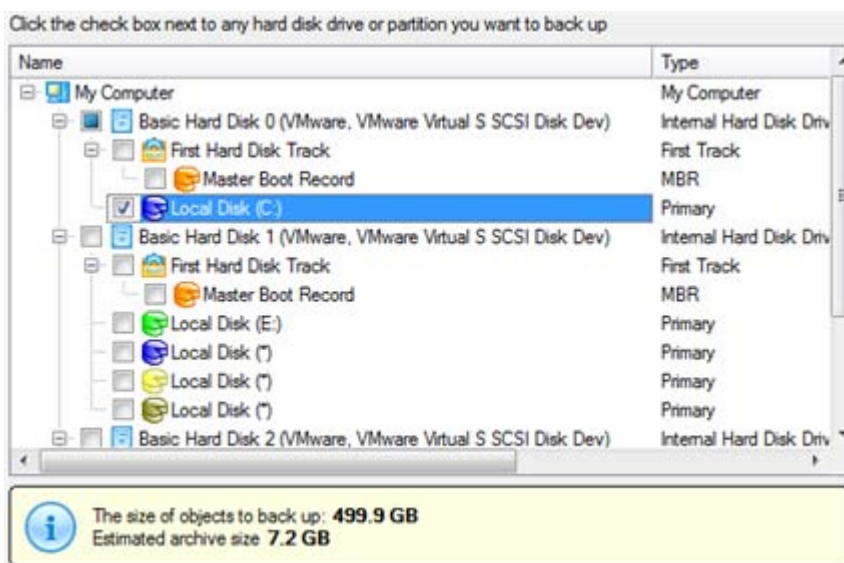
⚠ **You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.**

By default the program will take into account exclude filters set in the Settings dialog.

4. On the Backup Destination page, select the **Save data to FTP locations** option.

5. Set up parameters for the required FTP location.

Select a folder where archive should be placed and specify archive name. Archive name will be used as a sub-folder where backup data files will be stored.

Archive location: ftp://master.paragon-software.com/backup ✖ ▣

Name: Paragon FTP   Go

Login: upload

Password: ●●●●●● ☑ Remember password

Port: 21 ☐ Use Active Mode

- **Archive location**. Type in a full path to the required FTP location;

- **Name**. Set a name for the FTP server (optional);

- **Login**. Enter a login to access the FTP server;

- **Password**. Enter a password to access the FTP server. Click **Remember password** to save it next time you back up to this location;

- **Port**. Specify the required port (21 by default) and click **Use Active Mode** if necessary;

When ready, click the arrow button opposite the archive location field to check out you've got access to the FTP location.

> **You need to check out yourself Windows Firewall or programs of this kind let our program work with the required port (21 by default).**

6. If yes, you'll get a new item on the list named after the selected FTP location. By clicking the + icon you can browse it to specify a more exact location for your backup image.

Name	Size	Date
⊞ 🖹 Paragon FTP(master.paragon-software.com/Backup)		

7. Edit the archive name if necessary.

Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.

Archive details

Archive name: arc_030909071001085

Estimated archive size: **4.4 GB**

Space available on backup destination: **38 GB**

8. Add comments to your backup describing its contents.

Please enter a short comment to describe the archive

No comment

9. Choose whether to accomplish the operation immediately or set a time table for it.

10. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

⚠ **This operation can also be accomplished with the WinPE recovery environment.**

Creating a cyclic partition backup

To automate the partition backup process, please do the following:

1. Launch the Cyclic Backup Wizard by selecting in the Main Menu: **Wizards > Backup Utilities > Cyclic Backup...**

2. On the Wizard's Welcome page, click the Next button;

3. On the What to back up page, select a partition you want to make a cyclic backup of;
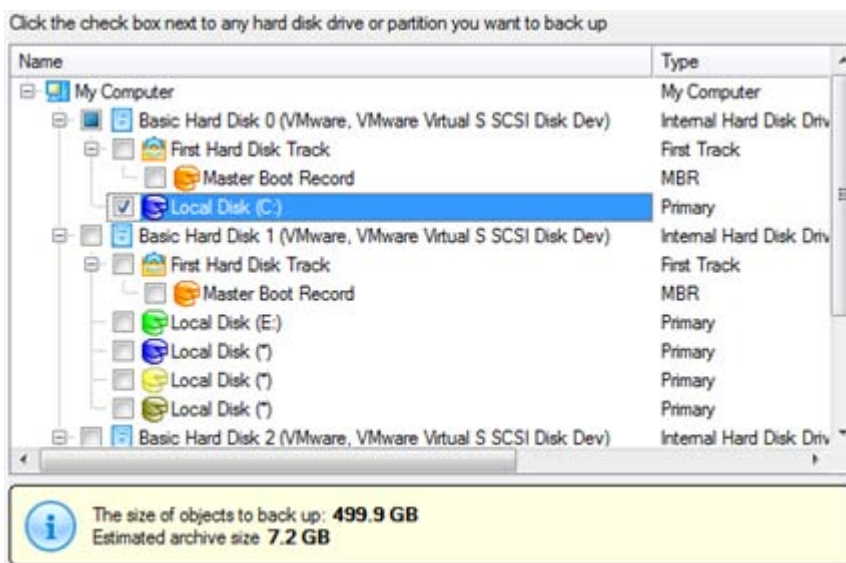
⚠ **The current version of the program enables to make a cyclic backup of only one partition at a time.**

4. On the Backup Destination page, select a mounted/unmounted partition, or a network share to place backup images to.
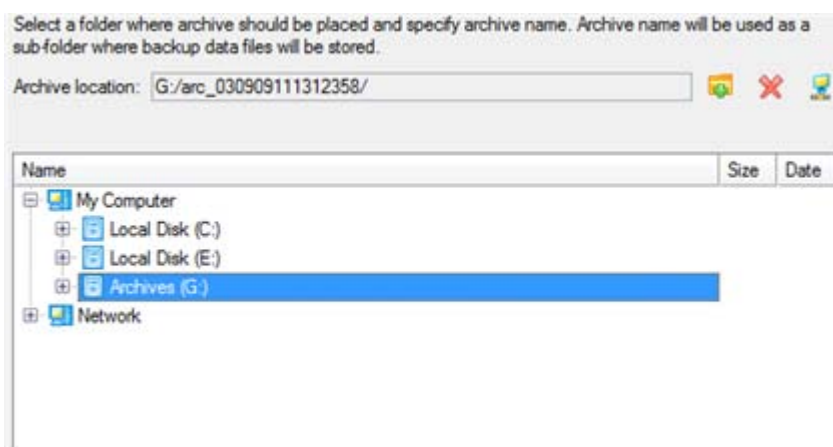
5. Edit the archive name if necessary.

Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.

Archive details

Archive name: arc_030909071001085

Estimated archive size: **4.4 GB**

Space available on backup destination: **38 GB**

> ⚠ **Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another drive needs to be selected.**

6. Add comments to your backup describing its contents.

Please enter a short comment to describe the archive

No comment

7. Set a timetable for the operation.

Please specify how and when would you like to perform the task:

Weekly

☐ Shutdown system after backup

☑ Generate unique names for scheduled backups

Run the task on:

09/02/2009 at 12:00 AM

Every

1 week(s) on: ☑ Monday ☐ Friday
☐ Tuesday ☐ Saturday
☐ Wednesday ☐ Sunday
☐ Thursday

☐ Do not run the task after:

09/02/2009

Specify user name and password.

> ⚠ **To know more on the subject, please consult the Task Scheduling chapter.**

8. On the Cyclic backup type page, choose the way of creating a cyclic backup:

There are several types of the cyclic backup the Wizard can perform. Please choose the one you would like to carry out:

Cyclic Backup Type

◉ Basic type

    Every image made during the operation will be created as a complete base image.

◯ Differential type

    Every first image will be made as a complete base image, all the others will be differentiated from it. A differential backup only contains changes in the partition's contents with respect to a complete image.

- **Base type**. Every image created during the operation will be made as a full archive.

- **Differential type**. Every first image will be made as a full (base) archive and all the others will be differentiated from it. This operation requires much less space, thus considerably saving your system resources.

By setting the **Maximum disk space to store images** and the **Maximum number of images to store** parameters you may define when the operation will be cycled. That means that on exceeding these two parameters the oldest archives will be automatically overwritten (if choosing the Differential type only differential images will be overwritten).

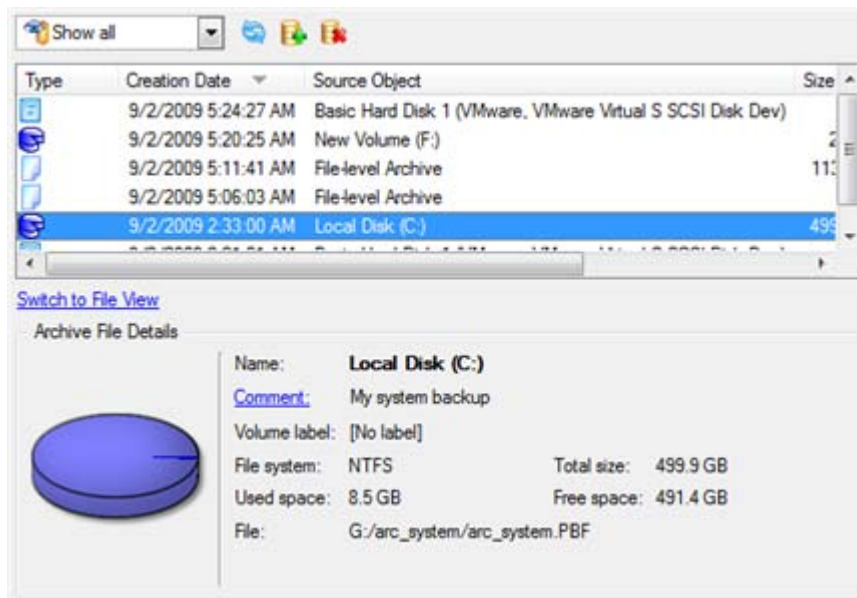|		
Maximum disk space to store images:	10000	MB.
Maximum number of images to store:	2	

9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

The operation will run according to the set timetable. The resulted backup images will be placed into the specified destination (a local or a network disk), its features defined by the wizard.

Creating a differential to a full partition backup
To update an image of the selected partition, please do the following:

1. Click the **Differential Partition Backup** item of the Wizards menu.

2. On the Wizard's Welcome page, click the Next button.

3. On the Browse for Archive page, specify the required full (base) partition archive:

- By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).

Type	Creation Date ▼	Source Object	Size ▲
	9/2/2009 5:24:27 AM	Basic Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)	
	9/2/2009 5:20:25 AM	New Volume (F:)	2
	9/2/2009 5:11:41 AM	File-level Archive	11:
	9/2/2009 5:06:03 AM	File-level Archive	
	9/2/2009 2:33:00 AM	Local Disk (C:)	499

Switch to File View

Archive File Details

Name:	**Local Disk (C:)**
Comment:	My system backup
Volume label:	[No label]
File system:	NTFS
Used space:	8.5 GB
File:	G:/arc_system/arc_system.PBF

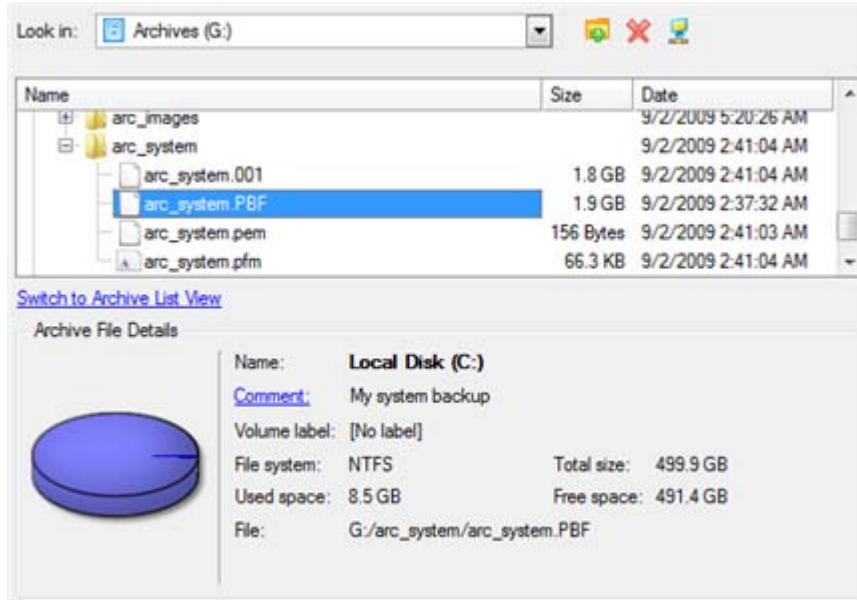Total size: 499.9 GB
Free space: 491.4 GB

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.
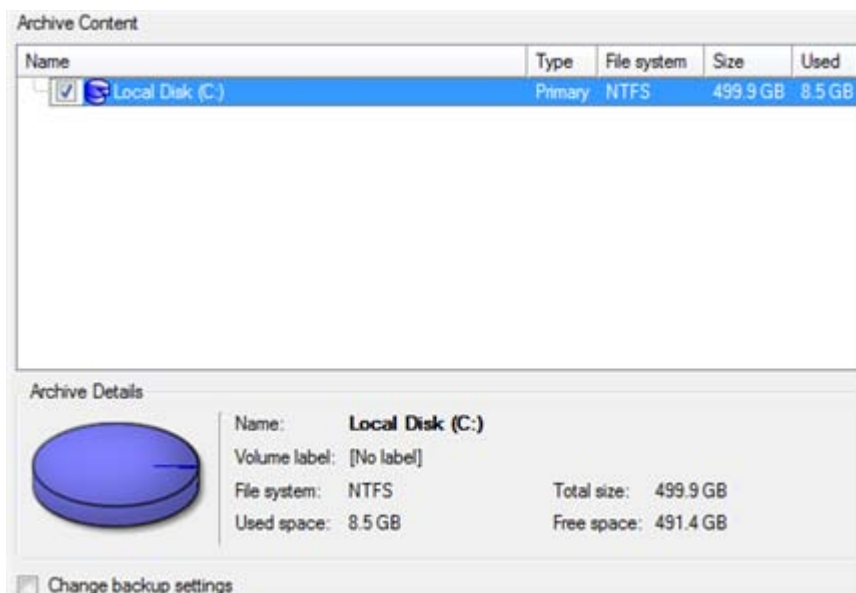
To know more on the subject, please consult the [Viewing Image Properties](#) chapter.

- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

To know more on the subject, please consult the [Viewing Image Properties](#) chapter.

4. The Archive Content page displays detailed information about the contents of the archive. It includes a full description of properties about the partition. In addition, there is the possibility to modify backup settings. To activate the advance mode, you need to mark the appropriate option at the foot of the page.

5. On the Backup Destination page, select where you want to place your backup image.

There are several ways the Wizard can store your data. Please select how would you like to save the archive:

- Save data to local/network drives.
- Save data to physical partitions.
- Burn the data to CD or DVD.

6. Edit the archive name if necessary.

Please specify the archive name. Archive name will be used as a sub-folder where backup data files will be stored.

Archive details

Archive name: arc_030909071001085

Estimated archive size: 4.4 GB

Space available on backup destination: 38 GB

> **Please take into account values of the parameters Estimated archive size and Space available on backup destination - if the archive size exceeds the available space, another drive needs to be selected.**

7. Add comments to your backup describing its contents;

Please enter a short comment to describe the archive

No comment
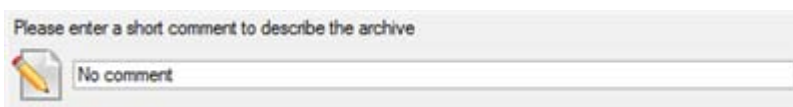
8. Choose whether to accomplish the operation immediately, set a time table for it, or generate a script.

9. On the Backup Summary page review all parameters of the operation and modify them if necessary. Click the Next button to start the backup process.

After the operation is completed you receive a differential backup of the selected partition. It is placed into the specified destination (a local or network disk, the Backup Capsule or a CD/DVD disc), its features defined by the wizard.

Recovery Scenarios

Fixing MBR after a boot virus attack

Let's assume that the MBR (Master Boot Record) of your hard disk has been corrupted as a result of a boot virus attack, thus your system fails to boot.

To fix the MBR of your hard disk, please do the following:

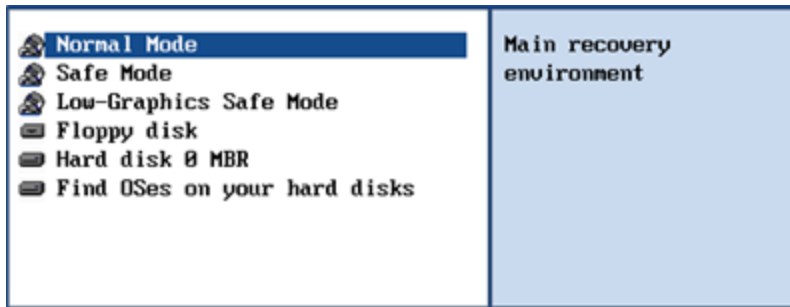1. Start up the computer from our Linux/DOS recovery media.

> **Recovery Media Builder can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.**
>
> **To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.**
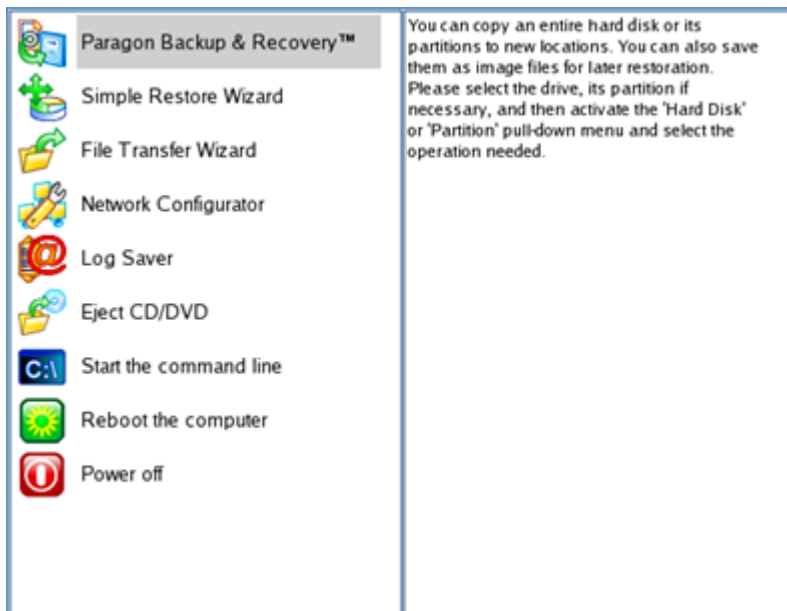
2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious

hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.
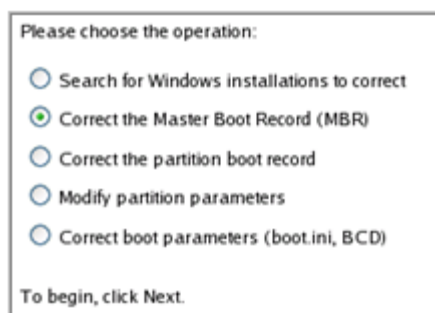

By default the Normal Mode will be automatically initiated after a 10 second idle period.
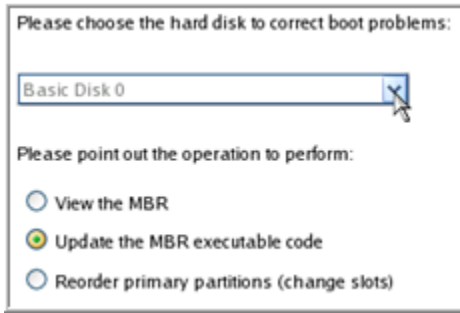
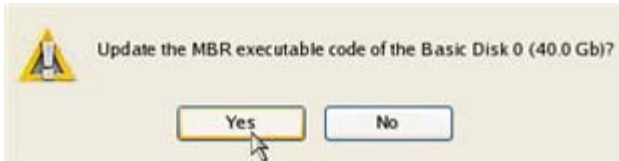3. In the Linux launch menu select Boot Corrector. You can find it in PTS DOS as well.

4. On the Wizard's Welcome page, select the **Correct the Master Boot Record (MBR)** option.

5. On the next page choose the required hard disk from the pull-down list (if several) and then select the **Update the MBR executable code** option.

6. Confirm the operation.

7. After the operation is completed click the Report button to see a well informative summary page. The program also enables to store the resulted report. To do that, just press the Save button and choose the exact location in the opened dialog.
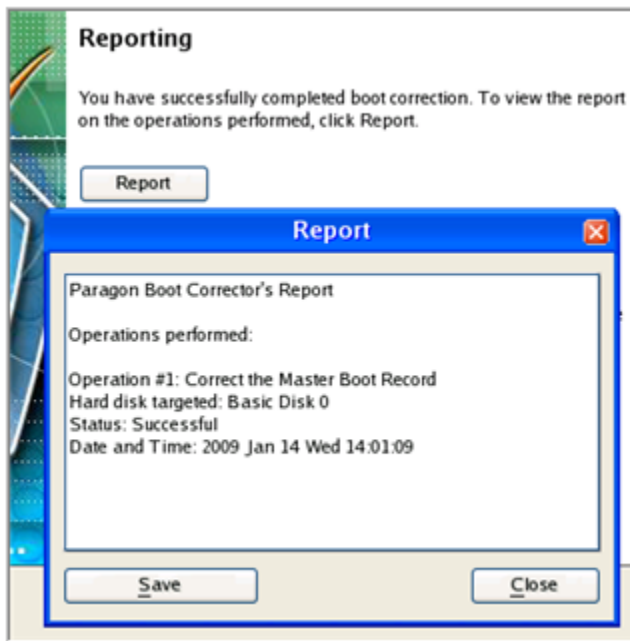
8. Click the Finish button to close Boot Corrector.

9. Reboot the computer.

Fixing Windows startup ability

Let's assume that due to an unknown reason your Windows fails to complete the startup procedure. At first everything seems quite OK, you can see the standard startup messages on the screen, but at some moment it hangs up.

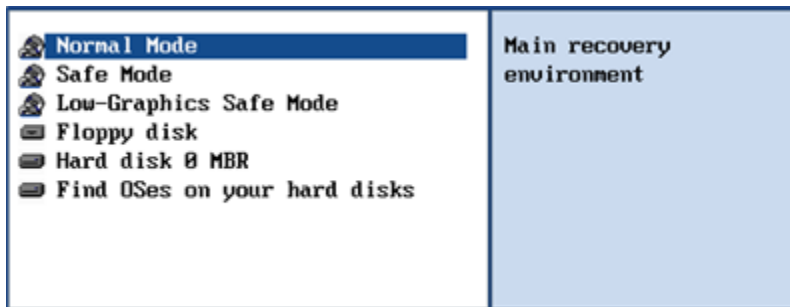To fix your Windows startup ability, please do the following:

1. Start up the computer from our Linux/DOS recovery media.

> **Recovery Media Builder** can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.
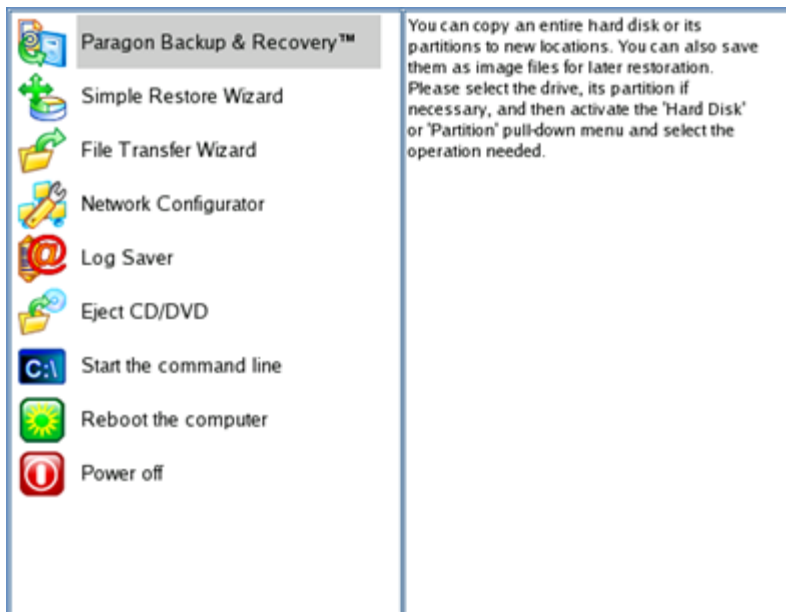>
> **To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.**

2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.

> **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

3. In the Linux launch menu select Boot Corrector. You can find it in PTS DOS as well.

4. On the Wizard's Welcome page, select the **Search for Windows installations to correct** option.

Please choose the operation:

◉ Search for Windows installations to correct
◯ Correct the Master Boot Record (MBR)
◯ Correct the partition boot record
◯ Modify partition parameters
◯ Correct boot parameters (boot.ini, BCD)

To begin, click Next.

5. On the next page choose the required Windows installation from the list of found installations (if several), then select the **Edit the Boot.ini file** option. If you're not sure which installation you need, please use the Properties button to get more info on the selected item.

Correct Windows installations

Program has searched for valid Windows installations on your computer. The results of the search you can see below. Status S refers to a system partition (you can edit the Boot.ini file), B - a boot partition (you can correct the System Registry).

N	Partition	Status	System root	Type
1	Disk 0, Partition 0	S+B	WINDOWS	WinXP

For the highlighted Windows installation, please point out the operation to perform:

[Properties]

◯ Correct drive letters in the System Registry
◉ Edit the Boot.ini file
◯ Correct the partition boot record
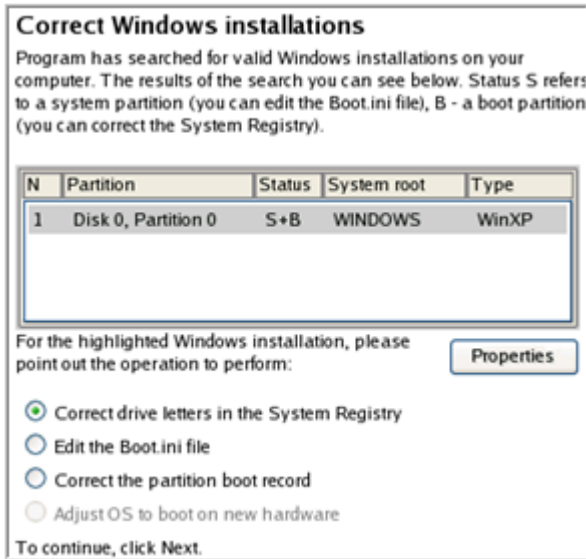◯ Adjust OS to boot on new hardware

To continue, click Next.

6. Examine the file – maybe that's where the problem is. If it contains a mistake, correct it by using the appropriate buttons.
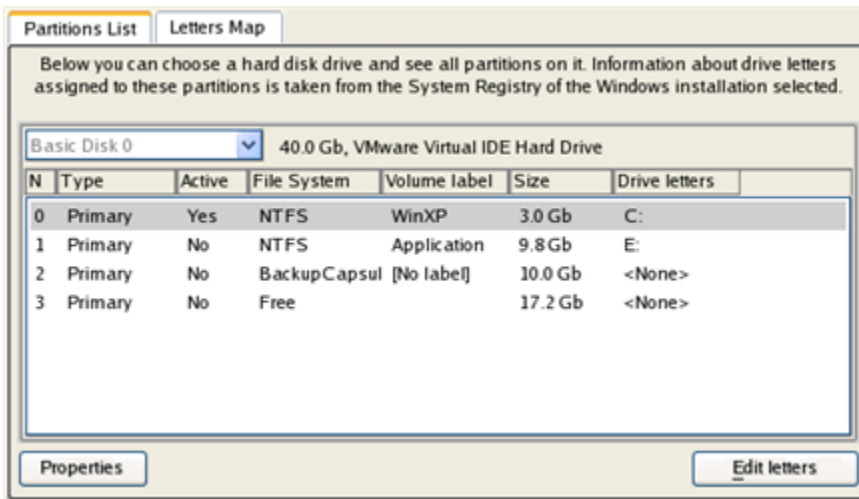
Edit the Boot.ini file on Hard Disk 0, Partition 0

[boot loader]
timeout=10
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Paragon VMWare Windows XP Partition 01" /fastdetect /

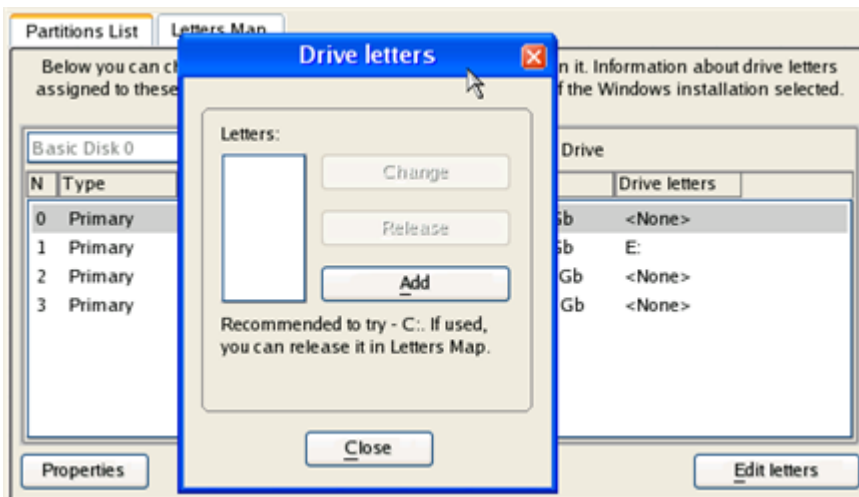| Copy	Insert	Add	Delete
Edit	Insert the sample	Add the sample	

7. If the Boot.ini file does not contain any mistake, please return to the Correct Windows Installations page to correct drive letters in the Windows System Registry.

Correct Windows installations

Program has searched for valid Windows installations on your computer. The results of the search you can see below. Status S refers to a system partition (you can edit the Boot.ini file), B - a boot partition (you can correct the System Registry).

N	Partition	Status	System root	Type
1	Disk 0, Partition 0	S+B	WINDOWS	WinXP

For the highlighted Windows installation, please point out the operation to perform: Properties

⊙ Correct drive letters in the System Registry
○ Edit the Boot.ini file
○ Correct the partition boot record
○ Adjust OS to boot on new hardware

To continue, click Next.

8. On the next page choose a hard disk from the pull-down list (if several), then the required partition. If you're not sure which installation you need, please use the Properties button to get more info on the selected item.

Partitions List | Letters Map

Below you can choose a hard disk drive and see all partitions on it. Information about drive letters assigned to these partitions is taken from the System Registry of the Windows installation selected.

Basic Disk 0 ▼   40.0 Gb, VMware Virtual IDE Hard Drive

N	Type	Active	File System	Volume label	Size	Drive letters
0	Primary	Yes	NTFS	WinXP	3.0 Gb	C:
1	Primary	No	NTFS	Application	9.8 Gb	E:
2	Primary	No	BackupCapsul	[No label]	10.0 Gb	<None>
3	Primary	No	Free		17.2 Gb	<None>

Properties   Edit letters

9. Click the Edit Letters button to correct an existing drive letter or assign a new one in the Windows System Registry.

Partitions List | Letters Map

Below you can ch...   ...n it. Information about drive letters
assigned to these...   ...f the Windows installation selected.

Drive letters ✕

Basic Disk 0   Drive

N	Type			Drive letters
0	Primary	Sb		<None>
1	Primary	Sb		E:
2	Primary	Gb		<None>
3	Primary	Gb		<None>

Letters:

Change

Release

Add

Recommended to try - C:. If used, you can release it in Letters Map.

Close

Properties   Edit letters

10. Once you've assigned the appropriate drive letter, close the dialog, then click the Apply button.

11. Confirm the operation.

12. After the operation is completed click the Report button to see a well informative summary page. The program also enables to store the resulted report. To do that, just press the Save button and choose the exact location in the opened dialog.
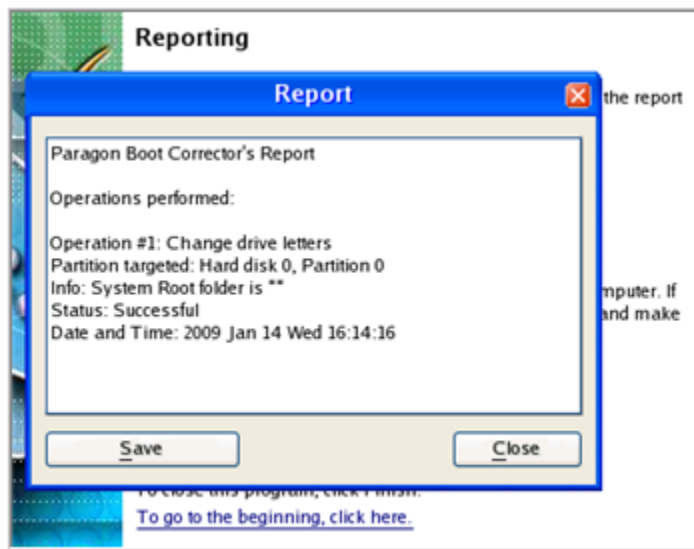

13. Click the Finish button to close Boot Corrector.

14. Reboot the computer.

Restoring a hard disk from the bootable Backup Capsule

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got the bootable backup capsule containing a backup of your hard disk. That's just enough to easily get your system back on track again.

To restore your hard disk from a backup image contained in the backup capsule when the current OS is down, please do the following:

1. Start up the computer from the bootable backup capsule. By default, the program offers to use the F1 hot key to boot from it.
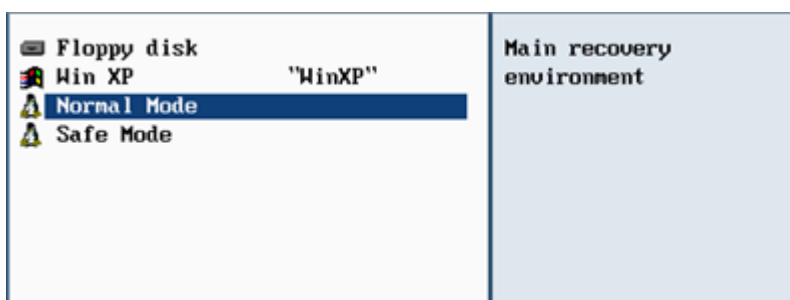
> ⚠ **This scenario implies that the backup capsule is bootable.**

2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux).
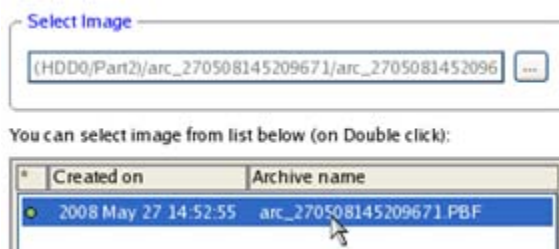
> ⚠ **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

3. In the Linux launch menu select the Simple Restore Wizard. You can find the same wizard in PTS DOS as well.

Paragon Backup & Recovery™	You can copy an entire hard disk or its partitions to new locations. You can also save them as image files for later restoration. Please select the drive, its partition if necessary, and then activate the 'Hard Disk' or 'Partition' pull-down menu and select the operation needed.
Simple Restore Wizard	
File Transfer Wizard	
Network Configurator	
Log Saver	
Eject CD/DVD	
Start the command line	
Reboot the computer	
Power off	

4. On the Wizard's Welcome page, click the Next button.

5. On the What to Restore page, you can see a list of available images (if several). Most likely the required archive will be there too. If not, click the standard browse button [...] to find it. When you find your image, double click on it to proceed.

Select Image

(HDD0/Part2)/arc_270508145209671/arc_2705081452096 [...]

You can select image from list below (on Double click):

*	Created on	Archive name
●	2008 May 27 14:52:55	arc_270508145209671.PBF

6. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.
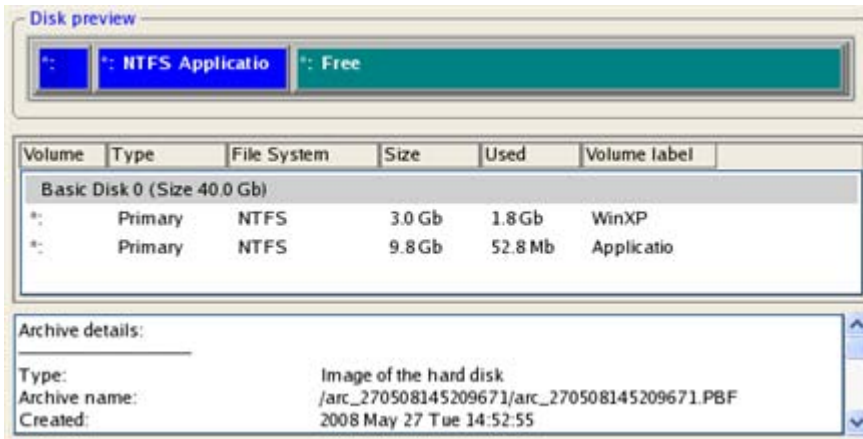
7. On the next page specify a hard disk to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.
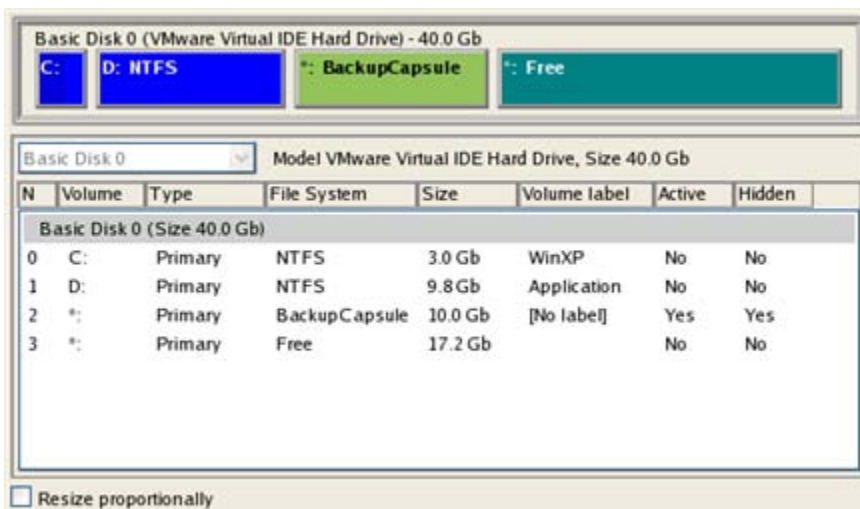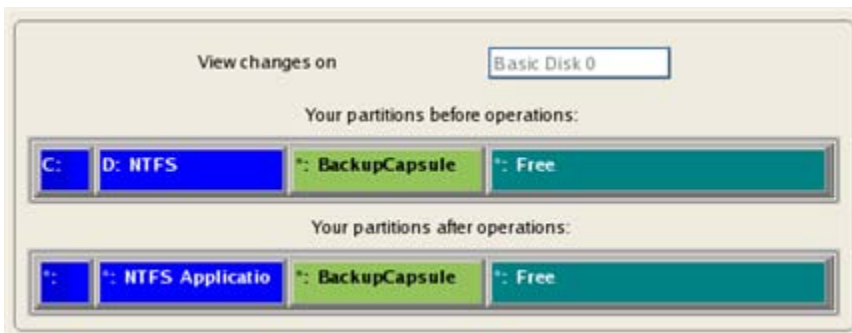

You can also make the program resize the on-disk partitions proportionally if necessary by marking the appropriate checkbox.
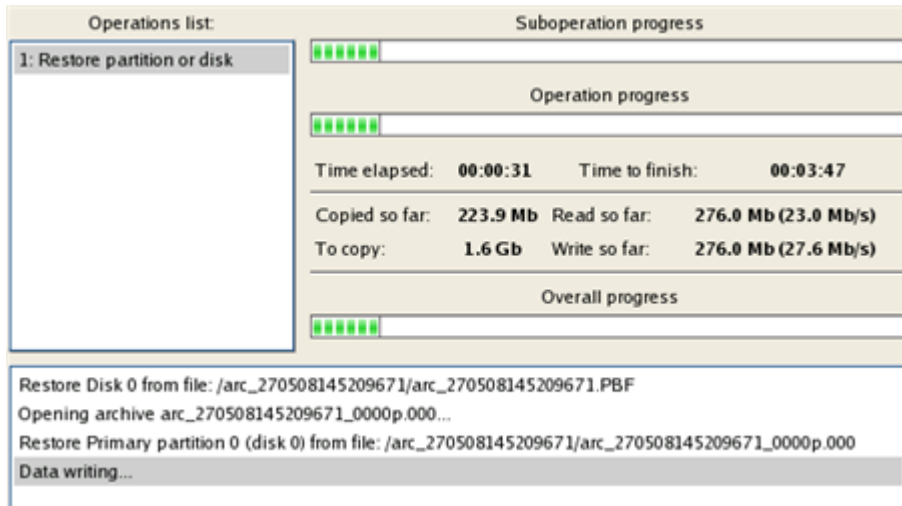
> ⚠️ **All contents on the disk selected for restoring purposes will be deleted during the operation.**

8. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.

9. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

Operations list:	Suboperation progress
1: Restore partition or disk	

Operation progress

Time elapsed:	00:00:31	Time to finish:	00:03:47
Copied so far:	223.9 Mb	Read so far:	276.0 Mb (23.0 Mb/s)
To copy:	1.6 Gb	Write so far:	276.0 Mb (27.6 Mb/s)

Overall progress

Restore Disk 0 from file: /arc_270508145209671/arc_270508145209671.PBF
Opening archive arc_270508145209671_0000p.000...
Restore Primary partition 0 (disk 0) from file: /arc_270508145209671/arc_270508145209671_0000p.000
Data writing...

10. After completing the operation close the wizard and reboot the computer.

Restoring a system partition from external media (CD/DVD)

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got a backup of your system partition on a bootable DVD disc. That's just enough to easily get your system back on track again.

To restore your system partition from a backup image located on CD/DVD when the current OS is down, please do the following:

1. Insert a CD/DVD disc containing the previously prepared backup image into a CD/DVD drive (the BIOS must be enabled to boot the system from the CD/DVD device).

> ⚠ **This scenario implies that you have got a bootable archive on your CD/DVD.**
>
> **In case the backup image is stored on several CD/DVD disks, please insert the first one.**

2. Restart the computer.

3. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.

```
 Normal Mode             Main recovery
 Safe Mode               environment
 Low-Graphics Safe Mode
 Floppy disk
 Hard disk 0 MBR
 Find OSes on your hard disks
```

> ⚠ **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

4. In the PTS DOS launch menu select the Simple Restore Wizard. You can find the same wizard in Linux as well.
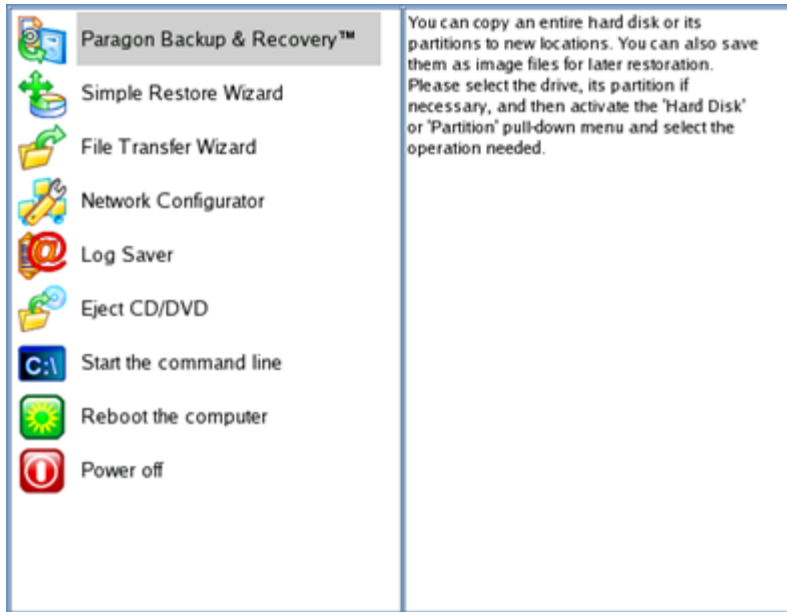

5. On the Wizard's Welcome page, click the Next button.

6. On the What to Restore page, you can see a list of available images (if several). Most likely the required archive will be there too. If not, click the standard browse button [...] to find it. When you find your image, double click on it to proceed.
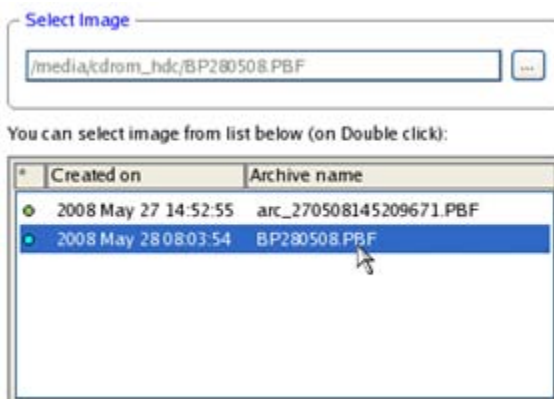
7. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.
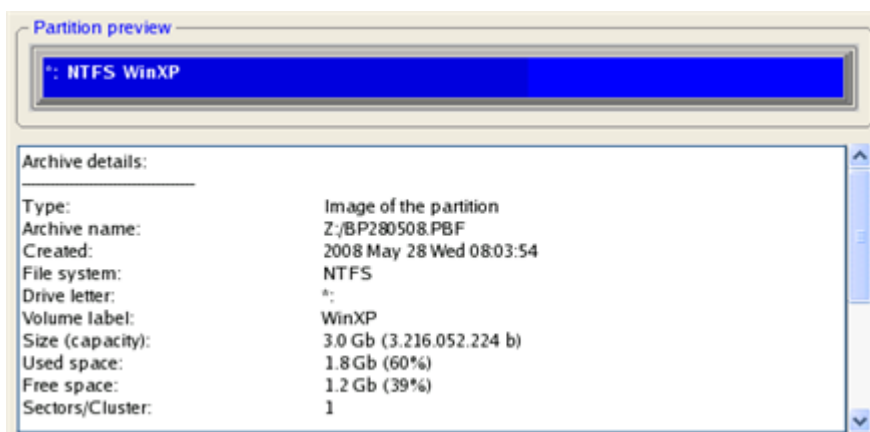
8. On the next page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.
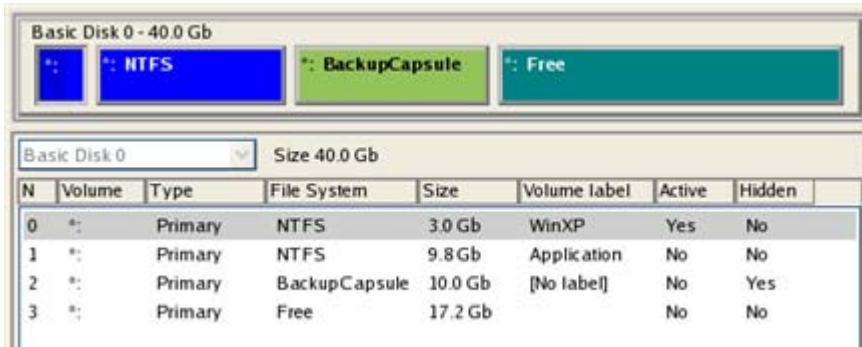
> ⚠️ **All contents on the partition selected for restoring purposes will be deleted during the operation.**

9. On the Partition Start and Size page you can change size of the partition and its location if necessary.
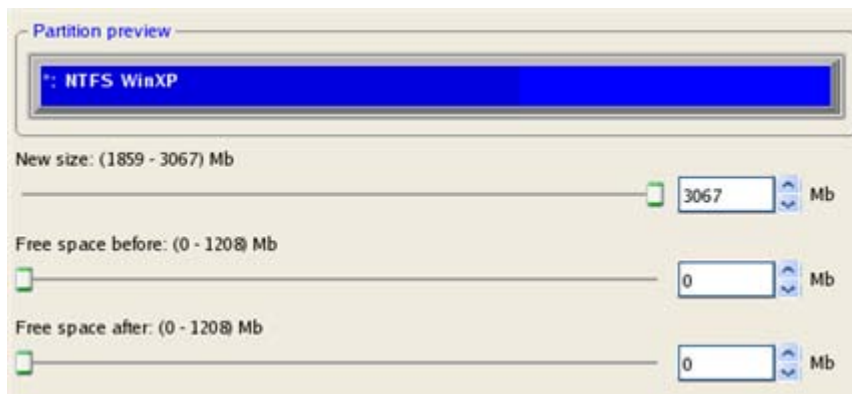
10. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.

11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

Operations list:	Suboperation progress
1: Restore partition or disk	

Operation progress

Time elapsed:	00:01:10	Time to finish:	00:06:36
Copied so far:	290.0 Mb	Read so far:	366.0 Mb (5.7 Mb/s)
To copy:	1.5 Gb	Write so far:	366.0 Mb (52.3 Mb/s)

Overall progress

Restore Primary partition 0 (disk 0) from file: Z:/BP280508.PBF
Data writing...
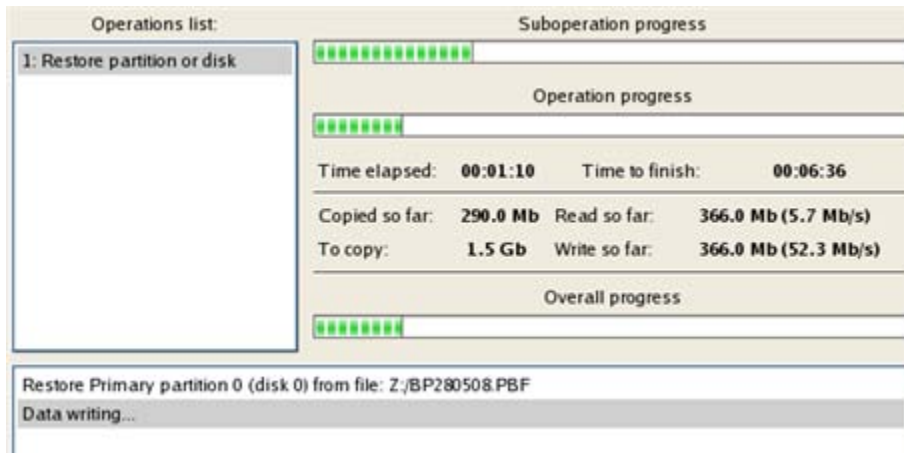
12. After completing the operation close the wizard, and then reboot the computer.

Restoring a system partition from a network drive

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got a backup of your hard disk on a remote backup server. That's just enough to easily get your system back on track again.

To restore your system partition from a backup image located on a network drive, please do the following:

1. Select the Restore Wizard.

2. On the Restore Wizard's Welcome page, click the Next button.

3. On the Browse for Archive page you need to specify the required backup image. So you should take the following steps to do that:

    - Select **Network** as a backup destination;
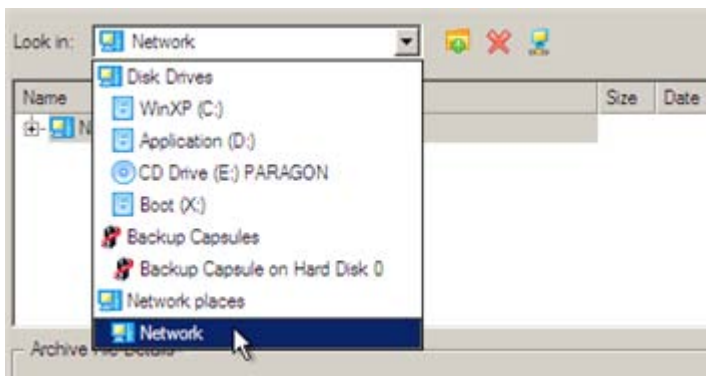
    - Map a network disk where your archives are placed:

    - Call the Map Network Drive dialog by clicking the appropriate button;
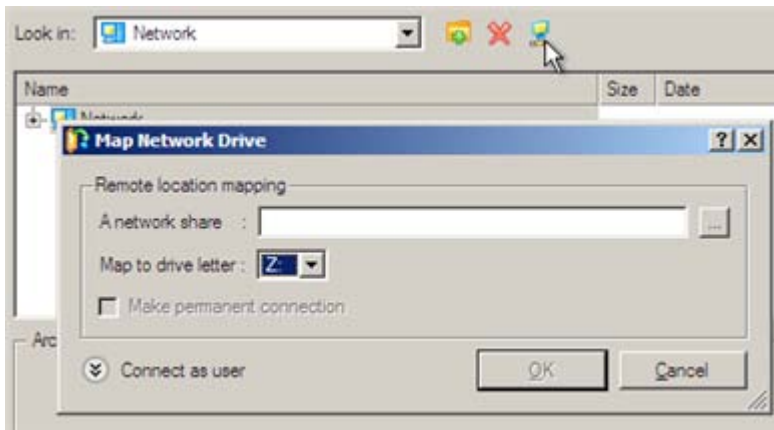
- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

- Define a letter from the pull-down list of available drive letters;

- Click the Connect as user button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

- Choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image.
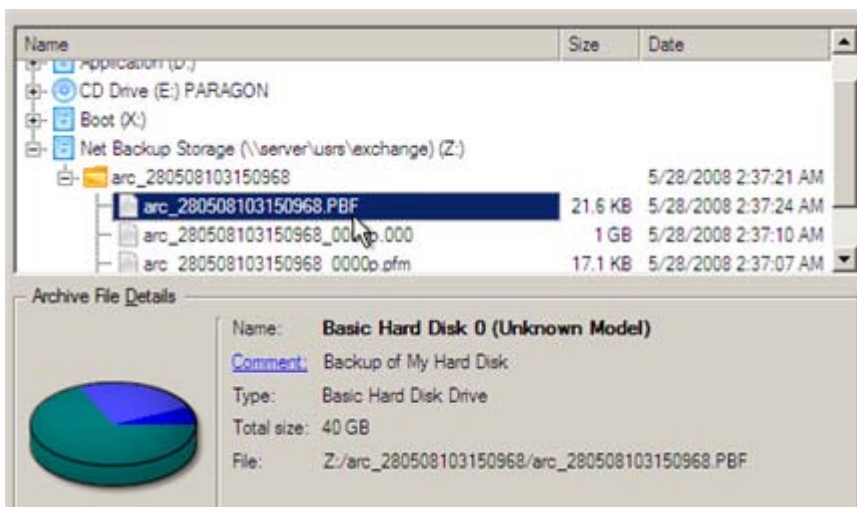
4. The What to Restore page displays detailed information about the contents of the archive. Select the required item to restore. In our case it is the first partition of the disk.
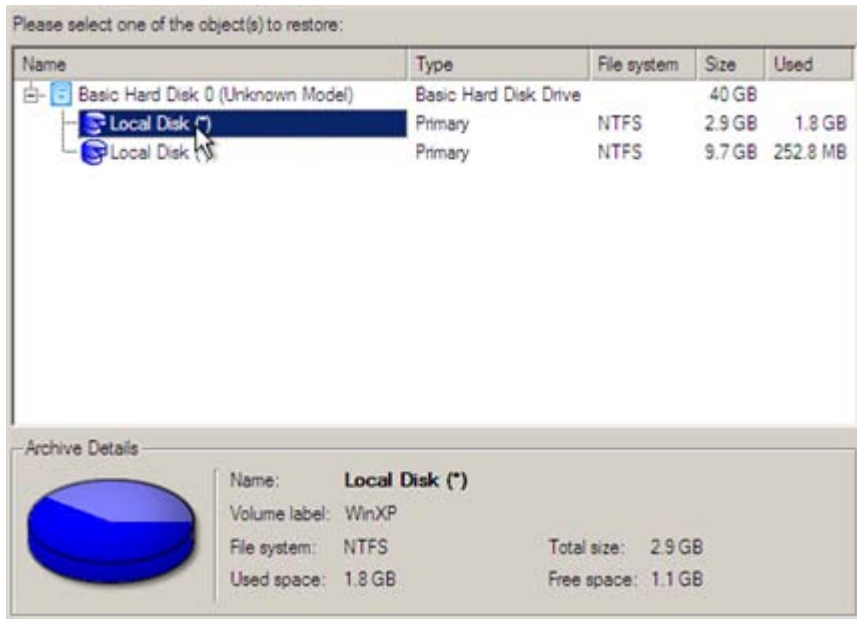
Please select one of the object(s) to restore:

Name	Type	File system	Size	Used
Basic Hard Disk 0 (Unknown Model)	Basic Hard Disk Drive		40 GB	
Local Disk (*)	Primary	NTFS	2.9 GB	1.8 GB
Local Disk (*)	Primary	NTFS	9.7 GB	252.8 MB

Archive Details

Name:	**Local Disk (*)**		
Volume label:	WinXP		
File system:	NTFS	Total size:	2.9 GB
Used space:	1.8 GB	Free space:	1.1 GB

5. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.

Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be **deleted** and replaced with the one from the archive.

Basic Hard Disk 0 (VMware Virtual IDE Hard Drive)

	Applicati...	Backup C...	(Unallocated)
	9.7 GB NTFS	9.9 GB	17.2 GB

Total size: 2.9 GB
Used: 1.8 GB
Free: 1.1 GB

> ⚠️ **All contents on the partition selected for restoring purposes will be deleted during the operation.**

6. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter.

Your hard disk after the changes:

Basic Hard Disk 0 (VMware Virtual IDE Hard Drive)

	Applicati...	Backup C...	(Unallocated)
	9.7 GB NTFS	9.9 GB	17.2 GB

Logical Disk Restore Options

Please specify the size of the restored partition:	3067	1849 MB - 3067 MB
Please specify size of free space before the partition:	0	0 MB - 1217 MB
Please specify size of free space after the partition:	0	0 MB - 1217 MB

Assign the following drive letter: C:
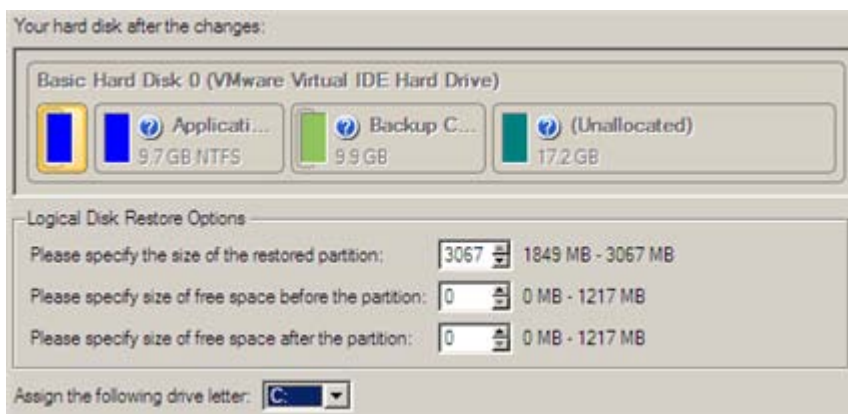
7. On the next page of the wizard confirm the operation by selecting the appropriate option.
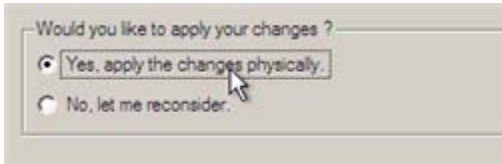
8. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.
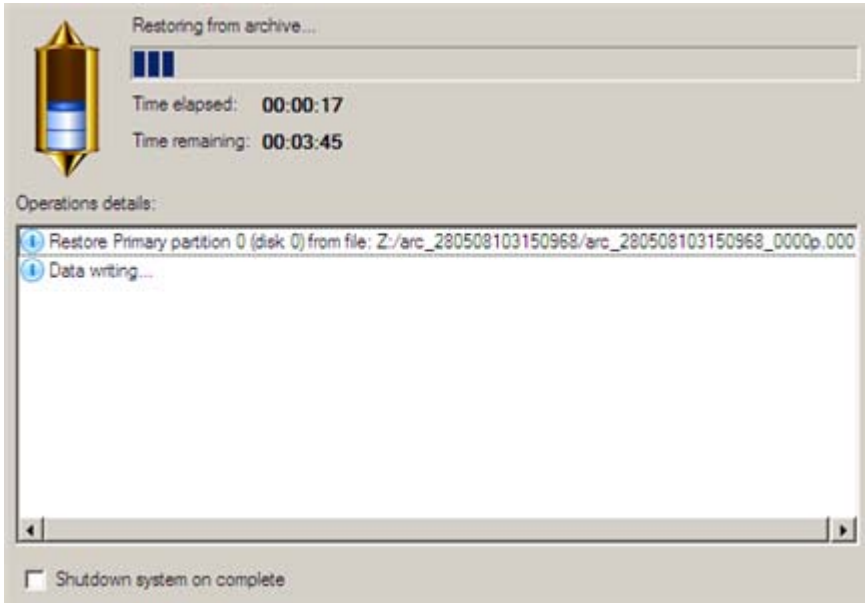
Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.
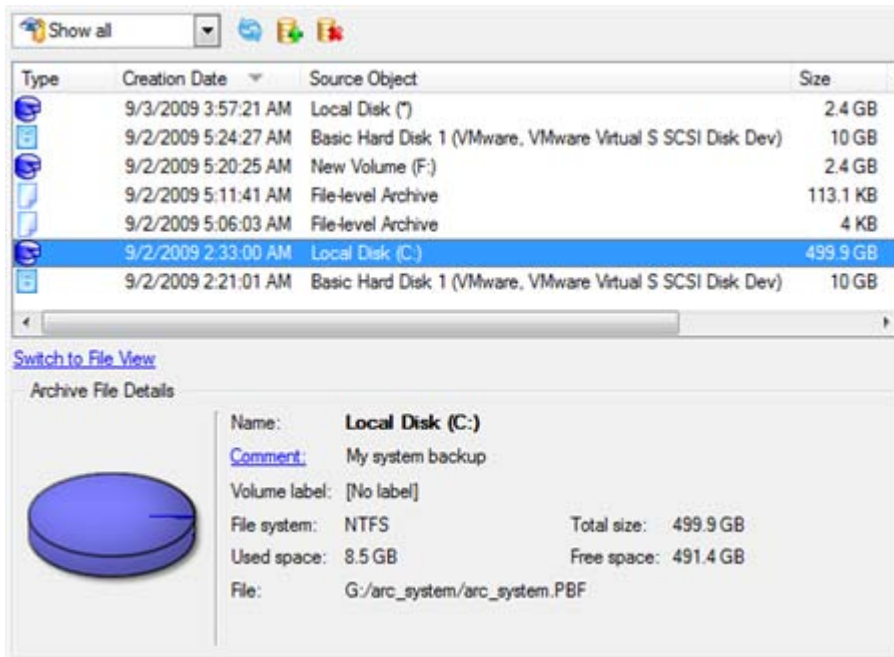
9. After completing the operation close the wizard, and then reboot the computer.

Restoring a system partition from a local drive

Let's assume that your operating system gives trouble after having installed brand new software. But you've got a backup of the system partition on a local disk. That's just enough to easily roll it back to the point when run smoothly.

To restore your system partition from a backup image located on a local disk, please do the following:

1. Click the **Restore** item of the Wizards menu (any of the ways described earlier can also be used here).

2. On the Restore Wizard's Welcome page, click the Next button.

3. On the Browse for Archive page, specify the required archive:

- By clicking the **Switch to Archive List View** link, you can see a list of images contained in the Archive Database (if any).

To get a clear-cut picture on properties of the required image, just click on it and the section below will (i.e. Archive File Details) display a short description.

⚠ **To know more on the subject, please consult the Viewing Image Properties chapter.**

- By clicking the **Switch to File View** link, you can find the required image in the browser-like window. The section below (i.e. Archive File Details) will also display a short description of the selected image.

⚠ **To know more on the subject, please consult the Viewing Image Properties chapter.**

4. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.

Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be **deleted** and replaced with the one from the archive.

Basic Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)

Local Disk (C:)
499.9 GB NTFS

> ⚠ **All contents on the partition selected for restoring purposes will be deleted during the operation.**

5. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter.

Your hard disk after the changes:

Basic Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)

Local Disk (C:)
499.9 GB NTFS

Geometry Restore Options

Please specify the size of the restored partition: 511998   8719 MB - 511998 MB

Please specify size of free space before the partition: 0   0 MB - 503279 MB

Please specify size of free space after the partition: 0   0 MB - 503279 MB

6. Complete the wizard and then apply the pending changes.

Apply pending changes ?

☐ Do not show this message again   Yes   No
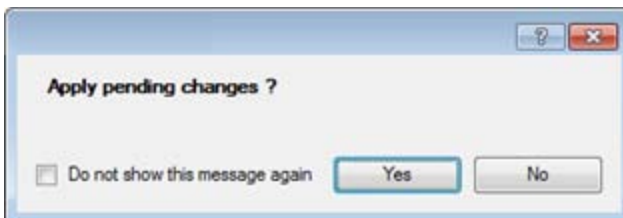
7. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.
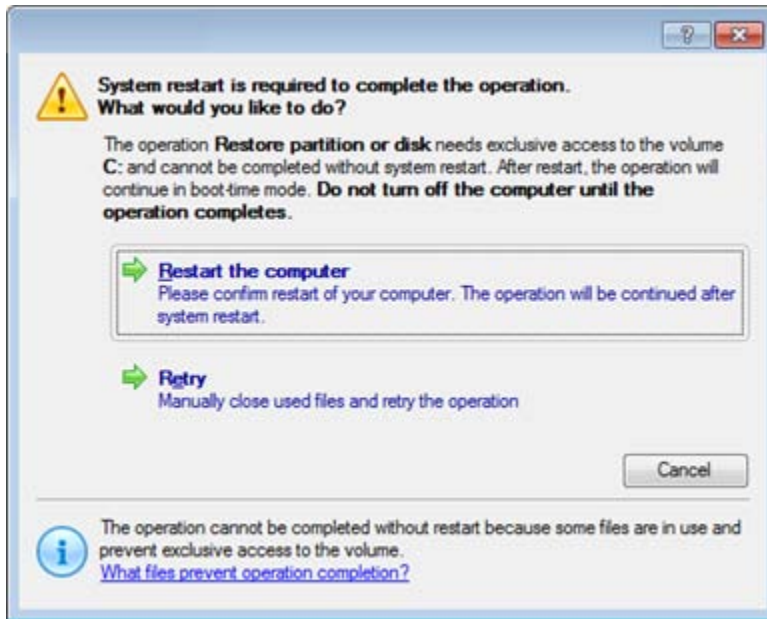
8. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.
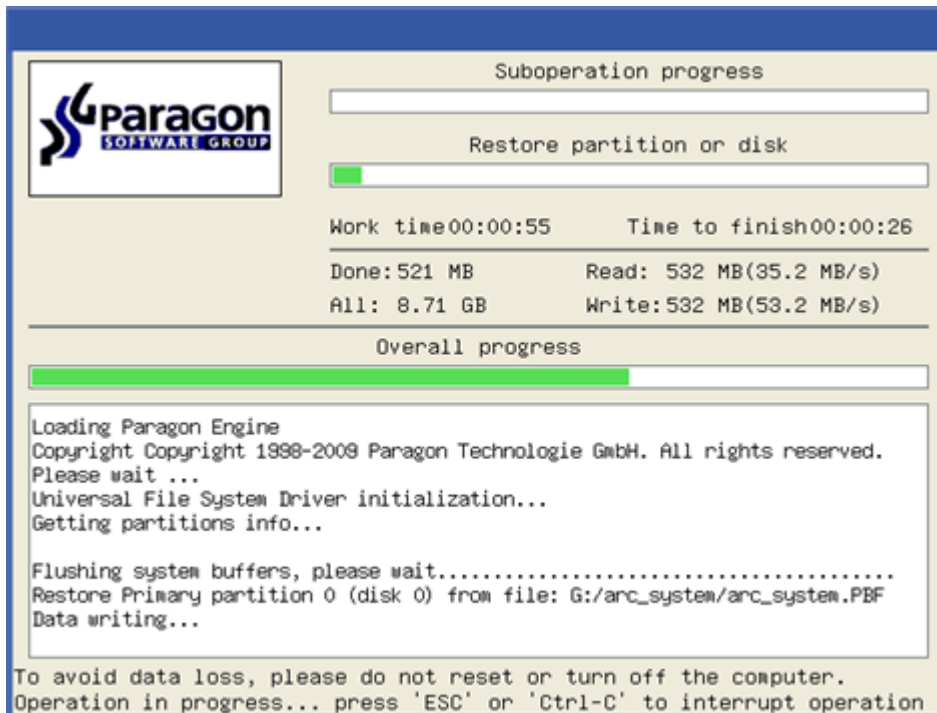
After completing the operation the program will automatically reboot the computer.

Restoring a dual boot Mac from an external USB drive
Let's assume that your Mac fails to boot because of a hard disk malfunction. But you've got a backup of your hard disk on an external USB drive. Just replace the failed disk with a new one and carry out a bare metal restore.

To restore a dual boot Mac from a backup image located on an external USB drive, please do the following:

1. Start up the computer from our Linux/DOS recovery media.
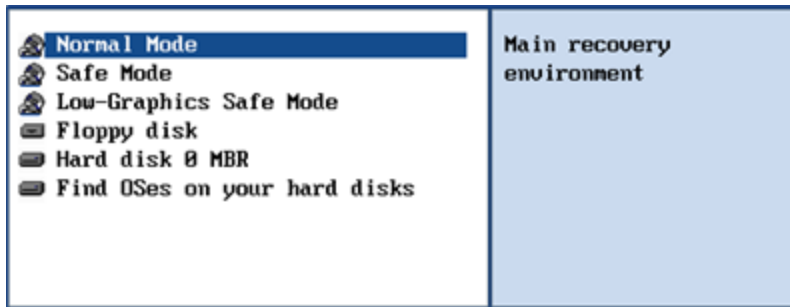
> ⚠️ **Recovery Media Builder can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.**

> **To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.**

2. Connect an external USB drive to the computer.

3. Restart the computer.

4. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to work with USB devices.
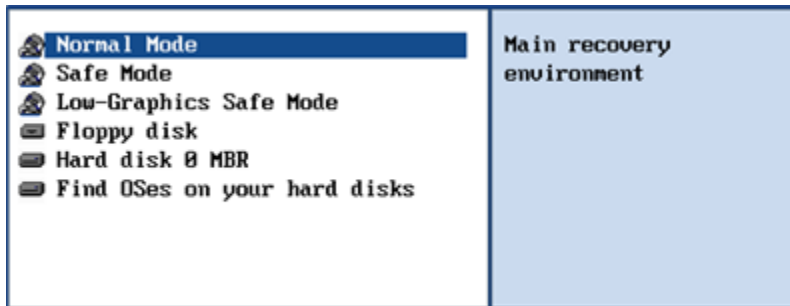
> ⚠ **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

5. In the Linux launch menu select the Simple Restore Wizard.
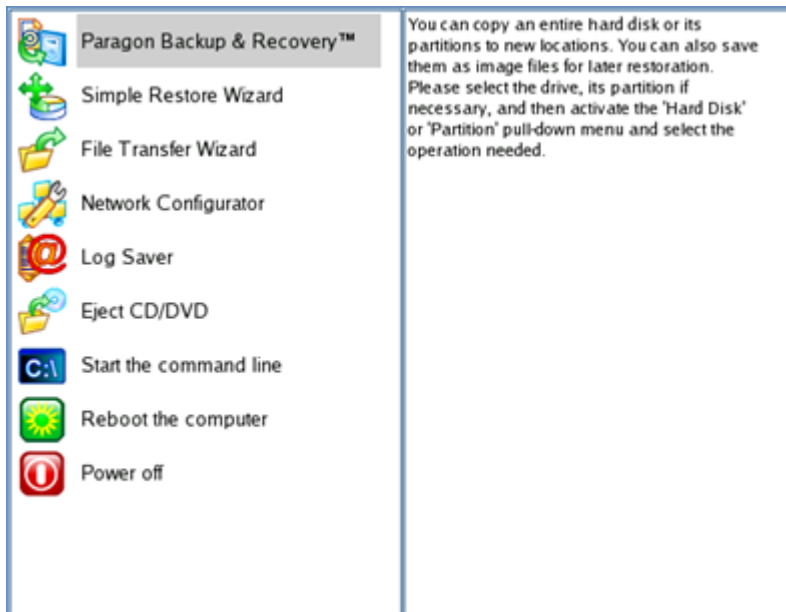
6. On the Wizard's Welcome page, click the Next button.

7. On the What to Restore page, click the standard browse button [...] to find the required archive. When done, double click on it to select.
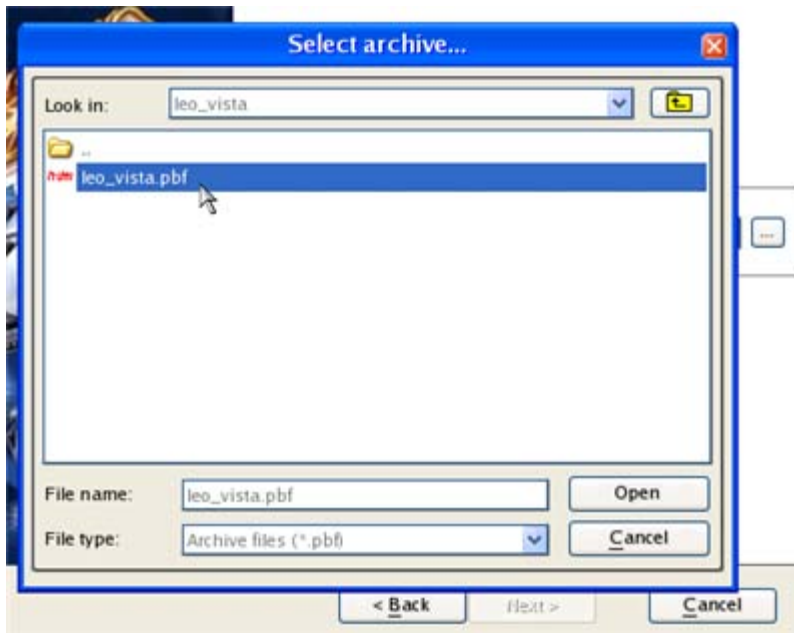
8. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.
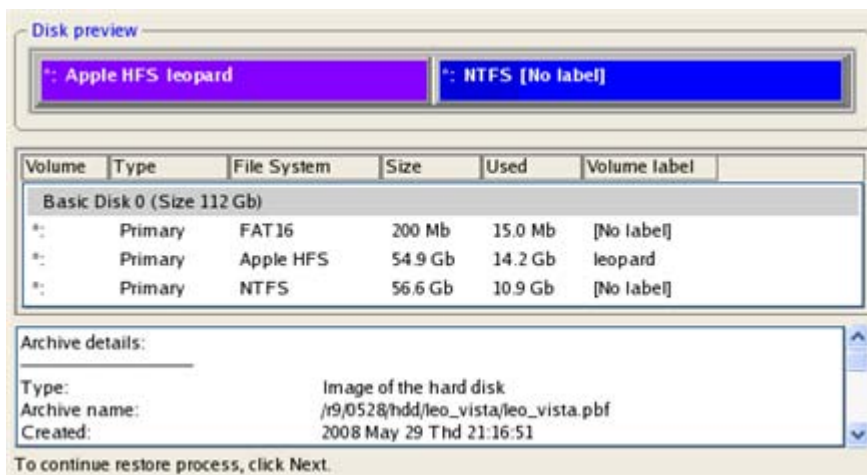
9. On the next page specify a hard disk to restore the image to.
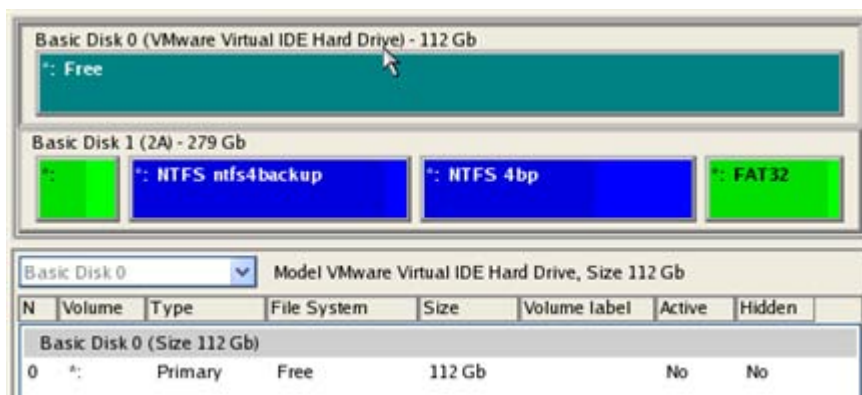
All contents on disk selected for restoring purposes will be deleted during the operation.

10. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.
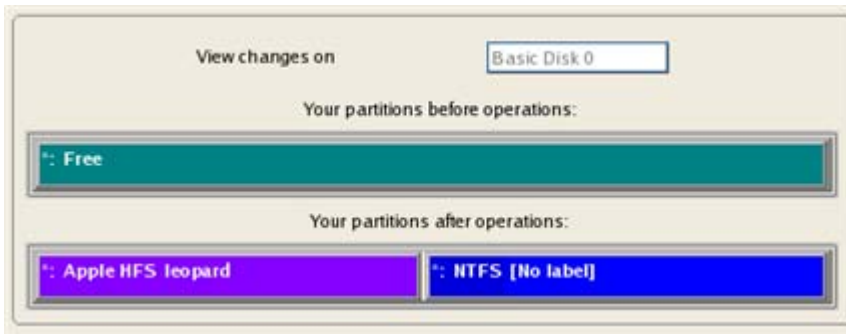
11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.
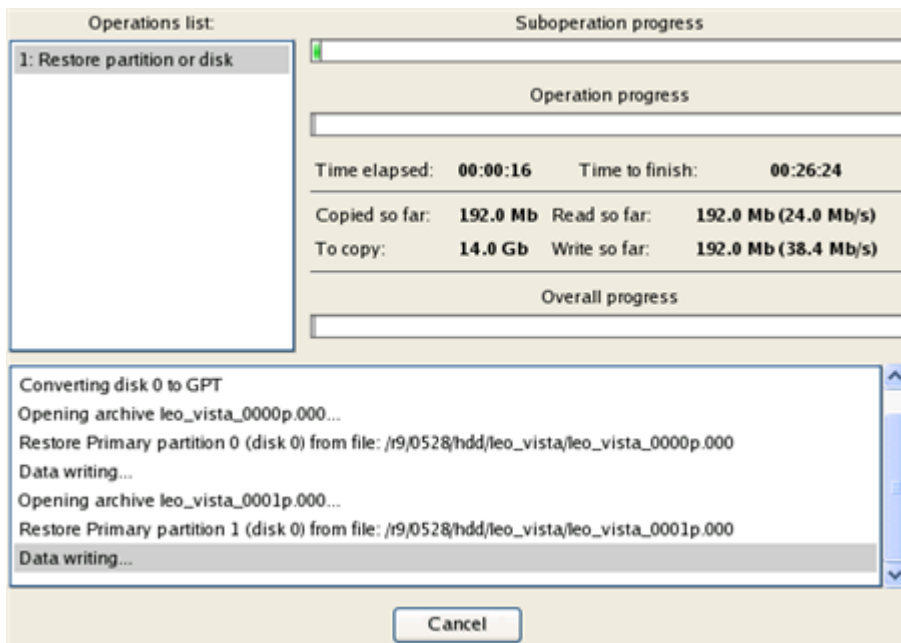
12. After completing the operation close the wizard, and then reboot the computer.

Copying of data from the corrupted system disk to another hard disk

To retrieve valuable information from your hard disk and copy it to another hard disk when the system fails to boot, please do the following:

1. Connect the second hard disk to the computer.

2. Start up the computer from our Linux/DOS recovery media.

> **Recovery Media Builder** can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.
>
> To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

3. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious

hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.
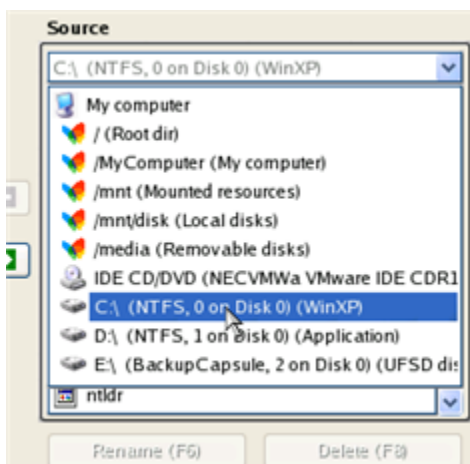

By default the Normal Mode will be automatically initiated after a 10 second idle period.
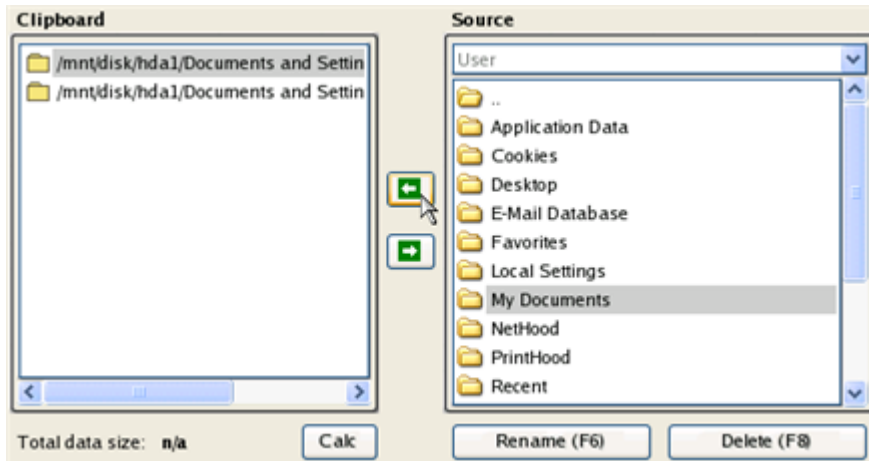
4. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.

5. On the Wizard's Welcome page, click the Next button.

6. Select a disk where the files you need are stored from the pull-down list in the right pane of the page.

7. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.

Click the Calc button to estimate the resulted data size.

8. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.
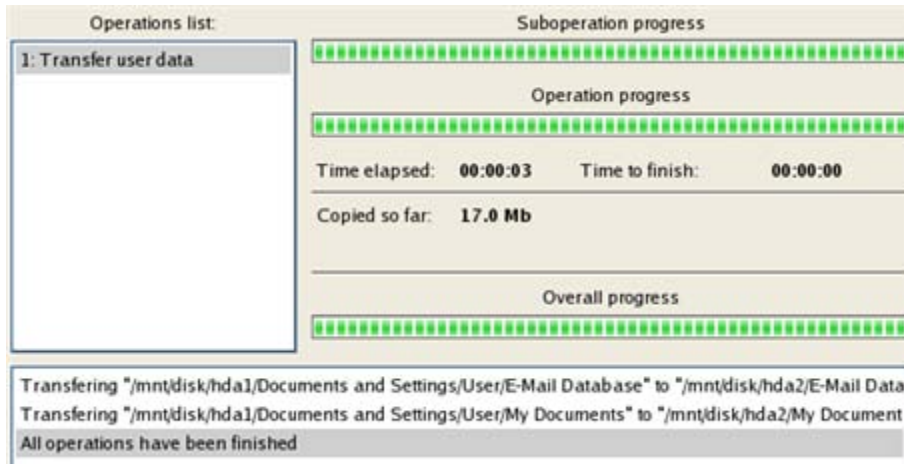

9. On the Select Destination Path page, select a hard disk to copy the data to by pressing the standard browse button […].

10. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

Operations list:	Suboperation progress
1: Transfer user data	

Operation progress

Time elapsed: 00:00:03   Time to finish: 00:00:00

Copied so far: 17.0 Mb

Overall progress

Transfering "/mnt/disk/hda1/Documents and Settings/User/E-Mail Database" to "/mnt/disk/hda2/E-Mail Data
Transfering "/mnt/disk/hda1/Documents and Settings/User/My Documents" to "/mnt/disk/hda2/My Document
All operations have been finished

12. After the operation is completed, close the wizard by pressing the appropriate button.

13. Turn off the computer.

Burning of data from the corrupted system disk to CD/DVD
To retrieve valuable information from your hard disk and burn it to CD/DVD when the system fails to boot, please do the following:
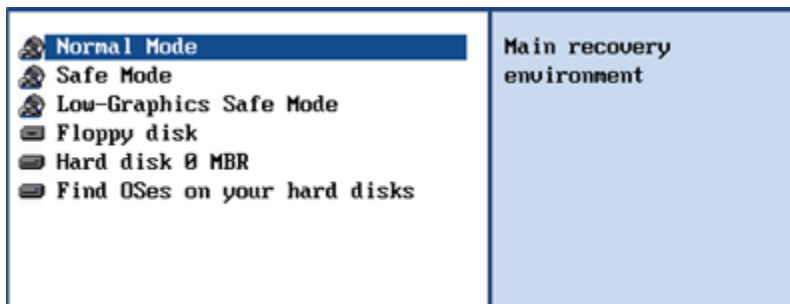
1. Start up the computer from our Linux/DOS recovery media.

> **Recovery Media Builder can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.**
>
> **To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.**

2. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to burn CD/DVD discs.

| Normal Mode	Main recovery
Safe Mode	environment
Low-Graphics Safe Mode	
Floppy disk	
Hard disk 0 MBR	
Find OSes on your hard disks	

> **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

3. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
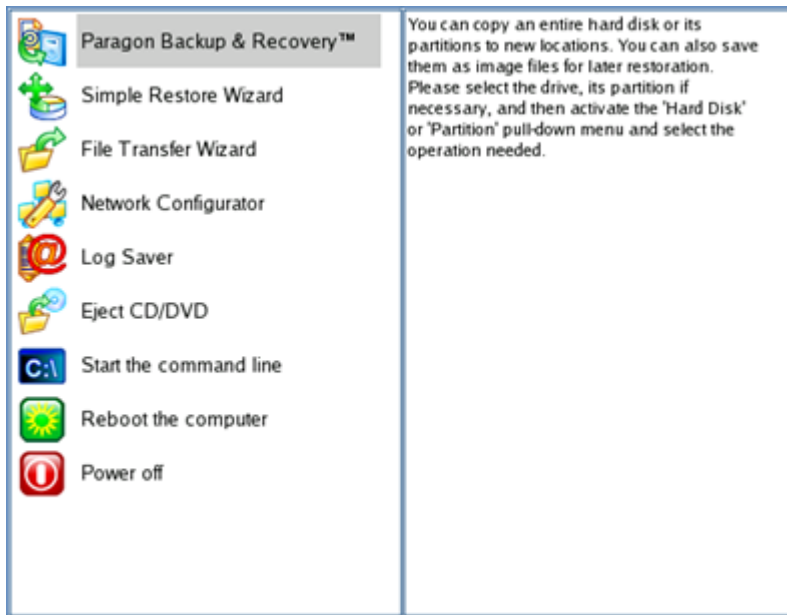
4. On the Wizard's Welcome page, click the Next button.

5. Select a disk where the files you need are stored from the pull-down list in the right pane of the page.
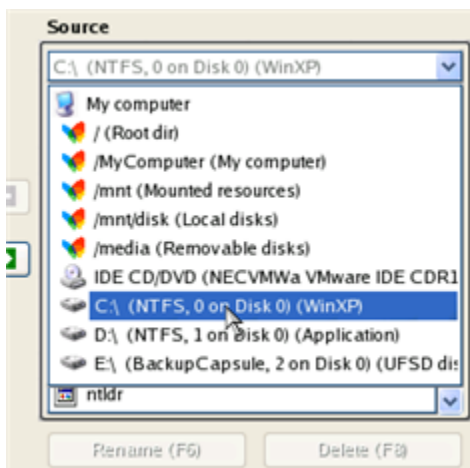
6. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.
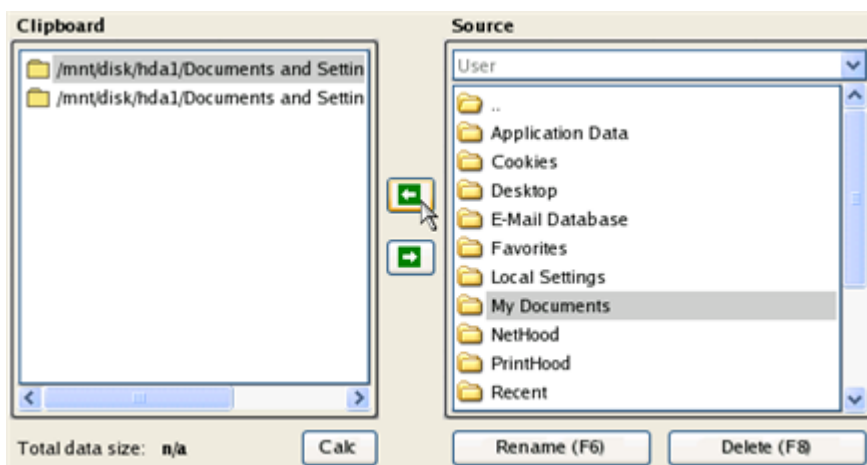
    Click the Calc button to estimate the resulted data size.

7. On the Select Destination Type, choose the way the data will be stored. Select the **Burn data to CD/DVD** item.

Please select how would you like to save the data:

○ **Save data to any local drives or a network share**
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.

⊙ **Burn data to CD/DVD**
Choose this option if you want the Wizard to burn the data to CD or DVD. You will be prompted to choose a CD or DVD RW drive.

8. On the Choose a Recorder page, select a recorder from the list of available devices and then set a volume label by entering it in the appropriate field.

Select a recorder to burn data to:

Vendor	Product	Type
Optiarc	DVD RW AD-7170A	CD-R; CD-RW; DVD-R

Volume label: My Data

9. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

10. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

Operations list: | Suboperation progress

1: Transfer user data

Operation progress

Time elapsed: 00:00:07   Time to finish: 00:00:16

Copied so far: 5.0 Mb
To copy: 12.0 Mb

Overall progress

Creating compilation image...
Used burner: DVD RW AD-7170A   Vendor: Optiarc
Session opening...
Data burning...

11. After the operation is completed, close the wizard by pressing the appropriate button.

12. Turn off the computer.

Copying of data from a backup to the corrupted system partition
The system fails to boot since some files are damaged. If you have a backup of the system partition, you can recopy these files to make the system be operable again:
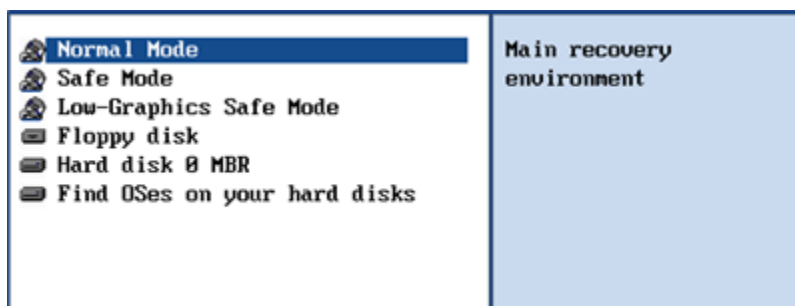
1. Start up the computer from our Linux/DOS recovery media.

> **Recovery Media Builder** can help you prepare the Linux/DOS recovery environment either on a CD/DVD disc or a thumb drive.
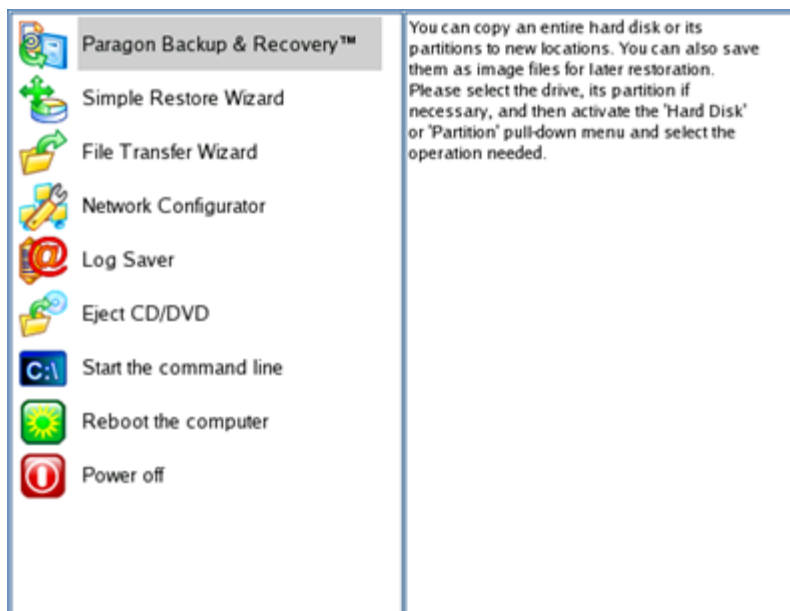>
> **To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.**

2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope with a serious hardware incompatibility. In this case, only the minimal set of drivers will be included, like hard disk, monitor, and keyboard drivers. This mode has simple graphics and a simple menu.
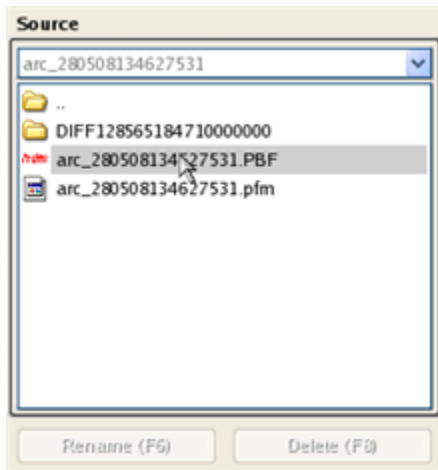

> **By default the Normal Mode will be automatically initiated after a 10 second idle period.**
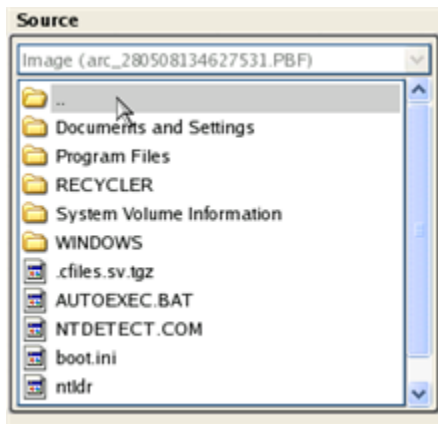
3. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
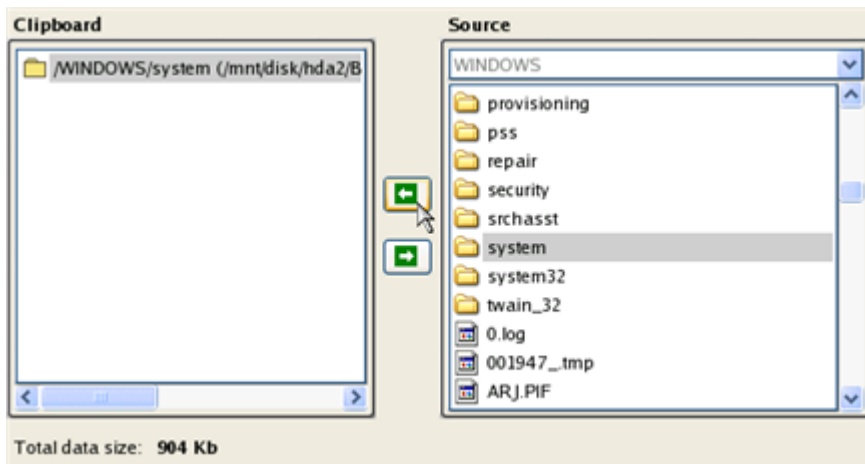

4. On the Wizard's Welcome page, click the Next button.

5. Select a disk where the system backup is stored from the pull-down list in the right pane of the page.

6. Double click on the required backup to open.

7. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.


Click the Calc button to estimate the resulted data size.

8. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.

Please select how would you like to save the data:

⦿ **Save data to any local drives or a network share**
Choose this option if you want to save your data to local
mounted or physical partition, to USB or FireWare external
drives and to a mounted network share. You will be prompted to
choose a location you want to save the archive to.

○ **Burn data to CD/DVD**
Choose this option if you want the Wizard to burn the data to
CD or DVD. You will be prompted to choose a CD or DVD RW
drive.

9. On the Select Destination Path page, select your system disk to copy the data to by pressing the standard browse button [...].
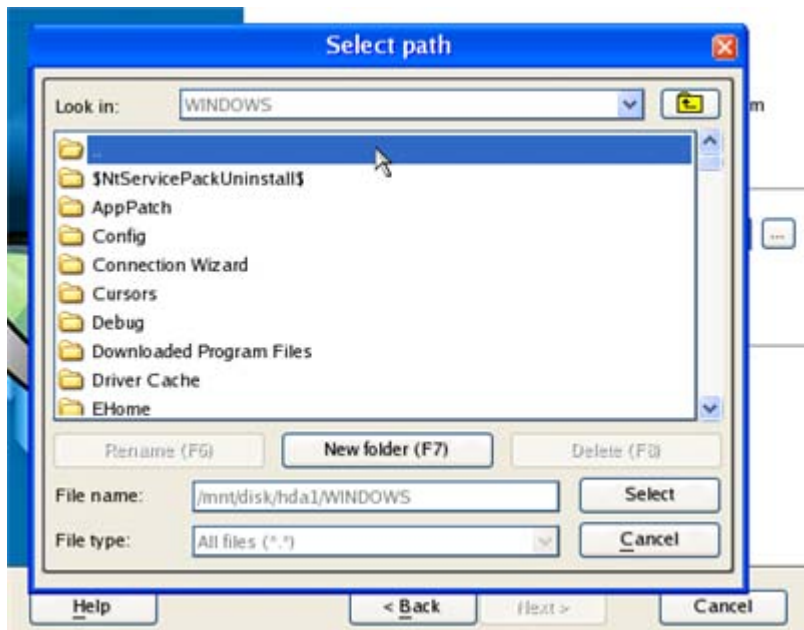
10. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.
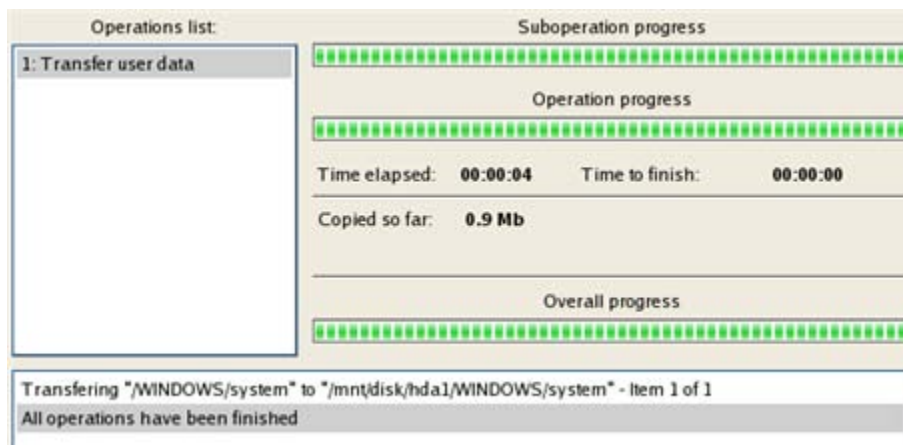

12. After the operation is completed, close the wizard by pressing the appropriate button.

13. Turn off the computer.

**Restoring separate files and folders from a backup**

The program provides a very convenient option to access backup archives and restore only data you need (the so called selective restore functionality). This operation can be accomplished either with the Restore Wizard, File Transfer Wizard.

Restore Wizard

1. Select the **Restore Wizard**.

2. On the Restore Wizard's Welcome page, click the Next button.

3. On the Browse for Archive page choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image.
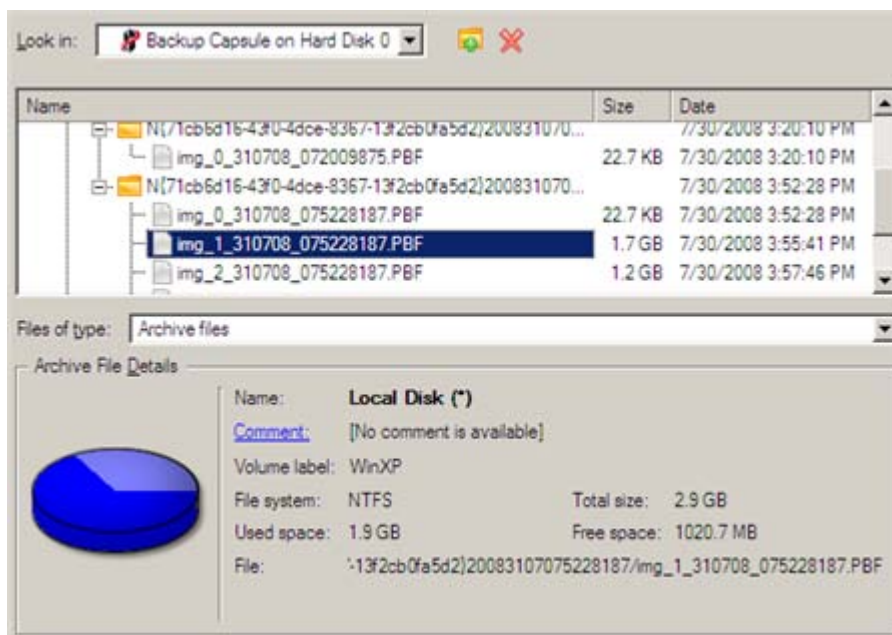
4. On the next page specify what you need to extract from the backup by marking checkboxes next to the required data items. At the right lower corner of the window you can see the resulted amount of the selected data.
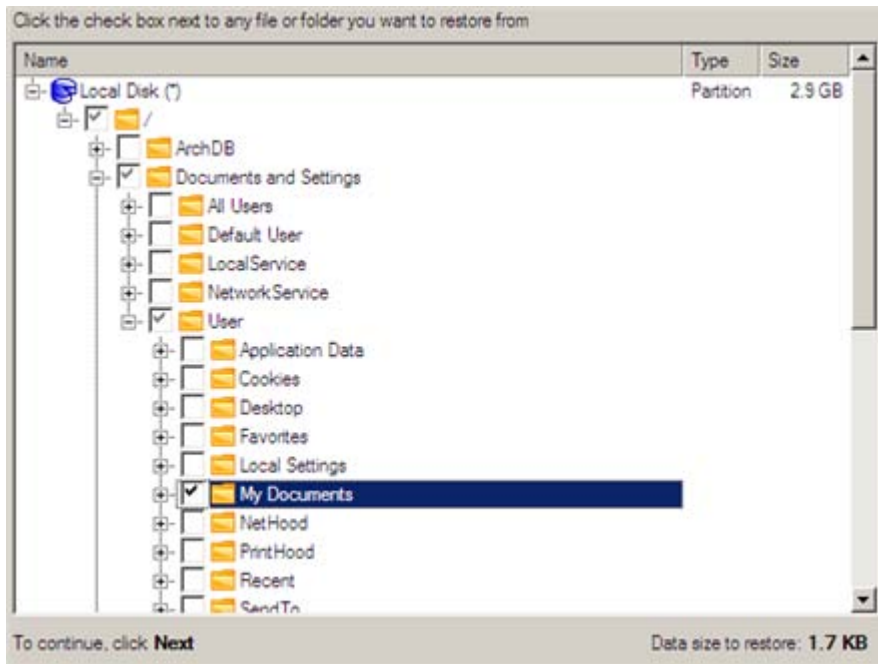
5. On the How to Restore page specify the way the selected data will be restored. In our case we'd rather restore contents of the backup to its original location with replacing existing files as well.
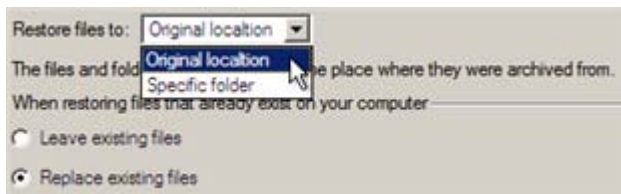
6. On the Restore Summary page review all parameters of the operation and modify them if necessary.
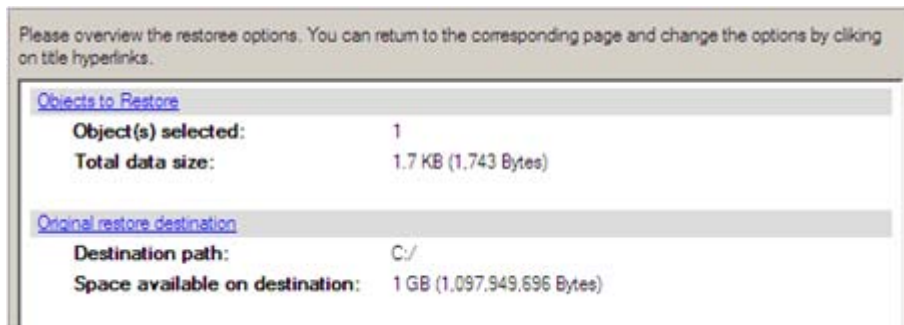

7. On the next page of the wizard confirm the operation by selecting the appropriate option.
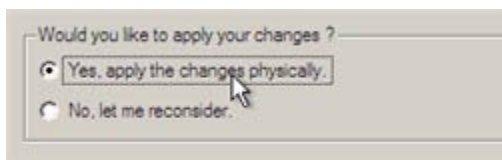
8. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

9. After completing the operation close the wizard, and then reboot the computer.

File Transfer Wizard

To restore separate files and folders from a backup image with the File Transfer Wizard, please do the following:

1. Call the popup menu for the required backup image (right click of the mouse button) in the Archive Database and then select the menu item: Restore File from Archive. Thus you automatically open it with the File Transfer Wizard.
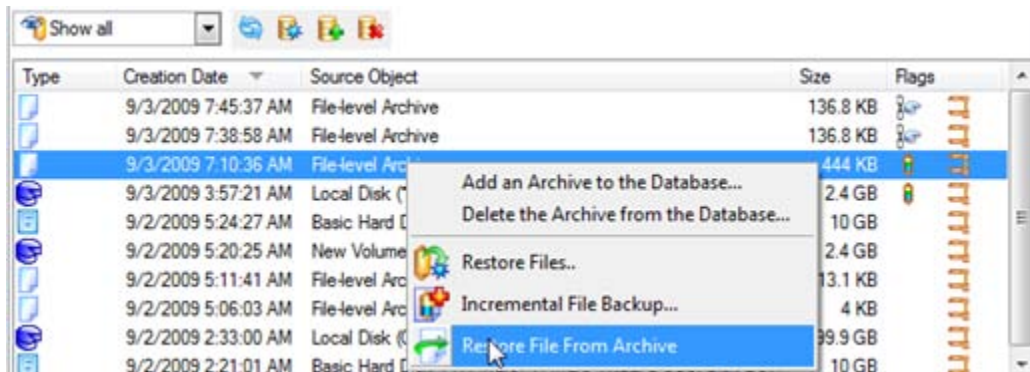
2. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.
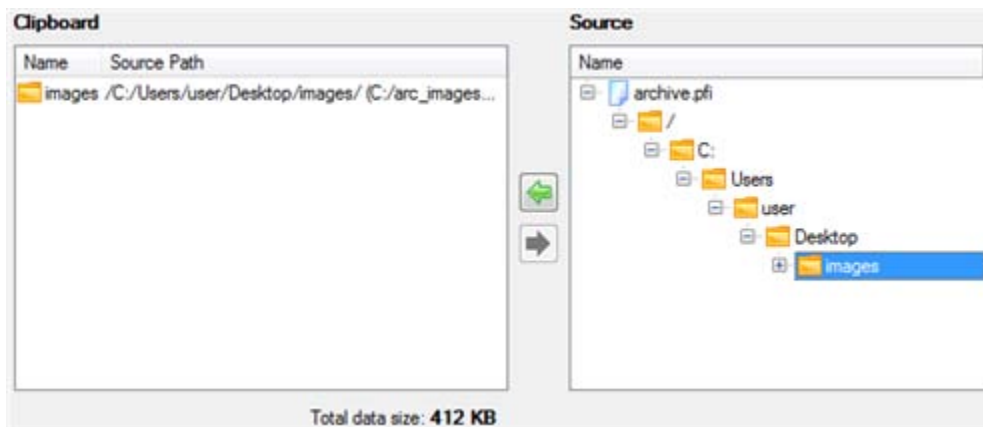
3. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.

4. On the Select Destination Path page, specify the exact place to copy the data to.

5. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

Please overview the transfer options. You can return to the corresponding page and change the options by clicking on title hyperlinks.

Objects to transfer	
Object(s) selected:	1
Total data size:	412 KB (421,969 Bytes)
Transfer destination	
Destination path:	C:/
Space available on destination:	489.8 GB (525,927,419,904 Bytes)
Overwrite existing files:	No

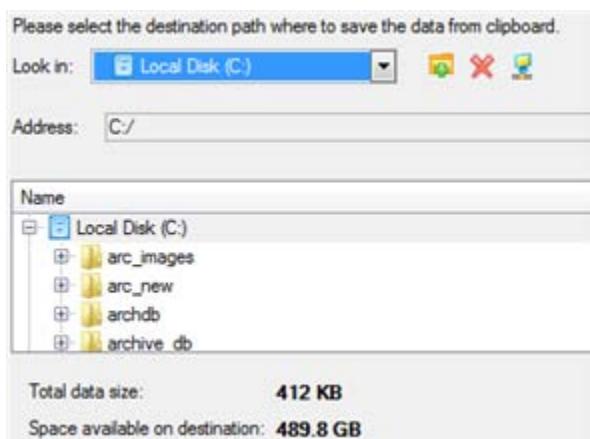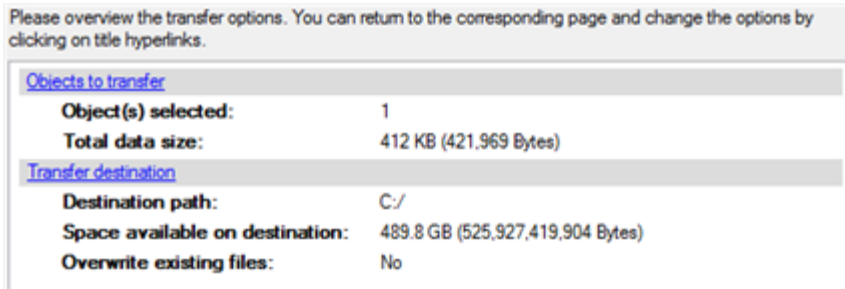6. After the operation is completed, close the wizard by pressing the appropriate button.

Troubleshooter

Here you can find answers to the most frequently asked questions that might arise while using the program.

1. I try to run an operation, but the program claims my partition is in use and suggests restarting the computer.

   There are a number of operations that cannot be performed while your partition is in use (or locked in other words). Please agree to reboot your machine to make the program accomplish the operation in a special boot-up mode.

2. I run an operation and restart the machine as required, but it just boots back into Windows without accomplishing the operation.

   Please run 'chkdsk /f' for the partition in question.

3. I cannot create a new partition on the disk.

   There can be a number of reasons for that:

   - The program cannot create a new partition on a dynamic disk, but only on a hard disk that uses the DOS partitioning scheme.

   - According to the rules of the DOS partitioning scheme, the following combinations of partitions cannot be created:

     - Two Extended Partitions on one hard disk;

     - Five or more Primary partitions on one hard disk;

     - If there is an Extended Partition on the disk, only three Primary partitions are allowed.

   - The program allows creating new partitions only within blocks of un-partitioned space. It cannot convert a free space on an existing partition to a new partition.

4. I cannot copy a partition.

   There can be a number of reasons for that:

   - The source or target disk you select is a dynamic disk;

- 4 primary partitions (or three primary partitions and an extended one) already exist on the target disk.

5. I need to copy a partition. But when selecting a place where to make a copy, I always get a crossed circle sign no matter which partition is selected.

   The program enables to copy a partition only to a block of un-partitioned space. If you don't have a block of free space on your hard disk, please delete or reduce an existing partition to accomplish the operation.

6. I cannot do anything with my USB flash drive. I get a crossed circle sign when trying to select any area on it.

   Some USB flash drives don't have the MBR (Master Boot Record), that's the cause of your problem. To fix the issue please use the Update MBR function of our program or 'fixmbr' of the Windows installation disc to write a standard code to your flash drive.

7. When trying to back up my system the program asks to restart the computer.

   Most likely the Hot Processing mode is disabled. Please make it active in the program settings.

8. When backing up a partition with the VSS (Volume Shadow Copy Service) mode, the program throws "VSS could not be started for processed volume".

   Most likely you try to back up a FAT32 partition, which is not supported by VSS. Please use the Paragon Hot Processing mode instead.

9. I cannot back up my hard disk to an external hard drive. Once started, the operation is aborted with the following error: Hard Disk management, Error Code 0x1100a. What is wrong here?

   The problem is that the Microsoft VSS service is set as the default Hot Processing mode in the program. But this service has not been started in your WindowsXP/Windows2003/Vista. Please start this service (right click on My Computer > Manage > Services > find Microsoft Volume Shadow Copy Service and make it active. Set also to start it automatically).

10. When running a backup operation with the Paragon Hot Processing mode enabled, I get an error: error code 0x1200e "Internal error during Hot Backup"

    Most likely your hard disk contains bad blocks. Please fix the issue with your HDD manufacturer's tool.

    You can find a name of the tool you need here: http://kb.paragon-software.com

11. When running a backup operation with the Microsoft VSS mode enabled, I get the following error: error code 0x12016 "VSS: can't read volume data"

    Most likely your hard disk contains bad blocks. Please fix the issue with your HDD manufacturer's tool.

    You can find a name of the tool you need here: http://kb.paragon-software.com

12. When trying to back up to a network share, I get the following error: "i/o error" or "can't open/create file"

    Please check whether you've got a permission to write to the selected destination or not.

13. When trying to restore a backup archive, I get the following error: "Can't restore to current selection" or "Archive does not fit"

    Most likely you're trying to restore a backup of the whole hard disk to a partition or vice versa.

14. I set up a timetable for a task, but it fails to execute.

There can be a number of reasons for that:

- Windows Task Scheduler does not work properly. Check whether it is so or not by scheduling a simple task (call Notepad through scheduling);

- You don't have permission to write to the selected backup destination.

Glossary

Active Partition is a partition from which an x86-based computer starts up. The active partition must be a primary partition on a basic disk. If you use Windows exclusively, the active partition can be the same as the system volume.

In the DOS partitioning scheme, only primary partitions can be active due to limitations of the standard bootstrap.

The term **backup** originates from the time when the best way to protect valuable information was to store it in form of archives on external media. It's become now a general notion to mean making duplications of data for protection purposes.

Bootable Archive is created by adding a special bootable section when backing up the data to CD/DVDs. Thus you will be able to restore the data from these archives without having to run the program, but by simply booting from these CD/DVDs.

Cluster is the smallest amount of disk space that can be allocated to hold a file. All file systems used by Windows organize hard disks based on clusters, which consist of one or more contiguous sectors. The smaller the cluster size, the more efficiently a disk stores information. If no cluster size is specified during formatting, Windows picks defaults based on the size of the volume. These defaults are selected to reduce the amount of space that is lost and the amount of fragmentation on the volume. A cluster is also called an allocation unit.

Extended Partition is a partition type you create only on a basic MBR (Master Boot Record) disk. Extended partition is used if you want to create more than four volumes on a disk, since it may contain multiple logical drives.

File System Metadata. The servicing structures of a file system, which contain information about allocating files and directories, security information etc, are named the file system metadata. It is invisible for users and regular applications because its accidental modification usually makes a partition unusable.

Hard Disk Geometry. Traditionally, the usable space of a hard disk is logically divided into cylinders, cylinders are divided into tracks (or heads), and tracks are divided into sectors.

The triad of values {[Sectors-per-Track], [Tracks-per-Cylinder], [Amount-of-Cylinders]} is usually named the Hard Disk Geometry or C/H/S geometry.

Tracks and cylinders are enumerated from "0", while sectors are enumerated from "1". These disk parameters play an essential role in the DOS Partitioning scheme.

Modern hardware uses an advanced scheme for the linear addressing of sectors, which assumes that all on-disk sectors are continuously enumerated from "0". To allow backward compatibility with older standards, modern hard disks can additionally emulate the C/H/S geometry.

Hidden Partition. The concept of a "hidden" partition was introduced in the IBM OS/2 Boot Manager. By default, an operating system does not mount a hidden partition, thus preventing access to its contents.

A method of hiding a partition consists in changing the partition ID value saved in the Partition Table. This is achieved by XOR-ing the partition ID with a 0x10 hexadecimal value.

Master File Table (MFT) is a relational database that consists of rows of file records and columns of file attributes. It contains at least one entry for every file on an NTFS volume, including the MFT itself. MFT is similar to a FAT table in a FAT file system.

MBR & 1st track of the hard disk is the 0th sector of the disk. MBR (Master Boot Record) contains important information about the disk layout:

- The used partitioning scheme;

- The starting records of the Partition Table;

- The standard bootstrap code (or the initial code of boot managers, disk overlay software or boot viruses).

Generally, the 0th sector is used for similar purposes in all existing partitioning schemes.

The MBR capacity is not sufficient to contain sophisticated boot programs. That's why the on-boot software is allowed to use the entire 0th track of the disk. For example, boot managing utilities such as LILO, GRUB and Paragon Boot Manager are located in the 0th track.

Partition ID (or File system ID) is a file system identifier that is placed in the partition. It is used to quickly detect partitions of supported types. A number of operating systems completely rely on it to distinguish supported partitions.

Partition ID is saved in appropriate entries of the Partition Table and takes only 1 byte of space.

Partition Label (or Volume Label) is a small textual field (up to 11 characters) that is located in the partition's boot sector. This value is used for notification purposes only. It is detectable by any partitioning tool including the DOS FDISK utility.

Modern operating systems save it within a file system, e.g. as a special hidden file. Thus it is able to contain a relatively large amount of text in multiple languages.

Partitioning Scheme is a set of rules, constraints and format of the on-disk structures to keep information on partitions located on a hard disk.

There are known several partitioning schemes. The most popular of them is the so-called DOS partitioning scheme. It was introduced by IBM and Microsoft to use multiple partitions in the disk subsystems on IBM PC compatible computers.

Another popular partitioning scheme is the so-called Logical Disks Model (LDM) that originates from the UNIX mainframe systems. Veritas Executive accommodates a simplified version of LDM to the Windows 2000 operating system.

Windows 2000 and XP support two quite different partitioning schemes: the old DOS partitioning scheme and the new Dynamic Disk Management (DDM). The problem is that earlier versions of Windows do not support DDM. In addition, most hard disk utilities do not support it as well.

Recovery Media is a CD/DVD disc, a USB flash card or even a floppy disk from which you can boot for maintenance or recovery purposes.

Root Directory is the top-level directory of a formatted logical drive to include other files and directories. In modern file systems (Ext2/Ext3, NTFS and even FAT32) it does not differ from other directories. This is not the case for old FAT12 and FAT16 file systems.

Serial Number. In the DOS partitioning scheme, every hard disk and every partition has a 32-bit serial number represented by an 8-figure hexadecimal value. It is stored in the MBR and its value is assigned when the MBR sector is initialized by Microsoft standard disk managing tools, such as Windows Disk Administrator and the FDISK utility.

In fact, a hard disk's serial number is not important for most operating systems and software. It is known that Windows NT, 2000 and XP store its value in the database of assigned drive letters.

A partition's serial number is stored in its boot sector (in FAT16, FAT32 and NFTS file systems). Its value is assigned when the partition is formatted. It does not play an important role for most operating systems and software as well.