PARTITION MANAGER™ 10 PERSONAL

USER MANUAL

CONTENTS

INTRODUCTION

Paragon Partition Manager™ 10 Personal is an integrated set of powerful tools that is specially designed to tackle most of the problems the user might face while using PC. A highly intelligent program engine together with built-in advanced recovery facilities make it possible to securely carry out partitioning operations of any complexity, optimize performance of NTFS and FAT file systems, migrate the system to another hard disk, etc. without fear to lose precious data.

In this manual you will find the answers to many of the technical questions, which might arise while using the program.

WHAT'S NEW IN PARTITION MANAGER 10

- ❑ **Support of the Windows Installer MSI package**. It is the latest engine for the installation, maintenance and removal of software on Windows-based operating systems. With its help you can now install the product remotely or in the silent mode, make use of powerful deployment capabilities, etc.

- ❑ **Improved 64-bit support**. You don't need to reboot your computer from the Recovery CD every time an operation cannot be accomplished under 64-bit Windows any more. The program will automatically reboot to a special mode to complete the operation.

- ❑ **Support of 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, Server 2008, Mac OS X and Linux.

- ❑ **Support of the latest Linux kernel**. It offers support of a wider range of hardware configurations, including the brand new Intel ICH9 chipset.

- ❑ **Express Create Partition Wizard**. Create a new partition in the most appropriate place of your hard disk, format it to NTFS and then make it available in the system by assigning a drive letter.

- ❑ **Safe Defragmentation Mode**. Guarantee data loss free defragmentation of any version of NTFS and FAT.

- ❑ **Integration of the Linux/DOS recovery media directly to the installation package**. You can now burn it with the Recovery Media Builder any time you want. Besides it will also be used as a bootable part of any bootable backup image created with the program.

- ❑ **Recovery environment on a USB flash drive**. With the help of the Recovery Media Builder you can now create Linux/DOS bootable media on a USB flash drive that may later be used for maintenance or recovery purposes.

- ❑ **Support of the Apple Boot Camp Configuration**. With the Boot Camp utility Apple Inc. offers a technology to set up a dual boot system (Mac OS X and Windows XP/Vista) on Intel-based Macs. With the Linux/DOS recovery environment you can now easily backup/restore this kind of configurations as well as redistribute unused space between Mac OS X and Windows partitions.

- ❑ **Install Windows OS Wizard**. Get your Intel-based Mac ready to install Windows either as a sole operating system with the option to back up your Mac partition, or as a second operating system, thus making a dual-boot system.

- ❑ **Express Resize Partitions Wizard**. Increase free space on one partition by up-taking the unused space of an adjacent partition of your hard disk (including partitions of Apple Boot Camp).

- ❑ **Refined User Interface**. Take advantage of an improved two-level user interface to satisfy the needs of the most demanding customer.

- ❑ **A context sensitive hint system for all functions of the program**. You can now get a detailed description to any setting, control, or field of the program just by clicking the hint button and then the object you need.

- ❑ **Support of Blu-ray discs**. You can now burn backup images to high capacity Blu-ray discs. A single layer Blu-ray can store 25 GB, more than five times the capacity of a single layer DVD.

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 CD** 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 CD 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.

- ❑ **Two-level user interface** to satisfy the needs of the most demanding customer.

- ❑ **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 basic techniques to store backup images**:

- *Backup to local mounted partitions*;

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

❑ **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.

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.

COPY FACILITIES

❑ **Partition**/**hard disk copy** to successfully transfer all on-disk information including standard bootstrap code and other system service structures, thus maintaining the operating system's working capability.

⚠ **Copy functionality can also be used as an alternative way of data protection.**

BOOT MANAGEMENT FACILITIES

❑ **Boot Manager Setup Wizard** to easily manage several operating systems on one computer.

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.

❑ **Express Create Partition Wizard** to create a new partition in the most appropriate place of your hard disk, format it to NTFS and then make it available in the system by assigning a drive letter.

❑ **Merge Partitions Wizard** to consolidate the disk space, which originally belongs to two adjacent partitions (NTFS, FAT16/FAT32), into a single, larger partition.

❑ **Redistribute Free Space Wizard** to increase free space on one partition by up-taking the on-disk unallocated space and the unused space of other partitions.

❑ **Express Resize Partitions Wizard** to increase free space on one partition by up-taking the unused space of an adjacent partition of your hard disk (including partitions of Apple Boot Camp).

❑ **NTFS hot resize upward** to enlarge an NTFS partition (system, locked) without rebooting Windows and interrupting its work.

❑ **Convert a file system** (FAT16/32, NTFS, Ext2/Ext3) without reformatting.

- ❑ **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, volume label, etc.).

- ❑ **Install New OS Wizard** to make your system ready to install a new operating system.

- ❑ **Install Windows OS Wizard** to get your Intel-based Mac ready to install Windows either as a sole operating system with the option to back up your Mac partition, or as a second operating system, thus making a dual-boot system.

- ❑ **Undelete Partitions Wizard** to recover an accidentally deleted partition.

FILE SYSTEM OPTIMIZATION FACILITIES

- ❑ **27 defragmentation strategies** available to defragment FAT and NTFS file systems.

- ❑ **Safe Defragmentation Mode** to guarantee data loss free defragmentation of any version of NTFS and FAT.

- ❑ **Low free space defragmentation** (less than 1% of the free space required) to successfully defragment almost full disks.

AUXILIARY FACILITIES

- ❑ **Volume Explorer** is a handy tool when you have different file systems on the disk, whether they contain an operating system or just data. Volume Explorer will let you explore a file system of any type and provide access to the necessary files and directories regardless of their security attributes.

- ❑ **Recovery Media Builder** to create a Linux/DOS bootable media, 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.

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 Hot Resize™** technology to enlarge NTFS partitions (system, locked) without rebooting Windows and interrupting its work.

- ❑ **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.

- ❑ **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 Partition Manager 10 provides support of 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 partitions under all versions of Windows, DOS 5.0 and later.

- ❑ Basic partitioning operations (create, format, delete) for Linux Swap.

- ❑ 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, ZIP® and Jazz® 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 Partition Manager 10 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 CD with auto-run of the Windows installation, thus it can be used as a ready-made solution (see Booting from the Linux/DOS Recovery CD). But if you're going to run the Windows components, you need to install them first (see Installing the Program under Windows).

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

Partition Manager 10 purchased over the Internet will be in form of an MSI package. After installing the product you can launch the Recovery Media Builder to burn the Linux/DOS Recovery CD.

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 Partition Manager 10, 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, 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
- Hard disk drive with 100 MB of available space
- SVGA video adapter and monitor
- Mouse

LINUX/DOS BASED RECOVERY CD

To use the Paragon Linux/DOS Recovery CD on your computer (it doesn't matter what operating system is installed), 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)
- On-board BIOS supports booting from CD first

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

❑ Network card is required to send partition/hard disk backups to a network computer or to retrieve previously made backups

❑ Recordable CD/DVD drive is needed to burn data to compact disks

❑ To save copy or backup of a hard disk or partition, removable USB disks can be used. The program supports USB Drives 1.0, 2.0.

INSTALLING THE PROGRAM UNDER WINDOWS

As we have already mentioned only Windows components of the product require installation. So to install Paragon Partition Manager 10 under Windows, please do the following:

1. **Run Setup Application**. Click on the PartitionManager.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 Partition Manager 10. 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.**

STARTING THE PROGRAM UNDER WINDOWS

To start Paragon Partition Manager 10 under Windows, please click the Windows Start button and then select **Programs > Paragon Software > Paragon Software Partition Manager™**.

⚠️ **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 Express Launcher. Thanks to a well thought-out categorization and hint system, it provides quick and easy access to wizards and utilities that we consider worth using on a regular basis. With its help you can also start up the traditional launcher, the help system or go to the program's home page.
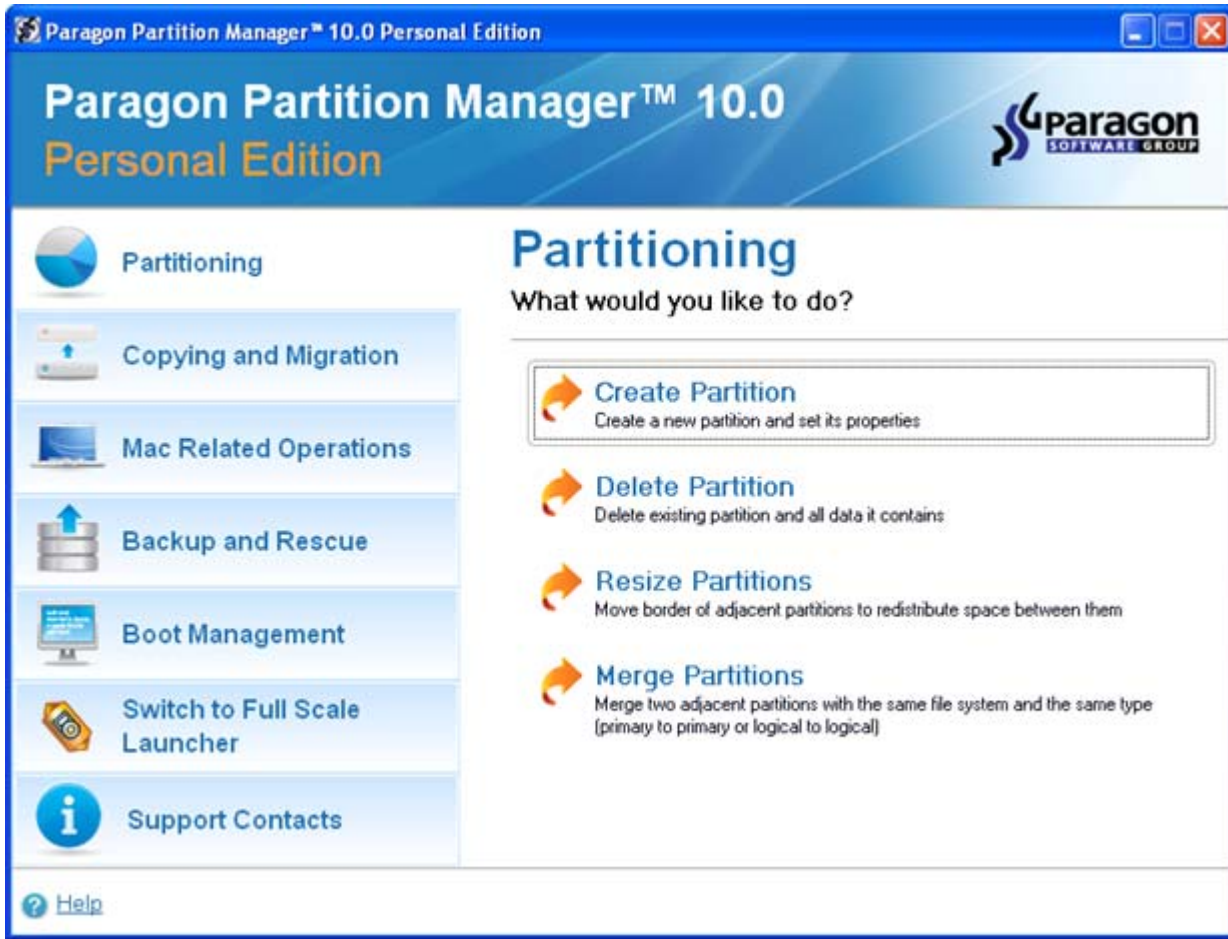
> **To start up the traditional launcher, please select the Switch to Full Scale Launcher menu item. To know more on the subject, please consult the <u>Windows Components</u> chapter.**

BOOTING FROM THE LINUX/DOS RECOVERY CD

The Linux/DOS Recovery CD can be used to boot your computer into Linux or PTS DOS to get access to your hard disk for maintenance or recovery purposes. On the disk you can also find 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 PROCEDURE

To start working with the Linux/DOS Recovery CD, please take the following steps:

1. Insert the Linux/DOS Recovery CD into a CD/DVD drive;

2. Reboot the computer;

3. 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.**

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

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

> ⚠️ **To automatically boot from the Recovery CD make sure the on-board BIOS is set up to boot from CD first.**

BOOT MENU

After you have inserted the Recovery CD into a CD/DVD drive and restarted the computer, the Boot menu appears.

```
Normal Mode              Main recovery
Safe Mode                environment
Low-Graphics Safe Mode
Floppy disk
Hard disk 0 MBR
Find OSes on your hard disks
```
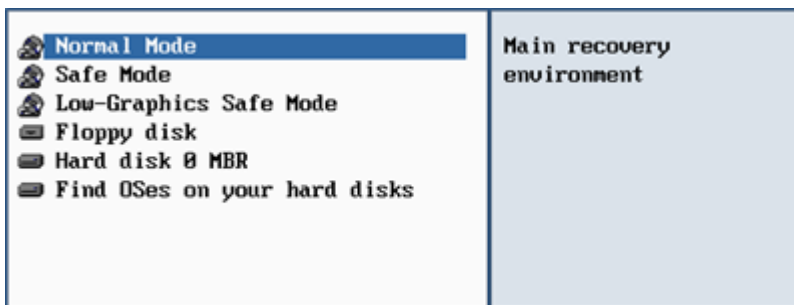
The Boot menu contains the following commands:

- ❑ **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.

> ⚠️ **To automatically boot from the Recovery CD make sure the on-board BIOS is set up to boot from CD first.**
>
> **While working with the Recovery CD 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:
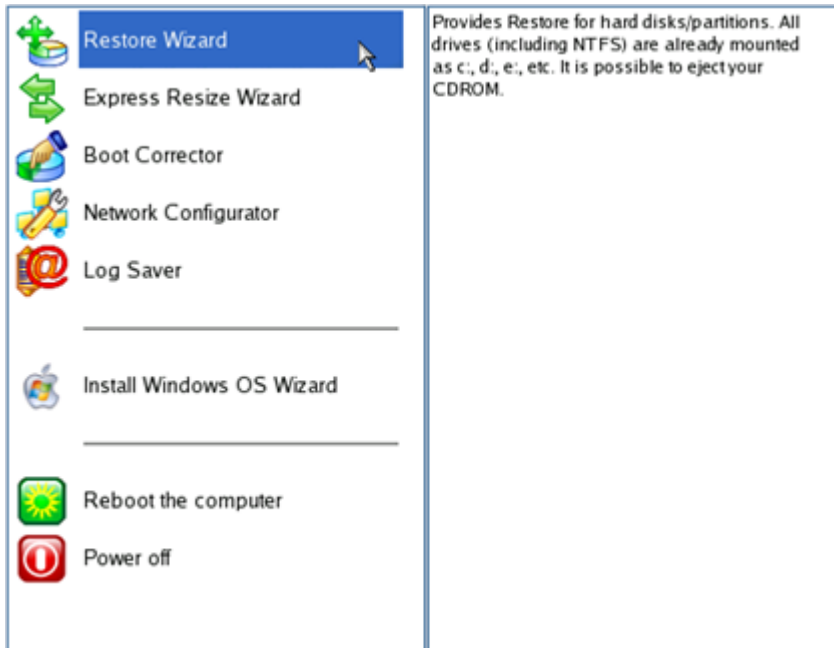
- ❑ **Restore Wizard** (allows restoring hard disks and partitions);

- ❑ **Express Resize Wizard** (enables to increase free space on one partition by up-taking the unused space of an adjacent partition);

- ❑ **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);

- ❑ **Install Windows OS Wizard** (helps to get an Intel-based Mac ready to install Windows);

- ❑ **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 disks.

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.
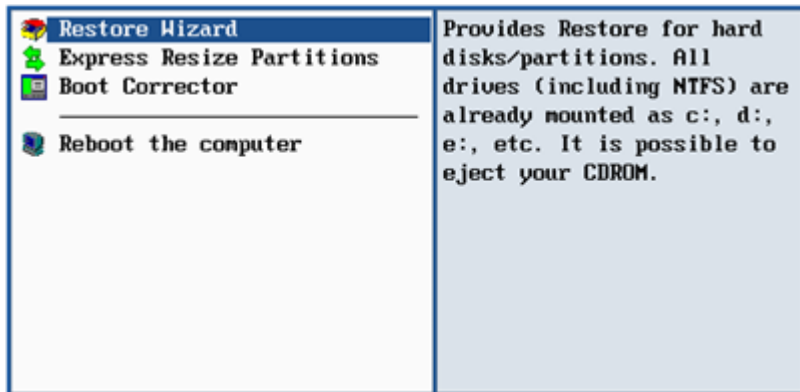
```
Restore Wizard              Provides Restore for hard
Express Resize Partitions   disks/partitions. All
Boot Corrector              drives (including NTFS) are
                            already mounted as c:, d:,
                            e:, etc. It is possible to
Reboot the computer         eject your CDROM.
```

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?

FILE BACKUP VERSUS SECTOR BACKUP

Since the advent of the computer age people were in the search of ways to guarantee data safety. As a result we've got now two principal approaches: the file-based backup and the sector-based backup. The main difference between the two lies in the way data is treated.

A sector-based backup operates with an image (or a snapshot) of the whole disk system or its separate partitions. It not only includes the contents of all user-made files, but additionally contains the exact structure of directories, information about file allocation, file attributes and other related data. Thus it enables to successfully process system or encrypted partitions of any file system type, no matter what kind of information they contain.

In contrast, a file-based backup takes into account a file system structure and only functions on a file or folder level. So it is very efficient when archiving separate files or folders, but in no way will help you back up a system partition.

You should understand pretty well that each of the two approaches is only good when properly chosen. In the comparison table below you can see when this or that approach will suit you at most.

Sector-Based Backup	File-Based Backup
Merits	
It does not dependent on a particular file system. Thus it can successfully process system or encrypted partitions of any file system type, no matter what kind of information they contain.	Functioning on a file/folder level, it is ideal for archiving separate files or folders.
It can create an exact image of a partition, including its service data. Thus it is ideal for a backup/restore of a system partition or a fast deployment to a bunch of identical computers.	It enables to automatically build up contents of the future backup image by using an advanced system of filters.
	It allows archiving data of the same volume with different backup policies.
	It is easy and efficient when creating backup chains.
Demerits	
Resulted backup images may contain a lot of redundant data.	It depends on a file system structure, so you won't be able to process unknown file systems.
It is ineffective when trying to maintain a backup chain, especially when little amount of data is being changed.	It cannot be used to back up a system partition.
	It is much slower when processing large amount of data.

BACKUP STORAGE

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

❑ You can place a backup image to a local mounted 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;

❑ Finally 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.

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.

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).

APPLE BOOT CAMP

Boot Camp is a special utility to help you set up a dual boot system (Mac OS X and 32-bit Windows XP/Vista) on Intel-based Macs. It enables to securely re-partition your hard disk (resize an existing HFS+ partition to create a separate partition for Windows) and then launch the installation process. With Boot Camp all the necessary drivers will be at your disposal. Moreover after Windows has been installed it will serve as a boot manager to choose what operating system to start up.

Our program provides the ability to successfully backup/restore this kind of configurations as well as redistribute unused space between Mac OS X and Windows partitions.

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.

COPY OPERATIONS

Hard drive duplication nowadays is becoming highly popular among PC users. That is due to some definite advantages it can offer. First of all, many people clone hard disks just to back up data for security reasons. The present day copy utilities enable to successfully transfer all on-disk information including standard bootstrap code and other system service structures, thus maintaining the operating system's working capability. In case of a system malfunction, the user can get the system back on track in minutes. No additional configuration is required, what is very convenient.

The second possible application is the upgrade of a hard disk to a new one. The capacity of a modern hard drive doubles every two years, thus opening up new possibilities for software developers. As a result programs become more complicated and require considerable amount of free space. One day the user realizes that there is no more free space left on the hard disk and the only way out is to upgrade. Usually that means that besides purchasing a new hard disk, the user is to face a large re-installation procedure spanning several days of tedious work. But all of this can be avoided just by copying the contents of the old hard disk to a new one proportionally resizing the partitions.

And the last but not least is the copying of hard disks for cloning purposes. It may be of great use when setting up similar computers. There is no need for a system administrator to install an operating system from scratch on every one of them. It is enough just to configure one and then clone it to the others.

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.

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

The main component of the program 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:
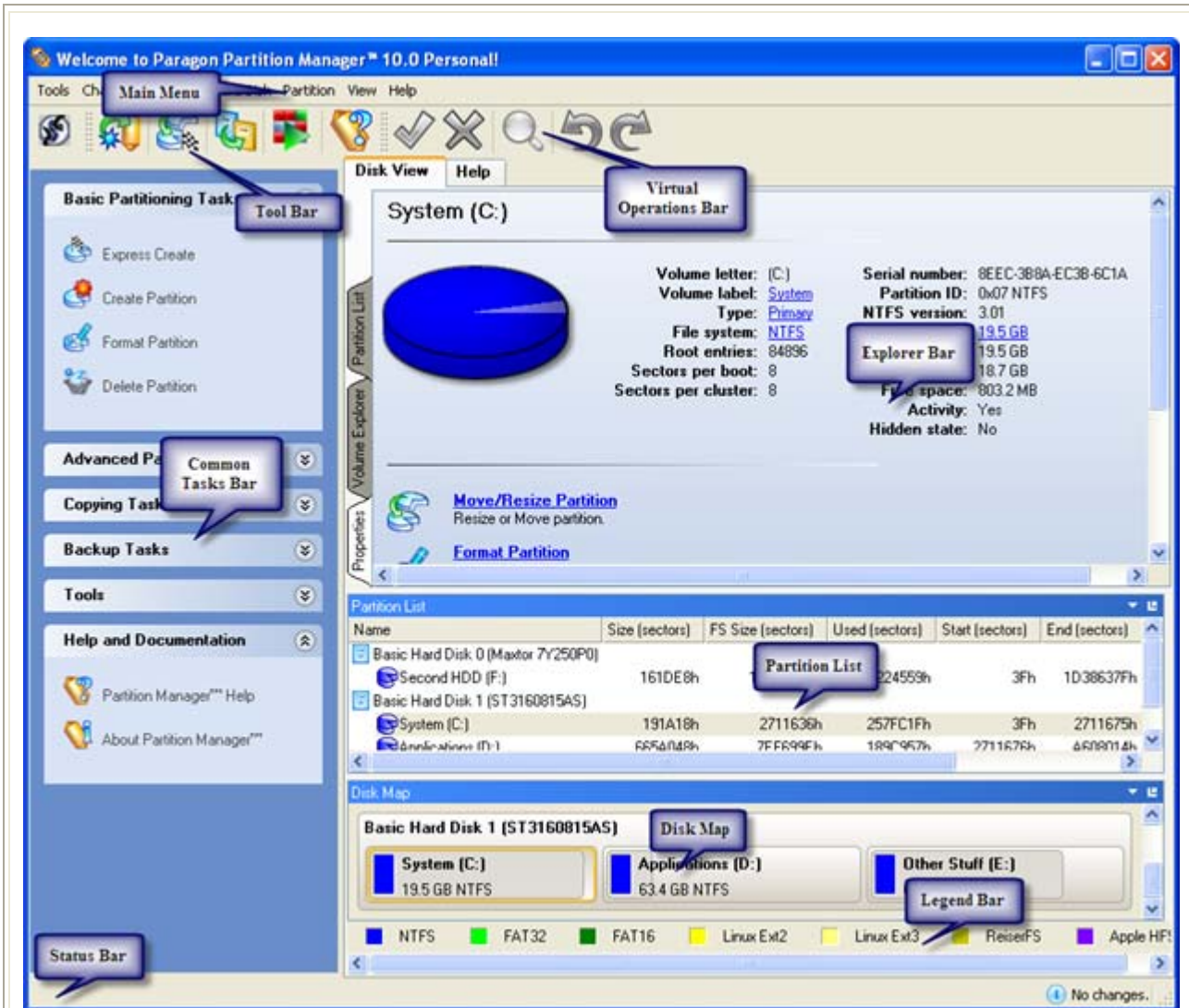
1. Main Menu

2. Tool Bar

3. Virtual Operations Bar

4. Common Tasks Bar

5. Explorer Bar

6. Disk Map

7. Partition List

8. Legend Bar

9. 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	
Send Log Files	Compress and send the log to the Paragon Support Team
View Logs…	View logs on the carried out operations
BM Setup Wizard…	Manage several operating systems on one computer
Recovery Media Builder…	Restore the system even when the current operating system cannot boot anymore
Settings...	Edit the general settings of the program
Exit	Exit the program
Changes	
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	
Express Create Partition…	Create an NTFS partition and make it ready for work
Create Partition…	Create a partition of any file system
Format Partition…	Format a partition of any file system
Delete Partition…	Delete a partition of any file system
Express Resize Partitions…	Increase free space on one partition by up-taking the unused space of an adjacent partition
Undelete Partitions…	Recover an accidentally deleted partition
Merge Partitions…	Merge adjacent partitions of NTFS, FAT or FAT32 file systems
Redistribute Free Space…	Redistribute available disk space of existed partitions
Install New OS…	Make your system ready to install a new operating system
Simple Backup…	Create a sector-based archive of an entire hard disk or separate partitions
Copy Hard Disk…	Create a hard disk copy
Copy Partition…	Create a partition copy
Hard Disk	
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
Move/Resize…	Move/Resize the selected partition
Convert File System…	Convert file system of the selected partition
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
Make Partition Primary…	Make the selected partition Primary
Make Partition Logical…	Make the selected partition Logical
Defragment Partition…	Defragment data on the selected FAT or NTFS 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
Properties and Commands	Display the Explorer Bar
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
	Redistribute free space between two adjacent partitions
	Copy a hard disk
	Defragment the selected FAT or NTFS partition
	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.
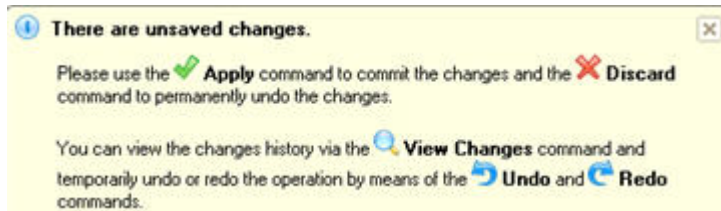
COMMON TASKS BAR

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 Partitioning Tasks**, **Advanced Partitioning Tasks**, **Copy Tasks**, **Backup Tasks**, **Tools** and **News and Documentation**. Each of these contains a separate button bar which can be folded by clicking it.

Basic Partitioning Tasks	
Express Create	Starting the Express Create Partition Wizard to create an NTFS partition and make it ready for work.
Create Partition	Starting the Create Partition Wizard to create a partition of any file system.
Format Partition	Starting the Format Partition Wizard to format an existing partition to one of the file systems supported by the program.
Delete Partition	Starting the Delete Partition Wizard to delete a partition of any file system.

Advanced Partitioning Tasks	
Express Resize	Starting the Express Resize Partitions Wizard to redistribute free space between two adjacent partitions.
Merge Partitions	Starting the Merge Partitions Wizard to merge adjacent partitions of NTFS, FAT, FAT32 file systems.

Redistribute Free Space	Starting the Redistribute Free Space Wizard to redistribute available disk space of existing partitions.
Undelete Partitions	Starting the Undelete Partitions Wizard to recover accidentally deleted partitions.

Backup Tasks

Simple Backup	Starting the Sector Backup Wizard to create an archive of a hard disk or separate partitions.

Copy Tasks

Copy Hard Disk	Starting the Copy Hard Disk Wizard to copy a hard disk.
Copy Partition	Starting the Copy Partition Wizard to copy a partition.

Tools

Boot Manager Wizard	Starting the Boot Manager Setup Wizard to easily manage several operating systems on one computer.
Install New OS	Starting the Install New OS Wizard to install a new operating system.

News and Documentation

Partition Manager™ Help	Launching the help system (you can also do it by pressing F1).
About Partition Manager™	Opening the page which contains information about the program. This page will be displayed in the Explorer Bar.

DISK MAP

You can find the Disk Map in the Explorer Bar if it's not disabled in the Partition List. It can be located either above the Partition List or under it, 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.
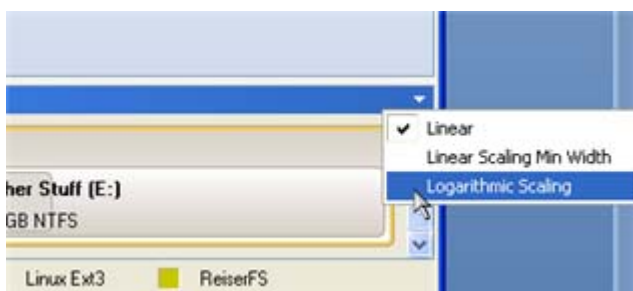
Disk Map is synchronized with the Explorer Bar. Thus by selecting a disk on the Disk Map, the Explorer Bar will automatically display detailed information on it.

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;

❑ Volume Explorer utility.

According to these categories the Explorer Bar has several tabs:

❑ **Disk View**, which offers the user the following options:

- *Partition List* to get a clear-cut picture of the current state of the system hard disks/partitions;

- *Volume Explorer* to browse and export contents of the selected partition/hard disk;

- *Properties* to view detailed information on the selected partition/hard disk in the bright graphical form.

⚠ **You can switch between these components by clicking tabs on the left side of the Explorer Bar.**

❑ **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

PARTITION LIST

The Partition List is another helpful tool that enables you to get a clear-cut picture of the current state of the system hard disks/partitions. Partitions are sorted according to their starting position. For every item of the list there is the possibility to call the context-sensitive popup menu with available operations. Besides, the program provides detailed information on all hard disks/partitions found in the system including the following properties:

- Name,

- Volume label (if exists),

- Partition type (Primary/Extended /Logical),

- File system type,

- Size,

- Amount of used and unused (free) space,

- Start/End cylinder,

- Start/End head,

- Start/End sector

- Free size in sectors/bytes

- Active/Inactive attribute

- Hidden/Unhidden attribute

You may customize outlook of the Partition List by clicking on the arrow icon on the top right side of the panel.
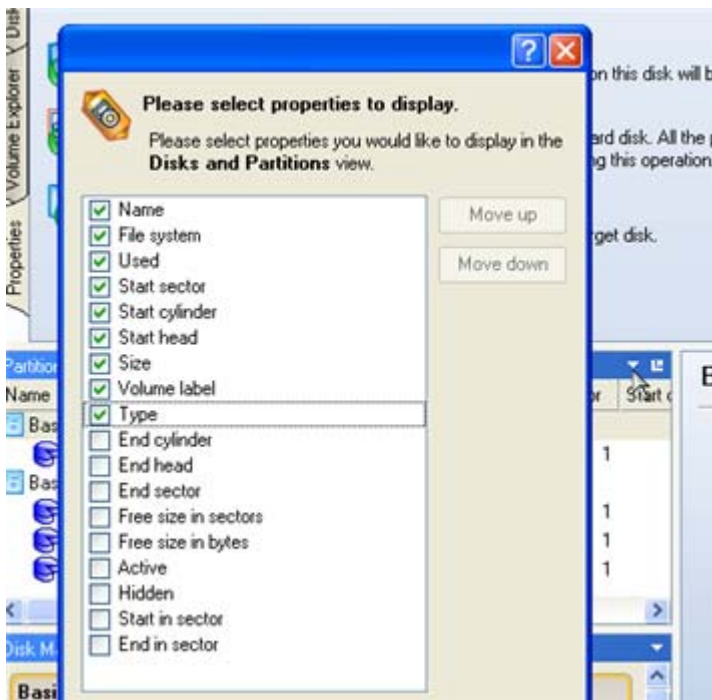
By marking a checkbox opposite the required item you can choose whether to display it or not. Besides, you can change its order by pressing the Move up or Move down buttons.

If you don't need the Disk Map, please click the shown below icon to disable it:
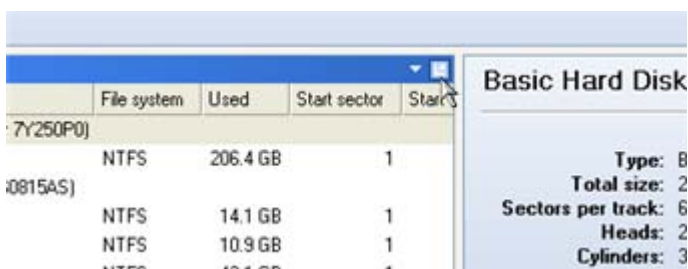
LEGEND BAR

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,

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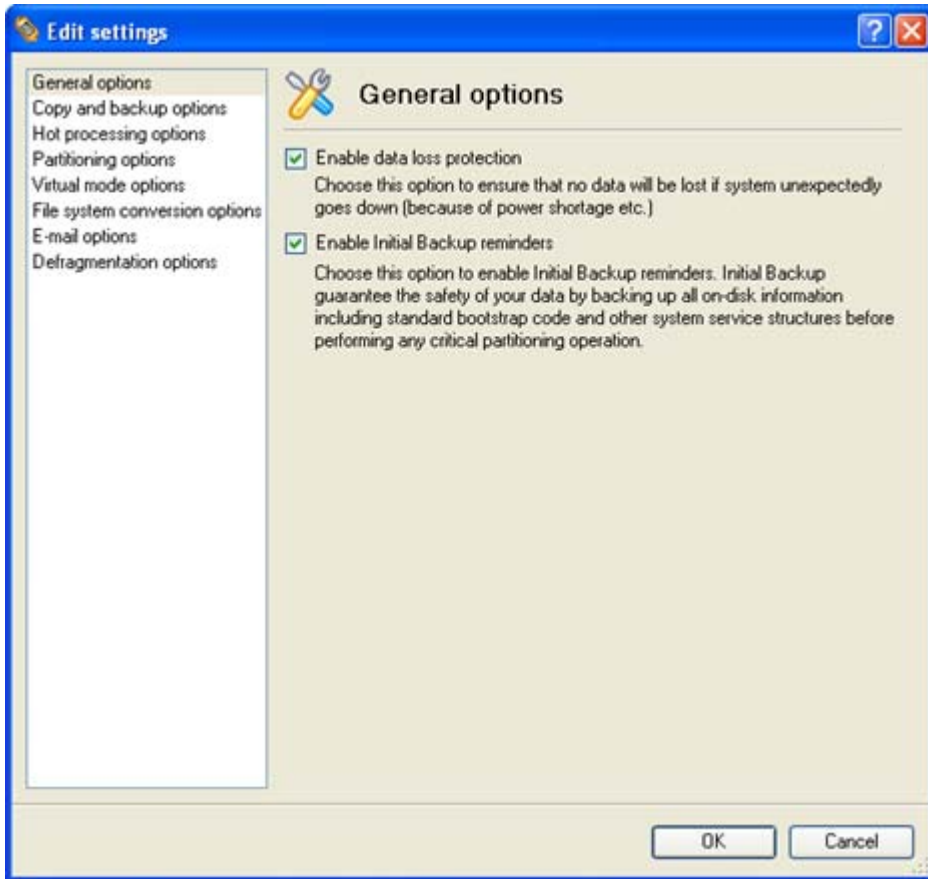
This section contains a set of general options that will be taken into account during any operation carried out with the program:

❑ **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 CD and automatically complete the interrupted operation, thus reviving the corrupted partition.

It is strongly recommended to enable this option.

❑ **Enable Initial Backup reminders**. If this option is marked, the program will automatically offer to make a backup before accomplishing any critical partitioning operation, thus minimizing the risk of data loss.

GENERAL COPY AND BACKUP OPTIONS
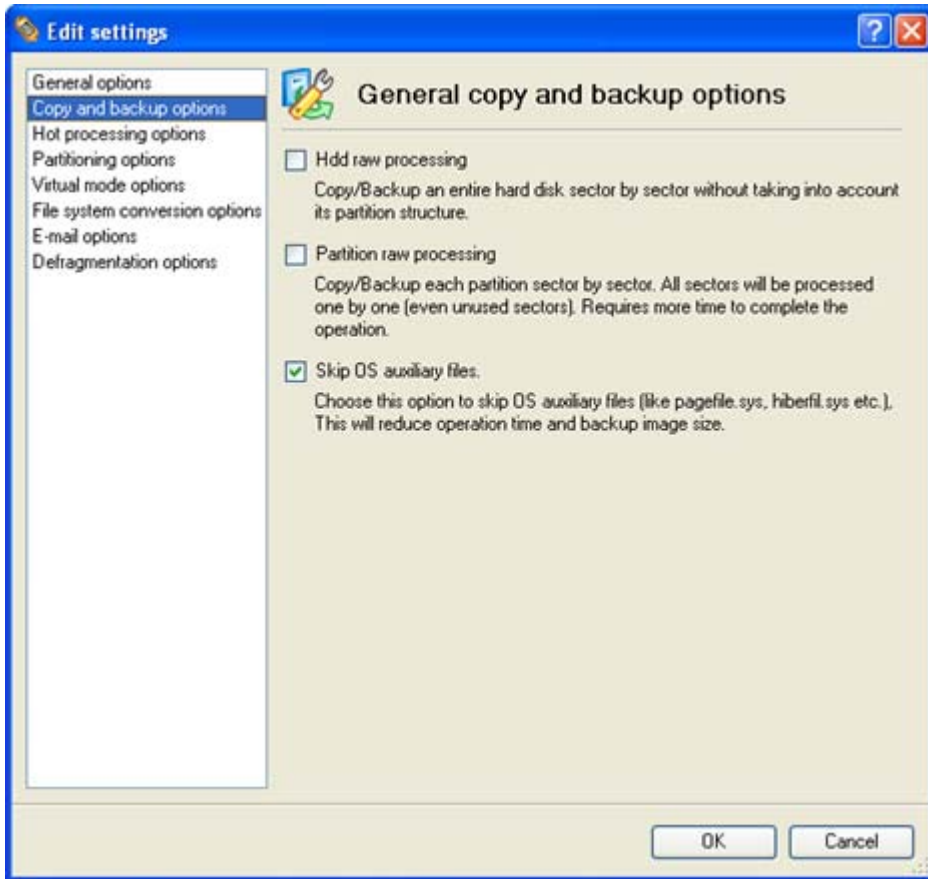
This section contains a set of options that will be taken into account during copy and backup operations:

- ❑ **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/back up a partition in the sector-by-sector mode to process unused space of that partition 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.

- ❑ **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.

HOT PROCESSING OPTIONS
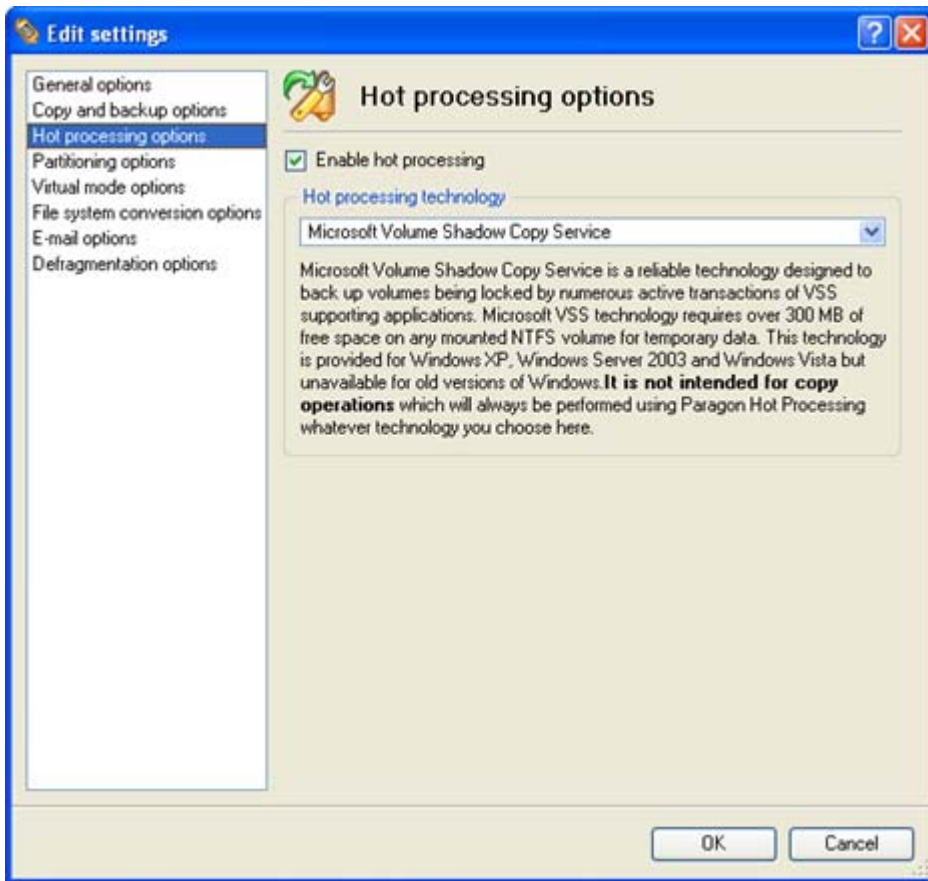
In this section you may configure the hot processing mode:

- **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:).

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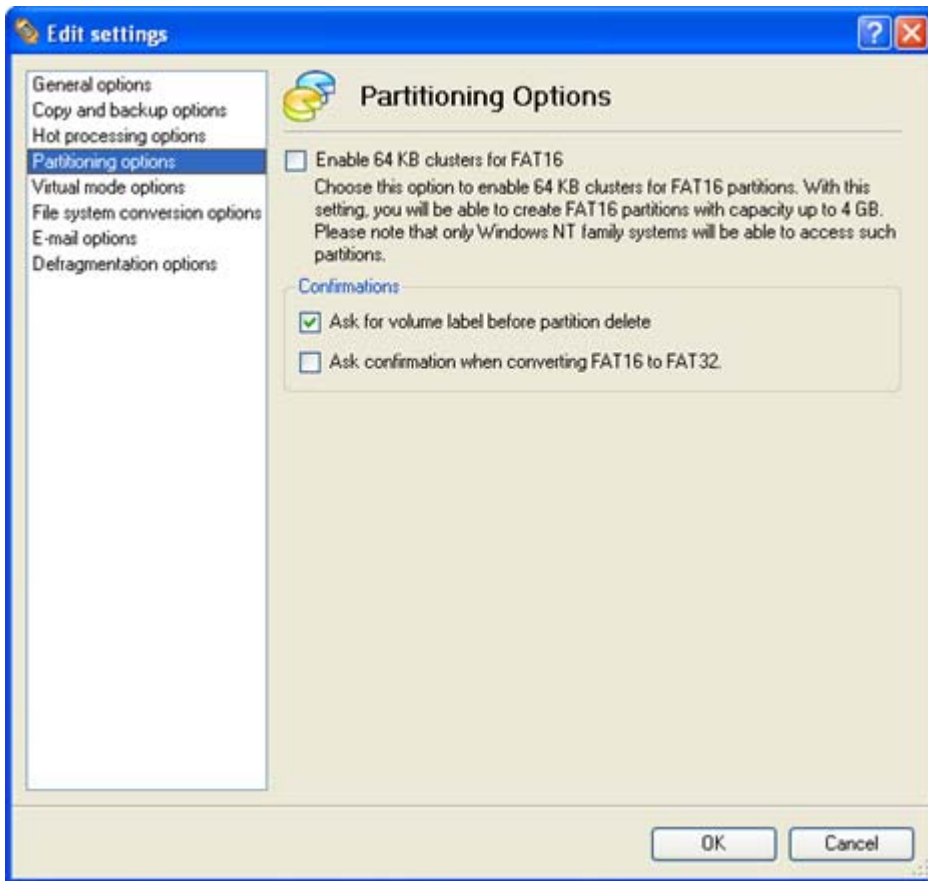
This section contains a set of options that will be taken into account during partitioning operations:

❑ **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.

VIRTUAL MODE OPTIONS
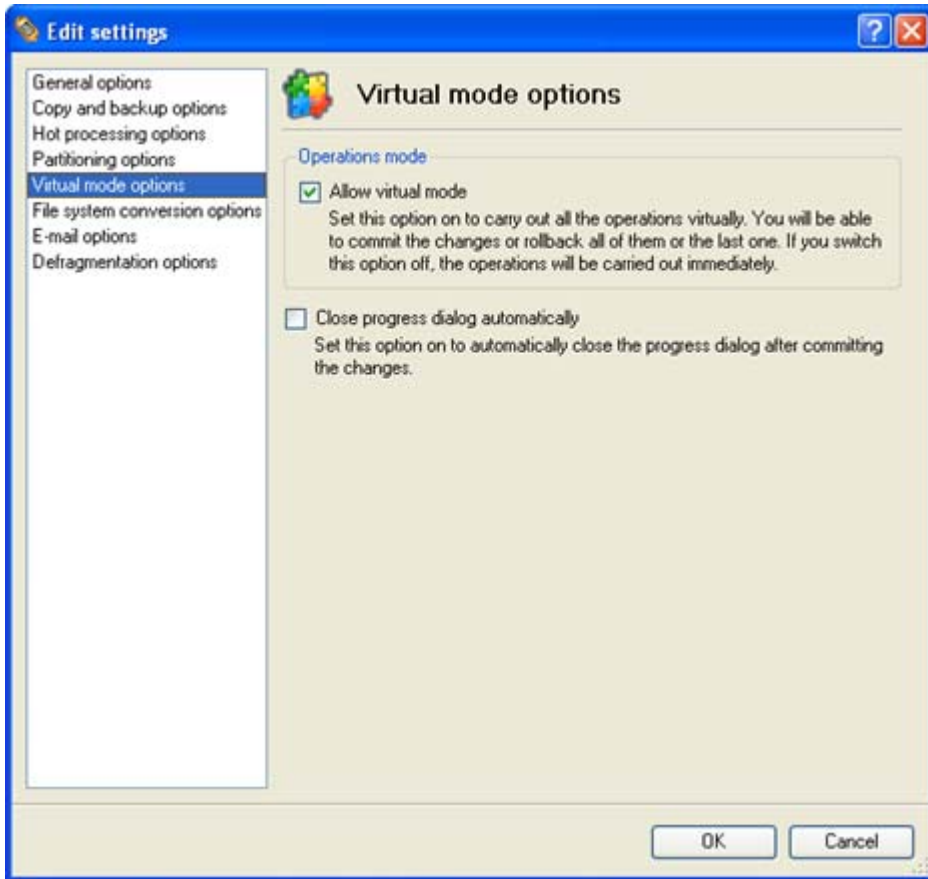
In this section you may configure the virtual mode:

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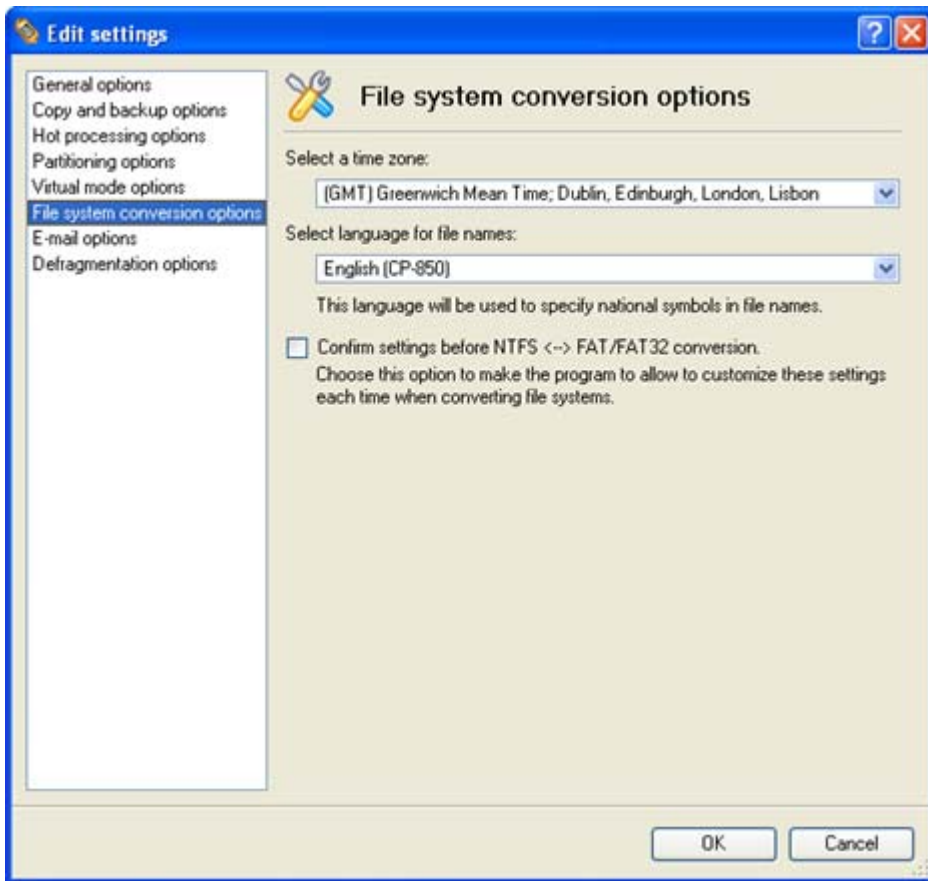
This section contains a set of options that will be taken into account when converting FAT and NTFS file systems. By default, the program takes locale (regional) settings from the system. Problems might occur however because of different standards for file names and file time stamps (Created, Modified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

E-MAIL OPTIONS
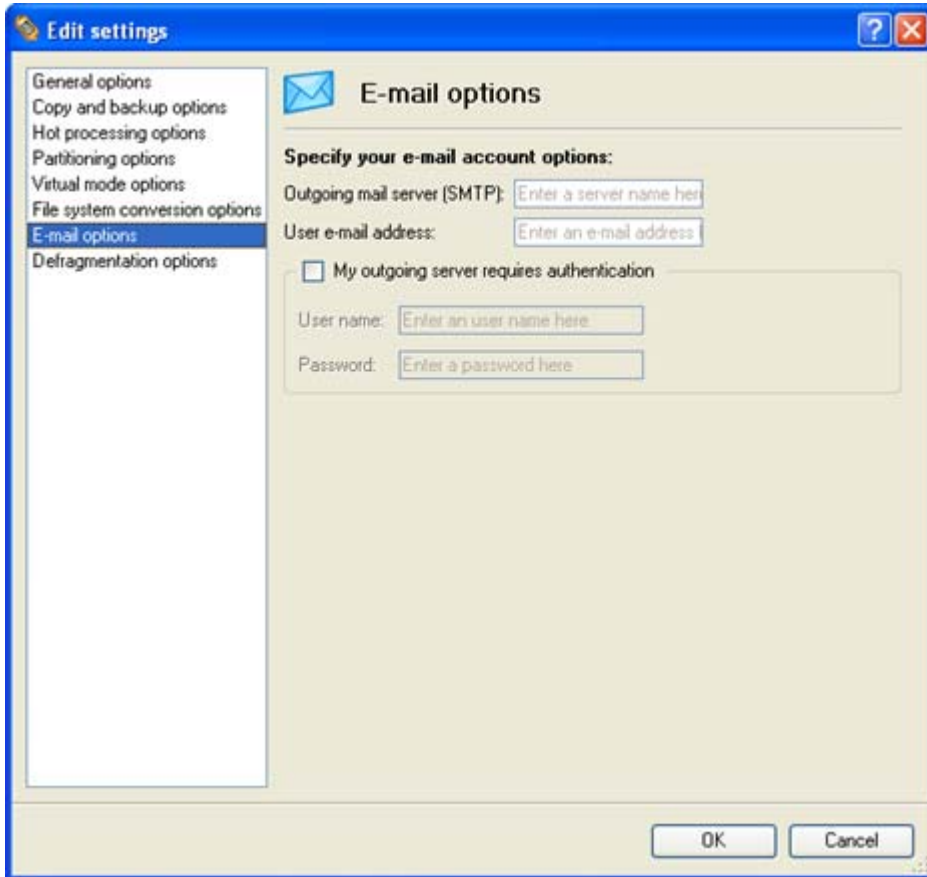
This section contains a set of options that will be taken into account during the Send log files and Send e-mail notification operations:

❑ **Outgoing mail server (SMTP)**. To send messages by using the built-in mail client, it is necessary to have access to a computer running an SMTP (Simple Mail Transfer Protocol) server. All outgoing messages are first sent to the SMTP server, which in its turn delivers them to the required recipients. The address may be represented as a traditional Internet host name (e.g.: mail.com) or as an IP numeric address (e.g. xxx.xxx.xxx.xx).

❑ **User e-mail address**. Specify an e-mail address that has been assigned by the Internet Service Provider or organization's e-mail administrator.

❑ **My outgoing server requires authentication**. Activate the option to allow the program to make authentication on the server before sending messages.

- User name. Enter the name that will be used to log in to the e-mail account.

- Password. Enter the password that will be used to access the mail server.

DEFRAGMENTATION OPTIONS
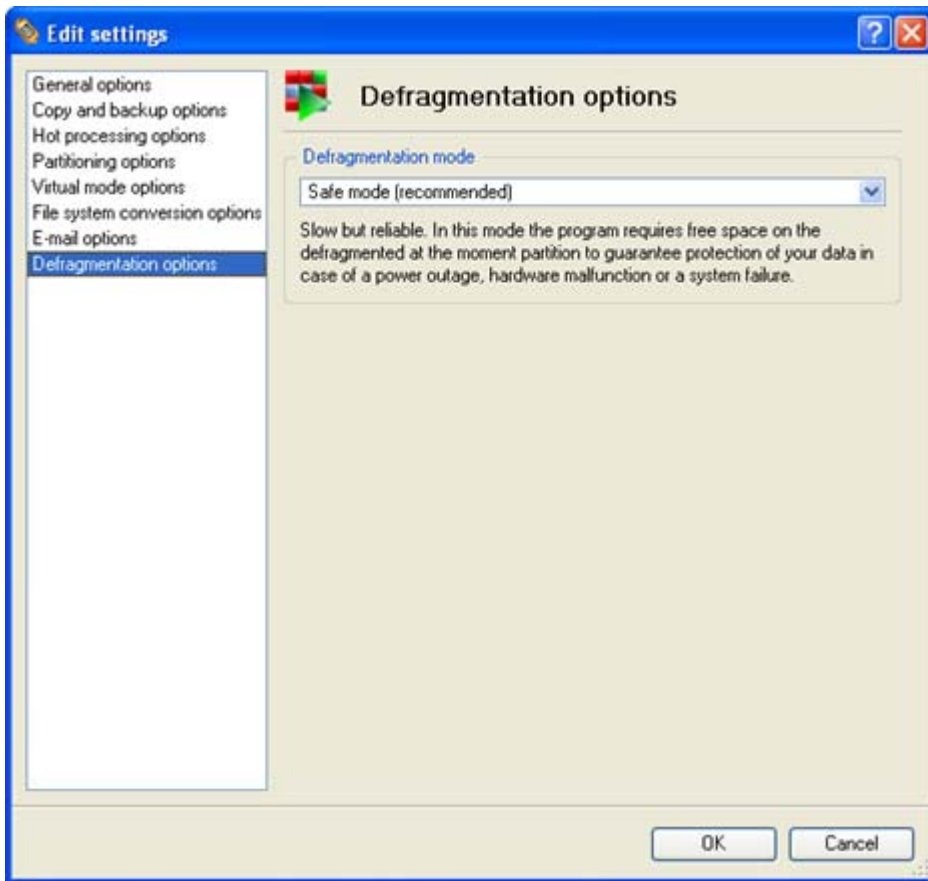
In this section you may set the preferable defragmentation mode:

❑ **Fast mode**. Partitions will be defragmented rather fast (a 10-30% gain depending on the fragmentation level), but a power outage, hardware malfunction or a system failure during the operation might lead to the data loss.

❑ **Safe mode**. To guarantee protection of your data during the operation, the program will allocate some free space (not less than the on-disk largest file) on the defragmented at the moment partition to make a duplicate of every processed file. Thus we strongly recommend you to use this very mode.

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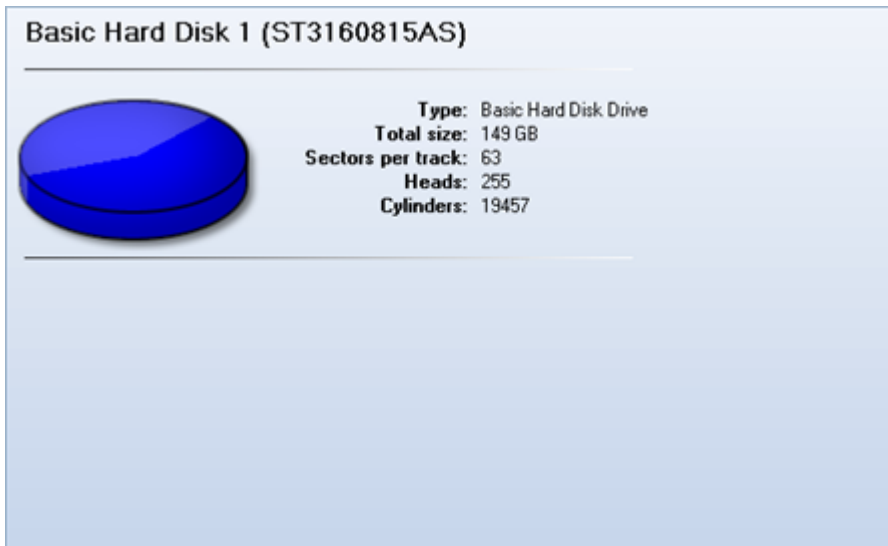
The model and serial number of the disk serve as the title of the browsed page. The disk layout is shown in form of a circular graph, where the color of a sector corresponds to a file system of an appropriate partition. On the right you may see a table, which contains the following information:

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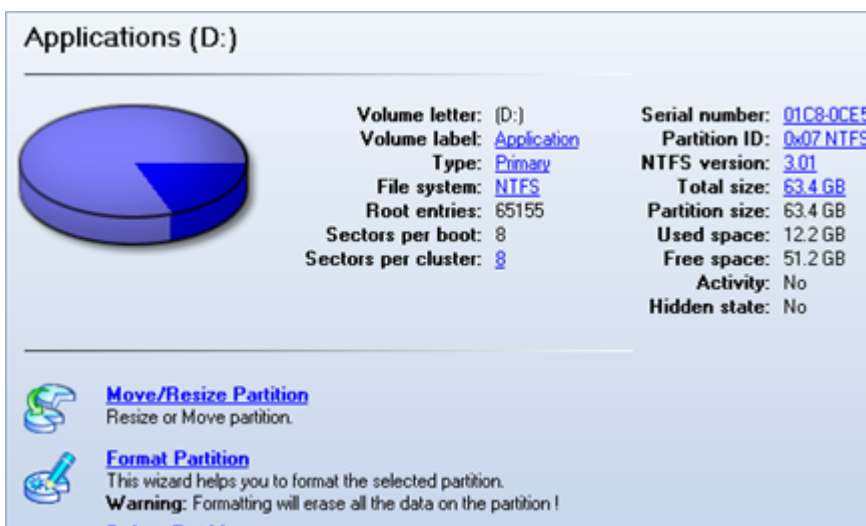
When you select a small-sized bar (i.e. corresponding to a logical disk) the Explorer Bar will display information on it as well. The page title will contain a drive letter, which is assigned to the disk. The disk layout graph will be colored in accordance with the volume ratio of the used space to the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

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. This operation can be accomplished with the Simple Backup Wizard.

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:

Express Launcher

- ❑ Click the **Backup and Rescue** button and then select **Simple Backup**.

Launcher

- ❑ In the Main Menu: select **Wizards > Simple Backup…**

- ❑ On the Common Tasks Bar: click the **Simple Backup** item of the Wizards menu.

- ❑ In the Toolbar: click the **Simple Backup** button.

SETUP

The wizard offers the following steps to accomplish the 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.

❑ **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.
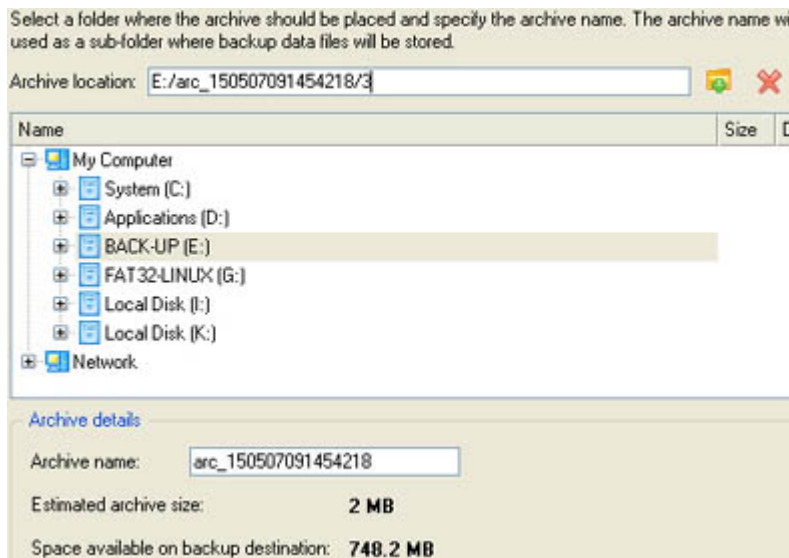
> ⚠ **The program automatically calculates size of the future archive and informs the user about space available on the selected destination.**

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 (a local or network disk), its features defined by the wizard.

Available operation scenarios:

❑ Backing up a Hard Disk or Partition to a Network Drive

BUILDING RECOVERY MEDIA

The Recovery Media Builder provides the possibility to prepare the Linux/DOS recovery environment 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. Besides it enables to save data from partitions of your hard disk directly to compact discs or just burn ISO-images.

STARTUP

There are several ways to start the Recovery Media Builder:

Launcher

❑ In the Main Menu: select **Tools > Recovery Media Builder…**

❑ On the Common Tasks Bar: click the **Recovery Media Builder** item of the Wizards menu.

SETUP

The wizard offers the following steps to build recovery media:

❑ **Type of the recovery media**. You can place it either on a CD/DVD disc, flash memory or a floppy disk.
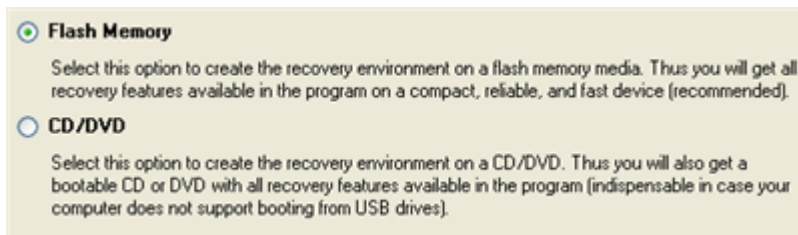
❑ **Contents of the recovery set**. You can choose whether to use the default Linux/DOS recovery environment (included in the installation package) or your own bootable image (need to provide a path to it). Besides you're free to add any data you like to the standard image what is very convenient.

❑ **A recording device**. The appropriate external media (CD/DVD, flash memory or a floppy disk) needs to be available in the system.

⚠ **You can make an ISO image instead of burning a CD/DVD by selecting the Emulator drive.**

❑ **CD/DVD writing parameters** (in case you select this kind of media). Writing parameters include writing speed (maximum or minimum) and the ability of ejecting the recorded disc after completing the operation.

The program supports CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-R, DVD+R double layer and also Blu-ray discs.

> **If the inserted disc is not empty, the wizard will suggest erasing its contents (if possible). Once the operation has been confirmed, the program will delete the re-writable disc's contents and begin the recording process.**

RESULT

As a result of the operation, you receive recovery media to use in most emergencies.

COPY TASKS

In this chapter you will find all the information necessary to make a copy of a hard disk or a separate partition.

CLONING HARD DISKS

You can clone a hard disk of any file system. During the hard disk copying process, the program moves controlling records of used partitioning scheme, the bootstrap code and on-disk partitions. That's why this operation cannot be substituted by simply copying all on-disk partitions.

The Copy Hard Disk Wizard is a traditional-like wizard. By going through its steps, you configure all the necessary settings to launch the copy 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.

> **You need at least two hard disks to carry out this operation.**

STARTUP

There are several ways to start the Copy Hard Disk Wizard:

Express Launcher

❑ Click the **Copying and Migration** button and then select **Hard Disk Migration**.

Launcher

❑ In the Main Menu: select **Wizards > Copy Hard Disk…**

❑ On the Common Tasks Bar: click the **Copy Hard Disk** item of the Wizards menu.

❑ In the Toolbar: click the **Copy Hard Disk** button.

SETUP

The wizard offers the following steps to accomplish the operation:

❑ **The hard disk to copy**. Select a hard disk you want to copy.
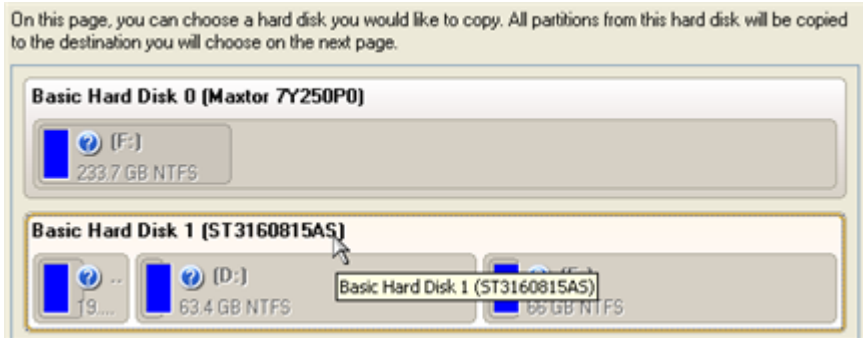
❑ **The target hard disk**. Select a hard disk (if several) where all data of the source disk will be copied to.
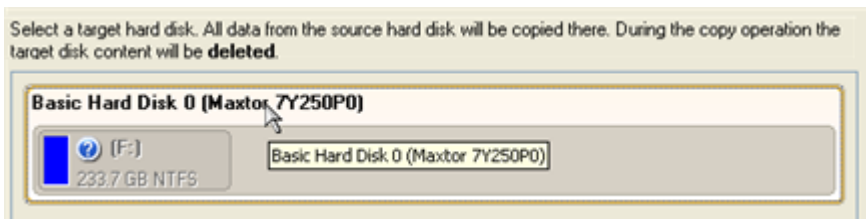
❑ **Copy parameters**. The wizard enables to specify the following options:
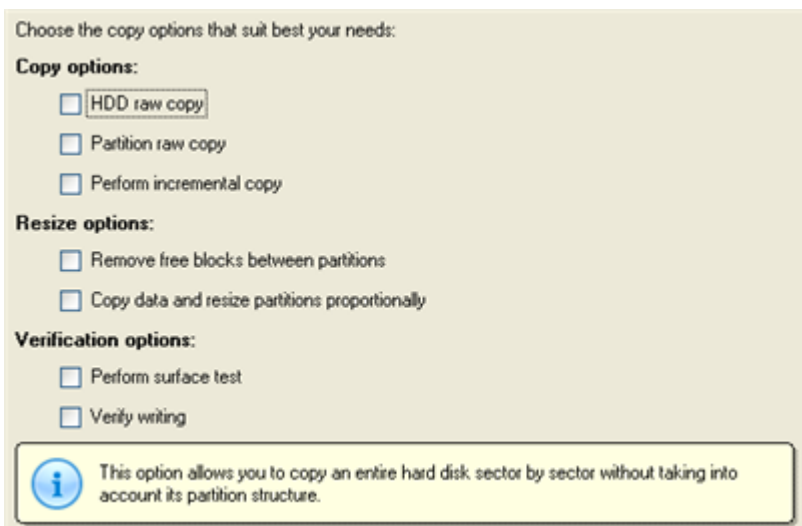
Copy options

- **HDD raw copy** to copy the 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 copy** to copy a partition in the sector-by-sector mode to process unused space of that partition 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.

- **Perform incremental copy** 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.

Resize options

- **Remove free blocks between partitions** not to keep blocks of free space between partitions on the targeted hard disk.

- **Copy data and resize partitions proportionally** to make the program proportionally change the size of partitions keeping their relative order intact. The option can be useful when upgrading the hard disk to a larger one.

Verification options

This section allows you to define whether the **Surface** and/or the **Writing verification** tests will be accomplished during the operation.

RESULT

After the operation is completed, you receive a fully functional duplicate of the existing hard disk.

Available operation scenarios:

❑ System Hard Disk Migration

CLONING PARTITIONS

You can duplicate partitions to protect oneself from downtime in case of a system malfunction or for cloning sample partitions. The program enables to duplicate all partition data including files, the exact structure of directories and file system metadata (location of files, security information, access quotas, etc.).

The Copy Partition Wizard will help you copy a partition of any file system. 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 Copy Partition Wizard:

Launcher

❑ In the Main Menu: select **Wizards > Copy Partition…**

❑ On the Common Tasks Bar: click the **Copy Partition** item of the Wizards menu.

SETUP

The wizard offers the following steps to accomplish the operation:

❑ **The partition to copy**. Select a partition you want to copy.

On this page you can choose a volume to copy.

Basic Hard Disk 0 [Maxtor 7Y250P0]

[*] 75.7 GB NTFS [Unallocated] 157.9 GB

Basic Hard Disk 1 [ST3160815AS]

19.5 (D:) 63.4 GB NTFS (E:) 66 GB NTFS

Total size: 19.5 GB
Used: 10.5 GB
Free: 8.9 GB
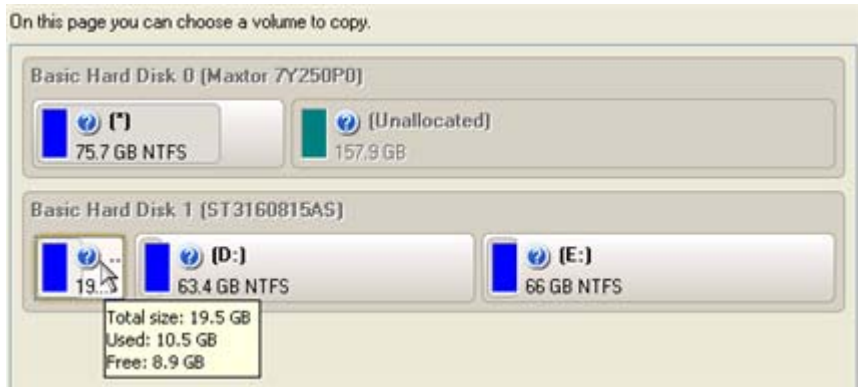
❑ **Destination disk**. Select a hard disk with enough unallocated space to perform the operation.

The wizard will create a copy of **Logical Disk (C:)** from **Basic Hard Disk 1 (ST3160815AS)**.

The copy will be created on **Basic Hard Disk 0 (Maxtor 7Y250P0)**

Please select where to create a copy:

Basic Hard Disk 0 [Maxtor 7Y250P0]

[*] 75.7 GB NTFS [Unallocated] 157.9 GB

> ⚠ **The program enables to copy a partition to a block of free space, which is smaller than the partition itself, taking into account only actual amount of data.**

❑ **Copy parameters**. The wizard enables to specify the following options:

Your hard disk after the changes:

Basic Hard Disk 0 [Maxtor 7Y250P0]

[*] 75.7 GB NTFS [*] 43.6 GB ... [Unallocated] 114.3 GB

Click and drag
here to resize
partition

Where to place a copy

Specify the size of the new partition: NTFS ~~16 669 MB~~ - 161 771 MB.

Specify the size of free space before the partition: 0 ⇕ **0 MB - 150 962 MB.**

Specify the size of free space after the partition: 117043 ⇕ **0 MB - 150 962 MB.**
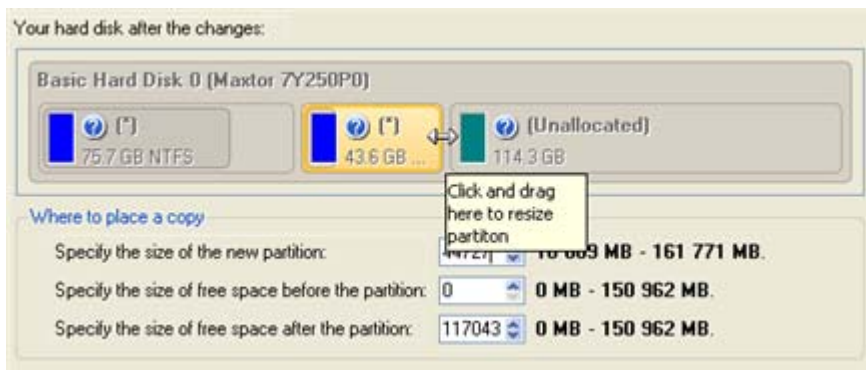
- **Partition size**. Define the size (in Mb) of the copied partition.

- **Free space before**. Define the position (in Mb) of the copied partition relative to the beginning of the available range of disk space.

- **Free space after**. Define the amount of trailing free space (in Mb) at the end of the available range of disk space.

> ⚠ **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.**

RESULT

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

BOOT MANAGEMENT

Our program enables to easily manage several operating systems on one computer with the help of the Boot Manager Setup Wizard. Among the key features of the wizard the following should be mentioned:

❑ Up to 16 operating systems on one PC;

❑ Secure adding/removing of the Boot Manager startup record to/from the MBR;

❑ Auto Boot option to automatically start up the previously chosen OS after a certain time period;

❑ Hiding of any primary partition except selected at the moment.

STARTUP

Express Launcher

❑ Click the **Boot Management** button and then select **Boot Manager**.

Launcher

❑ In the Main menu: select **Tools > BM Setup Wizard…**

❑ On the Common Tasks Bar: click the **Boot Manager Wizard** item of the Wizards menu.

SETUP

The wizard offers the following steps to accomplish the operation:

❑ **Hiding other primary partitions**. By marking this checkbox the program will automatically assign the hidden flag to all primary partitions of the hard disk(s) except the one selected to boot. This will help to avoid any problems when dealing with different operating systems or different versions of one and the same OS, as they will be unaware of each other.

❑ **Boot menu options**. In this section you can switch between the following modes:

- **Normal mode**. Choose this mode to display the boot menu every time the computer starts up and define a timeout on the expiry of which the program will automatically select the previously chosen item of the menu.

- **Hidden mode**. Choose this mode not to display the boot menu until pressing a hot key. For this mode you should define a hot key used to enable the Boot Manager and a time period in seconds the startup message will be displayed.
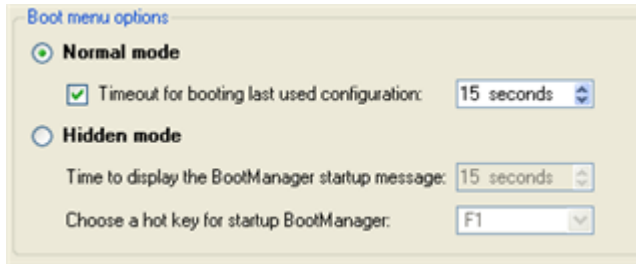
❑ **Deactivating/Configuring the Boot Manager**. These two options will only be available once the wizard has been completed and launched again. Select the Deactivate option to remove the Boot Manager from the MBR (Master Boot Record) or Configure to modify the previously set parameters of the startup process.
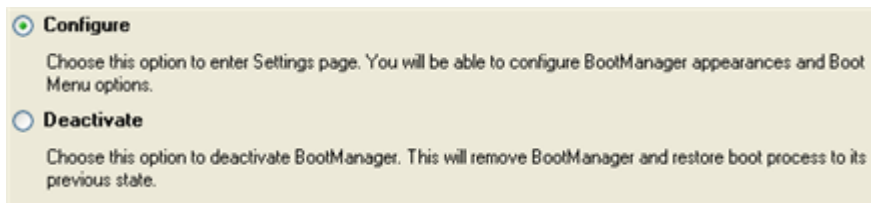
RESULT

After the Boot Manager Setup Wizard is completed the program updates the original record in the MBR to get control of the booting process and to be able to display the boot menu.

Available operation scenarios:

❑ Creating Dual Boot Systems

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 either with the Create Partition Wizard or the Create Partition Dialog.

Besides there's the Express Create Partition Wizard that will analyze your disk subsystem to help you create an NTFS partition in the most appropriate place of your hard disk by up-taking all the unallocated disk space (if any) and/or an innocuous slice of the unused space of an adjacent partition, and then make it available in the system by assigning a drive letter.

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.

EXPRESS CREATE PARTITION WIZARD STARTUP

There are several ways to start the Express Create Partition Wizard:

Launcher

   ❑ In the Main menu: select **Wizards > Express Create Partition…**

   ❑ On the Common Tasks bar: click the **Express Create** item of the Wizards menu.

CREATE PARTITION WIZARD STARTUP

There are several ways to start the Create Partition Wizard:

Express Launcher

   ❑ Click the **Partitioning** button and then select **Create Partition**.

Launcher

   ❑ In the Main menu: select **Wizards > Create Partition…**

   ❑ On the Common Tasks bar: click the **Create Partition** item of the Wizards menu.

DIALOG STARTUP

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

Launcher

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**.

EXPRESS CREATE PARTITION WIZARD SETUP

Thanks to a highly intelligent work algorithm, the wizard requires minimal involvement in the operation, thus you only need to choose a method you find the most suitable to create the partition (if several available), which actually differ in the amount of space to allocate. For easy perception, you can see the resulted disk layout on the disk map by selecting this or that mode.
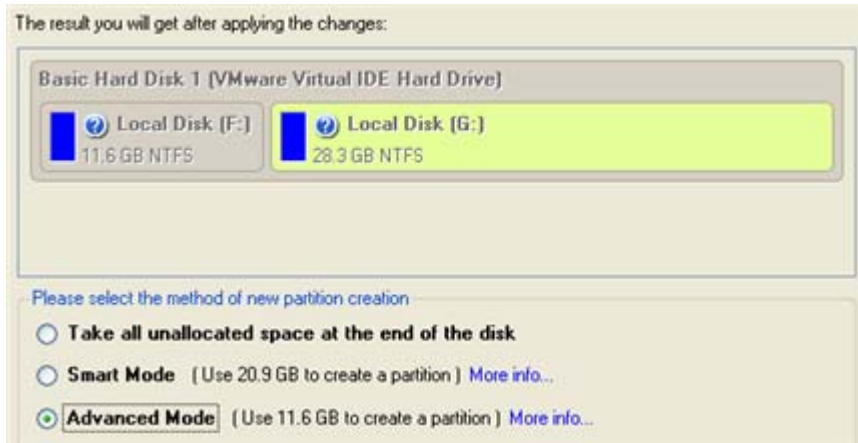
The number of available methods depends on your disk layout.

To learn more on the way the wizard works, please click the corresponding link on the first page of the wizard.

CREATE PARTITION WIZARD SETUP

The wizard offers the following steps to accomplish the operation:

❑ **Partition destination**. Select a hard disk (if the computer has several hard disks) and then choose position for the future partition on the disk: at the end (preferable), at the beginning or somewhere in the middle between other partitions.
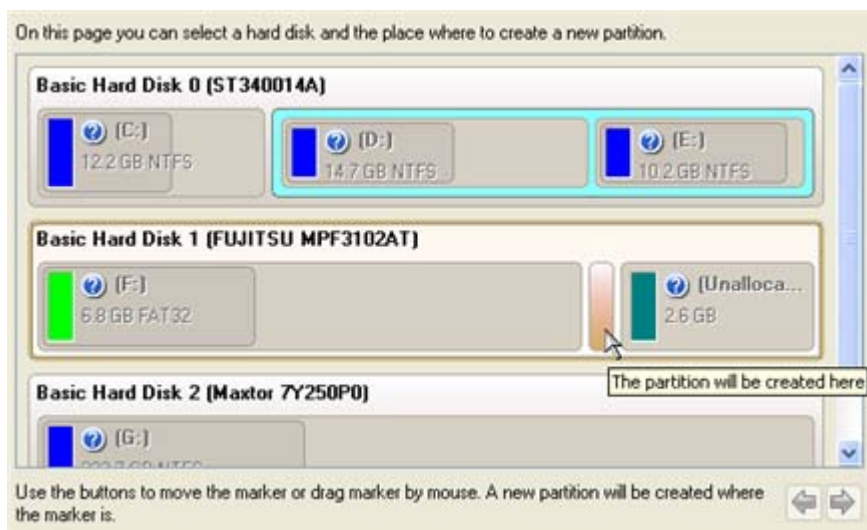
> ⚠️ **By default, the program allows you to create a new partition only as the last primary or as the last logical drive within the extended partition. However, by activating the advance mode on the first page of the wizard you can remove this restriction that in its turn might result in some boot problems.**

- **Partition size**. There is no restriction on size of the future partition, merely depending on space available on the hard disk.

  If there is not enough free space in one block, the wizard enables to redistribute free space, joining all free space blocks together into one united block and moving partitions when 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.
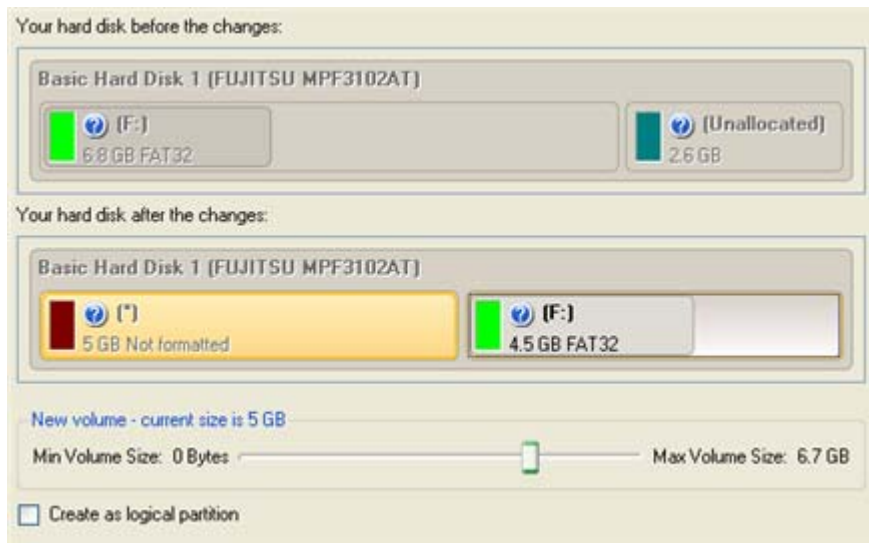
> ⚠️ **If a partition to resize is locked and cannot be processed, the wizard makes the system reboot to create the partition and then automatically boots the system again. (The rebooting mechanism is different for different versions of Windows.)**

  You can also choose whether the future partition will be primary or logical by marking the appropriate checkbox.

- **Partition properties**. On the next page of the wizard you can set a number of additional parameters:
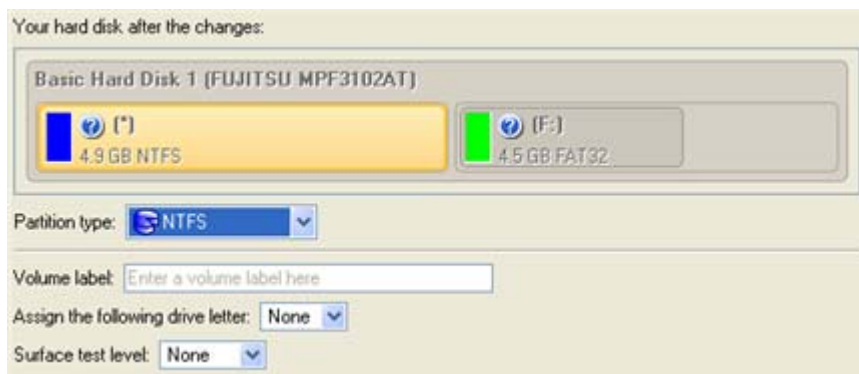
- **Partition type**. From the pull-down list select a file system the newly created partition will be formatted to, otherwise the partition will remain unformatted (so that it will not be ready to use).

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

- **Surface test level**. 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.

DIALOG 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.
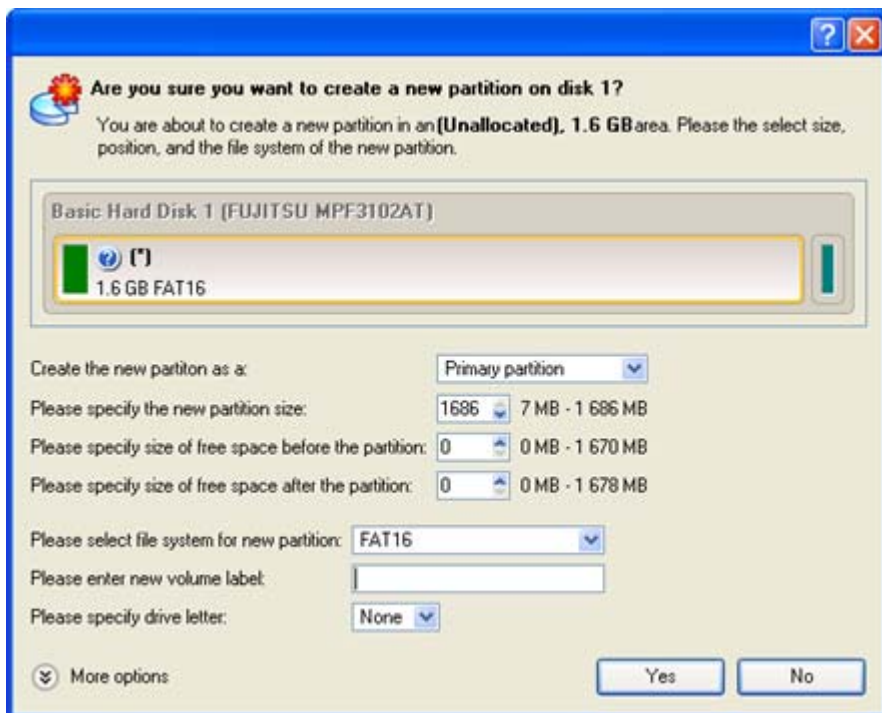
- ❑ **Define whether the partition will be Primary, Extended or Logical**. You can choose the desired partition type from the pull-down list. As a matter of fact, the available alternatives fundamentally depend on the selected block of free space - within the Logical free space, only Logical partitions 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.

Available operation scenarios:

❑ [Creating a New Partition to Detach Operating System from the Rest of Data](#)

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

- HPFS

This operation can be accomplished either with the Format Partition Wizard or the Format Partition Dialog.

WIZARD STARTUP

There are several ways to start the Format Partition Wizard:

Launcher

❑ In the Main menu: select **Wizards > Format Partition…**

❑ On the Common Tasks bar: click the **Format Partition** item of the Wizards menu.

DIALOG STARTUP

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

Launcher

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**.

WIZARD SETUP

The wizard offers the following steps to accomplish the operation:

❑ **Partition to format**. Select a hard disk (if the computer has several hard disks) and then the required partition to format.

On this page, you can choose a partition you would like to format.

Basic Hard Disk 0 [Maxtor 7Y250P0]

(?) (F:)
233.7 GB NTFS

Basic Hard Disk 1 (ST3160815AS)

(?) ..
19....

(?) (D:)
63.4 GB NT...

Total size: 63.4 GB
Used: 4.8 GB
Free: 58.5 GB

(?) (E:)
66 GB NTFS
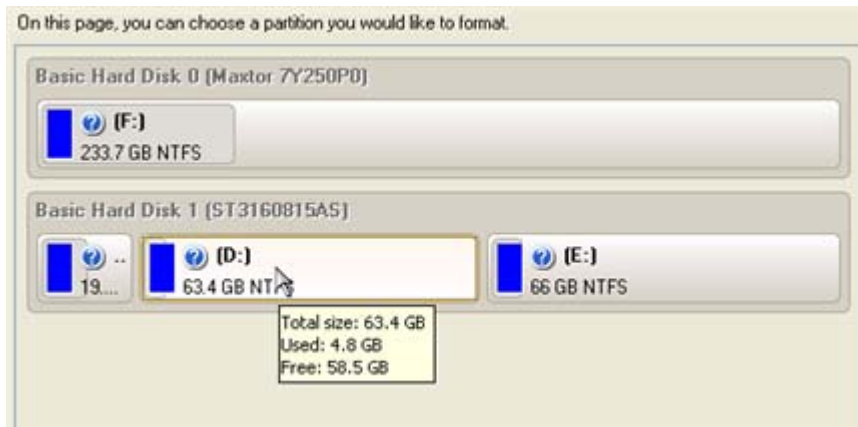
As a result of this operation contents of the selected partition will be lost.

❑ **Partition properties**. On the next page of the wizard you can set the following partition parameters:

Your hard disk after the changes:

Basic Hard Disk 1 (ST3160815AS)

(?) ..
19....

(?) (Q:)
63.4 GB FAT32

(?) (E:)
66 GB NTFS

Partition type: FAT32

Volume label: Enter a volume label here

Assign the following drive letter: Q:

- **Partition type**. 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.

- **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 mark the appropriate option at the foot of the page. When it is marked, the next page enables to define:

☑ Use OS built in format routine

Please select surface test level:
None

Please select sectors per cluster:
32

❑ **Use OS built-in routine**. Mark the checkbox 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.**

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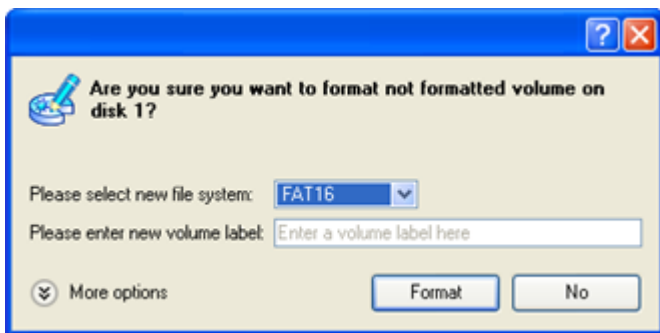
- ❑ **File system**. From the pull-down list select the desired file system type. In fact, the program displays only those file systems that can correctly be placed to the selected partition, taking its capacity into account.

- ❑ **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 checkbox 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.

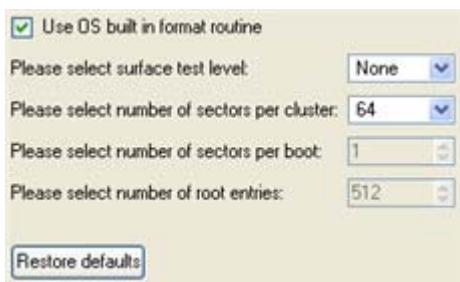**⚠ Number of available options depends on the selected file system type.**

RESULT

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

DELETING PARTITIONS

With the Delete Partition Wizard or 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.

WIZARD STARTUP

There are several ways to start the Delete Partition Wizard:

Express Launcher

- ❑ Click the **Partitioning** button and then select **Delete Partition**.

Launcher

- ❑ In the Main menu: select **Wizards > Delete Partition…**

- ❑ On the Common Tasks bar: click the **Delete Partition** item of the Wizards menu.

DIALOG STARTUP

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

Launcher

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**.

WIZARD SETUP

The wizard offers the following steps to accomplish the operation:

❑ **Partition to delete**. Select a hard disk (if the computer has several hard disks) and then the required partition to delete.
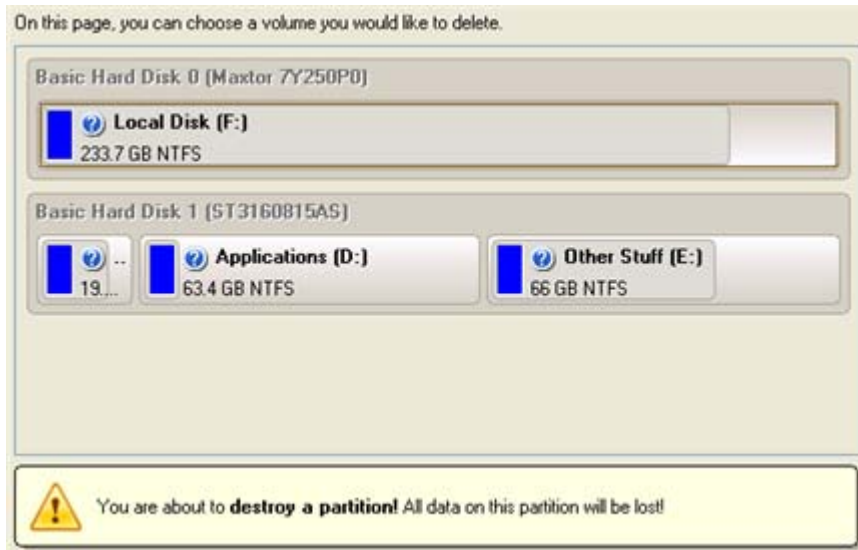
> ⚠ **As a result of this operation contents of the selected partition will be lost.**

❑ **Merge free blocks**. As a result of the operation you may get several blocks of the unallocated space on the hard disk. So choose whether to merge them all and place at the beginning of the disk or at the end by selecting the required operation from the pull-down list.
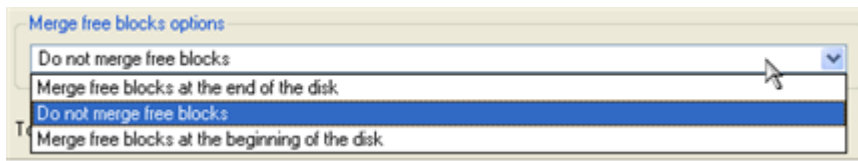
DIALOG SETUP

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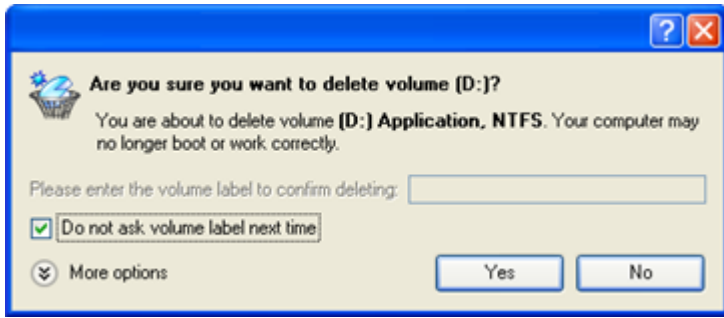
- ❑ **Enter the volume label to confirm deleting**. To confirm deletion of the selected partition, enter its Volume Label. The current volume label is displayed above.

- ❑ **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.

ADVANCED PARTITIONING OPERATIONS

Here you can learn how to accomplish advanced partitioning operations (merge, redistribute free space, undelete, etc.).

MERGING PARTITIONS

The Merge Partitions Wizard enables to consolidate the disk space, which originally belongs to two adjacent partitions, into a single, larger partition. The order, in which two partitions have been chosen, is important since all contents of the second selected partition will be placed in a folder on the resulted joined partition.

The program provides the ability to merge only NTFS, FAT16 or FAT32 partitions.

STARTUP

There are several ways to start the Merge Partitions Wizard:

Express Launcher

- ❑ Click the **Partitioning** button and then select **Merge Partitions**.

Launcher

- ❑ In the Main menu: select **Wizards > Merge Partitions…**

- ❑ On the Common Tasks bar: click the **Merge Partitions** item of the Wizards menu.

SETUP

The wizard offers the following steps to accomplish the operation:

- ❑ **The partition to expand**. Select a partition, the size of which you need to increase by up-taking contents of an adjacent partition.
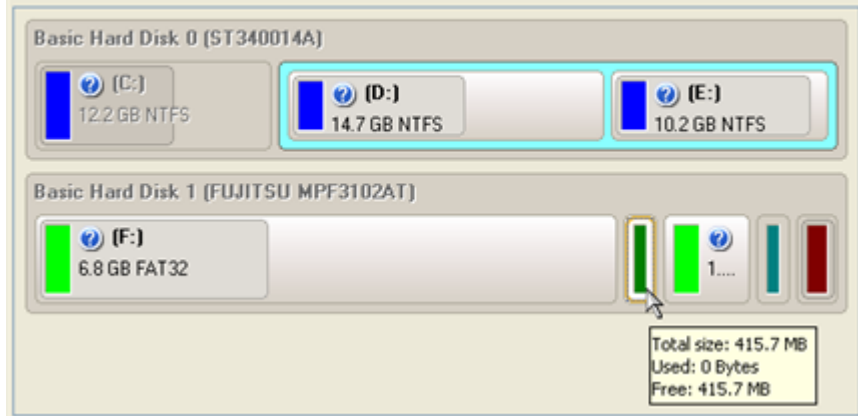
❑ **The partition to merge with**. Choose the second partition for the merge operation, the contents of which will be placed in a folder on the resulted joined partition. By default, the program offers an easy-to-understand folder name to store files of the second partition, which however can be customized.

> ⚠ **Be particularly careful when selecting system partitions to process, since the incorrect order, in which two partitions have been chosen, will result in inability to boot the operating system.**

RESULT

After the operation is completed the disk space of the two adjacent partitions will be consolidated.

REDISTRIBUTING UNUSED SPACE BETWEEN PARTITIONS

This operation can be accomplished either with the Express Resize Partitions Wizard or the Redistribute Free Space Wizard.

EXPRESS RESIZE PARTITIONS WIZARD

The Express Resize Partitions Wizard enables to easily increase free space on one partition by up-taking the unused space of an adjacent partition of your hard disk.

STARTUP

There are several ways to start the Express Resize Partitions Wizard:

Express Launcher

❑ Click the **Partitioning** button and then select **Resize Partitions**.

Launcher

❑ In the Main menu: select **Wizards > Express Resize Partitions…**

❑ On the Common Tasks Bar: click the **Express Resize** item of the Wizards menu.

SETUP

The wizard offers the following steps to accomplish the operation:

❑ **Adjacent partitions to resize**. Click on the left partition of the pair of partitions you need to redistribute the unused space between, as the right one will be selected automatically.
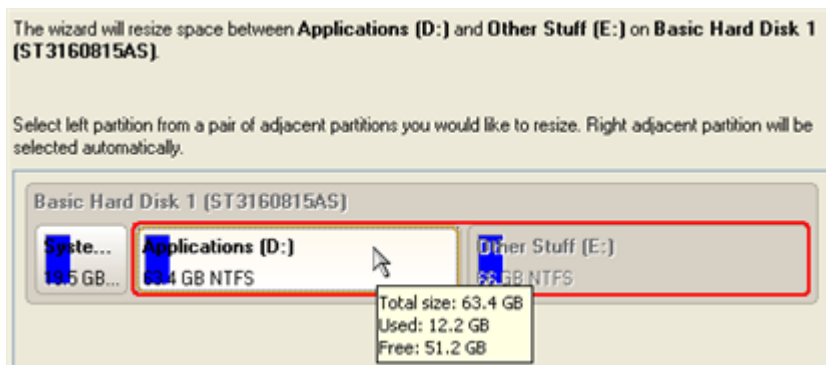
❑ **Resulted size of partitions**. Redistribute the unused space between the partitions with the slider or manually by entering the required value.

RESULT

After the operation is completed the unused space between the specified partitions will be redistributed according to your needs.

Available operation scenarios:

- ❑ [Increasing Size of a System Partition by Taking Unused Space of an Adjacent Partition](#)

- ❑ [Resizing Partitions of Apple Boot Camp](#)

REDISTRIBUTE FREE SPACE WIZARD

The Redistribute Free Space Wizard helps to increase free space on one partition by up-taking the on-disk unallocated space and the unused space of other partitions. By default, the wizard adds to the target partition all existing blocks of the free space. Besides you can specify partitions to act as a space donor. The wizard will automatically recalculate positions of the partitions and move their contents to new locations.

STARTUP

There are several ways to start the Redistribute Free Space Wizard:

Launcher

- ❑ In the Main menu: select **Wizards > Redistribute Free Space…**

- ❑ On the Common Tasks bar: click the **Redistribute Free Space** item of the Wizards menu.

SETUP

The wizard offers the following steps to accomplish the operation:

- ❑ **Partition to enlarge**. Select a partition, the size of which will be increased at the expense of other partitions. Blocks of the free space (if any) will be automatically added to the target partition.
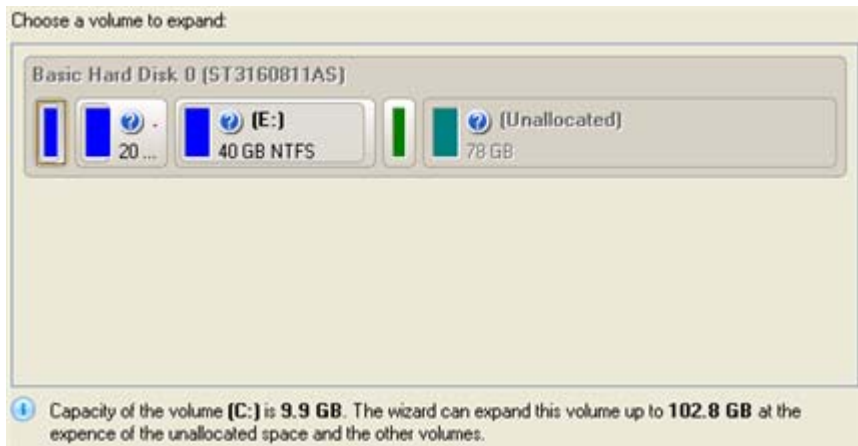
- ❑ **Partition to donate**. Choose any partition(s) (not only adjacent) to donate free space.
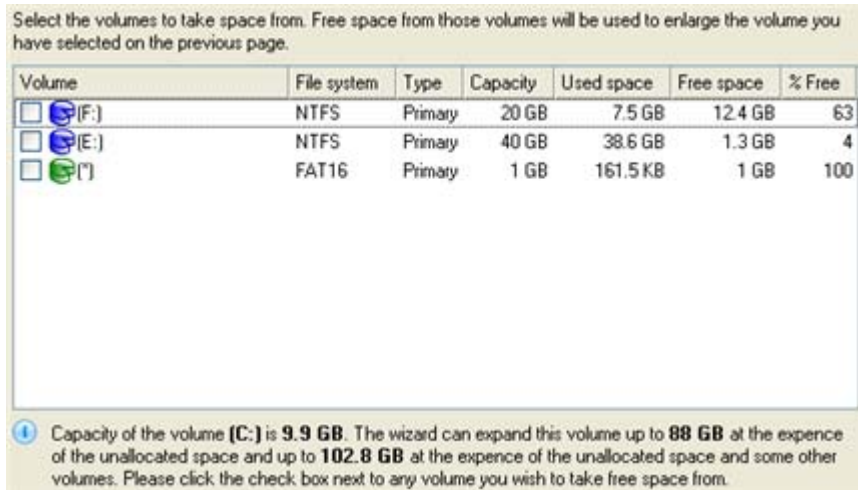
❑ **Partition size**. By default, the program leaves 50% of the unused space on a partition and removes another 50% to add it to the target partition. However, the size to take can be customized by moving the slider or by manually entering the exact value.
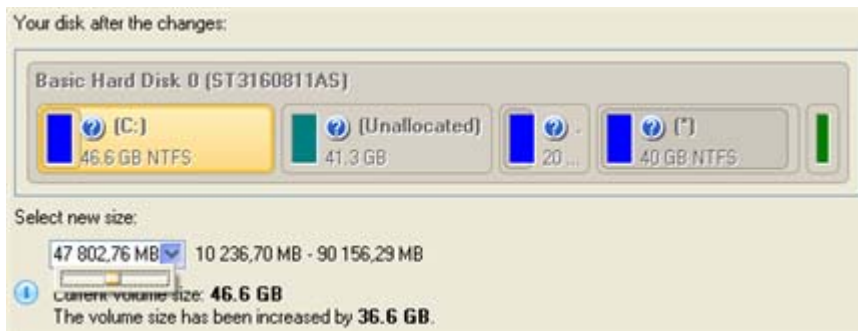
RESULT

After the operation is completed free space of the specified partition will be increased by up-taking the on-disk unallocated space and the unused space of other partitions.

UNDELETING PARTITIONS

When simply deleting a partition (without additional wiping) disk management software only removes references to it in the Partition Table, thus leaving the possibility to recover it later.

The program enables to find and recover these partitions. A restored partition will be fully functional, as long as other partitions were not created, moved or exceeded the disk space occupied by that partition. That is why the program offers this function only for blocks of free space.

The operation can be accomplished with the Undelete Partition Wizard.

STARTUP

There are several ways to start the Undelete Partition Wizard:

❑ In the Main Menu: select **Wizards > Undelete Partitions…**

❑ On the Common Tasks Bar: click the **Undelete Partition** item of the Wizards menu.

❑ Select a block of free space on the Disk Map and click the **Recover Lost Partitions** item on the page that appears in the Explorer Bar.

❑ Call the popup menu for the block of free space (right click of the mouse button) then select the menu item: **Recover Lost Partitions…**

SETUP

The wizard offers the following steps to accomplish the operation:

❑ **Free blocks to scan for lost partitions**. Choose a free block from a tree-like list of available hard disks.
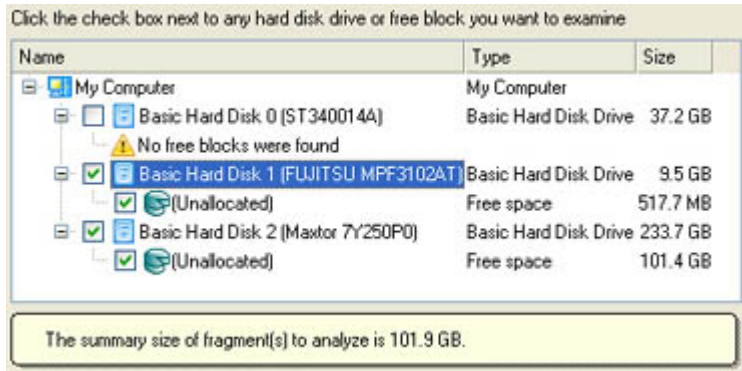
❑ **Search method**. By default, the wizard selects the fastest search method for your operating system. In most cases that will do to find any accidentally deleted partition. However if you're under Windows XP for instance (the Conventional Search option is selected), but the deleted partition you're looking for has been created with the Disk Management utility under Vista, the wizard won't be able to find this partition, unless you manually select the appropriate option (Quick Search for Partitions Created by Vista or Later OS). Moreover if the wizard still fails to find the partition you need, you can select the Thorough Search option to scan every single sector in the specified search area to get the most accurate results.
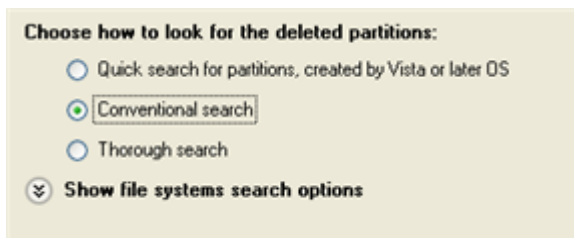
> ⚠ **To know more on the available search methods, please use the context sensitive hint system.**

❑ **File system filter**. By default, the wizard will search for all known file systems. However, by clicking on the appropriate option on the second page of the wizard, you can specify only those file systems you need.
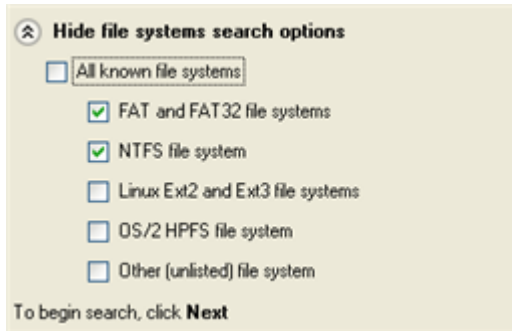
❑ **A partition to undelete** (if several). By default, the program searches records of any deleted partition ever existed on the selected block of free space. So you can get several partitions to choose from.
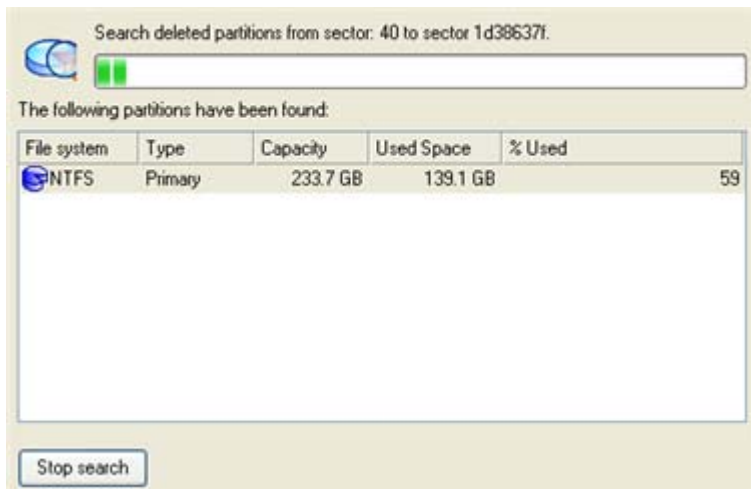
Most likely the required partition will be found first. If so, you may abort the search operation by pressing the Stop search button.

RESULT

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

INSTALLING A NEW OPERATING SYSTEM

Getting your computer ready to install a new operating system, especially when it is going to be an additional OS in the system, is a rather complicated task that implies quite a number of operations, from allocating space to create a new partition (resize, redistribution of free space) to formatting of the newly created partition to a particular file system and checking its surface for bad sectors to avoid possible data loss. Operating systems today are being supplied with basic tools of partitioning that only enable to create a partition (in case there is enough unallocated space on the disk) and then format it to the specified file system type. Our program offers a handy Install New OS Wizard to easily carry out all the necessary operations to install a new operating system.

STARTUP

There are several ways to start the Install New OS Wizard:

Express Launcher

❑ Click the **Boot Management** button and then select **Install New OS**.

Launcher

- In the Main menu: select **Wizards > Install New OS…**

- On the Common Tasks bar: click the **Install New OS** item of the Wizards menu.

SETUP

The wizard offers the following steps to accomplish the operation:

- **Partition to install a new operating system**. The program offers two ways of installing a new OS, i.e. to create a new primary partition for it or use an existing one.
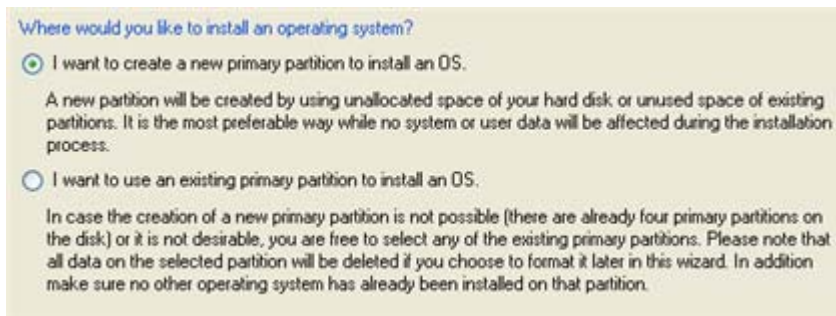
  Only primary partitions can be used to install an operating system.

- In case the first option has been marked, the wizard enables to specify:

A hard disk (if several) where a new partition will be created. Thanks to an advanced program engine it is possible to use unallocated space of the disk (if any) and unused space of existing partitions to create a new partition;
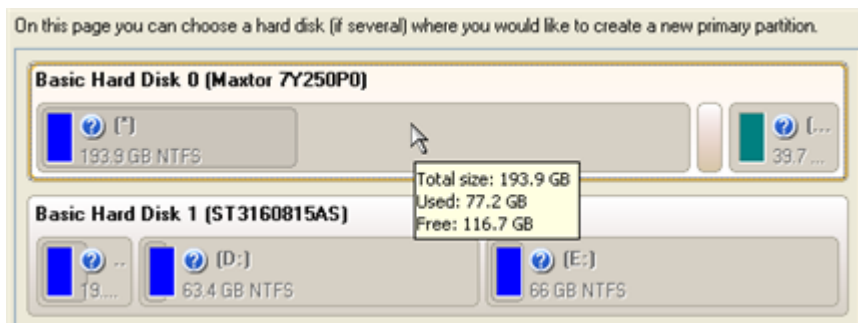
  To avoid any possible problems, the new partition will in no way be created as the first partition of the disk which already contains at least one partition.

And its size. If there are blocks of the free space on the disk, the wizard will merge them all and allocate the resulted space for a new partition in the first place. If not, it will take 50% of the unused space of an adjacent partition. However, the size to take can be customized by moving the slider.

You can select either a block of unallocated space from the disk or an existing partition for which the unused space will be used to create a new partition.

Basic Hard Disk 0 (Maxtor 7Y250P0)

❓ (*)
182.1 GB NTFS

❓ (*)
51.6 GB Not ...

New volume - current size is 51.6 GB

Min Volume Size: 0 Bytes ————————— Max Volume Size: 156.5 GB
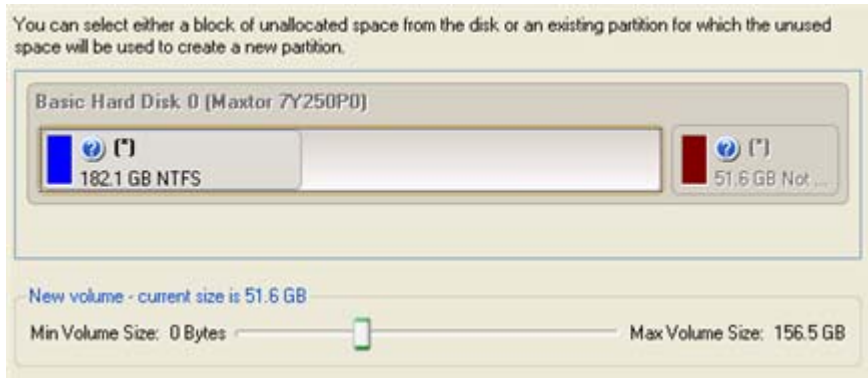
- In case the second option has been marked, the wizard enables to choose an existing primary partition to install a new operating system.

On this page you can choose an existing primary partition where you would like to install a new operating system.

Basic Hard Disk 0 (Maxtor 7Y250P0)

❓ ..
30 ...

❓ (*)
163.3 GB NTFS

❓ (U...
39.7 GB

Total size: 163.3 GB
Used: 77.2 GB
Free: 86.1 GB

Basic Hard Disk 1 (ST3160815AS)

❓ ..
19 ...

❓ (D:)
63.4 GB NTFS

❓ (E:)
66 GB NTFS
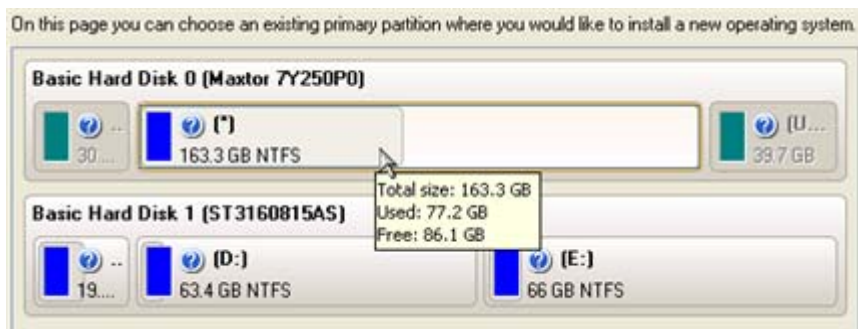
⚠️ **Your computer may fail if any other OS has already been installed on the selected partition.**

❑ **Partition properties**.

☑ Yes, I want to format the partition

Partition type: FAT32

Assign the following drive letter: None

Surface test level: Normal

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

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

- **Surface test level**. 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.

❑ **OS Label**. Enter a label for the selected partition in the textual field. It will later be used for the drive identification.

OS labels will be displayed in the Boot Manager's startup menu to help you boot the required operating system.

OS label: WinXP3

RESULT

As the final step the wizard will offer you to insert a distributive CD/DVD of the new operating system and restart the computer to launch the installation procedure.

> ⚠️ **The program will update your MBR, so most likely you won't be able to start up any of the previously installed operating systems. Please launch the Boot Manager Setup Wizard after the installation has been completed to fix this issue.**

Available operation scenarios:

❑ [Creating Dual Boot Systems](#)

MOVING/RESIZING PARTITION

The Move/Resize Partition function allows you to resize or change location of any partition without destroying its data.

In order to move/resize a partition you should take the following steps:

Launcher

1. Select a partition on the Disk Map.

2. Call the Move/Resize Partition dialog to set up the operation. There are several ways to do it:

   ❑ Select in the Main menu: **Partition > Move/Resize Partition…**

   ❑ On the Explorer bar: click on the current total size value.

   ❑ Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map or on the Partition List, then select the menu item: **Move/Resize Partition…**

3. Define parameters of the operation.
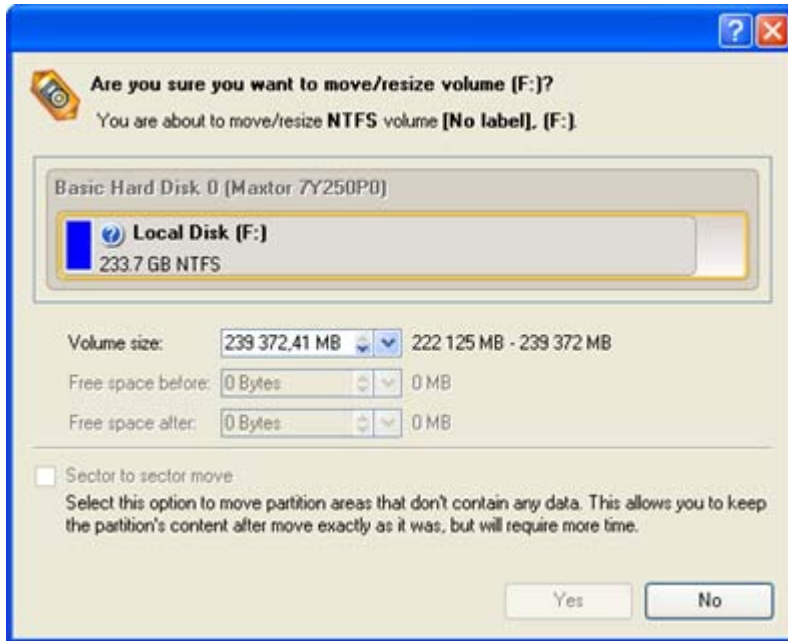
- ❑ **Volume size**. Define size (in Mb) of the modified partition.

- ❑ **Free space before**. Define the partition position (in Mb) relative to the beginning of the available range of disk space.

- ❑ **Free space after**. Define the amount of trailing free space (in Mb) at the end of the available range of disk space.

- ❑ **Sector to sector move**. Mark the checkbox to move the partition in the sector-by-sector mode to process its unused space 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 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.

When resizing a FAT16 partition beyond the 2GB limit (maximum file system size), the partition will automatically be converted to FAT32.

The program enables to enlarge NTFS partitions (system, locked) without rebooting Windows and interrupting its work, providing 100 percent guarantee that your data is kept intact.

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4. The operation will be performed immediately after confirmation.

Available operation scenarios:

- ❑ Increasing Size of a System Partition by Taking Unused Space from any Other

CONVERTING FILE SYSTEM

With our program you can change type of the used file system without destroying its data. While performing the operation, it first checks the current file system for consistency and then verifies whether the on-partition data meet the requirements of the desired file system or not. After having passed the testing, the program re-organizes the file system metadata and user files.

The program enables to convert the following file system types:

- FAT16 > NTFS, FAT32

- FAT32 > NTFS, FAT16

- NTFS > FAT16, FAT32

- Ext2 > Ext3

In order to convert a file system you should take the following steps:

Launcher

1. Select a partition on the Disk Map.

2. Call the Convert File System of Partition dialog to set up the operation. There are several ways to do it:

   ❑ Select in the Main menu: **Partition > Convert file system…**

   ❑ On the Explorer bar: click on the current file system type.

   ❑ Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map or on the Partition List, then select the menu item: **Convert File System…**

3. Initially the program suggests some consistent values for all parameters. In most cases, you can just press the Convert button to confirm the operation.
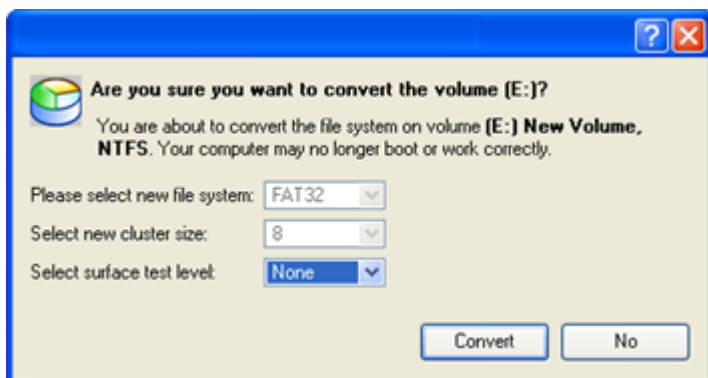
   ❑ **New file system**. From the pull-down list choose a file system you would like to convert to. Actually the program only displays variants available for the operation, taking into account the current parameters of the selected partition and limitations of the used file system.

   ❑ **New cluster size**. Define the cluster size for the partition. This parameter can have a profound effect on the overall performance. In a nutshell, larger clusters waste more space, but generally provide for slightly better performance, because of less fragmentation. So be particularly careful with it.

> ⚠️ **The cluster size value is expressed in sectors per cluster. To get it in Kbytes, please divide it into half.**
>
> **You may only decrease the current cluster size.**

- ❑ **Surface test level**. 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.

4. The operation will be performed immediately after confirmation.

MAKING LOGICAL/PRIMARY

The program allows you to include a primary partition in the extended partition, or exclude a logical partition from the extended partition, without partition duplication.

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

Launcher

1. Select a primary or logical partition on the Disk Map.

2. Call the Make Partition Logical/Primary dialog to set up the operation. There are several ways to do it:

   ❑ Select in the Main menu: **Partition > Modify > Make Partition Logical/Primary**.

   ❑ On the Explorer bar: click on the current partition type.
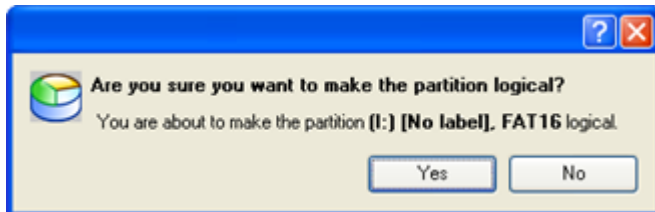
> ⚠️ **The Make Primary > Logical option is only available when the selected partition is adjacent to the extended partition and vice versa.**
>
> **The Make Primary > Logical option of the system partition will result in inability to boot the operating system.**

3. The operation will be performed immediately after confirmation.

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.
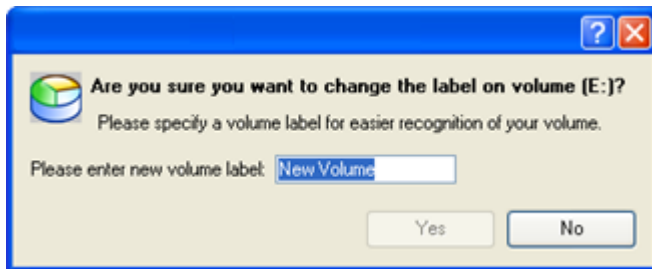
4. The operation will be performed immediately after confirmation.

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**.
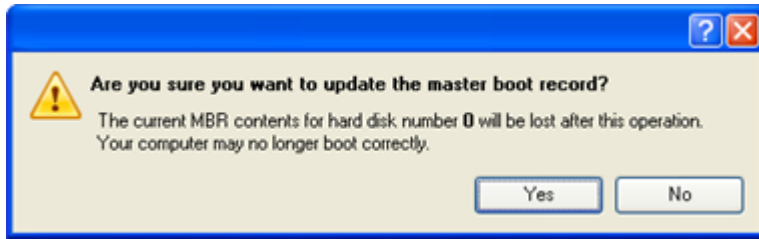
3. The operation will be performed immediately after confirmation.

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:

Launcher

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…**
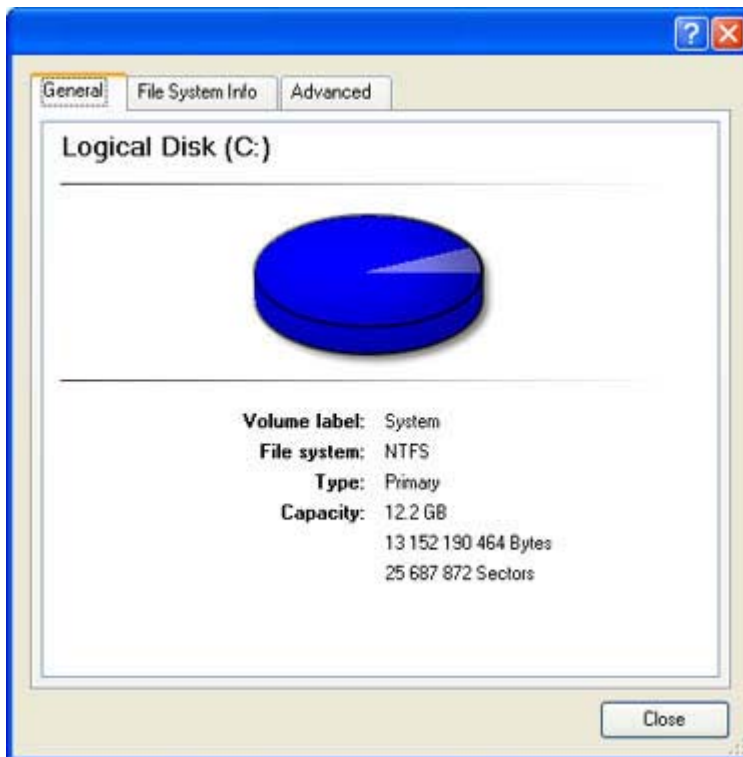
In the opened dialog information will be grouped according to its properties, thus by clicking tabs you can get information you need.

VOLUME EXPLORER

Volume Explorer is a special tool to browse and export contents of the local mounted/unmounted volumes formatted to FAT16, FAT32, NTFS, Ext2FS, Ext3FS, ReiserFS file systems. Besides it enables to access Paragon backups as regular folders to explorer their contents or to retrieve certain files.

Launcher

To launch the Volume Explorer you should click **Disk View** tab in the Explorer Bar and then choose **Volume Explorer**:

Call the popup menu for the selected file/folder (right click of the mouse button) to export it to some other location (local or network drive, etc.).
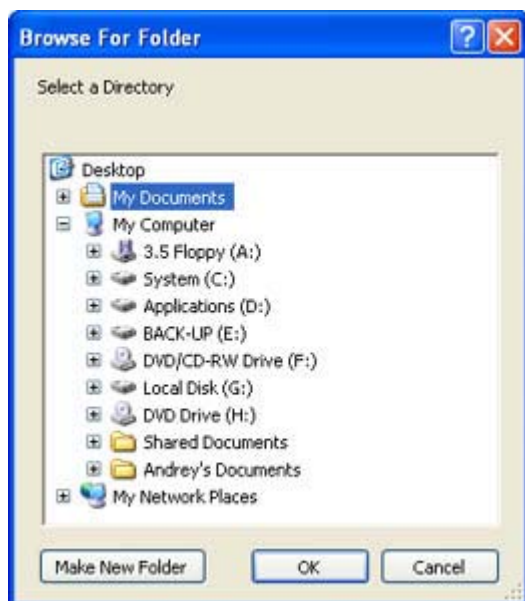
Available Operation Scenarios:

❑ [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:

Launcher

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.

   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:

Launcher

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**.

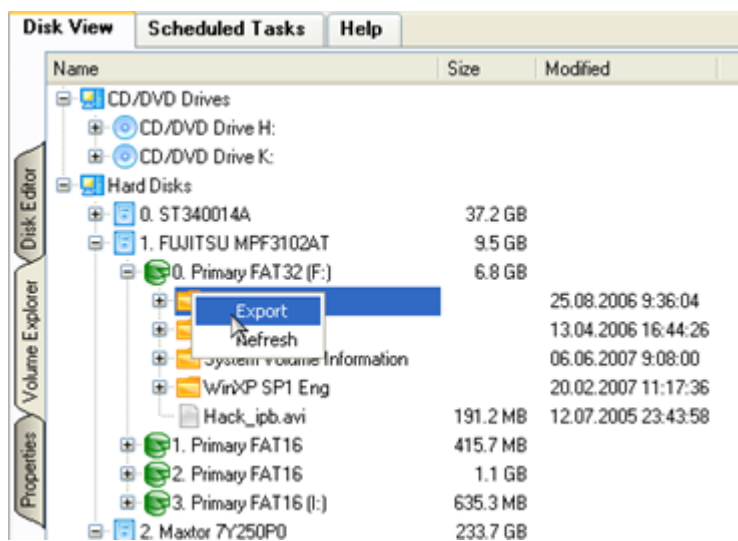   ❑ Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map, then select the menu item: **Remove Drive Letter**.

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.

DEFRAGMENT PARTITION

Defragmentation is the process of rewriting parts of a file to contiguous sectors on a hard disk to increase the speed of access and retrieval. When files are updated, the computer tends to save these updates on the largest continuous space on the hard disk, which is often on a different sector than the other parts of the file. When files are thus fragmented, the computer must search the hard disk each time the file is opened to find all of the file's parts, which slows down response time.

The program provides the necessary tool for the defragmentation of NTFS and FAT partitions.

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

Launcher

1. Select a partition on the Disk Map.

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

   ❑ Select in the Main menu: **Partition > Modify > Defragment Partition…**

   ❑ Call the popup menu for the selected partition (right click of the mouse button) on the Disk Map or on the Partition List, then select the menu item: **Defragment Partition…**

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.

   ❑ **Directories Placement**. From the pull-down list select the way how to sort directories.

   ❑ **Sort by size**. Sort files according to their size.

❑ **Sort by time**. Sort files according to the last time of update.

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:

System files options

☑ Do not save content of pagefile.sys and (or) hiberfil.sys

Pagefile.sys and Hiberfile.sys are OS temporary files and are only used for the current Windows session. Thus excluding them from processing will reduce time required to accomplish the operation.

Defragmentation options

⦿ Safe mode (recommended)

The operation may require a lot of time to complete, but it guarantees consistency of your data. Please use this mode when your computer is not going to be in operation for a considerable period of time.

○ Fast mode

The operation will go much faster, but there's a chance of loosing data because of a power outage. Please make a backup of your data before using this mode.

❑ **Skip auxiliary files**. Mark the option to ignore contents of the PAGEFILE.SYS and HIBERFIL.SYS system files. These files are used temporarily in the operating system.

❑ **Defragmentation Mode**. Select the preferable defragmentation mode.

4. The operation will be performed immediately after confirmation.

Available operation scenarios:

❑ [Hard Disk Optimization](#)

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:

Launcher

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.
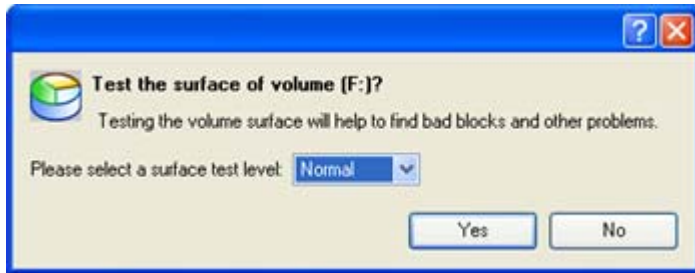
4. The operation will be performed immediately after confirmation.

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:

Launcher

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.

   ❑ **Automatically fix file system errors**. Mark the checkbox to automatically fix any found error without requesting a confirmation.

   ❑ **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.

SEND LOG FILES

The program enables to simplify the procedure of sending support requests to the Paragon Support Team. In case of having difficulties with handling the program, you, with the help of this very function, can address the company support engineers and provide them with all the information they need such as the disk layout, performed operations, etc. in order to tackle the encountered problem. Information of that kind is stored in Log files.

In order to send log files to the Paragon Support Team you should take the following steps:

Launcher

1. Call the Send Log Files dialog in the Main Menu: **Tools > Send Log Files**;

2. Provide a customer name and a product serial number;

3. Give a detailed description on the encountered problem.

By clicking the Send button the built-in mail client will generate a template request with attached compressed log files and then send it to the Paragon Support Team.

LOG FILES

Log files are simple textual files that can be opened by any text editor. There are several log files automatically generated by the program:

Stubact.log	**Contains in-depth information on parameters and performance of all operations carried out by the program**
Pwlog.txt	Besides brief overview on operations it also contains detailed information about the state of all hard disks
Cdb.log	Contains low-level information on the CD/DVD devices used in the system
BioNTlog.txt or Bio95log.txt	It is an OS-dependent supplementary log file derived from Bioxx.dll. It may contain valuable information on Windows family operating systems

Bio95log.txt	

> **Log files do not contain any confidential information on the operating system settings or the user documents.**
>
> **The Send Log Files function is only available when outgoing mail server (SMTP) and the user e-mail address are properly set. To learn more about it please consult the Settings Overview chapter.**

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.

Launcher

In order to view logs on carried out operations call the View Logs dialog in the Main Menu: **Tools > View Logs…**
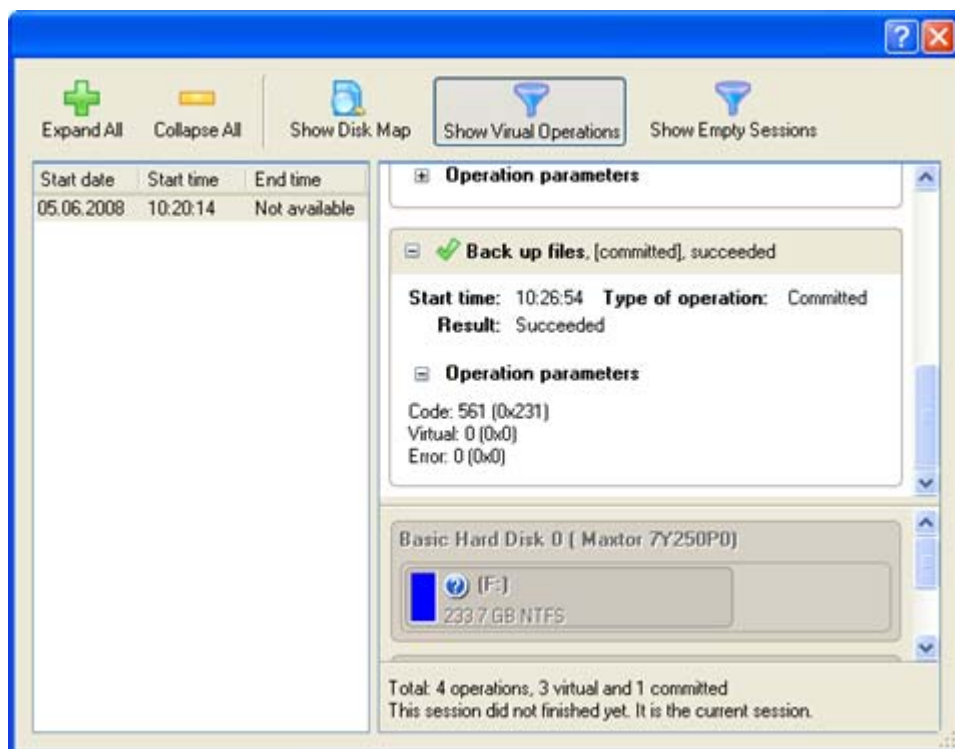
TYPICAL SCENARIOS

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

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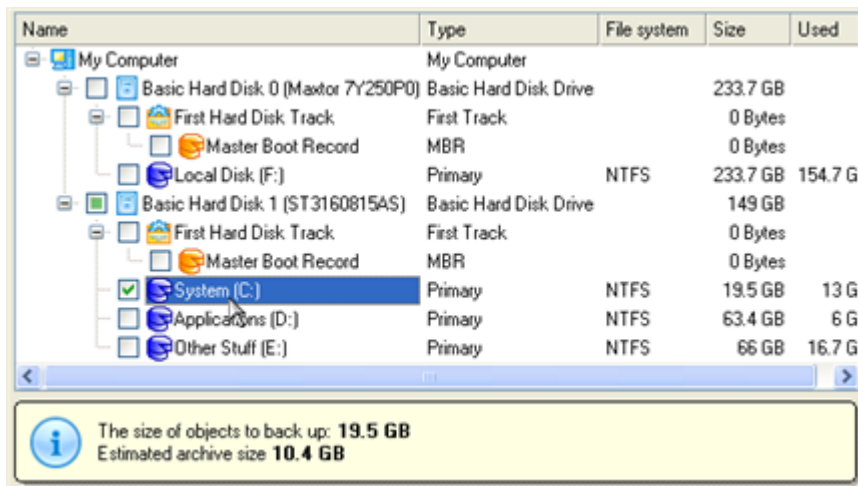
4. Map a network disk to place your backup image to:

   ❑ Call the Map Network Drive dialog by clicking the appropriate button;
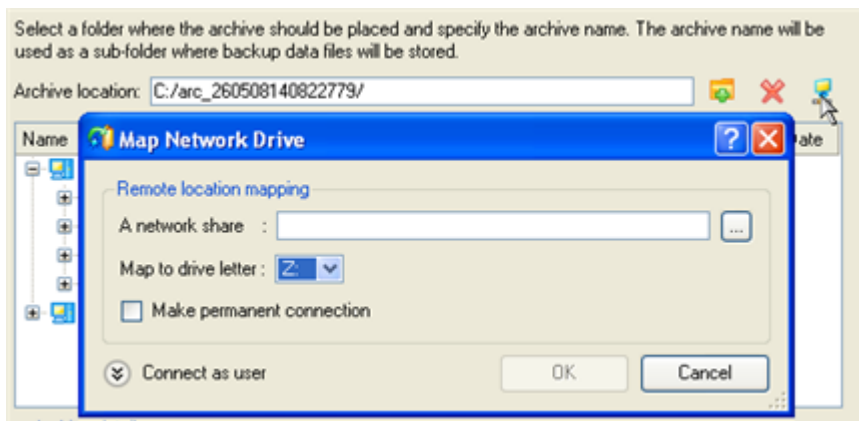
   ❑ Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

   ❑ 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.

5. Edit the archive name if necessary.

Archive details	
Archive name:	arc_260508135600046
Estimated archive size:	6.8 GB
Space available on backup destination:	11.1 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 network drive needs to be selected.**

6. 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.

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. Insert Paragon Linux/DOS Recovery CD (the BIOS must be enabled to boot the system from the CD/DVD device).

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                    The PC booting
🖳 Safe Mode                      will be proceeded in
🖳 Low-Graphics Safe Mode         08 seconds
💾 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 Linux launch menu select Boot Corrector. You can find it in PTS DOS as well.

5. On the Wizard's Welcome page, select the **Correct the Master Boot Record (MBR)** option.
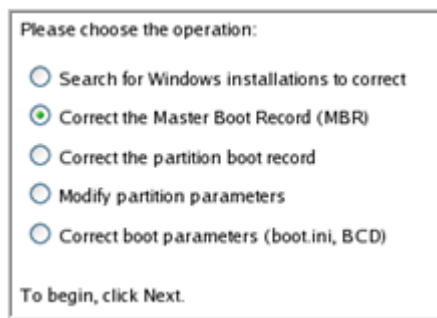
6. On the next page choose the required hard disk from the pull-down list (if several) and then select the **Update the MBR executable code** option.
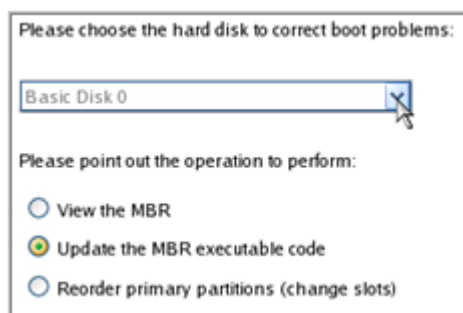
7. Confirm the operation.
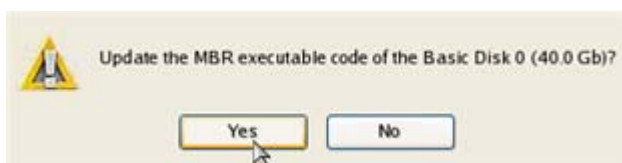
8. After the operation is completed click the Report button to see a well informative summary page. The program also enables to store the resulted report. To do that, just press the Save button and choose the exact location in the opened dialog.
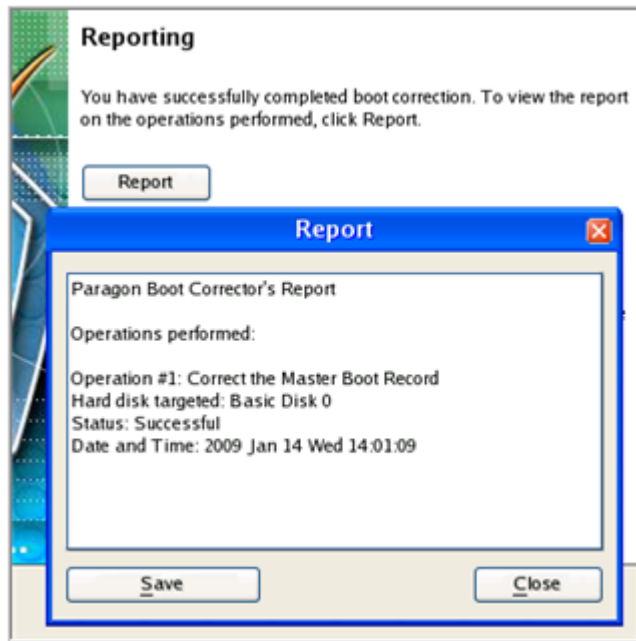
9. Click the Finish button to close Boot Corrector.

10. Eject the CD.

11. 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:
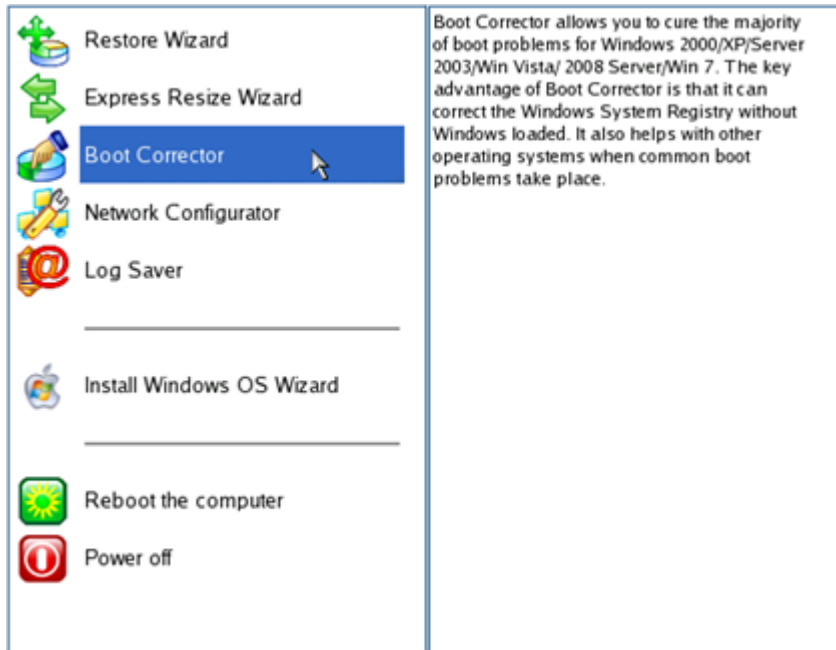
1. Insert Paragon Linux/DOS Recovery CD (the BIOS must be enabled to boot the system from the CD/DVD device).

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.


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

4. In the Linux launch menu select Boot Corrector. You can find it in PTS DOS as well.
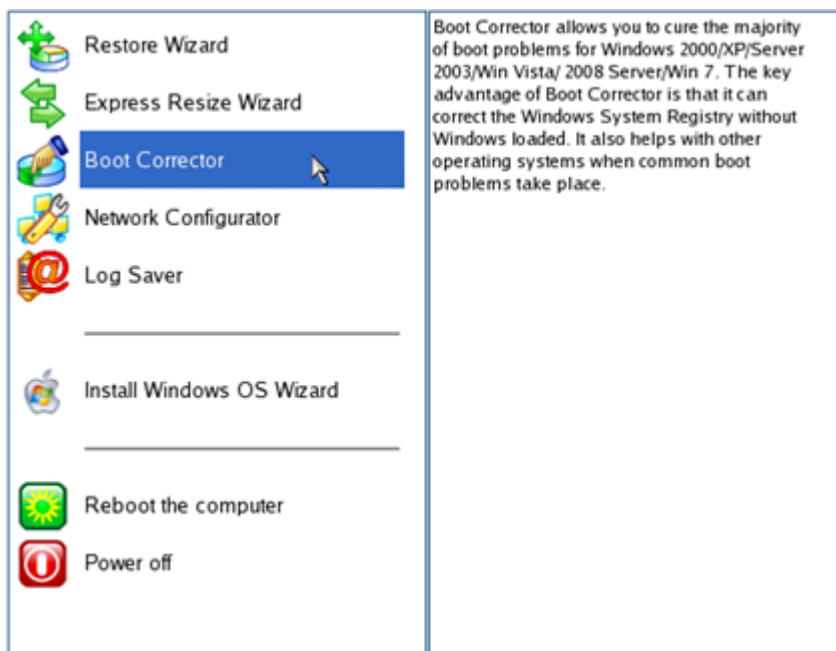
5. On the Wizard's Welcome page, select the **Search for Windows installations to correct** option.
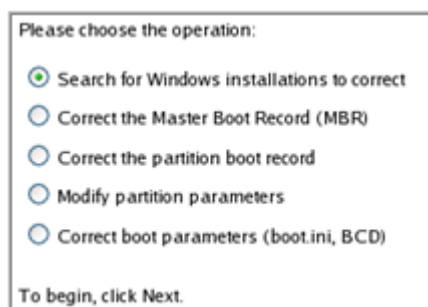
6. On the next page choose the required Windows installation from the list of found installations (if several), then select the **Edit the Boot.ini file** option. If you're not sure which installation you need, please use the Properties button to get more info on the selected item.

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.

7. 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 /f

Copy	Insert	Add	Delete
Edit	Insert the sample	Add the sample	
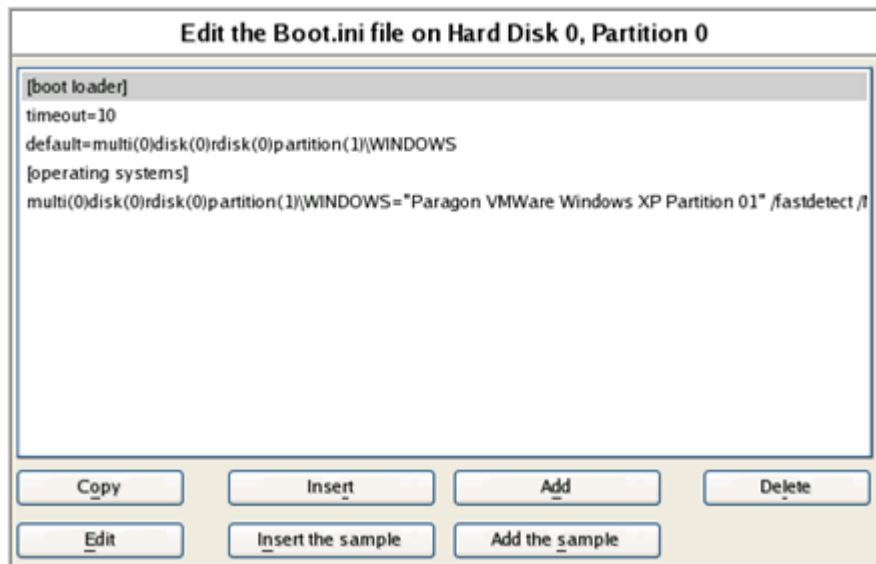
8. If the Boot.ini file does not contain any mistake, please return to the Correct Windows Installations page to correct drive letters in the Windows System Registry.

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.

9. 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.
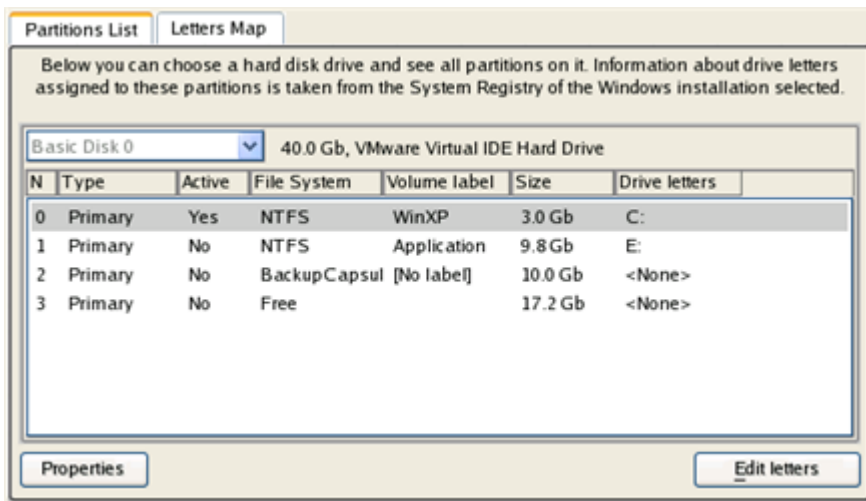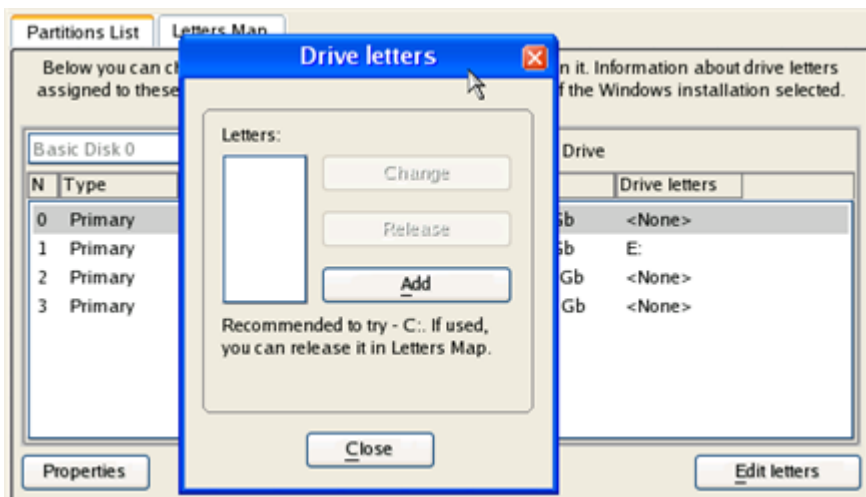

Partitions List | Letters Map

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]

10. 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.

Basic Disk 0   Drive

Drive letters

Letters:

[Change]

[Release]

[Add]

Recommended to try - C:. If used, you can release it in Letters Map.

[Close]

N	Type			Drive letters
0	Primary	Gb	<None>
1	Primary	Gb	E:
2	Primary	Gb	<None>
3	Primary	Gb	<None>

[Properties]   [Edit letters]

11. Once you've assigned the appropriate drive letter, close the dialog, then click the Apply button.

12. Confirm the operation.

13. 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.

14. Click the Finish button to close Boot Corrector.

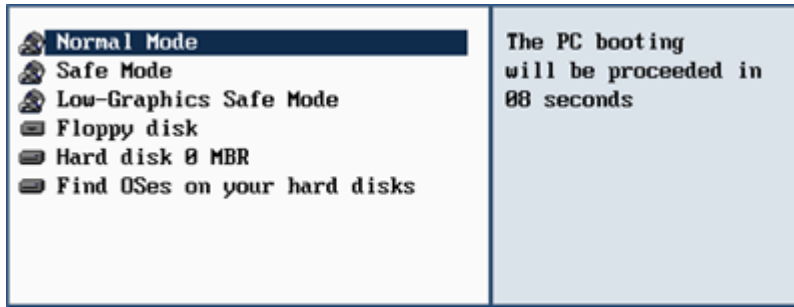15. Eject the CD.

16. 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.
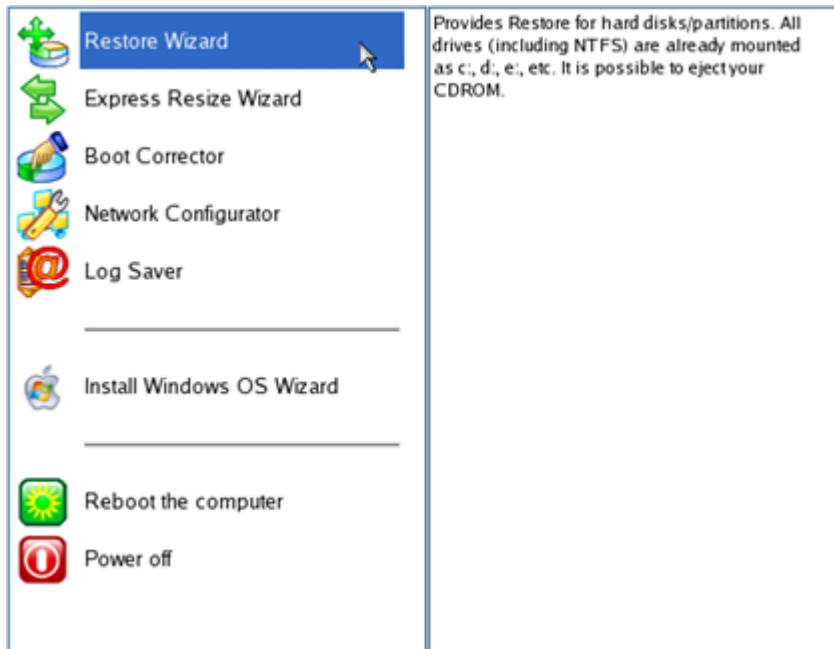
To restore a dual boot Mac from a backup image located on an external USB drive, please do the following:

1. Insert Paragon Linux/DOS Recovery CD (the BIOS must be enabled to boot the system from the CD/DVD device).

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.

```
 Normal Mode                        The PC booting
 Safe Mode                          will be proceeded in
 Low-Graphics Safe Mode             08 seconds
 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.**

5. In the Linux launch menu select the Restore Wizard.

Restore Wizard	Provides Restore for hard disks/partitions. All drives (including NTFS) are already mounted as c:, d:, e:, etc. It is possible to eject your CDROM.
Express Resize Wizard	
Boot Corrector	
Network Configurator	
Log Saver	
Install Windows OS Wizard	
Reboot the computer	
Power off	

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.
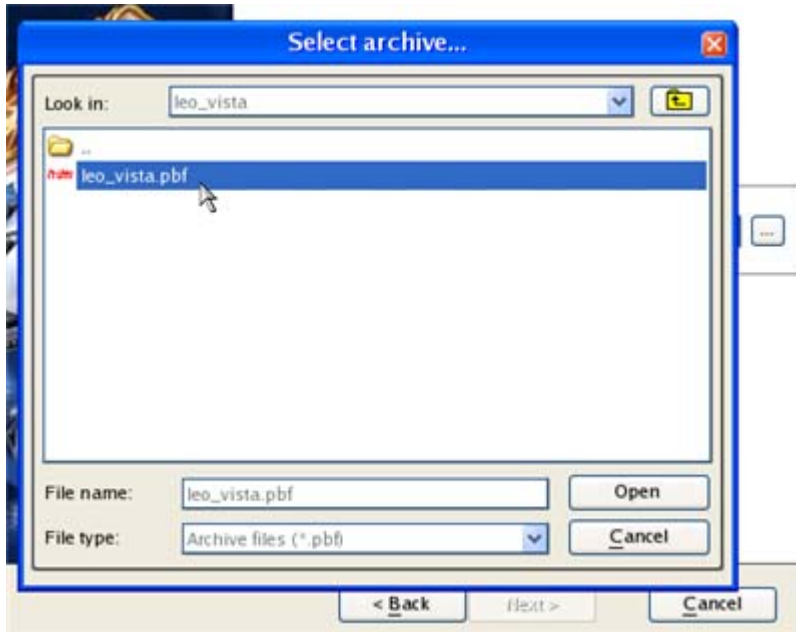
8. On the Image Properties page, make sure that you select the correct image by viewing the provided information about the archive.
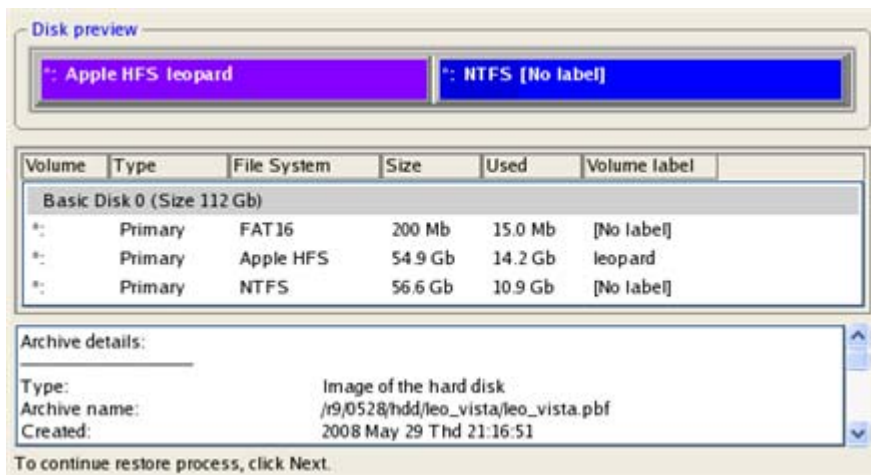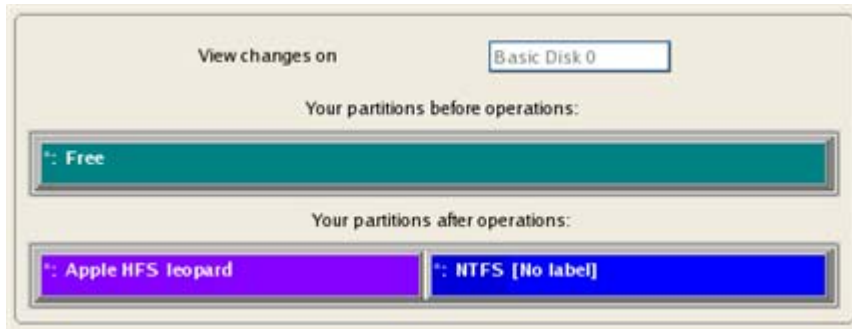

9. On the next page specify a hard disk to restore the image to.

> ⚠ **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.
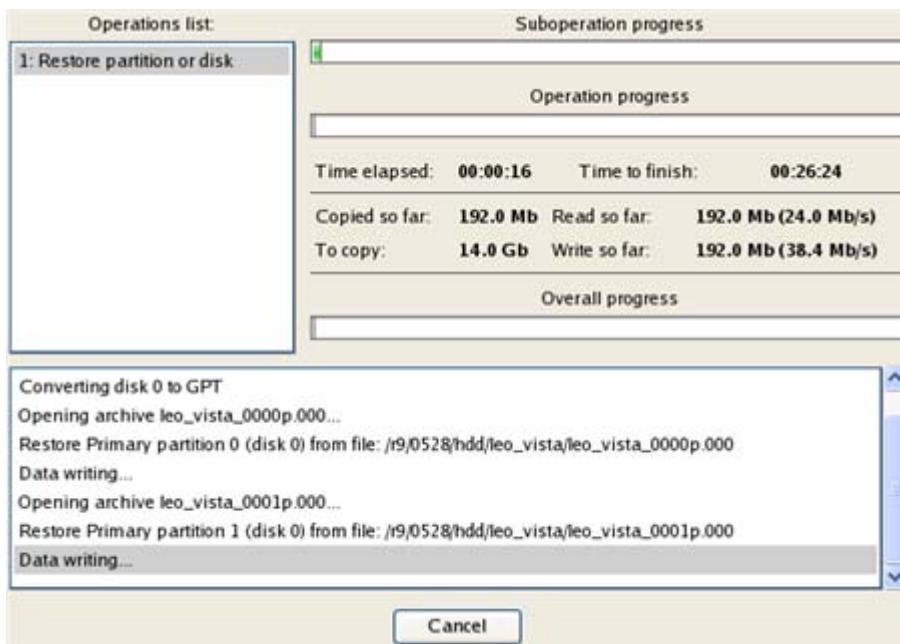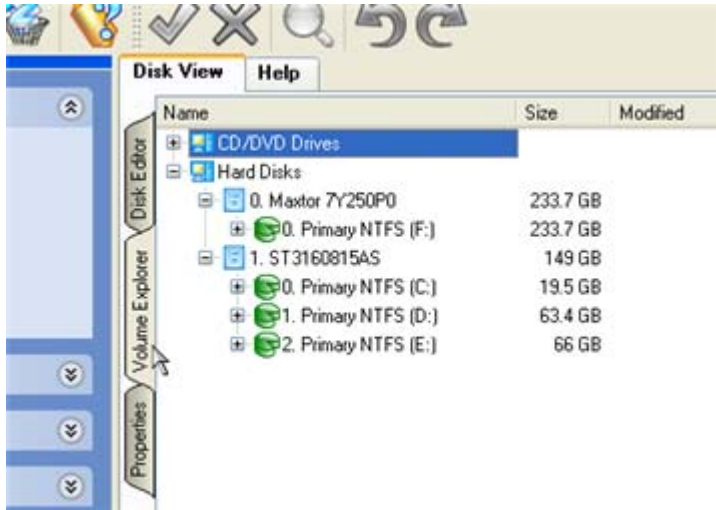

12. After completing the operation close the wizard, take out the disc and then reboot the computer.
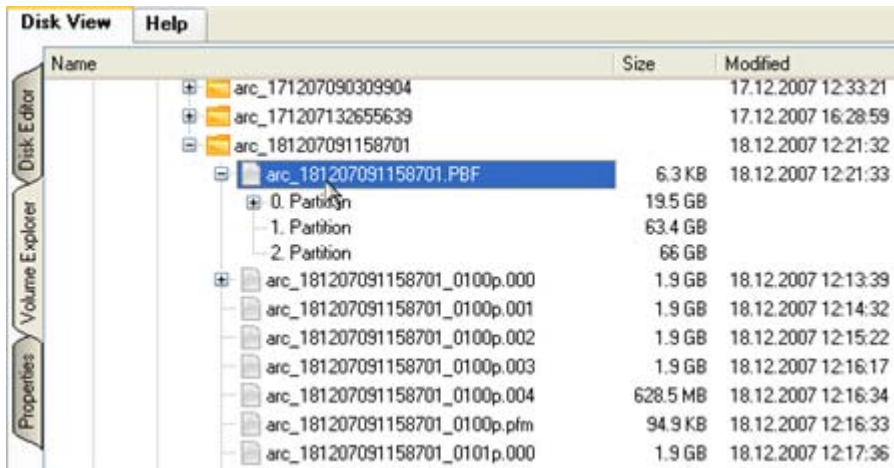
RESTORING SEPARATE FILES AND FOLDERS FROM A BACKUP

To restore separate files and folders from a backup image with Volume Explorer, please do the following:
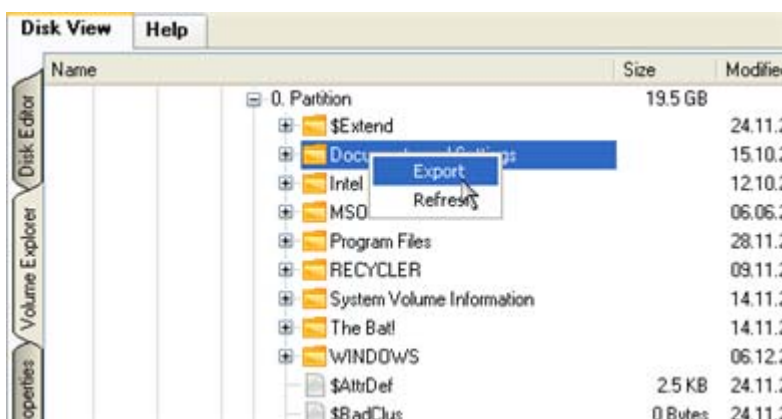
Launcher

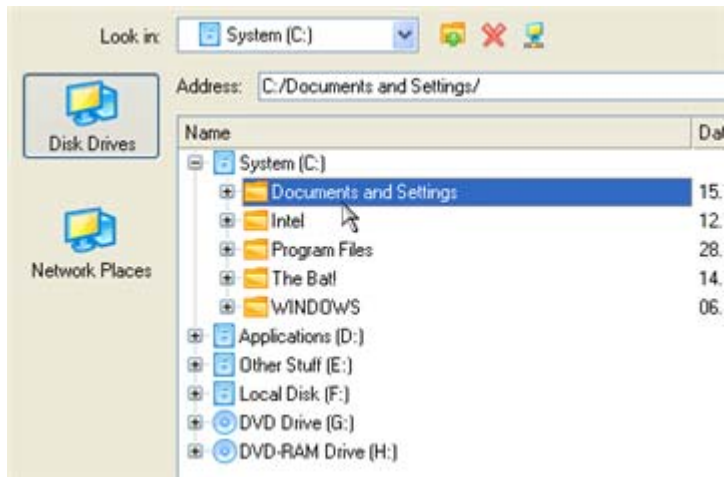1. Click the **Disk View** tab and then choose **Volume Explorer**;

2. Browse for the required archive and then open it by double click of the left mouse button.

3. Call the popup menu (right click of the mouse button) for a file/folder you need and then select the Export item.

4. Select a place on the disk where the file/folder will be extracted to.

5. Click the OK button to accomplish the operation.

RESIZE SCENARIOS

CREATING A NEW PARTITION TO DETACH OPERATING SYSTEM FROM THE REST OF DATA

Let's assume that you're 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). To secure yourself against a system malfunction or a virus attack you've got nothing to do, but make a backup of the whole partition, which besides the operating system itself contains all your family photos, favorite films and music, program distributives, whatever. As a result you'll get a very huge backup image. You can easily tackle this issue however by detaching your operating system from the rest of data.

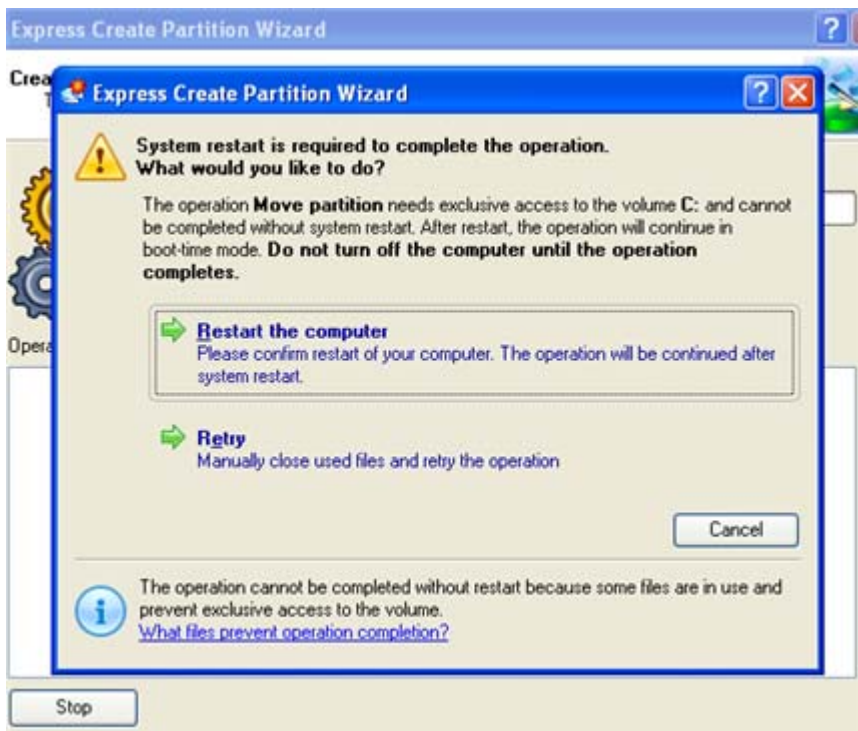To create a new partition on your hard disk, please do the following:

1. Click **Switch to Full Scale Launcher** in the Express Launcher.

2. Click the **Express Create 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. Choose a method you find the most suitable to create the partition. The wizard is especially designed to minimize your participation in finding an appropriate place for it and its resulted size. The only thing you're to do is to choose between several modes. The most relevant thing here is the amount of space that will be allocated for that partition. For easy perception, you can see the resulted disk layout on the disk map by selecting this or that mode.

5. That's basically it. By clicking the Next button the wizard will start modifying your disk layout. If you've got to do with the system partition resize, like we do in our case, you will be asked to restart your computer in a special boot-up mode to accomplish the operation. So click the appropriate button to agree.

6. In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.

After completing the operation your computer will be automatically restarted back to Windows where you can see the newly created NTFS partition. Now you've got a place to keep your stuff apart from Windows.

INCREASING SIZE OF A SYSTEM PARTITION BY TAKING UNUSED SPACE OF AN ADJACENT PARTITION

Let's assume you've got several partitions on your hard disk. After installing a number of resource-consuming applications and system updates your system partition has started to suffer from the lack of free space. But an adjacent partition has a plenty of redundant space. That's just enough to make your system partition suffer no more.

To increase size of a system partition by taking unused space from an adjacent partition, please do the following:

1. Click the **Partitioning** button and then select **Resize Partitions**.

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

3. Click on your system partition. By doing that, the wizard will automatically select an adjacent partition as well. This partition will later act as a space donor.
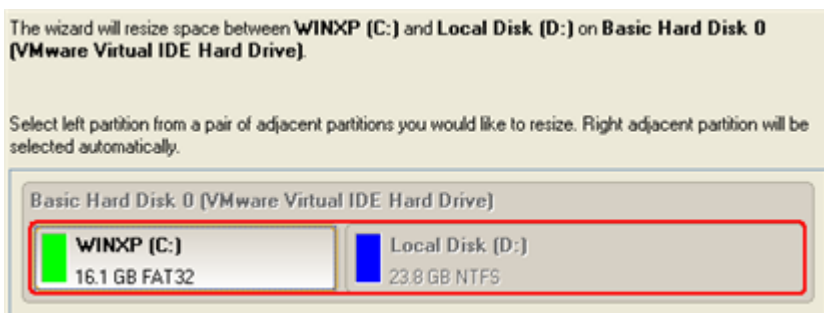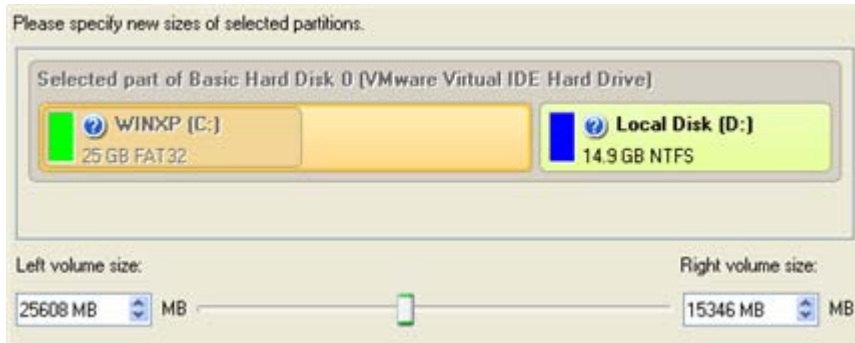

⚠️ **If you've got more than two partitions on your hard disk and a partition you need to increase is surrounded by other partitions, you've got the choice to choose which partition will act as a space donor. Just click on the left partition of the pair, as the right one will be selected automatically.**

---

4. Increase size of the system partition with the slider or manually by entering the required value. Please note, when you change size of one partition the size of the other will be changed as well, thus redistributing the unused space between the partitions.

5. On the next page of the wizard you need to confirm the operation by selecting the appropriate option.
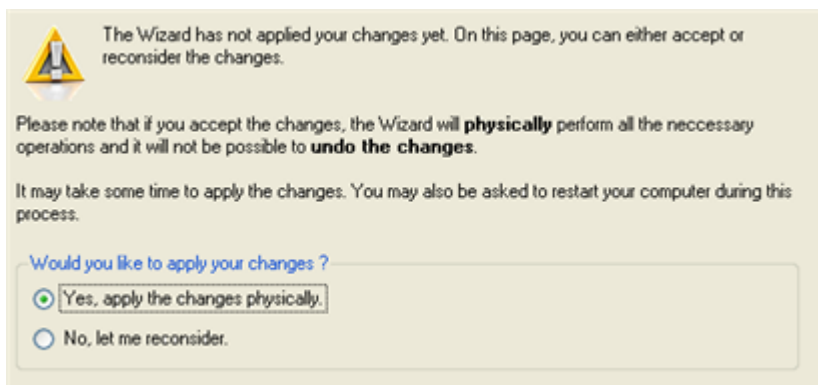
6. That's basically it. By clicking the Next button the wizard will start modifying your disk layout. If you've got to do with the system partition resize, like we do in our case, you will be asked to restart your computer in a special boot-up mode to accomplish the operation. So click the appropriate button to agree.

7. In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.


```
                          Suboperation progress
  ╔═══════════╗         ┌─────────────────────────────────┐
  ║ ▶▶ParaGon ║         │                                 │
  ║ SOFTWARE GROUP        Redistribute partitions
  ╚═══════════╝         ┌─────────────────────────────────┐
                        │███████████████████████████████  │

               Work time 00:01:15      Time to finish 00:00:05

               Done: 0.77 Mb          Read:  72 Mb(4.0 Mb/s)
               All:   0 Mb            Write: 0.0 Mb(0.0 Mb/s)

                          Overall progress
                        ┌─────────────────────────────────┐
                        │██████████████████████████████   │

Quick data moving ...
Flushing system buffers, please wait.
..........
Modifying drive *: on hard disk 0
Checking parameters ...
Scanning dir structure ...
Scanning data structure (may be a few minutes) ...
step 1 ...
step 2 ...

Do not reset or turn off your computer - to avoid the data loss.
Operation in progress... press 'ESC' or 'Ctrl-C' to interrupt operation
```
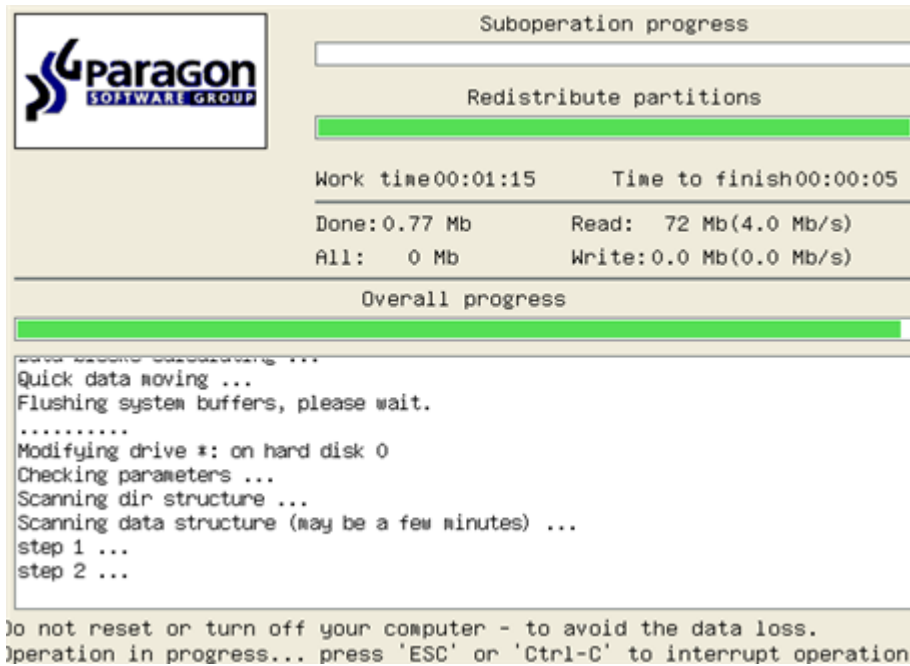
After completing the operation your computer will be automatically restarted back to Windows where you can see that your system partition is bigger now.

## INCREASING SIZE OF A SYSTEM PARTITION BY TAKING UNUSED SPACE FROM ANY OTHER

Let's assume you've got several partitions on your hard disk. After installing a number of resource-consuming applications and system updates your system partition has started to suffer from the lack of free space. But one of your partitions has a plenty of redundant space. That's just enough to make your system partition suffer no more.

To increase size of a system partition by taking unused space from any other on-disk partition, please do the following:
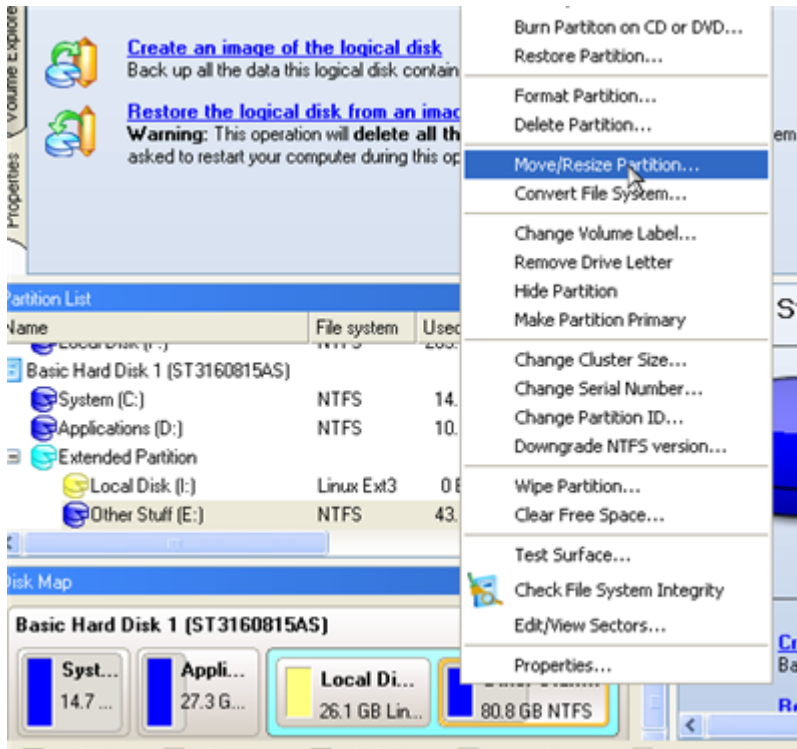
1. Click **Switch to Full Scale Launcher** in the Express Launcher.
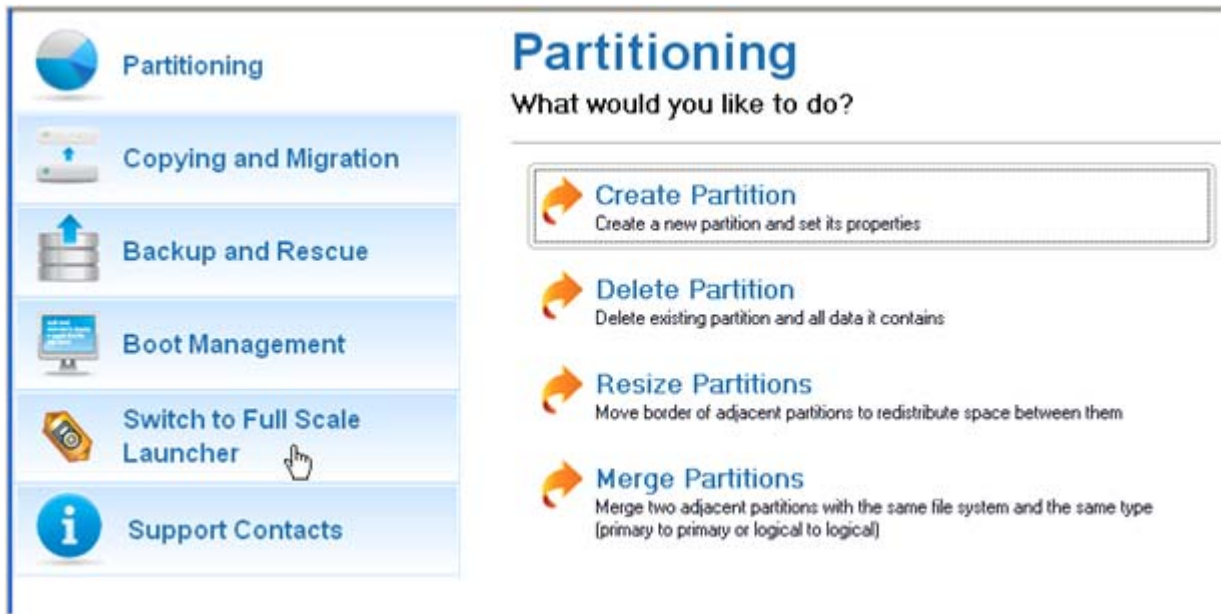
2. In the main window of PM select the required hard disk (if several) on the Disk Map.
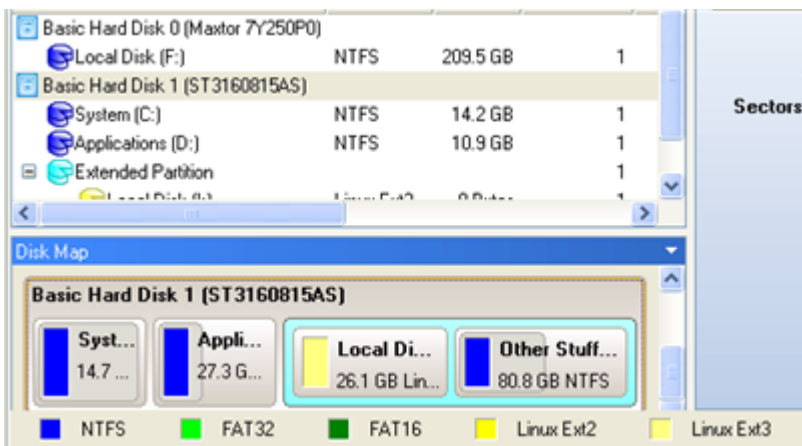
3. Choose a space donor partition and then call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.

4. In the opened dialog shift the edge of the partition to the right by the drag-and-drop technique. While doing this, free space from the partition will be released (displayed in aqua-green). You can also do it manually by entering the exact size of free space. Click the Yes button to continue.
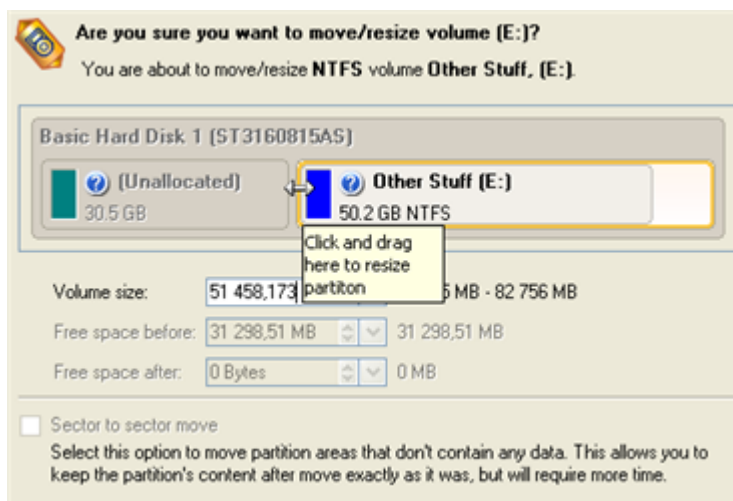
5. Now you've got a block of free space to add to the system partition. You cannot do it directly however, but by carrying out a number of extra move/resize operations.

6. Since the block of free space is within the extended partition, you need to take it out first. The program enables to resize the extended partition only when there's a block of free space adjoining its borders. In our case it's between two logical disks. So we need to move it. To do that, please select the first logical

partition and then call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.
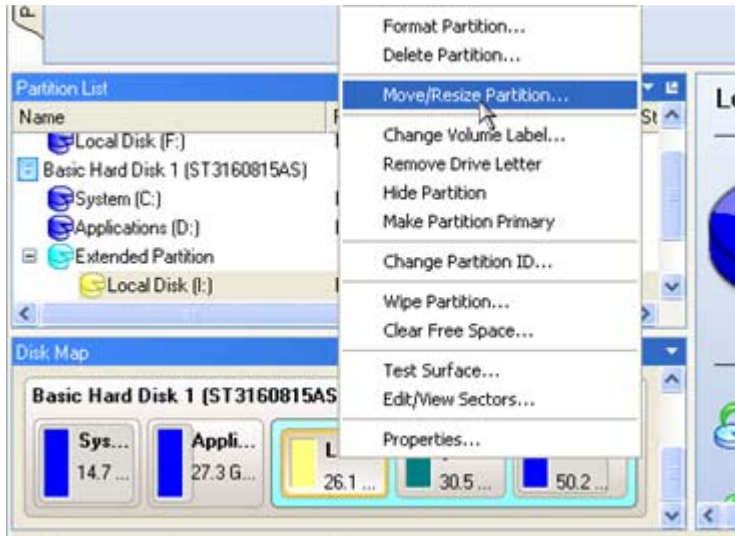
7. At first shift the right edge of the partition to the right, then do the same with the left edge. Make sure the partition size has been left unchanged.
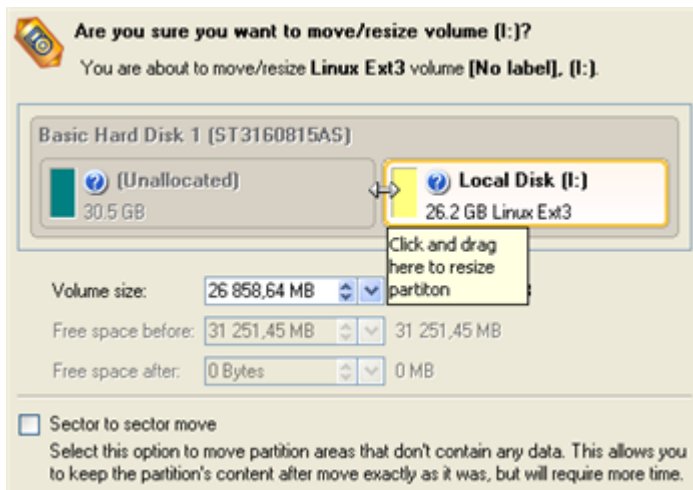

8. Now you can resize the extended partition to take the block of free space out of it. Call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.

9. In the opened dialog shift the edge of the extended partition to the right.

10. The block of free space has been released.

11. Now you need to move the second primary partition just the way we did it with the logical partition to make the block of free space adjoin the system partition.
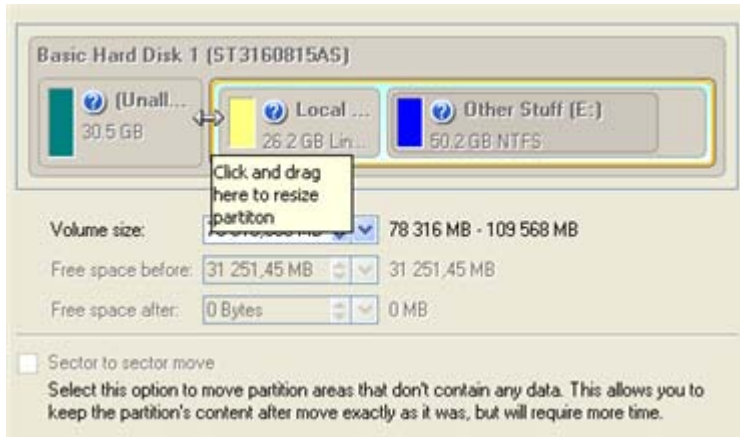

12. Finally increase size of the system partition. Call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.

13. In the opened dialog shift the edge of the partition to the right, thus increasing its size.
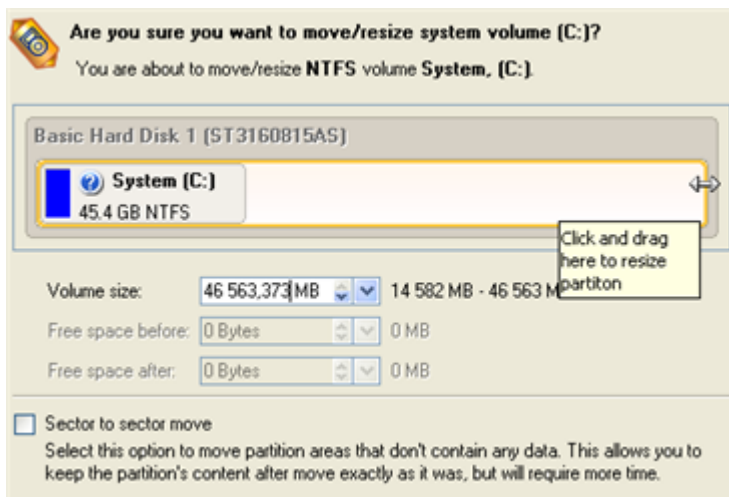
14. Apply all introduced changes. By default, PM works in the virtual mode of execution, so you have to confirm all operations to let the program accomplish them. To do that, just click the Apply button on the Virtual Operations Bar.
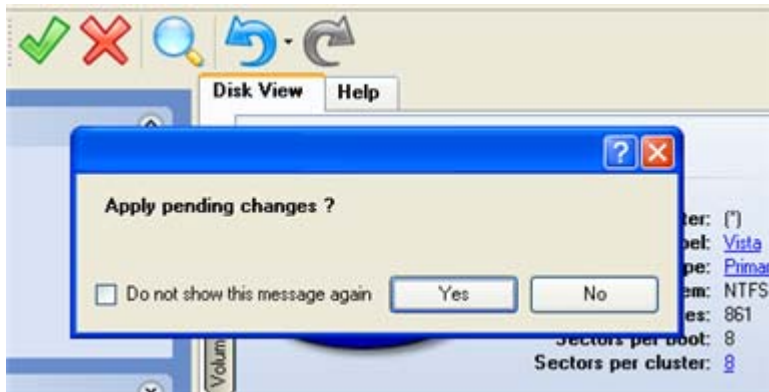
15. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.

RESIZING PARTITIONS OF APPLE BOOT CAMP

Let's assume you're a Boot Camp user who's got Windows XP as the second operating system. Initially allocated space for the Windows partition has turned out to be insufficient for your current needs. The only way out is to take some space from your Mac partition, thus redistributing the unused space between the partitions.

To increase size of the Windows partition by taking unused space from the Mac partition, please do the following:

1. Click the **Partitioning** button and then select **Resize Partitions**.
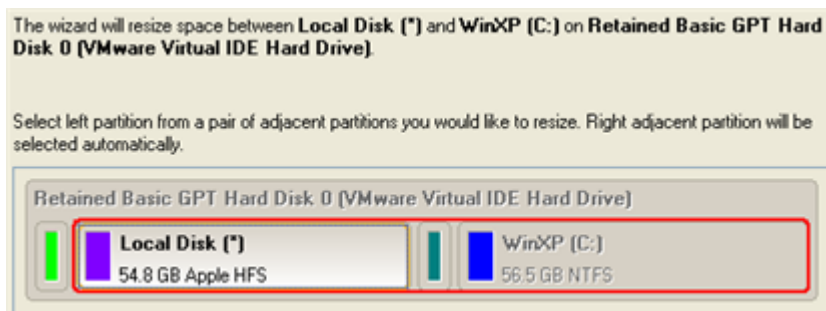
2. On the Wizard's Welcome page, click the Next button.

3. The wizard will automatically select Windows (the NTFS file system) and Mac (the Apple HFS file system) partitions of your Boot Camp configuration.

> ⚠️ **On the disk map you can also see the GPT service partition (called EFI) as well as a 128-megabyte free block between Mac and Windows partitions made with Boot Camp. It's just for your information.**
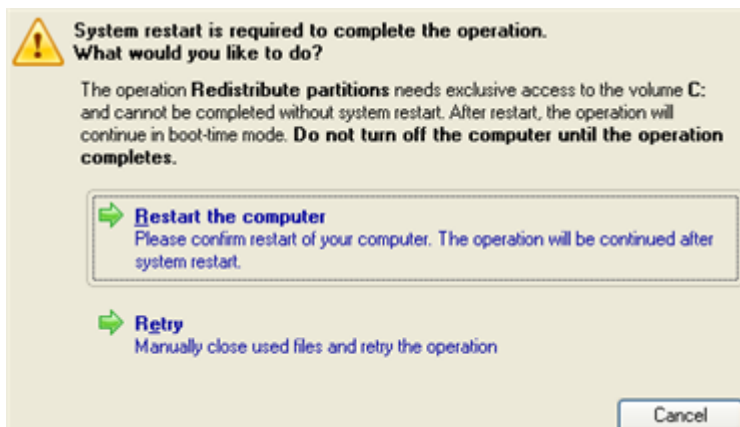
4. Increase size of your Windows partition with the slider or manually by entering the required value. Please note, when you change size of one partition the size of the other will be changed as well, thus redistributing the unused space between the partitions.

Please specify new sizes of selected partitions.

Selected part of Retained Basic GPT Hard Disk 0 (VMware Virtual IDE Hard Drive)

Local Disk (*)
40.2 GB Apple HFS

WinXP (C:)
71.1 GB NTFS

Left volume size:
41250 MB   MB

Right volume size:
72895 MB   MB

5. On the next page of the wizard you need to confirm the operation by selecting the appropriate option.

The Wizard has not applied your changes yet. On this page, you can either accept or reconsider the changes.

Please note that if you accept the changes, the Wizard will **physically** perform all the neccessary operations and it will not be possible to **undo the changes**.

It may take some time to apply the changes. You may also be asked to restart your computer during this process.

Would you like to apply your changes ?
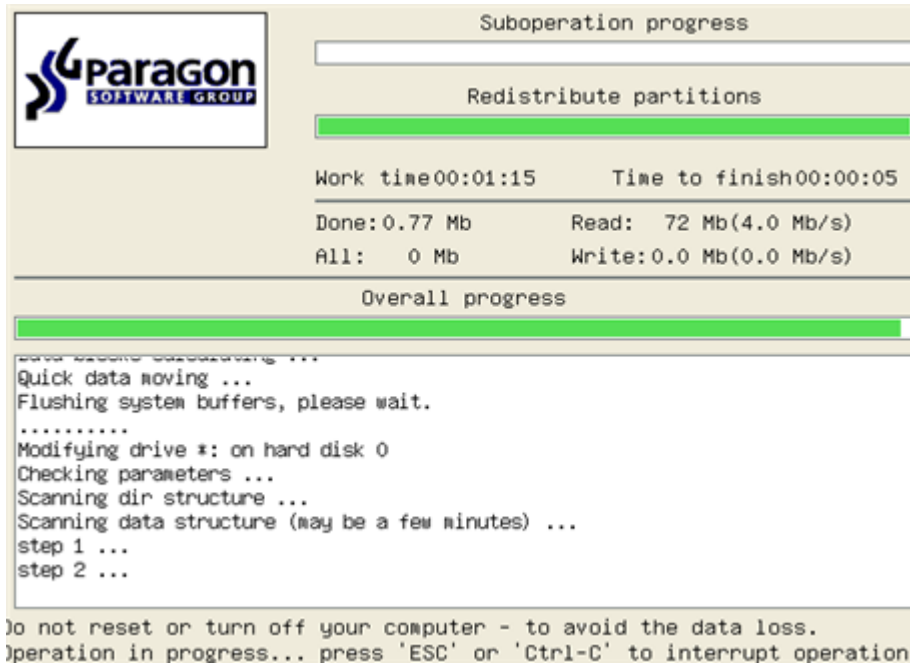⊙ Yes, apply the changes physically.
○ No, let me reconsider.

6. That's basically it. By clicking the Next button the wizard will start modifying your disk layout. If you've got to do with the system partition resize, like we do in our case, you will be asked to restart your computer in a special boot-up mode to accomplish the operation. So click the appropriate button to agree.

System restart is required to complete the operation. What would you like to do?

The operation **Redistribute partitions** needs exclusive access to the volume **C:** and cannot be completed without system restart. After restart, the operation will continue in boot-time mode. **Do not turn off the computer until the operation completes.**

Restart the computer
Please confirm restart of your computer. The operation will be continued after system restart.

Retry
Manually close used files and retry the operation

Cancel

7. In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.

After completing the operation your computer will be automatically restarted back to Windows where you can see that your system partition is bigger now.

CREATING DUAL BOOT SYSTEMS

FOR WINDOWS COMPUTERS

Release of Windows Vista has given a new impetus to the problem of establishing a dual boot system. In this connection we decided to consider two the most frequently used situations a rank and file user may face, i.e. Windows Vista + Windows XP and Windows XP + Windows Vista. Please note that for reasons of better security and system independence these operating systems will be installed on different partitions. That is why we need to hide the first system partition before installation of the second OS.

WINDOWS VISTA + WINDOWS XP

Suppose you have got Windows Vista coming with your brand new computer. Everything is great except one thing – your favourite applications simply reject to work correctly on it. Software updates are expected to release in the near future, but you cannot wait any more. Thus the best way out is to leave Windows Vista intact and install the time-proved Windows XP.

Most likely you have only one hard disk with only one partition (the only partition is always system). To install the second operating system you need to repartition your drive first, as it requires a separate primary partition. If this is the case, you can do your job either with the Install New OS Wizard (a specially designed tool for that) or traditionally with a number of the corresponding wizards and dialogs.

INSTALL NEW OS WIZARD

This scenario implies that operating systems will be installed on different partitions to provide better security and system independence.

1. Click **Boot Management** and then select **Install New OS** in the Express Launcher.

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

3. Select the appropriate option to create a new primary partition on your hard disk.
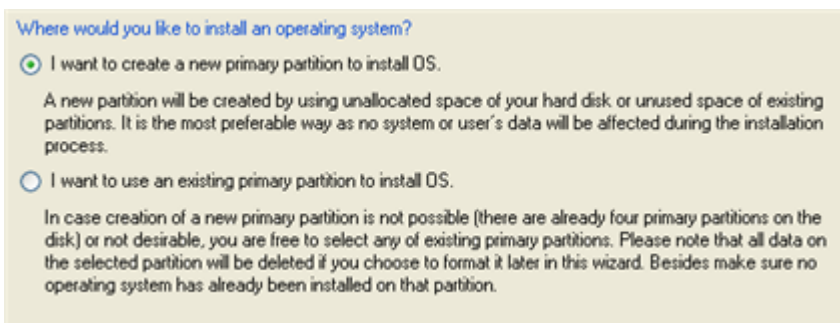
4. On the next page of the wizard, define size of the new partition. If the selected hard disk contains blocks of free space, the wizard will automatically merge them all and allocate the resulted space to create the partition. If not, it will take 50% of the unused space of an adjacent partition, thus resizing it.
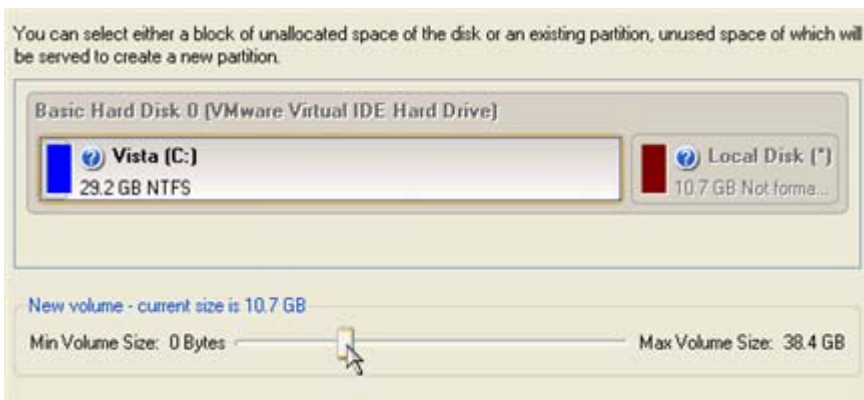
5. The next page enables to specify a file system and a number of additional parameters. Since we are going to install Windows XP, the most preferable file systems are NTFS and FAT32. Click the Yes button to continue.


On this page you can specify a number of additional parameters that can also be of help. However here we pay attention to the most relevant to fulfill our task.

---

6. Enter a label for the future partition in the textual field. It will later be used for the drive identification.

7. Complete the wizard and then apply the pending changes. By default, PM works in the virtual mode of execution, so you have to confirm all operations to let the program accomplish them. To do that, just click the Apply button on the Virtual Operations Bar.
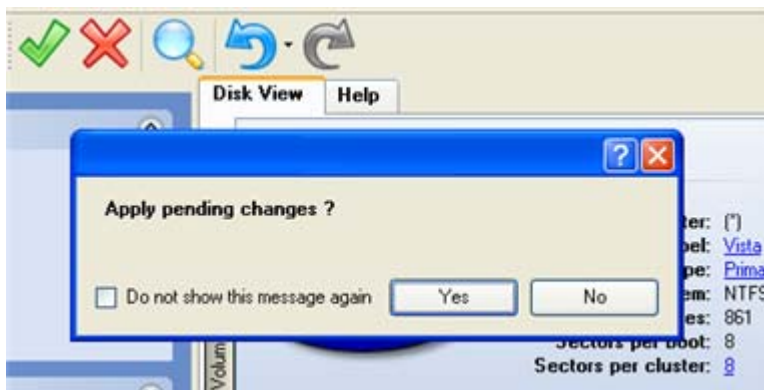
8. The program will carry out all the necessary operations and then automatically restart the computer to initiate the installation process.

If you've changed your mind on installing a new operating system, don't insert its distributive CD but press ESC when the following message appears:

---

9. Install Windows XP on the newly created partition. We won't go into details as for its installation, as you can find all the necessary information in documentation that comes with the product. However to avoid any problems, we consider it necessary to draw your attention on the following issues:

   - You need a bootable distributive CD of Windows XP to install it;

- To automatically start your computer from this CD, make sure the on-board BIOS is set up to boot from CD first or press F12 during startup to select a bootable device;

- Do not forget to select the newly created partition as destination.

10. So if everything is OK, you've got to have by this moment Windows XP successfully installed. Your Windows Vista however is still non-bootable. To fix this issue you need to launch the Boot Manager Setup wizard. To do that, please install Partition Manager 10 once again, but this time in Windows XP to activate Boot Manager.

11. Click **Boot Management** and then select **Boot Manager** in the Express Launcher.

12. Set up the Boot Manager wizard. The most relevant option here is the possibility to hide other primary partitions except the one selected to boot and it is by all means should be activated to make Windows Vista and Windows XP unaware of each other. The rest of the parameters offered by default will do in our case, so just complete the wizard and it will automatically find the two operating systems and update the MBR.
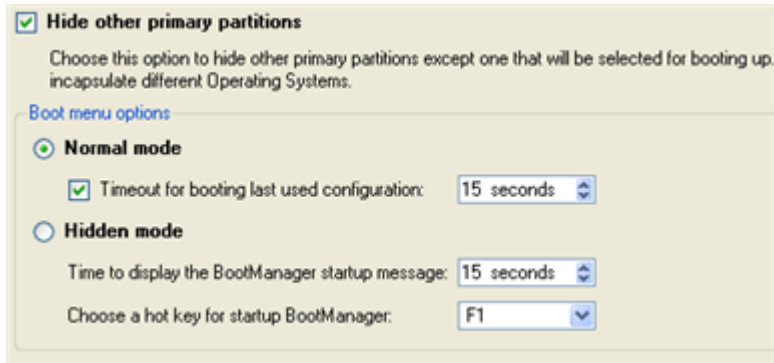
13. Now restart the computer to make sure you have got a dual boot system.

TRADITIONAL WAY

> ⚠ **This scenario implies that operating systems will be installed on different partitions to provide better security and system independence.**

1. Click **Switch to Full Scale Launcher** in the Express Launcher.
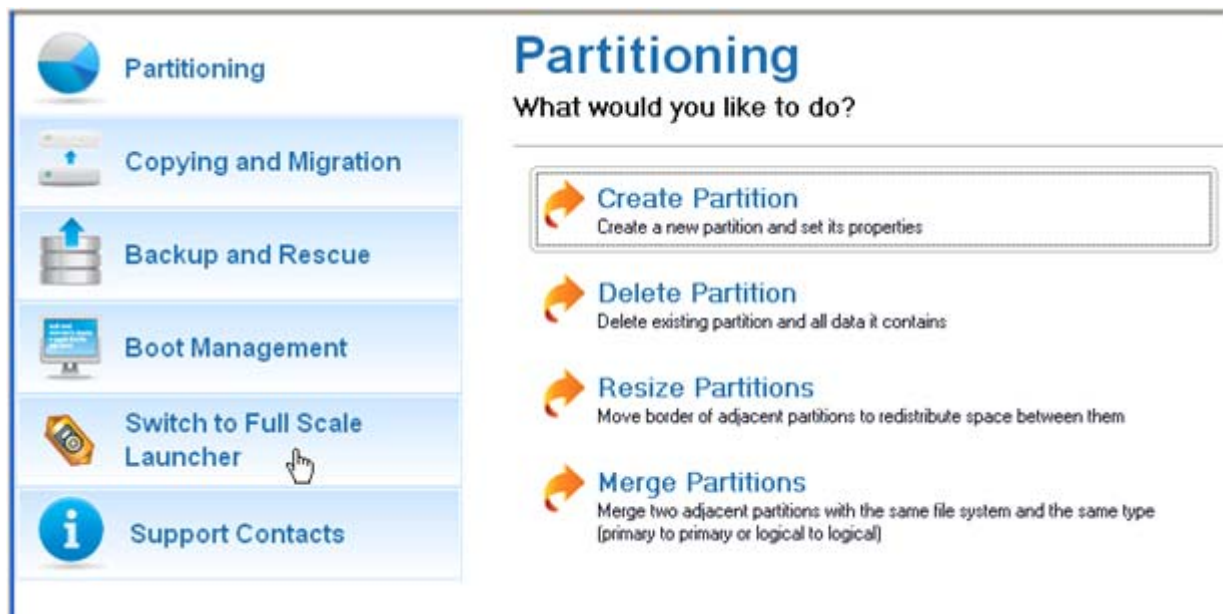
2. In the main window of PM select your hard disk on the Disk Map to make a block of free space on it.
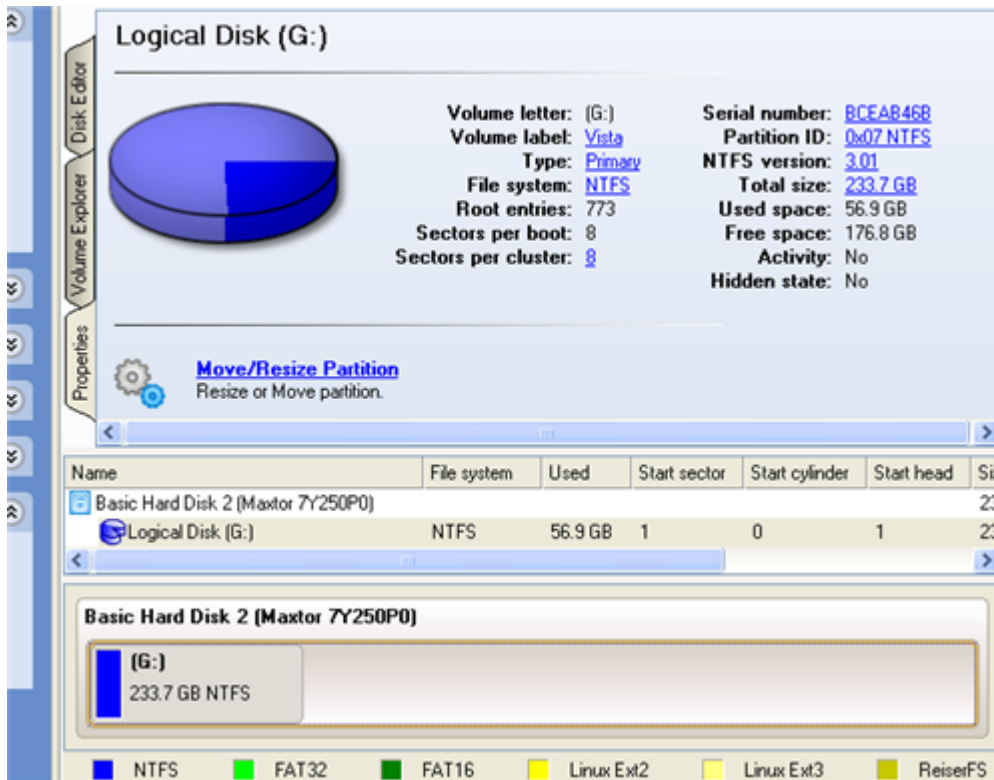
3. Release some free space (not less than 10 GB to install Windows XP) from the partition. To do that, please call the context menu for the selected partition (right click of the mouse button) and launch the Move/Resize dialog.
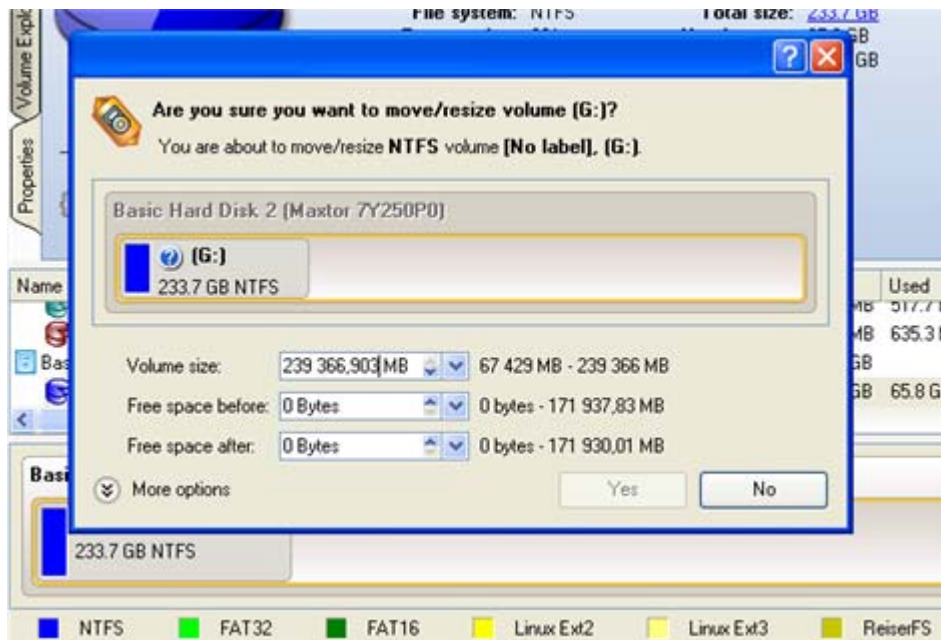
4. In the opened dialog shift the edge of the partition to the left by the drag-and-drop technique. While doing this, free space from the partition will be released (displayed in aqua-green). You can also do it manually by entering the exact size of free space. Click the Yes button to continue.
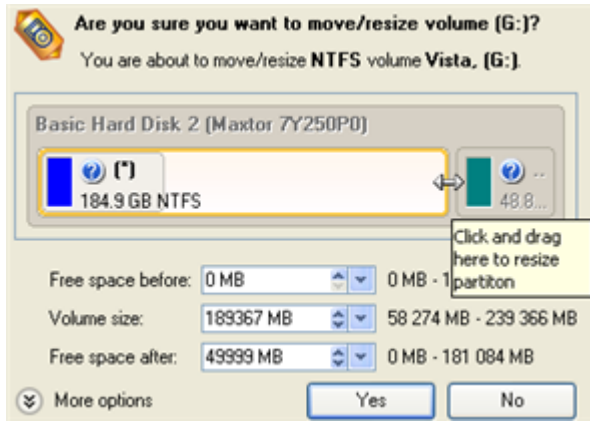
> ⚠️ **The Move/Resize dialog offers a number of additional parameters that can also be of help. However here we pay attention to the most relevant to fulfill our task.**

5. Now you have a block of free space sufficient in size to hold a new partition.
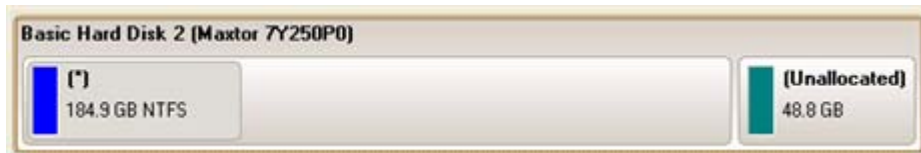
6. Create a new partition to install Windows XP. To do that, please call the context menu for a newly created block of free space (right click of the mouse button) and launch the Create Partition dialog.
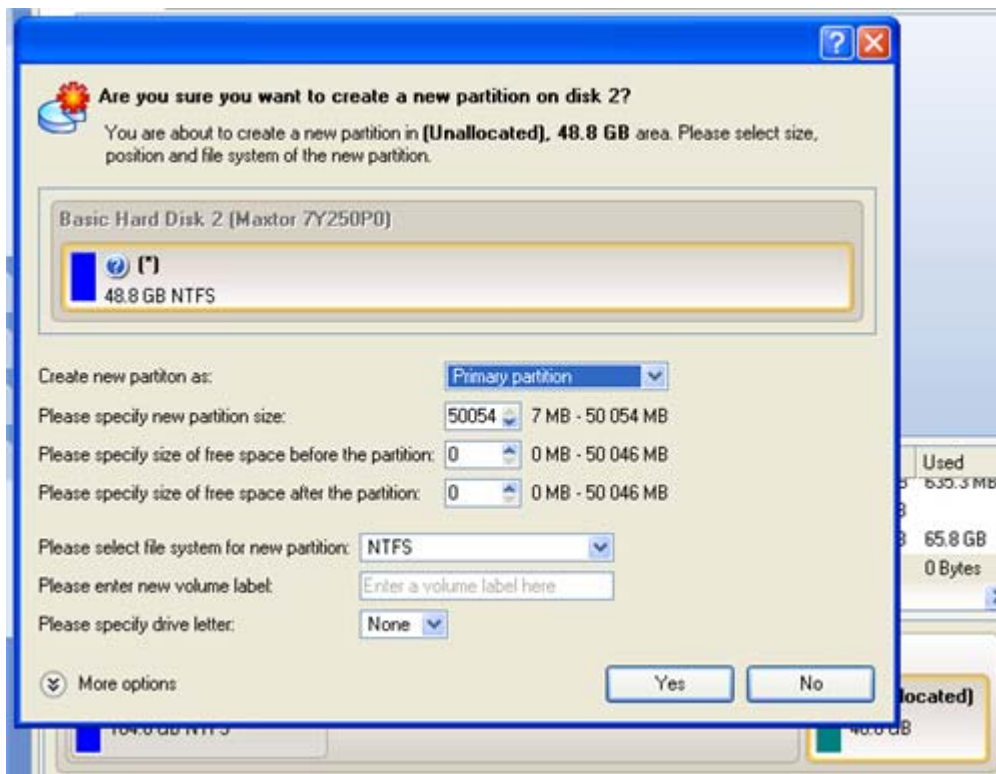
7. Define parameters of the future partition. By all means it has to be primary and since we are going to install Windows XP, the most preferable file systems are NTFS and FAT32. Click the Yes button to continue.

Create new partiton as:	Primary partition
Please specify new partition size:	49999 ⌄ 7 MB - 49 999 MB
Please specify size of free space before the partition:	0 ⌄ 0 MB - 49 991 MB
Please specify size of free space after the partition:	0 ⌄ 0 MB - 49 991 MB
Please select file system for new partition:	FAT32
Please enter new volume label:	Enter a volume label here

⊗ More options   Yes   No

⚠ **The Create Partition dialog offers a number of additional parameters that can also be of help. However here we pay attention to the most relevant to fulfill our task.**

---

8. As a result of the operation we have got a newly created FAT32 partition just enough in size to comfortably work with Windows XP.

Basic Hard Disk 2 (Maxtor 7Y250P0)

(*)
184.9 GB NTFS   (*)
48.8 GB FAT32

9. Hide the Windows Vista partition to avoid writing any data on it during the Windows XP installation, as it is the best way to provide system independence. To do that, please call the context menu for it (right click of the mouse button) and launch the Hide Partition dialog. Click the Yes button to continue.

⚠ **Are you sure you want to hide the partition?**

You are about to hide partition (*) **Vista, NTFS**. Hiding the partition may cause drive letters to be changed.

Yes   No

File system

Not formatted

NTFS

(*)
184.8 GB NTFS
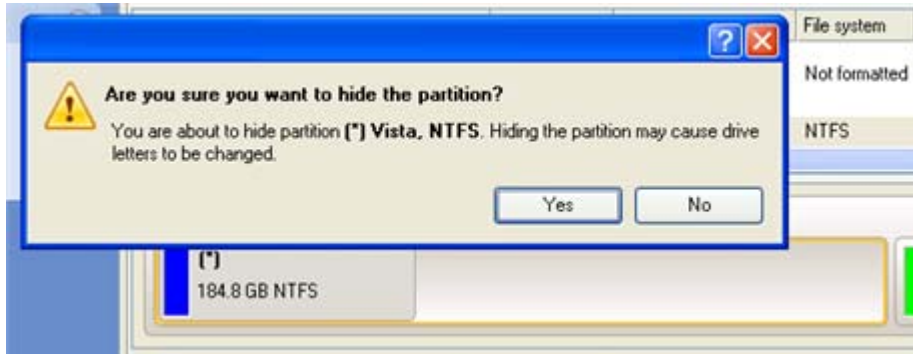
⚠ **Hiding of the system partition will make OS non-bootable, what is quite normal.**

---

10. Apply all introduced changes. By default, PM works in the virtual mode of execution, so you have to confirm all operations to let the program accomplish them. To do that, just click the Apply button on the Virtual Operations Bar.
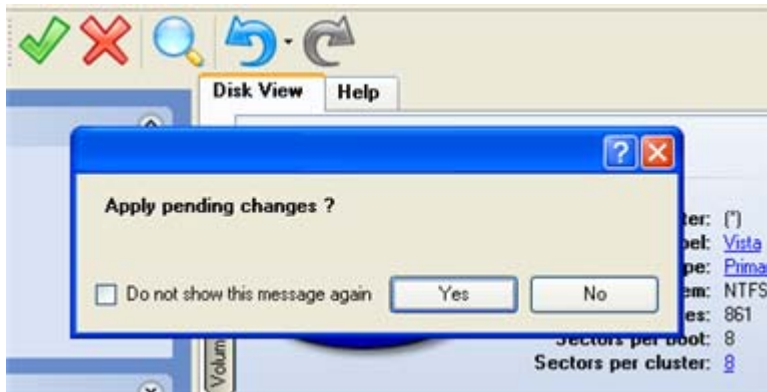
11. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.

After all the operations are completed you will not be able to restart the system, what is quite normal. Nevertheless if you do try it, the following error will occur:

```
STOP: c000021a {Fatal System Error}
The initial session process or system process terminated unexpectedly with a sta
tus of 0x00000000 (0xc0000034 0x0010037c).
The system has been shut down.
```

---

12. Install Windows XP on the newly created partition. We won't go into details as for its installation, as you can find all the necessary information in documentation that comes with the product. However to avoid any problems, we consider it necessary to draw your attention on the following issues:

- You need a bootable distributive CD of Windows XP to install it;

- To automatically start your computer from this CD, make sure the on-board BIOS is set up to boot from CD first or press F12 during startup to select a bootable device;

- Do not forget to select the newly created partition as destination.

```
Windows XP Professional Setup

  The following list shows the existing partitions and
  unpartitioned space on this computer.

  Use the UP and DOWN ARROW keys to select an item in the list.

     • To set up Windows XP on the selected item, press ENTER.

     • To create a partition in the unpartitioned space, press C.

     • To delete the selected partition, press D.

  238591 MB Disk 0 at Id 0 on bus 0 on atapi [MBR]

     E:  Partition1 (Inactive (OS/2 Boot Man188900 MB ( 182419 MB free)
     C:  Partition2 [FAT32]              49685 MB ( 49659 MB free)
```


Installation of Windows XP will make Windows Vista non-bootable.

---

13. Launch the Boot Manager Setup wizard. As your Windows Vista is non-bootable any more, you need to install Partition Manager 10 once again, but this time in Windows XP to activate Boot Manager.

14. Click **Boot Management** and then select **Boot Manager** in the Express Launcher.

15. Set up the Boot Manager wizard. The most relevant option here is the possibility to hide other primary partitions except the one selected to boot and it is by all means should be activated to make Windows Vista and Windows XP unaware of each other. The rest of the parameters offered by default will do in our case, so just complete the wizard and it will automatically find the two operating systems and update the MBR.
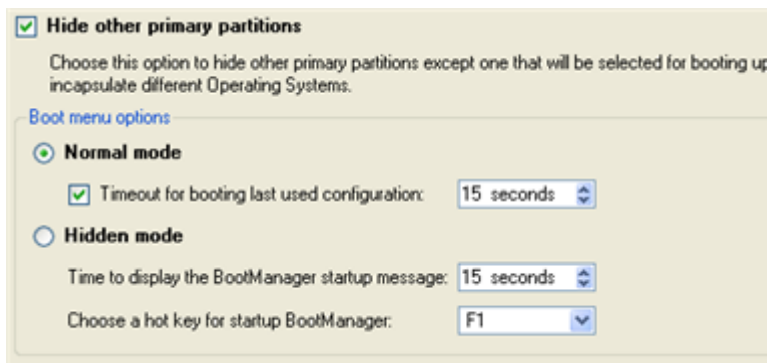
16. Now restart the computer to make sure you have got a dual boot system.

WINDOWS XP + WINDOWS VISTA

If you've got Windows XP and are willing to try the latest Windows Vista but not sure your favorite applications will flawlessly work on it, the best way out is to leave the time-proved Windows XP intact and install Windows Vista for studying purposes.

As this very situation is very close to the previous one, please use the Windows Vista + Windows XP scenario. However please take into consideration one more step you need to accomplish if you decide to use the traditional scenario:

1. Besides hiding of the system partition before installation of the second OS you need to make it inactive as well. To do that, please call the context menu for it (right click of the mouse button) and launch the corresponding dialog. Click the Yes button to continue;
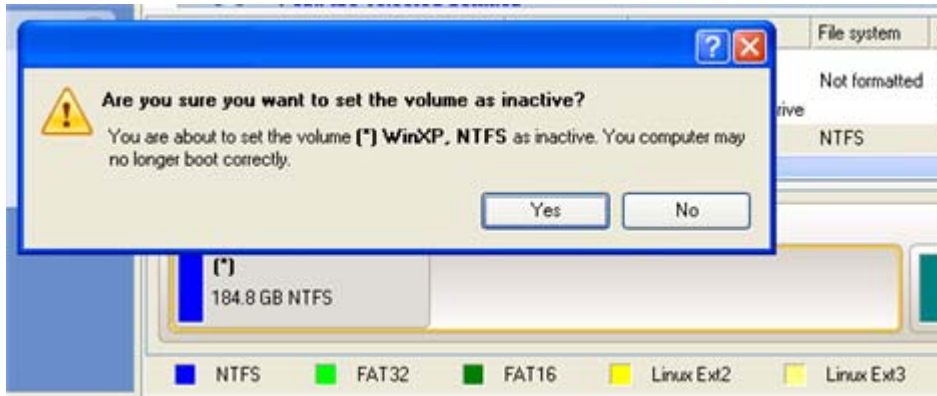
FOR MAC COMPUTERS

Let's assume you've got an Intel-based Mac where you're going to use Windows XP/Vista/7 as a second operating system. With the Install Windows OS Wizard you can easily allocate some space for Windows by taking a slice from your Mac partition, create an NTFS partition, and finally reboot the computer to launch the installation procedure.

To get your Mac ready to install Windows as a second operating system, please do the following:

1. Insert Paragon Linux/DOS Recovery CD (the BIOS must be enabled to boot the system from the CD/DVD device).

2. Restart the computer.

3. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to start up an Intel-based Mac.
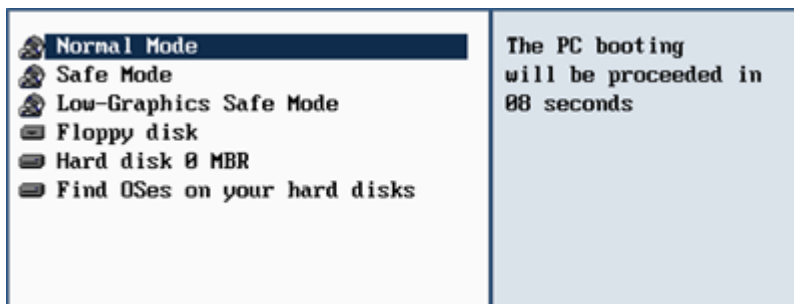
> ⚠ **By default the Normal Mode will be automatically initiated after a 10 second idle period.**

4. In the Linux launch menu select the Install Windows OS Wizard.
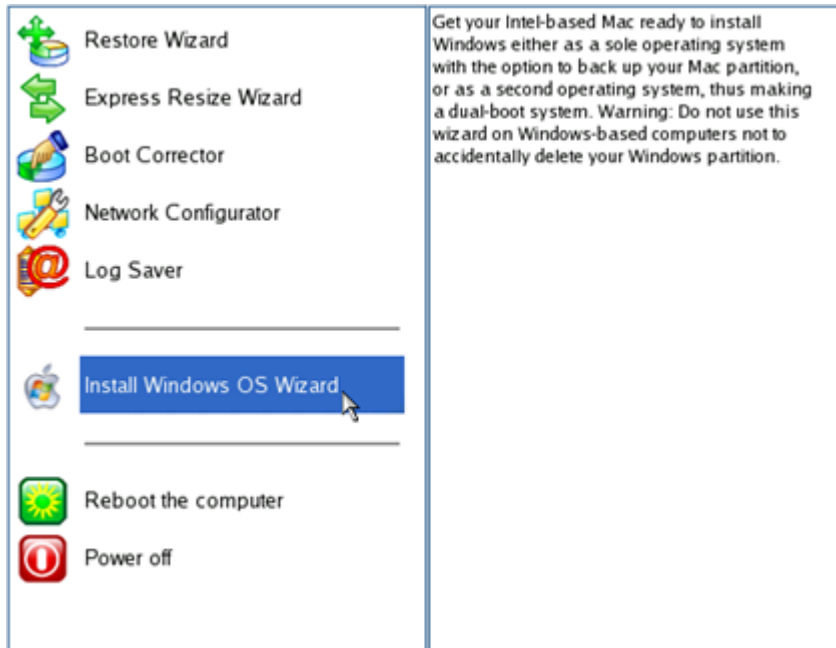
5. At first you will be prompted to make a backup of your Mac disk. If you haven't done that yet, we strongly recommend it to you. In our case we just mark the appropriate checkbox to skip this action.
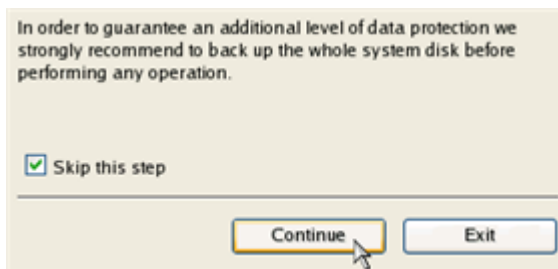
6. In the opened dialog set a size for the future Windows partition by moving the slider. Please note, available space to allocate for your Windows partition depends on the unused space of the Mac partition.
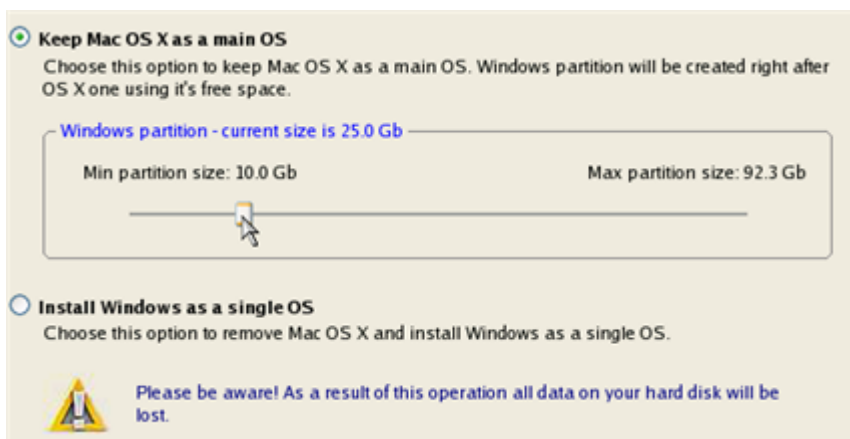
If your Mac partition has less than 5 GB of the unused space, the wizard will not continue.

7. In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.
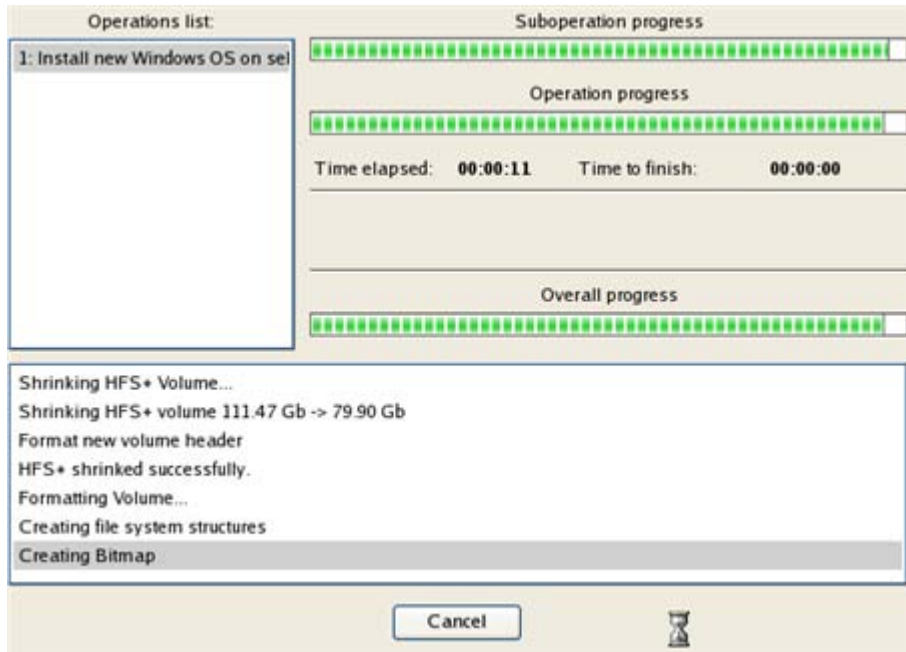
8. After completing the operation insert a Windows distributive CD and then press the Close button to reboot the computer and launch the installation procedure.
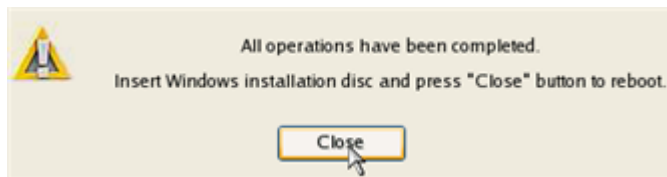
SYSTEM HARD DISK MIGRATION

To migrate your system hard disk to a larger disk, please do the following:

1. Connect both source and destination disks to the computer.

2. Turn on the computer.

3. Launch the Hard Disk Copy Wizard. There are several ways to do it:

   Express Launcher

   ❑ Click the **Copying and Migration** button and then select **Hard Disk Migration**.

   Launcher

   ❑ In the Main Menu: select **Wizards > Copy Hard Disk**

   ❑ On the Common Tasks bar: click the **Copy Hard Disk** item of the Wizards menu.

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

5. On the Select Hard Disk to Copy page, select a source disk (a hard disk you want to copy).

On this page, you can choose a hard disk you would like to copy. All partitions from this hard disk will be copied to the destination you will choose on the next page.

Basic Hard Disk 0 (Maxtor 7Y250P0)

(?) [Unallocated]
233.7 GB

Basic Hard Disk 1 (ST3160815AS)

(?) ...
19...

(?) Applications [D...
63.4 GB NTFS

Basic Hard Disk 1 (ST3160815AS)

(?) Other Stuff [E:]
...GB NTFS
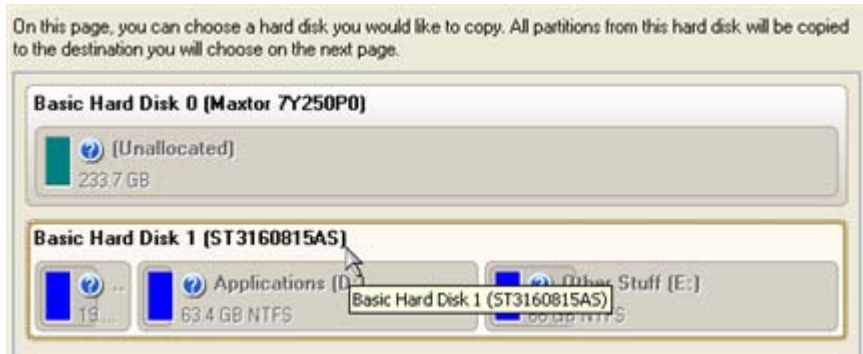
6. On the Select Target Hard Disk page, select a destination disk (a hard disk to copy contents of the source disk).

Select a target hard disk. All data from the source hard disk will be copied there. During copy operation, target disk content will be **deleted**.

Basic Hard Disk 0 (Maxtor 7Y250P0)

(?) [Unallocated]
233.7 GB

Basic Hard Disk 0 (Maxtor 7Y250P0)
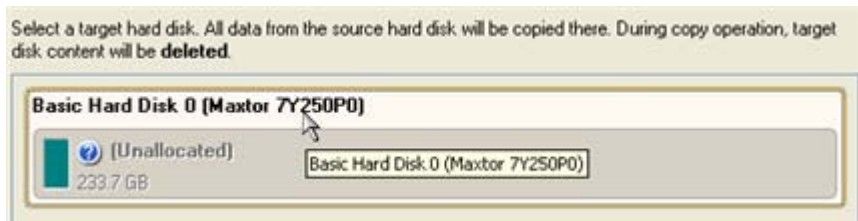
⚠ **During the operation all contents of the destination disk will be deleted.**

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7. On the next page of the wizard, define the copy options. In our case we'd rather copy data with a proportional resize to occupy the entire disk. Besides we recommend you to enable the surface test to make sure your new hard disk is flawless.

Choose copy options that suit best your task:

Copy options:
☐ HDD raw copy
☐ Partitions raw copy
☐ Perform incremental copy

Resize options:
☐ Remove free blocks between partitions
☑ Copy data and resize partitions proportionally

Verification options:
☑ Perform surface test

(i) Mark the checkbox to proportionally change the size of partitions while keeping their relative order intact.
Tip: This can be very convenient when migrating to a larger hard disk.

8. On the Revise Copy Results page review all parameters of the operation.

Original hard disk:

Basic Hard Disk 1 (ST3160815AS)

Applications (D:) — 63.4 GB NTFS
Other Stuff (E:) — 66 GB NTFS

Hard disk copy:

Basic Hard Disk 0 (Maxtor 7Y250P0)

Local Disk (*) — 99.5 GB NTFS
Local Disk (*) — 103.5 GB NTFS

Proportional resize - the copy will take 233.7 GB (100 % of target disk space)

Min Copy Size: 35.9 GB   Max Copy Size: 233.7 GB

ⓘ Select the range of the disk space that will be occupied on the destination disk with copied partitions.
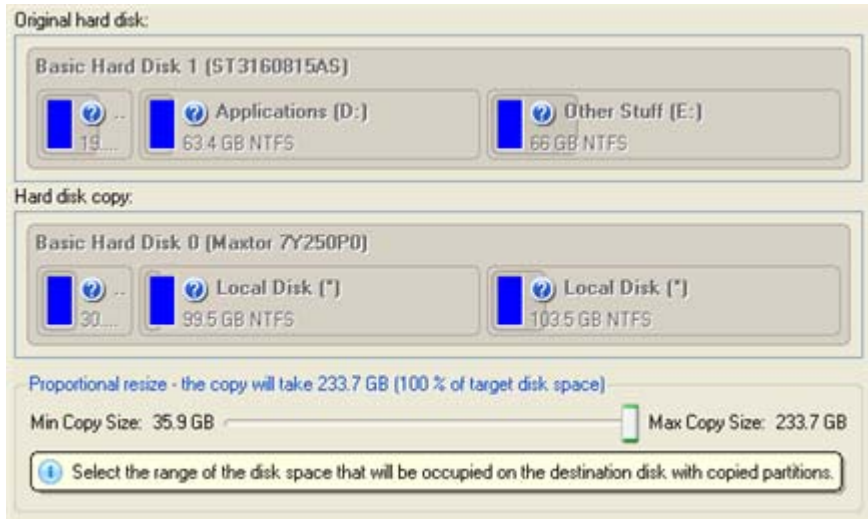
9. Complete the wizard and then apply the pending changes.
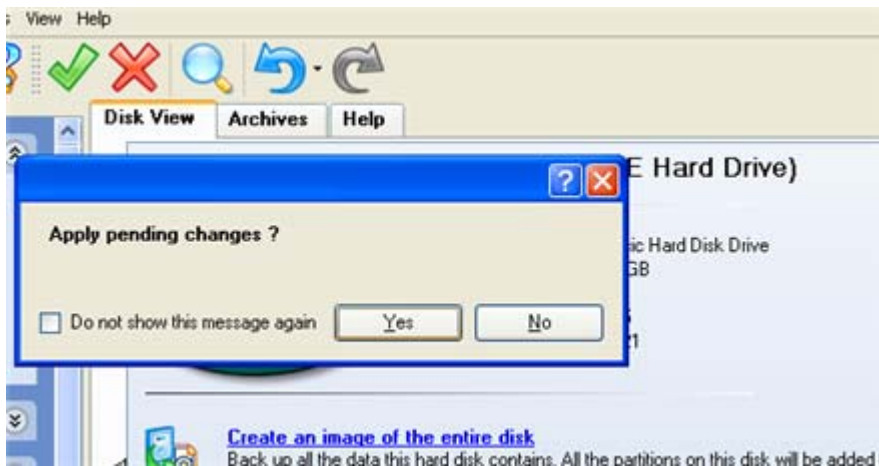
10. When copying is completed, shut down the computer.

11. Disconnect (physically) the source hard disk.

12. Boot the computer from the destination hard disk.

HARD DISK OPTIMIZATION

To defragment an NTFS or FAT partition, please do the following:

> ⚠ **You must have administrator's privileges to accomplish defragmentation of the system partition.**

1. Click **Switch to Full Scale Launcher** in the Express Launcher.
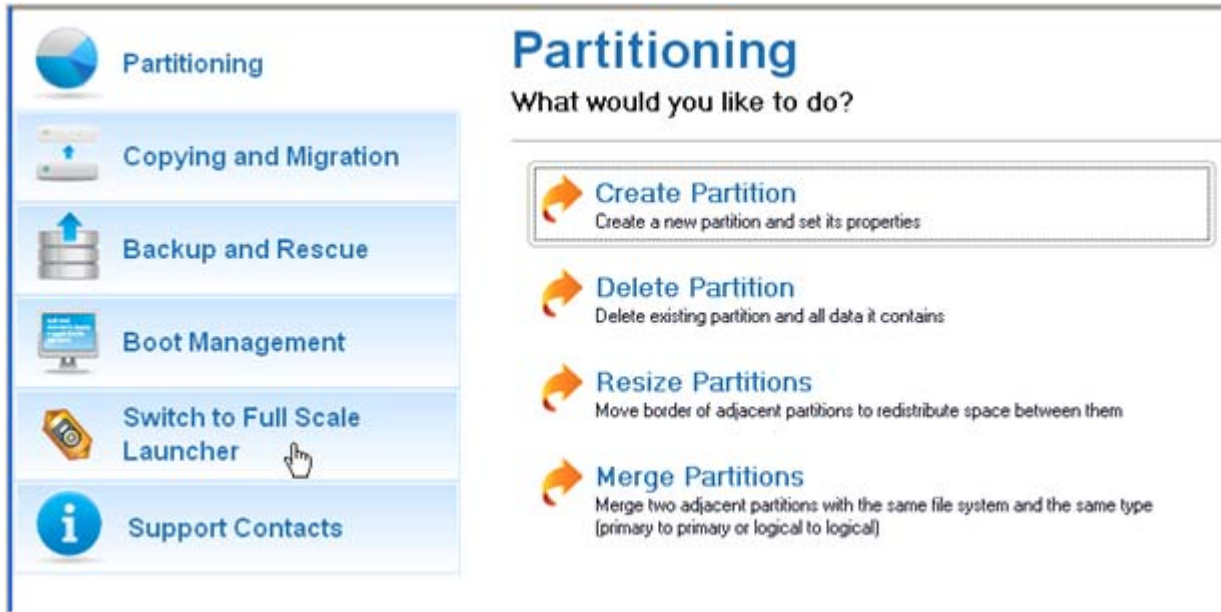
2. In the main window, select a partition you want to defragment on the Disk Map.

3. Launch the Defragment Partition dialog by calling the popup menu for the selected partition (right click of the mouse button) and then selecting the menu item: **Defragment Partition...**
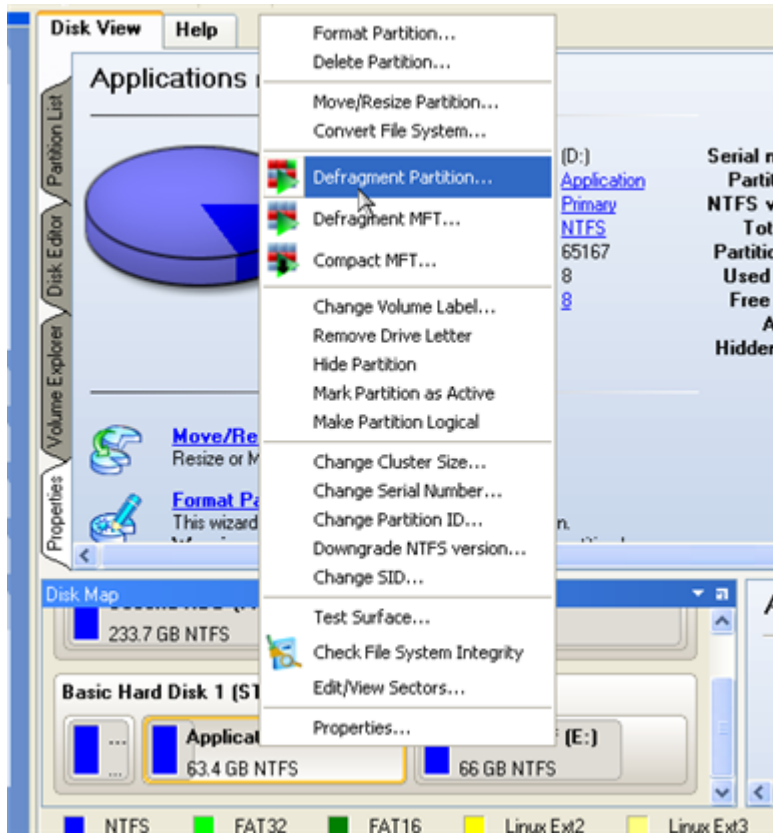
4. In the opened dialog define settings of the operation. To improve the performance we recommend you to mark the **Do not save content of the Pagefile.sys or (and) Hiberfile.sys** checkbox as these files are only needed for the current Windows session.
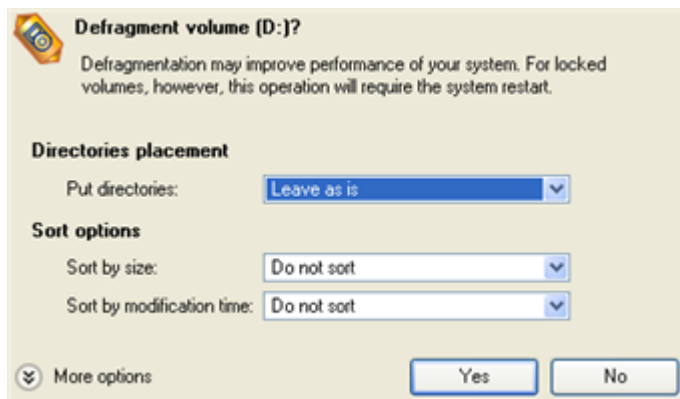
The **Defragment Partition** dialog offers a number of additional parameters that can also be of help. However here we pay attention to the most relevant to fulfill our task.

5. Start the operation by clicking the Yes 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.