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Partition Manager™ 14 Professional

User Manual

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Introduction

Paragon Partition Manager™ 14 Professional is an integrated set of powerful tools that is specially designed to tackle most of the problems you 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 on physical and virtual disks, optimize performance of NTFS file system, 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.



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

What's New in Partition Manager 14

- **Complete uEFI support.** Below you can find only new features introduced in this version:
 - A 64-bit Windows OS system configured to the uEFI boot mode can be adjusted to successfully start up on another hard disk during copy/restore accomplished directly under Windows. Previously the uEFI fixup was only available under WinPE;
 - The Linux-based recovery environment supports systems configured to the uEFI boot mode.
- **Enhanced backup format.** Paragon introduces a pVHD (Paragon Virtual Hard Drive) format – a special VHD, optimized for storing backups of virtual and physical machines. It's very efficient in handling incremental chains, data de-duplication and synchronization. pVHD allows obtaining backups that are up to four times smaller than original backup objects. What you get by using pVHD:
 - Incremental imaging works much faster and rock-stable in comparison with the old PBF;
 - Only pVHD images can be used to do immediate virtualization;
 - With the new backup technology, Paragon has also achieved easy support of any virtual containers (VMDK, VHD, etc.).



In the current version the pVHD support has a promotional goal. In future releases pVHD will gradually take the primary role.

- **Uplifted Recovery Media Builder.** Paragon's Recovery Media Builder, a simple alternative to Boot Media Builder, can help you prepare either Linux or WinPE-based bootable environment on a USB thumb drive or in an ISO file (previously only creation of WinPE images on USB was supported). Unlike Boot Media Builder, it doesn't require to have Windows Assessment and Deployment Kit (ADK) or Automated Installation Kit (WAIC) installed in the system. However, it can only be used under Windows 7 or higher, and its functionality is rather limited.
- **Complete support of Windows Storage Spaces.** Windows 8 has come with a storage management feature called the storage spaces. It enables to easily manage large storage pools. In fact it's an expandable virtual container of defined data size, allowing users to add it as many physical drives as they want until the defined virtual disk's limit is reached. This makes it easy to include additional storage devices without having to set up and manage each attached physical storage drive.

- **Uplifted Linux Recovery Environment.** Started from HDM 14 the Linux-based recovery environment is based on SuSe 12.3 (more hardware devices supported) and includes:
 - uEFI fixup to clone, restore, migrate 64-bit Windows systems configured to the uEFI boot mode;
 - ConnectVD to connect a virtual disk as if it were an ordinary physical disk, thus opening up all functionality available for physical disks to virtual.
- **Separate x86 and x64 installation packages.** Please note that started from HDM 14 installation packages do not include Recovery Media Builder, thus customers can build Linux or WinPE-based recovery media only through special utilities (Recovery Media Builder or Boot Media Builder) obtained from Paragon's website.
- **Windows 8.1 support.** Our product has been tested to work fine on Windows 8.1 RTM.
- **[New user-friendly interface](#)** that is fully compatible with the Windows 8 streamlined, tile-oriented interface:
 - Metro-style Express Launcher;
 - Ribbon-based full scale launcher.
 GUI of the Linux recovery environment has also been uplifted.

Product Components

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

- **[Windows based set of utilities](#)** is the crucial part of the product. With the help of an easy to use launcher you may find and run tasks of any complexity in the field of data and system protection, hard disk partitioning and cloning, etc.
- **[Linux/DOS based recovery environment](#)** is a multi-platform bootable media that enables to run utilities under Linux or PTS DOS, and that way to get access to your hard disk for maintenance or recovery purposes. Both platforms have their strong sides, for instance Linux can boast support of FireWire (i.e. IEEE1394) or USB devices. It enables to burn CD/DVD discs. However there can be some difficulties with detecting new hardware. DOS in its turn has no problems of that kind but is limited in features. The Linux/DOS recovery environment requires no installation and can be of great help when the system fails to boot. Besides it offers a Windows XP like environment.
- **[WinPE based recovery environment](#).** Especially for keen followers of Windows, our product offers the option to prepare a WinPE based bootable media. Unlike the Linux/DOS recovery environment it can boast an excellent hardware support and the same interface as the Windows version can. However its system requirements are much tougher.

Features Overview

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

Features

Let us list some of the features:

User Friendly Fault Minimizing Interface

- **Graphical representation of the data** to gain a better understanding.
- **[A handy Launcher](#)** to easily find and run the required tasks.

- **Comprehensive wizards** to simplify even the most complex operations.
- **A context sensitive hint system** for all functions of the program.
- [Previewing the resulting layout of hard disks before actually executing operations](#) (so-called virtual operations).

Backup Facilities

- **Available location for backup images:**
 - Backup to local mounted partitions.
 - Backup to local unmounted (without drive letter assigned) partitions.
 - Backup to an external mounted storage to provide for a higher level of data protection and system independence.
 - Backup to external media (CD/DVD) to guarantee a high level of data protection as long as the backup media is kept secure.
 - Backup to a network drive to stand a better chance of success in case of a hard disk failure.

For PBF images:

- [Back up separate partitions or entire disks.](#)

For pVHD images:

- [Backup to VD Wizard](#) to protect separate partitions or entire hard disks.

Restore Facilities

- **Restore an entire disk, separate partitions or only files you need** from the previously created backup image (for PBF and pVHD).
- **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.

Virtualization Facilities

- [Connect VD](#) to connect a virtual disk as if it's an ordinary physical disk, thus opening up all functionality available for physical disks to virtual.

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 a hard disk, format it to NTFS and then make it available in the system by assigning a drive letter.
- [Split Partition Wizard](#) helps you separate OS and data or different types of data by splitting one partition to two different partitions of the same type and file system.
- [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 a 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, Apple HFS) 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, etc.).
- [Install New OS Wizard](#) to make a system ready to install a new operating system.
- [Undelete Partitions Wizard](#) to recover an accidentally deleted partition.

File System Optimization Facilities

- **MFT defragmentation and shrinking** to improve performance of NTFS.

Auxiliary Facilities

- [GPT Loader](#) is a special system driver to allow use of all space of modern ultra high capacity drives (larger than 2.2TB) on systems that don't support it.
- [Conversion of basic MBR disks to basic GPT](#) to enjoy all benefits of the newest partitioning scheme with minimal effort.
- [File Transfer Wizard](#) to make such operations as transferring of files/directories or burning of them to CD/DVD as easy and convenient as possible. Providing access to Paragon backups as regular folders, it may also help to replace corrupted data from a previously created image in case of an operating system failure.
- [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.
- [Network Configuration Wizard](#) to establish a network connection on a bootable recovery media either to save a backup of a partition/hard disk or just several files on a network computer or retrieve a previously made backup from a network computer for recovery purposes.
- [Boot Corrector](#) to fix most of the system boot problems that can be a result of a human factor, program error or a boot virus activity.



Boot Corrector is only available for the bootable recovery environment.

Supported Technologies

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

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

- **Paragon Power Shield™** technology to provide data consistency in case of a hardware malfunction, power outages or an operating system failure.
- **Paragon UFSD™** technology to browse partitions of any file system including hidden and unmounted, modify and copy files and folders, etc.
- **Paragon 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 during the system restart, thus saving from the need to use a bootable media when modifying system partitions.
- **Paragon VIM™** (Virtual Image Management) technology that enables Paragon products work with virtual disks as though they are physical hard disks.
- **Microsoft Volume Shadow Copy Service (VSS)** to provide the copy/backup infrastructure for the Microsoft Windows XP/Vista/7/Server 2003/2008 operating systems. It offers a reliable mechanism to create consistent point-in-time copies of data known as shadow copies. Developed by Microsoft in close cooperation with the leading copy/backup solution vendors on the market, it is based on a snapshot technology concept.
- **Microsoft Dynamic Disk** (simple, spanned, striped, mirrored, RAID-5) to offer more management flexibility without the partition limitation of basic disks. Dynamic storage can be particularly beneficial for large-scale businesses when dealing with many physical hard disks involving complex setup.
- **GUID Partition Table (GPT)**. It is the next generation of a hard disk partitioning scheme developed to lift restrictions of the old MBR. GPT disks are now supported by Windows Vista/7, Server 2008, Mac OS X and Linux.

Supported Virtualization Software

For direct access to virtual hard drives

- Microsoft Virtual PC 2007
- Microsoft Windows Virtual PC
- Oracle Virtual Box 1.0-4.x
- VMware Player
- VMware Workstation
- VMware Fusion



Snapshot disks of Oracle VirtualBox are not supported.

Supported virtual hard drive types

- VMware - Virtual Machine Disk Format (VMDK)
- Microsoft - Virtual Hard Disk (VHD)
- Oracle - Virtual Desktop Image (VDI)
- Paragon's backups (PBF/pVHD)

Supported File Systems

- Full read/write access to FAT16/FAT32 partitions.
- Full read/write access to NTFS (Basic Disks) under Windows, Linux and PTS DOS. Compressed NTFS files are also supported.
- Full read/write access to Ext2FS/Ext3FS/Ext4FS partitions.
- 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 (2.2TB+ disks included)
- IDE, SCSI and SATA hard disks
- SSD (Solid State Drive)
- AFD (Advanced Format Drive)
- Non-512B sector size drives
- 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, USB 3.0 hard disks
- PC card storage devices (MBR and GPT flash memory, etc.)

Getting Started

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

System Requirements

For the Windows installation package

- Windows XP SP3
- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1

Additional requirements:

- To install and run the product the target OS should have Visual Studio C++ 2010 Runtime Library installed (comes with the installation package – you will be prompted to install it, if it's not been found in the system).



During the installation additional free space (up to 1GB) will be required.

For the Linux bootable environment

- Intel Pentium CPU or its equivalent, with 300 MHz processor clock speed
- 256 MB of RAM
- SVGA video adapter and monitor
- Keyboard
- Mouse

For the WinPE bootable environment

- Intel Pentium III CPU or its equivalent, with 1000 MHz processor clock speed
- At least 1 GB of RAM
- SVGA video adapter and monitor
- Keyboard
- Mouse

Additional requirements

- Network card to send/retrieve data to/from a network computer
- Recordable CD/DVD drive to burn data to compact discs
- External USB hard drive to store data.

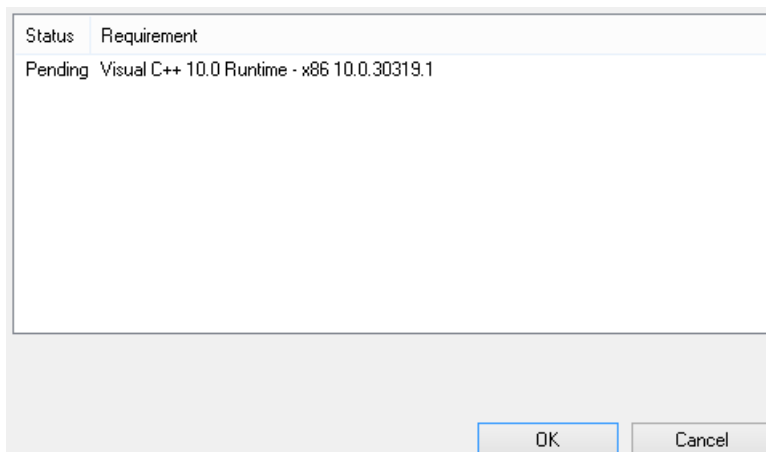
Installation

Before the installation, please make sure the [systems requirements](#) are met. If everything is OK, please do the following to install the product:



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

1. Click on the supplied setup file to initiate the installation. First your system will be checked for the presence of Visual Studio C++ 2010 Runtime Library and if not found, you will be prompted to install it (comes with the installation package). Click **Install** to continue.



2. The Welcome page will inform that the application is being installed. Click **Next** to continue.

3. Please Read Paragon License Agreement carefully and then select the appropriate option to accept. Otherwise you won't be able to proceed with the installation. By clicking the **Print** button, the license agreement may also be printed out.
4. Provide your product key and serial number.
5. On the Customer Information page you are to provide the standard customer 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. On the next page, click **Change** to install the utility to a different location (by default **C:\Program Files\Paragon Software\Paragon Partition Manager 14 Professional Edition**). Otherwise click **Next** 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. On the Ready to Install the Program page click **Install** to start the installation or **Back** to return to any of the previous pages and modify the installation settings.
8. The Final page reports the end of the setup process. Click **Finish** to complete the wizard.

First Start

To start Paragon Partition Manager 14 under Windows, please click the Windows Start button and then select **Programs > Paragon Partition Manager™ 14 > Paragon 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 know more on how to handle the product's interface and accomplish typical operations, please consult the [Windows Components](#) chapter.

Building Recovery Media

WinPE- and/or Linux-based recovery environments should be prepared on-site with Paragon's Recovery Media Builder or Boot Media Builder, which you can download from Paragon's web site, the My Account section (www.paragon-software.com/my-account/). To know more on the subject, please consult documentation that comes with these utilities.

Booting from the Linux/DOS Recovery Media

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

Startup

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

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



Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities [here](#):

www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Launch a boot mode you need (Normal, Safe, Low-Graphics Safe) in the Boot menu.

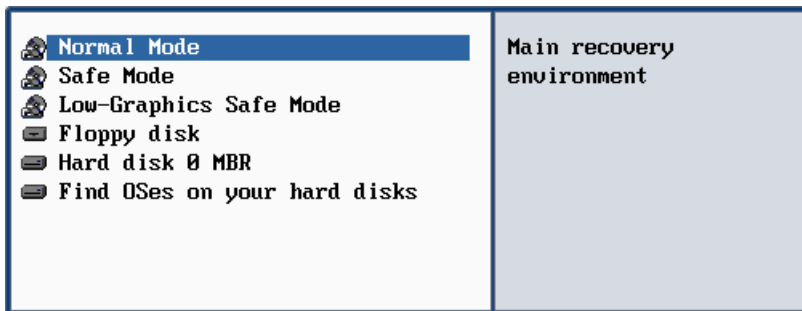


By default the Normal Mode will be automatically initiated after a 10 second idle period.

3. Click on the required operation to start. Hints on the selected at the moment item will help you make the right choice.
4. Consult the help system by pressing **ALT+F1** to know more on the subject.

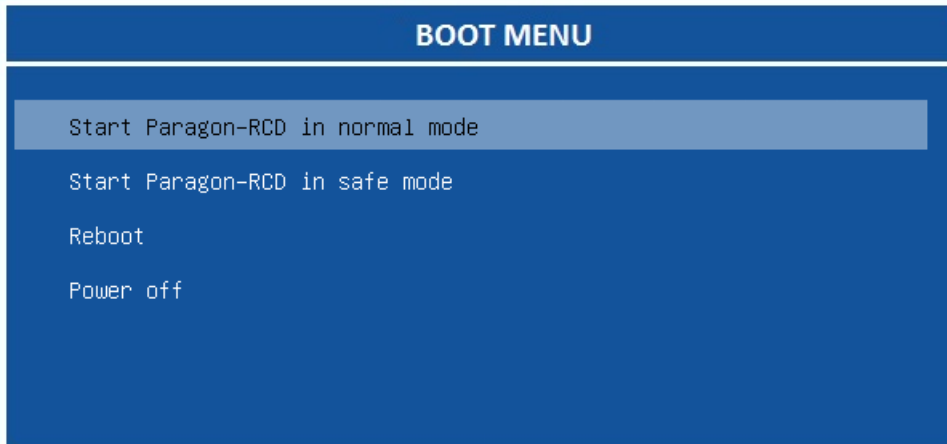
Boot menu

32-bit environment



- **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.

64-bit environment



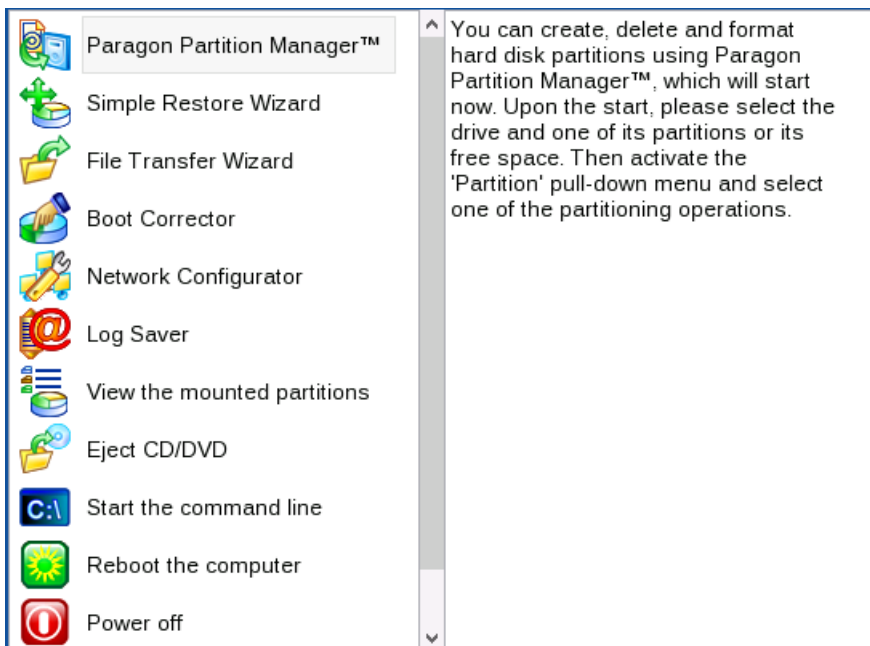
- **Normal Mode.** Boot into the Linux normal mode. This mode uses the full set of drivers (recommended);
- **Safe Mode.** Boot into the PTS DOS mode. This mode can be used as an alternative of the Linux normal mode if it fails to work properly;
- **Reboot.** Restart the computer.
- **Power off.** Shut down the computer.



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

Normal Mode

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



- **Partition Manager** (enables to run wizards and dialogs, to specify program settings, to visualize the operating environment and the hard disk configuration);

- **Simple Restore Wizard** (allows restoring hard disks and partitions);
- **File Transfer Wizard** (allows copying files/folders to another disk or a partition as well as recording them to CD/DVD);
- **Boot Corrector** (helps to correct the Windows System Registry without Windows being loaded);
- **Network Configurator** (enables to establish a network connection under Linux);



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

- **Log Saver** (helps to collect and send the necessary log files to the Technical Support);
- **View the mounted partitions** (the list of all mounted partitions will be displayed);



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

- **Eject CD/DVD;**
- **Command Line** (allows experienced users to execute any operation);
- **Reboot the computer;**
- **Power off the computer.**

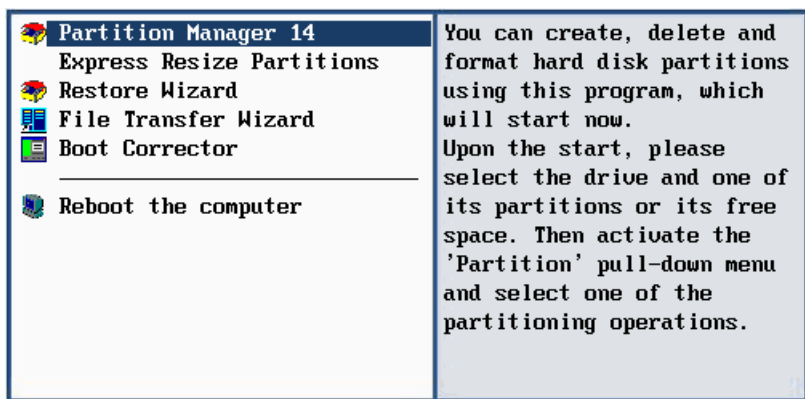
To move within the menu, please use the arrow keys of the computer keyboard.

Safe Mode

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

Low Graphics Safe Mode

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



Booting from the WinPE Recovery Media

The WinPE recovery environment can be a real alternative to the Linux/DOS recovery environment. Providing nearly the same level of functionality it offers an excellent hardware support and the same interface as the Windows version does.

Startup

To start working with the WinPE recovery environment, please take the following steps:

1. Start up the computer from the WinPE recovery media.



Please use **Boot Media Builder** to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Once it has been loaded, you will see the Universal Application Launcher. In general it enables to run components of the product, load drivers for undefined hardware or establish a network connection.



3. Click on the required operation to start. Hints on the selected at the moment item will help you make the right choice.
4. Consult the help system by pressing **ALT+F1** to know more on the subject.



The WinPE based recovery environment offers excellent hardware support. However in case it doesn't have a driver for your disk controller, your hard disks will be unavailable. Please consult the [Adding specific drivers](#) scenario to know how to tackle this issue.

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.

pVHD Support

Paragon introduces a pVHD (Paragon Virtual Hard Drive) format – a special VHD, optimized for storing backups of virtual and physical machines. It's very efficient in handling incremental chains, data de-duplication and synchronization. pVHD allows obtaining backups that are up to four times smaller than original backup objects.

In the current version of the product backup images can be made either in the old PBF or the new pVHD. Please note that the pVHD support has a promotional goal. In future releases pVHD will gradually take the primary role.

Below is the list of wizards that allow working with pVHD:

- [Backup to VD Wizard](#) (Linux, Windows, WinPE);
- [Restore from VD Wizard](#) (Linux, Windows, WinPE).

What you get by using pVHD:

- Incremental imaging works much faster and rock-stable in comparison with the old PBF;
- Only pVHD images can be used to do immediate virtualization;
- With the new backup technology, available for customers as a new backup image format pVHD, Paragon has also achieved easy support of any virtual containers (VMDK, VHD, etc.).

Dynamic Disks

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

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

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

There are five types of dynamic volumes: simple (uses free space from a single disk), spanned (created from free disk space that is linked together from multiple disks), striped (a volume the data of which is interleaved across two or more

physical disks), mirrored (a fault-tolerant volume the data of which is duplicated on two physical disks, and RAID-5 volumes (a fault-tolerant volume the data of which is striped across an array of three or more disks).

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

Limitations:

- Dynamic disks are not supported on portable computers.
- Dynamic disks are not supported on Windows XP Home Edition-based computers.
- You cannot create mirrored volumes or RAID-5 volumes on Windows XP Home Edition, Windows XP Professional, or Windows XP 64-Bit Edition-based computers.

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

GPT versus MBR

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

- Up to 128 primary partitions for the Windows implementation (only 4 in MBR);
- The maximum allowed partition size is 18 exabytes (only 2 terabytes in MBR);
- More reliable thanks to replication and cyclic redundancy check (CRC) protection of the partition table;
- A well defined and fully self-identifying partition format (data critical to the platform operation is located in partitions, but not in un-partitioned or hidden sectors as this is the case with MBR)

uEFI Boot Challenges

Introduced back in 2005 by Intel to lift restrictions of the old MBR (Master Boot Record) and PC BIOS (Basic Input/Output System), uEFI (Unified Extensible Firmware Interface) is now a recommended platform for new 64-bit Windows 8 computers. And the reason is easy to catch – besides other unique features impossible for the traditional tandem of BIOS+MBR, only a uEFI-based platform enables to accommodate Windows OS on a partition larger than 2.2TB.

Despite all uEFI advantages however, it has one quite naughty issue: a pretty standard operation with a bootable device for instance involving its connection to another SATA port results in unbootable Windows. You'll get the same result if trying to boot from a cloned system hard disk or from a restored hard disk. All these problems originate from the way uEFI+GPT bundle is organized.

Microsoft provides how-to guides to tackle this type of problems, but they demand a great deal of experience from the user, involving the use of the **cmd**, **diskpart** and **bcdedit** tools.

Paragon has a better way! Introducing an elegant technology, realized at the user side as one simple option, you can define a system GPT volume you're willing to boot from.

Below is a list of wizards where the uEFI switch boot device option can be found:

- [Restore Wizard](#);
- [Boot Corrector](#).

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.



It is strongly recommended not to modify the hard disk configuration with Windows Disk Manager. Otherwise it may lead to unexpected consequences, right up to BSOD and inability to boot in Windows XP/Vista. Please use our program to correctly update both MBR and GPT.

64-bit Support

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

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

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

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

Drive Partitioning

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

Large drives are always going to take longer to search than smaller volumes, and an operating system is going to have its work cut out both finding and organizing files. It is for this reason that many people decide to invest in multiple hard drives, but there is an easy solution – drive partitioning. Partitioning lets you divide a single physical drive into a number of logical drives, each of which serves 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.

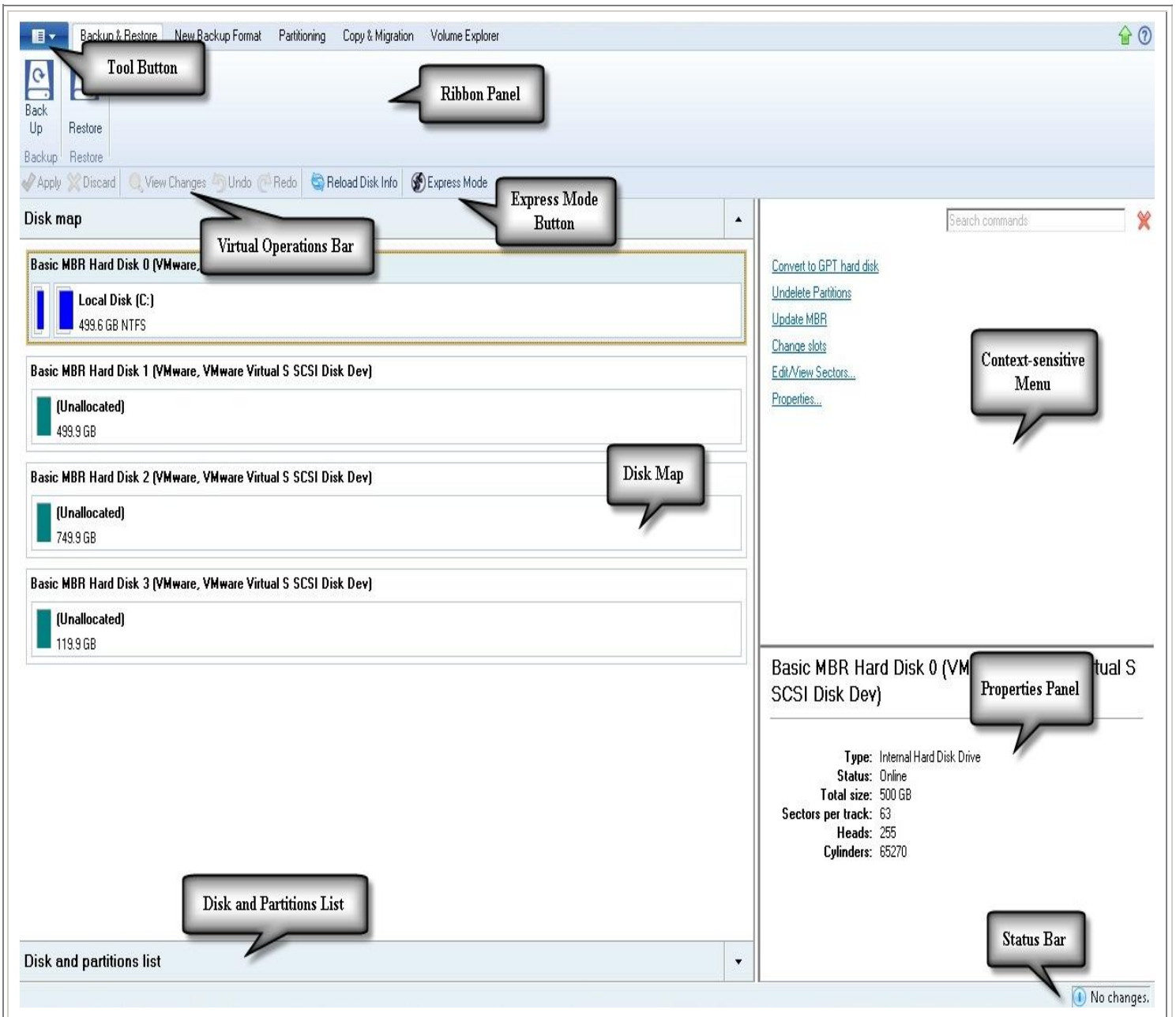
Interface Overview

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

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

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



1. [Tool Button](#)
2. [Ribbon Panel](#)
3. [Virtual Operations Bar](#)
4. [Express Mode Button](#)
5. [Disk Map](#)
6. [Disk and Partitions List](#)
7. [Context-sensitive Menu](#)
8. [Properties Panel](#)
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.

Tool Button

By clicking on this button the user can:

- Launch auxiliary wizards,
- Get access to the program settings,
- Collect and send a log files package to the Support Team,
- Go to Paragon's website to download a free update, register the product, visit Paragon's Knowledge Base, etc.

Ribbon Panel

An area across the top of the program's window is called the Ribbon Panel. It makes almost all the product capabilities available to the user in a single place. A Ribbon Tab is an area on the panel that contains buttons organized in groups by functionality. Each button corresponds to a certain program wizard or dialog.



If you'd like to hide all ribbon tabs, click on the arrow button at the right top corner of the program window.

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
	Generate a script out of all pending operations
	Schedule 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:

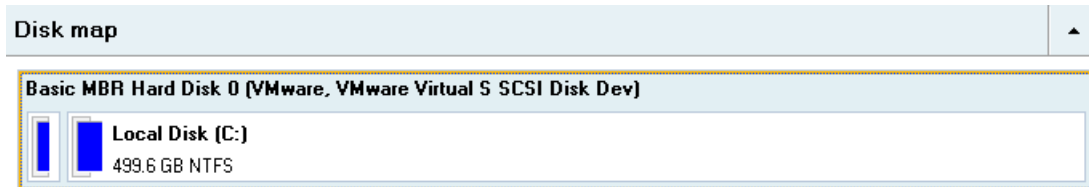
You have unsaved changes.

Express Mode Button

By clicking on this button the user can switch to the [express mode of operation](#) at any time.

Disk Map

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. By looking at the size of the bar's shaded area it is possible to estimate the used disk space. For the selected at the moment object there's the possibility to call a context-sensitive popup menu with available operations.



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

- Type (basic or dynamic MBR/GPT),
- Manufacturer,
- Model.

Small-sized bars display the following information about logical disks and blocks of free space:

- Volume label (if exists),
- Drive letter,
- Total size,
- File system.

The Disk Map is synchronized with the [Context-sensitive Menu](#) and the [Properties Panel](#). Thus by selecting a disk on the map, the two will automatically display detailed information on it. To know more on the subject, please consult the [Viewing Disk Properties](#) chapter.



Since the Disk Map and the Disk and Partitions List have the same purpose, the user is allowed to extend only one at the moment by using a corresponding arrow button.

Disk and Partitions List

The Disk and Partitions List is another helpful tool that helps to get a clear-cut picture on the current state of the system hard disks and partitions. All objects (disks, partitions, or blocks of free space) on the list are sorted according to their starting position. For every item there is the possibility to call a context-sensitive popup menu with available operations.

Disk and partitions list									
Name	File system	Volume size	Partition size	Used	Free	Volume label	Hidden	Ac	
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)		500 GB							
System Reserved	NTFS	350 MB	350 MB	256.8 MB	93.1 MB	System Reserved	No	Ye	
Local Disk (C:)	NTFS	499.6 GB	499.6 GB	11.7 GB	487.9 GB	[No label]	No	No	
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)		500 GB							
(Unallocated)				Bytes	499.9 GB	[No label]	No	No	
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)				Bytes	749.9 GB	[No label]	No	No	
(Unallocated)				Bytes	119.9 GB	[No label]	No	No	
Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)									
(Unallocated)									

The Disk and Partitions List provides detailed information on all hard disks and partitions found in the system including the following properties:

- Name,
- Volume label (if exists),
- Drive letter,
- File system type,
- Volume size,
- Amount of used and unused (free) space,
- Active/Inactive attribute,
- Hidden/Unhidden attribute.

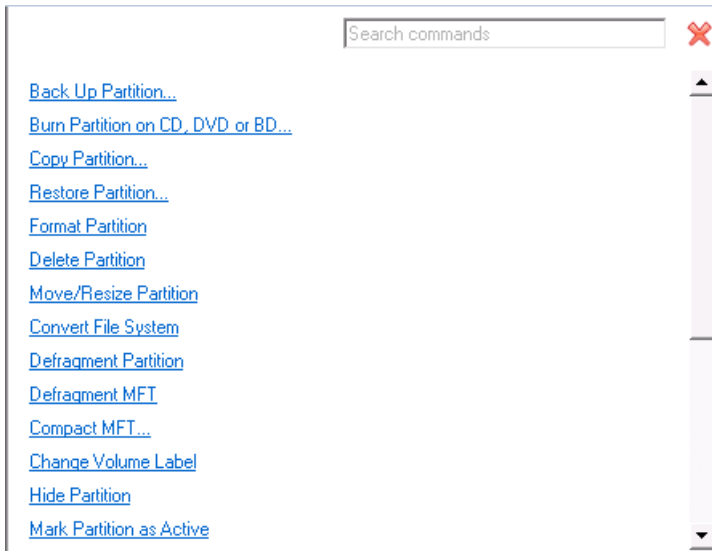
The Disk and Partitions List is synchronized with the [Context-sensitive Menu](#) and the [Properties Panel](#). Thus by selecting a disk on the list, the two will automatically display detailed information on it. To know more on the subject, please consult the [Viewing Disk Properties](#) chapter.



Since the Disk Map and the Disk and Partitions List have the same purpose, the user is allowed to extend only one at the moment by using a corresponding arrow button.

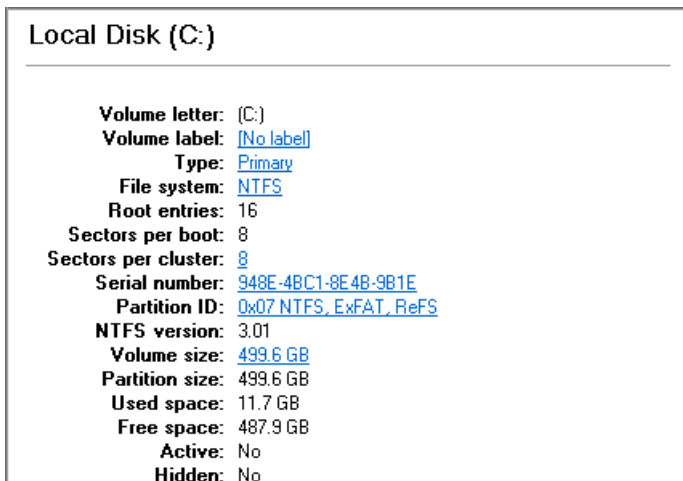
Context-sensitive Menu

The Context-sensitive Menu shows a list of operations available for an object (disk, partition, or block of free space) selected either on the [Disk Map](#) or the [Disk and Partitions List](#). If you click a corresponding record the appropriate wizard or dialog will be started. All default values for the operation parameters will correspond to the object's settings. If there too many items on the list, type in the first word of the required command in the **Search commands** field to filter the list.



Properties Panel

The Properties Panel provides information on the object (disk, partition, or block of free space) selected either on the [Disk Map](#) or the [Disk and Partitions List](#).



The Properties Panel helps to obtain the following data:

For a hard disk

- Model,
- Serial number,
- Type of hard disk (basic or dynamic MBR/GPT),
- Total size (in GB),
- Information on geometry of the disk (amount of sectors per track, heads and cylinders).

For a partition

- Drive letter assigned to the disk,
- Volume label (if exists),
- Type of the logical disk,
- File system,
- Root entries,

- Serial number,
- NTFS version,
- Partition ID,
- Total size, used space and free space (in GB), etc.

Besides you can modify practically any partition property by clicking on the required value.

For a block of free space

- Total size (in GB).

Status Bar

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

Settings Overview

To call the Settings dialog, please click **Tool Button**, then select **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



General options

<p>Partition Alignment Mode</p> <p>Vista</p> <p>Align partitions according to the rules used in Windows Vista and later OSes.</p>
<p>Check FS integrity policy</p> <p>Once</p> <p>Standard protection from data loss with acceptable performance. The file system integrity will be checked for each volume only once just before accomplishing data-sensitive operations.</p>
<p>Data Loss Protection mode</p> <p>Reset</p> <p>Medium protection from data loss.</p>

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

- **Partition Alignment mode.** There are three options you can choose from:
 - **Legacy.** DOS and Windows OSes before Vista required that partitions had to be aligned to the “disk cylinder” or 63 sectors to address and access sectors correctly. It was OK, until 4K hard drives came into scene. When partitions are aligned this way on this type of disk, each logical cluster is linked to two physical 4K clusters, thus resulting in a double read-write operation.

- **Vista.** Since Windows Vista, operating systems do not use the archaic CHS (cylinder/head/sector) addressing scheme, but the Logical Block Addressing (LBA), where sectors are addressed continuously over the whole disk drive. It is optimal for both, 512B and new 4K disk drivers.
- **Inheritance.** Select the option to disable automatic alignment of partitions.
- **Check FS integrity policy.** Accomplishment of any data-sensitive operation (resize, move, merge, redistribute, change cluster size, etc.) is potential with data loss. To minimize this risk, it's recommended to check integrity of your file system before this type of operations, despite the fact that it's quite time consuming. We offer you several options to let you choose, which is best for you:
 - **Always.** Maximum protection, but minimal performance. The file system integrity will be checked each time it's necessary to guarantee the maximum protection for the on-disk data.
 - **Once.** Standard protection with acceptable performance. The file system integrity will be checked for each volume only once just before accomplishing data-sensitive operations.
 - **Never.** No protection, but maximum performance. If you're not 100% sure your disk is rock solid, please do not use this option.
- **Data Loss Protection mode.** To guarantee safety for your information when a data-sensitive operation has been abruptly interrupted as a result of a computer reset, or a power outage, there are several techniques, that correspond to the options below:
 - **Do not protect.** No protection, but maximum performance. If you're not 100% sure you're completely safe from a power outage, or an accidental reset of your computer, please do not use this option.
 - **Reset.** Standard protection with acceptable performance. Maintaining a special journal, our program enables to automatically complete a data-sensitive operation interrupted by an accidental reset of your computer from our bootable recovery media, thus reviving the corrupted partition.
 - **Power loss.** Maximum protection, but minimal performance. Besides journaling, our program will also disable cache of your disk when accomplishing data-sensitive operations to avoid data loss even in case of a power outage.

Backup Image Options



Backup image options

Control archive integrity

Choose this option to allow writing of specific data that will later be used during restore to check the archive integrity. It can slow down the backup operation.

Set image file names automatically

Choose this option to automatically name files in complex archive.

Compression level

Normal compression

Good compression. Provides average speed with the reasonable image size.

Image split

Enable image splitting

Choose this option to enable splitting the archive to several files

Maximum split size: 1 MB

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

- **Control archive integrity.** Mark the checkbox to guarantee that all backup images created with the program are 100 percent flawless. If you decided not to control the archive integrity, the backup operation would take about 3-5% less time.
- **Set image file names automatically.** Mark the checkbox to make the program automatically set a file name for every volume of a complex backup image. Otherwise you will need to do it manually during the backup operation.
- **Compression level.** From the pull-down list you can select the desired compression level for backup images that will be used by default.
- **Enable image splitting.** Mark the checkbox to automatically split every backup image to volumes of a particular size.



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

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

General Copy and Backup Options



General copy and backup options

- HDD raw processing**
Copy an entire hard disk sector by sector without taking into account its partition structure.
- Partition raw processing**
Copy/Backup each partition sector by sector. All sectors will be processed one by one (even unused sectors). Requires more time to complete the operation.
- Automatic BCD update**
Add boot entry for target partition to BCD hive on copy\restore source partition

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

- **HDD raw processing.** Mark the checkbox to copy/back up a hard disk in the sector-by-sector mode, thus ignoring its information structure (e.g. unallocated space or unused sectors of existing partitions will be processed as well). This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.
- **Partition raw processing.** Mark the checkbox to copy a partition in the sector-by-sector mode to successfully process unknown file systems. However it is not recommended to enable this option when working with supported file systems as it takes more time to accomplish the operation.
- **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.
- **Automatic BCD Update.** Unmark the checkbox to suppress automatic update of BCD (Boot Configuration Data) after copy/restore operations.

CD/DVD/BD Recording Options



CD/DVD/BD recording options

Burn every CD/DVD/BD disk to the end.

Choose this option to allow the disk to be copied by third party tools.

Recording speed

Maximum recording speed

Fast recording. Choose this option if you have good quality disks and recorder.

Boot options

Specify a bootable ISO image to place on CD, DVD or BD along with backup data:

bootcd.iso

Browse

The specified ISO image **does not exist**.

Specify how would you like to boot from CD, DVD or BD:

Do not boot from CD, DVD or BD

ISO image folder

.\

Browse

Please select a folder to place ISO images to when CD, DVD or BD ISO maker is used.

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

- **Burn every CD/DVD/BD to the end.** By default, the program does not create ISO 9660 compliant burning sessions, as it processes data on-the-fly and can only estimate the resulted session size. That's why no third party tool will get access to the recorded data. To tackle the issue, mark the checkbox to make the program create a standard Disk-at-Once session. It may slow down the burning process, as every CD/DVD/BD will be recorded up to the end, no matter how much actual information to contain.
- **Recording speed.** The user may define how fast a CD/DVD/BD will be recorded (minimum, normal and maximum). Besides there is an automatic mode when the program will set the most appropriate speed for every CD/DVD/BD.
- **Bootable ISO image.** That's the image to be placed together with the backup data. By default, the program offers its own bootable ISO image, which contains a Linux/DOS recovery environment. However, the user is free to use any bootable ISO image.
- **CD/DVD/BD boot capability.** The program enables to choose whether any recorded CD/DVD/BD will be bootable, or only the first one for a session, or without that function at all.
- **Folder where the ISO image is to be placed.** When the user decides not to physically burn a CD/DVD/BD, but create an ISO image file, this very folder will be used to contain these images.

Hot Processing Options



Hot processing options

Enable hot processing

Hot processing technology:

Microsoft Volume Shadow Copy Service

Microsoft Volume Shadow Copy Service is a reliable technology designed to back up volumes being locked by numerous active transactions of VSS supporting applications. Microsoft VSS technology requires over 300 MB of free space on any mounted NTFS volume for temporary data. This technology is provided for Windows XP and newest Windows versions, but unavailable for old versions of Windows (98/ME/NT/2000).

Additional options:

Always use hot processing

Use hot processing only when partition is locked

Hot processing temporary drive:

C:

Number of attempts to start VSS: 3

Timeout between attempts (in seconds): 120

[Change run during backup options](#)

In this section you may configure the hot processing mode:

- **Enable hot processing.** Mark the checkbox to enable the so called hot data processing mode that is specially designed to process data without restarting your operating system.
- **Hot processing technology.** From the pull-down list you can select the required hot processing technology.
- **Always use hot processing.** Select the option to process partitions without making them locked. Thus you will be able to keep working with them as usual.
- **Use hot processing only when partition is locked.** Select the option to use the hot processing only when partitions are locked and cannot be processed without restarting the computer. Please keep in mind, that once you start any operation on a partition in this mode, it will automatically be locked by the program, thus you won't be able to keep working with it as usual.
- **Hot processing temporary drive.** Here you can select a disk drive that will be used to store the temporary hot backup data (by default – C:).
- **Attempts to start VSS.** Here you can set how many attempts to start Microsoft VSS the program is to do before automatically rebooting the system and accomplishing the operation in a special boot-up mode.
- **Timeout between attempts (in seconds).** Here you can set a time period between different attempts to start Microsoft VSS.
- **Switch between hot processing technologies.** Mark the checkbox to automatically switch between Paragon Hot Processing and Microsoft VSS if one of them is unavailable at the moment.

Partitioning Options



Partitioning Options

Confirmations:

Ask for volume label before partition delete

Ask confirmation when converting FAT16 to FAT32.

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

- **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.

E-Mail Options



E-mail options

Specify your e-mail account options:

Outgoing mail server (SMTP):

User e-mail address:

SMTP port number:

My outgoing server requires authentication

User name:

Password:

Send test e-mail

Click this button to test e-mail account options. The program will send generated e-mail message to the address you've specified in **User e-mail address** field.

Specify e-mail notification options:

Send E-Mail notification on apply

To:

Send mail in HTML format

Send complete report after applying operations

Send graphical view of the disk sub-system before and after apply

Select the operations you would like to be notified about

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.

When you're ready with the settings, click on the **Send test e-mail** button to check if everything is OK.

- **Send e-mail notification on apply.** Specify an e-mail to send notifications on the carried out operations.
 - **Send mail in HTML format.** Activate the option to create messages in the HTML format instead of plain text.
 - **Send complete report after applying operations.** Activate the option to create an in-depth report on the carried out operations and send it after performing the last operation.
 - **Send graphical view of the disk sub-system before and after apply.** Activate the option to allow the program to attach two pictures of the disk layout made before and after the operation is completed.



By clicking the link at the bottom of the window you can jump to the [Operation Dependency Options](#).

Operation Dependency Options



Operation dependency options

Please select a task to be carried out when one or more of the following operations are committed.

Perform the task:

Operation
<input checked="" type="checkbox"/> Adjust OS to boot on new hardware
<input checked="" type="checkbox"/> Adjust OS to boot on virtual hardware
<input checked="" type="checkbox"/> Backup partition or disk
<input checked="" type="checkbox"/> Backup partitions or disks increment to virtual containers
<input checked="" type="checkbox"/> Backup partitions or disks to virtual containers
<input checked="" type="checkbox"/> Boot record correction
<input checked="" type="checkbox"/> Check file system
<input checked="" type="checkbox"/> Compact \$MFT
<input checked="" type="checkbox"/> Convert Dynamic Disk to Basic
<input checked="" type="checkbox"/> Copy partition
<input checked="" type="checkbox"/> Copy partition by files to zip archive

This section contains a set of options that will be taken into account when the Send e-mail notification on apply function is enabled. By marking/unmarking a checkbox opposite the required operation you can choose whether to receive an e-mail notification on its completion or not.



You won't be notified if an operation requires the system restart.

Virtual Mode Options



Virtual mode options

Operations mode

Allow virtual mode

Set this option on to carry out all the operations virtually. You will be able to commit the changes or rollback all of them or the last one. If you switch this option off, the operations will be carried out immediately.

Close progress dialog automatically

Set this option on to automatically close the progress dialog after committing the changes.

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



Virtual mode options

Operations mode

Allow virtual mode

Set this option on to carry out all the operations virtually. You will be able to commit the changes or rollback all of them or the last one. If you switch this option off, the operations will be carried out immediately.

Close progress dialog automatically

Set this option on to automatically close the progress dialog after committing the changes.

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.

Defragmentation Options



Defragmentation options

Defragmentation mode

Safe mode (recommended)

Slow but reliable. In this mode the program requires free space on the defragmented at the moment partition to guarantee protection of your data in case of a power outage, hardware malfunction or a system failure.

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.

Log Files Options



Log files options

Logs directory

.\

Browse

Please select a folder name to place an engine log files (stubact.log etc.)

Write logs in Bluescreen

Choose this option to allow engine operations logging when actions need to be restarted and continued in Bluescreen mode

Stubact log file truncation

Choose a storage life span for the stubact.log file. Please note, once the defined period has been expired, the file will be emptied.

Infinite

Minimal

Custom

1 hours

Clean now

In this section you can set up the program logging engine:

- **Logs directory** to specify location of program log files. By default, all logs are placed to: **C:\Program Files\Paragon Software\product's name\program**
- **Write logs in Bluescreen** to enable the program logging in a special boot-up mode
- **Stubact log file truncation** to specify a storage life span for the stubact.log file:
 - **Infinite** not to empty the file ever;
 - **Minimal** to have the file emptied all the time;
 - **Custom** to set a certain storage life span for the file. Please note, once the defined period has been expired, the file will be emptied.



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

Viewing Disk Properties

The [Disk Map](#) and the [Disk and Partitions List](#) are the main tools to get information on the properties of hard disks and partitions available in the system. To know more on the subject, please consult the corresponding chapters of the [Interface Overview](#) chapter.

Viewing Image Properties

General information on backup archives can be obtained with the following tools:

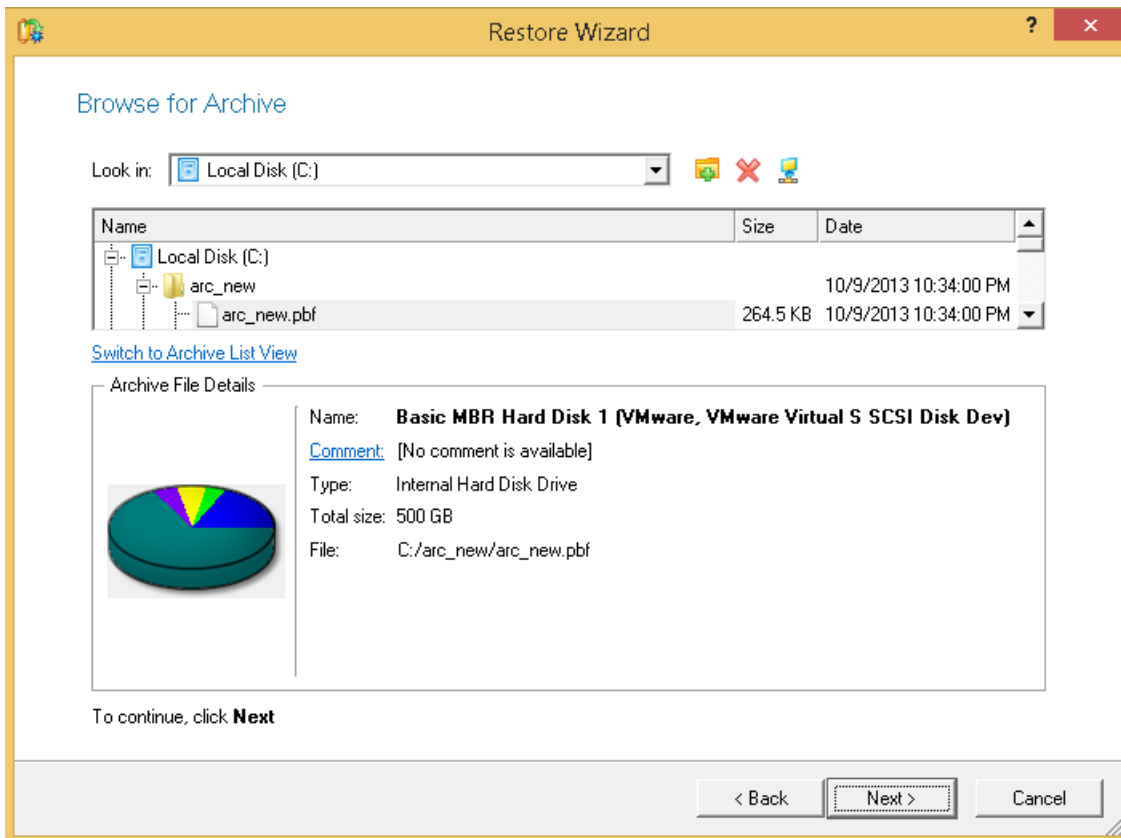
Using the Restore Wizard

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

At first, the wizard displays the Welcome page – simply click the Next button at the foot of the dialog window. The next page refers to Browse for Archive. Here you can find the required image in the browser-like window.

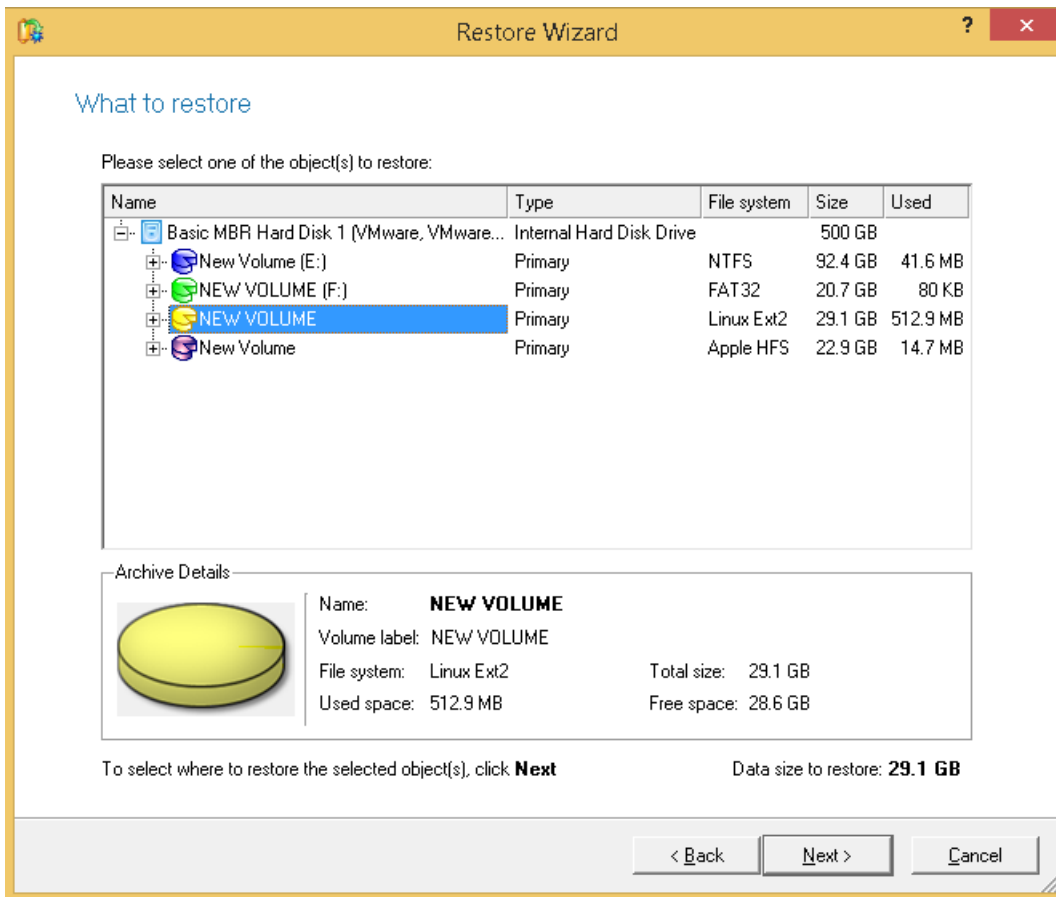


The section below (i.e. Archive File Details) displays a short description of the selected image, including:

- Information on a type of the archive contents (whether it is sector-based or file-based),
- Whether the archive is compressed or not,
- Whether the archive is password protected or not,
- The date, when the archive was created.

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

The next page (i.e. What to restore) displays detailed information about the contents of the archive.



If you want to restore the image contents, click the Next button. In order to cancel, click the Cancel button.

Data Backup and Rescue

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

Creating Backup Images

Depending on a type of information you need to protect and the way this information should be processed, the program offers a number of handy backup wizards. To make your job with the program as easy and convenient as possible, all backup wizards share similar work algorithm. 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.

Backup Wizard Startup

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



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Backup Wizard Setup

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

- **The object to back up.** You can back up either an entire disk or separate partitions of the disk (primary, extended or logical). In case of backing up an entire disk, you've got the possibility to include into the image such disk elements as the Master Boot Record (MBR) and the first track of the hard disk. This can be very helpful for serious disk recovery procedures.

Name	Type	Fi
My Computer	My Computer	
Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive	
First Hard Disk Track	First Track	
Master Boot Record	MBR	
System Reserved	Primary	N
Local Disk (C:)	Primary	N
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive	
First Hard Disk Track	First Track	
Master Boot Record	MBR	

- **Backup destination.** The wizard allows saving backup archives to local or network drives, to physical partitions (without drive letters assigned), or burning them to CD/DVDs. You need to select a destination, taking the estimated archive size and available space on the backup destination into account.

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

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

- **Name and location of the resulted image.** Provide a file name for the new image and its exact location. The program automatically offers an easy to understand name containing the date and the time of the archive creation, which can anyway be modified.

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

Archive location:   

Name	Size	Date
My Computer		
Local Disk (C:)		
New Volume (E:)		
NEW VOLUME (F:)		
RecoveryMedia (G:)		
Network		

Archive details

Archive name:

Estimated archive size: **2 MB**

Space available on backup destination: **92.4 GB**



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

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

Please enter a short comment to describe the archive



In addition, there is the possibility to make further detailed settings (although the default values will do in most cases). To activate the advance mode, you need to mark the appropriate option on the second page of the wizard. When it is marked, the next page enables to define:

- Whether the archive integrity will be controlled.



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

- Whether image file names will be set automatically in complex archives.
- Compression level for the backup image (including the No compression variant).
- Whether the archive will be split (if yes, you can set the maximum size for the archive files).



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

- Whether the archive will be protected by password.
- Whether the selected disk (or the selected partition) will be copied in the sector-to-sector mode (including unused sectors as well).
- Whether the OS auxiliary files (pagefile.sys, hyberfil.sys) will be included in the backup image.
- Recording speed when the user wants to burn the backup image onto CD/DVDs.
- ISO image folder where the archive that is to be recorded on a disc, is placed.
- Whether the operation will be performed without rebooting the system. The program needs to reboot the system in order to have exclusive access to processing data. In a Windows environment this is difficult to achieve because even when all the other applications are closed, the system service programs are still running. However, there is a way to avoid rebooting. The mode of processing the backup operation without rebooting is named Hot Processing. You can also define specific parameters for the Hot Processing mode.

Result

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

Available operation scenarios:

- [Backing up a hard disk or partition to external media \(CD/DVD\)](#)
- [Backing up a hard disk or partition to a network drive](#)
- [Backing up a dual boot Mac to an external USB drive](#)

Restoring System and Data

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

Startup

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.






There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Setup

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


- **A backup image to be restored.** The Browse for Archive page enables to find a backup image you need. The section below (i.e. Archive File Details) will also display a short description of the selected image.

Look in:   

Name	Size	Date
arc_091013125156058		10/9/2013 11:17:27 PM
arc_091013131559760		10/9/2013 10:37:14 PM
arc_091013133756622		10/9/2013 6:38:02 AM
arc_091013140817551		10/10/2013 7:00:26 AM
arc_091013140825801		10/10/2013 7:00:44 AM
arc_101013053218496		10/9/2013 10:32:29 PM
arc_101013061434390		10/9/2013 11:14:51 PM
arc_101013062903344		10/9/2013 11:53:11 PM
arc_101013091536750		10/10/2013 2:15:43 AM
arc_101013091716250		10/10/2013 2:17:49 AM
arc_101013140759053		10/10/2013 7:08:19 AM
arc_101013141139475		10/10/2013 7:11:52 AM
arc_101013141139475.pbf	264.5 KB	10/10/2013 7:11:52 AM

[Switch to Archive List View](#)

Archive File Details



Name: **Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk)**

[Comment:](#) [No comment is available]

Type: Internal Hard Disk Drive

Total size: 120 GB

File: C:/arc_101013141139475/arc_101013141139475.pbf

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



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

File Backup Restore

- **Data to restore.** You've got the option to restore not only the entire archive, but separate items of it (the so called selective restore functionality) by marking checkboxes next to the data items you need.

Click the check box next to any file or folder you want to restore from

Name	Type	Size
<input type="checkbox"/> FB Archive	File Level Archive	589.5 KB (603,660 Bytes)
<input checked="" type="checkbox"/> /		
<input checked="" type="checkbox"/> C:		
<input checked="" type="checkbox"/> arc_091013140825801		
<input checked="" type="checkbox"/> arc_091013140825801.pfi	File	576 KB
<input checked="" type="checkbox"/> arc_091013140825801.pfm	File	1.5 KB

To continue, click **Next**

Data size to restore: **589.5 KB**

- **A place to restore.** From the pull-down list you can choose whether to restore contents of the backup image to its original location or specify some other one.

Restore files to:

The files and folders will be restored to the place where they were archived from.

When restoring files that already exist on your computer:

Leave existing files.
If a file exists in the original location, it won't be overwritten. Only missing/deleted files will be restored from backup.

Replace existing files
ALL selected files will be replaced with files from backup.

Besides if you select the Original location option, you can additionally define whether to replace already existing files during the restore operation (good for recovering presumably corrupted files) or leave them intact (good for recovering accidentally deleted files).

Sector Backup Restore

- **Data to restore.** You've got the option to restore not only the entire archive, but separate items of it (the so called selective restore functionality) by marking checkboxes next to the data items you need.

Please select one of the object(s) to restore:

Name	Type	File system	Size	Used
Basic MBR Hard Disk 3 (VMware, VMware...	Internal Hard Disk Drive		120 GB	
[-] New Volume (G:)	Primary	NTFS	14.2 GB	163.8 MB
[-] NEW VOLUME (E:)	Primary	Linux Ext4	8.3 GB	281.9 MB
[-] NEW VOLUME (H:)	Primary	FAT16	8 MB	0 Bytes
[-] NEW VOLUME (I:)	Primary	FAT32	5.8 GB	4 KB

Archive Details



Name: **Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Dis**
 Type: Internal Hard Disk Drive
 Total size: 120 GB

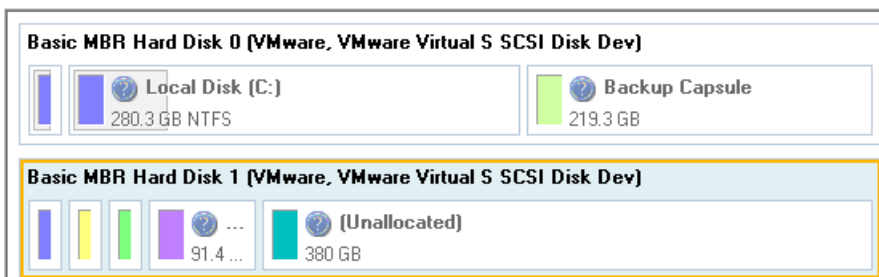
To select where to restore the selected object(s), click **Next**

Data size to restore: **120 GB**



If you select separate files or folders to restore, the wizard will continue working as though you've got to do with a file backup.

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



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

Restoring Partition:

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

Geometry Restore Options

Please specify the size of the restored partition: 167 MB - 767990 MB

Please specify size of free space before the partition: 0 MB - 753383 MB

Please specify size of free space after the partition: 0 MB - 753383 MB

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

Partition Restore Options

Assign the following drive letter:

- **Create new EFI boot entry for destination drive.** If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the following option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through [Boot Corrector](#).

Create new EFI boot entry for destination drive
 Mark the checkbox to create new EFI boot entry called "Windows Boot Manager" for destination hard drive.



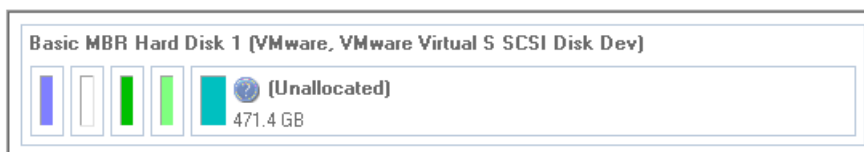
The option above will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

Restoring Hard Disk:



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

Your hard disk after the changes:



Hard Disk Restore Options

Copy data and resize partitions proportionally

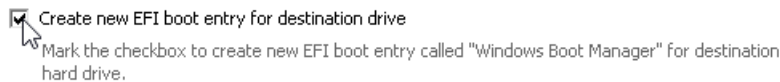
In this mode, the Wizard changes the size of partitions in the same proportion, with keeping intact their relative order. This option can be useful in restoring an image of hard disk to a larger one.

Perform surface test

Set this option if you want the Wizard to perform the surface test on the target hard disk. In this case, if the program finds bad and unreliable sectors it will mark them as unusable ones.

- **Copy data and resize partitions proportionally.** If this option is activated, the program proportionally changes the size of partitions keeping their relative order intact. The option can be useful when restoring to a larger hard disk.
- **Perform surface test.** Define whether the surface test will be accomplished during the operation or not.
- **Create new EFI boot entry for destination drive.** If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the following option will become available for you to define what instance of Windows OS

you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through [Boot Corrector](#).



The option above will be available to the user only if the target disk becomes Bootable GPT as a result of the migration process.

Result

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

Available operation scenarios:

- [Restoring a system partition from external media \(CD/DVD\)](#)
- [Restoring a system partition from a network drive](#)
- [Restoring a system partition from a local drive](#)
- [Restoring a dual boot Mac from an external USB drive](#)
- [Restoring separate files and folders from a backup](#)

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

- Click **Tool Button**, then select **Setup Boot Manager...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Setup

The wizard offers the following steps to accomplish the operation:

- **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.

Boot menu options

Normal mode

Timeout for booting last used configuration: 15 seconds

Hidden mode

Time to display the BootManager startup message: 15 seconds

Choose a hot key for startup BootManager: F1

- **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.

Configure

Choose this option to enter Settings page. You will be able to configure BootManager appearances and Boot Menu options.

Deactivate

Choose this option to deactivate BootManager. This will remove BootManager and restore boot process to its previous state.

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 within a block of un-partitioned space.

Restrictions

1. Do not use the Create Partition function in order to undelete the last deleted partition.
2. 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.
3. The program cannot create new partitions on Dynamic Disks.

Express Create Partition Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Express Create**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Create Partition Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Create Partition**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Dialog Startup

1. Select a block of free space on the Disk Map;
2. Call a context menu for the selected object by the right mouse click, then select **Create Partition**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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 result you will get after applying the changes:



The number of available methods depends on your disk layout.

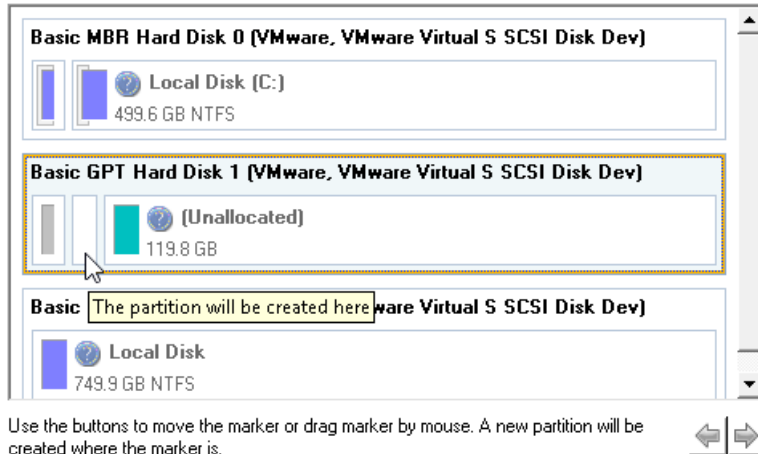
To learn more on the way the wizard works, please click the corresponding link on the first page of the wizard.

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.

On this page you can select hard disk and the place where to create a new partition.

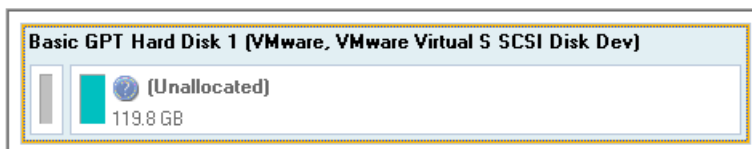


By default, the program allows you to create a new partition only as the last primary or as the last logical drive within the extended partition. However, by activating the advance mode on the first page of the wizard you can remove this restriction that in its turn might result in some boot problems.

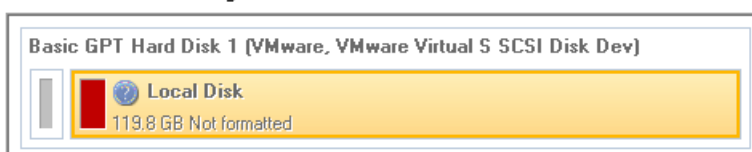
- **Partition size.** There is no restriction on size of the future partition, merely depending on space available on the hard disk.

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.

Your hard disk before the changes:



Your hard disk after the changes:



New volume - current size is 119.8 GB

Min Volume Size: 0 Bytes Max Volume Size: 119.8 GB



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:

Your hard disk after the changes:

Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)

New Volume (E:)
119.8 GB NTFS

Partition type: NTFS

Volume label: New Volume

Assign the following drive letter: E:

- **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.

Are you sure you want to create a new partition on disk 3?
You are about to create a new partition in (Unallocated), 119.9 GB area. Please select size, position and file system of the new partition.

Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)

New Volume (H:)
114.7 GB NTFS

Create new partition as: Primary partition

Please specify new partition size: 117546 8 MB - 122,879 MB

Please specify size of free space before the partition: 2551 0 MB - 122,870 MB

Please specify size of free space after the partition: 2782 0 MB - 122,870 MB

Please select file system for new partition: NTFS

Please enter new volume label: New Volume

Please specify drive letter: H:

More options Yes No

- **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 format routine

Please select number of sectors per cluster:

Restore defaults

- **Use OS built-in routine.** Mark the option to restrict the available values according to the used OS.
- **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
- HFS+
- NTFS
- Ext2
- Ext3
- Ext4
- Linux Swap v. 2

Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Format Partition**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Dialog Startup

1. Select a partition on the Disk Map;
2. Call a context menu for the selected object by the right mouse click, then select **Format Partition**.



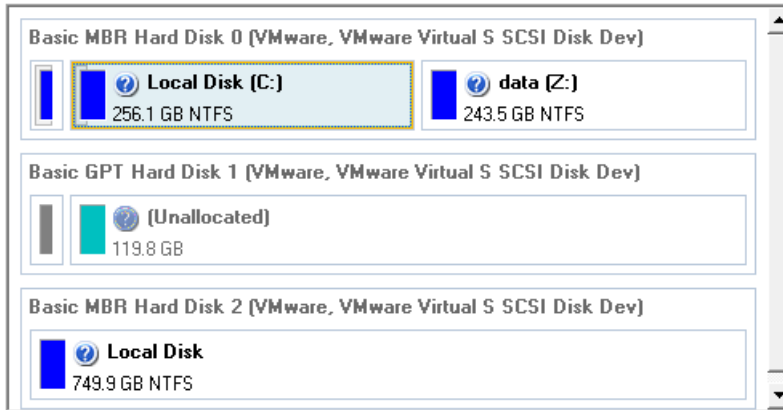
There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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.

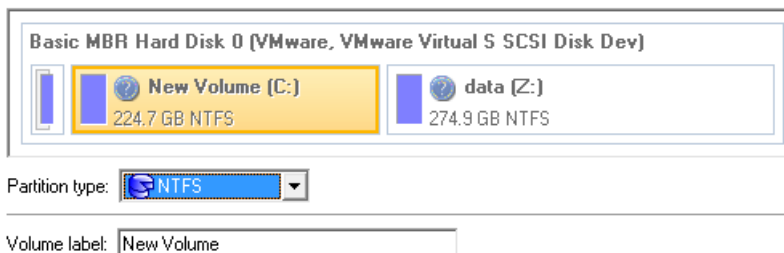
On this page, you can choose a volume you would like to format.



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:



- **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 sectors per cluster:



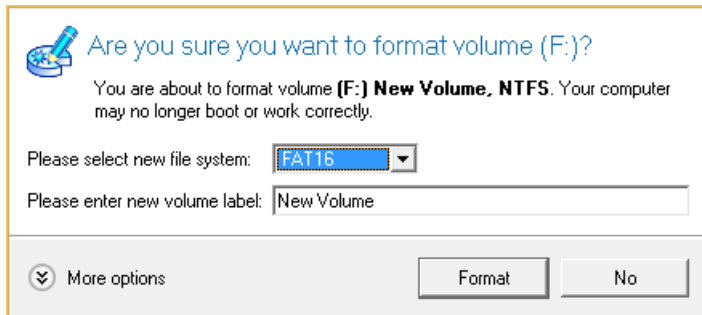
- **Use OS built-in routine.** Mark the checkbox to restrict the available values according to the used OS.
- **The amount of sectors per cluster.** Define the Cluster Size for the formatted partition with this spinner control.



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 format routine

Please select number of sectors per cluster:

Restore defaults

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

Wizard Startup

- Click the **Partitioning** tab on the Ribbon Panel, then select **Delete Partition**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Dialog Startup

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

1. Select a partition on the Disk Map;
2. Call a context menu for the selected object by the right mouse click, then select Create **Delete Partition**.



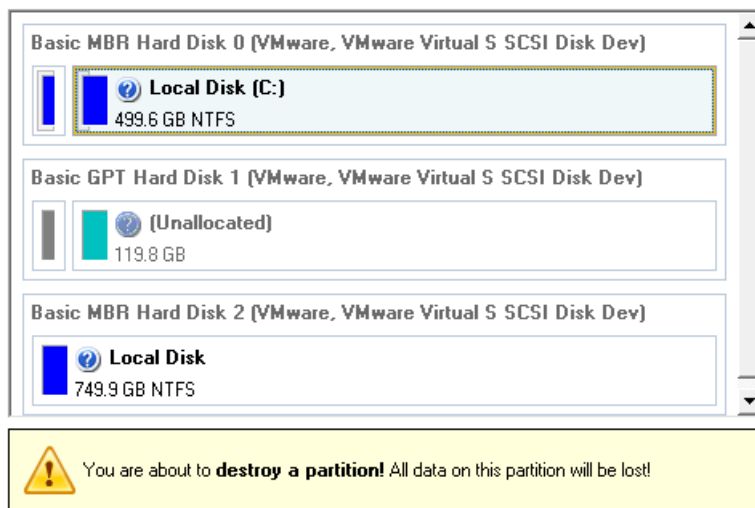
There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Wizard Setup

The wizard offers the following steps to accomplish the operation:

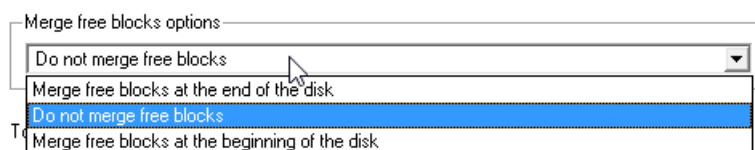
- **Partition to delete.** Select a hard disk (if the computer has several hard disks) and then the required partition to delete.

On this page, you can choose a volume you would like to delete.



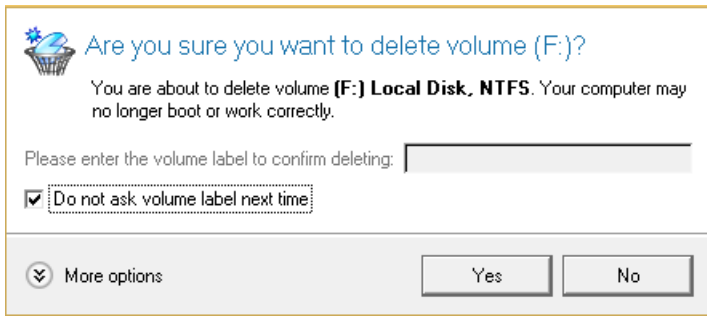
As a result of this operation contents of the selected partition will be lost.

- **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.

Merging Partitions

The Merge Partitions Wizard enables to consolidate the disk space, which originally belongs to two adjacent partitions (or additionally separated by free blocks), 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

- Click the **Partitioning** tab on the Ribbon Panel, then select **Merge Partitions**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Setup




The wizard offers the following steps to accomplish the operation:

- **Adjacent partitions to merge.** Click on the left partition of the pair of partitions you need to merge, as the right one will be selected automatically. During the operation all contents of the right partition will be placed in a folder on the resulted joined partition. By default, the program offers an easy-to-understand folder name, which can be customized however.

Please note that it is possible to select only FAT, FAT32 or NTFS adjacent partitions or FAT, FAT32 or NTFS partitions, separated from each other by free block. You will not be able to proceed further if no pair of partitions of these types are presented on the disk.

Select left partition from a pair you would like to merge. Right partition will be selected automatically. Please note that content of right partition will be placed within a folder, placed in a root of left partition. You can specify this folder name in a field below.

Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)

 System ... 2.1 GB NTFS	 Data (E:) 2.6 GB NTFS	 Utils (G:) 3.2 GB NTFS
--	---	--

Specify a folder name to keep content of right partition

Folder Name

To review the changes, click **Next**



If a system partition is the right one of the selected pair, Windows OS will become unbootable after the merge operation is over.

Result

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

Redistributing Unused Space between Partitions

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

- Click the **Partitioning** tab on the Ribbon Panel, then select **Express Resize Partitions**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

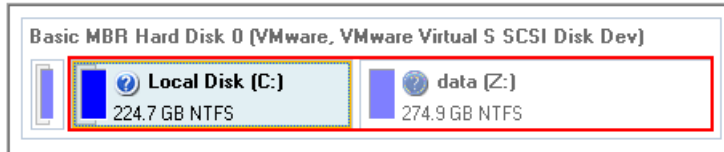
Setup

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.

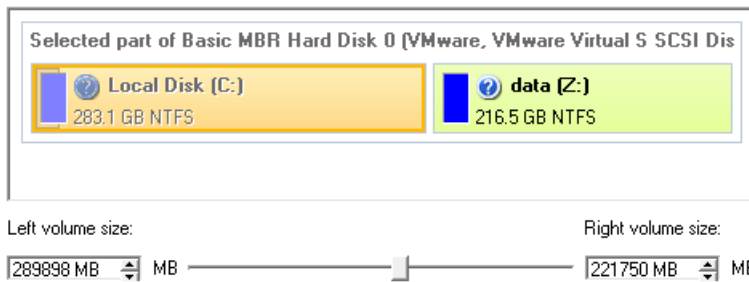
The wizard will resize space between **Local Disk (C:)** and **data (Z:)** on **Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)**.

Select left partition from a pair of adjacent partitions you would like to resize. Right adjacent partition 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.

Please specify new sizes of selected partitions.



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 logical 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

- Click the **Partitioning** tab on the Ribbon Panel, then select **Redistribute Free Space**.



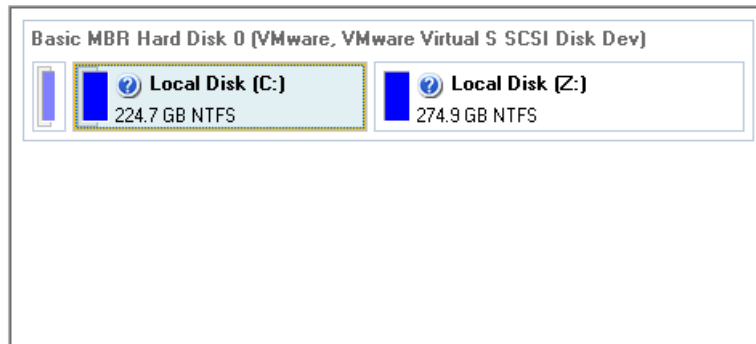
There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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.

Choose a volume to expand:



Capacity of the volume [C:] is **224.7 GB**. The wizard can expand this volume up to **499.5 GB** at the expense of other volumes.

[How will the wizard expand the volume?](#)

- **Partition to donate.** Choose any partition(s) (not only adjacent) to donate free space.

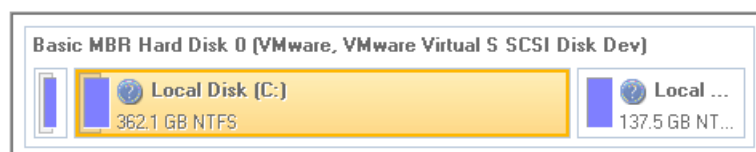
Select volumes to take space from. Free space from that volume will be used to enlarge the volume you have selected on the previous page.

Volume	File system	Type	Capacity	Used space	Free space	% Free
Z:	NTFS	Primary	274.9 GB	121.3 MB	274.8 GB	100%

There is no unallocated space on the hard disk you have selected. The wizard can only expand the volume [C:] at the expense of some other volumes. Please click the check box next to any volume to take free space from it.

- **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.

Your disk after the changes:



Select new size:

370,818 MB 230,114 MB - 511,522.66 MB

Current volume size: **362.1 GB**
The volume size has been increased on **137.4 GB**.

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

- Click the **Partitioning** tab on the Ribbon Panel, then select **Undelete Partitions**.



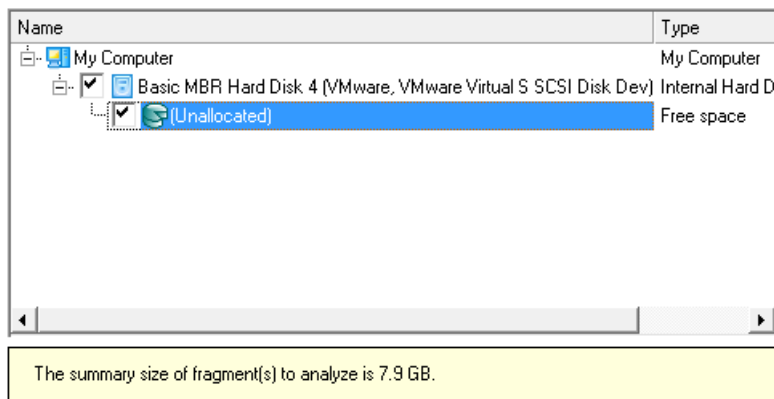
There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Setup

The wizard offers the following steps to accomplish the undelete partition operation:

- **Free blocks to scan for lost partitions.** Choose a free block from a tree-like list of available hard disks.

Click the check box next to any hard disk drive or free block you want to examine



- **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.

Choose how to look for the deleted partitions:

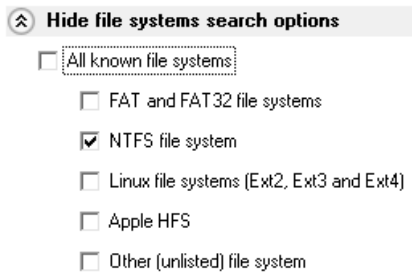
- Quick search for partitions, created by Vista or later OS
- Conventional search
- Thorough search

Show file systems search options



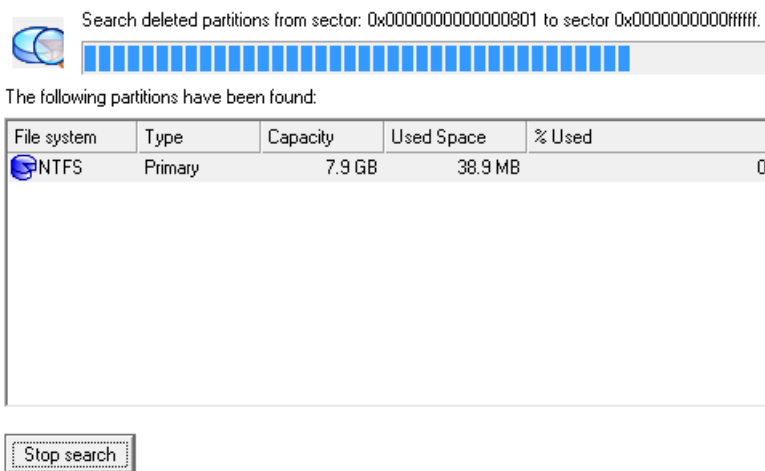
To know more on the available search methods, please use the context sensitive hint system.

- **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.



To begin search, click **Next**

- **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

- Click the **Partitioning** tab on the Ribbon Panel, then select **Install New OS Wizard**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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.

Where would you like to install an operating system?

- I want to create a new primary partition to install OS.

A new partition will be created by using unallocated space of your hard disk or unused space of existing partitions. It is the most preferable way as no system or user's data will be affected during the installation process.

- I want to use an existing primary partition to install OS.

In case creation of a new primary partition is not possible (there are already four primary partitions on the disk) or not desirable, you are free to select any of existing primary partitions. Please note that all data on the selected partition will be deleted if you choose to format it later in this wizard. Besides make sure no operating system has already been installed on that partition.

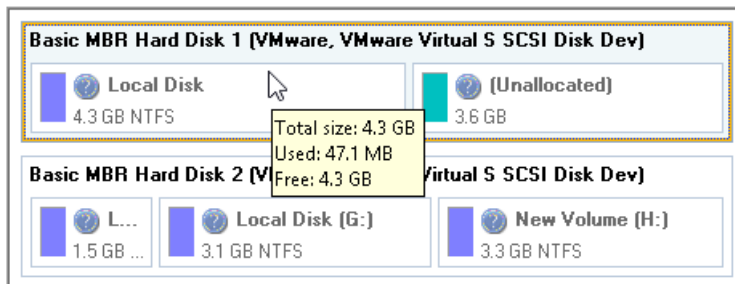


Only primary partitions can be used to install an operating system.

- 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;

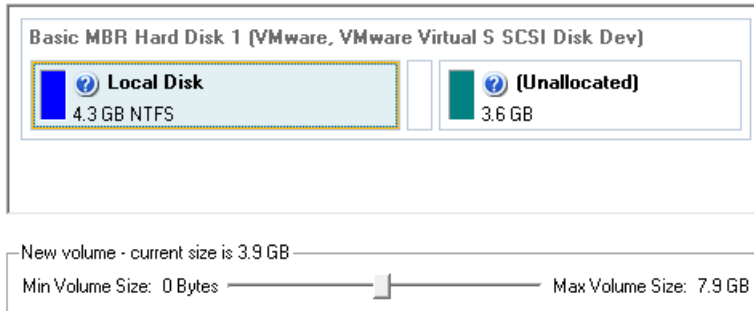
On this page you can choose a hard disk (if several) where you would like to create a new primary partition. Please make sure your BIOS is set up to boot from the selected disk.



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.

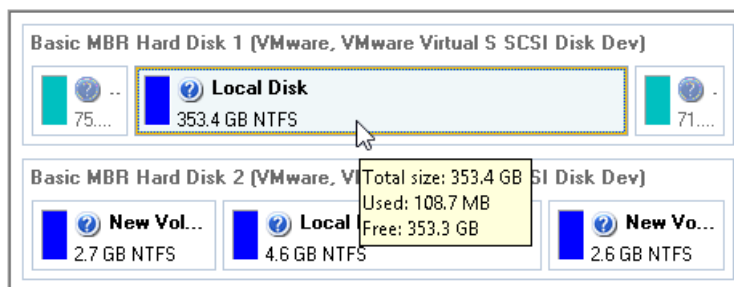
And its size. If there are blocks of the free space on the disk, the wizard will merge them all and allocate the resulted space for a new partition in the first place. If not, it will take 50% of the unused space of an adjacent partition. However, the size to take can be customized by moving the slider.

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



- 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. Please make sure your BIOS is set up to boot from the disk containing the selected partition.



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:

Assign the following drive letter:

Surface test level:

- **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:

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:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Move/Resize Partition...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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.

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](#)
- [Shrinking a system partition to increase size of a data partition](#)

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:

- FAT16/32 <> NTFS
- NTFS <> HFS

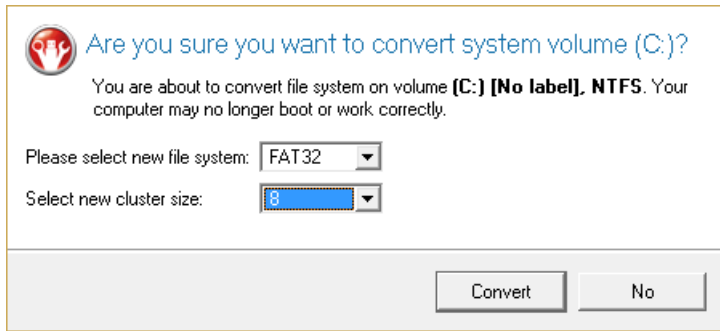
In order to convert a file system you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Convert file system...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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.

Changing Cluster Size

Cluster size is one of the crucial parameters of any file system. Its value implicitly affects the performance of the files input-output activity since it defines the size of the file system metadata. Besides, the so-called waste space factor also depends on the cluster size.

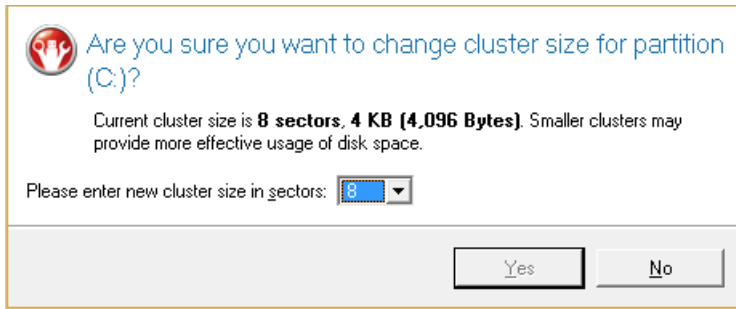
In order to change the cluster size of a partition you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Cluster Size...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

3. 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.



i The Cluster Size value is expressed in Sectors Per Cluster. To get the Cluster Size in Kbytes, divide it into half.

4. The operation will be performed immediately after confirmation.

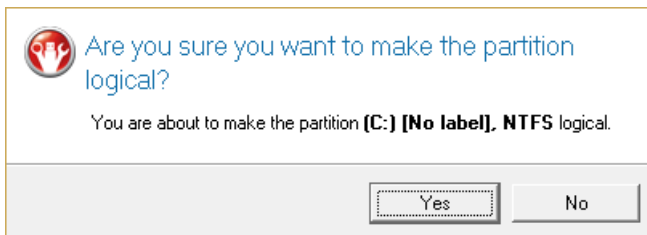
Making Logical/Primary

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:

1. Select a primary or logical partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Make Partition Logical/Primary**.

i There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



i The Make Primary > Logical option is only available when the selected partition is adjacent to the extended partition and vice versa.

i 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, Volume Label, etc.).

Mark Partition Active/Inactive

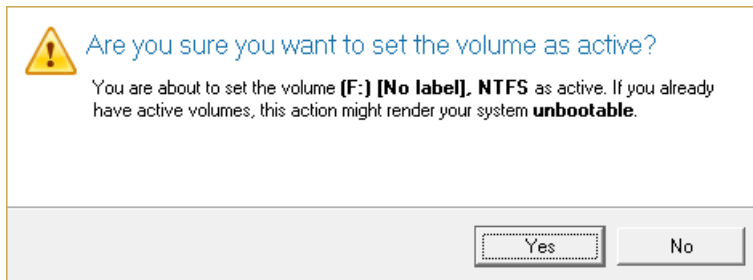
The program enables to set an active/inactive flag for primary partitions of a hard disk. By default, an operating system will boot only if its partition is active or bootable.

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 a context menu for the selected object by the right mouse click, then select **Mark Partition as Active/Inactive**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



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 a context menu for the selected object by the right mouse click, then select **Hide/Unhide Partition**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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 a context menu for the selected object by the right mouse click, then select **Change Volume Label**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

3. Enter a label for the selected partition.

The dialog box has a title bar with a red warning icon. The main text reads: "Are you sure you want to change label on volume (F:)?". Below this, it says "Please specify a volume label for easier recognition of your volume." There is a text input field with the label "Please enter new volume label:" and the text "New Volume" inside. At the bottom, there are two buttons: "Yes" and "No".

4. The operation will be performed immediately after confirmation.

Change Partition ID

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

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

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Partition ID...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

3. Set a new ID for the selected partition.

The dialog box has a title bar with a red warning icon. The main text reads: "Are you sure you want to change system ID of the partition (F:)?". Below this, it says "Current system ID is 0x07 NTFS, ExFAT, ReFS. Changing system ID might prevent some operating systems from working with the partition." There are two radio buttons: "Please select predefined ID from the list:" (which is selected) and "Please enter ID manually:". Under the first radio button is a dropdown menu showing "0x07 NTFS, ExFAT, ReFS". Under the second radio button is a text input field with "07" and a small icon to its right. At the bottom, there are two buttons: "Yes" and "No".

- **Predefined ID.** Select from the pull-down list the required ID.
 - **Enter ID manually.** With the spinner control set the required ID value. It has to be a 1-2 digit hexadecimal number.
4. The operation will be performed immediately after confirmation.

Change Serial Number of a Partition

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

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

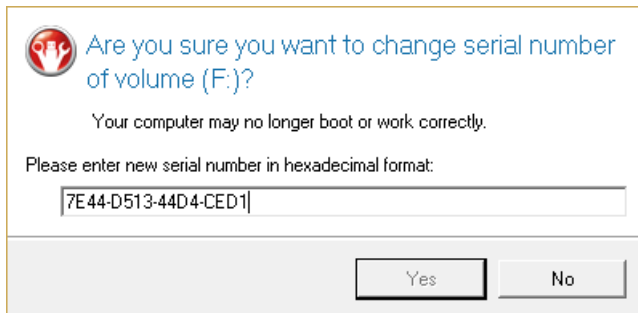
In order to change a serial number you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Serial Number**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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



4. The operation will be performed immediately after confirmation.

Hard Disk Management

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

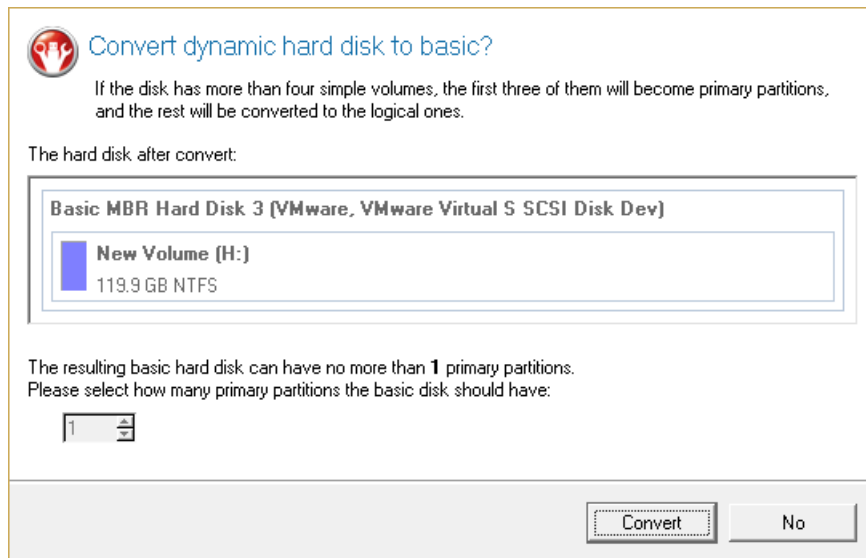
Converting Dynamic MBR to Basic

The program allows you to convert a dynamic MBR disk containing simple volumes into a basic one while keeping its contents intact.

In order to convert a dynamic MBR disk into basic you should take the following steps:

1. Select a dynamic MBR disk containing simple volumes on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Convert to Basic...**
3. Set the required number of primary partitions if necessary. According to the DOS partitioning scheme a hard disk can have up to four Primary partitions. If there is an Extended partition on the disk, only three primary partitions are allowed. That is why if a dynamic disk contains several simple volumes the program enables to

choose the number of primary partitions. The rest of them if any will automatically be converted to logical disks within the Extended partition.



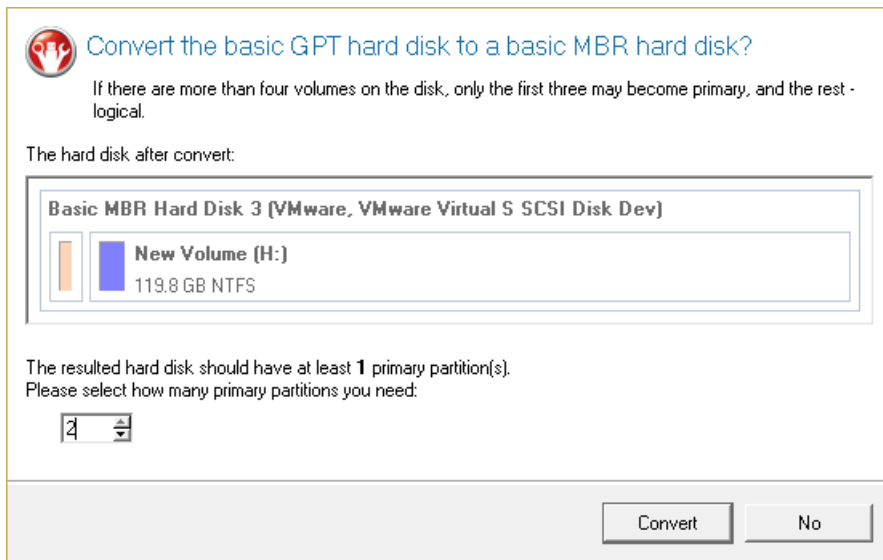
The program can only process dynamic disks containing solid simple volumes (without extension).

Converting GPT to Basic MBR

The program allows you to convert a basic or a dynamic GPT disk containing simple volumes into a basic MBR disk while keeping its contents intact.

In order to convert a basic or a dynamic GPT disk into a basic MBR disk you should take the following steps:

1. Select a basic or a dynamic GPT disk containing simple volumes on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Convert to Basic MBR Hard Disk...**
3. Set the required number of primary partitions if necessary. According to the DOS partitioning scheme a hard disk can have up to four Primary partitions. If there is an Extended partition on the disk, only three primary partitions are allowed. That is why if a GPT disk contains several volumes the program enables to choose the number of primary partitions. The rest of them if any will automatically be converted to logical disks within the Extended partition.



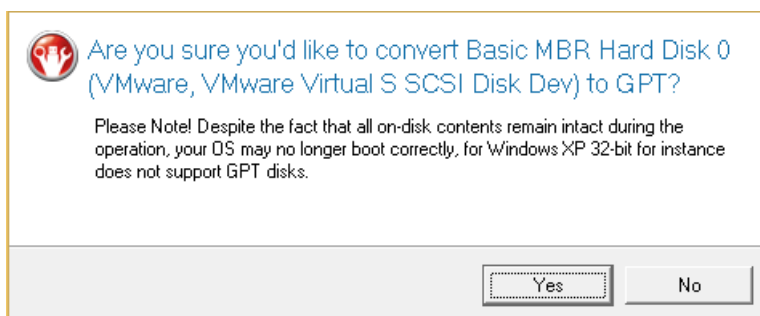
The program can only process dynamic GPT disks containing solid simple volumes (without extension).

Converting Basic MBR to GPT

The program allows you to easily convert a basic MBR disk into a basic GPT disk while keeping its contents intact. The operation is quite safe for the on-disk data, but you should know that only 64-bit Windows OSes since Vista are able to boot from this type of disks. So if you've got a 32-bit Windows OS accommodated on a disk you'd like to convert to GPT, it won't start up after the operation is over.

In order to convert a basic MBR disk to a basic GPT you should take the following steps:

1. Select a basic MBR hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Hard Disk > Convert to GPT hard disk**.



3. The operation will be performed immediately after confirmation.



The program can only convert basic MBR disks.

Updating MBR

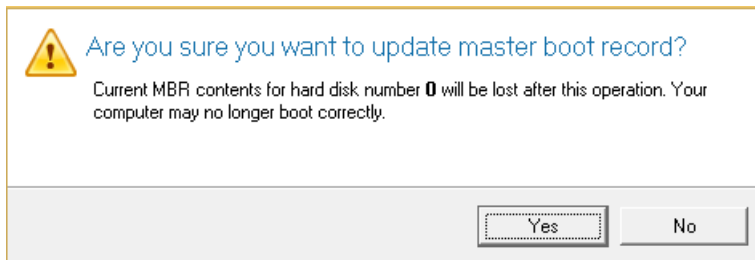
The program enables to overwrite the current bootable code in the MBR (Master Boot Record) by the standard bootstrap code. This can help to repair a corrupted bootable code of a hard disk resulted from a boot virus attack or a malfunction of boot management software.

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 a context menu for the selected object by the right mouse click, then select **Update MBR**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



3. The operation will be performed immediately after confirmation.

Changing Primary Slot

Different operating systems apply different approaches to enumeration of the primary partitions.

In Linux:

In Linux, every partition has a special symbolic name that encodes a hard disk containing a partition, and a partition itself. Partitions are addressed and accessed by using their symbolic names. Symbolic names are automatically generated by Linux in accordance with the order of hard disks in BIOS and the order of partition records in the Partition Table. Thus changing enumeration of the primary partitions can lead to changing of paths to some important resources.

In DOS:

The last versions of MS-DOS use a rather sophisticated algorithm for a drive letter assignment. A drive letter, which is assigned to a partition, depends on the order of records in the Partition Table. Thus changing enumeration of the primary partitions affects the drive letters assignment. In early versions of MS-DOS, it could even lead to the unavailability of a partition.

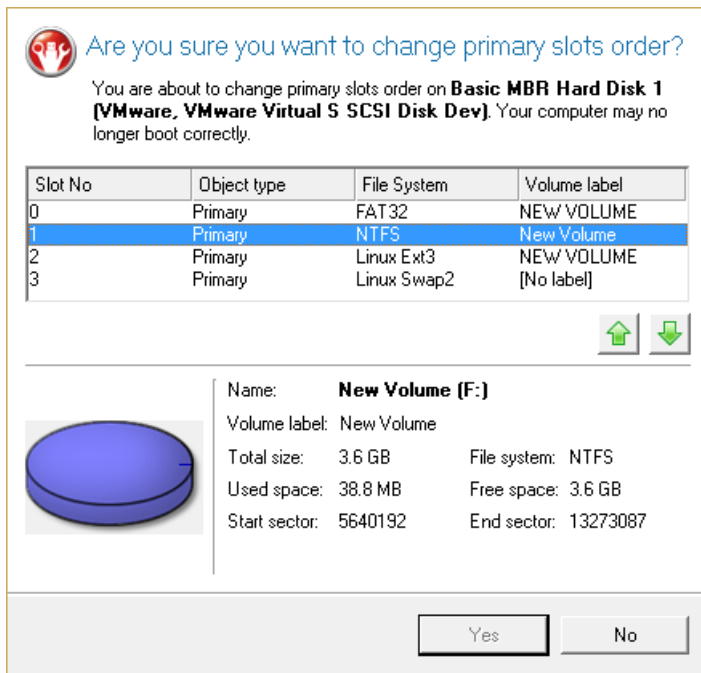
The program provides the ability to change enumeration of the primary partitions. This feature will allow you to fix problems concerning an inappropriate order of partitions.

In order to modify enumeration of the primary partitions you should take the following steps:

1. Select a hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Change Primary Slot**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



3. In the opened dialog you can see the current enumeration of the primary partitions of the selected hard disk in the Partition Table. To help you distinguish partitions from one another, the program provides the following parameters for every partition:

- Slot
- Volume
- Partition type
- File system
- Partition size
- Volume label

There are two buttons on the right to move the selected partition up and down within the primary part of the Partition Table.

4. 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

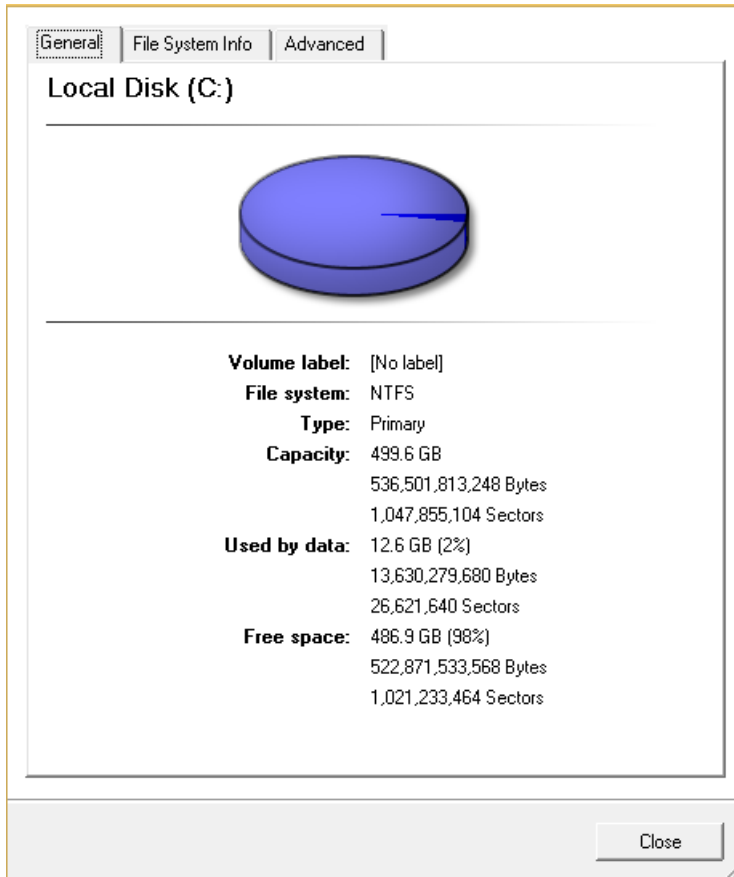
The program enables to obtain in-depth information on the properties of hard disks and partitions. Besides the general information, such as capacity, used space or file system type it provides the possibility to get info on hard disk geometry, cluster size, exact partition location, etc.

To get properties on a partition/hard disk, please do the following:

1. Choose a partition/hard disk on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Properties...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



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

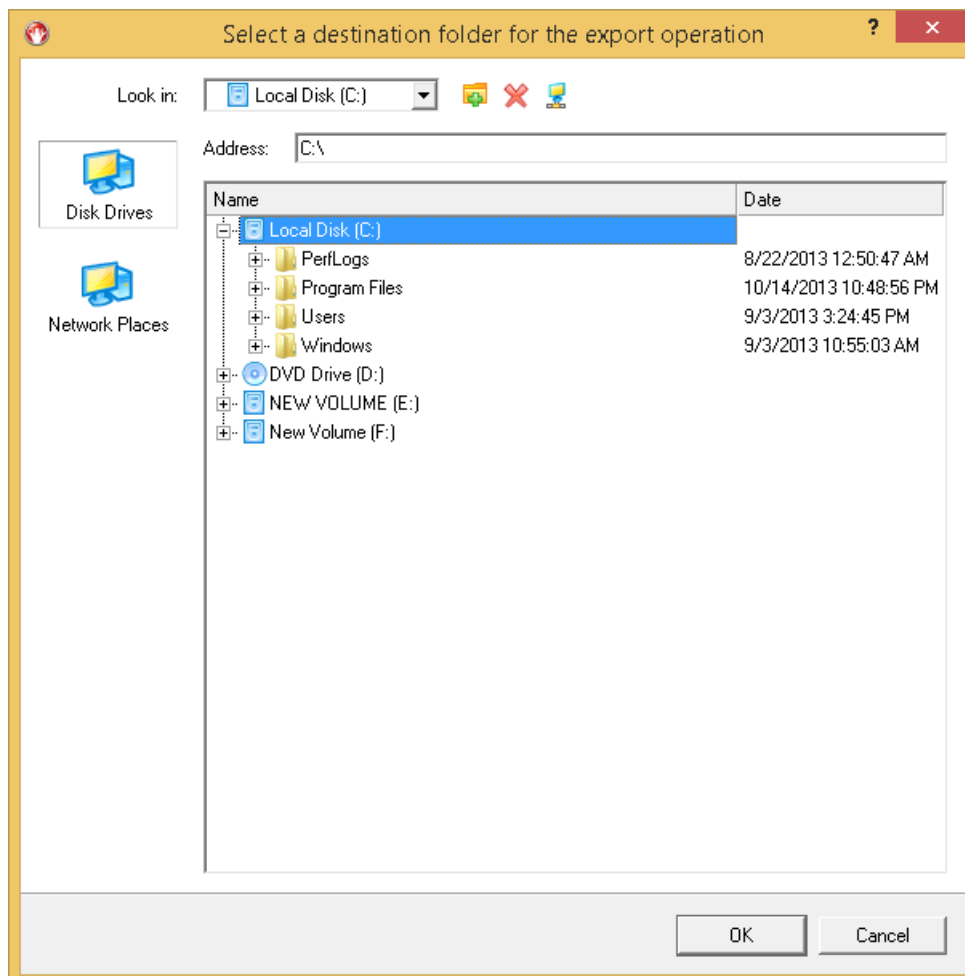
Volume Explorer

Volume Explorer is a special tool to browse and export contents of the local mounted/unmounted volumes formatted to FAT16, FAT32, NTFS, Ext2FS, Ext3FS, Ext4FS, reFS file systems. Besides it enables to access Paragon backups as regular folders to explorer their contents or to retrieve certain files.

Click the **Volume Explorer** tab on the Ribbon Panel to open it:

Name	Size	Modified
Drives		
A:/		
C:/		
D:/		
Z:/ - POOL		
Hard Disks		
1. VMware, VMware Virtual S SCSI Disk Device	500 GB	
1. Primary NTFS	350 MB	
2. Primary NTFS (C:)	499.6 GB	
\$Recycle.Bin		9/3/2013 1:49:11 PM
Documents and Settings		8/22/2013 6:45:52 AM
PerfLogs		8/22/2013 7:22:35 AM
Program Files		10/22/2013 4:01:15 AM
Program Files (x86)		9/3/2013 1:54:48 PM
ProgramData		10/22/2013 7:00:32 AM
System Volume Information		10/22/2013 4:00:53 AM
Users		9/3/2013 1:48:22 PM
Windows		9/3/2013 9:43:00 AM
bootmgr	417.6 KB	8/21/2013 9:31:45 PM
BOOTNXT	1 Bytes	6/18/2013 4:18:29 AM
pagefile.sys	1.1 GB	10/22/2013 3:37:45 AM
swapfile.sys	256 MB	10/22/2013 3:37:46 AM
2. VMware, VMware Virtual S SCSI Disk Device	500 GB	
3. VMware, VMware Virtual S SCSI Disk Device	750 GB	
4. VMware, VMware Virtual S SCSI Disk Device	120 GB	
Virtual Drives		

Call a context menu for the selected file/folder by the right mouse click to export it to some other location (local or network drive, etc.).



Available operation scenarios:

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



The current version of the program does not enable to access pVHD images and file archives with Volume Explorer.

File Transfer Wizard

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

Startup

- Click **Tool Button**, then select **File Transfer Wizard**.



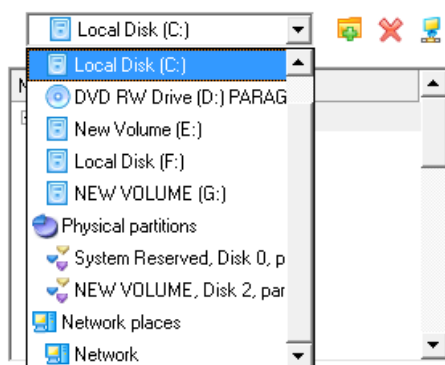
There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Setup

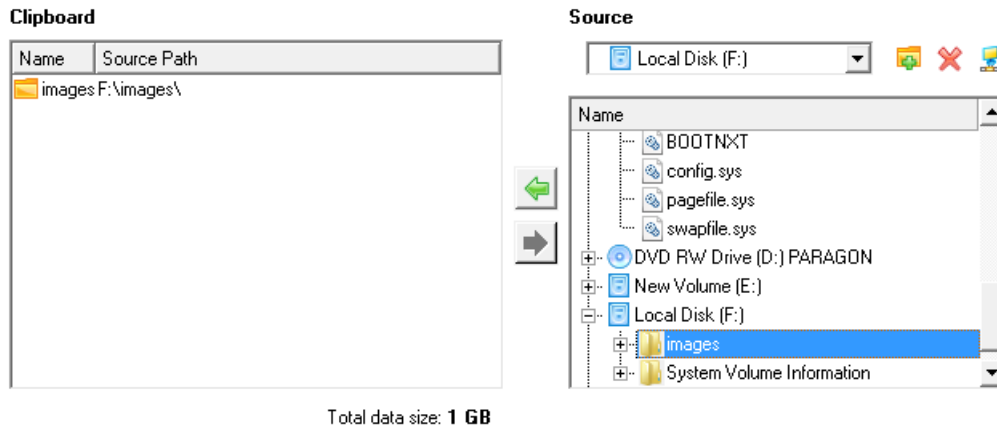
The wizard offers the following steps to accomplish the transfer operation:

- **Place to look for files/directories.** Select a source disk from the pull-down list in the left pane of the page. The program enables to process both mounted and unmounted (without drive letter assigned) partitions. Besides it is possible to map a network drive.

Source



- **Object(s) of operation.** Choose files/directories you want to copy and place them to Clipboard by pressing the Add button. To delete a file/directory from the Clipboard, select it in the Clipboard pane and press the Remove button. You can also create a new folder, rename or irreversibly delete existing files/directories of the left pane by pressing the appropriate buttons.



Files/directories deleted from the Clipboard remain intact on source disks.

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

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

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

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

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

Objects to transfer	
Object(s) selected:	1
Total data size:	1 GB (1,078,198,272 Bytes)
Transfer destination	
Destination path:	C:\
Space available on destination:	485.9 GB (521,742,041,088 Bytes)
Overwrite existing files:	No

Result

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

Available operation scenarios:

- [Copying of data from the corrupted system disk to another hard disk](#)
- [Burning of data from the corrupted system disk to CD/DVD](#)
- [Copying of data from a backup to the corrupted system partition](#)
- [Restoring separate files and folders from a backup](#)

Mount Partition

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

Assign Drive Letter

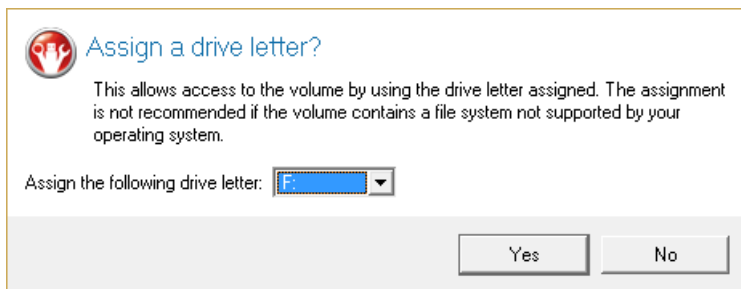
In order to mount a partition you should take the following steps:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Assign Drive Letter...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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:

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Remove Drive Letter**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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 MFT

The MFT (Master File Table) is an NTFS system file that contains in-depth information on files, including size, time and date stamps, permissions, and data contents. In the course of time the MFT file can also be fragmented, thus slowing down the speed at which data is accessed.

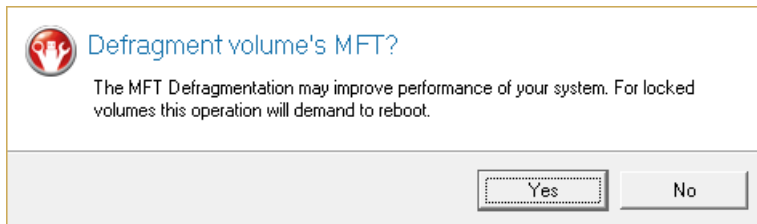
The program enables to defragment the MFT file.

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

1. Select an NTFS partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Defragment MFT...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



3. The operation will be performed immediately after confirmation.

Compact MFT

The program enables to re-write MFT (Master File Table) in a more compact way to increase the access speed to files on NTFS partitions.

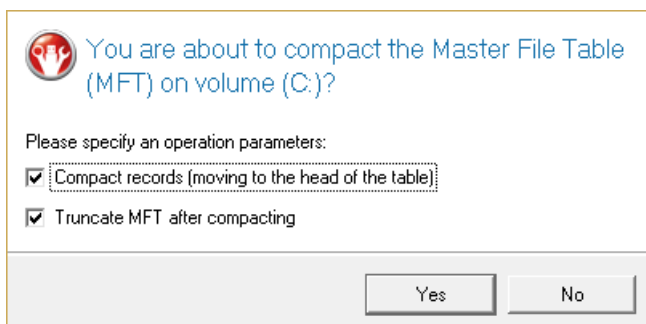
In order to start the operation you should take the following steps:

1. Select an NTFS partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Compact MFT...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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.



- **Compact records.** Mark the option to re-write MFT records and shift them to the head of the table.
- **Truncate MFT after compacting.** Mark the option to remove table rows emptied during the operation.

1. The operation will be performed immediately after confirmation.

Test Surface

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

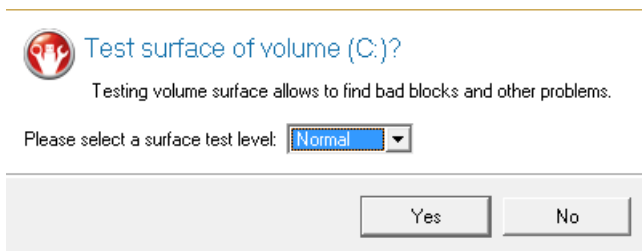
In order to start the surface test you should take the following steps:

1. Select a partition or a block of free space on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Test Surface...**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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



4. The operation will be performed immediately after confirmation.

Check File System Integrity

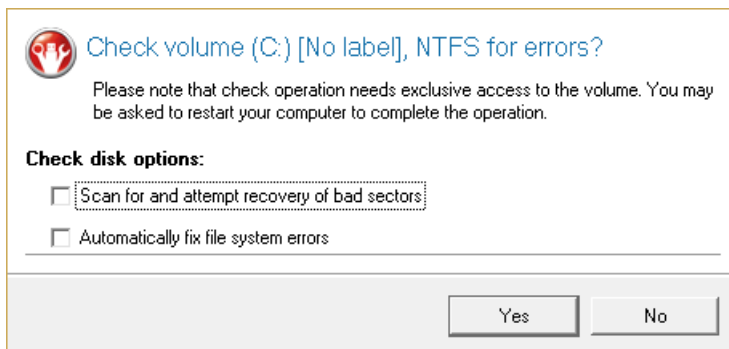
The program allows you to check integrity of a file system. It can be used to detect possible file system errors before performing any operation on a partition.

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

1. Select a partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Check File System Integrity**



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.



3. The operation will be performed immediately after confirmation.

Edit/View Sectors

With the built-in Edit/View Sectors tool the program enables to view/edit sectors on existing partitions/hard disks providing the possibility to directly access and modify sectors, save and restore sectors from specified files, navigate through the system metadata, etc.

In order to edit/view sectors of a hard disk/partition you should take the following steps:

1. Select a hard disk/partition on the Disk Map.
2. Call a context menu for the selected object by the right mouse click, then select **Edit/View Sectors**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

Edit sectors on Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
Current sector is 0 of 1,048,575,999.

Please select sector number:

0x00000000	00000000	33 c0 8e d0 bc 00 7c 8e c0 8e d8 be 00 7c bf 00	3Ã.Ð% .Ã.Ø
0x00000000	00000010	06 b9 00 02 fc f3 a4 50 68 1c 06 cb fb b9 04 00	..üóPPh..
0x00000000	00000020	bd be 07 80 7e 00 00 7c 0b 0f 85 0e 01 83 c5 10	%%.%
0x00000000	00000030	e2 f1 cd 18 88 56 00 55 c6 46 11 05 c6 46 10 00	ãñí.V.UÆF.
0x00000000	00000040	b4 41 bb aa 55 cd 13 5d 72 0f 81 fb 55 aa 75 09	'A»»Uí.]r..
0x00000000	00000050	f7 c1 01 00 74 03 fe 46 10 66 60 80 7e 10 00 74	+Ã.t.þF.f'
0x00000000	00000060	26 66 68 00 00 00 00 66 ff 76 08 68 00 00 68 00	&fh...fÿv..
0x00000000	00000070	7c 68 01 00 68 10 00 b4 42 8a 56 00 8b f4 cd 13	h..h.'B.V
0x00000000	00000080	9f 83 c4 10 9e eb 14 b8 01 02 bb 00 7c 8a 56 00	..Ã..ë.,...»
0x00000000	00000090	8a 76 01 8a 4e 02 8a 6e 03 cd 13 66 61 73 1c fe	.v..N..n.í.
0x00000000	000000A0	4e 11 75 0c 80 7e 00 80 0f 84 8a 00 b2 80 eb 84	N.u..~.....
0x00000000	000000B0	55 32 e4 8a 56 00 cd 13 5d eb 9e 81 3e fe 7d 55	U2ä.V.í.jë.
0x00000000	000000C0	aa 75 6e ff 76 00 e8 8d 00 75 17 fa b0 d1 e6 64	ëunyv.è..u.
0x00000000	000000D0	e8 83 00 b0 df e6 60 e8 7c 00 b0 ff e6 64 e8 75	è..*Bæ`è .*
0x00000000	000000E0	00 fb b8 00 bb cd 1a 66 23 c0 75 3b 66 81 fb 54	.ú.,»í.f#Åu
0x00000000	000000F0	43 50 41 75 32 81 f9 02 01 72 2c 66 68 07 bb 00	CPAu2..ù..r.
0x00000000	00000100	00 66 68 00 02 00 00 66 68 08 00 00 00 66 53 66	.fh...fh..
0x00000000	00000110	53 66 55 66 68 00 00 00 66 68 00 7c 00 00 66	SfUfh...fh
0x00000000	00000120	61 68 00 00 07 cd 1a 5a 32 f6 ea 00 7c 00 00 cd	ah...í.Z2öè
0x00000000	00000130	18 a0 b7 07 eb 08 a0 b6 07 eb 03 a0 b5 07 32 e4	...ë.¶.ë.
0x00000000	00000140	05 00 07 8b f0 ac 3c 00 74 09 bb 07 00 b4 0e cd	...ë-<t.».»
0x00000000	00000150	10 eb f2 f4 eb fd 2b c9 e4 64 eb 00 24 02 e0 f8	..ëöëÿ+Ëädë
0x00000000	00000160	24 02 c3 49 6e 76 61 6c 69 64 20 70 61 72 74 69	\$.ÃInvalid :
0x00000000	00000170	74 69 6f 6e 20 74 61 62 6c 65 00 45 72 72 6f 72	tion table..
0x00000000	00000180	20 6c 6f 61 64 69 6e 67 20 6f 70 65 72 61 74 69	loading op
0x00000000	00000190	6e 67 20 73 79 73 74 65 6d 00 4d 69 73 73 69 6e	ng system.M
0x00000000	000001A0	67 20 6f 70 65 72 61 74 69 6e 67 20 73 79 73 74	g operating
0x00000000	000001B0	65 6d 00 00 00 63 7b 9a 72 4c fb 18 00 00 80 20	em...c{.rLü
0x00000000	000001C0	21 00 02 75 10 25 00 00 00 00 00 00 00 00 00	...y

Close



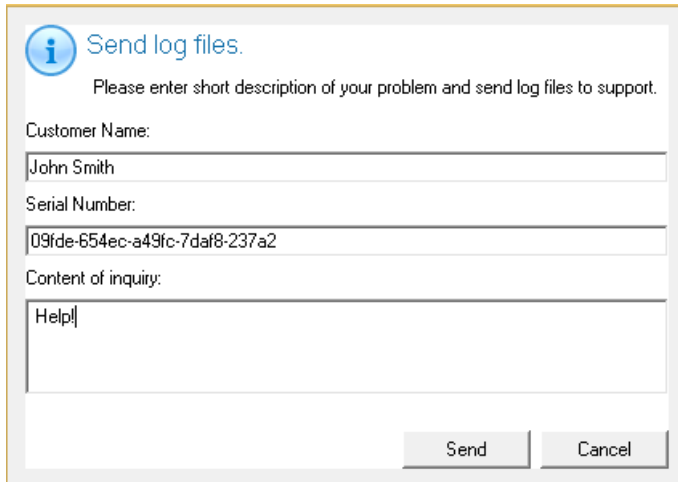
Careless use of the Edit Sectors function may result in the irreversible data corruption.

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:

1. Click **Tool Button**, then select **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 do not contain any confidential information on the operating system settings or the user documents.

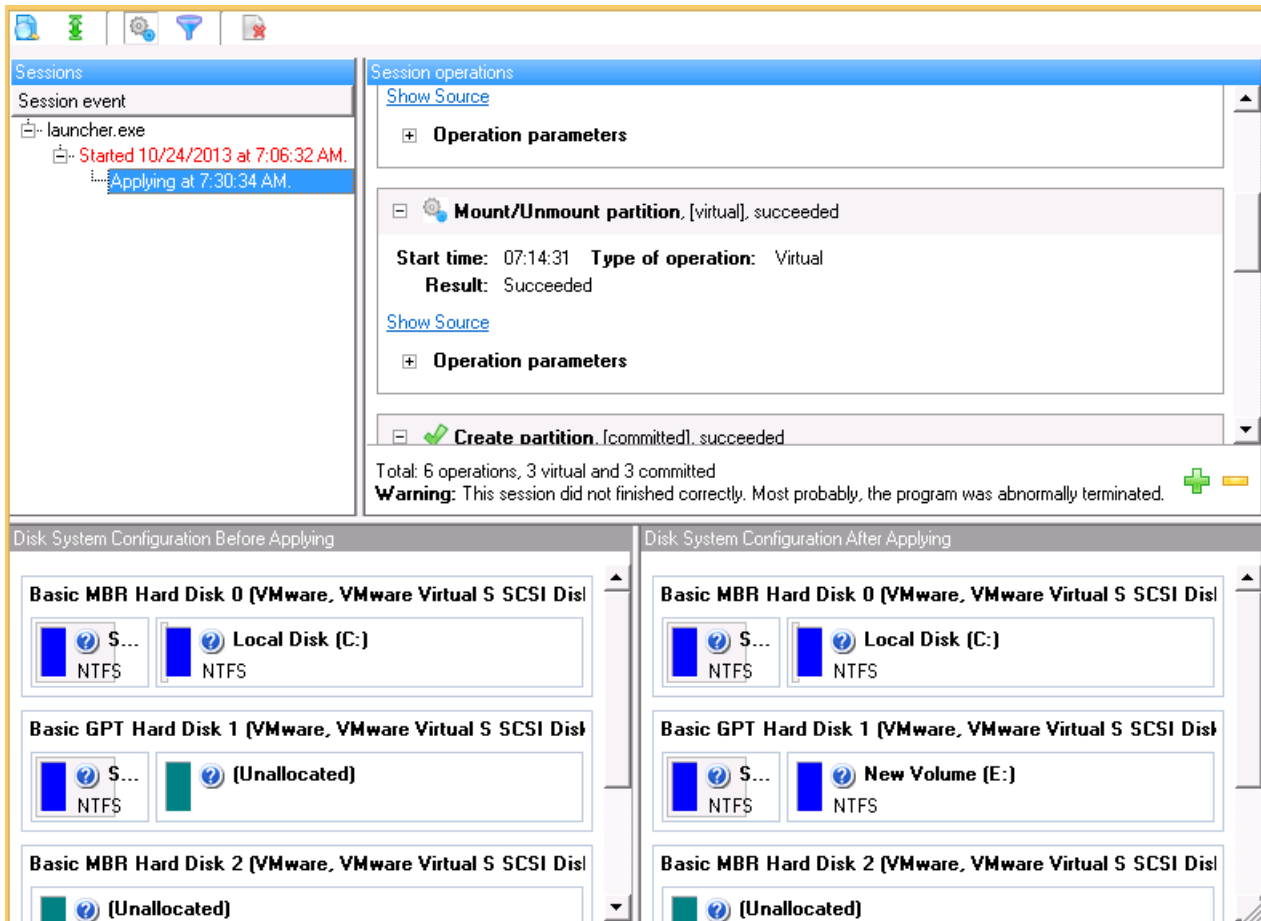


The Send Log Files function is only available when outgoing mail server (SMTP) and the user e-mail address are properly set. To learn more about it please consult the [Settings Overview chapter](#).

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.

In order to view logs on carried out operations, click **Tool Button**, then select **View Log Files**.



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 external media (CD/DVD)

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

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Back up a Disk or Partition**.




There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

2. On the Wizard's Welcome page, click the Next button.
3. On the next page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.

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

Name	Type	File system	Size	U:
My Computer	My Computer			
<input checked="" type="checkbox"/> Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive		500 GB	
<input type="checkbox"/> First Hard Disk Track	First Track		0 Bytes	
<input type="checkbox"/> Master Boot Record	MBR		0 Bytes	
<input checked="" type="checkbox"/> Local Disk	Primary	NTFS	350 MB	2E
<input checked="" type="checkbox"/> Local Disk (C:)	Primary	NTFS	280.3 GB	E
Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive		500 GB	
<input type="checkbox"/> First Hard Disk Track	First Track		0 Bytes	
<input type="checkbox"/> Master Boot Record	MBR		0 Bytes	
<input type="checkbox"/> Local Disk (F:)	Primary	NTFS	499.6 GB	E
<input type="checkbox"/> NEW VOLUME	Primary	Linux Ext4	350 MB	E
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive		750 GB	
<input type="checkbox"/> First Hard Disk Track	First Track		0 Bytes	
<input type="checkbox"/> Master Boot Record	MBR		0 Bytes	

 The size of objects to back up: **280.3 GB**
Estimated archive size **48.3 GB**



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




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

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

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

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

Select a recorder to burn archive images to.

Name	Disc types
 NECVMWare VMware IDE CDR10	CD-R/RW; DVD-R/RW; DVD-RAM
 ISV CD Burner Emulator	CD-R/RW
 ISV DVD Burner Emulator	DVD+R/RW

Archive details

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

Estimated archive size: **3.1 GB**



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

- Add comments to your backup describing its contents.

Please enter a short comment to describe the archive



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



This operation can also be accomplished with our recovery media.

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:

For PBF images

- Click the **Backup & Restore** tab on the Ribbon Panel, then select **Back up a Disk or Partition**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

- On the Wizard's Welcome page, click the Next button.
- On the next page, mark the appropriate option opposite a hard disk's name or a partition's name depending on the chosen task.

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

Name	Type	File system	Size	U:
My Computer	My Computer			
<input checked="" type="checkbox"/> Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive		500 GB	
<input type="checkbox"/> First Hard Disk Track	First Track		0 Bytes	
<input type="checkbox"/> Master Boot Record	MBR		0 Bytes	
<input type="checkbox"/> Local Disk	Primary	NTFS	350 MB	2E
<input checked="" type="checkbox"/> Local Disk (C:)	Primary	NTFS	280.3 GB	E
<input type="checkbox"/> Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive		500 GB	
<input type="checkbox"/> First Hard Disk Track	First Track		0 Bytes	
<input type="checkbox"/> Master Boot Record	MBR		0 Bytes	
<input type="checkbox"/> Local Disk (F:)	Primary	NTFS	499.6 GB	F
<input type="checkbox"/> NEW VOLUME	Primary	Linux Ext4	350 MB	E
<input type="checkbox"/> Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)	Internal Hard Disk Drive		750 GB	
<input type="checkbox"/> First Hard Disk Track	First Track		0 Bytes	
<input type="checkbox"/> Master Boot Record	MBR		0 Bytes	



The size of objects to back up: **280.3 GB**
Estimated archive size **48.3 GB**



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

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

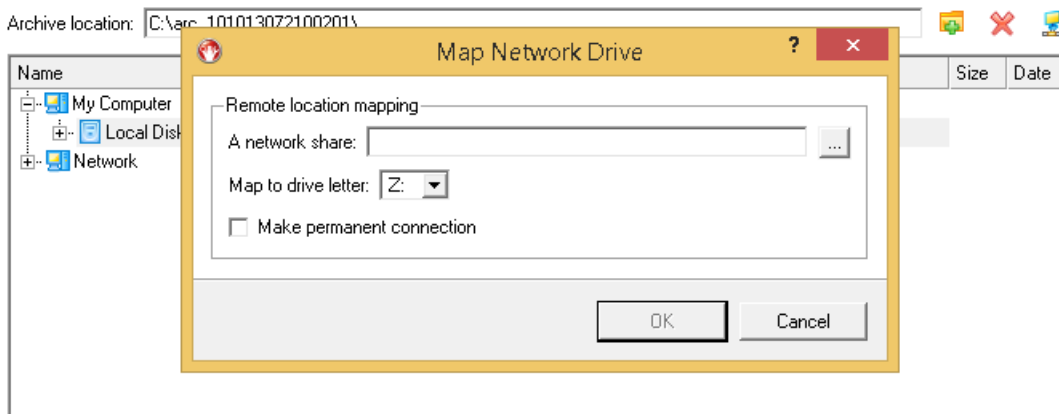
There are several ways the Wizard can store your data. Please select how would you like to save the archive:

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

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

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

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



- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
- Define a letter from the pull-down list of available drive letters;
- Mark the checkbox to make this connection permanent. Otherwise it will only be available for the current Windows session;
- Click the Connect as user button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

6. Edit the archive name if necessary.

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

Archive details

Archive name:	<input type="text" value="arc_091013135006539"/>
Estimated archive size:	5.5 GB
Space available on backup destination:	10.7 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.

7. Add comments to your backup describing its contents.

Please enter a short comment to describe the archive



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

For pVHD images

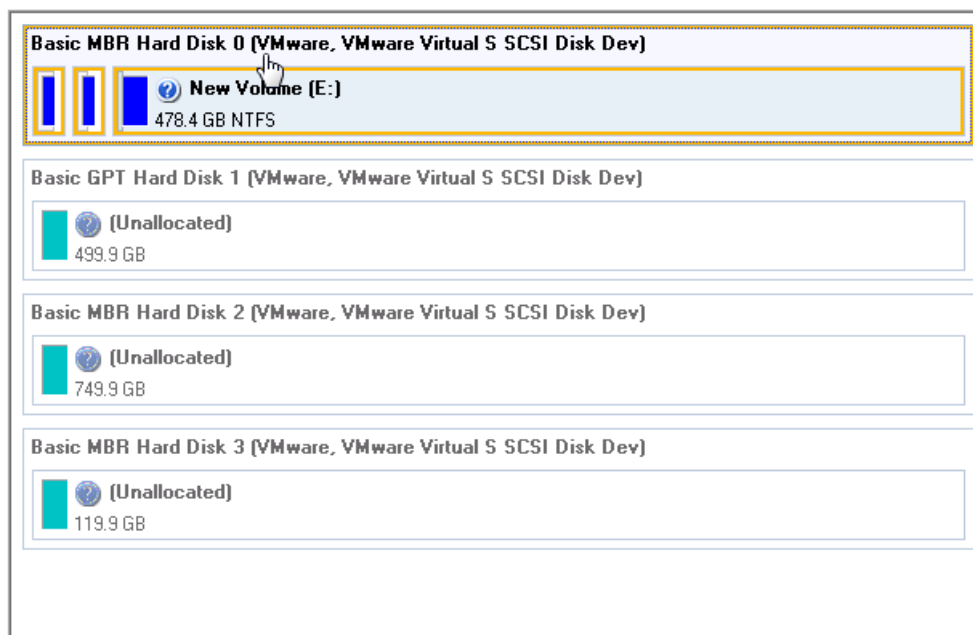
1. Click the **New Backup Format** tab on the Ribbon Panel, then select **Backup to VD**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

2. On the Wizard's Welcome page, click the Next button.
3. Select partitions or entire hard disks you'd like to back up by using **Shift** or **Ctrl** to select several objects at once. Click **Next** to proceed.

Press **Shift** or **Ctrl** to select several objects at once.



Change backup settings

Note: This option is recommended for advanced users only.

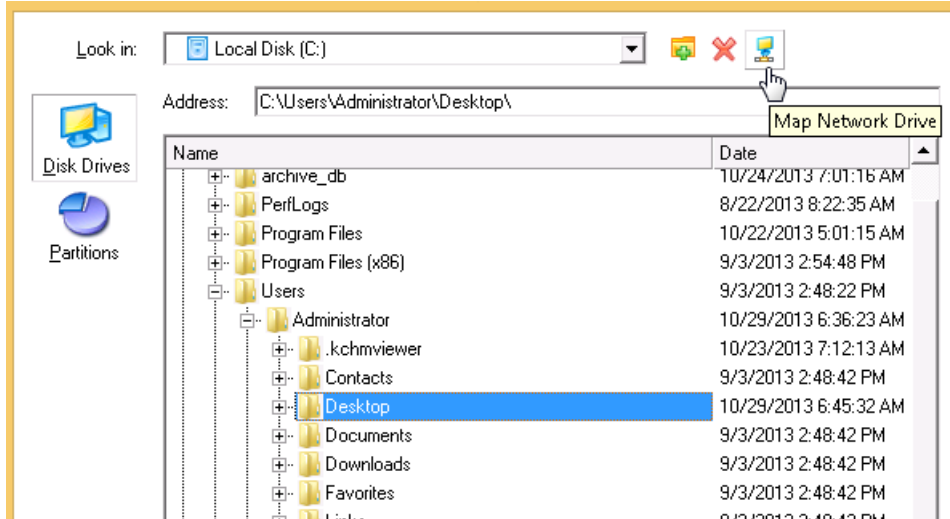


You've got the option to modify the default backup settings by marking the appropriate checkbox on this page.

4. Specify location of the resulted pVHD in the 'Backup destination' section. If you'd like to save it locally, either enter a full path to the target folder in the corresponding field or use the **Browse** button to find it.

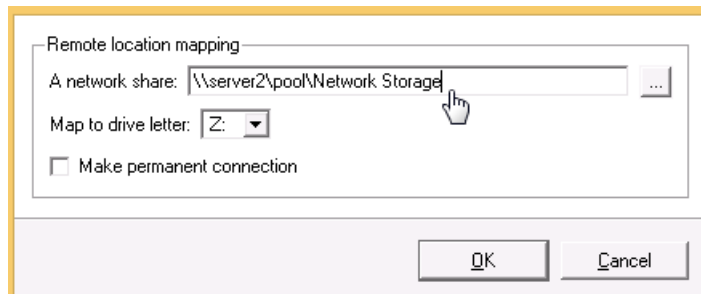


If you're going to save the backup image on a network share, or a physical partition (a partition that doesn't have a drive letter in the system), click on the **Browse** button. In the opened dialog you can see several options:

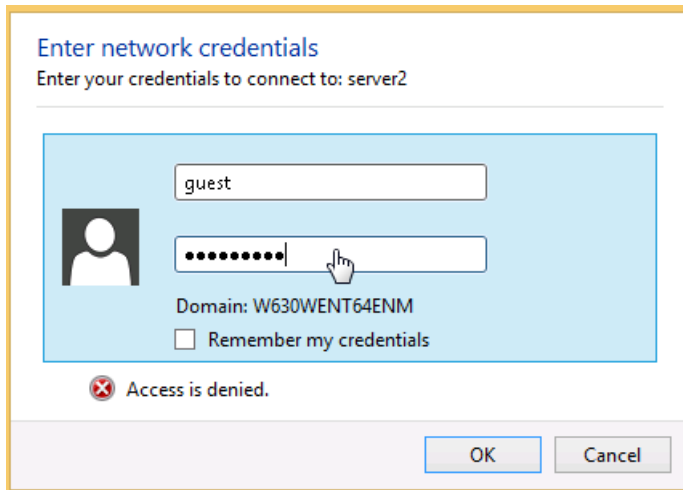


- Select **Disk Drives** to use a local disk as backup destination;
- Select **Partitions** to use a physical partition as backup destination;
- Click on the **Map Network Drive** icon to map a network share to use it as backup destination (our case).

5. To map a network share, please do the following:



- 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;
- Specify a user name and password to access the selected network share if necessary.



- Click **OK** when ready.
6. Edit the default archive name and description in the 'Archive details' section if necessary. Click **Next** to proceed.

Image details

Backup name	Backup_HDD0_20131029_0713
Backup description	Backup_image_20131029_0713

7. Click **Finish** to complete the wizard, then apply the pending changes.



This operation can also be accomplished with our recovery media.

Backing up a dual boot Mac to an external USB drive

To back up a dual boot Mac (Mac OS X and Windows XP/Vista/7/8) and then place the resulted image to an external USB drive, please do the following:

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

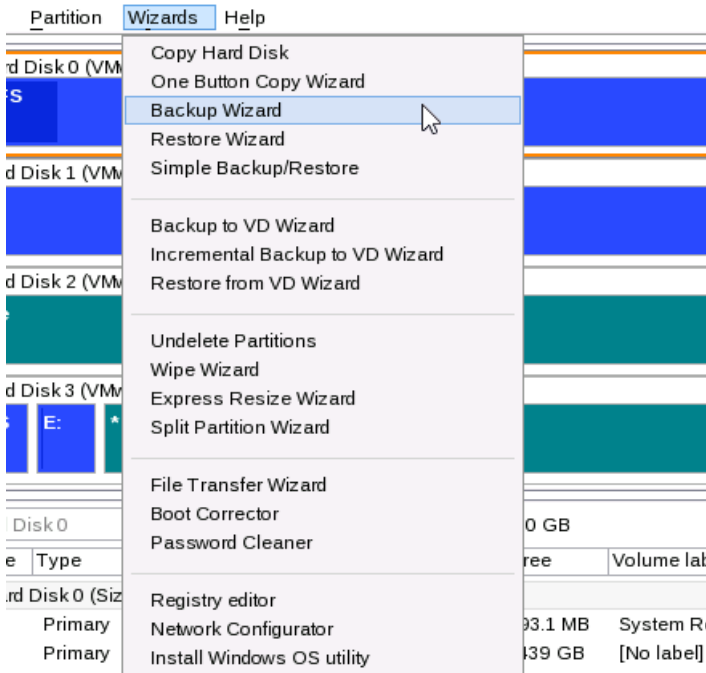


Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:

www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Connect an external USB drive to the computer.
3. Restart the computer. It will be automatically started up into the Linux recovery environment (**Normal Mode**), since it's the only mode that provides support for Mac computers.
4. In the Linux launch menu select **Partition Manager**.
5. Launch the Backup Wizard by selecting in the Main Menu of the program: **Wizards > Backup Wizard**.



6. On the Wizard's Welcome page, click the Next button.
7. On the What to back up page, select your Mac hard disk.

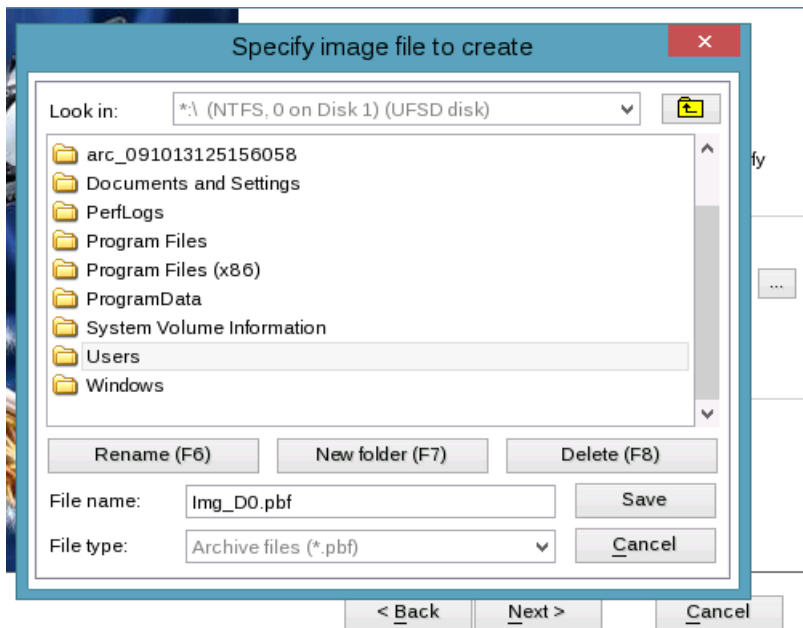
N	Volume	Type	File System	Size	Used	Free	Volume label	Active	Hidden
Basic Hard Disk 0 (Size 500 GB)									
0	*:	Primary	NTFS	350 MB	257 MB	93.1 MB	System Resen	Yes	Yes
1	*:	Primary	NTFS	500 GB	60.5 GB	439 GB	[No label]	No	No

8. On the Backup Destination page, select the **Save data to any local drive or a network share** option.

Please select how would you like to save the archive:

- Save data to any local drives or a network share**
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
- Burn data to CD/DVD/BD**
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

9. Select an external USB drive as a backup destination.



10. Edit the archive name if necessary.

Backup destination

Archive name:
 ...

Space available on destination: **490 GB**

Approximate archive size: **52.8 GB**



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

11. Add comments to your backup describing its contents.

Archive text comment

Please enter backup comments to describe the archive:

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



This operation can also be accomplished under Windows.

Recovery Scenarios

Correcting EFI parameters

To specify a bootable device in the EFI boot entry, please do the following:

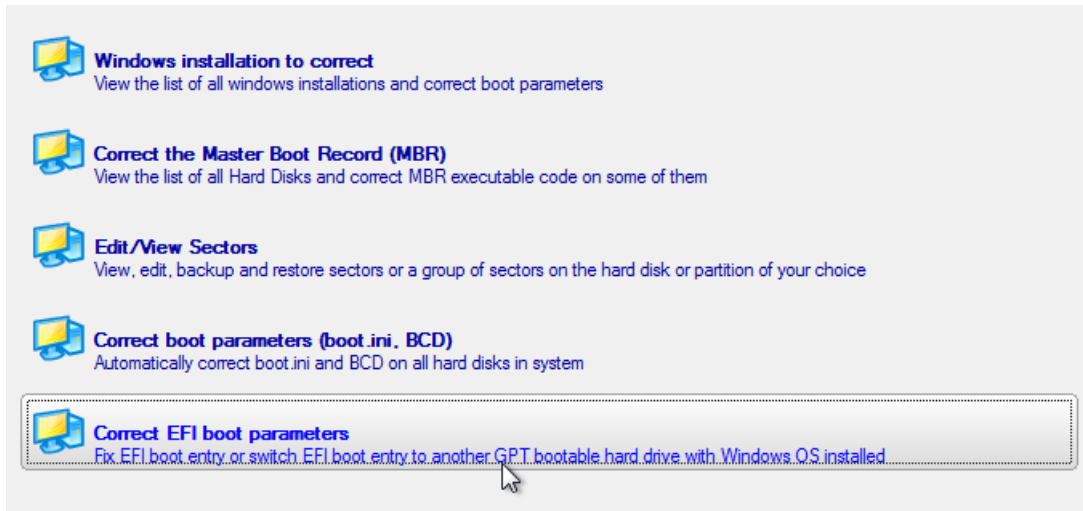
1. Start up the computer from the WinPE recovery media.



Please use **Boot Media Builder** to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

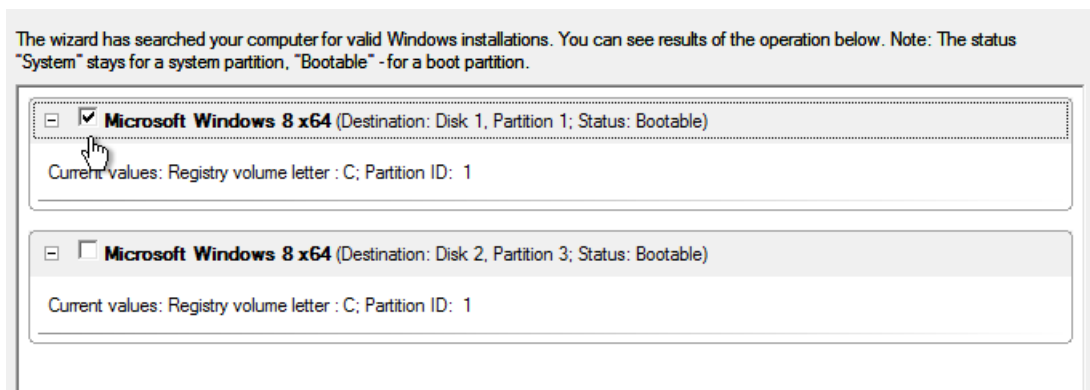
To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Launch **Boot Corrector**.
3. On the Wizard's Welcome page, click the Next button.
4. Select **Correct EFI parameters** to specify the required bootable device in the EFI boot entry.



The option above will be available for the user, only if the operation is accomplished through the 64-bit WinPE media.

5. The wizard will detect and list all available GPT partitions that accommodate 64-bit Windows OS. Choose the one you need to boot from, to let the wizard modify the EFI boot entry correspondingly.



6. Confirm the operation.
7. Click the **Finish** button to close **Boot Corrector**.
8. Restart the computer.

Correcting BCD (Boot Configuration Data)

To automatically correct Windows BCD, please do the following:

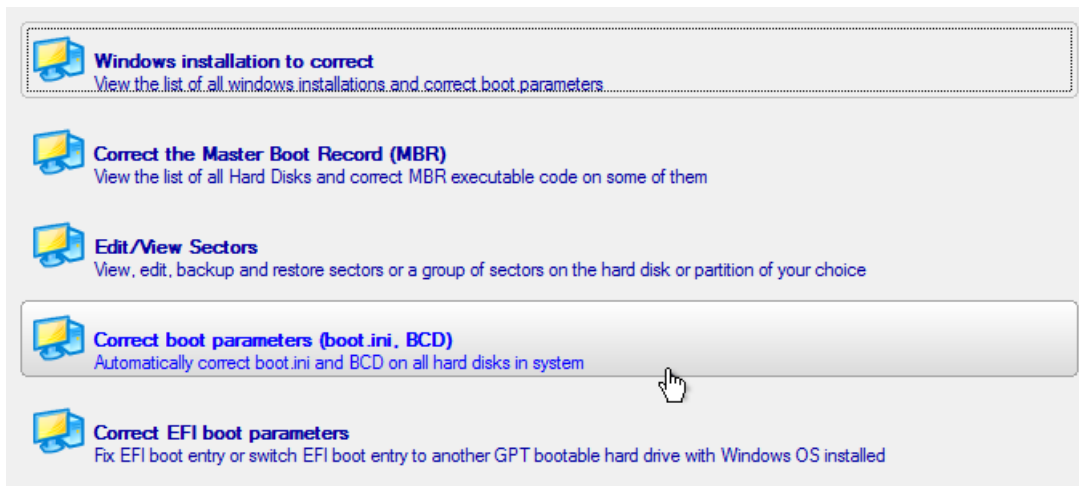
1. Start up the computer from the WinPE recovery media.



Please use **Boot Media Builder** to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Launch **Boot Corrector**.
3. On the Wizard's Welcome page, click the Next button.
4. Select **Correct boot parameters...** to let the wizard fix BCD in all found Windows installations.



5. Confirm the operation.
6. Click the **Finish** button to close **Boot Corrector**.
7. Restart the computer.

Fixing Windows startup ability

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

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

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



Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here: www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

- 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.

- In the Linux launch menu select Boot Corrector. You can find it in PTS DOS as well.
- On the Wizard's Welcome page, select the **Search for Windows installations to correct** option.

Please choose the operation:

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

To begin, click Next.

- 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	Root	System
1	Disk 0, Partition 0	S+B	WINDOWS	WinXP

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

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

To continue, click Next.

- 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=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft Windows XP Professional" /noexecute=
```

Copy Insert Add Delete

Edit Insert the sample Add the sample

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

Correct Windows installations

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

N	Partition	Status	Root	System
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 partition boot record
- Adjust OS to boot on new hardware

To continue, click Next.

8. On the next page choose a hard disk from the pull-down list (if several), then the required partition. If you're not sure which installation you need, please use the Properties button to get more info on the selected item.

Partitions List Letters Map

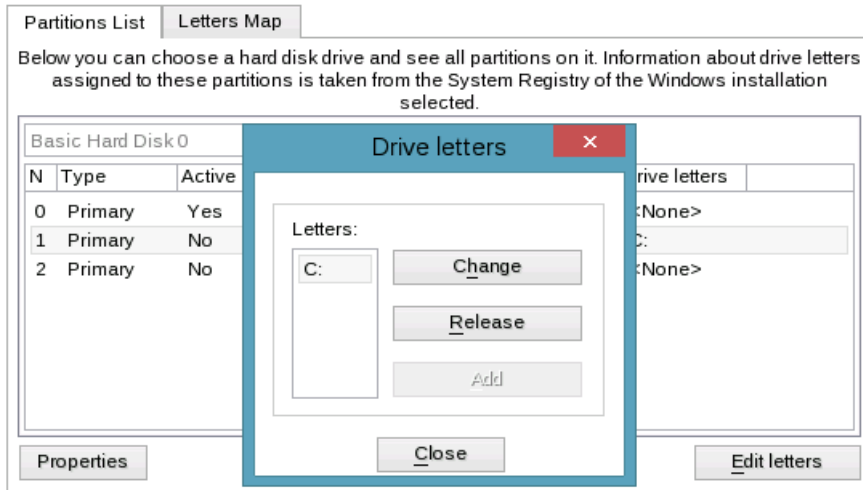
Below you can choose a hard disk drive and see all partitions on it. Information about drive letters assigned to these partitions is taken from the System Registry of the Windows installation selected.

Basic Hard Disk 0 500 GB, VMware Virtual

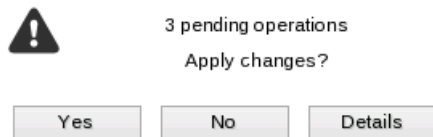
N	Type	Active	File System	Volume label	Size	Drive letters
0	Primary	Yes		System Reser	350 MB	<None>
1	Primary	No	NTFS	[No label]	478 GB	C:
2	Primary	No	Free		21.9 GB	<None>

Properties Edit letters

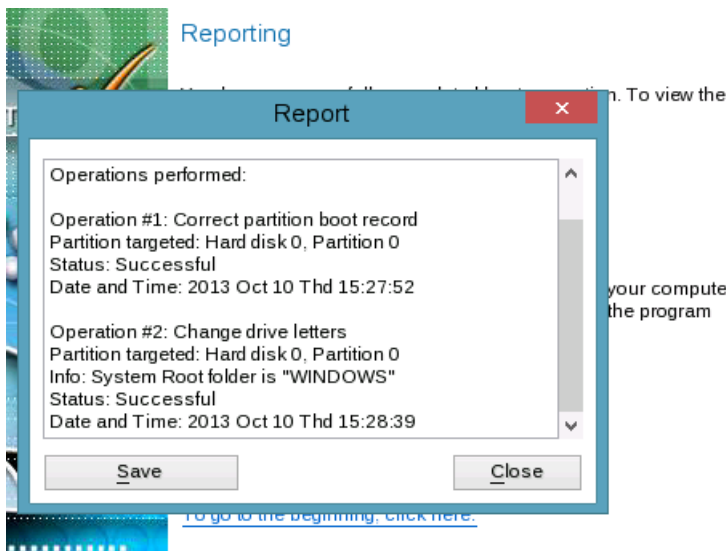
9. Click the Edit Letters button to correct an existing drive letter or assign a new one in the Windows System Registry.



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



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



13. Click the Finish button to close Boot Corrector.
14. Reboot the computer.

Restoring a system partition from external media (CD/DVD)

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got a backup of your system partition on a bootable DVD disc. That's just enough to easily get your system back on track again.

To restore your system partition from a backup image located on CD/DVD when the current OS is down, please do the following:

1. Insert a CD/DVD disc containing the previously prepared backup image into a CD/DVD drive (the BIOS must be enabled to boot the system from the CD/DVD device).



This scenario implies that you have got a bootable archive on your CD/DVD.

In case the backup image is stored on several CD/DVD disks, please insert the first one.

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



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

4. In the PTS DOS launch menu select the Simple Restore Wizard. You can find the same wizard in Linux as well.
5. On the Wizard's Welcome page, click the Next button.
6. On the What to Restore page, you can see a list of available images (if several). Most likely the required archive will be there too. If not, click the standard browse button [...] to find it. When you find your image, double click on it to proceed.

Please select the file with partition or hard disk image.

You can select image from list below (on Double click):

* Created on	Type	Archive path
2013 Oct 14 11:48:28	Partition	/media/CD1:linux:1

Select Image

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

Partition preview

*: NTFS

Archive details:

Type: Image of the partition
 Archive path: /arc_091013125156058/arc_091013125156058.pbf
 Created: 2013 Oct 9 Wed 12:52:57
 File system: NTFS
 Drive letter: *:
 Volume label:
 Size (capacity): 500 GB (536.501.813.248 Bytes)
 Used space: 10.5 GB (2%)
 Free space: 489 GB (98%)
 Sectors/Cluster: 8
 Bytes per sector: 512 (0x200)

8. On the next page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.

Basic Hard Disk 0 (VMware Virtual) - 500 GB

*: NTFS *: BackupCapsule BC

Basic Hard Disk 0 Model VMware Virtual, Size 500 GB

N	Volume	Type	File System	Size	Volume label	Active	Hidden
0	*:	Primary		350 MB	System Resen	Yes	No
1	*:	Primary	NTFS	280 GB	[No label]	No	No



All contents on the partition selected for restoring purposes will be deleted during the operation.

9. On the Partition Start and Size page you can change size of the partition and its location if necessary.

Partition preview

*: NTFS

New size: (10263 - 511649) MB

511649 MB

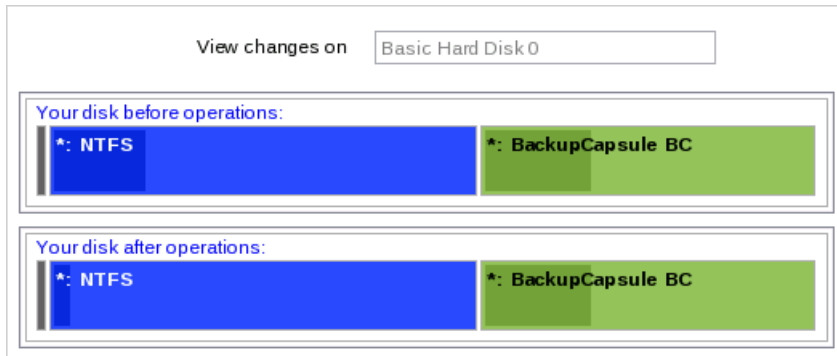
Free space before: (0 - 501386) MB

0 MB

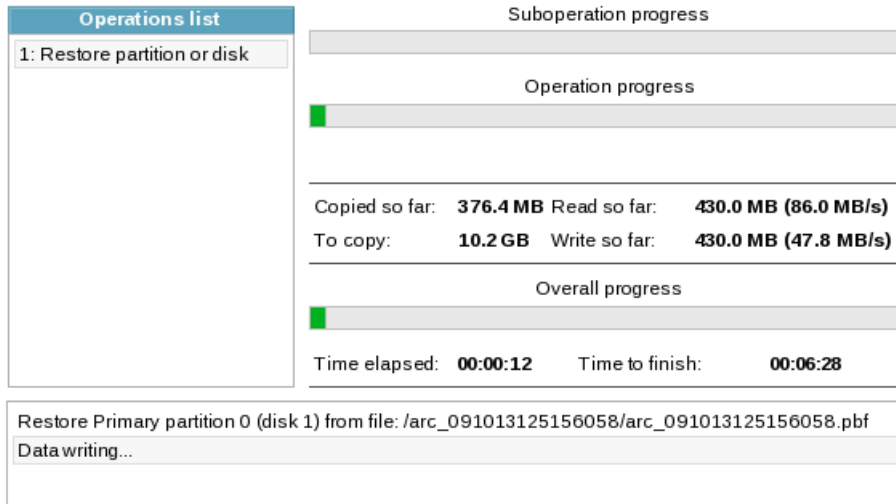
Free space after: (0 - 501386) MB

0 MB

10. On the Restore Summary page you can see your hard disk layout before and after the operation. Click the Next button to initiate the restore process.



11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.



12. After completing the operation close the wizard, and then reboot the computer.

Restoring a system partition from a network drive

Let's assume that your computer fails to boot because of a virus attack or corruption of some system critical files. But you've got a backup of your hard disk on a remote backup server. That's just enough to easily get your system back on track again.

To restore your system partition from a backup image located on a network drive, please do the following:

For PBF images

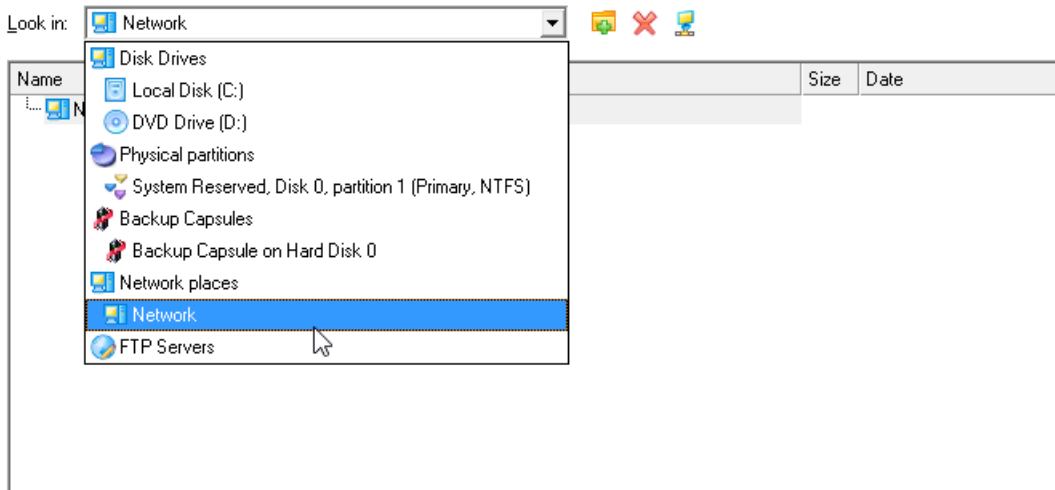
1. Start up the computer from the WinPE recovery media.



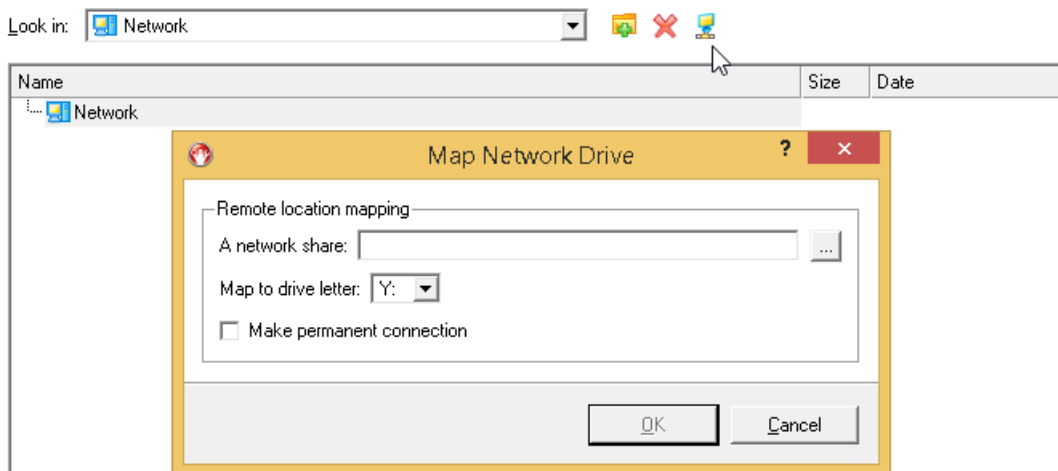
Please use **Boot Media Builder** to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Launch the **Restore Wizard**.
3. On the Restore Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page you need to specify the required backup image. So you should take the following steps to do that:
 - Select **Network** as a backup destination;



- Map a network disk where your archives are placed:
 - Call the Map Network Drive dialog by clicking the appropriate button;



- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
- Define a letter from the pull-down list of available drive letters;
- Click the Connect as user button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.




You can also map a network disk with Network Configurator.

- Choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image.

Name	Size	Date
pool (\server2) [Z:]		
Audio		3/6/2013 4:23:25 AM
!		4/16/2013 12:29:46 AM
!Backup Storage		10/10/2013 12:52:24 AM
arc_091013125156058		10/10/2013 12:51:36 AM
arc_091013133756622		10/10/2013 1:43:35 AM
diff_101013084041587		10/10/2013 2:00:08 AM
arc_091013133756622.pbf	4.7 MB	10/9/2013 6:38:02 AM
arc_091013133756622.pfi	576 KB	10/9/2013 6:38:02 AM
arc_091013133756622.pfm	1.6 KB	10/9/2013 6:38:02 AM

[Switch to Archive List View](#)

Archive File Details



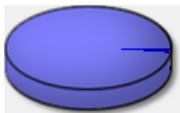
Name: **New Volume (E:)**
 Comment: [No comment is available]
 Volume label: New Volume
 File system: NTFS Total size: 10.9 GB
 Used space: 39 MB Free space: 10.9 GB
 File: Z:/!Backup Storage/.../arc_091013133756622.pbf

- The What to Restore page displays detailed information about the contents of the archive. Select the required item to restore. In our case it is the first partition of the disk.

Please select one of the object(s) to restore:

Name	Type	File system	Size	Used
Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk D...	Internal Hard Disk Drive		750 GB	
Local Disk	Primary	NTFS	499.6 GB	9.7 GB
Local Disk (L...)	Primary	NTFS	250.3 GB	72.5 MB

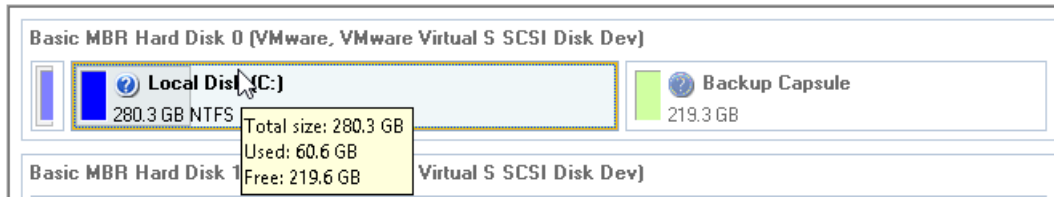
Archive Details



Name: **Local Disk**
 Volume label: [No label]
 File system: NTFS Total size: 499.6 GB
 Used space: 9.7 GB Free space: 489.9 GB

- On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.

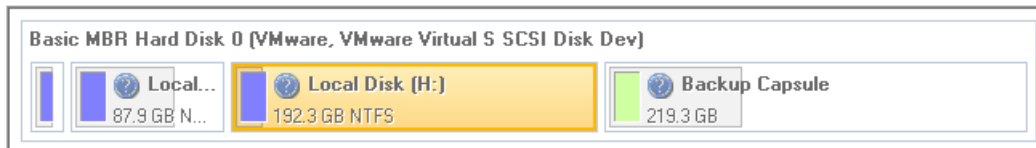
Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be **deleted** and replaced with the one from the archive.



All contents on the partition selected for restoring purposes will be deleted during the operation.

- On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the **Switch EFI to boot from destination drive** option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through [Boot Corrector](#).

Your hard disk after the changes:



Geometry Restore Options

Please specify the size of the restored partition: 10263 MB - 196996 MB
 Please specify size of free space before the partition: 0 MB
 Please specify size of free space after the partition: 0 MB

Partition Restore Options

Assign the following drive letter:

- On the next page of the wizard confirm the operation by selecting the appropriate option.
- In the Progress window you can see in real-time a detailed report on all actions carried out by the program. Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.
- After completing the operation close the wizard, and then reboot the computer.

For pVHD images

- Start up the computer from the WinPE recovery media.



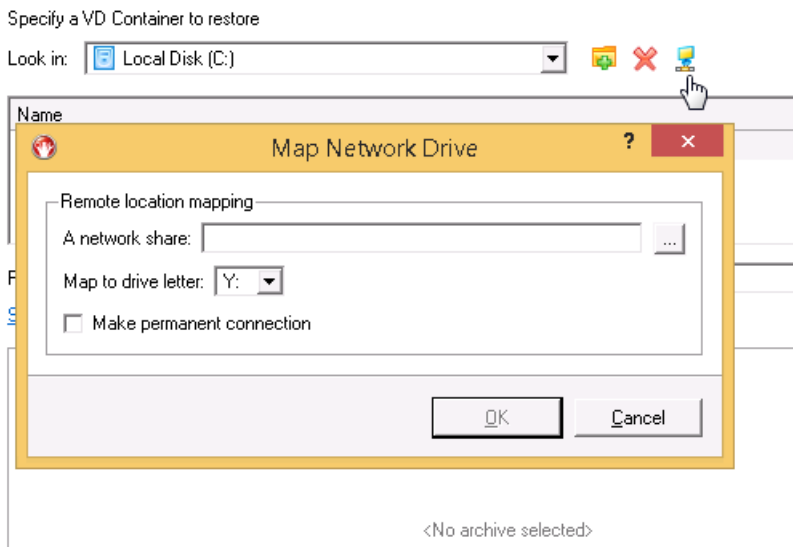
Please use Boot Media Builder to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

- Select **Switch to Full Scale Launcher**, then click the **Restore from VD** item of the Wizards menu.
- On the Restore Wizard's Welcome page, click the Next button.

4. On the Browse for Archive page you need to specify the required backup image:

- Map a network disk where your archives are placed:
 - Call the Map Network Drive dialog by clicking the appropriate button;






- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
- Define a letter from the pull-down list of available drive letters;
- Click the Connect as user button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.



You can also map a network disk with Network Configurator.

- Choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image. If you need more information on the selected backup object, please click the corresponding link at the bottom of the section. Click **Next** to proceed.

Specify a VD Container to restore

Look in:   

Name	Size	Date
inc_1_0_1		10/29/2013 8:15:03 AM
inc_1_0_3		10/29/2013 8:18:17 AM
inc_2_1_2		10/29/2013 8:17:37 AM
Backup_HDD0_20131029_0713.pfi	96 KB	10/29/2013 8:18:18 AM

Files of type:

[Switch to Archive List View](#)

Archive File Details

Name: Backup_HDD0_20131029_0713

Comment: Backup_image_20131029_0713

File: Z:/Backup_HDD0_20131029_0713/Backup_HDD0_20131029_0713.pfi

Type: Full VD Container

Parent: No

Creation date: 10/29/2013 8:02:57 AM


[View VD container detailed structure](#)

- The What to Restore page displays detailed information about the contents of the archive. Select the required item to restore.

Please select hard disk or partition to restore. If you need to restore several objects at once please use Linux-based Recovery Media.

Name	Type	File system	Size	Used
Backup_HDD0_20131029_0713	VD Archive		11.5 GB (12,362,911,744 Bytes)	
Basic MBR Hard Disk 0 (PVHD i...	Virtual Hard Disk Drive		500 GB	
System Reserved	Primary	NTFS	350 MB	256.8 MB
Local Disk	Primary	NTFS	21.2 GB	10.5 GB
New Volume	Primary	NTFS	478.4 GB	4.9 GB

Archive Details



Name: **Local Disk**

Volume label: [No label]

File system: NTFS

Used space: 10.5 GB

Total size: 21.2 GB

Free space: 10.6 GB

To continue, click **Next**

Data size to restore: **21.2 GB**



If you need to restore several backup objects from a pVHD image in one operation, please use the Linux-based recovery media.

- On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.

Specify where you'd like to restore

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

New Volume (E:)
478.4 GB NTFS

Basic GPT Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)

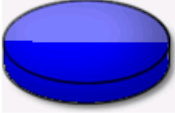
(Unallocated)
499.9 GB

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

(Unallocated)
749.9 GB

Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)

Object details

 Name: **Local Disk (C:)**
Volume label: [No label]
File system: NTFS Total size: 21.2 GB
Used space: 10.6 GB Free space: 10.5 GB



All contents on the partition selected for restoring purposes will be deleted during the operation.

- On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the **Switch EFI to boot from destination drive** option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through [Boot Corrector](#).

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

New Volume (E:)
478.4 GB NTFS

Geometry Restore Options

Please specify the size of the restored partition: 21721 10835 MB - 21721 MB

Please specify size of free space before the partition: 0 0 MB

Please specify size of free space after the partition: 0 0 MB

Partition Restore Options

- Click **Finish** to complete the wizard, then apply the pending changes.
- In the Progress window you can see in real-time a detailed report on all actions carried out by the program. Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.
- After completing the operation, please reboot the computer.

Restoring a system partition from a local drive

Let's assume that your operating system gives trouble after having installed brand new software. But you've got a backup of the system partition on a local disk. That's just enough to easily roll it back to the point when run smoothly.

To restore your system partition from a backup image located on a local disk, please do the following:

1. Click the **Backup & Restore** tab on the Ribbon Panel, then select **Restore**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

2. On the Restore Wizard's Welcome page, click the Next button.
3. On the Browse for Archive page, specify the required archive. The section below (i.e. Archive File Details) will also display a short description of the selected image.

Look in:

Name	Size	Date
arc_091013125156058.pbif	5.1 GB	10/9/2013 6:00:28 AM
arc_091013125156058.pfi	28.9 MB	10/9/2013 6:00:23 AM
arc_091013125156058.pfm	110.3 KB	10/9/2013 6:00:27 AM
arc_091013131559760		10/9/2013 10:37:14 PM
arc_091013133756622		10/9/2013 6:38:02 AM
arc_091013140817551		10/10/2013 7:17:43 AM
arc_091013140825801		10/10/2013 7:18:23 AM
arc_101013053218496		10/9/2013 10:32:29 PM
arc_101013061434390		10/9/2013 11:14:51 PM
arc_101013062903344		10/9/2013 11:53:11 PM
arc_101013091536750		10/10/2013 2:15:43 AM
arc_101013091716250		10/10/2013 2:17:49 AM
arc_101013140759053		10/10/2013 7:22:40 AM
arc_101013141139475		10/10/2013 7:12:58 AM

[Switch to Archive List View](#)

Archive File Details

Name: **Local Disk (C:)**

[Comment:](#) [No comment is available]

Volume label: [No label]

File system: NTFS Total size: 499.6 GB

Used space: 10.5 GB Free space: 489.1 GB

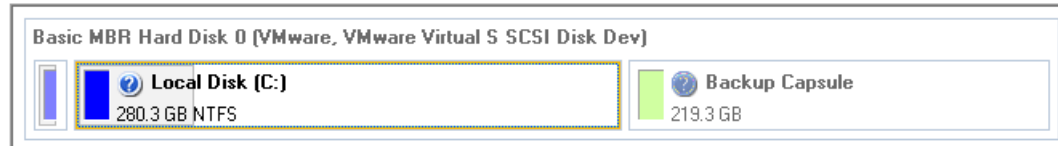
File: C:/arc_091013125156058/arc_091013125156058.pbif



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

4. On the Where to Restore page specify a hard disk, then one of its partitions to restore the image to (if several in your computer). By default, the program offers to restore the archive exactly where it belongs. That's what we actually need.

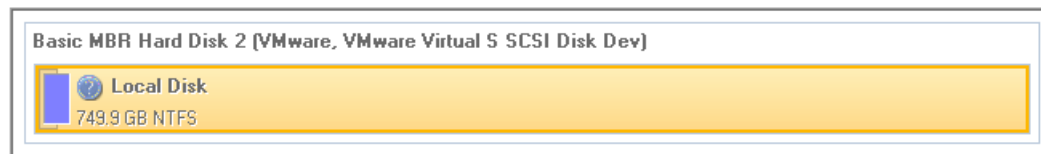
Please select a place you would like to restore the archive to. Note that if you select an existing hard disk or partition, its content will be **deleted** and replaced with the one from the archive.



All contents on the partition selected for restoring purposes will be deleted during the operation.

5. On the Restore Results page you can see the resulted disk layout. Besides there's the possibility to change size of the partition and its location if necessary as well as assign a particular drive letter.

Your hard disk after the changes:



Geometry Restore Options

Please specify the size of the restored partition: 10263 MB - 767999 MB
 Please specify size of free space before the partition: 0 MB
 Please specify size of free space after the partition: 0 MB

6. Complete the wizard and then apply the pending changes.
7. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.
8. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

After completing the operation the program will automatically reboot the computer.



This operation can also be accomplished with our recovery media.

Restoring a dual boot Mac from an external USB drive

Let's assume that your Mac fails to boot because of a hard disk malfunction. But you've got a backup of your hard disk on an external USB drive. Just replace the failed disk with a new one and carry out a bare metal restore.

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

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



Please use Recovery Media Builder or Boot Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:

www.paragon-software.com/my-account/.

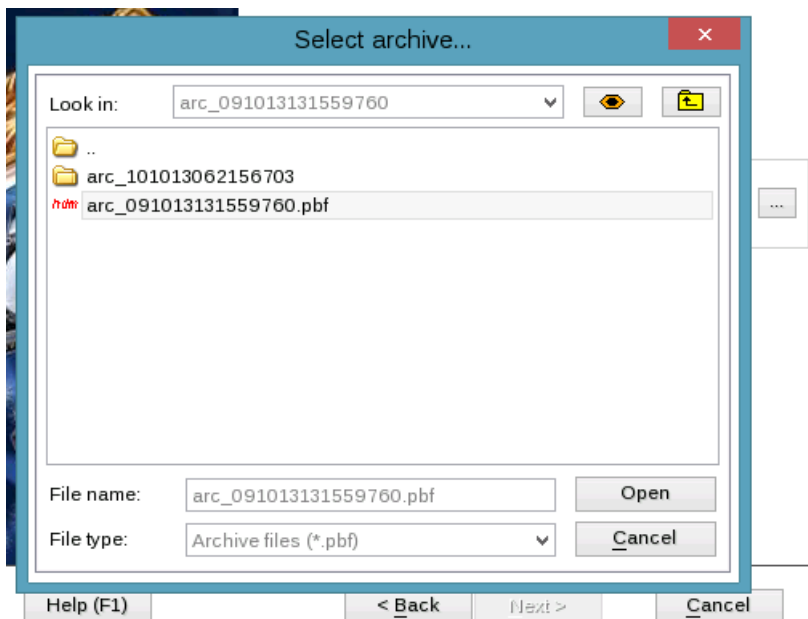
To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. Connect an external USB drive to the computer.
3. Restart the computer.
4. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to work with USB devices.



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

5. In the Linux launch menu select the Simple Restore Wizard.
6. On the Wizard's Welcome page, click the Next button.
7. On the What to Restore page, click the standard browse button [...] to find the required archive. When done, double click on it to select.



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

Disk preview

*: NTFS *: *: Free

Volume	Type	File System	Size	Used	Volume label
Basic Hard Disk 3 (Size 120 GB)					
*:	Primary	NTFS	14.3 GB	164 MB	New Volume
*:	Primary	NTFS	8.4 GB	8.9 MB	New Volume

Archive details:

Type: Image of the hard disk
 Archive path: /mnt/disk/sdb2/img_D3.pbf
 Created: 2013 Oct 10 Thd 04:49:39

To continue restore process, click Next.

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

N	Volume	Type	File System	Size	Volume label	Active	Hidden
0	*:	Primary	NTFS	14.3 GB	New Volume	No	No
1	*:	Primary	NTFS	8.4 GB	New Volume	No	No
2	*:	Primary	Free	97.3 GB		No	No



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

- 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.

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

Operations list

- 1: Restore partition or disk

Suboperation progress

Operation progress

Copied so far: **8.9 MB** Read so far: **14.0 MB (14.0 MB/s)**
 Write so far: **14.0 MB (14.0 MB/s)**

Overall progress

Time elapsed: **00:00:06** Time to finish: **00:00:00**

```
Restore Disk 3 from file: /mnt/disk/sdb2/Img_D3.pbk
Opening archive Img_D3_0300p.000...
Restore Primary partition 0 (disk 3) from file: /mnt/disk/sdb2/Img_D3_0300p.000
Data writing...
Opening archive Img_D3_0301p.000...
Restore Primary partition 1 (disk 3) from file: /mnt/disk/sdb2/Img_D3_0301p.000
Data writing...
```

Close

- After completing the operation close the wizard, and then reboot the computer.

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

To retrieve valuable information from your hard disk and copy it to another hard disk when the system fails to boot, please do the following:

1. Connect the second hard disk to the computer.
2. Start up the computer from our Linux/DOS recovery media.

Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:

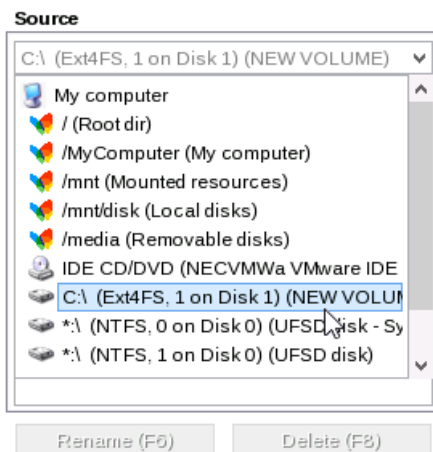
www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

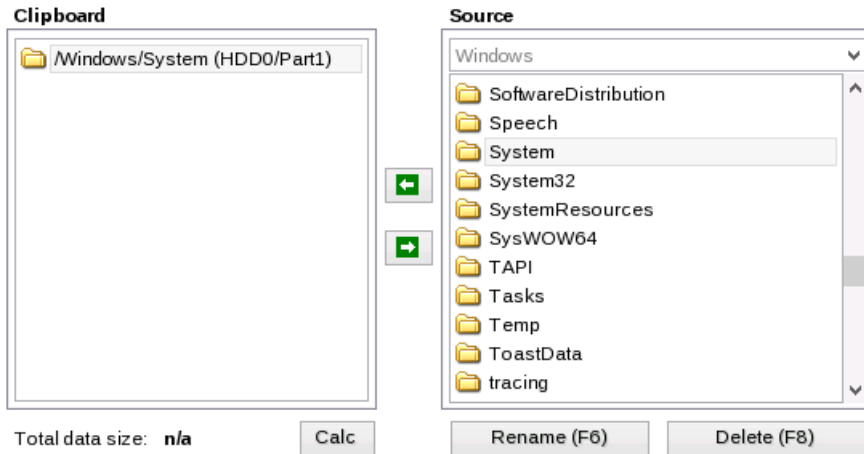
3. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope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

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

4. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
5. On the Wizard's Welcome page, click the Next button.
6. Select a disk where the files you need are stored from the pull-down list in the right pane of the page.



7. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



Click the Calc button to estimate the resulted data size.

- On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.

Please select how would you like to save the archive:

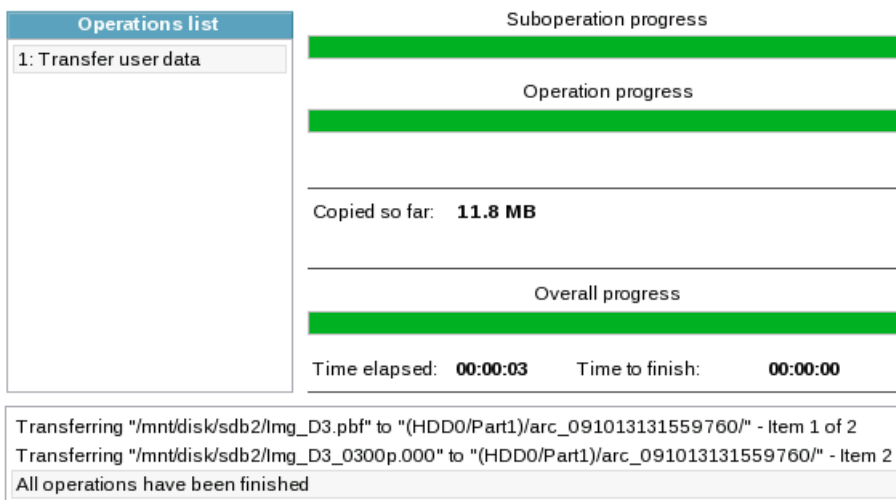
- Save data to any local drives or a network share**
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
- Burn data to CD/DVD/BD**
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

- On the Select Destination Path page, select a hard disk to copy the data to by pressing the standard browse button [...].



- On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

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



12. After the operation is completed, close the wizard by pressing the appropriate button.
13. Turn off the computer.



This operation can also be accomplished with our recovery media.

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

To retrieve valuable information from your hard disk and burn it to CD/DVD when the system fails to boot, please do the following:

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



Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:

www.paragon-software.com/my-account/.

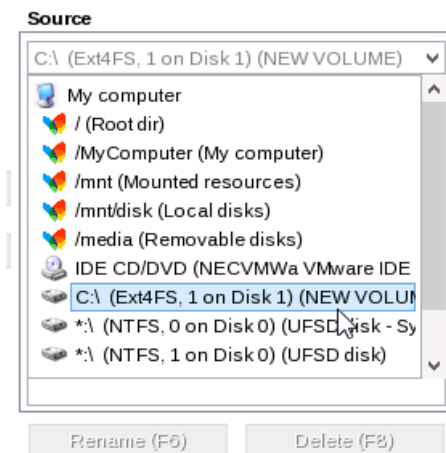
To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

2. In the boot menu select **Normal Mode** to use the Linux recovery environment, since it's the only mode that enables to burn CD/DVD discs.

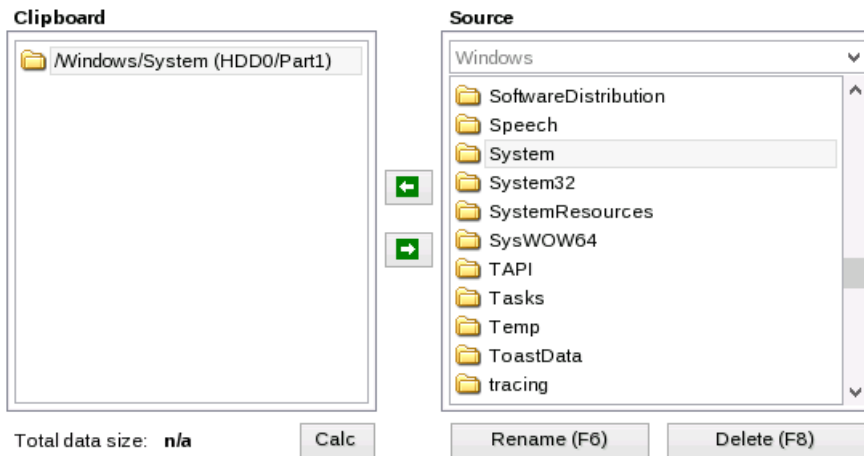


By default the **Normal Mode** will be automatically initiated after a 10 second idle period.

3. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
4. On the Wizard's Welcome page, click the Next button.
5. Select a disk where the files you need are stored from the pull-down list in the right pane of the page.



6. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



Click the Calc button to estimate the resulted data size.

- On the Select Destination Type, choose the way the data will be stored. Select the **Burn data to CD/DVD** item.

Please select how would you like to save the archive:

- Save data to any local drives or a network share**
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
- Burn data to CD/DVD/BD**
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

- On the Choose a Recorder page, select a recorder from the list of available devices and then set a volume label by entering it in the appropriate field.

Select a recorder to burn data to:

Vendor	Product	Type
NECVMWAr	VMware IDE CDR10	CD-R;CD-RW;D
Paragon	CD Burner Emulator	CD-R;CD-RW
Paragon	DVD Burner Emulator	DVD+R;DVD+F

Volume label:

- On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.
- In the Progress window you can see in real-time a detailed report on all actions carried out by the program.

11. After the operation is completed, close the wizard by pressing the appropriate button.
12. Turn off the computer.



This operation can also be accomplished with our recovery media.

Copying of data from a backup to the corrupted system partition

The system fails to boot since some files are damaged. If you have a backup of the system partition, you can recopy these files to make the system be operable again:

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



Please use Recovery Media Builder or Boot Media Builder to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:

www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

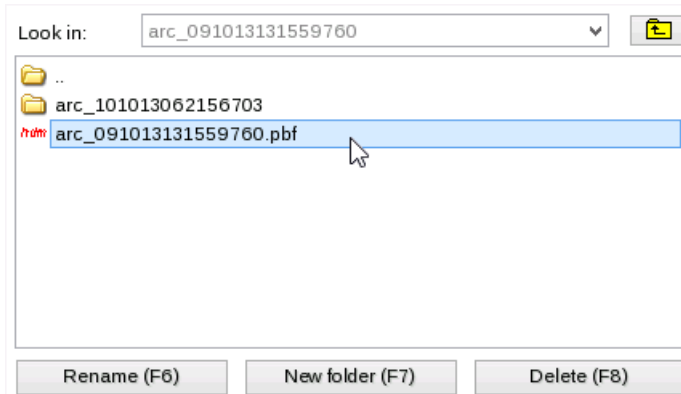
2. In the boot menu select **Normal Mode** to use the Linux recovery environment (more preferable) or **Safe Mode** to use the PTS DOS recovery environment (in case you've got problems with Linux). Moreover you've got the option to boot into the **Low-Graphics Safe Mode** (PTS DOS safe mode) to cope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



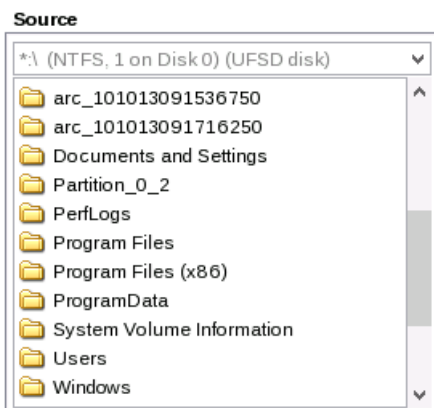
By default the Normal Mode will be automatically initiated after a 10 second idle period.

3. In the Linux launch menu select the File Transfer Wizard. You can find the same wizard in PTS DOS as well.
4. On the Wizard's Welcome page, click the Next button.

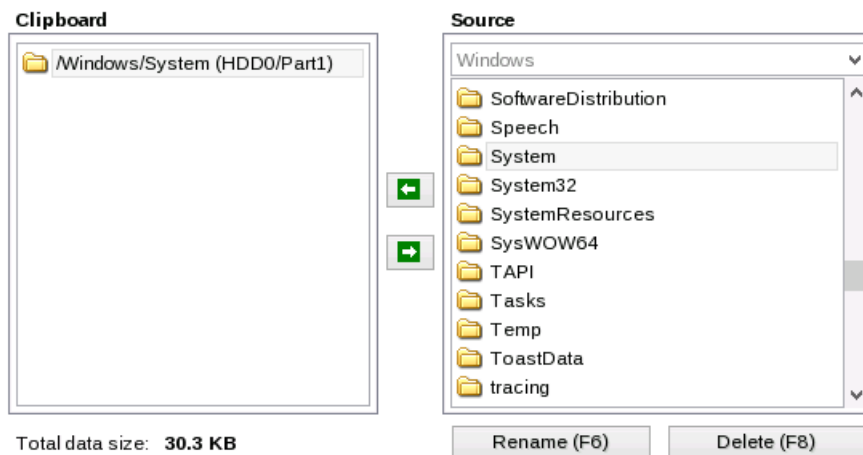
5. Select a disk where the system backup is stored from the pull-down list in the right pane of the page.



6. Double click on the required backup to open.



7. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



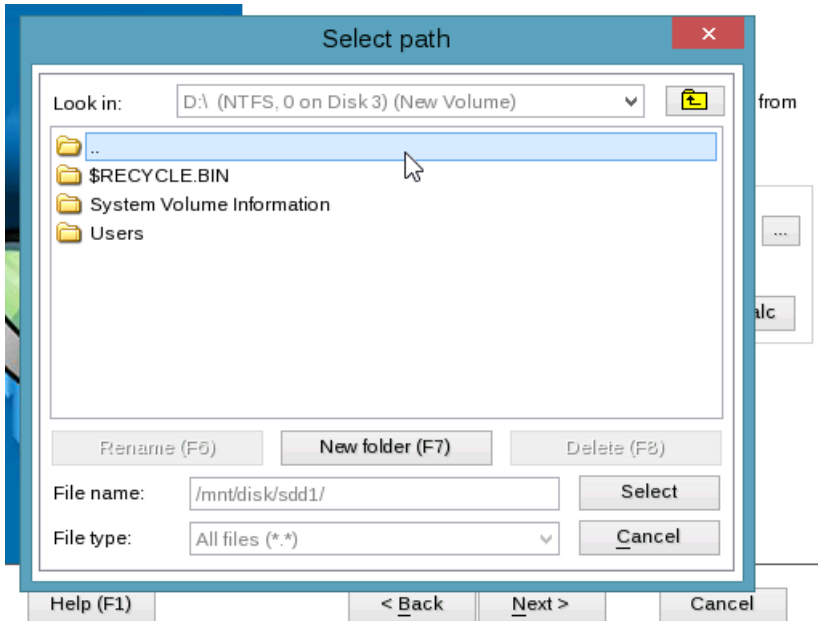
Click the Calc button to estimate the resulted data size.

8. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.

Please select how would you like to save the archive:

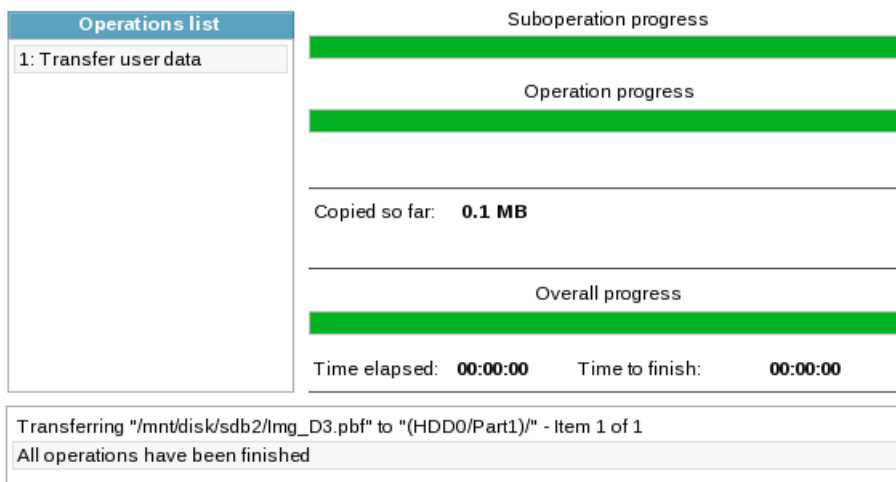
- Save data to any local drives or a network share**
Choose this option if you want to save your data to local mounted or physical partition, to USB or FireWare external drives and to a mounted network share. You will be prompted to choose a location you want to save the archive to.
- Burn data to CD/DVD/BD**
Choose this option if you want the Wizard to burn the archive to CD/DVD/BD. You will be prompted to choose a drive.

9. On the Select Destination Path page, select your system disk to copy the data to by pressing the standard browse button [...].



10. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.



12. After the operation is completed, close the wizard by pressing the appropriate button.

13. Turn off the computer.



This operation can also be accomplished with our recovery media.

Restoring separate files and folders from a backup

The program provides a very convenient option to access backup archives and restore only data you need (the so called selective restore functionality).

Restore Wizard

To restore separate files and folders from a backup image with the Restore Wizard, please do the following:

1. Start up the computer from the WinPE recovery media.



Please use **Boot Media Builder** to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

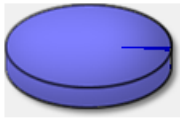
2. Launch the **Restore Wizard**.
3. On the Restore Wizard's Welcome page, click the Next button.
4. On the Browse for Archive page choose the required archive in the browser-like window. The Archive File Details section displays a short description of the selected image.

Look in: Backup Capsule on Hard Disk 0

Name	Size	Date
Backup Capsule on Hard Disk 0		
arc_091013125156058		10/10/2013 6:55:53 PM
DIFF130258590010000000		10/10/2013 6:55:52 PM
DIFF130258594470000000		10/10/2013 6:55:54 PM
arc_091013125156058.pbf	1.1 GB	10/10/2013 6:53:54 PM
arc_091013125156058.pfi	28.9 MB	10/10/2013 6:53:56 PM
arc_091013125156058.pfm	110.3 KB	10/10/2013 6:53:57 PM
arc_111013111635639		10/10/2013 9:33:56 PM
arc_111013111635639.pbf	215.8 KB	10/10/2013 9:33:57 PM
arc_111013111635639.pfi	29.2 MB	10/10/2013 9:33:56 PM
arc_111013111635639_0200p.000	1.1 GB	10/10/2013 9:33:49 PM
arc_111013111635639_0200p.pfm	110.3 KB	10/10/2013 9:33:49 PM
arc_111013111635639_0201p.000	8.7 MB	10/10/2013 9:33:56 PM

[Switch to Archive List View](#)

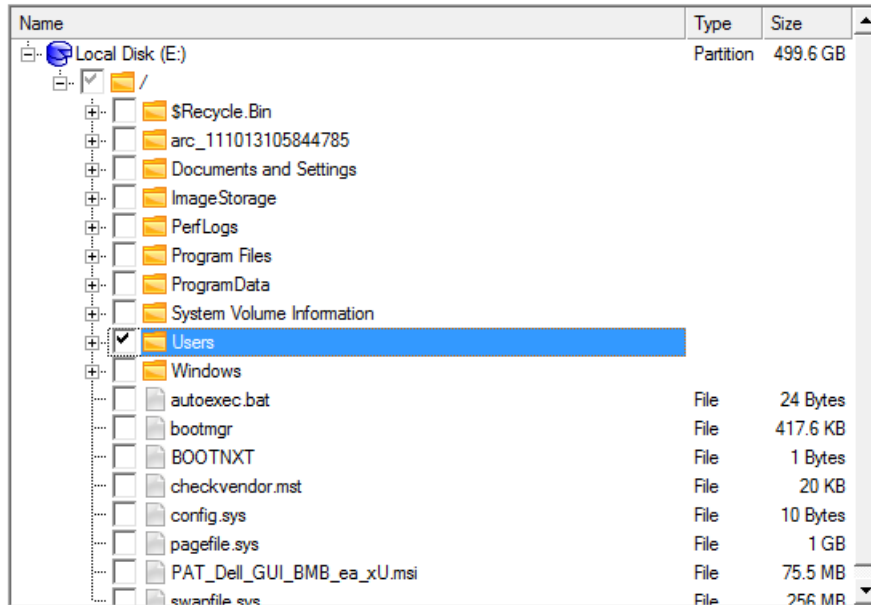
Archive File Details



Name: **Local Disk (C:)**
 Comment: [No comment is available]
 Volume label: [No label]
 File system: NTFS
 Used space: 10.5 GB
 File: /.../arc_091013125156058.pbf
 Total size: 499.6 GB
 Free space: 489.1 GB

5. On the next page specify what you need to extract from the backup by marking checkboxes next to the required data items. At the right lower corner of the window you can see the resulted amount of the selected data.

Click the check box next to any file or folder you want to restore from



To continue, click **Next**

Data size to restore: less than 14.8 GB

- On the How to Restore page specify the way the selected data will be restored. In our case we'd rather restore contents of the backup to its original location with replacing existing files as well.

Restore files to:

The files and folders will be restored to the place where they were archived from.

When restoring files that already exist on your computer:

Leave existing files.
If a file exists in the original location, it won't be overwritten. Only missing/deleted files will be restored from backup.

Replace existing files
ALL selected files will be replaced with files from backup.

- On the Restore Summary page review all parameters of the operation and modify them if necessary.

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

Objects to Restore	
Object(s) selected:	1
Total data size:	71.9 MB (75,470,833 Bytes)
Specified restore destination	
Destination path:	C:\
Space available on destination:	219.4 GB (235,588,853,760 Bytes)

- On the next page of the wizard confirm the operation by selecting the appropriate option.
- In the Progress window you can see in real-time a detailed report on all actions carried out by the program.
- After completing the operation close the wizard, and then reboot the computer.

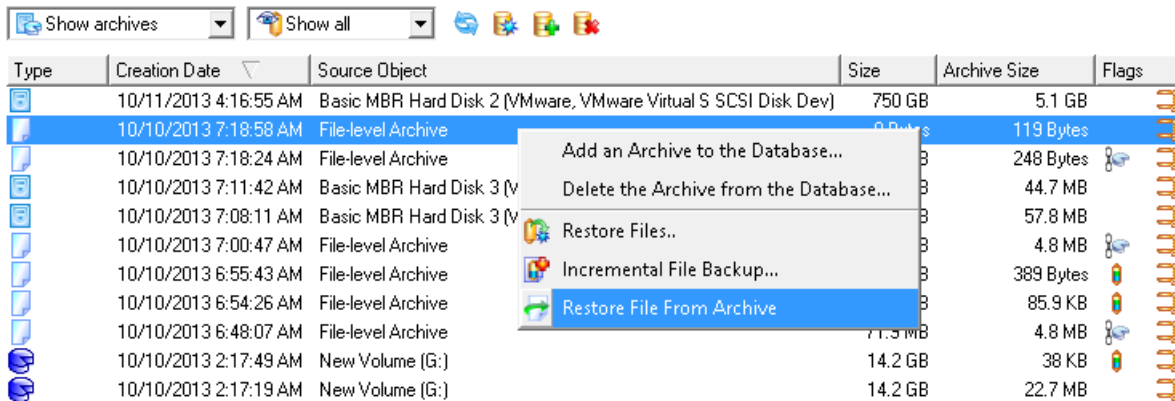


This operation can also be accomplished under Windows.

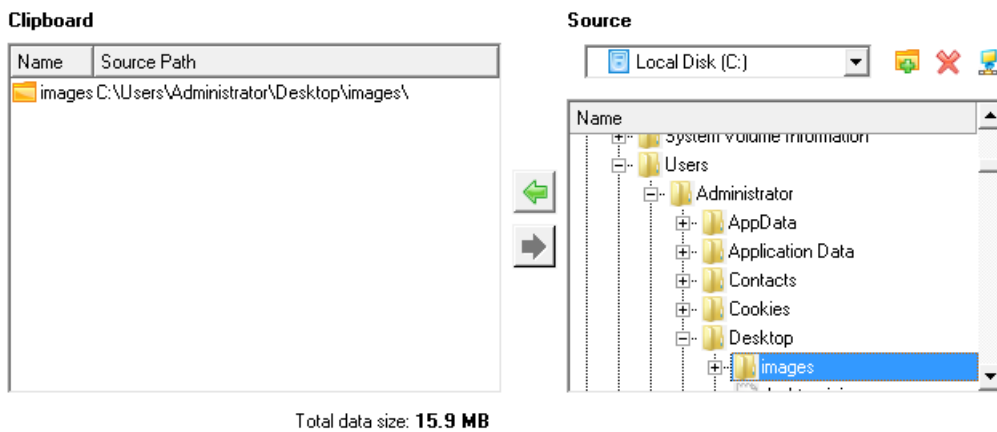
File Transfer Wizard

To restore separate files and folders from a backup image with the File Transfer Wizard, please do the following:

1. Call the popup menu for the required backup image (right click of the mouse button) in the Archive Database and then select the menu item: Restore File from Archive. Thus you automatically open it with the File Transfer Wizard.



2. Select files you want to copy and place them to Clipboard by pressing the left arrow-button.



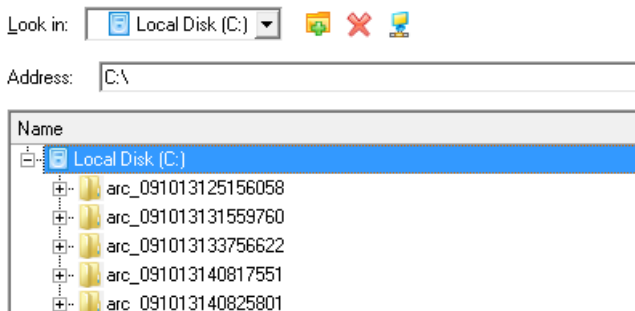
3. On the Select Destination Type, choose the way the data will be stored. Select the **Save data to any local drive or a network share** item.

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

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

4. On the Select Destination Path page, specify the exact place to copy the data to.

Please select the destination path where to save the data from clipboard.



Total data size: **15.9 MB**
 Space available on destination: **219.6 GB**

5. On the Transfer Summary page check all parameters of the operation. Click the Next button to accomplish the operation.

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

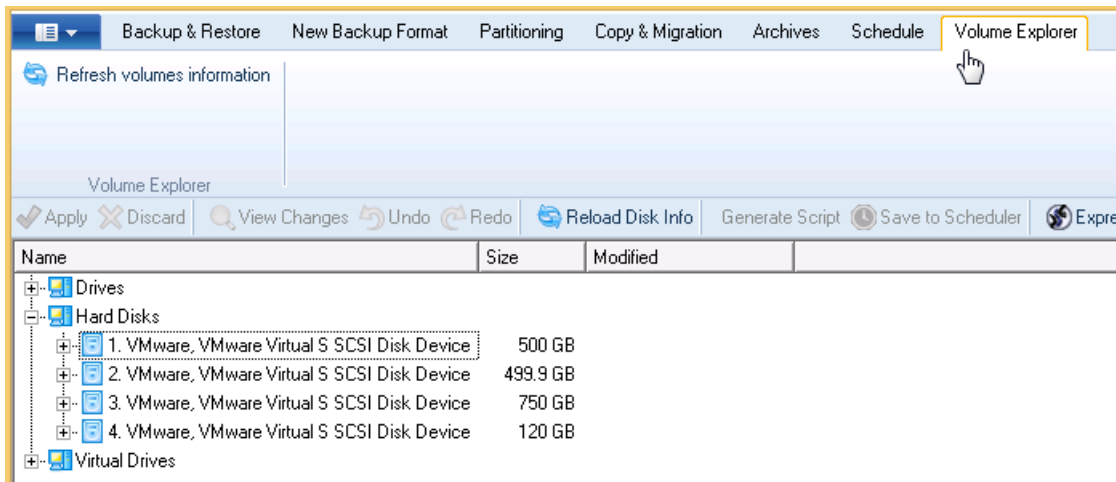
Objects to transfer	
Object(s) selected:	1
Total data size:	7.6 GB (8,248,732,638 Bytes)
Transfer destination	
Destination path:	C:\
Space available on destination:	219.4 GB (235,588,853,760 Bytes)
Overwrite existing files:	No

- After the operation is completed, close the wizard by pressing the appropriate button.

Volume Explorer

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

- Click the **Volume Explorer** tab on the Ribbon Panel;



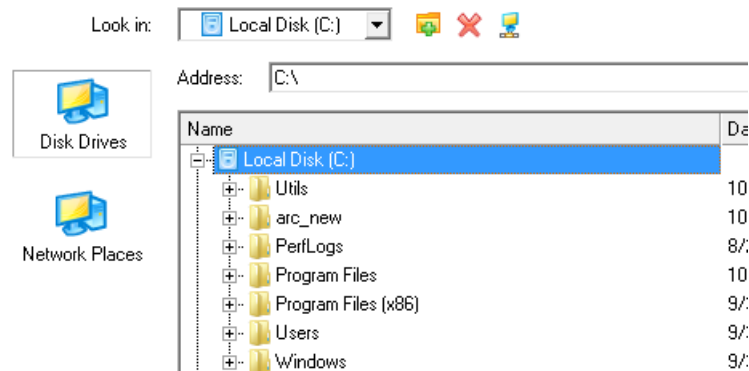
- Browse for the required archive and then open it by double click of the left mouse button.

Name	Size	Modified
Drives		
Hard Disks		
1. VMware, VMware Virtual S SCSI Disk Device	500 GB	
2. VMware, VMware Virtual S SCSI Disk Device	499.9 GB	
3. VMware, VMware Virtual S SCSI Disk Device	750 GB	
4. VMware, VMware Virtual S SCSI Disk Device	120 GB	
Virtual Drives		
1. Primary NTFS (E:)	72.6 GB	
arc_disk3		10/16/2013 9:02:11 PM
arc_doc		10/16/2013 9:00:23 PM
arc_image		10/16/2013 9:00:56 PM
arc_system		10/16/2013 8:57:56 PM
inc_171013045750652		10/16/2013 8:57:56 PM
arc_system.pbk	57 MB	10/16/2013 8:57:20 PM
arc_system.pfi	576 KB	10/16/2013 8:59:18 PM
arc_system.pfm	7.2 KB	10/16/2013 8:57:19 PM
System Volume Information		10/16/2013 8:23:03 PM
2. Primary FAT 32 (F:)	20.9 GB	
3. Primary Ext2/Ext3/Ext4/Reiser	13 GB	
4. Primary Ext2/Ext3/Ext4/Reiser	19.2 GB	
3. VMware, VMware Virtual S SCSI Disk Device	750 GB	
4. VMware, VMware Virtual S SCSI Disk Device	120 GB	

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

Name	Size	Modified
Drives		
Hard Disks		
1. VMware, VMware Virtual S SCSI Disk Device	500 GB	
1. Primary NTFS	350 MB	
2. Primary NTFS (C:)	499.6 GB	
\$Recycle.Bin		9/3/2013 1:49:11 PM
Documents and Settings		10/22/2013 6:45:52 AM
PerfLogs		10/22/2013 7:22:35 AM
Program Files		10/16/2013 8:18:50 PM
Program Files (x86)		9/3/2013 1:54:48 PM
ProgramData		10/16/2013 8:21:08 PM
System Volume Information		10/16/2013 8:18:29 PM
Users		9/3/2013 1:48:22 PM
Windows		9/3/2013 9:43:00 AM

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



5. Click the OK button to accomplish the operation.



The current version of the program does not enable to access pVHD images and file archives with Volume Explorer.

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 the **Partitioning** tab on the Ribbon Panel, then select **Express Create**.

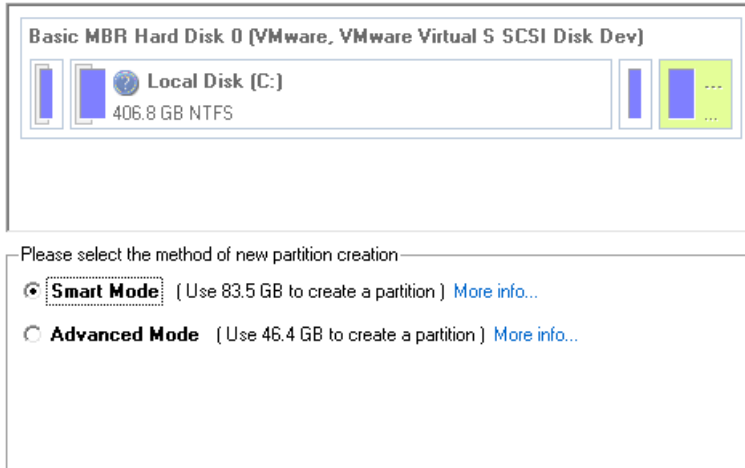


There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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

- 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.

The result you will get after applying the changes:



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.

- 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.

- 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:

- Click the **Partitioning** tab on the Ribbon Panel, then select **Express Resize**.



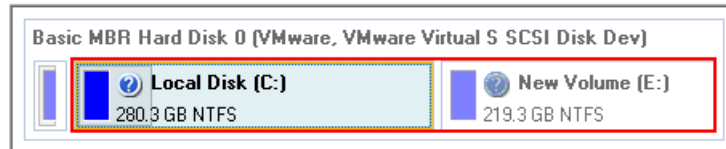
There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

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

- 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.

The wizard will resize space between **Local Disk (C:)** and **New Volume (E:)** on **Basic MBR Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)**.

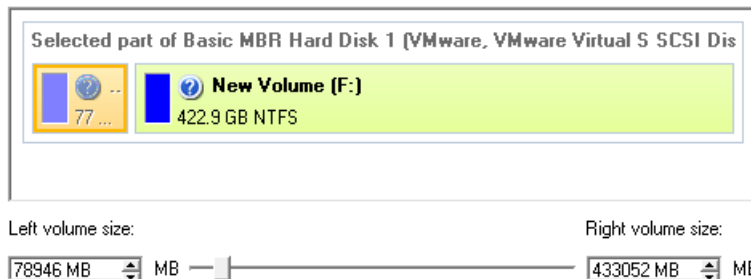
Select left partition from a pair of adjacent partitions you would like to resize. Right adjacent partition will be selected automatically.



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.

- 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.

Please specify new sizes of selected partitions.



- On the next page of the wizard you need to confirm the operation by selecting the appropriate option.
- 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.
- In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.

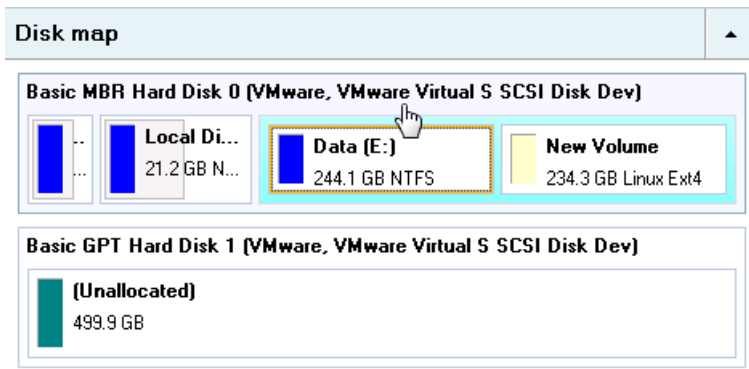
After completing the operation your computer will be automatically restarted back to Windows where you can see that your system partition is bigger now.

Increasing size of a system partition by taking unused space from any other

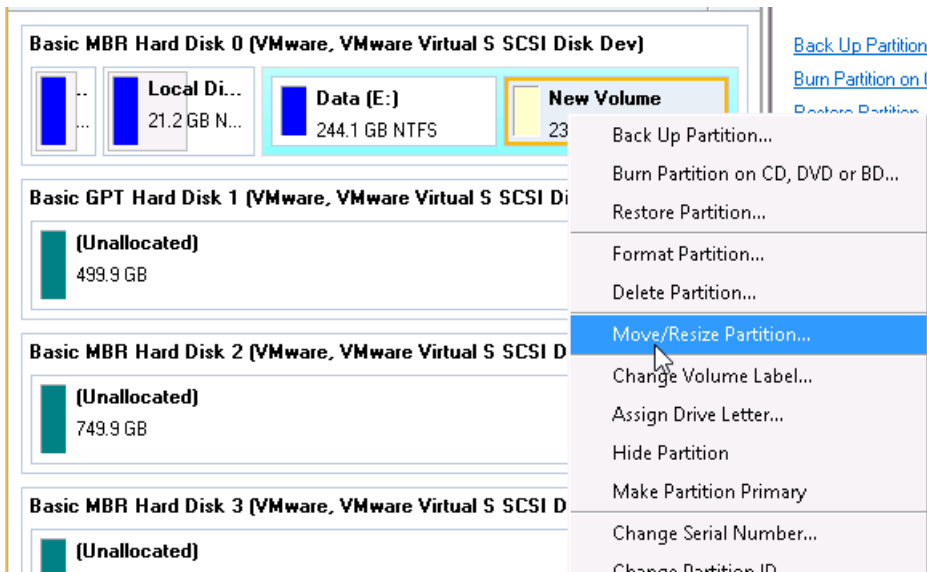
Let's assume you've got several partitions on your hard disk. After installing a number of resource-consuming applications and system updates your system partition has started to suffer from the lack of free space. But one of your partitions has a plenty of redundant space. That's just enough to make 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:

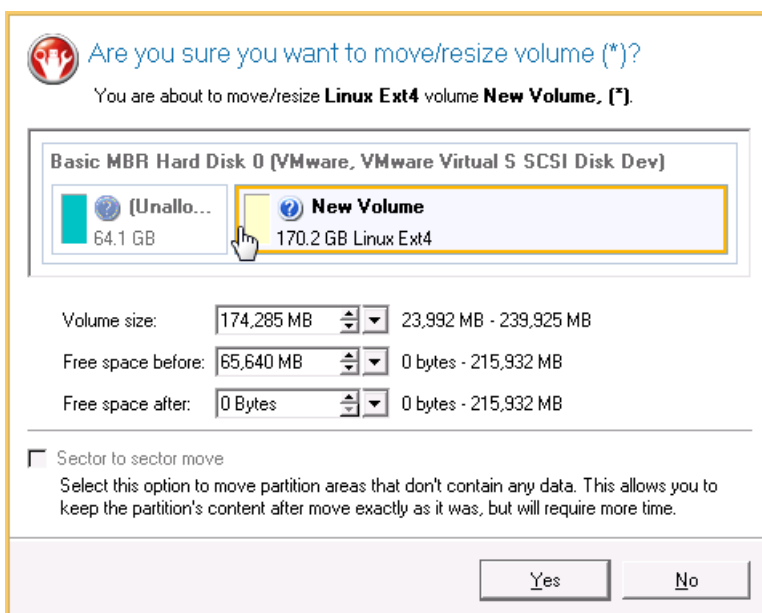
- In the main window select the required hard disk (if several) on the Disk Map.



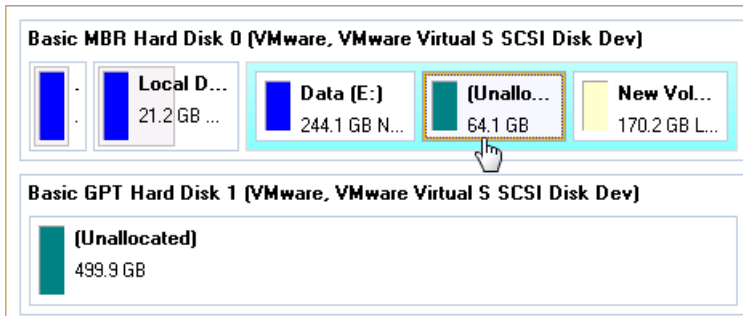
2. Choose a space donor partition and then call a context menu for it (right click of the mouse button) to launch the Move/Resize dialog.



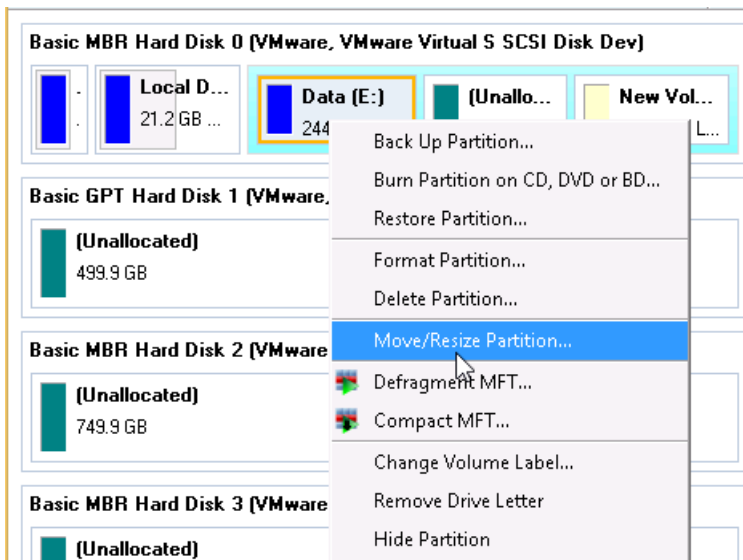
3. In the opened dialog shift the edge of the partition to the right by the drag-and-drop technique. While doing this, free space from the partition will be released (displayed in aqua-green). You can also do it manually by entering the exact size of free space. Click the Yes button to continue.



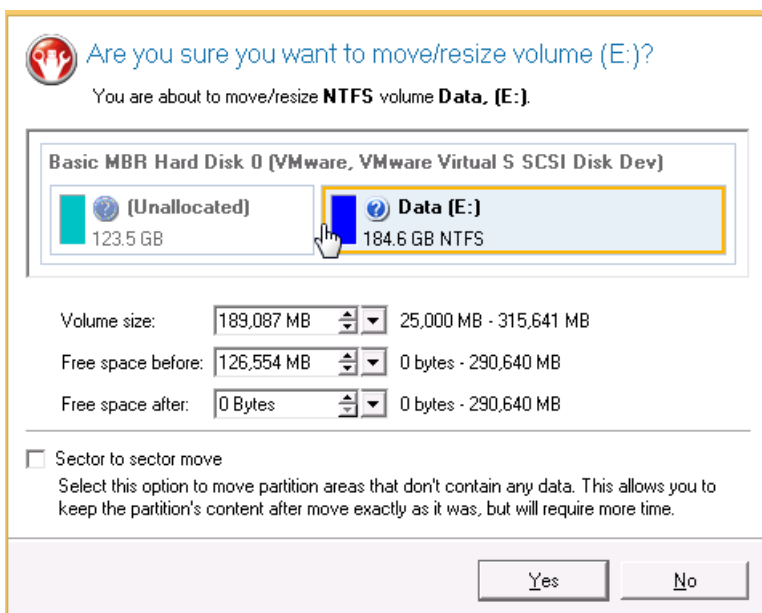
4. Now you've got a block of free space to add to the system partition. You cannot do it directly however, but by carrying out a number of extra move/resize operations.



5. 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 a context menu for it (right click of the mouse button) to launch the Move/Resize dialog.



6. 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.

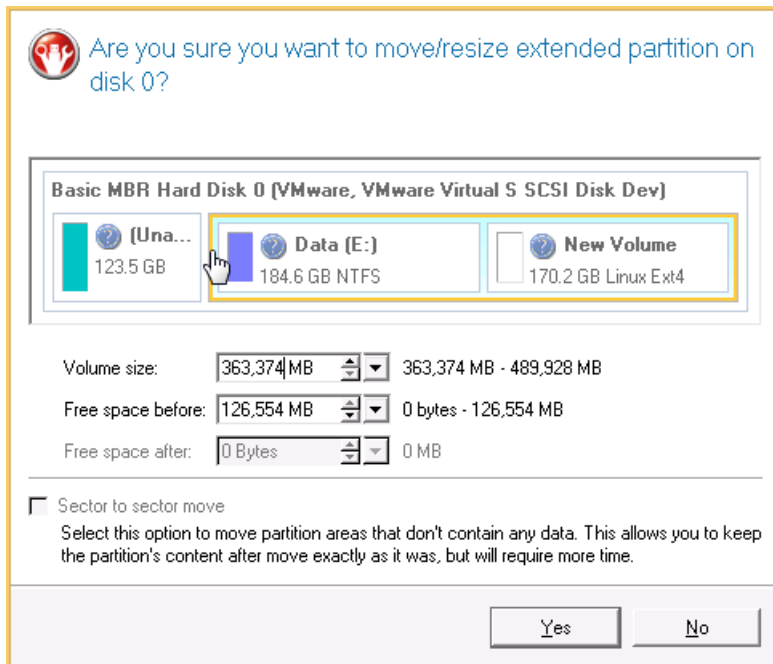


- Now you can resize the extended partition to take the block of free space out of it. Call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.

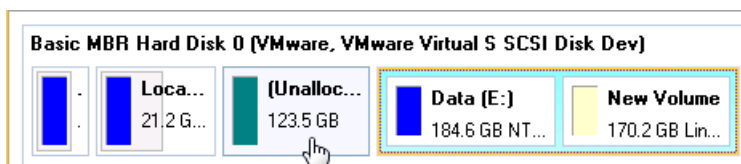


Call a context menu for the extended partition (with the blue border), not the logical one.

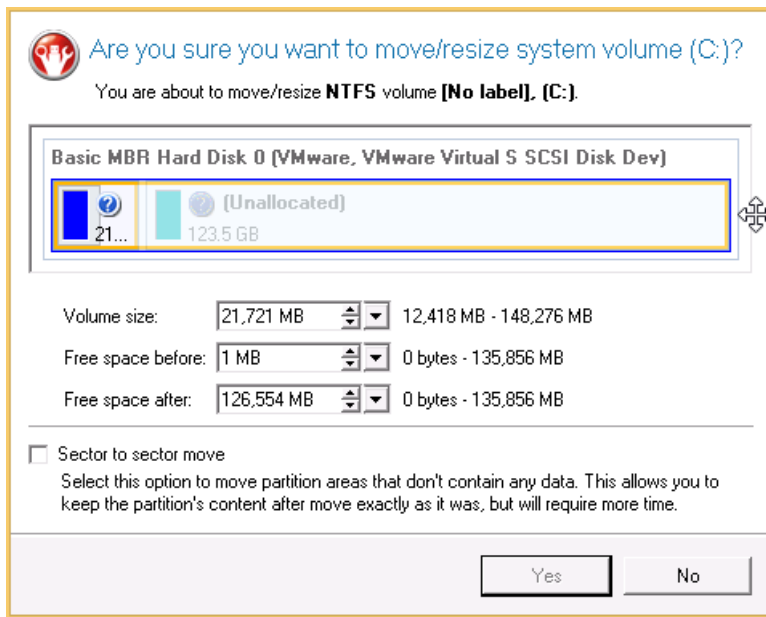
- In the opened dialog shift the edge of the extended partition to the right.



- The block of free space has been released.



- Finally increase size of the system partition. Call a context menu for it (right click of the mouse button) to launch the Move/Resize dialog.
- In the opened dialog shift the edge of the partition to the right, thus increasing its size.



12. Apply all introduced changes. By default, our program 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.
13. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.

Increasing size of a system partition by taking unused space of an adjacent logical 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 logical 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** tab on the Ribbon Panel, then select **Redistribute Free Space**.



There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

2. On the Wizard's Welcome page, click the Next button.
3. Select a volume you want to expand, i.e. the system one.

Choose a volume to expand:



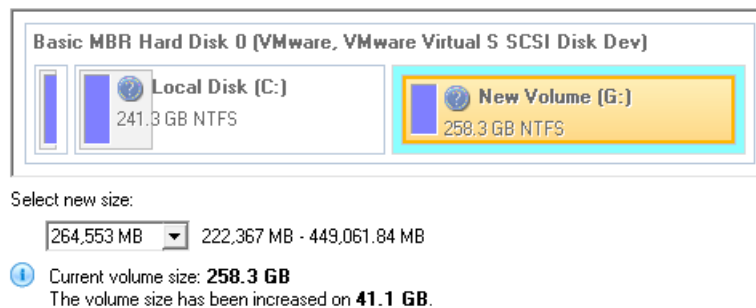
4. Select a volume to take the space from, i.e. the logical one.

Select volumes to take space from. Free space from that volume will be used to enlarge the volume you have selected on the previous page.

Volume	File system	Type	Capacity	Used space	Free space	% Free
<input checked="" type="checkbox"/> (C:)	NTFS	Primary	280.3 GB	60.6 GB	219.6 GB	79
<input type="checkbox"/> (H:)	FAT32	Logical	101.9 GB	0 Bytes	101.9 GB	100

5. On the next page of the wizard you can specify size of the resulted system volume. Drag the slider or type in the exact value to set the volume size.

Your disk after the changes:



6. Apply all introduced changes. By default, our program 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.

Separating OS from media data

Let's assume you've got one partition available on the hard disk, like other people who purchase a computer with a preinstalled operating system. So besides OS, it holds all your documents, favorite music, movies and family photos. This type of configuration is certainly not optimal for effective data organization and safety. First, it negatively affects the system: huge amount of data aggravated by its inevitable excessive fragmentation causes poor performance in file search/access and read/write operations. Second, it's inconvenient for the user: system files and folders piled up with media and documents besides obvious difficulties in transparent organization become a naughty problem in case of a system malfunction.

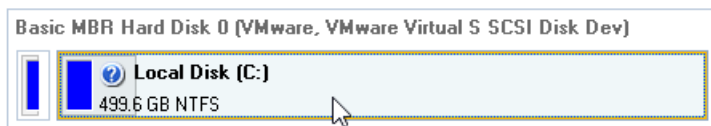
Split Partition Wizard can help you detach the operating system and data or different types of data by splitting one partition to two different partitions of the same type and file system – you just select a partition, then files and folders you'd like to move to the new partition, finally redistribute free space between the two partitions if necessary, and here you are!

Before you start, please take into account the cases when the split operation is impossible to perform:

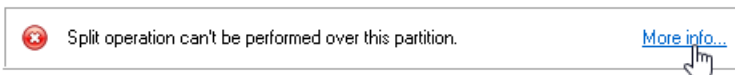
- Partition's type is not supported (you have selected a non-standard primary or logical partition);
- The selected partition is located on a dynamic disk;
- You've already got 4 primary partitions on a Basic MBR disk;
- You've already got 3 primary partitions on a Hybrid (Retained) GPT+MBR disk;
- There's not enough free space on the selected partition (free up to 50 MB);
- The selected partition has an unsupported file system (currently only NTFS and FAT file systems are available for splitting).

To detach OS from media files, please do the following:

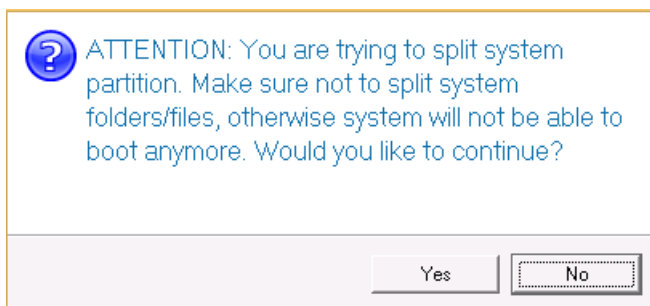
1. Click the **Partitioning** tab on the Ribbon Panel, then select **Split Partition Wizard**.
2. The first page of the wizard informs the user on the upcoming operation. Please read all notes carefully before you proceed. Once you're done with that, click **Next** to continue.
3. Select a volume you want to split up.



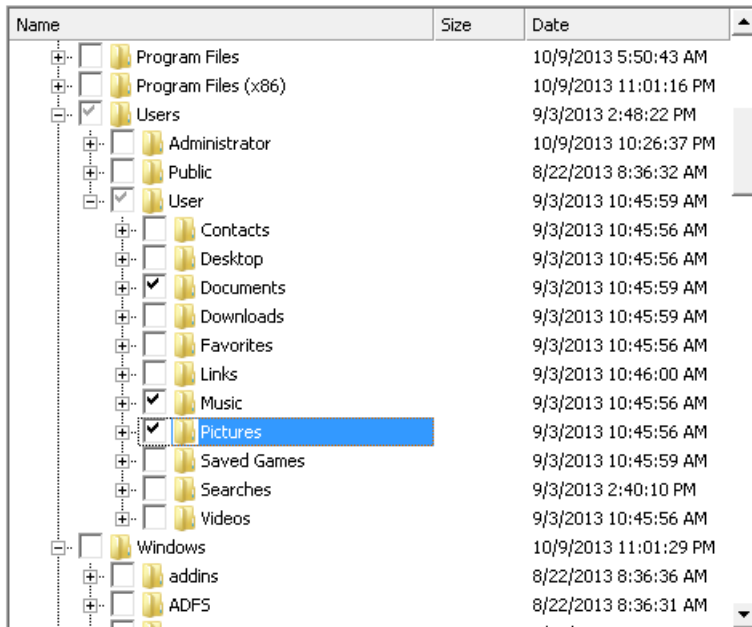
If the wizard cannot work with the selected partition, you'll get a corresponding notification – click on the “More Info...” link to see the details.



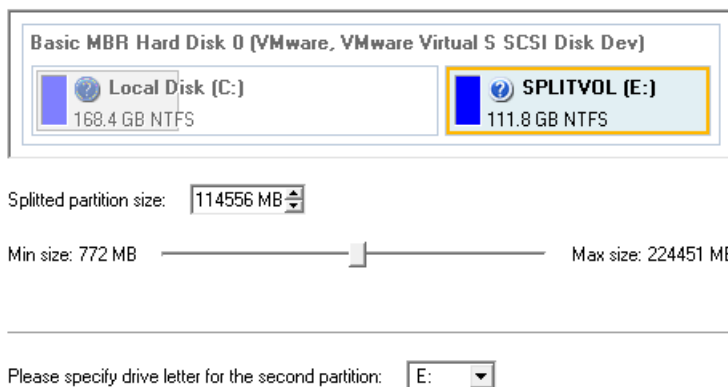
4. When selecting a system partition (just our case), the wizard notifies that this type of operation may cause inability of the operating system to start up if moving system files/folders to the new partition. So please take it seriously. If you're sure, confirm the operation.



5. Mark checkboxes next to files/folders you'd like to move to the new partition. Please don't touch system files/folders like “Windows”, “Users”, “Program Files”, config.sys, etc. By clicking the **Next** button, the wizard starts calculating the amount of data to move, which may take some time.



- Redistribute free space between the partitions by moving the slider or manually by entering the required value for the new partition in the corresponding field. Then choose a drive letter for this partition from the pull-down list that contains vacant letters if necessary (by default, the wizard selects the first vacant one).



By default, the wizard allocates all free space to the original partition. You should decide for yourself how much of it should be given to the original and the new partitions. Anyway we strongly recommend you to allow free space on both partitions.

- Review the changes and complete the wizard.
- Apply all introduced changes. By default, our program 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.
- In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.

Merging a system partition with an adjacent logical partition

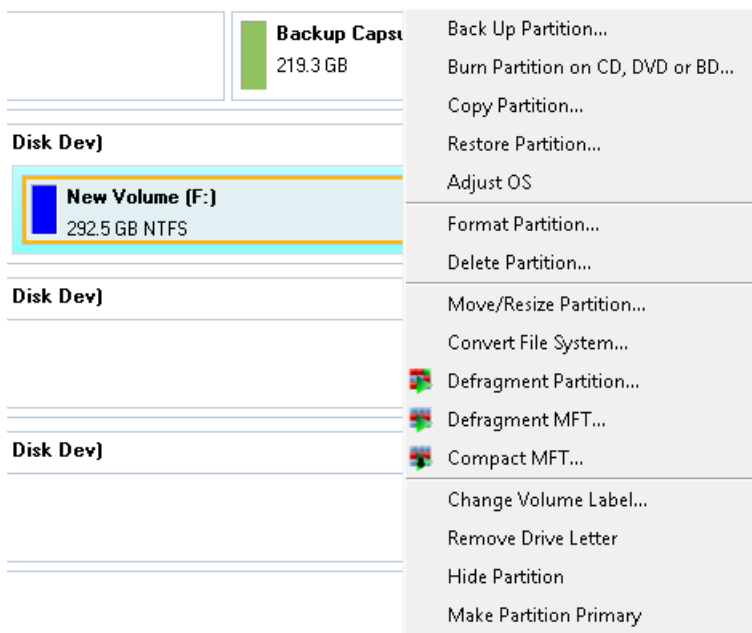
Let's assume you've got several partitions on your hard disk. After installing a number of resource-consuming applications and system updates your system partition has started to suffer from the lack of free space. But an adjacent logical partition has a plenty of redundant space. That's just enough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

To merge a system partition with an adjacent partition, please do the following:

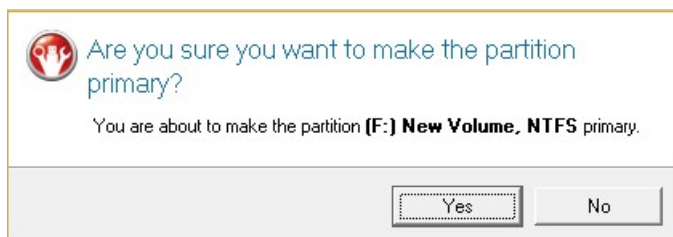
1. In the main window select the required logical volume on the Disk Map.



2. Call a context menu for it (right click of the mouse button) to launch the Make Partition Primary dialog.



3. Confirm the operation by clicking the Yes button. By default, our program works in the virtual mode of execution, so you can either confirm all operations to let the program accomplish them or continue work in the virtual mode.



4. Click the **Partitioning** tab on the Ribbon Panel, then select **Merge Partitions** (any of the ways described earlier can also be used here).
5. On the Wizard's Welcome page, click the Next button.
6. Click on the left partition of the pair of partitions you need to merge, as the right one will be selected automatically. During the operation all contents of the right partition will be placed in a folder on the resulted

joined partition. By default, the program offers an easy-to-understand folder name, which can be customized however.

Please note that it is possible to select only FAT, FAT32 or NTFS adjacent partitions or FAT, FAT32 or NTFS partitions, separated from each other by free block. You will not be able to proceed further if no pair of partitions of these types are presented on the disk.

Select left partition from a pair you would like to merge. Right partition will be selected automatically. Please note that content of right partition will be placed within a folder, placed in a root of left partition. You can specify this folder name in a field below.

Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)

System ... 2.1 GB NTFS	Data (E:) 2.6 GB NTFS	Utils (G:) 3.2 GB NTFS
---------------------------	----------------------------------	---------------------------

Specify a folder name to keep content of right partition

Folder Name

To review the changes, click **Next**



If a system partition is the right one of the selected pair, Windows OS will become unbootable after the merge operation is over.

7. Review the changes and complete the wizard.
8. Apply all introduced changes. By default, our program 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.
9. 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.
10. 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 you have the merged volume now.

Shrinking a system partition to increase size of a data partition

Let's assume you've got two partitions on your hard disk, the first one takes about 40% of all the disk space and is exclusively used for Vista 64-bit, while the second serves as a data storage. One day you realize that your system partition doesn't need so much disk space, that's what your data partition really requires at the moment. You can easily tackle this problem with Paragon Linux/DOS recovery environment.

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

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

Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:



www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

- 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.

- In the Linux launch menu select **Partition Manager**. You can find it in PTS DOS as well.
- In the main window select the required hard disk (if several) on the Disk Map.

Hard Disk Partition Wizards Help

Basic Hard Disk 0 (VMware Virtual) - 500 GB

E: NTFS *: NTFS New Volume

Basic Hard Disk 1 (VMware Virtual) - 500 GB

*: Free

Basic Hard Disk 2 (VMware Virtual) - 750 GB

*: Free

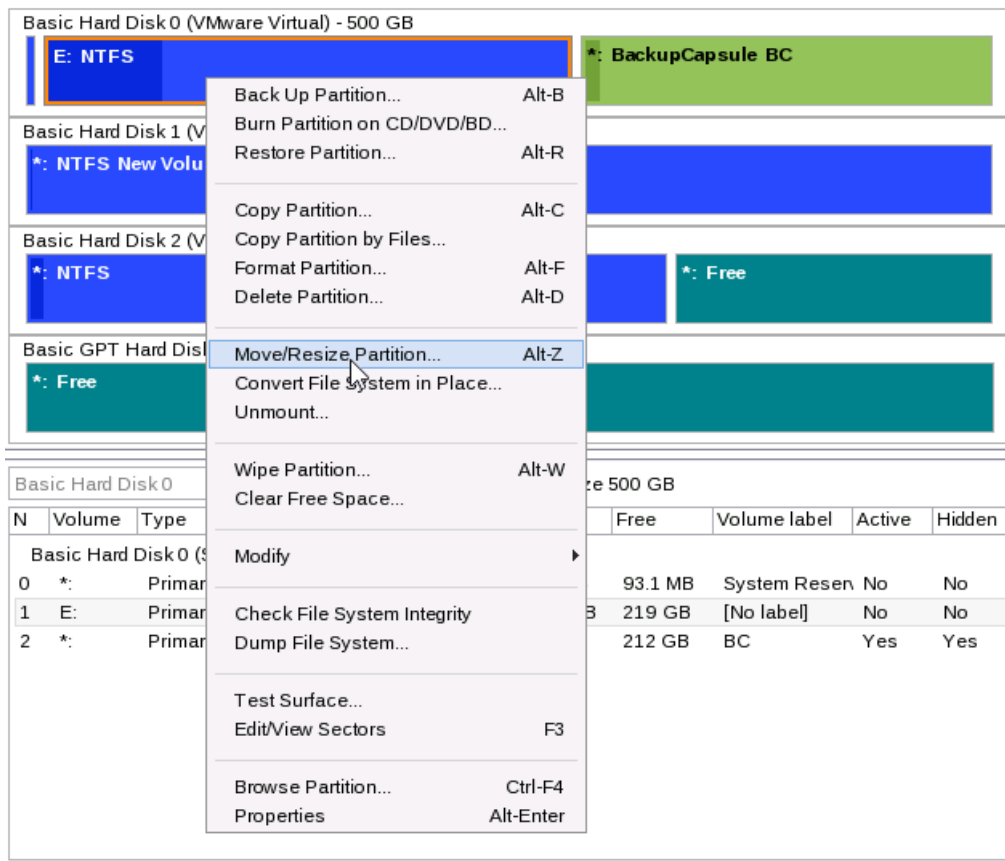
Basic GPT Hard Disk 3 (VMware Virtual) - 120 GB

*: Free

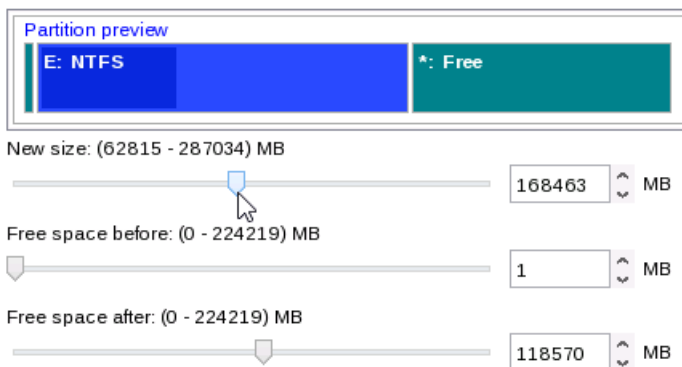
Basic Hard Disk 1 Model VMware Virtual, Size 500 GB

N	Volume	Type	File System	Size	Used	Free	Volume label	Active
Basic Hard Disk 1 (Size 500 GB)								
0	*:	Primary	Free	500 GB				No

- Choose your system partition and then call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.



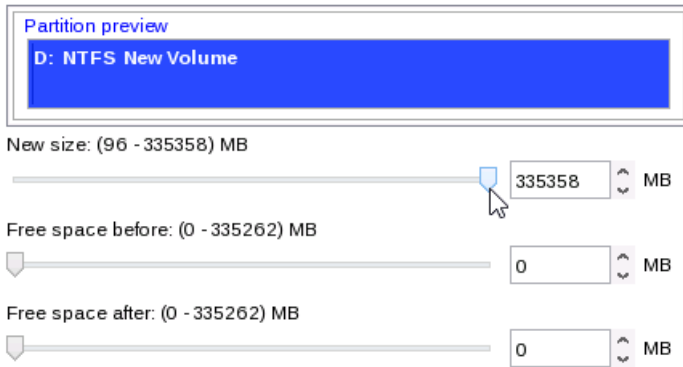
- In the opened dialog set a new size for the partition by moving the slider or by entering the exact value in the appropriate field. While doing this, free space from the partition will be released (displayed in aqua-green). Click OK to continue.



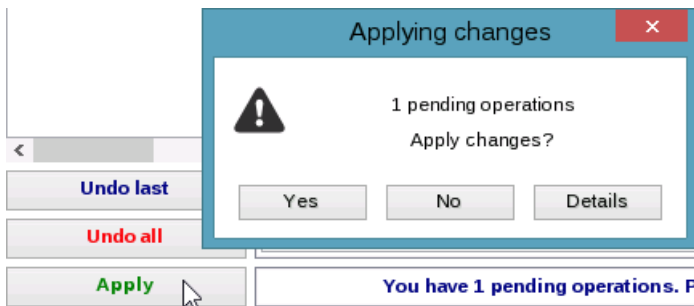
- Now you've got a block of free space to add to your data partition.



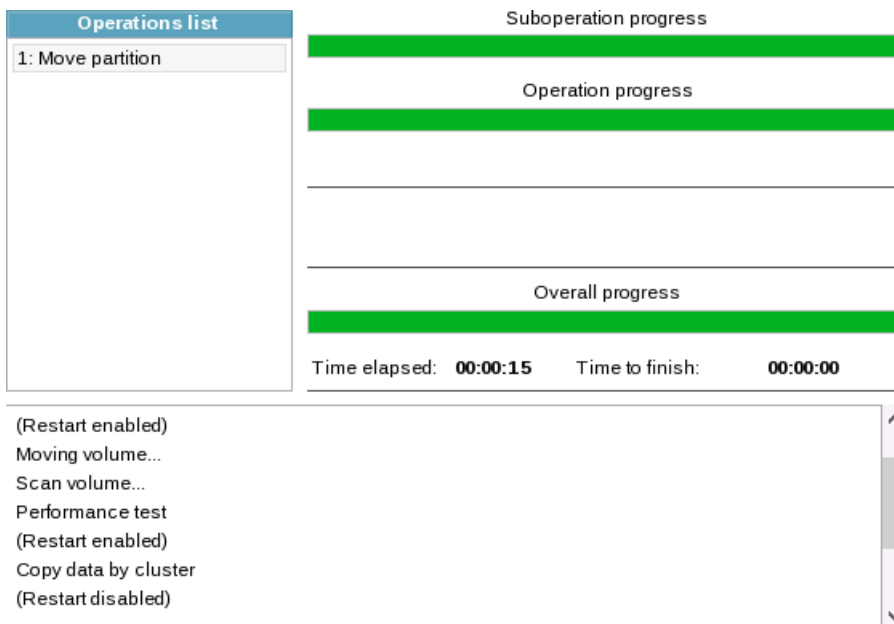
- Choose the data partition and then call the context menu for it (right click of the mouse button) to launch the Move/Resize dialog.
- Move the slider to the right to increase size of the partition. Click OK to continue.



10. Apply the pending changes.



11. In the Progress window you can see in real-time a detailed report on all actions carried out by the program.



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** tab on the Ribbon Panel, then select **Express Resize**.

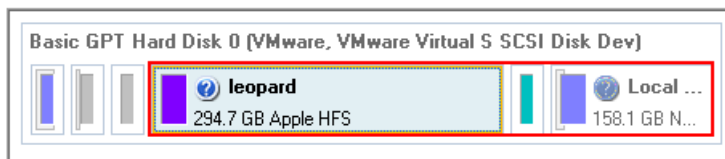


There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.

- On the Wizard's Welcome page, click the Next button.
- The wizard will automatically select Windows (the NTFS file system) and Mac (the Apple HFS file system) partitions of your Boot Camp configuration.

The wizard will resize space between **leopard** and **Local Disk (C:)** on **Basic GPT Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)**.

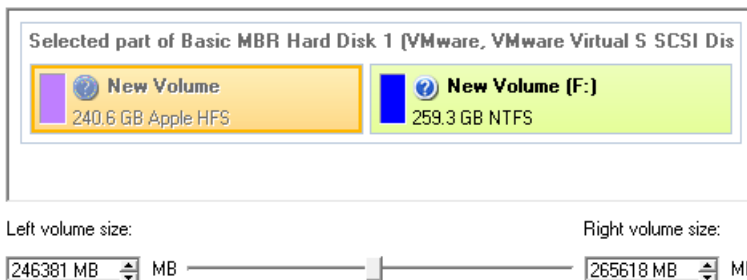
Select left partition from a pair of adjacent partitions you would like to resize. Right adjacent partition will be selected automatically.



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.

- 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.



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


Windows Vista + 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.

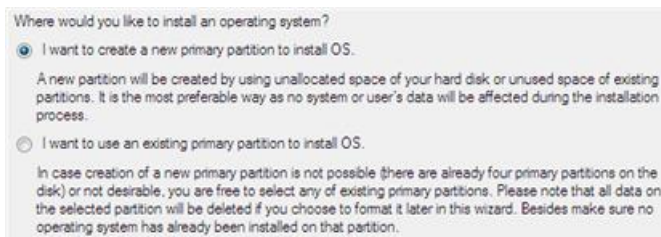
Install New OS Wizard

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

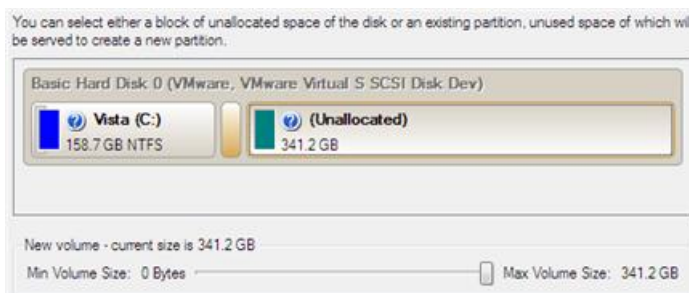
1. Click the **Partitioning** tab on the Ribbon Panel, then select **Install New OS Wizard**.

 **There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.**

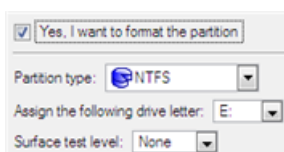
2. On the Wizard's Welcome page, click the Next button.
3. Select the appropriate option to create a new primary partition on your hard disk.



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.



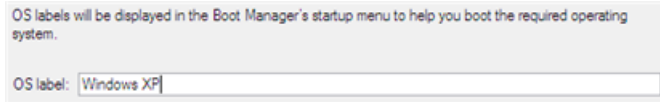
5. The next page enables to specify a file system and a number of additional parameters. Since we are going to install Windows XP, the most preferable file systems are NTFS and FAT32. Click the Yes button to continue.





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. 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:

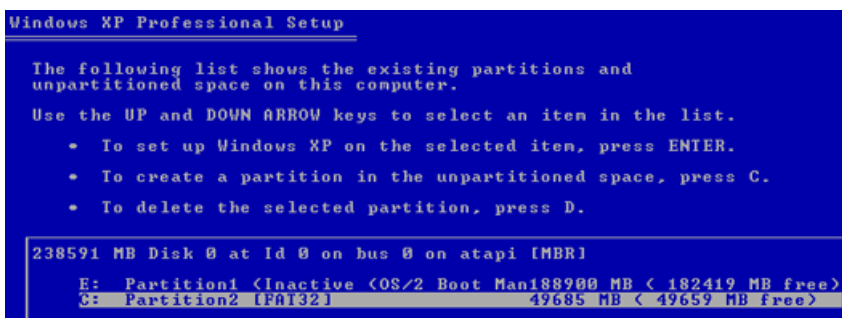


```
Insert distributive CD/DVD and press any key to continue
or <Esc> to abort the action
Please make sure your BIOS is set up to boot from CD/DVD.
```

All the mentioned above operations can also be accomplished with the WinPE recovery environment.

8. 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.



9. 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 our program once again, but this time in Windows XP to activate Boot Manager.



To avoid double installation, please use our recovery media to activate Boot Manager.

10. Click **Boot Management** and then select **Boot Manager** in the Express Launcher.
11. Set up the Boot Manager wizard. 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.



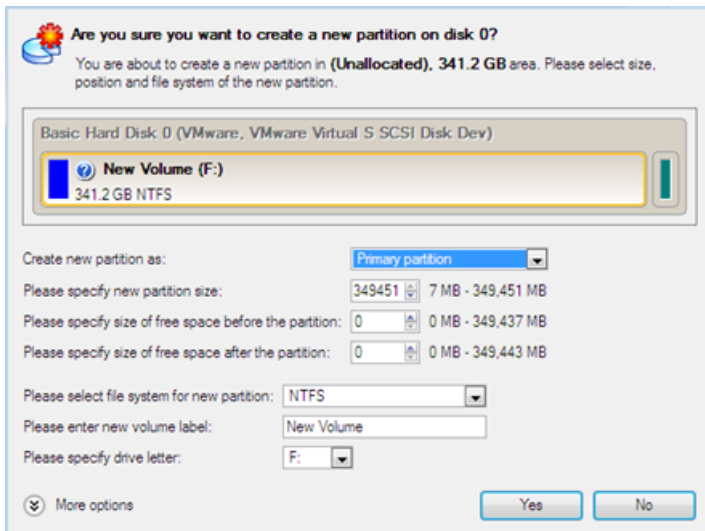
12. Now restart the computer to make sure you have got a dual boot system.

Traditional way

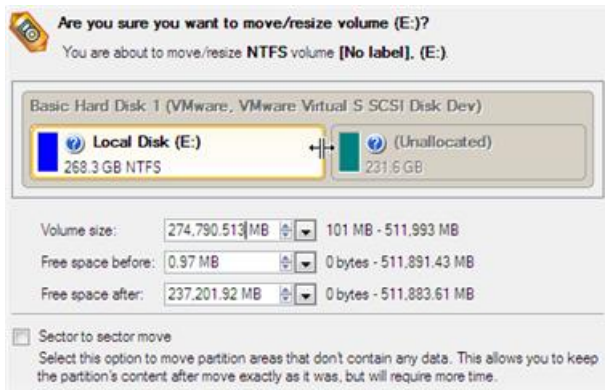


This scenario implies that operating systems will be installed on different partitions to provide better security and system independence.

1. In the main window select your hard disk on the Disk Map to make a block of free space on it.
2. Release some free space (not less than 10 GB to install Windows XP) from the partition. To do that, please call a context menu for the selected partition (right click of the mouse button) and launch the Move/Resize dialog.



3. 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.

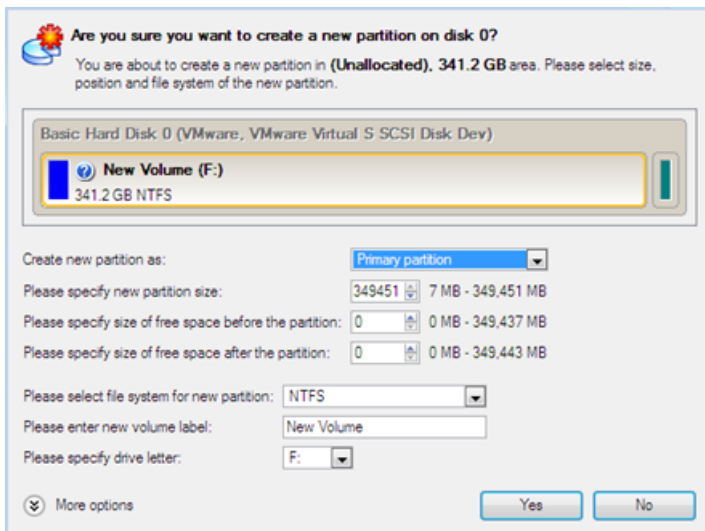


The Move/Resize dialog offers a number of additional parameters that can also be of help. However here we pay attention to the most relevant to fulfill our task.

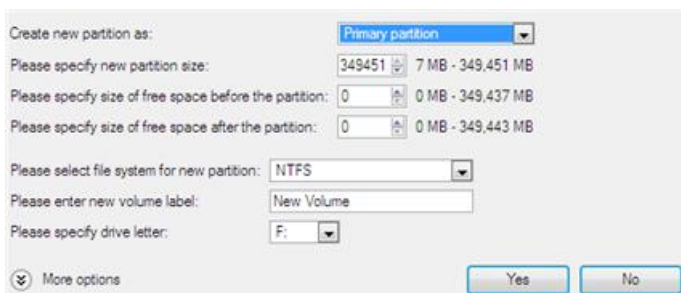
- Now you have a block of free space sufficient in size to hold a new partition.



- 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.



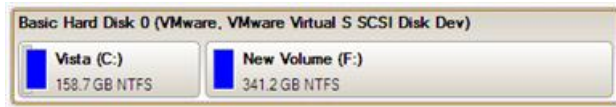
- Define parameters of the future partition. By all means it has to be primary and since we are going to install Windows XP, the most preferable file systems are NTFS and FAT32. Click the Yes button to continue.





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.

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



8. 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.



Hiding of the system partition will make OS non-bootable, what is quite normal.

9. Apply all introduced changes. By default, our program 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.
10. 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 status of 0x00000000 (0xc0000034 0x0010037c).
The system has been shut down.
```

All the mentioned above operations can also be accomplished with the WinPE recovery environment.

11. 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>
G: Partition2 [PQ132] 49685 MB < 49659 MB free>

```



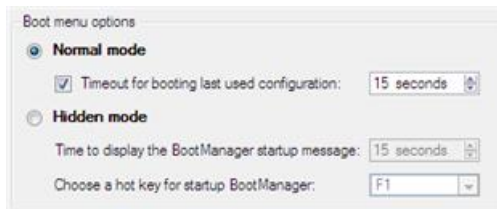
Installation of Windows XP will make Windows Vista non-bootable.

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



To avoid double installation, please use our recovery media to activate Boot Manager.

13. Click **Boot Management** and then select **Boot Manager** in the Express Launcher.
14. Set up the Boot Manager wizard. 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.

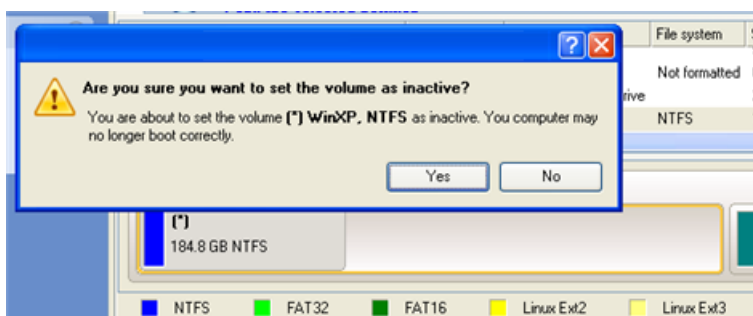


15. Now restart the computer to make sure you have got a dual boot system.

Windows XP + Windows Vista

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;



Reviving the system partition

In case you are not able or not willing to complete the mentioned above scenarios, but have already reached the point when all changes are applied and everything is ready to install the second OS, please do the following to make your system bootable once again (only relevant for the traditional scenario):

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

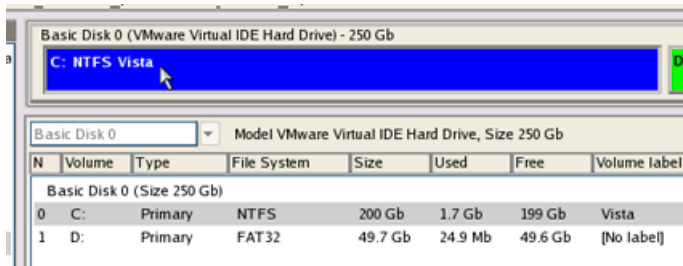
Please use **Recovery Media Builder** or **Boot Media Builder** to prepare Paragon's recovery environments on CD/DVD, flash, or in an ISO-image. You can get these utilities here:



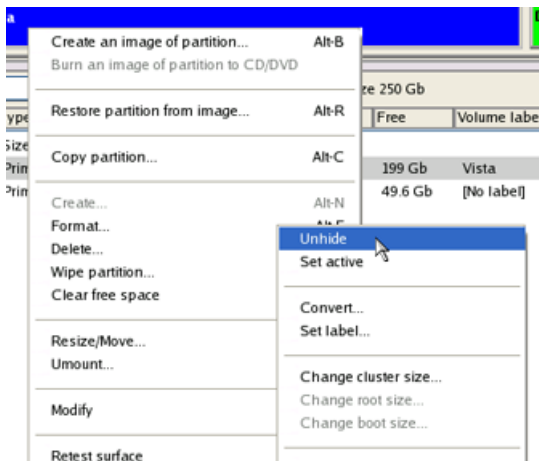
www.paragon-software.com/my-account/.

To automatically boot from the recovery media please make sure the on-board BIOS is set up to boot from CD/USB first.

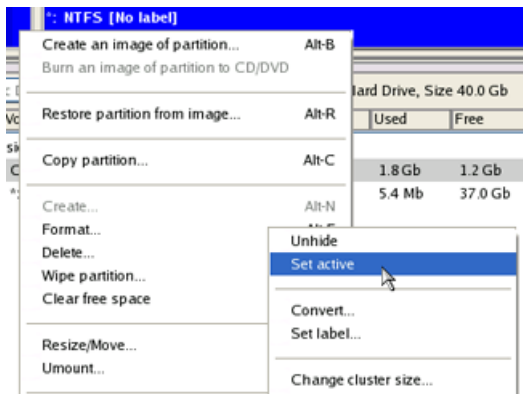
2. In the Linux launch menu select **Partition Manager**.
3. In the main window select your non-bootable Windows partition on the Disk Map.



4. Unhide the partition by calling the context menu for it (right click of the mouse button) and then selecting **Unhide**.



5. Only for the Windows XP + Windows Vista scenario you need to make the system partition active as well by calling the context menu for it (right click of the mouse button) and then selecting **Set Active**.



6. You will be notified after the operations are completed.
7. Restart the computer.

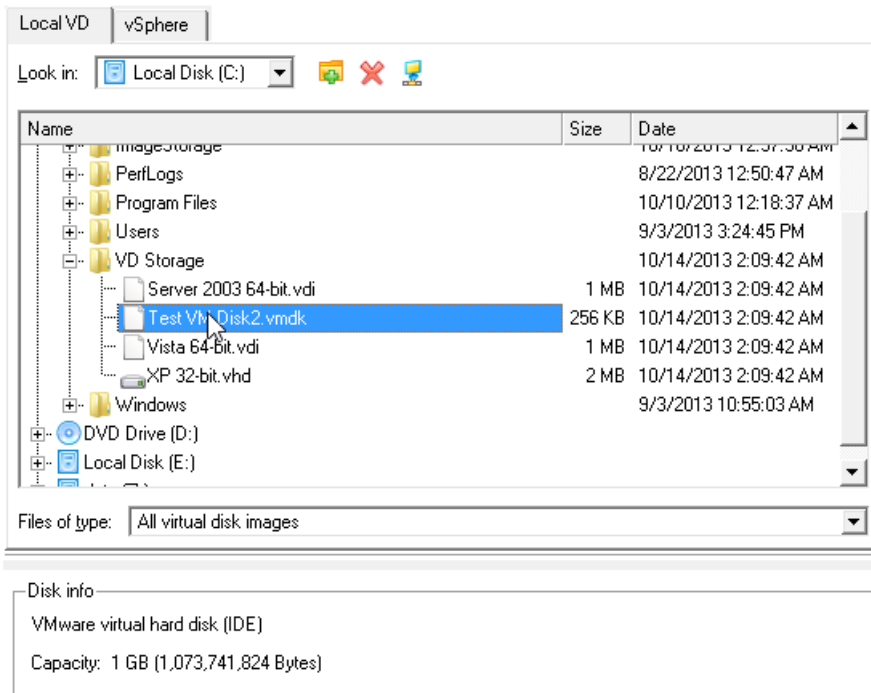
Connecting a virtual disk (Connect VD)

You've got the option to connect a virtual disk of [one of the supported types](#) directly to our program as if it's an ordinary physical disk, so opening up enormous possibilities:

- Exchange data between your physical environment and the virtual one through Volume Explorer (data import only) or File Transfer Wizard (data import and export). The way we offer is much easier and faster, as you don't need a VM shared folder, the network, or the slow-goer drag-and-drop;
- Import data from a parent virtual disk to one of its snapshots;
- Accomplish drive partitioning (create, format, delete, move, resize, etc.);
- Modify partition attributes (Active flag, Hidden flag, Volume Label, etc.);
- Edit/View sectors, and many more.

Direct connection

1. Click the **Copy & Migration** tab on the Ribbon Panel, then select **Connect a Virtual Disk**.
2. In the opened dialog click on the **Local VD** tab, then browse for the required virtual disk. You can connect a virtual disk from a local disk, a flash stick, a mapped network share, or CD/DVD/BD. When selecting one of the supported virtual disks, you will see detailed information on it below.



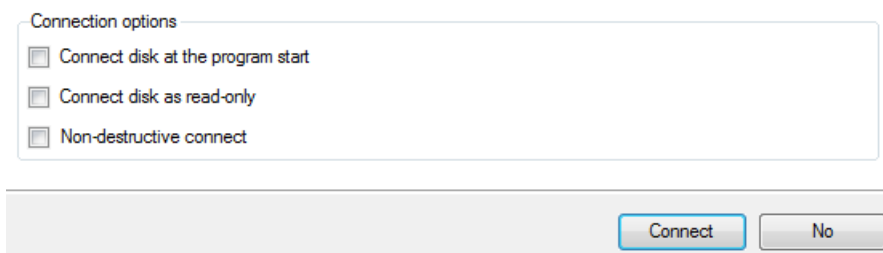
Although you're allowed to map a network share for connecting a virtual disk, we do not recommend it due to modest performance, especially when you need to accomplish drive partitioning.



Virtual disks connected from CD/DVD/BD will be available for reading only.

All earlier connected virtual disks get on a special list, which can be seen by clicking the "Recent virtual disks" tab (inactive initially). Just select a disk you've already worked with, and then click "Connect" for the fast connection.

- By default the selected virtual disk will be connected in the read/write mode until you disconnect it or exit the program. There are several auxiliary options however that can help in particular situations:



- **Connect disk at the program start** to have the virtual disk connected automatically at every program start.
- **Connect disk as read-only** to prohibit modification of data on the virtual disk.
- **Non-destructive connect.** It's a special read/write mode, when all changes on the connected disk are being saved to a snapshot, thus providing complete safety for the original disk's contents. If needed, this snapshot can later be merged with its parental disk by using standard tools of virtualization software vendor.



If choosing connection in the read-only mode, the non-destructive connection will be disabled and vice versa.

Since snapshots of Oracle VirtualBox are not supported, the non-destructive connection is unavailable for .vdi disks.

- Click **Connect** to accomplish the operation. The selected virtual disk will be available on the disk map, as if it's an ordinary physical disk.

Limitations:

- A virtual disk opened for writing with a 3rd party tool (e.g. being used by a virtual machine) won't be connected, as asynchronous parallel writing to the disk file will most likely result in data corruption;
- A virtual disk opened for reading with a 3rd party tool (e.g. it's a parent VMware disk, which snapshot is being used by a virtual machine) will be opened for reading only with the corresponding notification;
- A double disk connection is prohibited.

Repartitioning a virtual disk

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

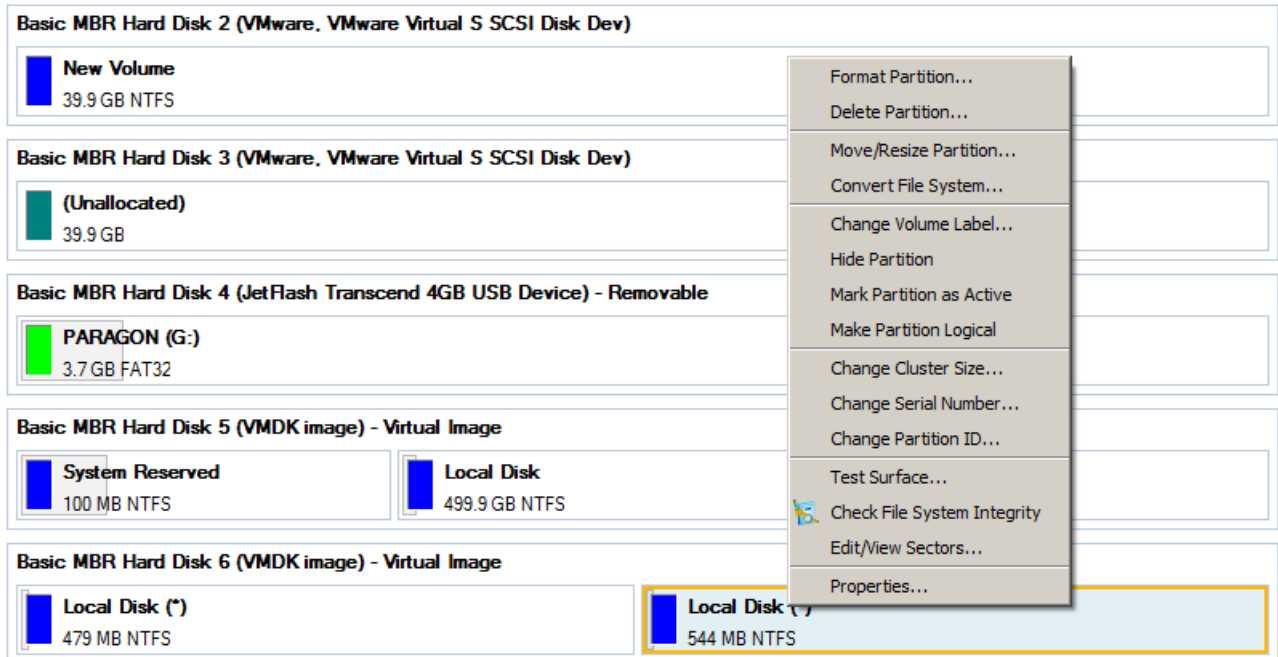
To increase size of a system partition by taking unused space from an adjacent partition, please do the following:

- [Connect the required virtual disk to our program.](#)
- Select it on the disk map.

The screenshot shows a 'Disk map' window with five entries:

- Basic MBR Hard Disk 0 (VMware Virtual IDE Hard Drive ATA Devi)**: (Unallocated) 39.9 GB
- Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev)**: System Reserved (100 MB NTFS), Local Disk (C:) (499.9 GB NTFS)
- Basic MBR Hard Disk 2 (VMware, VMware Virtual S SCSI Disk Dev)**: New Volume (39.9 GB NTFS)
- Basic MBR Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)**: (Unallocated) 39.9 GB
- Basic MBR Hard Disk 4 (VMDK image) - Virtual Image**: System Reserved (100 MB NTFS), Local Disk (499.9 GB NTFS)

- Right click on the space donor partition, then select **Move/Resize Partition...**



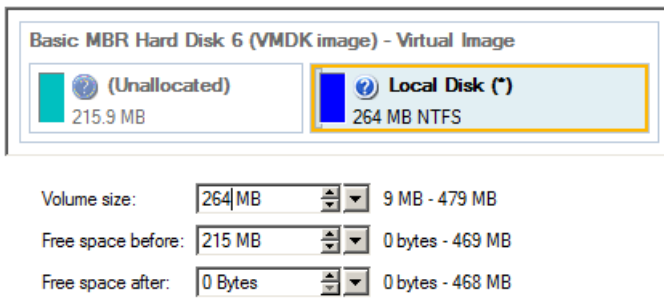
In case you've got more than two partitions on the disk, and the required space donor is not adjacent to the system partition, you can still use this scenario by consecutively redistributing free space between all partitions involved in the operation.

- In the opened dialog drag-and-drop the left edge of the partition to the right to release the required amount of the free space (displayed in aqua-green). You can also do it manually by entering the exact size of free space.



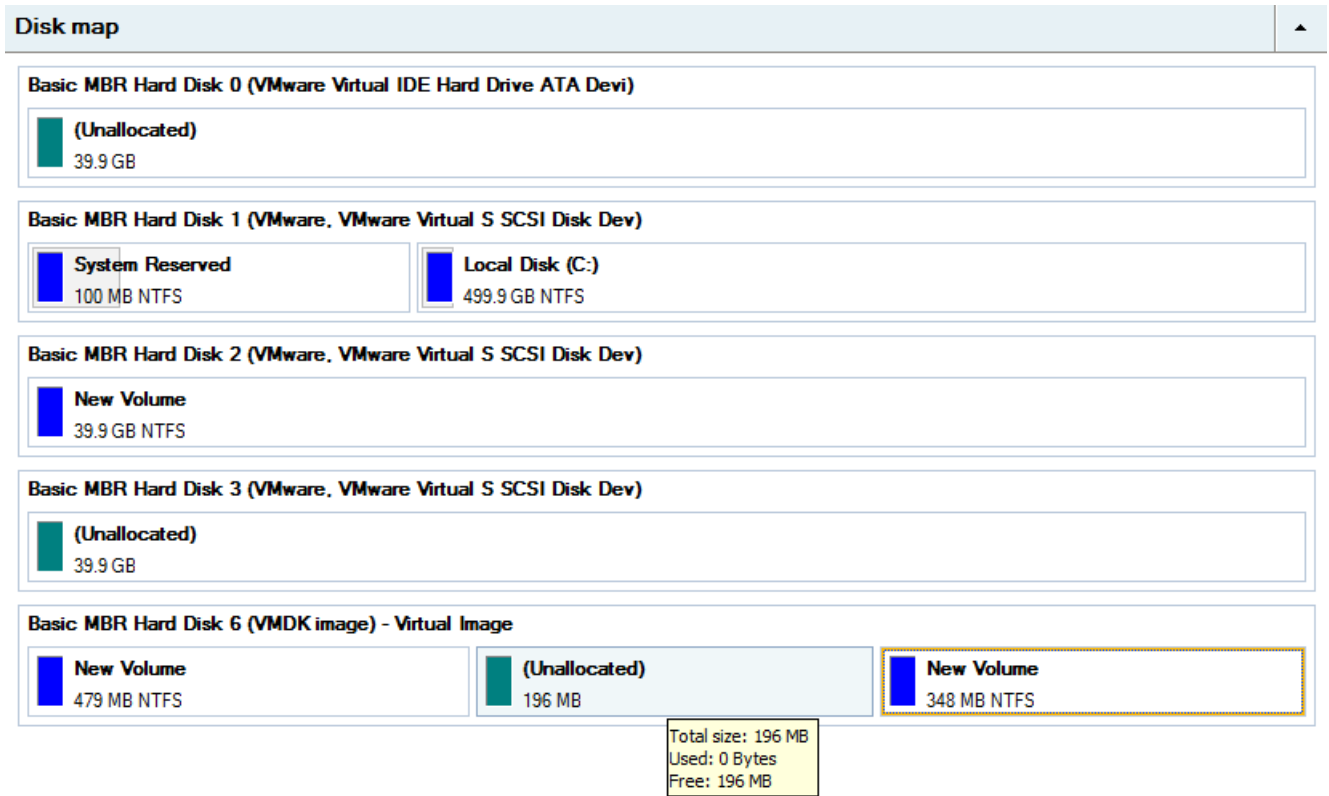
Are you sure you want to move/resize volume (*)?

You are about to move/resize NTFS volume **Local Disk (*)**. (*)

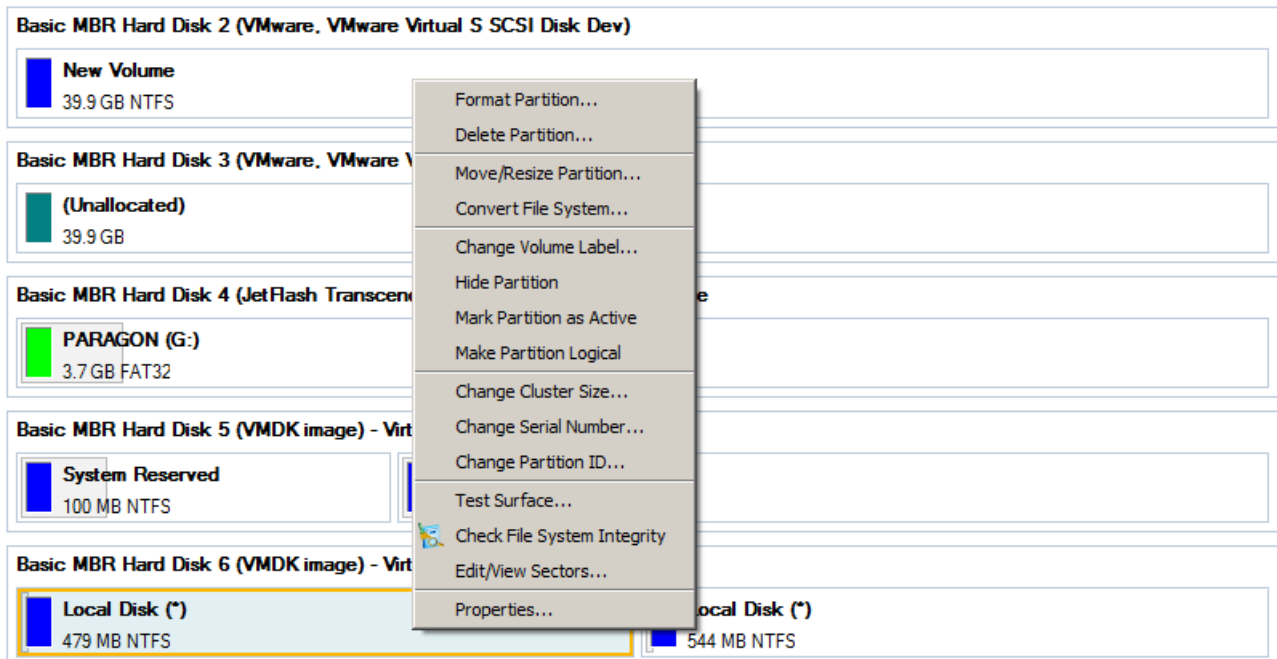


Sector to sector move
 Select this option to move partition areas that don't contain any data. This allows you to keep the partition's content after move exactly as it was, but will require more time.


- Now you've got a block of free space to add to the system partition.

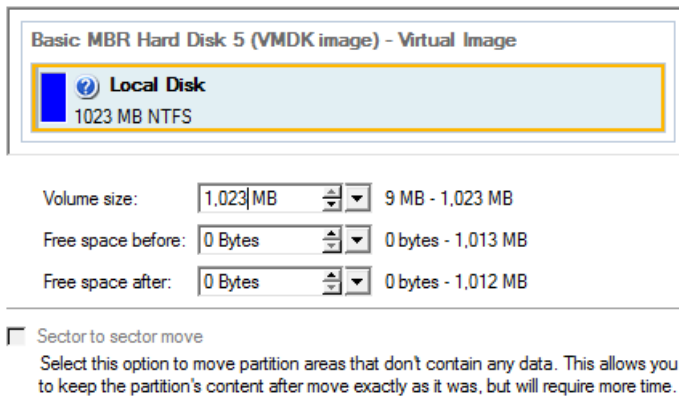


6. Right click on the system partition, then select **Move/Resize Partition...**



7. In the opened dialog shift the right edge of the partition to the right end, thus increasing its size.

 Are you sure you want to move/resize volume (*)?
You are about to move/resize **NTFS** volume **Local Disk. (*)**.



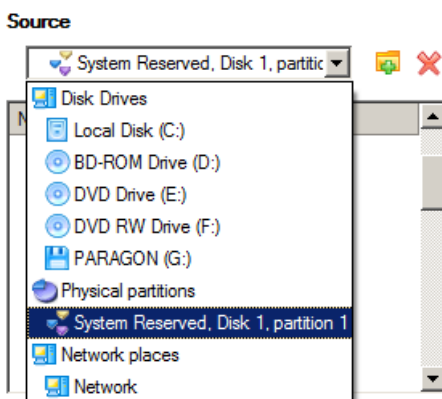
8. Apply all introduced changes. By default, the program works in the virtual mode of execution, so you have to confirm all operations to let the program accomplish them. To do that, just click the Apply button on the Virtual Operations Bar.
9. When done, either disconnect the virtual disk or close our program.

Exchanging data between physical and virtual environments

Let's assume you need to import a lot of data from one of your virtual disks. The best way out is to use our program, as it can help you do that without starting up the virtual environment and the other actions typical for this task.

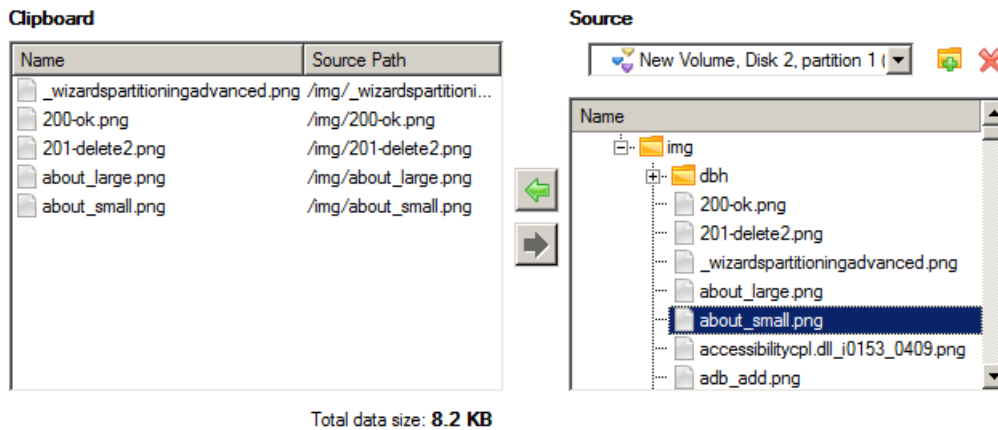
To import data from a virtual environment, please do the following:

1. [Connect the required virtual disk to our program.](#)
2. Click **Tool Button**, then select **File Transfer Wizard**.
3. On the Wizard's Welcome page, click the Next button.
4. Select a disk where the required data is stored from the pull-down list in the right pane of the window. You can find it among physical partitions, as a connected virtual disk cannot have an assigned drive letter either.



To easily find the required disk, please use its volume label or sequence number as a check point.

5. Select files you want to copy and place them to Clipboard by pressing the left arrow-button. Click **Next** to continue.



6. Select the **Save data to local/network drives** item. Click **Next** to continue.

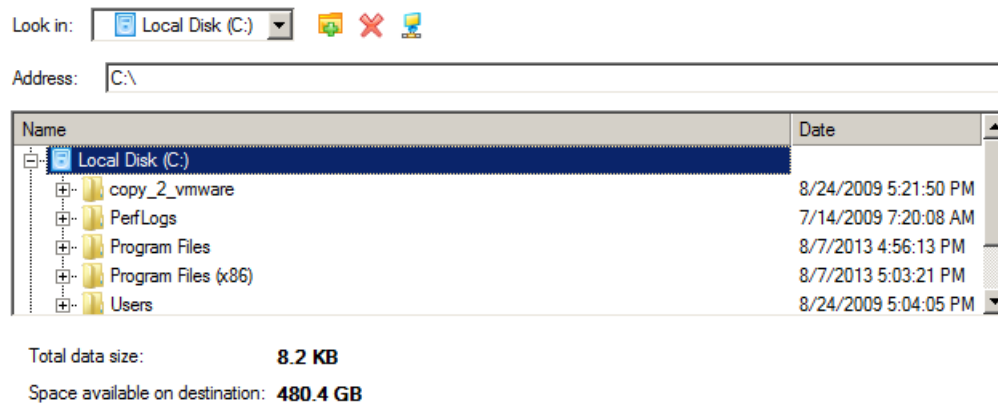
There are several ways the Wizard can store your data. Please select how would you like to save the data:

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

Select the option to save your data locally on a mounted partition (with drive letter assigned) or on a network share. To store your data on the network, you will need a mapped network drive or a mounted directory on the server. You will be prompted to choose an exact location for your data later in the wizard.

7. Specify the exact place to copy the data to.

Please select the destination path where to save the data from clipboard.



8. Finish the wizard to accomplish the operation.

Copying data from a parent virtual disk to one of its snapshots

Let's assume you've got a virtual machine with several snapshots. You need to copy some data from a parent image to one of its snapshots. You can't just roll back to the parent image, as you don't want to lose the latest data of the snapshot, so the best way out is to copy the required data from the parent image to the snapshot.

To copy data from a parent image to one of its snapshots, please do the following:

1. [Connect the required snapshot disk to our program.](#)
2. Connect its parent disk to our program. It'll be connected for reading only.

3. [Copy the required data from the parent disk to the snapshot.](#)
4. Disconnect the virtual disks or close the program.

Using 2.2TB+ HDD as internal data storage in Windows XP

As you know 2.2TB+ drives are out of the supported size range for the popular Windows XP system. Though two new Windows versions have been released since XP, it's still utilized on 51% of computers worldwide. Meaning, roughly half of PC users simply cannot use the new hard disk drives.

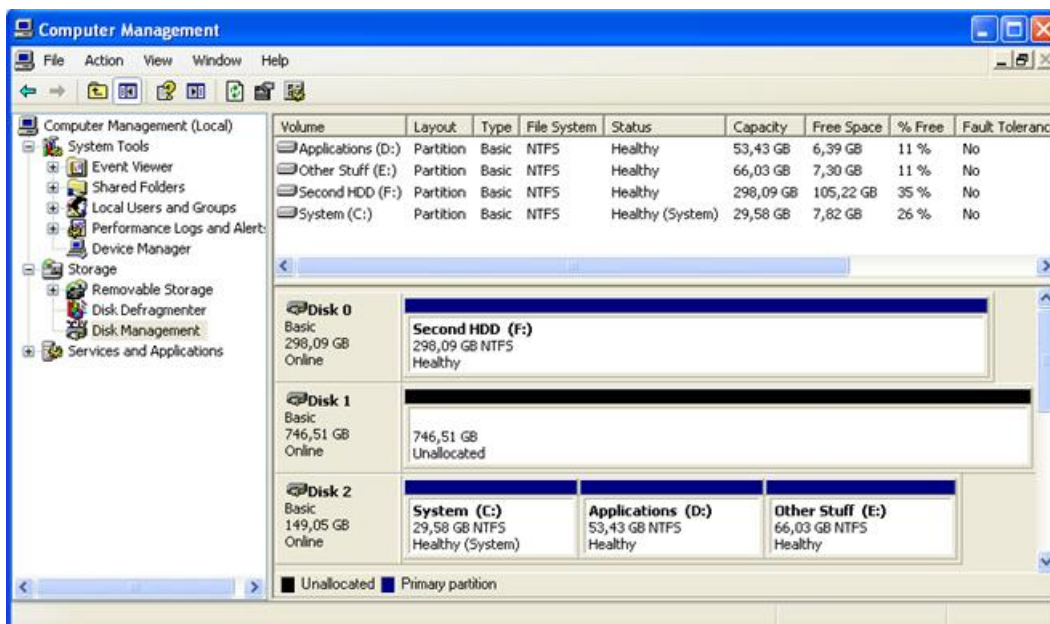
We can help you augment Windows XP by adding support for GPT (GUID Partition Table) disks, thus you will be able to use all disk space on ultra high capacity drives:



GPT Loader enables to use all disk space of modern 2.2TB+ drives under Windows XP, but only for storing data, not for the Windows XP accommodation.

Only internally connected single 2.2TB+ drives are supported, not external storages, or those combined into RAID (Redundant Array of Independent Disks).

1. As an example we've taken a new 3TB hard disk (**Disk 1** in the system). As you see Windows XP detects it as a 750GB disk. It's due to the fact that this operating system works only with MBR (Master Boot Record) disks, so it cannot address disk space beyond 2.2TB limit. If a drive exceeds this limit, OS detects the remaining slice of space (750GB in our case) only, thus making the bulk of the disk space unavailable to the user.

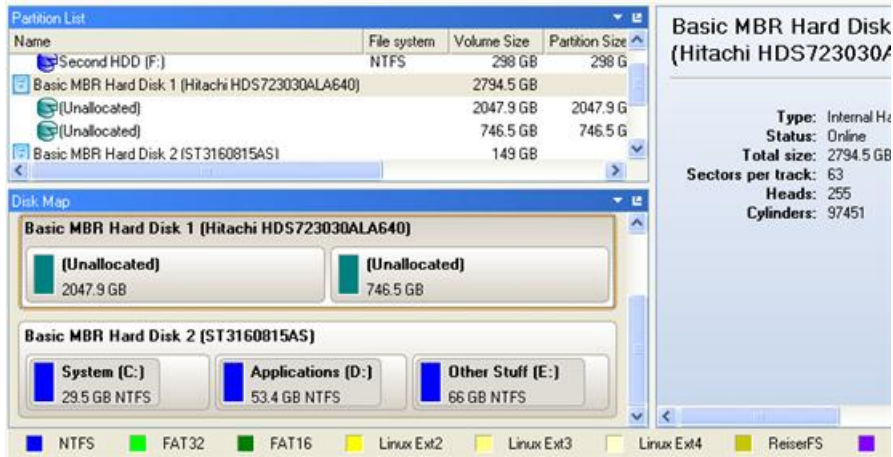


2. First we need to add support for GPT disks to the operating system. To do that, install Paragon GPT Loader. It's included to the product's installation package, but it's not allowed to install by default, so please take it into account.

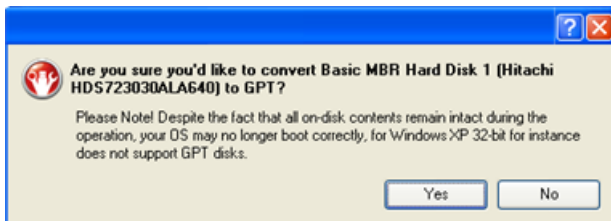


Windows OSes since Vista do not need functionality of Paragon GPT Loader, so it's only available to install under Windows XP 32/64-bit.

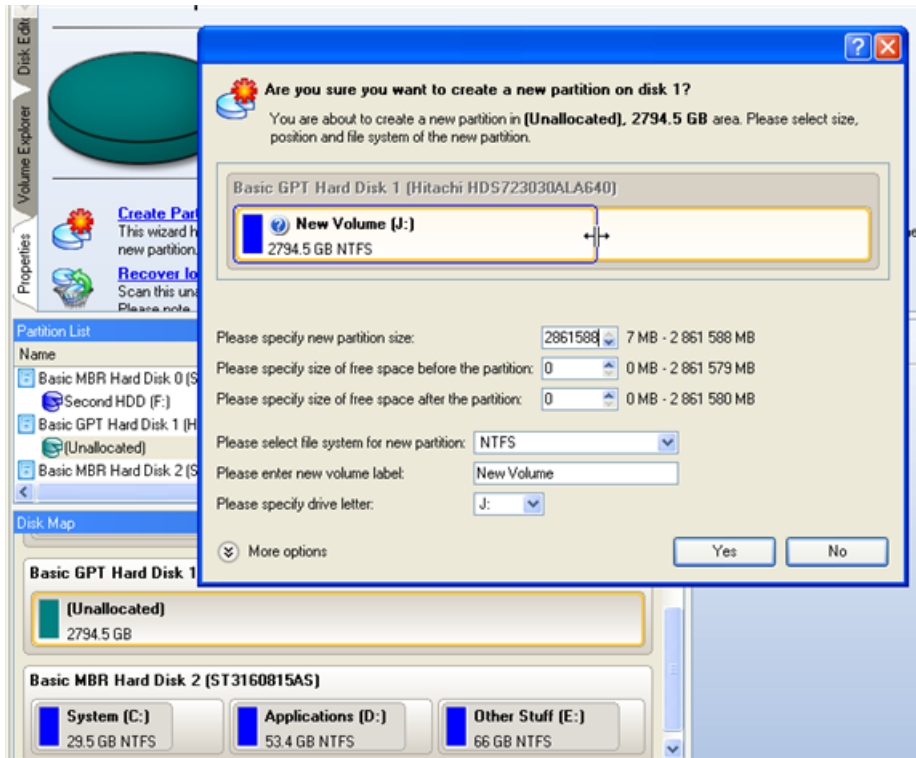
3. Restart the system when the installation is over.
4. If you launch Windows Disk Management (WDM) now, it will show the same 750GB, since the hard disk is still treated as MBR in the operating system. If you launch our program, you will see that the entire disk space is now correctly detected. Being MBR though, there are two unallocated slices: the maximum available for MBR 2.2TB and 750GB.



5. To get access to the entire disk space, we need to convert the disk to GPT. To do that, select in the Main Menu: **Hard Disk > Convert to GPT hard disk.**



6. Confirm the operation and then apply the pending changes.
7. Now you've got access to the entire disk space and are able to perform functions such as creating a volume using our program or Windows Disk Management.



When trying to create a volume in WDM just after the conversion to GPT, you will be asked to restart the computer first. The system restart is not required for our program.



When partitioning in WDM, it additionally creates an MSR (Microsoft Reserved) partition, which size may vary from 32MB (for disks up to 16GB in size) to 128MB (for all the others). It's a service partition, which reserves space for particular needs of Microsoft. You won't see it in WDM, but it's available in our program. You're free to delete it.

Extra Scenarios for WinPE



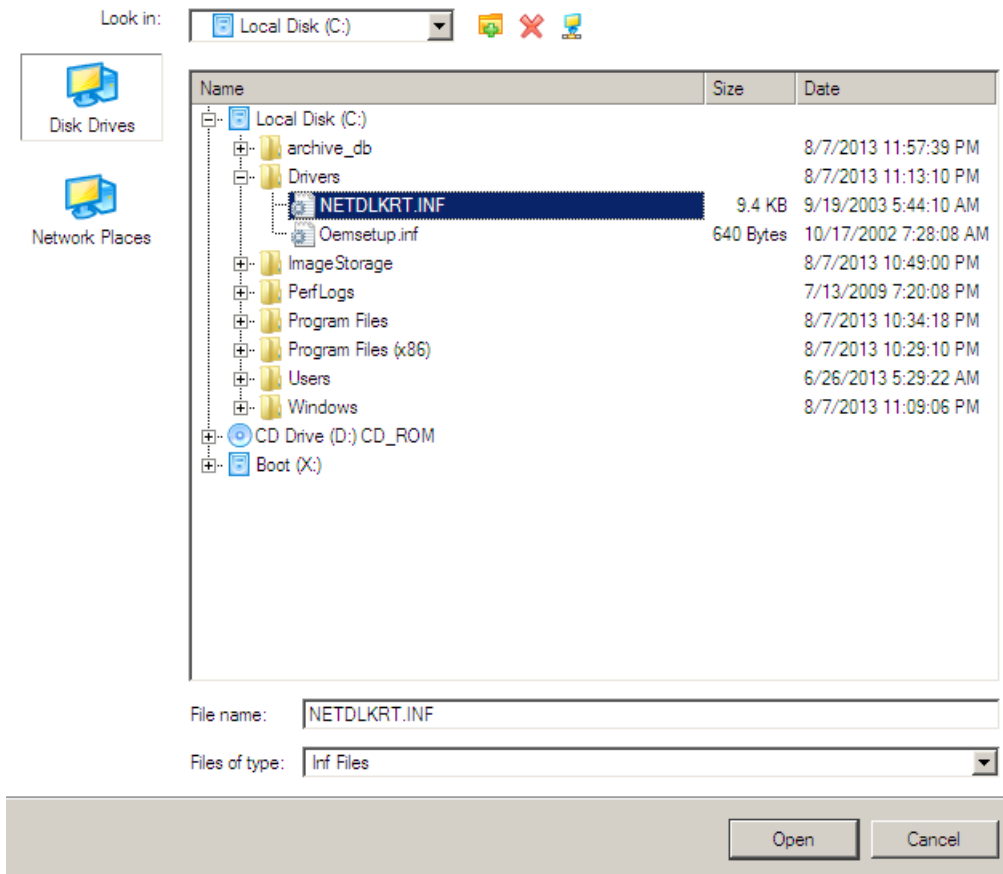
Please use Boot Media Builder to prepare the WinPE recovery environment, which you can get here: www.paragon-software.com/my-account/.

Adding specific drivers

The WinPE based recovery environment offers excellent hardware support. Anyway you've got the option to add drivers for specific hardware with a handy dialog.

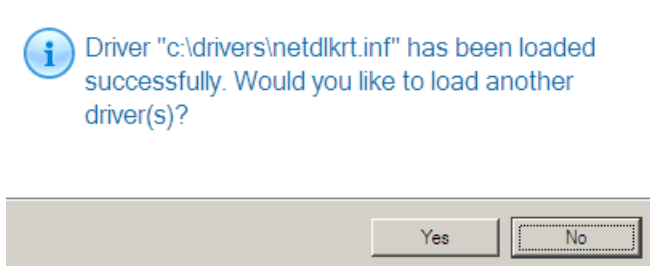
To add drivers for specific hardware, please do the following:

1. Click **Load Drivers**.
2. In the opened dialog browse for an .INF file of the required driver package located on a floppy disk, local disk, CD/DVD or a network share. Then click the **Open** button to initiate the operation



To know how to map a network share, please consult the [Configuring network](#) scenario.

- You will be notified on the successful accomplishment of the operation. Click **Yes** to load another driver or **No** to close the dialog.



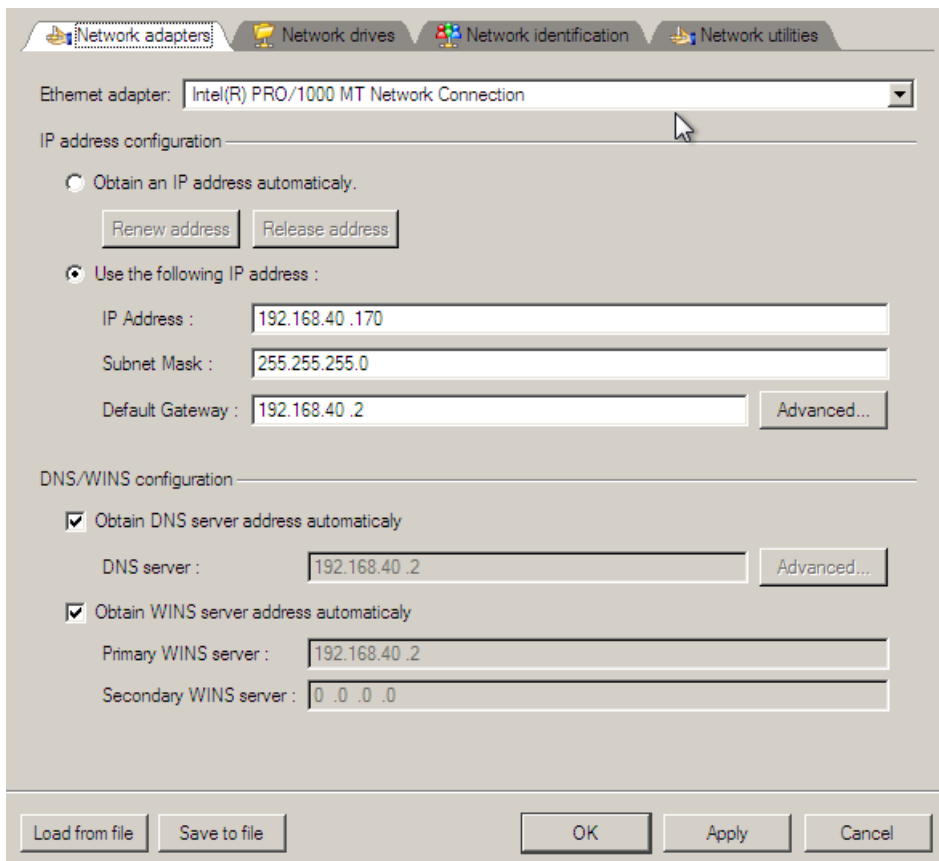
The WinPE recovery environment can either be 32- or 64-bit, so are to be drivers for injection.

Configuring network

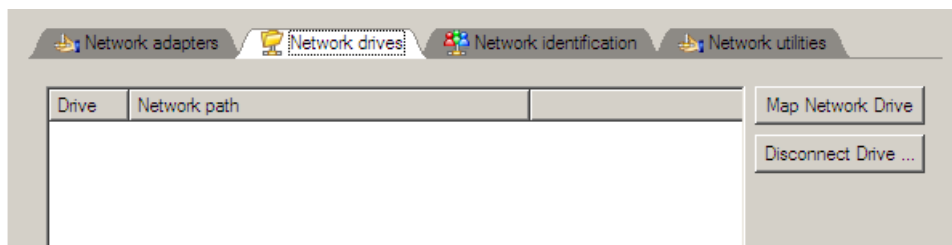
If your local network has a DHCP server, a network connection will be automatically configured once the WinPE recovery environment has been started up. Otherwise you will need to do it manually with a handy dialog by providing an IP address, a network mask, default gateway, etc. Besides with its help you can easily map network shares.

To manually set up a network connection and map a network share, please do the following:

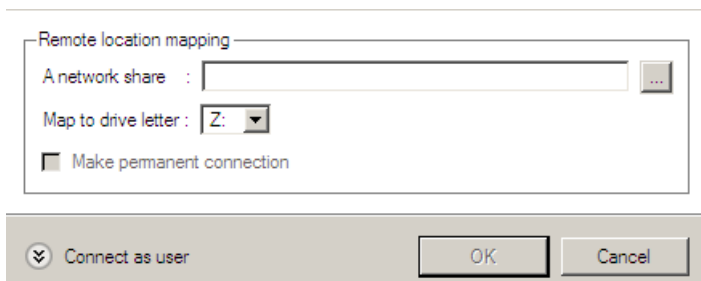
1. Click **Configure Network**.
2. In the opened dialog provide an IP address, a network mask, default gateway, etc. for your network device.



3. Click the **Network drivers** tab to map a network share.



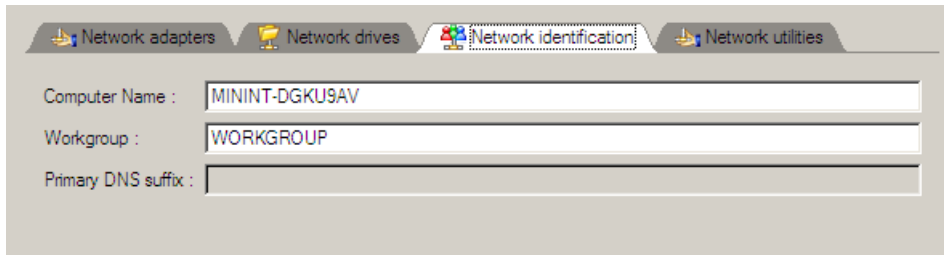
4. Click **Map Network Drive** and provide all the necessary information to map a network share in the opened dialog:



- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;
- Define a letter from the pull-down list of available drive letters;
- Click the **Connect as user** button at the foot of the dialog page to specify a user name and password to access the selected network share if necessary.

By clicking **Disconnect Drive...** you can delete an existing network share if necessary.

- Click the **Network identification** tab to change a network name of your computer (generated automatically) and a workgroup name.

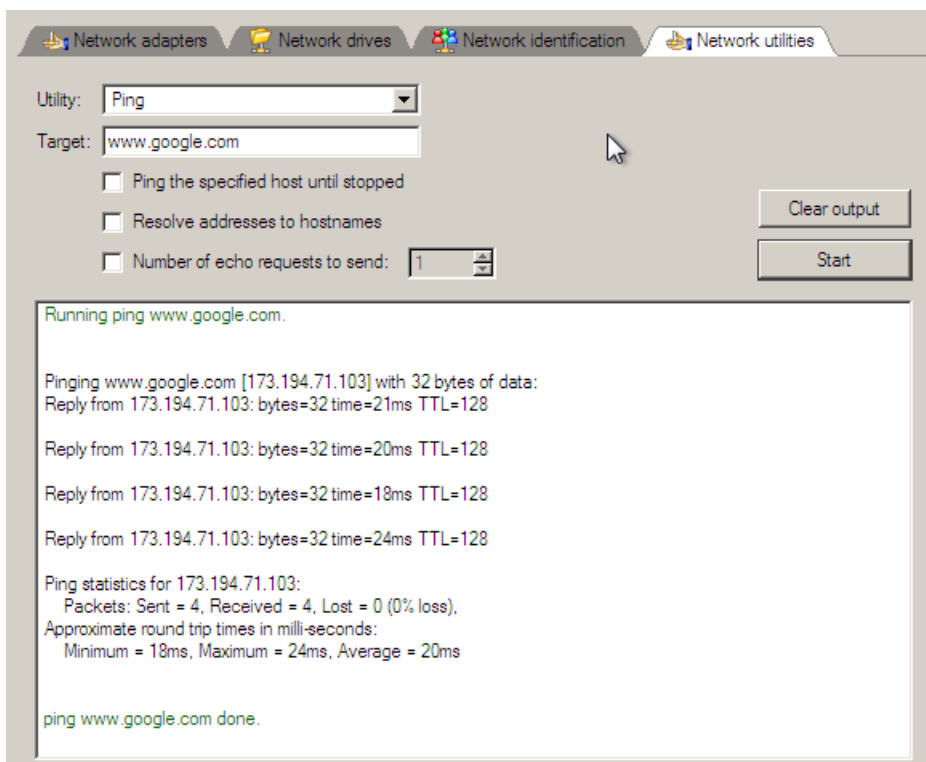


- By default, the wizard saves all network settings in the netconf.ini file located on the WinPE RAM drive, thus it will only be available until you restart the computer. However, you can just once configure your network device and then save this file to some other destination, for instance a local drive, and this way avoid constant re-configuration, just by providing a path to it. So Click **Save to file** to save the netconfig.ini file to the required destination.

Network troubleshooter

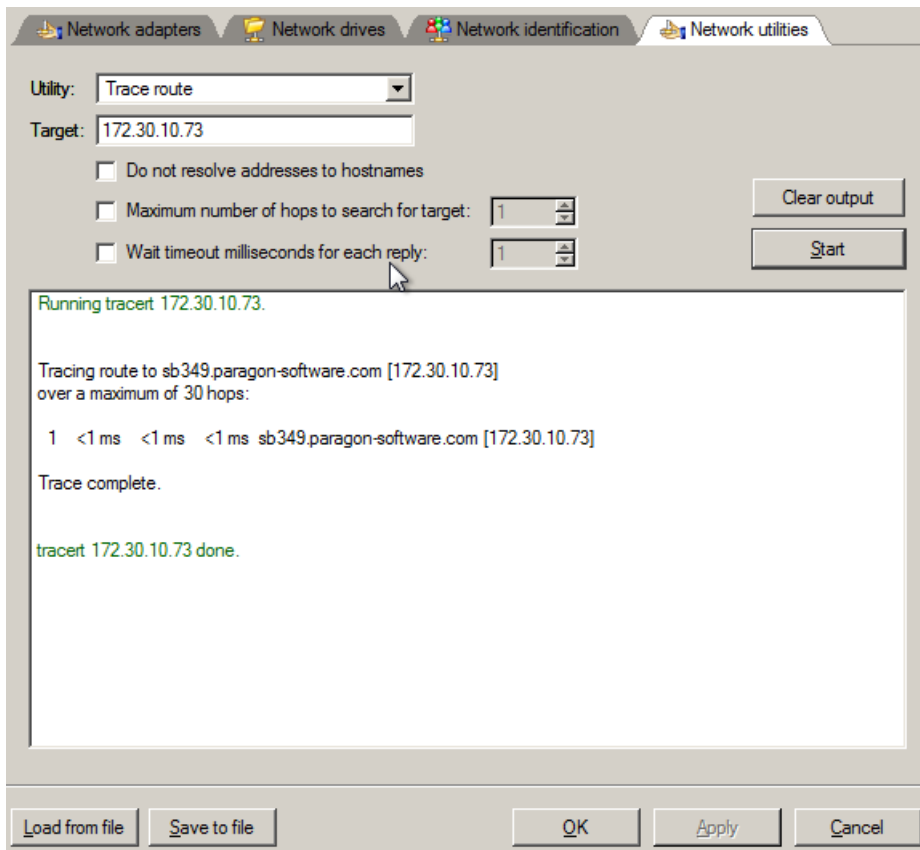
Network Configurator includes a traceroute/ping utility that enables to get detailed information on particular routes and measure transit delays of packets across an Internet Protocol (IP) network. So with its help you can easily track down problematic nodes.

- If you need to ping some network host, please select **Ping**, then type in the required IP address or its name. Click **Start** when ready.



- Ping the specified host until stopped.** Mark the option to ping the chosen host for indefinite time;
- Resolve addresses to hostnames.** Mark the option to display hostnames instead of IP addresses.
- Number of echo requests to send.** By default the utility sends 4 echo requests, which you can modify however.

- If you need to trace a route to some network host, please select **Trace route**, then type in the required IP address or its name. Click **Start** when ready.



- Do not resolve addresses to hostnames.** Mark the option to display IP addresses instead of hostnames.
- Maximum number of hops to search for target.** By default the utility goes through maximum 30 hops when searching for the target host, which you can modify however.
- Wait timeout milliseconds for each reply.** By default the utility waits 4 seconds for each echo reply message. If not received within the timeout, an asterisk (*) is displayed.

Saving 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.

To prepare a log files package, please do the following:

- Click **Log Saver**.
- Provide an e-mail address used for registering the product, then give a detailed description on the encountered problem in the corresponding text fields. Please don't worry - we respect your privacy, so none of your confidential data will be exposed. This utility only collects the program's operation logs to help our Support Team find and tackle your problem. Click **Next** to continue.

Welcome to Log Saver Wizard

Please enter e-mail address which was used while registering this product. With its help Paragon Support Department will be able to associate your log files with your request through [on-line request system](#).

TEST_USER@gmail.com

Please enter description of encountered issue:



Log files do not contain any confidential information on the operating system settings or the user documents.

3. Browse for the required location of the log files package or manually provide a full path to it. Click **Save** to initiate the operation.

Specify folder and file name for ZIP archive

Look in:

Name	Size	Date
Local Disk (C:)		
DVD Drive (D:)		
New Volume (E:)		
NEW VOLUME (F:)		

File name:

Files of type:



This function is also available under Windows.

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.
- 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 NTFS 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.