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Virtualization Manager™ 12 Professional

User Manual

Contents

Introduction

More and more people today face the problem of smooth and cost saving system migration. It mostly has to do with constant hardware improvement. Traditional approach involving complete re-installation and re-setup of the operating system and all applications requires a lot of time and labor resources, few can afford. Moreover it doesn't guarantee all software will flawlessly work on a new hardware platform.

Paragon Virtualization Manager™ 12 Professional is an elegant solution that can help you accomplish the following tasks:

- Transfer your live Windows or from a Paragon's backup to a virtual environment of Microsoft Virtual PC, VMware Workstation/Fusion, or Oracle VirtualBox 4.0 (P2V/P2V Restore);

- Transfer your Windows to a different hardware platform. When upgrading to newer or just replacing failed hardware use our unique P2P technology to guarantee startup of your system on a dissimilar hardware configuration (P2P);

- Transfer your virtual Windows back to a physical environment (V2P);

- Migrate your Windows from one virtual environment to another (V2V);

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

- Make OS start up after unsuccessful migration with 3rd party tools (P2V Adjust OS/P2P Adjust OS)

- And many more…

Most functionality of the product is offered through handy intuitive wizards, that's why not only IT pros, but also inexperienced users can find it easy and efficient.

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 Virtualization Manager 12

- **Support of Oracle VirtualBox 4.0**.

- **Improved 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. You've now got the option to:

  - Mount Paragon's backups (.pbf images).

  - Mount a virtual disk in the read-only mode to make sure no data will be changed on the virtual disk during copy or any other operation on it.

- **Automatic partition alignment** during partitioning/copy operations to optimize performance of your hard disk.

- **Check FS Integrity and Data Loss Policies** to let you specify the acceptable balance between the operation performance and the risk of data loss.

- **Conversion of basic MBR disks to basic GPT** to enjoy all benefits of the newest partitioning scheme with minimal effort.

- **WinPE traceroute/ping utility** to get detailed information on particular routes and measure transit delays of packets across an Internet Protocol (IP) network.

- **Support of the restart-free installation**.

- **AFD (Advanced Format Drive) ready**.

- **Support of 2TB+ and non-512B sector size drives**.

- **USB 3.0 ready**.

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.

- **WinPE based recovery environment**. Our product includes the option to prepare a WinPE 3.0 bootable environment on CD/DVD or a thumb drive. It offers excellent hardware support and the same interface and functionality as the Windows version does. Despite the fact that its system requirements are tougher, it's practically indispensible for V2P and P2P scenarios.

Features Overview

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

Key Features

- **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.

- **P2V Copy** to migrate a Windows physical system to a virtual environment in the online mode.

- **P2V Restore** to migrate a Windows physical system backed up with a Paragon disaster recovery tool to a virtual environment.

- **P2V Adjust** to recover the startup ability after unsuccessful virtualization with a 3rd party tool.

- **Create VD** to create an empty virtual disk or with specific data of one of the supported virtualization vendors.

- **P2P Adjust** to successfully migrate a Windows physical system to a different hardware platform (P2P) by allowing automatic injection of all required drivers and the other actions crucial for a migration of this kind.

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

- **Easy size setup for virtual disks** with the partition auto-resize option.

- **Disk file split for VMware** to automatically cut the resulted virtual image to files of 2 GBs each.

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

- **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.

- **Scripting** to make the program create a script of any set of operations you need. Besides support of all operations available in the interactive mode, the unattended mode provides some additional features, such as conditional execution, subroutines, repeatable iterations, disk/partition properties analysis, errors management, etc.

- **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 Adaptive Restore™** technology to successfully migrate a Windows physical system to a different hardware platform (P2P).

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

- **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 Virtual Machines

- Microsoft Virtual PC

- VMware Workstation

- VMware Fusion

- Oracle VirtualBox 4.0

Additionally for Connect VD and P2V Adjust OS only

- MS Windows backups (.vhd images)

Additionally for Connect VD only

- Paragon's backups (.pbf images)

- Parallels Workstation

- XenServer (.vhd only)

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.

Contacting Paragon Software GmbH

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

Service	Contact
Visit Paragon Software web site	www.paragon-software.com
Registration & updates web-service	www.paragon-software.com/support
Knowledge Base & Technical Support	kb.paragon-software.com
Pre-sale information	sales@paragon-software.com

System Requirements

For the Windows installation package

- Operating systems:

    - Windows XP (32 and 64 bit)

    - Windows Vista (32 and 64 bit)

    - Windows 7 (32 and 64 bit)

- Internet Explorer 5.0 or higher

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

- 128 MB of RAM (256+ recommended)

- Hard disk drive with 250 MB of available space

- SVGA video adapter and monitor

- Keyboard

- Mouse

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

For the WinPE bootable environment

- Intel Pentium III CPU or its equivalent, with 1000 MHz processor clock speed

- At least 512 MB 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

To install Paragon Virtualization Manager 12, please do the following:

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

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

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

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

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

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

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

   C:\Program Files\Paragon\Paragon Virtualization Manager 12. To select another folder, click the Change… button.

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

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

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

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

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

First Start

To start Paragon Virtualization Manager 12 under Windows, please click the Windows Start button and then select **Programs > Paragon Virtualization Manager™ 12 > Paragon Virtualization 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.**

Booting from the WinPE Recovery Media

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 3.0 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 License Agreement. Read the agreement and then mark the appropriate checkbox to accept. If you do not agree with any conditions stated there, you won't be able to use the program.
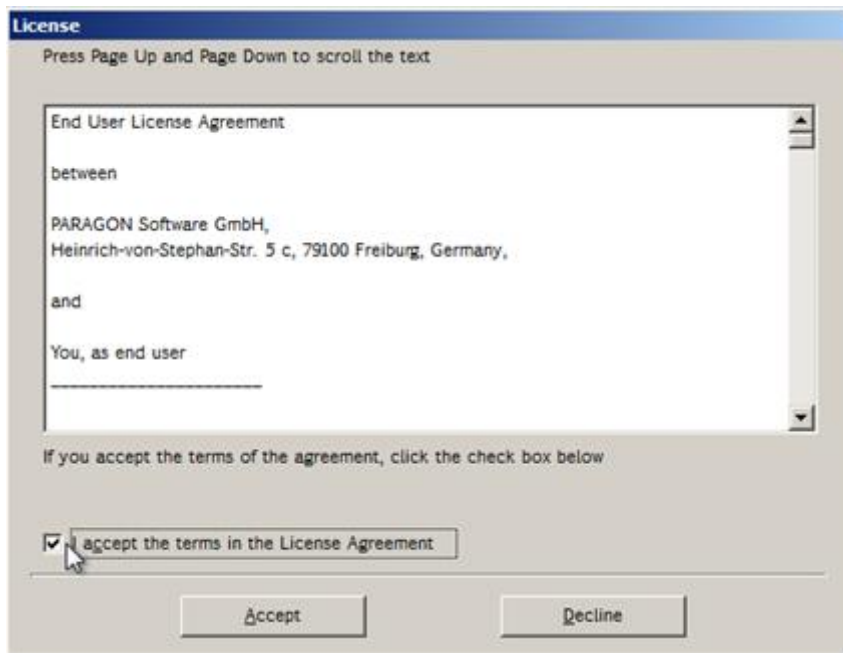
3. Once you accept the agreement, you will see the Universal Application Launcher. In general it enables to run components of the product, load drivers for undefined hardware or establish a network connection.

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

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

⚠️ **The WinPE 3.0 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.

System Virtualization

With new powerful x86 computers, system virtualization has become extremely popular. It's a software technology that enables to run several virtual machines on one physical machine, providing resources of that single computer are shared across several environments. As a result one and the same physical computer can have multiple OSs and applications operating simultaneously, thus opening up enormous opportunities for both, business and home users, exactly:

- Avoid underutilization of up-to-date powerful computers;

- Increase flexibility of a physical infrastructure;

- Provide for increased availability of hardware and applications;

- Cut expenses on hardware and energy;

- Guarantee smooth and cost saving system migration;

- Enjoy working with old applications you can't launch on your current PC;

- Take advantage of having multiple operating systems on one Windows PC, including Linux, Mac OS X, etc.;

- Forget about hunting for replacement of the failed hardware, and many more…

Known Issues

1. You should install integration services (e.g. VMware Tools) on the virtual system yourself. We only guarantee its smooth startup.

2. After transferring Microsoft Vista and later versions to a virtual disk, you will need to re-activate license of the system. It's normal behavior as these systems keep tracking any change of hardware. Re-activation is legally justified in this case, as you transfer your system to another PC.

3. If your system hosts several Windows OSes, our program will find them all and automatically patch to run in a virtual environment. However we cannot guarantee smooth startup of all found Windows systems, but the guest OS, for its configuration parameters may be incompatible with the others.

Adaptive Restore

### Technology Background

Windows family operating systems are notorious for their excessive sensibility to hardware, especially when it turns to replacement of such a crucial device as HDD controller or motherboard – actually Windows will most likely fail to boot as a result of this operation.

In 2008 our company came with an exclusive technology called Paragon Adaptive Restore™. Initially aimed at restore of Windows Vista or Server 2008 from a backup to a different hardware configuration, its current realization, available in the P2P Adjust OS Wizard, enables to make any Windows OS since XP bootable on dissimilar hardware by allowing automatic injection of all required drivers and the other actions crucial for this type of migration.

Technology Concept

Let's take a closer look at how Paragon Adaptive Restore works.
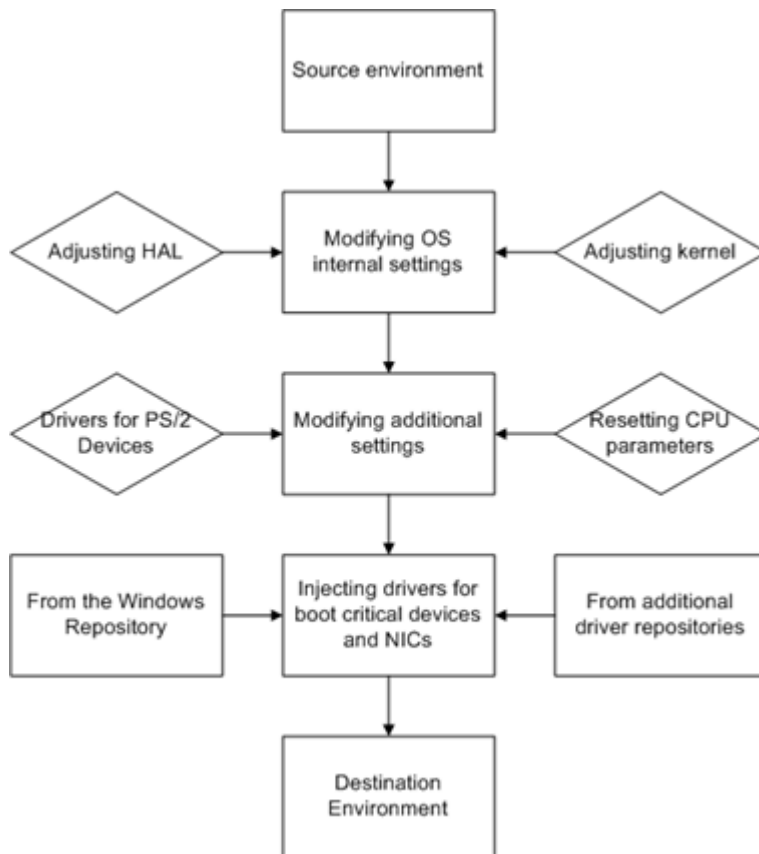
As you see, successful migration of a Windows system to a different hardware platform involves several actions:

1. **Change of the Windows kernel settings according to the new configuration**. The program detects the given hardware profile and automatically installs the appropriate Windows HAL and kernel.

2. **Installation of drivers for boot critical devices**. The program detects those without drivers and automatically tries to install lacking drivers from the built-in Windows repository. If there's no driver in the repository, it prompts the user to set a path to an additional driver repository, strongly recommending not to proceed until all drivers for the found boot critical devices are installed. In case drivers for these devices are installed, but disabled, they will be enabled.

3. **Installation of drivers for a PS/2 mouse and keyboard**. This action will only be accomplished for Windows XP/Server 2003.

4. **Installation of drivers for network cards**. The program detects those without drivers and automatically tries to install lacking drivers from the built-in Windows repository. If there's no driver in the repository, it prompts the user to set a path to an additional driver repository.

These actions guarantee a Windows system will start up on dissimilar hardware. After the startup, Windows will initiate reconfiguration of all Plug'n'Play devices. It's a standard procedure, so please don't worry and prepare the latest drivers at this step to get the most out of the system.

> **Though all Windows systems have built-in driver repositories, please be prepared to have additional drivers when dealing with Windows XP/Server 2003, because for these systems they are very modest.**

Technology Application

Let's consider a number of situations when the Adaptive Restore technology can help you out:

- If you need to migrate to a different hardware platform with minimal effort
- If you need to upgrade hardware while keeping all programs and settings intact
- If you need to replace failed hardware and cannot find an exact match for original system specifications

Known Issues

1. After transferring Microsoft Vista and later versions to different hardware, you will need to re-activate license of the system. It's normal behavior as these systems keep tracking any change of hardware. Re-activation is legally justified in this case, as you transfer your system to another PC.

2. If you've installed several operating systems on one partition, we can only add drivers to the latest version of OS. Microsoft highly recommends that you install an operating system on a separate partition.

3. Please note drivers are not cached during selection. That's why if you select a driver to add to the system, but it's already unavailable during the operation, the program will end the operation with an error.

Windows Components

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

Interface Overview

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

General Layout

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

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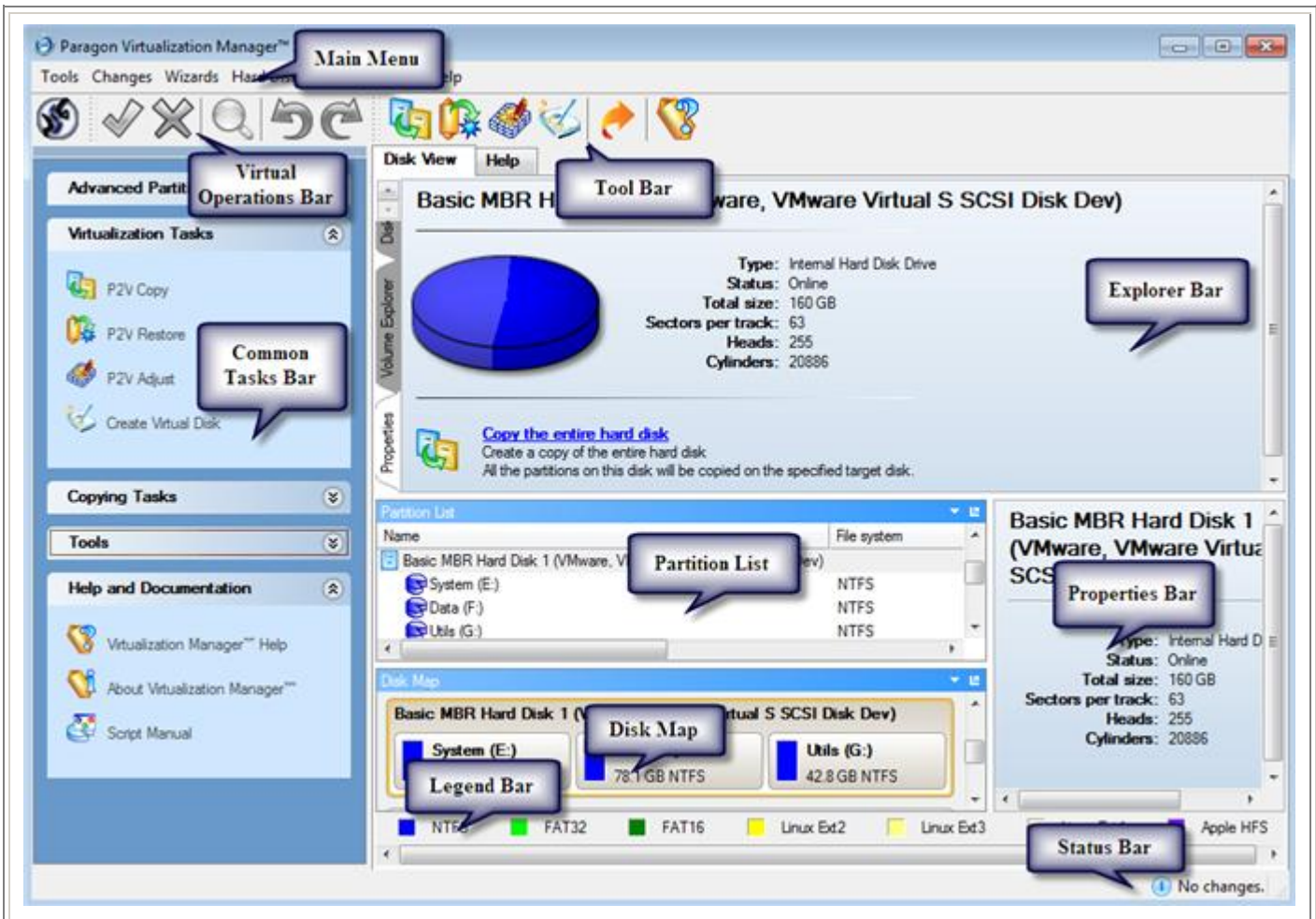
1. Main Menu

2. Tool Bar

3. Virtual Operations Bar

4. Common Tasks Bar

5. Explorer Bar

6. Disk Map

7. Partition List

8. Properties Bar

9. Legend Bar

10. Status Bar

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

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

Main Menu

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

MENU ITEM	FUNCTIONALITY

Tools	
View Log Files	View logs on the carried out operations
Send Log Files	Compress and send the log to the Paragon Support Team
Log Saver	A wizard will help you collect and send logs to the Paragon Support Team
File Transfer Wizard...	Transfer data from any media
Settings...	Edit the general settings of the program
Exit	Exit the program
Changes	
Generate Script...	Generate a script for the task
Undo `the last virtual operation`	Cancel the last virtual operation on the List of Pending Operations
Redo `the last virtual operation`	Cancel the last undo virtual operation on the List of Pending Operations
View Changes...	Display the List of Pending Operations
Apply Changes	Launch the real execution of virtual operations
Discard All Changes	Cancel all virtual operations on the List of Pending Operations
Reload Disk Info	Refresh the current information about disks
Wizards	
Undelete Partitions...	Recover an accidentally deleted partition
Merge Partitions...	Merge adjacent partitions of NTFS, FAT or FAT32 file systems
Redistribute Free Space...	Redistribute available disk space of existed partitions
P2P Adjust OS...	Make your system bootable on different hardware
Create Virtual Disk...	Create an empty virtual disk or with specific data of one of the supported virtualization vendors
P2V Copy...	Migrate a live Windows physical system to a virtual environment
P2V Restore...	Migrate a Windows physical system backed up with a Paragon disaster recovery tool to a virtual environment
P2V Adjust OS...	Make Windows Vista/7 backups bootable on virtual hardware; recover the startup ability after unsuccessful virtualization with a 3rd party tool
Copy Hard Disk...	Create a hard disk copy
Copy Partition...	Create a partition copy

Hard Disk	
Convert to Basic...	Convert a dynamic MBR disk containing simple volume(s) into a basic MBR disk
Convert to Basic MBR hard disk...	Convert a basic or a dynamic GPT disk containing simple volume(s) into a basic MBR disk
Convert to GPT hard disk	Convert a basic MBR disk into a basic GPT disk
Update MBR	Update MBR (Master Boot Record) of the selected hard disk
Change Primary Slots...	Modify the primary partitions enumeration for the selected hard disk
Change SID...	Change SID (Security Identifier) value of any found Windows installation
Edit/View Sectors...	View/edit sectors of the selected hard disk
Connect a Virtual Disk	Connect a virtual disk to work with it as if it's a physical disk
Disconnect a Virtual Disk	Disconnect a virtual disk
Properties...	Get in-depth information on the properties of selected hard disk
Partition	
Create Partition...	Create a partition
Format Partition...	Format a partition
Delete Partition...	Delete a partition
Move/Resize...	Move/Resize the selected partition
Convert File System...	Convert file system of the selected partition
Assign Drive Letter...	Assign drive letter to the selected partition
Remove Drive Letter...	Remove drive letter for the selected partition
Hide Partition...	Make the selected partition unavailable for the operating system
Unhide Partition...	Make the selected partition available for the operating system
Mark Partition as Active	Make the selected partition bootable by default
Mark Partition as Inactive	Make the selected partition non-bootable by default
Change Volume Label...	Change volume label of the selected partition
Change Cluster Size...	Change cluster size of the selected partition
Change Serial Number...	Change serial number of the selected partition
Downgrade NTFS version...	Decrease version of the selected NTFS partition
Change Partition ID...	Change identifier of the selected partition

Change SID...	Change SID (Security Identifier) value of any found Windows installation
Make Partition Primary...	Make the selected partition Primary
Make Partition Logical...	Make the selected partition Logical
Test Surface...	Test surface of the selected partition/block of free space
Check File System Integrity...	Check the selected partition for possible file system errors
Edit/View Sectors...	View/edit sectors of the selected partition
Properties...	Get in-depth information on the properties of selected partition
View	
Layouts	Manage the Launcher layout with several predefined profiles
Toolbar	Manage the Tool Bar representation: show / hide standard and navigation buttons, text labels and large icons
Status Bar	Display the Status Bar
Common Tasks Bar	Display the Common Tasks Bar
Disk Map Legend	Display the Disk Map legend
Properties and Commands	Display the Explorer Bar
Disk Map Location	Select whether the Disk Map will be located on the top of the main window or at the bottom
Help	
Help	Open the Help system (you can also do it by pressing F1)
About	Open the dialog with information about the program

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

Tool Bar

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

BUTTON	FUNCTIONALITY
	Transfer OS to a virtual environment
	Transfer an archived OS to a virtual environment

	Adjust OS to start up on virtual hardware
	Create an empty virtual disk or with specific data
	Collect and send logs to Support
	Switch to Express launcher
	Open the Help system

Virtual Operations Bar

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

The Virtual Operations Bar enables to manage pending operations.

BUTTON	FUNCTIONALITY
	Cancel the last virtual operation on the List of Pending Operations
	Cancel the last undo virtual operation on the List of Pending Operations
	Display the List of Pending Operations
	Launch the real execution of virtual operations
	Cancel all virtual operations on the List of Pending Operations

Virtual mode is an effective way of protection from any troubles, since no operations will be executed until clicking the Apply button for confirmation, thus giving a second chance to weigh all pros and cons of this or that particular operation. The program politely reminds the user that there are unsaved changes by showing the following window:
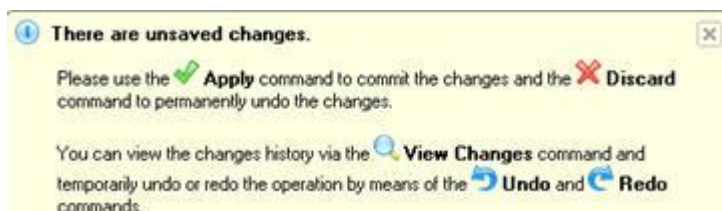
Common Tasks Bar

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

The bar contains several tabs. Each tab includes a separate button bar which can be folded by clicking it.

| **Advanced Partitioning Tasks**	
Undelete Partitions	Starting the Undelete Partitions Wizard to recover accidentally deleted partitions.
Virtualization Tasks	
P2V Copy	Starting the P2V Copy Wizard to migrate a Windows system to a virtual environment by converting all installed software and data into a virtual machine.
P2V Restore	Starting the P2V Restore Wizard to restore a Windows physical system from a backup directly to a virtual environment.
P2V Adjust OS	Starting the P2V Adjust OS Wizard to restore functionality of a virtual environment after unsuccessful virtualization with 3-rd party tools; prepare virtual machines out of supported virtual disks or Windows .vhd backup images.
Create Virtual Disk	Starting the Create Virtual Disk Wizard to create an empty virtual disk or with specific data of one of the supported virtualization vendors.
Copying Tasks	
Copy Disk	Starting the Copy Hard Disk Wizard to copy a hard disk.
Copy Partition	Starting the Copy Partition Wizard to copy a partition.
Tools	
File Transfer Wizard	Starting the File Transfer Wizard to transfer data from any media. Besides it provides access to Paragon backups as regular folders to browse through their contents or copy required files.
Log Saver	Starting the Log Saver Wizard to collect and send logs to Support.
Help and Documentation	
Virtualization Manager™ Help	Launching the help system (you can also do it by pressing F1).
About Virtualization Manager™	Opening the page which contains information about the program. This page will be displayed in the Explorer Bar.
Script Manual	Opening a brief review on the Paragon Scripting Language.

Disk Map

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

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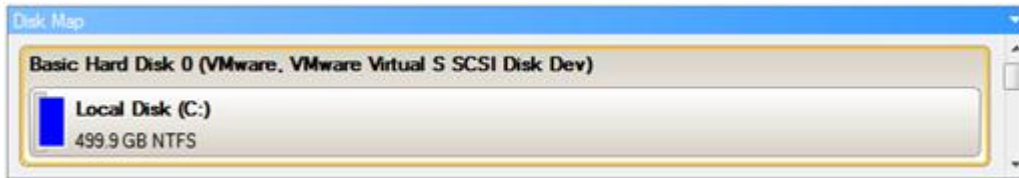
Large-sized bars display the following information about physical disks:

- Manufacturer,
- Model.

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

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

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

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

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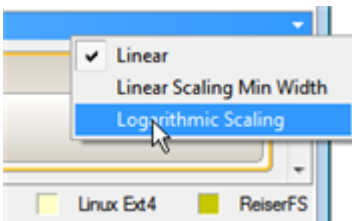
Disk Map is synchronized with the Explorer Bar. Thus by selecting a disk on the Disk Map, the Explorer Bar will automatically display detailed information on it.

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

Explorer Bar

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

- The help system

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

- Detailed information about disks selected on the Disk Map

- Disk Editor utility

According to these categories the Explorer Bar has several tabs:

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

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

  - *Disk Editor* to view/edit sectors of the selected partition/hard disk

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

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

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

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

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

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

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

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

Partition List

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

- Name,

- Volume label (if exists),

- Partition type (Primary/Extended /Logical),

- File system type,

- Size,

- Amount of used and unused (free) space,

- Start/End cylinder,

- Start/End head,

- Start/End sector

- Free size in sectors/bytes

- Active/Inactive attribute

- Hidden/Unhidden attribute

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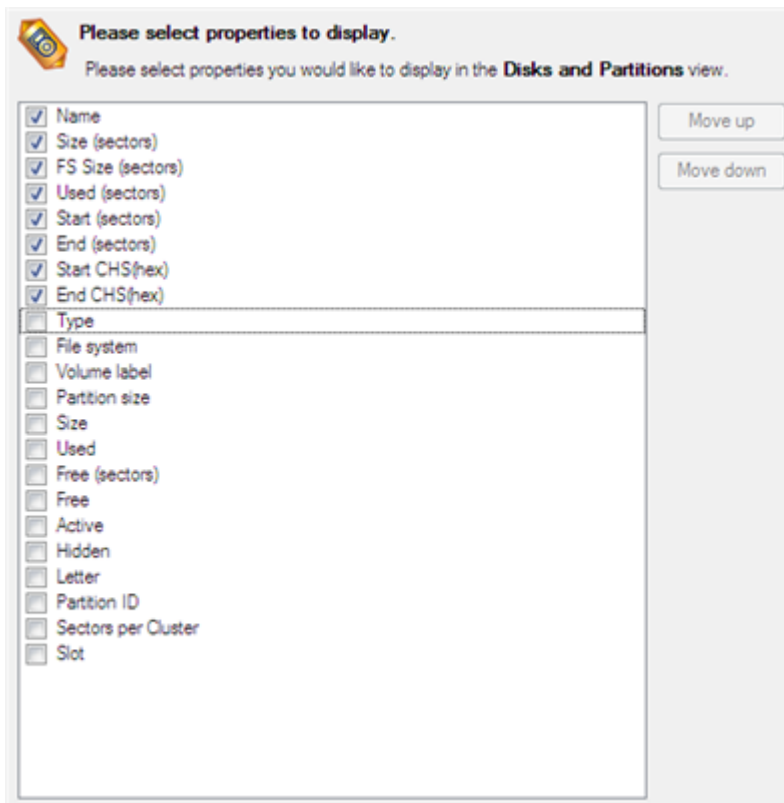
By marking a checkbox opposite the required item you can choose whether to display it or not. Besides, you can change its order by pressing the Move up or Move down buttons.

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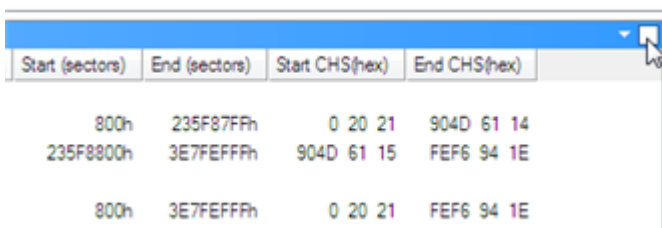
Properties Bar

The Properties Bar provides information on the selected at the moment partition/hard disk:

For a hard disk

- Model,

- Serial number,

- Type of hard disk (basic or dynamic),

- Total size (in GB),

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

For a partition

- Drive letter assigned to the disk,

- Volume label (if available),

- Type of the logical disk,

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

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

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

Legend Bar

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

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

  - FAT16/32

  - NTFS

  - Linux Ext2/3/4

  - Linux ReiserFS

  - Apple HFS

Status Bar

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

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

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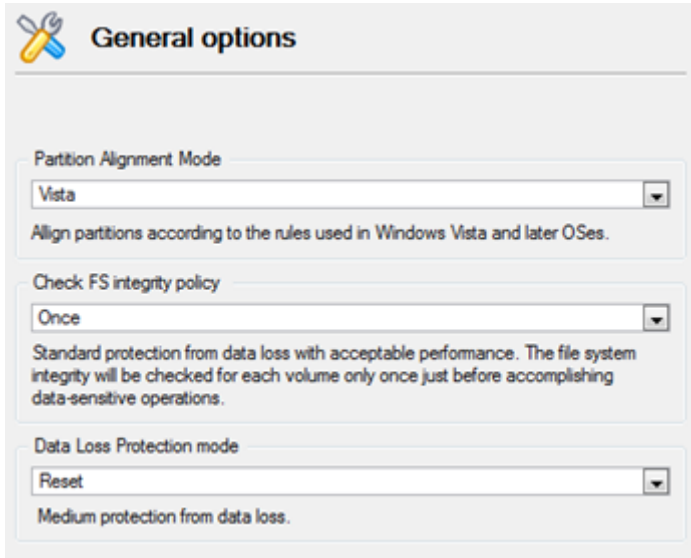
The Settings dialog is available from the Main Menu: Tools > Settings. All the settings are grouped into several sections, which functions are described in the following paragraphs. The list of sections is placed on the left side of the dialog. By selecting a section from the list, you can open a set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

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

General Options

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

- **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.

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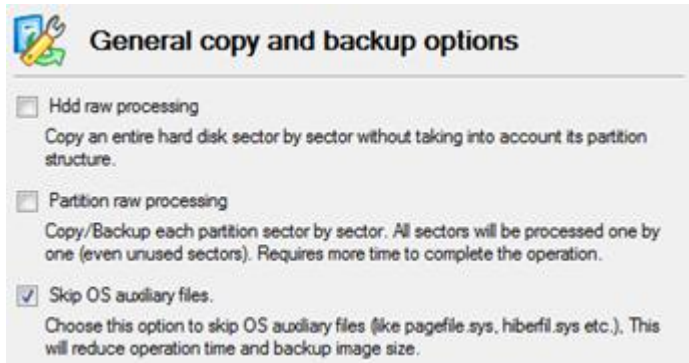
This section contains a set of options that will be taken into account during copy and backup operations:

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

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

- **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.

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

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Hot Processing Options

In this section you may configure the hot processing mode:

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

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

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

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

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

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

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

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

Partitioning Options

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.

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- **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

```
Specify your e-mail account options:

Outgoing mail server (SMTP):  [                    ]
User e-mail address:          [Enter an e-mail address here]
SMTP port number:             [25                  ]

    [ ] My outgoing server requires authentication

    User name:  [Enter an user name here      ]

    Password:   [Enter a password here        ]

    [  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: [Enter an e-mail address here        ]

    [ ] 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

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

In this section you may configure the virtual mode:

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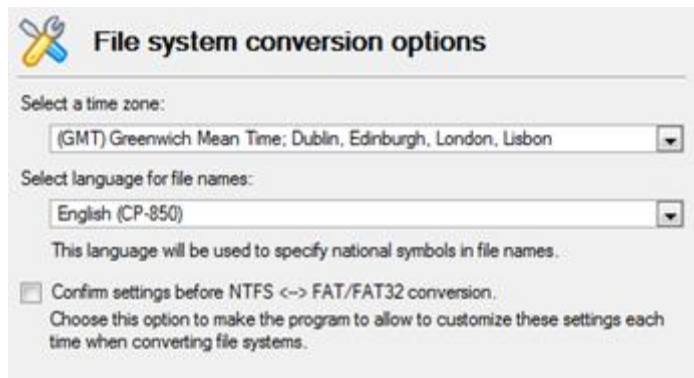

⚠️ **We strongly recommend you to enable this mode.**

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

File System Conversion Options

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

To tackle problems of that kind you can manually set:

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

⚠️ **An incorrectly chosen time zone might lead to inability to launch certain software.**

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


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

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

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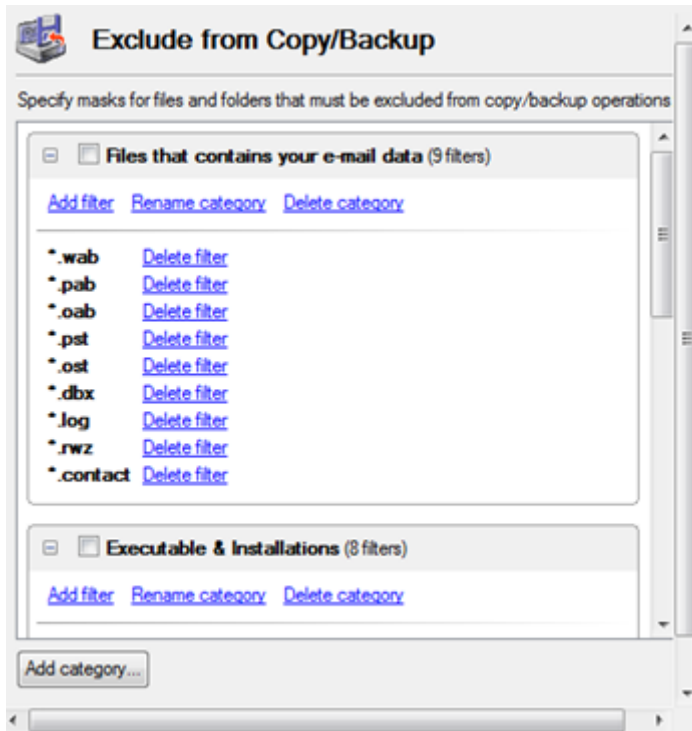
In this section the program enables to specify what data should be automatically ignored during copy and sector-based backup operations. You can filter certain files or folders either by the manual selection or by creating masks, what is more preferable. Thus you will be able to effectively manage contents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

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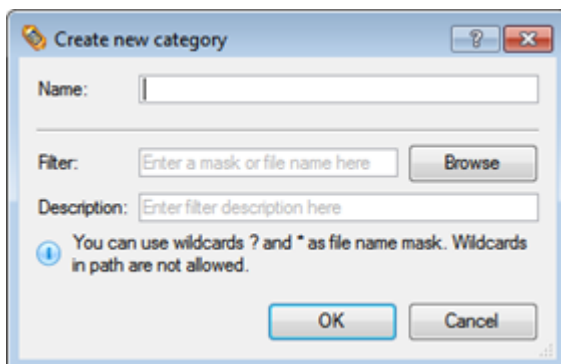
In the opened dialog the program allows the user to define the following parameters:

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

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

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

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

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

Log Files Options

In this section you can specify a storage life span for the stubact.log file:
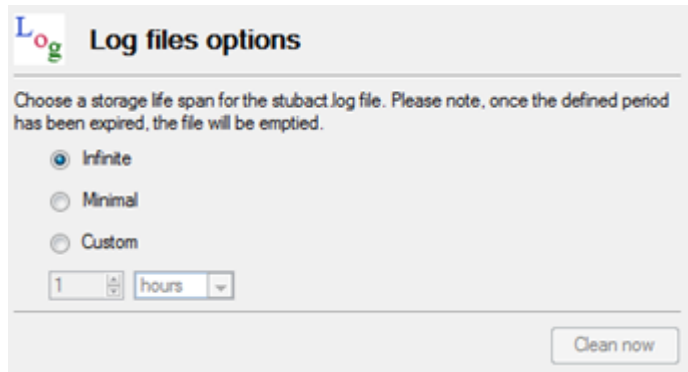
- **Infinite** not to empty the file ever;

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

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

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

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.

System Migration Scenarios

Migrating system to a new HDD (up to 2.2TB in size)

Let's assume that you've bought a new hard disk that is up to 2.2TB in capacity. It's faster and of much higher capacity than your current system disk, so it's quite natural you start thinking about system migration. We can help you do that.

To migrate your system to a hard disk that doesn't exceed the 2.2TB capacity limit, please do the following:

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

2. Turn on the computer.

3. Click the **Copy Disk** item of the Wizards menu.

> **There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.**

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

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

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

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

Local Disk (C:)
499.9 GB NTFS

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

Local Disk (E:) Basic Hard Disk 1 (VMware, VMware Virtual S SCSI Disk Dev) all...
3.4 GB FAT32   2.4 GB NTFS   1.4 ...   2.2 GB

6. On the Select Target Hard Disk page, select a destination disk (a hard disk to copy contents of the source disk).

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

Basic Hard Disk 0 (VMware, VMware Virtual S SCSI Disk Dev)
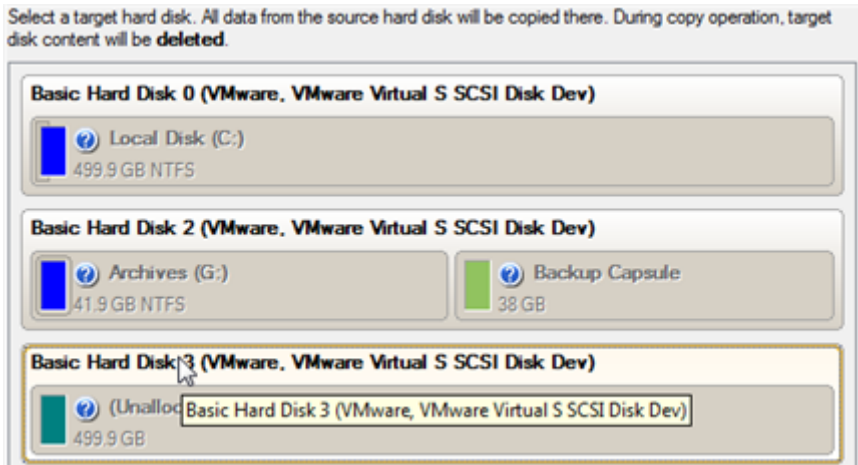
Local Disk (C:)
499.9 GB NTFS

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

Archives (G:)   Backup Capsule
41.9 GB NTFS   38 GB

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

(Unalloc Basic Hard Disk 3 (VMware, VMware Virtual S SCSI Disk Dev)
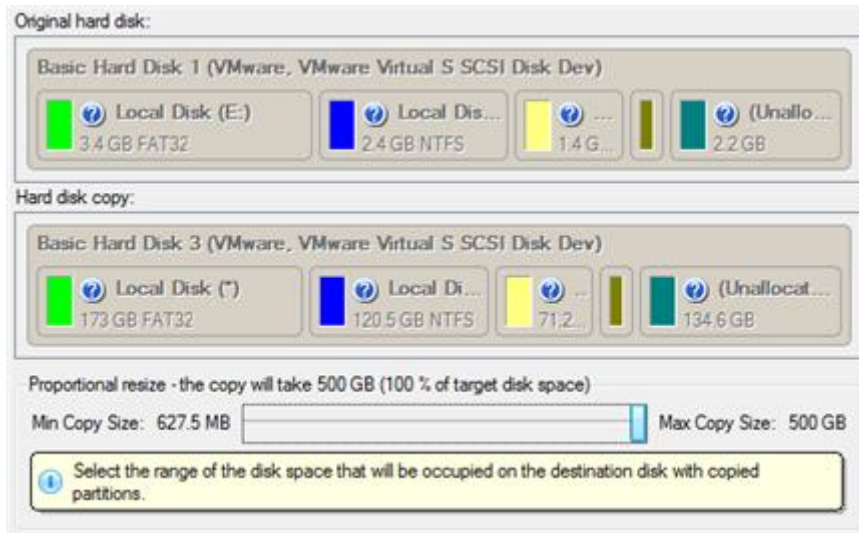499.9 GB

> ⚠️ **During the operation all contents of the destination disk will be deleted.**

7. On the next page of the wizard, define the copy options. In our case we'd rather copy data with a proportional resize to occupy the entire disk.

Choose copy options that suit best your task:

Copy options:

☐ HDD raw copy

☐ Partitions raw copy

Resize options:

☐ Remove free blocks between partitions

☑ Copy data and resize partitions proportionally

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

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

9. Complete the wizard and then apply the pending changes.
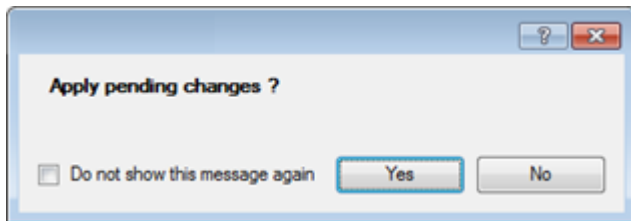
10. When copying is completed, shut down the computer.

11. Disconnect (physically) the source hard disk.

12. Boot the computer from the destination hard disk.

> ⚠ **To make Windows bootable on different hardware, please additionally complete the P2P Adjust OS Wizard.**

Making system bootable on different hardware (P2P Adjust OS)

Let's assume you had to migrate to a new hardware platform. You connected your system hard disk to the brand new PC and tried to start up the operating system - you do know for sure now that this operation had been doomed to failure from the very beginning. With our program you can easily tackle this naughty problem.

Before you start, please make sure the following conditions are met:

- You've got drivers for the new hardware ready to use, not zipped or in .exe files.

- Your OS is unrolled on the new computer, not in a backup image.

To make a Windows physical system bootable on different hardware, please do the following:

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

> ⚠ **Please use Boot Media Builder to prepare the WinPE 3.0 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 **P2P Adjust OS Wizard**.

⚠️ **The WinPE 3.0 based 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.**

---

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

4. From the list of all found Windows systems (if several) select one you need to adjust to the new hardware. If you're willing to adjust them all, just re-launch this wizard for each.

5. There are two execution modes to choose from: **fully automatic** and **advance**. Below we will go set-by-step through the automatic scenario to show the whole process, and then take a closer look at specifics of the advance scenario.

6. Select **Adjust the OS to the new hardware automatically**.

7. The wizard will automatically accomplish all the necessary actions.
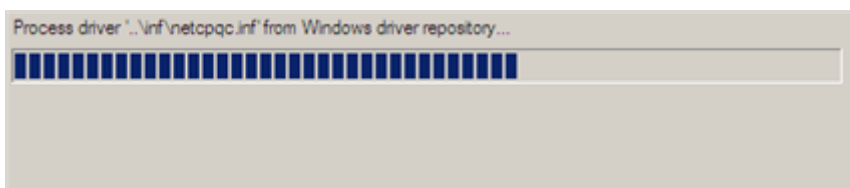
8. The only action that might be required from your side is to set a path to an additional driver repository in case the wizard has failed to find drivers for some boot critical devices in the built-in Windows repository. Generally together with new hardware you get its drivers for different operating systems on removable media (mostly CD or DVD). By collecting all these drivers in one folder you can let the wizard automatically pick and install only those required for your OS. Select **Search for drivers in a specific folder**.

> ⚠️ **Click on the link at the bottom of the page to see what boot critical devices have no drivers. The wizard names all devices according to their model description, not some alphanumeric code, which is very convenient.**

9. Though you've got the option to continue without injecting missing drivers for boot critical devices (The **Ignore all missing drivers** option), we strongly recommend you not to do it. Otherwise we cannot guarantee your Windows will start up on the new hardware.
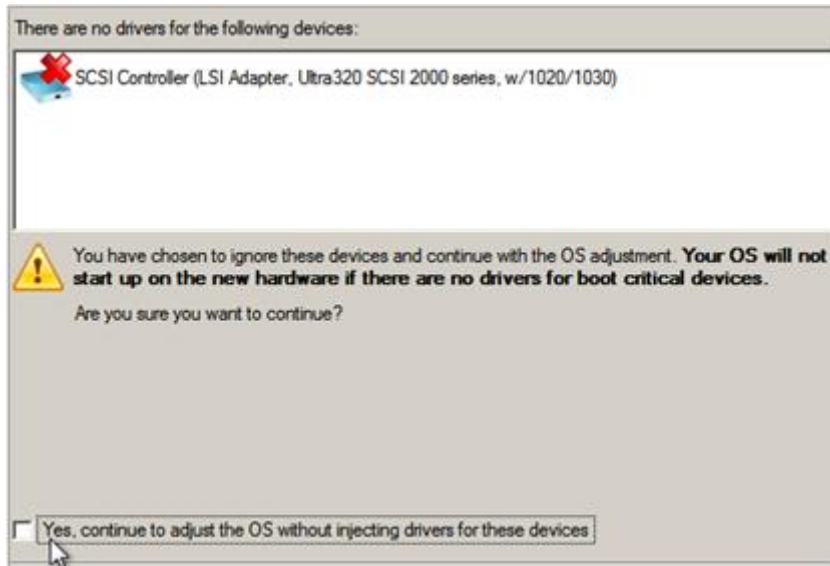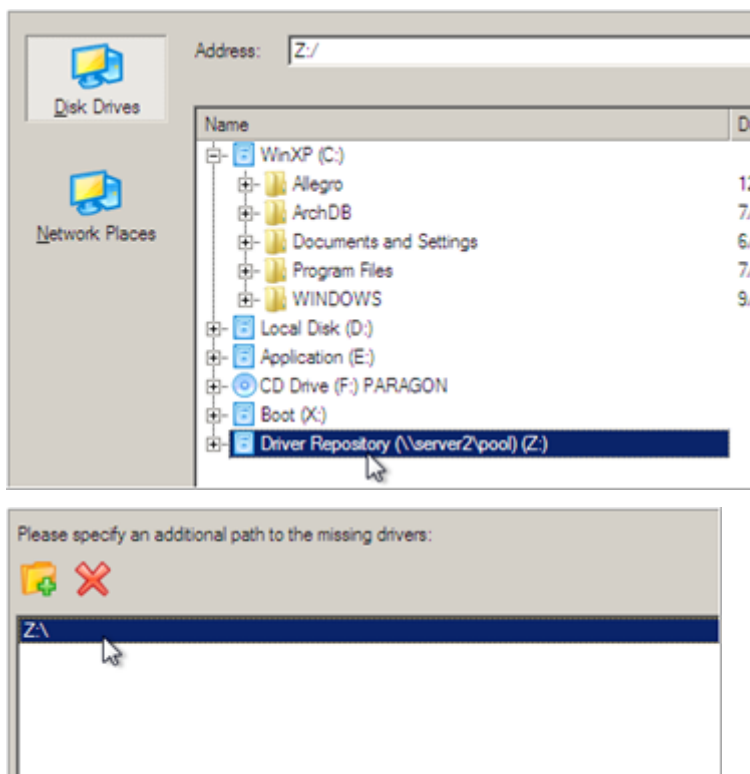

10. The wizard can search for drivers on a local disk or a mapped network share. In our case it's on a network share, this is why we need to map it first.
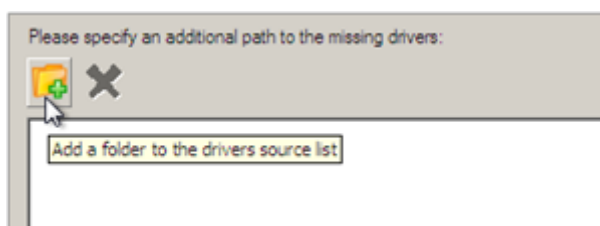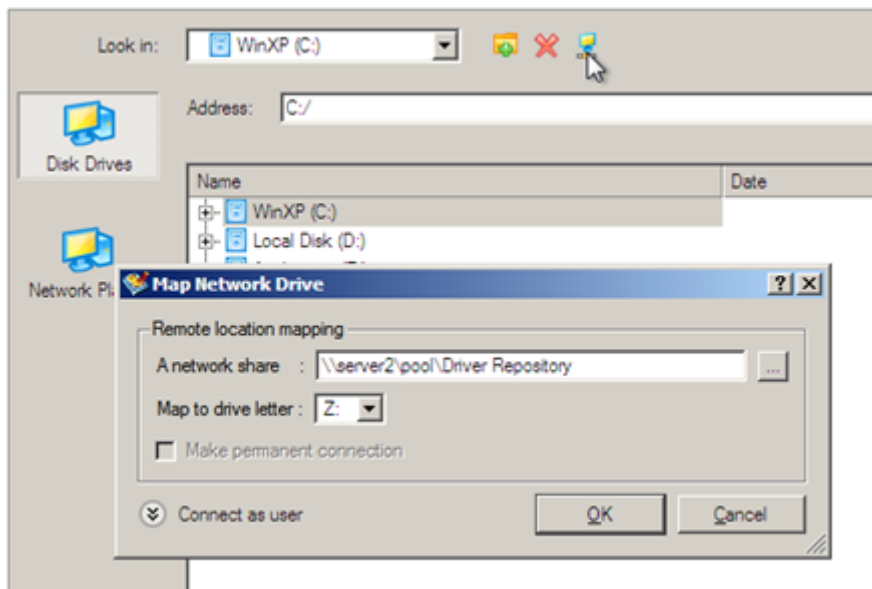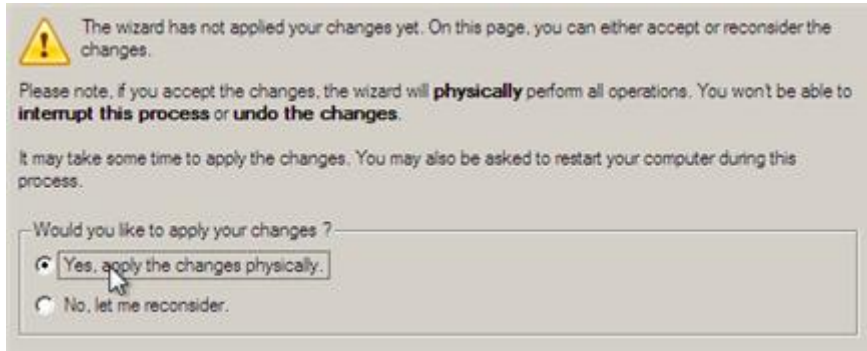
11. When done, we can select it as target.

⚠️ **The wizard enables to specify several driver repositories.**

---

12. If the wizard has found all missing drivers, it will ask you to confirm the operation. Apply the changes to complete.

After the operation is completed the system will be bootable on the new hardware. After the startup, Windows will initiate reconfiguration of all Plug'n'Play devices. It's a standard procedure, so please don't worry and prepare the latest drivers at this step to get the most out of the system.

Advance scenario specifics

1. To launch the advance mode, select **Set parameters for the OS adjustment**.

2. When setting additional driver repositories, you can specify how to process drivers for found hardware.
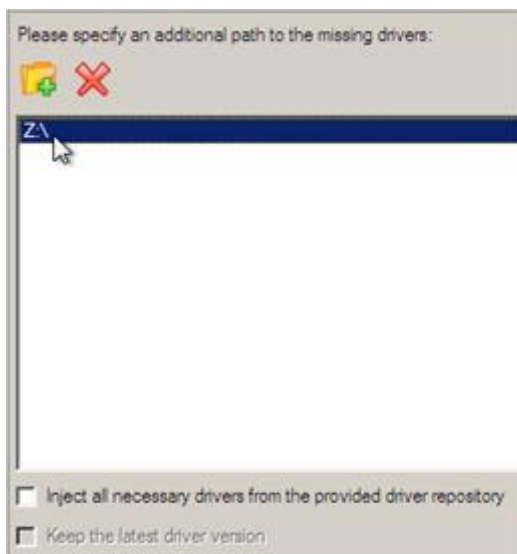
- **Inject all necessary drivers…** Mark the checkbox to force injection of all drivers for your devices from the given driver repository(s), even if there are already installed drivers for some hardware. Please use this option if you suspect any of the installed drivers of not matching your hardware.

- **Keep the latest driver version**. Mark the checkbox to keep the latest version of drivers during the forced re-injection. You can use this option only when the above option is active.

3. Just before the OS adjustment, you can additionally:

- View all found hardware devices and their driver status by clicking . The wizard names all devices according to their model description, not some alphanumeric code, which is very convenient. So you can compare the listed devices with the given hardware to make sure the wizard has analyzed your system correctly.
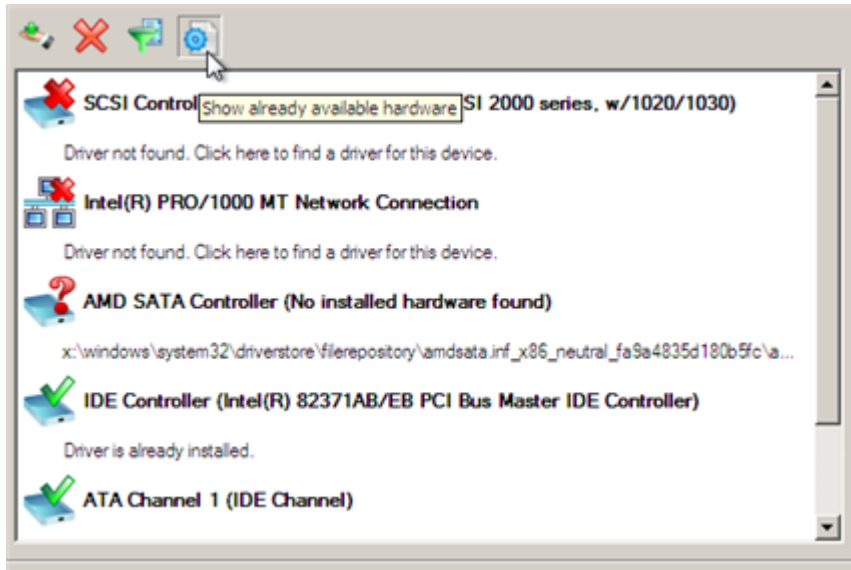
- Filter devices without drivers by clicking . Unlike the automatic mode, where only boot critical devices (storage controllers) without drivers are being reported, here you can view and inject drivers for network cards as well.

- Add a driver for each device that lacks it by clicking on the device, then browsing for the required location. The wizard will then match the device with drivers inside the given location and pick the right one.

Name	Date
⊟ WinXP (C:)	
⊞ Allegro	12/5/2008 4:01:40 AM
⊞ ArchDB	7/22/2008 11:56:50 PM
⊞ Documents and Settings	6/18/2003 1:12:53 PM
⊞ Program Files	7/22/2008 11:43:02 PM
⊞ WINDOWS	9/25/2009 5:54:12 AM
⊞ Local Disk (D:)	
⊞ Application (E:)	
⊞ CD Drive (F:) PARAGON	
⊞ Boot (X:)	
⊞ Driver Repository (\\server2\pool) (Z:)	

A device driver has been found. Press **OK** to install this driver...

Intel(R) PRO/1000 MT Network Connection

Driver not found. Click here to find a driver for this device.

SCSI Controller (LSI Adapter, Ultra320 SCSI 2000 series, w/1020/1030)

z:\symmpi_xp_x86_rel\symmpi.inf

- Manually add a driver for a device that has not been found by our wizard by clicking [icon] , then specifying the required .INF file.

Add a driver manually

Intel(R) PRO/1000 MT Network Connection

Driver not found. Click here to find a driver for this device.

SCSI Controller (LSI Adapter, Ultra320 SCSI 2000 series, w/1020/1030)

z:\symmpi_xp_x86_rel\symmpi.inf
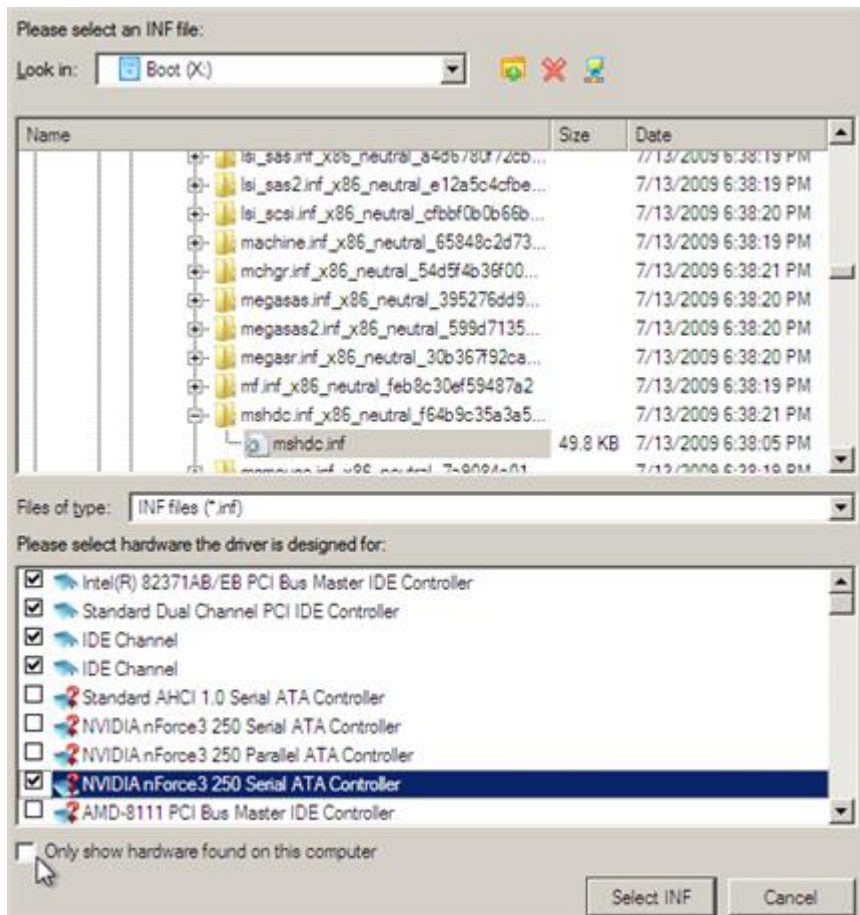
When selecting an .INF file that contains several driver records for hardware you both, have in the system and don't have, you can filter the list by marking the appropriate checkbox.

- Remove a driver for a device, which has not been found in the system.
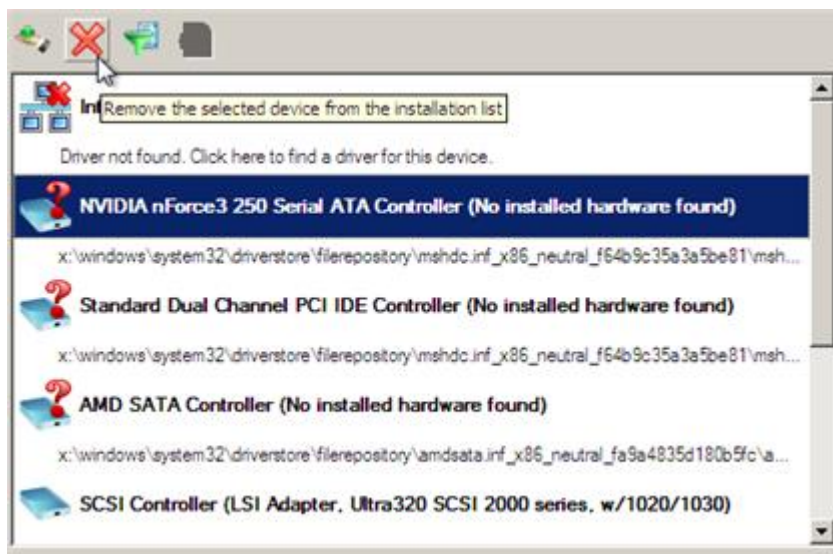
Virtualizing the current system (P2V Copy)

Let's assume that you're about to migrate to a brand-new hardware platform with the latest operating system available for it. Your current system is quite obsolete, but you still need access to some of its software. You don't want to waste

time re-installing the old software to the new system, and you do know for sure that the bulk of it won't work anyway. The best way out is to virtualize your old system.

But before you start, please make sure the following conditions are met:

- Your hard disk has enough free space to store a virtual image of your Windows (depends on the system).
- You've got one of the supported virtualization software.

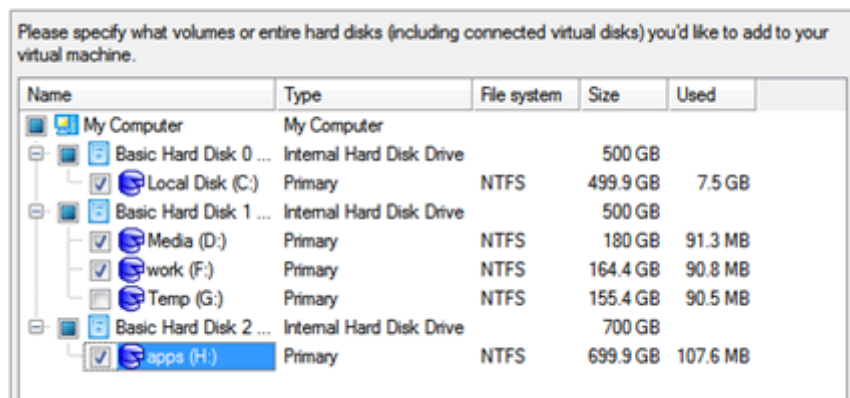To make a virtual disk out of your current system, please do the following:
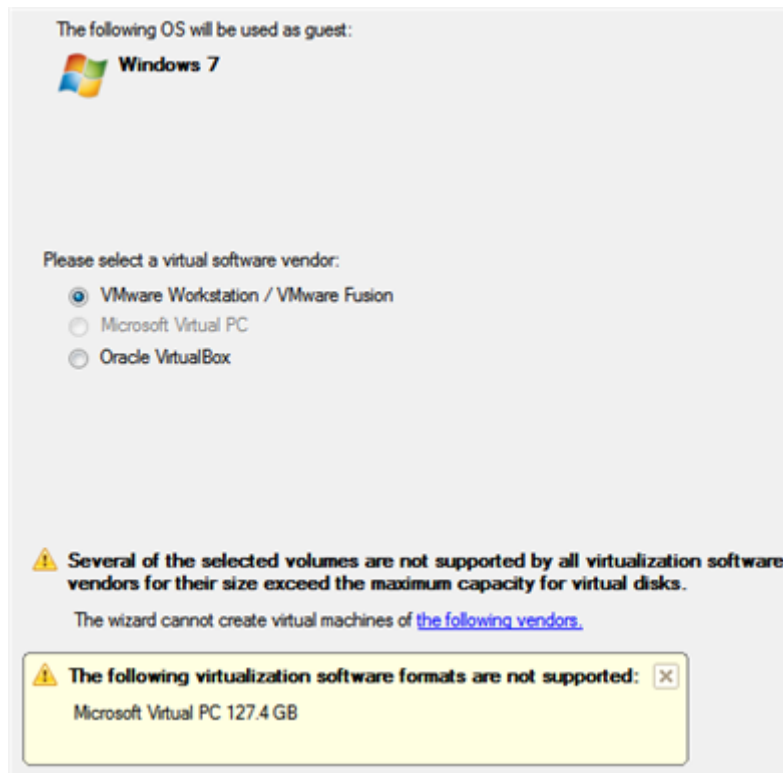
1. Click the **P2V Copy** item of the Wizards menu.

⚠️ **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 objects you need to virtualize. You're allowed to select any combination of hard disks and partitions, but don't forget to choose your system partition (**Local Disk C:** in our case) to use it as guest. Otherwise the resulted virtual machine won't start up.

Please specify what volumes or entire hard disks (including connected virtual disks) you'd like to add to your virtual machine.

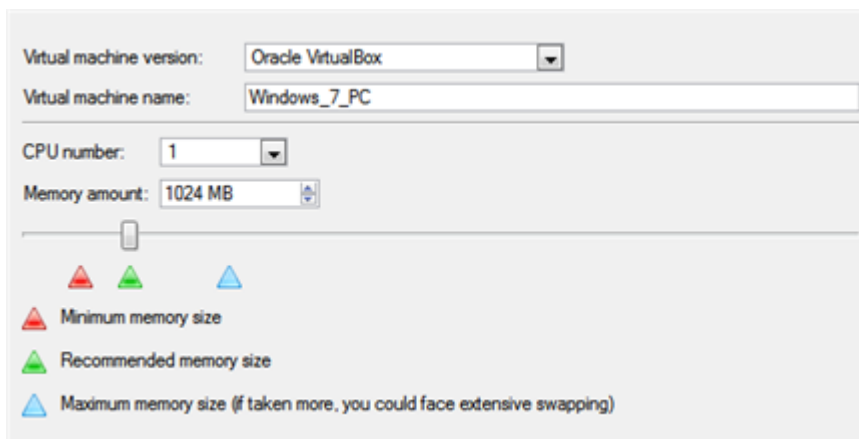| Name	Type	File system	Size	Used	
🖥️ My Computer	My Computer				
⊟ ▣ Basic Hard Disk 0 ...	Internal Hard Disk Drive		500 GB		
☑ Local Disk (C:)	Primary	NTFS	499.9 GB	7.5 GB	
⊟ ▣ Basic Hard Disk 1 ...	Internal Hard Disk Drive		500 GB		
☑ Media (D:)	Primary	NTFS	180 GB	91.3 MB	
☑ work (F:)	Primary	NTFS	164.4 GB	90.8 MB	
☐ Temp (G:)	Primary	NTFS	155.4 GB	90.5 MB	
⊟ ▣ Basic Hard Disk 2 ...	Internal Hard Disk Drive		700 GB		
☑ apps (H:)	Primary	NTFS	699.9 GB	107.6 MB	

4. Specify the guest OS and a virtualization software vendor. If your system hosts several Windows OSes, our wizard will find them all and automatically patch to run in a virtual environment. However we cannot guarantee smooth startup of all found Windows systems for their configuration parameters may be incompatible with each other. This is why we additionally prompt you to specify what operating system you'd like to use as guest to configure the virtual machine for that particular system.

The following OS will be used as guest:

Windows 7

Please select a virtual software vendor:

- ● VMware Workstation / VMware Fusion
- ○ Microsoft Virtual PC
- ○ Oracle VirtualBox

⚠ Several of the selected volumes are not supported by all virtualization software vendors for their size exceed the maximum capacity for virtual disks.

The wizard cannot create virtual machines of the following vendors.

⚠ The following virtualization software formats are not supported: ☒

Microsoft Virtual PC 127.4 GB

Not all vendors may be available to choose. If capacity of one of the selected objects exceeds the maximum virtual disk capacity of any vendor, this vendor will be shadowed.
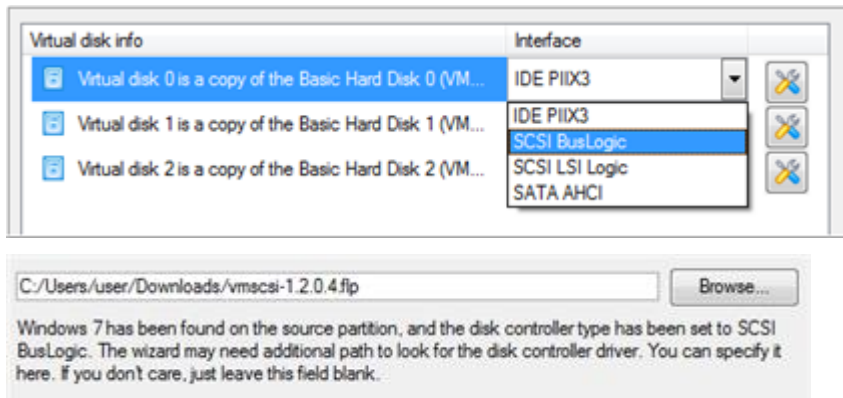
---

5. Set properties of the future virtual machine:

- **Virtual machine version**. Please make sure you choose a version which is supported by your virtualization software, otherwise you won't be able to work with the newly created machine.

- **Virtual machine name**. By default the wizard picks the name of your guest OS, which can be modified however.

- **CPU number**. If your computer supports multiprocessing, select how many CPUs you'd like to allocate for the virtual machine.

- **Memory amount**. Depending on the guest OS the wizard calculates the recommended size of RAM, which can be modified however.
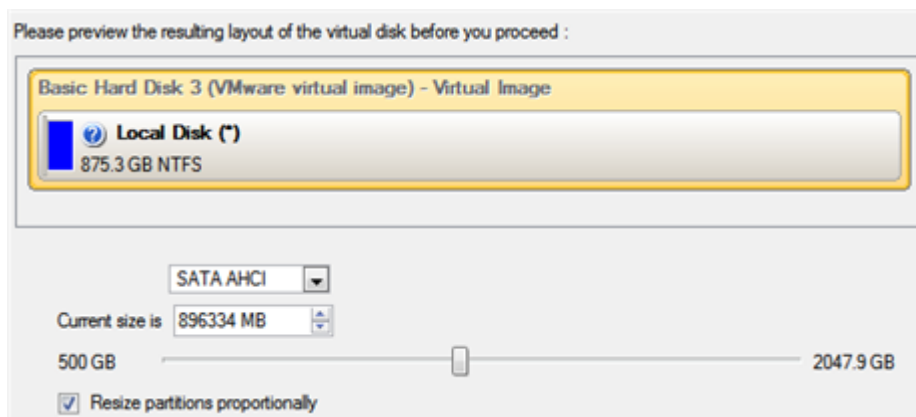
Virtual machine version: Oracle VirtualBox
Virtual machine name: Windows_7_PC
CPU number: 1
Memory amount: 1024 MB

△ Minimum memory size
△ Recommended memory size
△ Maximum memory size (if taken more, you could face extensive swapping)

6. Set properties of the resulted virtual disk(s):

45

- **Virtual disk interface**. By default the wizard sets the most appropriate interface for each disk. Anyway you've got the option to change it to one of the supported by your guest OS. Just click on a disk, and then select the required interface from the pull-down list. But be ready to provide drivers for it on the next page.
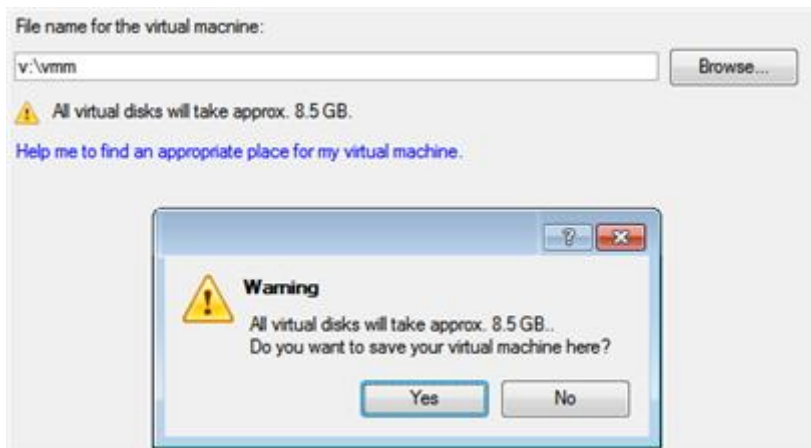

> ⚠️ **Our program supports injection of drivers delivered in .iso or .flp images, so you can for instance download and inject drivers for the BusLogic controller from the VMware website.**

- **Additional properties** that depending on the selected virtualization vendor may include:
  - Size of the virtual disk. By default the wizard offers to create a virtual disk exactly the size of the selected object(s), which you can resize however (available for all);
  - Resize partitions proportionally. If you upsize the resulted virtual disk, you can make the wizard proportionally change the size of partitions keeping their relative order intact (available for all);
  - Create a split disk. You can choose whether to automatically cut the resulted virtual image to files of 2 GBs or not (available for VMware only);
  - Pre-allocate all disk space. You can choose whether to pre-allocate all space of the future virtual disk, or do it dynamically (not available for VMware ESX and Oracle VirtualBox).
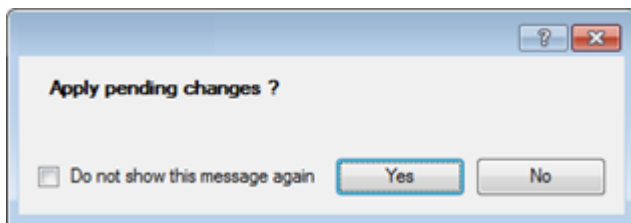

> ⚠️ **The maximum limit you can downsize the virtual disk is the capacity of its first partition.**

7. Specify a file name for the virtual machine and its location. By default the wizard scans all your local disks for available free space and picks the most appropriate location taking into account the total capacity of all virtual disks inside the virtual machine.

8. Complete the wizard and then apply the pending changes.

Virtualizing system from its backup image (P2V Restore)

Let's assume that your system has been corrupted as a result of a hardware failure. You realize it's quite obsolete and it's next to impossible to replace the damaged hardware devices. Migration to a new hardware platform seems the best way out, if not for one thing – you still need access to your software, but you do know for sure that the bulk of it won't work on the new platform. Luckily you've got a backup image of your old system made with Paragon software – that's just enough for its virtualization.

Before you start, please make sure the following conditions are met:

- You've got a backup image of your old system.

- You've got enough free space to store a virtual image of your old system (depends on the system).

- You've got one of the supported virtualization software.

To restore a Windows system from a Paragon's backup directly to a virtual environment, please do the following:

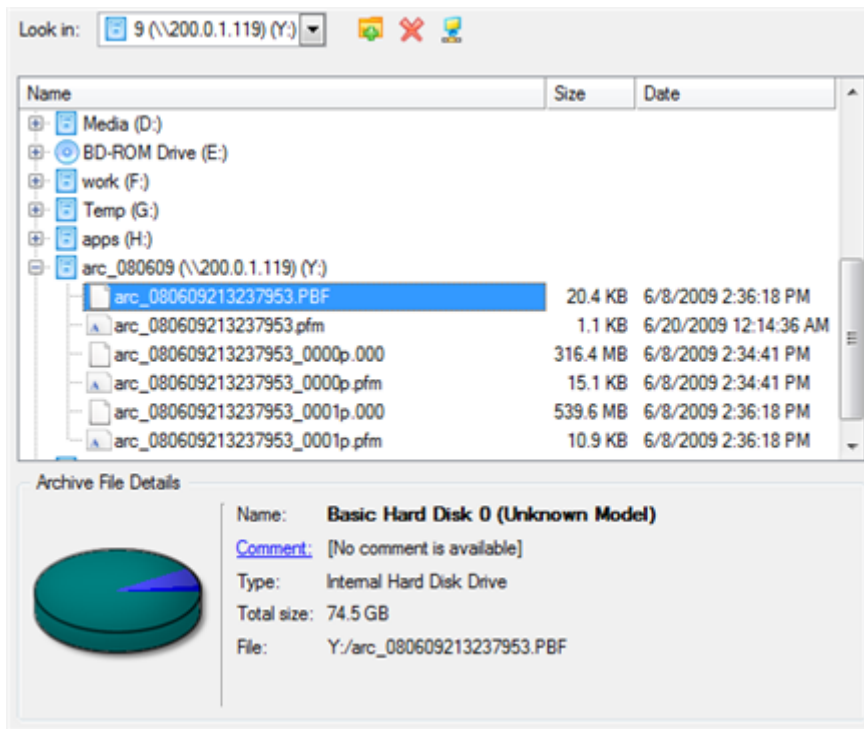1. Click the **P2V Restore** item of the Wizards menu.

> **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. Browse for the required backup image. The section below (i.e. Archive File Details) will also display a short description of the selected image.

4. Select objects you need to virtualize. You're allowed to select any combination of hard disks and partitions, but don't forget to choose your system partition (**Local Disk C:** in our case) to use it as guest. Otherwise the resulted virtual machine won't start up.
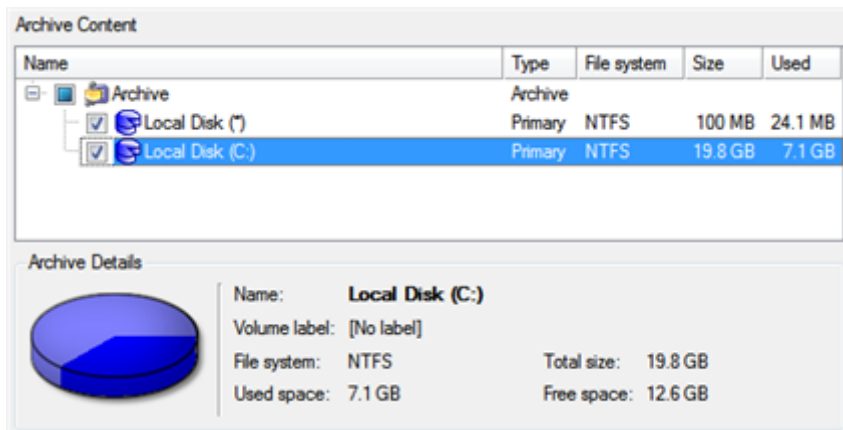
5. Specify the guest OS and a virtualization software vendor. If the selected backup contains several Windows OSes, our wizard will find them all and automatically patch to run in a virtual environment. However we cannot guarantee smooth startup of all found Windows systems for their configuration parameters may be incompatible with each other. This is why we additionally prompt you to specify what operating system you'd like to use as guest to configure the virtual machine for that particular system.
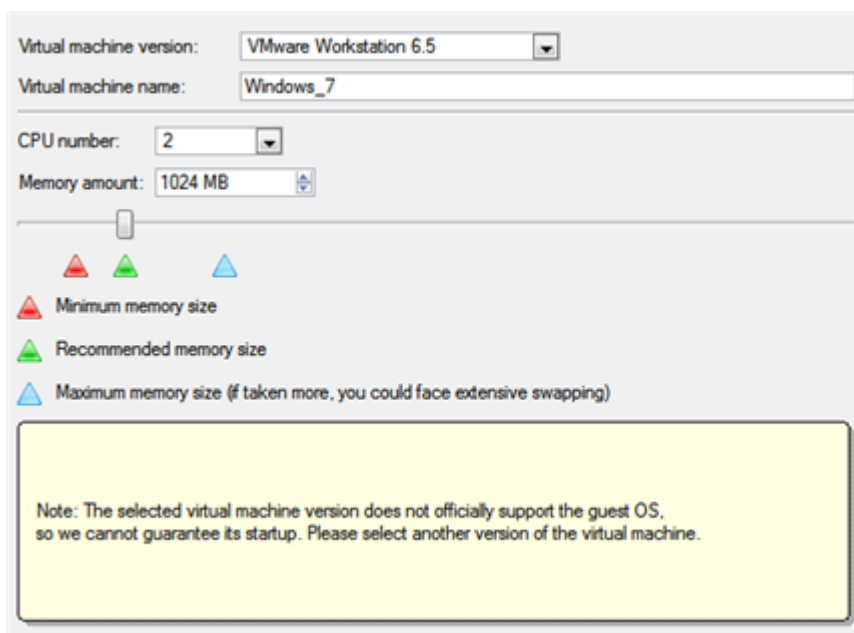
> **When using old Paragon's backup images (prior to Backup & Recovery 10), please be ready to manually specify the guest OS.**
>
> **Not all vendors may be available to choose. If capacity of one of the selected objects exceeds the maximum virtual disk capacity of any vendor, this vendor will be shadowed.**

6. Set properties of the future virtual machine:

- **Virtual machine version**. Please make sure you choose a version which is supported by your virtualization software, otherwise you won't be able to work with the newly created machine.

- **Virtual machine name**. By default the wizard picks the name of your guest OS, which can be modified however.

- **CPU number**. If your computer supports multiprocessing, select how many CPUs you'd like to allocate for the virtual machine.

- **Memory amount**. Depending on the guest OS the wizard calculates the recommended size of RAM, which can be modified however.
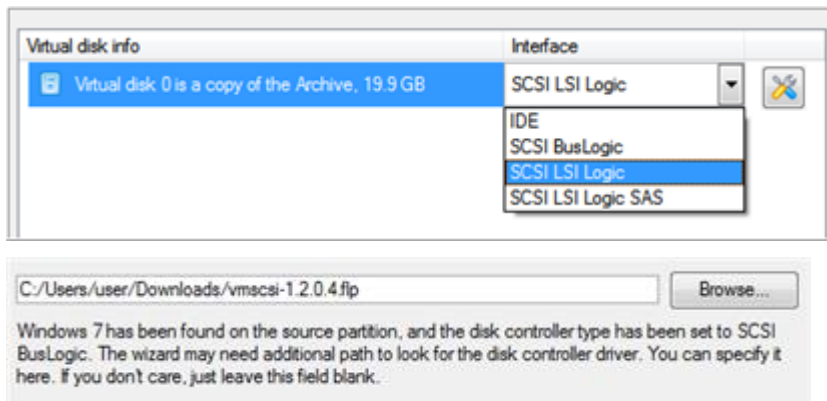
> ⚠️ **If the selected version does not officially support the guest OS, you will be notified and prompted to select another one.**
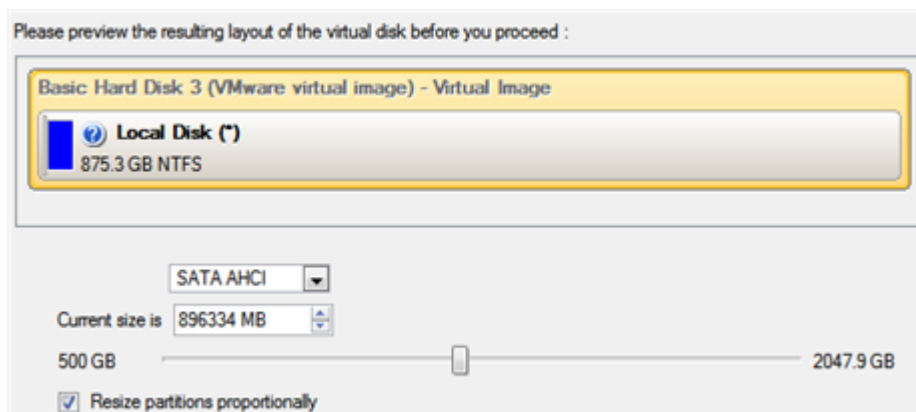
7. Set properties of the resulted virtual disk(s):

- **Virtual disk interface**. By default the wizard sets the most appropriate interface for each disk. Anyway you've got the option to change it to one of the supported by your guest OS. Just click on a disk, and then select the required interface from the pull-down list. But be ready to provide drivers for it on the next page.

> ⚠️ **Our program supports injection of drivers delivered in .iso or .flp images, so you can for instance download and inject drivers for the BusLogic controller from the VMware website.**
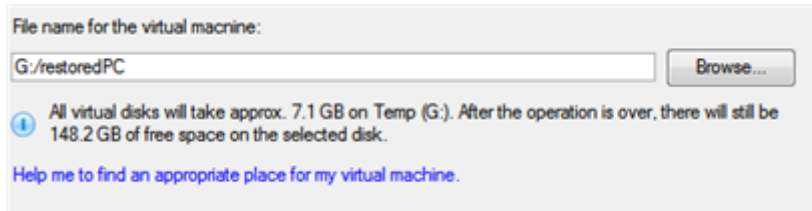
- **Additional properties** that depending on the selected virtualization vendor may include:

  - Size of the virtual disk. By default the wizard offers to create a virtual disk exactly the size of the selected object(s), which you can resize however (available for all);

  - Resize partitions proportionally. If you upsize the resulted virtual disk, you can make the wizard proportionally change the size of partitions keeping their relative order intact (available for all);

  - Create a split disk. You can choose whether to automatically cut the resulted virtual image to files of 2 GBs or not (available for VMware only);

  - Pre-allocate all disk space. You can choose whether to pre-allocate all space of the future virtual disk, or do it dynamically (not available for VMware ESX and Oracle VirtualBox).
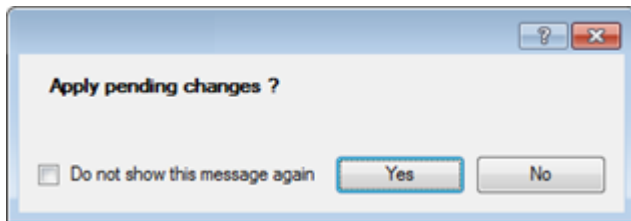

⚠️ **The maximum limit you can downsize the virtual disk is the capacity of its first partition.**

---

8. Specify a file name for the virtual machine and its location. By default the wizard scans all your local disks for available free space and picks the most appropriate location taking into account the total capacity of all virtual disks inside the virtual machine.
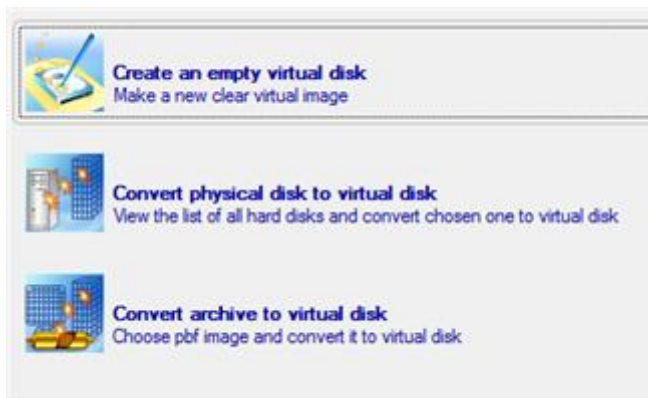
> File name for the virtual macnine:
>
> G:/restoredPC   Browse...
>
> ⓘ All virtual disks will take approx. 7.1 GB on Temp (G:). After the operation is over, there will still be 148.2 GB of free space on the selected disk.
>
> Help me to find an appropriate place for my virtual machine.

9. Complete the wizard and then apply the pending changes.

> Apply pending changes ?
>
> ☐ Do not show this message again   Yes   No

Creating an empty virtual disk (Create VD)

To create an empty virtual disk, please do the following:

1. Click the **Create Virtual Disk** item of the Wizards menu.

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

3. Select **Create an empty virtual disk**.

> **Create an empty virtual disk**
> Make a new clear virtual image
>
> **Convert physical disk to virtual disk**
> View the list of all hard disks and convert chosen one to virtual disk
>
> **Convert archive to virtual disk**
> Choose pbf image and convert it to virtual disk

4. Specify a virtualization software vendor and a number of additional parameters, including:

- **Type of the virtual disk**. You can either create an IDE or a SCSI virtual disk (relevant for VMware only);

- **Create a split disk**. You can choose whether to automatically cut the resulted virtual image to files of 2 GBs or not (available for VMware only);

- **Pre-allocate all disk space**. You can choose whether to pre-allocate all space of the future virtual disk, or do it dynamically (not available for VMware ESX and Oracle VirtualBox);
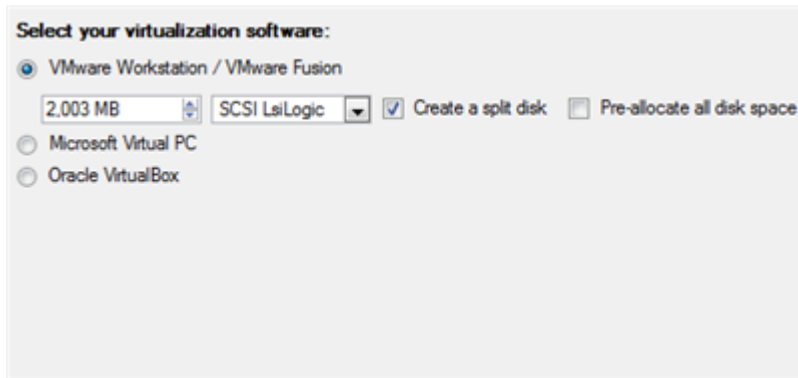
5. Specify a file name for the resulted virtual disk and its location.
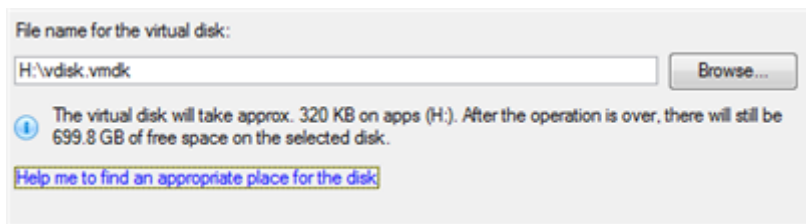
6. Complete the wizard and then apply the pending changes.
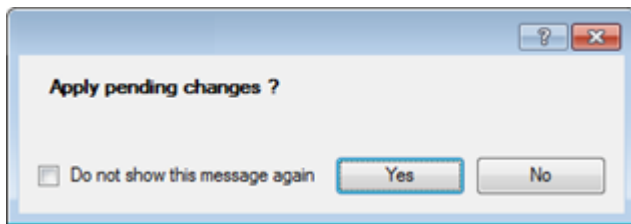
Making Windows Vista/7 backup bootable on virtual hardware (P2V Adjust OS)

As you probably know, Windows Vista and later operating systems from Microsoft include a built-in disaster recovery tool, which enables to create backup images of Windows OS in a .vhd (Virtual Hard Disk) format, used now by Microsoft Virtual PC/Server/Hyper-V, and Oracle VirtualBox. Unfortunately you cannot just take this type of backup to run Windows OS in a virtual environment – it won't start up. We can help you out with this naughty problem. Our P2V Adjust OS Wizard can patch Windows OS inside a .vhd backup image according to the specified virtualization vendor to let you start up and work with your Windows on virtual hardware.

To make a Windows .vhd backup image start up in a virtual environment, please do the following:

1. Click the **P2V Adjust OS** item of the Wizards menu.

⚠️ **There are other ways to start up this function, please consult the [Interface Overview](#) chapter to know more on the subject.**
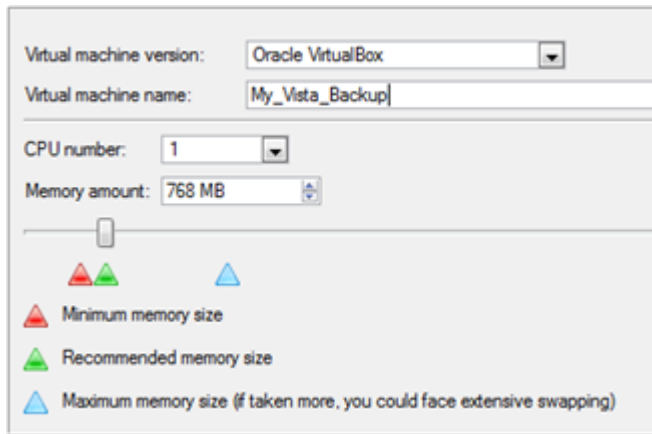
2. On the Wizard's Welcome page, click the Next button.

3. Browse for the required .vhd backup image of your Windows.
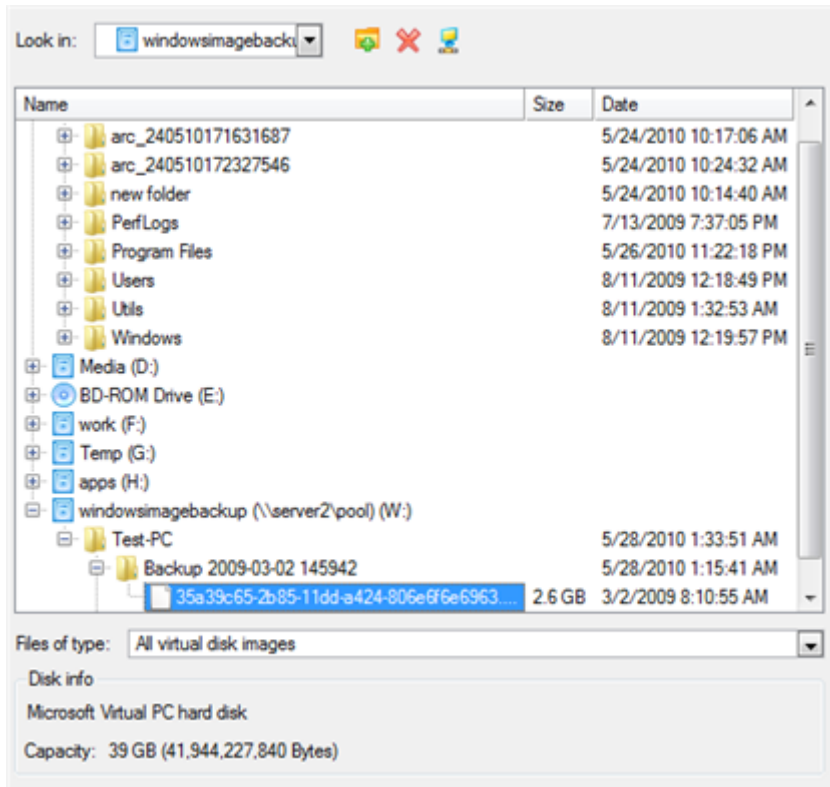
4. Our wizard will detect a version of Windows OS inside the image and offer to specify a virtualization software vendor. At the present moment the .vhd format is supported by Microsoft Virtual PC/Server/Hyper-V, and Oracle VirtualBox. We choose the last one.
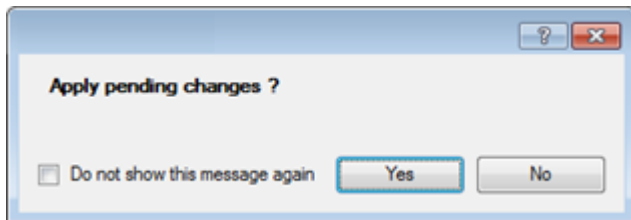

5. Set properties of the future virtual machine:

- **Virtual machine version**. Please make sure you choose a version which is supported by your virtualization software, otherwise you won't be able to work with the newly created machine.

- **Virtual machine name**. By default the wizard picks the name of your guest OS, which can be modified however.

- **CPU number**. If your computer supports multiprocessing, select how many CPUs you'd like to allocate for the virtual machine.

- **Memory amount**. Depending on the guest OS the wizard calculates the recommended size of RAM, which can be modified however.

> ⚠️ **If the selected version does not officially support the guest OS, you will be notified and prompted to select another one.**

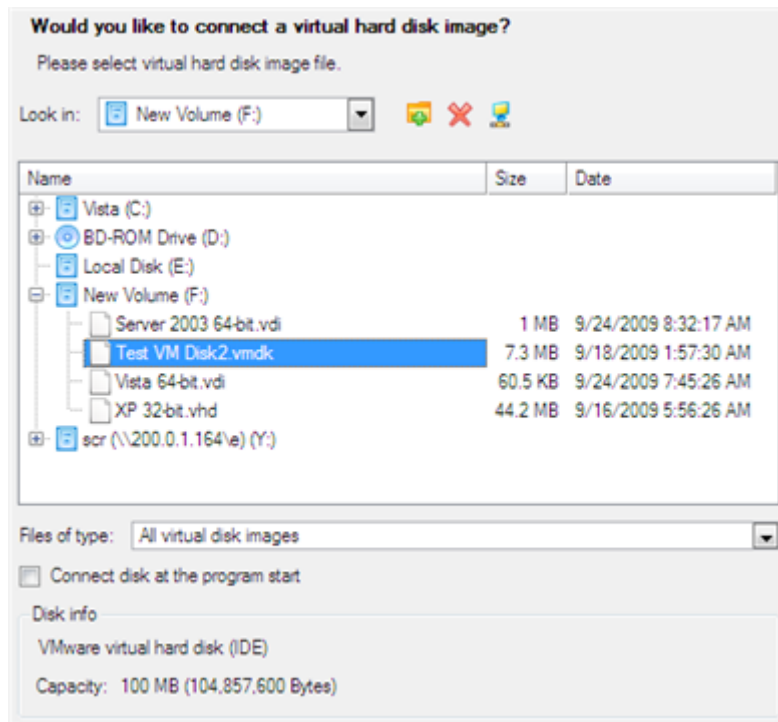6. Complete the wizard and then apply the pending changes.

Connecting a virtual disk (Connect VD)

You've got the option to connect a virtual disk of <u>one of the supported types</u> 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.);

- Clone a partition or an entire hard disk;

- Edit/View sectors, and many more.

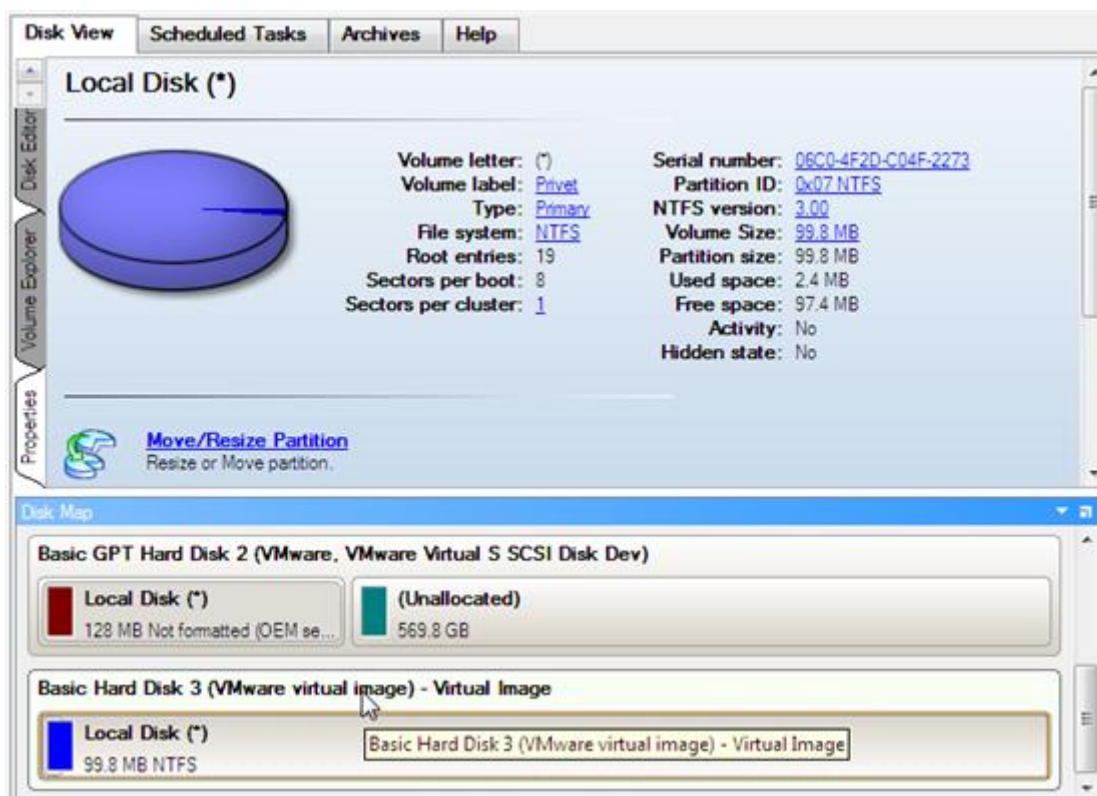To connect a virtual disk (snapshot) to our program, please do the following:

1. Click the **Connect a Virtual Disk** item of the Hard Disk menu.

2. In the opened dialog browse for the required virtual disk, then click **Connect** to accomplish the operation. You've also got the option to connect this disk in the read-only mode or/and have it connected automatically at every program startup by marking appropriate checkboxes.

Would you like to connect a virtual hard disk image?

Please select virtual hard disk image file.

Look in: New Volume (F:)   [▼]   [icons]

Name	Size	Date
⊞ Vista (C:)		
⊞ ◎ BD-ROM Drive (D:)		
— Local Disk (E:)		
⊟ New Volume (F:)		
— Server 2003 64-bit.vdi	1 MB	9/24/2009 8:32:17 AM
— Test VM Disk2.vmdk	7.3 MB	9/18/2009 1:57:30 AM
— Vista 64-bit.vdi	60.5 KB	9/24/2009 7:45:26 AM
— XP 32-bit.vhd	44.2 MB	9/16/2009 5:56:26 AM
⊞ scr (\\200.0.1.164\e) (Y:)		

Files of type: All virtual disk images   [▼]

☐ Connect disk at the program start

Disk info

VMware virtual hard disk (IDE)

Capacity: 100 MB (104,857,600 Bytes)

⚠ **Click the "Show recently used disks" link to select and connect one of the disks you've already worked with.**

---

3. That's all. The selected virtual disk will be available on the disk map, as if it's an ordinary physical disk.

| Disk View | Scheduled Tasks | Archives | Help |

Local Disk (*)

Volume letter: (*)	Serial number: 06C0-4F2D-C04F-2273
Volume label: Privet	Partition ID: 0x07 NTFS
Type: Primary	NTFS version: 3.00
File system: NTFS	Volume Size: 99.8 MB
Root entries: 19	Partition size: 99.8 MB
Sectors per boot: 8	Used space: 2.4 MB
Sectors per cluster: 1	Free space: 97.4 MB
	Activity: No
	Hidden state: No

Move/Resize Partition
Resize or Move partition.

Disk Map

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

| Local Disk (*) | (Unallocated) |
| 128 MB Not formatted (OEM se... | 569.8 GB |

Basic Hard Disk 3 (VMware virtual image) - Virtual Image

| Local Disk (*) |
| 99.8 MB NTFS | Basic Hard Disk 3 (VMware virtual image) - Virtual Image |

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 a 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:

1. Connect the required virtual disk to our program.

2. Select it on the disk map.
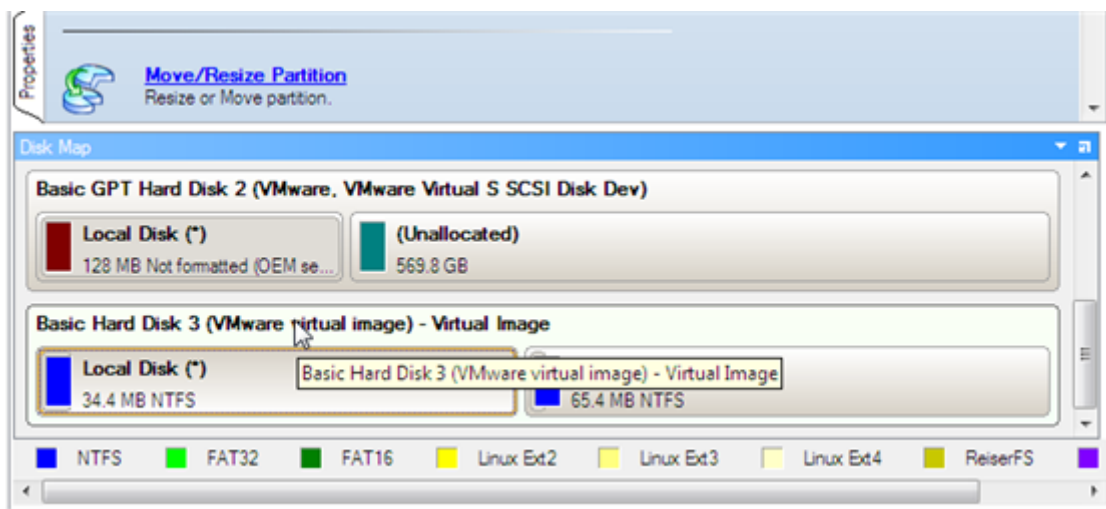
3. Right click on the space donor partition, then select **Move/Resize Partition…**
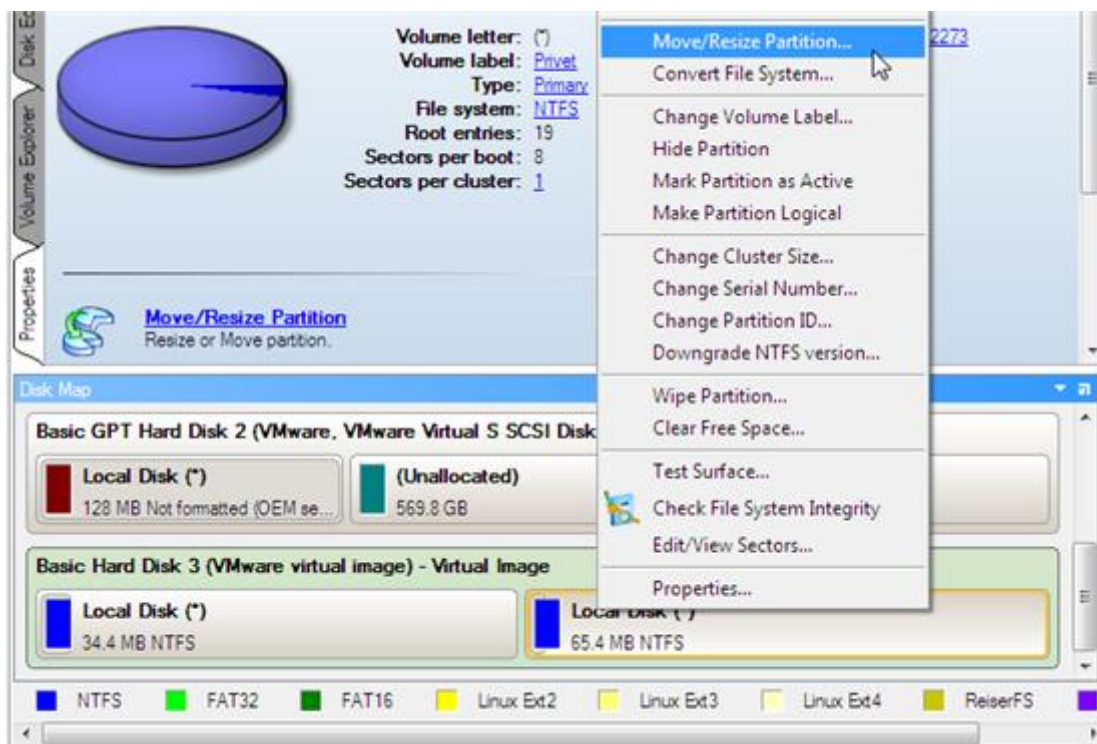
> ⚠ **In case you've got more than two partitions on the disk, and the required space donor is not adjacent to the system partition, you can still use this scenario by consecutively redistributing free space between all partitions involved in the operation.**

4. 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.
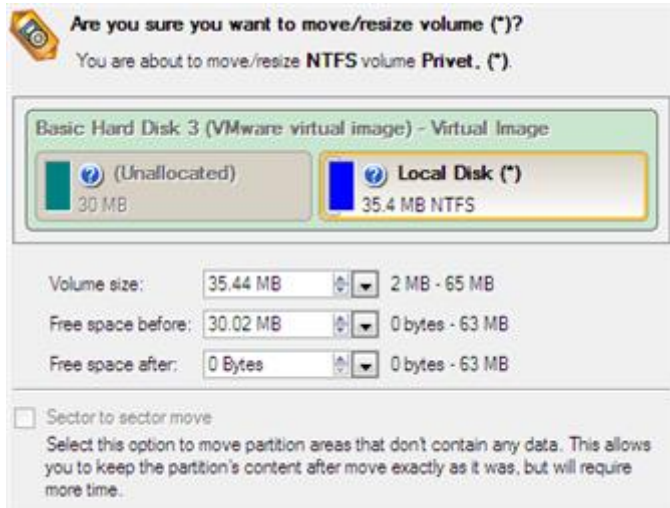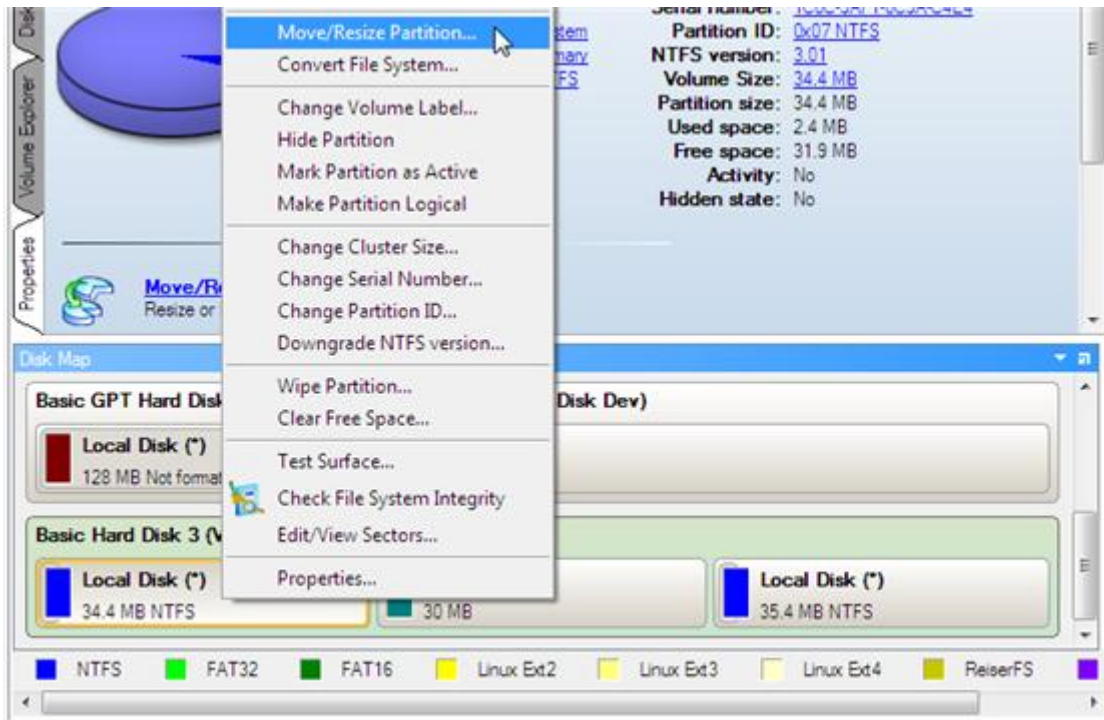
5. Now you've got a block of free space to add to the system partition.
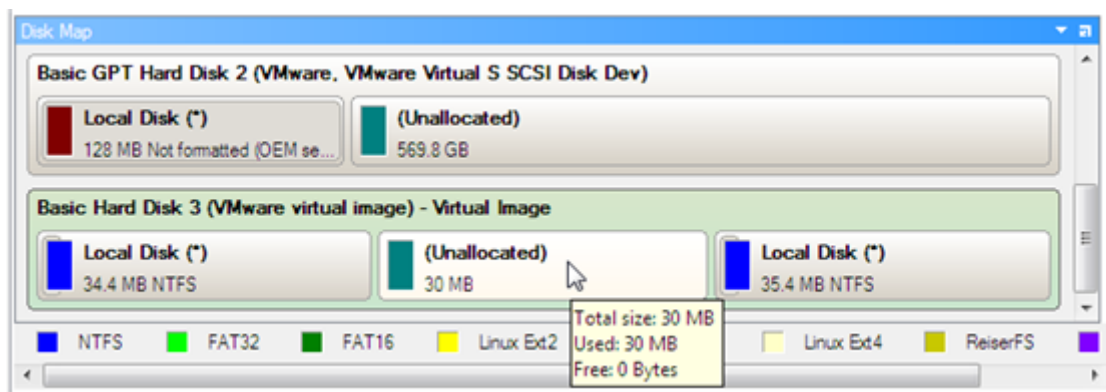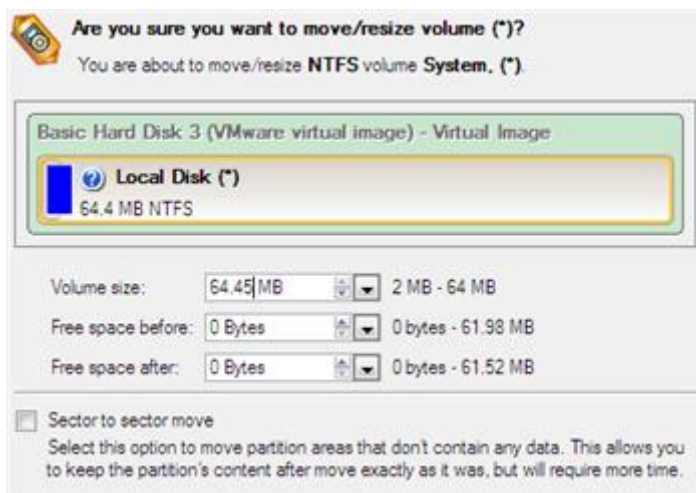
6. Right click on the system partition, then select **Move/Resize Partition…**

7. In the opened dialog shift the right edge of the partition to the right end, thus increasing its size.

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.

Merging a system partition with an adjacent logical partition on a virtual disk

Let's assume you've got several partitions on your virtual 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. Connect the required virtual disk to our program.

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

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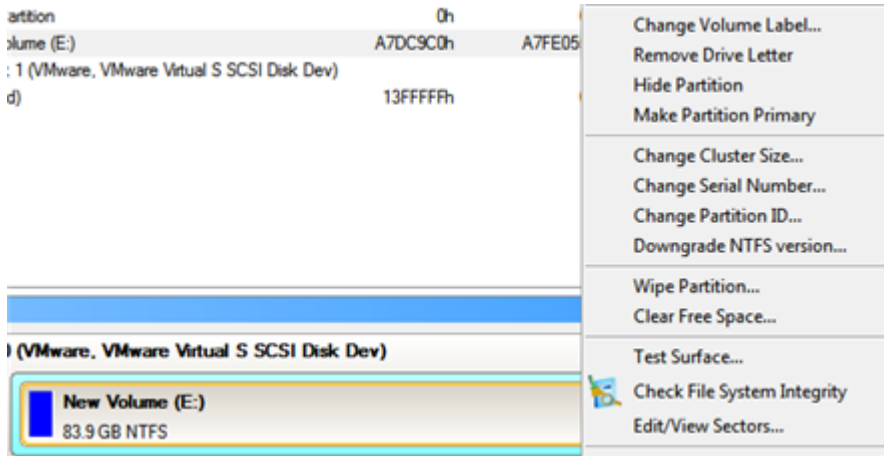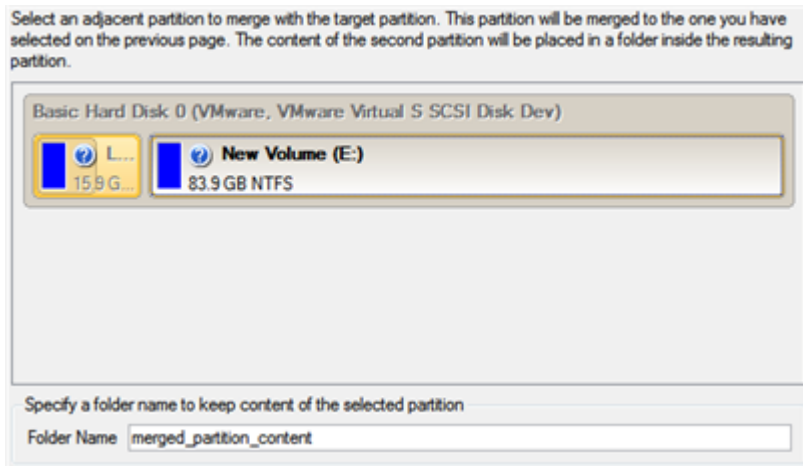

4. Confirm the operation by clicking the Yes button. By default, our program works in the virtual mode of execution, so you can either confirm all operations to let the program accomplish them or continue work in the virtual mode.


5. Click the **Merge Partitions** item of the Wizards menu.

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

7. Select a volume you want to expand, i.e. the system one.
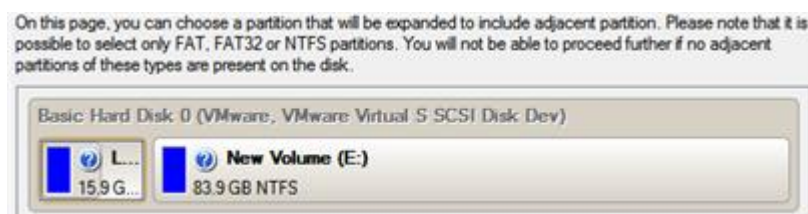
8. Select a volume you'd like the first volume to merge with. Please note that all contents of the selected partition will be placed into a specific folder after the merge operation is over.

9. Review the changes and complete the wizard.

10. 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.
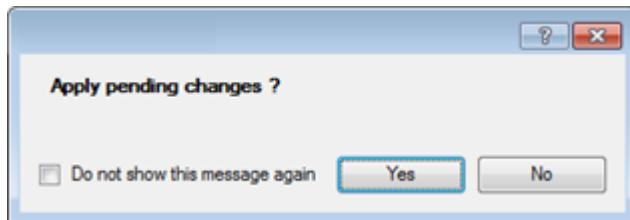

11. In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.

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. Select in the Main Menu: **Tools > File Transfer Wizard** (any of the ways described earlier can also be used here).

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.
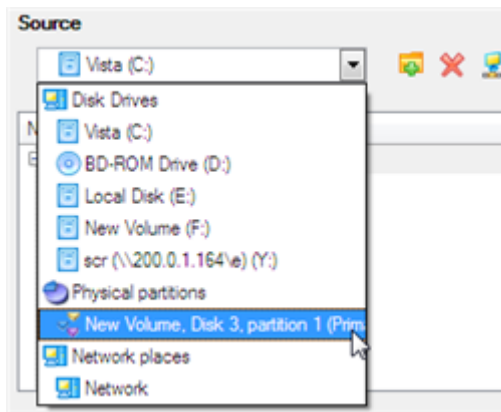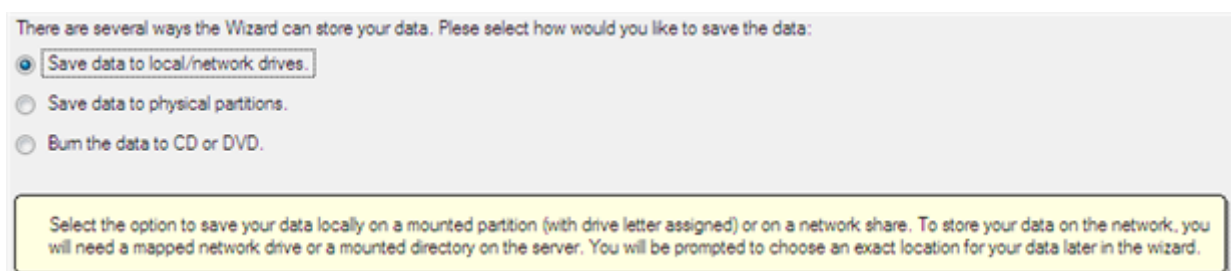
> ⚠️ **To easily find the required disk, please use its volume label or sequence number as a check point.**
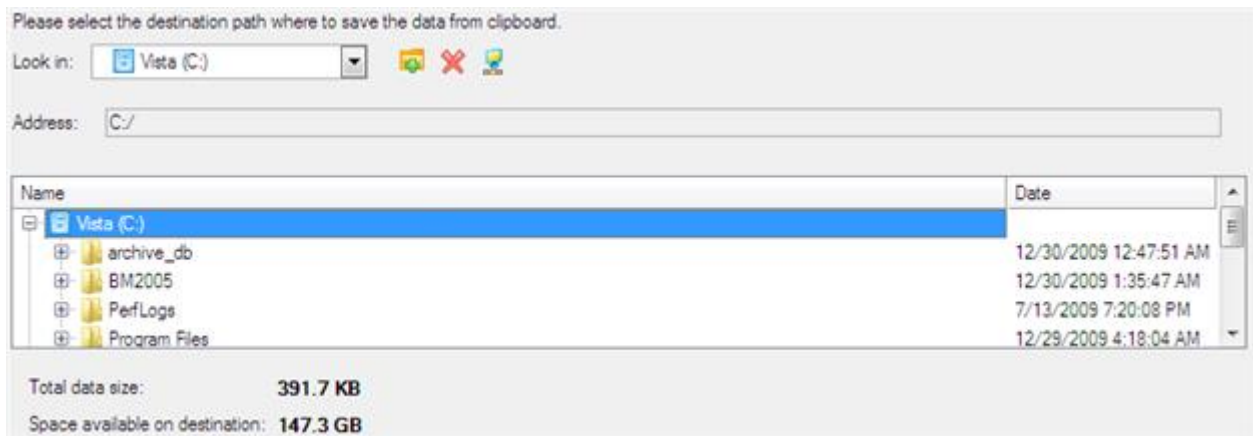
5. Select files you want to copy and place them to Clipboard by pressing the left arrow-button. Click **Next** to continue.
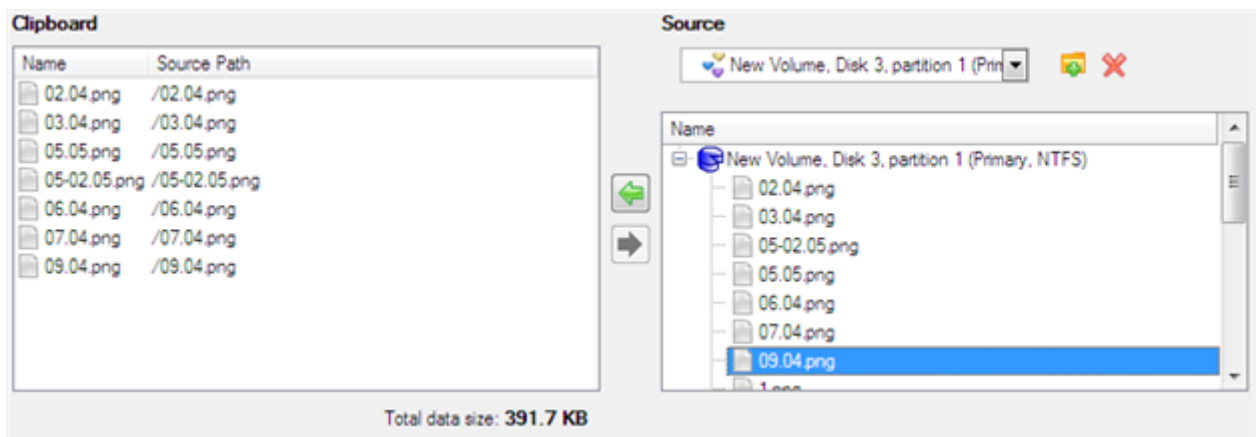
6. Select the **Save data to local/network drives** item. Click **Next** to continue.

7. Specify the exact place to copy the data to.

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.

Migrating from one virtual environment to another (V2V)

Let's assume you're willing to shift to another virtualization software vendor (e.g. from Microsoft Virtual PC to VMware Workstation). The only thing that holds you back from it is a lot of virtual machines of MS Virtual PC, which are not fully compatible with VMware Workstation. Don't worry, we can help you out.

> ⚠ **Before you start, please make sure you've got enough free space to accomplish the operation.**

To make a virtual machine of one vendor out of an existing virtual machine of another vendor, please do the following:

1. Connect all virtual disks of the required virtual machine to our program.

2. Complete the P2V Copy Wizard. Do not forget to select all virtual disks as objects of virtualization.

As a result you'll get two virtual machines containing the same virtual environment, but of different vendors. You can now delete the original to release some free space.

Migrating from a virtual environment to physical (V2P)

Let's assume your desktop PC was damaged a couple of months ago. Luckily you had had its system virtualized just before the tragedy. Having a laptop at the disposal, you kept working with the desktop system in a virtual environment for a while, while scanning the market for a replace. To cut it short, you've got a brand-new desktop PC just delivered to your door – it's time for a little V2P operation. Our program can help you do that.

Before you start, please make sure the following conditions are met:

- You've got drivers for the new hardware ready to use, not zipped or in .exe files.

- You've got access to the virtual disk from your desktop PC. You can have it locally, on external storage, or a network share.

To migrate from a virtual environment to physical, please do the following:

1. Start up the computer from the WinPE media.

⚠️ **Please use Boot Media Builder to prepare the WinPE 3.0 recovery environment, which you can get here: www.paragon-software.com/my-account/.**

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2. Click **Full Scale Launcher**.

3. Connect the required virtual disk to our program.

4. Copy the connected virtual disk to your physical disk just the way it's done with physical disks.

5. Right click on the virtual disk, then select **Disconnect Virtual Disk**.

6. Complete the P2P Adjust OS Wizard.

Migrating a Windows 7 vhd

Let's assume you need to make your Windows 7 contained in a .vhd file start up on another computer. You've copied the virtual disk, added info on it to the BCD boot menu, then tried to start up the OS, but to no avail - your Windows goes BSOD with the 0x000007B error code. We can help you out with this naughty problem.

To make a .vhd image of Windows 7 start up on different hardware, please do the following:

1. Start up the computer from the WinPE media.

⚠️ **Please use Boot Media Builder to prepare the WinPE 3.0 recovery environment, which you can get here: www.paragon-software.com/my-account/.**

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2. Click **Full Scale Launcher**.

3. Connect the required virtual disk to our program.

4. Complete the P2P Adjust OS Wizard.

## Extra Scenarios for WinPE

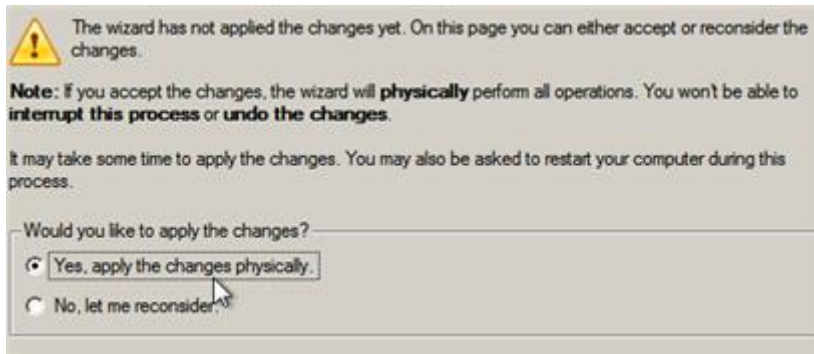### Correcting BCD (Boot Configuration Data)

To automatically correct Windows BCD, please do the following:

1. Once you accept the agreement, you will see the Universal Application Launcher. Click **Boot Corrector**.

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

3. Select **Correct boot parameters…** to let the wizard fix BCD in all found Windows installations.
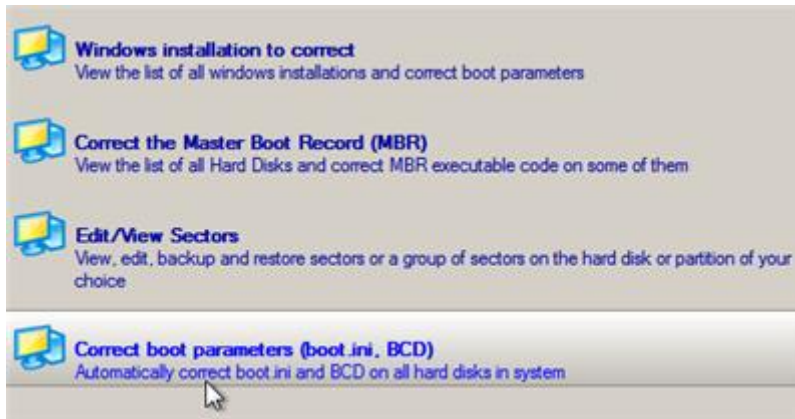
4. The wizard will ask you to confirm the operation. Apply the changes to complete.

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

Adding specific drivers

The WinPE 3.0 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. Once you accept the agreement, you will see the Universal Application Launcher. 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
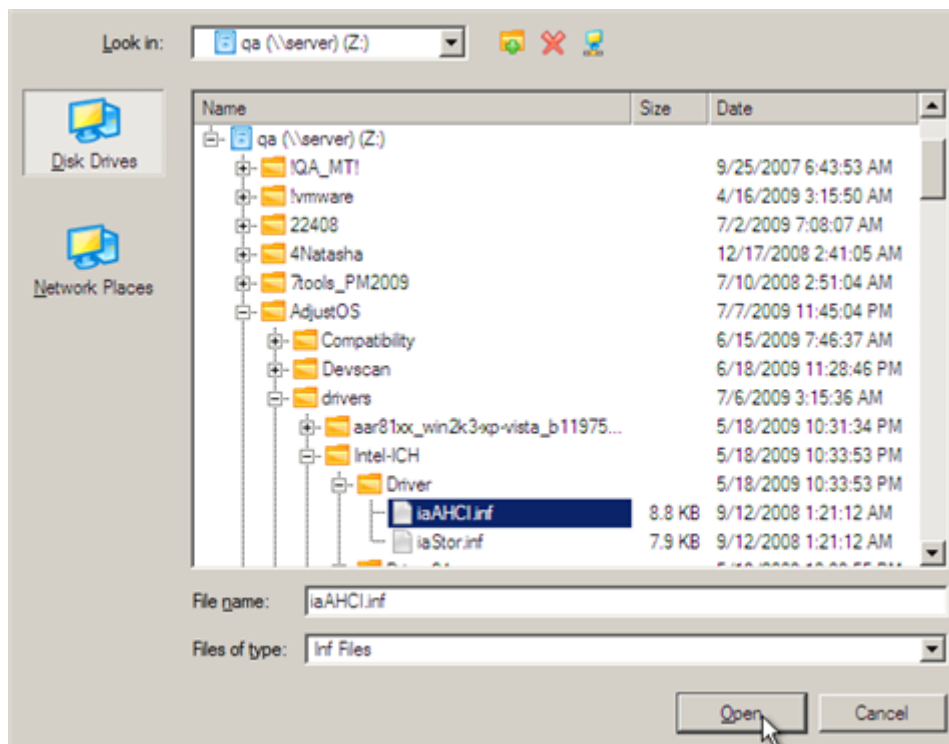
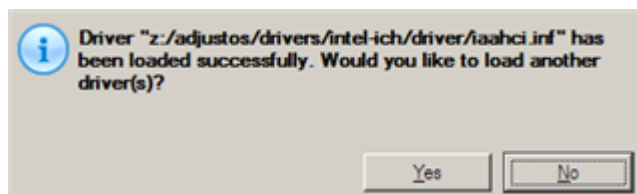**To know how to map a network share, please consult the Configuring network scenario.**

3. 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 3.0 recovery environment is 32-based, thus you need to use 32-bit 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. Once you accept the agreement, you will see the Universal Application Launcher. Click **Configure Network**.

2. In the opened dialog provide an IP address, a network mask, default gateway, etc. for your network device.
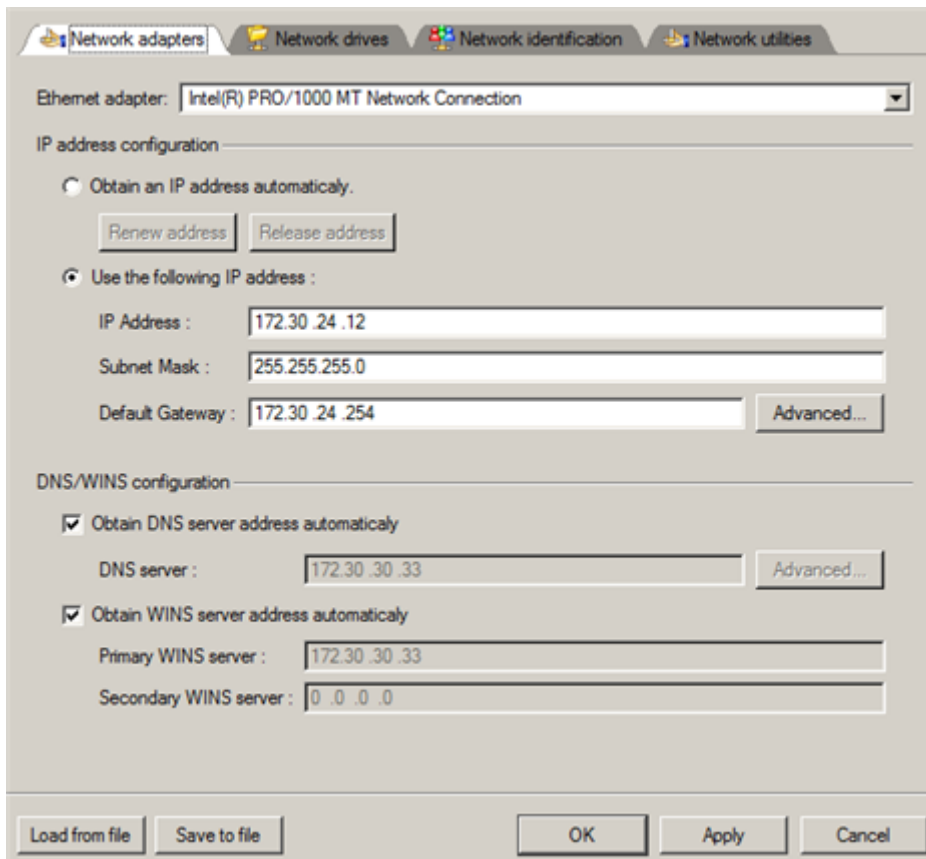
3. Click the **Network drivers** tab to map a network share.

4. Click **Map Network Drive** and provide all the necessary information to map a network share in the opened dialog:

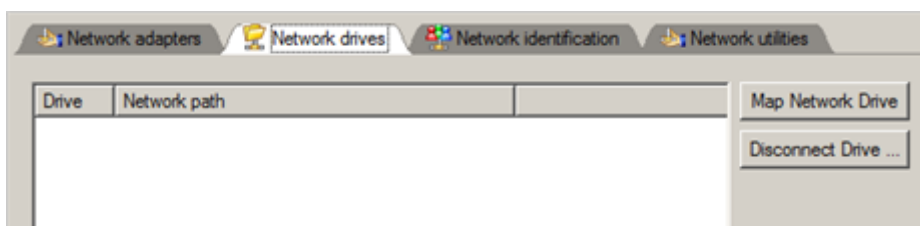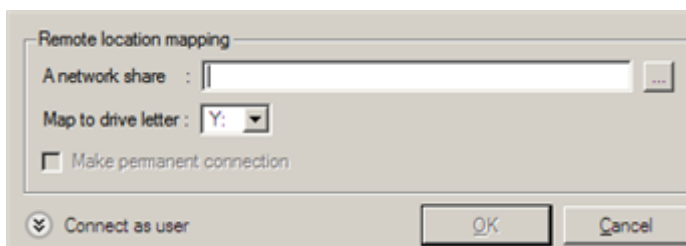- Click the standard browse button [...] to browse for the required network share or manually enter a path to it;

- 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.

5. Click the **Network identification** tab to change a network name of your computer (generated automatically) and a workgroup name.

6. 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.

1. 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.
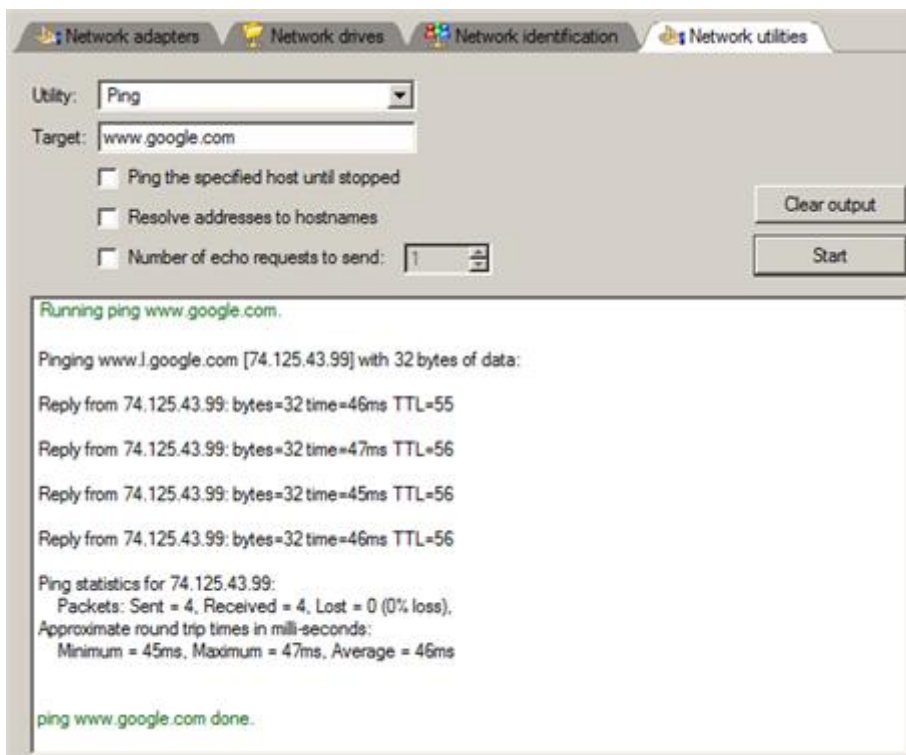
- **Ping the specified host until stopped**. Mark the option to ping the chosen host for indefinite time;
- **Resolve addresses to hostnames**. Mark the option to display hostnames instead of IP addresses.
- **Number of echo requests to send**. By default the utility sends 4 echo requests, which you can modify however.

2. 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.
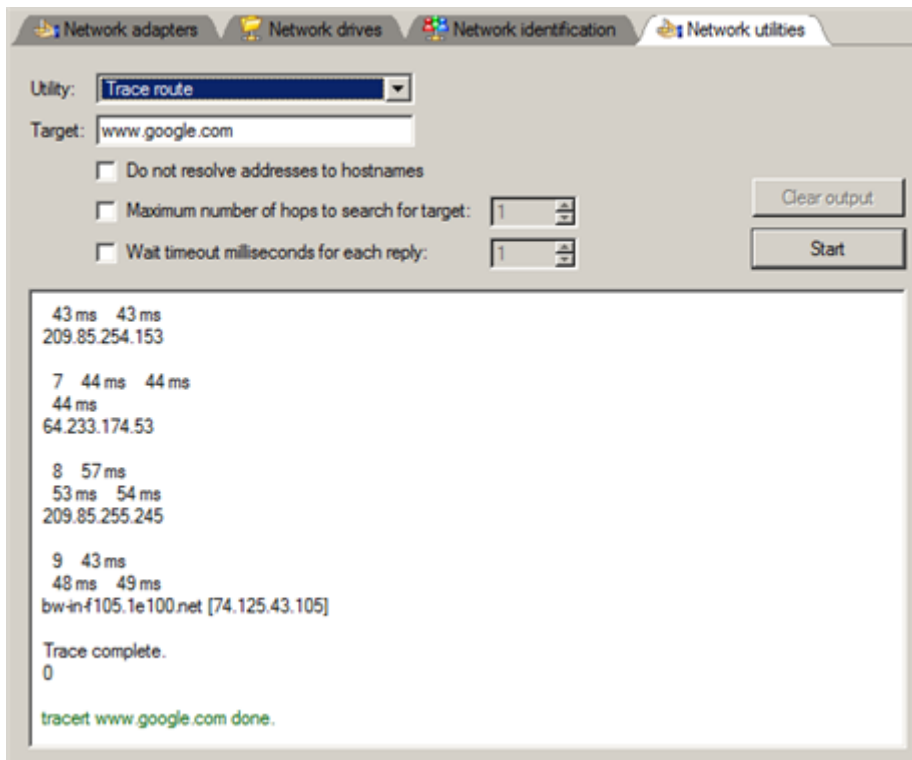
- **Do not resolve addresses to hostnames**. Mark the option to display IP addresses instead of hostnames.

- **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.

Collecting logs

1. Once you accept the agreement, you will see the Universal Application Launcher. Click **Log Saver**.

2. 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:

The system doesn't start up after migration. Please help...

Privacy statement

Please note, this process collects only Paragon created log data. Paragon Software respects your privacy and does not touch personal data. All the collected information will be used for problem research and fix only in our support team.

Show privacy statement

> ⚠ **Log files do not contain any confidential information on the operating system settings or the user documents.**

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3. On the next page choose how you'd like to send the logs, either immediately to Paragon's FTP Server in the automatic mode (recommended), or later by manually sending an e-mail to our support engineers with the collected logs attached.

Collect and send log files

⇨ Collect log files and send them to support via FTP
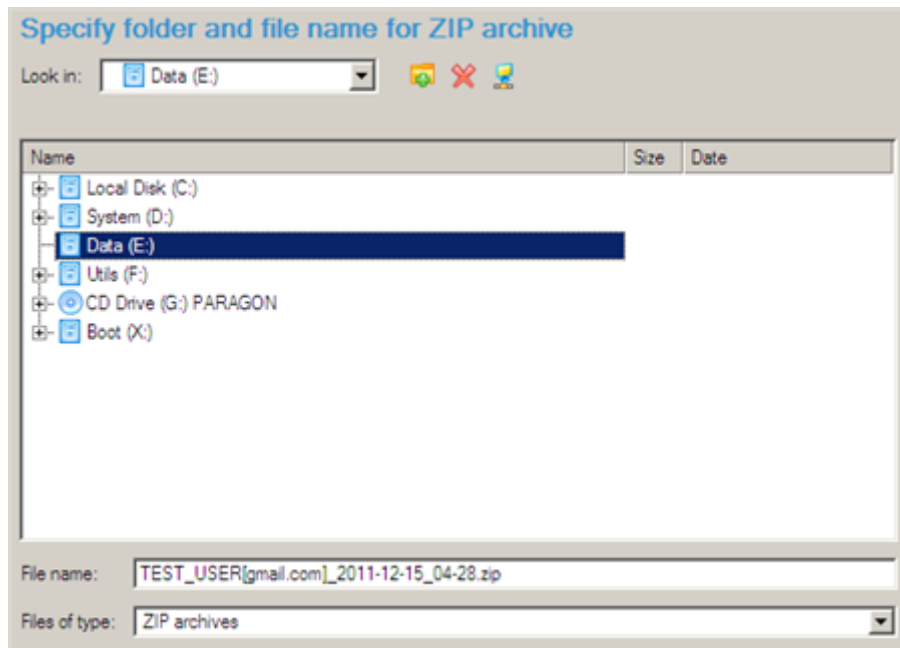
⇨ Collect log files and save them

Collect and zip the log files. You can send them later, or from another computer.

Automatic mode:

Log files have been uploaded succesfully!

100%

Manual mode:

Our Support Team will get in touch with you and help to resolve all problems.

> ⚠ **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 NFTS file systems). Its value is assigned when the partition is formatted. It does not play an important role for most operating systems and software as well.