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# Virtualization Manager™ 2010

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*User Manual*

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## 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™ 2010 is an elegant solution that can help you accomplish the following tasks:

- Migrate a live Win2K+ physical system to a virtual environment (P2V Copy);
- Restore a Win2K+ physical system from a Paragon's backup to a virtual environment (P2V Restore);
- Migrate a Win2K+ virtual system to a physical environment (V2P);
- Migrate from one virtual environment to another (V2V);
- Migrate a Win2K+ physical system to a different hardware platform (P2P);
- 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).

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




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**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.**

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## What's New in Virtualization Manager?

- [The updated P2V Copy/Restore Wizards](#) to migrate a Win2K+ physical system (live or from a Paragon's backup) to a virtual environment of one of the supported virtualization software vendors. In the latest version of the product the wizards enable to:
  - Create and properly configure virtual machines according to your preferences. Depending on the selected virtualization vendor you've got the option to specify a version of the future virtual machine, its name, location, RAM to allocate, a disk controller, the guest OS, etc. So when the migration is over, you'll get not only a virtual disk that contains an operating system and/or data, but a ready-to-use virtual machine.
  - Convert any combination of hard disks and partitions to migrate your entire computer or certain partitions in one operation. Complex backups that contain partitions from different hard disks are supported as well.
  - Employ MS VSS (Volume Shadow Copy Service) to synchronously migrate from several hard disks, thus ensuring data consistency during online migration of a system, which seats on several partitions or hard disks. This is achieved by taking a point-in-time snapshot of the whole disk subsystem.
  - When migrating from several hard disks, all their signatures will be kept intact, so you'll get the same drive letters in a virtual environment.

- [The updated P2V Adjust OS Wizard](#) allows creation of virtual machines as well, so besides its primary function, you can now build virtual machines out of supported virtual disks or Windows Vista/7 backup images.
- [The updated 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 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.
  - Support for VMware ESX Server's export format to copy/retrieve data from virtual machines of this vendor. It's useful for offline V2V and V2P operations.
- [Create VD Wizard](#) to create an empty virtual disk or with specific data of one of the supported virtualization vendors.
- [The updated P2P Adjust OS Wizard](#) to successfully start up a Win2K+ physical system on a different hardware platform (P2P) by allowing injection of all required drivers and the other actions crucial for this type of migration. Including the third generation of Paragon's Adaptive Restore™ technology, it now can:
  - Analyze all installed drivers inside a target system to report on devices without drivers.
  - Search for and install lacking drivers from the built-in Windows repository.
  - Notify the user about boot critical devices without drivers (HDD/RAID controllers, etc.), automatically prompting to provide a path to a driver repository.
  - Name all devices according to their model description, not some alphanumeric code, which requires additional deciphering.
  - Determine and install drivers not only for boot critical devices, but for physically connected NICs as well.
- [WinPE 3.0 based bootable environment](#) to enjoy support of a wider range of hardware configurations with the option to add drivers for specific hardware on-the-fly.
- [The updated Boot Corrector for WinPE](#) that now equals the functionality of the Linux/DOS counterpart.

## Product Components

Paragon Virtualization Manager™ 2010 contains several components:

- [Windows based utilities](#). With the help of an easy to use launcher you may find and run the required task, open the help system, or collect log files for Paragon Support Team.
- [WinPE based environment](#). Our product also includes a WinPE 3.0 bootable environment, which you can build 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 indispensable for V2P and P2P scenarios.

## Features Overview

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

### Key Features

Let us list some of the key features:

- [P2V Copy](#) to migrate a live Win2K+ physical system to a virtual environment.
- [P2V Restore](#) to restore a Win2K+ physical system from a Paragon's backup directly to a virtual environment.
- [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 Adjust OS](#) to recover the startup ability after unsuccessful virtualization with a 3rd party tool; to make Windows Vista/7 backups bootable on virtual hardware.
- [P2P Adjust OS](#) to migrate a Win2K+ physical system to a different hardware platform; to recover the startup ability after unsuccessful migration with a 3rd party tool.
- [Create VD](#) to create an empty virtual disk or with specific data of one of the supported virtualization vendors.
- [Support for major virtual machines](#), Microsoft Virtual PC, Microsoft Hyper-V, VMware Workstation, VMware Fusion, Oracle VirtualBox.
- **Smart Driver Injector** to make the process of adding new drivers smooth and easy.
- **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.
- [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.
- [File Transfer Wizard](#) to make such operations as transferring of files/directories or burning of them to CD/DVD as easy and convenient as possible.
- **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.
- **Convert a file system** (FAT16/32, NTFS, Ext2/Ext3) without reformatting.
- **Modify file system parameters** (make active/inactive, hide/unhide, change serial number, partition ID, volume label, etc.).
- **Basic functions for initializing, partitioning and formatting hard disks** (create, format, delete). Instead of the standard Windows disk tools, the program supports all popular file systems.
- **Undelete Partitions Wizard** to recover an accidentally deleted partition.
- **27 defragmentation strategies** available to defragment FAT and NTFS file systems.
- **MFT defragmentation and shrinking** to improve performance of NTFS.
- **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.
- **Task scheduling** to automate routine operations. It can be particularly effective when you have to repeat a sequence of actions on a regular basis.



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

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## Supported Technologies

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

- **Paragon Hot Copy™** technology to clone locked partitions and hard disks under Windows NT+ family operating systems providing both high operating efficiency as well as low hardware requirements.
- **Paragon Adaptive Restore™** technology to successfully migrate a Win2K+ 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 if 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

Paragon Virtualization Manager™ 2010 provides support for major virtual machines presented on the market today:

- Microsoft Virtual PC;
- VMware Workstation;
- VMware Fusion;
- Oracle VirtualBox;

### Additionally for Connect VD and P2V Adjust OS only

- MS Windows Vista/7 backup;

### Additionally for Connect VD only

- Parallels Workstation;
- XenServer (.vhd only).

## Getting Started

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

### System Requirements

#### Windows based utilities

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

- Operating systems: Windows 2000 Professional and later, except server editions
- Internet Explorer 5.0 or higher
- Intel Pentium CPU or its equivalent, with 300 MHz processor clock speed
- 128 MB of RAM (256+ recommended)
- Hard disk drive with 100 MB of available space
- SVGA video adapter and monitor
- Mouse

#### WinPE environment

To use the WinPE based utilities on your computer, (it doesn't matter what operating system is installed), make sure that it meets the following minimum system requirements:

- Intel Pentium III CPU or its equivalent, with 1000 MHz processor clock speed
- At least 512 MB of RAM
- SVGA video adapter and monitor
- Mouse

#### Additional requirements

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

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

### Installation

The setup utility has the standard user interface and set of installation steps. Once the installation procedure is completed you need to restart the system to activate a system driver that will enable to copy locked partitions/hard disks online.

### First Start

To start Paragon Virtualization Manager 2010 under Windows, please click the Windows Start button and then select **Programs > Paragon Virtualization Manager™ 2010 > Paragon Virtualization Manager™**.

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.




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To start up the traditional Launcher, please click on Switch to Full Scale Launcher.

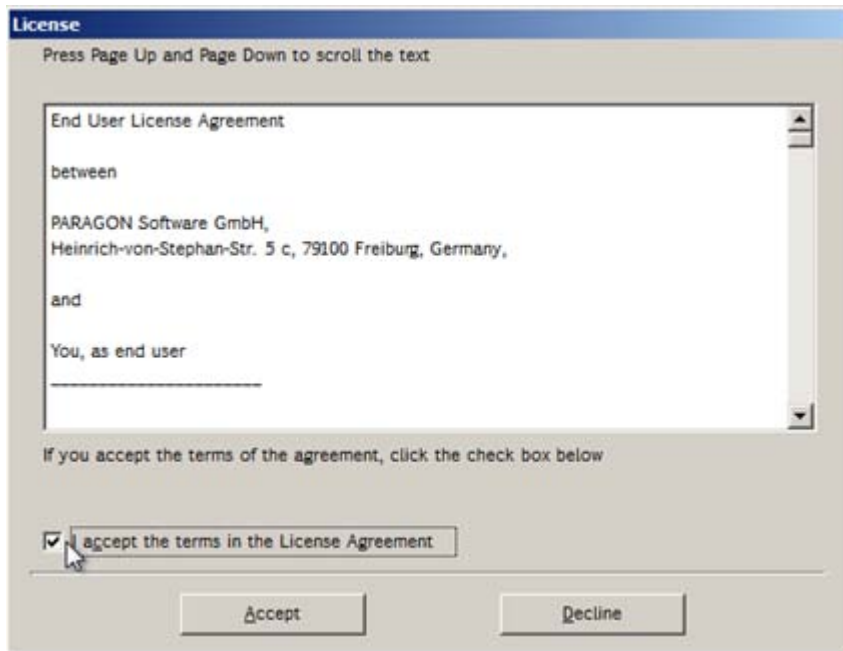


To know more on how to handle the product's interface and accomplish typical operations, please consult the [Windows Components](#) chapter.

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## Booting from the WinPE Environment

1. Start up the computer from our WinPE environment, which you can prepare on a CD/DVD disc or a thumb drive. Please make sure the on-board BIOS is set up to boot from CD/USB first.
2. Read Paragon's license 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.



- 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.



- Click on the required operation to start. Hints will help you make the right choice.



**Our 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**

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consult the [Adding specific drivers](#) scenario to know how to tackle this issue.

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## Contacting Paragon Technology GmbH

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

Service	Contact
Visit Paragon GmbH web site	<a href="http://www.paragon-software.com">www.paragon-software.com</a>
Registration & updates web-service	<a href="http://www.paragon-software.com/support">www.paragon-software.com/support</a>
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Pre-sale information	<a href="mailto:sales@paragon-software.com">sales@paragon-software.com</a>

## 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.

### About 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 of your particular version of virtualization software (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 environment, 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.
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.

## About Adaptive Restore Technology

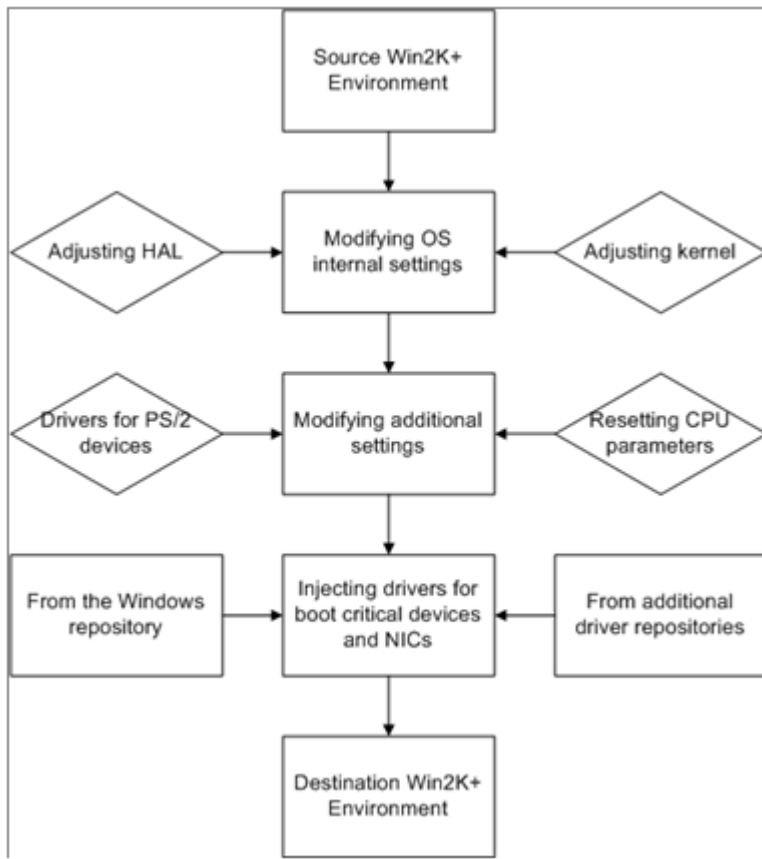
### Technology Background

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 Win2K system (Windows 2000/XP/Server 2003 and Vista/7/Server 2008) 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 Win2K 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 2000/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 Win2K 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 Win2K systems have built-in driver repositories, please be prepared to have additional drivers when dealing with Windows 2000/XP/Server 2003, because for these**

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**systems they are very modest.**

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### *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.

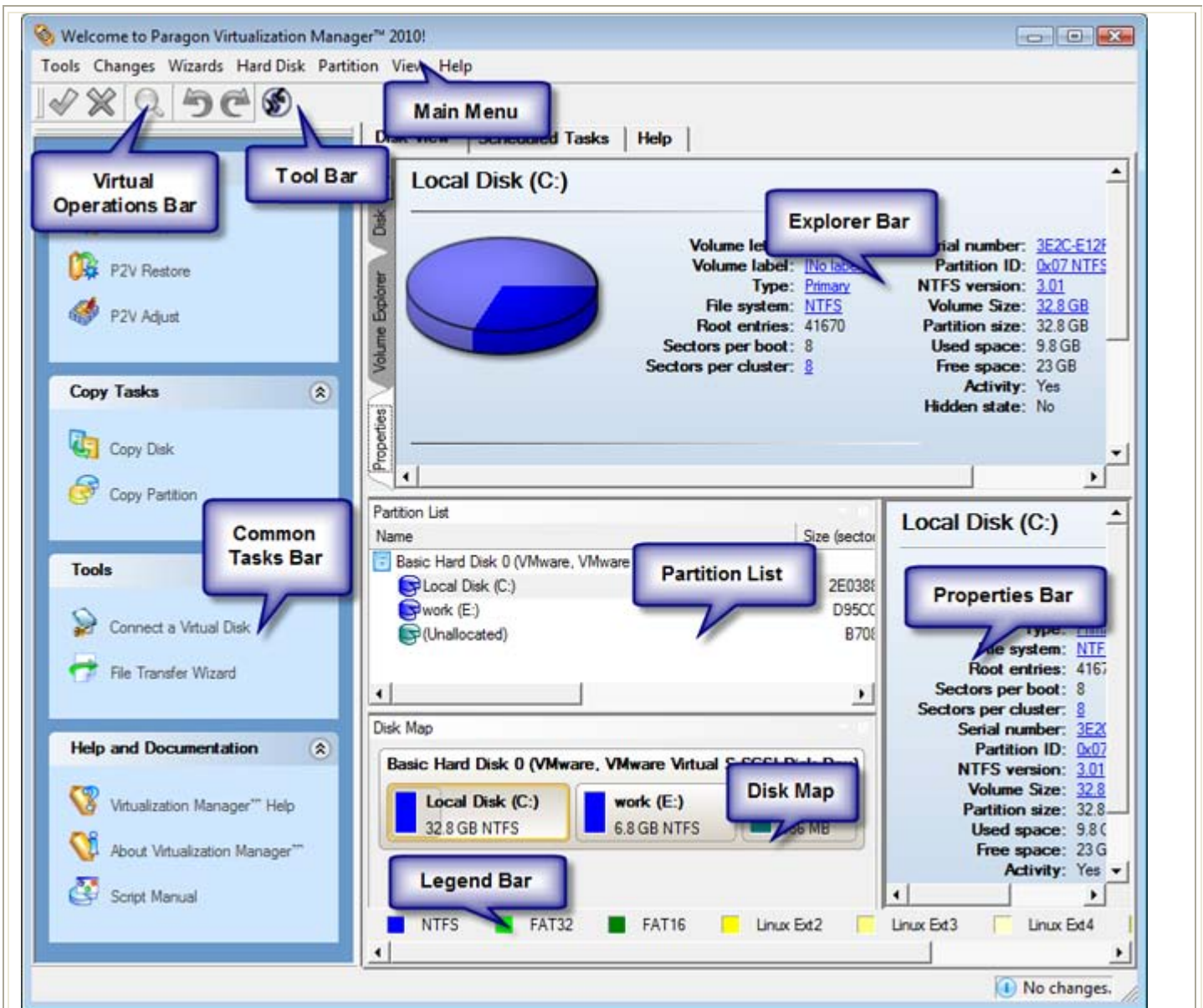
### Interface Overview

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. [Partition List](#)
7. [Properties Bar](#)
8. [Disk Map](#)
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
<b>Tools</b>	
<b>View Logs...</b>	View logs on the carried out operations
<b>Send Log Files</b>	Compress and send the log to the Paragon Support Team
<a href="#">File Transfer Wizard...</a>	Transfer data from any media
<a href="#">Settings...</a>	Edit the general settings of the program
<b>Exit</b>	Exit the program
<b>Changes</b>	
<b>Generate Script...</b>	Generate a script for the task
<b>Save to Scheduler...</b>	Schedule pending operations
<b>Undo `the last virtual operation`</b>	Cancel the last virtual operation on the List of Pending Operations
<b>Redo `the last virtual operation`</b>	Cancel the last undo virtual operation on the List of Pending Operations
<b>View Changes...</b>	Display the List of Pending Operations
<b>Apply Changes</b>	Launch the real execution of virtual operations
<b>Discard All Changes</b>	Cancel all virtual operations on the List of Pending Operations
<b>Reload Disk Info</b>	Refresh the current information about disks
<b>Wizards</b>	
<b>Create Partition...</b>	Create a partition of any file system
<b>Format Partition...</b>	Format a partition of any file system
<b>Delete Partition...</b>	Delete a partition of any file system
<b>Undelete Partitions...</b>	Recover an accidentally deleted partition

<b>Merge Partitions...</b>	Merge adjacent partitions of NTFS, FAT or FAT32 file systems
<b>Redistribute Free Space...</b>	Redistribute available disk space of existed partitions
<a href="#"><u>P2P Adjust OS...</u></a>	Make your system bootable on different hardware; recover the startup ability after unsuccessful migration with a 3rd party tool
<a href="#"><u>Create Virtual Disk...</u></a>	Create an empty virtual disk or with specific data of one of the supported virtualization vendors
<a href="#"><u>P2V Copy...</u></a>	Migrate a live Win2K+ physical system to a virtual environment
<a href="#"><u>P2V Restore...</u></a>	Restore a Win2K+ physical system from a Paragon's backup directly to a virtual environment
<a href="#"><u>P2V Adjust OS...</u></a>	Make Windows Vista/7 backups bootable on virtual hardware; recover the startup ability after unsuccessful virtualization with a 3 <sup>rd</sup> party tool
<a href="#"><u>Copy Hard Disk...</u></a>	Create a hard disk copy
<b>Schedule Hard Disk Copy...</b>	Set a timetable for a hard disk copy
<b>Copy Partition...</b>	Create a partition copy
<b>Schedule Partition Copy...</b>	Set a timetable for a partition copy
<b>Hard Disk</b>	
<b>Update MBR</b>	Update MBR (Master Boot Record) of the selected hard disk
<b>Change Primary Slots...</b>	Modify the primary partitions enumeration for the selected hard disk
<b>Edit/View Sectors...</b>	View/edit sectors of the selected hard disk
<a href="#"><u>Connect a Virtual Disk</u></a>	Connect a virtual disk to work with it as if it's a physical disk
<b>Disconnect a Virtual Disk</b>	Disconnect a virtual disk
<b>Properties...</b>	Get in-depth information on the properties of selected hard disk
<b>Partition</b>	
<b>Create Partition...</b>	Create a partition
<b>Format Partition...</b>	Format a partition
<b>Delete Partition...</b>	Delete a partition
<a href="#"><u>Move/Resize...</u></a>	Move/Resize the selected partition
<b>Convert File System...</b>	Convert file system of the selected partition
<b>Assign Drive Letter...</b>	Assign drive letter to the selected partition

<b>Remove Drive Letter...</b>	Remove drive letter for the selected partition
<b>Hide Partition...</b>	Make the selected partition unavailable for the operating system
<b>Unhide Partition...</b>	Make the selected partition available for the operating system
<b>Mark Partition as Active</b>	Make the selected partition bootable by default
<b>Mark Partition as Inactive</b>	Make the selected partition non-bootable by default
<b>Change Cluster Size...</b>	Change cluster size of the selected partition
<b>Change Volume Label...</b>	Change volume label of the selected partition
<b>Change Serial Number...</b>	Change serial number of the selected partition
<b>Change Partition ID...</b>	Change identifier of the selected partition
<b>Downgrade NTFS version...</b>	Decrease version of the selected NTFS partition
<b>Change SID...</b>	Change SID (Security Identifier) value of any found Windows installation
<b>Make Partition Primary...</b>	Make the selected partition Primary
<b>Make Partition Logical...</b>	Make the selected partition Logical
<b>Defragment Partition...</b>	Defragment data on the selected FAT or NTFS partition
<b>Defragment MFT...</b>	Defragment MFT (Master File Table) of the selected NTFS partition
<b>Compact MFT...</b>	Shrink MFT (Master File Table) of the selected NTFS partition
<b>Test Surface...</b>	Test surface of the selected partition/block of free space
<b>Check File System Integrity...</b>	Check the selected partition for possible file system errors
<b>Edit/View Sectors...</b>	View/edit sectors of the selected partition
<b>Properties...</b>	Get in-depth information on the properties of selected partition
<b>View</b>	
<b>Layouts</b>	Manage the Launcher layout with several predefined profiles
<b>Toolbar</b>	Manage the Tool Bar representation: show / hide standard and navigation buttons, text labels and large icons
<b>Status Bar</b>	Display the Status Bar
<b>Common Tasks Bar</b>	Display the Common Tasks Bar
<b>Disk Map Legend</b>	Display the Disk Map legend



<b>Properties and Commands</b>	Display the Explorer Bar
<b>Disk Map Location</b>	Select whether the Disk Map will be located on the top of the main window or at the bottom
<b>Help</b>	
<b>Help</b>	Open the Help system (you can also do it by pressing F1)
<b>About</b>	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
	Connect a virtual disk
	Open the Help system

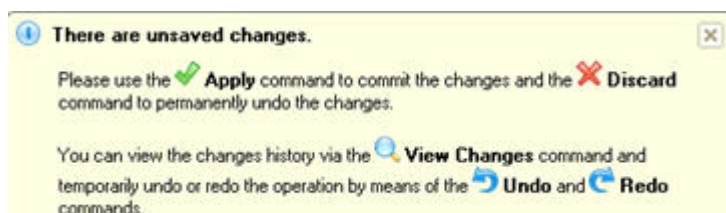
### Virtual Operations Bar

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

<b>Virtualization Tasks</b>	
 P2V Copy	Starting the P2V Copy Wizard to migrate a live Win2K+ physical system to a virtual environment.
 P2V Restore	Starting the P2V Restore Wizard to restore a Win2K+ physical system from a Paragon's backup to a virtual environment.
 P2V Adjust OS	Starting the P2V Adjust OS Wizard to recover the startup ability after unsuccessful virtualization with a 3rd party tool; to make Windows Vista/7 backups bootable on virtual hardware.
<b>Copy Tasks</b>	
 Copy Disk	Starting the Copy Hard Disk Wizard to copy a hard disk.
 Copy Partition	Starting the Copy Partition Wizard to copy a partition.
<b>Tools</b>	
 Connect a Virtual Disk	Starting the Connect a Virtual Disk dialog to connect a virtual disk to work with it as if it's a physical disk.
 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.
<b>News and Documentation</b>	
 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:

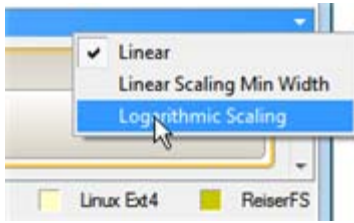
- Serial number,
- Drive letter,
- Total size,
- File system.

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](#);
- List of scheduled operations;
- List of scripts;
- Volume Explorer utility;
- 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;
  - *Volume Explorer* to browse and export contents of the selected partition/hard disk;
  - *Properties* to view detailed information on the selected partition/hard disk in the bright graphical form.




---

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

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

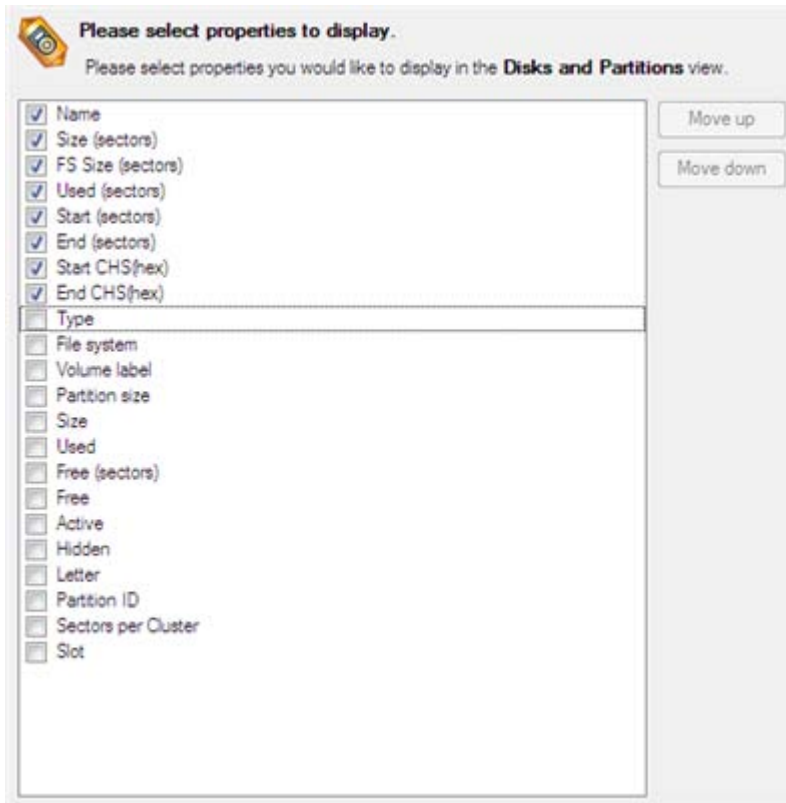
BUTTON	FUNCTIONALITY
	Return to the previously browsed page
	Open the next browsed page
	Stop loading the current page
	Refresh the contents of the current page

### 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:

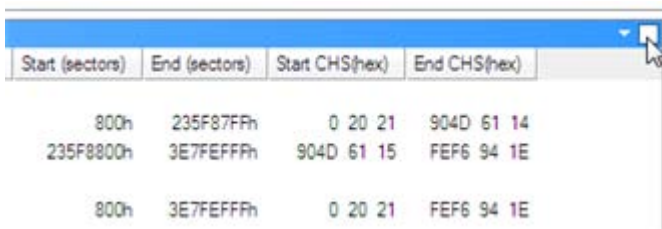
- Name,
- Volume label (if exists),
- Partition type (Primary/Extended /Logical),
- File system type,
- Size,
- Amount of used and unused (free) space,
- Start/End cylinder,
- Start/End head,
- Start/End sector
- Free size in sectors/bytes
- Active/Inactive attribute
- Hidden/Unhidden attribute

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

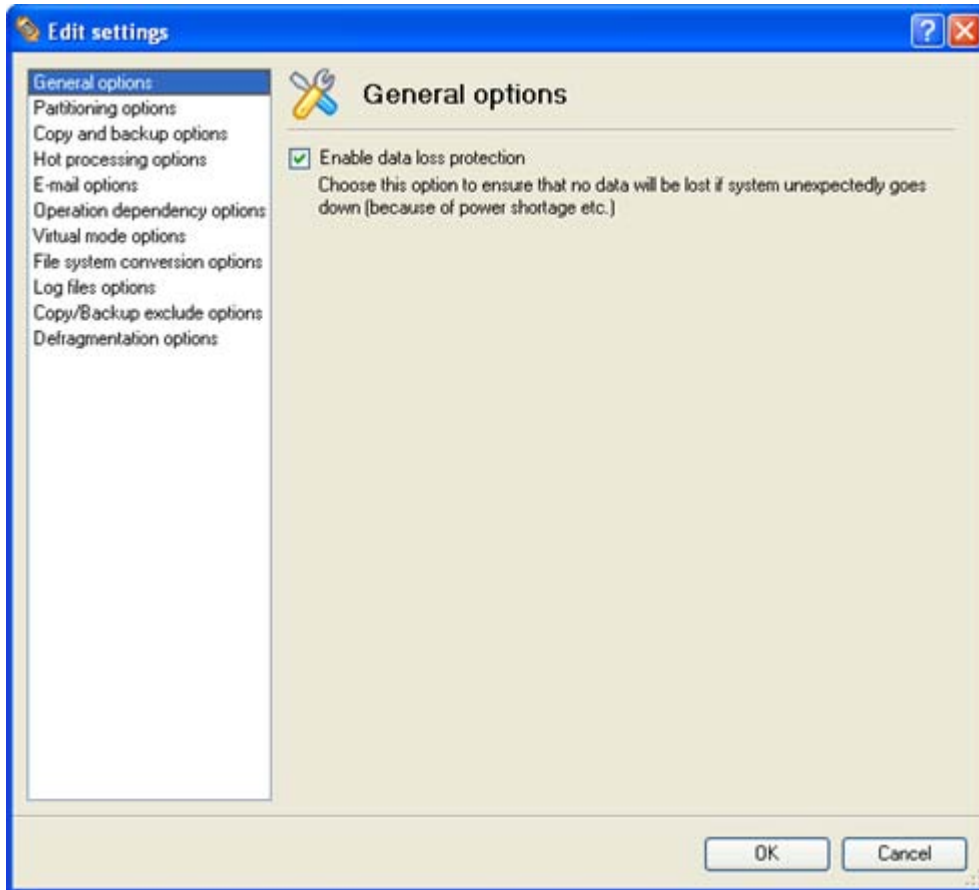
The Settings dialog is available from the Main Menu: Tools > Settings. All the settings are grouped into several sections, which functions are described in the following paragraphs. The list of sections is placed on the left side of the dialog. By selecting a section from the list, you can open a set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

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## General Options



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

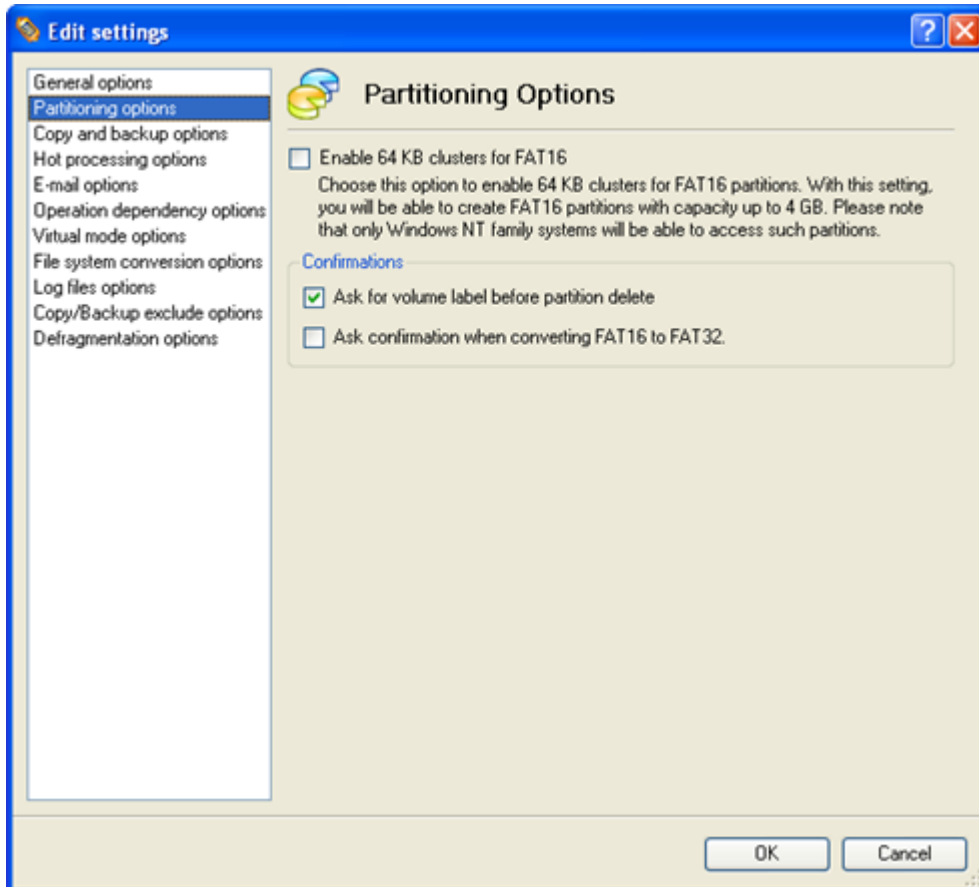
- **Enable data loss protection.** Mark the checkbox to make the program work in the fail-safe mode (also referred to as the data-loss protection mode), which ensures reliability for operations by maintaining a special journal. In case of a hardware malfunction, power outage or an OS failure happened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



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

---

## Partitioning Options



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

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



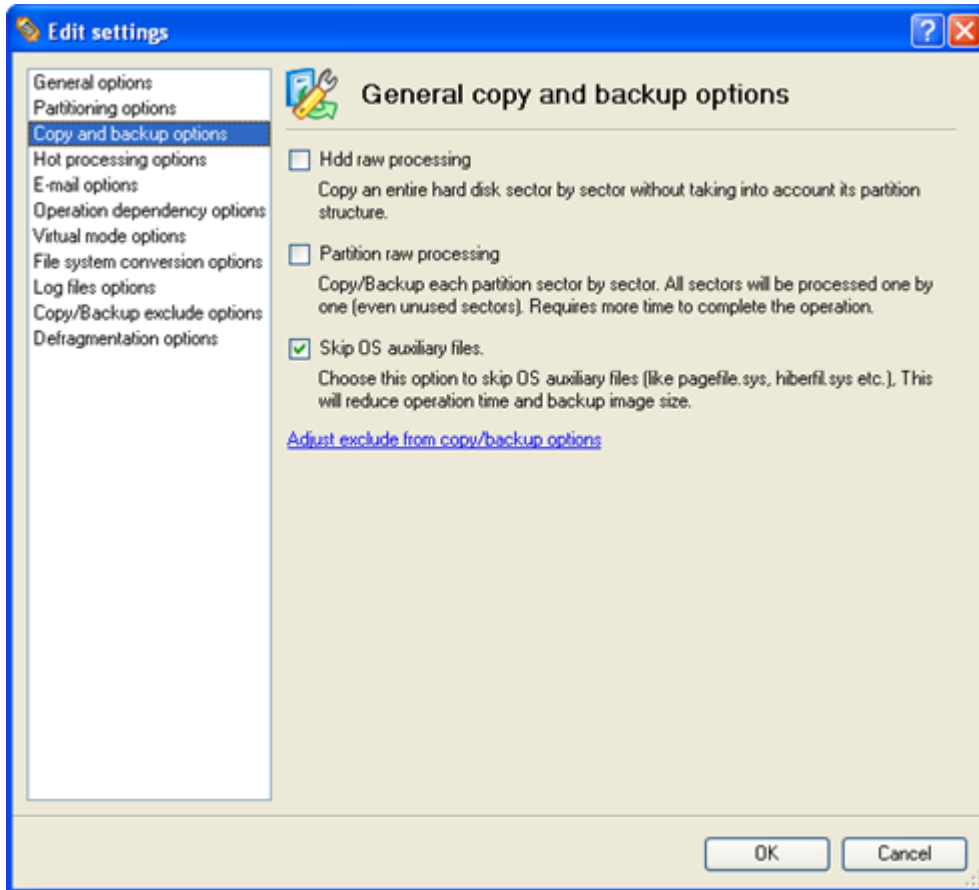

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**Due to the maximum cluster size of 32KB for Windows 95/98/ME or MS DOS, FAT16 partitions larger than 2GB are not reliably accessible under these operating systems.**

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

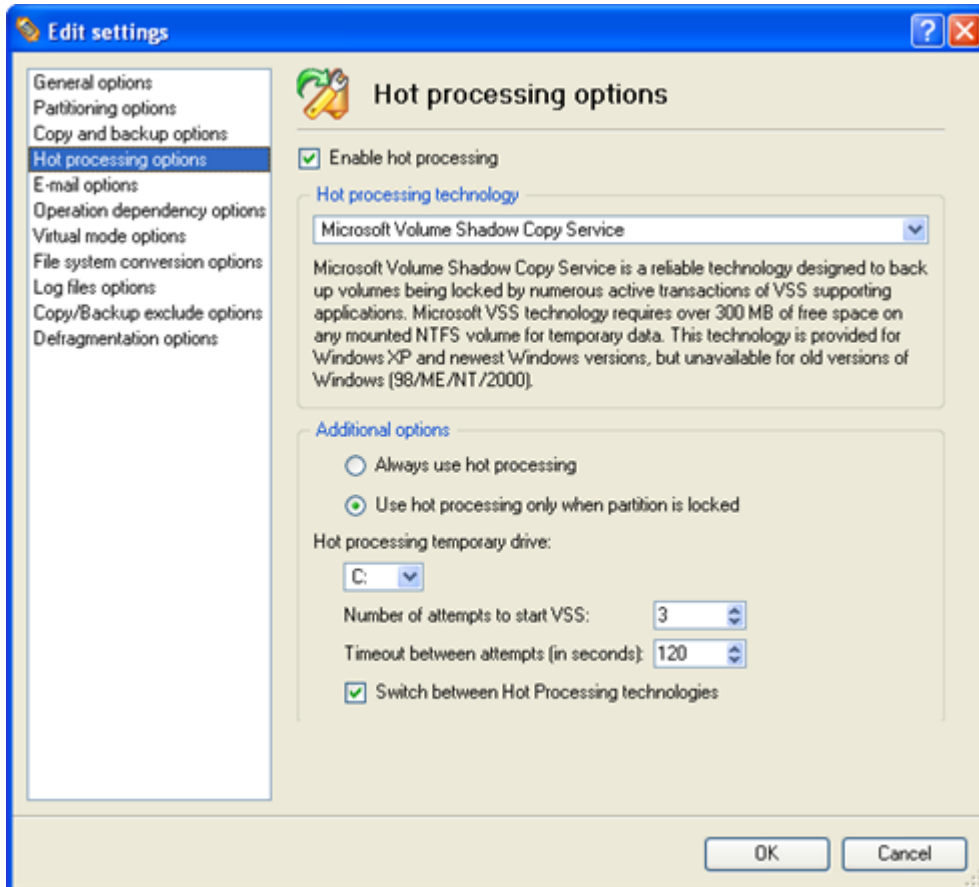
## General Copy and Backup Options



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

- **HDD raw processing.** Mark the checkbox to copy/back up a hard disk in the sector-by-sector mode, thus ignoring its information structure (e.g. unallocated space or unused sectors of existing partitions will be processed as well). This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.
- **Partition raw processing.** Mark the checkbox to copy a partition in the sector-by-sector mode to successfully process unknown file systems. However it is not recommended to enable this option when working with supported file systems as it takes more time to accomplish the operation.
- **Skip OS auxiliary files.** Mark the checkbox to skip OS auxiliary files (like pagefile.sys, hiberfil.sys, etc.), thus reducing the operation time and the resulted size of the backup image.

## Hot Processing Options

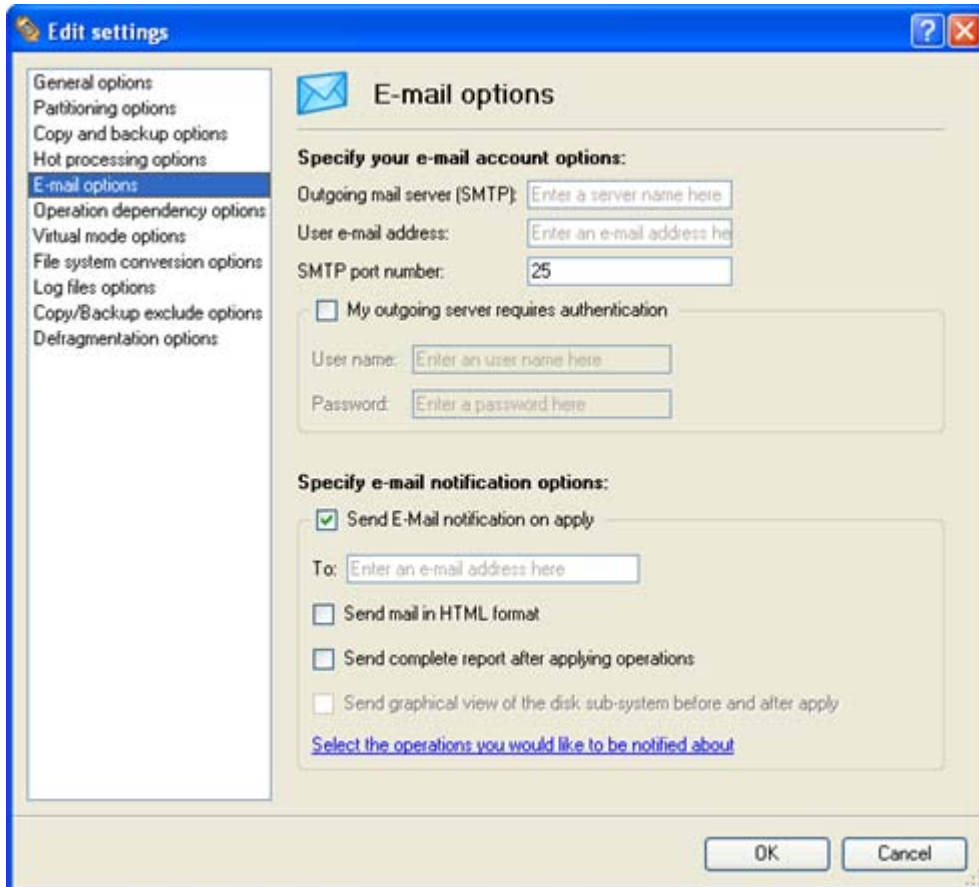


In this section you may configure the hot processing mode:

- **Enable hot processing.** Mark the checkbox to enable the so called hot data processing mode that is specially designed to process data without restarting your operating system.
- **Hot processing technology.** From the pull-down list you can select the required hot processing technology.
- **Always use hot processing.** Select the option to process partitions without making them locked. Thus you will be able to keep working with them as usual.
- **Use hot processing only when partition is locked.** Select the option to use the hot processing only when partitions are locked and cannot be processed without restarting the computer. Please keep in mind, that once you start any operation on a partition in this mode, it will automatically be locked by the program, thus you won't be able to keep working with it as usual.
- **Hot processing temporary drive.** Here you can select a disk drive that will be used to store the temporary hot backup data (by default – C:).
- **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.



## E-Mail Options



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

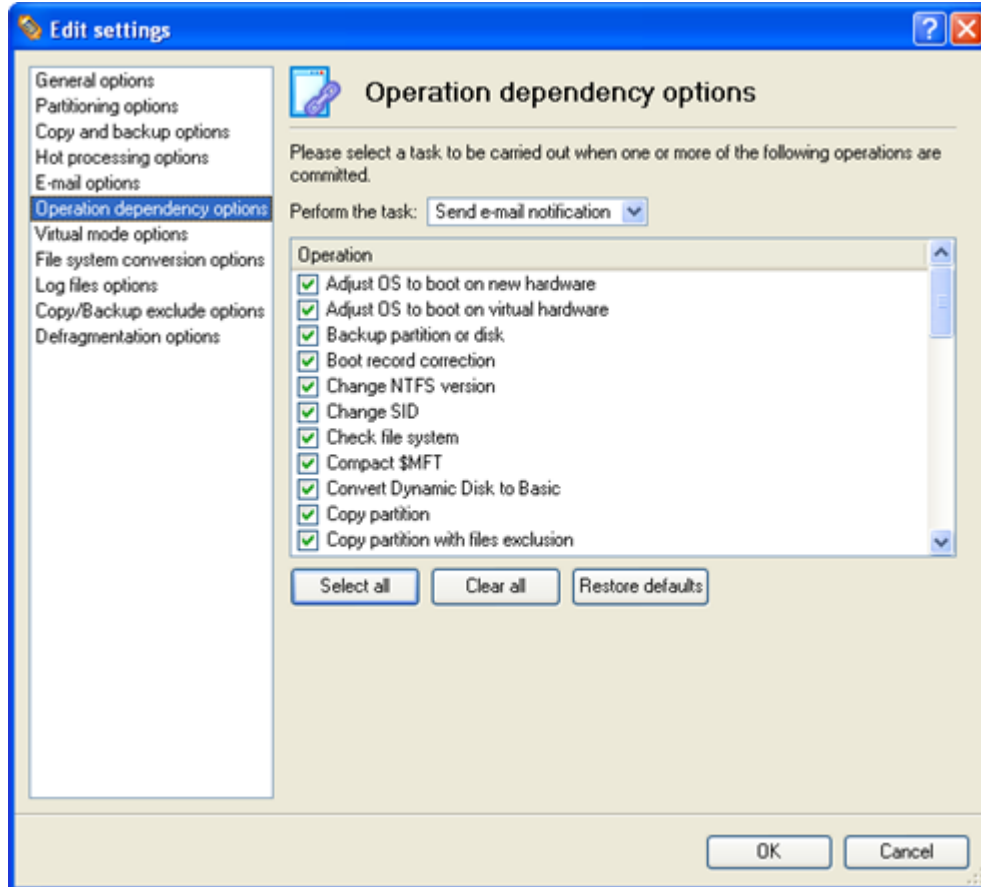
- **Outgoing mail server (SMTP).** To send messages by using the built-in mail client, it is necessary to have access to a computer running an SMTP (Simple Mail Transfer Protocol) server. All outgoing messages are first sent to the SMTP server, which in its turn delivers them to the required recipients. The address may be represented as a traditional Internet host name (e.g.: mail.com) or as an IP numeric address (e.g. xxx.xxx.xxx.xx).
- **User e-mail address.** Specify an e-mail address that has been assigned by the Internet Service Provider or organization's e-mail administrator.
- **My outgoing server requires authentication.** Activate the option to allow the program to make authentication on the server before sending messages.
  - User name. Enter the name that will be used to log in to the e-mail account.
  - Password. Enter the password that will be used to access the mail server.
- **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

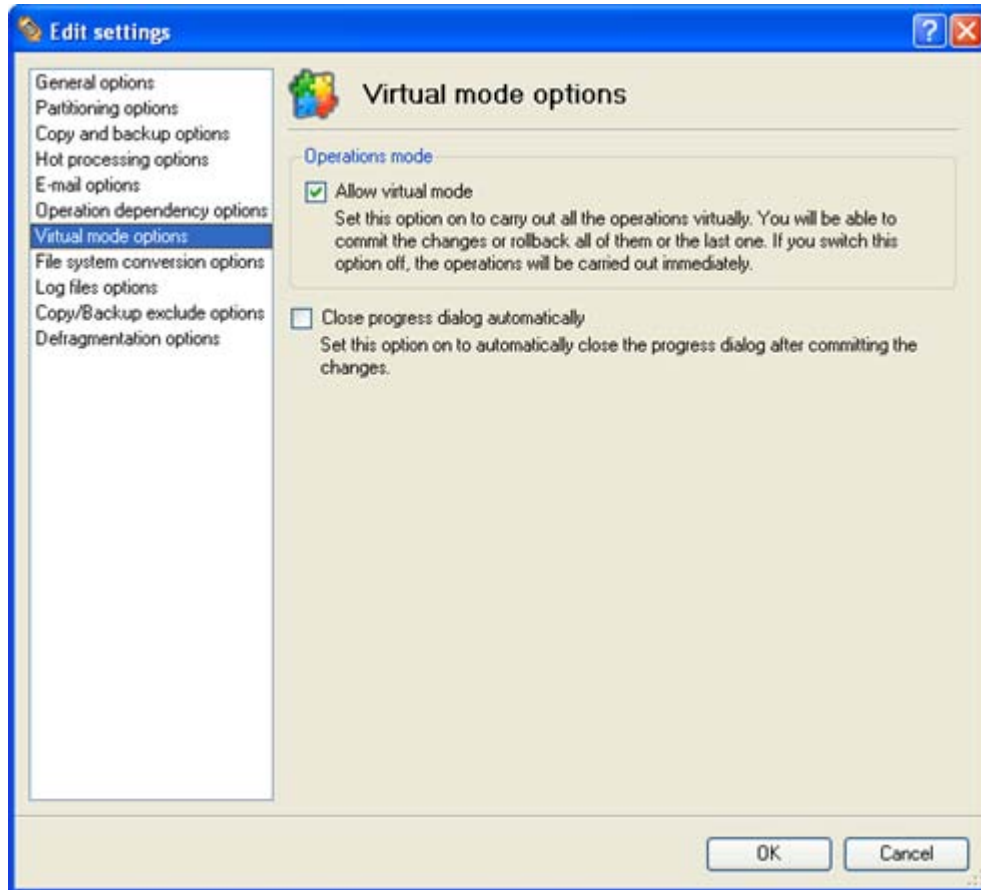


This section contains a set of options that will be taken into account when the Send e-mail notification on apply function is enabled. By marking/unmarking a checkbox opposite the required operation you can choose whether to receive an e-mail notification on its completion or not.



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

## Virtual Mode Options



In this section you may configure the virtual mode:

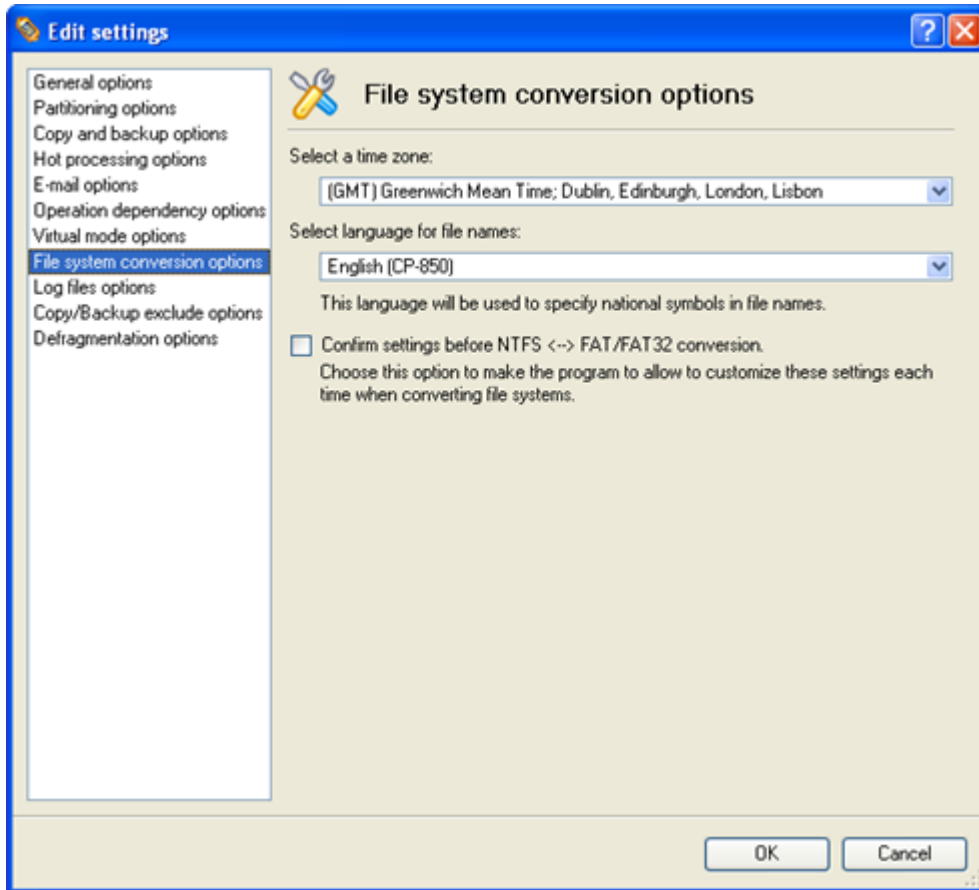
- **Allow virtual mode.** Mark the checkbox to enable the virtual mode. It is an effective way of protection from any troubles, since no operation will be executed until confirmation, thus giving you a second chance to weigh all pros and cons of this or that particular operation.



**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.**

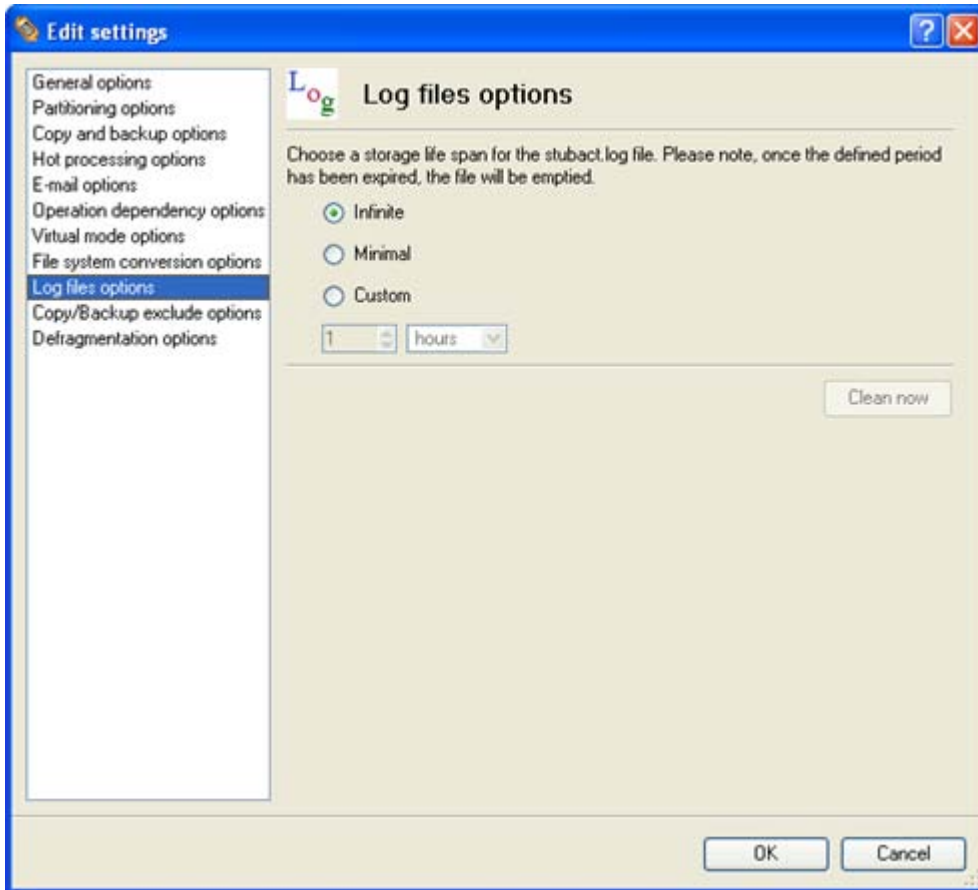
- **Language for file names** to use during the convert operation. NTFS stores file names in Unicode while FAT/FAT32 uses ANSI to save short file names (also called the DOS aliases). The codepage information is required for the correct conversion of non-English file names from Unicode to ANSI and vice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

## Log Files Options



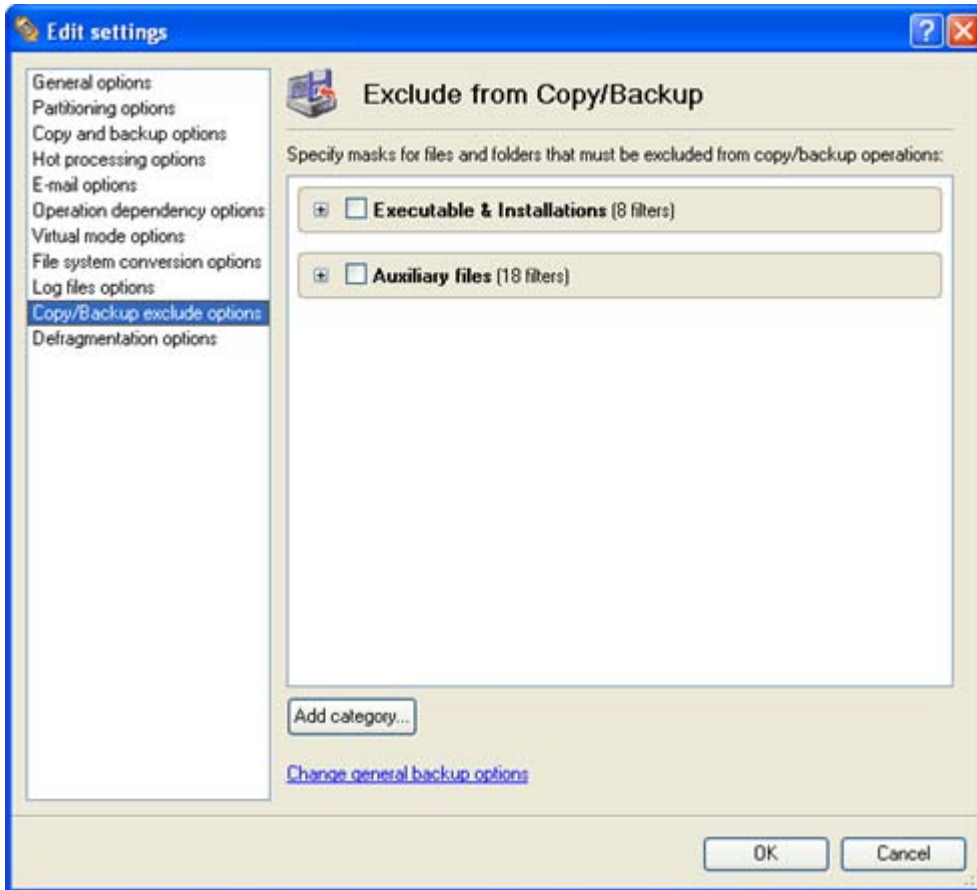
In this section you can specify a storage life span for the stubact.log file:

- **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.**

## Copy/Backup Exclude Options



In this section the program enables to specify what data should be automatically ignored during copy 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 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.

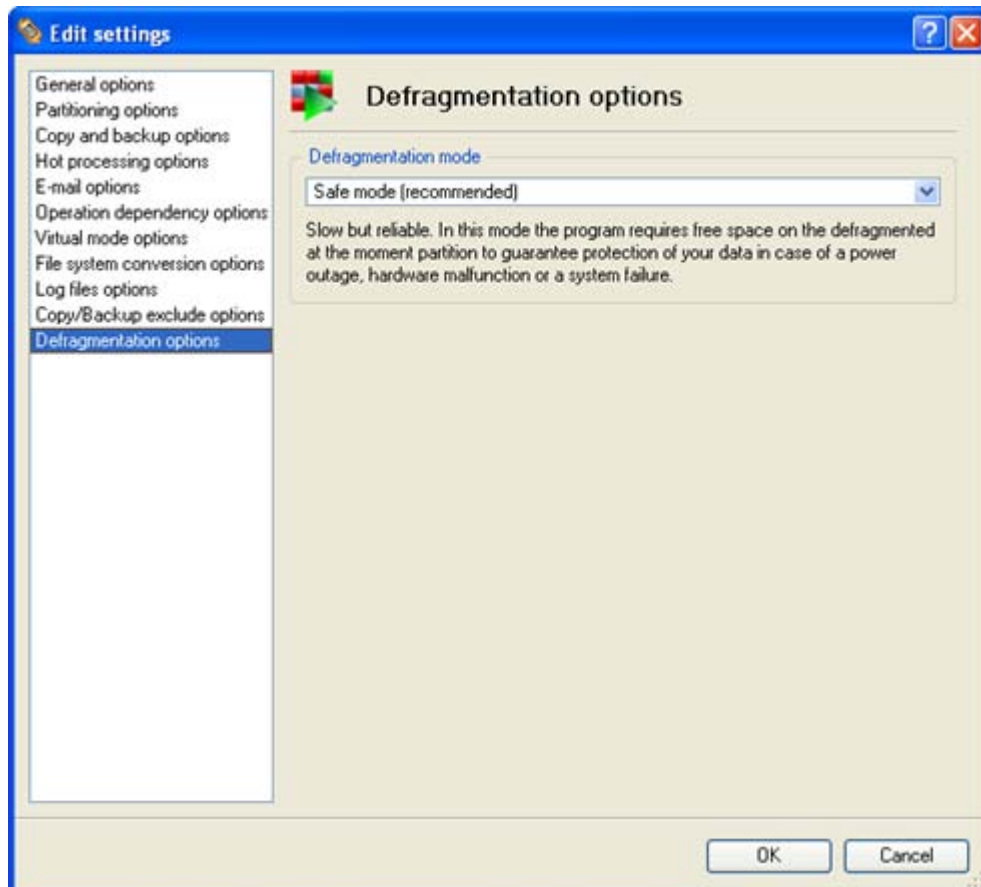
Click the OK button and you will get a new item on the list of filters. By marking/unmarking a checkbox opposite its name you can choose whether to use it or not.



By clicking the link at the bottom of the window you can jump to the [General Copy and Backup Options](#).

## Defragmentation Options

In this section you may set the preferable defragmentation mode:



- **Fast mode.** Partitions will be defragmented rather fast (a 10-30% gain depending on the fragmentation level), but a power outage, hardware malfunction or a system failure during the operation might lead to the data loss.
- **Safe mode.** To guarantee protection of your data during the operation, the program will allocate some free space (not less than the on-disk largest file) on the defragmented at the moment partition to make a duplicate of every processed file. Thus we strongly recommend you to use this very mode.

## 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.

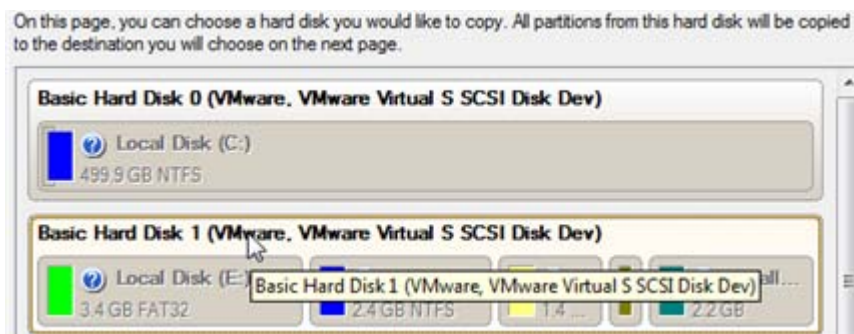
### System Migration and Virtualization Scenarios

#### Migrating system to another hard disk (Clone HDD)

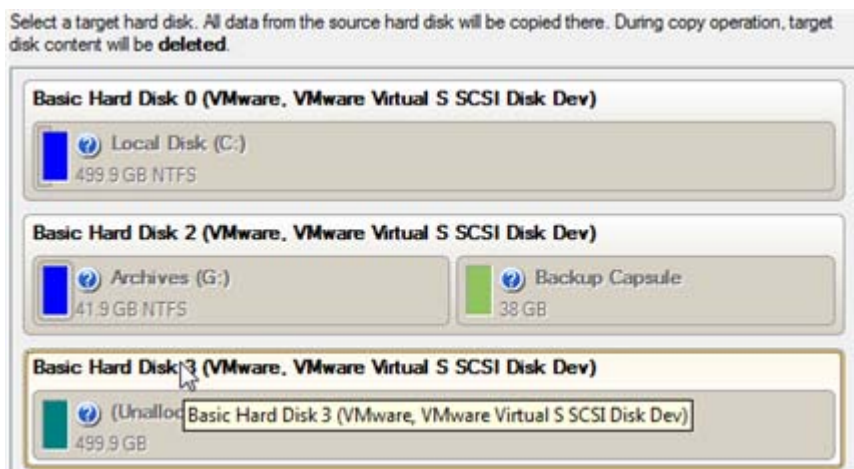
Let's assume that you've bought a new hard disk. It's faster and of much higher capacity than your current system disk, so it's quite natural you start thinking about system migration. We can help you do that.

To migrate your system from one hard disk to another, 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 (any of the ways described earlier can also be used here).
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).



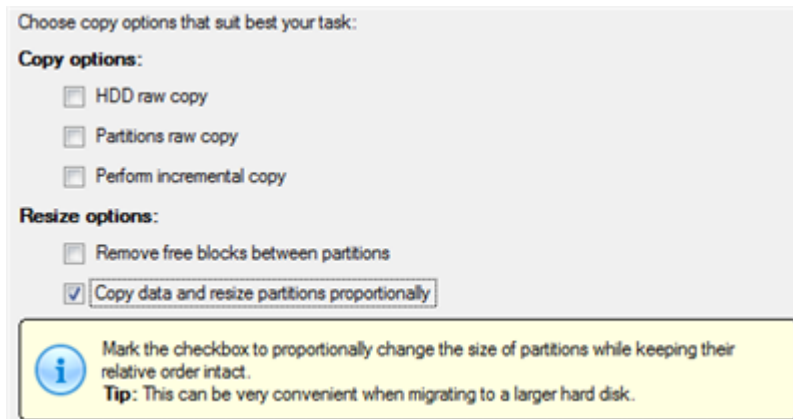
6. On the Select Target Hard Disk page, select a destination disk (a hard disk to copy contents of the source disk).



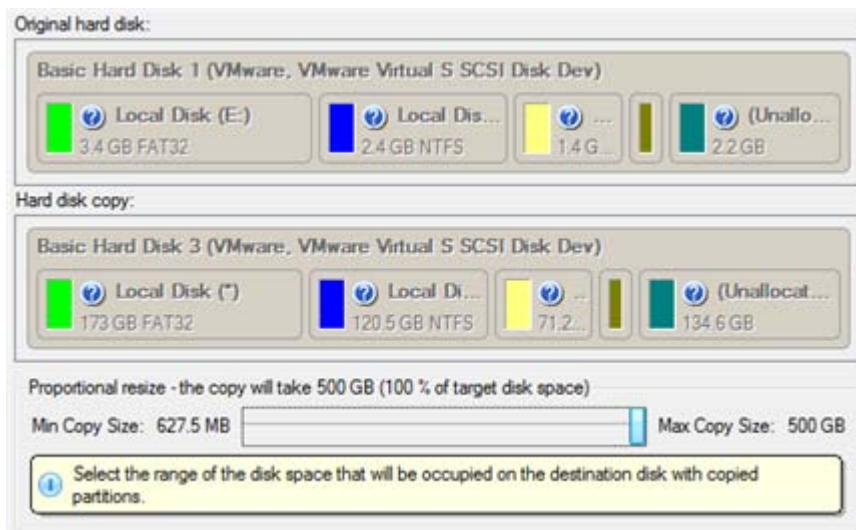
**During the operation all contents of the destination disk will be deleted.**



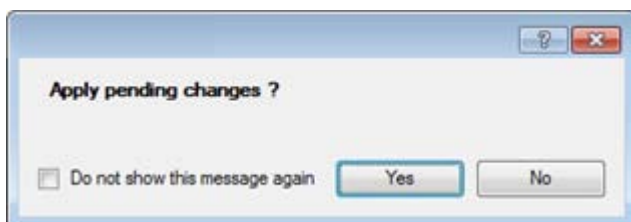
7. On the next page of the wizard, define the copy options. In our case we'd rather copy data with a proportional resize to occupy the entire disk. Besides we recommend you to enable the surface test to make sure your new hard disk is flawless.



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 a Win2K+ operating system bootable on different hardware, please additionally complete the [P2P Adjust OS Wizard](#).

## Virtualizing the current system (P2V Copy)

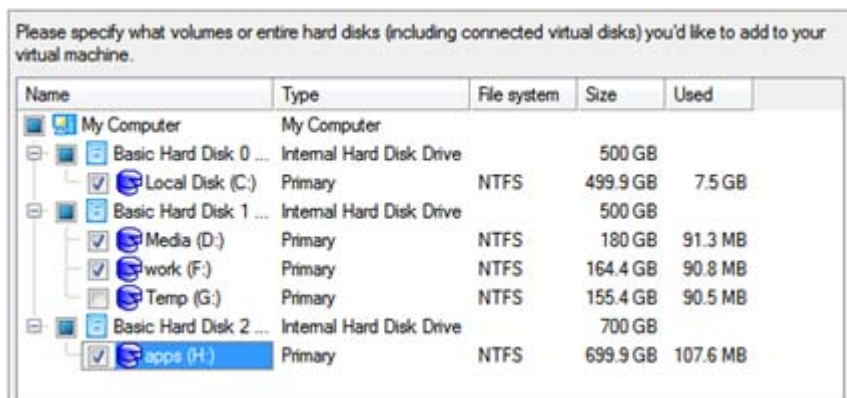
Let's assume that you're about to migrate to a brand-new hardware platform with the latest operating system available for it. Your current system is quite obsolete, but you still need access to some of its software. You don't want to waste time re-installing the old software to the new system, and you do know for sure that the bulk of it won't work anyway. The best way out is to virtualize your current system.

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

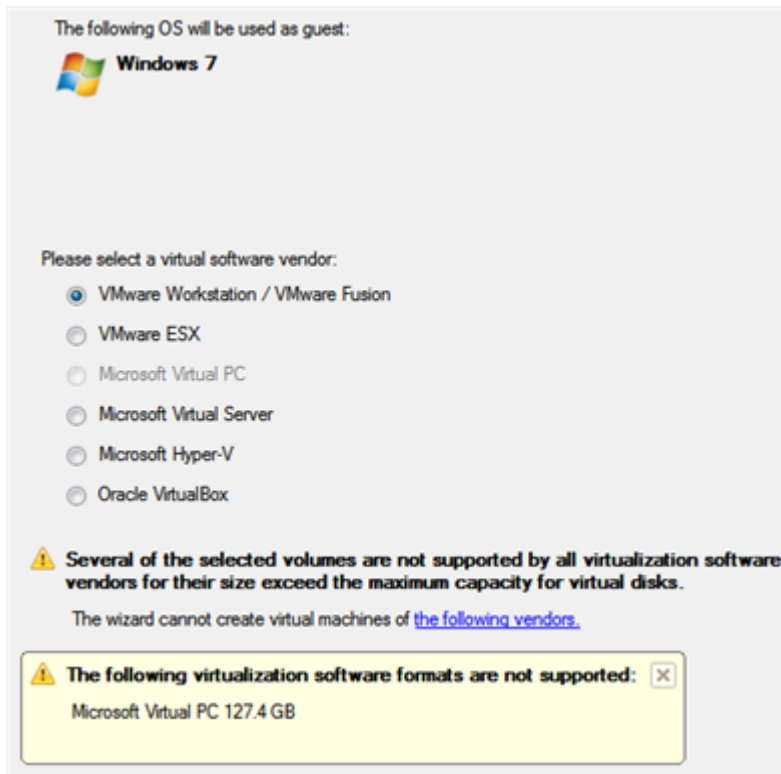
- You've got enough free space to store a virtual image of your system (depends on the system).
- [You've got one of the supported virtualization software.](#)

To migrate your current system to a virtual environment, please do the following:

1. Click the **P2V Copy** item of the Wizards menu (any of the ways described earlier can also be used here).
2. On the Wizard's Welcome page, click the Next button.
3. Select 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.



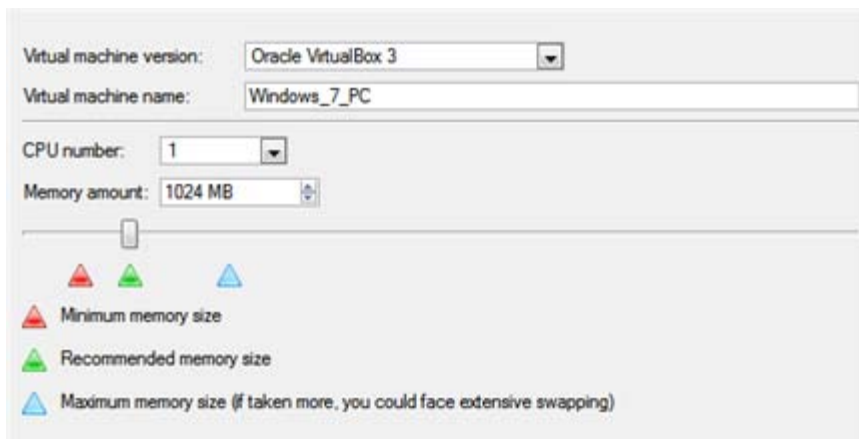
4. Specify the guest OS and a virtualization software vendor. If your system hosts several Windows OSes, our wizard will find them all and automatically patch to run in a virtual environment. However we cannot guarantee smooth startup of all found Windows systems for their configuration parameters may 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.



**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.**

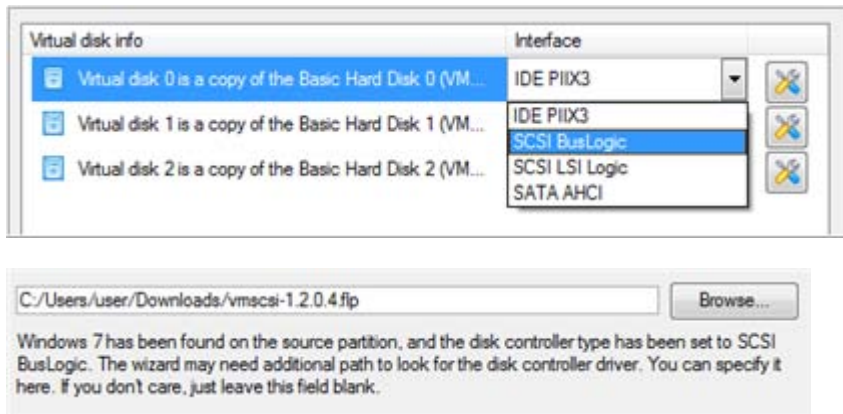
#### 5. Set properties of the future virtual machine:

- **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.



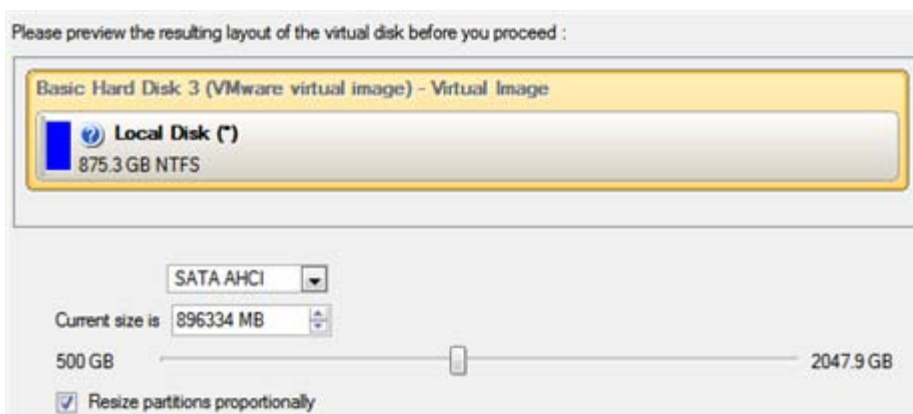
## 6. Set properties of the resulted virtual disk(s):

- **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.



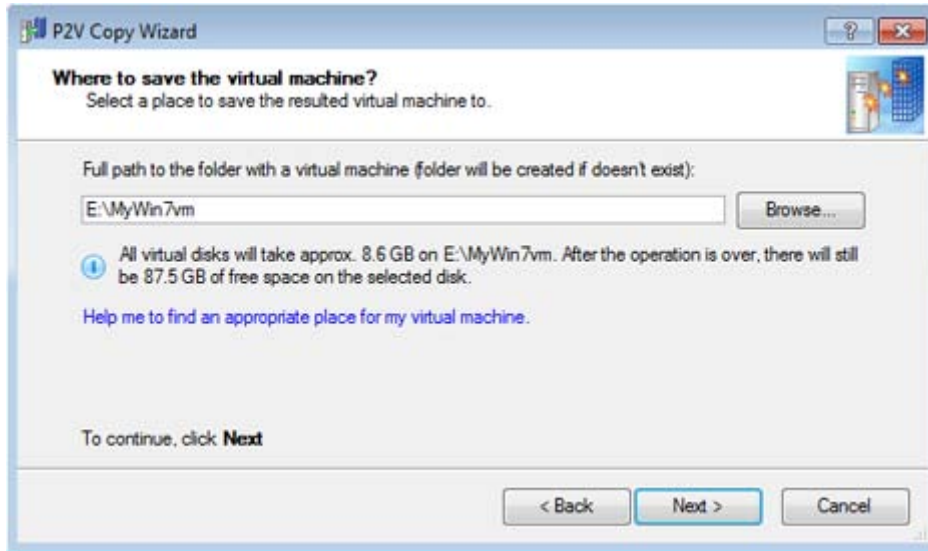
**Our program supports injection of drivers delivered in .iso or .flp images, so you can for instance download and inject drivers for the BusLogic controller from the VMware website.**

- **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).

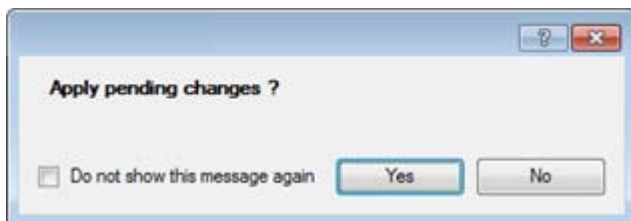


**The maximum limit you can downsize the virtual disk is the capacity of its first partition.**

- 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.



- Complete the wizard and then apply the pending changes.



### Virtualizing system from its backup image (P2V Restore)

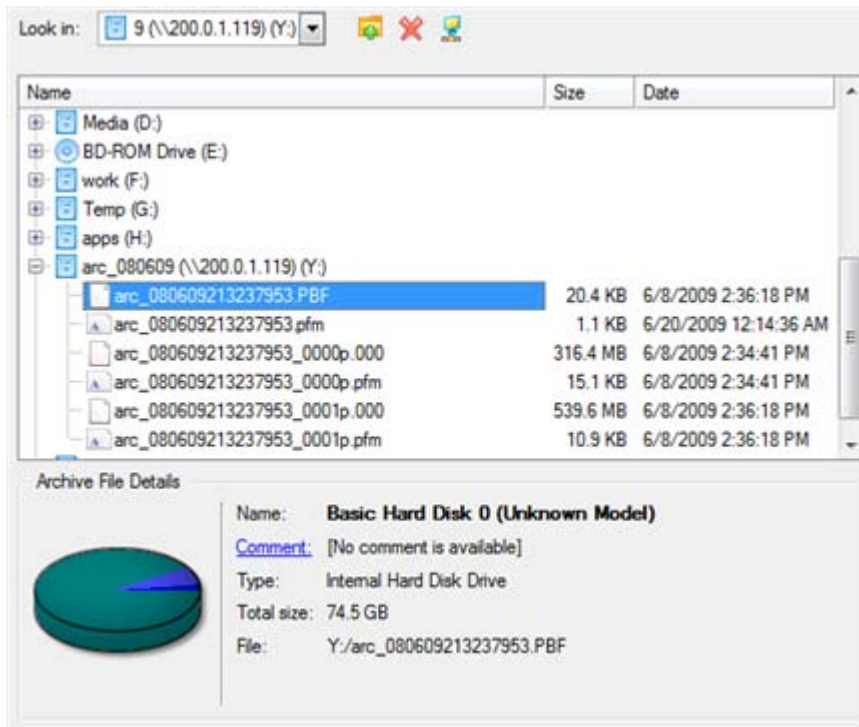
Let's assume that your system has been corrupted as a result of a hardware failure. You realize it's quite obsolete and it's next to impossible to replace the damaged hardware devices. Migration to a new hardware platform seems the best way out, if not for one thing – you still need access to your software, 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:

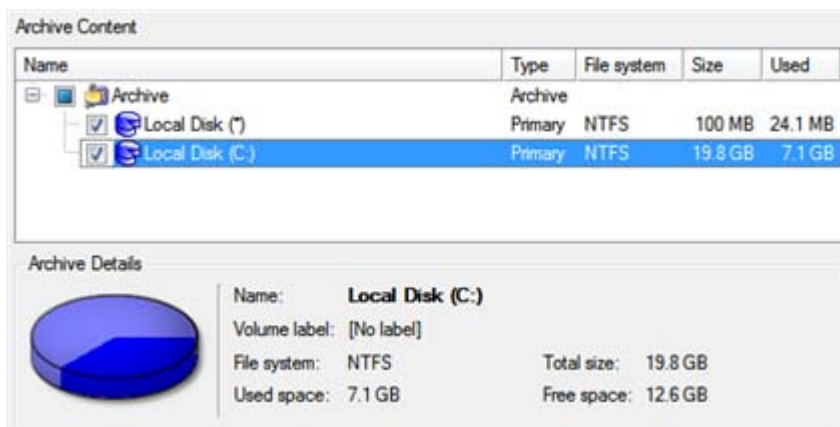
- You've got a backup image of your old system.
- You've got enough free space to store a virtual image of your old system (depends on the system).
- [You've got one of the supported virtualization software.](#)

To restore a Win2K+ system from a Paragon's backup directly to a virtual environment, please do the following:

- Click the **P2V Restore** item of the Wizards menu (any of the ways described earlier can also be used here).
- On the Wizard's Welcome page, click the Next button.
- 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.




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**When using old Paragon's backup images (prior to Drive Backup 10), please be ready to manually specify the guest OS.**

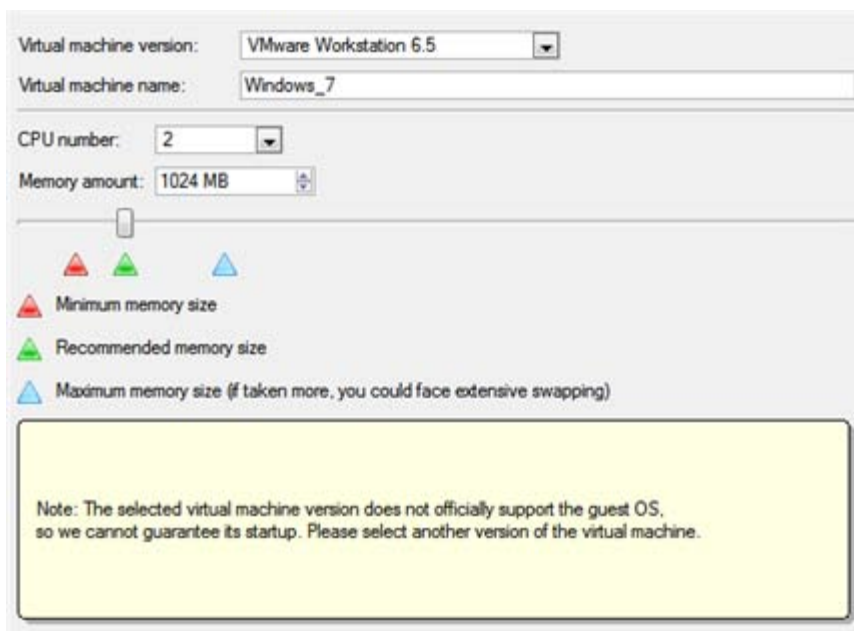


**Not all vendors may be available to choose. If capacity of one of the selected objects exceeds the maximum virtual disk capacity of any vendor, this vendor will be shadowed.**

---

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.

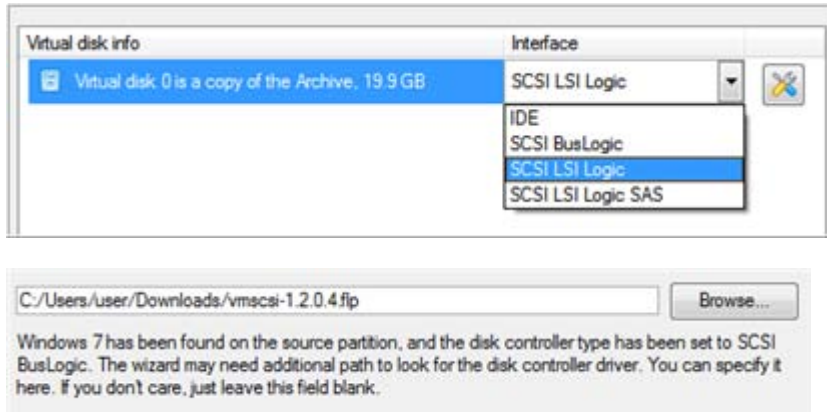




If the selected version does not officially support the guest OS, you will be notified and prompted to select another one.

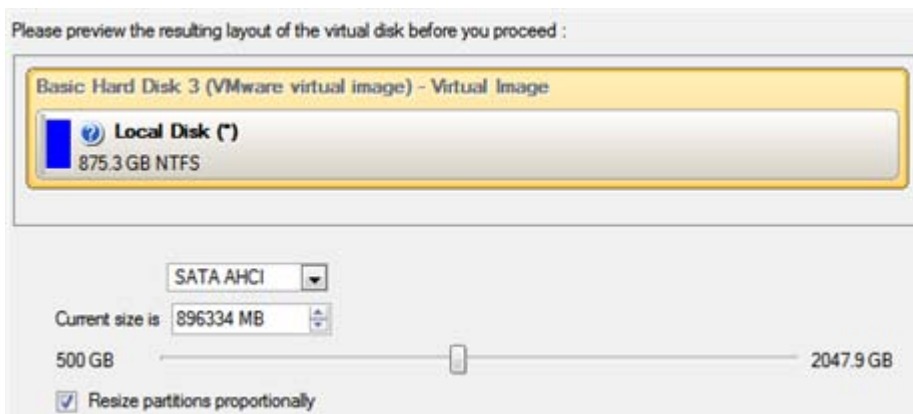
7. Set properties of the resulted virtual disk(s):

- **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).





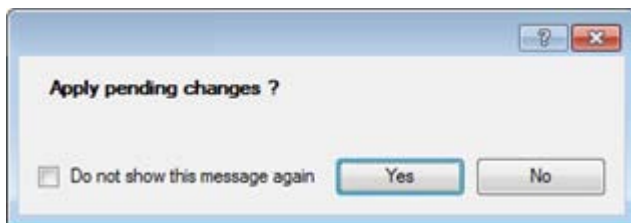


**The maximum limit you can downsize the virtual disk is the capacity of its first partition.**

- 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.



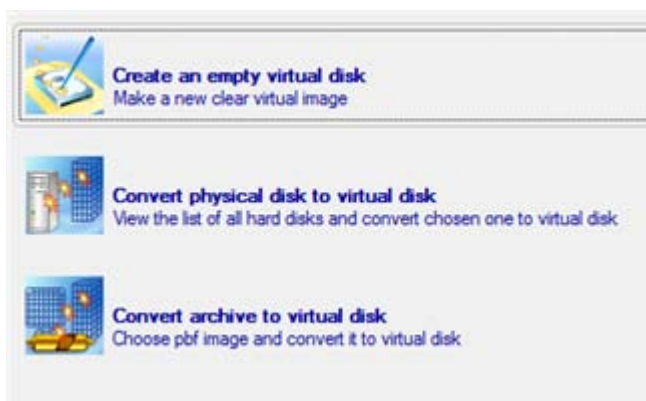
- Complete the wizard and then apply the pending changes.



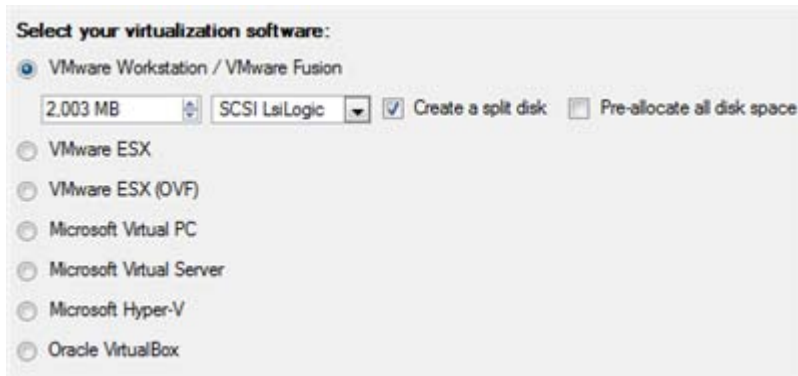
### Creating an empty virtual disk (Create VD)

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

- Click the **Create Virtual Disk** item of the Wizards menu (any of the ways described earlier can also be used here).
- On the Wizard's Welcome page, click the Next button.
- Select **Create an empty virtual disk**.



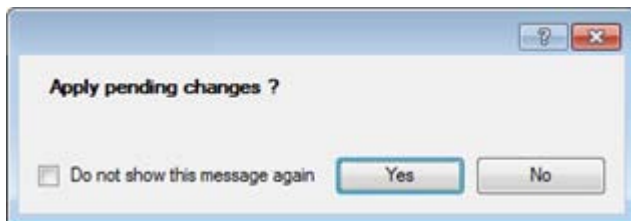
- Specify a virtualization software vendor and a number of additional parameters, including:
  - Type of the virtual disk.** You can either create an IDE or a SCSI virtual disk (relevant for VMware only);
  - Create a split disk.** You can choose whether to automatically cut the resulted virtual image 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);



- Specify a file name for the resulted virtual disk and its location.



- Complete the wizard and then apply the pending changes.

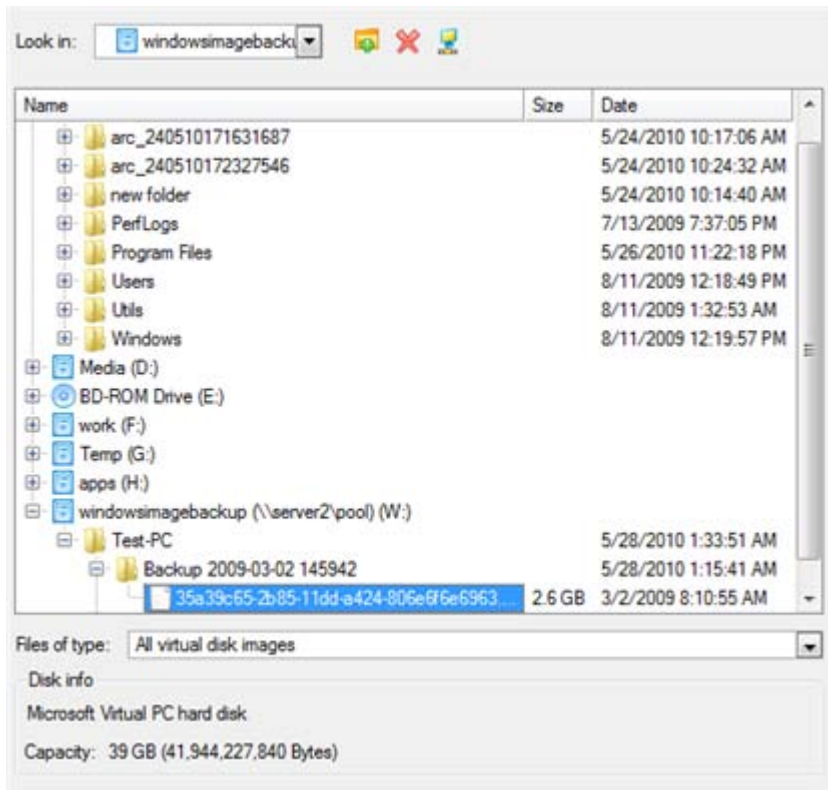


### Making Windows Vista/7 backup bootable on virtual hardware (P2V Adjust OS)

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:

- Click the **P2V Adjust OS** item of the Wizards menu (any of the ways described earlier can also be used here).
- On the Wizard's Welcome page, click the Next button.
- Browse for the required .vhd backup image of your Windows.

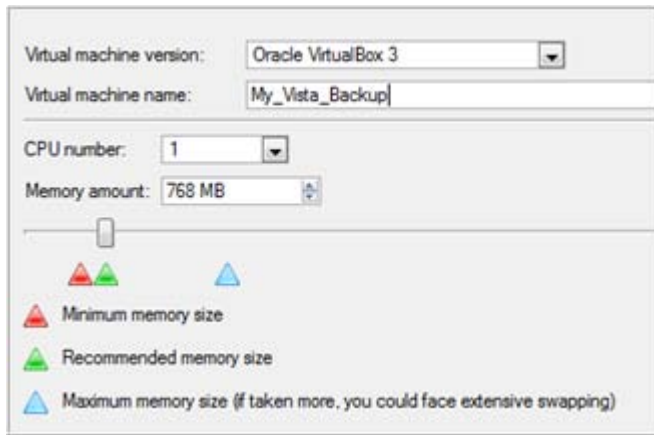


4. Our wizard will detect a version of Windows OS inside the image and offer to specify a virtualization software vendor. At the present moment the .vhd format is supported by Microsoft Virtual PC/Server/Hyper-V, and Oracle VirtualBox. We choose the last one.



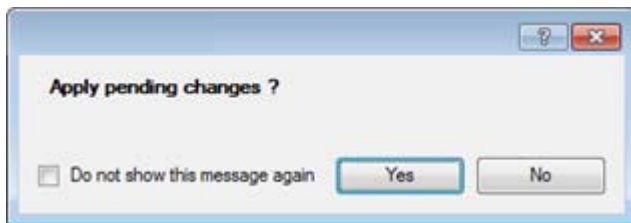
5. Set properties of the future virtual machine:

- **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.



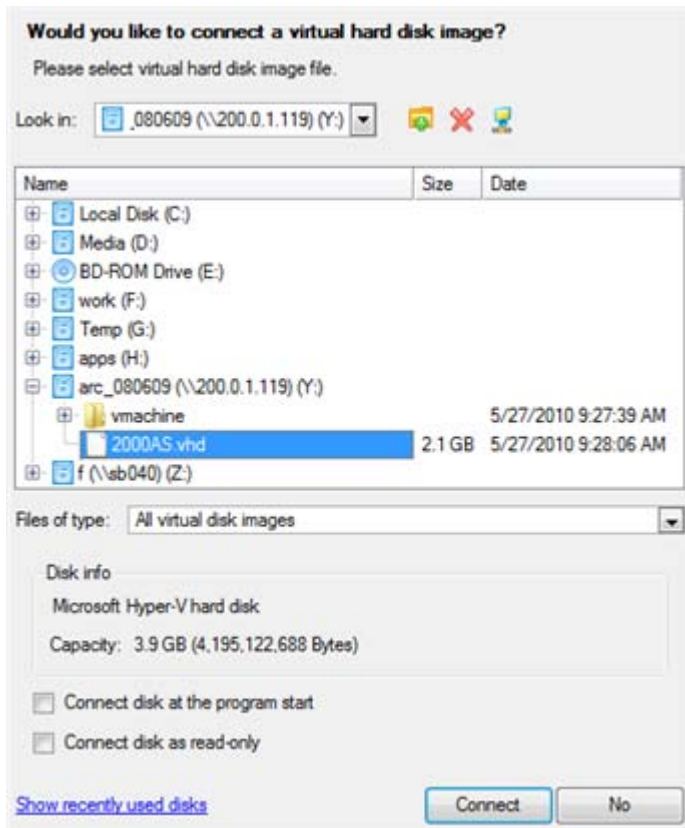
### Connecting a virtual disk (Connect VD)

You've got the option to connect a virtual disk of [one of the supported types](#) directly to our program as if it's an ordinary physical disk, so opening up enormous possibilities:

- Exchange data between your physical environment and the virtual one through Volume Explorer (data import only) or File Transfer Wizard (data import and export). The way we offer is much easier and faster, as you don't need a VM shared folder, the network, or the slow-goer drag-and-drop;
- Import data from a parent virtual disk to one of its snapshots;
- Accomplish drive partitioning (create, format, delete, move, resize, etc.);
- Modify partition attributes (Active flag, Hidden flag, Volume Label, etc.);
- Clone a partition or an entire hard disk;
- Edit/View sectors, and many more.

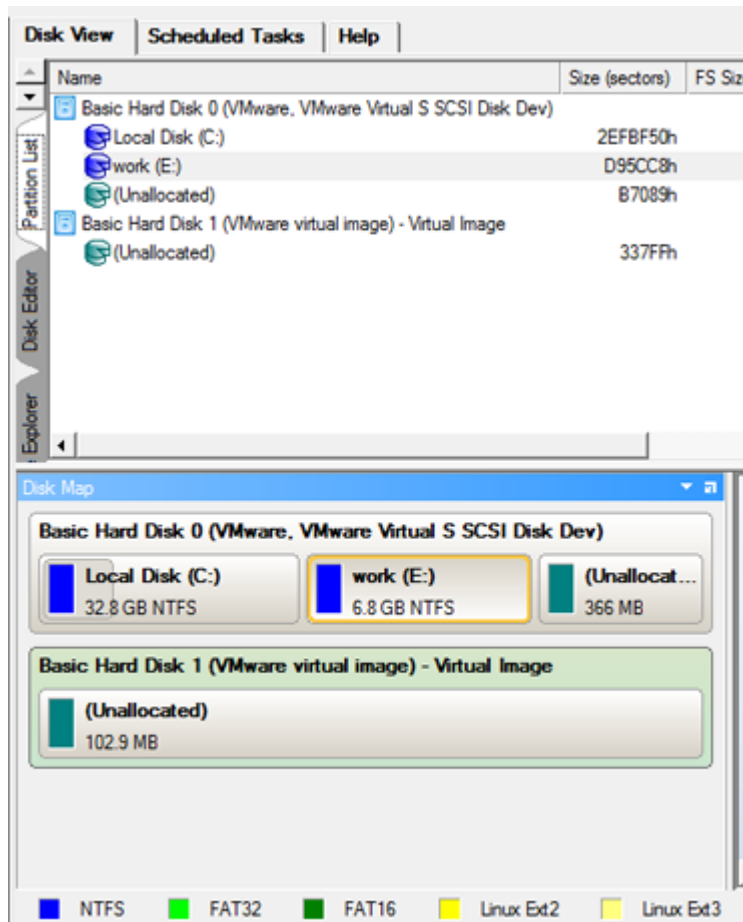
To connect a virtual disk (snapshot) to our program, please do the following:

1. Click the **Connect a Virtual Disk** item of the Hard Disk menu (any of the ways described earlier can also be used here).
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.



Click the “Show recently used disks” link to select and connect one of the disks you’ve already worked with.

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



### Limitations:

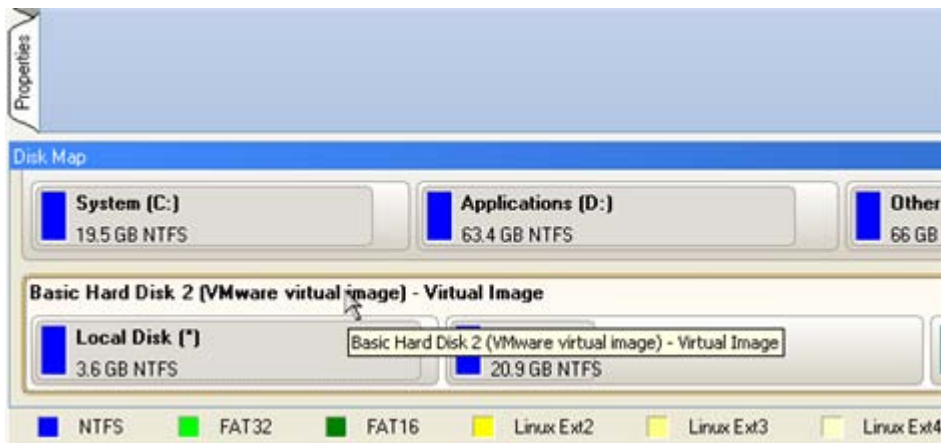
- A virtual disk opened for writing with a 3<sup>rd</sup> party tool (e.g. being used by a virtual machine) won't be connected, as asynchronous parallel writing to the disk file will most likely result in data corruption;
- A virtual disk opened for reading with a 3<sup>rd</sup> party tool (e.g. it's 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

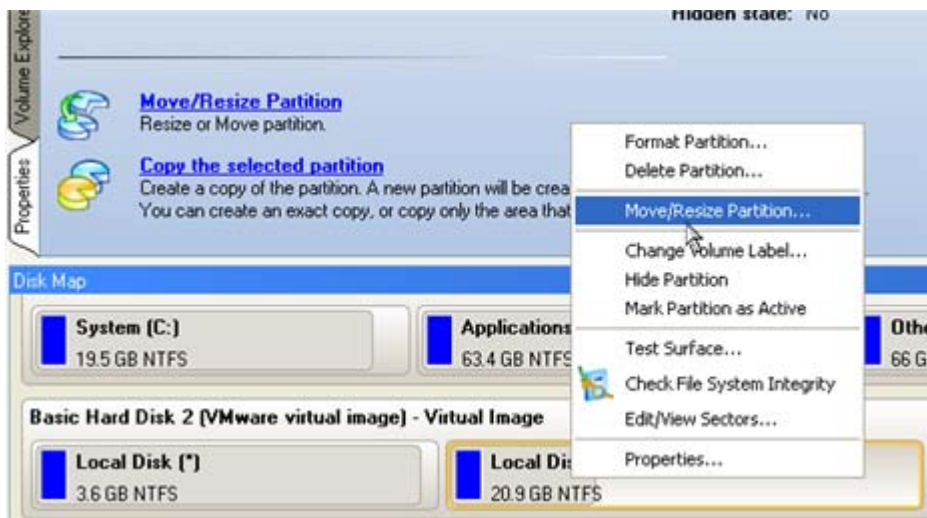
Let's assume you've got several partitions on a virtual disk. After installing a number of resource-consuming applications and system updates the system partition has started to suffer from the lack of free space. But an adjacent partition has a plenty of redundant space. That's just enough to make the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

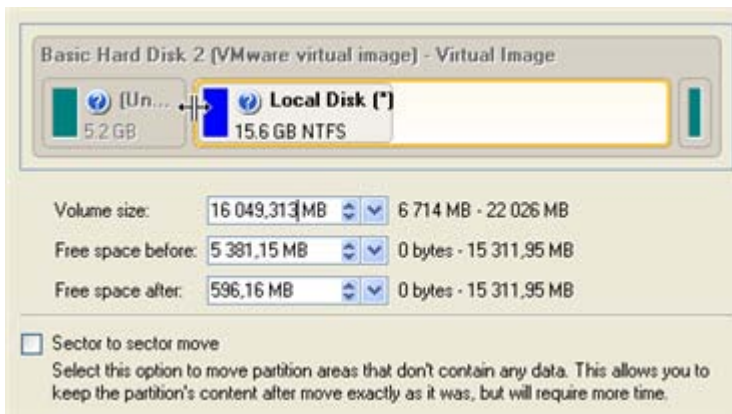


3. Right click on the space donor partition, then select **Move/Resize Partition...**

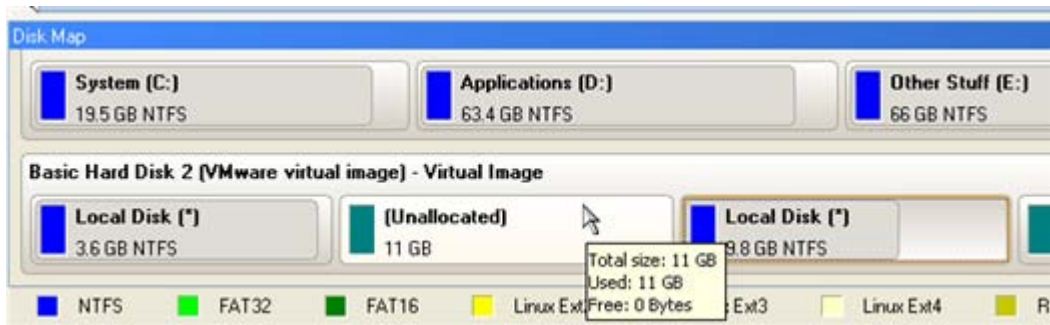


In case you've got more than two partitions on the disk, and the required space donor is not adjacent to the system partition, you can still use this scenario by consecutively redistributing free space between all partitions involved in the operation.

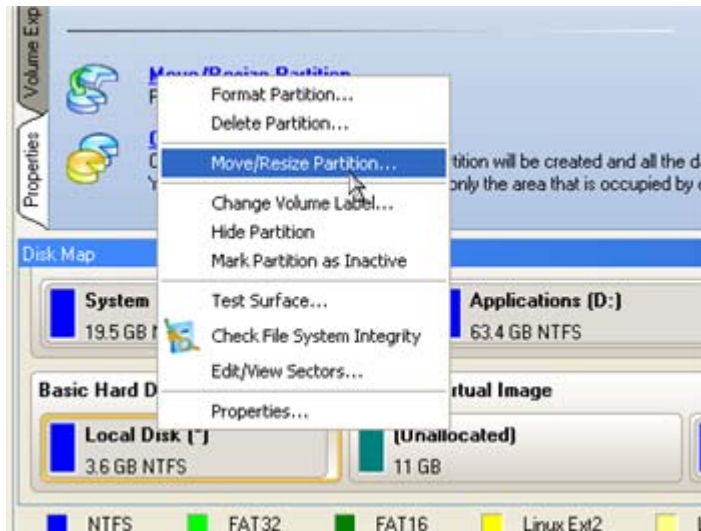
4. In the opened dialog drag-and-drop the left edge of the partition to the right to release the required amount of the free space (displayed in aqua-green). You can also do it manually by entering the exact size of free space.



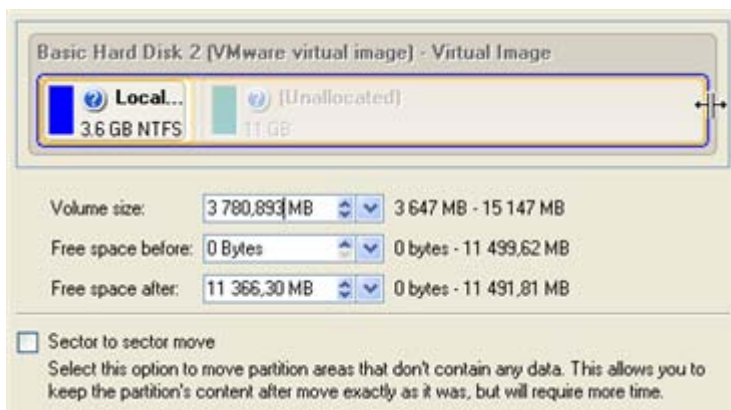
5. Now you've got a block of free space to add to the system partition.



- Right click on the system partition, then select **Move/Resize Partition...**



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



- 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.
- When done, either disconnect the virtual disk or close our program.

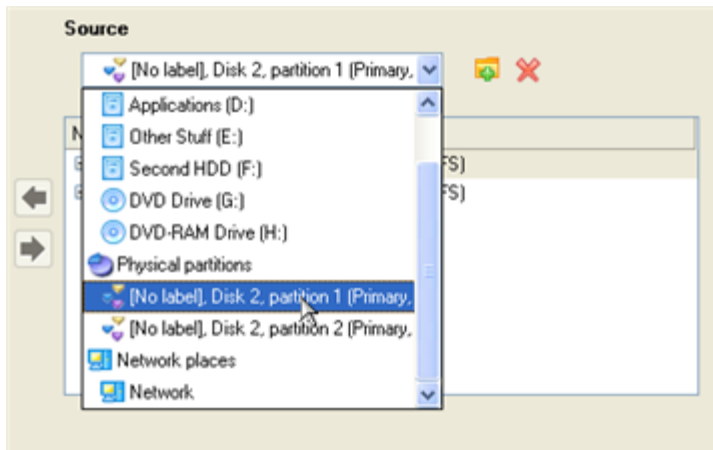
### Exchanging data between physical and virtual environments

Let's assume you need to import a lot of data from one of your virtual disks. The best way out is to use our program, as it can help you do that without starting up the virtual environment and the other actions typical for this task.

To import data from a virtual environment, please do the following:

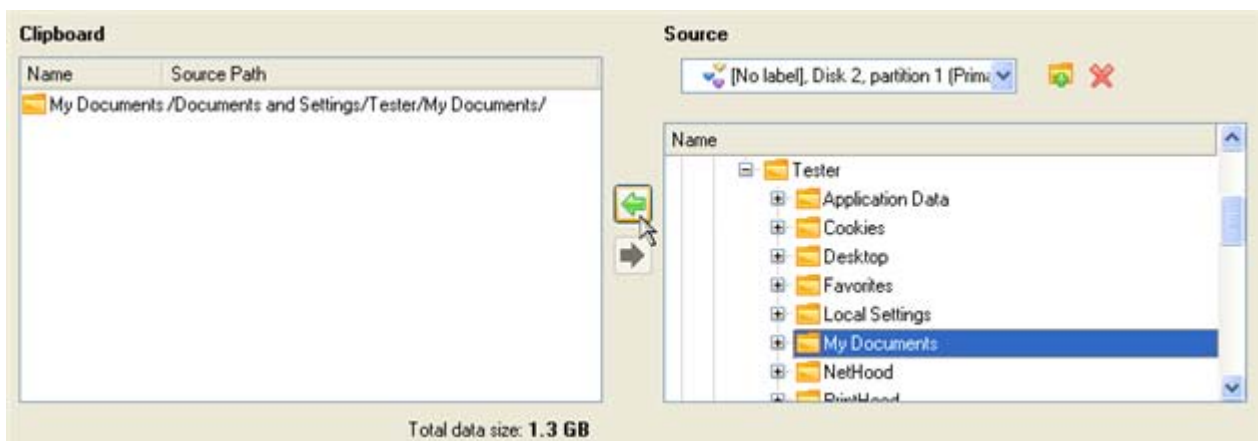


1. [Connect the required virtual disk to our program.](#)
2. Select in the Main Menu: **Tools > File Transfer Wizard** (any of the ways described earlier can also be used here).
3. On the Wizard's Welcome page, click the Next button.
4. Select a disk where the required data is stored from the pull-down 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.

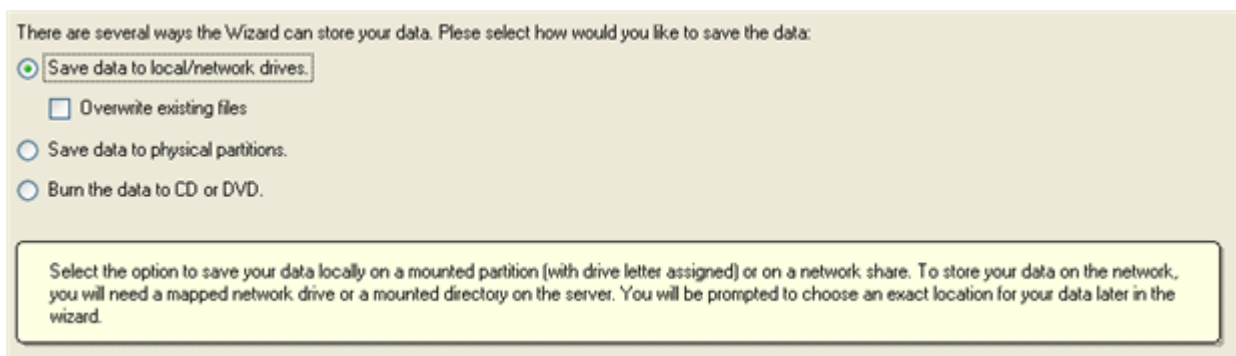


To easily find the required disk, please use its volume label or sequence number as a check point.

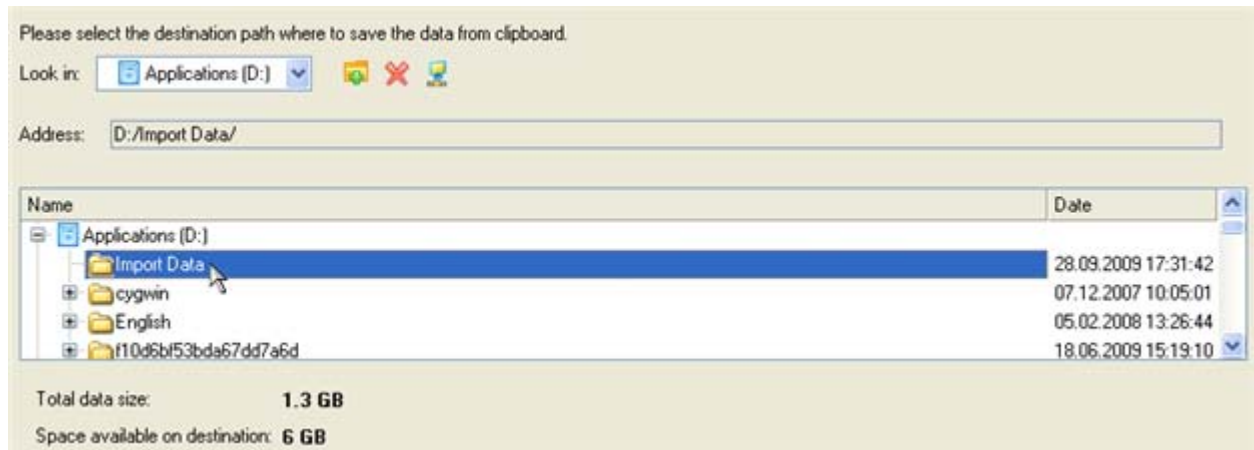
5. Select files you want to copy and place them to Clipboard by pressing the left arrow-button. Click **Next** to continue.



6. Select the **Save data to local/network drives** item. Click **Next** to continue.



- Specify the exact place to copy the data to.



- 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:

- [Connect the required snapshot disk to our program.](#)
- [Connect its parent disk to our program.](#) It'll be connected for reading only.
- [Copy the required data from the parent disk to the snapshot.](#)
- 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:

- [Connect all virtual disks](#) of the required virtual machine to our program.
- [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.

### 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 Win2K+ physical system bootable on different hardware, please do the following:

1. [Start up the computer from our WinPE media.](#)
2. Launch the **P2P Adjust OS Wizard**.



**Our 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.**

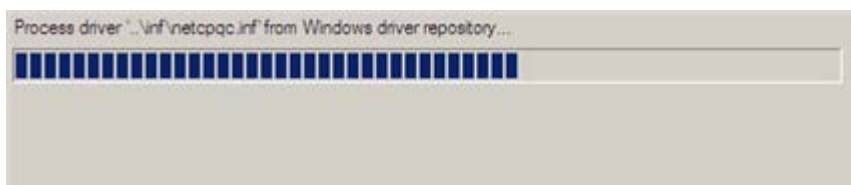
3. On the Wizard's Welcome page, click the Next button.
4. From the list of all found Win2K+ systems (if several) select one you need to adjust to the new hardware. If you're willing to adjust them all, just re-launch this wizard for each.



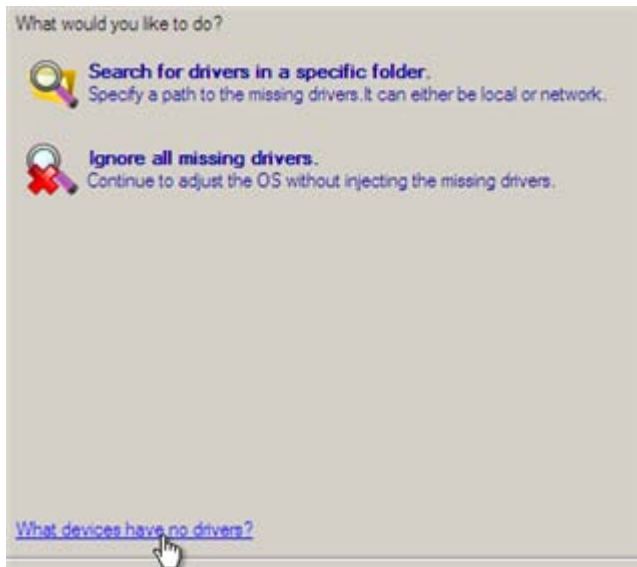
5. There are two execution modes to choose from: **fully automatic** and **advance**. Below we will go set-by-step through the automatic scenario to show the whole process, and then take a closer look at [specifics of the advance scenario](#).



6. Select **Adjust the OS to the new hardware automatically**.
7. The wizard will automatically accomplish all the necessary actions.

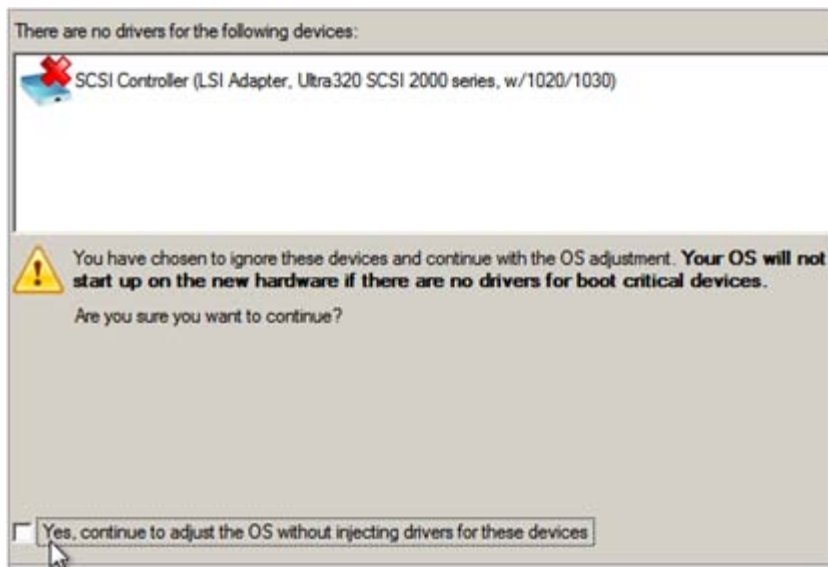


8. The only action that might be required from your side is to set a path to an additional driver repository in case the wizard has failed to find drivers for some boot critical devices in the built-in Windows repository. Generally together with new hardware you get its drivers for different operating 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**.

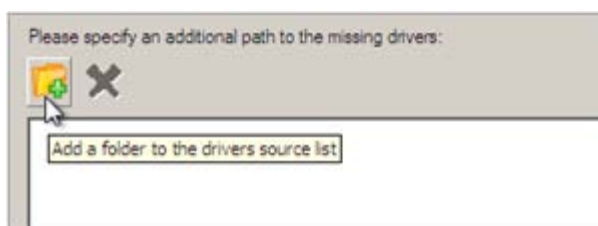


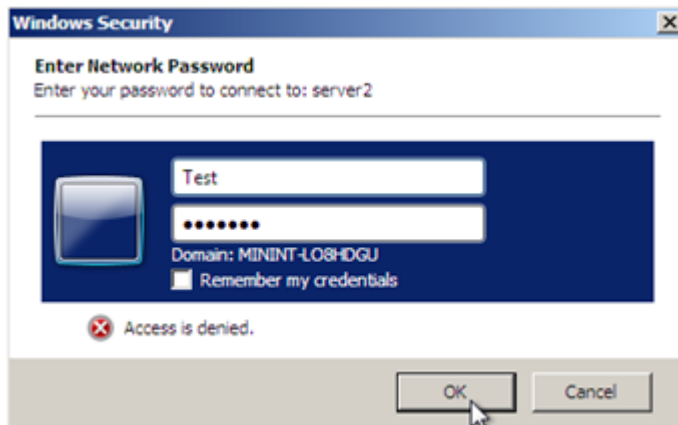
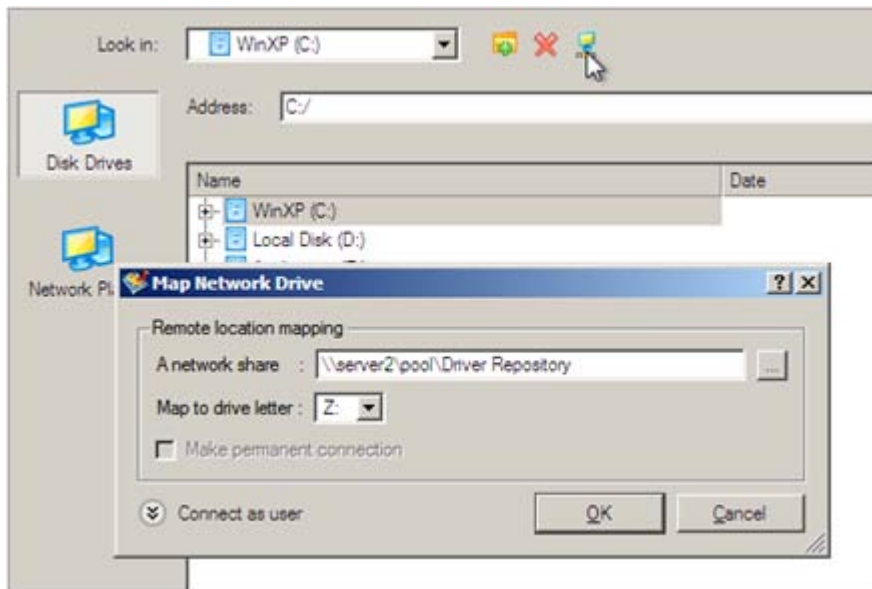
Click on the link at the bottom of the page to see what boot critical devices have no drivers. The wizard names all devices according to their model description, not some alphanumeric code, which is very convenient.

- 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.

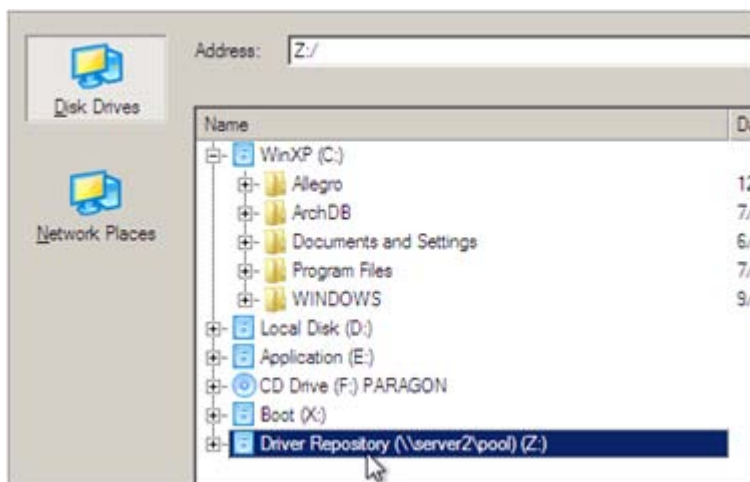


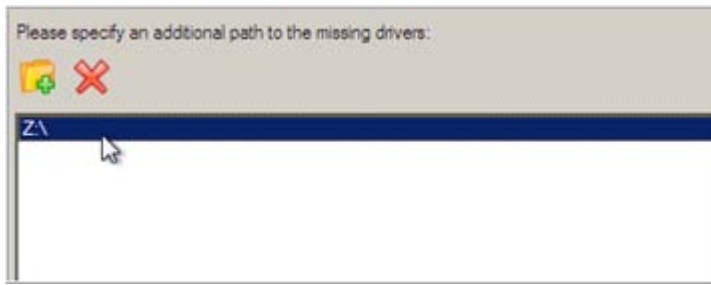
- The wizard can search for drivers on a local disk or a mapped network share. In our case it's on a network share, this is why we need to map it first.





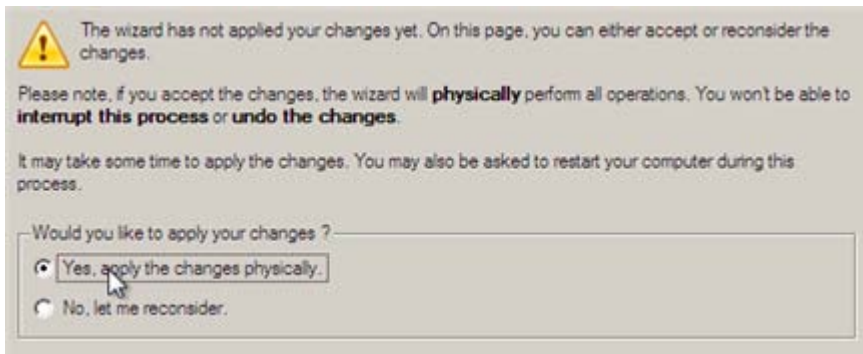
11. When done, we can select it as target.





The wizard enables to specify several driver repositories.

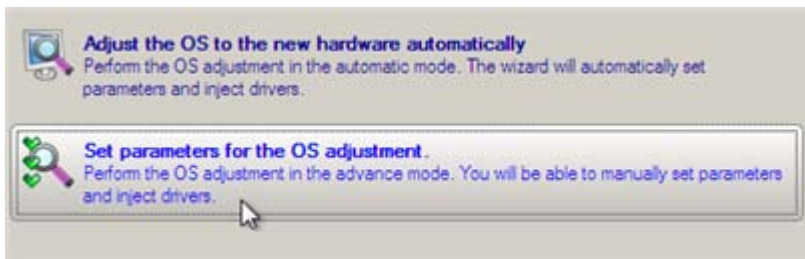
12. If the wizard has found all missing drivers, it will ask you to confirm the operation. Apply the changes to complete.



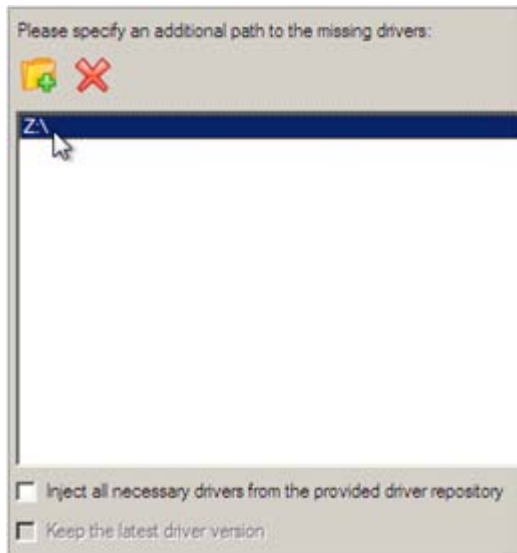
After the operation is completed the system will be bootable on the new hardware. After the startup, Windows will initiate reconfiguration of all Plug'n'Play devices. It's a standard procedure, so please don't worry and prepare the latest drivers at this step to get the most out of the system.

### *Advance scenario specifics*

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




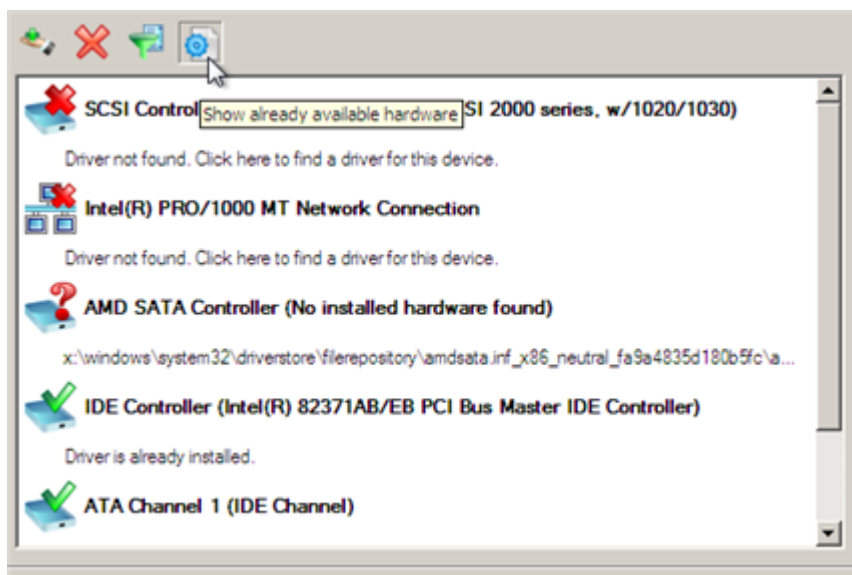
2. When setting additional driver repositories, you can specify how to process drivers for found hardware.




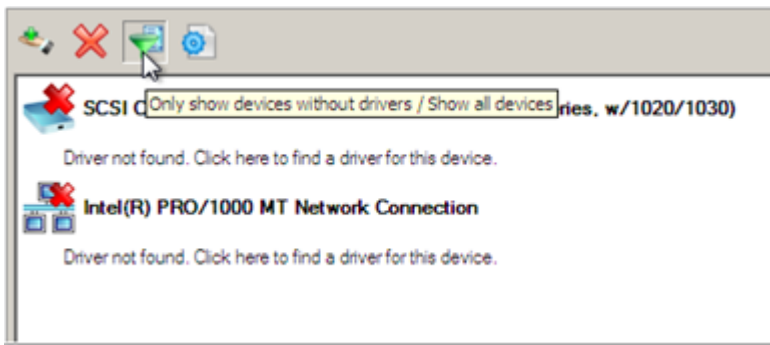
- **Inject all necessary drivers...** Mark the checkbox to force injection of all drivers for your devices from the given driver repository(s), even if there are already installed drivers for some hardware. Please use this option if you suspect any of the installed drivers of not matching your hardware.
- **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:

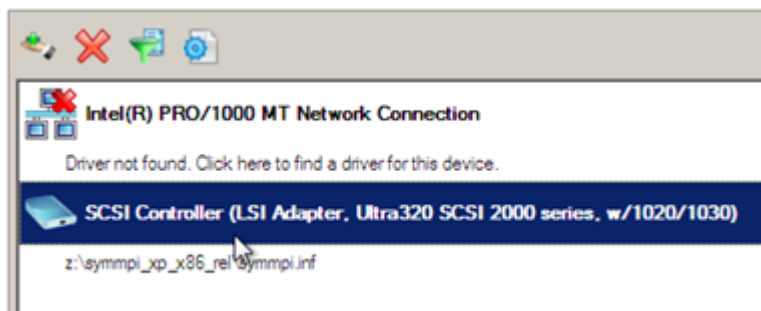
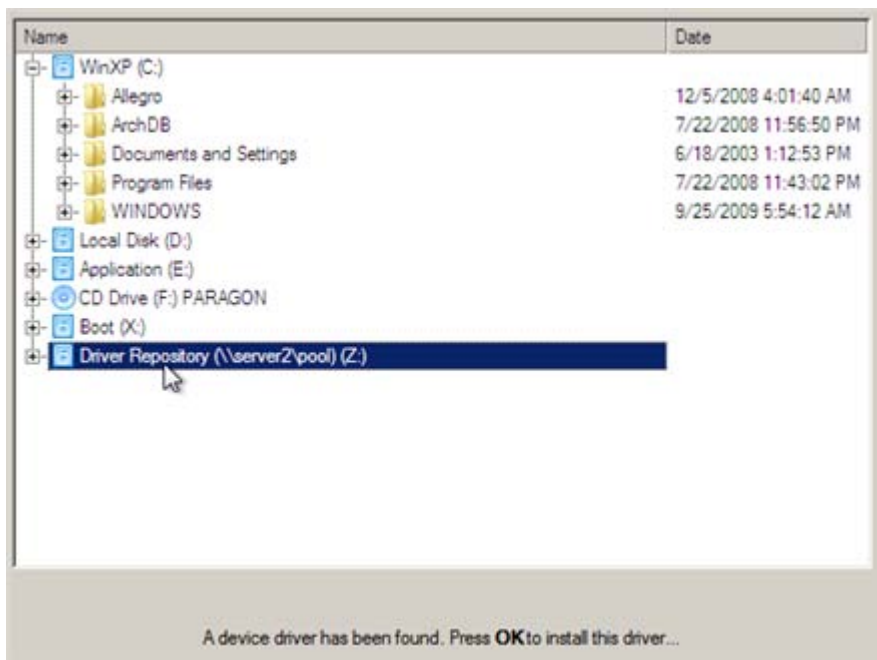
- View all found hardware devices and their driver status by clicking . The wizard names all devices according to their model description, not some alphanumeric code, which is very convenient. So you can compare the listed devices with the given hardware to make sure the wizard has analyzed your system 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.

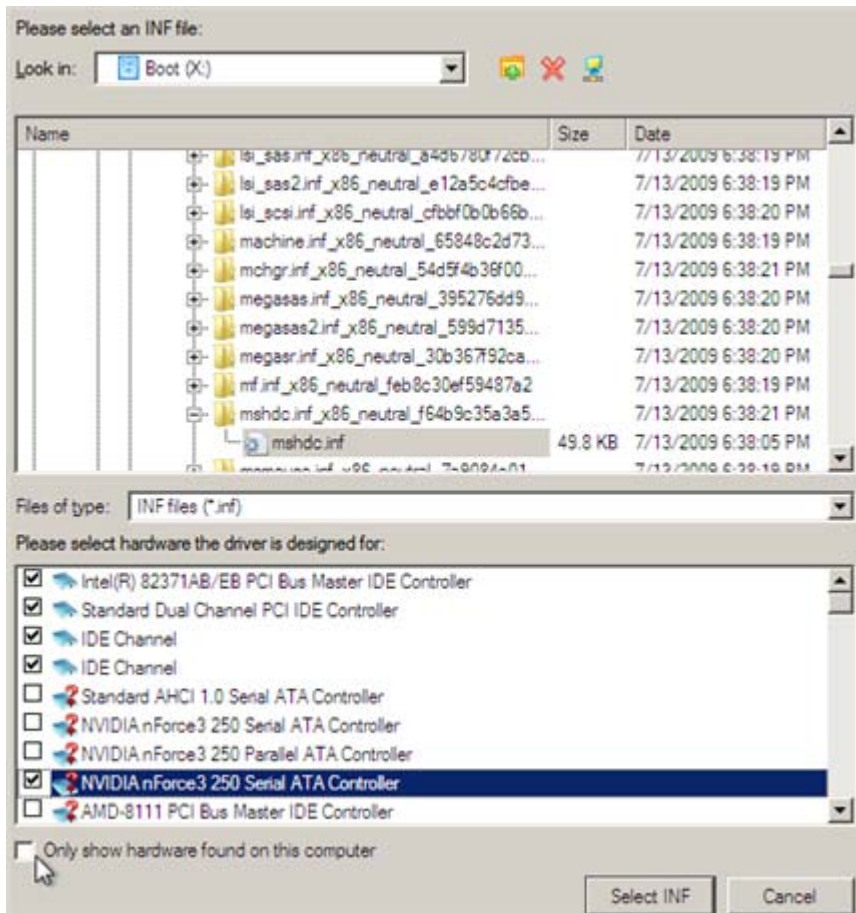
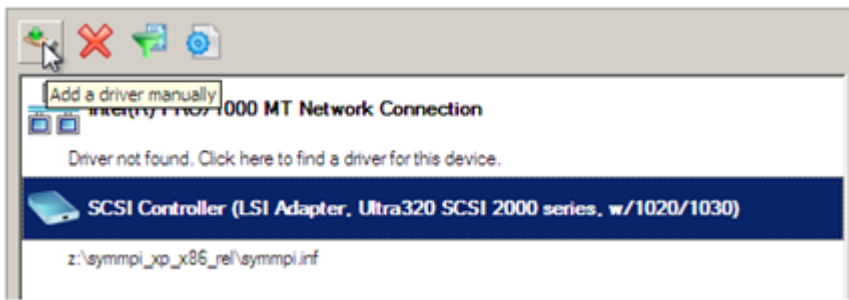


- Add a driver for each device that lacks it by clicking on the device, then browsing for the required location. The wizard will then match the device with drivers inside the given location and pick the right one.



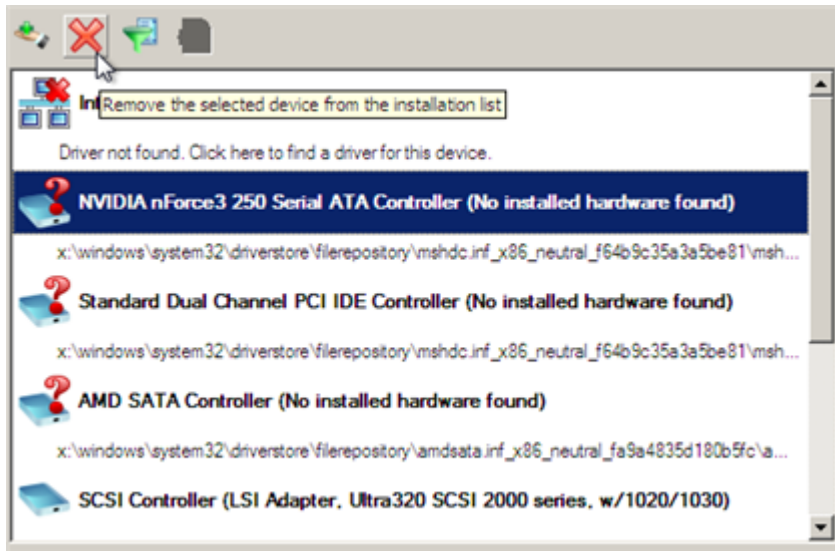
- Manually add a driver for a device that has not been found by our wizard by clicking , then specifying the required .INF file.





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.



### 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 our WinPE media.](#)
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 our WinPE media.](#)
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

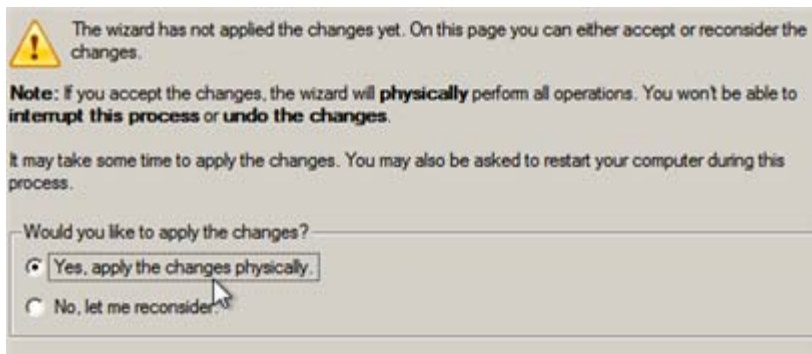
### Correcting BCD (Boot Configuration Data)

To automatically correct BCD of a Win2K+ system, please do the following:

1. [Start up the computer from our WinPE media.](#)
2. Launch **Boot Corrector**.
3. On the Wizard's Welcome page, click the Next button.
4. Select **Correct boot parameters...** to let the wizard fix BCD in all found Win2K+ installations.



5. The wizard will ask you to confirm the operation. Apply the changes to complete.



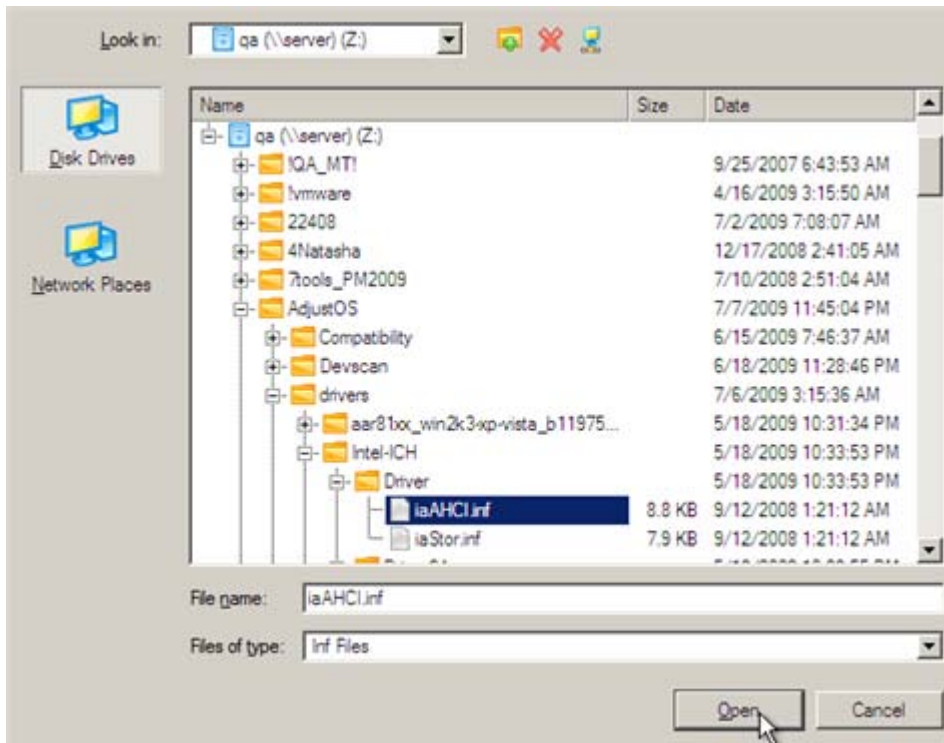
After completing the operation close the wizard, and then reboot the computer.

### Adding specific drivers

Our WinPE 3.0 based environment offers excellent hardware support. Anyway you've got the option to add drivers for specific hardware with a handy dialog.

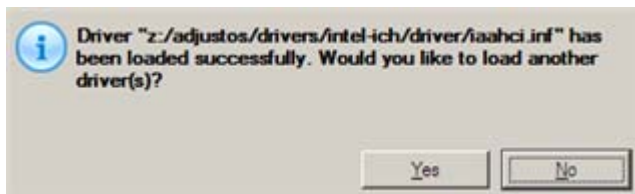
To add drivers for specific hardware, please do the following:

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



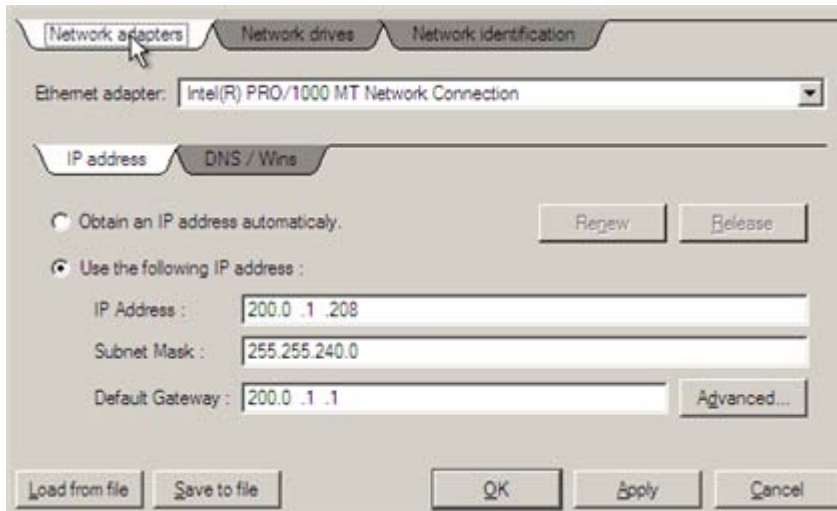
Our WinPE 3.0 environment is 32-based, thus you need to use 32-bit drivers for injection.

### Configuring network

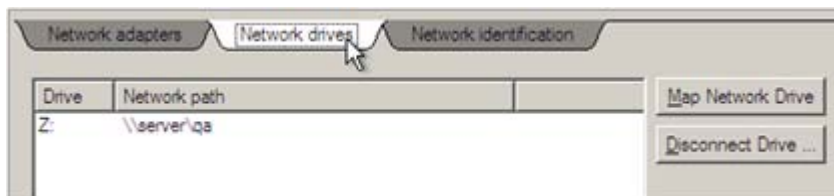
If your local network has a DHCP server, a network connection will be automatically configured once our WinPE recovery environment has been started up. Otherwise you will need to do it manually with a handy dialog by providing an IP address, a network mask, default gateway, etc. Besides with its help 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.



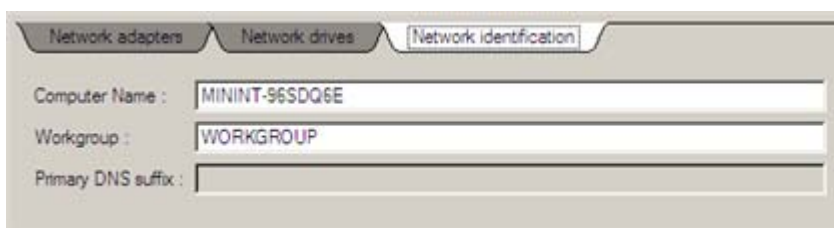
4. Click **Map Network Drive** and provide all the necessary information to map a network share in the opened dialog:



- 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.



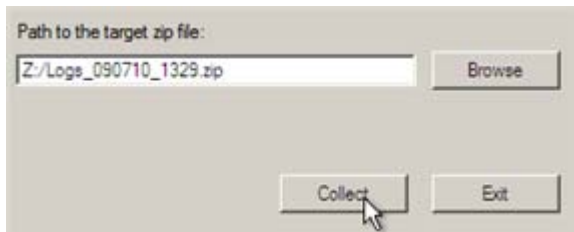
6. By default, the wizard saves all network settings in the netconf.ini file located on the WinPE RAM drive, thus it will only be available until you restart the computer. However, you can just once configure your network device and then save this file to some other destination, for instance a local 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.

### Saving log files

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

To prepare a log files package, please do the following:

1. Once you accept the agreement, you will see the Universal Application Launcher. Click **Log Saver**.
2. In the opened dialog browse for the required location of the log files package or manually provide a full path to it. Click **Collect** to initiate the operation.



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

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