PARAGON Software GmbH

Heinrich-von-Stephan-Str. 5c ● 79100 Freiburg, Germany

Tel. +49 (0) 761 59018201 ● Fax +49 (0) 761 59018130

Internet www.paragon-software.com ● Email sales@paragon-software.com

Partition Manager™ 2014 Free

User Manual

Contents

Introduction

Paragon Partition Manager™ 2014 Free is designed to do drive partitioning on computers that host Windows and Mac OS X environments. The program supports the latest Windows 8.1 and enables to resize partitions of Apple Boot Camp.

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

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

What's New in Partition Manager 14

- **Complete support of Windows Storage Spaces**. Windows 8 has come with a storage management feature called the storage spaces. It enables to easily manage large storage pools. In fact it's an expandable virtual container of defined data size, allowing users to add it as many physical drives as they want until the defined virtual disk's limit is reached. This makes it easy to include additional storage devices without having to set up and manage each attached physical storage drive.

- **Windows 8.1 support**. Our product has been tested to work fine on Windows 8.1 RTM.

Features Overview

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

Features

Let us list some of the features:

User Friendly Fault Minimizing Interface

- **Graphical representation of the data** to gain a better understanding.
- **A handy Launcher** to easily find and run the required tasks.
- **Comprehensive wizards** to simplify even the most complex operations.
- **A context sensitive hint system** for all functions of the program.
- **Previewing the resulting layout of hard disks before actually executing operations** (so-called virtual operations).

Partition/Hard Disk Management Facilities

- **Basic functions for initializing, partitioning and formatting hard disks** (create, format, delete). Instead of the standard Windows disk tools, the program supports all popular file systems.
- **Express Create Partition Wizard** to create a new partition in the most appropriate place of a hard disk, format it to NTFS and then make it available in the system by assigning a drive letter.
- **Express Resize Partitions Wizard** to increase free space on one partition by up-taking the unused space of an adjacent partition of a hard disk (including partitions of Apple Boot Camp).
- **NTFS hot resize upward** to enlarge an NTFS partition (system, locked) without rebooting Windows and interrupting its work.

- **Convert a file system** (FAT16/32, NTFS, Apple HFS) without reformatting.

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

- **Modify file system parameters** (make active/inactive, hide/unhide, etc.).

Supported Technologies

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

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

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

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

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

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

- **Paragon BTE™** technology to set tasks for execution during the system restart, thus saving from the need to use a bootable media when modifying system partitions.

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

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

Supported File Systems

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

- Full read/write access to NTFS (Basic Disks) under Windows, Linux and PTS DOS. Compressed NTFS files are also supported.

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

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

Supported Media

- Support of both MBR and GPT hard disks (2.2TB+ disks included)

- IDE, SCSI and SATA hard disks

- SSD (Solid State Drive)

- AFD (Advanced Format Drive)

- Non-512B sector size drives

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

- FireWire (i.e. IEEE1394), USB 1.0, USB 2.0, USB 3.0 hard disks

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

Getting Started

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

System Requirements

For the Windows installation package

- Windows XP SP3

- Windows Vista

- Windows 7

- Windows 8

- Windows 8.1

Additional requirements:

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

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

Installation

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

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

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

Status	Requirement
Pending	Visual C++ 10.0 Runtime - x86 10.0.30319.1

OK   Cancel

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

3. Please Read Paragon License Agreement carefully and then select the appropriate option to accept. Otherwise you won't be able to proceed with the installation. By clicking the **Print** button, the license agreement may also be printed out.

4. Provide your product key and serial number.

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

6. On the next page, click **Change** to install the utility to a different location (by default **C:\Program Files\Paragon Software\Paragon Partition Manager 2014 Free Edition**). Otherwise click **Next** to continue.

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

---

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

8. The Final page reports the end of the setup process. Click **Finish** to complete the wizard.

First Start

To start Paragon Partition Manager 14 under Windows, please click the Windows Start button and then select **Programs > Paragon Partition Manager™ 14 > Paragon Partition Manager™**.

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

The first component that will be displayed is called the Express Launcher. Thanks to a well thought-out categorization and hint system, it provides quick and easy access to wizards and utilities that we consider worth using on a regular basis. With its help you can also start up the traditional launcher, the help system or go to the program's home page.

> ℹ️ **To know more on how to handle the product's interface and accomplish typical operations, please consult the Windows Components chapter.**

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.

GPT versus MBR

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

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

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

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

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

Apple Boot Camp

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

disposal. Moreover after Windows has been installed it will serve as a boot manager to choose what operating system to start up.

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

64-bit Support

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

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

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

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

Drive Partitioning

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

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

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

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

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

Windows Components

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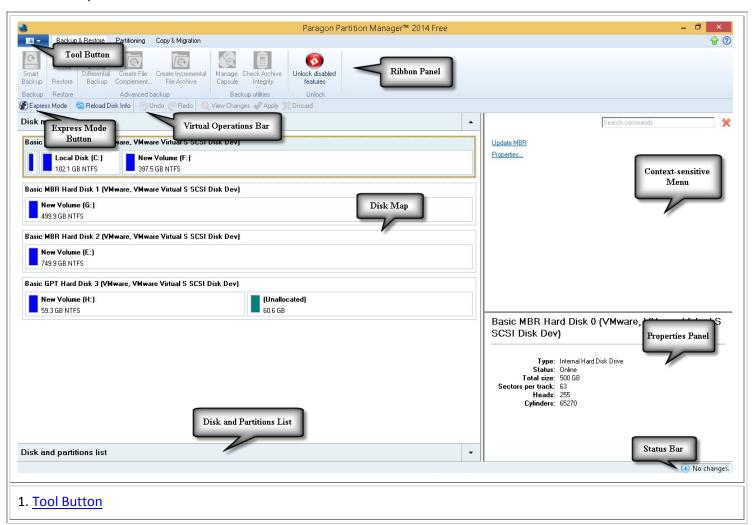
Interface Overview

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

General Layout

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

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

1. Tool Button

2.

3.

4.

5.

6.

7.

8.

9.

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

Tool Button

By clicking on this button the user can:

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

Ribbon Panel

An area across the top of the program's window is called the Ribbon Panel. It makes almost all the product capabilities available to the user in a single place. A Ribbon Tab is an area on the panel that contains buttons organized in groups by functionality. Each button corresponds to a certain program wizard or dialog.
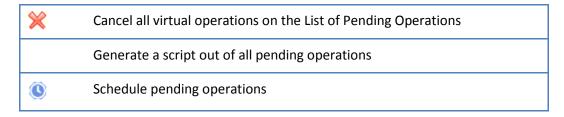
If you'd like to hide all ribbon tabs, click on the arrow button at the right top corner of the program window.

Virtual Operations Bar

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

The Virtual Operations Bar enables to manage pending operations.

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

✖	Cancel all virtual operations on the List of Pending Operations
	Generate a script out of all pending operations
🕐	Schedule pending operations

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

Express Mode Button

By clicking on this button the user can switch to the express mode of operation at any time.

Disk Map

As the name infers, the Disk Map displays the layout of physical and logical disks. Physical disks are represented with rectangle bars that contain small-sized bars. These small-sized bars represent logical disks. Their color depends on the file system of the appropriate partition. By looking at the size of the bar's shaded area it is possible to estimate the used disk space. For the selected at the moment object there's the possibility to call a context-sensitive popup menu with available operations.

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

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

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

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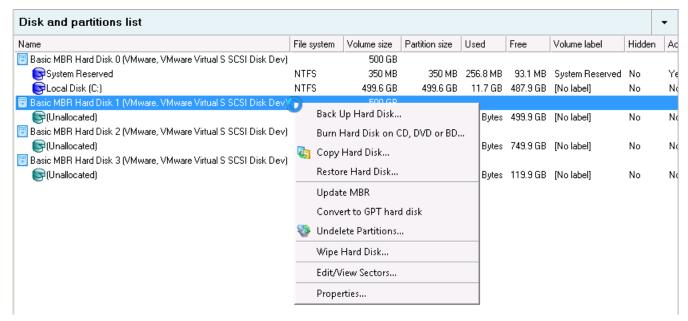- Drive letter,
- Total size,
- File system.

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

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

Disk and Partitions List

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

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

  - Name,

  - Volume label (if exists),

  - Drive letter,

  - File system type,

  - Volume size,

  - Amount of used and unused (free) space,

  - Active/Inactive attribute,

  - Hidden/Unhidden attribute.

The Disk and Partitions List is synchronized with the Context-sensitive Menu and the Properties Panel. Thus by selecting a disk on the list, the two will automatically display detailed information on it. To know more on the subject, please consult the Viewing Disk Properties chapter.
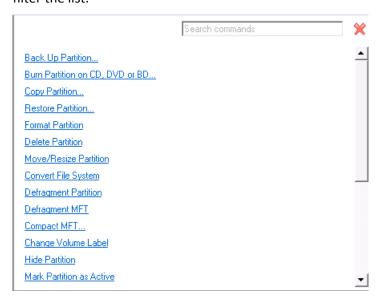
> **Since the Disk Map and the Disk and Partitions List have the same purpose, the user is allowed to extend only one at the moment by using a corresponding arrow button.**

Context-sensitive Menu

The Context-sensitive Menu shows a list of operations available for an object (disk, partition, or block of free space) selected either on the Disk Map or the Disk and Partitions List. If you click a corresponding record the appropriate wizard or dialog will be started. All default values for the operation parameters will correspond to the object's settings.

If there too many items on the list, type in the first word of the required command in the **Search commands** field to filter the list.

Properties Panel

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

The Properties Panel helps to obtain the following data:

For a hard disk

- Model,

- Serial number,

- Type of hard disk (basic or dynamic MBR/GPT),

- Total size (in GB),

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

For a partition

- Drive letter assigned to the disk,

- Volume label (if exists),

- Type of the logical disk,

- File system,

- Root entries,

- Serial number,

- NTFS version,

- Partition ID,

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

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

For a block of free space

- Total size (in GB).

Status Bar

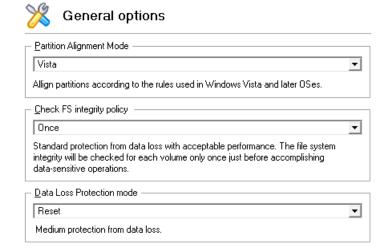This is the bottom part of the main window. The Status Bar displays menu hints, for each item the cursor points to.

Settings Overview

To call the Settings dialog, please click **Tool Button**, then select **Settings**. All the settings are grouped into several sections, which functions are described in the following paragraphs. The list of sections is placed on the left side of the dialog. By selecting a section from the list, you can open a set of options.

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

General Options

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

- **Partition Alignment mode**. There are three options you can choose from:

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

- **Vista**. Since Windows Vista, operating systems do not use the archaic CHS (cylinder/head/sector) addressing scheme, but the Logical Block Addressing (LBA), where sectors are addressed continuously over the whole disk drive. It is optimal for both, 512B and new 4K disk drivers.

- **Inheritance**. Select the option to disable automatic alignment of partitions.

- **Check FS integrity policy**. Accomplishment of any data-sensitive operation (resize, move, merge, redistribute, change cluster size, etc.) is potential with data loss. To minimize this risk, it's recommended to check integrity of your file system before this type of operations, despite the fact that it's quite time consuming. We offer you several options to let you choose, which is best for you:

  - **Always**. Maximum protection, but minimal performance. The file system integrity will be checked each time it's necessary to guarantee the maximum protection for the on-disk data.

  - **Once**. Standard protection with acceptable performance. The file system integrity will be checked for each volume only once just before accomplishing data-sensitive operations.

  - **Never**. No protection, but maximum performance. If you're not 100% sure your disk is rock solid, please do not use this option.

- **Data Loss Protection mode**. To guarantee safety for your information when a data-sensitive operation has been abruptly interrupted as a result of a computer reset, or a power outage, there are several techniques, that correspond to the options below:

  - **Do not protect**. No protection, but maximum performance. If you're not 100% sure you're completely safe from a power outage, or an accidental reset of your computer, please do not use this option.

  - **Reset**. Standard protection with acceptable performance. Maintaining a special journal, our program enables to automatically complete a data-sensitive operation interrupted by an accidental reset of your computer from our bootable recovery media, thus reviving the corrupted partition.

  - **Power loss**. Maximum protection, but minimal performance. Besides journaling, our program will also disable cache of your disk when accomplishing data-sensitive operations to avoid data loss even in case of a power outage.

General Copy and Backup Options

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

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

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

- **Automatic BCD Update**. Unmark the checkbox to suppress automatic update of BCD (Boot Configuration Data) after copy/restore operations.

Hot Processing Options

In this section you may configure the hot processing mode:

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

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

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

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

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

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

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

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

Partitioning Options

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

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

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

Virtual Mode Options

In this section you may configure the virtual mode:

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

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

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

File System Conversion Options

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

To tackle problems of that kind you can manually set:

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

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

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

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

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

Log Files Options

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

- **Logs directory** to specify location of program log files. By default, all logs are placed to: **C:\Program Files\Paragon Software\product's name\program**

- **Write logs in Bluescreen** to enable the program logging in a special boot-up mode

- **Stubact log file truncation** to specify a storage life span for the stubact.log file:

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

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

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

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

Viewing Disk Properties

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

Partition Management

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

Basic Partitioning Operations

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

Creating Partitions

The program provides the ability to create a new partition within a block of un-partitioned space.

Restrictions

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

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

3. The program cannot create new partitions on Dynamic Disks.

Express Create Partition Wizard Startup

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

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

Create Partition Wizard Startup

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

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

Dialog Startup

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

2. Call a context menu for the selected object by the right mouse click, then select **Create Partition**.

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

Express Create Partition Wizard Setup

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

The result you will get after applying the changes:

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

Local Disk (C:)
378 GB NTFS

6... 6...

Please select the method of new partition creation

○ **Smart Mode**   (Use 109.3 GB to create a partition) More info...

◉ **Advanced Mode**   (Use 60.7 GB to create a partition) More info...

The number of available methods depends on your disk layout.

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

Create Partition Wizard Setup

The wizard offers the following steps to accomplish the operation:

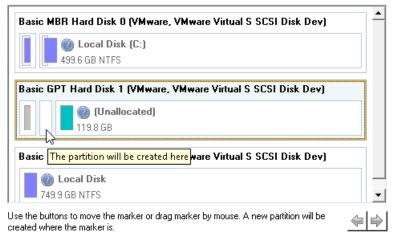- **Partition destination**. Select a hard disk (if the computer has several hard disks) and then choose position for the future partition on the disk: at the end (preferable), at the beginning or somewhere in the middle between other partitions.

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

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

Local Disk (C:)
499.6 GB NTFS

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

(Unallocated)
119.8 GB

Basic The partition will be created here ware Virtual S SCSI Disk Dev)

Local Disk
749.9 GB NTFS

Use the buttons to move the marker or drag marker by mouse. A new partition will be created where the marker is.

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

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

    If there is not enough free space in one block, the wizard enables to redistribute free space, joining all free space blocks together into one united block and moving partitions when necessary. If the total amount of free

space is still not enough, it is possible to split a fragment of space from one of the existing partitions, thus resizing it.
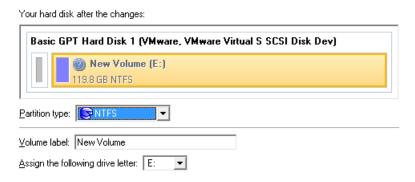
You can also choose whether the future partition will be primary or logical by marking the appropriate checkbox.

- **Partition properties**. On the next page of the wizard you can set a number of additional parameters:

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

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

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

Dialog Setup

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

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

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

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

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

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

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

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

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

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

Use OS built in format routine

Please select number of sectors per cluster: 8

Restore defaults

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

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

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

Result

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

Available operation scenarios:

- [Creating a new partition to detach operating system from the rest of data](#)

Formatting Partitions

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

Supported File Systems

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

- FAT12 & FAT16

- FAT32

- HFS+

- NTFS

- Ext2

- Ext3

- Ext4

- Linux Swap v. 2

Wizard Startup

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

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

Dialog Startup

1. Select a partition on the Disk Map;

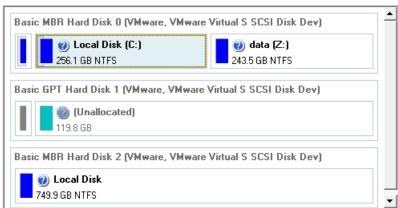2. Call a context menu for the selected object by the right mouse click, then select **Format Partition**.

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

Wizard Setup

The wizard offers the following steps to accomplish the operation:

- **Partition to format**. Select a hard disk (if the computer has several hard disks) and then the required partition to format.
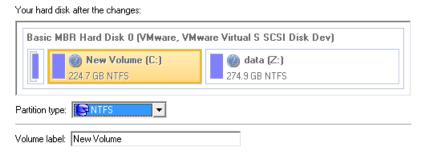
On this page, you can choose a volume you would like to format.

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

Local Disk (C:) 256.1 GB NTFS   data (Z:) 243.5 GB NTFS

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

(Unallocated) 119.8 GB

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

Local Disk 749.9 GB NTFS

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

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

Your hard disk after the changes:

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

New Volume (C:) 224.7 GB NTFS   data (Z:) 274.9 GB NTFS

Partition type: NTFS

Volume label: New Volume

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

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

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

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

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

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

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

Dialog Setup

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

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

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

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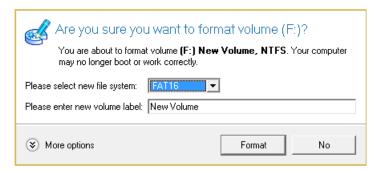

- **Use OS built-in routine**. Mark the checkbox to restrict the available values according to the used OS.

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

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

Result

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

Deleting Partitions

Wizard Startup

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

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

Dialog Startup

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

1. Select a partition on the Disk Map;

2. Call a context menu for the selected object by the right mouse click, then select Create **Delete Partition**.
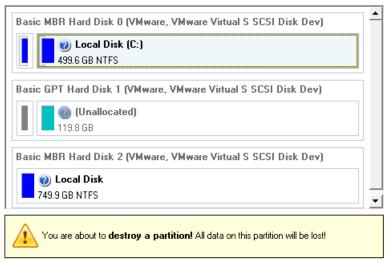
> ℹ **There are other ways to start up this function, please consult the Interface Overview chapter to know more on the subject.**

Wizard Setup

The wizard offers the following steps to accomplish the operation:

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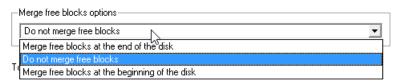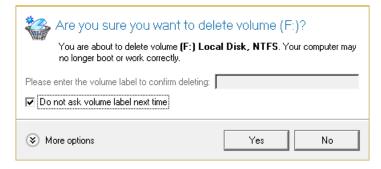
> ⚠️ **As a result of this operation contents of the selected partition will be lost.**

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

Dialog Setup

Initially the program suggests you just to remove references to the selected partition from the Partition Table.

- **Enter the volume label to confirm deleting**. To confirm deletion of the selected partition, enter its Volume Label. The current volume label is displayed above.

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

Result

By default, the operation takes only a fraction of a second. However, the program waits until Windows completes the modification of the disk layout.

Advanced Partitioning Operations

Here you can learn how to accomplish advanced partitioning operations.

Moving/Resizing Partition

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

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

1. Select a partition on the Disk Map.

2. Call a context menu for the selected object by the right mouse click, then select **Move/Resize Partition…**

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

3. Define parameters of the operation.

- **Volume size**. Define size (in Mb) of the modified partition.

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

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

- **Sector to sector move**. Mark the checkbox to move the partition in the sector-by-sector mode to process its unused space as well. This can help to avoid problems with hidden data created by certain applications or the system administrator. However, it will take more time to accomplish the operation.

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

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

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

---

4. The operation will be performed immediately after confirmation.

Available operation scenarios:

- [Increasing size of a system partition by taking unused space from any other](#)

Converting File System

With our program you can change type of the used file system without destroying its data. While performing the operation, it first checks the current file system for consistency and then verifies whether the on-partition data meet the

requirements of the desired file system or not. After having passed the testing, the program re-organizes the file system metadata and user files.

The program enables to convert the following file system types:
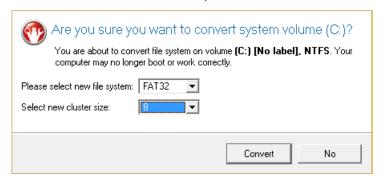
- FAT16/32 <> NTFS

- NTFS <> HFS

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

1. Select a partition on the Disk Map.

2. Call a context menu for the selected object by the right mouse click, then select **Convert file system…**

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

---

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

- **New file system**. From the pull-down list choose a file system you would like to convert to. Actually the program only displays variants available for the operation, taking into account the current parameters of the selected partition and limitations of the used file system.

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

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

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

4. The operation will be performed immediately after confirmation.

Changing Partition Attributes

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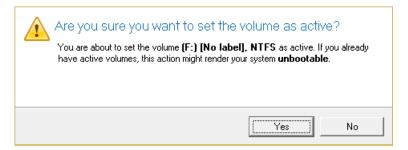
Mark Partition Active/Inactive

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

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

1. Select a primary partition on the Disk Map.

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

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

---

3. The operation will be performed immediately after confirmation.

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

Hide/Unhide Partition

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

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

1. Select a partition on the Disk Map.

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

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

---

3. The operation will be performed immediately after confirmation.

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

Set Label of a Partition

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

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

1. Select a partition on the Disk Map.

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

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

---

3. Enter a label for the selected partition.

4. The operation will be performed immediately after confirmation.

Hard Disk Management

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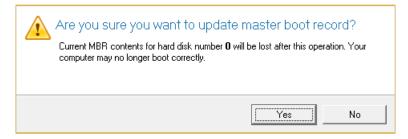
Updating MBR

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

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

1. Select a hard disk on the Disk Map.

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

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

---

3. The operation will be performed immediately after confirmation.

Copyright© 1994-2014 Paragon Software GmbH. All rights reserved.

Extra Functionality

This chapter describes the supplementary functionality available in the program.

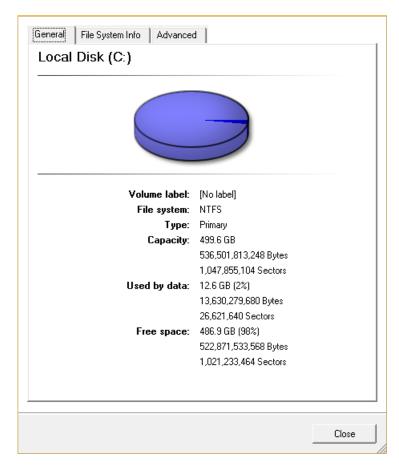## View Partition/Hard Disk Properties

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

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

1. Choose a partition/hard disk on the Disk Map.

2. Call a context menu for the selected object by the right mouse click, then select **Properties…**

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

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

Mount Partition

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

Assign Drive Letter

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

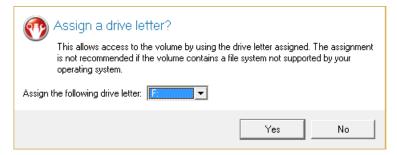1. Select a partition on the Disk Map.

2. Call a context menu for the selected object by the right mouse click, then select **Assign Drive Letter…**

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

---

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

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

4. The operation will be performed immediately after confirmation.

Remove Drive Letter

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

1. Select a partition on the Disk Map.

2. Call a context menu for the selected object by the right mouse click, then select **Remove Drive Letter**.

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

---

3. The operation will be performed immediately after confirmation.

Modifying drive letter of the system partition will result in inability to boot the operating system.

After having processed partitions with installed software, some programs may not run properly.

Test Surface

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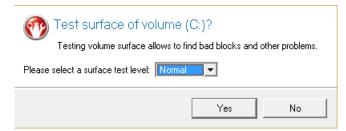
In order to start the surface test you should take the following steps:

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

2. Call a context menu for the selected object by the right mouse click, then select **Test Surface…**

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

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

4. The operation will be performed immediately after confirmation.
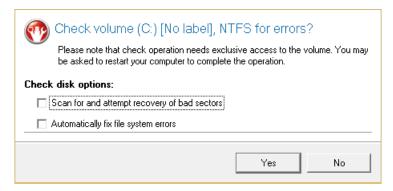
Check File System Integrity

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

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

1. Select a partition on the Disk Map.

2. Call a context menu for the selected object by the right mouse click, then select **Check File System Integrity**

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

3. The operation will be performed immediately after confirmation.

Send Log Files

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

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

1. Click **Tool Button**, then select **Send Log Files**;

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

3. Give a detailed description on the encountered problem.

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

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

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

View Logs

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

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

Typical Scenarios

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

Resize Scenarios

Creating a new partition to detach operating system from the rest of data

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

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

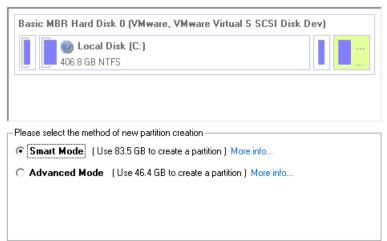1. Click the **Partitioning** tab on the Ribbon Panel, then select **Express Create**.

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

---

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

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

The result you will get after applying the changes:

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

Local Disk (C:)
406.8 GB NTFS

Please select the method of new partition creation

- ⦿ **Smart Mode** (Use 83.5 GB to create a partition) More info...
- ○ **Advanced Mode** (Use 46.4 GB to create a partition) More info...

ℹ **The number of available methods depends on your disk layout.**

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

---

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

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

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

Increasing size of a system partition by taking unused space of an adjacent partition

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

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

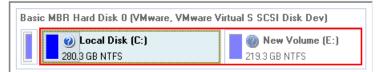1. Click the **Partitioning** tab on the Ribbon Panel, then select **Express Resize**.

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

---

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

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

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

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

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

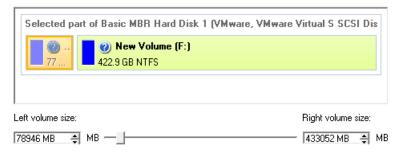| Local Disk (C:) | New Volume (E:) |
| 280.3 GB NTFS | 219.3 GB NTFS |

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

---

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

Please specify new sizes of selected partitions.

Selected part of Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Dis

| | New Volume (F:) |
| 77 ... | 422.9 GB NTFS |

Left volume size:
78946 MB MB

Right volume size:
433052 MB MB

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

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

7. In the Progress window you can see in real-time a detailed report on all actions carried out at the moment.
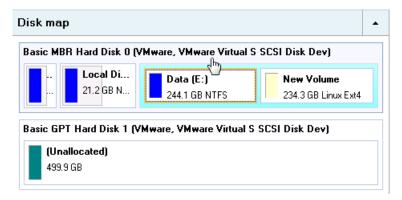
After completing the operation your computer will be automatically restarted back to Windows where you can see that your system partition is bigger now.

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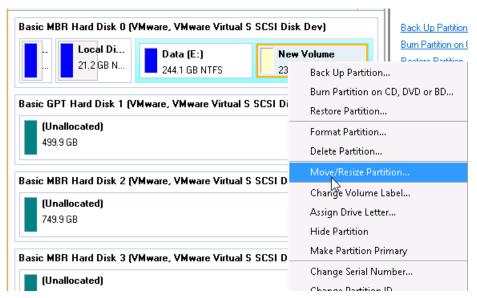
Let's assume you've got several partitions on your hard disk. After installing a number of resource-consuming applications and system updates your system partition has started to suffer from the lack of free space. But one of your partitions has a plenty of redundant space. That's just enough to make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

To increase size of a system partition by taking unused space from any other on-disk partition, please do the following:
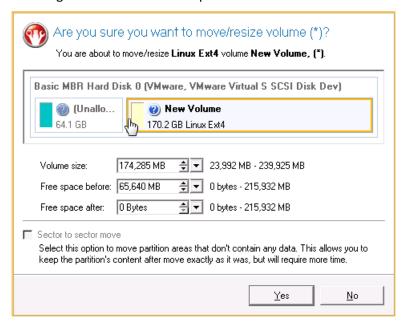
1. In the main window select the required hard disk (if several) on the Disk Map.

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

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

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

5. Since the block of free space is within the extended partition, you need to take it out first. The program enables to resize the extended partition only when there's a block of free space adjoining its borders. In our case it's between 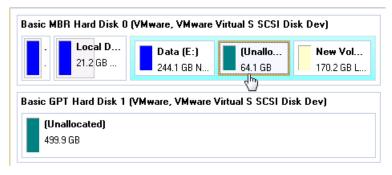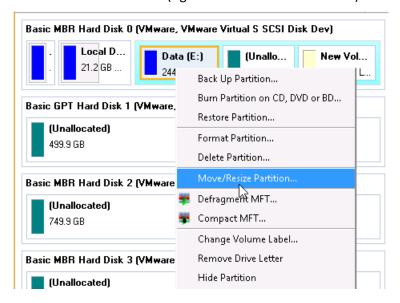two logical disks. So we need to move it. To do that, please select the first logical partition and then call a context menu for it (right click of the mouse button) to launch the Move/Resize dialog.

6. At first shift the right edge of the partition to the right, then do the same with the left edge. Make sure the partition size has been left unchanged.

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

---

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

---

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

9. The block of free space has been released.

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

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

12. Apply all introduced changes. By default, our program works in the virtual mode of execution, so you have to confirm all operations to let the program accomplish them. To do that, just click the Apply button on the Virtual Operations Bar.

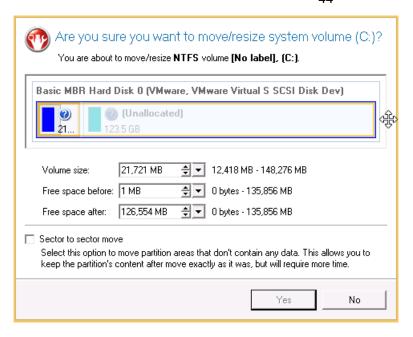13. The program will require the system restart to accomplish the operation in a special boot-up mode. Click the appropriate button to agree.

Resizing partitions of Apple Boot Camp

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

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

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

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

---

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

3. The wizard will automatically select Windows (the NTFS file system) and Mac (the Apple HFS file system) partitions of your Boot Camp configuration.
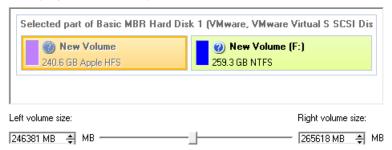
> **On the disk map you can also see the GPT service partition (called EFI) as well as a 128-megabyte free block between Mac and Windows partitions made with Boot Camp. It's just for your information.**

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

Please specify new sizes of selected partitions.

```
Selected part of Basic MBR Hard Disk 1 (VMware, VMware Virtual S SCSI Dis

   New Volume              New Volume (F:)
   240.6 GB Apple HFS      259.3 GB NTFS
```

Left volume size: Right volume size:

246381 MB ⇱ MB ————————⊟———————— 265618 MB ⇱ MB

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

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

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

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

Troubleshooter

Here you can find answers to the most frequently asked questions that might arise while using the program.

1. I try to run an operation, but the program claims my partition is in use and suggests restarting the computer.

   There are a number of operations that cannot be performed while your partition is in use (or locked in other words). Please agree to reboot your machine to make the program accomplish the operation in a special boot-up mode.

2. I run an operation and restart the machine as required, but it just boots back into Windows without accomplishing the operation.

   Please run 'chkdsk /f' for the partition in question.

3. I cannot create a new partition on the disk.

   There can be a number of reasons for that:

   - The program cannot create a new partition on a dynamic disk.

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

4. I cannot copy a partition.

There can be a number of reasons for that:

- The source or target disk you select is a dynamic disk;

- 4 primary partitions (or three primary partitions and an extended one) already exist on the target disk.

5. I need to copy a partition. But when selecting a place where to make a copy, I always get a crossed circle sign no matter which partition is selected.

    The program enables to copy a partition only to a block of un-partitioned space. If you don't have a block of free space on your hard disk, please delete or reduce an existing partition to accomplish the operation.

6. I cannot do anything with my USB flash drive. I get a crossed circle sign when trying to select any area on it.

    Some USB flash drives don't have the MBR (Master Boot Record), that's the cause of your problem. To fix the issue please use the Update MBR function of our program or 'fixmbr' of the Windows installation disc to write a standard code to your flash drive.

7. When trying to back up my system the program asks to restart the computer.

    Most likely the Hot Processing mode is disabled. Please make it active in the program settings.

8. When backing up a partition with the VSS (Volume Shadow Copy Service) mode, the program throws "VSS could not be started for processed volume".

    Most likely you try to back up a FAT32 partition, which is not supported by VSS. Please use the Paragon Hot Processing mode instead.

9. I cannot back up my hard disk to an external hard drive. Once started, the operation is aborted with the following error: Hard Disk management, Error Code 0x1100a. What is wrong here?

    The problem is that the Microsoft VSS service is set as the default Hot Processing mode in the program. But this service has not been started in your WindowsXP/Windows2003/Vista. Please start this service (right click on My Computer > Manage > Services > find Microsoft Volume Shadow Copy Service and make it active. Set also to start it automatically).

10. When running a backup operation with the Paragon Hot Processing mode enabled, I get an error: error code 0x1200e "Internal error during Hot Backup"

    Most likely your hard disk contains bad blocks. Please fix the issue with your HDD manufacturer's tool.

    You can find a name of the tool you need here: http://kb.paragon-software.com

11. When running a backup operation with the Microsoft VSS mode enabled, I get the following error: error code 0x12016 "VSS: can't read volume data"

    Most likely your hard disk contains bad blocks. Please fix the issue with your HDD manufacturer's tool.

    You can find a name of the tool you need here: http://kb.paragon-software.com

12. When trying to back up to a network share, I get the following error: "i/o error" or "can't open/create file"

    Please check whether you've got a permission to write to the selected destination or not.

13. When trying to restore a backup archive, I get the following error: "Can't restore to current selection" or "Archive does not fit"

    Most likely you're trying to restore a backup of the whole hard disk to a partition or vice versa.

14. I set up a timetable for a task, but it fails to execute.

    There can be a number of reasons for that:

- Windows Task Scheduler does not work properly. Check whether it is so or not by scheduling a simple task (call Notepad through scheduling);

- You don't have permission to write to the selected backup destination.

Glossary

Active Partition is a partition from which an x86-based computer starts up. The active partition must be a primary partition on a basic disk. If you use Windows exclusively, the active partition can be the same as the system volume.

In the DOS partitioning scheme, only primary partitions can be active due to limitations of the standard bootstrap.

The term **backup** originates from the time when the best way to protect valuable information was to store it in form of archives on external media. It's become now a general notion to mean making duplications of data for protection purposes.

Bootable Archive is created by adding a special bootable section when backing up the data to CD/DVDs. Thus you will be able to restore the data from these archives without having to run the program, but by simply booting from these CD/DVDs.

Cluster is the smallest amount of disk space that can be allocated to hold a file. All file systems used by Windows organize hard disks based on clusters, which consist of one or more contiguous sectors. The smaller the cluster size, the more efficiently a disk stores information. If no cluster size is specified during formatting, Windows picks defaults based on the size of the volume. These defaults are selected to reduce the amount of space that is lost and the amount of fragmentation on the volume. A cluster is also called an allocation unit.

Extended Partition is a partition type you create only on a basic MBR (Master Boot Record) disk. Extended partition is used if you want to create more than four volumes on a disk, since it may contain multiple logical drives.

File System Metadata. The servicing structures of a file system, which contain information about allocating files and directories, security information etc, are named the file system metadata. It is invisible for users and regular applications because its accidental modification usually makes a partition unusable.

Hard Disk Geometry. Traditionally, the usable space of a hard disk is logically divided into cylinders, cylinders are divided into tracks (or heads), and tracks are divided into sectors.

The triad of values {[Sectors-per-Track], [Tracks-per-Cylinder], [Amount-of-Cylinders]} is usually named the Hard Disk Geometry or C/H/S geometry.

Tracks and cylinders are enumerated from "0", while sectors are enumerated from "1". These disk parameters play an essential role in the DOS Partitioning scheme.

Modern hardware uses an advanced scheme for the linear addressing of sectors, which assumes that all on-disk sectors are continuously enumerated from "0". To allow backward compatibility with older standards, modern hard disks can additionally emulate the C/H/S geometry.

Hidden Partition. The concept of a "hidden" partition was introduced in the IBM OS/2 Boot Manager. By default, an operating system does not mount a hidden partition, thus preventing access to its contents.

A method of hiding a partition consists in changing the partition ID value saved in the Partition Table. This is achieved by XOR-ing the partition ID with a 0x10 hexadecimal value.

Master File Table (MFT) is a relational database that consists of rows of file records and columns of file attributes. It contains at least one entry for every file on an NTFS volume, including the MFT itself. MFT is similar to a FAT table in a FAT file system.

MBR & 1st track of the hard disk is the 0th sector of the disk. MBR (Master Boot Record) contains important information about the disk layout:

- The used partitioning scheme;

- The starting records of the Partition Table;

- The standard bootstrap code (or the initial code of boot managers, disk overlay software or boot viruses).

Generally, the 0th sector is used for similar purposes in all existing partitioning schemes.

The MBR capacity is not sufficient to contain sophisticated boot programs. That's why the on-boot software is allowed to use the entire 0th track of the disk. For example, boot managing utilities such as LILO, GRUB and Paragon Boot Manager are located in the 0th track.

Partition ID (or File system ID) is a file system identifier that is placed in the partition. It is used to quickly detect partitions of supported types. A number of operating systems completely rely on it to distinguish supported partitions.

Partition ID is saved in appropriate entries of the Partition Table and takes only 1 byte of space.

Partition Label (or Volume Label) is a small textual field (up to 11 characters) that is located in the partition's boot sector. This value is used for notification purposes only. It is detectable by any partitioning tool including the DOS FDISK utility.

Modern operating systems save it within a file system, e.g. as a special hidden file. Thus it is able to contain a relatively large amount of text in multiple languages.

Partitioning Scheme is a set of rules, constraints and format of the on-disk structures to keep information on partitions located on a hard disk.

There are known several partitioning schemes. The most popular of them is the so-called DOS partitioning scheme. It was introduced by IBM and Microsoft to use multiple partitions in the disk subsystems on IBM PC compatible computers.

Another popular partitioning scheme is the so-called Logical Disks Model (LDM) that originates from the UNIX mainframe systems. Veritas Executive accommodates a simplified version of LDM to the Windows 2000 operating system.

Windows 2000 and XP support two quite different partitioning schemes: the old DOS partitioning scheme and the new Dynamic Disk Management (DDM). The problem is that earlier versions of Windows do not support DDM. In addition, most hard disk utilities do not support it as well.

Recovery Media is a CD/DVD disc, a USB flash card or even a floppy disk from which you can boot for maintenance or recovery purposes.

Root Directory is the top-level directory of a formatted logical drive to include other files and directories. In modern file systems (Ext2/Ext3, NTFS and even FAT32) it does not differ from other directories. This is not the case for old FAT12 and FAT16 file systems.

Serial Number. In the DOS partitioning scheme, every hard disk and every partition has a 32-bit serial number represented by an 8-figure hexadecimal value. It is stored in the MBR and its value is assigned when the MBR sector is initialized by Microsoft standard disk managing tools, such as Windows Disk Administrator and the FDISK utility.

In fact, a hard disk's serial number is not important for most operating systems and software. It is known that Windows NT, 2000 and XP store its value in the database of assigned drive letters.

A partition's serial number is stored in its boot sector (in FAT16, FAT32 and NFTS file systems). Its value is assigned when the partition is formatted. It does not play an important role for most operating systems and software as well.