



PARAGON

# Hard Disk Manager

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 VERSION 16

## User Manual

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## Product Overview

Hard Disk Manager 16 is an integrated set of powerful tools that is specially designed to tackle most of the problems you might face while using PC. Its functionality covers all aspects of a computer life cycle beginning from carrying out all the necessary partitioning operations to install the system from scratch and providing its data reliable protection to secure utilization of an outdated hard disk.

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

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## Getting Started

### Product Components

- **Windows installation package** for regular system and data protection, drive partitioning, OS migration, and other operations. It's the main component of the product.
- **WinPE bootable environment** for emergency scenarios. You can prepare it on a USB thumb drive or in an ISO file with the program's wizard (highly recommended). Additionally to the Windows wizards and dialogs, this media includes several more utilities that help you add missing hardware drivers, set up network environment, and fix OS boot problems.

### System Requirements

#### For the Windows installation package

- Windows 7 SP1 and later. Please note that the list of supported Windows versions may vary for your product.
- Opened ports in Firewall: inbound and outbound 80, 443



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

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#### For the WinPE bootable environment

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

### Additional requirements



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

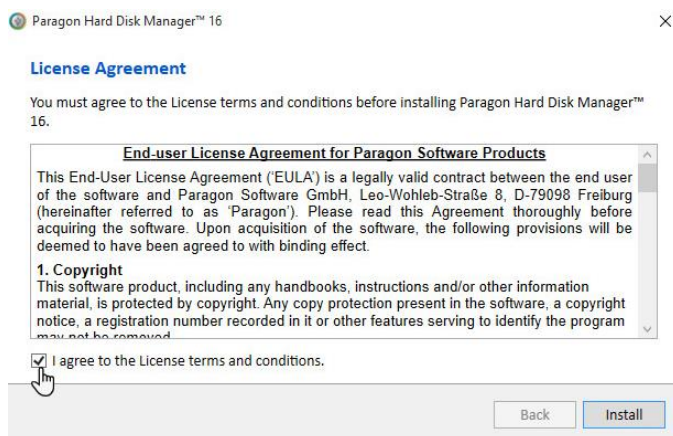
## Installation

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



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

1. Click on the supplied setup file to initiate the installation. First your system will be checked for the presence of Visual Studio C++ 2015 Redistributable and if not found, it will be installed automatically (comes with the installation package). **Note!** Before installing this library in Windows 8.1 or Windows Server 2012 R2, the following OS updates should be present: KB2919442, KB2919355.
2. Then your system will be checked for the presence of Microsoft .NET 4.0 or later and if not found, it will be downloaded from Microsoft's website and then installed.
3. The Welcome page will inform that the application is being installed. Click **Next** to continue.
4. 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.

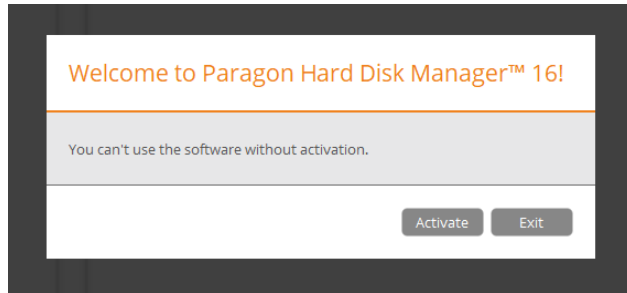


5. The final page reports the end of the setup process. Click **Finish** to complete the wizard.

## First Start

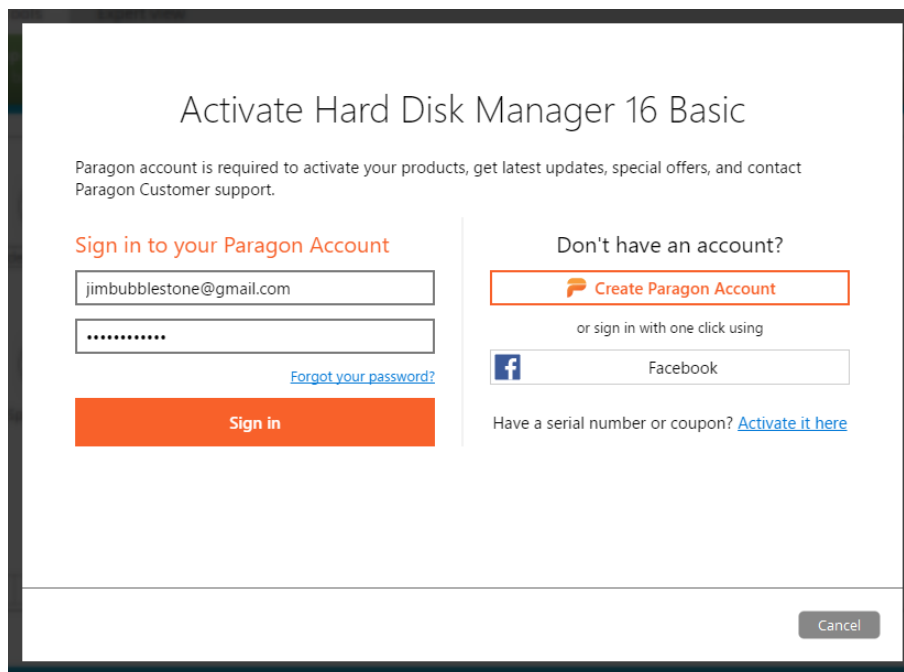
### Activating Free Functions

1. After the installation you can see a program icon on the Windows desktop. Double click it to launch.
2. Once started, you will see an activation dialog. Hard Disk Manager is a commercially distributed product that includes basic drive partitioning and disaster recovery features that you can use completely for free after the activation over the Internet. Click **Activate** to proceed.



Depending on the product version, you may also have a 30-day period to try free basic drive partitioning and disaster recovery features.

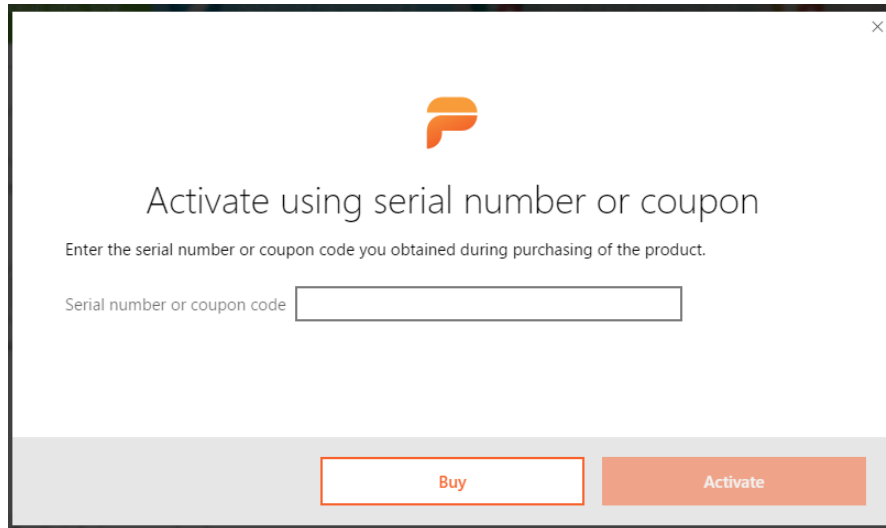
3. In the opened dialog enter an email and password of your Paragon's account, then click **Sign in**. If you don't have an account yet, please create it by clicking the corresponding option. Alternatively, you can sign in with your Facebook account.



4. The product activation completes automatically after signing in to your account.

### *Activating Paid Functions*

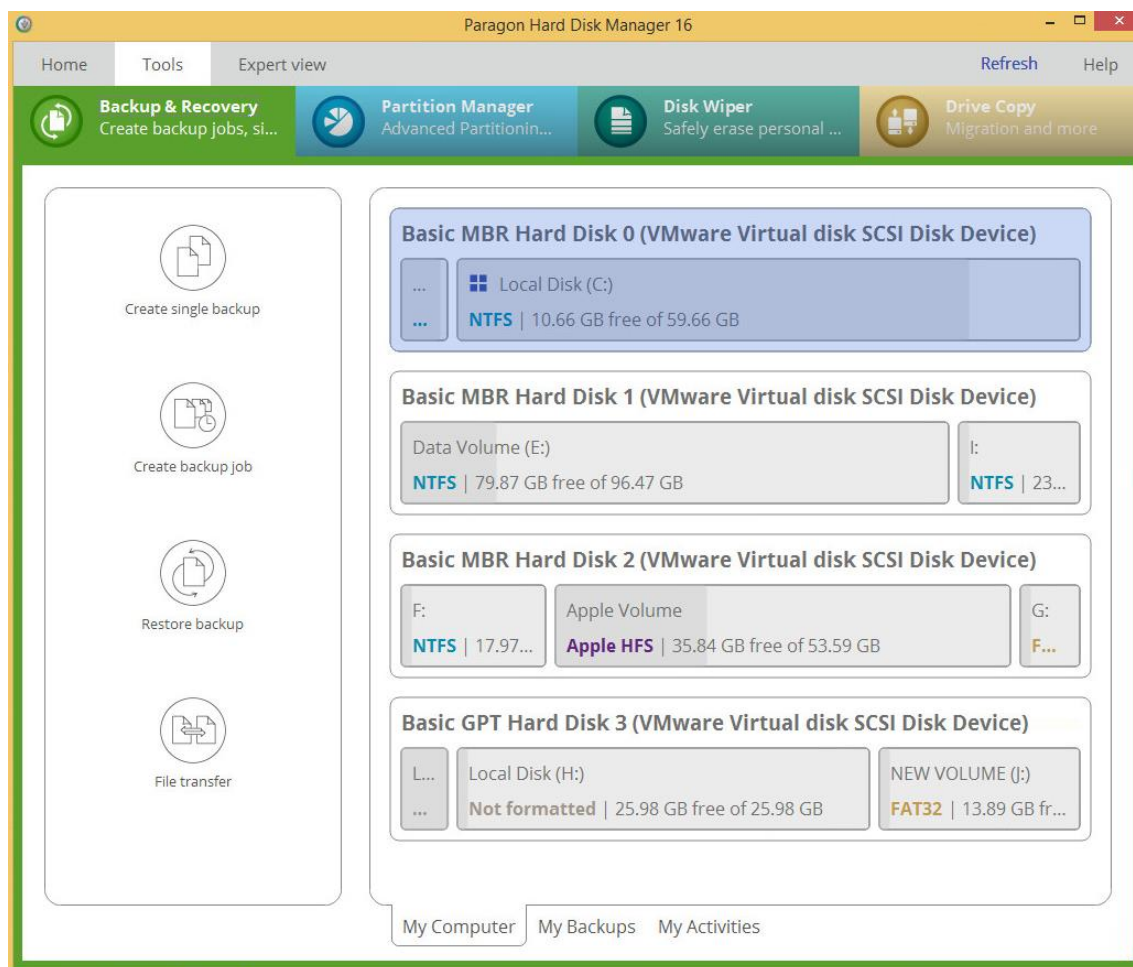
1. Click on a locked product feature or a functionality scope, then click **Buy**. You can also buy product features in your MyParagon Account.



2. Enter your serial number, then click **Activate**. This info will be sent to our activation server to complete the procedure.

### Using the Product

After the activation you will get access to the program interface. You will be prompted to take a brief product tour and build recovery media.

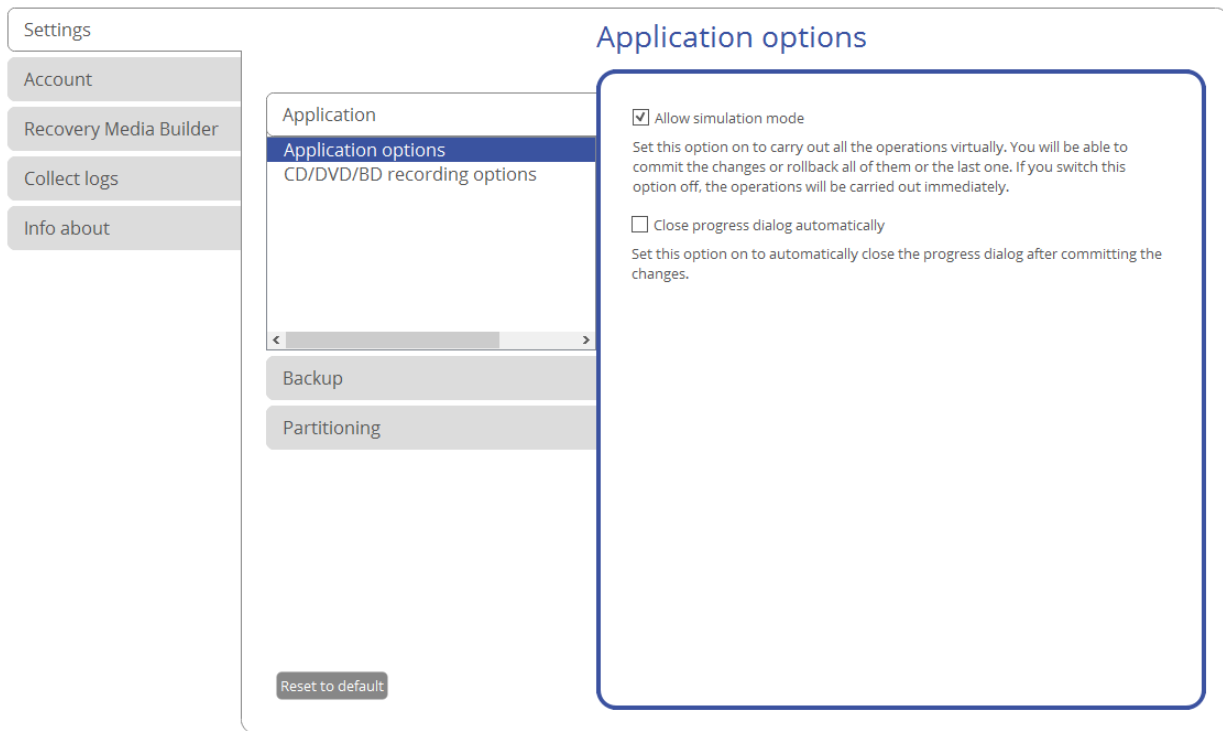


The upper area of the main window contains several tabs: **Home**, **Tools** and **Expert view**.

### Home

Use this tab to change the program settings, manage your account, build bootable recovery media, collect program logs, or go to Paragon's website to download a free update, register the product, visit Paragon's Knowledge Base, etc.

## Home

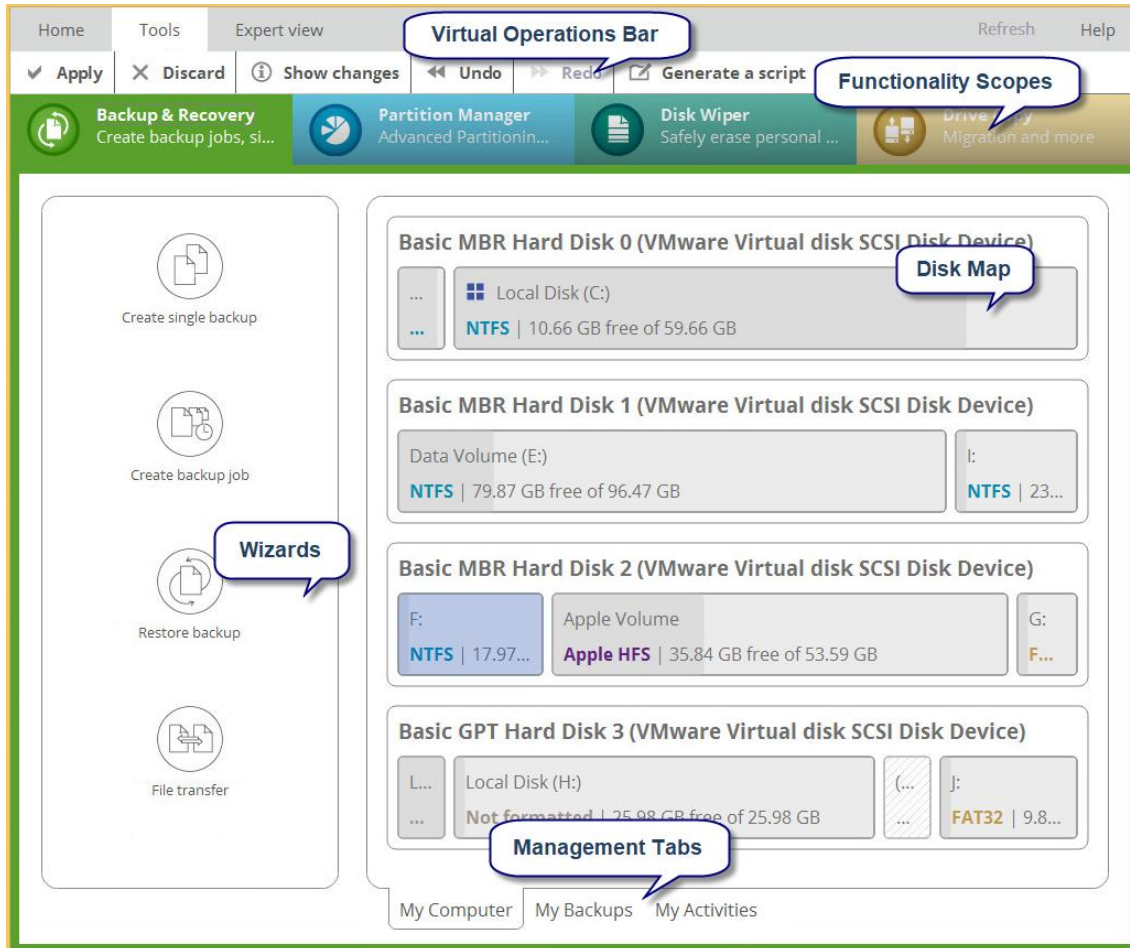


For more details, please consult the following chapters:

- [Changing Program Settings](#)
- [Managing Account](#)
- [Building Recovery Media](#)
- [Troubleshooting](#)

### Tools

It is displayed [each time you launch the program](#). Use this tab to see the layout of system storage devices, open program wizards and dialogs, monitor backup activities and some other actions.



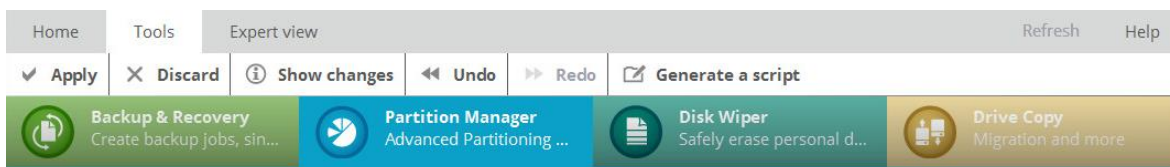
### Functionality Scopes

For your convenience, the product functions are distributed among four groups. For example, partitions become resizable and can be moved directly on the Disk Map only when you are in **Partition Manager**, while 'My Backups' tab appears in **Backup & Recovery**. If you'd like everything to be available in one view, just go to [Expert view](#).

### Virtual Operations Bar

By default, the program does not accomplish operations that may destroy the on-disk data (format, delete, restore, etc.) immediately, but places them on a special list (the so-called simulation mode). First it helps to avoid possible mistakes as you should confirm all provided changes. Second it saves your time and effort when executing several operations, as you don't need to wait for each operation to physically complete before proceeding to the next operation.

A corresponding bar appears in the upper area after you accomplish a potentially dangerous operation.



- **Apply.** Click to physically execute pending changes.
- **Discard.** Click to cancel all pending changes.
- **Show changes.** Click to see and manage pending changes.

## Operations

Operations queue

Old disk layout

New disk layout

Formatting volume (F:) New Volume as Apple HFS...

Undo Redo

Apply Close

Select **Old disk layout** to see your disks before accomplishing pending changes.

## Operations

Operations queue

Old disk layout

New disk layout

Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)

Sys... Local Disk (C:) NTFS | 71.96 GB free of 99.51 GB

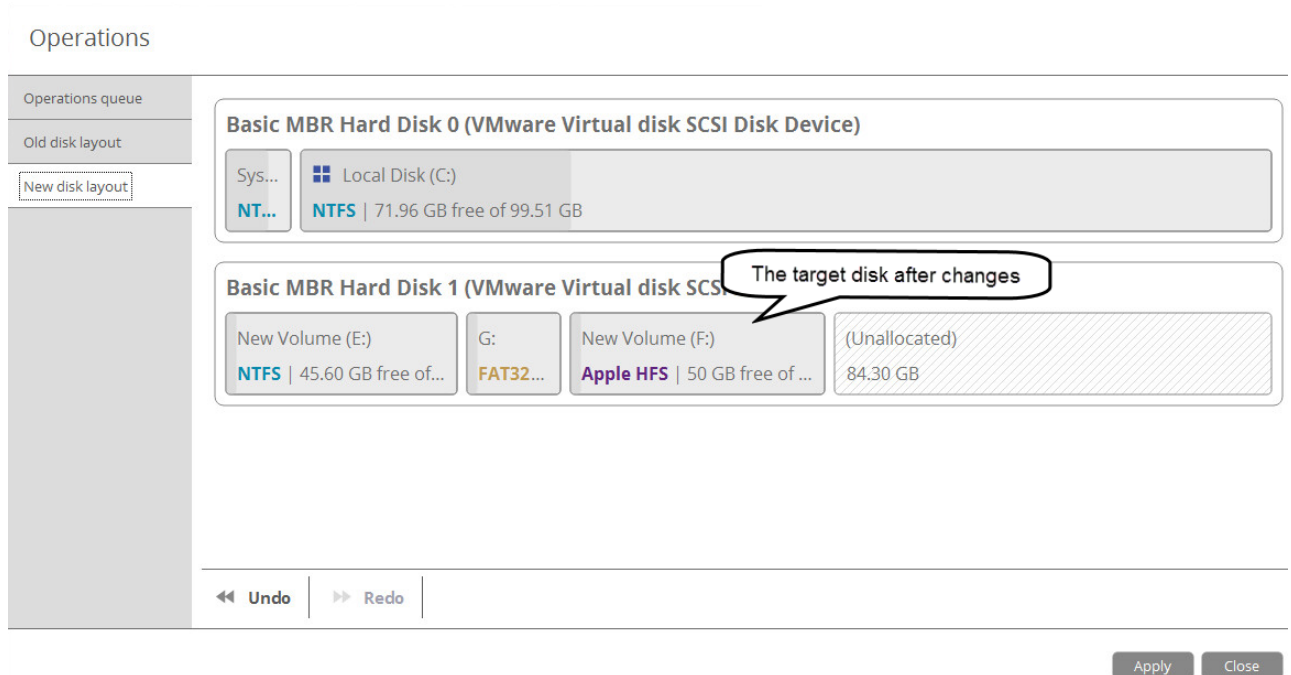
Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)

New Volume (E:) NTFS | 45.60 GB free of... G: FAT32... New Volume (F:) NTFS | 49.91 GB free of 5... (Unallocated) 84.30 GB

The target disk before changes

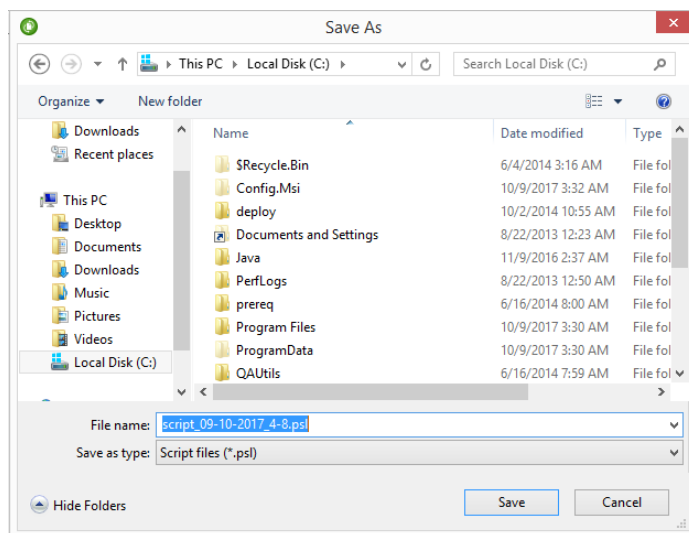
Apply Close

Select **New disk layout** to see your disks after accomplishing pending changes. Use the arrow buttons below to see how the target disk layout changes after each operation.



- **Undo.** Click to cancel the last pending operation.
- **Redo.** Click to cancel the last undo pending operation.
- **Generate script.** Generate a script out of all pending changes. A script may describe one or several operations with macro-language commands. The program installation package includes an interpreter utility "hdmengine\_scriptapp.exe" that allows executing any set of operations automatically in the unattended mode. For more details, please consult [Using the Command Prompt](#).

If necessary, you can change the default location and filename for the created script file.



To learn more about scripts, please consult the Paragon Scripting Language manual.

## Disk Map

The Disk Map displays the layout of storage devices. Each device is represented with a rectangle bar that contains small-sized bars, which represent partitions or logical disks. By looking at the size of the bar's shaded area it is possible to estimate the used disk space.

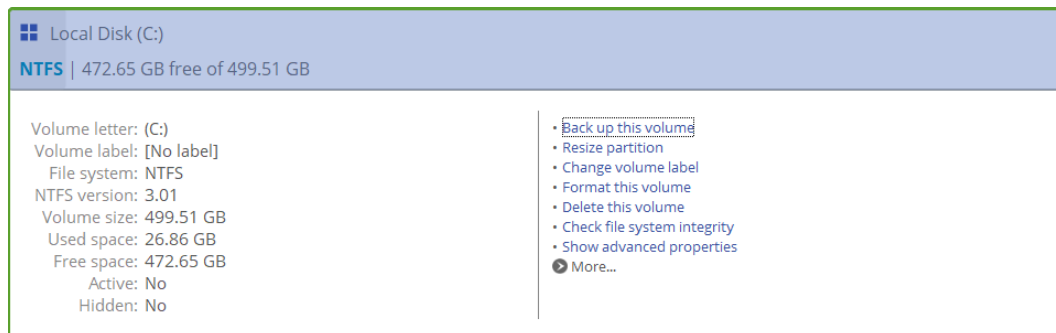
Large-sized bars display the following information about storage devices:

- Type (physical, virtual),
- Used partitioning scheme (MBR or GPT),
- Total capacity.

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

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

Left click a disk, volume, or block of free space to call a context-sensitive menu with detailed information on the selected object and a list of available operations.



For more details, please consult the following chapters:

- [Protecting System and Data](#)
- [Managing Partitions and Disks](#)
- [Erasing Data](#)
- [Copying Data](#)

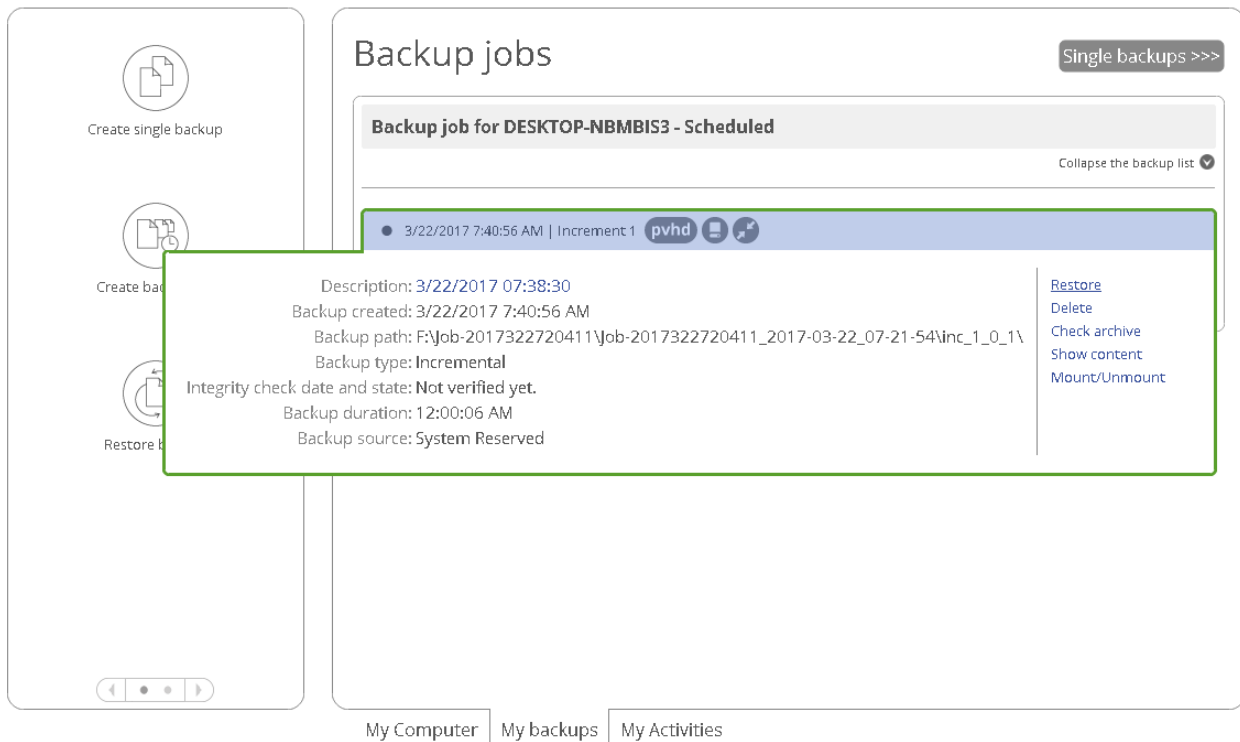
## Wizards

Wizards are also grouped by functionality scopes. If the program window is relatively small, the wizards get into several tabs. Use the arrow buttons to switch between them. In [Expert view](#) you can choose what wizards to display and to hide.

## Management Tabs

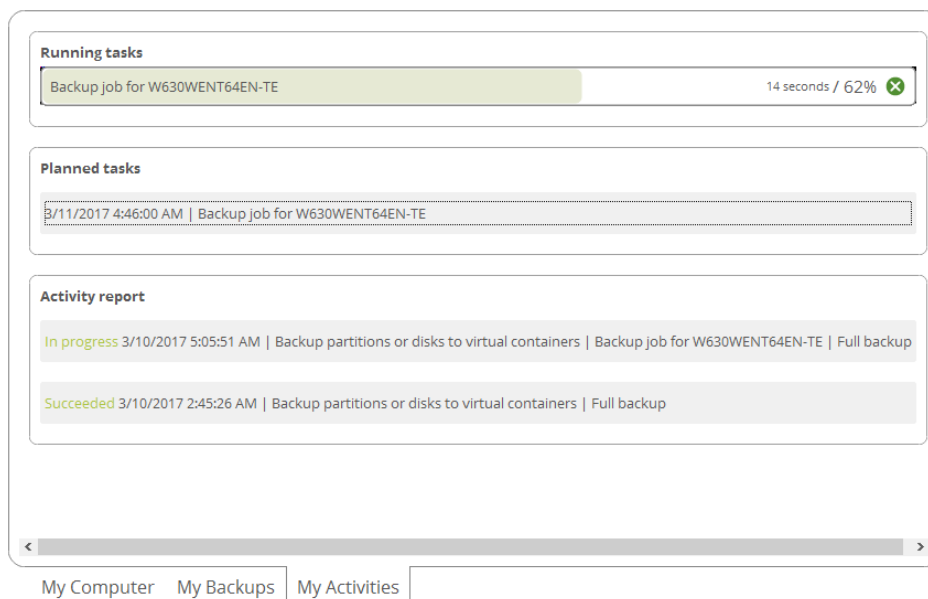
- Select **My Computer** (opened by default) to see the layout of storage devices. This tab is available in all four functionality scopes.
- Select **My Backups > Single backups>>>** to see all configured one-shot backup tasks or **My Backups > Backup jobs>>>** to see configured regular backup routines. Left click a backup image to call a context-sensitive menu with detailed information on the selected object and a list of available operations. Please note that this tab is only available in **Backup & Recovery** scope or [Expert view](#).





For more details, please consult the following chapters:

- [Restoring Individual Files and Folders](#)
- [Restoring an Entire Disk or Separate Volumes](#)
- [Checking Backup Integrity](#)
- [Mounting a Backup Image](#)
- Select **My Activities** to see completed, scheduled and currently executed operations and their statuses. Please note that this tab is only available in **Backup & Recovery** scope.



For any scheduled backup job you can call a context-sensitive menu with detailed information on the selected object and a list of available operations. For more details, please consult [Managing Backup Jobs](#).

**Planned tasks**

3/20/2017 11:46:00 PM | Backup job for DESKTOP-NBMBIS3

Last backup run: **Not run yet**

Backup type: Create full backup every time.

Retention: Keep at least 1 backups

Backup path: C:\Job-20173192346615\

When: At 11:46:00 PM every day, starting on 3/19/2017

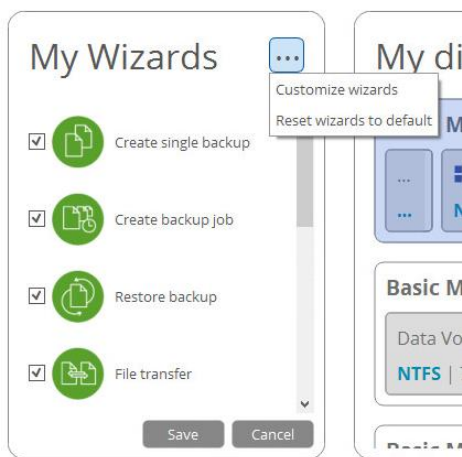
Backup source: System Reserved

Description: Backup job created on 3/19/2017 11:47:03 PM for DESKTOP-NBMBIS3

[Edit Job](#)  
[Delete Job](#)  
[Deactivate](#)  
[Start now](#)

### Expert view

Use this tab to have all product functions in one view. This mode also allows you to adjust the working environment by hiding wizards you don't need.

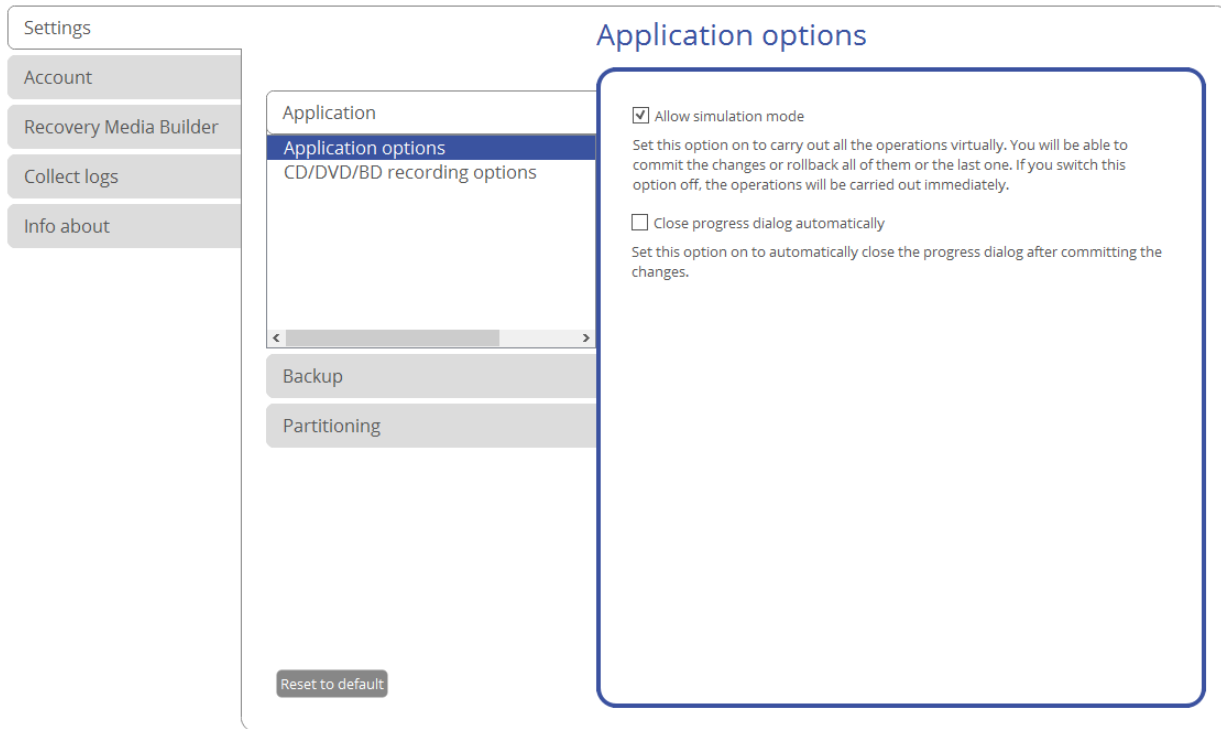


## Changing Program Settings

Select **Home > Settings** to access the program settings. All settings are grouped into several sections, which functions are described in the following paragraphs. By selecting a section from the list, you can open a set of options.

### Application Section

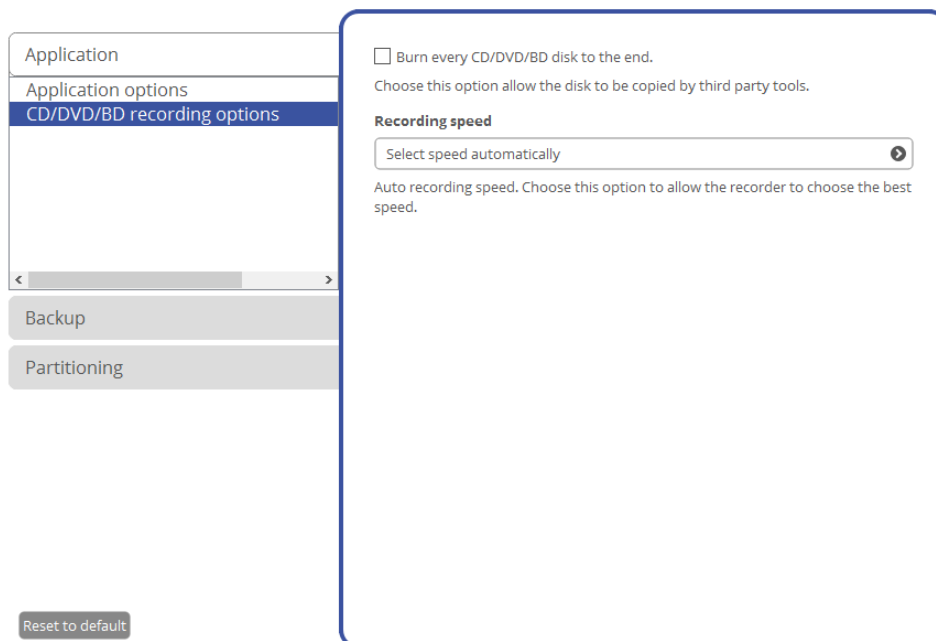
#### Simulation Mode Options



- **Allow simulation mode** (enabled by default). The simulation mode is an effective way of protection from any troubles, since no potentially dangerous operation is executed until confirmation, thus giving you a second chance to weigh all pros and cons of this or that particular operation. For more details, please consult [Tools](#).
- **Close progress dialog automatically.** Mark the checkbox to automatically close the progress dialog after accomplishing operations.

### CD/DVD/BD Recording Options

#### CD/DVD/BD recording options



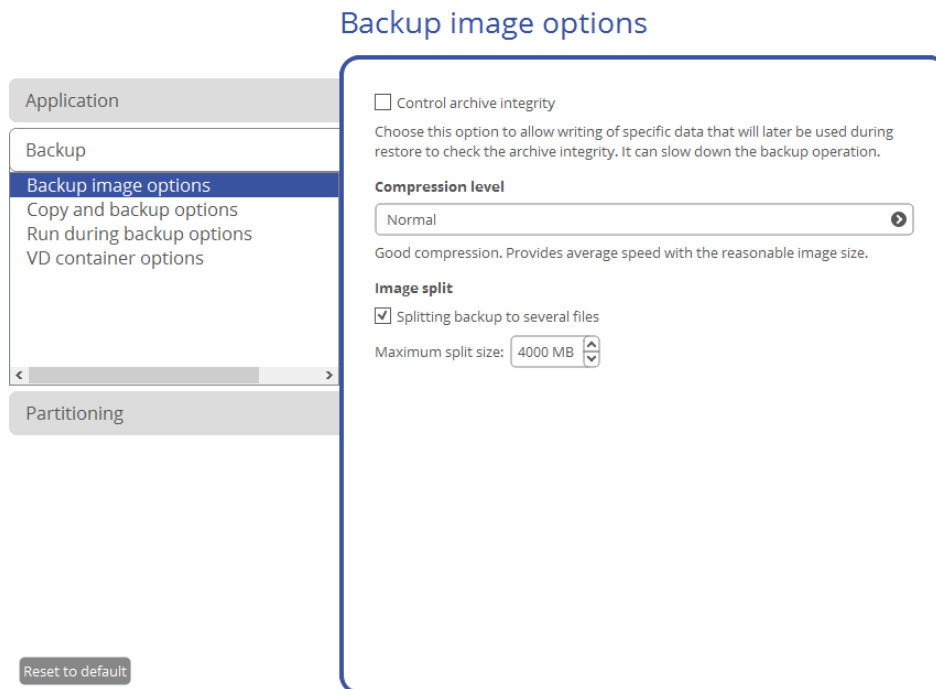
- **Burn every CD/DVD/BD to the end.** By default, the program does not create ISO 9660 compliant burning sessions, as it processes data on-the-fly and can only estimate the resulted session size. That's why no third party tool will get access to the recorded data. To tackle the issue, mark the checkbox to make the program

create a standard Disk-at-Once session. It may slow down the burning process, as every CD/DVD/BD will be recorded up to the end, no matter how much actual information to contain.

- **Recording speed.** Define how fast compact discs should be recorded (minimum, normal and maximum). Besides there is automatic mode when the program sets the most appropriate speed for each disc.

## Backup Section

### Backup Image Options



- **Control archive integrity** (enabled by default). Use this option to make sure all backup images created with the program are 100 percent flawless. If you decided not to control the archive integrity, the backup operation would take about 3-5% less time.
- **Compression level.** Select the default compression level for all created backup images from the pull-down list.
- **Image split.** By default, every backup image will be split to files of 4GB. This can help to avoid problems caused by a maximum file size limitation of your file system (e.g. 4GB for FAT32). Use the spinner control to set another size or disable this option if necessary.

### Copy and Backup Options

## Copy and backup options

Application

Backup

Backup image options

**Copy and backup options**

Run during backup options

VD container options

< >

Partitioning

Reset to default

☐ HDD raw processing

Copy an entire hard disk sector by sector without taking into account its partition structure.

☐ Partition raw processing

Copy/Backup each partition sector by sector. All sectors will be processed one by one (even unused sectors). Requires more time to complete the operation.

☒ Skip archive files stored in archive library.

Choose this option to skip archive files stored in archive library. This will reduce operation time and backup image size.

☒ Automatic BCD update

Add boot entry for target partition to BCD hive on copy\restore source partition.

- **HDD raw processing.** Mark the checkbox to 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. If you enable this option, the operation will take more time to complete.
- **Partition raw processing.** Mark the checkbox to back up a partition in the sector-by-sector mode to successfully process unknown file systems. If you enable this option for processing supported file systems, the operation will take more time to complete.
- **Skip archive files stored in archive library.** By default, backup images registered in the archive database will be skipped from processing, thus reducing the operation time and the resulted backup size.
- **Automatic BCD Update.** If necessary, unmark the checkbox to suppress automatic update of BCD (Boot Configuration Data) after copy/restore operations.

### Run during Backup Options

## Run during backup options

Application

Backup

Backup image options

Copy and backup options

**Run during backup options**

VD container options

Reset to default

**Execute at the beginning of the backup process before taking a snapshot**

Enter a file name here

**Execute after taking a snapshot**

Enter a file name here

**Execute after finishing the backup process**

Enter a file name here

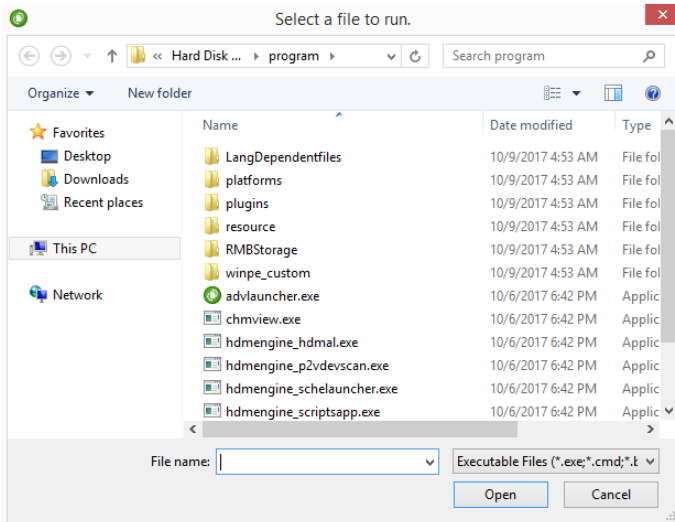
For backup operations in the Paragon Hot Processing mode you have a possibility to run external programs and commands at different stages of the backup process. The key point to link such execution to is a short period of time when a snapshot is taken. (Snapshot is a map of used blocks; the system is totally frozen for writing when it is taken).

In this section you can specify external applications to execute at various phases of the backup process in order to obtain consistent backup images of systems with high availability requirements (MS SQL, MS Exchange, etc.). The point is to provide a coherent state of all open files and databases involved in a backup, taking into account that applications may still keep writing to disks.

Actually a backup process consists of two phases: the preparation phase (snapshot) and the data-copying phase. There are three points of the backup when external commands/programs can be launched:

- **Execute at the beginning of the backup process before taking a snapshot.** Specify an executable file that will help you to prepare running applications for taking a snapshot. It may contain specific commands/programs to delete unnecessary files, suspend services, flush transactions or caches, etc. Everything depends on the used applications.
- **Execute after taking a snapshot.** Specify an executable file that will run just after taking a snapshot. It may contain specific commands/programs, e.g. to resume the previously suspended services, etc. Everything depends on the used applications.
- **Execute after finishing the backup process.** Specify an executable file that will run after the backup process has been accomplished. It may include commands/ programs that will move the backup image to a particular location, etc.

By clicking the **Browse** button you can get into a browser-like window to choose an executable file.



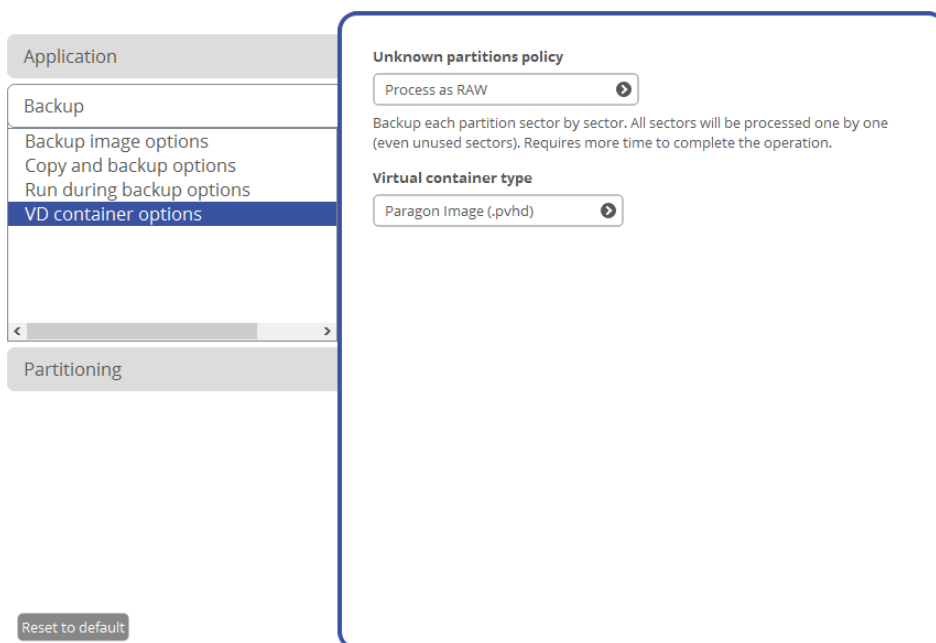
The program supports three types of executable files (.exe, .bat, .cmd). It's up to you to write batch files to safely prepare applications for backup. There are certain general requirements for that:

- All programs and commands must execute sequentially and finish before the .bat file completes its work.
- It is recommended to use external commands/programs in the following format - **Start/wait program.exe**. The wait option will help to start an application and wait until it completes its work. This guarantees all included commands/programs complete their execution before the batch file does.

You're allowed to set parameters for an executable file directly from the line. However, if the file path contains word gaps it is necessary to enclose it in quotes in order to make the program distinguish between the path and the used parameters.

### VD Container Options

#### VD container options

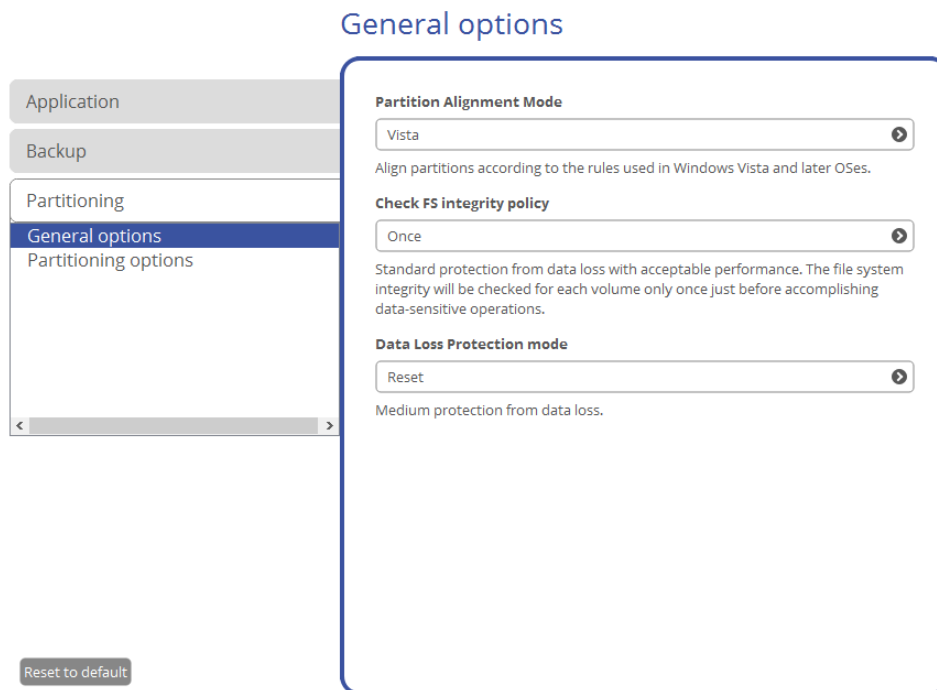


- **Unknown partitions policy.** Here you can define behavior for processing unknown or unformatted partitions (skip from backup, process in the sector-by-sector mode, or ask the user each time this type of partition has been found).
- **Virtual container type.** By default, the program is configured to back up to pVHD (Paragon Virtual Hard Drive). Use this option to switch the resulted virtual container to VHD, VHDX, or VMDK. Please note that the

use of pVHD enables to get full backup images several times smaller than the original objects, while incremental updates – dozens of times smaller when comparing to VHD, VHDX or VMDK, which have some fixed size of blocks, not dynamic. Besides encryption and password protection are only available for pVHD. However, if you're having a VMware or Microsoft hypervisor at your disposal and are planning to do instant virtualization, please make sure the used backup format matches your hypervisor.

## Partitioning Section

### General Options

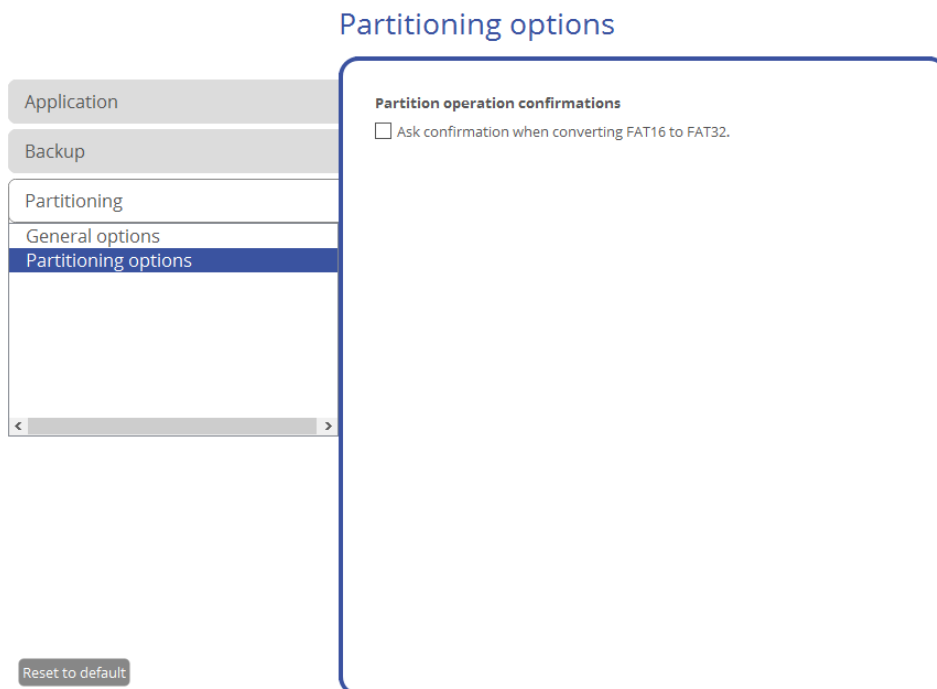


- **Partition Alignment Mode.** There are three options you can choose from:
  - **Legacy.** DOS and Windows operating systems before Vista required that partitions had to be aligned to the “disk cylinder” or 63 sectors to address and access sectors correctly. It was OK until 4K hard drives came into scene. When partitions are aligned this way on a 4K disk, each logical cluster is linked to two physical 4K clusters, which leads to double read-write operations.
  - **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 disks.
  - **Inheritance.** Select the option to disable the automatic partition alignment.
- **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.

## Partitioning Options



- **Ask 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 to accomplish the operation. For instance, you are going to transfer your software environment to a larger hard disk with the proportional resize of existing partitions. As a result you may 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 disk/partition or restore disk/partition operation involving an extra upsizing.

## Managing Account

1. Select **Home > Account**. In the opened dialog enter an email and password of your Paragon's account, then click **Sign in**. If you don't have an account yet, please create it by clicking the corresponding option. Alternatively, you can sign in with your Facebook account.

Settings
Account
Recovery Media Builder
Collect logs
Info about

Please sign in to your account

Sign in to your Paragon Account

[Forgot your password?](#)

Sign in

Don't have an account?

Create Paragon Account

or sign in with one click using

Facebook

Have a serial number or coupon? [Activate it here](#)

- If a success, you can see a list of purchased product components. Click **Activate on this computer** to enable paid features on the computer.

My products
My subscriptions
Paragon Store
[Sign off](#) > JimBubblestone

Hard Disk Manager 16

Activate on this computer

Purchased: Oct 18, 2017

Drive Copy advanced
[Show details >](#)

Partition Manager advanced
[Show details >](#)

Backup & Recovery advanced
[Show details >](#)

Disk Wiper advanced
[Show details >](#)

Hard Disk Manager 16 Basic

Backup & Recovery Free

Done

- Use **Show details >** opposite a product component to see the current activation status.

Drive Copy advanced

Activations 1 of 3 licenses are activated

	Activation status	GUID
1	Oct 19, 2017	00329-10438-01420-AA857
2	Not activated	
3	Not activated	

## Building Recovery Media

The program includes a user-friendly wizard that will guide you through the process of creating a WinPE-based recovery media on a USB thumb drive or in an ISO file to later burn it to CD/DVD. For advanced users, there are

capabilities to add drivers for specific hardware devices, configure network settings, and map network shares in the process.

1. Select **Home** > **Recovery Media Builder**.
2. The welcome page introduces the wizard's functionality. Besides you can see two options here:

## Home



- **Advanced mode.** Please mark this option if you'd like the future bootable media to have pre-configured network settings, mapped network resources, or injected drivers for specific storage controllers or network cards.
- **Use ADK/WAIK.** Recovery Media Builder doesn't require Windows Assessment and Deployment Kit (ADK) or Automated Installation Kit (WAIK) to be installed in the system to build a WinPE-based environment, as it can directly use WIM image inside the operating system. However, some system builders remove this image from preinstalled Windows OS. If this is your case, mark the option to use **ADK/WAIK**. You will also need it to create an ISO image of the WinPE environment.



WAIK/ADK is a Microsoft's proprietary tool and can be obtained from its [Download Center](#) for free. Please note that you need a genuine Windows installation to be able to download this tool. Moreover you will need to download a version, which is suitable for your Windows OS – Recovery Media Builder automatically detects your system and offers [the required download link](#).

3. Click on **Removable flash media**, then select a thumb drive of at least 512MB in size from the list of flash memory devices available in the system at the moment (if several). If you'd like to create an ISO image of the WinPE environment, please use the corresponding option.

### Recovery media format


☐ ISO-image

Please specify location of an image file:

C:\Users\Administrator\Documents\vm\_17\_03\_2017.iso Browse...

☒ Removable flash media

Please select a USB-flash drive:

 USB drive 4, JetFlash Transcend 2GB (1.9 GB)

- If selecting a thumb drive, the wizard will warn you that all data on it will be deleted.


#### Additional steps of the advanced mode

- Inject additional drivers for specific storage controllers or network cards. First click on the required link.


#### Recovery Media Builder

### Select device drivers to add to the recovery environment

Please select INF-files of device drivers:

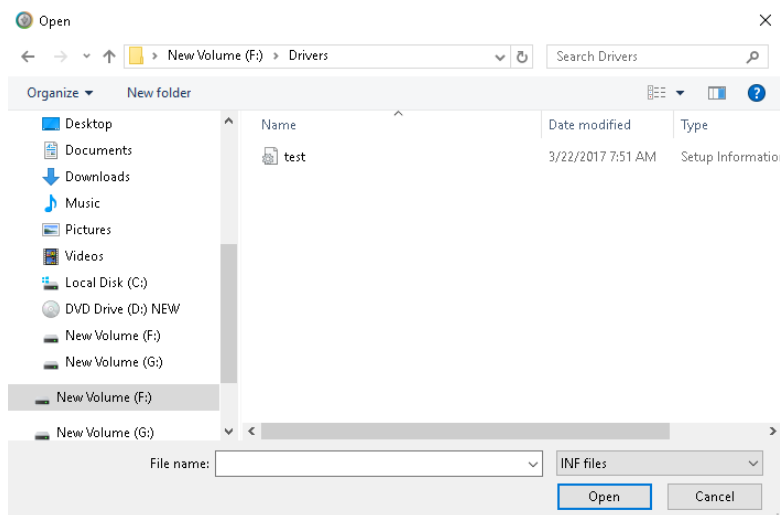
 **Storage device drivers (0)**

[Add storage device drivers](#)

 **Network device drivers (0)**

[Add network device drivers](#)

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.



If successfully injected, you can see the specified driver on the list. If you'd like to add another driver, please repeat the procedure.

## Recovery Media Builder

### Select device drivers to add to the recovery environment

Please select INF-files of device drivers:

<b>Storage device drivers (1)</b>	
<a href="#">Add storage device drivers</a>	
F:\Drivers\test.INF	<a href="#">Remove</a>
<b>Network device drivers (0)</b>	
<a href="#">Add network device drivers</a>	

Recovery Media Builder can build 32-bit WinPE media configured to the uEFI mode, which is the only type compatible with Windows pads running on Intel Atom.



By default, WinPE environment doesn't support touch screens, thus Windows pads can only be managed by mouse and/or keyboard. You can add required drivers however through our driver injector.

- Set up a network connection if needed. You've got several options to choose from:

## Recovery Media Builder

### Network configuration

☒ Connect to network automatically after the startup

☐ Detect network interface automatically

Network adapter to use:

☒ Obtain an IP-address from a DHCP server

☐ Specify an address

IP-address:

Subnet mask:

DNS address:

☐ Connect to network manually after the startup

☐ Skip network adjustment

- **Connect to network automatically...** Specify the following parameters if you'd like to have an active network connection once the bootable environment has been started up:
  - **A network adapter to use.** Select a network adapter (if several in the system) to be used for the network connection.
  - **IP address settings.** Choose whether to get an IP address automatically from a DHCP server or set it manually.
- **Connect to network manually...** If selecting this option you will be prompted to configure network properties each time the computer has been started up from the bootable media.
- **Skip network adjustment.** Please use this option if you don't need network support on the bootable media.

7. Map a network share if needed. You've got several options to choose from:

### Recovery Media Builder

#### Mount a network share

☒ Mount network share automatically after boot

Share:  [Browse...](#)

Login:

Password:

☐ Mount network share manually after boot

☐ Don't mount network share

- **Mount a network share automatically...** Mark this option if you'd like to have a mapped network resource once the computer has been started up from the bootable media. Manually type in a path to the required network share or click **Browse** to find it, then provide user credentials if necessary.



With no pre-defined user credentials your network share will be attempted to map under the Guest account.

Please use back slashes for WinPE-based media, like \\server\share, while for Linux – forward slashes, like //server/share.

- **Mount a network share manually...** If selecting this option you will be prompted to map a network resource each time the computer has been started up from the bootable media.
- **Don't mount a network share.** Please use this option if you don't need to map network resources.

#### Additional steps if using WAIK/ADK

8. If you install WAIK or ADK by their default locations, the wizard automatically detects it. Otherwise, you will need to browse for the required folder. If you haven't installed one of these tools yet, click **Download WAIK/ADK** to get them directly from the Microsoft website.

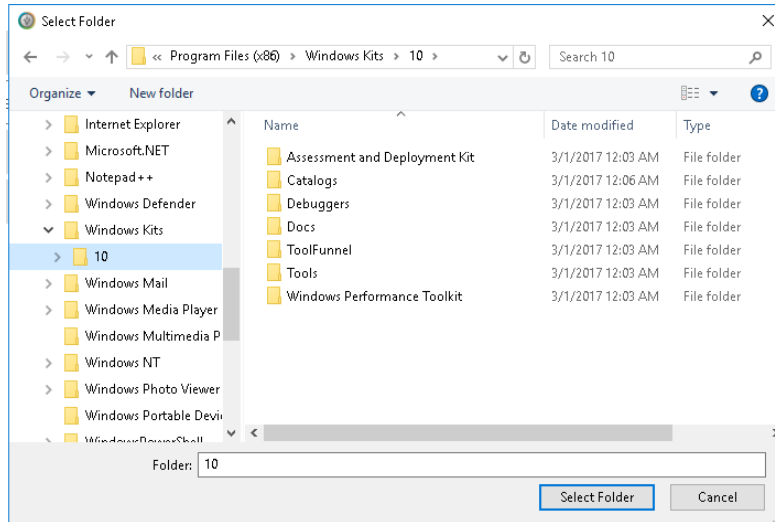
#### Please specify location of WAIK/ADK

Path to installed WAIK/ADK:

[Browse...](#)

[Download WAIK/ADK](#)

Manually browsing for Windows OS kits:




---

**The wizard won't continue until you install WAIK or ADK.**



**If running RMB under Windows 7, 8, 8.1, Server 2008 R2, Server 2012 R1/R2, please use ADK 8.1.**

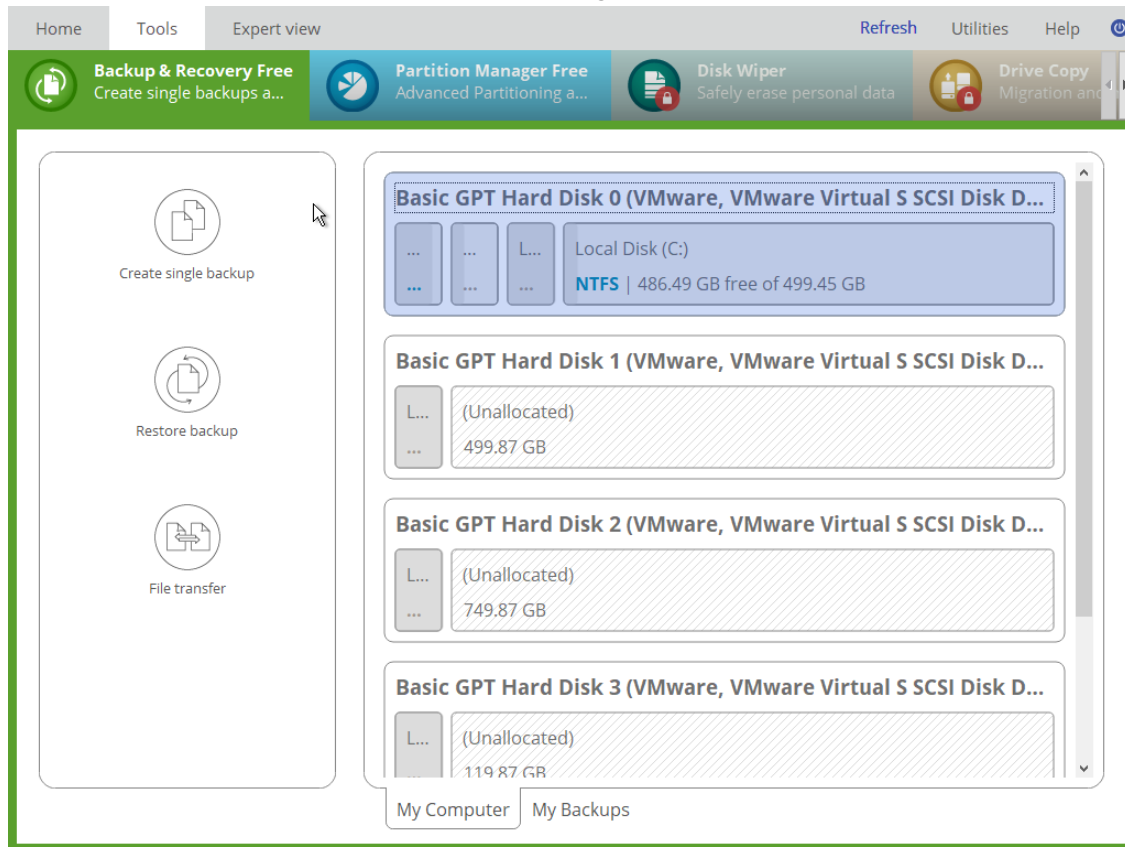
---

9. When done with all parameters, please confirm the operation to proceed.

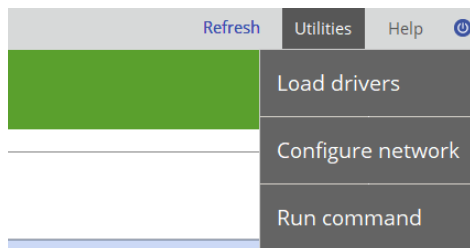
## Booting from Recovery Media

The recovery media helps to boot your PC to load in an existing backup, secure important data, or rectify booting errors when Windows OS fails to start up.

1. Start up the computer from the prepared recovery media. To automatically boot from it, you should configure the on-board BIOS to start up from CD/USB first.
2. Once loaded, you will see the already familiar program interface, so please consult **First Start** for more details.



3. Additionally to the Windows wizards and dialogs, the recovery media includes several more utilities.



For more details, please consult the following chapters:

- [Fixing Boot Problems](#)
- [Adding Specific Drivers](#)
- [Configuring Network](#)
- [Using the Command Prompt](#)

4. Select an operation to start. If you have questions on how to use the program, please refer to the embedded help system, you can find in the right top corner of the window.

## Protecting System and Data

### Backup Scenarios

#### Configuring a One-shot Backup Task

The Create Single Backup Wizard allows you to create a point-in-time full backup image of entire disks, individual volumes or files. Full copies of disks and partitions help to secure your software environment, including the operating system, applications and data. This way, in case of emergency you will be able to recover your system to a working state within several minutes. But what if you need to back up a specific file or folder? Partition-level backup will surely protect the files you want, but it will also back up plenty of data you don't need, eating up time and backup storage. To solve this problem, the program also includes the file-level backup capabilities to protect



the needed files like family pictures, favorite music, some project or document, or a financial report you're working on, while avoiding all the rest.

Backup data consistency at a specific point-in-time while OS or applications keep modifying data on disks is achieved by utilizing Microsoft Volume Shadow Copy Service that enables to quiesce a running machine, in other words to freeze its file system and to unlock files to be able to copy them to a backup location.

1. Open **Backup & Recovery** scope.
2. Select **Tools > Create single backup**, then click **Next** on the Welcome page of the wizard.
3. If necessary, edit the default backup name and description containing the current date and time.

Welcome	Name	Source	Target	Finish
Enter a backup name and description				
Backup name:				
<input type="text" value="Backup_20170908_0007"/>				
Description:				
<input type="text" value="Backup image created on 9/8/2017 12:07 AM"/>				

4. Initially the wizard prompts you to back up all available storage devices. If you don't need that, select the most suitable option on the left.

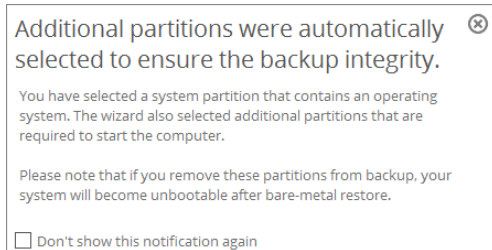
Welcome	Name	Source	Target	Finish
What do you want to back up?				
<div> <div> <div>Whole computer</div> <div>Disk / Partition</div> <div>File types</div> <div>Files and folders</div> </div> <div> <div>Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)</div> <div> <div>Sys...</div> <div>Local Disk (C:)</div> <div>NTFS   71.89 GB free of 99.51 GB</div> </div> </div> <div> <div>Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)</div> <div> <div>E:   NTFS   45.60 ...</div> <div>G:   FA...   (Unallocated) 134.30 GB</div> </div> </div> </div>				
<div>Selected objects: 28.02 GB</div> <div> <div>&lt; Back</div> <div>Next &gt;</div> <div>Cancel</div> </div>				

### Disk / Partition

Left click an object(s) you'd like to back up.

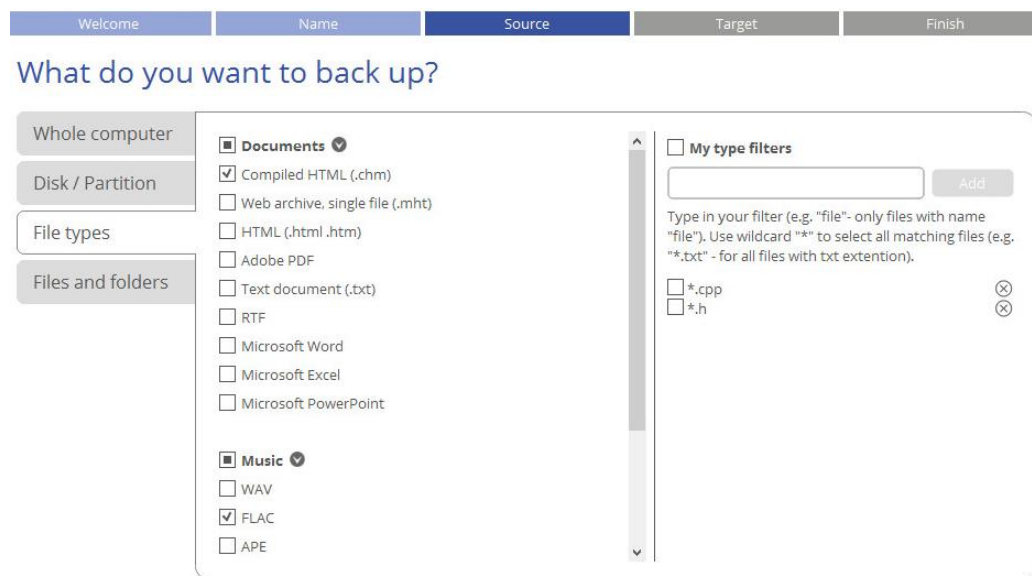
Whole computer	Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)
Disk / Partition	<div> <div>Sys...</div> <div>Local Disk (C:)</div> <div>NTFS   82.67 GB free of 99.51 GB</div> </div>
File types	Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)
Files and folders	<div> <div>(Unallocated) 30.00 GB</div> <div>New Volume (F:)</div> <div>NTFS   69.90 GB free of 70.00 GB</div> </div>

When selecting a volume that hosts Windows OS you may be warned that the wizard automatically selects another one that contains boot system files to ensure successful startup of the operating system after restore. Though it's not recommended, you can use the Ctrl key to deselect any volume you consider unnecessary.



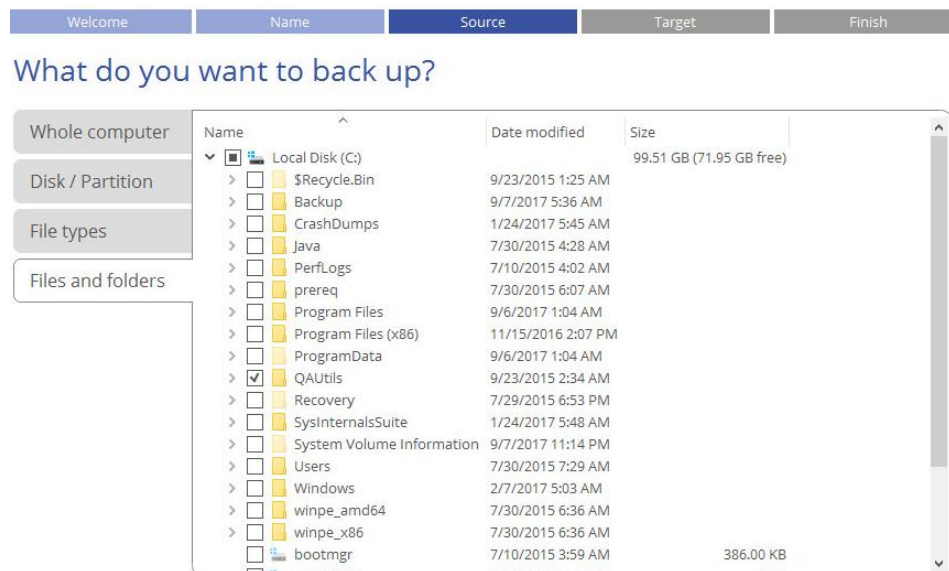
## Types of files

The wizard includes three predefined categories containing file masks for popular document, music, and picture formats. Either select an entire category(ies) or use the arrow icon to expand it and choose a certain file mask(s). If you don't find the required mask, add your own through the **My type filters** option.



## File and folders

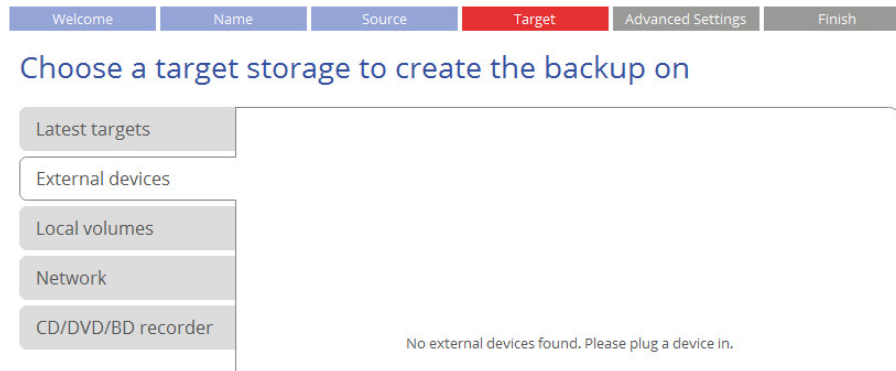
From a list of all partitions available in the system, mark a checkbox opposite a file, folder or even a whole partition to build up contents of the future backup image.



- Specify location of the resulted backup image.

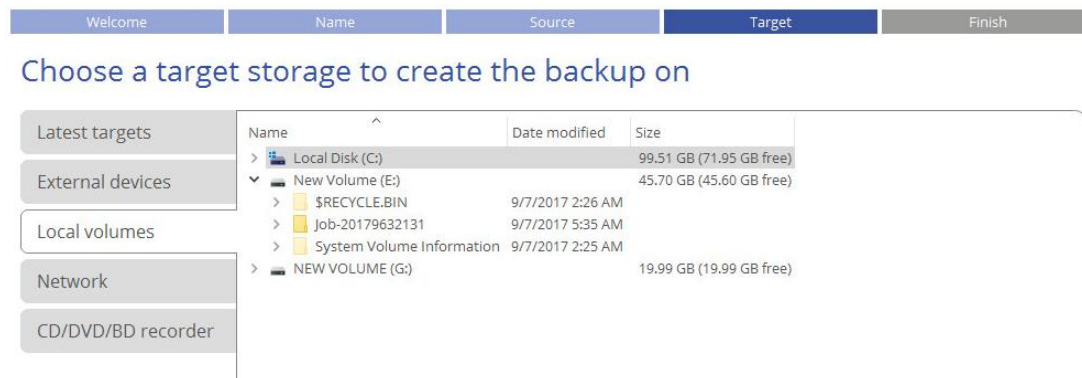
### External devices

If you'd like to save it on an externally connected storage (hard disk, thumb drive, etc.), select **External devices**, then choose it from the list. If it's not present, please make sure it's available in the system, then try again.



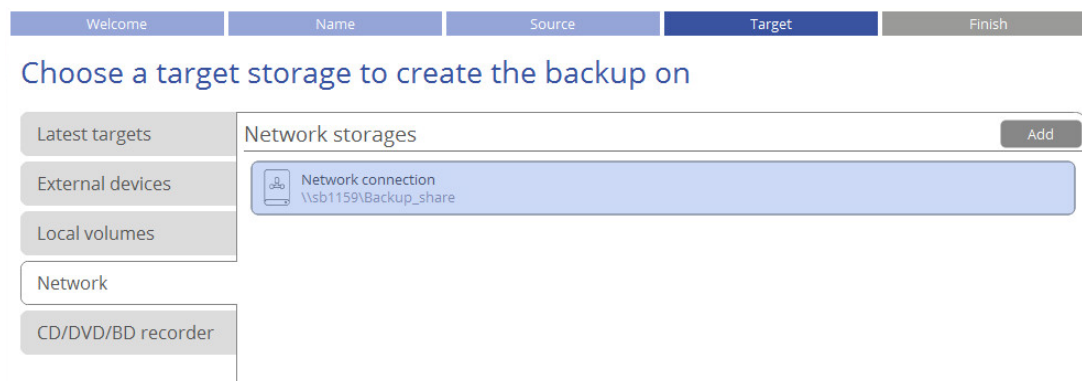
### Local volumes

If you want to save it locally, select **Local volumes**, then browse to the target folder.



### Network

If you're going to save it on a network share, select **Network > Add** to add a network share.



In the opened dialog edit the default connection name if necessary, then specify the required share by manually entering its location or through browsing the network, finally provide access credentials in the corresponding fields.

### New network storage

Connection name  
New Network connection

Connection path  
\\sb035\share Browse >>>

User name  
sb035domain\user

Password  
\*\*\*\*\*

Add Cancel

Once the connection is established, click on it to select and browse its contents. By using the corresponding options on the right you can edit or delete the connection.

Welcome | Name | Source | **Target** | Finish

### Choose a target storage to create the backup on

Latest targets

External devices

Local volumes

Network

CD/DVD/BD recorder

#### Network storages

Add

Name	Date modified	Size	Options:
Network connection \\sb1159\Backup_share			
<ul style="list-style-type: none"> <li>Job-20179735814</li> <li>New folder</li> <li>Storage</li> </ul>	<ul style="list-style-type: none"> <li>9/7/2017 4:03 ...</li> <li>9/7/2017 3:58 ...</li> <li>9/7/2017 3:58 ...</li> </ul>	645.30 GB (205.46 GB free)	Remove > Edit >

### CD/DVD/BD recorder

If you want to record it to CD/DVD/BD or create an ISO-image, select **CD/DVD/BD recorder**, then a recorder from the list of available devices.

Welcome | Name | Source | **Target** | Finish

### Choose a target storage to create the backup on

External devices





Local volumes

Network




**CD/DVD/BD recorder**

Name	Disc types
NECVMWare VMware IDE CDR10	CD-R/RW; DV...
Paragon CD Burner Emulator	CD-R/RW
Paragon DVD Burner Emulator	DVD+R/RW
Paragon DVD DL Burner Emulator	DVD+R/RW
Paragon BD Burner Emulator	BD-R/RE

- If necessary, modify the default backup settings. To make sure you've got a trustworthy fallback position, each backup image is verified for viability immediately after creation. Though it's not recommended, unmark the corresponding option to skip this step and make the backup process a bit faster.

Welcome	Name	Source	Target	Advanced Settings	Finish
<h2>Advanced Settings</h2> <p style="text-align: right;"><a href="#">Enable password protection</a></p> <p>Degree of compression</p> <p>Normal </p> <p><input checked="" type="checkbox"/> Maximum size for a backup file</p> <p>4000   Mb </p>					

- Review all parameters of the operation and modify them if necessary by going back to any of the required steps. Click **Finish** to start the backup process.

Welcome	Name	Source	Target	Finish
<h2>Finish the wizard</h2> <p>You have successfully completed the Create Single Backup Wizard. Please check the summary before starting the backup.</p> <div> <h3>Backup summary</h3> <div> Backup name: Backup_20170908_0007  Source: Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)  Target: E:\ </div> </div> <div>    </div>				

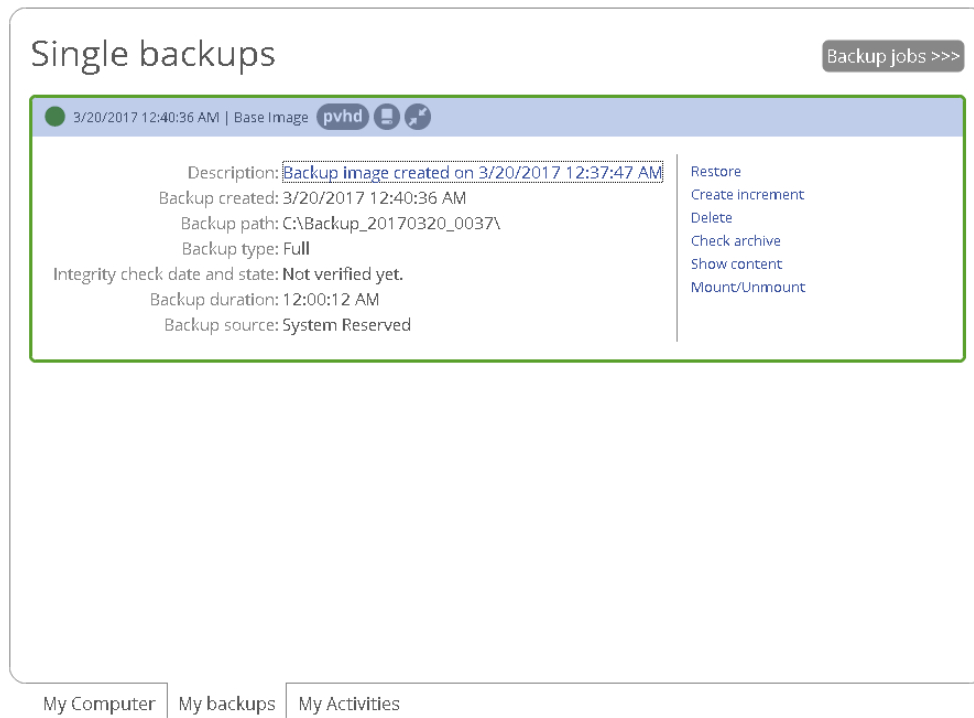
### Creating an Incremental Update

After you get the first full backup image, we recommend you to do incremental updates regularly to keep the backup data up-to-date. An incremental backup only includes data changed since the time of creating the latest image in a chain, so it doesn't include data duplicates, which minimizes the backup storage footprint. Besides, incremental imaging allows having different time stamps of one and the same data.



**If you need to regularly update backup data, you'd better use the Create Backup Job Wizard. For more details, please consult [Configuring a Regular Backup Routine](#).**

- Open **Backup & Recovery** scope.
- Select **My Backups > Single backups>>>** to see all configured one-shot backup tasks. Left click a backup image to call a context-sensitive menu, then **Create incremental**.



3. Change the default backup name, if necessary. Click **Create** to start the backup process.

Create incremental backup for "Base Image"?

Backup comment:

Incremental backup for Base Image, created on 3/20/2017 12:40:36 AM

Create

No

### Configuring a Regular Backup Routine

If you develop a specific project on a day-to-day basis and have to make a backup every evening so as not to lose the progress of your efforts, backup automation is a must. Besides, the backup automation enables to optimally utilize resources of your PC by scheduling backup tasks during off hours or whenever the computer has the least work-load to perform.

Paragon's technicians recommend you to configure regular backup jobs instead of one-short backup tasks to minimize negative aftereffects in case of emergency. The Create Backup Job Wizard will help in this process. The three predefined backup strategies should fill the needs of any home user. For advances users there's a way to create comprehensive backup policies that utilize full, incremental, and differential backup methods and their combinations, where backup runs can be scheduled from every hour till certain days of the month, or evoked by a certain event (system start or user logon).

1. Open **Backup & Recovery** scope.
2. Select **Tools > Create backup job**, then click **Next** on the Welcome page of the wizard.
3. If necessary, edit the default backup name and description containing the current date and time.

## Enter a job name and description

Backup job name:

Backup job for W100W64-01-95

Description:

Backup job created on 9/6/2017 2:17 AM for W100W64-01-95

4. Initially the wizard prompts you to back up all available storage devices. If you don't need that, select the most suitable option on the left, then required objects. For more details, please consult [the previous scenario](#).

## What do you want to back up?

Whole computer

Disk / Partition

File types

Files and folders

Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)

Sys...

Local Disk (C:)

NTFS | 82.43 GB free of 99.51 GB

Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)

New Volume (E:)

B:

(Unallocated)

NTFS | 91.81 GB free of 92.20 GB

FAT32

83.80 GB

Selected objects: 17.39 GB

5. Specify location of future backup images (local or external storage, or a network share). For more details, please consult [the previous scenario](#).

## Choose a target storage to create the backup on

Latest targets

External devices

Local volumes

Network

Name	Date modified	Size
> NEW VOLUME (B:)		23.98 GB (23.98 GB free)
> Local Disk (C:)		99.51 GB (82.38 GB free)
> New Volume (E:)		92.20 GB (91.41 GB free)
> \$RECYCLE.BIN	9/6/2017 3:21 AM	
> Backup_20170906_0314	9/6/2017 3:15 AM	
> Backup_20170906_0320	9/6/2017 3:20 AM	
> Job-20179632131	9/6/2017 3:22 AM	
> System Volume Information	9/6/2017 3:23 AM	
> Temp	9/6/2017 3:21 AM	



6. Select one the predefined backup strategies recommended by Paragon's technicians, then adjust it to your needs.



**In the current version of the product you're not allowed to modify all parameters of the selected backup strategy during configuration of a backup job. However, you can do it later when editing. For more details, please consult [Managing Backup Jobs](#).**

## Daily Backup

The daily backup is a necessity when it comes to protecting valuable information that keeps changing constantly, for example some project or document, or a financial report you're working on every day. The main rule here is the more valuable the data, the more frequent backups are required. For production environments like SQL Server or Exchange Server, where multiple transactions occur every second, the optimal interval between backups is about 30 minutes. By reducing it even further you risk to heavily overload the entire infrastructure. For home users it is the daily backup that is considered optimal.

The screenshot shows the 'Schedule' tab of the Paragon Backup & Recovery configuration window. The 'Daily Backup' strategy is selected from a list on the left. The main configuration area on the right includes the following settings:

- Run time:** 2:18 (with up/down arrows)
- When:** Every day
- Backup type:** Full, then 6 increments (represented by a slider with 7 circles, the first is filled)
- Retention:** Keep at least the latest 7 backups (with an 'Enable' link)
- Options:** Prevent from going into sleep / hibernate (with an 'Edit >' link)

At the bottom of the window, there is a 'New strategy' button, a checkbox for 'Enable advanced settings' (which is checked), and three buttons: '< Back', 'Next >', and 'Cancel'.

- The main parameter you need to set is time you believe most convenient for backup, e.g. at night or early in the morning.
- To keep data precisely up to date with minimal time and backup storage footprint, we recommend a seven-day backup cycle of one full backup image followed by six incremental updates. To avoid the situation when backup data eats up the entire storage space, we also suggest enabling a retention policy that will only keep seven latest restore points.
- Finally, there are several auxiliary options you can use to tune up the backup job. Click **Edit >** to see them and adjust. Use the question mark next to the required option to get more details.



Options

---

☒ Prevent from going into sleep / hibernate ?

☐ Wake up from sleep / hibernate ?

☐ Shutdown system after the backup complete ?

---

OK Cancel

### On demand Backup

The on demand backup begins immediately without waiting for a schedule to run. It only produces full images. This type of backup might be useful before applying OS patches or installing some new software. It's similar to a one-shot backup operation, but additionally includes a simple backup data retention policy that keeps one latest backup on the storage (off by default).

Welcome	Name	Source	Target	Schedule	Finish
---------	------	--------	--------	----------	--------

### List of strategies

Daily Backup  
**On demand Backup**  
Weekly Backup  
One Backup

Select this strategy, if you wish to determine the execution time manually. Backup jobs will not automatically process. Only full backups will be created.

Run time: 1:33

When: Schedule later

Backup type: Full backups only

Retention: Keep one backup only [Enable](#)

Options: Prevent from going into sleep / hibernate [Edit >](#)

New strategy

☐ Enable advanced settings

< Back Next > Cancel

- To avoid the situation when backup data eats up the entire storage space, we suggest enabling a retention policy that will only keep one latest restore point.
- There are several auxiliary options you can use to tune up the backup job. Click **Edit >** to see them and adjust. Use the question mark next to the required option to get more details.

### Weekly Backup

As you guess, the weekly backup comes into play when your data is not changed very often. Obviously, there's no need to back up your music collection on a daily basis, as in most cases losing the latest album won't be a huge disaster. Thus we recommend this backup strategy for protecting non-critical data when rollback to a state that took place a week ago works fine for you.

Welcome
Name
Source
Target
Schedule
Advanced Settings

## List of strategies

Daily Backup
On demand Backup
Weekly Backup
One Backup

Use this strategy, if you intend to backup your computer on a weekly base. This strategy will only create full backups. If you have activated the retention you can keep at least the latest 3 backups. Older backups will be deleted.

Run time and day: 2:18 Sun

When: Every week | every Sun

Backup type: Full backups only

Retention: Keep at least the latest 3 backups [Enable](#)

Options: Prevent from going into sleep / hibernate [Edit >](#)

New strategy
☒ Enable advanced settings
< Back
Next >
Cancel

- The main parameters you need to set is time and day of week you believe most convenient for backup, e.g. at Sunday nights.
- We consider the use of the incremental imaging on a weekly basis not optimal, as the amount of data changes may be so huge, so it can nullify primary benefits of this backup method, i.e. small backup times and image files. Furthermore, restore from this incremental chain may be time-consuming. Thus we recommend it to create full backup images only. To avoid the situation when backup data eats up the entire storage space, we also suggest enabling a retention policy that will only keep three latest restore points.
- Finally, there are several auxiliary options you can use to tune up the backup job. Click **Edit >** to see them and adjust. Use the exclamation mark next to the required option to get more details.

### One Backup

This backup strategy is daily-based, but only produces and keeps one full backup image on the storage. We suggest using it if you don't need to have several restore points that reflect various time stamps of your data and prefer an external storage device as backup media.

Welcome	Name	Source	Target	Schedule	Advanced Settings
---------	------	--------	--------	----------	-------------------

## List of strategies

Daily Backup  
On demand Backup  
Weekly Backup  
**One Backup**

Use this strategy, if you intend to backup your computer on a daily base. The new backup will replace the old backup every day.

Run time: 2:18

When: Every day

Backup type: Full backups only

Retention: Keep one backup only [Disable](#)

Options: Prevent from going into sleep / hibernate [Edit >](#)

New strategy
☒ Enable advanced settings
< Back
Next >
Cancel

- The main parameter you need to set is time you believe most convenient for backup.
- To avoid the situation when backup data eats up the entire storage space, we also suggest enabling a retention policy that will only keep the latest restore point.

### New strategy

Click **New strategy** to create your own backup policy that utilizes full, incremental, and differential backup methods and their combinations, where backup runs can be scheduled from every hour till certain days of the month, or evoked by a certain event (system start, user logon). For more details, please consult

[Managing Backup Jobs](#).

### Create a backup strategy

Name / Description	Name
When	Custom strategy
Backup type	Description
Retention	
Options	

OK
Cancel

7. If necessary, modify the default backup settings. To make sure you've got a trustworthy fallback position, each backup image is verified for viability immediately after creation. Though it's not recommended, unmark the corresponding option to skip this step and make the backup process a bit faster.

Welcome | Name | Source | Target | Schedule | **Advanced Settings**

## Advanced Settings

[Enable password protection](#)

Degree of compression

☒ Maximum size for a backup file

☐ Check integrity after backup

8. Review all parameters of the operation and modify them if necessary by going back to any of the previous steps. When ready, click **Finish** to complete the wizard.

Welcome | Name | Source | Target | Schedule | **Finish**

## Finish the wizard

You have successfully completed the Backup Job Creation Wizard. Please check the summary and save the job.

☐ Create initial backup now

Set job active on:

☐ Run as different user

**Job summary**

Job name: Backup job for W100W64-01-95  
 Source: Whole computer  
 Target: E:\Backup  
 Strategy: Daily Backup

- If you'd like to force creation of the first backup image after completing the wizard, mark the **Create initial backup now** option.
- To allow the scheduled backup tasks while a non-admin user is logged in, specify administrative credentials by marking the corresponding option.

☒ Run as different user

Please specify a user name and password:

User name:

Password:

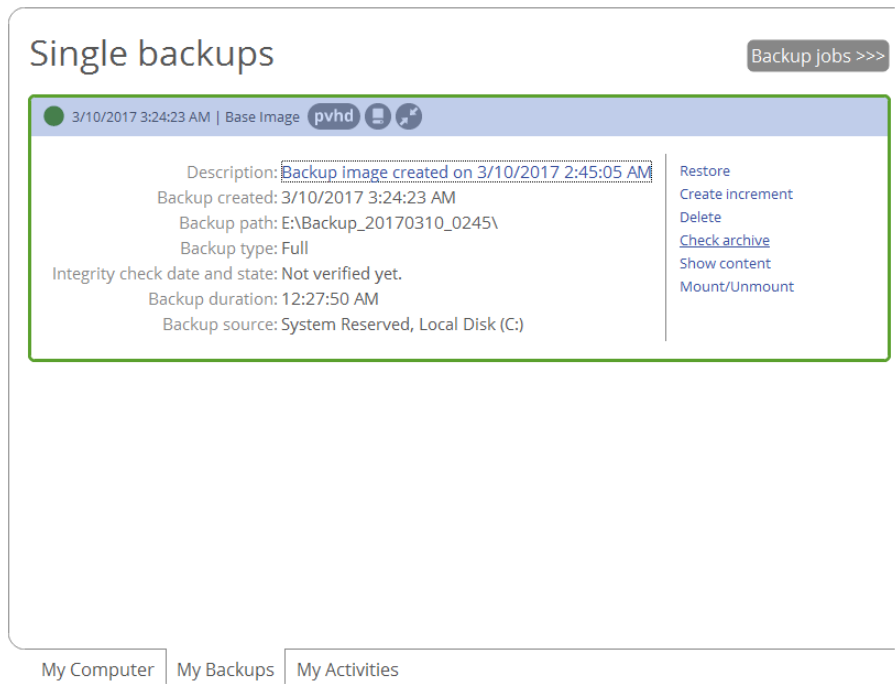
Confirm:

### Checking Backup Integrity

Unfortunately, backup media may fail at any moment. You can't predict when this will happen, but you can be certain it will. We suggest verifying integrity of backup images on a regular basis to make sure of their ongoing viability.

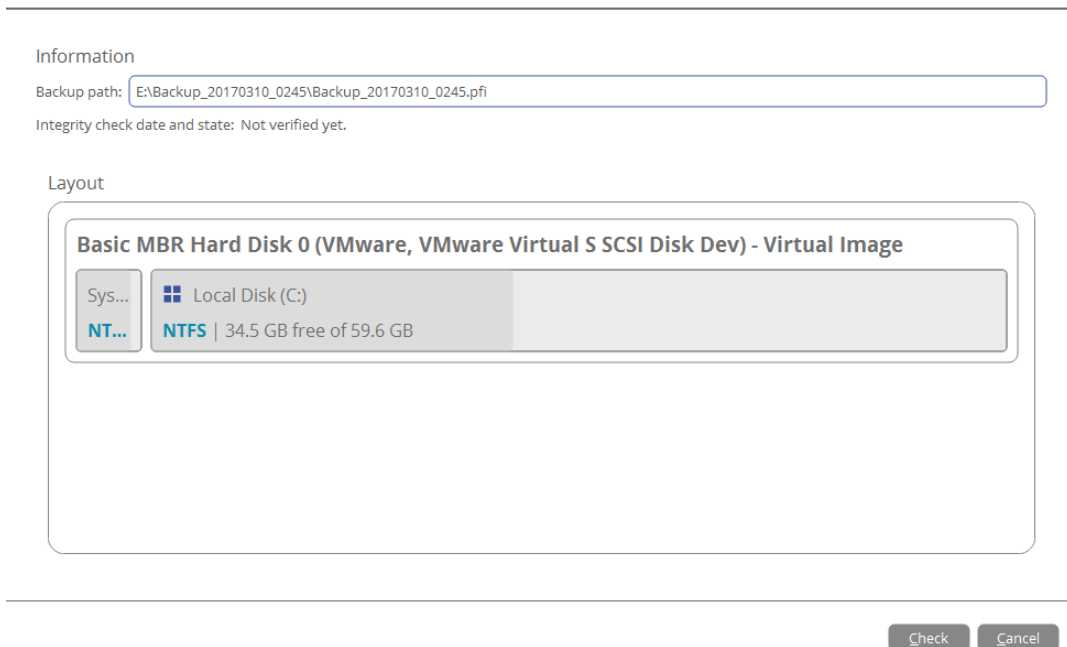
1. Open **Backup & Recovery** scope.

2. Select **My Backups > Single backups>>>** to see all configured one-shot backup tasks or **My Backups > Backup jobs>>>** to see configured regular backup routines. Left click a backup image to call a context-sensitive menu, then **Check archive**.



3. In the opened dialog you can see contents of the selected backup image. Click **Check** to start the operation, which takes a couple of minutes.

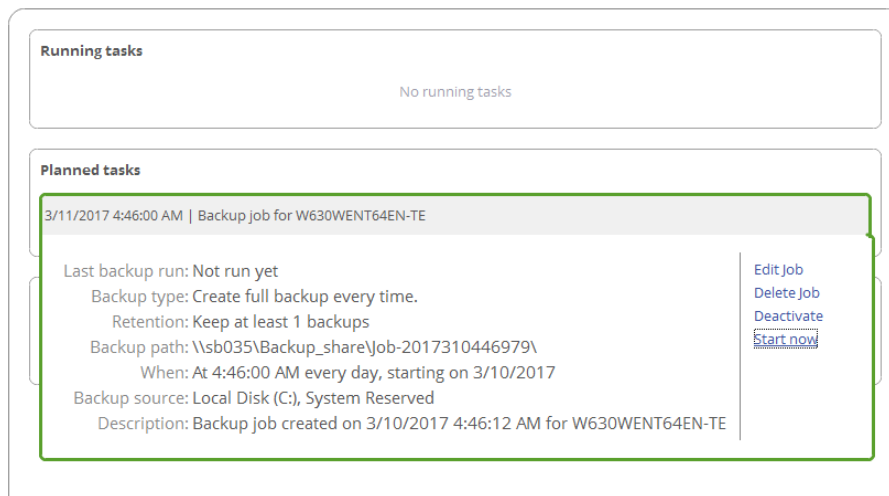
#### Check Archive Integrity



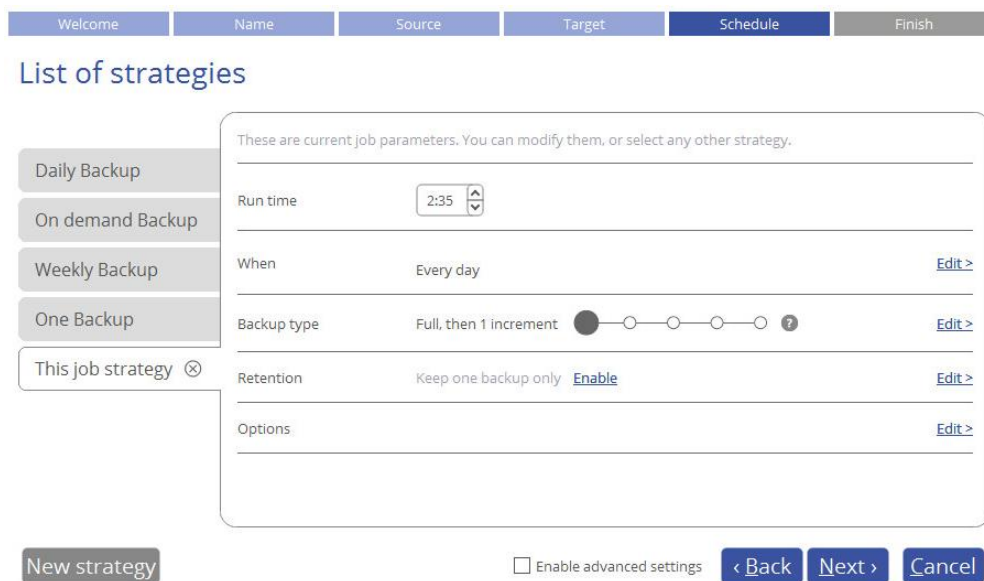
**Only pVHD-type containers are available to check at the moment.**

## Managing Backup Jobs

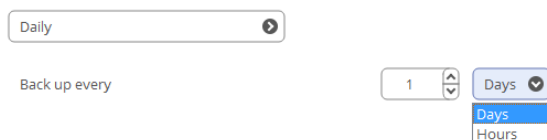
1. Open **Backup & Recovery** scope.
2. Select **My Activities**, then left click any of the planned backup jobs to call a context-sensitive menu with detailed information on the selected object and a list of available operations.



3. Select the required operation from the list:
  - **Edit Job.** While being able to only specify the basic parameters during [creation of the backup job](#), right now you're allowed to change every single option of the specified backup strategy by using the **Edit>** link.



- **When.** Backup runs can be scheduled from every hour till certain days of the month.



Monthly ⓘ

Back up on

Backups will be skipped if dates for certain months don't exist e.g. 31th of Feb.

01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Furthermore, you can choose a certain backup trigger event (system start or user logon). If necessary, you can also disable the schedule.

On event ⓘ

☒ Back up at system start

☐ Back up at user logon

- **Backup Type.** The program supports full, incremental and differential sector-level backup imaging and their combinations, which opens a way to create comprehensive backup policies to suit your needs at best. Below you can find some details on each backup type to help you make the right choice.

### Change the backup strategy

Name / Description	
When	<input type="radio"/> Full backup Select this option to make only full images of the disks and/or partitions you select. You will be able to determine the number of full images you will retain.
Backup type	<input checked="" type="radio"/> Full and incremental backup Number of increments until next full backup: 1
Retention	<input type="radio"/> Full and differential backup Number of differentials until next full backup: 1
Options	Select this option to make full and differential images of the disks and / or partitions you select. You will be able to determine the number of differential images set and the number of full images per set you will retain.

A full backup image includes all contents of the specified backup objects (all system hard disks, one or several partitions or disks) at the moment of its creation. If you roll back your system to the initial state on a regular basis, that's exactly what you're looking for. But if you want to have multiple time stamps of the same data, unchanged data will inevitably be duplicated in all images, thus taking additional space on backup media.

As an attempt to solve this problem, there has been developed a supplementary method called a differential backup. Containing only data changed since the time of creating a full or parental backup image it enables to considerably save your system resources. It is achieved by the exact bit-wise comparison of the previous data (saved in the parental image) with the current data (the backup object itself). Unfortunately, this type of backup doesn't help to avoid data duplicates inside several differentials based on one parental image. Thus if you're planning to keep two or more restore points, take a closer look at the incremental imaging.

Unlike differentials, an incremental backup only includes data changed since the time of creating the latest image in a chain, either full or incremental. In general, this type of backup is great except for one thing – restore of an incremental backup requires processing the initial full image and all

increments between, which depending on the size of your backup chain may take plenty of time, while restore of a differential backup always involves two objects – one differential and its parental.

- **Retention.** To avoid the situation when backup data eats up the entire storage space, we also suggest enabling a retention policy to automatically get rid of obsolete restore points.

Change the backup strategy

Name / Description	<input checked="" type="checkbox"/> Enable retention	
When	<input checked="" type="radio"/> Define a minimum number of backups to keep	7 ?
Backup type	<input type="radio"/> Define the number of days to keep backups	1 ?
Retention	<input type="radio"/> Automatically delete backups when target disk is full	?
Options		

You can choose from the three data retention policies:

- Keep a certain number of backup images,
  - Keep all backup images created during a certain number of days,
  - Delete an entire backup chain when the storage runs out of space.
- **Delete Job** to delete the backup job.
  - **Deactivate** to stop the ongoing backup operation.
  - **Start now** to force creation of the next backup image, either incremental or full, which depends on the used backup strategy. By selecting the corresponding option you may force out-of-turn full backup, thus starting a new backup chain.

Please select how to run job "Backup job for W100W64-01-95 (2)"

You can either run the job according to its backup strategy, or start a new backup chain.

How to create a backup:

Proceed with backup job settings

Proceed with backup job settings

Force to create a full backup

Back up

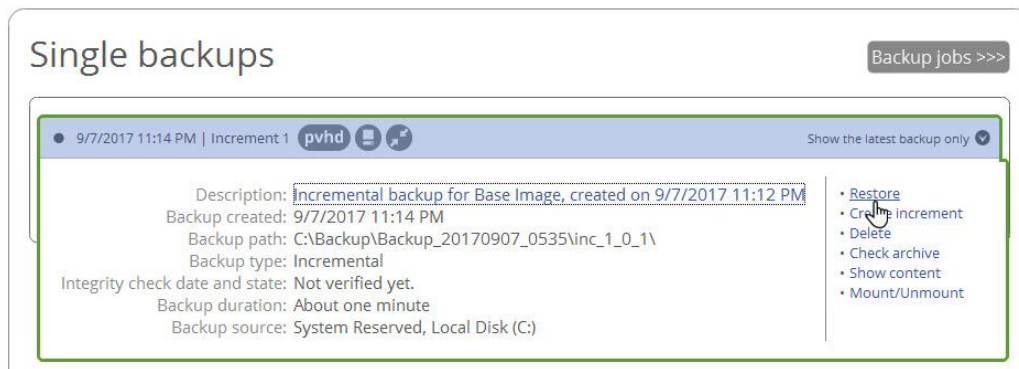
No

## Windows Restore Scenarios

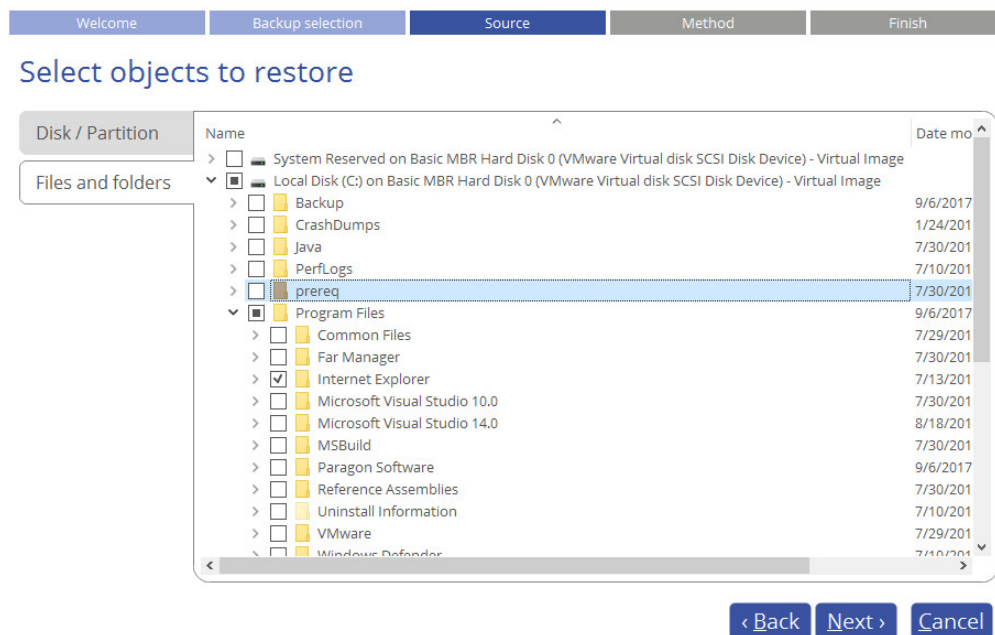
### Restoring Individual Files and Folders

1. Open **Backup & Recovery** scope.
2. Select **My Backups > Single backups>>>** to see all configured one-shot backup tasks or **My Backups > Backup jobs>>>** to see configured regular backup routines. Left click a backup image to call a context-sensitive menu, then **Restore**.

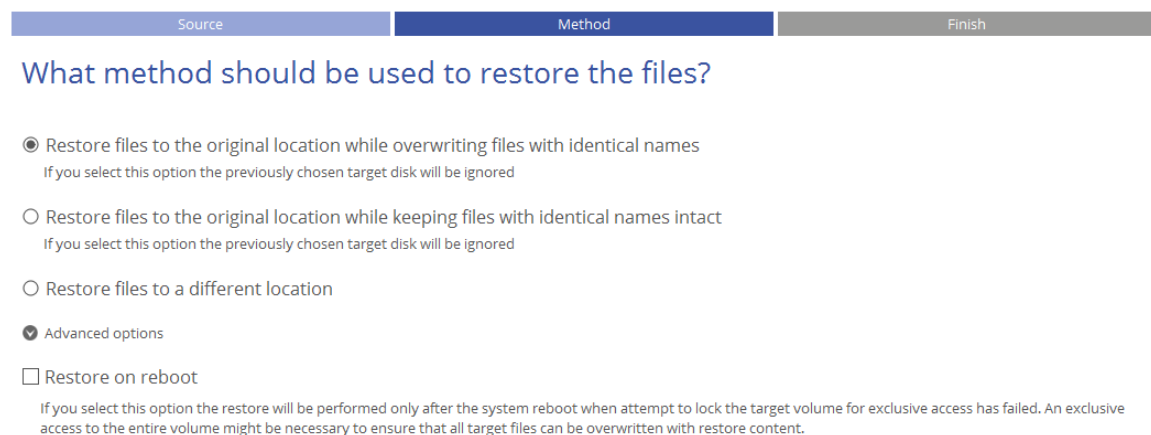




3. Select **Files and Folders**, then browse the backup image to specify what you need to extract by marking checkboxes next to the required data items.



4. Choose a way the selected data will be restored, either to original location by replacing files with identical names, to original location non-destructively, thus keeping two versions of files with the same names, or to a different location. The latter option requires setting a restore path.





**Restore to the original location with overwriting existing files requires exclusive access rights to the entire target volume. By default, if the target volume cannot be locked, our program ends this type of operation with a corresponding error.**

**Click 'Advanced options > Restore on reboot' to allow restore in a special boot-time mode, when the volume lock is not possible.**

- Choose whether to execute the operation immediately after finishing the wizard, set up another restore operation(s) and then run all at once, or [generate a program script for later execution](#). Click **Finish** to initiate the operation.

How would you like to proceed?

☒ **Restore now** ?  
Select this option to perform the restore operation on your computer physically right now.

☐ **Restore another disk or partition** ?  
Select this option to restore more than one disk or partition at the same time.

☐ **Generate a script** ?  
Select this option to create a script for this restore task.

Restore operations:  
Restore files and folders to their original locations, overwrite existing files.

< Back Finish Cancel

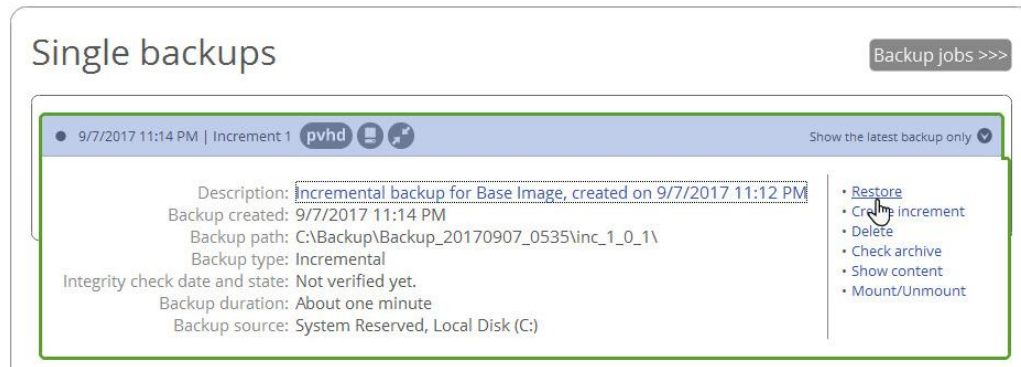
If selecting files with security attributes that cannot be restored at file-level correctly, the wizard will prompt you to restore the corresponding volume entirely.

**i** Some files have security attributes that cannot be restored! Please restore entire volume to avoid possible errors.

OK

### *Restoring an Entire Disk or Separate Volumes*

- Open **Backup & Recovery** scope.
- Select **My Backups > Single backups>>>** to see all configured one-shot backup tasks or **My Backups > Backup jobs>>>** to see configured regular backup routines. Left click a backup image to call a context-sensitive menu, then **Restore**.



- Initially the wizard prompts you to specify an entire backup image or individual volumes or disks for restore – that's exactly what we need.



- The program offers to restore the selected backup object exactly where it belongs. However, you can choose any disk of enough capacity available in your system.



**You will get a corresponding warning when trying to rewrite a bootable partition.**

- Next you can see the resulted disk layout. If necessary, specify a number of additional parameters (depends on the selected backup object).

### **Restoring a partition**

Change size of the partition and its location as well as assign a particular drive letter. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the Switch EFI to boot from destination drive

option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through Boot Corrector.

Welcome Backup selection Source Target **Options** Finish

Please review the changes

Previous status

**Basic MBR Hard Disk 1 (VMware Virtual disk S...**

E:	G:	(Unallocated)
NTFS ...	FA...	134.30 GB

New status

**Basic MBR Hard Disk 1 (VMware Virtual disk S...**

E:	G:	Local Disk
NTFS ...	FA...	NTFS   117.88 GB free of 134.30 GB

Assign drive letter:

None

Specify size of the restored partition:

134.30 GB 16.55 GB - 134.30 GB

Specify size of free space before the partition:

0 MB 0 MB

Specify size of free space after the partition:

0 MB 0 MB

< Back Next > Cancel

### Restoring a disk

If attempting to restore to a larger disk, use the corresponding option to resize on-disk partitions proportionally to occupy the entire target disk.

Source Target **Options** Finish

Please review the changes

Previous status

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI D...**

E:	G:	(Unallocated)
NTFS   ...	FA...	134.30 GB

New status

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI D...**

Sys...	Local Disk	(Unallocated)
NT...	NTFS   83.09 GB free o...	100.00 GB

☐ Resize proportionally

- Choose whether to execute the operation immediately after finishing the wizard, set up another restore operation(s) and then run all at once, or [generate a program script for later execution](#). Click **Finish** to initiate the operation.

Source	Target	Options	Finish
--------	--------	---------	--------

## How would you like to proceed?

☒ **Restore now** ?  
 Select this option to perform the restore operation on your computer physically right now.

☐ **Restore another disk or partition** ?  
 Select this option to restore more than one disk or partition at the same time.

☐ **Generate a script** ?  
 Select this option to create a script for this restore task.

Restore operations:

Restore disk 0 from image "Backup\_20170907\_0535.pfi" to disk 1

### Mounting a Backup Image

You can assign a drive letter to any partition inside an existing backup image. As a result of the operation you will get a new partition in the system to easily browse through its contents and copy the required information even with the standard Windows tools.

Before you start, please read the following limitations:

- Backup partitions will only be mounted for the current session and won't be available after the system restart;
- Backup images containing Windows Storage Spaces are not supported;
- Backup images containing ReFS partitions are not supported;
- Backup images located on physical (unmounted) partitions or in the backup capsule cannot be mounted;
- Backup images containing LVM/LDM volumes are not supported.

1. Open **Backup & Recovery** scope.
2. Select **My Backups > Single backups>>>** to see all configured one-shot backup tasks or **My Backups > Backup jobs>>>** to see configured regular backup routines. Left click a backup image to call a context-sensitive menu, then **Mount/Unmount**.

Single backups

Backup jobs >>>

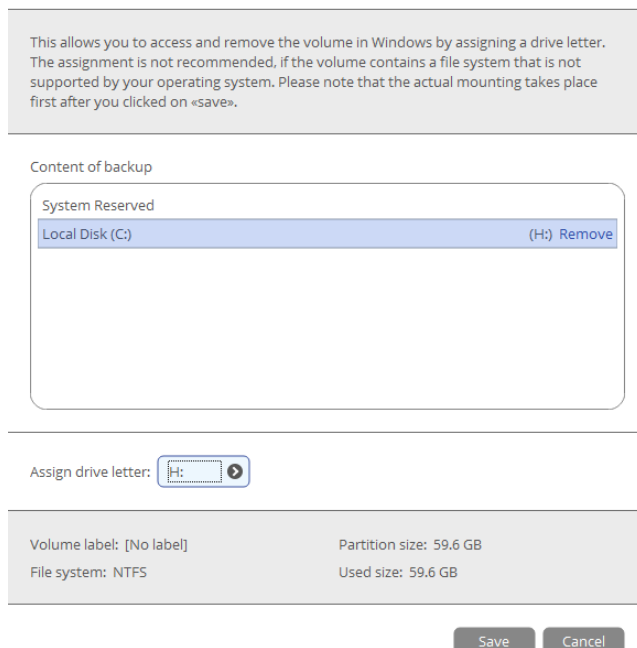
3/10/2017 3:24:23 AM | Base Image pvhd

Description: Backup image created on 3/10/2017 2:45:05 AM  
 Backup created: 3/10/2017 3:24:23 AM  
 Backup path: E:\Backup\_20170310\_0245\  
 Backup type: Full  
 Integrity check date and state: Valid, 3/10/2017 4:26:59 AM  
 Backup duration: 12:27:50 AM  
 Backup source: System Reserved, Local Disk (C:)

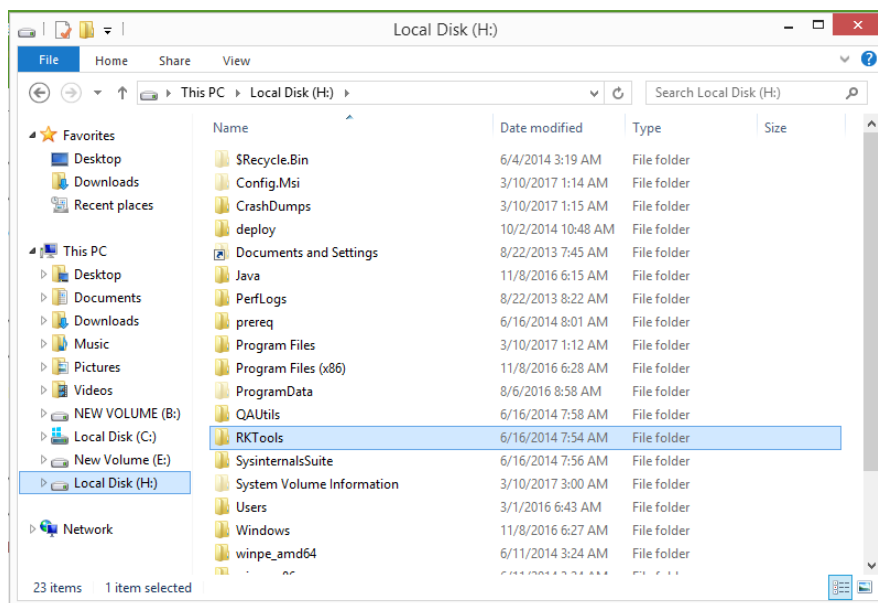
[Restore](#)  
[Create increment](#)  
[Delete](#)  
[Check archive](#)  
[Show content](#)  
[Mount/Unmount](#)

3. In the opened dialog you can see contents of the selected backup image. Select a partition you'd like to mount, then one of the vacant drive letters from the list to associate with the partition. Click **Save** to confirm.

### Mount / unmount backups



4. Once mounted, you can treat the backup partition as you would any other Windows volume (browse, retrieve files, modify files).

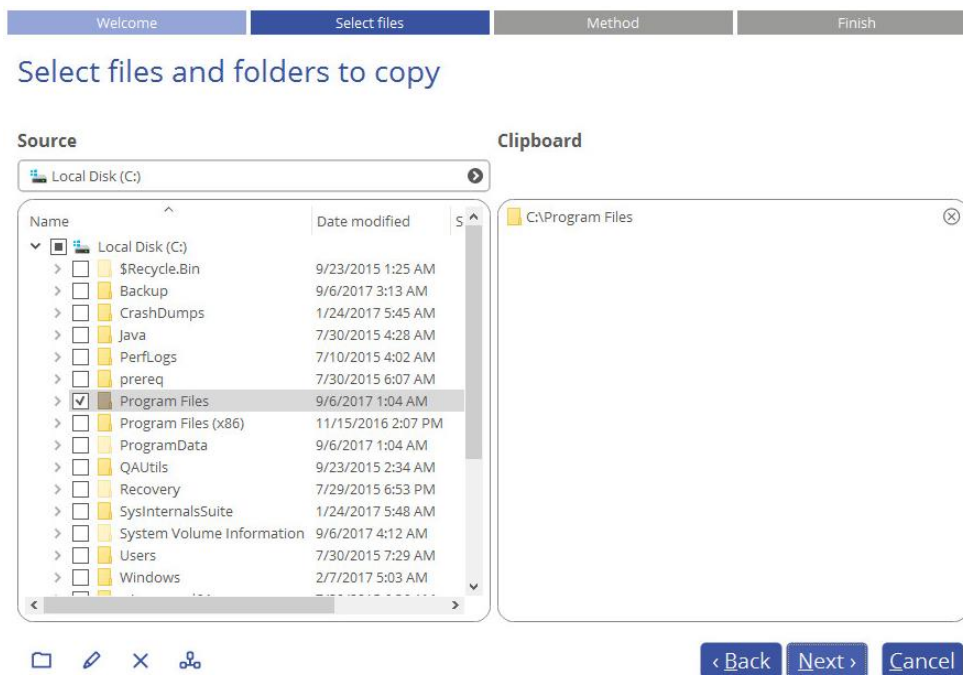


5. Use the same algorithm to unmount the backup image when not required any more.

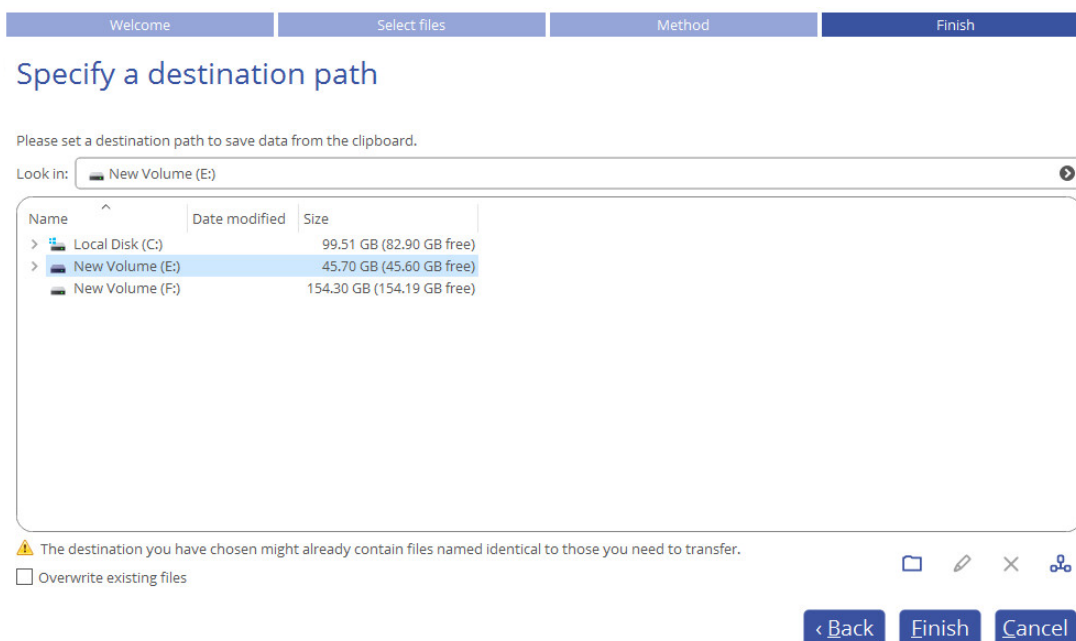
### Transferring Files between Storages

1. Open **Backup & Recovery** scope.
2. Select **Tools > File transfer**, then click **Next** on the Welcome page of the wizard.

3. Select a source disk, then mark files and directories you want to copy. The wizard enables you to browse both mounted and unmounted (without a drive letter) partitions. It is also possible to map a network drive. All selected files get to the Clipboard.



4. The wizard enables you to copy data to a local or external drive, a network share, a physical partition (without a drive letter), or burn it to a CD/DVD/BD disc. Choose the most suitable option.



### Local/Network

Select a local, external, or network drive to copy the data to. If you'd like to replace files with identical names, mark the corresponding option.



Welcome	Select files	Method	Finish
---------	--------------	--------	--------

## Specify a destination path

Please set a destination path to save data from the clipboard.

Look in: New Volume (E:)

Name	Date modified	Size
> Local Disk (C:)		99.51 GB (82.90 GB free)
> <b>New Volume (E:)</b>		<b>45.70 GB (45.60 GB free)</b>
New Volume (F:)		154.30 GB (154.19 GB free)

⚠ The destination you have chosen might already contain files named identical to those you need to transfer.

☐ Overwrite existing files

< Back Finish Cancel

### CD/DVD/BD

Select a recorder from the list of available devices and then set a volume label by entering it in the appropriate field.

Welcome	Select files	Method	Finish
---------	--------------	--------	--------

## Choose a recorder

Select a recorder to burn the data to:

Name	Disc types
NECVMMWar VMware IDE CDR10	CD-R/RW; DV...
Paragon CD Burner Emulator	CD-R/RW
Paragon DVD Burner Emulator	DVD+R/RW
Paragon DVD DL Burner Emulator	DVD+R/RW
Paragon BD Burner Emulator	BD-R/RE

Volume label:  (No more than 8 symbols and only in English)

Total data size: 535.56 MB

< Back Finish Cancel

5. Click **Finish** to initiate the operation.

## WinPE Restore Scenarios

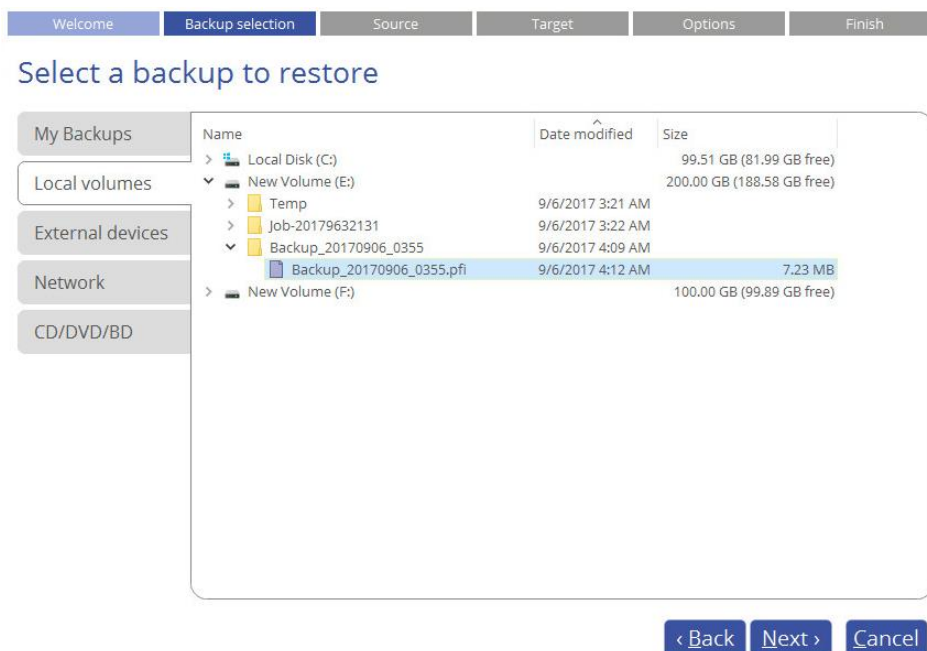
### Restoring a Failed System

If your computer fails to start up because of a software glitch or after you accidentally deleted the entire Windows partition or some system files, you can get it back on track by utilizing a previously prepared recovery media and one of available backup images.

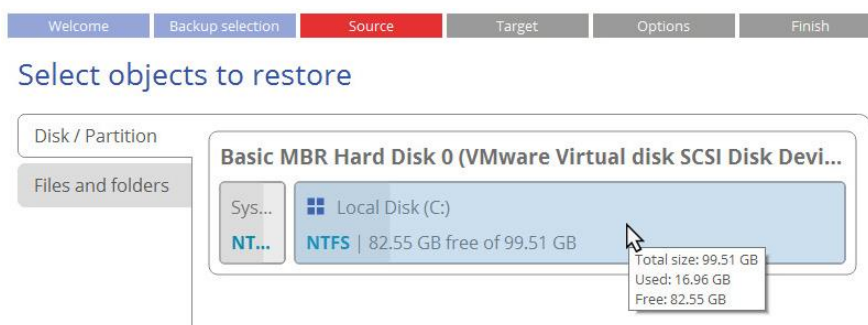
1. [Start up the computer from the WinPE recovery media.](#)
2. Select **Restore backup** in the Wizards pane.
3. The welcome page introduces the wizard's functionality. Click **Next** to continue.



4. Specify a backup image for restore. Depending on the location, first select a corresponding tab on the left, then browse for the required backup image file. To learn how to map a network share, please consult [Configuring Network](#).



5. Initially the wizard prompts you to specify an entire backup image or individual volumes or disks for restore – that's exactly what we need. If you need to restore individual files, select **Files and folders**, then backup data you want to recover. For more details, please consult [Restoring Individual Files and Folders](#).



6. The program offers to restore the selected backup object exactly where it belongs. However, you can choose any disk of enough capacity available in your system.

Welcome	Backup selection	Source	Target	Options	Finish
---------	------------------	--------	--------	---------	--------

Select a target where you'd like to restore

**Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)**

C: Local Disk (F:) NTFS | 82.96 GB free of 99.51 GB

Total size: 99.51 GB  
Used: 16.55 GB  
Free: 82.96 GB

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)**

New Volume (D:) NTFS | 188.56 GB free of 200.00 GB

**Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**

New Volume (E:) NTFS | 99.89 GB free of 100.00 GB



**You will get a corresponding warning when trying to rewrite a bootable partition.**

- Next you can see the resulted disk layout. If necessary, specify a number of additional parameters (depends on the selected backup object).

### Restoring a partition

Change size of the partition and its location as well as assign a particular drive letter. If you've got to do with a 64-bit Windows configured to the uEFI boot mode, the Switch EFI to boot from destination drive option will become available for you to define what instance of Windows OS you'd like to boot from once the operation is over. Anyway you can specify a bootable device at any time through [Boot Corrector](#).

Welcome	Backup selection	Source	Target	Options	Finish
---------	------------------	--------	--------	---------	--------

Please review the changes

**Previous status**

**Basic MBR Hard Disk 2 (VMware Virtual disk SC...**

New Volume (F:) NTFS | 99.89 GB free of 100.00 GB

**New status**

**Basic MBR Hard Disk 2 (VMware Virtual disk SC...**

Local Disk (F:) NTFS | 83.04 GB free of 100.00 GB

Assign drive letter: F:

Specify size of the restored partition: 100.00 GB 17.09 GB - 100.00 GB

Specify size of free space before the partition: 0 MB 0 MB

Specify size of free space after the partition: 0 MB 0 MB

### Restoring a disk

If attempting to restore to a larger disk, use the corresponding option to resize on-disk partitions proportionally to occupy the entire target disk.

Welcome Backup selection Source Target **Options** Finish

### Please review the changes

Previous status

**Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk De...**

Sys... Local Disk (C:)

NTFS | 82.39 GB free of 99.51 GB

☐ Resize proportionally

New status

**Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk De...**

Sys... Local Disk

NTFS | 82.55 GB free of 99.51 GB

8. Choose whether to execute the operation immediately after finishing the wizard, set up another restore operation(s) and then run all at once, or [generate a program script for later execution](#). Click **Finish** to initiate the operation.

Welcome Backup selection Source Target Options **Finish**

### How would you like to proceed?

☒ **Restore now** ?

Select this option to perform the restore operation on your computer physically right now.

☐ **Restore another disk or partition** ?

Select this option to restore more than one disk or partition at the same time.

☐ **Generate a script** ?

Select this option to create a script for this restore task.

Restore operations:

Restore disk 0 from image "Backup\_20170906\_0355.pfi" to disk 0

< Back Finish Cancel

9. In the Progress window you can see in real-time a detailed report on all actions carried out by the program. Mark the checkbox at the bottom of the window to automatically switch off the computer on the successful accomplishment of the restore operation.
10. After completing the operation, please reboot the computer.

### Fixing Boot Problems

If Windows OS doesn't boot after replacing a failed hardware device or you have any other boot issue resulting from a human or program error, or a boot virus activity, first try our boot repair tools before taking more radical actions.

1. [Start up the computer from the WinPE recovery media.](#)
2. Select **Boot Corrector** in the Wizards pane.
3. The welcome page introduces the wizard's functionality. Click **Next** to continue.

- Click on the required operation to select.

## What operation to execute

### Windows installation to correct

View the list of all Windows installations and correct boot parameters

### Correct the Master Boot Record (MBR)

View the list of all hard disks and correct MBR executable code on some of them

### Edit/View Sectors

View, edit, backup and restore sectors or a group of sectors on the hard disk or partition of your choice

### Correct boot parameters (boot.ini, BCD)

Automatically correct boot.ini and BCD on all hard disks in system

### Correct EFI boot parameters

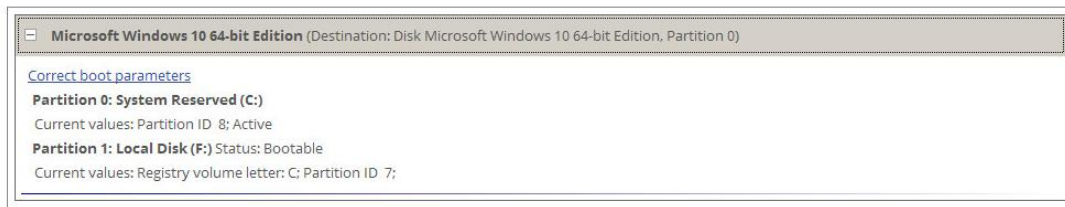
Fix EFI boot entry or switch EFI boot to another GPT bootable hard drive with Windows OS installed

- **Windows installation to correct.** Fix your Windows startup ability, if it fails to complete the startup procedure due to an unknown reason.

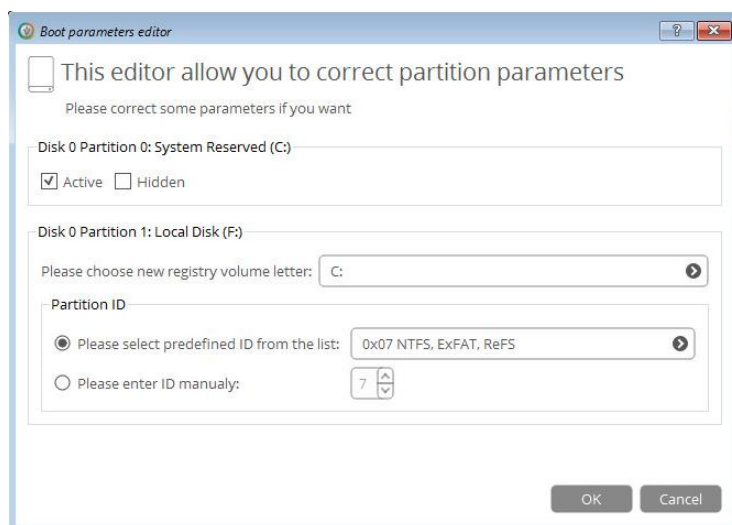
Choose a failed Windows installation from the list of found installations (if several). If necessary, click on the plus icon to get more info on the selected item.

## What operating system to correct

The wizard has searched your computer for valid Windows installations. You can see results of the operation below. Note: The status "System" stays for a system partition, "Bootable" - for a boot partition.



If you want to manually correct the chosen installation, click **Correct boot parameters**, then edit the required parameters. Otherwise, click **Next** to let the wizard fix the installation automatically.



## Correct the Master Boot Record (MBR)

You can see the list of all hard disks in your system. All disks, where MBR correcting is available, can be choosed.

Please choose hard disks to correct their Master Boot Records:

Name	Type	Size
<input checked="" type="checkbox"/> Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Dev...	Internal Hard Disk Drive	100 GB
<input type="checkbox"/> Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Dev...	Internal Hard Disk Drive	200 GB
<input type="checkbox"/> Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Dev...	Internal Hard Disk Drive	100 GB

- **Edit/View Sectors.** You can directly access and modify sectors of an entire disk drive or individual partition, save and restore sectors from specified files as well as navigate through the system metadata.

[Edit/View Sectors](#)

You can see the list of all hard disks and partitions in your system.

Please choose the object to correct its Sectors:











Name	Type	Size
My Computer	My Computer	
Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Dev...	Internal Hard Disk Drive	100 GB
System Reserved (C:)	Primary	
Local Disk (F:)	Primary	
Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Dev...	Internal Hard Disk Drive	200 GB
New Volume (D:)	Primary	
Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Dev...	Internal Hard Disk Drive	100 GB
New Volume (E:)	Primary	

[Edit/View Sectors](#)

Current sector is 0 of 209,715,199.

Please select sector number

0

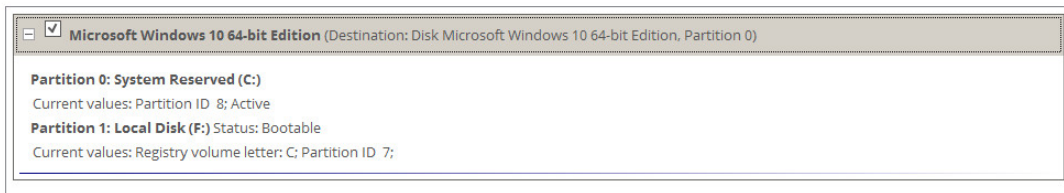











0x00000000	00000000	33 c0 8e d0 bc 00 7c 8e c0 8e d8 be 00 7c bf 00	3..... ..... ..
0x00000000	00000010	06 b9 00 02 fc f3 a4 50 68 1c 06 cb fb b9 04 00	.....Ph.....
0x00000000	00000020	bd be 07 80 7e 00 00 7c 0b 0f 85 0e 01 83 c5 10	.....~..... .....
0x00000000	00000030	e2 f1 cd 18 88 56 00 55 c6 46 11 05 c6 46 10 00	.....U.U.F.....F.....
0x00000000	00000040	b4 a1 bb aa 55 cd 13 5d 72 0f 81 fb 55 aa 75 09	..A..U.. r.....U.u.
0x00000000	00000050	F7 c1 01 00 74 03 fe 46 10 66 60 80 7e 10 00 74	.....t.....F.f.....t
0x00000000	00000060	26 66 68 00 00 00 00 66 ff 76 08 68 00 00 68 00	&fh.....f.u.h.....h
0x00000000	00000070	7c 68 01 00 68 10 00 b4 42 8a 56 00 8b f4 cd 13	h.....h.....B.U.....
0x00000000	00000080	9f 83 c4 10 9e eb 14 d8 01 02 bb 00 7c 8a 56 00	..... ..... .....U.
0x00000000	00000090	8a 76 01 8a 4e 02 8a 6e 03 cd 13 66 61 73 1c fe	.....v..N..n.....fas..
0x00000000	000000a0	4e 11 75 80 06 7e 00 80 0f 84 8a 00 b2 80 eb 84	N.U..... .....
0x00000000	000000b0	55 32 e4 8a 56 00 cd 13 5d eb 9e 81 3e fe 7d 55	U.U..... .....>}.U
0x00000000	000000c0	aa 75 6e ff 76 00 e8 8d 00 75 17 fa b0 d1 e6 64	..un.v..... .....d
0x00000000	000000d0	e8 83 00 00 b0 df e6 60 eb 7c 00 b0 ff e6 64 e8 75	..... ..... .....d
0x00000000	000000e0	00 fb b8 00 bb cd 1a 66 23 c0 75 3b 66 81 fb 54	..... .....#..u;f..T
0x00000000	000000f0	43 50 a1 75 32 81 f9 02 01 72 2c 66 68 07 bb 00	CPAu2.....r,fh.....
0x00000000	00000100	00 66 68 00 02 00 00 66 68 00 00 00 66 53 66	.....fh..... .....FSF
0x00000000	00000110	53 66 55 66 68 00 00 00 66 68 00 7c 00 00 66	SFUfh.....fh..... ..f
0x00000000	00000120	61 68 00 00 07 cd 1a 5a 32 f6 ea 00 7c 00 00 cd	ah.....22..... .....
0x00000000	00000130	18 a0 b7 07 eb 08 a0 b6 07 eb 03 a0 b5 07 32 e4	..... ..... .....2.
0x00000000	00000140	05 00 07 8b f0 ac 3c 00 74 09 bb 07 00 b4 0e cd	.....<.....t.....
0x00000000	00000150	10 eb f2 f4 eb fd 2b c9 e4 6a eb 00 24 02 e0 f8	.....+.....d.....\$....
0x00000000	00000160	24 02 c3 49 6e 76 61 6c 69 64 20 70 61 72 74 69	\$.Invalid parti
0x00000000	00000170	74 69 6f 6e 20 74 61 62 6c 65 00 45 72 72 6f 72	tion table.Error
0x00000000	00000180	20 6c 6f 61 64 69 6e 67 20 6f 70 65 72 61 74 69	loading operati
0x00000000	00000190	6e 67 20 73 79 73 74 65 6d 00 4d 69 73 73 69 6e	ng system.Missin
0x00000000	000001a0	67 20 6f 70 65 72 61 74 69 6e 67 20 73 79 73 74	g operating sust

- **Correct boot parameters (boot.ini, BCD).** If you have several operating systems on your disk (Windows Vista and later) after copying a system partition for instance, update their BCD (Boot Configuration Data) files to be able to choose an OS to start up.
- **Correct EFI boot parameters.** The wizard will detect and list all available GPT partitions that accommodate 64-bit Windows OS. Choose the one you need to boot from, to let the wizard modify the EFI boot entry correspondingly. Please note that this option is available on the 64-bit WinPE media only.

## What operating system to correct

The wizard has searched your computer for valid Windows installations. You can see results of the operation below. Note: The status "System" stays for a system partition, "Bootable" - for a boot partition.



5. When done with all parameters, please confirm the operation to proceed.
6. After completing the operation, please reboot the computer.

## Managing Partitions and Disks

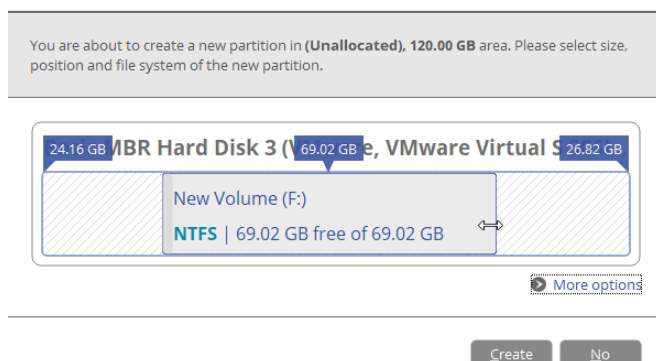
Partitioning lets you divide a single physical drive into a number of logical drives, each of which serves as a container with its own drive letter and volume label, thus enabling the operating system to process data more efficiently. Partitioning also makes it possible to organize data so that it is easy to find and manage. 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. Finally partitioning is a necessity if you're planning to run several OSs on a single hard drive to effectively delineate the boundaries of each OS.

### Basic Partitioning Tasks

#### Creating a Partition

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click a block of free space on a disk you'd like to partition. Select **Create new volume here** in the opened menu.
3. By default, there will be created an NTFS partition the size of the selected free block. Drag-and-drop borders of the free block on the Disk Map to define the partition size and position. If you want to modify other properties, click **More options**.

Create a new partition on disk 3?



4. In the opened dialog you can change any predefined partition property.



The screenshot shows the Partition Manager interface. At the top, a disk map displays three partitions: a 24.15 GB partition, a 69.47 GB partition (labeled 'New Volume (F:) NTFS | 69.47 GB free of 69.47 GB'), and a 26.37 GB partition. Below the disk map is a configuration form for creating a new partition. The form includes the following fields and options:

- Create new partition as:** A dropdown menu set to 'Primary partition'.
- Please specify new partition size:** A text input field containing '69.47 GB', with a range of '8.03 MB - 120.00 GB' displayed next to it.
- Please select file system for new partition:** A dropdown menu set to 'NTFS'.
- Please enter new volume label:** A text input field containing 'New Volume'.
- Please specify drive letter:** A dropdown menu set to 'F:'.
- Use OS built in format routine:** A checked checkbox.
- Please select number of sectors per cluster:** A dropdown menu set to '8'.
- Restore defaults:** A button.
- Create** and **No** buttons at the bottom.

- Select the desired partition type (Primary, Extended, or Logical). The available alternatives depend on the selected block of free space – within a Logical block, only Logical partitions can be created; Within a Primary block, both Primary partitions or the Extended Partition are allowed to create.
- Drag-and-drop borders of the free block on the Disk Map to define the partition size and position. An accurate value in MB can be set in the corresponding field.
- To store data on the created partition you need to format it to one of the supported file systems:
  - FAT32 – use for data disks that are 32GB or less
  - NTFS – the primary file system for Windows OS
  - Ext 2/3/4 – the primary file system for Linux OS
  - Apple HFS – the primary file system for Mac OS X
- Enter a volume label to easily identify the partition later (optional parameter).
- Choose one of the vacant drive letters from the list to associate with the partition. The drive letter plays an important role in telling Windows where to look data.
- By default, the amount of sectors per cluster will be specified according to the used OS and the chosen file system. If you'd like to set another value, unmark the **Use OS built-in routine** and define the desired value in the corresponding field. The cluster size is one of the crucial parameters of any file system. Its value implicitly affects the performance of the files input-output activity since it defines the size of the file system metadata. Besides, the so-called waste space factor also depends on it.

5. Click **Create** when ready. All introduced changes to the disk layout will be pending until confirmed.

### Formatting a Partition

When you create a new partition you will be prompted to choose the desired file system format as described above. This section explains how to format an existing partition.

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing partition. Select **Format this volume** in the opened menu.

3. Select the desired file system from the list of the supported file systems and enter a volume label to easily identify the partition later (optional parameter). Since the selected partition may contain data, which will be lost after formatting, you need to confirm the operation.

**Format volume (F:)?**

Please select new file system: **Apple HFS**

Please enter new volume label: **New Volume**

[More options](#)

☐ I am aware that this operation can cause data loss / non-booting system

**Format** **No**

4. If you want to change the default amount of sectors per cluster, click **More options**. The cluster size is one of the crucial parameters of any file system. Its value implicitly affects the performance of the files input-output activity since it defines the size of the file system metadata. Besides, the so-called waste space factor also depends on it.

☒ Use OS built in format routine

Please select number of sectors per cluster: **32**

**Restore defaults**

5. Click **Format** when ready. All introduced changes to the disk layout will be [pending until confirmed](#).

## Deleting a Partition

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing partition. Select **Delete this volume** in the opened menu.
3. Since the selected partition may contain data, which will be lost after deleting, you need to confirm the operation.

**Delete volume (E:)?**

You are about to delete volume (E:) **New Volume, NTFS**. Your computer may no longer boot or work correctly.

☒ I am aware that this operation can cause data loss / non-booting system

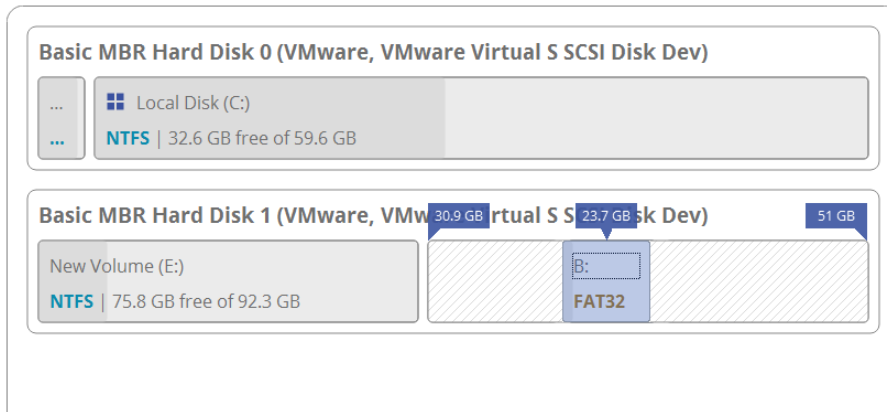
**Delete** **No**

4. Click **Delete** when ready. All introduced changes to the disk layout will be [pending until confirmed](#).

## Moving/Resizing a Partition

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then drag-and-drop borders of a partition on the Disk Map to define its size and position. All introduced changes to the disk layout will be [pending until confirmed](#).





**Resize or free space redistribution that leads to shrinking of an unlocked bitlocked volume may fail due to limitations of a Microsoft service used for accomplishing this type of operations.**

### Undeleting a Partition

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

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

1. Open **Partition Manager** scope.
2. Select **Tools > Undelete partitions**, then click **Next** on the Welcome page of the wizard.
3. The wizard only displays disks that contain unallocated space. Choose a free block that used to be a partition.



### Location of deleted partitions

Select a free block to search for deleted partitions



① One or more hard disks are hidden



4. By default, the wizard selects the quick search method. In most cases it's enough to find an accidentally deleted partition. However, if the wizard fails to find the partition you need, you can select the 'Thorough search' option to scan every single sector in the specified search area to get the most accurate results.

Welcome Search in **Settings** Select Overview Finish

Please define search parameters.

Choose how to look for deleted partitions:

☒ Quick search for partitions created by Microsoft Vista or later OS

☐ Thorough search

☐ Show the file system search options

< Back Next > Cancel

If you'd like to narrow the search results, select the corresponding option and mark a checkbox opposite the required file system.

- ☒ Hide the file system search options
- ☐ Look for any file system
- ☒ Look for a specific file system
- ☒ NTFS
- ☐ FAT and FAT32
- ☐ Linux file systems (Ext2, Ext3, Ext4)
- ☐ Apple HFS+
- ☐ XFS

5. By default, the program searches records of any deleted partition ever existed on the selected block of free space. So you can get several partitions to choose from. Most likely the required partition will be found first.

Welcome Search in Settings **Select** Overview Finish

Select a previously deleted partition(s) you would like to undelete.

Click on the partitions you would like to undelete. Please note: partitions that intersect with selected ones will not be available:

Volume label	File system	Capacity	Used space	Geometry
▼ Unallocated space 5.00 GB on Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)				
<input checked="" type="checkbox"/> New Volume	NTFS	5.00 GB	26.78 MB	

< Back Next > Cancel

6. Check the resulting disk layout, then click **Next** to confirm.

7. If you'd like to execute the operation immediately after finishing the wizard, disable the simulation mode by unmarking the corresponding option. Click **Finish** to complete.

## Converting File System

You can change type of an existing file system without formatting and completely safe for your data. First the original file system will be checked for consistency, then the partition data will be verified whether it meets the requirements of the target file system or not. And only after having passed this testing, the program will re-organize the file system metadata and user files.

Our program supports the following scenarios:

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

1. Open **Partition Manager** scope.

2. Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Convert file system** in the opened menu.
3. Initially the program suggests consistent values for all parameters.

Are you sure you want to convert file system on system volume (C:)?

---

Please select new file system:

Select new cluster size:

---

☒ I am aware that this operation can cause data loss / non-booting system

---

- **New file system.** Choose a file system you would like to convert to from the list. The program only displays variants available for the operation, taking into account parameters of the selected partition and limitations of the used file system.
- **New cluster size.** Change the suggested cluster size. This parameter can have a profound effect on the overall performance. In a nutshell, larger clusters waste more space, but generally provide for slightly better performance, because of less fragmentation. So be particularly careful with it.



**The cluster size value is expressed in sectors per cluster. To get it in Kbytes, please divide it into half.**

4. Click **Convert** when ready. The operation will be pended until confirmed.

### Changing Volume Label

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing partition. Select **Change volume label** in the opened menu.
3. Enter a new catchy volume label. The operation will be performed immediately after confirmation.

Are you sure you want to change label on volume (C:)?

---

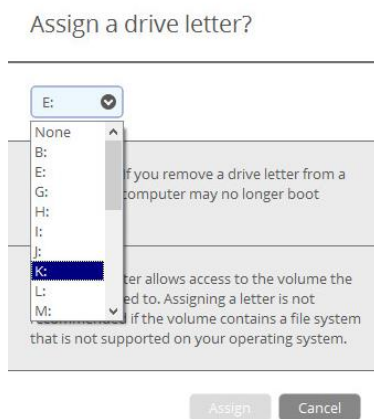
Please enter new volume label:

---

### Changing Drive Letter

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing partition. Select **Change drive letter** in the opened menu.

- Choose one of the vacant drive letters from the list to associate with the partition. The drive letter plays an important role in telling Windows where to look data.



**After changing drive letter of the system partition, your Windows OS won't start up.**

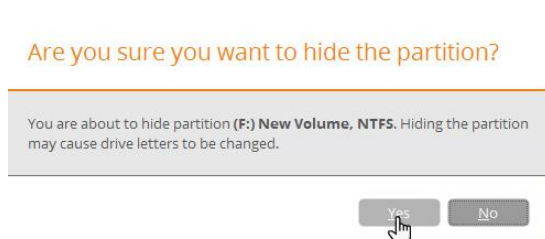
**Some programs may not run properly either if changing drive letter of a data partition.**

- Click **Change** when ready. All introduced changes to the disk layout will be [pending until confirmed](#).

### *Hiding/Unhiding Partition*

This option can help you hide a partition from OS, applications, and users, thus preventing access to its contents and vice versa. To prevent the situation when the operating system becomes unbootable, the program doesn't allow you to hide OS partitions.

- Open **Partition Manager** scope.
- Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Hide/Unhide this partition** in the opened menu.
- Click **Yes** when ready. The operation will be [pending until confirmed](#).



### *Making Partition Active/Inactive*

You can set an active/inactive flag for primary partitions on an MBR-type hard disk. Please note that OS starts up only if the partition where its bootable files are resided is active or bootable.

- Open **Partition Manager** scope.
- Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Mark this partition active/inactive** in the opened menu.

- Click **Yes** when ready. The operation will be pending until confirmed.

Are you sure you want to set the volume as inactive?

You are about to set the volume (\*) **System Reserved, NTFS** as inactive. Your computer may no longer boot correctly.

Yes

No

### Updating MBR

The program enables you 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 after a boot virus attack or a malfunction of boot management software.

- Open **Partition Manager** scope.
- Select **Tools > My Computer**, then left click an existing MBR (Master Boot Record) disk. Select **Update MBR** in the opened menu.
- Click **Yes** when ready. The operation will be pending until confirmed.

Are you sure you want to update master boot record?

Current MBR contents for hard disk number 1 will be lost after this operation. Your computer may no longer boot correctly.

Yes

No

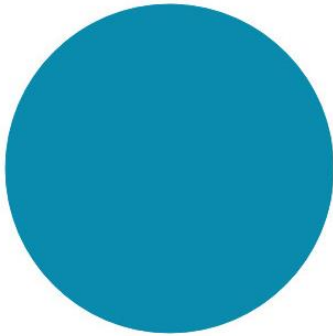
### Getting Disk/Partition Properties

- Open any functionality scope.
- Select **Tools > My Computer**, then left click an existing partition or disk. Select **Show advanced properties** in the opened menu.
- The program displays detailed information on the properties of an entire storage device or individual partition. 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.

#### Disk Properties:

General

Advanced



### Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)


Total size:	100 GB 107,374,182,400 Bytes
Physical size:	100 GB 107,374,182,400 Bytes 209,715,200 Sectors
Cylinders:	0x32FE (13054)
Heads:	0xFF (255)
Sectors per track:	0x3F (63)

#### Partition Properties:

General

File System Info

Advanced



### Local Disk (C:)

HDD number:	0
Partition number:	1
Volume label:	[No label]
Partition ID:	0x07 NTFS, ExFAT, ReFS
Serial number:	7C90-1A4D-901A-0E70
Sectors per boot:	8
Sectors per cluster:	8

	Sector No:	Cyl:	Hd:	Sec:
First physical sector:	1026048	63	221	31
Last physical sector:	1048573951	65270	180	62
Hard disk geometry:		65270	255	63

## Complex Partitioning Tasks

### Splitting a Partition

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

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

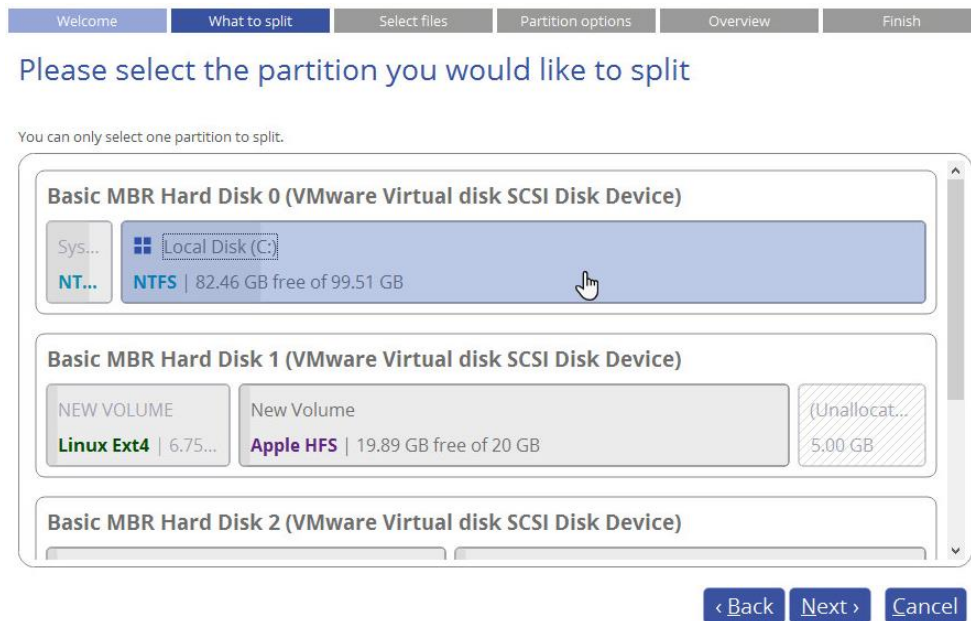
Before you start, please take into account the cases when the split operation is impossible to perform:

- Partition's type is not supported (you have selected a non-standard primary or logical partition);
- The selected partition is located on a dynamic disk;

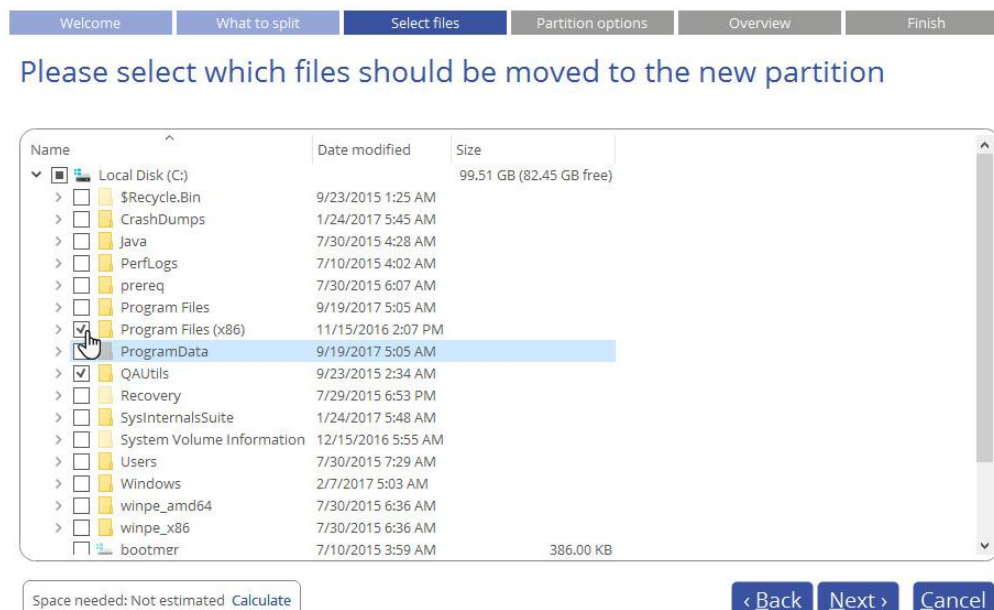


- You've already got 4 primary partitions on a Basic MBR disk;
- You've already got 3 primary partitions on a Hybrid (Retained) GPT+MBR disk;
- There's not enough free space on the selected partition (free up to 50 MB);
- The selected partition has an unsupported file system.

1. Open **Partition Manager** scope.
2. Select **Tools > Split partition**, then click **Next** on the Welcome page of the wizard.
3. Choose a partition you'd like to split.



4. Mark checkboxes next to files or folders you'd like to move to the new partition. Please don't touch system files or folders like "Windows", "Users", "Program Files", config.sys, etc. for it may cause inability of the operating system to start up. Click **Calculate** to find out the amount of data to move or **Next** to calculate and proceed further. Please note that the calculation may take some time, so please be patient.





- Redistribute free space between the partitions by clicking amongst them and dragging the border on the Disk Map or by entering the required value for the new partition in the corresponding field. By default, the wizard allocates all free space to the original partition. You should decide for yourself how much of it should be given to the new partition. Anyway we strongly recommend you to allocate some free space to both partitions.

Next you need to choose one of the vacant drive letters from the list to associate with the partition and change the default volume label, if necessary.

Welcome
What to split
Select files
Partition options
Overview
Finish

### Please set options for the new partition

You can use the slider in the disk map to adjust the size of the partitions or enter it below manually.

Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)

Local Disk (C:)

NTFS | 31.40 GB free of 48.31 GB

SPLITVOL (E:)

NTFS | 51.20 GB free of 51.20 GB

New partition size:

New drive letter:

New volume label:

< Back
Next >
Cancel

- Check the resulting disk layout, then click **Next** to confirm.

Welcome
What to split
Select files
Partition options
Overview
Finish

### Please review the changes

Changes:

Old status

Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)

Sys...

Local Disk (C:)

NTFS | 82.60 GB free of 99.51 GB

New status

Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)

Sys...

Local Disk (C:)

NTFS | 31.40 GB free of 48.31 GB

SPLITVOL (E:)

NTFS | 51.20 GB free of 51.20 GB

< Back
Next >
Cancel

- If you'd like to execute the operation immediately after finishing the wizard, disable the simulation mode by unmarking the corresponding option. Click **Finish** to complete.

Welcome	What to split	Select files	Partition options	Overview	Finish
---------	---------------	--------------	-------------------	----------	--------

## Completing the split wizard

You have successfully prepared a split operation. The operation can now be either created in the **simulation mode** for you to review in the disk map or you can **perform the physical operation**. If you wish to do it physically please deselect the button below.

☒ Perform the operation in the simulation mode

### Summary

Selected partition: Local Disk (C:)

New partitions: Local Disk (C:), SPLITVOL (E:)

< Back Finish Cancel

## Redistributing Free Space

The Redistribute Free Space Wizard can help you increase free space on one partition by up-taking the on-disk unallocated space and the unused space of other partitions. By default, the wizard will add all existing blocks of the free space to the target partition. Additionally, you will be able to specify partitions to act as space donor. According to introduced changes the wizard will automatically recalculate positions of the involved partitions and move their contents to new locations.

1. Open **Partition Manager** scope.
2. Select **Tools > Redistribute free space**, then click **Next** on the Welcome page of the wizard.
3. Choose a partition you'd like to expand at the expense of others. Blocks of the free space (if any) will be automatically added to the target partition.

Welcome	What to expand	Volume Size	Finish
---------	----------------	-------------	--------

## Select the partition you would like to expand

Capacity of the volume **New Volume (F:)** is **70.00 GB**. The wizard can expand this volume up to **100.00 GB** at the expense of the unallocated space.

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)**

(Unallocated) 30.00 GB	<b>New Volume (F:)</b> NTFS   69.90 GB free of 70.00 GB
---------------------------	--

**Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**

<b>New Volume (E:)</b> NTFS   9.96 GB free of 10.00 GB	(Unallocated) 22.00 GB
---	---------------------------

① [One or more hard disks are hidden](#)

< Back Next > Cancel

4. Choose one or several partitions (not only adjacent) to donate free space.

Volume	File system	Capacity	Used space	% Free
<input checked="" type="checkbox"/> NEW VOLUME	Linux Ext4	7.00 GB	256,46 MB	97

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

[See expanding details](#)

[< Back](#) [Next >](#) [Cancel](#)

- Set a new size for the target partition in the corresponding field.

Welcome	What to expand	Volume Size	Finish
---------	----------------	-------------	--------

## Select volume size

Your disk after the changes

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)**

New Volume (F:)

**NTFS** | 99.90 GB free of 100.00 GB

Select new size:

100.00 GB 70.00 GB - 100.00 GB

[Current volume size: 100.00 GB](#)  
The volume size has been increased on 30.00 GB

[< Back](#) [Next >](#) [Cancel](#)

- If you'd like to execute the operation immediately after finishing the wizard, disable the simulation mode by unmarking the corresponding option. Click **Finish** to complete.

Welcome	What to expand	Volume Size	Finish
---------	----------------	-------------	--------

## Completing the redistribute wizard

You have successfully prepared an operation that redistributes your free spaces. The operation can now be either created in the **simulation mode** for you to review in the disk map or you can **perform the physical operation**. If you wish to do it physically please deselect the button below.

☒ Perform the operation in the simulation mode

### Summary

Expanded volume: New Volume (F:)

Resize source(s): 30.00 GB of unallocated spaces

New volume size: 100.00 GB

< Back Finish Cancel

## Merging Partitions

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

Please note that the wizard can only merge two adjacent NTFS, FAT32 or FAT partitions, also separated by unallocated space.

1. Open **Partition Manager** scope.
2. Select **Tools > Merge partitions**, then click **Next** on the Welcome page of the wizard.
3. Click on the left partition of the pair of partitions you need to merge, as the right one will be selected automatically. During the operation all contents of the right partition will be placed in a folder on the resulted joined partition.

Welcome What to merge Target folder Overview Finish

## Please select the partitions you would like to merge

Please note that it is only possible to select **FAT**, **FAT 32** or **NTFS** adjacent partitions or **FAT**, **FAT 32** or **NTFS** partitions that are separated from each other by free blocks.

**Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**

<p>New Volume (F:)</p> <p>NTFS   22.94 GB free of 23.00 GB</p>	<p>New Volume (G:)</p> <p>NTFS   26.93 GB free of 27.00 GB</p>
--	--

One or more hard disks are hidden

< Back Next > Cancel



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

4. By default, the wizard prompts an easy-to-understand folder name, which can be changed.

Welcome What to merge Target folder Overview Finish

## Please define a folder in the resulted joined partition to keep contents of the right partition

Files and folders from volume **New Volume (G:)** will be copied to a folder on the merged volume. The directory structure of the volume will be left intact inside the target folder.  
Please enter a name for this folder right here.

Folder name:

**Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**

<p>New Volume (F:)</p> <p>NTFS   22.94 GB free of 23.00 GB</p>	<p>New Volume (G:)</p> <p>NTFS   26.93 GB free of 27.00 GB</p>
--	--

**Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**

<p>New Volume (F:)</p> <p>NTFS   49.87 GB free of 50.00 GB</p>
--

< Back Next > Cancel

5. Check the resulting disk layout, then click **Next** to confirm.

Welcome
What to merge
Target folder
Overview
Finish

## Please review the changes

Changes:

Old status

Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)

New Volume (F:)

NTFS | 22.94 GB free of 23.00 GB

New Volume (G:)

NTFS | 26.93 GB free of 27.00 GB

New status

Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)

New Volume (F:)

NTFS | 49.87 GB free of 50.00 GB

< Back
Next >
Cancel

- If you'd like to execute the operation immediately after finishing the wizard, disable the simulation mode by unmarking the corresponding option. Click **Finish** to complete.

Welcome
What to merge
Target folder
Overview
Finish

## Completing the merge wizard

You have successfully prepared a merge operation. The operation can now be either created in the **simulation mode** for you to review in the disk map or you can **perform the physical operation**. If you wish to do it physically please deselect the button below.

☒ Perform the operation in the simulation mode

### Summary

Selected partitions: New Volume (F:), New Volume (G:)

Folder name: Files from New Volume (G)

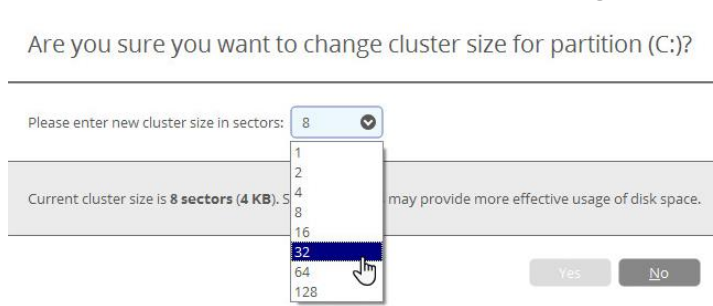
< Back
Finish
Cancel

## Advanced Partitioning Tasks

### Changing Cluster Size

The cluster size 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.

- Open **Partition Manager** scope.
- Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Change Cluster Size** in the opened menu.
- Change the default cluster size according to your needs, then click **Yes**. All introduced changes to the disk layout will be **pending until confirmed**.



**The cluster size value is expressed in sectors per cluster. To get it in Kbytes, please divide it into half.**

### Converting to Logical/Primary

You can include a primary partition into the extended partition or exclude a logical partition from the extended partition without partition duplication.

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Make partition logical/primary** in the opened menu.
3. Click **Yes** when ready. The operation will be [pending until confirmed](#).

Are you sure you want to make the partition logical?

You are about to make the partition logical. Do this if you need to have more than four partitions on basic MBR hard disk. Please note that extended partition, if any, is also counts as primary.

Yes

No



**The operating system won't start up if you make the system partition logical.**

### Changing Serial Number

FAT16, FAT32, and NTFS file systems include the serial number parameter. It is generated automatically while formatting a partition and is saved in the boot sector.

You can modify this parameter for FAT16, FAT32, or NTFS partitions without re-formatting.

1. Open **Partition Manager** scope.

2. Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Change volume serial number** in the opened menu.
3. Enter a new serial number for the selected partition. It should contain 8 hexadecimal figures (0..9 or A..F). The operation cannot proceed until you enter all 8 symbols.

Change serial number of volume (C:)?

---

Please enter new serial number in hexadecimal format:



---

Yes No

4. Click **Yes** when ready. The operation will be [pending until confirmed](#).

### *Change Primary Slots*

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

#### **In Linux:**

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

#### **In DOS:**

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

Our program helps you to change enumeration of the primary partitions, and this way fix problems concerning an inappropriate order of partitions on an MBR disk.

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing MBR disk. Click **More...**, then select **Change primary slots** in the opened menu.
3. Use the arrow buttons to move the selected partition up and down within the primary part of the partition table.



### Are you sure to want to change primary slots order?

You are about to change primary slots order on **Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**. Your computer may no longer boot correctly.

Slot #	Object type	File system	Volume label
0	Primary	Apple HFS	Apple Volume
1	Primary	NTFS	New Volume
2	Primary	FAT32	NEW VOLUME
3			



Name:	Apple Volume	Volume label:	Apple Volume
Total size:	53.59 GB	File system:	Apple HFS
Used space:	17.75 GB	Start sector:	37810176
Free space:	35.84 GB	End sector:	150204415

Yes

No

- Click **Yes** when ready. The operation will be [pending until confirmed](#).

### Converting a Partition Table

Your storage device may have GPT (GUID Partition Table), MBR (Master Boot Record), including dynamic disk configurations, or a hybrid GPT+MBR partition table.

GPT is now used on Windows and Mac computers as the primary partition scheme, while MBR used to be the main and only partition scheme for Windows computers up to Vista. A hybrid GPT+MBR partition scheme is a necessity for Apple BootCamp users. Dynamic disk configurations are mostly employed by business.

Our program allows easy non-destructive conversion between various partition schemes:

- Basic GPT <> Basic MBR disk conversion. Please note that only 64-bit Windows OSes since Vista are able to boot from a GPT disk. So if you've got a 32-bit Windows OS accommodated on an MBR disk, it won't start up after converting to GPT.
- Dynamic GPT/MBR > Basic MBR disk conversion. Please note that our program can only process dynamic disks containing solid simple volumes (without extension).

- Open **Partition Manager** scope.
- Select **Tools > My Computer**, then left click an existing disk. Select **Convert to MBR/GPT disk** in the opened menu (available operation depends on the selected storage device).
- Click **Yes** when ready. The operation will be [pending until confirmed](#).

### Are you sure you'd like to convert Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device) to GPT?

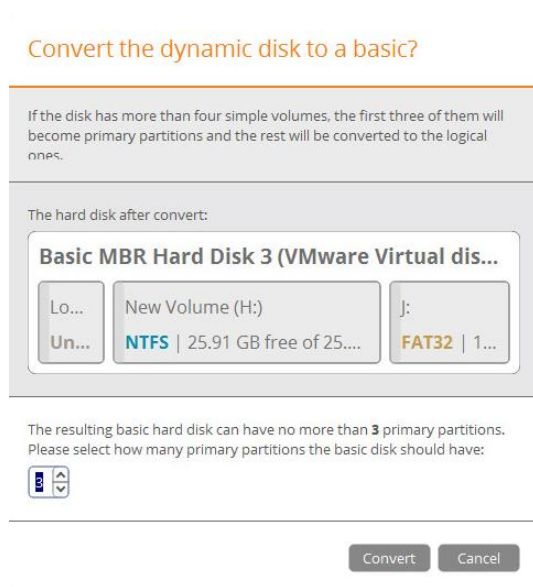
Please Note! Despite the fact that all on-disk contents remain intact during the operation, your OS may no longer boot correctly, for Windows XP 32-bit for instance does not support GPT disks.

Yes

No

According to the DOS partitioning scheme a hard disk can have up to four Primary partitions. If there is an Extended partition on the disk, only three primary partitions are allowed. So when attempting to convert a

basic GPT disk or a dynamic disk containing several volumes, our program will ask you to choose the preferred number of primary partitions, and the rest (if there are more than four volumes on the disk) will be converted to logical disks within the Extended partition.



### Editing Disk Sectors

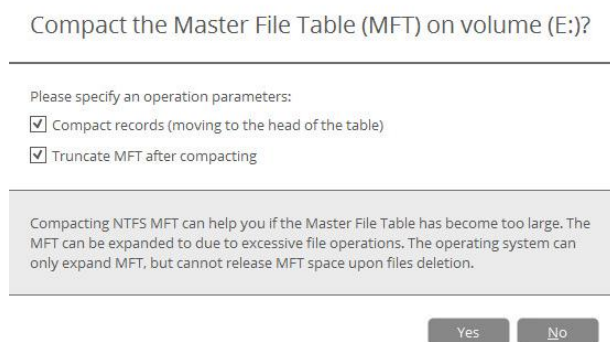
You can directly access and modify sectors of an entire disk drive or individual partition, save and restore sectors from specified files as well as navigate through the system metadata. For more details, please consult [Fixing Boot Problems](#) chapter.

### NTFS Optimization

As you know NTFS partitions get more and more redundant records about deleted files over time, which slows down performance. On database servers that host MS SQL or Exchange it may cause severe performance degradation. We include tools that help you organize valid and delete redundant records inside NTFS MFT (Master File Table) in a couple of minutes, so you don't need to rebuild the system or defragment the entire disk when that is the only problem.

### Compact MFT

1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing NTFS partition. Click **More...**, then select **Compact MFT** in the opened menu.



- **Compact records.** Unmark the option if you don't want to shift MFT records to the head of the table (not recommended).

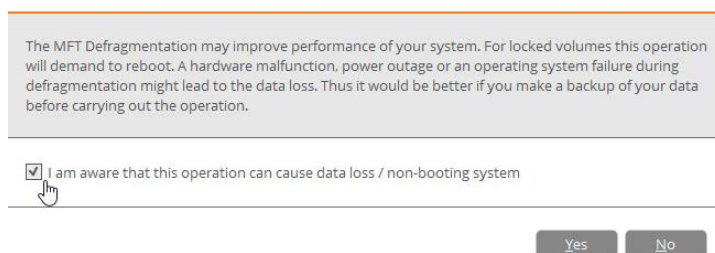
- **Truncate MFT after compacting.** Unmark the option if you don't want to remove emptied table rows that appeared during the operation (not recommended).

3. Click **Yes** when ready. The operation will be [pending until confirmed](#).

### *Defragment MFT*

1. Open **Partition Manager** scope.
2. Since a hardware or software failure, or power outage during this operation may lead to data loss, please make a backup of the specified NTFS partition. For more details, please consult [Backup Scenarios](#) chapter.
3. Select **Tools > My Computer**, then left click an existing NTFS partition. Click **More...**, then select **Defragment MFT** in the opened menu.

#### Defragment MFT on volume (E:)?



4. Confirm the operation, then click **Yes**. The operation will be [pending until confirmed](#).

### *Partitioning Virtual Disks*

Guess you didn't know that partitioning of virtual disks could be done from outside without login into a guest virtual machine? Our program helps you to connect a virtual disk as if it was an ordinary physical disk and do drive partitioning. Our solution supports disks of all popular virtualization vendors, including VHD(X), VMDK, and VDI. And if you feel uneasy about spoiling anything, just enable the non-destructive mode and all changes on the connected disk will be saved to a snapshot. This snapshot can later be merged with its parental disk by using standard tools included with the virtualization software.

#### Limitations:

- A virtual disk opened for writing with a 3rd party tool (e.g. being used by a virtual machine) won't be connected, as asynchronous parallel writing to the disk file will most likely result in data corruption.
- A virtual disk opened for reading with a 3rd party tool (e.g. it's a parent VMware disk, which snapshot is being used by a virtual machine) will be opened for reading only with the corresponding notification.
- The non-destructive connection is unavailable for .vdi disks, as our program doesn't support Oracle VirtualBox snapshots.
- Virtual disks connected from compact discs will be available for reading only.
- A double disk connection is prohibited.

1. Open **Partition Manager** scope, then click **Add VD** located in the upper right area of the Disk Map.
2. Connect a virtual disk from a local disk, a flash stick, a mapped network share, or a compact disc.

## Connect virtual disk

Path to virtual disk container file:

E:\Windows XP Professional.vmdk Browse

Please choose how to connect the disk:

☒ Allow write on disk

☐ Allow non-destructive write on disk

☐ Read only

☐ Connect disk at the program start

Connect No

- **Allow write on disk.** By default, the selected disk will be connected in read/write mode until you disconnect it or exit the program.
- **Allow non-destructive write on disk.** It is a special read/write mode, when all changes on the connected disk are being saved to a snapshot, thus providing complete safety for the original disk's contents. If needed, this snapshot can later be merged with its parental disk by using standard tools of virtualization software vendor.
- **Read only.** Use this mode to avoid modification of data on the virtual disk.
- **Connect disk at the program start.** Use this option to have the virtual disk connected automatically at every program start.



**Although you're allowed to connect virtual disks from network shares, we do not recommend it due to modest performance.**

3. Click **Connect** when ready. The operation will be performed immediately.
4. As a result a new disk will appear on the Disk Map. Now you can change its layout, copy data from/to, check surface and file system integrity, optimize NTFS, and accomplish other operations.

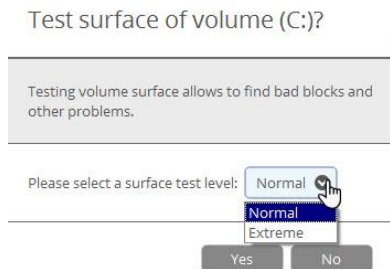


## Checking Partitions for Problems

### Testing Partition Surface

You can test surface of existing partitions and blocks of free space for bad or unstable sectors. During the operation all found questionable and damaged sectors will be marked unusable in the file system metadata, thus minimizing the risk of data loss.

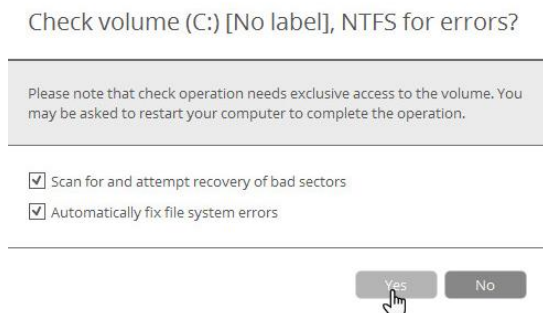
1. Open **Partition Manager** scope.
2. Select **Tools > My Computer**, then left click an existing partition. Click **More...**, then select **Test partition surface** in the opened menu.
3. Select the required verification level, and then click **Yes**. The operation will be [pending until confirmed](#).



## Checking File System Integrity

You can check the integrity of a file system to detect and repair errors before copying data or performing drive partitioning.

1. Open any functionality scope.
2. Select **Tools > My Computer**, then left click an existing partition. Select **Check file system integrity** in the opened menu.
3. If you'd like the program to automatically fix file system errors and/or find and attempt to repair bad sectors, just enable the corresponding options, and then click **Yes**. The operation will be [pending until confirmed](#).



## Erasing Data

You probably don't have an idea that deleted data can be easily recovered by novice, while pros can retrieve data even from a disk destroyed by mechanical means. Your private data is yours alone and should not be exposed to third party in any way. This can be achieved by erasing your storage device.

1. Open **Disk Wiper** scope.
2. Select **Tools > Wipe disks or partitions**, then click **Next** on the Welcome page of the wizard.
3. Choose whether to irreversibly destroy all on-disk data or only remnants of deleted files. Please note that the clear free space operation is available for known file systems only.

Welcome Scenario **Wipe target** Algorithm Overview Finish

## What is your wipe scenario?

☒ Wipe out all the data  
Choose this option if you want to completely destroy all data on the selected objects.

☐ Clear (wipe) free space  
Choose this option if you want to destroy the traces of data that may have left after an ordinary delete operation.

< Back Next > Cancel

4. Select one or several partitions or disks you'd like to erase completely or clear free space only.

Welcome Scenario **Wipe target** Algorithm Overview Finish

## What would you like to wipe?

Please choose an object for wiping. It can be a whole hard disk, a single partition or a block of unallocated space. Depending on the wipe scenario you've chosen, some of the objects might become unavailable for selection.

**Basic MBR Hard Disk 0 (VMware Virtual disk SCSI Disk Device)**

Sys... Local Disk (C:) NTFS | 82.46 GB free of 99.51 GB

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)**

NEW VOLUME New Volume (Unallocat... 5.00 GB)  
Linux Ext4 | 6.75... Apple HFS | 19.89 GB free of 20 GB

**Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)**

< Back Next > Cancel

5. Select a specific data erasure algorithm or create your own method. Please note that SSD drives are detected automatically and erased by the 'trim' command without eating up precious write cycles.

Welcome Scenario Wipe target **Algorithm** Overview Finish

## What algorithm would you like to use?

**Specific algorithm**

*i* You can skip the verification completely or partly by disabling it or reducing the percentage of sectors to check. Please note that it will be derivation from the original algorithm.

Paragon's algorithm

Algorithm consists of the 4 passes. At first overwrite each erased sector with a forcefully randomized 512-byte string, new for each sector, using state-of-the-art cryptographically secure pseudo-random number generator (CSPRNG). After that overwrite each erased sector with its complement. Then overwrite each sector with 512-byte CSPRNG string, again forcefully randomized and different from the first pass, and new for each sector. Finally fill each erased sector with 0xAA mask and verify everything.

Approximate wipe time: 00:57:10

☒ Verify wipe results Percentage of sectors to check: 100

☐ Set wipe stamp [Read more about this option](#)

New algorithm

< Back Next > Cancel



**The list of supported wiping algorithms may vary for your product.**

To create a new wiping algorithm, define up to four wiping patterns, number of passes for each wiping pattern and for the group of patterns. The Mask spinner control allows you to set a two-figure hexadecimal character value ("00" by default). The available range is from "00" to "FF". You can also choose whether to carry out residual data verification or not specifying the percentage of sectors to check.

### Create a new algorithm

Define your personal wipe algorithm here.

Algorithm name:

<input checked="" type="checkbox"/> Mask: <input type="text" value="0"/>	Pass count: <input type="text" value="1"/>
<input type="checkbox"/> Mask: <input type="text" value="0"/>	Pass count: <input type="text" value="1"/>
<input type="checkbox"/> Mask: <input type="text" value="0"/>	Pass count: <input type="text" value="1"/>
<input type="checkbox"/> Mask: <input type="text" value="0"/>	Pass count: <input type="text" value="1"/>
Pass count for the group of patterns: <input type="text" value="1"/>	

☒ Verify wipe results      Percentage of sectors to check:

☐ Set wipe stamp

By marking the **Set wipe stamp** option, information on the used wipe program, algorithm, device serial number, and other properties will be added to the MBR (Master Boot Record) of the wiped storage device to get notified during the boot phase how and when the storage has been wiped. Please note this option is available when wiping entire disks only.

```
Paragon Hard Disk Manager
HDD S/N: N/A
Method: Custom
1 Pass - 01 (1), 2 Pass - 02 (2), 3 Pass - 03 (3), Total Passes=6
Started: 05:46:52 2014-09-26
Ended: 05:48:27 2014-09-26
Status: SUCCESS
System ID: VMware-56 4d ee 93 2
```

6. Check the resulting disk layout, then click **Next** to confirm.



Welcome Scenario Wipe target Algorithm Overview **Finish**

## Please review the changes

Changes:

Previous status

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)**

NEW VOLUME	New Volume	(Unallocat...)
Linux Ext4   6.75...	Apple HFS   19.89 GB free of 20 GB	5.00 GB

New status

**Basic MBR Hard Disk 1 (VMware Virtual disk SCSI Disk Device)**

NEW VOLUME	New Volume	(Unallocat...)
Linux Ext4   6.75...	Not formatted   20 GB free of 20 GB	5.00 GB

< Back Next > Cancel

7. If you'd like to execute the operation immediately after finishing the wizard, disable the simulation mode by unmarking the corresponding option. Click **Finish** to complete.

Welcome Scenario Wipe target Algorithm Overview **Finish**

## Completing the Wipe Wizard

You have successfully prepared a wipe operation. The operation can now be either created in the **simulation mode** for you to review in the disk-map or you can **perform the physical operation**. If you wish to do it physically please deselect the button below.

☒ Perform the operation in the simulation mode

### Summary

Wipe target(s): New Volume

Wipe scenario: Wipe out hard disks or partitions.

Algorithm: **Paragon's algorithm**  
 Algorithm consists of the 4 passes. At first overwrite each erased sector with a forcefully randomized 512-byte string, new for each sector, using state-of-the-art cryptographically secure pseudo-random number generator (CSPRNG). After that overwrite each erased sector with its complement. Then overwrite each sector with 512-byte CSPRNG string, again forcefully randomized and different from the first pass, and new for each sector. Finally fill each erased sector with 0xAA mask and verify everything.

< Back Finish Cancel

## Copying Data

Sooner or later each of us faces the problem of having not enough space on the internal disk to install a new game or application, or to store a favorite music album or family pictures. Worse still, is a situation when a system HDD or a trendy SSD starts to deteriorate, threatening to die any moment. When this is happening to us, the only thought we've got is how to transfer Windows OS, applications and all data to a newer and larger storage device with minimal time and effort.

Fortunately, there are technologies that help to straightforward the process of moving all contents of your disk, including standard bootstrap code and other system service structures, to another storage device without having to re-install the operating system and applications. Our program can help you to perform fast and safe migrations of Windows OS, single partitions and entire disks to new storage devices and even downsizes to smaller capacity drives.



1. Connect a new disk to the computer.
2. [Launch Hard Disk Manager](#).
3. Open **Drive Copy** scope.
4. Select **Tools > Migrate**, then click **Next** on the Welcome page of the wizard.
5. Select the preferred migration scenario. We pick the first option, as we're going to transfer Windows OS to a fast but relatively small SSD drive.

The screenshot shows the 'Scenario' step of a migration wizard. At the top is a progress bar with tabs: Welcome, Scenario (active), Target, Excludes, Overview, and Finish. The main heading is 'What is your migration scenario?'. There are three radio button options, each with an icon and a help/next button:

- ☒ **Operating system including programs, user folders, etc.** (Icon: four squares). Description: 'Select this option if you wish to migrate an operating system with programs, user files, and service partitions to another disk.'
- ☐ **Whole disk including all partitions** (Icon: disk). Description: 'Select this option if you wish to migrate an entire disk with all partitions to another disk.'
- ☐ **Single partition** (Icon: pie chart). Description: 'Select this option if you wish to migrate a single partition to unallocated space on another disk.'

At the bottom right are three buttons: '< Back', 'Next >', and 'Cancel'.

6. The wizard will search your system for supported operating systems. If several OSes have been found, you will need to choose the one you'd like to migrate.

The screenshot shows the 'Source' step of the migration wizard. The progress bar at the top has tabs: Welcome, Source (active), Target, Overview, and Finish. The main heading is 'What would you like to migrate?'. Below the heading is the instruction: 'Please select an operating system you would like to migrate to another disk:'. There is a list box containing two entries, both labeled 'Microsoft Windows 10 64-bit Edition' and 'Local Disk (C:)'. The first entry is highlighted with a blue background. At the bottom right are three buttons: '< Back', 'Next >', and 'Cancel'.

7. Depending on your choice, it will then automatically pick one or two on-disk partitions (Windows may have System Reserved, a special hidden partition that contains boot critical files, while in the uEFI+GPT mode there will be another hidden partition, called EFI System Partition) and prompt you to select a destination disk, if there are more than two storage devices besides the source.

If the selected disk is not enough in capacity to hold your OS, you will be prompted to exclude files from the main system partition at the next step to try to fit in to the destination.

Welcome Target Excludes Overview Finish

## Choose a target to migrate to

Microsoft Windows 10 64-bit Edition on Local Disk (C:) on hard disk 0  
Please select a disk you would like to migrate to:

Local Disk (E:)  
Bitlocked | 16.60 GB

Linux Volume  
Linux Ext4 | 15.22 GB free of o...

Apple Volume  
Apple HFS | 17.66 GB free of 17.7...

Basic MBR Hard Disk 3 (VMware Virtual disk SCSI Disk Device)

NEW VOLUME (G:)  
NTFS | 4.86 GB free of 4.88 GB

NEW VOLUME (H:)  
FAT32 | 5.11 GB free of 5.11 GB

The selected target cannot fit to the source as is. You may try to exclude unnecessary files or folders to shrink the source data size.

< Back Next > Cancel

If the selected disk is the same size or larger than the source, but you're still willing to remove redundant data from the migration process, mark the corresponding option to do it later.

Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)

Local Disk (E:)  
Bitlocked | 16.60 GB

Linux Volume  
Linux Ext4 | 15.22 GB free of...

Apple Volume  
Apple HFS | 17.66 GB free of 17.77...

Basic MBR Hard Disk 3 (VMware Virtual disk SCSI Disk Device)

NEW VOLUME (G:)  
NTFS | 4.86 GB free of 4.88 GB

NEW VOLUME (H:)  
FAT32 | 5.11 GB free of 5.11 GB

☒ Edit folders and files excludes (advanced)

8. The destination disk will be checked for the presence of files. If found, you will be warned that all data stored on this disk will be lost during the upcoming operation. Use Windows Explorer or any file manager to save all important data to another location, then confirm you agree to proceed.

Are you sure you want to proceed this migration?

You are about to migrate Microsoft Windows 10 64-bit Edition to Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device). Please note that there are files on the selected target that will be overwritten.

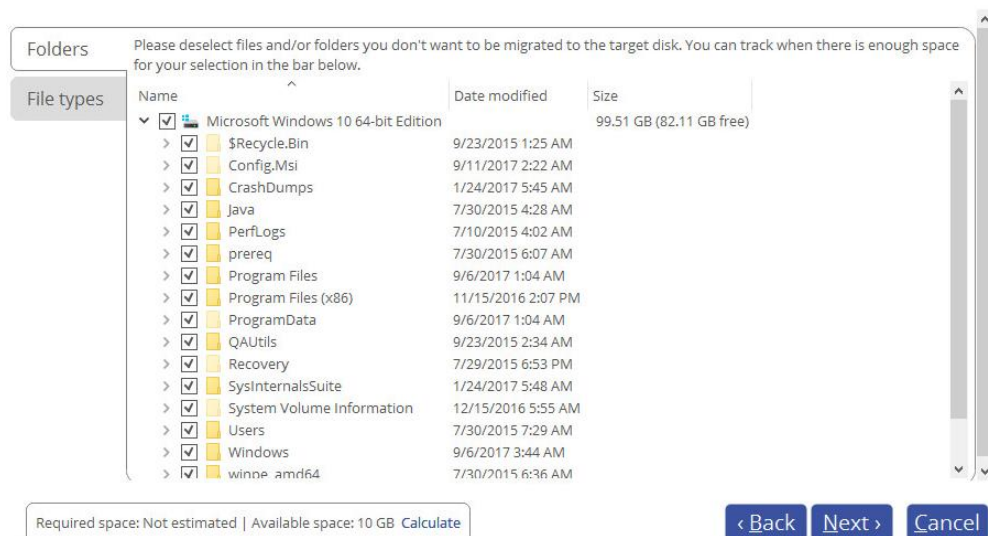
☒ I am aware that data on the target disk will be overwritten

Yes No

9. If the destination disk is not enough in capacity to hold your OS, first click **Calculate** to know exactly how much data you need to exclude. The calculation takes a while, so please be patient.

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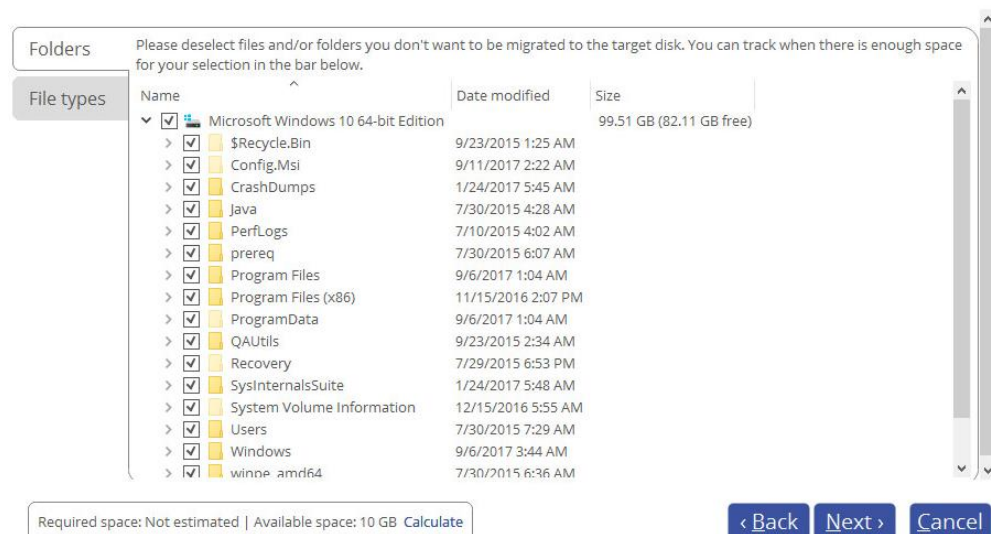
## Exclude folders or certain file types



The wizard includes two data exclusion modes, available under the corresponding tabs:

- **Folders** (default). Double click the system partition to see its contents, then unmark checkboxes opposite unnecessary files and folders to try to fit in to the destination disk. We do not recommend you to exclude system files, but those that could take plenty of disk space, like video, music, photos, etc. When ready, click **Calculate** to make sure you get a success.

## Exclude folders or certain file types



- **File types**. By clicking on this tab, you can see three predefined categories containing file masks for popular document, music, and picture formats. Either select an entire category(ies) or use the arrow icon to expand it and choose a certain file mask(s). If you don't find the required mask, add your own through the **My type filters** option. When done, click **Calculate** to make sure you get a success.

**Folders**

Please select file types you would like to exclude from the migration. You can track when there is enough disk space for your selection in the bar below.

**File types**

Please note that calculation may take much time.

☐ Documents

☒ Music

☒ WAV

☒ FLAC

☒ APE

☒ MP3

☒ WMA

☒ OGG

☒ Pictures

☒ Videos

☒ My type filters

Type in your filter (e.g. "file" - only files with name "file"). Use wildcard "\*" to select all matching files (e.g. "\*.txt" - for all files with txt extension).

☒ \*.\*txt

Required space: Not estimated | Available space: 10 GB [Calculate](#)

[< Back](#) [Next >](#) [Cancel](#)



**If the destination disk is the same or larger than the source, then the data space calculation won't be available in the program's interface.**

10. Review all parameters of the operation and modify them if necessary by going back to any of the required steps.

Welcome Target Excludes **Overview** Finish

**Migrate:** Microsoft Windows 10 64-bit Edition  
Local Disk (C:)

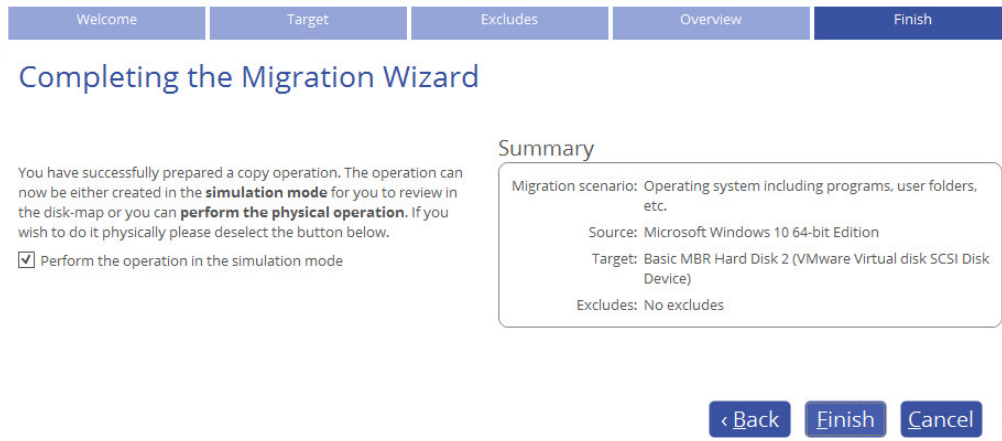
**To:** Basic MBR Hard Disk 2 (VMware Virtual disk SCSI Disk Device)  
[View changes in disk layout >>>](#)

There is enough disk space, no excludes are required.  
[Edit exclude files / folders <<<](#)

[< Back](#) [Next >](#) [Cancel](#)

- If the destination disk is larger than the source, then the wizard will prompt you to expand the resulted partition across all on-disk space. Unmark the corresponding option if you don't need that.
- If the destination disk becomes Bootable GPT as a result of the migration process, you'll see one more option that will allow you to make OS bootable on this disk. Please note that you can specify a bootable device at any time through Boot Corrector.

11. If you'd like to execute the operation immediately after finishing the wizard, disable the simulation mode by unmarking the corresponding option. Click **Finish** to complete.



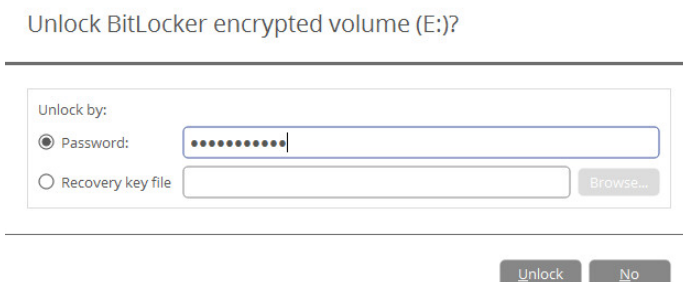
12. When the migration is over, first check up Windows OS starts up from the SSD. If yes, delete the Windows OS partition from the source disk, then re-partition the disk according to your needs.

## Extra WinPE Scenarios

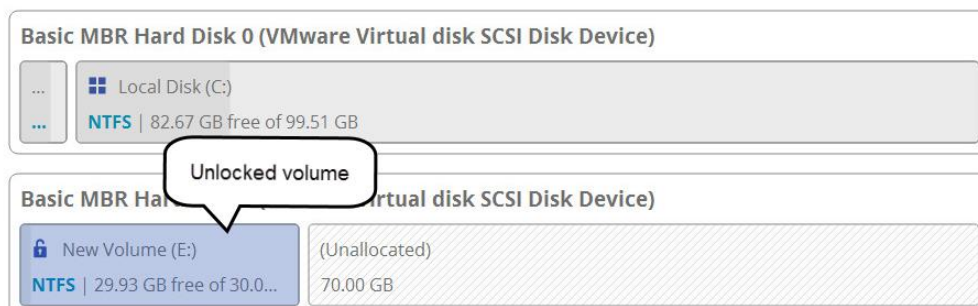
### Unlocking Bitlocked Volumes

The program allows you to accomplish backup, restore, or copying of Windows BitLocker encrypted volumes, but only when they are unlocked. Until that the locked volumes will be recognized in the program's interface as "Bitlocked".

1. [Start up the computer from the WinPE recovery media.](#)
2. Open **Tools > My Computer**. Left click a volume detected as "Bitlocked", then select **Unlock Bitlocker encrypted volume** in the opened menu.
3. Either enter a password or provide a path to a recovery key (**recoverykey.bek**). For more details, please consult documentation provided by Microsoft.



4. Click **Unlock** when ready. All introduced changes to the disk layout will be [pending until confirmed](#).
5. As a result of the operation the volume gets correctly recognized and is available to work with.





---

The same action can be accomplished in the Windows version of the program.

Resize or free space redistribution that leads to shrinking of an unlocked bitlocked volume may fail due to limitations of a Microsoft service used for accomplishing this type of operations.

---

### Adding Specific Drivers

The WinPE recovery media offers excellent hardware support. However, in case of not having a driver for your disk controller, for example, your hard disks will be unavailable to work with. Please use this scenario to inject drivers for unknown storage controllers, network cards, or other devices.

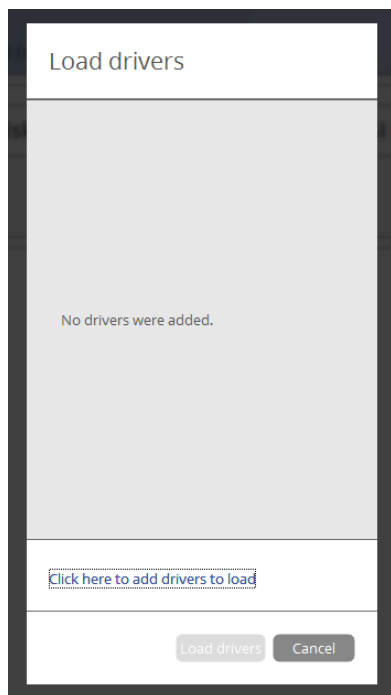


---

To avoid this action every time you start up the recovery media, we recommend you to inject additional drivers during its creation. For more details, please consult [Building Recovery Media](#).

---

1. [Start up the computer from the WinPE recovery media](#).
2. Select **Utilities > Load drivers**.
3. Use the corresponding link to browse for an .INF file of the required driver package on a floppy disk, local disk, CD/DVD or a network share. To learn how to map a network share, please consult [Configuring Network](#).



The chosen package gets on the list. Repeat this action to inject more drivers. Click **Load drivers** to accomplish the operation.



**The WinPE environment can either be 32- or 64-bit, so are to be drivers for injection.**

## Configuring Network

If your local network has a DHCP server, a network connection will be automatically configured once the WinPE recovery media has loaded. Otherwise, you will need to do it manually by providing an IP address, a network mask, default gateway, etc. in Network Configurator. Additionally, this wizard will help you map a network share, ping a network resource, or measure transit delays of packets across an Internet Protocol (IP) network to track down problematic nodes.



**To avoid this action every time you start up the recovery media, we recommend you to pre-configure network settings and map network resources during its creation. For more details, please consult [Building Recovery Media](#).**

1. [Start up the computer from the WinPE recovery media.](#)
2. Select **Utilities > Configure network**.
3. Provide an IP address, a network mask, default gateway, etc. to configure your network device according to network environment.

The screenshot shows the 'Network adapters' tab in the Network Configurator. The Ethernet adapter is 'Intel(R) 82574L Gigabit Network Connection'. Under 'IP address configuration', the radio button 'Obtain an IP address automatically.' is selected, with 'Renew address' and 'Release address' buttons. Below it, the 'Use the following IP address:' option is unselected, with fields for IP Address (172.30.66.86), Subnet Mask (255.255.254.0), and Default Gateway (172.30.67.220). Under 'DNS/WINS configuration', the checkboxes 'Obtain DNS server address automatically' and 'Obtain WINS server address automatically' are both checked. The DNS server field is 172.30.10.9, and the WINS server fields are Primary WINS server: 172.30.10.9 and Secondary WINS server: 0.0.0.0. At the bottom are buttons for 'Load from file', 'Save to file', 'OK', 'Apply', and 'Cancel'.

4. Use the **Network drives** tab to manage network shares.



5. Click **Map Network Drive** to map a network share.

Map Network Drive

---

A network share:  ...

Map to drive letter: G: ▼

☐ Make permanent connection

---

👤 Connect as user OK Cancel

- 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;
  - If you'd like to make this connection permanent, mark the corresponding checkbox. Otherwise it will only be available for the current session;
  - Click the **Connect as user** button at the foot of the dialog page to specify a user name and password to access the selected network share, if necessary.
6. Use the **Network identification** tab to change a network name of your computer (generated automatically) and a workgroup name.



Network adapters    Network drives    **Network identification**    Network utilities

Computer Name :

Workgroup :

Primary DNS suffix :

7. By default, the wizard saves all network settings in the "netconf.ini" file located on the WinPE RAM drive, thus it will only be available until you restart the computer. However, you can just once configure your network device and then save this file to some other destination, for instance a local drive, and this way avoid constant re-configuration, just by providing a path to it. So click **Save to file** to save the "netconfig.ini" file to the required destination.

### Network Troubleshooter

Network Configurator includes a traceroute/ping utility that enables to get detailed information on particular routes and measure transit delays of packets across an Internet Protocol (IP) network. So with its help you can easily track down problematic nodes.

1. [Start up the computer from the WinPE recovery media.](#)
2. Select **Utilities > Configure network**.
3. Click on the **Network identification** tab, then select **Ping** to ping a network host. Click **Start** when you're ready with all parameters.

The screenshot shows the 'Network utilities' tab of a software interface. The 'Utility' dropdown is set to 'Ping'. Below it is a 'Target' text field. There are three checkboxes: 'Ping the specified host until stopped' (unchecked), 'Resolve addresses to hostnames' (unchecked), and 'Number of echo requests to send:' (checked, with a value of 1 in a spinner box). To the right of these options are 'Clear output' and 'Start' buttons. At the bottom are 'Load from file', 'Save to file', 'OK', 'Apply', and 'Cancel' buttons.

- **Target.** Type in the required IP address or its DNS name.
- **Ping the specified host until stopped.** Mark the option to ping the chosen host for indefinite time.
- **Resolve addresses to hostnames.** Mark the option to display hostnames instead of IP addresses.
- **Number of echo requests to send.** By default, the utility sends 1 echo request, which you can modify however.

4. Select **Trace route** to trace a route to a network host. Click **Start** when you're ready with all parameters.

The screenshot shows the 'Network utilities' tab with the 'Utility' dropdown set to 'Trace route'. The 'Target' text field is empty. There are three checkboxes: 'Do not resolve addresses to hostnames' (unchecked), 'Maximum number of hops to search for target:' (checked, with a value of 1 in a spinner box), and 'Wait timeout milliseconds for each reply:' (checked, with a value of 1 in a spinner box). To the right are 'Clear output' and 'Start' buttons. At the bottom are 'Load from file', 'Save to file', 'OK', 'Apply', and 'Cancel' buttons.

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

- **Maximum number of hops to search for target.** By default the utility goes through maximum 30 hops when searching for the target host, which you can modify however.
- **Wait timeout milliseconds for each reply.** By default the utility waits 4 seconds for each echo reply message. If not received within the timeout, an asterisk (\*) is displayed.

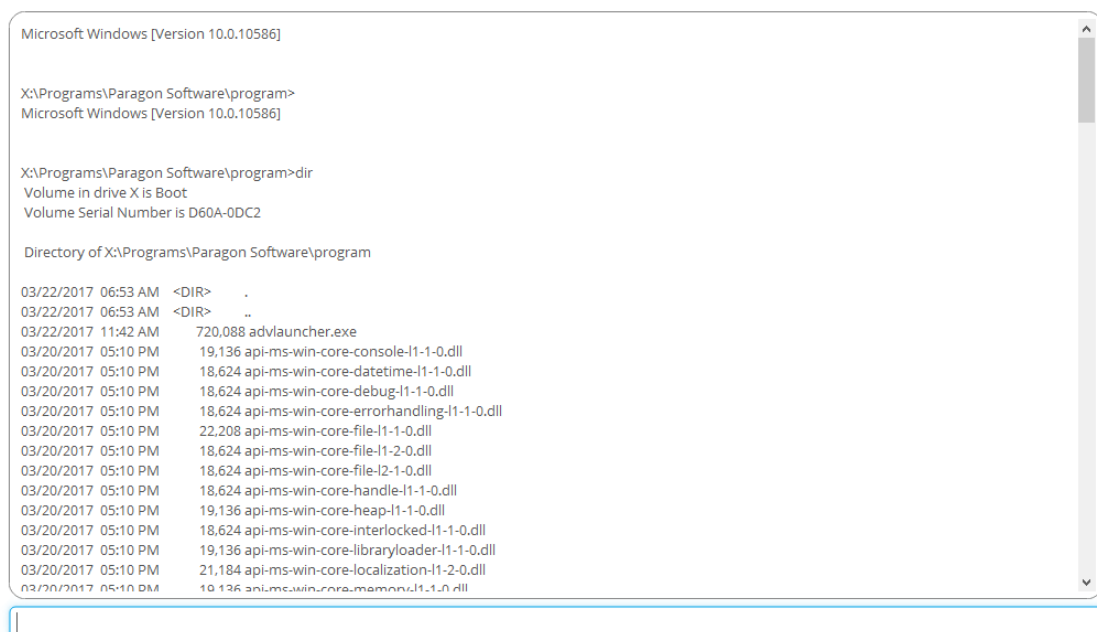
## Using the Command Prompt

The primary function of the command prompt is running [generated program scripts](#) with different parameters. Additionally, it can help you with opening Notepad or Diskpart, running batch files, or solving a variety of issues such as failure to connect to the internet or website loading problems.

1. [Start up the computer from the WinPE recovery media.](#)
2. Select **Utilities > Run command.**
3. The embedded command prompt utility is similar to Windows CMD. It supports the auto-complete and commands history features:
  - **Arrow up/Arrow down** to navigate the history,
  - **Tab** to complete or select a path,
  - **Esc** to clear a text field,
  - **Return** to run a command.

Type in **hdmengine\_scriptapp.exe <path to a generated script file> --multiple** to run the required program script.

Command Line Tool



```

Microsoft Windows [Version 10.0.10586]

X:\Programs\Paragon Software\program>
Microsoft Windows [Version 10.0.10586]

X:\Programs\Paragon Software\program>dir
Volume in drive X is Boot
Volume Serial Number is D60A-0DC2

Directory of X:\Programs\Paragon Software\program

03/22/2017 06:53 AM <DIR>      .
03/22/2017 06:53 AM <DIR>      ..
03/22/2017 11:42 AM          720,088 advlauncher.exe
03/20/2017 05:10 PM      19,136 api-ms-win-core-console-l1-1-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-datetime-l1-1-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-debug-l1-1-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-errorhandling-l1-1-0.dll
03/20/2017 05:10 PM      22,208 api-ms-win-core-file-l1-1-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-file-l1-2-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-file-l2-1-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-handle-l1-1-0.dll
03/20/2017 05:10 PM      19,136 api-ms-win-core-heap-l1-1-0.dll
03/20/2017 05:10 PM      18,624 api-ms-win-core-interlocked-l1-1-0.dll
03/20/2017 05:10 PM      19,136 api-ms-win-core-libraryloader-l1-1-0.dll
03/20/2017 05:10 PM      21,184 api-ms-win-core-localization-l1-2-0.dll
03/20/2017 05:10 PM      10,136 api-ms-win-core-memory-l1-1-0.dll
  
```

The 'multiple' parameter is obligatory to use in WindowsPE. To learn more about scripts, please consult the Paragon Scripting Language manual.

```

C:\Program Files\Paragon Software\Hard Disk Manager 16 Internal\program>hdmengine_scriptapp.exe C:\script.ps1
Some of the Paragon disk engine is already running.

C:\Program Files\Paragon Software\Hard Disk Manager 16 Internal\program>
  
```

## Troubleshooting

In case of having difficulties with handling the product first visit our Knowledge Base to find an existing remedy: <https://kb.paragon-software.com/>.

If your issue is not described there, please address our support engineers for assistance. To help you solve your problem with minimal time, our engineers need operation logs and your brief description.

1. Reproduce your issue (make it happen again).
2. Select **Home > Collect logs**. Provide an e-mail address used for registering the product, then describe the encountered problem. Please don't worry - we respect your privacy, so none of your confidential data will be exposed.

### Home

**Collect software logs**

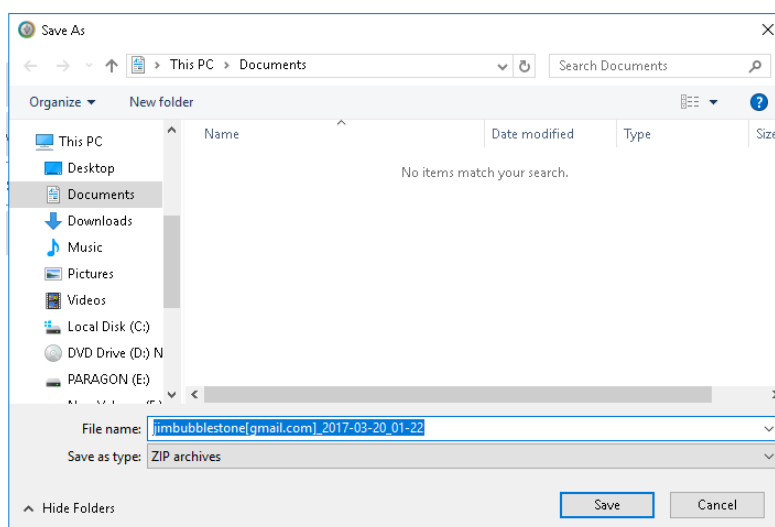
**Please specify issue details**

Please enter an e-mail address used during the product registration. With its help Paragon Support Department will be able to associate your log files with your request through an [on-line request system](#).

Please describe the encountered issue:

[Next >](#)

3. Browse for the required location of the log files package and edit the default file name, if necessary. Click **Save** when ready.

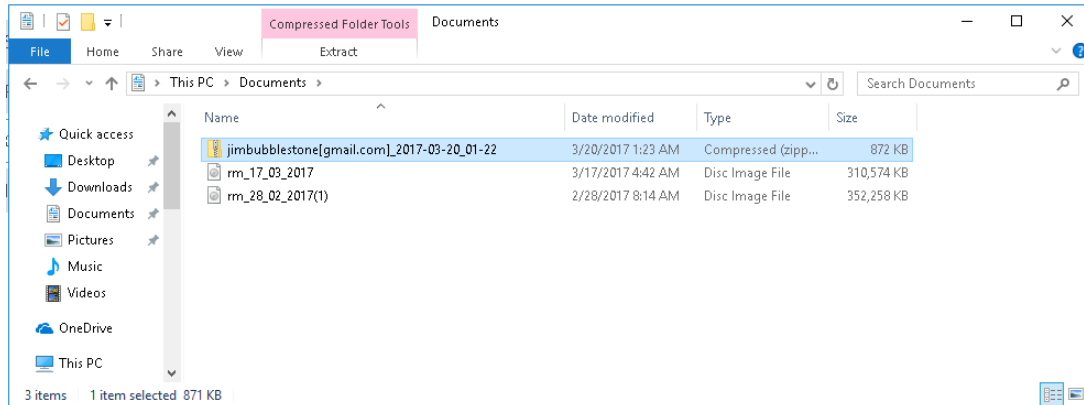


4. Once the operation is over, click **Open folder with logs...** to check the prepared package doesn't contain anything confidential, but layouts of your disks, performed operations, etc.

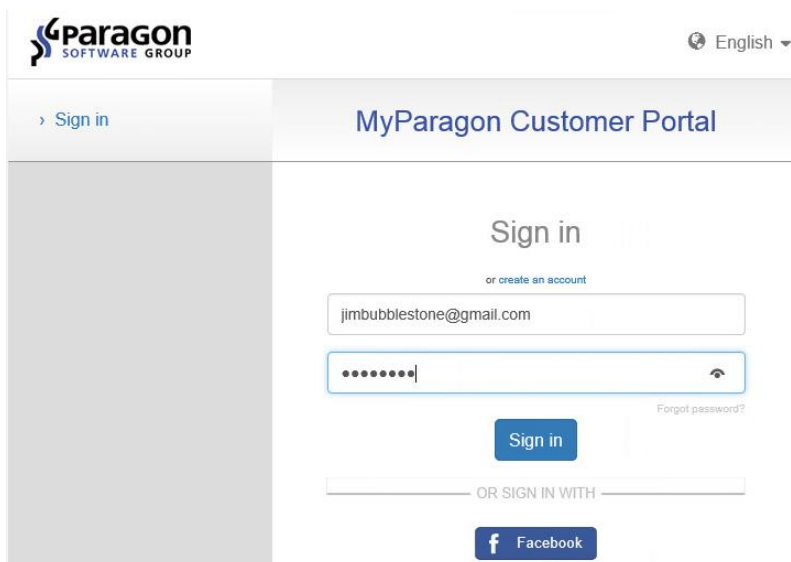
## Collect software logs

The log files have been successfully collected!

[Open the folder with logs in Windows Explorer](#)




5. Use the link on the first page of the wizard to sign in to MyParagon Account.



6. Go through the first-level ticket request form, then click **Submit request**.

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Support
Knowledge base
Documentation
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New Support Request
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\$19.95 \$139.75

Knowledge Base
Forum
Documentation

## New Support Request

Ask a question, report a problem or give feedback by creating a request. Please fill in all the required fields for better support.

\* What is your question about?

\* Product   
If your purchased product is not shown in the list, please register it via the "Register New Product" section.

\* Tell us more

Please note, that we will answer your question during next 3 business days within standard support program.

Need faster solution? Check hot topics now

1. [Backup and Recovery 16 – Troubleshooting Guide](#)

Still need help?

[Submit request](#)

7. Go through the second-level ticket request form, attach the prepared logs package, then click **Post request**. That's all. Our support engineers will get in touch with you in a little while.

\* Brief description

\* Details of the request

BR16 doesn't back up my Windows correctly

Attach a file

Select file

logs.zip ✕

Select file

no file selected

Maximum attachment size: 50 Mb.

Build number

(available in "Help" -> "About" dialog, for products with Express Launcher in Advanced Options -> main product -> Help -> About)

\* Operating system

\* Required fields

Post request

