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Paragon Alignment Tool 4.0 Professional

User Manual

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Introducing the Paragon Alignment Tool

This chapter will present general information on the Paragon Alignment Tool (PAT).

What is PAT?

The Paragon Alignment Tool is a software utility for both physical and virtual systems. It is intended to check and solve misalignment issues on 4K physical sector size Advanced Format Drives (AF Drives) and Solid State Drives (SSDs), as well as Redundant Array of Independent Disks (RAID). Using PAT to check and properly realign partitions will assure maximum system and RAID performance, and in the case of SSDs also assure their maximum longevity.

What's New in PAT 4.0 Professional

- **Support of Windows 8, Windows 8 Server, and Windows 2011 SBS.** Install the product and do partition alignments on computers that accommodate these operating systems.
- **PAT WinPE environment.** Prepare a WinPE based bootable media to do partition alignments, or resume previously interrupted operations. It provides an excellent hardware support and the same interface as the Windows version does. Additionally it includes the Delete Partition Wizard, which might be of help in particular emergency cases.
- **Faster alignment engine.** Partition alignments have become much faster when protection from data loss is disabled.
- **Log Saver** is also added to the PAT Linux environment to help you collect log files and send them to Paragon's Support Team.

Product Components

PAT features several components for checking and aligning drives, and protecting user data:

- **Windows™-based utility** – the primary tool for checking and aligning partitions from within Windows.
- **Blue Screen utility** – aligns “locked” partitions, such as a system partition or volumes with open files.
- **PAT Linux environment** – a set of utilities that run under Linux™ from a CD, DVD, BD, or external storage device connected via USB or FireWire (IEEE 1394). The user-friendly “Windows-like” Linux environment requires no installation, and is designed to be used when the operating system (OS) won't boot in order to continue a previously interrupted alignment operation.
- **PAT WinPE environment** – with Boot Media Builder you can prepare a WinPE based bootable media on a CD/DVD/BD disc, USB thumb drive, or in an ISO image format. Unlike the Linux environment it requires no installation to do partition alignments, providing an excellent hardware support and the same interface as the Windows version does. It also enables to resume interrupted operations.



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

Key Features

- **Partition Alignment without Reboot** – Unlocked partitions can be aligned directly from Windows.

- **Alignment in Blue Screen Mode** – Reboot the system into this Blue Screen mode to align system partitions or volumes with open files.
- **Linux and WinPE based media** – Boot up your system when Windows won't, or check and align drives without installing PAT.
- **Total Data Protection** – Data will be protected even if the alignment process was unexpectedly interrupted (e.g. due to power outage).

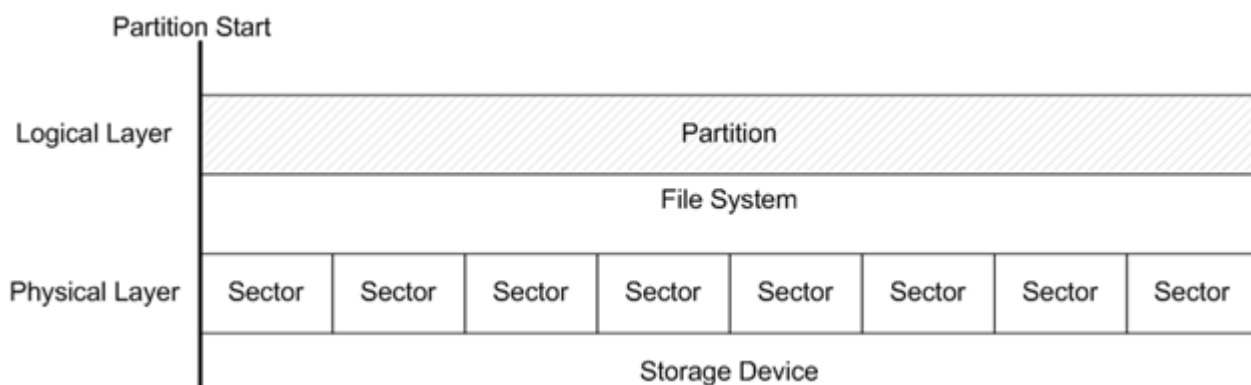
About Partition Alignment

What is Partition Alignment?

To understand what partition alignment is we should first see how data is stored on a drive.

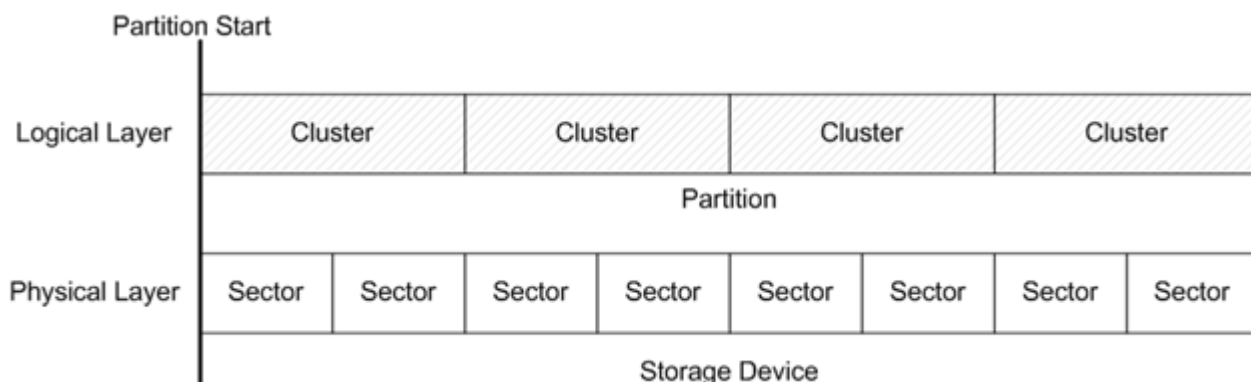
A standard hard disk drive is divided into physical sectors, where each sector is 512 bytes in size. On the Diagram 1 you can see a simplified partitioning scheme, where one partition consumes all drive space and sectors. In this case it is shown properly aligned with the first physical sector; that is, the partition start position corresponds with the first sector start position:

Diagram 1



The partition consists of logical units, called clusters. In this simplified partitioning example (Diagram 2), one logical cluster corresponds to two physical sectors:

Diagram 2



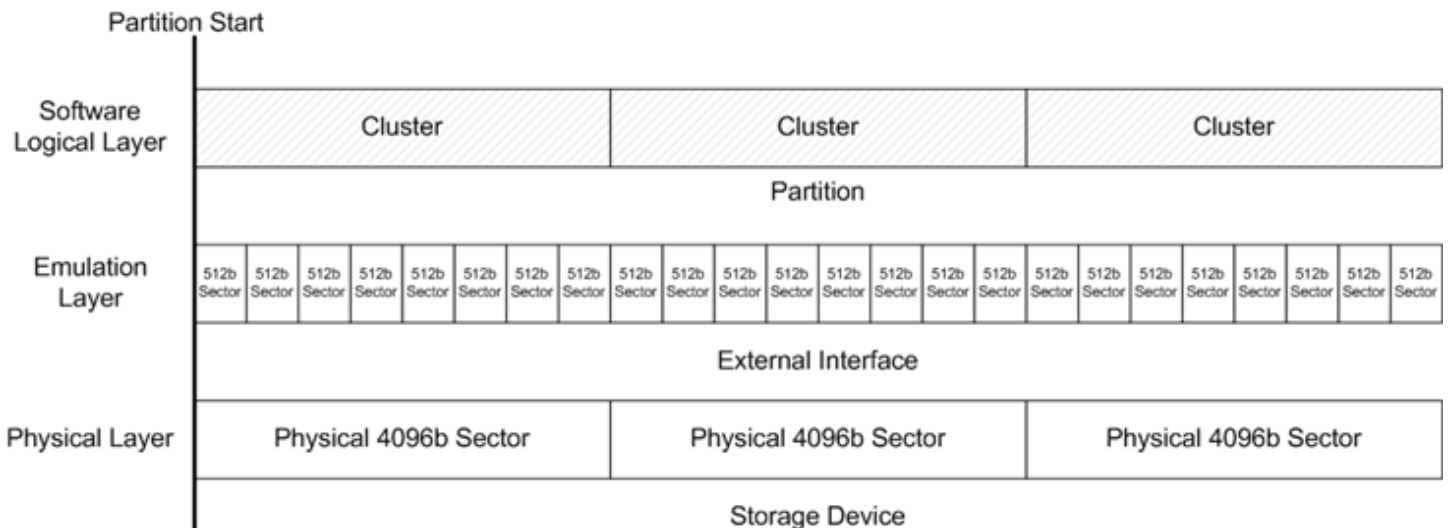
So in this example, when data is read from one logical cluster, for example a small text file, the storage device is actually reading data from two physical sectors. Here again the partition is shown properly aligned; that is, the partition start position and the first sector start position correspond to each other – so all clusters are aligned with all sectors, and thus drive operations are as fast as possible.

Why are Misaligned Partitions a Problem for Hard Disk Drives?

The next generation of hard disk drives, known as Advanced Format Drives (AF Drives) or “4K”, will have physical sectors that are 4,096 bytes in size (instead of 512 bytes) –because a larger sector size reduces the amount of Error Correction Code (ECC) and head positioning (servo code) data on the drive, resulting in superior read/write performance and increased hard drive capacity.

But for drives including IDE and SATA, the sector size must be “emulated” at 512 bytes because OSs are designed to work only with sectors of 512 bytes, even though the physical sectors of internal AF Drives are actually 4K (4,096 bytes) in size:

Diagram 3

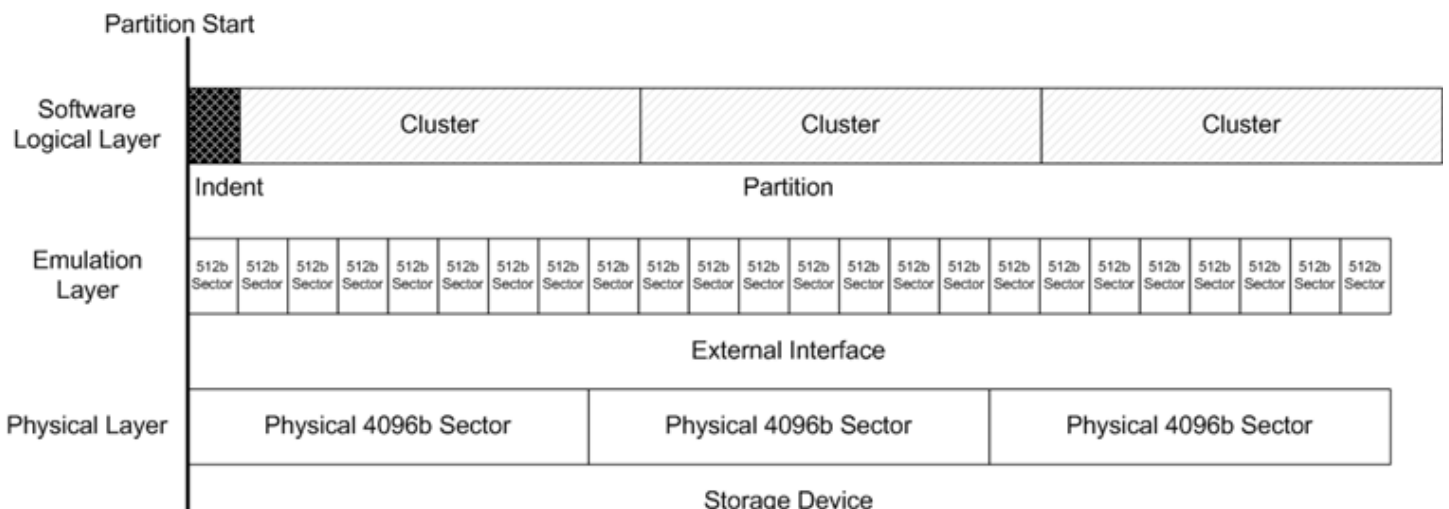


On the Diagram 3 you can see the three layers of an AF Drive: the bottom physical layer is divided into physical sectors that are 4K in size. The second emulation layer is divided into 512 byte sectors. And the top layer is the actual file system partition; here it is divided into 4K clusters, so 1 cluster = 8 emulated sectors = 1 actual physical sector.

Also notice that in this case all three layers are aligned in relation to each other and disk start position. So when you read or write data from one cluster, it will be actualized in eight 512 byte emulated sectors and one 4K physical sector. The amount of required read/write operations is minimized; all disk operations are at maximum performance.

But look on the Diagram #4 what happens when logical clusters are shifted (misaligned) relative to all underlying layers:

Diagram 4



On the Diagram 4 you can see that the partition is shifted from the disk start position by 1 512 byte sector. As a result, all logical clusters are now linked (overlapping) with two actual physical 4K sectors, and all read/write operations will be doubled. In this case the performance of the entire system will decrease, because for each cluster of data, the drive has to perform two operations with two sectors –instead of just one if the partition was properly aligned.

What causes this shift? All Windows versions before Vista™ use a factor of 512 bytes to create volume clusters, meaning that the partition start position is aligned to 512 byte sectors and not to 4K sectors, where the partition start position is indented by one 512 byte sector as shown. It is also possible under certain circumstances for any version of Windows to create secondary partitions that are misaligned, and any third-party software which is not “4K-ready” can also misalign partitions.

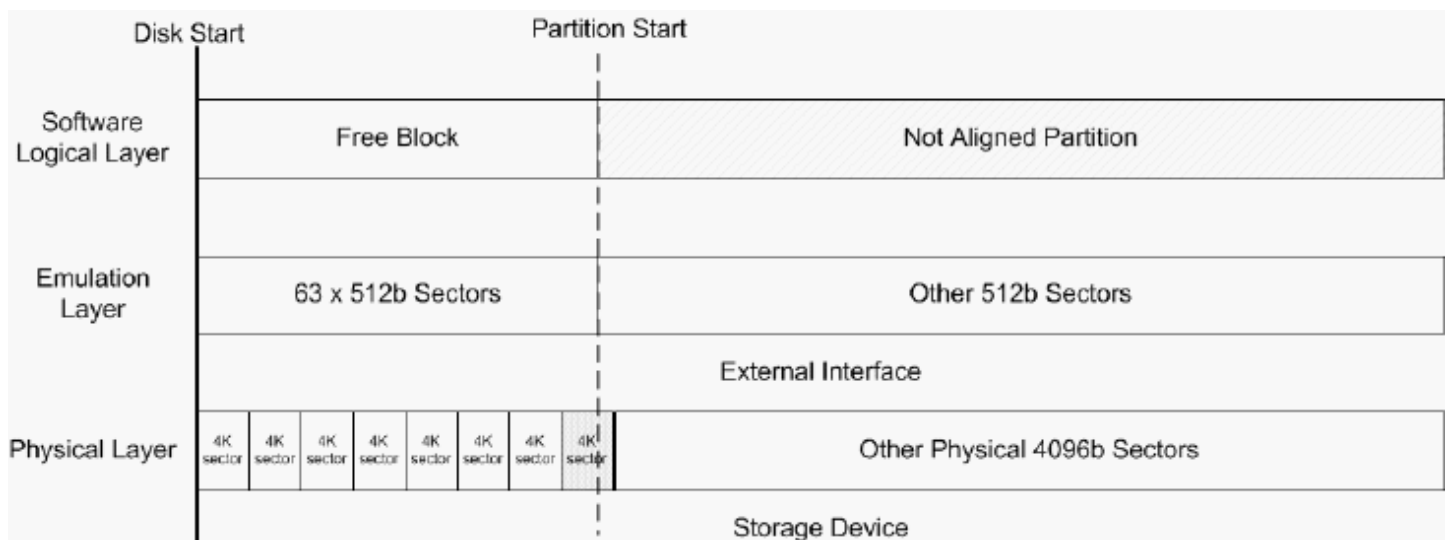
The partition start position is usually indented by 63 sectors because it’s an old measure of disk “cylinder”, and older versions of Windows (and DOS) require that the partition has to be aligned to the “cylinder” for correct sector addressing and access. This Cylinder/Head/Sector (CHS) addressing scheme is an old compatibility issue which modern operating systems do not use. Instead, they use a Logical Block Addressing (LBA) scheme where there are no “cylinders” or “heads”; sectors are addressed continuously over a whole disk drive. But for legacy reasons all Windows versions before Vista create partitions accordingly to the “cylinder alignment” rule.

There was no problem with this rule and partition alignment until “4K” (4,096 byte) AF Drives became mainstream. Partitions aligned to 63 sectors start position are not aligned with 4K sectors by default. This is a matter of simple math Formula 1:

$$\frac{63 \text{ sectors} \times 512 \text{ bytes}}{1 \text{ sector} \times 4096 \text{ bytes}} = 7,875 \quad \text{Formula 1}$$

As you can see, 63 sectors multiplied by 512 bytes does not equal a whole number of 4K sectors, thus this partition and as well as all other subsequent partitions on the disk are misaligned (Diagram 5):

Diagram 5



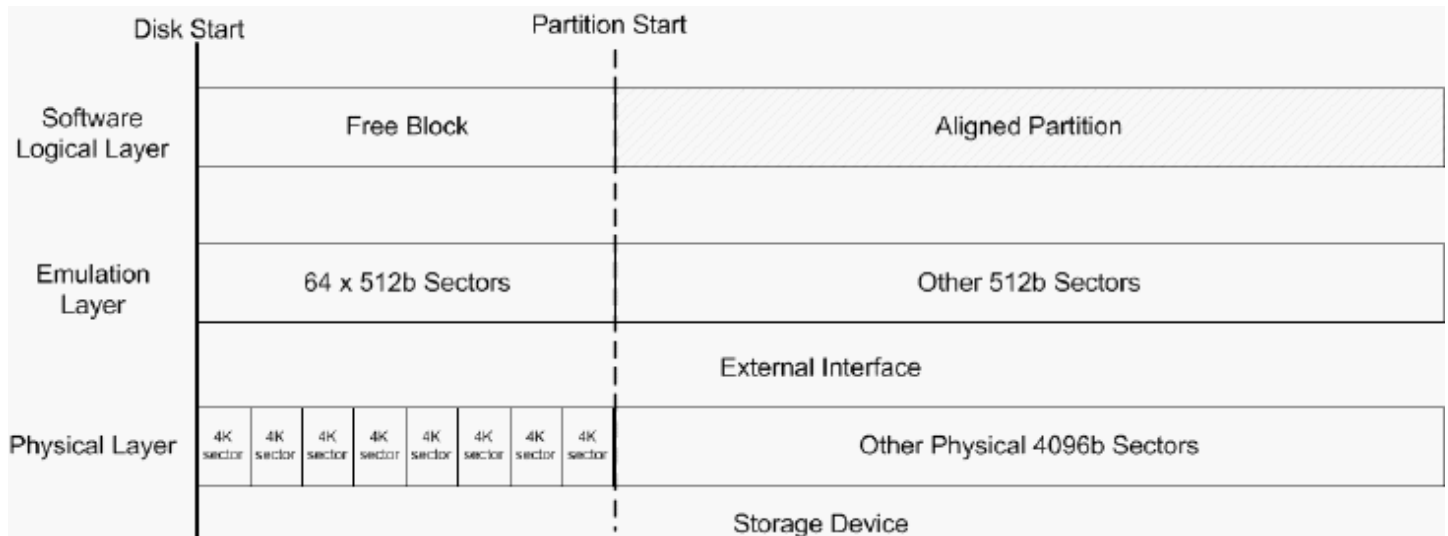
How can the Paragon Alignment Tool help?

PAT realigns all partitions that are misaligned by moving them the required number of 512 byte sectors so that all volumes become aligned. In this example (Formula 2), PAT will move the misaligned partition forward by one 512 byte sector to properly align it:

$$\frac{64 \text{ sectors} \times 512 \text{ bytes}}{1 \text{ sector} \times 4096 \text{ bytes}} = 8 \quad \text{Formula 2}$$

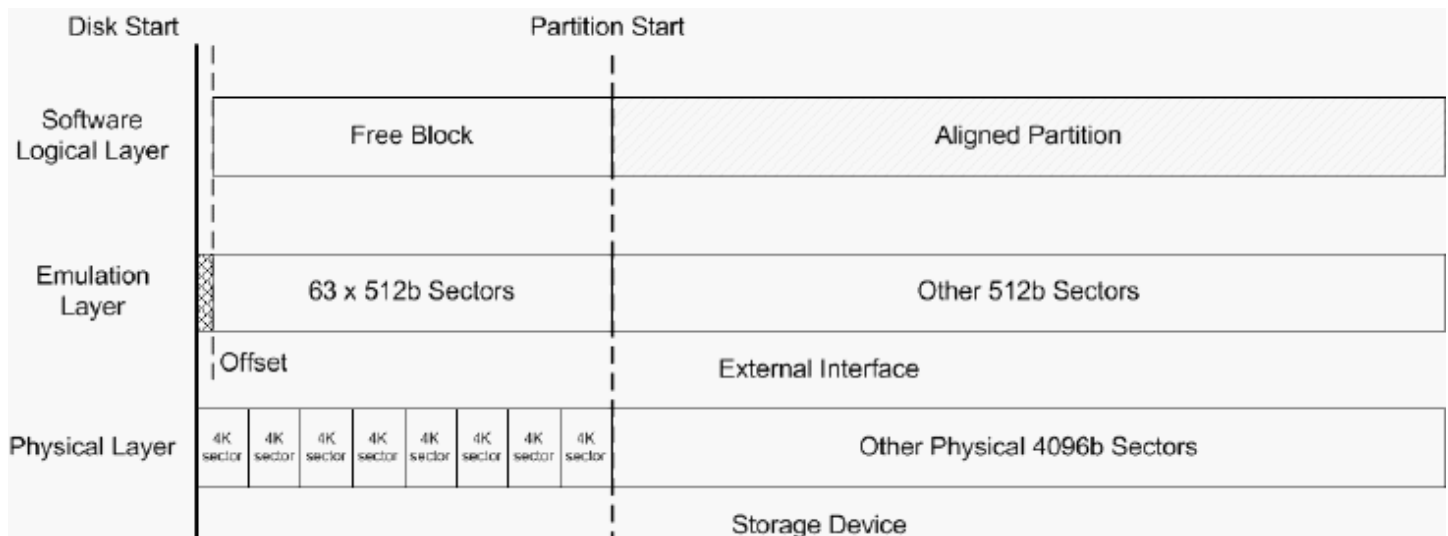
Now the partition start position corresponds to the 4K sector start position, so this partition as well as all other subsequent partitions on the hard drive are properly aligned (Diagram 6):

Diagram 6



There is also one other important issue: Some AF Drives have a trigger to address partition alignment issues. Their internal controllers can be adjusted to shift the emulation layer addressing to an offset of one 512 byte sector. Thus sector #63 becomes sector #64 so that all partitions will be aligned (Diagram 7):

Diagram 7



Most software will not detect a shifted volume such as this because all logical partitions are aligned, so applications which are not “4K offset-aware” will actually create misaligned partitions in this case. However, PAT is “4K offset-aware”, and is able to recognize a shifted volume such as in this example and will skip alignment of partitions on this type of AF Drive.

Getting Started with the Paragon Alignment Tool

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

System Requirements

Windows-based Utility

To use PAT under Windows, it must first be installed. Please make sure your computer meets the following minimum system requirements:

- Supported Operating Systems:
 - Windows XP
 - Windows Server 2003
 - Windows Vista
 - Windows Server 2008
 - Windows 7
 - Windows Server 2008 R2
 - Windows SBS 2011
 - Windows 8
 - Windows Server 8
- Supported File Systems
 - FAT12
 - FAT16
 - FAT32
 - NTFS
- Internet Explorer 5.0 or higher
- Intel Pentium CPU or equivalent, with 300 MHz processor clock speed
- 128 MB of RAM (256+MB recommended)
- Hard disk drive with 100 MB of available space
- SVGA video adapter and monitor
- Mouse

Linux Based Environment

To use the PAT Linux environment on your computer it doesn't matter what operating system you have installed. Please make sure that your computer meets the following minimum system requirements:

- IBM AT compatible computer with i486 or higher CPU
- 256 MB of RAM
- SVGA-compatible monitor
- Mouse (recommended)

WinPE Based Environment

To use the PAT WinPE environment on your computer it doesn't matter what operating system you have installed. Please make sure that your computer meets the following minimum system requirements:

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

- At least 512 MB of RAM
- SVGA video adapter and monitor
- Keyboard
- Mouse



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

Additional Requirements

- Recordable CD/DVD drive to burn data to compact discs

Installation

Before installation, please make sure your platform [meets the minimum system requirements](#). If your computer meets these requirements, please do the following to install PAT Windows installation package:

1. Click on the setup file to initiate the installation.
2. The Welcome page will inform that the application is being installed. Click **Next** to continue.
3. Please read the Paragon License Agreement carefully and then select the appropriate option to accept it. By not accepting the Paragon License Agreement you won't be able to proceed with the installation. By clicking the **Print** button, the license agreement may also be printed out.
4. **Provide Registration Information.** On the Registration page you are to provide your product key and serial number, if applicable.
5. **Provide Customer Information.** On the Customer Information page you are to provide standard information, i.e. a user name and an organization. You must also decide whether to make the program available for all users of this computer (if applicable) or only for the current user.
6. **Default Installation Path.** Click **Change** to install the utility to a different location (by default **C:\Program Files(x86)\ Paragon Software\Alignment Tool 4.0**). Otherwise, click **Next** to continue using the default path.
7. **Install PAT.** On the Ready to Install the Program page click **Install** to start the installation or click **Back** to return to any of the previous pages to review or modify the installation settings.
8. **Installation Complete.** The Final page reports the end of the setup process. Click **Finish** to complete the wizard.

First Start

To start the Paragon Alignment Tool, please double-click the Paragon Alignment Tool™ 4.0 desktop icon, or click the Windows Start button and then select **Programs > Paragon Alignment Tool™ 4.0> Paragon Alignment Tool 4.0**

Obtaining PAT Bootable Environments

PAT Linux Environment

The PAT Linux-based image is delivered as a separate download from the PAT installation package. It is provided to assist in emergency situations only; when you encounter an interrupted alignment operation.

You can download it separately from the web site. It is packaged within Paragon's Unpack and Burn Wizard that helps to build the PAT Linux environment on a CD/DVD/BD or flash. Using the Unpack and Burn Wizard will prevent the need of using third-party authoring tools to create PAT media.

PAT WinPE environment

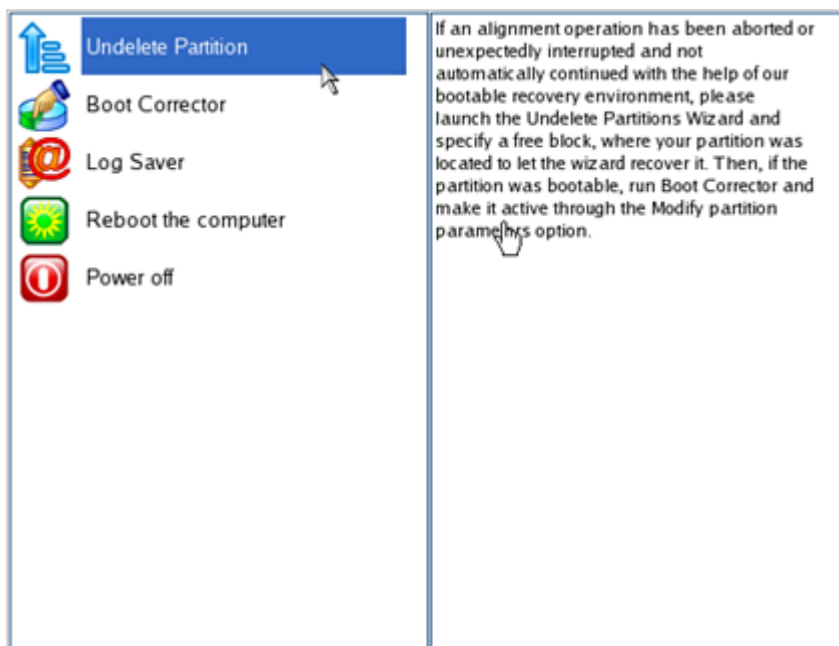
The WinPE-based image should be prepared on-site with Paragon's Boot Media Builder, which you can download from the web site as well. Additionally you should have either Windows Automated Installation Kit (WAIK) or OEM Preinstallation Kit (OPK) installed in your system. Otherwise, you won't be able to accomplish the operation. To know more on the subject, please consult documentation that comes with Boot Media Builder.

Launching PAT Bootable Environments

PAT Linux Environment

The PAT Linux environment can be used to boot your computer into Linux to get access to your hard disk for alignment or recovery purposes. If an alignment operation has been aborted or unexpectedly interrupted, you can continue the alignment in this bootable environment.

To resume an alignment operation or do a system recovery, please start the computer and boot from the PAT Linux media.



Please consult the [Additional Options](#) section for more information.

PAT WinPE Environment

The PAT WinPE environment includes more options than the Linux one. It includes the same PAT Wizard as the Windows installation package does, so you can do partition alignments without installing Paragon's software. Besides the Undelete Partition Wizard, Boot Corrector, and Log Saver, it includes the Delete Partition Wizard and Network Configurator. The PAT WinPE environment offers an excellent hardware support and allows injecting drivers for special storage controllers and network cards. If an alignment operation has been aborted or unexpectedly interrupted, you can continue the alignment in this bootable environment as well.

To do a partition alignment, resume an interrupted alignment, or do a system recovery, please start up the computer from the PAT WinPE media.



Please consult the [Additional Options](#) section for more information.

Contacts

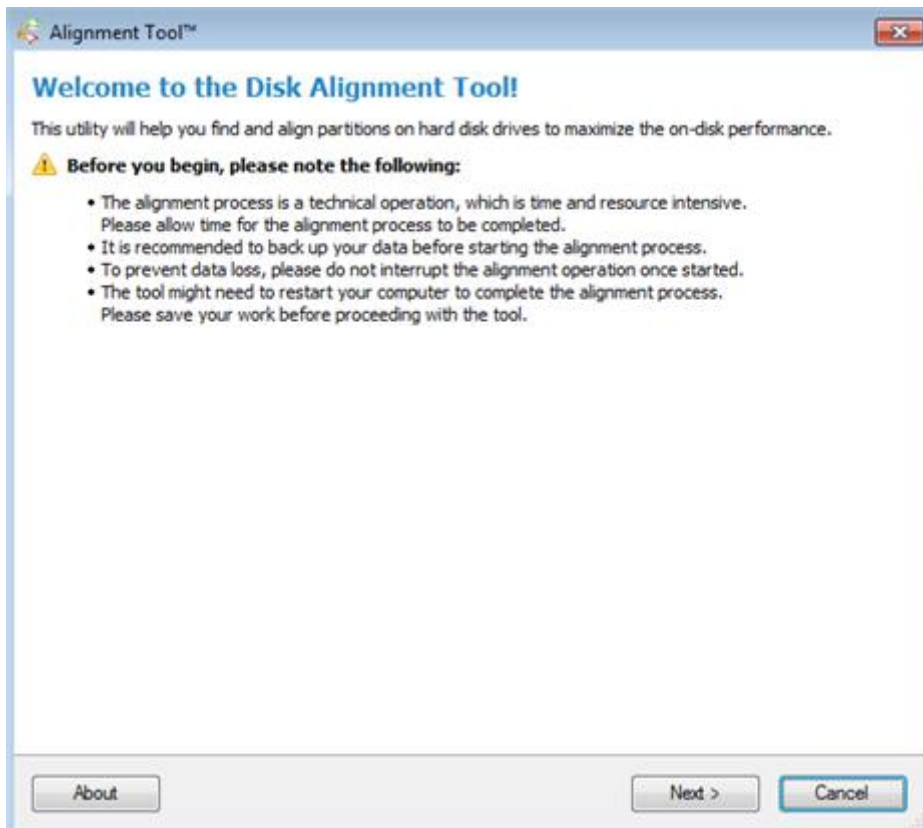
If you need technical assistance with the product, or want information on additional Paragon products, please use the following links:

<u>Service</u>	<u>Contact</u>
Technical Support	www.paragon-software.com/support
Visit Paragon's Website	www.paragon-software.com

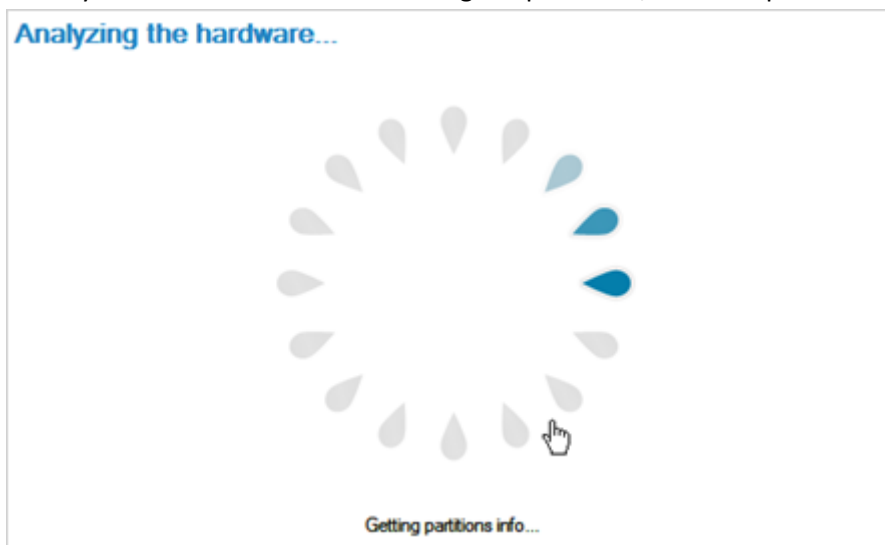
Using PAT under Windows

This chapter describes how the Paragon Alignment Tool is used for partition alignment.

1. Launch the program. Select **Programs > Paragon Alignment Tool™ 4.0> Paragon Alignment Tool 4.0** or click the corresponding shortcut on the Desktop.
2. Read the information on the Welcome screen, then click **Next** to continue. If you need to know more about the product, click **About**.



3. Your system will be checked for misaligned partitions, which requires a couple of seconds.



4. If no misaligned partitions have been found, the wizard will inform you about it, showing all hard disks and partitions of your system in a special list. If there's at least one partition that requires alignment, you will see the Alignment Options page where you can choose how you would like the alignment process to be performed.

Alignment options

Protect from an accidental data loss:

Reset

Medium protection from data loss. If your system unexpectedly restarts, maintenance of a special journal enables to complete interrupted operations with our bootable recovery media. Depending on the system however, operations will go 1.5 – 2 times slower.

File system integrity check policy:

Once

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

Default options are an acceptable balance between the risk of possible data loss and the operation performance. In this mode you will be protected from:

- File system errors on partitions to be aligned
- An unexpected system restart

To proceed in the fastest alignment mode, simply set the corresponding data protection settings to “**None**” and “**Never**” respectively, then click on the “**I understand the risks and want to proceed further**” check box.

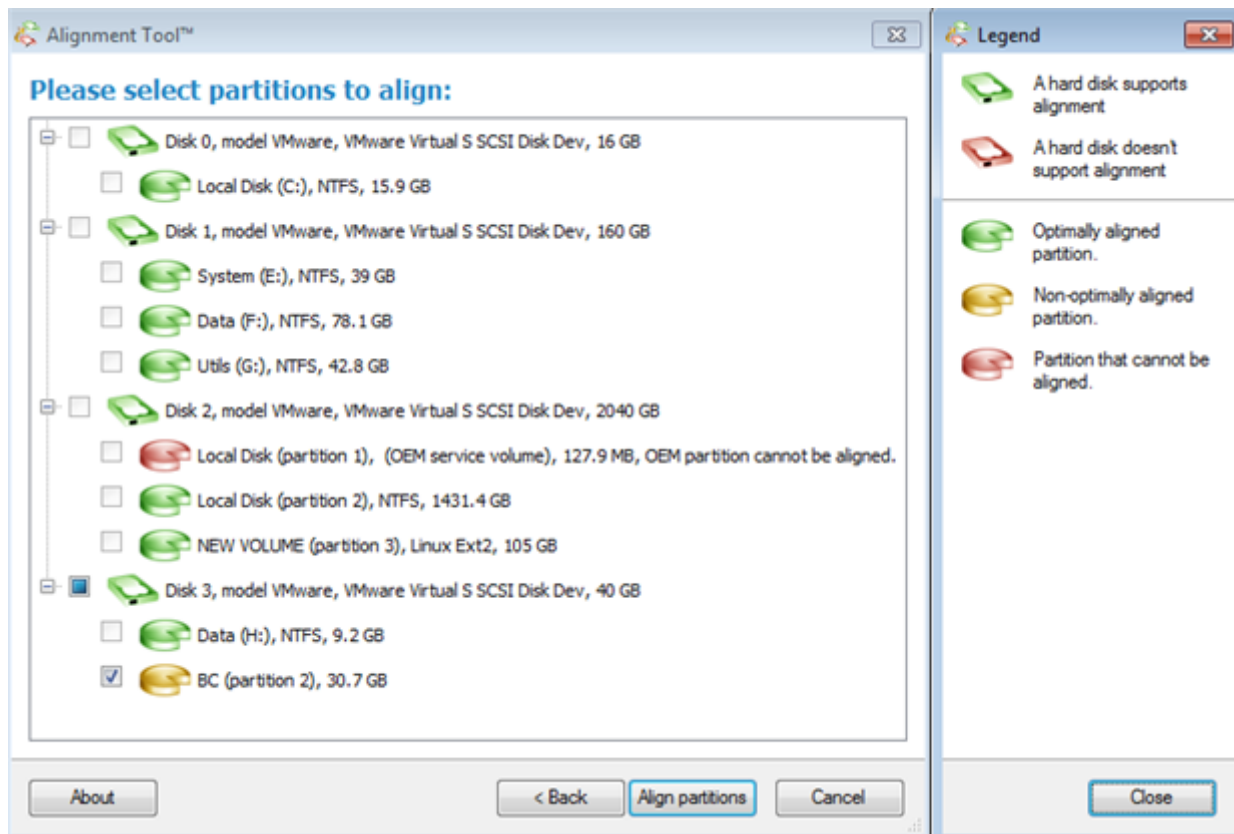
If you are concerned about potential power loss or other system interruptions during alignment, then one of the following options in the “Protect from accidental data loss” section can be selected:

- **No protection:** Protection disabled
- **Reset:** Protects from accidentally pressing the Reset button (default)
- **Power loss:** Protects from complete system power interruption

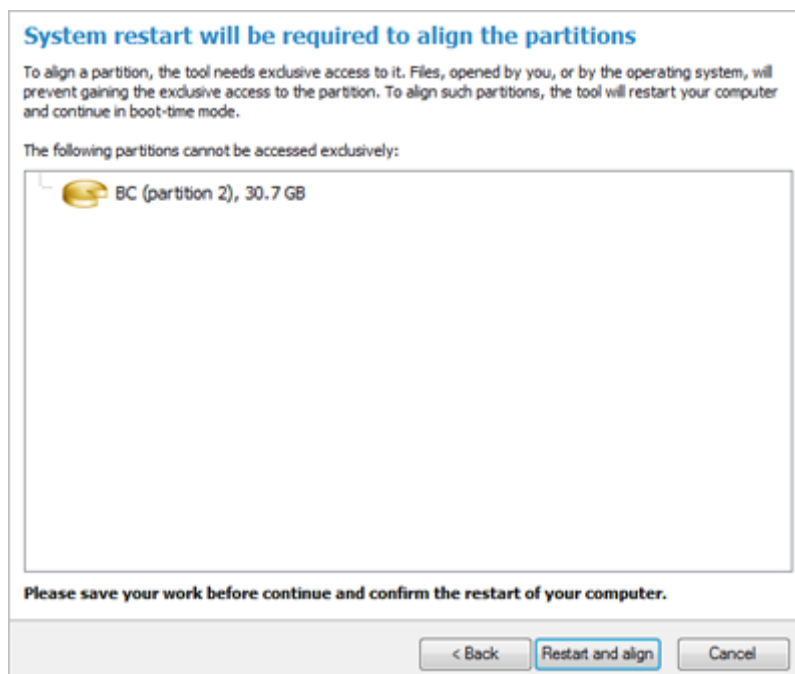
If you are concerned about the file system consistency of partitions (for example, “chkdsk /f” has never or rarely been performed), then one of the following options in the “File system integrity check policy” can be selected:

- **Never:** Do not check file systems
- **Once:** Check file systems once for each partition before alignment (default)
- **Always:** Check file systems for each partition before & after alignment

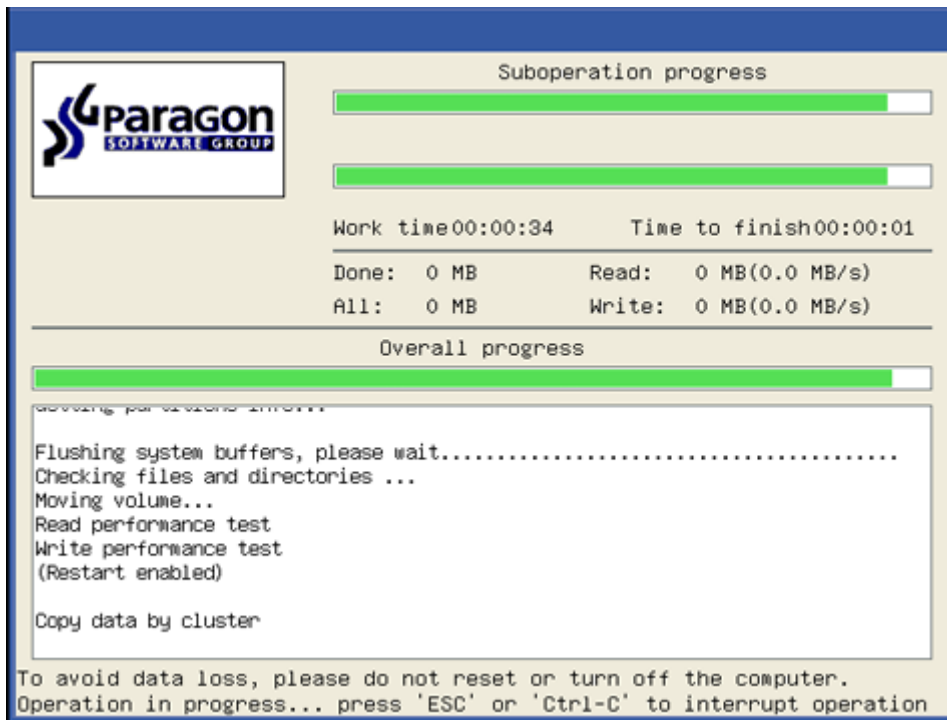
5. On the next screen is a display of all drives and partitions in the system on the left side, and a disk map legend on the right side. By default all found misaligned partitions will be selected for you. Unmark checkboxes opposite partitions you don’t want to align.



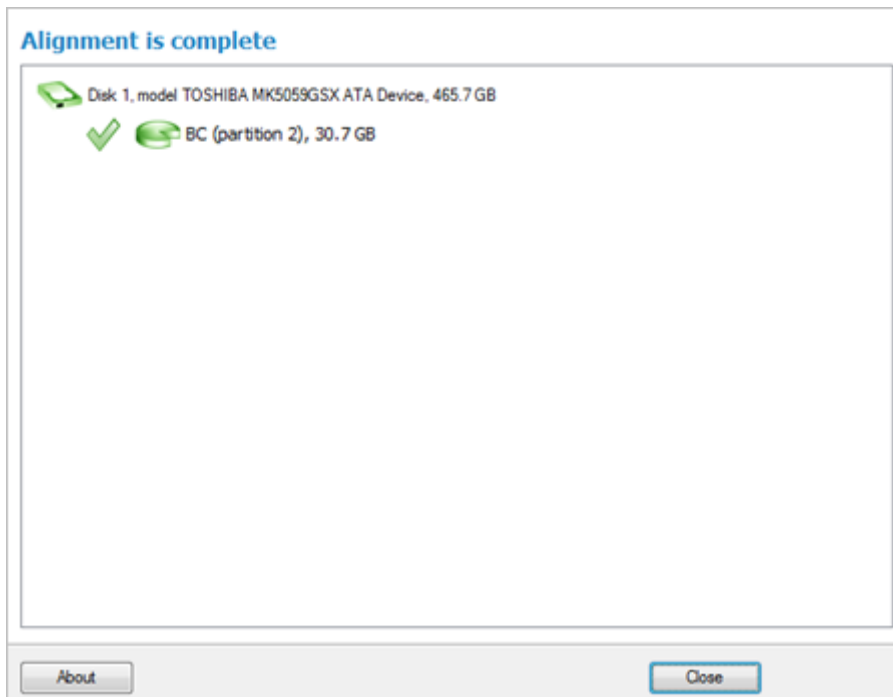
6. Click the **Align partitions** button and start the operation. **NOTE:** If there are any opened or used files on the partition, the program will prompt to restart the computer. The computer will restart and enter the Blue Screen mode, where all operations will be safely performed.



7. The system will reboot.



8. It may take several minutes before the alignment operation completes. The amount of time needed depends on the amount of data in the partition. After alignment completes in Blue Screen Mode, your system will restart and return to Windows. Upon returning to Windows, PAT will be automatically re-launch and provide an alignment status update.



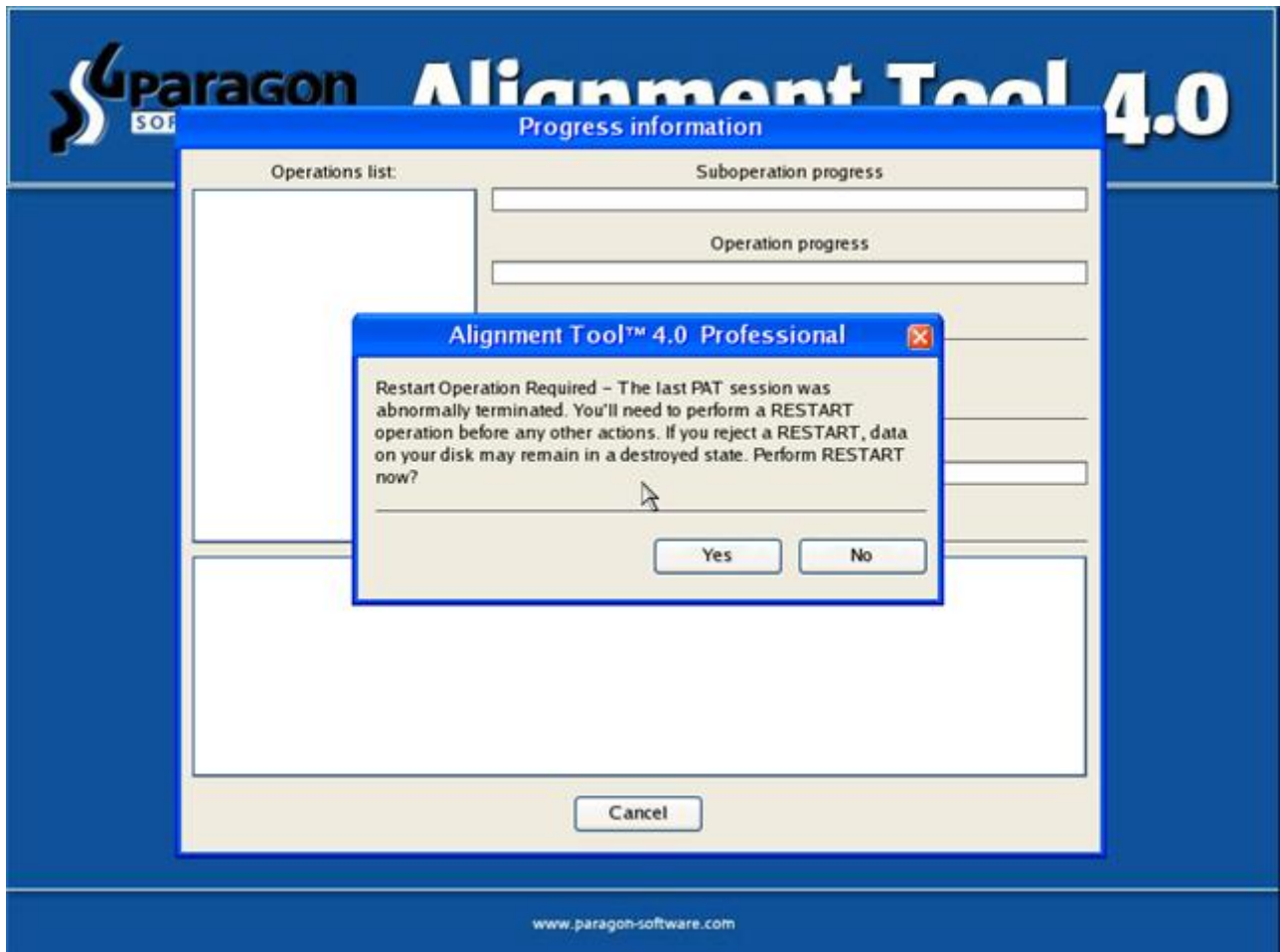
You can do partition alignments with the PAT WinPE media. The operation is quite similar to the mentioned above.

Recovery after Interrupted Alignment

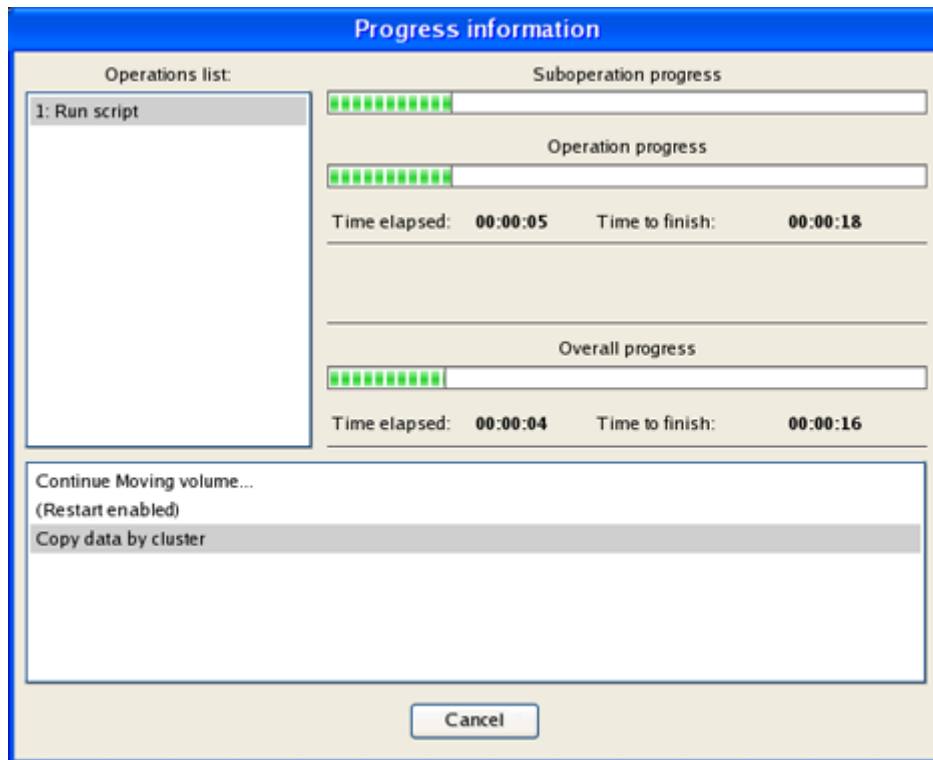
With PAT Linux environment

The PAT Linux environment is intended to help you successfully finish any unintentionally interrupted alignment operation. For example, a sudden power outage caused a computer shutdown, or an accidental button push caused a reboot during alignment of the system partition and you can no longer boot to your operating system. Simply reboot your computer with the PAT Linux media and continue the alignment operation.

1. [Start your computer and boot from the PAT Linux media.](#)
2. A warning message will appear, prompting that an interrupted alignment operation was detected.



3. Click the **Yes** button to continue the interrupted alignment operation.



4. After the alignment operation completes, restart your computer.

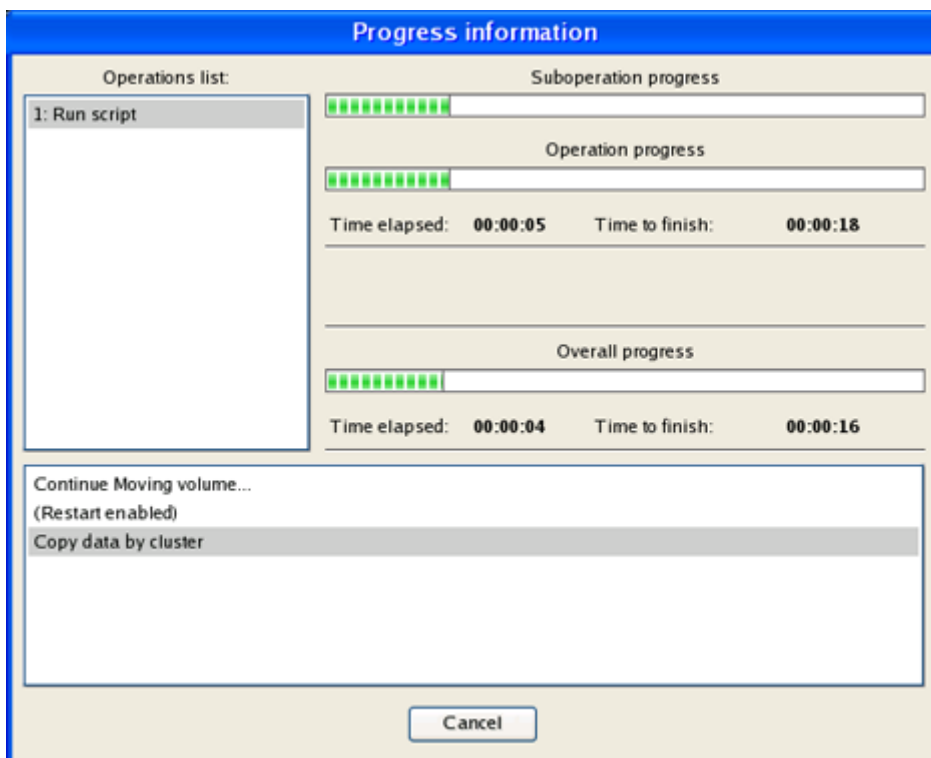
With PAT WinPE environment

You can resume interrupted alignment operations with the PAT WinPE environment as well.

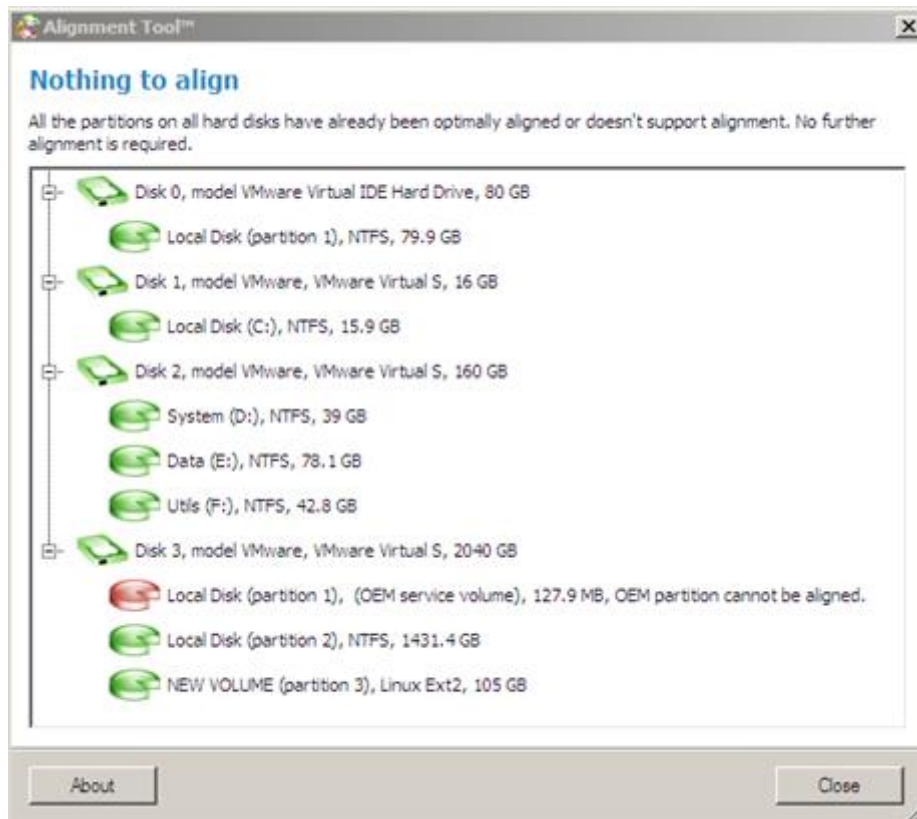
1. [Start your computer and boot from the PAT WinPE media.](#)
2. Select **Paragon Alignment Tool™** from the PAT start menu.
3. Click **Next** on the Wizard's Welcome page.
4. A warning message will appear, prompting that an interrupted alignment operation was detected.



5. Click the **Yes** button to continue the interrupted alignment operation.



6. When completed the wizard will provide an alignment status update. Click **Close** and restart your computer.



You can resume interrupted alignments of non-system partitions directly under Windows. The procedure is quite similar to the mentioned above.

Additional Options

PAT Linux Environment

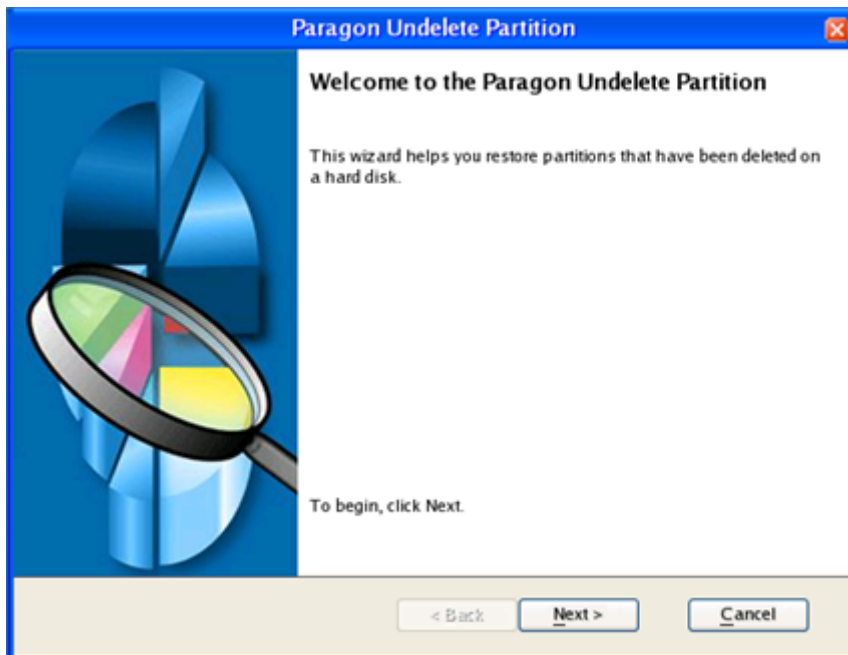
Undeleting Partition

The program provides the ability to find and recover deleted partitions. This function is usually known as "undelete".

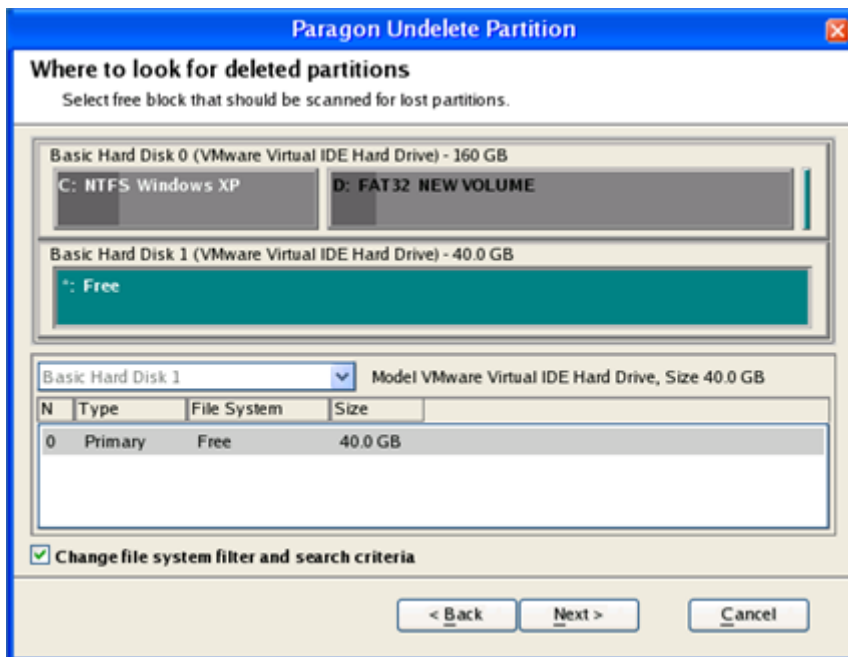
When PAT aligns a partition it deletes the partition from the Partition Table. In the event of a power outage during this stage all data remains untouched, but the computer no longer finds this partition. However, a previously deleted partition can still be recovered.

A restored partition will be fully functional, as long as other partitions were not created, moved or have not exceeded the disk space occupied by the partition before any undelete attempts. That is why the program enables the Undelete Partition function only for blocks of free space.

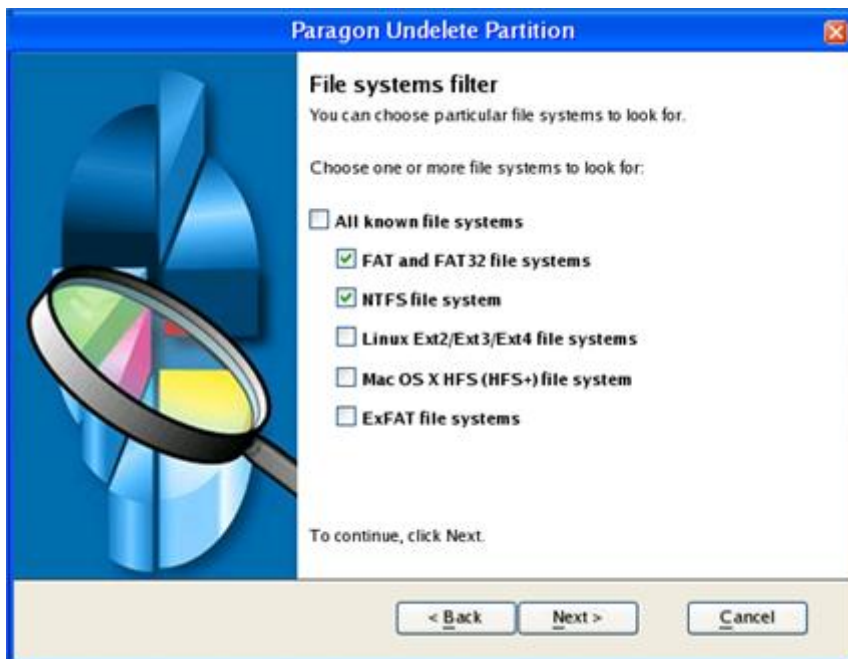
1. [Start the computer and boot from the PAT Linux media.](#)
2. Select the **Undelete Partition** item from the PAT start menu.
3. Click **Next** on the Wizard's Welcome page.



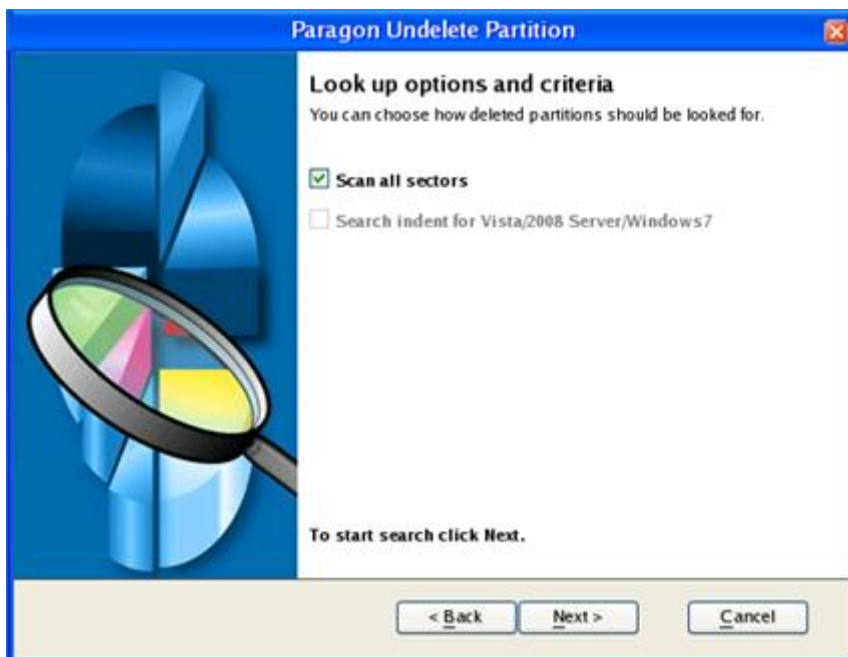
4. Select the free block that will be scanned for lost partitions.



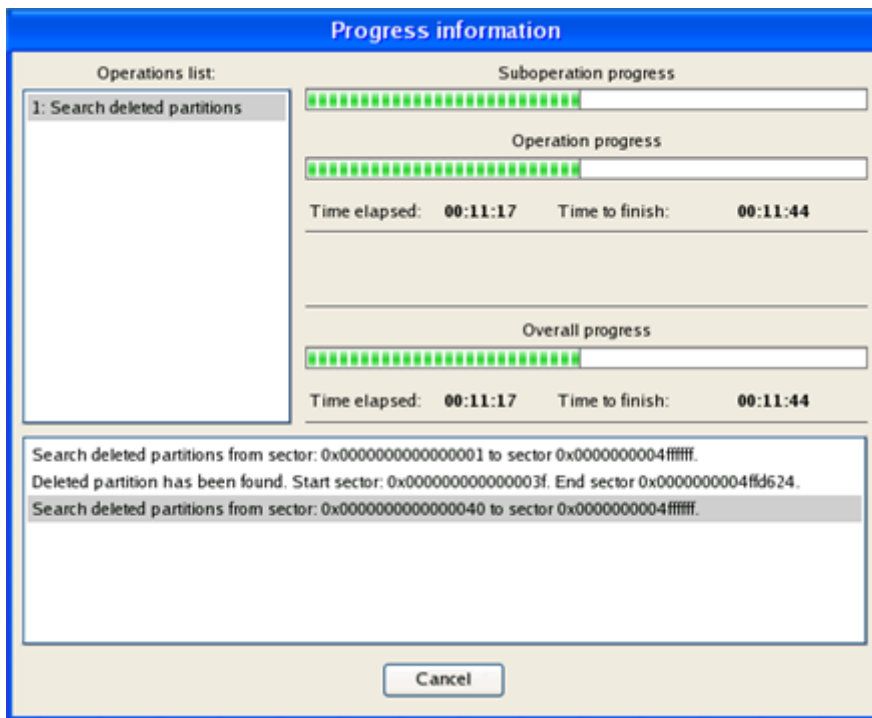
5. Optionally, choose specific file systems to search for.



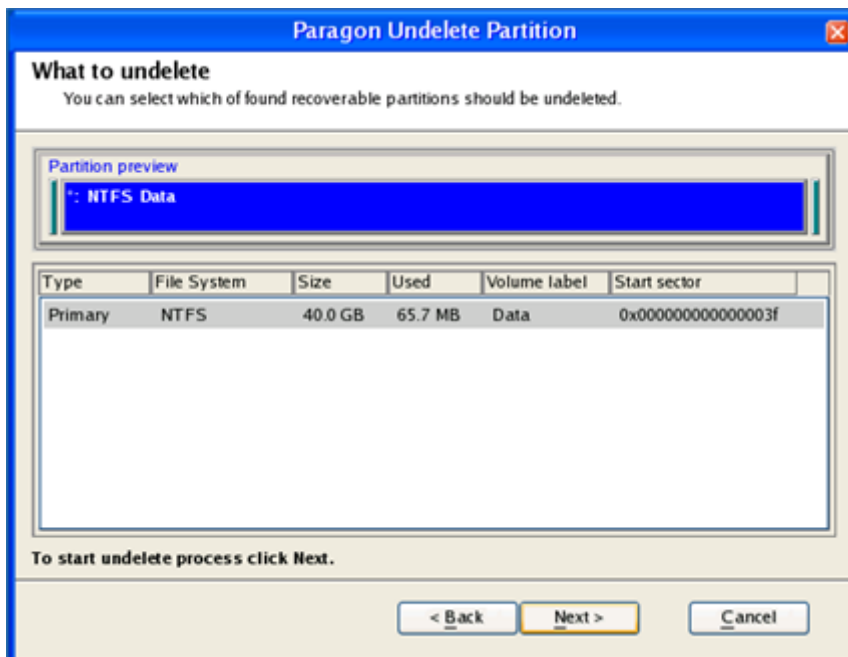
6. You can define how lost partitions should be searched: scan all sectors or only scan where Vista/Windows 7 creates volumes. Click **Next** to start the search.



7. The search progress will be shown.



8. After the search process finishes you will see whether any partitions were found. Here you can select which discovered partition(s) you need to recover.



9. Click **Next** to recover the partition.

Fixing the Master Boot Record (MBR)

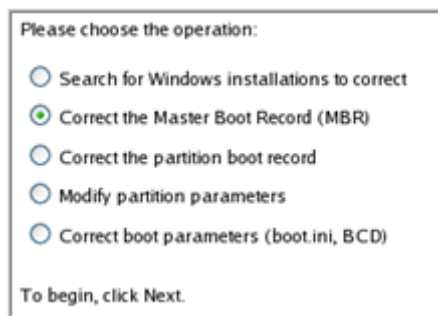
Boot Corrector is a system utility designed to tackle most of the system boot problems that can typically be a result of human error, program error, or boot virus activity. The program is able to fix most of the common boot problems for Windows 2000/XP/Server 2003/Vista/Windows 7/Server 2008/Windows 8/Windows 8 Server.

The crucial thing about Boot Corrector is that it provides the possibility to correct the Windows System Registry without Windows being loaded. It can be of help with other operating systems, for instance, when a boot virus has corrupted the MBR.

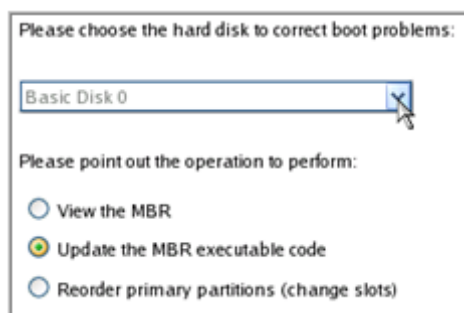
Let's assume that the MBR of your hard disk has been corrupted, thus your system fails to boot.

To fix the MBR of your hard disk, please do the following:

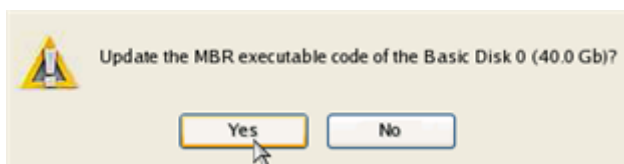
1. [Start the computer and boot from the PAT Linux media.](#)
2. Select **Boot Corrector** from the PAT start menu.
3. On the Welcome page, select the **Correct the Master Boot Record (MBR)** option.



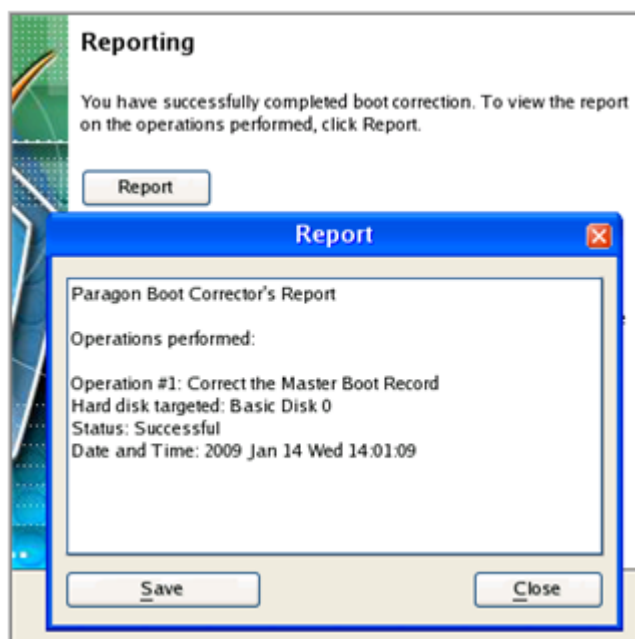
4. On the next page choose the required hard disk from the drop-down list (if applicable) and then select the **Update the MBR executable code** option.



5. Confirm the operation by clicking the **Yes** button.



6. After the operation is complete, click the **Report** button to see an informative summary. The program also enables you to store this report. To do so, just press the **Save** button and choose the destination.



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



This function is also available in the PAT WinPE environment.

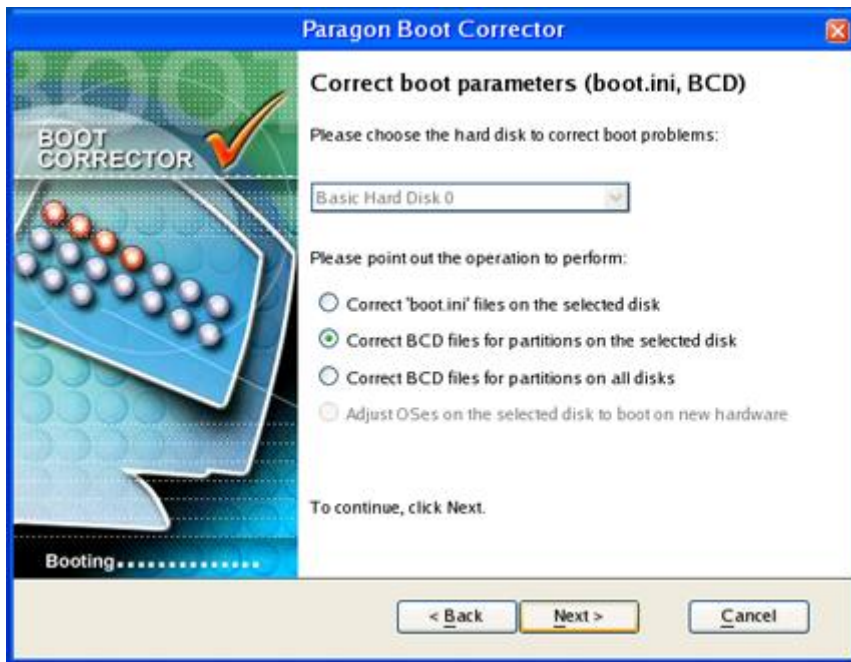
Correcting the Boot Configuration Data (BCD)

To automatically correct the BCD of a Windows 2000+ system, please do the following:

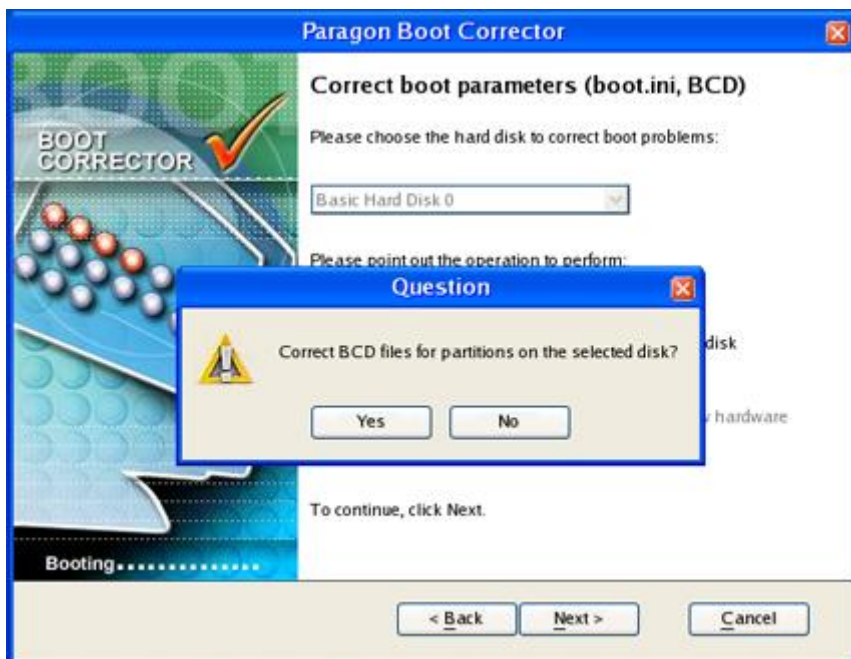
1. [Start the computer and boot from the PAT Linux media.](#)
2. Select **Boot Corrector** from the PAT start menu.
3. Select **Correct boot parameters...** to let the wizard fix the BCD in all recognized Windows 2000+ installations.



4. Select the option to **Correct BCD files for partitions on the selected disk.**



5. The wizard will ask you to confirm the operation. Click the **Yes** button to confirm the operation.



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

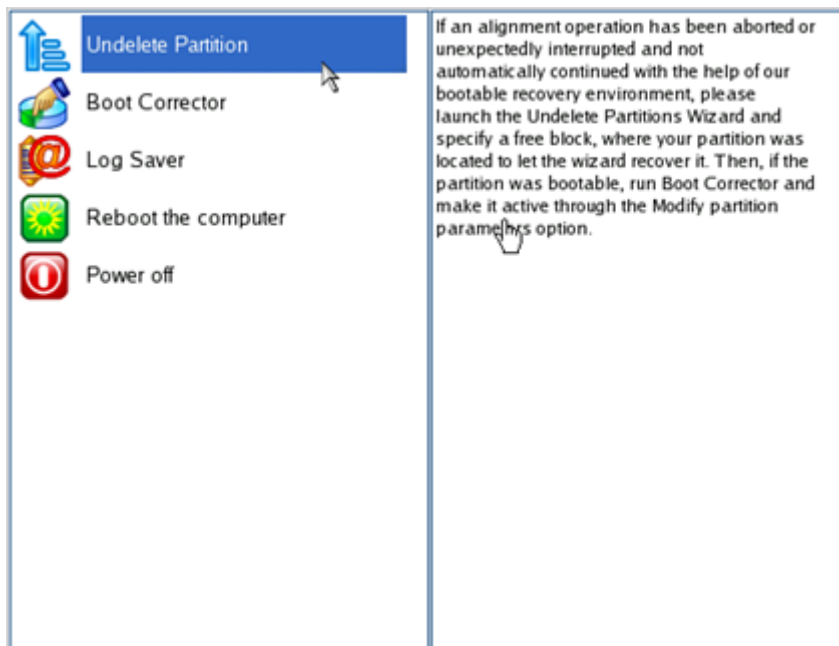


This function is also available in the PAT WinPE environment.

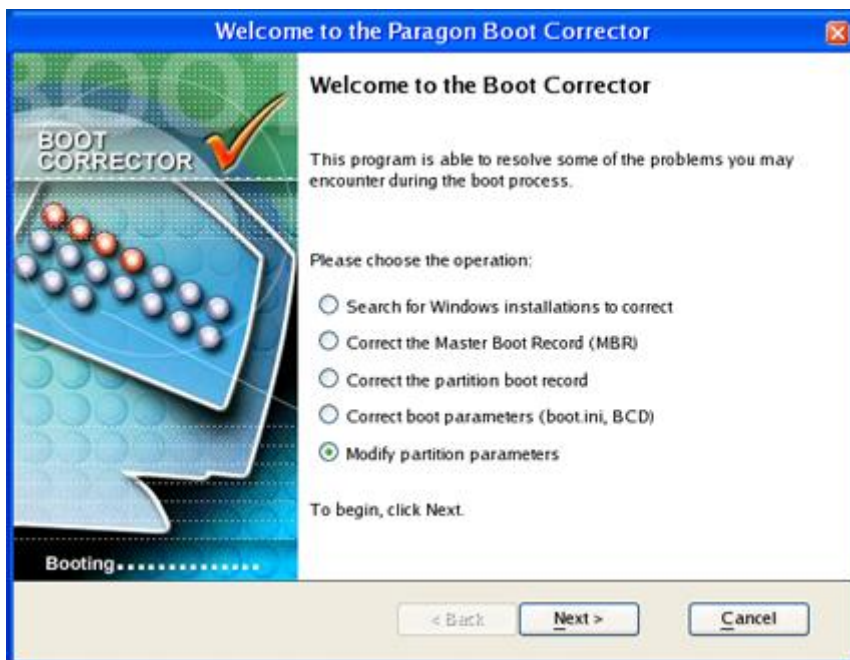
Marking Partitions Active

To mark a partition of a Windows 2000+ system as Active, please do the following:

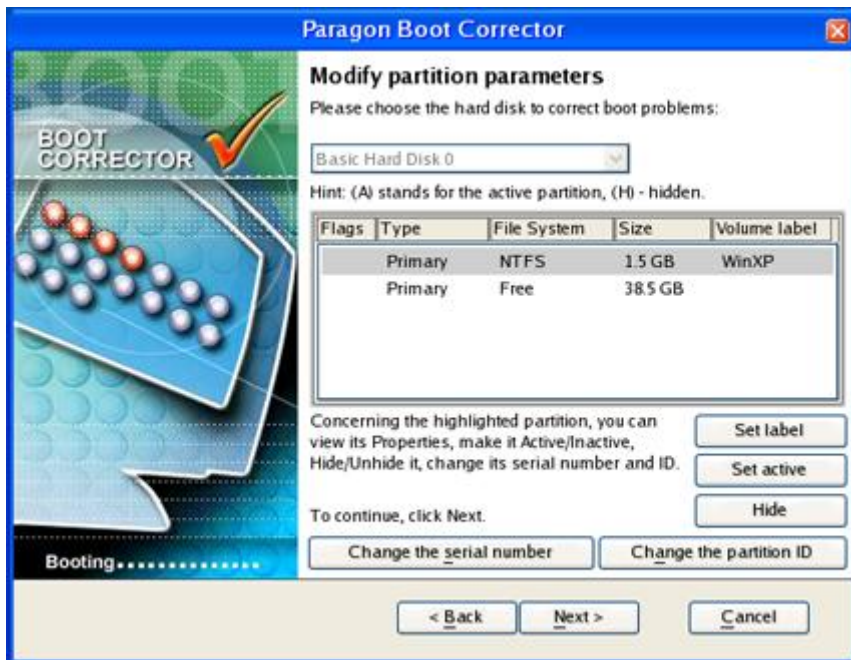
1. [Start the computer and boot from the PAT Linux media.](#)
2. Select **Boot Corrector** from the PAT start menu.



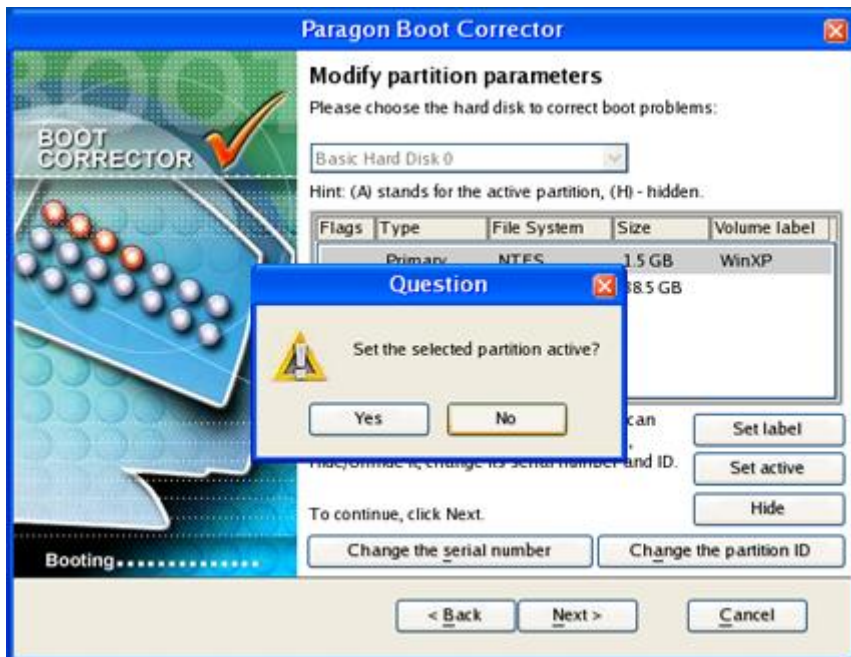
3. On the Wizard's Welcome page, select **Modify partition parameters**.



4. Choose the partition to modify and click **Set active**.



5. The wizard will ask you to confirm the operation. Click the **Yes** button to confirm the operation.



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

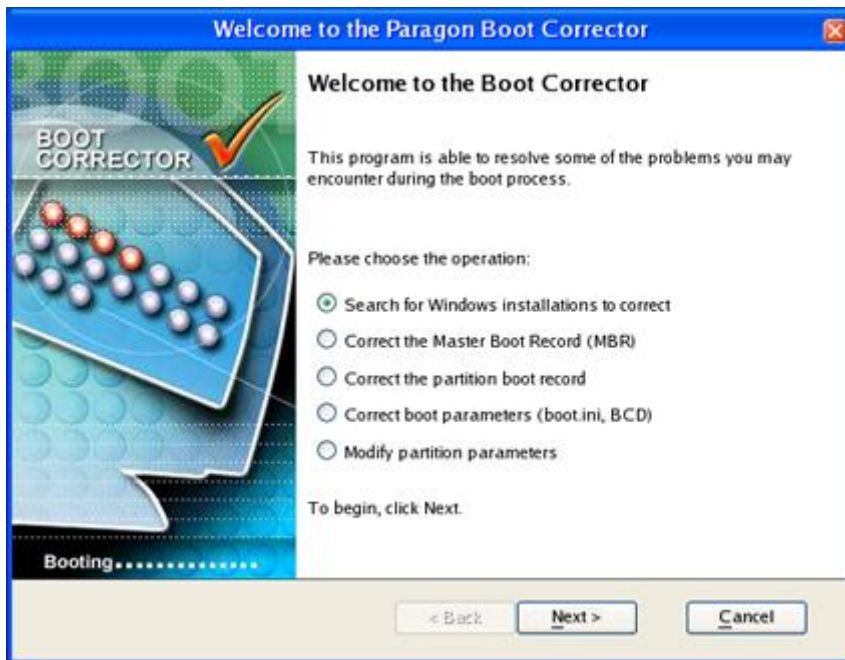


This function is also available in the PAT WinPE environment.

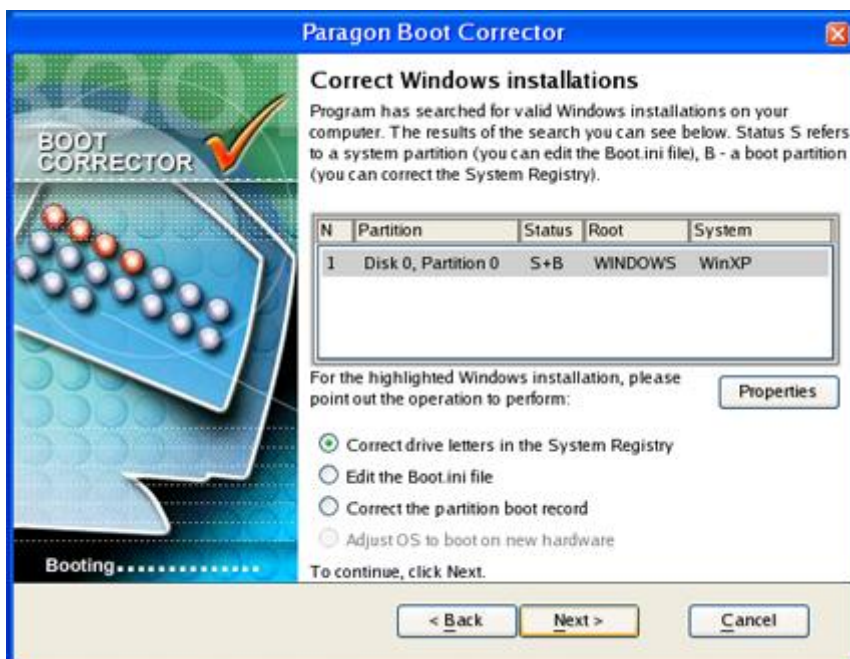
Changing Drive Letters

To change a partition drive letter, please do the following:

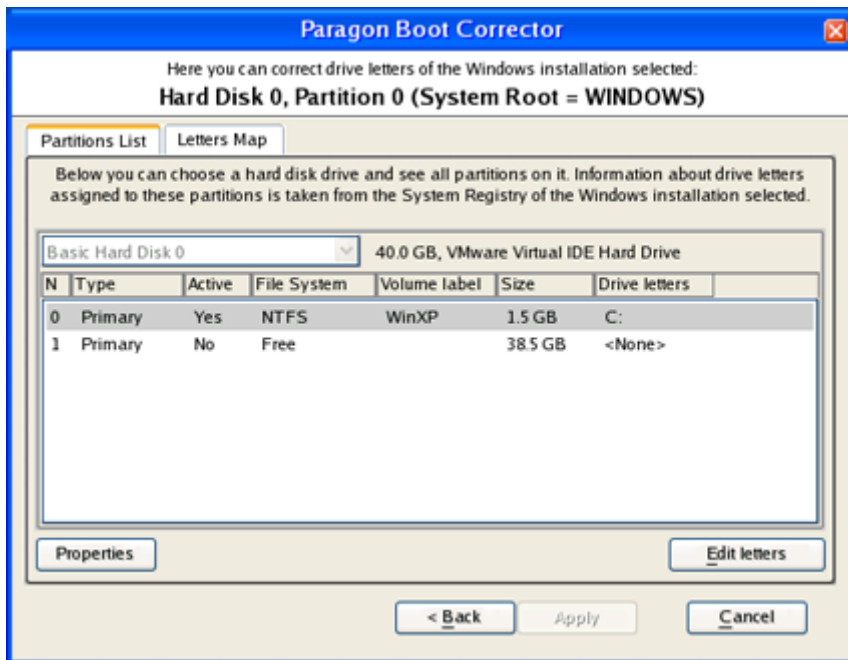
1. [Start the computer and boot from the PAT Linux media.](#)
2. Select **Boot Corrector** from the PAT start menu.
3. On the Wizard's Welcome page, select **Search for Windows installations to correct.**



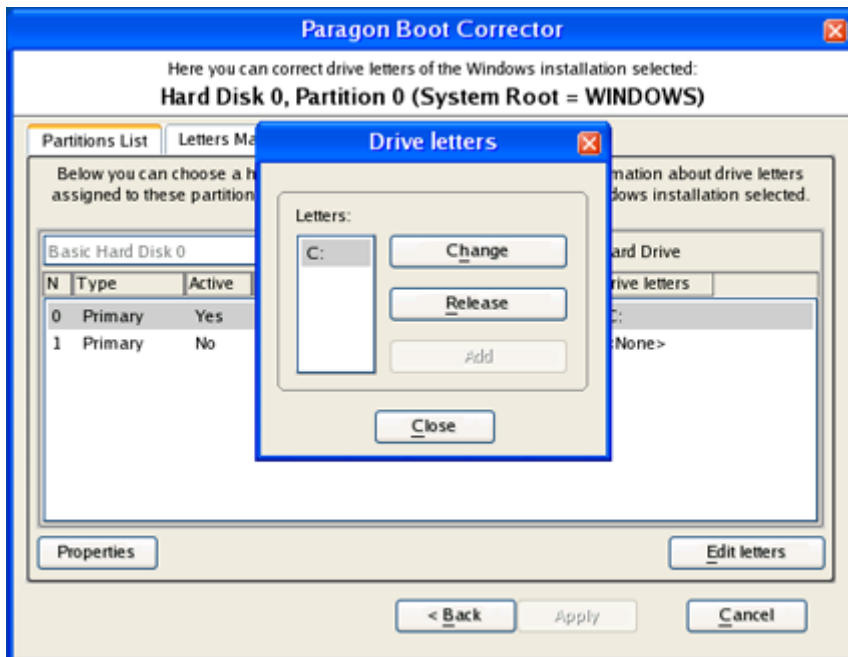
4. Select the detected Windows installation you desire and select the **Correct drive letter in the System Registry** option.



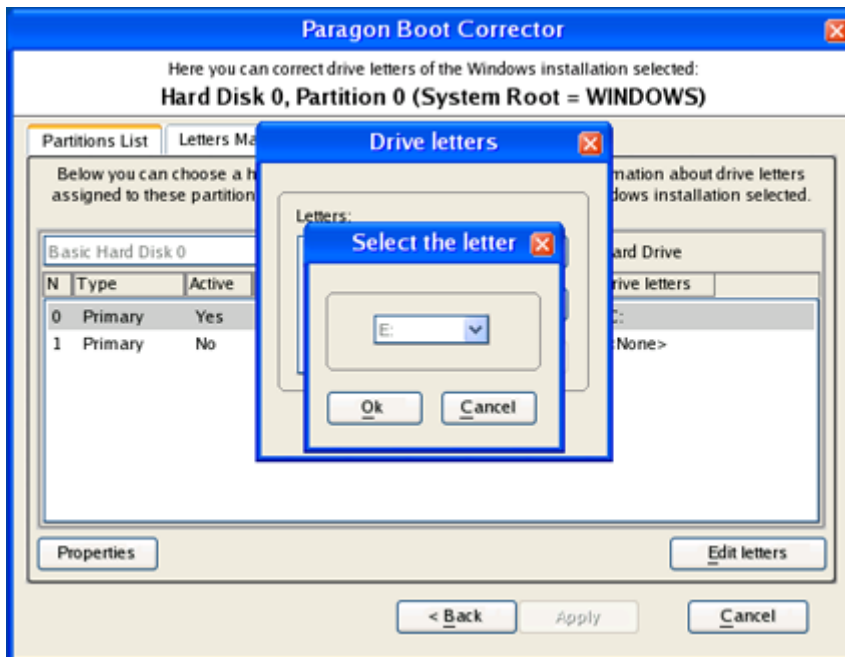
5. Select the system volume and click the **Edit letters** button.



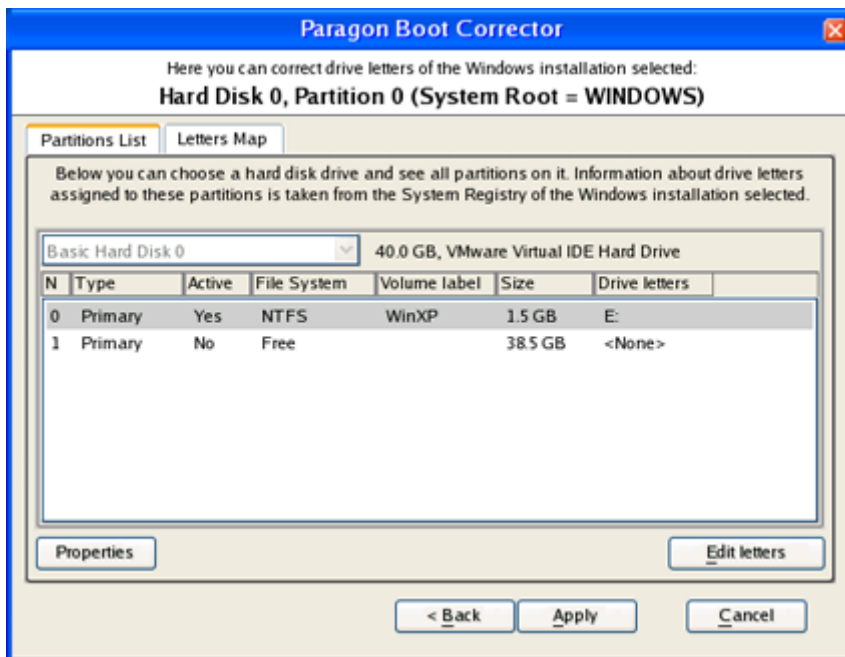
6. A window will appear where you will see the letter you chose. Click **Change**.



7. Select a new drive letter and click **OK**.



8. The wizard will then commit the drive letter change.



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



This function is also available in the PAT WinPE environment.

PAT WinPE Environment



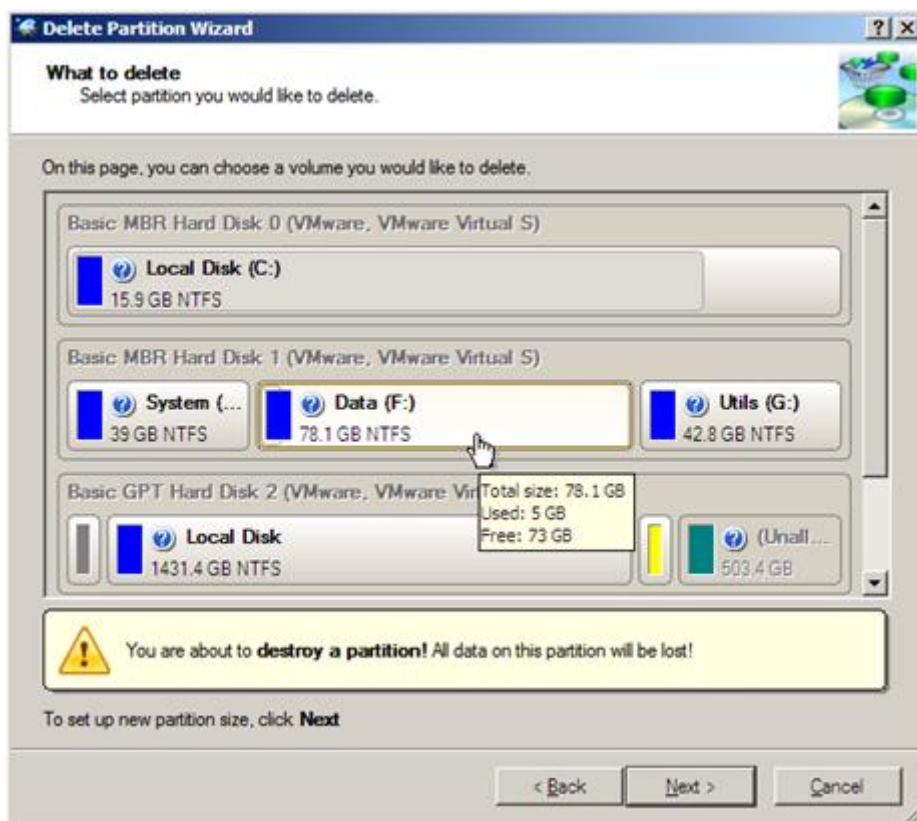
Please use Boot Media Builder to prepare the WinPE environment, which you can get here: www.paragon-software.com/my-account/.

Deleting Partition

In some emergency cases a corrupted partition needs to be deleted before recovering through the Undelete Partition Wizard.

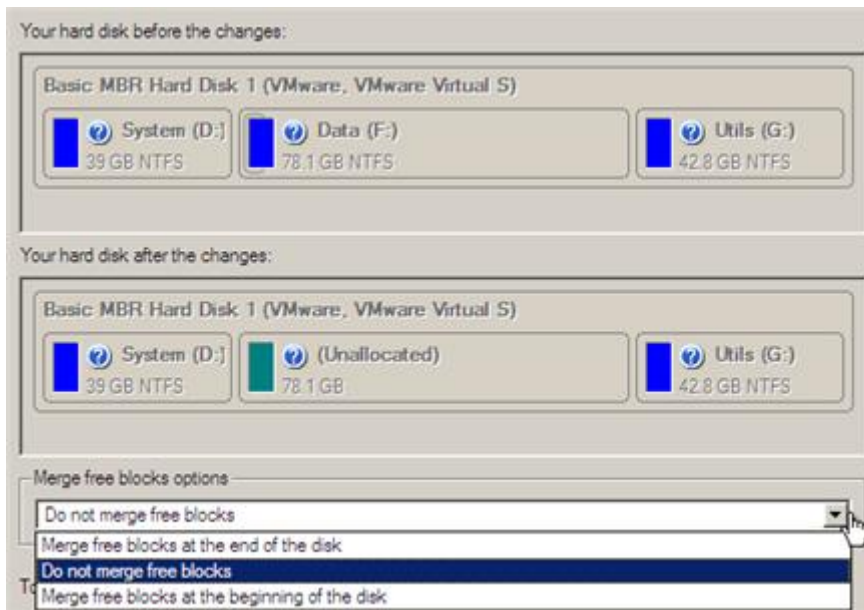
To delete a partition, please do the following:

1. [Start your computer and boot from the PAT WinPE media.](#)
2. Select **Delete Partition** from the PAT start menu.
3. Click **Next** on the Wizard's Welcome page.
4. Select a hard disk (if the computer has several hard disks) and then the required partition to delete.

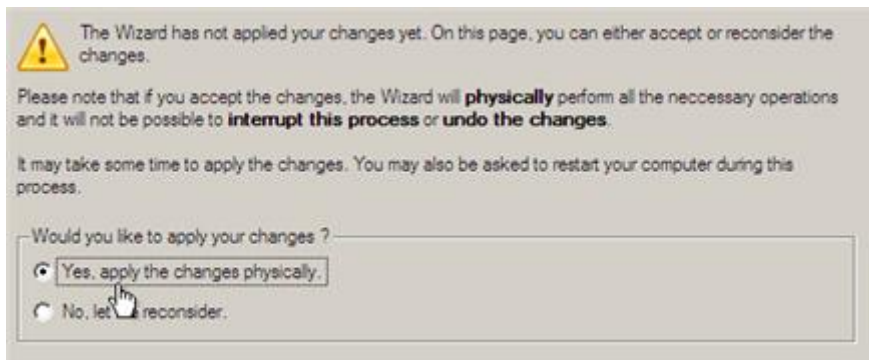


As a result of this operation contents of the selected partition will be lost.

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



6. Confirm the operation and click **Next**.

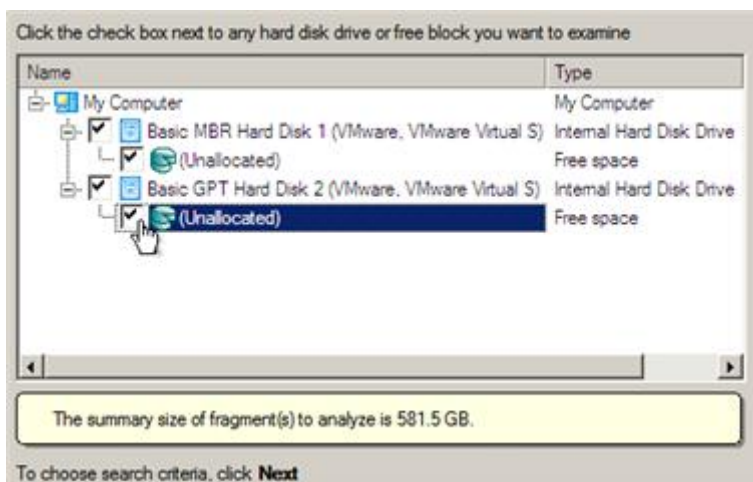


7. After completing the operation close the wizard, and then reboot the computer.

Undeleting Partition

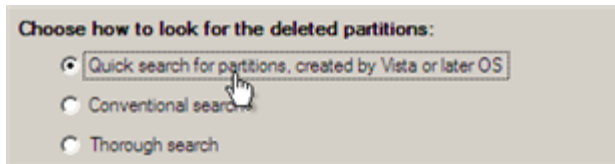
To recover a previously deleted partition, please do the following:

1. [Start your computer and boot from the PAT WinPE media.](#)
2. Select **Undelete Partition** from the PAT start menu.
3. Click **Next** on the Wizard's Welcome page.
4. Choose a free block from a tree-like list of available hard disks.



5. The second page allows setting up the required search criteria.

- **Search method.** By default, the wizard selects the fastest search method for your operating system. In most cases that will do to find any accidentally deleted partition. However if the wizard fails to find the partition you need, try the other two methods. Please note the Thorough Search method enables to obtain the most accurate results, as every single sector in the specified search area is being scanned, but it requires considerable time to accomplish the task.

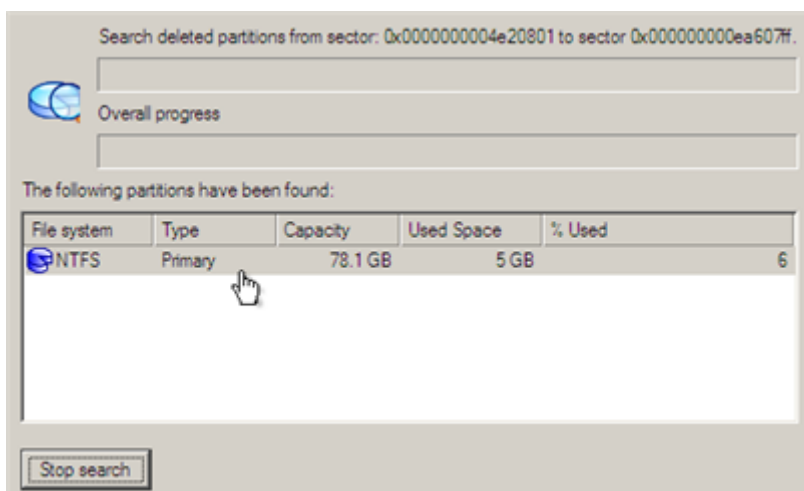


To know more on the available search methods, please use the context sensitive hint system.

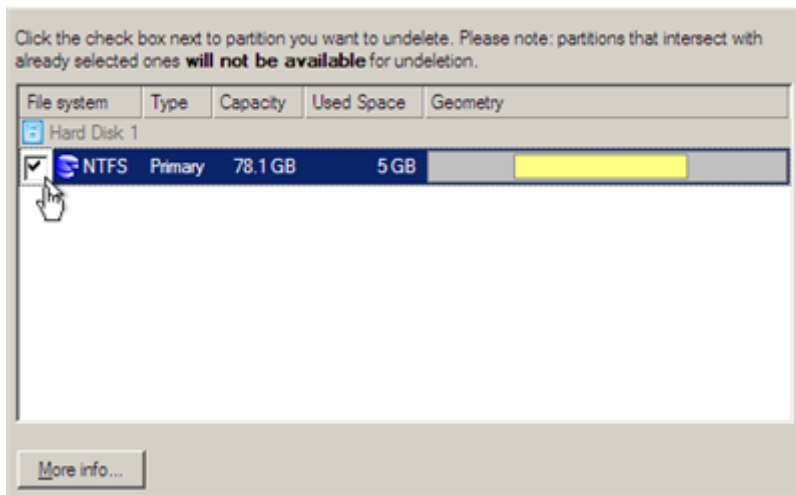
- **File system filter.** By default, the wizard will search for all known file systems. However, by clicking on the appropriate option, you can specify only those file systems you need.



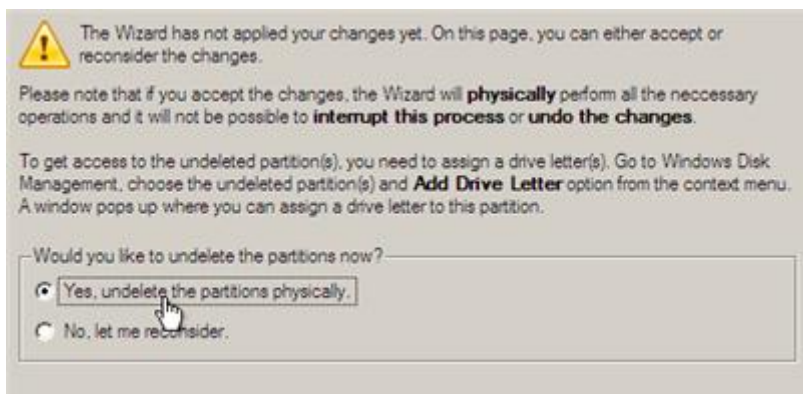
6. Click **Next** to initiate the search operation. By default, the program searches records of any deleted partition ever existed on the selected block of free space. So you can get several partitions to choose from. Most likely the required partition will be found first. If so, you may abort the search operation by pressing the **Stop search** button.



7. Select a partition you'd like to undelete, then click **Next** to continue. Click **More info...** to get details on the selected object.



- Confirm the operation.



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

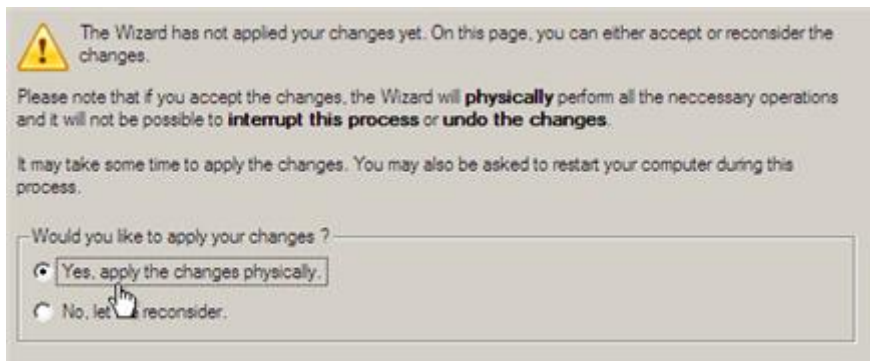
Correcting the Boot Configuration Data (BCD)

To automatically correct the BCD of a Windows 2000+ system, please do the following:

- [Start the computer and boot from the PAT WinPE media.](#)
- Select **Boot Corrector** from the PAT start menu.
- Click **Next** on the Wizard's Welcome page.
- Select **Correct boot parameters...** to let the wizard fix BCD in all found Windows installations.



- Confirm the operation.



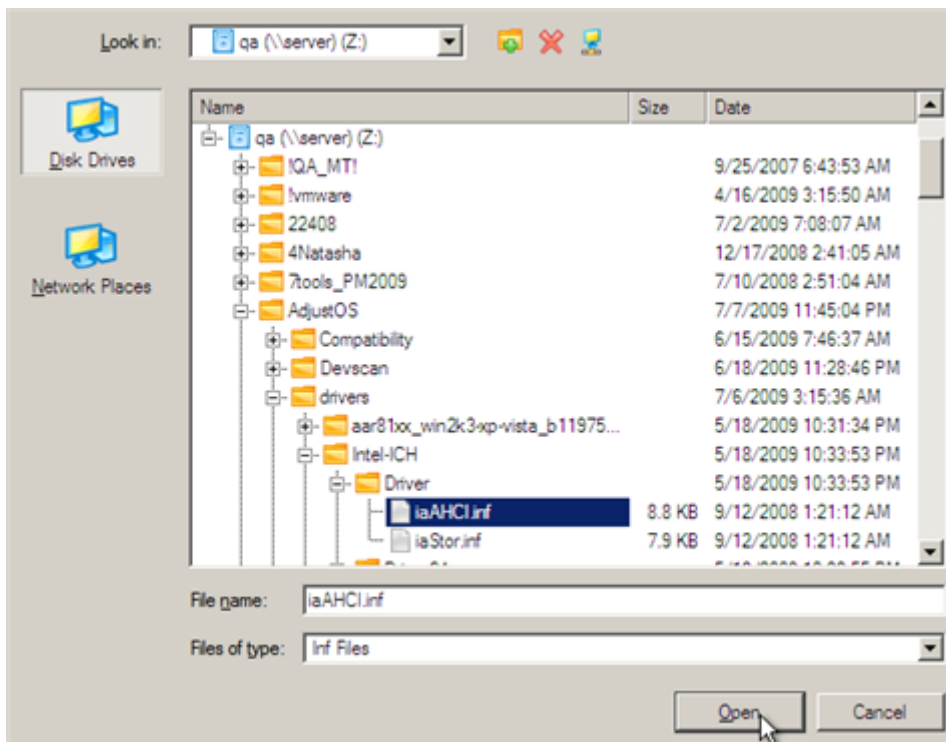
6. Click the **Finish** button to close **Boot Corrector**.
7. Restart the computer.

Adding Specific Drivers

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

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

1. [Start the computer and boot from the PAT WinPE media.](#)
2. Select **Load Drivers** from the PAT start menu.
3. In the opened dialog browse for an .INF file of the required driver package located on a floppy disk, local disk, CD/DVD or a network share. Then click the **Open** button to initiate the operation



To know how to map a network share, please consult the [Configuring network](#) scenario.

- You will be notified on the successful accomplishment of the operation. Click **Yes** to load another driver or **No** to close the dialog.



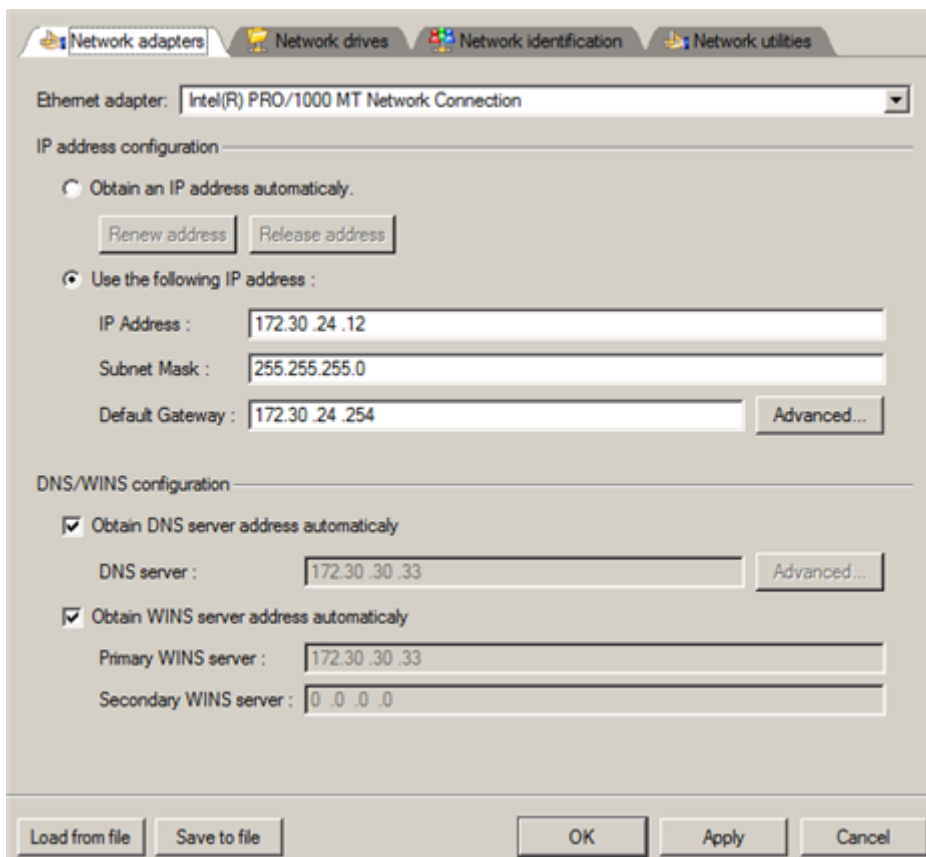
The PAT WinPE environment is 32-based, thus you need to use 32-bit drivers for injection.

Configuring Network

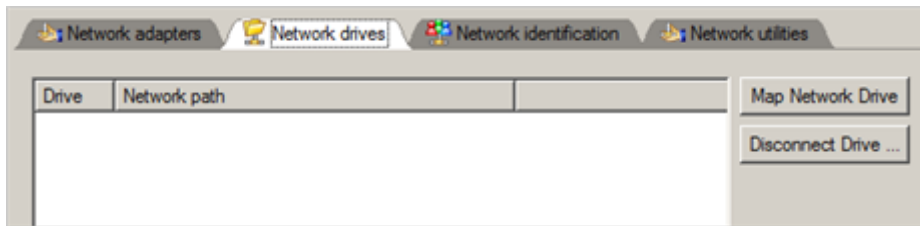
If your local network has a DHCP server, a network connection will be automatically configured once the PAT WinPE environment has been started up. Otherwise you will need to do it manually with a handy dialog by providing an IP address, a network mask, default gateway, etc. Besides with its help you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

To manually set up a network connection and map a network share, please do the following:

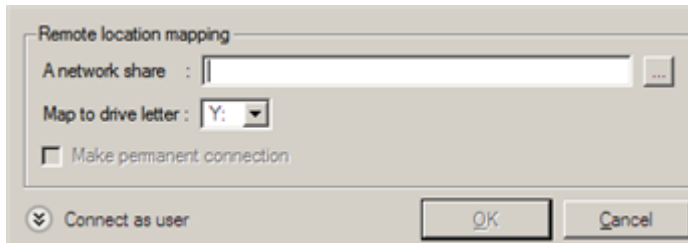
- [Start the computer and boot from the PAT WinPE media.](#)
- Select **Configure Network** from the PAT start menu.
- In the opened dialog provide an IP address, a network mask, default gateway, etc. for your network device.



- Click the **Network drives** tab to map a network share.



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



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

By clicking **Disconnect Drive...** you can delete an existing network share if necessary.

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

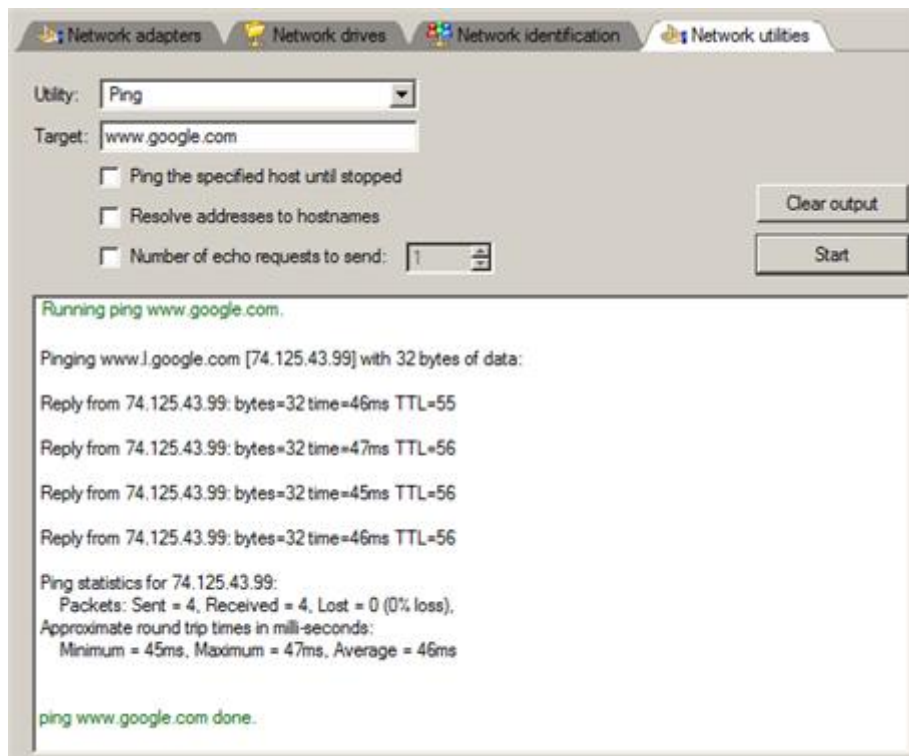


- By default, the wizard saves all network settings in the netconf.ini file located on the WinPE RAM drive, thus it will only be available until you restart the computer. However, you can just once configure your network device and then save this file to some other destination, for instance a local drive,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

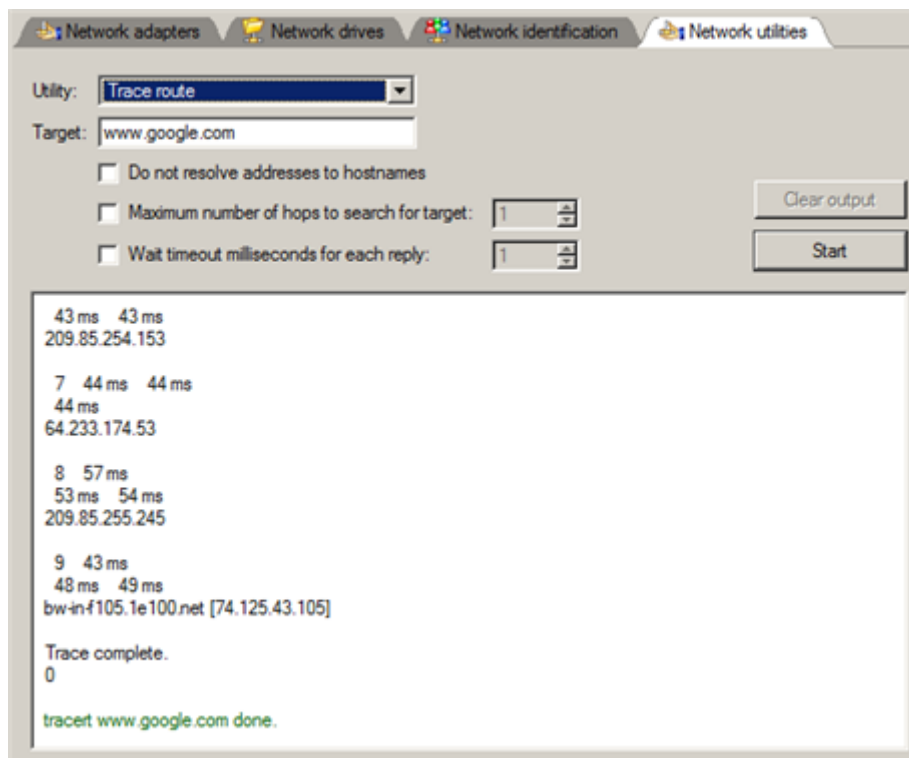
Network troubleshooter

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

- If you need to ping some network host, please select **Ping**, then type in the required IP address or its name. Click **Start** when ready.



- **Ping the specified host until stopped.** Mark the option to ping the chosen host for indefinite time;
 - **Resolve addresses to hostnames.** Mark the option to display hostnames instead of IP addresses.
 - **Number of echo requests to send.** By default the utility sends 4 echo requests, which you can modify however.
2. If you need to trace a route to some network host, please select **Trace route**, then type in the required IP address or its name. Click **Start** when ready.



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

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

Saving Log Files

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

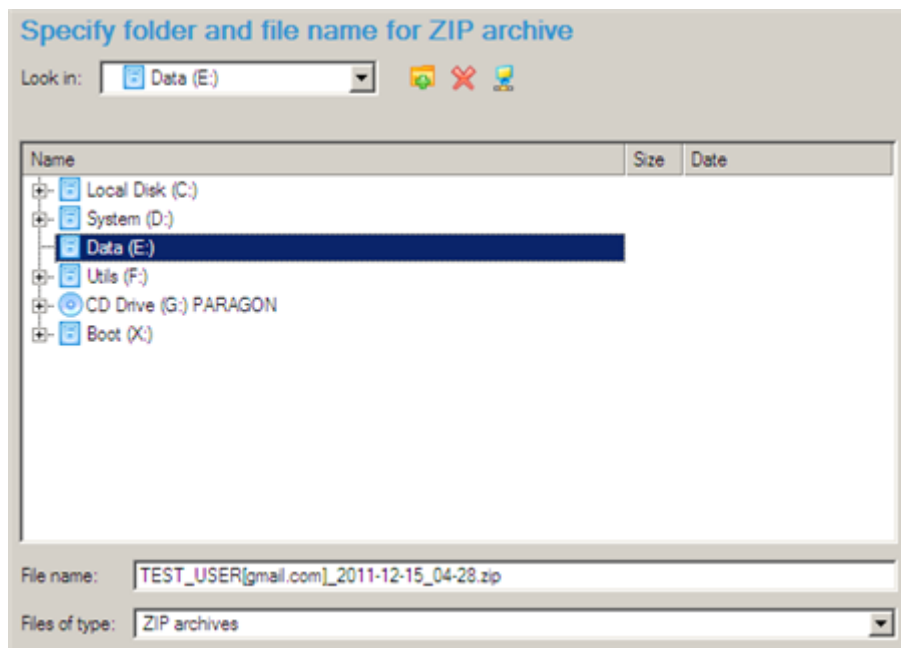
To prepare a log files package, please do the following:

1. [Start the computer and boot from the PAT WinPE media.](#)
2. Select **Log Saver** from the PAT start menu.
3. Provide an e-mail address used for registering the product, then give a detailed description on the encountered problem in the corresponding text fields. Please don't worry - we respect your privacy, so none of your confidential data will be exposed. This utility only collects the program's operation logs to help our Support Team find and tackle your problem. Click **Next** to continue.



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

4. Browse for the required location of the log files package or manually provide a full path to it. Click **Save** to initiate the operation.



This function is also available in the PAT Linux environment.