Active@ Disk Image

User's Guide

Document version: 1.28

Contents

1 Product Overview

Active@ Disk Image is a Windows-based solution that allows you to create an exact image of the data stored in selected partitions of a hard disk or an image of the entire hard disk. You can protect your valuable data by regularly making a disk image and keeping it in a safe place. If you have trouble with data corruption, or if you want to refer to an archived version of a file, you can easily restore the data.

1.1 Overview and List of Features

Active@ Disk Image allows you to create an image of the data stored in selected partitions of a hard disk or an image of the entire hard disk. Active@ Disk Image is partition-oriented and not file-oriented. In a file-oriented system, you must select all the files that you want to archive. In a partition-oriented system, all files on the selected disk partition are saved into the archive.

A partition-oriented approach offers two major advantages:

There is no risk that you will overlook important files when performing the backup. All files on the disk are saved into the image file.
The folder structure and all hidden system files are saved, guaranteeing reliable partition restoring. If the original partition is completely corrupted and unrecoverable, it is still possible to restore system partitions, data and installed software.

1.1.1 Main Features

Create and restore a disk image without having to restart the computer (in most cases).
Optionally select only those sectors that contain useful information. The resulting disk image is smaller and it takes less time to create.
Store a disk image in a local file, on a network drive or burn directly on CD/DVD/Blu-ray Disc.
Create an exact (sector-by-sector) image for data recovery scenarios or for backing up partitions with unknown file systems.
Make a disk image from any Windows-based hard disk (SATA, SCSI, USB, NVMe, FireWire, PC Card), USB Flash Drive or Floppy diskette.
Create an ISO image from CD/DVD/Blu-ray disc and burn them back.
Backup data from basic disks or dynamic disks.
Configure image compression to achieve a balance between archive size and recording speed.
Create an image of several disk partitions at the same time and store them in one archive.
Automate image creation by setting up several disk images at once.
Restore selected disk, partition or individual files from the archive.

Run Active@ Disk Image from Active@ Boot Disk to perform all disk image operations no matter what installed operating system is present.
Setup an unattended imaging of a computer using scheduling.
Simple procedures using easy-to-follow wizards.
Record operations logs. There are three log formats supported: XML logs (used internally by software), plain text log (placed along with an image) and Windows Event log.
Split a disk image into several files to make file handling easier.
Use password protection for security.
Exclude page files and hibernate file to improve recording speed and reduce backup file size.
Easily transfer system and program files to several workstations with disk or partition cloning. Unicode support (file names and descriptions in Asian languages are supported).
Backup disks partitioned with MBR or GPT.
Create incremental and differential backups to save storage space.
Copy partitions or whole disks to other disks (partitions) without creating an intermediate image, and resizing support.
Send e-mail notification after image is created.

1.2 System Requirements

Active@ Disk Image requires the following hardware:

Pentium processor or compatible
1GB RAM
Mouse (recommended)

1.2.1 Supported operating systems:

Windows 7
Windows 8
Windows 8.1
Windows 10
Windows 11
Windows 2003 Server
Windows Server 2008
Windows Server 2012
Windows Server 2016
Windows Server 2019
Windows Server 2022

Both 32-bit and 64-bit versions of operating systems are supported.

NOTE When you use Active@ Disk Image from a bootable CD, it doesn't matter what operating system is installed on the hard disk. The bootable CD has a self-contained Windows PE system and Active@ Disk Image executes in that environment. When you use a bootable CD, you can create and restore a disk image from disks or partitions that contain any operating system.

NOTE Due to an error on Terminal Server it is not recommended to install the software remotely on a terminal server.

1.3 Supported File Systems

Active@ Disk Image supports the following file systems:

FAT12
FAT16
FAT32
exFAT
NTFS
ReFS*
CDFS
UDF

NOTE Active@ Disk Image can create a RAW disk image, making an exact
sector-by-sector copy of a disk. This allows you to backup and restore
data on any file system.

NOTE Resilient File System (ReFS) is a new file system from Microsoft
introduced with Server 2012. It is also supported by Windows 8.1,
Windows 10, Server 2016 and Server 2019. While Active@ Disk Image
creates images of ReFS partitions in the same way as of other systems,
it cannot change partition size during restore – it must match the
original size.

2 Using Active@ Disk Image

You can easily create a backup, restore a file or verify a disk image using Active@ Disk Image wizard screens. Select the procedure from the main program window and follow the instructions.

To help introduce you to the Active@ Disk Image workspace, read the following topics:

2.1 Main Program Window
2.2 Types of Images
2.3 Dynamic Disks

2.1 Main Program Window

To open the main program window, in the main Windows menu select Programs/Active@ Disk Image/ Active@ Disk Image.

The main program window contains a command menu bar, a panel that displays operations and a status bar.

The Tools menu contains a list of the Active@ Disk Image operations. When you hover the mouse pointer over a command, a description of the command appears in the status bar.

In the display panel, when you click one of the operations to select it, a description of the selected operation appears in a description panel, to the left.

Operations in the display panel use wizards to step you through the procedures. The five Backup Operations are functions that you may perform with disk images. The Disk-to-Disk Operation copies data from one disk or partition directly to another disk or partition without making a disk image archive. The Other Operations provide additional services such as viewing application log and automating the tasks.

To open a wizard dialog, double-click an operation in the display panel or select an operation from the Tools menu.

2 Using Active@ Disk Image

Fig. 1 – Main Program Window
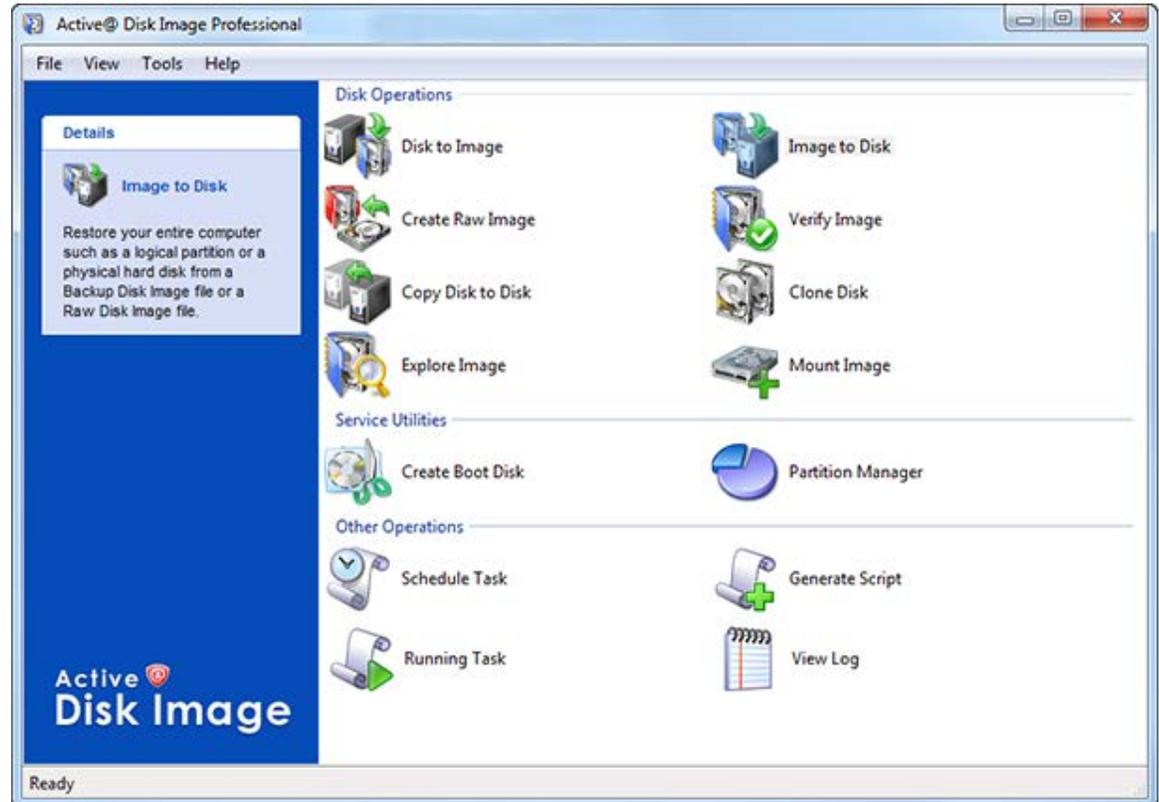
2.1.1 List of menu commands

File

View Log - Opens the View Log dialog box. You may view descriptions of all activities, including warning and error messages.
Schedule Task – Opens the Scheduling dialog box. You may automate creating disk images by making and scheduling a task.
Generate Script – Opens the Script wizard. You may record parameters for delayed execution from the script.
Settings - Opens the Program Settings dialog box. You may configure the settings for data compression, image splitting and what type of data is recorded in the log file.
Save Hardware Info - Saves information about all hard drives and partitions installed in the computer into an XML file.
Create Boot Disk - Creates a bootable USB flash or CD/DVD disk.
Partition Manager – launches the Partition Manager utility.
Exit - Closes the program.

View

Status Bar - Toggles the status bar display on or off.
Refresh Devices – Rescans all disks attached to the system. This command might be useful when disk configuration has changed since the application started.

Tools

Disk to Image - Opens the Disk to Image Wizard. Helps you to create a regular type disk image archive of an entire disk(s) or of selected partitions in the system.
Image to Disk - Opens the Image to Disk Wizard. Helps you to restore data from a disk image archive.
Create Raw Image - Opens the Create Raw Image Wizard. Helps you create a raw type disk image of only one partition or the entire disk.
Clone Disk - Opens the Clone Disk Wizard. Helps you to transfer a sector-by-sector copy from one disk (partition) to another.
Copy Disk to Disk - Opens the Copy Disk Wizard. Helps you to copy a single partition or a whole disk to another disk or partition. In contrast to Clone Disk partition size can be increased or decreased, also only data sectors are copied resulting in faster operation.
Explore Image - Opens Active@ Disk Image Explorer. Helps you to browse through folders and files in a disk image as though it was a hard drive. You may select folders or individual files and restore them.
Verify Image - Opens the Verify Image Wizard. Helps you check the integrity of a disk image archive file.
Mount Image – Opens Active@ Virtual Disk. Allows you to mount images as virtual drives and access them from Windows Explorer or any application as normal drive.

Help

Help Contents - Opens the user guide.
Check for Updates – checks if any updates are available to download.
Send Feedback via Web – opens a web form in a browser, allowing you to leave comments and suggestions regarding your experience with Disk Image.
Send Feedback via E-mail – allows you to send your feedback as E-mail by launching your default e-mail program.
Register Product – allows you to register the program if it is not done yet.
About Active@ Disk Image - Displays information about the program version, licensing and copyright statements.

2.1.2 About the status bar

The status bar is at the bottom of the main program window. Here you may view the current status of the application or information about operation commands. When Active@ Disk Image is idle and ready to perform an operation, the status displays "Ready".

To toggle the status bar on and off, from the View menu, click Status Bar.

NOTE   When you run Active@ Disk Image, the application gathers information about disks and partitions available to the system. During this preliminary operation, the status bar displays "Initializing..." and prevents most other operations from starting. If you try to open a wizard before this initializing is finished, Active@ Disk Image shows a message box with the status bar message in it. After initializing is finished, this message box closes automatically and the selected operation is started.

2.2 About Disk Image Types

Active@ Disk Image supports regular type and raw type disk images. Regular disk image is the default type and should be used in most cases. When raw disk image type is not mentioned explicitly in this guide, we are referring to the regular disk image. Another file format supported is ISO image. ISO images are used to store a copy of CD/DVD/Blu-ray disc in a file and stand apart from actual disk images.

2.2.1 Regular disk images

A regular disk image contains only data found in used sectors of a hard drive. This is done in order to reduce the size of the disk image file and to reduce the time it takes to create the disk image.

One regular disk image archive can hold data from several partitions from one or more disks. When you select a partition to be backed up, all current data will be saved into the disk image archive. Data that is recognized as deleted files and unused partition areas are not recorded into the image. Windows page files and hibernation file data are also excluded from a regular type of backup because they contain temporary information which is useless to keep and restore.

Active@ Disk Image can make a backup of any file system. If a partition selected for backup is formatted with a file system which is not supported by Disk Image natively (i.e. FAT or NTFS), a sector-by-sector (raw) backup will be performed. Keep in mind that this mode is different from raw disk images described below. The image of a partition of an unknown file system will be placed into an .ADI file; the major difference from NTFS and FAT partitions is that it will contain all sectors of the partition - used and free.

2.2.2 Raw disk images

A raw disk image contains an exact, sector-by-sector copy of a single partition or disk. A raw disk image of a disk or a partition is a larger file than a regular disk image of the same disk or partition and it takes a longer time to create.

A raw disk image archive can hold data from only one disk; either a whole disk or one partition from a single disk. It cannot contain more than one selected partition. To make a raw disk image of several partitions on various disks, you may create a separate raw disk image for each partition.

2.2.3 ISO images

ISO image is a standard format which contains an exact, sector-by-sector copy of an optical media as CD/DVD/Blu-ray disc. It is used automatically when a CD/DVD/Blu-ray disc is selected for backup. ISO image can be burned back to the optical media.

2.2.4 When to use raw images

In normal conditions, you will likely use regular disk images. A regular disk image has the following advantages over a raw disk image:

A regular image file is smaller than a raw image file (while containing all your valuable and usable data).
It takes less time to create a regular image than it takes to create a raw image.
The regular image process has advanced features like storing several partitions in one image, password protection and variable compression options.

Raw disk images are more helpful in a data recovery scenario. Here are some reasons why a raw disk image is superior for data recovery:

Data recovery technologies are based on searching the unused space on a partition for traces of deleted, lost or damaged files and folders. So-called "unused space" on a partition is not recognized by the file system and is not saved to a regular disk image. However, this space might contain valuable data information and it is saved to a raw disk image.
The uncompressed raw disk image file contains a sequence of sectors that is unchanged from the original. There are no headers or other application-specific identifiers added. As a result, the raw disk image can be viewed by any data rescue software as a mirror of your drive. If the integrity of the data on your live disk is questionable, you may want to experiment with the data on the partition image instead.

If file size is an issue, a compressed raw image may be used. Active@ Undelete is an example of data recovery software which can work with both compressed and uncompressed raw images.

Raw images have no regard for the file system type. During the raw disk image recording process, all sectors are backed up. An image of any partition can be created and restored.

If you want the data from a file to be restored from the disk image to the same exact location as they were before, then use a raw disk image. A regular image saves all current data but restores files to different sectors, allowing the partition to shrink or grow, depending on the size of the replaced file. In a regular situation, you should not be concerned about partition size. If the partition size is important, however, a raw image is the solution.

2.2.5 About disk image file names

Regular disk images

Regular images have the file extension .ADI.

All data is stored in one file or in a sequential series of numbered files. When the disk image is split into several files, additional file names are created by adding sequential numbers to the original name.

Here is an example: If you save a regular disk image with the name MyImage, the application creates a file named MyImage.adi at the specified location for the first image file. If you have configured the operation to split the image after a fixed file size, or if the image is split automatically, the next file name is MyImage1.adi. The next file name after that is MyImage2.adi, and so on.

Raw images

Raw images have the file extension .DIM.

A raw disk image consists of two files: a configuration file and data file. The configuration file describes the disk or partition geometry and keeps the image description. This file has the .DIM extension. When verifying or exploring a raw image, select this file.

The raw image data files have numerical extensions starting from .001 added to the whole image name.

Here is an example: If you save a raw disk image with the name MyImage, the application creates a file named MyImage.dim. This is the configuration file. Data is stored in a file named MyImage.dim.001. If more than one file is created, the next file is named MyImage.dim.002, and so on.

ISO images

ISO images have the file extension .ISO. One .ISO file contains an image of one optical disc. Thus for every optical drive selected the will be a separate .ISO file created.

Backup folder
When creating an image, all files belonging to it (.ADI or .DIM data files, .XML configuration file and optional text .LOG file) will be placed in one folder with the same name as the backup name. For example, if you choose a backup location such as C:\Backups and the backup name DiskImage, the main data file will have the name C:\Backups\DiskImage\DiskImage.adi

2.3 Working with Basic or Dynamic Disks

You may use Active@ Disk Image to backup and restore valuable data from both dynamic and basic disks.

A basic disk uses partition tables supported by all versions of Windows, MS-DOS, and Windows NT. It can hold primary partitions, extended partitions, and logical drives.

A dynamic disk has a different structure that is supported by Windows 2000 and operating systems after Windows 2000. A dynamic disk can hold simple volumes, spanned volumes, mirrored volumes, striped volumes, and RAID-5 volumes. A single dynamic disk may consist of several physical disks.

In the Disk to Image Wizard, basic volumes are listed under each corresponding physical disk. Dynamic volumes are combined into a group named Dynamic volumes. To select all the physical dynamic disks in this group, select the group name. When you select the whole group, all dynamic volumes are included in the backup. The contents of the dynamic volume is stored, however the structure data is not stored. What this means is that the information about dynamic disk (stripe, mirror etc.) is lost.

If you try to create a raw disk image of one dynamic disk consisting of several physical disks you will not make a valid backup that allows you to restore the dynamic disk structure. However, you can create and restore a raw disk image of each physical dynamic disk.

Active@ Disk Image does not allow you to restore the structure of dynamic disks. Nevertheless, you can restore the contents of dynamic disks to basic disks.

2.4 Incremental and Differential Images

Starting from version 4.0 there are 3 types of image which you can select when creating a new backup – full, incremental and differential. Full backup includes all data and is similar to previous images (but the image file format has been changed). Incremental and differential are based on the previous image and include only data changed since the last backup. The previous image is called a base image and can be a full backup or another incremental image. If, for a particular block, there's no difference between current state and the base image, data is not written into the current image but a reference to a base image is placed instead. Differential image differs from an incremental image in the matter of allowing only a full backup to be a base image.

The base image and all subsequent incremental images have the same partitions backed up. The create wizard dialog for incremental image shows the partitions selected for information purposes only; it does not allow to change the selection. If it appears that partition included into base image is no longer available or reformatted, the warning must be shown and the image creation seized.

In an incremental image, if a password is used it cannot be changed. It remains the same for the base and any subsequent incremental image. All other options like compression, file splitting, and description are individual for every image.

Normally incremental images are named by the date/time of creation and located in the folder below the full backup, so the file structure will be as follows:

<Images location>\<Full backup>
<Images location>\<Full backup>\<Incremental 1>
<Images location>\<Full backup>\<Incremental 2>

When you select any image as a base for incremental image, the application scans the parent folder and sibling folders (if it is not a full backup) or children folders (for full backup selected). All found images are enumerated and shown as a list from which user can select a required base image. If more than one image with the same sequence exists, it will be ignored. For example, the full backup has sequence #0, the first incremental image will have sequence #1. If another incremental image is created based on #0, it will become #1 again, so one of them will be ignored during the enumeration.

When an incremental image is selected for restoring, all sequential images starting from the full backup and including the selected image must be presented in the folders as described above.

Backward image compatibility is supported but forward is not. Images created with newer versions may have a different format.

3 Creating a Disk or Partition Image

The Disk to Image Wizard steps you through the process of creating a disk image for a whole disk or a number of partitions.

To open the Disk to Image Wizard, do one of the following:

In the main program window, double-click **Disk to Image**.
From the Tools menu, choose **Disk to Image**.
Follow instructions on the wizard screens. In each case, click **Next** to move to the next screen.

After the operation is complete, click Finish to close the dialog box.

3.1 Selecting a Backup Type

The first thing you need to do is select a backup type from Full, Incremental and Differential. The full backup is a normal backup containing all data for selected partitions. In most cases this is the type you will choose. Even if you consider making differential or incremental backups, the first backup you create (it is called a base backup) must be a full backup.

Fig. 2 – Select Backup Type
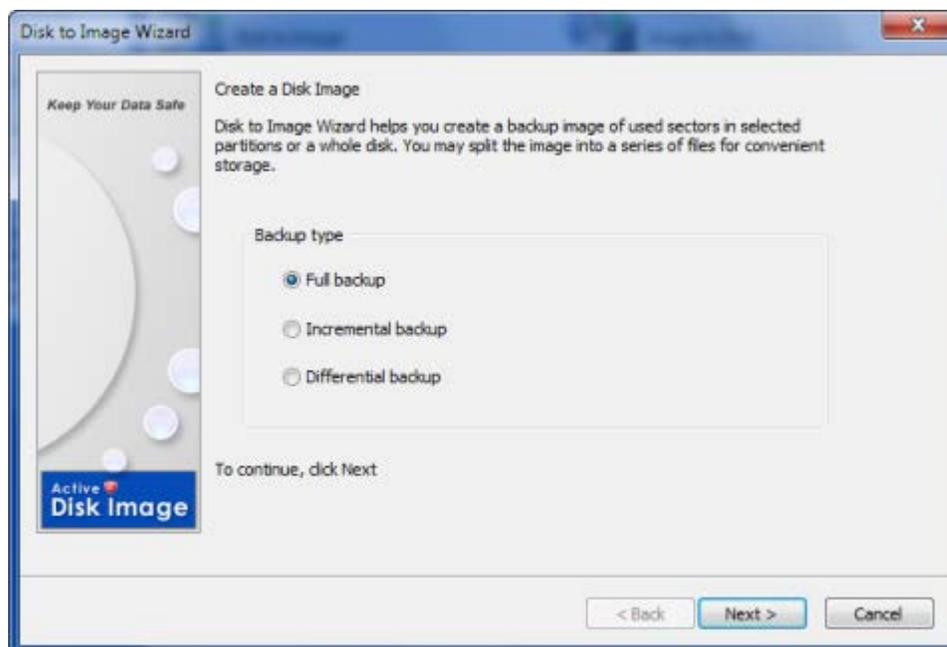
Incremental backup can be based on either full or another incremental backup. It contains only data that has been changed since the base backup was created, thus occupying less disk space and taking less time

to create. It is not self sufficient however and requires all previous backup images to get information from it (by restoring an image or exploring it in Disk Image Explorer).

Differential backup is a backup type based on full backup. You cannot create a chain of differential backups - use incremental backup for this purpose. Technically a pair of full and first incremental backups is identical to a pair of full and differential backups. With differential backup you only need two images to restore data - a full backup and a differential made on top of it.

3.2 Selecting Disks and Partitions

On this wizard page, select disks and partitions for back up. This list displays the disks installed in your system and the current partitions on them. If there any dynamic volumes in the system, they will be shown in one group named Dynamic Volumes.

Fig. 3 – Select Disks and Partitions
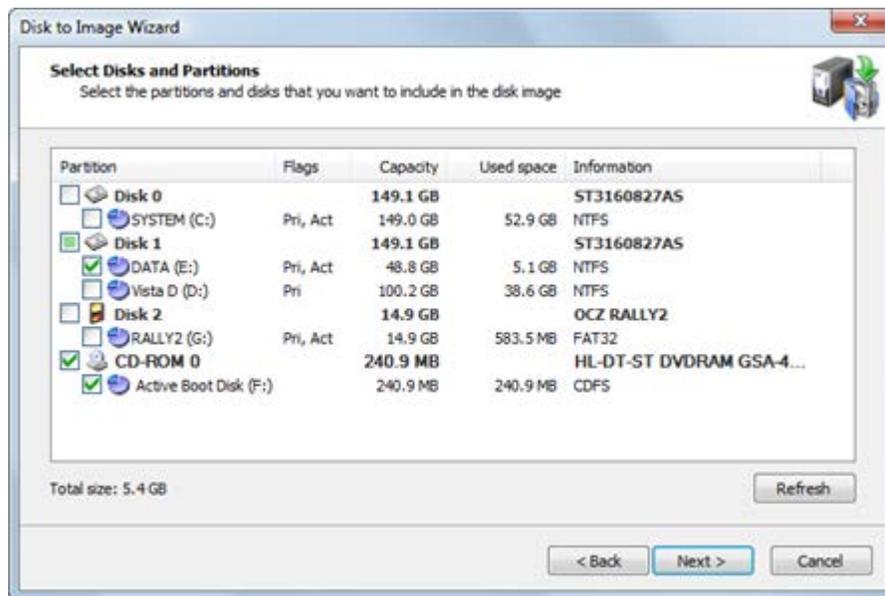
Information in this list is presented in five columns.

Partition - The name of the hard disk or of the partition in the format
<volume label>(<drive letter>:)
Flags - The type of the partition. Options are:

- Pri - Primary partition

- Act - Active (bootable) partition

- No flags indicate a logical drive

Capacity - The full partition size.
Used space - The amount of space occupied by the current data stored in the partition. This shows the amount of data that will be backed up.
Information - For a partition - the file system type is shown. For a hard disk - the name assigned by the BIOS.
Select a check box next to a disk or partition if you want to include that disk or partition in the disk image. The check box for a disk item has three-states:

Clear - None of the partitions belonging to the disk is selected.
Selected - All of the partitions belonging to the disk are selected.
Undetermined - Some of the disk partitions are selected.
At the bottom of the list a total size for the selected partitions is displayed.

NOTE You can select only partitions formatted with supported file systems. Partitions with other file systems, or unformatted partitions, cannot be selected and are shown without a check box. Partitions without a drive letter will display a number with a colon instead of the drive letter.

There are four types of devices supported, represented by different icons: hard drives, USB flash drives, floppy disks and CD/DVD drives. You may select partitions from all kinds of devices in one operation, however, only hard drives, USB flash and floppy partitions can be stored in one backup file. If you select a CD/DVD drive, an ISO image will be created for it and placed into separate subfolder.

NOTE If the image you are creating is an incremental or differential, you will see the list of selected partitions but won't be able to change the selection. This is because you select a set of partitions to backup when you create a first, full backup. For every subsequent backup you will only see the selection, but it is read-only. You cannot change the set of partitions in incremental backup. You also need to have all partitions selected during the full backup available on your machine while making an incremental or differential backup.

3.2.1 BitLocker Volumes

If a partition contains a volume, encrypted by Windows BitLocker, it's marked so in the Information column. The encrypted partition must be in Unlocked state to be fully supported by Active@ Disk Image. If a partition is locked, all its data is in encrypted state and could not be parsed by Active@ Disk Image. It is still possible to backup and subsequently restore a partition in the locked state, but it implies several limitations:

- Since all data stored on the disk is in encrypted state, it cannot be interpreted and image is created in "raw" format, with all sectors included (with and without data) which results in a larger image size.

- Image cannot be opened in Active@ Disk Image Explorer.

- While the data partition can be successfully restored in encrypted state and subsequently unlocked using original key, the system Windows partition will be restored without the necessary modification which results in not bootable system

To avoid the above-mentioned problems, unlock an encrypted partition before creating an image. In Windows 10 open Settings and search for a BitLocker:
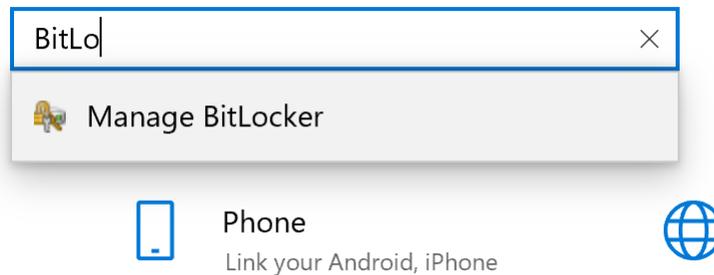
Open Manage BitLocker applet. You should see a window similar to this:
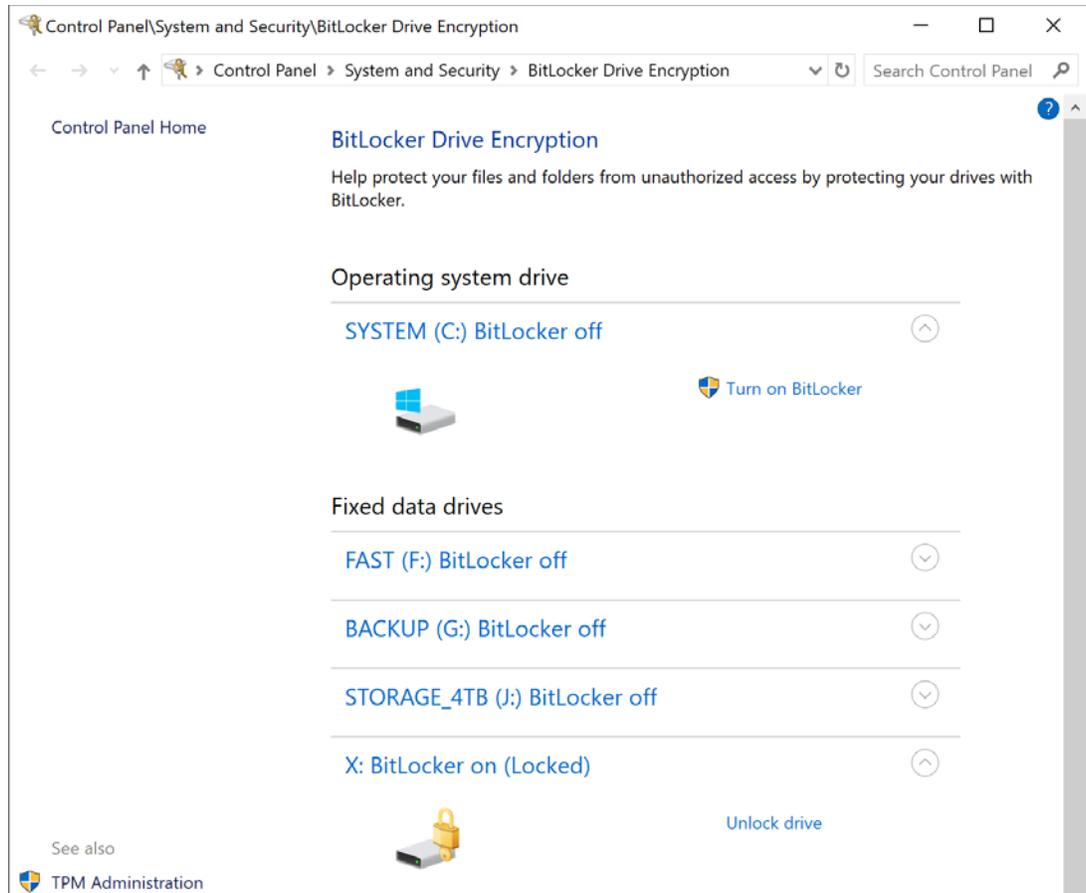
Click on Unlock drive and provide a secret key. Now the drive should be in unlocked state and accessible by Active@ Disk Image. If you unlocked the drive while in Create Image wizard, click a Refresh button to update the state of the partitions in the list.

You can also use a command line interface to manage BitLocker encrypted disks. Open a PowerShell app with Admin privileges and type **manage-bde**.

3.3 Choosing a Backup Location

In this wizard screen, specify where to write the disk image archive.

Fig. 4 – Indicate Backup Location


When creating a regular backup, you have an option to select between writing an image into a local or network file, storing it in the cloud or burning it onto a CD/DVD. Raw images can be saved to file only.

If you choose burning to CD/DVD, you need to select a burning device and enter a backup name. If you decide to store a disk image to a file, you need to provide a backup name and location. By default a folder named \Backups on a disk other than from which you are making backup which has the most of free space is suggested.

When creating an image, all files belonging to it (.ADI or .DIM data files, .XML configuration file and optional text .LOG file) will be placed in one folder with the same name as the backup name. For example, if you choose a backup location such as C:\Backups and a backup name DiskImage, the main data file will have the name C:\Backups\DiskImage\DiskImage.adi. If you burn the disk image to CD/DVD, no extra folder is created and all files are placed in the root.

NOTE Storing image on the cloud is available for Amazon AWS S3 service. You need to have an account properly configured and provide account credentials and selected bucket in **Settings** dialog. You can store full backup images (not incremental and not raw images) in the cloud.

If you choose to store image on the cloud, it will be stored in a folder named **ActiveDiskImage** and the name of the image should be unique. You can see the list of existing images by clicking on **Browse** button when **Cloud storage** option is selected.
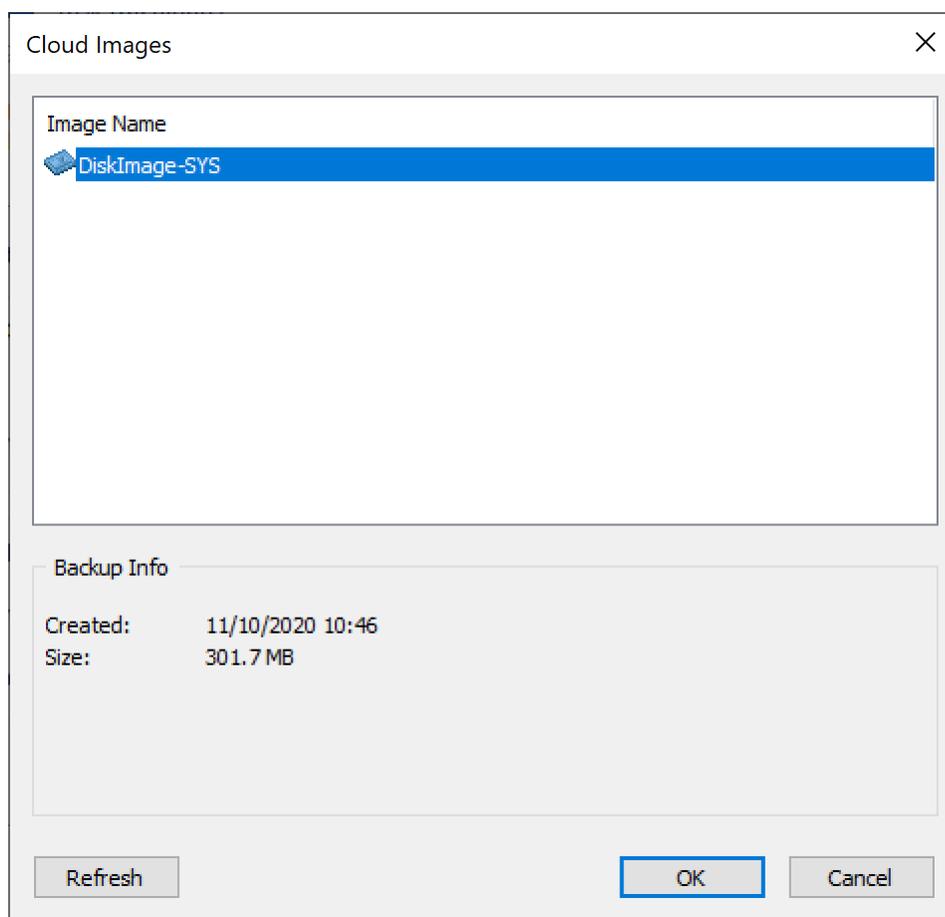
NOTE When you choose to backup to a CD/DVD burner, you have to insert a blank disc and select a desired burn speed. You cannot move forward (the 'Next' button will be disabled) unless there's a writable media in the target burner. You might also want to change default burner settings by clicking the **Settings...** button.

Fig. 5 – Burner settings
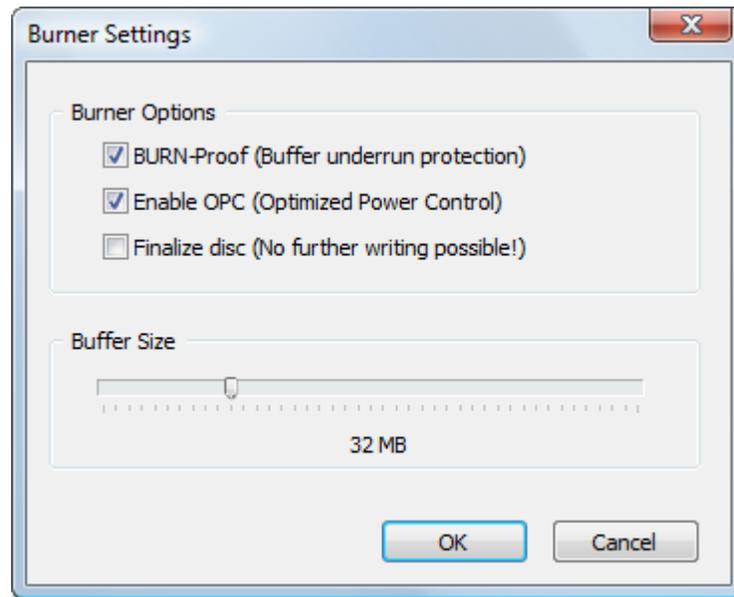
First two options enable hardware burning optimization and buffer under run protection. It is highly recommended to leave them on.

NOTE You cannot burn an incremental or differential image to CD/DVD/Blu-ray disc.

3.4 Setting Image Options

Configure the compression settings, image splitting, and password protection and enter a description for the archive.

Fig. 6 – Image Options

Compression

The effectiveness of compression depends on the type of files in the data you are going to back up. Text documents can be reduced in size significantly. Trying to compress picture files or data that is already compressed, (for example, ZIP files) will yield a small file size difference.

There are three compression settings indicated here by the affect each one has on the speed of the operation:

None is in many cases the fastest option but will consume the most space.
Fast (recommended) is a balance between compression speed and resulting image size
Normal can give a better compression compared to Fast method but generally takes longer.
High provides the smallest file size and takes the longest time to complete.

NOTE When you compare the size of an image created using Normal and an image created using High options the difference in file size is not significant. Because high compression takes significantly more time, use it only when you need to get the smallest possible image and when speed is not important.

NOTE When burning a backup directly to CD/DVD, image compression is not available and the only compression option enabled is **None**.

How to select compression method properly

In most cases selecting a Fast compression method is a straightforward choice giving both speed and image size benefits, however here are some more detailed explanations behind the compression methods. There 4 methods available: None, Fast, Normal and High. Each of them is progressively does a better compression but takes more time to do the job. The tests shown here are designed to illustrate the difference between the methods but their results highly depend on kind of data being compressed as well as hardware specifications.

Text file

Compression	Speed	Resulted size
NONE (copy)	23100 MB/s	100%
FAST	405 MB/s	62.5%
NORMAL	225 MB/s	57.4%
HIGH	68 MB/s	43.6%

EXE file

Compression	Speed	Resulted size
NONE (copy)	23300 MB/s	100%
FAST	736 MB/s	46.4%
NORMAL	286 MB/s	46.1%
HIGH	80 MB/s	38.0%

These tests were performed on i7-7700K desktop and show the pure performance of different compression methods which itself varies significantly on type of data used. Text files normally gives a good compression ratio (because compression engine has good chances to find repeated data and pack them) but takes longer due to necessity to find matches. Program files (executables) are similar to text in what they contain generally large amount of sparse data and can yield even bigger compression. JPEG and video files on the other hand are almost not compressible since they contain already compressed data.

Those are artificial tests comparing compression itself, but in real life there are also different factors involved, like HDD speed for source and target disks, CPU speed and number of cores, kind of data being compressed.

i5-6500 @3.2 GHz, medium performance desktop, backup of system partition (21.3 GB) on HDD (7200 RPM) to another HDD (7200 RPM).

Compression	Time	Image size, GB	Speed	Resulted size
NONE	4:05	22 GB	89 MB/s	100%
FAST	3:47	14.7 GB	96 MB/s	69%
NORMAL	4:15	15.1 GB	85 MB/s	70%
HIGH	4:26	12.7 GB	82 MB/s	60%

i7-7700K @4.2 GHz, high performance desktop, backup of data partition, mostly project files (178 GB) from fast HDD (7200 RPM) to slower HDD (5400 RPM).

Compression	Time	Image size, GB	Speed	Resulted size
NONE	52:55	178 GB	57 MB/s	100%
FAST	53:38	142 GB	57 MB/s	80%
NORMAL	53:34	140 GB	57 MB/s	78%
HIGH	52:33	131 GB	58 MB/s	73%

It is obvious here that overall speed is mostly determined by hard disk speed and not by choice of compression method. In first test the target HDD is significantly faster than the one in the second test, resulting in much higher speed despite being run on less powerful machine. Generally, if machine is powerful enough, even high compression can be quite satisfactory in terms of the speed while giving the best compression. On the other hand, if CPU is struggling with compressing data, the speed impact could be drastic to extent prohibiting compression altogether (as an example if run on very slow Atom based PC, creating compressed image can take several times more time than not compressed image). Again, of both CPU and disk are fast (like in case with SSD), both CPU and disk speed might be equally important and Fast compression method could be more beneficial.

Image splitting

All image contents can be written into one file, depending on the size of the partition. When a disk image can be written into one file, the image file and the archive are the same thing. When Image splitting is set to Automatic (try single file), the resulting archive may be written into one file.

Archive backups can be written to multiple files. Here are the situations when it is necessary to split the image:

Burning an image onto CD/DVDs. If you plan to create a disk image and then subsequently burn the created image onto CDs or DVDs, you must split the archive into files that can fit onto the media. Select the Fixed size (MB) check box and either type a file size in megabytes or make a choice from the drop-down list. Choices are:

- 100 MB (ZIP)
- 650 MB (CD)
- 700 MB (CD)
- 2GB (FAT)
- 4GB (DVD)

Saving image onto a FAT disk. You cannot create a file greater than 4Gb on a FAT partition. In some situations, even 4Gb files cannot be handled properly. To provide the best data integrity on a FAT disk, select 2GB (FAT) from the drop-down list or enter a smaller number manually.

NOTE If you select the Automatic (try single file) option, the archive will not necessarily be written into one file. If the system runs out of free disk space on the disk where you are saving the backup or if you are storing an image file on disk with a FAT file system, Active@ Disk Image automatically splits the archive into multiple files and prompts you for the path to write the next file.

Password protection

To protect sensitive data on a disk image, use password protection. Choose a password with a maximum of 16 characters. Type the password in the Password and Confirm password fields. Store your password in safe place. You will not be able to restore data from an image if you forget the password.

Image encryption

Professional version of Disk Image supports an image encryption in addition to password protection. If you select encryption option [None] but enter a password, an image will be protected from non-authorized access but its content will not be encrypted and although you cannot open the image without knowing a password using the Disk Image application, one can get raw data and try to descramble it and potentially extract sensitive information. Encrypting the image protects it's content

with widely accepted strong encryption methods making such access impossible.

There are three options to encrypt an image: using AES-128, AES-192 and AES-256 algorithms. They are considered modern and safe encryption methods. The difference between them is key length, the bigger the key length, the harder to decipher data using a brute force, though the encryption time will be longer.

NOTE Password for all incremental images in a series is shared and can be set only for full backup. If you are creating an incremental or differential image, the password field will be disabled.

Image description

You may give a short description of the contents of your image. Enter descriptive text (maximum 1,024 characters) into the Image description text box. In this text box, you may use the Enter key to insert line breaks.

NOTE If the data that you are saving is confidential, be aware that the text that you enter into the Image description text box is stored as clear text. You are not required to use a password to view this description, so do not place confidential information here.

Separating backups and naming images

If you selected partitions belonging to different disks you have the option to split the data into separate image files, placing the data for each disk into a separate image. To do so, check "Create separate image for each disk" option. In this case the image name and location you specified before will become a root folder where two or more images for each disk will be placed. The names for these images are made based on disk's numbers and names. You can change them by clicking on "edit names" link.

Fig. 7 – Edit image names
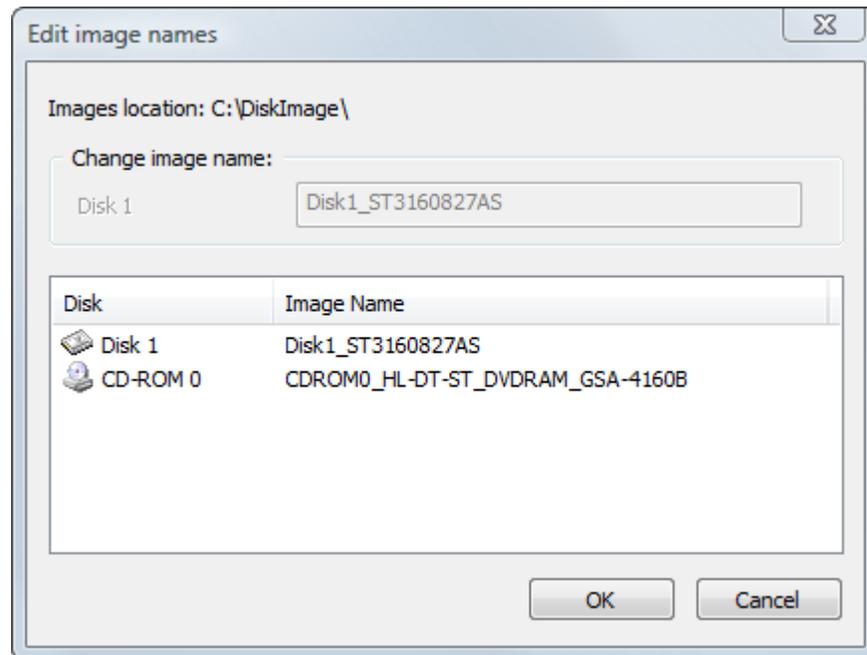
You may rename the default names by selecting a name in the list and editing it in the text box above.

Any CD/DVD images will be placed separately from the rest of the data automatically despite of "Create separate image for each disk" checkbox state, which controls all other data types.

3.5 Creating Several Images at once

The image splitting option described above is only a shortcut allowing you to separate data from different hard drives. You also can setup several backups at once while controlling every option. These images will be completely independent and created after each other.

Fig. 8 – Create another image
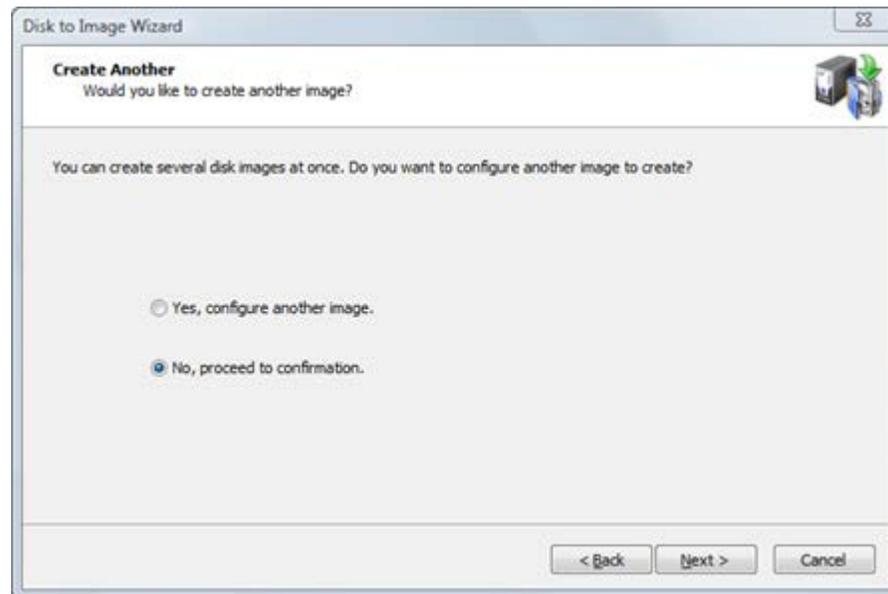
If you want only one image to be created, click Next button; otherwise select "Yes, configure another image" and click Next. You will be forwarded to the partitions selection page and will be able to set options for a second backup.

3.6 Confirming the Disk Image Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start the process of image creation.

The confirmation dialog contains three options to set:

Verify image after creating – runs image verification immediately after the image is created.
Shutdown computer when finished – turns off the computer when image creation is done.
Minimize in tray – minimize application in system tray after starting the process. Active@ Disk Image icon will appear in the system tray showing the current progress when user hovers mouse over it. Double click on the tray icon restores application windows on the screen. If the application is minimized in tray, once the process finished, a system notification will be shown in the tray.

3 Creating a Disk or Partition Image

Fig. 9 – Confirming Operation Details
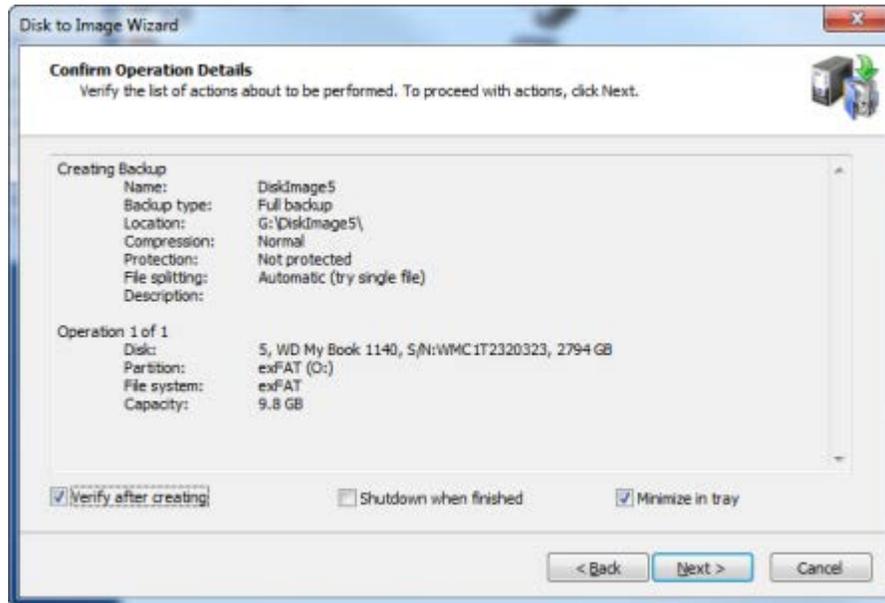
The process of creating the image can take a long time. You can watch the progress bar on the Progress page.

To stop the process of creating an image, click **Cancel** at any time.

Fig. 10 – Progress Status
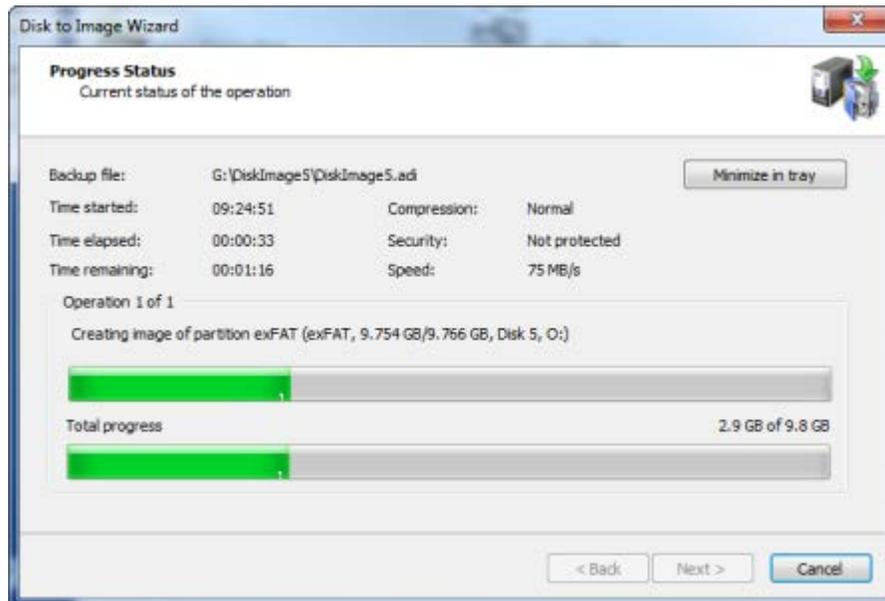
Active@ Disk Image can be configured to send a notification e-mail after completing creating an image. See 10.4.5 Notifications Settings section for details.

4 Creating a Raw Disk Image

The Create Raw Image Wizard steps you through the process of creating a raw disk image.

To open Create Raw Image Wizard, do one of the following:

In the main program window, double-click **Create Raw Image**.
From the Tools menu, choose **Create Raw Image**.
Follow instructions on the wizard screens. In each case, click **Next** to move to the next screen.

After the operation is complete, click **Finish** to close the dialog box.

4.1 Selecting a Disk or a Partition

Select a disk or a partition here to back up. This list displays the disks installed in your system and the current partitions on them.

Because a raw image supports only one partition or disk per image, you may select only one partition or disk. If you select a disk, all its sectors (with all partitions) will be backed up.

Fig. 11 – Select a Disk or Partition
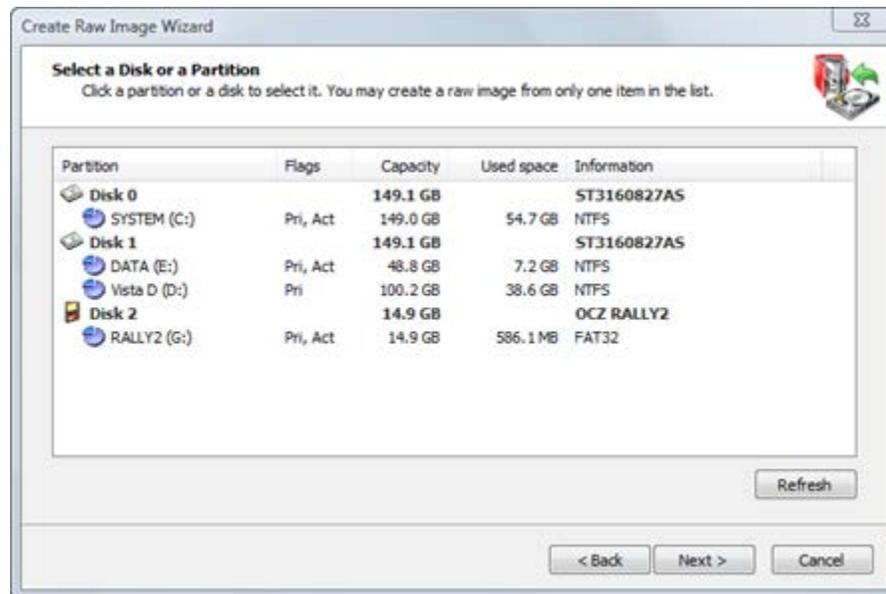
Information in this list is presented in five columns.

Partition - The name of the hard disk or of the partition in the format <volume label>(<drive letter>:)
Flags - The type of the partition. Options are:

- • Pri - Primary partition

- • Act - Active (bootable) partition

- • No flags indicate a logical drive

Capacity - The full partition size.
Used space - The size taken by current data stored in the partition. Although all sectors will be written, this shows the amount of data the backup will contain.
Information - For a partition - the file system type is shown. For a hard disk - the name assigned by the BIOS.

4.2 Choosing a Backup Location

Specify where to write the raw disk image archive.

Fig. 12 – Backup Location
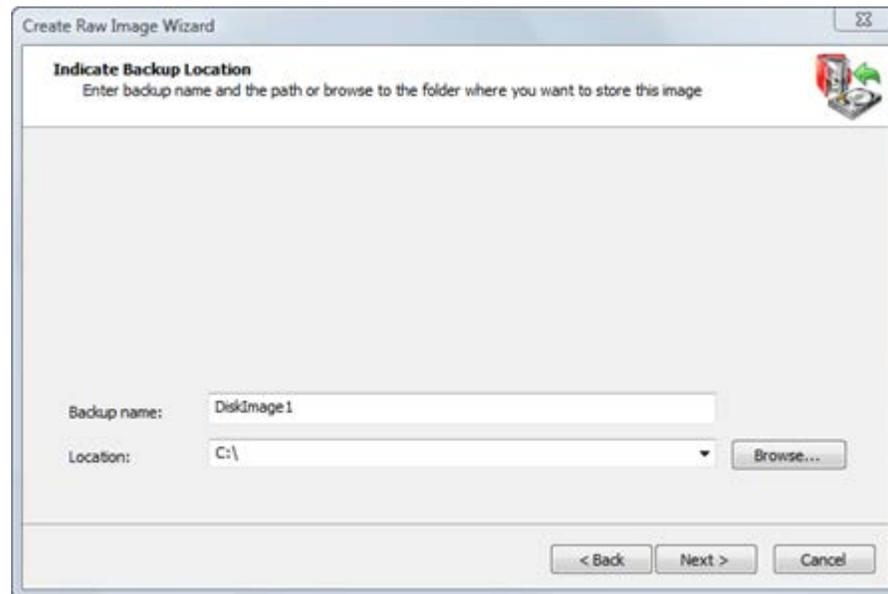
When creating an image, all files belonging to it (.DIM file, data files, .XML configuration file and optional text .LOG file) will be placed in one folder with the same name as the backup name. For example, if you choose a backup location such as C:\Backups and a backup name DiskImage, the main data file will have the name C:\Backups\DiskImage\DiskImage.dim.

4.3 Setting Image Options for a Raw Disk Image

Configure the compression settings and image splitting and enter a description for the archive.
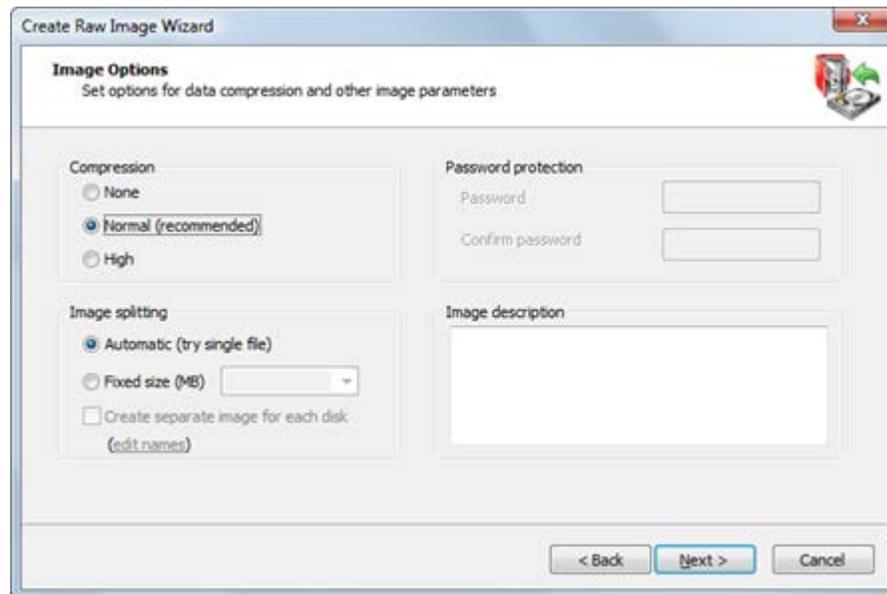
Fig. 13 – Image Options

Compression

The effectiveness of compression depends on the type of files in the data you are going to back up. Text documents can be reduced in size significantly. Trying to compress picture files or data that is already compressed, (for example, ZIP files) will yield a small file size difference.

There are three compression settings indicated here by the affect each one has on the speed of the operation:

None is in many cases the fastest option but will consume the most space.
Normal (standard compression) is a compromise between a smaller file size and a faster operation speed.
High provides the smallest file size and takes the longest time to complete.

NOTE When you compare the size of an image created using Normal and an image created using High options the difference in file size is not significant. Because high compression takes significantly more time, use it only when you need to get the smallest possible image and when speed is not important.

Image splitting

4 Creating a Raw Disk Image

All image contents can be written into one file, depending on the size of the partition. When a disk image can be written into one file, the image file and the archive are the same thing. When Image splitting is set to Automatic (try single file), the resulting archive may be written into one file.

Archive backups can be written to multiple files. Here are the situations when it is necessary to split the image:

Burning an image onto CD/DVDs. If you plan to create a disk image and then subsequently burn the created image onto CDs or DVDs, you must split the archive into files that can fit onto the media. Select the Fixed size (MB) check box and either type a file size in megabytes or make a choice from the drop-down list. Choices are:

- 100 MB (ZIP)
- 650 MB (CD)
- 700 MB (CD)
- 2GB (FAT)
- 4GB (DVD)

Saving image onto a FAT disk. You cannot create a file greater than 4Gb on a FAT partition. In some situations, even 4Gb files cannot be handled properly. To provide the best data integrity on a FAT disk, select 2GB (FAT) from the drop-down list or enter a smaller number manually.

NOTE If you select the Automatic (try single file) option, the archive will not necessarily be written into one file. If the system runs out of free disk space on the disk where you are saving the backup or if you are storing an image file on disk with a FAT file system, Active@ Disk Image automatically splits the archive into multiple files and prompts you for the path to write the next file.

Image description

You may give a short description of the contents of your image. Enter descriptive text (maximum 1,024 characters) into the Image description text box. In this text box, you may use the Enter key to insert line breaks.

NOTE If the data that you are saving is confidential, be aware that the text that you enter into the Image description text box is stored as clear text. You are not required to use a password to view this description, so do not place confidential information here.

4.4 Confirming the Raw Disk Image Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start the process of image creation.

The process of creating the image can take a long time. You can watch the progress bar on the Progress page.

To stop the process of creating an image, click **Cancel** at any time.

5 Verifying a Disk Image Archive

After you have created a disk image, it is important for you to check that the data stored in the image archive is intact and can be read without errors. The Verify Image Wizard steps you through this process.

To verify a disk image archive:

1. To start the Verify Image Wizard, do one of the following:
   - Double-click the wizard icon on the main screen.
   - From the **Tools** menu, choose **Verify Image**.
2. Follow instructions on the wizard screens. In each case, click **Next** to move to the next screen.

NOTE The process of verifying the image can take a long time.

5.1 Selecting a Backup for Verification

Specify the name of the archive that you want to verify.

Fig.14 – Locate Source Image File

You may enter new image name into the **File name** field or use the **Browse...** button to select an image location in **Open Backup File** dialog box. If you use the Browse button, you may view details of the archive file like date, size and description without going further.

Fig. 15 – Open Backup File
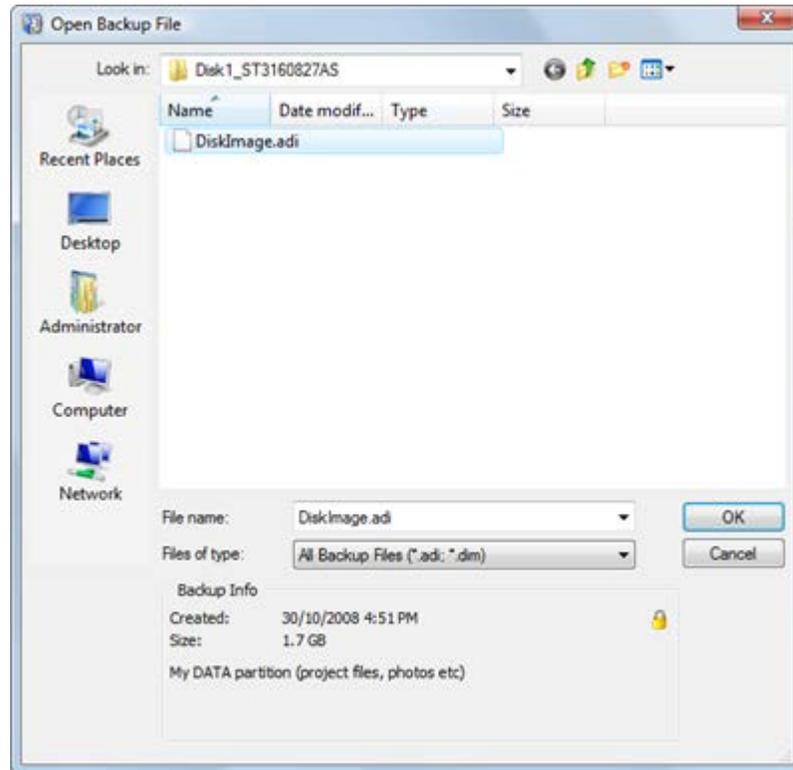
The Open Backup File dialog box shows supported image files (having extensions .ADI and .DIM).

When you select a disk image file, details of the selected file appear in the **Backup Info** area at the bottom of the dialog box. Details include image creation date and time, data size and the image description that you entered when you created the image. If the image is password protected, a small lock icon appears in the top-right corner of the Backup Info area.

Click **OK** to return to the **Backup Selection** screen. The selected image name appears in the **File name** box.

If you'd like to restore an image stores in the cloud, select **Cloud storage** option and click **Browse** to see a list of images available on the cloud. Once you have selected an image, its name will be placed into **Backup name** field.

NOTE When a regular disk image is split into several files, the image description is placed into the last file of the archive. If all files are located in the same folder, you can select any file in the image. The application will automatically locate the last file of the archive and read the backup information. If the last file cannot be found, the message in the Backup Info area indicates that **The file is not the last file of multi-file archive....** Locate the last archive file and select it to open the image.

You don't need to have all files in one place in order to start verifying the image. As each archive file location is required, the application requests a path to the file.

5.2 Confirming the Verify Details

View the file name and confirm that it is correct. To change the file name, click **Back** and choose a different image before proceeding. If the file name is correct, click **Next** to start the process of verifying the image.

Fig. 16 – Confirm Operation Details
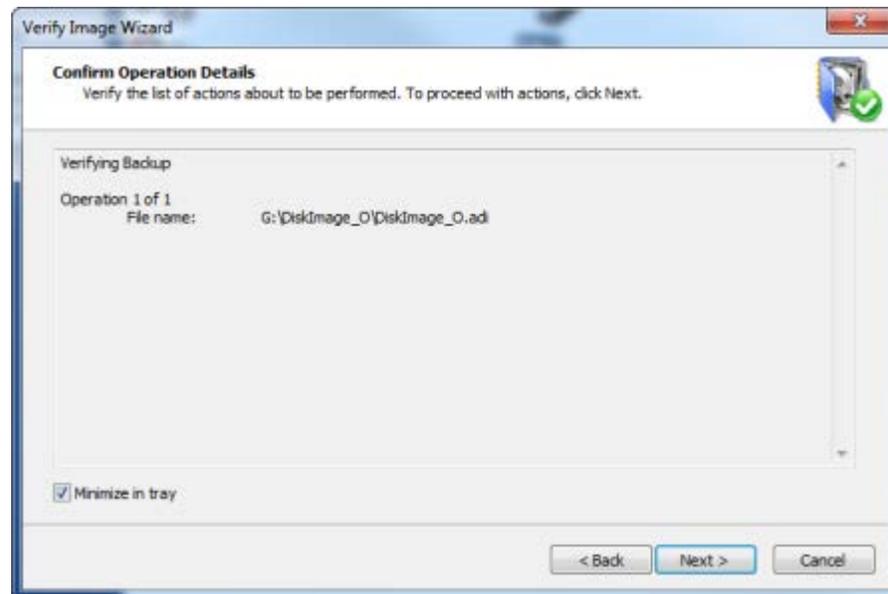
The process of verifying the image can take a long time. You can watch the progress bar on the Progress page.

To stop the process of creating an image, click **Cancel** at any time.

6 Restoring a Disk Image

The Image to Disk Wizard steps you through the process of restoring a disk image archive of a whole disk or a disk partition.

To open the Image to Disk Wizard, do one of the following:

In the main program window, double-click **Image to Disk**.
From the Tools menu, choose **Image to Disk**.
Follow instructions on the wizard screens. In each case, click Next to move to the next screen.

NOTE You can restore more than one partition or disk at a time. If you restore a disk, all partitions belonging to the disk will be restored. If you want to restore more than one partition, you must choose **"Yes, select another disk or partition"** when prompted by Image to Disk Wizard.

6.1 Selecting a Disk Image to Restore

When you are restoring a disk image, you may restore an entire disk, or a partition. In either case, you must first select the disk archive.

Fig. 17 – Locate Source Image File

To identify a disk image file, type the file name into the **File name** field.

To open the Open File dialog box and view information about a number of archive files, click Browse… The Open File dialog box displays all supported image file types (with file extensions .ADI, .DIM and .ISO).

Fig. 18 – Open Backup File
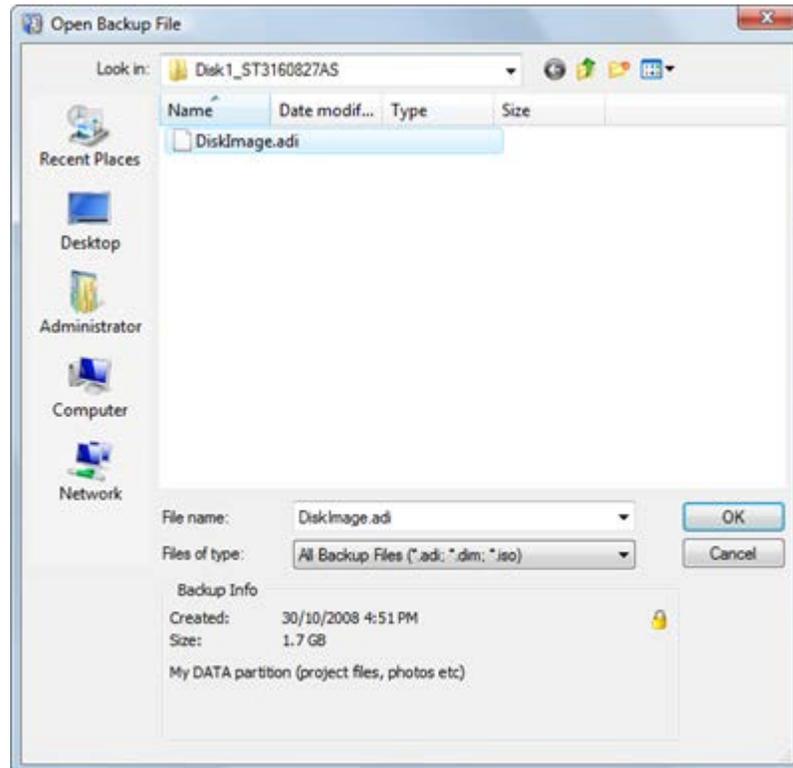
Click a file in the list to select it. In the Backup Info area of the Open File dialog box, you can view the archive date, file size and description of the file. If the selected image is password protected, a small lock icon appears in the top-right corner of the Backup Info area.

Click **OK** to return to the Backup Selection wizard screen. The selected image name appears in the **File name** field.

Click **Next** to continue.

If you'd like to restore an image stores in the cloud, select **Cloud storage** option and click **Browse** to see a list of images available on the cloud. Once you have selected an image, its name will be placed into **Backup name** field.

NOTE When a disk image is split into several files, the image description is placed into the last file of archive. If all files are located in the same folder, you can select any file of the image. The application will

automatically locate the last file of archive and read backup information. If the last file cannot be found, the message in the Backup Info area indicates that **"The file is not the last file of multi-file archive...."**, locate the last archive file and select it to open the image.

You don't need to have all files in one place in order to start restoring the image. As each archive file location is required, the application requests a path to the file.

If the image you have opened is part of incremental backup, Active@ Disk Image looks for all incremental images in a series and shows them in the wizard. You have to select which incremental image (meaning which version of backup) to open. See section 2.4 for details on incremental images.

Fig. 19 – Select Incremental Image
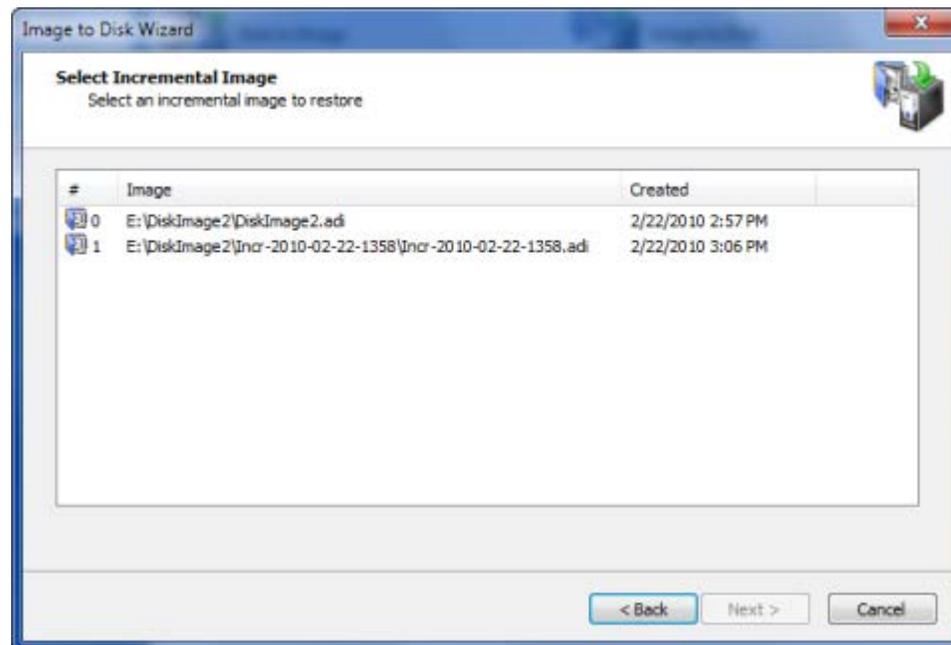
6.2 Selecting a Whole Disk or a Partition

After you have selected an archive, a list of partitions stored in that backup archive appears. Select the check box next to the disk or the partition that you want to restore. At the bottom of the list, a description of the selected image appears (if a description has been stored with the image).

Fig. 20 – Select Source Disk or Partition
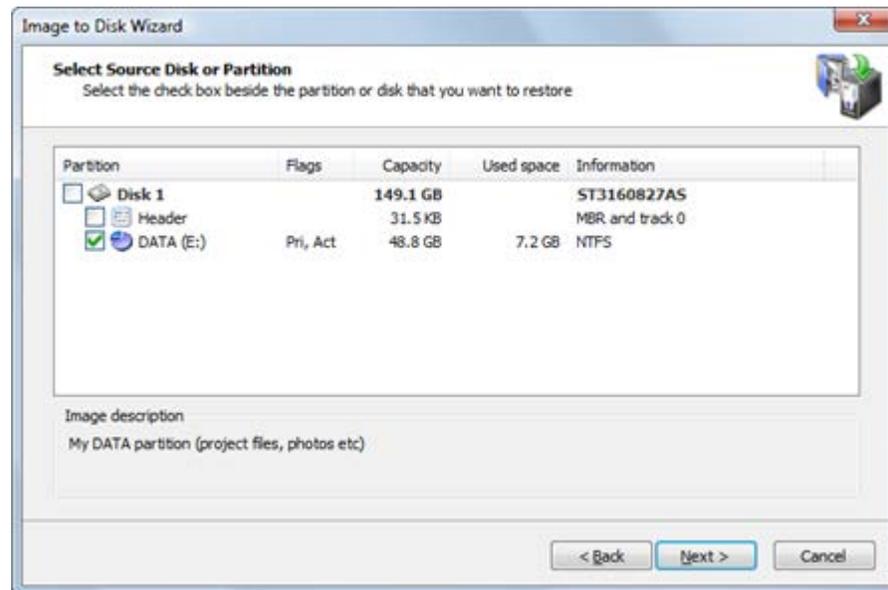
NOTE   You may select only one check box. If you select a disk, all partitions
belonging to the disk will be selected. You can restore more than one
disk (partition) in one operation. Once you have passed through all the
wizard dialogs for the selected item, you will be prompted to add
another disk (partition) to the restore operation. When you select
another disk or partition to restore, the partition previously selected for
restoring will be represented by 🔄 icon. You may however select it
again resulting in duplicating one partition in the backup into two on the
target disk.

The process for restoring a disk is different from the process for restoring
a partition.

When you restore a disk:

All partitions that belong to the selected disk are restored.
The operation is more automated and you have less control.
You cannot specify the size and location of the partitions on the disk.
You cannot assign a drive letter to a partition.
All existing partitions and the data in them in the destination disk will be
permanently removed to make space for the restored disk and its
partitions.
If the destination disk is a different size than the disk archive, all
partitions in the disk image are restored to the destination disk using
automatic resizing. The restored partitions will occupy all target disk
space proportionally to their original size.

6 Restoring a Disk Image

If the destination disk has the same disk geometry (sectors per track and tracks per cylinder) as the original one and it is of the same or larger size, you have an option to preserve the exact size and location of partitions on the disk being restored.

NOTE   If you are restoring data from an image created on the same machine and it contains more than one disk, you may restore data in "Automated mode" by selecting two or more disks from the list. In this case you won't be asked to select a destination disk but rather forwarded directly to the confirmation page. All the selected disks and the partitions they contain will be restored to their original location.

When you restore a partition:

You may choose the location of the partition.
You may choose the size of the destination partition
You may assign a drive letter to it.

Restoring MBR and track 0

When you create an image of a disk or a partition, the first track of each disk containing a MBR in sector 0 is stored in the backup. Normally track 0 is filled with zeros, except the first sector, which contains the MBR (Master Boot Record) code and a partition table. The MBR code is necessary to boot a system from the disk and must be present on the disk containing an active partition. When a new disk is added to the system Windows must initialize it before use (you can do it in Disk Manager). During disk initialization a typical MBR is written to the first sector. Alternatively you may simply restore a partition to the new disk and Active@ Disk Image will also initialize it, so you should have no problems with booting from that disk.

However, if you use a non-standard boot manager it might use a proprietary MBR code and extra code or data in sector 1 and below. If you make a backup of such a disk and later restore it as a whole disk, the whole first track (normally 63 sectors) will be restored automatically, so the alternative boot manager data will be restored. If you, however, decide to restore only a single partition to another (perhaps clean) disk, this proprietary MBR and data will be left behind. You have an option to restore the disk header (MBR and track 0) as a separate item when you are restoring that partition.

When restoring a disk header (MBR and track 0), only sectors belonging to the first track are overwritten. The partition table on the target disk is also preserved, so it is safe to restore a disk header to the disk containing data and you can do it even after restoring a partition.

NOTE If you are restoring a disk that has only one partition, keep in mind that the process of restoring a disk is different from the process of restoring a partition. If you select the partition in the image, you will proceed with partition recovery. If you select the disk, you will proceed with disk recovery.

6.3 Restoring a Partition

If you have chosen to restore a partition, you are said to be in "Partition Mode". You are going to restore a single partition that is stored in the disk image archive. You will have control over the parameters of the operation. You may restore to the existing partition (by overwriting it) or to unallocated space, provided that the target partition is large enough.

Exclusive access to the target

If the selected target is not an unallocated space, the restore operation must have exclusive access to the target partition while restoring the disk image. Before you confirm the details of the restoring operation, Active@ Disk Image attempts to lock the target partition for exclusive access. If another application or the operating system is using the target partition, you must close all applications or system processes that may be using the target partition.

If you cannot lock the target partition after closing applications and system processes, there are other alternatives that you may try:

Choose a different partition - Try to restore the disk image to a different partition.
Restart the computer - Choosing this option will lead to rebooting your machine, so please close all applications first before selecting it. As an alternative you might restart your computer in a normal way (regular windows boot). After you restart, start Active @ Disk Image and repeat the attempt to restore the disk image.
Force volume dismount - If you don't know what is preventing the partition from being locked, use force volume dismount. Keep in mind that all open file handles on the target partition will become invalid and the application that opened them might crash.

NOTE Although force volume dismount will work in most cases, it will not allow exclusive access when you are restoring a disk image to a system partition or to a partition that is involved with system memory pagefiling. If you are dealing with either of these two cases, you may run Active@ Disk Image from a bootable CD or start your computer in such a way that the target partition is not part of the operating system.

You can do this on a computer with multiple operating systems installed by booting into a different operating system. Or, you can remove the target disk and install it into another computer where it will not be a system disk.

6.3.1 Selecting a Destination Partition

After you have selected a partition image to restore, you must select a destination partition.

Select a target partition to receive restored data from the disk image archive. The partition that you select must be big enough to hold all the data in the disk image. If you select a partition that is too small, the Next button is disabled.

Fig. 21 – Select Destination Partition
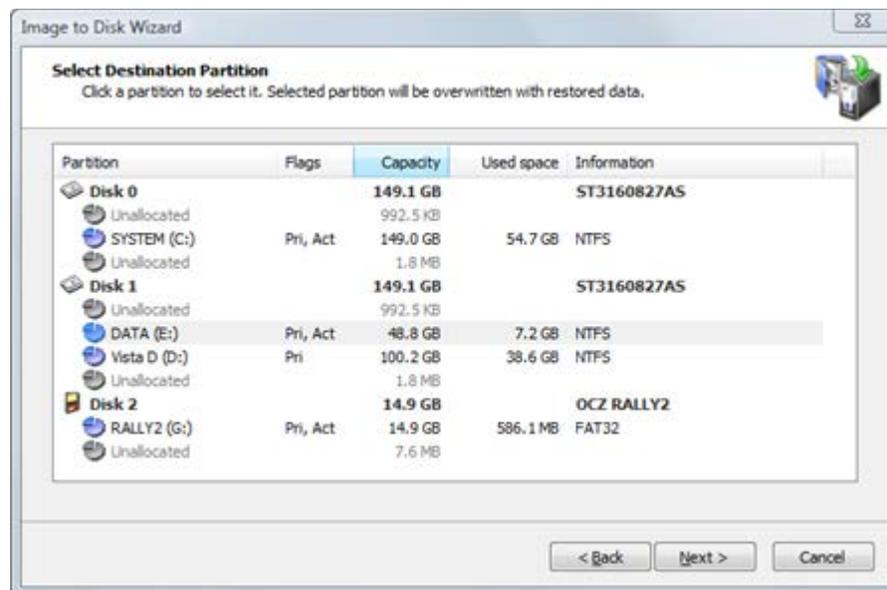
NOTE Target partition size is not the only condition that must be met when you are restoring to a partition.

Unallocated space located on the same level as primary partitions cannot serve as target for restoring if the following exist:

Four primary partitions, or
Three primary and one extended partition
You cannot restore an extended partition onto itself. In the selecting partition page, an extended partition is represented by a green icon because it serves as a container for logical drives which can serve as a target.

If you restore more than one disk (partition) at a time, the partitions that are going to be created are marked with an icon 🟤. You cannot select this new partition as a target for another one.

After you click **Next**, an attempt is made to lock the target partition for exclusive access. If the target partition is being used by another application or by the operating system, an error dialog box appears.

Fig. 22 – Exclusive Access Required
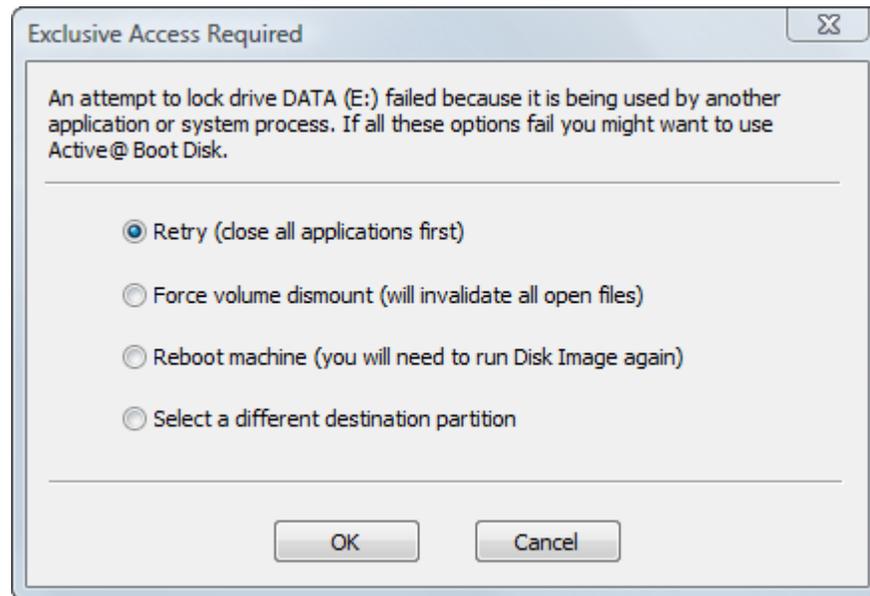
Select one of the solutions and click OK to continue.

6.3.2 Choosing a Partition Type

Choose how the restored partition will be used in the system. The restored partition may be Active, Primary or Logical.

Fig. 23 – Set Destination Partition Type
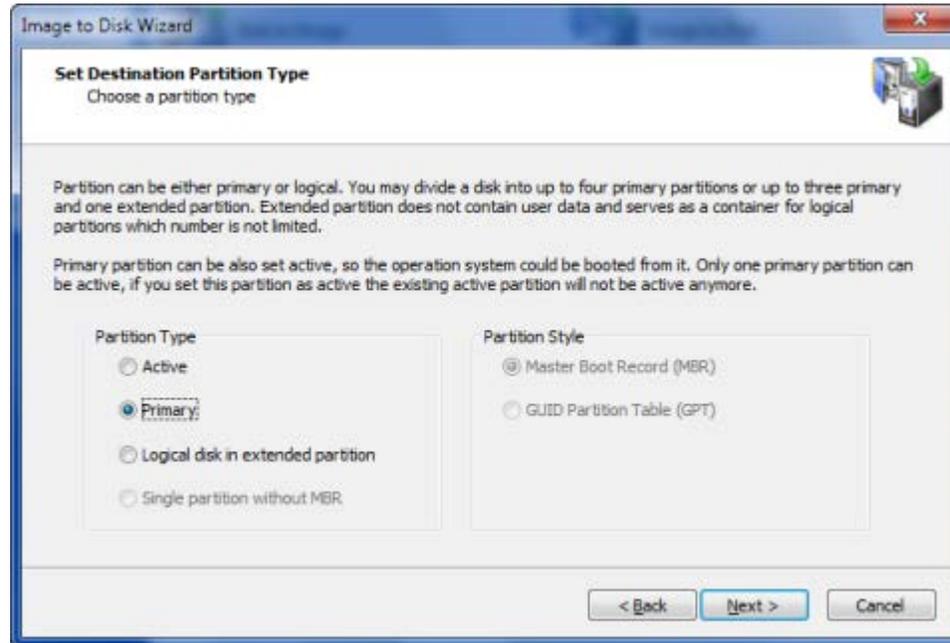
Active - A hard disk can have only one active partition. As an Active partition, it is automatically set as Primary as well. If the selected disk image is a bootable partition, you must choose Active in order to allow the system to boot from it. If the target disk already has a system residing in an active partition, when you restore a disk image into a new active partition you will replace the existing active partition. All data on the formerly active partition will remain intact, but you will not be able to boot from it anymore.

Primary - A hard disk can have up to four primary partitions.

Logical - A hard disk can have an unlimited number of logical partitions. (The number of primary partitions is limited to three in this case.) If the target disk does not have an extended partition, a new extended partition will be created and logical partitions will be placed in it.

Single partition without MBR – This option is available for USB flash drives only. Normally, USB flash disks do not have an MBR and their single partition is placed starting from sector 0. Nevertheless it is possible to create a flash drive with an MBR. It might be the best option when the drive must be made bootable.

If the image you are restoring contains only data, it does not matter what type of partition you choose.

NOTE Only one partition on a disk can be set to active (the bootable partition). Choose Active type only when you are restoring a system partition and you want to boot from it. If you are restoring the image of a system partition only to retrieve the data from it, choose Primary or Logical.

Your type choices on this page depend on what kind of partition you have chosen to restore:

If you selected a primary partition or unallocated space at the primary level, you can restore image as primary, active or logical partition. If an extended (logical) partition already exists on the disk, your choice will be limited to primary and active partitions.
If you selected a logical partition or unallocated space on an extended partition, you can make the new partition logical only.

Active@ Disk Image supports restoring partitions to GPT disks. In Destination Partition Type you can now select not only partition type but also a partitioning scheme (partition style) which can be one of the following types:

- MBR

- GPT

If you are restoring a partition to an already partitioned disk, the partition style is locked and the choice of partition type is limited to suitable values. If you, however, restore an image to a blank disk, you have a choice of partition style.

6.3.3 Specifying Partition Size

Indicate the size of the restored partition. You may expand the partition in order to occupy more space than the original, or you may shrink the partition so that it uses less space on the restored partition.

Fig. 24 – Specify Destination Partition Size

The two calculated values on this page show the minimum and maximum size that the new partition may occupy. The maximum size corresponds to the size of the partition or unallocated space you have chosen as the target. The minimum size is determined by the amount of space used in the disk image of the source partition.

You may change not only the size but also the position of the new partition by providing values for **Free space before** and **Free space after**. The sum of all three fields must be equal to the maximum size of the partition. When you change the value in one field, the wizard automatically recalculates the other values. If you enter an invalid value, all values are reset to the defaults.

In a normal situation, you want the new partition to occupy the size of the target partition. If this is the case, do not change anything and click **Next**. If you want to make the new partition smaller than the existing target partition, change only the **Partition size** value. Free space is added after the partition.

NOTE   You may enter only the approximate size of the new partition. The actual number may be slightly larger or smaller due to disk geometry alignments.

6.3.4 Assigning a Drive Letter

NOTE When running Active@ Disk Image from a Boot Disk (using Windows PE environment), it is not possible to assign a drive letter due to the temporary nature of Windows PE. This wizard page will not appear.

To assign a new drive letter to the new partition, select a letter from the drop-down box. The list contains all drive letters that are unassigned. If the letter that you want to assign is already taken, it will not be in the list. To use a letter that is already assigned, you must close Active@ Disk Image and free that letter. After the letter is free, start Active@ Disk Image again and return to this page.

Fig. 25 – Assign a Drive Letter

To allow the operating system to assign the drive letter, click "**No, don't assign drive letter"**. In this case Windows will assign a drive letter to the newly created partition by default, giving it the next free letter. However, if no letter is given to the partition you can use Disk Manager to assign a drive letter later.

NOTE The drive letter you choose might be very important if the restored partition contains installed programs. For example, if you created a disk image of programs on partition E:, you should restore the image back to a partition with the letter E:. Otherwise, all links stored in the registry that refer to those programs installed on E: will become invalid.

6.3.5 Restoring Multiple Partitions

Once you are done with your selection, the wizard will prompt to restore another disk or partition. If you would like to, choose **"Yes, select another disk or partition"** and you will be forwarded to selecting another item.

Fig. 26 – Restore Another
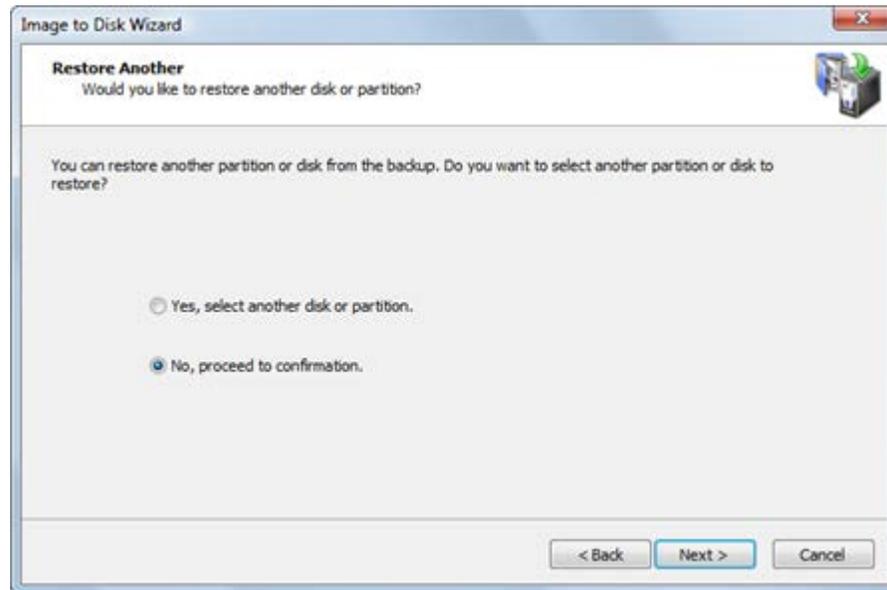
If you need to restore only one disk or partition at a time, click **Next** to proceed to Confirmation dialog.

6.3.6 Confirming Restore Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start.

6 Restoring a Disk Image

Fig. 27 – Confirm Operation Details
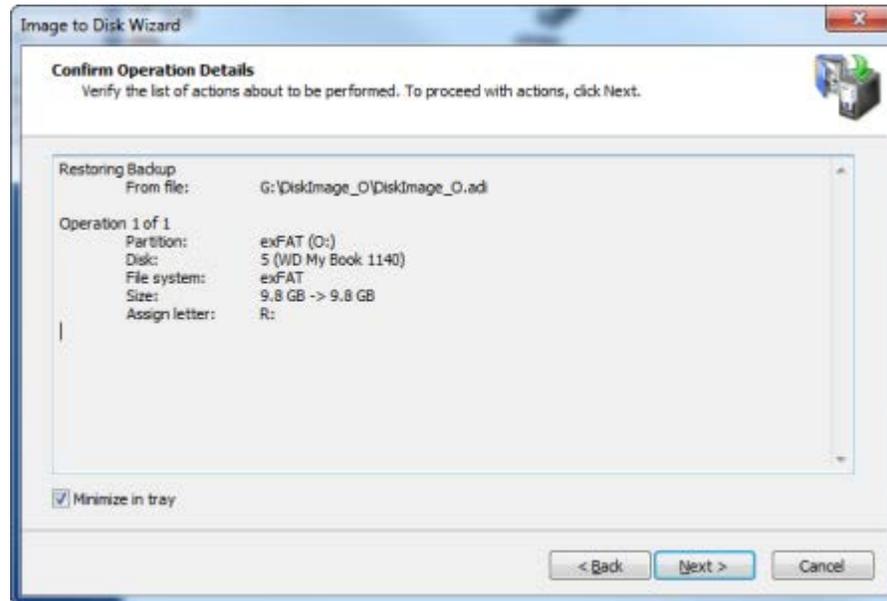
The process of restoring a partition or whole disk can take a long time. You can watch the progress bar on the Progress page. To stop the process at any time, click **Cancel**.

6.4 Restoring a Whole Disk

If you have chosen to restore a whole disk, you are said to be in "Disk Mode". You are going to restore all the partitions that belong to the selected disk.

You might consider Disk Mode as an automated mode. In Disk Mode, your only choice is the location of the target disk where the archive is to be written and then confirmation to proceed.

Things that are automated are:

The size and location of individual partitions
The drive letter assignment

If the target disk is larger than the saved image, the disk image is expanded so that the whole target disk is used. All partitions on the disk image are resized automatically to take up the same proportional amount of space that they occupy on the disk image.

For example, imagine an original hard disk with a capacity of 100 GB and two partitions: Partition A is 25 GB and Partition B is 75 GB. You create a backup disk image of this drive. The disk image file is 50 GB. When you restore the disk image, you choose to restore the whole disk. Here are three restore scenarios:

If you restore the disk image to a 100 GB disk, then you will have two partitions: Partition A at 25 GB and Partition B at 75 GB.
If you restore the disk image to a 200 GB disk, then you will have two partitions: Partition A at 50 GB and Partition B at 150 GB.
If you restore the disk image to a 60 GB disk, then you will have two partitions: Partition A and Partition B may not be restored at the same proportional amount, depending on the amount of data that is stored on each partition. The goal is to restore all the data into two partitions.

Exclusive access to the target

If the selected target is not an unallocated space, the restore operation must have exclusive access to the target partition while restoring the disk image. Before you confirm the details of the restoring operation, Active@ Disk Image attempts to lock the target disk for exclusive access. If another application or the operating system is using the target disk, you must close all applications or system processes that may be using the target disk.

If you cannot lock the target disk after closing applications and system processes, there are other alternatives that you may try:

Choose a different disk - Try to restore the disk image to a different hard disk.

Restart the computer - Choosing this option will lead to rebooting your machine, so please close all applications first before selecting it. As an alternative you might restart your computer in normal way. After you restart, start Active@ Disk Image and repeat the attempt to restore the disk image.

Force volume dismount - If you don't know what is preventing the partition from being locked, use force volume dismount. Keep in mind that all open file handles on the target disk will become invalid and the application that opened them might crash.

NOTE Although force volume dismount will work in most cases, it will not allow exclusive access when you are restoring a disk image to a system partition disk or to a partition that is involved with system memory pagefiling. If you are dealing with either of these two cases, you may run Active@ Disk Image from a bootable CD or start your computer in such a way that the target partition is not part of the operating system. You can do this on a computer with multiple operating systems installed by booting into a different operating system. Or, you can remove the target disk and install it into another computer where it will not be a system disk.

6.4.1 Selecting a Destination Disk

After you have selected a whole disk image to restore, you must select a destination disk.

Select a target disk to receive restored data from the disk image archive. The disk that you select must be big enough to hold all the data in the disk image. If you select a disk that is too small, the Next button is disabled.

Fig. 28 – Select Destination Disk
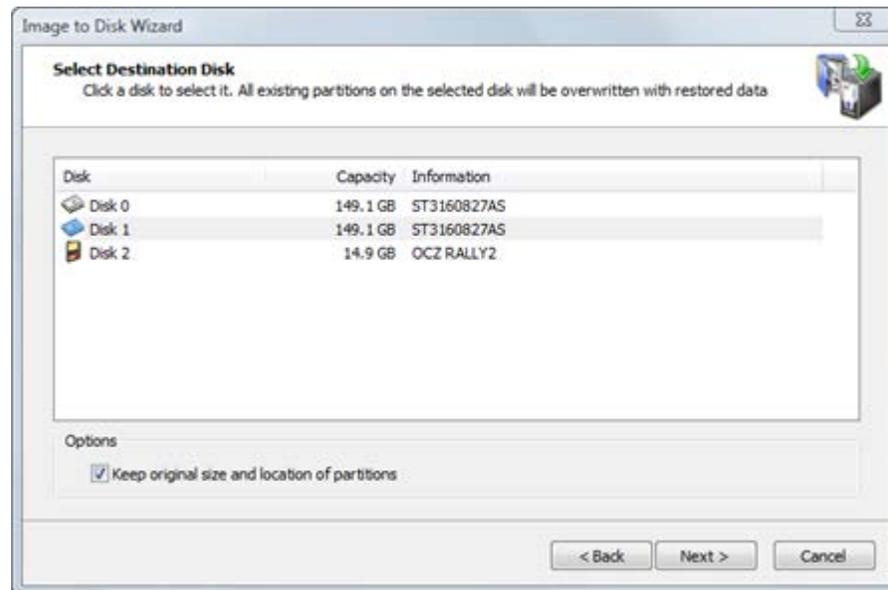
If you restore more than one disk or partition, the target disk containing the new partition being created is marked with icon 🔄 here. It cannot be selected as a target disk here.

If the destination disk has the same disk geometry (sectors per track and tracks per cylinder) as the original one and is the same or larger in size, you will see the option **"Keep original size and location of partitions"** enabled when you select that disk. If you leave this option checked, all partitions will be replaced to exactly the same place they were before and no partition resizing will take place. This might be especially useful when you are restoring a system partition and do not want the operating system to detect that it has been repositioned.

After you click **Next**, an attempt is made to lock the target disk for exclusive access. If the target disk is being used by another application or by the operating system, an error dialog box appears.

Fig. 29 – Exclusive Access Required
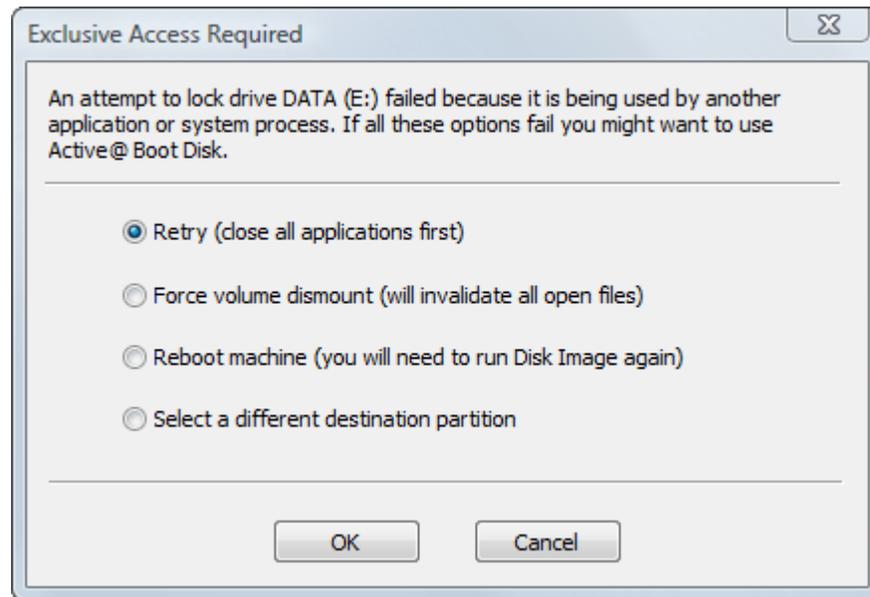
Select one of the solutions and click OK to continue.

6.4.2 Confirming Partition Delete on Target Disk

When you restore a disk image in Disk Mode, all partitions on the target disk - along with all data on them - must be deleted. This confirmation page is your final warning.

Fig. 30 – Destination Disk Contains Partitions
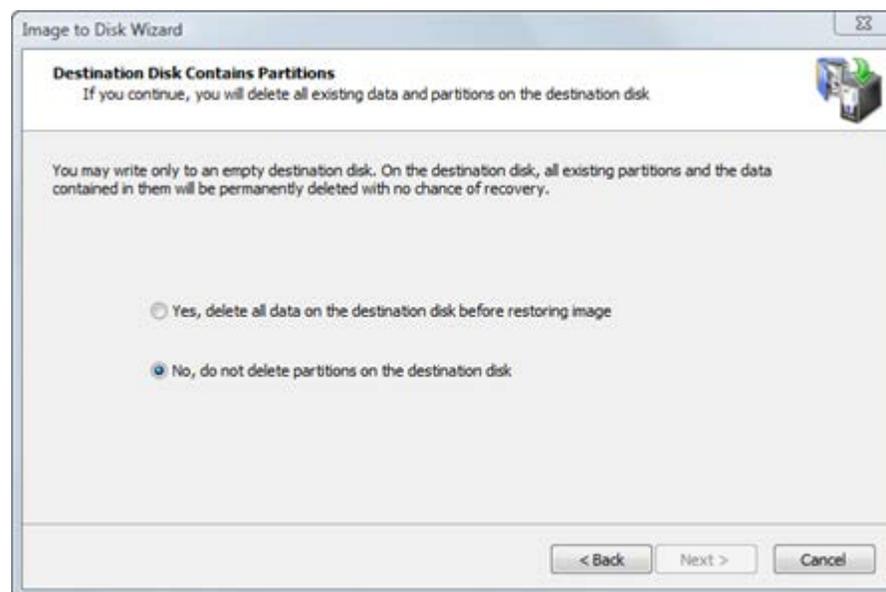
To proceed, select Yes, delete all partitions on the selected disk and click Next.

6.4.3 Restoring Multiple Partitions

Once you are done with your selection, the wizard will prompt to restore another disk or partition. If you would like to, choose **"Yes, select another disk or partition"** and you will be forwarded to selecting another item.

Fig. 31 – Restore Another
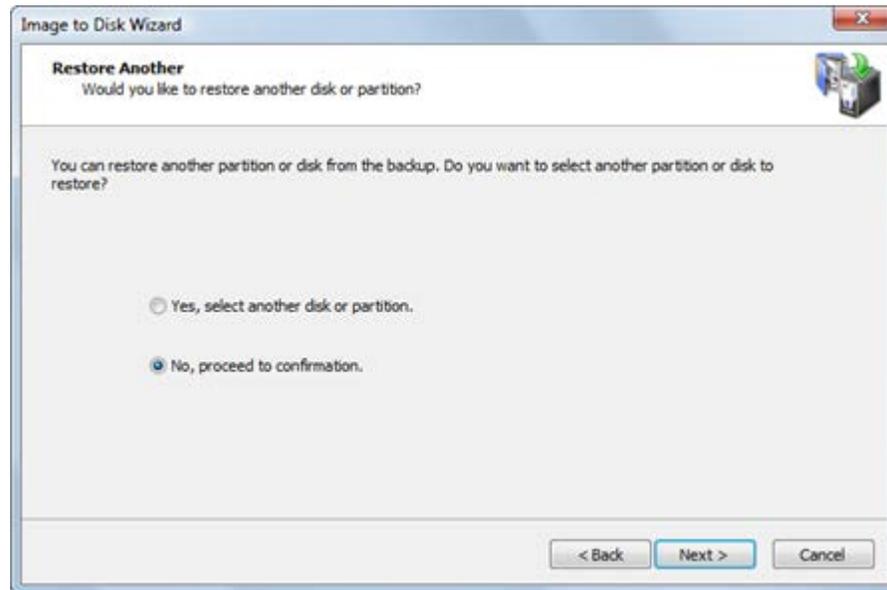
If you need to restore only one disk or partition at a time, click **Next** to proceed to Confirmation dialog.

6.4.4 Confirming Restore Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start.

Fig. 32 – Confirm Operation Details
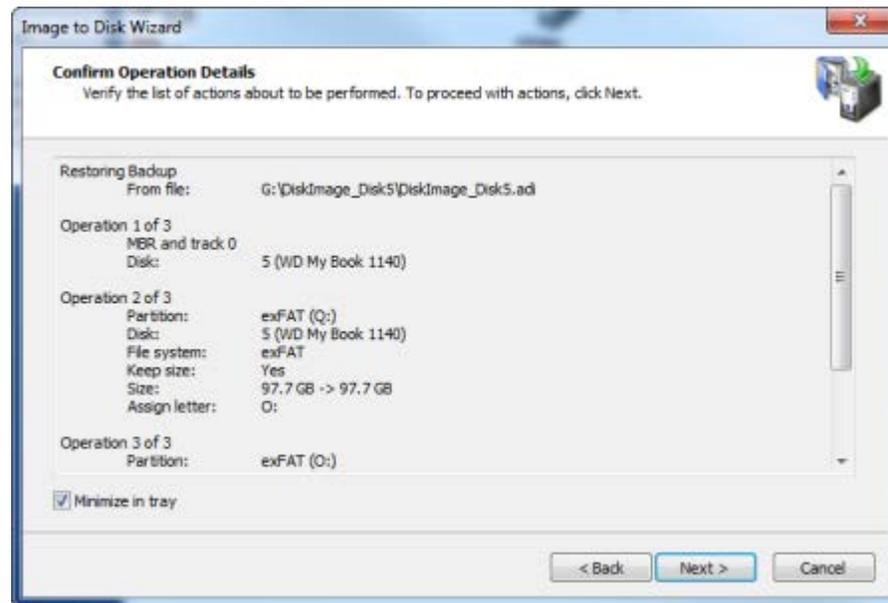
The process of restoring a whole disk can take a long time. You can watch the progress bar on the Progress page.

To stop the process at any time, click **Cancel**.

6.5 Restoring a Raw Disk Image

The Image to Disk Wizard steps you through the process of restoring a raw disk image archive of a whole disk or a disk partition.

To open the Image to Disk Wizard, do one of the following:

In the main program window, double-click **Image to Disk**.
From the Tools menu, choose **Image to Disk**.
Follow instructions on the wizard screens. In each case, click **Next** to move to the next screen.

NOTE If the raw backup contains an image of a whole disk, you will be prompted to select a disk as a destination. The steps to restore a raw whole disk are the same steps found in section **6.4 Restoring a Whole Disk**, above. If the raw backup contains an image of a single partition you will be prompted to select a partition. The steps to restore a raw partition are the same steps found in section **6.3 Restoring a Partition**, above, except that you cannot specify the partition size.

6.6 Burning an ISO Image

ISO images are treated differently from regular ADI images. The term "restoring" applied to an ISO image means burning it back to a CD/DVD media. When a regular backup (.ADI file) or a raw image (.DIM file) is selected as a source, Image to Disk wizard will lead you to selecting a target disk or partition, selecting size, drive letter etc. However, when an ISO image (file with .ISO extension) is selected as a source image, the next wizard dialog will be **Burn ISO Image**, asking to select a burning device and set write speed.

Fig. 33 – Burn ISO Image
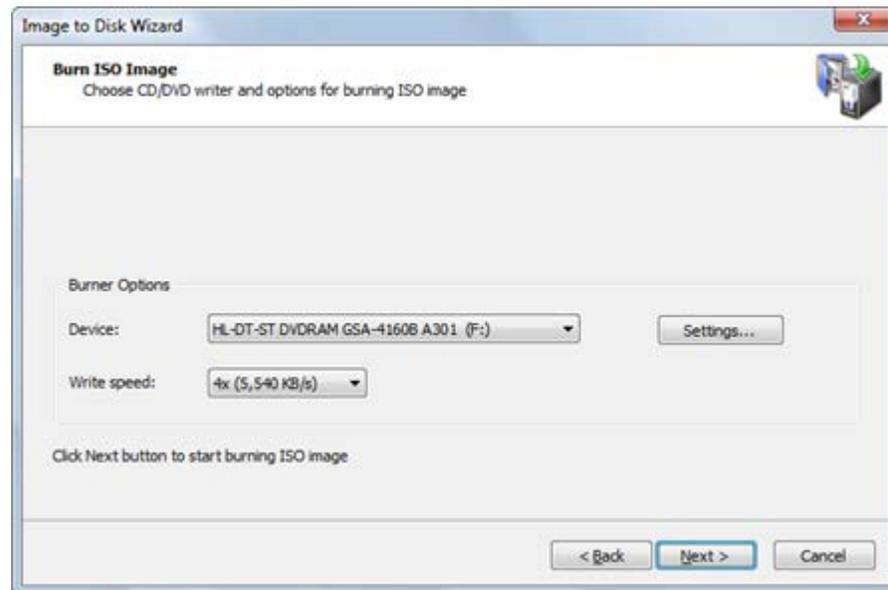
A blank writable media must be inserted and write speed selected in order to start burning. If no suitable media is detected in 'selected device', the **Write Speed** list box will be empty and button **Next** will be disabled.

You may optionally change the burner settings by clicking the **Settings…** button.

Fig. 34 – Burn ISO Image
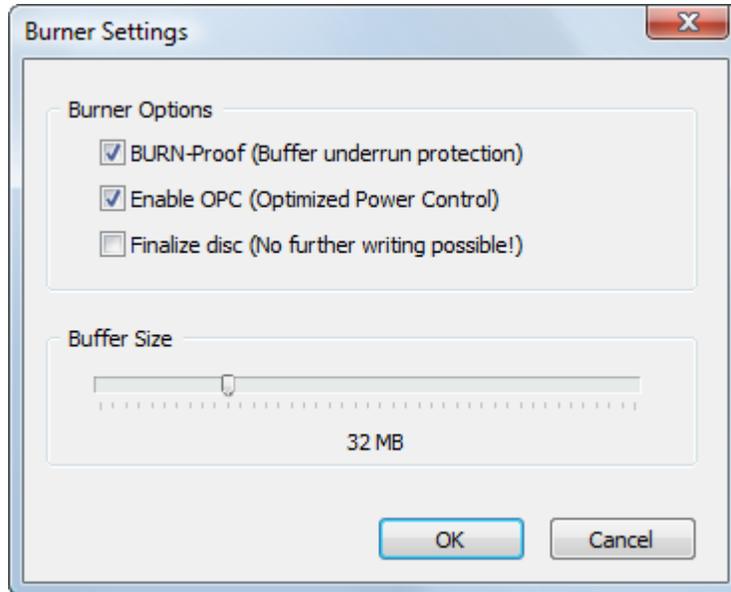
The first two options enable hardware burning optimization and buffer under run protection. It is highly recommended to leave them on.

After the **Next** button is clicked, the burn starts. The progress window reflects the status of the burning.

Fig. 35 – Burn progress
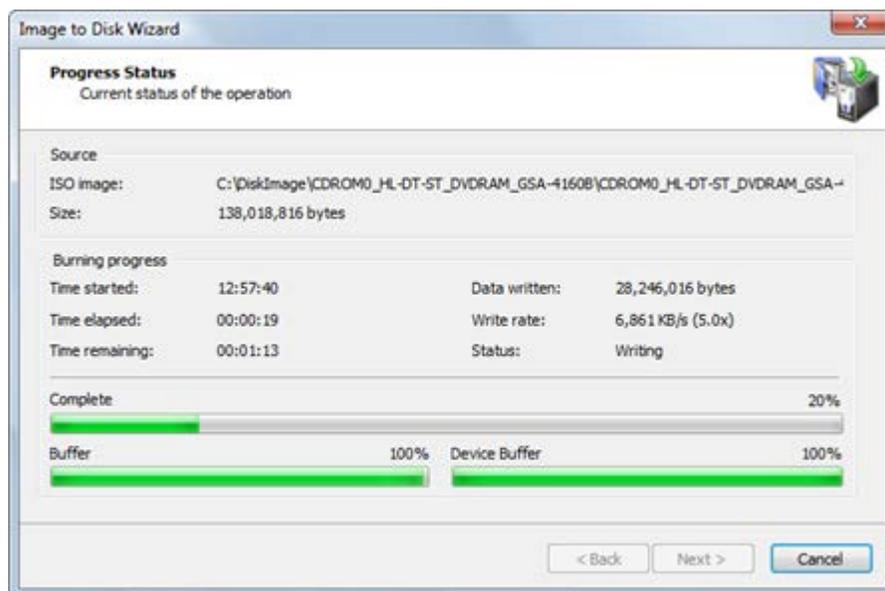
6.7 Restoring a Floppy Image

Floppy disk can be selected together with other partitions and placed inside the same ADI file as hard disk partitions. However, due to uniqueness of floppy partition, it can be restored only to a floppy disk.

Again, since there is no MBR structure on a floppy disk and a single partition occupies the whole disk starting from sector 0, Floppy device cannot be selected.

Fig. 36 – Selecting a destination for a floppy image
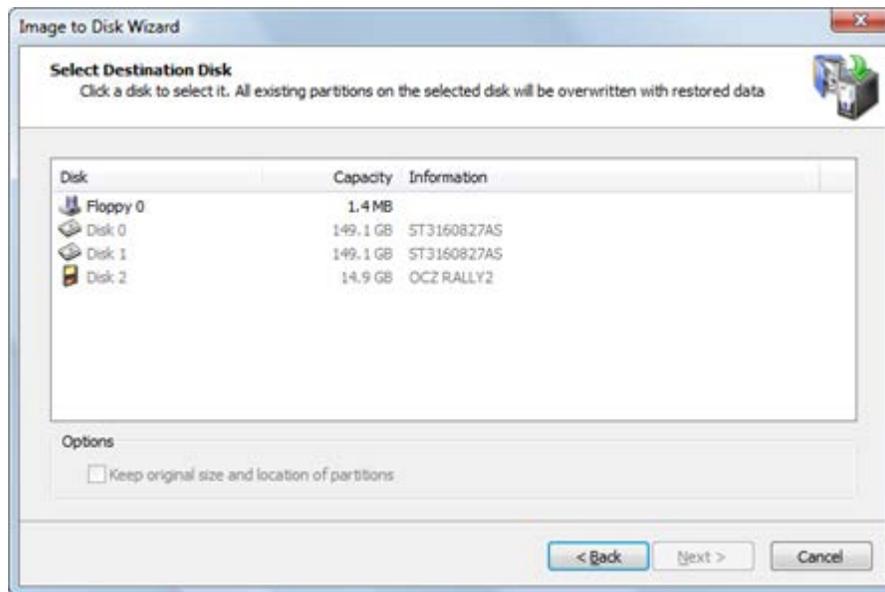
As a result, when a floppy image selected in backup, only a floppy device can be a target.

7 Viewing and Restoring Individual Files

Active@ Disk Image Explorer is a utility that displays files and folders in disk image archives. You may browse through the file contents the same way that you would browse through the contents of a local disk using Windows Explorer. You may view the contents of the file and restore individual files from it.

To open Active@ Disk Image Explorer, do one of the following:

In the main program window, double-click **Explore Image**.
From the **Tools** menu, choose **Explore Image**.
After you launch **Active@ Disk Image Explorer**, you must open a disk image to browse through its contents.

7.1 Opening an Image in Active@ Disk Image Explorer

To open an image in Active@ Disk Image Explorer:

3. To open the **Open Disk Image** dialog box, do one of the following:

    - In the toolbar, click **Open Disk Image**.

    - From the **File** menu, choose **Open Image...**

4. In the **Open Disk Image** dialog box, browse to either a DIM file (raw disk image) or an ADI file (data backup). Select the file.

5. Click **Open**.

NOTE If the disk image is password protected, the Type Password dialog box appears. Type your password in the Password field and click OK.

If you have forgotten your password, an image that is password protected cannot be opened. This is a security feature.

When you store a disk image with a password, please memorize it or write it down and keep it in a safe place.

To close an image that you have opened in Active@ Disk Image Explorer:

6. In the **Opened Disk Images** tree node, right-click a raw image or disk backup file.

7. From the context menu, choose **Close**.

7.2 About the Active@ Disk Image Explorer Interface

Active@ Disk Image Explorer is similar to the standard Windows-Explorer-style interface with a tree view panel on the left side and a list view panel on the right. A log view appears in a panel at the bottom. Here you may view all events executed by the explorer.

Fig. 37 – Active@ Disk Image Explorer
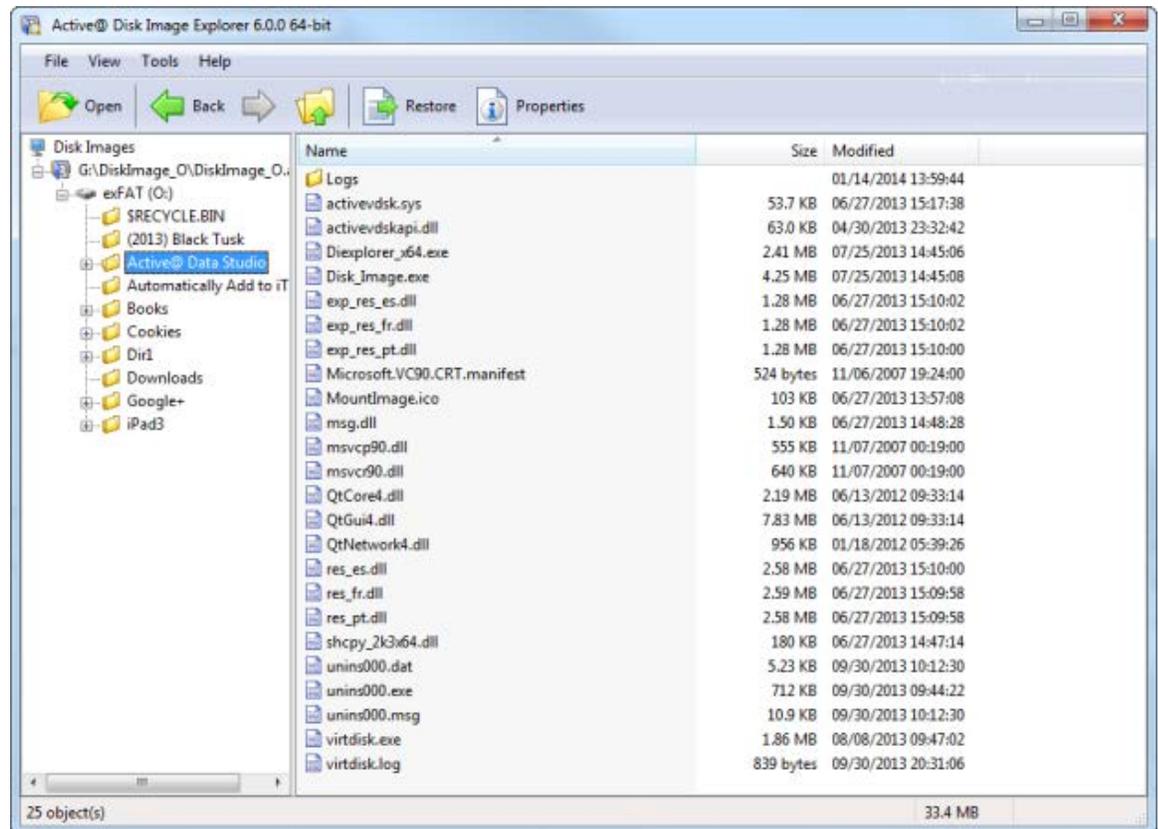
In the tree view, you may open drives or partitions and select folders.

View the contents of folders in the list view panel

To view additional information about a selected item, click **Info**.

7.3 Restoring Individual Files

To restore a file or folder:

8. In **Active@ Disk Image Explorer**, select a file or folder.

9. To select multiple files or folders, do one of the following:

   • To select a consecutive list of items, click the first item and then press **SHIFT** and click the last item in the list.

- To select a non-consecutive list of items, press **CTRL** each time you click an item.

10. To open the **Restore Options** dialog box, use one of the following methods:

- On the toolbar, click **Restore**.

- Right-click the file, and choose **Restore...** from the context menu.

11. To give the file a name, you may use the file name that appears in the **Name** field or you may type a different name.

12. To restore the file to a specific location, in the **Restore To** field, you may type a different path or click the ellipsis button (...) and browse to a restore folder location.

13. Click **Restore**.

8 Active@ Virtual Disk

Active@ Virtual Disk allows to mount ADI or RAW image as a virtual disk drive and access its contents via Windows Explorer or any other file manager.

8.1 Running Active@ Virtual Disk

To Start Active@ Virtual Disk select Active@ Virtual Disk command in Active@ Disk Image folder in Start Menu. Active@ Virtual Disk will start and main window displaying open and mounted images will be shown.

Alternatively you can launch Active@ Virtual Disk by clicking on Mount Image icon in the main screen of Active@ Disk Image or executing command Tools > Mount Image.

A mounted image is available only as long as Active@ Virtual Disk is running, so you should not exit it if you want keep an image mounted. To stay active and at the same time to be not obtrusive, Active@ Virtual Disk normally runs in a System Tray. When you click a red close button in the right upper corner of main window, Active@ Virtual Disk does not stop but actually hides into system tray. To bring the main window back, find an icon of Active@ Virtual Disk in the system tray and double click on it. You can also right-click on the icon to show a context menu.

To actually exit Active@ Virtual Disk, select Quit from context menu of Active@ Virtual Disk in the system tray.

8 Active@ Virtual Disk

Only one instance of Active@ Virtual Disk can be running at the same time, so if you accidently start the application again from the Start Menu, it will actually bring the running instance to the screen.

8.2 User Interface

Active@ Virtual Disk contains one window showing a list of open images, partitions inside them and mounting status
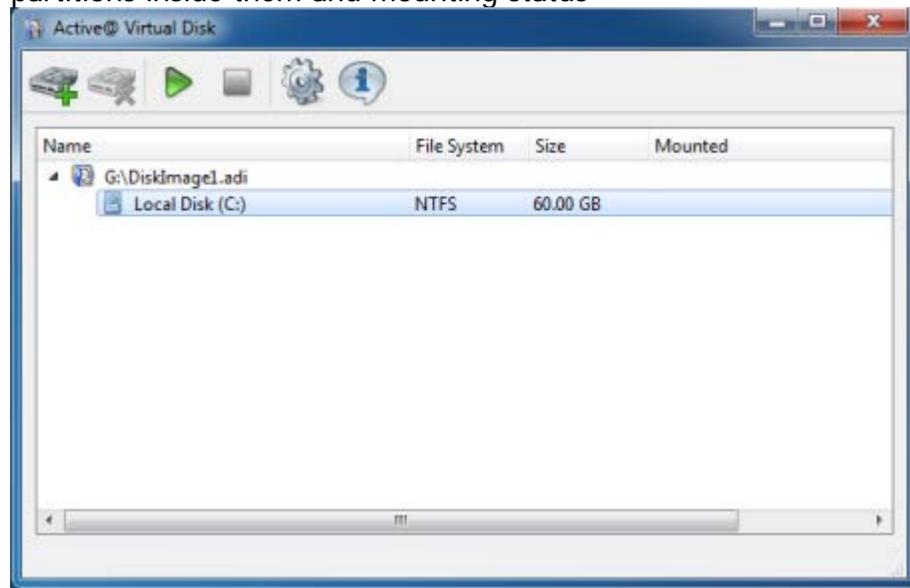
At the top of the window there is a tool bar with buttons giving access to the main operations:

- Add Image
- Remove Image
- Mount Partition
- Unmount Partition
- Settings
- About

Some of them might be disabled depending on the context.

8.3 Opening and mounting disk images

The procedure of mounting a disk image consists of two steps.
1. Open an ADI or RAW image by clicking on Add Image button.
   The image will be open and added into the list. It will show the list of partitions it contains. (You can only open RAW image containing a single partition).
2. Select a partition you'd like to mount and click the Mount Partition button. A drive letter selection dialog will be shown:
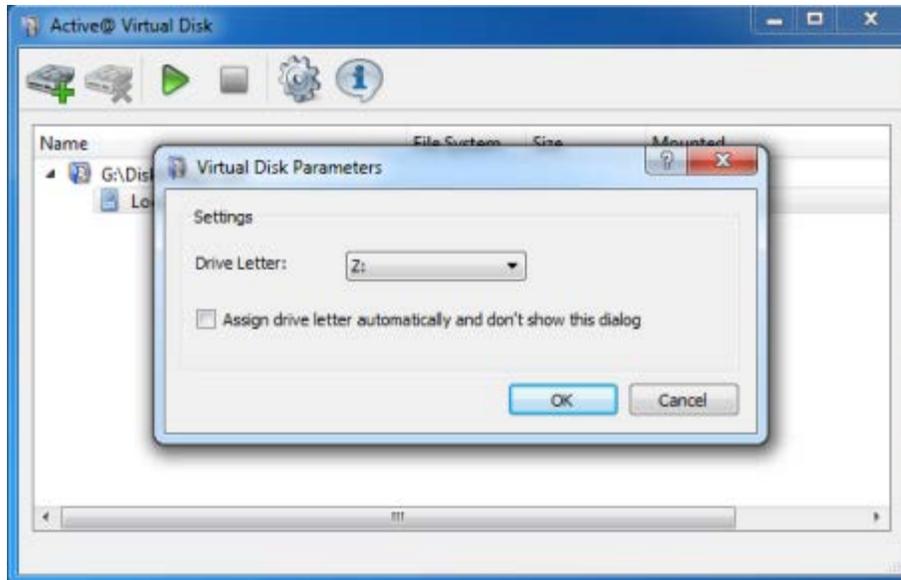
Select a drive letter and press OK. The image will be mounted and a new virtual drive will appear in Windows Explorer. You can work with it the same way as with a normal drive. A virtual drive is read-only and attempting to copy files to it or change data in it will fail.

Active@ Virtual Disk must be running to ensure that virtual disk is working. If you don't want the main window to occupy screen space simply click on the Close button of the window - Active@ Virtual Disk will hide into the System Tray. Clicking on the tray icon will bring the window back.

8.4 Un-mounting and closing images

You should keep images open only as long as you use them. When you're done with the image, it's better to close the virtual disk drive.

Select a mounted partition and click the Unmount Partition button in the toolbar. The partition will be unmounted and the virtual drive will disappear.

Unmounting a partition does not close the image itself, so if you don't need it, you can select an image and click the Remove Image button.

If you simply remove an image without unmounting its partition first, all mounted drives will be unmounted automatically. The same is true when you exit the program – all mounted partitions will be unmounted and all open images closed.

You can also unmount all disks at once by selecting the Unmount All Disks command in the context menu in the program icon in the System Tray.

8.5 Troubleshooting

Active@ Virtual Disk keeps a log of operations like installing driver, opening and closing images, mounting and unmounting virtual drives. The log file is located in the installation folder (normally C:\Program Files\Active@ Disk Image) and is named virtdisk.log. It can show additional details about Active@ Virtual Disk operations.

If you see any problem with installing a driver, mouting a partition or should the Active@ Virtual Disk crash, a stranded virtual drive, a machine reboot should be the best remedy.

9 Clone Disk Wizard

The Clone Disk Wizard steps you through the process of transferring data from one disk or partition to another by making an exact, sector-by-sector copy of the original. During the cloning process, a disk image file is not created.

You may use the Clone Disk Wizard to make a copy of the same configuration from one hard drive onto a multiple other hard drives. For example, you may duplicate a hard drive configuration over several workstations on a network. If you are trying to recover data from a damaged hard drive or partition, you may clone the damaged partition to a number of other hard drives in order to experiment with different data recovery techniques on the copy rather than on the original.

To open the Clone Disk Wizard, do one of the following:

In the main program window, double-click **Clone Disk**.
From the **Tools** menu, choose **Clone Disk**.
Follow instructions on the wizard screens. In each case, click Next to move to the next screen.

After the operation is complete, click **Finish** to close the dialog box.

9.1 Selecting a Source Disk or Partition

Select a disk or a partition that you want to clone.

If you select a disk, all its sectors (with all partitions) will be selected.

Fig. 38 – Select Source Disk or Partition
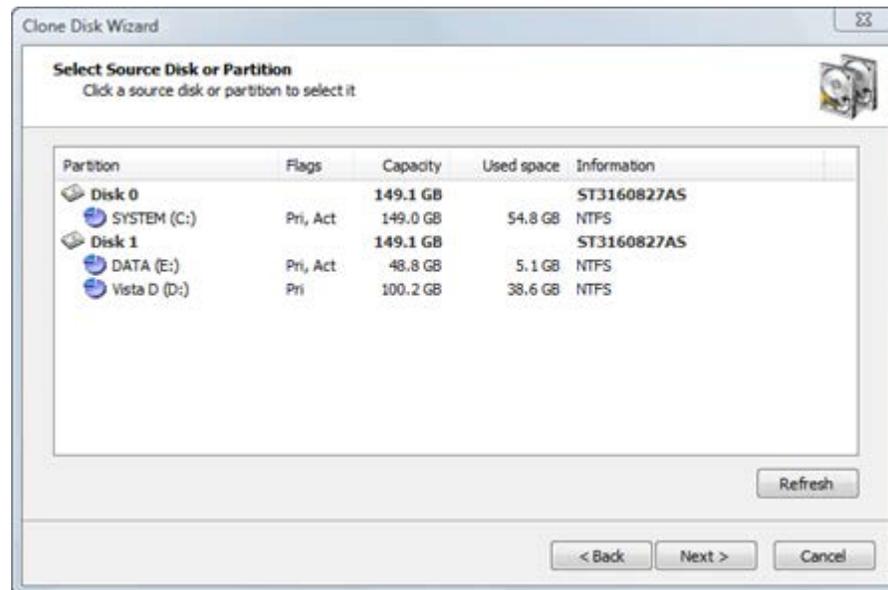
Information in this list is presented in five columns.

Partition - The name of the hard disk or of the partition in the format <volume label>(<drive letter>:)

Flags - The type of the partition. Options are:

- Pri - Primary partition

- Act - Active (bootable) partition

- No flags indicate a logical drive

Capacity - The full partition size.

Used space - The size taken by current data stored in the partition. Although all sectors will be written, this shows the amount of data the backup will contain.

Information - For a partition - the file system type is shown. For a hard disk - the name assigned by the BIOS.

NOTE Because you can clone only one partition or disk at a time, you may select only one item.

9.2 Cloning a Partition

If you have chosen to clone a partition, you are said to be in "Partition Mode". You are going to copy a single partition sector-by-sector from an existing hard drive. You will have control over some parameters of the

operation. You may write the clone data to an existing partition (by overwriting it) or to unallocated space, provided that the target is large enough.

Exclusive access to the target

If the selected target is not an unallocated space, Active@ Disk Image must have exclusive access to the target partition while writing the clone data. Before you confirm the details of the operation, Active@ Disk Image attempts to lock the target partition for exclusive access. If another application or the operating system is using the target partition, you must close all applications or system processes that may be using the target partition.

If you cannot lock the target partition after closing applications and system processes, there are other alternatives that you may try:

Choose a different partition - Try to restore the disk image to a different partition.
Restart the computer - Choosing this option will lead to rebooting your machine, so please close all applications first before selecting it. As an alternative you might restart your computer in normal way. After you restart, start Active @ Disk Image and repeat the attempt to clone the partition.
Force volume dismount - If you don't know what is preventing the partition from being locked, use force volume dismount. Keep in mind that all open file handles on the target partition will become invalid and the application that opened them might crash.

NOTE Although force volume dismount will work in most cases, it will not allow exclusive access when you are writing to a system partition or to a partition that contains a system memory page file. If you are dealing with either of these two cases, you may run Active@ Disk Image from a bootable CD or start your computer in such a way that the target partition is not part of the operating system. You can do this on a computer with multiple operating systems installed by booting into a different operating system. Or, you can remove the target disk and install it into another computer where it will not be a system disk.

9.2.1 Selecting a Destination Partition

After you have selected a source partition to clone, you must select a destination partition.

In the Selecting destination partition page, choose a target to write the cloned data from the source partition. You may clone the source partition

either to an existing partition - where all data will be overwritten - or to unallocated space.

The target partition must have enough space to hold all the data from the source partition.

Fig. 39 – Select Destination Partition
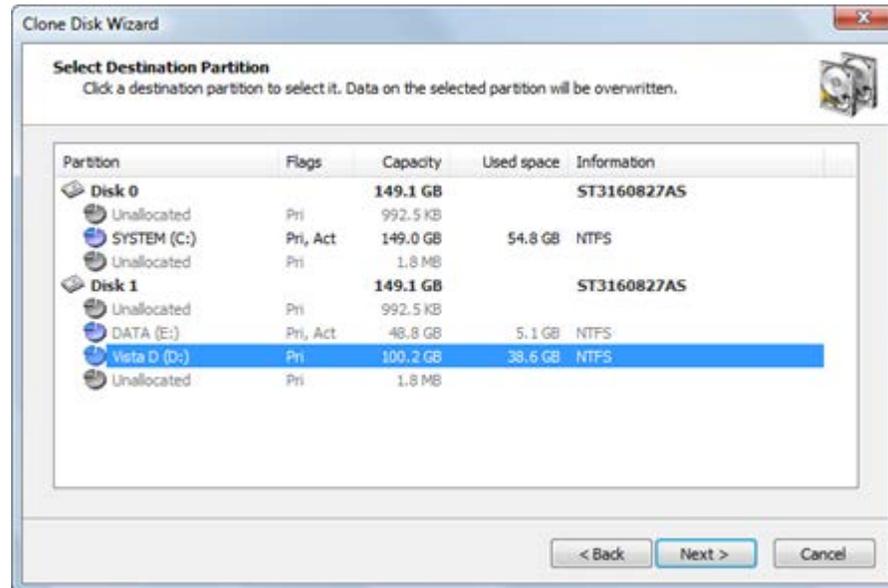
The **Next** button will remain disabled until you select a partition that is large enough.

NOTE Because a clone is an exact copy of the source partition, you cannot change the size of the destination partition. If you choose a destination partition that is larger than the source, free (unallocated) space will appear after the cloned partition.

NOTE Target partition size is not the only condition that must be met when you are restoring to a partition.

Unallocated space located on the same level as primary partitions cannot serve as target for restoring if the following exist:

- Four primary partitions, or
- Three primary and one extended partition

You cannot restore an extended partition onto itself. In the selecting partition page, an extended partition is represented by a green icon

because it serves as a container for logical drives which can serve as a target.

If the selected target is not an unallocated space, after you click Next, an attempt is made to lock the target partition for exclusive access. If the target partition is being used by another application or by the operating system, an error dialog box appears.

Fig. 40 – Exclusive Access Required
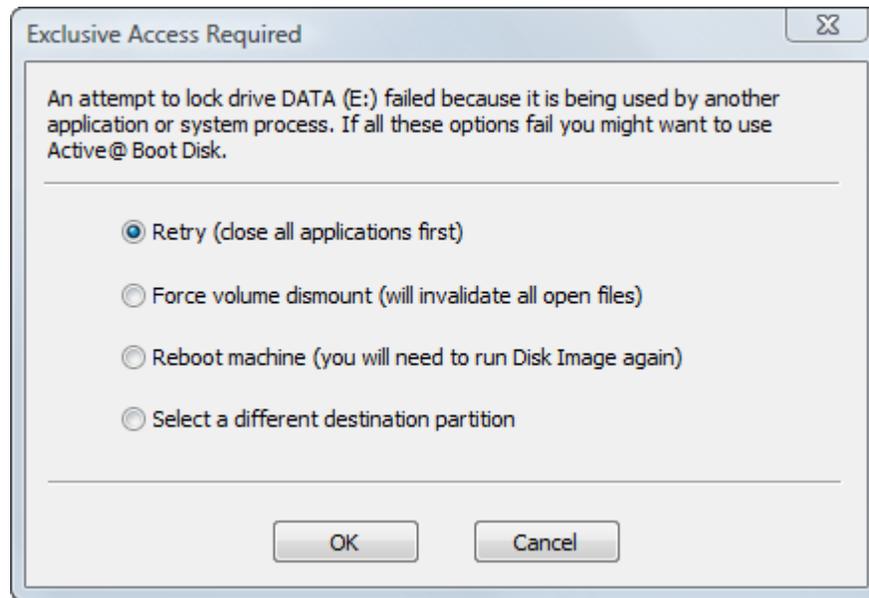
Select one of the solutions and click OK to continue.

9.2.2 Choosing a Partition Type

Choose how the cloned partition will be used in the system. The cloned partition may be Active, Primary or Logical.

Fig. 41 – Set Destination Partition Type

Active - A hard disk can have only one active partition. As an Active partition, it is automatically set as Primary as well. If the selected partition is a bootable partition, you must choose Active in order to allow the system to boot from it. If the target disk already has a system residing in an active partition, when you clone a partition onto a new active partition you will replace the existing active partition. All data on the formerly active partition will remain intact, but you will not be able to boot from it anymore.

Primary - A hard disk can have up to four primary partitions.

Logical - A hard disk can have an unlimited number of logical partitions. (the number of primary partitions is limited to three in this case).

Single partition without MBR – This option is available for USB flash drives only. Normally USB flash disks do not have MBR and their single partition is placed starting from sector 0. Nevertheless it is possible to create a flash drive with MBR. It might be the option when drive must be made bootable.

If the image you're restoring contains only data, it does not matter what type of partition you choose.

NOTE Only one partition on a disk can be set to active (the bootable partition). Choose Active type only when you are cloning a system partition and you want to boot from it. If you are cloning a system partition only to retrieve the data from it, choose Primary or Logical.

Your type choices on this page depend on what kind of partition you have chosen to clone:

If you selected a primary partition or unallocated space at the primary level, you can choose primary, active or logical partition. If an extended (logical) partition already exists on the disk, your choice will be limited to primary and active partitions.
If you selected a logical partition or unallocated space on an extended partition, you can make the new partition logical only.

9.2.3 Assigning a Drive Letter

NOTE When running Active@ Disk Image from a Boot Disk (using Windows PE environment), it is not possible to assign a drive letter due to the temporary nature of Windows PE. This wizard page will not appear.

To assign a new drive letter to the new partition, select a letter from the drop-down box. The list contains all drive letters that are unassigned. If the letter that you want to assign is already taken, it will be not in the list. To use a letter that is already assigned, you must close Active@ Disk Image and free that letter. After the letter is free, start Active@ Disk Image again and return to this page.

Fig. 42 – Assign a Drive Letter
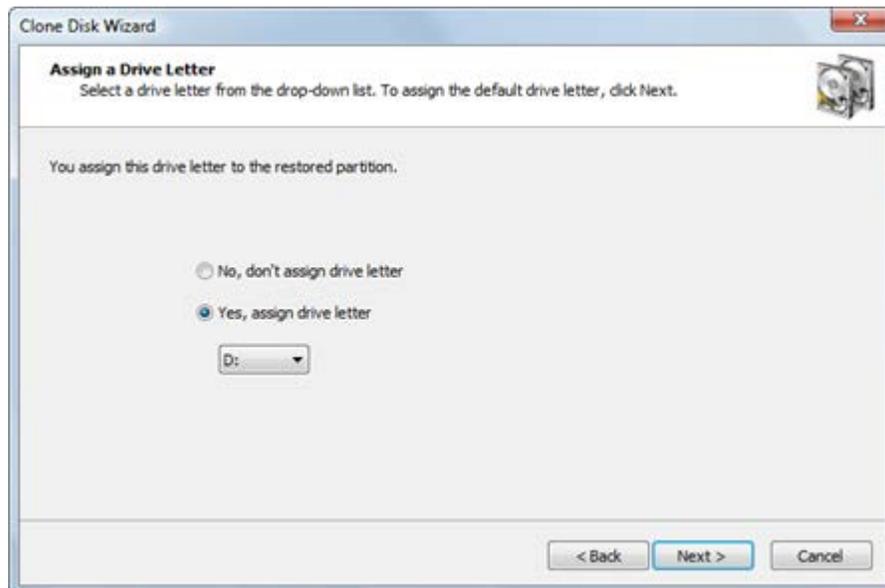
To allow the operating system to assign the drive letter, click No, don't assign drive letter. In this case Windows will assign a drive letter to the newly created partition by default, giving it the next free letter. However,

if no letter is given to partition you can use Disk Manager to assign a drive letter later.

NOTE The drive letter you choose might be very important if the cloned partition contains installed programs. For example, if your source partition is partition E:, you should write the clone to a partition with the letter E:. Otherwise, all links stored in the registry that refer to those programs installed on E: will become invalid.

9.2.4 Confirming Clone Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start.

Fig. 43 – Confirm Operation Details
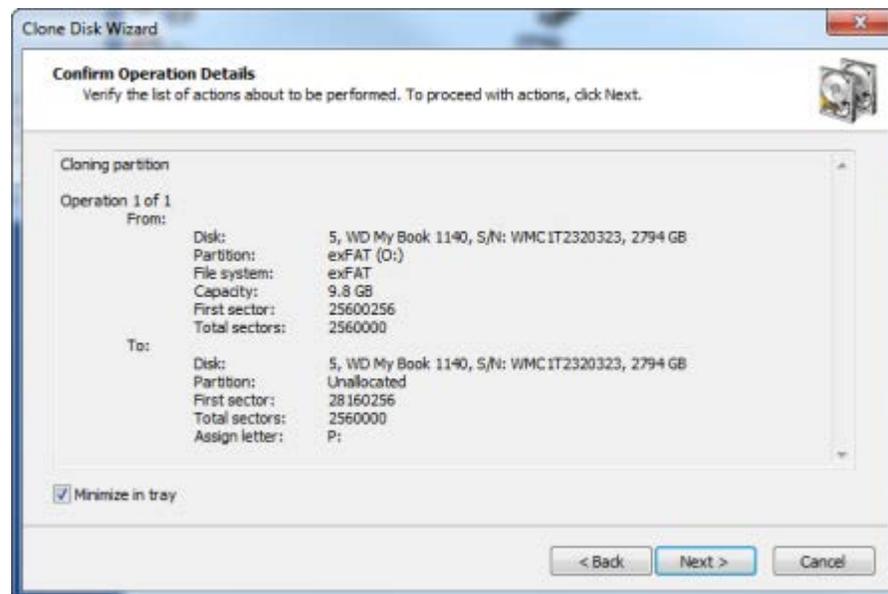
The process of cloning a whole disk can take a long time. You can watch the progress bar on the Progress page.

To stop the process at any time, click **Cancel**.

9.3 Cloning a Whole Disk

If you have chosen to clone a whole disk, you are said to be in "Disk Mode". You are going to copy all the partitions, sector-by-sector from the selected source disk.

You might consider Disk Mode as an automated mode. In Disk Mode, your only choice is the location of the target disk where the archive is to be written and then confirmation to proceed.

Things that are automated are:

The size and location of individual partitions
The drive letter assignment
Exclusive access to the target

The clone operation must have exclusive access to the target disk while writing to it. Before you confirm the details of the clone operation, Active@ Disk Image attempts to lock the target disk for exclusive access. If another application or the operating system is using the target disk, you must close all applications or system processes that may be using the target disk.

If you cannot lock the target disk after closing applications and system processes, there are other alternatives that you may try:

Choose a different disk - Try to copy the selected disk to a different hard disk.
Restart the computer - Choosing this option will lead to rebooting your machine, so please close all applications first before selecting it. As an alternative you might restart your computer in normal way. After you restart, start Active @ Disk Image and repeat the attempt to clone the disk.
Force volume dismount - If you don't know what is preventing the partition from being locked, use force volume dismount. Keep in mind that all open file handles on the target disk will become invalid and the application that opened them might crash.

NOTE Although force volume dismount will work in most cases, it will not allow exclusive access when you are writing data to a system partition disk or to a partition that is involved with system memory page filing. If you are dealing with either of these two cases, you may run Active@ Disk Image from a bootable CD or start your computer in such a way that the target partition is not part of the operating system. You can do this on a computer with multiple operating systems installed by booting into a different operating system. Or, you can remove the target disk and install it into another computer where it will not be a system disk.

9.3.1 Selecting a Destination Disk

After you have selected a source disk to clone, you must select a destination disk.

In the Selecting destination disk page, select a target disk to receive cloned data from the selected disk. The disk that you select must be big enough to hold all the data in the source disk. If you select a disk that is too small, the Next button is disabled.

Fig. 44 – Select Destination Disk
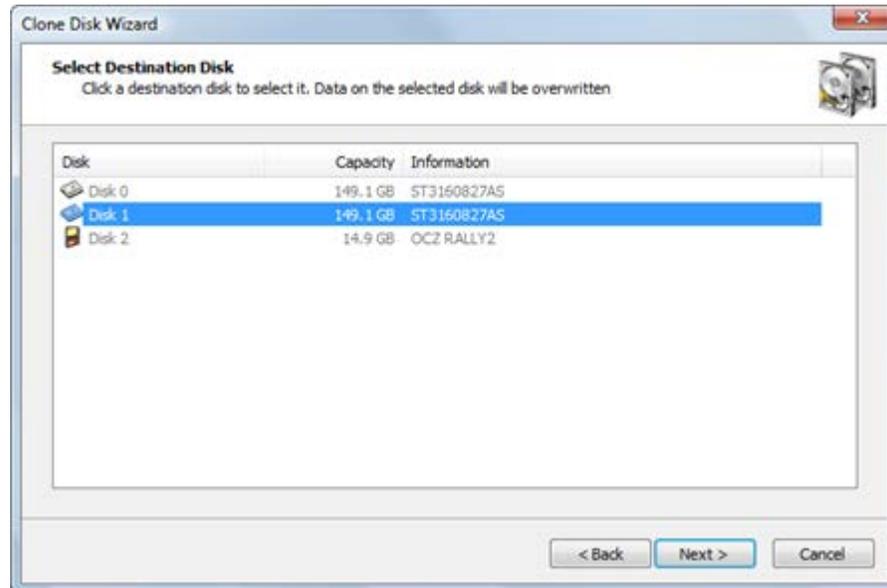
After you click **Next**, an attempt is made to lock the target disk for exclusive access. If the target disk is being used by another application or by the operating system, an error dialog box appears.

Fig. 45 – Exclusive Access Required
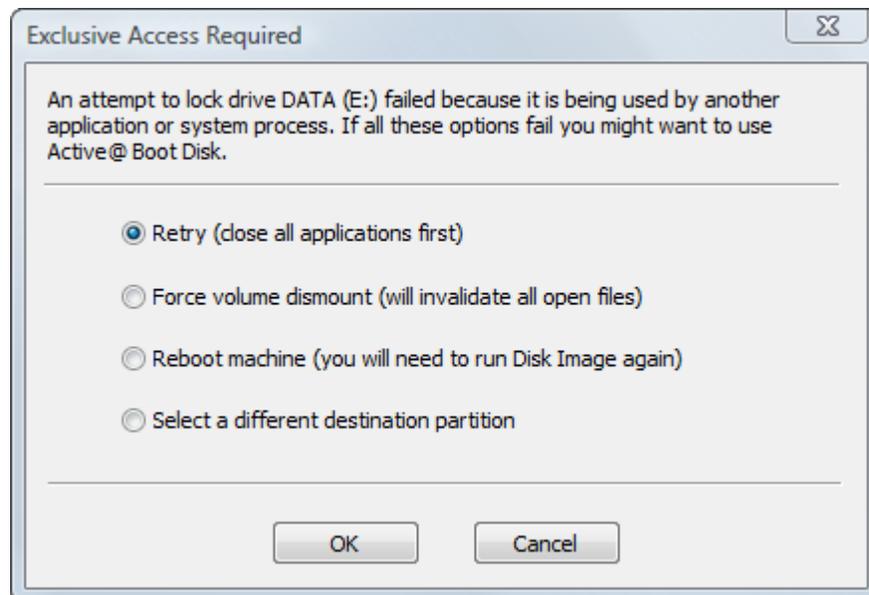
Select one of the solutions and click OK to continue.

9.3.2 Confirming Partition Delete on Target Disk

When you copy all partitions from a source disk in Disk Mode, all partitions on the target disk - along with all data on them - must be deleted. This confirmation page is your final warning.

Fig. 46 – Destination Disk Contains Partitions

To proceed, select Yes, delete all partitions on the selected disk and click Next.

9.3.3 Confirming Clone Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start cloning the disk.

Fig. 47 – Confirm Operation Details
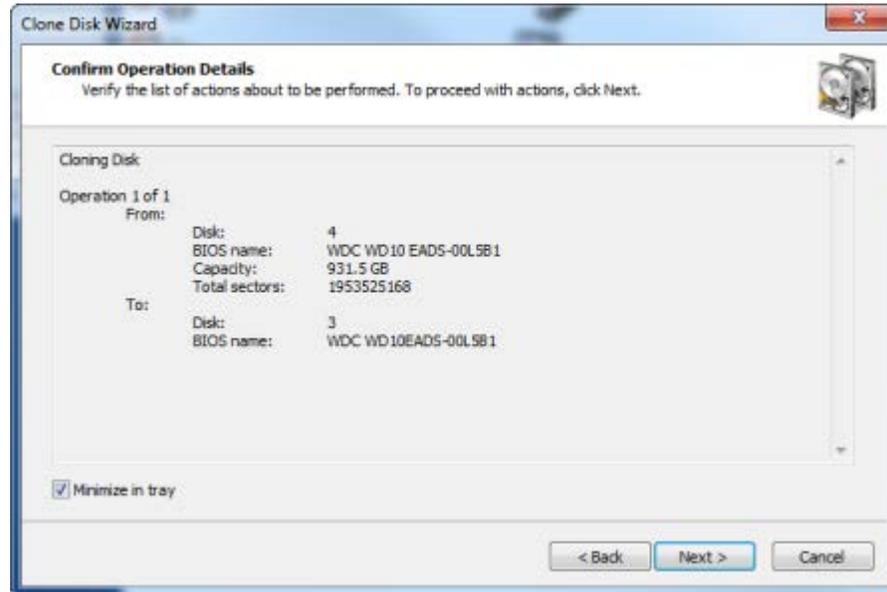
The process of cloning a whole disk can take a long time. You can watch the progress bar on the Progress page.

To stop the process at any time, click **Cancel**.

10 Copy Disk to Disk Wizard

The Copy Disk to Disk Wizard steps you through the process of transferring data from one disk or partition to another with an option to resize partition(s). Essentially it is like creating a disk image of one partition or a whole disk and subsequently restoring it to another disk or partition except there is no intermittent image created.

You may use the Copy Disk to Disk Wizard to make a copy of the same configuration from one hard drive onto a multiple other hard drives. For example, you may duplicate a hard drive configuration over several workstations. If you are trying to recover data from a damaged hard drive or partition, you may clone the damaged partition to a number of other hard drives in order to experiment with different data recovery techniques on the copy rather than on the original.

To open the Copy Disk to Disk Wizard, do one of the following:

In the main program window, double-click **Copy Disk to Disk**.
From the **Tools** menu, choose **Copy Disk to Disk**.
Follow instructions on the wizard screens. In each case, click Next to move to the next screen.

After the operation is complete, click **Finish** to close the dialog box.

10.1 Selecting a Source Disk or Partition

Select a disk or a partition that you want to copy.

If you select a disk, all its sectors (with all partitions) will be selected.

Fig. 48 – Select Source Disk or Partition

Information in this list is presented in five columns.

Partition - The name of the hard disk or of the partition in the format <volume label>(<drive letter>:)

Flags - The type of the partition. Options are:

- Pri - Primary partition
- Act - Active (bootable) partition
- No flags indicate a logical drive

Capacity - The full partition size.

Used space - The size taken by current data stored in the partition. Although all sectors will be written, this shows the amount of data the backup will contain.

Information - For a partition - the file system type is shown. For a hard disk - the name assigned by the BIOS.

NOTE Because you can copy only one partition or disk at a time, you may select only one item.

10.2 Copying a Partition

If you have chosen to copy a partition, you are said to be in "Partition Mode". You are going to copy a single partition from an existing hard drive. You will have control over some parameters of the operation. You

may write the copy data to an existing partition (by overwriting it) or to unallocated space, provided that the target is large enough.

Exclusive access to the target

If the selected target is not an unallocated space, Active@ Disk Image must have exclusive access to the target partition while writing the copy data. Before you confirm the details of the operation, Active@ Disk Image attempts to lock the target partition for exclusive access. If another application or the operating system is using the target partition, you must close all applications or system processes that may be using the target partition.

If you cannot lock the target partition after closing applications and system processes, there are other alternatives that you may try:

Choose a different partition - Try to restore the disk image to a different partition.
Restart the computer - Choosing this option will lead to rebooting your machine, so please close all applications first before selecting it. As an alternative you might restart your computer in normal way. After you restart, start Active @ Disk Image and repeat the attempt to clone the partition.
Force volume dismount - If you don't know what is preventing the partition from being locked, use force volume dismount. Keep in mind that all open file handles on the target partition will become invalid and the application that opened them might crash.

NOTE   Although force volume dismount will work in most cases, it will not allow exclusive access when you are writing to a system partition or to a partition that contains a system memory page file. If you are dealing with either of these two cases, you may run Active@ Disk Image from a bootable CD or start your computer in such a way that the target partition is not part of the operating system. You can do this on a computer with multiple operating systems installed by booting into a different operating system. Or, you can remove the target disk and install it into another computer where it will not be a system disk.

10.2.1 Selecting a Destination Partition

After you have selected a source partition to copy, you must select a destination partition.

In the Selecting destination partition page, choose a target to write data from the source partition. You may copy the source partition either to an

existing partition - where all data will be overwritten - or to unallocated space.

The target partition must have enough space to hold all the data from the source partition.

Fig. 49 – Select Destination Partition
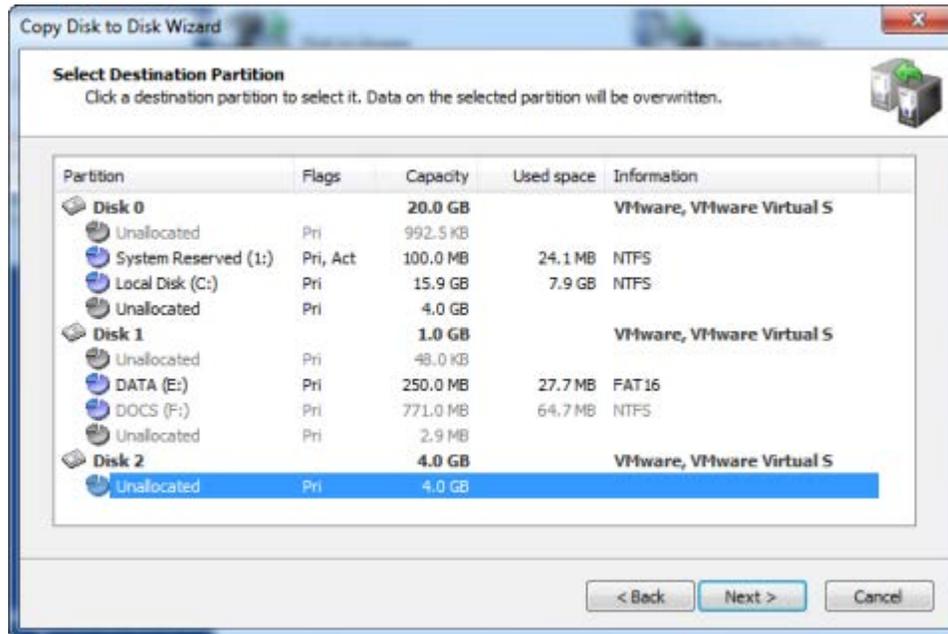
The **Next** button will remain disabled until you select a partition that is large enough.

NOTE Target partition size is not the only condition that must be met when you are copying to a partition.

Unallocated space located on the same level as primary partitions cannot serve as target for copying if the following exist:

- Four primary partitions, or
- Three primary and one extended partition

If the selected target is not an unallocated space, after you click Next, an attempt is made to lock the target partition for exclusive access. If the target partition is being used by another application or by the operating system, an error dialog box appears.

Fig. 50 – Exclusive Access Required
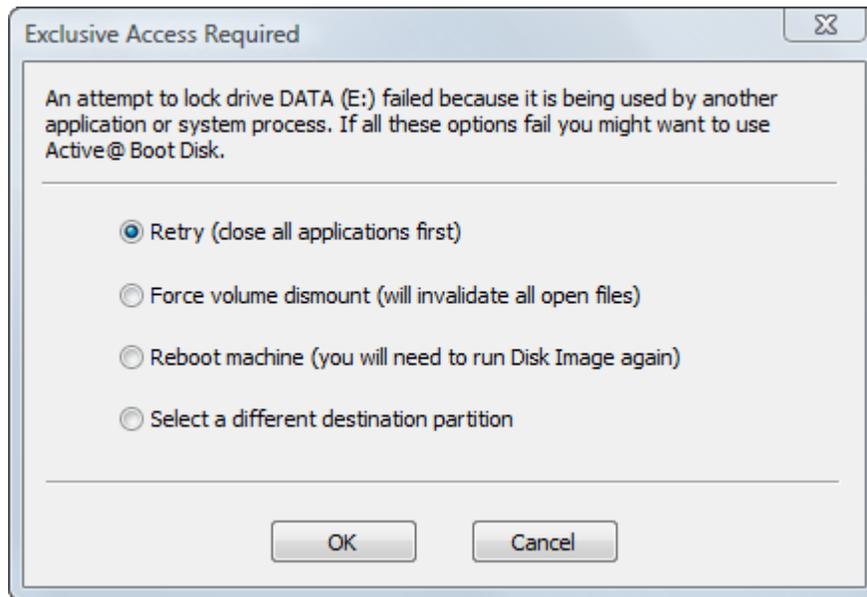
Select one of the solutions and click OK to continue.

10.2.2 Choosing a Partition Type

Choose how the copied partition will be used in the system. The copied partition may be Active, Primary or Logical on a disk with Master Boot Record (MBR) layout.

Fig. 51 – Set Destination Partition Type

Active - A hard disk can have only one active partition. As an Active partition, it is automatically set as Primary as well. If the selected partition is a bootable partition, you must choose Active in order to allow the system to boot from it. If the target disk already has a system residing in an active partition, when you clone a partition onto a new active partition you will replace the existing active partition. All data on the formerly active partition will remain intact, but you will not be able to boot from it anymore.

Primary - A hard disk can have up to four primary partitions.

Logical - A hard disk can have an unlimited number of logical partitions. (The number of primary partitions is limited to three in this case.)

Single partition without MBR – This option is available for USB flash drives only. Normally USB flash disks do not have MBR and their single partition is placed starting from sector 0. Nevertheless it is possible to create a flash drive with MBR. It might be the option when drive must be made bootable.

If the image you're restoring contains only data, it does not matter what type of partition you choose.

NOTE   Only one partition on a disk can be set to active (the bootable partition). Choose Active type only when you are cloning a system partition and you want to boot from it. If you are cloning a system partition only to retrieve the data from it, choose Primary or Logical.

Your type choices on this page depend on what kind of partition you have chosen to clone:

If you selected a primary partition or unallocated space at the primary level, you can choose primary, active or logical partition. If an extended (logical) partition already exists on the disk, your choice will be limited to primary and active partitions.

If you selected a logical partition or unallocated space on an extended partition, you can make the new partition logical only.

Active@ Disk Image supports copying partitions to GPT disks. In Destination Partition Type you can now select not only partition type but also a partitioning scheme (partition style) which can be one of the following types:

- MBR
- GPT

If you are copying a partition to an already partitioned disk, the partition style is locked and the choice of partition type is limited to suitable values. If you, however, restore image to a blank disk, you have a choice of partition style.

10.2.3 Specifying Partition Size

Indicate the size of the destination partition. You may expand the partition in order to occupy more space than the original, or you may shrink the partition so that it uses less space than the original partition.

Fig. 52 – Specify Destination Partition Size

The two calculated values on this page show the minimum and maximum size that the new partition may occupy. The maximum size corresponds to the size of the partition or unallocated space you have chosen as the target. The minimum size is determined by the amount of space used in the disk image of the source partition.

You may change not only the size but also the position of the new partition by providing values for **Free space before** and **Free space after**. The sum of all three fields must be equal to the maximum size of the partition. When you change the value in one field, the wizard automatically recalculates the other values. If you enter an invalid value, all values are reset to the defaults.

In a normal situation, you want the new partition to occupy the size of the target partition. If this is the case, do not change anything and click **Next**. If you want to make the new partition smaller than the existing target partition, change only the **Partition size** value. Free space is added after the partition.

NOTE You may enter only the approximate size of new partition. The actual number may be slightly larger or smaller due to disk geometry alignments.

10.2.4 Assigning a Drive Letter

NOTE When running Active@ Disk Image from a Boot Disk (using Windows PE environment), it is not possible to assign a drive letter due to the temporary nature of Windows PE. This wizard page will not appear.

To assign a new drive letter to the new partition, select a letter from the drop-down box. The list contains all drive letters that are unassigned. If the letter that you want to assign is already taken, it will be not in the list. To use a letter that is already assigned, you must close Active@ Disk Image and free that letter. After the letter is free, start Active@ Disk Image again and return to this page.

Fig. 53 – Assign a Drive Letter
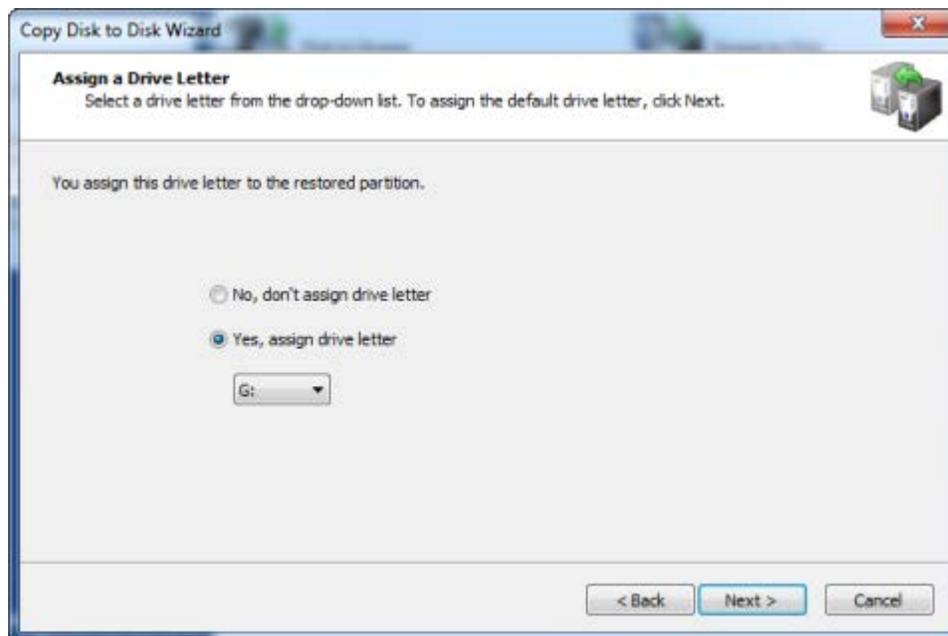
To allow the operating system to assign the drive letter, click No, don't assign drive letter. In this case Windows will assign a drive letter to the newly created partition by default, giving it the next free letter. However, if no letter is given to the partition you can use Disk Manager to assign a drive letter later.

NOTE The drive letter you choose might be very important if the copy partition contains installed programs. For example, if your source partition is partition E:, you should write the copy to a partition with the letter E:.

Otherwise, all links stored in the registry that refer to those programs installed on E: will become invalid.

10.2.5 Confirming Copy Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed, before proceeding. If everything is correct, click **Next** to start cloning the partition.

Fig. 54 – Confirm Operation Details
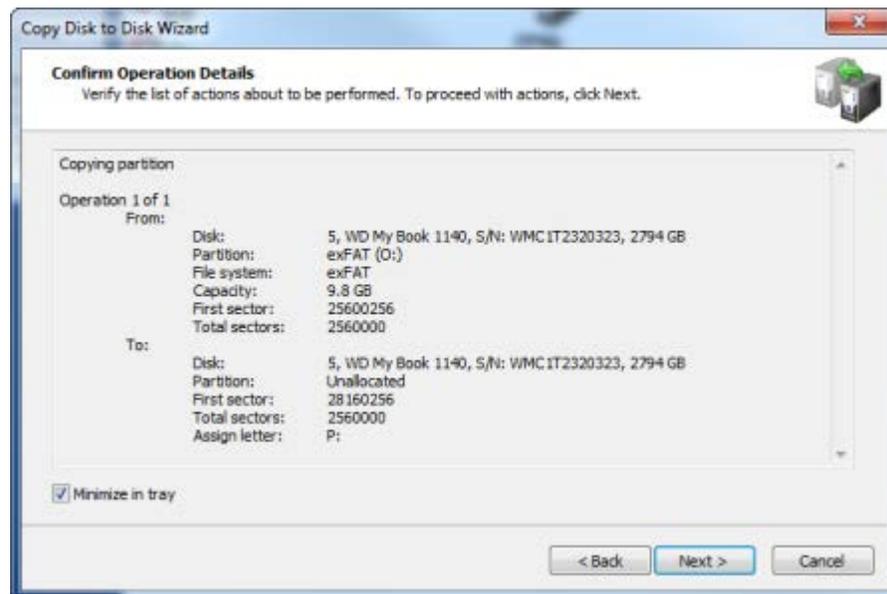
The process of copying a whole disk can take a long time. You can watch the progress bar on the Progress page.

To stop the process at any time, click **Cancel**.

10.3 Copying a Whole Disk

If you have chosen to copy a whole disk, you are said to be in "Disk Mode". You are going to copy all the partitions, one by one from the selected source disk.

You might consider Disk Mode as an automated mode. In Disk Mode, your only choice is the location of the target disk where the archive is to be written and then confirmation to proceed.

Things that are automated are:

The size and location of individual partitions
The drive letter assignment
Exclusive access to the target

The copy operation must have exclusive access to the target disk while writing to it. Before you confirm the details of the copy operation, Active@ Disk Image attempts to lock the target disk for exclusive access. If another application or the operating system is using the target disk, you must close all applications or system processes that may be using the target disk.

If you cannot lock the target disk after closing applications and system processes, there are other alternatives that you may try:

Choose a different disk - Try to copy the selected disk to a different hard disk.
Restart the computer - Choosing this option will lead to rebooting your machine, so please close all applications first before selecting it. As an alternative you might restart your computer in normal way. After you restart, start Active @ Disk Image and repeat the attempt to clone the disk.
Force volume dismount - If you don't know what is preventing the partition from being locked, use force volume dismount. Keep in mind that all open file handles on the target disk will become invalid and the application that opened them might crash.

NOTE Although force volume dismount will work in most cases, it will not allow exclusive access when you are writing data to a system partition disk or to a partition that is involved with system memory page filing. If you are dealing with either of these two cases, you may run Active@ Disk Image from a bootable CD or start your computer in such a way that the target partition is not part of the operating system. You can do this on a computer with multiple systems installed, by booting a different system or you can remove the target disk and install it into another computer where it will not be a system disk.

10.3.1 Selecting a Destination Disk

After you have selected a source disk to copy, you must select a destination disk.

In the Selecting destination disk page, select a target disk to receive copied data from the selected disk. The disk that you select must be big enough to hold all the data in the source disk. If you select a disk that is too small, the Next button is disabled.

Fig. 55 – Select Destination Disk
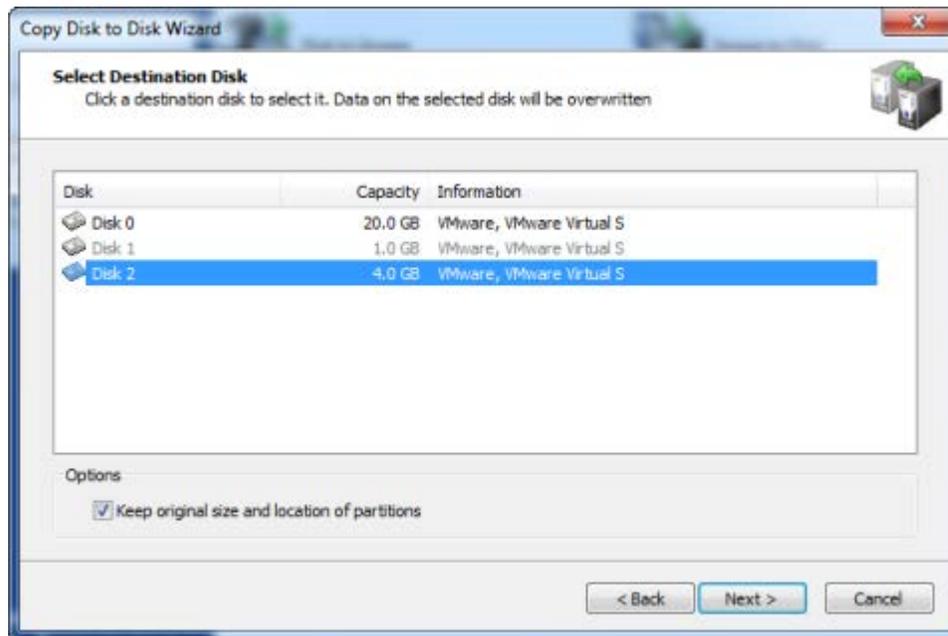
 After you click **Next**, an attempt is made to lock the target disk for exclusive access. If the target disk is being used by another application or by the operating system, an error dialog box appears.

Fig. 56 – Exclusive Access Required
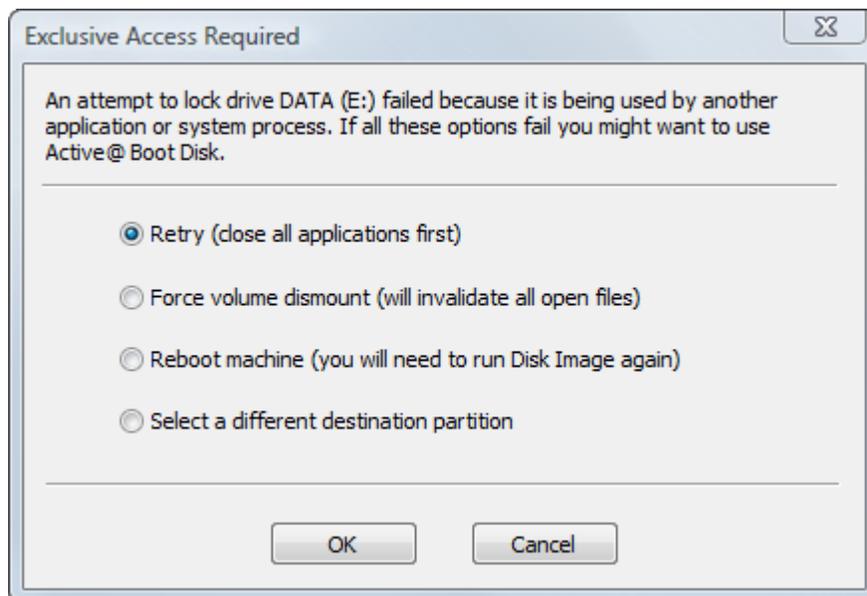
Select one of the solutions and click OK to continue.

10.3.2 Confirming Partition Delete on Target Disk

When you copy all partitions from a source disk in Disk Mode, all partitions on the target disk - along with all data on them - must be deleted. This confirmation page is your final warning.

Fig. 57 – Destination Disk Contains Partitions
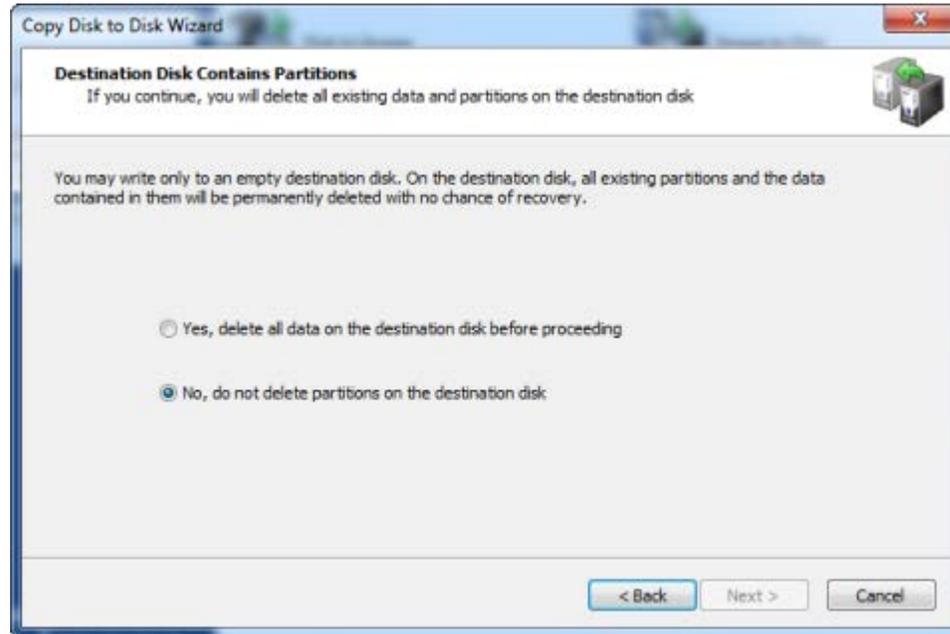
To proceed, select Yes, delete all partitions on the selected disk and click Next.

10.3.3 Confirming Copy Details

Review the details of this page carefully. To change an item on this page, click **Back** and change an option, if needed before proceeding. If everything is correct, click **Next** to start copying the disk.

Fig. 58 – Confirm Operation Details
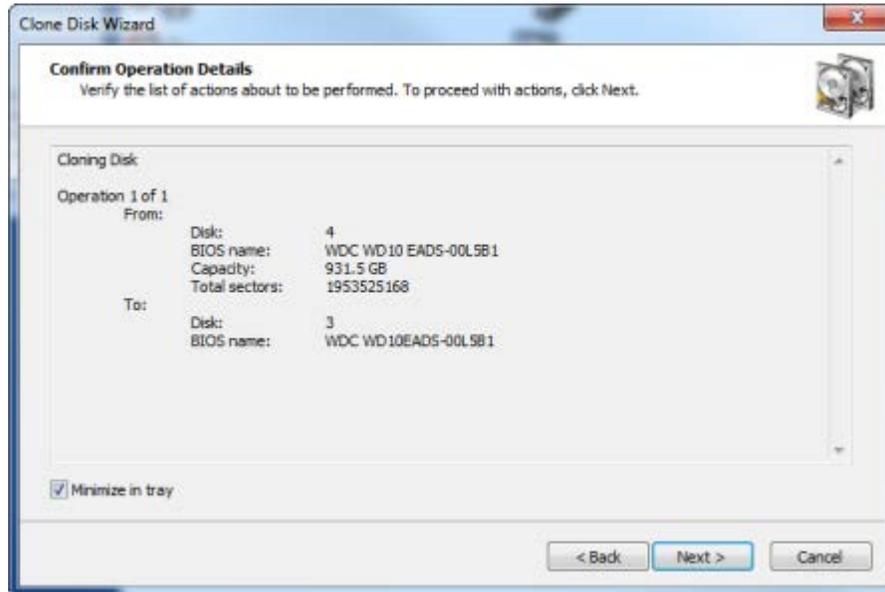
The process of copying a whole disk can take a long time. You can watch the progress bar on the Progress page.

To stop the process at any time, click **Cancel**.

11 Other Operations

11.1 Viewing the Log File Details

Active@ Disk Image keeps a record of every operation that it performs. You may view the details of this record to help overcome difficulties when saving or restoring a disk image.

To open the View Log dialog box:

14. From the **File** menu, choose **View log...**

Fig. 59 – View Log
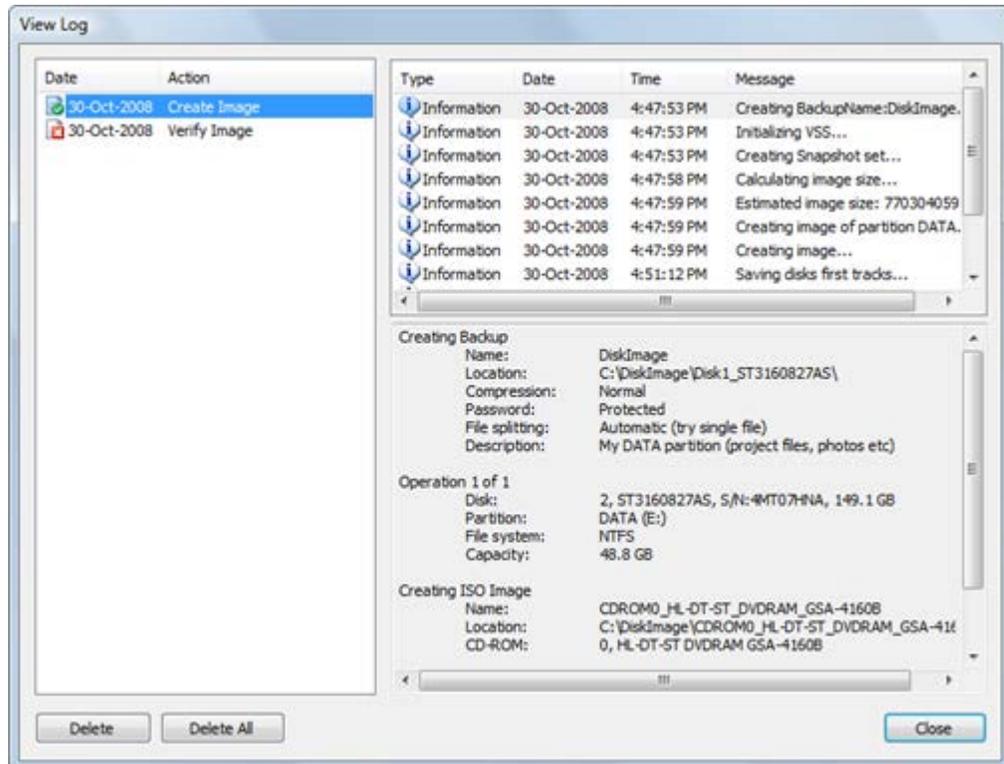
The View Log window is divided into three panels. The left panel shows a list of all actions performed. Each item in the action list is a log. When you select a log in the action list, the top right panel displays information, warning and error messages that Active@ Disk Image created during the selected action or operation. When you select a message in the message list, details of the selected message are displayed in the bottom right panel.

Each log in the action list has an icon that shows the resulting status of that action or operation:

[icon]   Action or operation finished successfully.

[icon]   At least one warning message was created. The operation completed successfully in spite of the warning.

[icon]   At least one error happened during the operation. The operation did not complete.

[icon]   The operation is in progress. There are no errors or warnings at this point.

To delete logs:

15. Select a log in the action list.

16. Click **Delete**.

17. To delete all logs, click **Delete All**.

NOTE   Besides regular logs you also have an option to create an additional text log. It contains the same information as a regular one. In order to create it, make sure that log check box is enabled at confirmation dialog of a wizard.

Besides XML log files in Logs folder accessible via GUI and text logs placed along with the image, Active@ Disk Image places logs into Windows Application log. These logs are created for administrator`s convenience and can be viewed by Event Viewer.

11.2 Scheduling a Task

You can automate creating images by making a scheduled task. This will run automatically at a time of your choice (unattended execution). When Active@ Disk Image is executing a scheduled task it runs without user interaction and does not have a GUI interface. If the execution started when a user was logged on, a console window will be shown displaying the progress of the operation executed. You do not need to be logged on in order to execute a scheduled task. If the execution has started when a user is not logged on the above mentioned console window will not appear – Disk Image will continue running until the task is finished.

Scheduled backups use a different schema of naming the images. Every image created automatically is placed in a folder named Backup-<DATETIME> under the main backup folder. For example, if the backup location is C:\Backups and the backup name is DiskImage, the

scheduled backup files created on September 11, 2007 at 3:24pm will be placed in folder C:\Backups\DiskImage\Backup-2007-09-11-1524. Each scheduled backup may have several copies created at a different time as scheduled, each with its own timestamp. If two copies of a backup happen to have the same timestamp, the second copy will have "(1)" added to the backup name, i.e. C:\Backups\DiskImage\Backup-2007-09-11-1524(1).

You may control how many previous copies of scheduled backups you want to keep. It is configurable in the Scheduling tab of the Settings dialog. Select 0 means that only the most recent copy will be kept. The previous copies of scheduled backups are erased only after the current backup is successfully created.

NOTE Task scheduling is not supported when Active@ Disk Image is running under Windows PE (from a Boot Disk).

11.2.1 Tasks Dialog

You can get access to the configuration of tasks by double clicking the **Schedule Task** icon in the main window or by selecting menu command **File / Schedule Task…**

Fig. 60 – Scheduled Task dialog
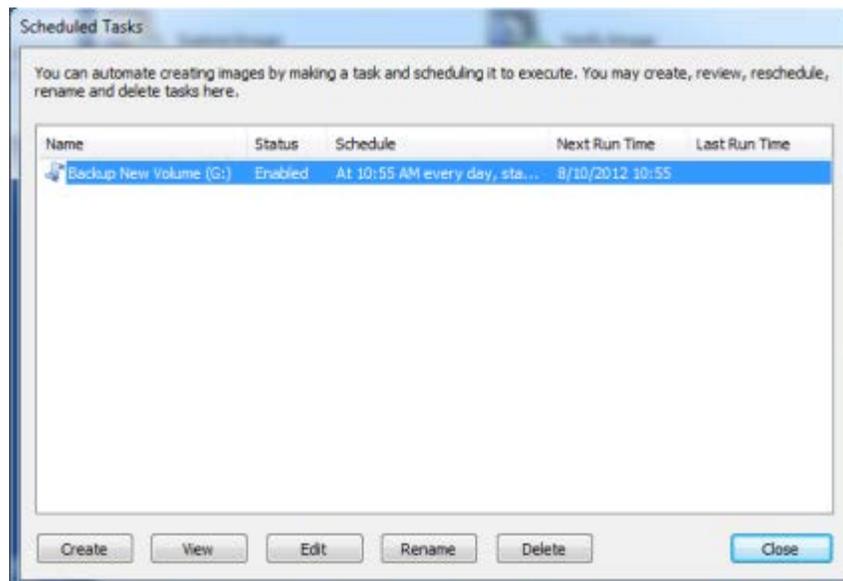
The Scheduled Tasks dialog shows the list of created tasks with the following information:

Name – the name you gave to the task. The icon preceding the name will indicate task status - 🐾 for an enabled task and 🔒 for a disabled one.

Status – either enabled or disabled. If you have a task and do not want it to be executed you might temporary disable it instead of deleting it.

Schedule – a short description of time (condition) to which the task is scheduled.

Next Run Time – time at which the task should run.

Last Run Time – the most recent time the task was executed.

To create a new task, click the **Create** button. You may create tasks for both regular and raw image backups. The second wizard dialog asks you to choose a backup type. The dialogs that follow are exactly the same as in Disk To Image and Create Raw Image wizards except you cannot schedule an image to be burnt onto CD/DVD.

11.2.2 Scheduling a Task

After you are done selecting objects to backup, and specifying the settings options, you need to schedule the task in order to run it automatically. This dialog lets you select an appropriate launch condition.

Fig. 61 – Schedule Task
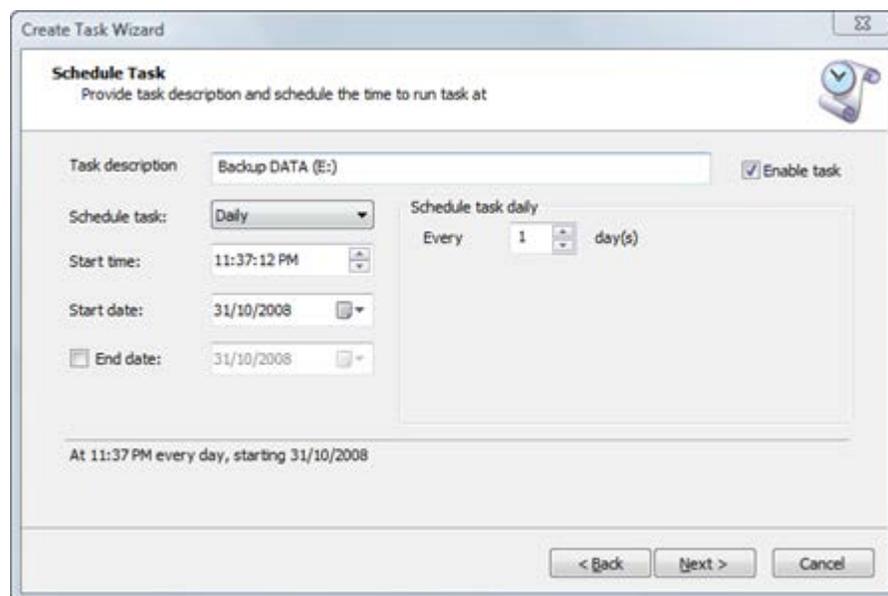
Task description – give it a meaningful name in order to quickly find out what will be backed up. It is not the same as the image description which you entered in the Options dialog.

Enable task – if you don't want the task to be executed yet leave the check box blank. The status of the task will be disabled.

Schedule task - the field that allows you to select a type of trigger upon which the task should be executed. You can choose between Daily, Weekly, Monthly, Once, At system startup, At user logon. Please note that the control set is changed as you select different trigger types.

Start time and date – the initial time when the trigger will execute.

End date – allows you to limit the period of the task execution

11.2.3 Choosing Account Information

You need to provide a user name and a password of the account by which the task will be executed. Please be sure that the account you choose has administrative privileges.

Fig. 62 – Set Account Information
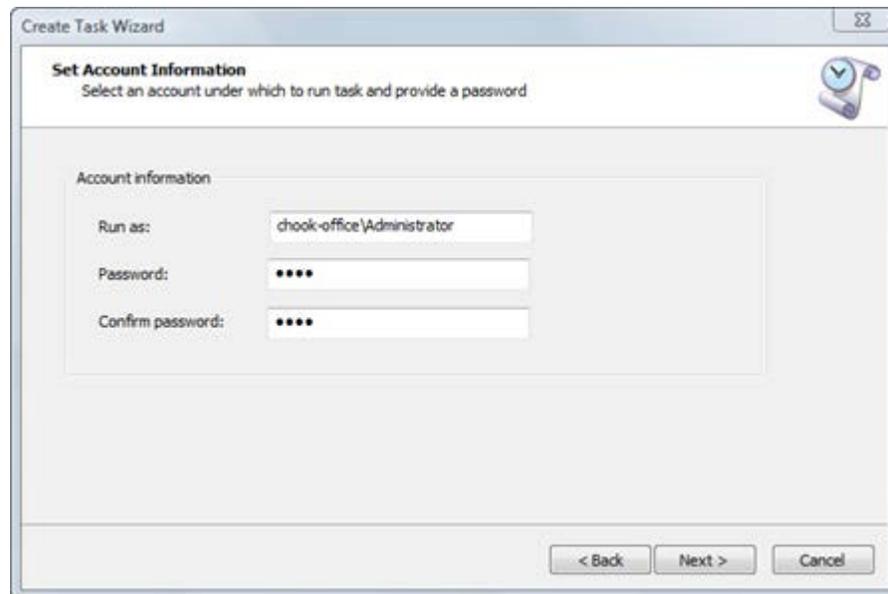
11.2.4 Pre- and post-execute commands

You can specify which commands Active@ Disk Image should execute
right before and after creating a scheduled image. This could be copying
a disk image to central storage or doing cleanup as example. When
creating a scheduled task simply specify required commands in the
following dialog. Keep in mind that working directory is a folder where
Active@ Disk Image installation is located, so plan shell commands
accordingly.

Fig. 63 – Pre- and post-execution commands

11.2.5 Confirming Task Details

Review the details of this page carefully. To change an item on this
page, click **Back** and change an option, if needed before saving the
task.

Fig. 64 – Confirm Operation Details
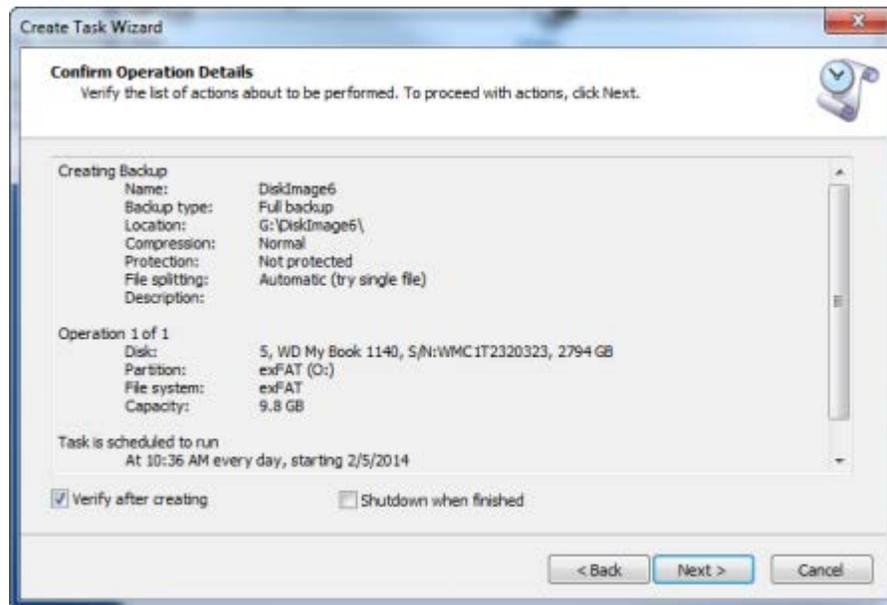
A text log file will be created in the backup folder with the name of backup and .log extension.

11.2.6 Viewing Task Details

After a task is created it appears in the tasks dialog list. To review the details of the task select the task and click the **View** button.

Fig. 65 – View task details
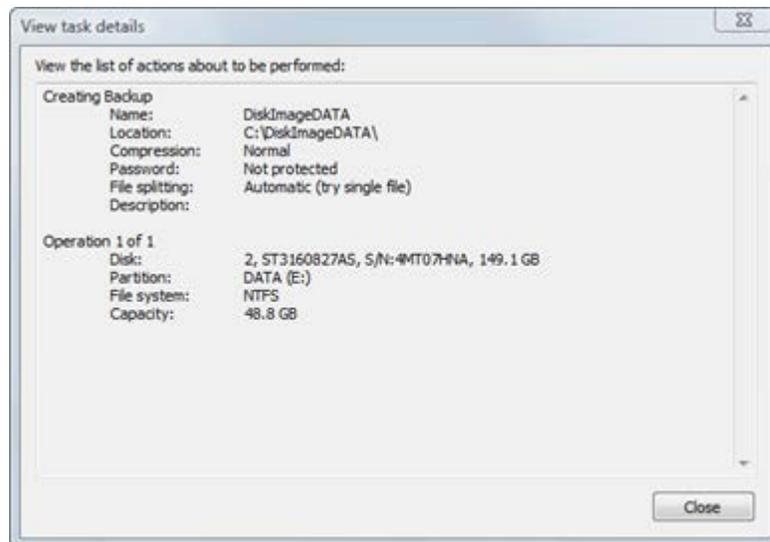
11.2.7 Editing a Task

You can edit an existing task by selecting a task and clicking **Edit** button. The wizard will guide you through the same steps you followed when you created the task.

11.2.8 Renaming a Task

You may want to rename an existing task if you find that its original name does not reflect the task's purpose. To do that, click the **Rename** button in the Scheduled Tasks dialog after selecting the task you want to rename.

11.2.9 Deleting a Task

When a task is no longer needed, you can delete it. Select a task you want to delete from the task list in Scheduled Tasks dialog and click the **Delete** button.

11.2.10 Scheduling an incremental backup

Pro version of Active@ Disk Image supports creating an incremental backup as a scheduled task. When you create a new task the first wizard dialog you see is selecting a backup type.

Fig. 66 – Choose a Backup Type
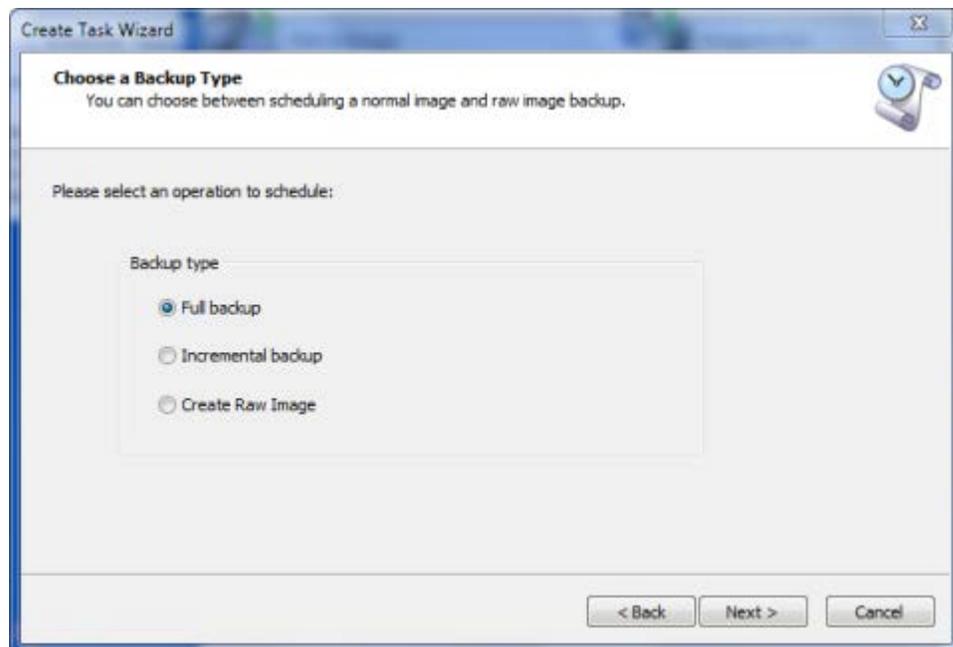
To create an incremental backup, select Incremental backup. The logic behind creating a scheduled incremental backup is slightly different from the one for manual backup. Here you won't be prompted for choosing a base image. The following schema is used in creating/naming

incremental backups. The first created backup will be a full backup. Next, up to specified maximum incremental backups will be created. Then, again a full backup and a series of incremental backups will follow.

For example, if the backup location is C:\Backups and backup name is DiskImage and maximum of incremental backups is 3, the following backups will be created:

C:\Backups\DiskImage\Backup-2010-01-01 (full backup)

C:\Backups\DiskImage\Backup-2010-01-01\Incr-2010-01-02 (1st incremental backup)

C:\Backups\DiskImage\Backup-2010-01-01\Incr-2010-01-03 (2nd incremental backup)

C:\Backups\DiskImage\Backup-2010-01-01\Incr-2010-01-04 (3rd incremental backup)

C:\Backups\DiskImage\Backup-2010-01-05 (full backup)

C:\Backups\DiskImage\Backup-2010-01-05\Incr-2010-01-06 (1st incremental backup)

C:\Backups\DiskImage\Backup-2010-01-05\Incr-2010-01-07 (2nd incremental backup)

C:\Backups\DiskImage\Backup-2010-01-05\Incr-2010-01-08 (3rd incremental backup)

etc.

The limitation of number of incremental backups in a series is necessary to cap the dependency on previous backups, i.e. if the backup you need to restore is a 3rd incremental backup, you will need all three incremental backups and a full backup to get the data. The longer the chain of incremental backups, the higher number of files to worry about and potential risk of corruption, so it's best to keep it reasonably short, say under 10 backups.

Fig. 67 – Maximum incremental backups

![NOTE icon] **NOTE** Keep in mind, that "Number of previous backups to keep" counts only full backups, not incremental when deleting old backups.

Completed backups to keep is the total number of completed full backups to keep, including just created during the last task run. The parameter set to 1 means "delete all previous copies and leave only the most recent one which just has been created".

![NOTE icon] **NOTE** When deleting old completed copies, Active@ Disk Image will also look for incomplete (read "corrupted" images) and will delete them all to reclaim the disk space. This clean up procedure will be performed only after current backup is successfully created, so there will be at least one good copy left.

11.2.11 Viewing Running Task

When a task is executing by scheduler, it runs as a separate process without user interface. You can, however, see a task progress and stop the task if necessary, by launching Active@ Disk Image and executing a Running Task command from the main screen.

If there's no task running in background, a dialog message will say that, otherwise a dialog box similar to the progress dialog will show up. It will display the current status of the task being executed.

You can stop the running task by clicking on "Abort" button. A signal will be sent to running process to terminate. Once it is finished, "Connection has been lost" message will be displayed.

Fig. 68 – Running task dialog
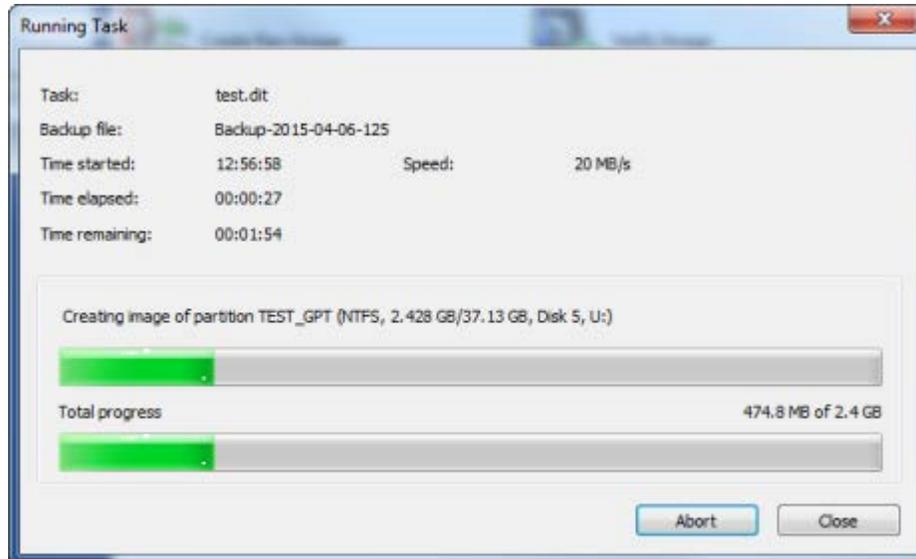
If the running task is completed while Running Task dialog is open, a connection with it will be broken and a message "Connection has been lost. The task is, probably, completed." will be shown. It is normal; simply close the Running Task dialog.

11.3 Creating and Executing Scripts

Besides scheduling backup tasks Active@ Disk Image (Pro version only) offers another way of executing tasks without interacting with the application and using GUI. It is called scripting. Using Generate Script wizard you create a script describing the action you would like to perform (creating or restoring image, copying or cloning a disk etc.). Then you run Active@ Disk Image with special parameters so instead of launching its GUI, it runs in console mode and executes a previously created script.

When creating a script, you are not limited to creating a backup but rather can script any major task – create a backup, create a raw image, restore an image, copy or clone a disk or a partition.

The main benefit of using a script is unattended backup or restore from a batch file. If you have a sophisticated backup scheme based on batch file execution, you may incorporate Active@ Disk Image in it easily through using a script. When executing a script, Active@ Disk Image runs in console mode and provides output to the same console window it was launched from. When finished executing a script it returns an error code which can be analyzed further in a batch file to make decisions. User can also interrupt Active@ Disk Image script task by pressing CTRL-C while in console window.

11.3.1 Creating a Script

To create a script, launch a script wizard by double clicking Generate Script icon on the main window. The first wizard dialog offers you to choose which task you'd like to script.

Fig. 69 – Selecting a script task
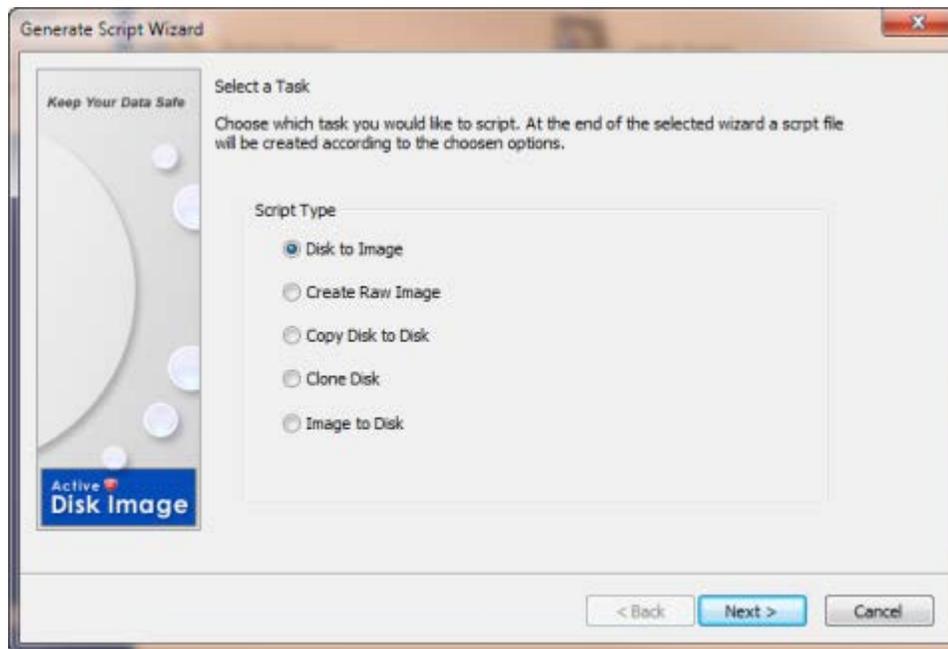
After choosing a task you are going to follow exactly the same wizard as you'd do when executing a task manually. For example, if you select Script Type as Disk to Image, you will be guided through the same dialogs as in Disk to Image wizard (selecting a backup type, disk and partitions to backup, backup location, options and confirmation).

The main difference from regular task wizard is that instead of proceeding with execution of the task after a confirmation dialog you'll be presented with another dialog named Save Script File. It shows a generated script text and allows saving the results either to a script file or to clipboard.

Fig. 70 – Saving a script
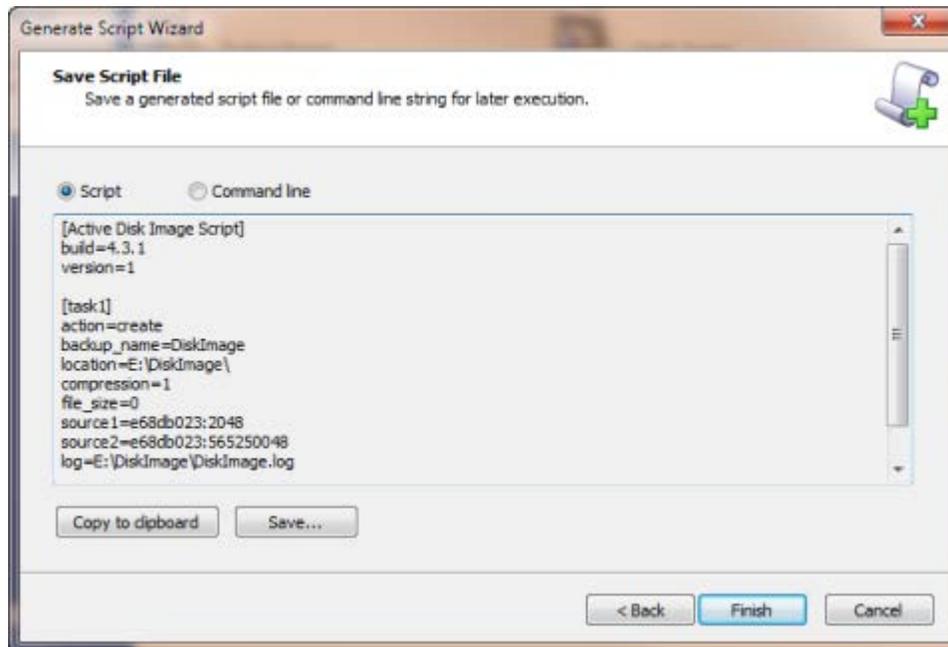
There are two ways to create and execute a script – as a script file or through command line parameters. A script file has an extension .DIS and follows a simple key=value structure. Using command line parameters allows you to avoid using a separate script file, and passes all script values to Active@ Disk Image as parameters. Keep in mind though that sticking with command line parameters may create a very long a cluttered command line.

The task parameters the wizard describes are placed in [task] section in a script file. Normally there would be only one [task] section in the file but in some cases wizards may produce more than one task. For example, if you create an image of more than one hard disk and turn on the option "Create separate images for each disk", script wizard will generate several tasks, one for each image to be created. Those tasks will be executed as independent entities one after another. Command line parameters allow describing only one task, so there will be more than one set of command line parameters generated each of them representing a separate call of Active@ Disk Image.

11.3.2 Executing a Script

To execute a script, run Active@ Disk Image with parameter **/e** following by a set of key/values pairs. The /e parameter must be the last in the set of command line parameters.

For example, to execute script file script.dis run the following:

`C:\>disk_image.exe /e f=script.dis`

If you want to use a set of command line parameters instead of .DIS file, you use the command line generated by a script wizard. It may look like this:

`C:\>disk_image.exe /e a=create bn="DiskImage5" bl="G:\DiskImage5\" c=1 fs=0 s1=37eb37ea:63 s2=37eb37ea:311291505 s3=37eb37ea:413689815 s4=37eb37ea:618486435 s5=cc07cc07:63 s6=cc07cc07:204796620 s7=cc07cc07:205198245 s8=cc07cc07:205602816 l="G:\DiskImage5\DiskImage5.log"`

Keep in mind that in both cases you have to use a correct version of disk image executable: disk_image.exe for 32-bit environment or disk_image_x64.exe for 64-bit. You should run Active@ Disk Image from the path where it is installed.

When executing a script Active@ Disk Image creates a console window which is used for program output. If you are running Active@ Disk Image from your batch file, this can be inconvenient as it will launch a separate console window. To change this behavior and use the existing console window of cmd.exe run Active@ Disk Image with parameter **/c**:

`C:\>disk_image.exe /c /e f=script.dis`

When launched in script mode Active@ Disk Image first parses provided parameters, then executes a task and reports the result. During the execution phase you may interrupt the process by pressing CTRL-C when the console window is in focus. It has the same effect as clicking the Cancel button when running the application in GUI mode.

Upon finishing the execution Active@ Disk Image outputs the result into the console and exits with a return code. You may analyze the return code in your batch file to detect successful or failed execution. Active@ Disk Image may return the following values:

`0 – Success`
`1 – Completed with warnings`
`2 – Completed with errors`

100 – Failed
101 – Canceled
102 – Feature not supported
103 – Bad parameters
104 – Cannot create folder
105 – Cannot start thread
106 – Cannot lock volume
107 – Target folder not empty
108 – Failed open image

Return codes below 100 are generally considered successful.

11.4 Changing Program Settings

You can change the program settings in the Program Settings dialog.

To open the Program Settings dialog box:

18.1. From the **File** menu, choose **Settings...**

Fig. 71 – Program Settings - General
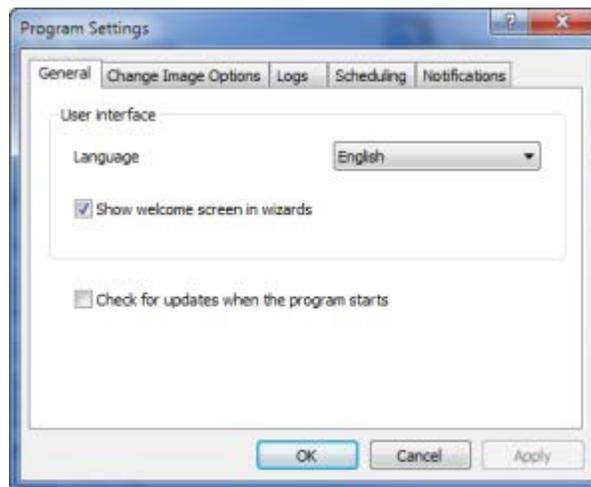
To preserve the changes you made, click **OK** or the **Apply** button of the dialog.

NOTE When Active@ Disk Image is running under Windows PE (from a Boot Disk), setting changes are not retained as they are stored in the System Registry which is discarded after reboot.

11.4.1 General Settings

In the General tab you can choose a user interface language by selecting one from drop-down list.

Show welcome screen in wizards. Normally wizards have an introductory welcome page describing the purpose of the wizard. You can choose not to show it by unchecking this option.

Check for updates when program starts. If this option is chosen, Active@ Disk Image will check for a newer version of the program when it starts. A working internet connection is required for this feature to work.

11.4.2 Image Options Settings

This tab allows you to change default image options.

Fig. 72 – Program Settings – Options
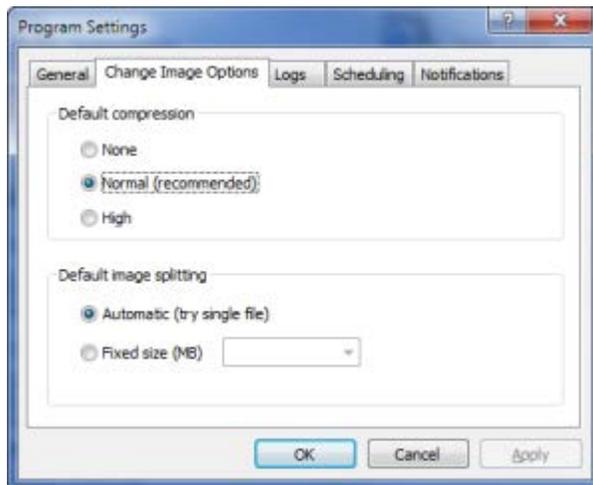
They include compression settings and image splitting. Every time you create a new image the wizard uses these settings as default.

11.4.3 Logs Settings

Fig. 73 – Program Settings - Logs
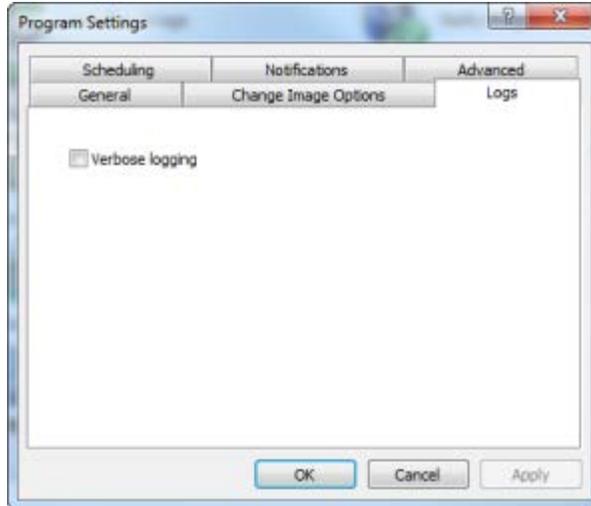
Verbose logging is useful as a troubleshooting measure to locate the source of an error.

11.4.4 Scheduling Settings

You may control how many previous copies of scheduled backups you want to keep.

Fig. 74 – Program Settings - Scheduling
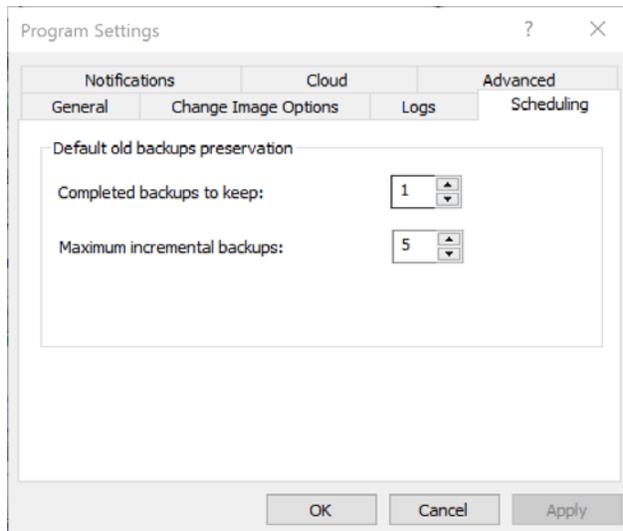
Selecting 1 means that only the most recent copy will be kept. The previous copies of a scheduled backup are erased only after the current backup is successfully created.

Maximum incremental backups parameter sets the default value for the number of incremental backups in sequence after a full backup. A value

of 5 means that a full backup will be created and 5 incremental backups after it, then the sequence repeats again - 1 full and 5 incremental.

NOTE This is default setting only. When you create a task, an Options page will contain **Number of previous backups to keep** parameter with the value taken from this setting. You may overwrite it, giving individual values for each backup. The same is true for **Maximum incremental backups**.

11.4.5 Notifications Settings

Active@ Disk Image can send an e-mail notification on completion of image creation. All parameters concerning when and where to send notification is described in Notification settings tab.

Send e-mail notification for. This group of checkboxes sets when to send notifications. Normally you want to get e-mail notification when image is creating automatically by scheduled backup or as part of a script.

Fig. 75 – Program Settings - Notifications
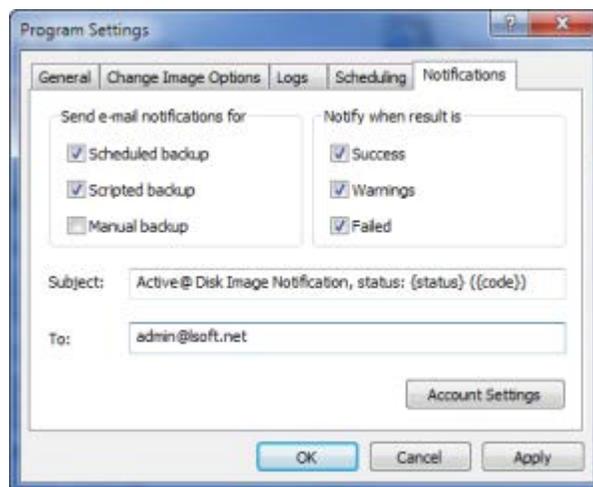
Notify when result is. These options specify when to send notifications and correspond to the following result codes from creating image:

1. **Success –** successfully created

2. **Failed –** failed or cancelled by user

3. **Warning –** completed with errors or completed with warnings

Subject – is a template used to make a message subject. It can contain two placeholders which are substituted with actual values:

- **{status}** – string value of status (can be "Success", "Warnings" or "Failed"
- **{code}** – numerical value of status (0 – success, 1 – warnings, 2 – failed)

You are free to change subject template according to your needs. Including status string or numerical value could be useful when setting up a message filter.

To: - enter a list of e-mail recipients separated by a semicolon. At least one e-mail address must be entered here.

Account settings opens a dialog with SMTP account settings.

Fig. 76 – SMTP settings
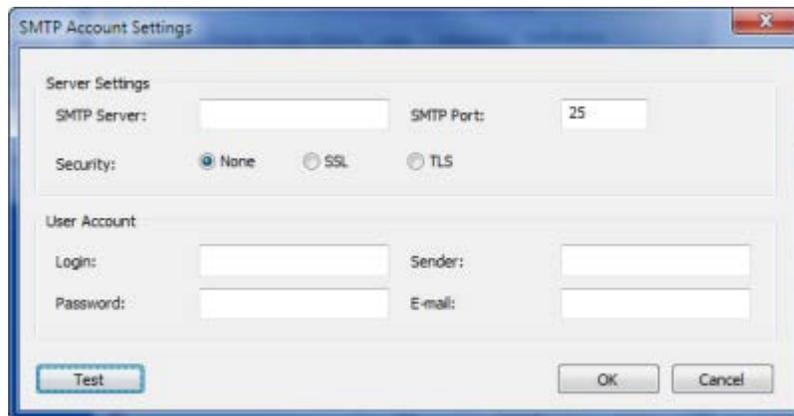
Server Settings contains server name, port number, and security type. Normally, for non-secure connections, port 25 is used, and for SSL and TLS – ports 465 and 587 respectively. However, your ISP provider may use different values.

User Account enumerates user identity. If your SMTP server does not require authentication leave Login and Password empty.

Sender is the name which will appear in From field in notification e-mail.

Test button allows to verify account settings. A test e-mail will be sent.

11.4.6 Cloud Settings

Active@ Disk Image can use cloud storage services to store backups. Before you use them you need to configure access to cloud storage through Cloud tab in Settings dialog. For using **Amazon AWS S3** service you need to setup it first and obtain a pair of access keys called Access key ID and Secret access key. Please refer to AWS

documentation how to setup account, create an IAM user and use S3 service.

Region. Select a region where to store images. Normally you would choose a data center closest to your location. For Eastern USA you might choose us-east-1. For full list of available regions and their codes see AWS doc: https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/using-regions-availability-zones.html

Bucket. Before using cloud storage, you need to create or select a bucket. Active@ Disk Image can share the bucket with other data; it will create a subfolder called **ActiveDiskImage** and store all backups inside that subfolder.

Split size. When images are stored in the cloud, they are automatically split into chunks of predefined size. In the cloud an image will look like a set of smaller files inside one folder. The most optimal size is 100 MB, but in some cases if connection is not stable on particular machine, you may want to reduce the split size to 50 MB, 20 MB or less. Don't change this value unless you have a reason to do so.

Access ID. Provide an Access key ID for IAM user under which Active@ Disk Image will access the storage.

Access key. Enter a Secret access key for the mentioned Access ID.
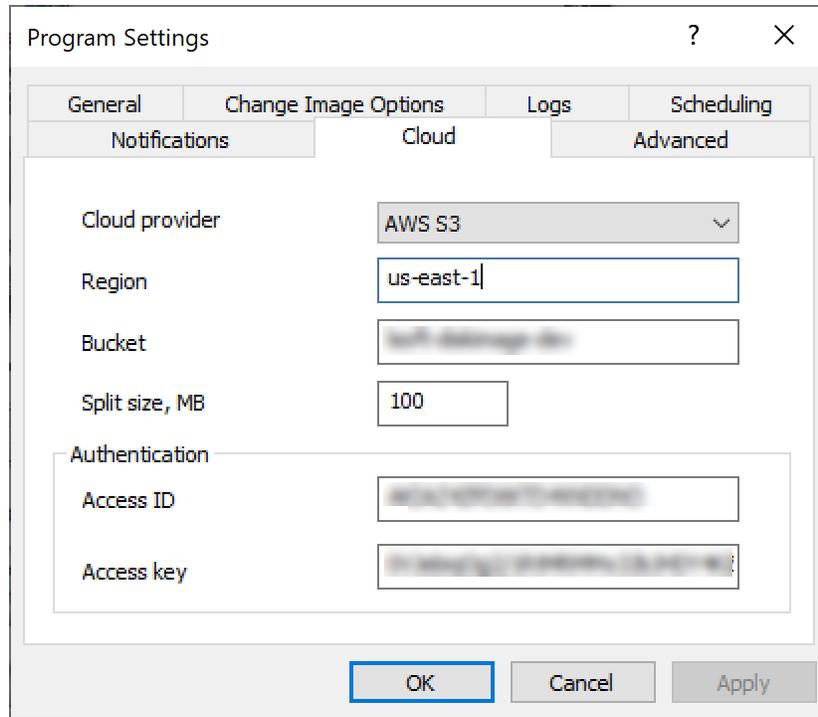
Cloud settings are stored in Windows Registry.

When creating a Boot Disk using a Boot Disk Creator there is an option to provide cloud settings which will be available in Boot Disk environment once you booted from it. If you configured Cloud settings before creating a Boot Disk, Boot Disk Creator will pick them up and you will see them in the Cloud tab in configuration wizard. By providing the settings in Boot Disk Creator you will eliminate the need to configure Active@ Disk Image manually every time you boot from Boot Disk.

11.4.7 Advanced Settings

Active@ Disk Image can use multiple threads for compression and encryption. This can significantly improve performance on multi-core machines. By default, Active@ Disk Image uses as many compression threads as the number of CPUs/cores detected on a machine. However, there is an option to manually specify this number. Use it with care and do not specify a value larger than the number of CPUs/cores on your machine, as it might lead to performance degradation.

Fig. 77 – Advanced settings
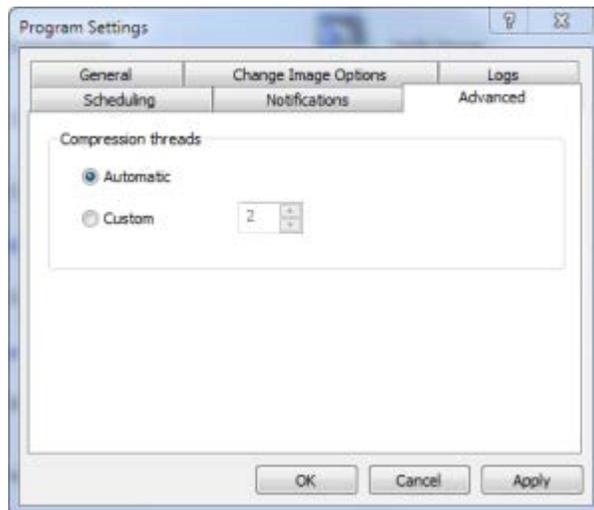
10.5 Saving Hardware Information

When you are performing maintenance on a hard disk, or if you are repairing or recovering lost or damaged data on a disk, you might want to record technical information about the disk before making changes. This information may be helpful if you need to remember the original configuration when restoring data after a system crash or when contacting technical support.

This configuration information includes a list of all hard disks installed on your machine with details about all partitions and volumes. It will be saved as a XML file which most browsers will render in an easy-to-read format.

To save hardware information:

19. From the **File** menu, click **Save Hardware Info...** The **Save As** dialog box appears.

20. Navigate to a folder location and type a name in the **File name** field.

21. Click **Save**.

NOTE When you create a disk image, a Hardware Info file is created automatically. It is written into the same location as your disk image and has the same file name but with a .XML extension. You do not need this file to restore data from the disk image. The information in this file reflects the configuration at the moment of creating the image and it may be helpful in the event that you have any difficulty restoring the data.

12 Troubleshooting

12.1 FAQ (Frequently Asked Questions)

Q. Does Active@ Disk Image work under Windows 98 or Windows 2000?

> **A.** No. Active@ Disk Image requires Windows 7 or newer OS to run from a regular windows boot. However, if you use Active@ Disk Image from a Boot Disk, you may have any operating system - or no operating system at all - on your data disk. The purchased version of the software comes with a utility to create a boot CD /USB (which contains a Windows PE operating system).

Q. Why do I get the error message "The file is not the last file of multi-file archive..." when I try to open an image file?

> **A.** When a regular disk image is split into several files, the image description is placed into the last file of the archive. If all files are located in the same folder, you may select any file of the image. The application will automatically locate the last file of the archive and read the backup information. If the last file cannot be found, you must locate the last archive file and select it to open the image.

Q. What does it mean when I get the error message: "... call has failed. HRESULT = ..." ?

> **A.** When creating an image the program usually uses volume shadow copy service (VSS) to get a consistent image of a partition on the fly. This error means that either VSS or COM+ has failed. Make sure that COM+ is configured properly. If necessary, reinstall COM+. Restart the VSS service (or reboot the machine) and try the operation again.

Q. Why do I get a message that a drive cannot be locked while creating an image?

> **A.** Normally, Active@ Disk Image relies on a snapshot driver to read data while creating an image. The snapshot driver tries to get exclusive access to the drive. You will get this message under the following circumstances:
>
> - If another application or the operating system is using a target partition.

- If you are running the program from a Boot Disk (under Windows PE)

- If your machine does not have at least one NTFS partition with 110 MB of free space.

Follow the options listed in the message dialog box to resolve the situation.

12.2 Technical Support

If you are an existing Active@ Disk Image customer and are having difficulties using the software, you can find help using any of the following options:

To get more information, see our Web page: www.disk-image.com/support.htm
To contact our customer service:

- E-mail: support@lsoft.net

- Toll-Free Line: +1 (877) 477-3553

- International Line: +1 (905) 812-8434

- Fax: +1 (416) 352-7561